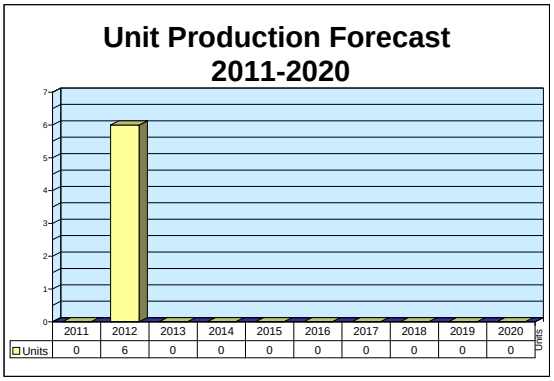
Super Dvora

Outlook

- Additional Six Super Dvora Mk III reportedly ordered by Sri Lanka
- Three craft reportedly ordered by Morocco
- Limited operational role for craft in this class



Orientation

Description. Offshore patrol craft tasked with maritime policing.

Sponsor. This program has been developed by the manufacturer to government specifications. The sponsors of the program (when procured) are the respective navies of the countries using the vessel.

Status. In service.

Total Produced. Approximately 35 of these craft remain in service out of 51 built.

Pennant List

Number & Name	Operator Navy	Builder	Type	Commissioning
P-101	Eritrea	IAI Ramta, Israel	Mk II	12/1993
P-102	Eritrea	IAI Ramta, Israel	Mk II	12/1993
P-103	Eritrea	IAI Ramta, Israel	Mk II	3/1994
P-104	Eritrea	IAI Ramta, Israel	Mk II	3/1994
T80	India	IAI Ramta, Israel	Mk II	6/1998
T81	India	IAI Ramta, Israel	Mk II	6/1999
T82	India	Vasco SY, India	Mk II	10/2003
T83	India	Vasco SY, India	Mk II	1/2004
T84	India	Vasco SY, India	Mk II	4/2004
T85	India	Vasco SY, India	Mk II	2/2005
T86	India	Vasco SY, India	Mk II	2/2005
811	Israel	IAI Ramta, Israel	Mk I	6/1989
812	Israel	IAI Ramta, Israel	Mk I	1990 (est.)
813	Israel	IAI Ramta, Israel	Mk I	1990 (est.)
814	Israel	IAI Ramta, Israel	Mk I	1990 (est.)
815	Israel	IAI Ramta, Israel	Mk I	1991 (est.)
816	Israel	IAI Ramta, Israel	Mk I	1991 (est.)
817	Israel	IAI Ramta, Israel	Mk I	1991 (est.)
818	Israel	IAI Ramta, Israel	Mk I	1992 (est.)
819	Israel	IAI Ramta, Israel	Mk I	1992 (est.)

Super Dvora

Number & Name	Operator Navy	Builder	Type	Commissioning
820	Israel	IAI Ramta, Israel	Mk II	1993
821	Israel	IAI Ramta, Israel	Mk II	1994 (est.)
822	Israel	IAI Ramta, Israel	Mk II	1994 (est.)
823	Israel	IAI Ramta, Israel	Mk II	1994 (est.)
830	Israel	IAI Ramta, Israel	Mk II-I	2005
831	Israel	IAI Ramta, Israel	Mk II-I	2005
832	Israel	IAI Ramta, Israel	Mk II-I	2005
833	Israel	IAI Ramta, Israel	Mk II-I	2006
834	Israel	IAI Ramta, Israel	Mk II-I	2006
835	Israel	IAI Ramta, Israel	Mk II-I	2006
836	Israel	IAI Ramta, Israel	Mk III	11/2007
837	Israel	IAI Ramta, Israel	Mk III	11/2007
838	Israel	IAI Ramta, Israel	Mk III	11/2007
839	Israel	IAI Ramta, Israel	Mk III	11/2007
HPL 21 *Ankaran*	Slovenia	IAI Ramta, Israel	Mk II	8/1996
P440 (ex-P465)	Sri Lanka	IAI Ramta, Israel	Mk I	1988
P441 (ex-P466)	Sri Lanka	IAI Ramta, Israel	Mk I	1988
P442 (ex-P467)	Sri Lanka	IAI Ramta, Israel	Mk I	1988
P443 (ex-P468)	Sri Lanka	IAI Ramta, Israel	Mk I	1988
P460 (ex-P441)	Sri Lanka	IAI Ramta, Israel	Mk II	11/1995
P462 (ex-P497)	Sri Lanka	IAI Ramta, Israel	Mk II	6/1996
P464	Sri Lanka	IAI Ramta, Israel	Mk II	6/1999
P465	Sri Lanka	IAI Ramta, Israel	Mk II	9/1999
TBA	Sri Lanka	IAI Ramta, Israel	Mk III	12/2009
TBA	Sri Lanka	IAI Ramta, Israel	Mk III	2010
TBA	Sri Lanka	IAI Ramta, Israel	Mk III	2010
TBA	Sri Lanka	IAI Ramta, Israel	Mk III	2010
TBA	Sri Lanka	IAI Ramta, Israel	Mk III	2010
TBA	Sri Lanka	IAI Ramta, Israel	Mk III	2010

Mission. The Super Dvoras are intended for high-speed insertion and coastal patrolling missions by naval and special operations forces.

Price Range. A unit price of $10 million is estimated, based on contract award information from 1999-2000. (The unit price of the boats purchased by India and of those built locally has been reported as being much lower.) Interestingly, the two secondhand boats acquired by Sri Lanka from Israel have been valued at $20-$26 million.

It was noted in 1992 that the subsequent Mks II and III were less expensive to procure and operate than the original Mk I.

Contractors

Prime

Israel Aerospace Industries (IAI) International Inc	http://www.iai.co.il, 1700 N Moore St, Suite 1210, Arlington, VA 22209 United States, Tel: + 1 (703) 875-3729, Fax: + 1 (703) 875-3770, Prime
Goa Shipyards	http://www.goashipyard.co.in/, Vasco-da-Gama, 403802 Goa, India, Tel: + 91 832 2512152, Fax: + 91 832 2513870, Licensee
IAI - Ramta Division	http://www.iai.co.il, PO Box 323, Beer Sheva, 84102 Israel, Tel: + 972 8 627 2250, Fax: + 972 8 640 2252, Email: corpmkg@iai.co.il, Second Prime
Israel Aerospace Industries (IAI) International Inc	http://www.iai.co.il, 1700 N Moore St, Suite 1210, Arlington, VA 22209 United States, Tel: + 1 (703) 875-3729, Fax: + 1 (703) 875-3770, Licensee

Subcontractor

Detroit Diesel Corp	http://www.detroitdiesel.com, 13400 Outer Dr W, Detroit, MI 48239-4001 United States, Tel: + 1 (313) 592-5000, Fax: + 1 (313) 592-5158, Email: defense@detroitdiesel.com (16V92TA Diesel Powerpack)
MTU Friedrichshafen GmbH	http://www.mtu-on-line.com, Maybachstrasse 1, Postfach 2040, Friedrichshafen, 88040 Germany, Tel: + 49 7541 90 0, Fax: + 49 7541 90 5000, Email: info@mtu-on-line.com (12V396TE94 Diesel Powerpack)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Samples/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

	Metric	**U.S.**
Dimensions		
Length – Overall	25 m	82 ft
Beam – Overall	5.65 m	18.5 ft
Draft (in surface drive config)	0.9-1 m	3-3.25 ft
Displacement		
Standard	40-50 tonnes	45-55 tons
Full Load	45-55 tonnes	50-60 tons
Payload		
Fuel Capacity	10,000 l (approx)	2,500 gal (approx)
Water Capacity	600 l (approx)	150 gal (approx)
Performance		
Speed – Sustained	60-90 kmph	32-48 kt (approx)
Maximum	90-95 kmph	48-50 kt (approx)
Operating Range	1,300 km at 80 kmph	700 nm at 42 kt
	18,500 km at 35 kmph	1,000 nm at 20 kt
Crew	10-15 (including 1-2 officers)	
	Type	**Quantity**
Armament		
Main Gun	20-23mm/80 (Oerlikon)	1-2
Secondary Guns	12.7mm machine guns	2
Surface-to-Surface Missile	HELLFIRE (optional)	
Depth Charges	Fitted-for-but-not-with (optional)	
Torpedoes	Fitted-for-but-not-with (optional)	
Rocket Launcher	130mm caliber (optional)	
Electronics		
Radar – Surface Search	Koden MD 3220, I-band	1
Weapons Control	El-Op MSIS optronic low light	1
Machinery		
Diesels	MTU or Detroit, various types	2
Propulsion	Propellers; surface-drive or V-drive (two shafts)	2
Generator Power	Cummins diesel engines	2

Super Dvora

Design Features. The hull is of hard-chine form and is internally subdivided by bulkheads into seven watertight sections; five of the bulkheads have watertight doors. The hull is made of welded, maritime-grade aluminum alloy. Construction is said to meet Lloyd's 100 A1 standards. The monohull structure is 82 feet long and has a designed top speed of more than 48 knots (it should be noted that non-Israeli users state that their craft fail to achieve this by at least 5 kt).

The Mk II version of the craft incorporates improved structural, hydrodynamic, and propulsion characteristics, including computer-assisted steering and machine control, as well as propulsion systems. It can support a variety of sensor suites, including radars, electronic countermeasures, Identification Friend or Foe (IFF) systems, and infrared/electro-optical systems. Most of the systems on board are made in Israel, typically by El-Op. The mast-mounted Multisensor Stabilized Integrated System (MSIS) includes a sensor turret with thermal imager, CCD camera, and laser rangefinder, and weighs about 60 kilograms.

The communications suite includes a full range of HF/VHF/UHF capabilities, in secure and/or non-secure mode. The standard navigation and surveillance suite includes, as standard equipment, a navigation radar, gyro compass, depth indicator, magnetic compass, and navigation lights. Optional equipment includes a Global Positioning System (GPS), chronometer, barometer, night vision equipment, xenon searchlight, and other, more specialized systems as necessary.

Standard power is provided by twin MTU diesel engines, although a now-defunct triple-engined version was once available. The craft also features an underwater exhaust system and internal insulation in order to maintain low acoustic and thermal signatures while in operation.

Propulsion alternatives are a traditional V-drive system driving conventional propellers or an articulated surface drive (ASD) system driving surface-piercing propellers. The ASD propulsion system, designed and built by the U.S. company Arneson/Twin Disc, has been modified for the craft's particular requirements to meet the specifications of each user navy. It has reportedly been selected over more conventional propeller and waterjet systems as the first choice of propulsion for this boat class, based on a cost-performance analysis.

Automatic firefighting systems are fitted in the engine and steering rooms. In other compartments, such systems are portable. A life raft or rubber dinghy with a davit is available on board as lifesaving equipment.

Personnel facilities are sized to support a crew of 4-10, but there is accommodation for up to 18 mission personnel. The vessels are equipped with an air-conditioning and ventilation system that covers the crew quarters and the closed bridge; fans are fitted in the engine and steering rooms. Hot and cold water are available in the galley, messdecks, and heads.

Operational Characteristics. The craft is purpose-built for day and nighttime coastal surveillance and reconnaissance, coordinated sea-air search and rescue, beach insertion/extraction, and high-speed intercept operations. It can operate in a variety of threat conditions, providing protection while coordinating its operation with a multitude of other sea, air, and land systems. These characteristics are possible because the design allows substantial payloads and provides good stability, maneuverability, and seaworthiness. According to the Israeli Navy, the craft's maintainability and life-cycle costs are also optimized.

Deck space is provided for the storage and launch of up to two rubber inflatables (Zodiacs) on the vessels. Another mission support feature that the vessel can offer is a swimmer launch-and-recovery capability.

The main gun on the foredeck is remotely controlled with a stabilizer and a joystick. This feature was retrofitted on some of the older models, such as those in the Israeli Navy.

Variants/Upgrades

Dvora. The Super Dvora class was preceded by the Dvora, which was smaller, with hull dimensions of 70.8 x 18 x 5.8 feet (21.6 x 5.5 x 1.8 m) and a full load displacement of 47 tons. Sri Lanka bought two of these boats in 1984, followed by another four in October 1986. Two were casualties to the war against the Tamil terrorists (August 1995, March 1996), and one was taken out of service in 1996.

The speed of these predecessor models was rated at 36 knots, with an operating range of 1,200 nautical miles at a speed of 17 knots. The three units remaining in Sri Lankan service have two MTU diesel engines each, producing 2,605 horsepower on two shafts. The armament consists of only two Oerlikon 20mm guns and two 12.7mm machine guns.

The Dvora was itself based on the earlier Dabur class fast attack craft (FAC).

Engine Alternatives. The Super Dvora has been offered with a number of different engine configurations, including those from both Detroit Diesel and MTU, as well as MWM. Furthermore, the vessel

features two engines, except in the now-discontinued Mk III export version, which was offered with three.

In 1992, the Mk II was being offered in an articulated surface drive (ASD) setup propelled either by two MTU 12V396 TB4 or TE4 diesel engines, rated at 1,580 kW, and having an estimated top speed of 46 knots, or by the Detroit Diesel 16V92TAs, which are rated at 1,170 kW and produce an estimated top speed of 47 knots. In V-drive configuration, the engine alternatives were listed as the same MTU pair as above (top speed 40 kt), the Detroit Diesels mentioned above (35 kt), or two MWM TBD 604V12s, which were rated at 1,450 kW and apparently produced a top speed of 40 knots in a twin-engine installation.

Gearbox choices in all solutions come from Germany's ZF. The MTU engine is, in both drive alternatives, coupled to a BW465 model; the MWM uses the BW455, and the Detroit Diesel uses the BW265 in surface drive configuration and the BW255 in V-drive.

Mk I. The original design is often referred to as the Super Dvora without the "Mk I" designation. It was slightly shorter (22.4 m, or 73.5 ft) and narrower (5.5 m, or 18 ft) than the Mk II but had a deeper draft (1.8 m, or 5.8 ft) because of the conventional V-drive configuration. Top speed of these vessels was listed as 46 knots, with an operating range of 1,200 nautical miles at 17 knots. The superstructure is similar to that of the subsequent Mk II but slightly more traditional in appearance, and the bow is less steeply raked. The boat's displacement was rated as 54 tons full load – heavier than that of the predecessor Dvora class, but 10 tons less than that of the Mk II, which has a larger hull.

The Sri Lankan Mk I boats are equipped with two Oerlikon 20mm guns and two half-inch machine guns. Their electronic systems fit is limited (in radar) to a Decca 926 I-band surface search unit.

It's been noted in the trade press that the purchase price and operating costs of the Mk I were higher than those of the subsequent generation Mk II and Mk III. The reason for this disparity has not been provided, but it could be a combination of improvements in manufacturing technology, lower production costs (thanks to production in larger volumes, which saves on material costs), and the higher speed planing stance of the boat when in operation, which may have resulted in lower fuel costs (less water resistance, more efficient transit). The lower service and maintenance costs may also have been attributable to better quality components and materials.

Mk II. This version is the focus of this report and is the one currently in production in both Israel and India.

Mk II-I. Upgraded and modernized version of Mk II with higher speed, better engineering, and greater range. The craft is armed with an M242 25mm Bushmaster cannon in a Typhoon stabilized mount. The four examples of this type entering the Israeli Navy in 2007-2008 were fitted with waterjets and are now known as the Mk III (not to be confused with the older Mk III below).

Mk III (Old). Three-engine, three-shaft version, which was introduced primarily for export markets in the early 1990s but eventually canceled. At one time it was expected that all twin-engine boats would be retrofitted with three engines, but those plans have since been dropped as well. The U.S. Navy tested the Mk 3 when seeking a suitable high-speed Special Operations Craft.

Mk III (New). The Mk III designation has been re-used for the Mk II-I equipped with pumpjets in place of conventional screws.

Propulsion Options. The Super Dvora Mk II is offered in either a V-drive or surface-piercing drive, or in an articulated surface drive (ASD) configuration. The advantage of the V-drive setup is its smaller space requirement; the surface-piercing drive (Arneson type) is considered superior in shallow water, where high attack speeds are a prerequisite – the surface-piercing drive brings draft down from the 1.7-1.8 meters of the V-drive to only 0.7-0.8 meters. Furthermore, the smaller amount of peripheral equipment required in the ASD arrangements reduces weight, translating to better top-speed performance. The ASD has also been stated as being less costly than waterjet drives, the other alternative considered for shallow water operation.

In Mk II ASD configuration, the drives are either the ASD-16, if the power source is the MTU 12V3946TE94 (1,680 kW), or the ASD-14 when the engines are the MTU 8V396TE94 (1,120 kW). The mean draft of the vessel varies slightly between the different engine alternatives, in a range of roughly 10 to 20 centimeters (4 to 8 in).

Diesel engines have been chosen for this design because of their better purchase and operating costs, as well as their operability. Despite the acknowledged top-speed penalty, the designers claimed that diesels offer better cruise economy overall.

Weapons Alternatives. The Super Dvora is offered with a number of different weapons configurations. This, combined with local modifications that are often

unofficial and/or unapproved, results in a bewildering variety of armament. The usual mix includes one or two half-inch heavy machine guns and two 7.62mm machine guns. A 20mm, 23mm, or 25mm gun can be chosen as the main gun, operated autonomously or slaved to a surveillance system. Also, a stabilized electro-optical day-and-night surveillance system can be fitted.

The options also include surface-to-surface (anti-ship) or surface-to-air missiles (SAMs). These are the U.S. HELLFIRE type when used on board the Israeli boats. Other operators do not report carrying missiles on their Super Dvoras.

Program Review

Background. The Super Dvora class is derived from the Dabur coastal patrol craft, developed in the late 1960s to early 1970s by the U.S. company Sewart Seacraft. The first 12 units were built in the U.S., while the Ramta division of Israel Aerospace Industries (then Israel Aircraft Industries) built another 18 between 1973 and 1977. These aluminum-hull vessels were about 65 feet (20 m) long, with a displacement of 39 tons full load and a flexible package of onboard systems. The craft were commended for good rough-weather performance but, by the 1980s, were showing signs of being too slow for the high-speed craft employed by terrorists and other enemy naval forces.

A Need for Speed

The original Dvora class was derived from these craft, which were becoming aged by the mid-1980s. The Dvora was heavier and larger than the Daburs but retained the capability to be transported by land if needed. Israel itself did not place an order for this new domestically produced fast patrol/attack boat until March 1987, apparently first serving the export customers who were hungry for this new capability. Sri Lanka bought six of this new, improved Super Dvora design in October 1986, with deliveries in 1987 and 1988. Two were destroyed in combat, one in August 1993 and the other two years later in 1995. Two more were destroyed in early 2000.

Israel's first Super Dvora began trials in November 1988, and the first two were commissioned into service in June 1989. A total of 10 Super Dvoras were procured for the Israeli Navy, which has used a number of varying weapons and systems configurations on board these boats.

In 1992, Ramta entered a teaming agreement with Textron Marine Systems for the manufacture and marketing of the Super Dvoras in the U.S. The idea was that the Israeli company would provide the U.S. boat maker with a Super Dvora Mk II (or III, with three engines) for the 1993 prototype test phase in the U.S. Navy's Mk V patrol boat selection process for the U.S. Special Operations Command (USSOCOM). Textron was to be responsible for the engineering and construction of production vessels, provided the design was chosen.

Israel commissioned its first Mk II version in the fleet during the course of 1993. The country had purchased four of these new vessels.

Export Sales. Somewhat surprisingly, the African nation Eritrea also became a client for the new Super Dvora Mk IIs, with one delivered in July 1993. A total of four boats are believed to have been delivered, although the original contract may have been for as many as six units. All are reportedly still in active service there.

With the introduction of the Mk II, Sri Lanka came back to the shipyard for more; in early 1995, the Navy presumably ordered one of these new versions, adding three more to the shopping list in the following year. The first Mk II for Sri Lanka was delivered in November 1995, the second in April 1996, followed by the third in June, and the last of this batch just before the end of the year.

Slovenia, which broke from the former Yugoslavia in 1991, became the first European country to purchase Super Dvoras for its Navy, which had been first organized in 1993. It was then based on two former Yugoslavian patrol craft, but was dismantled again in 1995 in lieu of a Maritime Police force. In 1996, a Navy was re-created, with the Super Dvoras as the first new vessels in its inventory. The Mk II was delivered on August 1, 1996, and was supposed to be followed by a second unit soon afterward. Contrary to some reports, no order has been placed for the second unit, suggesting that the first order may have included an option for a second (which thus has not been exercised yet). It is possible, though, that more will be purchased later when the country's finances are on a more solid footing.

Why Triple Shafts?

A three-engine version, also known as the Mk III, was proposed in an attempt to offer an even higher-speed alternative to the twin-engine Mk II, but this model has since been withdrawn from the market. It is difficult to understand why a triple-shaft proposal was even

contemplated given the unfavorable history of such arrangements.

Indian Production. India became interested in the Super Dvora design in the mid-1990s, and signed a contract in December 1996 for a single prototype boat built in Israel and commissioned in June 1998. A second boat was subsequently built in Israel. This was the basis of a technology transfer/licensing agreement under which India will build at first two, but possibly as many as 20 more, Mk IIs locally at its Goa Shipyard in Vasco-da-Gama, India. The original schedule envisioned the construction of one boat every three months from mid-2000 onward, but the next boat in the class commissioned in late 2002, more than three years behind schedule.

Following this disappointing start, the program managed to get back onto a more even keel. Two additional Super Dvora class boats were completed in 2003, with two more following in 2004. A third pair of two boats was completed in 2005, and this appears to have marked the end of construction.

In January 2000, Sri Lanka was reported to be in talks to buy two Super Dvoras from Israel. The price of that deal was rumored to be around $20 million, suggesting new-builds, while other sources stated that the boats had been used previously in the Israeli Navy.

For most of the 1990s and into the 2000s, Sri Lanka continued to suffer casualties in its ongoing battle against the Tamil terrorists. Two additional Super Dvoras of the Sri Lankan Navy were sunk in April 2000. Another boat was lost in 2006 when a fishing trawler operated by the terrorists was intercepted by a Sri Lankan naval patrol. Upon approach by the patrol craft, the crew of the trawler blew the ship up, killing themselves and inflicting damage to the patrol craft, which then sank. Eleven crew members of the patrol craft were rescued during a search-and-rescue operation. During the years of the so-called cease-fire, there were numerous cases of Tamil terrorists using fishing trawlers to transport war-like items and explosives. Typically, they blew themselves up when detected by the Navy. Unfortunately, fast light patrol craft lack the structural integrity to resist this type of explosion, and so the casualties of the Sri Lankan Navy crews were high. By early 2009, the Tamil terrorist movement had been crushed and all its naval bases occupied by advancing troops.

Latest Orders

In January 2002, the Israeli Navy ordered six Super Dvora Mk III craft from IAI Ramta, with options on an additional five. These craft replace the existing fleet of 15 Dabur class offshore patrol craft. The first of these ships was delivered in November 2004. The entire order of six craft was delivered by the end of 2006. In 2005, the additional construction option was exercised, with four more boats being ordered; these are believed to have been delivered in 2007 and 2008.

In September 2009, Sri Lanka ordered six new Super Dvora class patrol craft to replace its existing inventory, eight Super Dvora class craft that had been worn out by long years of arduous war service. This is believed to be the start of a recapitalization process for the Sri Lanka armed forces. The first of these boats was delivered in December 2009 with the remainder entering service in 2010. With the defeat of the Tamil terrorists, it is likely that a substantial re-equipment of the navy will take place. There are some reports that an additional batch of six Super Dvora Mark III boats was ordered by Sri Lanka in January 2010 for delivery in 2011/2012.

In late 2010, it was also reported that Morocco had ordered a group of three Super Dvora Mark II craft for the customs service. This order, like the reported second batch order from Sri Lanka, has yet to be confirmed.

Funding

The Super Dvora class craft have been developed by the manufacturer. The share of development funding provided by the Israeli government is not known.

Contracts/Orders & Options

Contractors	Award ($ millions)	Date/Description
IAI Ramta	N/A	Oct 1986 – Six Mk Is sold to Sri Lanka.
IAI Ramta	N/A	Mar 1987 – Israeli Navy order for Mk Is.

Super Dvora

Contractors	Award ($ millions)	Date/Description
Textron Marine Systems/IAI	N/A	Aug 1992 – Joint manufacturing and marketing agreement for USSOCOM Mk V Special Operations Craft procurement program.
IAI Ramta	N/A	1993 – Eritrea buys four Mk IIs.
IAI Ramta	N/A	Early 1995 – One Mk II ordered by Sri Lanka.
IAI Ramta	N/A	1996 – Sri Lanka orders three more Mk IIs.
IAI Ramta	N/A	1996 – Slovenia buys one Mk II (to be followed by a second unit).
IAI Ramta	N/A	Sep 24/Dec 2, 1996 – India orders two Mk IIs.
IAI/Goa Shipyards	10.0	Early 1997 – Two more Mk IIs for Indian Navy, to be completed locally.
IAI Ramta	20.0	Early 2000 – Sri Lanka buying two more boats from Israel (perhaps secondhand).
IAI Ramta		Early 2002 – Israel orders six Mk IIIs.
IAI Ramta		Sep 2009 – Sri Lanka orders six Super Dvora Mk IIIs.

N/A = Not Available.

Timetable

Month	Year	Major Development
Oct	1986	Sri Lanka orders six Mk Is
Mar	1987	Israeli order for 10 Mk Is based on improved Dabur design
Nov	1988	Israel's first unit begins trials
Jun	1989	Two boats commissioned by Israeli Navy
Jul	1992	Textron enters teaming agreement for local manufacture, marketing in the U.S.
	1993	Israel commissions first Mk II
Jul	1993	Eritrea's first Mk II delivered
Early	1995	Sri Lanka orders one Mk II
Nov	1995	Delivery of Sri Lanka's Mk II
	1996	Three more Mk IIs sold to Sri Lanka, one to Slovenia
Apr	1996	Sri Lanka's second Mk II delivered
Jun	1996	Third Mk II delivered to Sri Lanka
Aug	1996	Slovenian Navy first in Europe to operate the Mk II
Fall	1996	India's Goa Shipyard enters licensing agreement with IAI
Dec	1996	India orders two, followed by two built locally; Sri Lanka's fourth Mk II delivered
	1997	Slovenia announces intention to buy second unit; India buys two
Jun	1998	India's first Mk II commissioned
Mar	1999	Second Indian boat commissioned
Jan	2000	Sri Lanka reported to be buying two secondhand boats from Israel
Jan	2002	Israeli Navy orders six Mk IIIs, with option for five more
Oct	2003	India's first locally built unit commissioned
Nov	2008	Last Israeli Super Dvora Mk III delivered
Sep	2009	Sri Lanka orders six Mk IIIs

Worldwide Distribution/Inventories

Eritrea Four Mk IIs remain, out of order for six.

India Two Mk IIs bought from Israel, three built locally; plans for up to 15 more.

Israel Nine Mk Is, four Mk IIs, six Mk II-Is, and four Mk IIIs.

Slovenia One Mk II delivered in 1996.

Sri Lanka Six Mk Is bought in 1987-1988 (two of which were later destroyed), plus four Mk IIs; two more bought in 1999, although they are probably secondhand Israeli boats. Eight boats are currently operational (four Mk Is, four Mk IIs). Six Mk IIIs on order.

Forecast Rationale

The order situation for the Super Dvora class ships remains unclear. An order from Sri Lanka for an additional six Super Dvora Mk III class craft has been completed with the last of the six being delivered before the end of 2010. That much is certain. However, reports are circulating that Sri Lanka has ordered a second batch of six craft. This is not unlikely; the long war against the Tamil terrorists reduced much of the existing Sri Lankan fleet to a woeful condition as a result of years of arduous service and hastily patched combat damage.

The six Super Dvora class craft ordered replace the existing fleet of eight Super Dvora class craft and take on the role of coastal patrol and maritime policing; as long as they are used inshore and during peacetime, they work well for these purposes. They are low in cost, economical to operate, and have adequate capability to deal with peacetime duties such as rescuing stranded pleasure boats or fishing injured swimmers out of the water. An additional six craft would allow the rest of the battered patrol craft fleet to be withdrawn.

The report from Morocco that three Super Dvoras had been ordered for the customs service remains to be confirmed and there is a growing suspicion that this order eventually materialized as one for Aker Lorient offshore patrol craft. If so, this would not be the first time that one competitor in a competition had prematurely announced success.

The following forecast represents the delivery of the six craft ordered by the Sri Lanka Navy. It projects the construction of an additional six craft for the Sri Lanka Navy. The reported Moroccan order is discounted at this time, partly due to the order placed with Aker-Lorient and partly due to the unrest sweeping the Middle East at time of writing. No additional construction is forecast at this time.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program		**High Confidence**				**Good Confidence**			**Speculative**			
	Thru 2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
IAI - Ramta Division												
Super Dvora <> Sri Lanka <> Navy												
	6	0	6	0	0	0	0	0	0	0	0	6
Total	6	0	6	0	0	0	0	0	0	0	0	6