Lockheed Martin

F-16C/D Barak

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Introduction

The story of the F-16C/D in IAF service begins in 1983. By that time, the F-16A/B Netz (Hebrew for Hawk) has thoroughly illustrated it's ability in every major aspect of modern aerial warfare. From long range strike demonstrated in June 1981 with an octet of F-16A striking the Iraqi Osirak nuclear plant near Baghdad, through attack missions in Southern Lebanon and finally the most important aspect: air-to-air superiority proven by the remnants of 45 Syrian aircraft wreckages shot down by F-16's during the 1982 campaign. Just as the IAF was the best promotion for the Mirage IIIC during the 1960s, giving it the "combat proven" seal, the F-16 performance in Israeli service was the best advertisement General Dynamics could hope for. In this atmosphere, The F-16 was the natural choice for every modern air force, including the IAF.

Constant improvement and continuous block by block upgrades is the policy with every modern fighter, and the F-16 was no exception, with its MSIP (Multi Stage Improvement Program). When manufacturing block reached the 25 marker, it was evident that the F-16A was entitled for a new designation, the F-16C. The C model included numerous improvements, most prominent being the APG-68 radar, glass cockpit with two large multi function displays (MFD) replacing former analogue displays, wide-angle HUD and wall to wall avionics upgrades. The next phase in the MSIP program, the Block 30, included engine replacement or upgrading.

Top: F-16C number 309, the last of the Peace Marble II first delivery, makes its first touch down on Israeli soil at Ramat-David on February 9th, 1987. It was a rainy day, as evident from the fumes and water spraying from between the main landing gear and the runway.
Rubi Kastro via First Jet squadron



Above: The F-16C first trio is seen en route from the USA to Israel, accompanied by an F-16A from the First Jet squadron. The First Jet squadron was the first to receive the new fighter, and the Knights of the North followed shortly afterwards.
Gil Arbel via First Jet squadron

Left: The IAF first group of Barak I pilots poses for the camera near a USAF F-16C during the conversion course at Hill AFB. Standing from right to left are: Lieutenant D., Captain E., Major Ram Shmu'eli, Lt. Colonel Gidon Eilat (the first commander of the First Jet squadron during the F-16C era), late Major Yehuda Bavli and Major G.
First Jet squadron



Above: The first IAF F-16D, number 020, is being tested in the USA, carrying a pair of GBU-15 inert rounds and a data link pod. It is accompanied by an Edwards USAF flight test center F-16C with a similar load.
IMI - Aircraft Systems Division

Below: The IAF first F-16C, number 301 in flight over the USA, carrying six AGM-65 maverick rounds, ALQ-131 ECM pod, 370 gallon fuel tanks and AIM-9 training missiles. This aircraft was later delivered to the IAF Test and Evaluation squadron.
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This was necessary due to stagnation stall problems with the Pratt & Whitney F-100-200 engine series. The solution was to split the power plant delivery between General Electric's F-110-GE-100 and P&W with their improved F-100-220.

The Peace Marble II Program

The IAF, seeking its next generation fighter for the 1980s, has marked the F-16 as its workhorse for the decades to come. The order for the next Peace Marble program suffered some delays due to the 1982 Lebanon conflict, but finally, on August 1983 the most costly contract in the history of Israel was signed, with the IAF ordering 75 F-16C/D aircraft at the cost of 3.3 billion dollar and General Dynamics committing to reciprocal worth $300 million from Israeli companies such as IAI, IMI and others.

Under PM II, 51 F-16C and 24 F-16D were to be delivered and as in previous aircraft, the IAF versions of these aircraft were different from their USAF equivalents. Copared to F-16A, the external differences for the F-16C included: enlarged tail fin containing improved avionics, larger inlet navigation light housings, eight chaff/flare dispensers and larger radar warning receivers mounted behind the radome. In addition, the airframe was strengthened, increasing the maximum take-off weight from 42,300 pounds to 48,000 pounds. This weight increase required reinforcement of the landing gear and usage of larger tires. The F-16D has an even more unique external appearance because of the hump extending from behind the cockpit all the way back and past the vertical tail. According to foreign sources, this hump houses electronic warfare systems made by





Top: One of the First F-16Cs, number 307 is being towed to its new home on February 9th, 1987. As evident from the picture, it was a winter day!
IAF Magazine





Above right: IAI chief test pilot, Menachem Shmul is more than happy with the new F-16Cs. This picture was taken when the IAI Lavi project, was still in development, so he could afford the smile...
First Jet squadron

Above left: Late Itzhak Rabin, Israel's defence minister at the time, is pleased with the IAF new acquirement.
First Jet squadron

the Israeli company Elta, replacing the original Loral AN/ALQ-178 EW system. The IAF was the first F-16 user using the two seat D version for non training purposes, sharing the intense work between the pilot and the weapon system officer, or navigator as this position is definded in the IAF. The F-16D version also features an enlarged air intake duct for its GE F-110 engine. This modified air intake was required since the more powerful F-110 engine consumed more air than the P&W F-100. It should be noted, however, that IAF Block 30 F-16Cs still have the smaller inlet. A plan to retrofit all Block 30 C versions with the enlarged intakes was initiated with one C model (tail number 360) actually modified and tested with this inlet, but it was found that there was no significant improvement in engine performance and the program was cancelled.

The new PM II aircraft were given the name Barak, lightning in Hebrew. The first F-16C trio arrived on February 9th, 1987, initially entering service with the First Jet squadron and later with the Knights of the North squadron. The first F-16D arrived on December 21st, 1987 to serve with the First Fighter squadron.

The PM II transfer flights were coded "Helena Hayafa" (Hebrew for Helen of Troy, meaning beautiful Helen) with a serial number added to indicate the transfer progress. This name was used again with the PM III aircraft.

The PM II program also included the delivery of a ground simulator for the F-16, enabling the IAF to enhance its training of its Barak pilots.

Cancellation of the IAI LAVI

Although the IAF was purchasing US manufactured F-16s, IAI and the Ministry of Defense were moving ahead in the course outlined with the Sa'ar, Nesher and Kfir and were planning to produce an indigenous Israeli fighter, named Lavi (Hebrew word for Lion). The Lavi was to complement the existing F-15 and F-16 fighters and to replace the aging A-4, F-4 and Kfir on the close support and strike



Above: F-16D number 020 is seen during one of the test flights, still carrying USAF badges and IAF tail number.
IMI - Aircraft Systems Division

roles. This ambitious project was a strong catalyst for many Israeli defense companies, from avionics and radar designers, airframe and structure related companies and engine manufacturing. As the program paced ahead it became very clear that the Lavi will be more of a rival than a compliment to the F-16, and the US government, the main source of funds for this project, refused to continue its support for the potential competitor. Three Lavi prototypes were built and flown before the project was cancelled by the Israeli government on August 30th, 1987. Even though the halting the program took some time and was discussed widely in the Israeli press and electronic media, the actual cancellation came as a shock for the IAI and its sub-contractors. Many engineers and employees lost their work place, the fact that the whole country was in economic depression at the time only deteriorated the situation.

A substitute is offered

The US offered Israel the Block 40 F-16C/D versions as replacements to the Lavi, and in May 1988, Israel ordered 60 F-16C/D Block 40 under the Peace Marble III program. The IAF called its new F-16 model Barak II, while the Block 30 F-16 were renamed Barak I.

The Block 40 Barak II featured further changes compared to the Block 30. Some of the changes were in common with USAF counterparts, like the AMRAAM missiles

Below: The first F-16C trio is seen during the reception ceremony at Ramat-David. After the aircraft landed, IAF roundels were hastily applied on the wet tails, signifying the new ownership of these aircraft.
IAF Magazine





capability, improved radar, additional RWR on the wing's leading edge, HUD repeater screen for the navigator and repositioning of the landing lights on the nose landing gear bay door.

After the Lavi cancellation, Israeli Defense companies shifted their effort to avionics upgrades, and many of the Israeli systems intended for the Lavi were incorporated into the Block 40 F-16s. External changes unique to IAF Block 40 included: six chaff/flare dispensers, a new bulged antenna under the air intake, four box-like antenna arrays around the tail cone (this system was removed later) and enlarged cooling intake above the port landing gear bay. Israeli Block 40 F-16s are not equipped with the Holographic HUD that is incorporated to USAF and foreign Block 40 Vipers.

The first PM III F-16 arrived on August 1991 and entered service with the First Fighter squadron and the Scorpion squadron. The ground simulator acquired on PM II was improved to reflect the Block 40 changes. Unlike the northern squadrons, the Scorpions and the First Fighter squadrons are non-homogeneous units, each operating a mix of single seat and two seat aircraft. This concept of operation is unique to the IAF and new doctrines were developed.

On the treadmill

During 1994 the international community of F-16 operators faced a serious crisis. Problems with the GE F-110 engine were discovered simultaneously at different air forces including

Above: Peace Marble III F-16C number 528 is seen on its way to the IAF, carrying a factory applied tail number and IAF roundels.
Lockheed Martin

Below: Block 40 F-16D number 612 is seen during its test flights in the USA, with a fresh paint scheme and AIM-9 inert missiles.
Lockheed Martin









Top: IAF first Peace Marble III F-16Cs, numbers 503 and 502, are seen during their reception ceremony on August 1991 at Hatzor AFB.
Ra'anan Weiss collection

Above left: IAF commander, Major General Avihu Ben-Nun, is making a speech on the Peace Marble III reception ceremony.
Yoav Efrati collection

Above right: The First Fighter squadron badge is applied to its new Block 40 F-16C number 503. This aircraft was later transferred to the Scorpion squadron.
Yoav Efrati collection

the Egyptian Air Force, USAF and the IAF. several crashes following engine failures caused the immediate grounding of Block 40 F-16 units all around the world. The problem also affected the US navy F-14D community, which utilize the same engine. In the IAF this meant the Scorpion squadron and the First Fighter squadron had to freeze operations with their Barak II airframes until the cause of the failure was found. In order to maintain operations, 12 Barak I single seat aircraft were transferred from the Northern squadrons. The tail numbers of these aircraft were: 305, 309, 333, 337, 350, 360, 367, 368, 376, 384, 386 and 389. The aircraft were equally divided between the Scorpions and the First Fighter squadron.

After inspecting the F-110 engines of crashed airframes, it was found that certain turbine blades disintegrated, causing the immediate failure of the whole engine. After the problem was resolved, the Barak I aircraft returned to their Northern AFB and the Barak II were back to normal flight operations.

Between 1994 and 1995 it was discovered that the strenuous flights with the Barak I on IAF service had its own costs, when cracks were detected in the wing spar and other areas. According to the manufacturer, the cracks were supposed to appear, but much later during the airframe life. It turned out the strain the IAF pilots put on their aircraft has taken its toll. The same phenomenon was discovered on F-16A Netz airframes, and a series of reinforcements were fitted to all of the Barak I and Netz aircraft.

As mentioned previously, the Block 40 squadrons are operational with both single seat and two seat aircraft. While this mix of types holds several advantages, it also has some secondary implementations. In the late nineties it was discovered that the Block 40 F-16D airframes accumulated considerably more flying hours than the F-16C within the same squadrons. This situation was due to the higher demand for precision and night strike sorties during that period, including operations such as "Accountability" in 1993 and "Grapes of Wrath" during 1996. This kind of sorties are better performed with another pair of eyes, the natural pick being the F-16D. In order to



Left: IAF mechanics perform last minute checks on an SUU-20 practice munition dispenser, hanging from the wing of First Jet squadron Barak I. This dispenser carries six practice bombs, which simulate the trajectory of live bombs. The dispenser can also hold practice rockets but this option is not used by the IAF.
IAF Museum

resolve this imbalance, Barak II single seaters were transferred to the northern homogeneous F-16C squadron, in order to match flight hours of the two-seaters. When the flight hours status was balanced these aircraft returned to their parent squadrons.

Turning the night into day

When introduced to IAF service, the F-16D brought with it a new unique capability: night vision integrated with the Aircraft systems through the LANTIRN pod. The ability to see and designate targets during night time and adverse weather was a quantum leap for the IAF, enabling around-the-clock operations for the first time. When the ability of the LANTIRN, and later the Litening pod, was coupled with the "Journal" night vision goggles, the night revolved to day. As part of the night revolution a whole new doctrine for night operations was developed. Apart from singular night training sorties, all of the night-vision equipped IAF squadrons, being the Valley squadron, the Scorpions, the First Fighter squadron and the F-15I Hammers squadron, perform a unique drill called "inverted week". During such training, a squadron trains regularly, with every day-time activity transferred to the night and vice versa. The day is devoted to sleeping and gaining strength for the nocturnal activity, and when the evening arrives the squadron springs to life. Every type of mission performed by the F-16 has a new profile when performed during the night, and all of the squadron cadre, pilots, navigators and mechanics find themselves checking and pushing the limits of their capabilities. Extra attention is given to fatigue level and safety. The ground crew double check aircraft and the briefings are even more thorough than the usualg. Such a week is the

Below: A casual day during the late 1980's at Ramat-David: First Jet squadron Barak I number 307 is taxiing while a Hammers squadron F-4E is making its final landing approach. The Barak is carrying an empty Triple Ejector Rack (TER) and full load of external fuel tanks.
IAF Museum





Above: Knights of the North Barak I number 359 is being checked before being permitted to leave the flight line and take-off to another day of training.
Knights of the North squadron

Below: a pair of Valley squadron F-16D (tail numbers 034 and 039) awaits their clearance for take-off, during nocturnal training operations. F-16D number 034 is carrying an enlarged IAF roundel on its tail, applied in order to ease identification during air-to-air training sorties.
IAF Magazine

best opportunity for the pilots and navigators to familiarize themselves with the different night vision systems.

Facing the future

As part of Israel's developing military ties with Turkey, the air arms of both countries have established a firm relationship which includes mutual deployments and joint exercises. All of the IAF Barak I and II squadrons participate in these exercises on a regular basis. The Turkish broad airspace and diverse terrain features, enable the practicing IAF pilots to experience a kind of flight that couldn't be achieved in Israeli limited ranges. The IAF is now expecting the next generation of F-16 to arrive, the F-16I Sufa and together with the existing Barak and Netz squadron will form the backbone of the IAF.

Barak I and II armament and weapon systems

During the 90's two advanced weapon systems became operational in the Barak squadrons, becoming the front line of the world F-16 community. These systems are the "Panter" and "TEKA" (Hebrew for panther and an acronym for "helmet display" respectively). The Panter is the IAF code name for Rafael's Python 4 missile, which is considered one of the world's most advanced heat seeking missiles. This missile is capable of locking on a target, even when it is out of the missile's field of view. The pilot identifies the target using the Helmet sight allowing the target location to transfer to the missile. Once the missile is launched it uses this information to direct itself towards the target, requiring no further guidance from the launching aircraft. This can be performed with the target being at any bearing to the launching aircraft D as long as the pilot can see the target he can lock and launch without maneuvering his aircraft. The combination of the Panter missile and the TEKA helmet enables the pilot to shoot with a look, a formidable capability.

The Barak squadrons are capable of





operating almost every guided weapon in the IAF arsenal, from the simple and reliable Paveway LGB's to the advanced GBU-15 electro optically guided bomb.

These days, the LANTIRN pods are phased out from the Barak II squadrons and transferred to the F-15I squadron. The pods are replaced by the more advanced Rafael Litening III pod, which will be used on the F-16I as well. The target designation ability provided by the Litening pod is not always necessary, and in such cases the Pave Penny pod is carried under the right chin station, on an adapter similar to the one used with the USAF Harm Target Seeker (HTS).

While the squadrons operating two seat Barak aircraft were naturally tasked with precision strike missions, the two Barak I squadrons, the First Jet squadron and the Knights of the North were traditionally focused on the interception and air combat roles. The ground strike element was always a secondary part of their schedule, but this has changed with the JDAM and SPICE systems become operational with these squadrons. These autonomous weapons enable a single pilot to handle several targets simultaneously, a formerly non-existant capability for the single seat F-16 squadrons.

Barak numbering system, Colors and standard markings

The paint scheme for both Barak I and II is basically the same as applied to the Netz: upper surfaces with FS 33531 Sand, FS 34424 Green and FS 30219 Brown. The lower surfaces are painted FS 36375 Light Ghost Grey, with wing tip launchers, RWR covers and radome painted FS36270 Medium Grey. The IAF roundel is applied in 4 positions, above and beneath the wings, and the squadron badge is located at the top of the tail.

The different blocks and types were

Above: IAF early 1990's first line fighters pose for the camera. The Israeli-Lebanese border line can be seen clearly between The One squadron Kurnass 2000 number 668 and First Fighter squadron F-16D number 612. Completing the flight is Baz (the IAF nickname for the F-15) number 109 from the Knights of the Double Tail squadron.
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Below: First Fighter squadron F-16D number 656 is seen from its formation's mate cockpit, seconds before take-off. The aircraft is carrying four AIM-9L live sidewinder missiles and a 300 gallon belly fuel tank.
IAF Magazine





Above: Valley squadron Barak I number 022 is seen just before landing at Ramat-David, after completing a training flight. The aircraft is carrying a pair of GBU-15 inert bombs and a 300 gallon external fuel tank.
Ra'anan Weiss collection



Right: Knights of the North squadron F-16C number 367 taxiing at Ovda AFB.
IAF Magazine

Below: Scorpion squadron F-16C number 503 and F-16D number 610 are flying above the Samaria region in central Israel. Both aircraft carry AIM-9 training missiles. Note that aircraft number 503 is carrying the early version of the flash at the tail base, while aircraft number 610 is carrying the final version.
IAF Magazine





numbered according to the following system: Block 30 F-16C aircraft are numbered using the 3XX range. Block 30 F-16D aircraft are numbered using the 0XX range. It should be noted that IAF F-16B are also numbered using the same range, so in order not to mix between them, the B variant doesn't exceed the 019, while the D variants numbers start from 020. Block 40 F-16C feature the 5XX range while the F-16D were allocated the 6XX range.

F-16I Sufa

In July 1999, Israel selected the F-16I over other competing aircraft, which led to a contract for 50 F-16D Block 52+ signed in January 2000. An option for 52 more aircraft was exercised in 2001. The F-16I, known as the "Sufa," or Storm, is specially modified for the Israel Air Force. The aircraft include a number of systems produced by Israeli industry and are powered by the Pratt & Whitney F100-PW-229 engine. Amos Yaron, Director General of the Israeli Ministry of Defense, said that the new F-16I "einforces the significant defense capability provided by Israel's Air Force, which relies on the F-16 as the backbone of its fighter aircraft fleet" The Peace Marble V aircraft will be delivered through 2008.

Above: Any time and place are good for some push-ups! First Fighter squadron F-16D number 603 is seen during IAF deployment to Turkey. The pilot is watching while his navigator and the ground crew are having a go at the Turkish Tarmac. Note that the aircraft is carrying IMI 600 gallon external fuel tanks.
IAF Magazine

Below: A gathering of Middle East F-16s. Valley squadron Block 30 F-16D number 041 is seen with its hosting Turkish squadron Block 40 F-16Cs. The IAF F-16 is carrying Rafael's Litening pod and 600 gallon tanks.
IAF Magazine





Above: This photo taken during IAF deployment to the USA. The aircraft carry AIM-9D and Python 4 training missiles.
Scorpion squadron

Right: Photo from the same deployment show Valley squadron F-16D number 036 and First Fighter squadron F-16D number 612.
Valley squadron

Below: Almost all of IAF F-16C/D blocks and types are seen during their deployment to the USA. Closest to the camera is a Block 30 F-16C number 388 from the Knights of the North squadron, followed by the same type from the First Jet squadron. Pair of Valley squadron Block 30 F-16D are in the middle of the formation and the last aircraft is a Block 40 F-16D from the First Fighter squadron.
Valley squadron





The First Jet Squadron

As its name implies, the First Jet squadron was the first IAF unit to be equipped, during the early 1950s, with a jet fighter. The squadron's first two jets, the British- manufactured Gloster Meteor T.7, were received on June 17th, 1953 at Ramat-David and nicknamed by the young state's prime minister, David Ben-Gurion, "Sufa" and "Sa'ar". Both represent Hebrew words for storm, the immediate feeling arising when hearing their peculiar jet whistle. These training aircraft were later joined by the F.8 fighter version and the FR.9 reconnaissance variant.

In August 1955, the first encounter occurred between the Israeli Meteor fighters and Egyptian Vampire fighters and, even though one of the Meteors shot and hit one of the Vampires, which was seen fleeing away with trailing smoke, this first kill was not confirmed. However, the Meteors didn't need to wait too long for their first confirmed kill. On September 1st, 1955 Aharon Yoeli, flying Meteor FR.9 number 36, shot down two EAF Vampires.

In mid 1956 the IAF received its first Mystere fighter, which immediately became the IAF primary interceptor. The First Jet squadron Meteors missions were changed to ground attack (with the F.8 and FR.9 variants) and reconnaissance (with the FR.9 and T.7 variants).

In April 1962, the First Jet squadron became the center of attention when they received the Mirage IIIC fighter, a short period after the First Fighter squadron. Before the Six-Day War, the First Jet squadron shot down 3 enemy aircraft. In this 1967 war, the squadron lost 4 Mirages and shot down 14 enemy aircraft. During the War of Attrition, the squadron shot down 31 enemy aircraft. The squadron also took part in the IDF's anti-terrorist activity, such as the Karame operation on March 21st, 1968, when 43 strike and CAP sorties were performed by the squadron Mirages.

In 1969 the squadron Mirages took part in the Shafrir II development program, and it was in its service that the missile achieved its first kill. During the 1973 Yom Kippur War the squadron operated a mix of Mirage and IAI Nesher fighters, claiming 44.5 enemy aircraft (half kill is a kill divided between two aircraft firing simultaneously on the same enemy aircraft).

In October 1979 the last of the squadron's Mirages were transferred to the Negev squadron, and only a minimal intercept flight remained active at Ramat-David, operating four IAI Kfir fighters borrowed from the Valley squadron. This flight remained active for a year before it ceased operations.

On January 31st, 1980 Lt. Colonel Ze'ev Raz



Below: F-16C number 309 is seen taxiing after its delivery flight on February 9th, 1987. Note that the aircraft arrived without wing-tip launchers. The font used by General Dynamics for the number was changed to a different type, used only by the First Jet squadron.
First Jet squadron



Above: First Jet squadron F-16C number 315 and 355 are seen during air-to-air training sortie.
IAF Museum

was appointed the First Jet squadron commander as part of the preparation for the IAF brand new fighter; the F-16A Netz (The Hebrew name for Hawk, and the IAF nickname for the F-16A/B) purchased under the Peace Marble I program. On July 2nd, 1980 the first quartet of F-16, were received by the squadron and in November 1980 the squadron reached operational readiness.

The early 80's were an exciting period for the squadron with lots of first-time events. On April 28th, 1981 the squadron ground crew could paint the world's first kill mark on an F-16. A Syrian Mil-8 helicopter flying over southern Lebanon fell prey to Netz number 112, flown by Lieutenant Rafi. In June 1981 four of the squadron F-16s, together with four Knights of the North F-16s, destroyed the Iraqi Osirak nuclear reactor.

During the 1982 Lebanon war the squadron Netz fighters shot down 21 Syrian aircraft. In November 1986, the squadron transferred its F-16A/B to the Negev squadron and started preparing for the new Block 30 F-16C Barak.

The squadron's first Barak trio arrived on February 9th, 1987. These three aircraft were given the following tail numbers: 305, 307 and 309. The aircraft were checked, minor changes were made to accommodate them for IAF service and on February 17th, a pair (tail numbers 307, 309) took off for the first IAF F-16C flight. On March 19th, 1987, an additional six aircraft arrived (tail numbers: 304, 310, 315, 317, 318, 321) accompanied by a pair of F-16As from the Knights of the North squadron.

The rest of the aircraft kept arriving on a monthly basis and in September 1987 the squadron received its last F-16C.

Like the other IAF squadrons, the First Jet squadron maintained a high alert level during the 1991 gulf war, with its aircraft standing armed for a possible strike in Iraq and flying constant CAP, guarding Israeli airspace.

During the 1993 operation "Accountability" the squadron performed 41 CAP and 22 ground attack sorties.

In 1995, the squadron participated in a unique training sortie. During wartime, apart from its permanent airbases, the IAF operates aircraft from emergency landing strips, as well. One of these strips is located on the northern part of the Tel Aviv Haifa highway, near Atlit. A section of the road was specially designed to enable fighter aircraft to land. On the night of May 17th, this special road segment was closed for ground traffic and was quickly prepared for landing of aircraft. Four of the squadron F-16s took off from Ramat-David and practiced fake landing approaches on this strip. Later on, two of the aircraft actually landed. It turned out that the ground crew brought everything needed to handle the F-16s, except for a ... cockpit ladder.

Below left: First Jet squadron F-16C number 324 is landing on the Haifa Tel-Aviv highway during 1995. Normal car traffic is conducted on the sides of the runway centerline.
IDF Spokesman

Below right: First Jet squadron F-16C number 307 is checked after landing on the highway. Note the partially open airbrakes.
IAF Magazine









Above: First Jet squadron F-16D number 077 is photographed during an air to ground training sortie, carrying a SUU-20 practice munitions dispenser. This aircraft was later transferred to the Valley squadron and crashed on March 2000.
IAF Museum

Left: First Jet squadron F-16C number 324 approach landing to its base in the northern Israel.
First Jet squadron

The pilots had to remain seated in their aircraft while they were refueled and pre-flight checked by the ground crew. After a short time on the ground, the F-16s took off and the road was opened for civil traffic.

Another interesting event happened during 1995 when the squadron sent a detachment to the southern Ovda AFB. While practicing air-to-air combat, the vertical tail tip of Barak number 356, ripped off. This happened while the aircraft was maneuvering and passing through the jet stream of another aircraft. The sortie was aborted and the aircraft returned immediately to base. The aircraft was repaired and returned to service.

On December 23rd, 1997, Barak number 304 was returning from a training sortie and preparing to land, when a major failure occurred. The landing gear failed to extend and remained inside its bay. After consulting with the ground it was decided the aircraft would land on its belly, or actually on its belly external fuel tank (the aircraft was configured with two air-to-air training missiles and a single belly tank). The pilot burned off some more fuel while the runway was prepared for emergency landing. The runway was cleared and covered with foam in order to reduce the heat generated from the friction between the airframe and the concrete. The pilot made a perfect approach and touched the runway with the center drop tank while maintaining the aircraft balance as long as he could. Amazingly, the aircraft never lost stability and came to a stop on its drop tank, the only damage being to the nose pitot probe. The following day, the aircraft was lifted, using a giant crane nicknamed 'camel', and taken to a hangar for inspection. It turned out

F-16D Block 30 No. 077, First Jet squadron, 1989

This aircraft was the only F-16D that served in the First Jet squadron.



Right: First Jet squadron F-16C number 345 is taking-off to an air-to-air training sortie. The silver lightning was applied to the squadron's aircraft shortly after the reception of the F-16C.
Ra'anan Weiss collection



Below left: First Jet squadron F-16C number 348 during air-to-air training. The aircraft carries two AIM-9L and two 370 gallon external fuel tanks.
Ra'anan Weiss collection





Above right: A trio of First Jet squadron F-16C's during a training flight. The aircraft carry training AIM-9L painted in fluorescent red, in order to ease identification during air-to-air combat training.
Ra'anan Weiss collection

that a pin on the left landing gear apparatus had snapped and prevented the landing gear from extending. The aircraft was quickly repaired and returned to service.

On February 24th, 2003 Barak number 310 suffered an engine failure while approaching Ramat-David for landing. When it was clear to the pilot that the aircraft couldn't make it to the runway, he ejected and landed safely.

During 2003 the squadron received a formidable weapon system, the Rafael "Spice". This revolutionary weapon uses both electro-optical identification and GPS guidance for autonomous direction. This bomb is capable of identifying its target by comparing its image to a set of images stored in its memory. The guidance head can be loaded with dozens of target images and, once in the air, the bomb can identify the target without aircrew intervention. In the next phase, the bomb plans its trajectory and provides the pilot guidance cues so he could fly the aircraft in the appropriate manner. Since the Spice is totally independent, several bombs can be aimed at different targets simultaneously, relieving the pilot or navigator from the need to designate the target while the bomb is airborne. The First Jet squadron is in charge of developing operational methods and instructing the other IAF Barak squadrons about this weapon system. The First Jet squadron, which was always a leader in the air-to-air arena, is now also the owner of a powerful strike asset, making it one of the central pillars of the IAF.

Below: First Jet squadron F-16C number 324 is flying above northern Israel, carrying a single 300 gallon belly tank.
First Jet squadron







Above: First Jet squadron F-16C number 340 prepares for take-off with a heavy weapon load, consisting of: four Mk.84 2000 lb. bombs, 300 gallon fuel tank and a pair of live AIM-9L missiles. The photo was taken during the 1993 operation "Accountability".
Yoav Efrati collection

Left: One of the First Jet squadron F-16C is seen in 1991 during the Gulf war period. The aircraft is armed for a long range strike, with four AIM-9L missiles, two Mk.84 2000 lb. bombs 600 gallon under wing fuel tanks and 300 gallon belly tank. All IAF squadrons kept a number of aircraft on immediate alert, ready for a strike in Iraq during this period.
Ra'anan Weiss collection

Below: First Jet squadron F-16C number 307 is seen taxiing with inert AIM-9L missiles.
Ra'anan Weiss collection





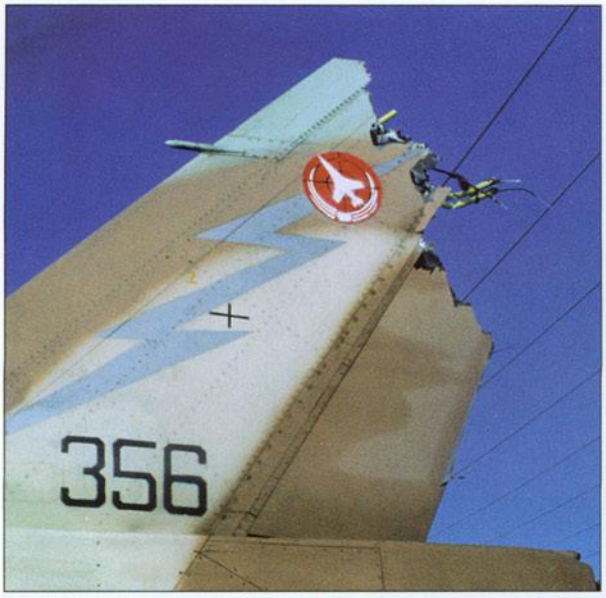
Above: First Jet squadron F-16C number 317 is taxiing in Ramat-David air base. The aircraft has a large Shield of David on its vertical tail so it could be quickly identified during air-to-air combat. Note the severe paint chipping on the tail's leading edge.
Ra'anan Weiss collection

Right: First Jet F-16C number 353 is landing at Ramat-David AFB after an air-to-air training sortie.
Ra'anan Weiss collection



Below: First Jet squadron F-16C number 309 is being checked under the cover of a camouflage net during operation "Accountability" in 1993. The aircraft is armed with a pair of live AIM-9L missiles, two Mk.84 2000 lb. bombs and a belly tank.
Ra'anan Weiss collection









Above left: The severely damaged F-16C number 356 tail after passing through the jet stream of another aircraft. This photo was taken after the aircraft made an emergency landing at Ovda AFB during 1995.
First Jet squadron

Above right: F-16C number 356 un painted new tail section. Note original colors of materials. Also noteworthy is the temporary squadron badge applied in an inverted format and that the stabilizer moving part is already camouflaged.
First Jet squadron

Left: The morning after F-16C number 304 emergency night landing. A special crane hoists the aircraft and is about to transfer it to a maintenance hangar.
First Jet squadron

Below: Another view of F-16C number 304. Amazingly, the centerline tank took all the damage and practically acted as the aircraft landing gear. The aircraft is seen placed on jacks for inspection.
First Jet squadron





Above: F-16C number 356 is back in business after its repair. The new tail is adorned with a large Shield of David and the aircraft is carrying a Python 4 training missile.
Ra'anan Weiss collection



Right: First Jet squadron flight line with F-16C number 345 closest to the camera. The aircraft is carrying AIM-9L missiles and 600 gallon external fuel tanks.
Ra'anan Weiss collection

F-16C Block 30 No. 349, First Jet squadron, 1993

First Jet squadron F-16C number 349 is configured with four Mk.84 2000 lb. bombs, AIM-9L missiles and a 300 gallon fuel tank.







Above: A trio of First Jet squadron F-16C is about to take-off from Ramat-David to an air-to-air training sortie.
IAF Magazine

Left: The pilot of First Jet squadron F-16C number 315 pre-flights his aircraft while the ground crew watches. This photo was taken on November 1988 before a strike in southern Lebanon. The aircraft carries four Mk.84 2000 lb. bombs and live AIM-9L missiles.
First Jet squadron

Below: First Jet squadron F-16Cs number 348 and 317 in low flight above the Red Sea. Each aircraft carries Mk.82 500lb. bombs and AIM-9L missiles.
Ra'anan Weiss collection





Above: The pilot of First Jet squadron F-16C number 310 is about to engage full throttle and take-off. This aircraft crashed on February 2003 due to an engine failure.
IAF Magazine

Right: F-16C number 310 is about to land at its base.
IAF Magazine

Below: The remnants of F-16C number 310 shortly after its crash.
IAF Magazine





F-16C Block 30 No. 307, First Jet squadron, 2003

First Jet squadron F-16C number 307 is seen with IAF newest weapons, the JDAM in its Mk.84 version and the Python 4 air-to-air missile.







Above: This impressive photo shows First Jet squadron F-16C number 345 taking-off from Ramat-David. Note the eight chaff/flare dispensers behind the wing, typical to all IAF Block 30 F-16C/D models.
IAF Magazine

Left: Pre flight inspection is underway for this First Jet squadron F-16C number 355, during 1991. Note the aircraft's partially open airbrakes. This aircraft served for a short period in the Valley squadron when it was reopened on 1991.
Ra'anan Weiss collection

Below: First Jet squadron F-16C number 348 during static display at Ramat-David air base. The giant crane, nicknamed camel is demonstrating its salvage capability.
Ra'anan Weiss collection



Right: The IAF and USAF train together on a regular basis. This photo captures First Jet squadron F-16C number 355 with a 144th fighter wing Block 42 F-16C, belonging to California Air National Guard.
First Jet squadron



Below: First Jet squadron F-16Cs number 355 and 348 are preparing to set out for an air-to-air training sortie, during an IAF deployment to the USA. The aircraft carry AIM-9D and python 4 missiles.
First Jet squadron



F-16C Block 30 No.333, First Jet squadron, 2003

This First Jet squadron F-16C number 333 is carrying the squadron's newest acquisition, the Rafael Spice.



The Knights of the North Squadron

The Knights of the North squadron was formed as a Mosquito squadron in 1953 and was active with this type until the end of the 1956 campaign. In mid-1957, the squadron was re-equipped with the new Vautour bombers. The squadron was the only operator of the Vautour type other than the Bat squadron, which operated the night-fighter version of this aircraft (designated IIN). Following receipt of the Mirage IIIC in 1964, the night-fighters were transferred to the Knights of the North squadron. The Vautour was phased out during 1971, and the squadron received A-4E fighters that were previously operated by the US Navy and US Marine Corps. In 1976, these aircraft were joined by the A-4H version, received from the Valley squadron, which at the time was taking the Kfir into service. Along with the older A-4 versions, a few A-4N aircraft (the most advanced version of this type in the IAF) also saw action with the squadron. In 1980, the F-16A/B types were introduced into service with the squadron, together with its sister squadron at Ramat- David, the First Jet squadron.

In June 1981, eight aircraft from both squadrons took off from Etzion AFB, located in the Sinai peninsula and, after a tedious flight, each aircraft delivered two Mk.84 bombs into the heart of the Osirak Iraqi nuclear reactor near Baghdad, which was in its final construction stage.



Above: Knights of the North squadron F-16C number 397 is ready for take-off, with a pair from the same squadron in the distance. The aircraft are in "clean" configuration.
IAF Museum

During the 1982 Lebanon war, the squadron's F-16 fighters shot down 22 Syrian aircraft. Seven of these kills were credited to the squadron commander, Lt. Colonel Amir Nachumi, adding to the 7 kills he achieved flying the F-4E.

In 1987, the Knights of the North squadron was chosen to operate the Block 30 F-16C, along with the First Jet squadron. The squadron's first seven aircraft arrived at Ramat-David on July 30th, 1987, (the aircraft tail numbers were: 364, 367, 368, 371, 373,

Below: F-16C number 392 was one of the last aircraft arriving to the Knights of the North squadron.
IAF Magazine





Above: Knights of the North squadron F-16C number 388 lands during a squadron deployment to Ovda AFB, during 1998. The aircraft carries python 4 and AIM-9 training missiles. Note the different shades of the canopy sections.
IAF Magazine

374, 377) and, on the second day of August, the squadron started routine flights with this type. The squadron's former aircraft, the F-16A/B was transferred to the Negev squadron and the Golden Eagle squadron.

During these transitions the squadron aircraft were given a unique design, applied to the aircraft tail. This design was in the form of an eagle's head, using the standard camouflage colors of sand and brown, and the squadron badge as the eagle's eye. Also, the tail fin received a black rectangle, crossed by a silver lightning bolt.

The first operational strike of the F-16C in the service of the IAF took place on April 22nd, 1988. Two of the squadron's aircraft, together with four F-16Cs from the First Jet squadron, attacked a command center and ammunition dumps of the Ahmad Gibril terrorist organization. These sites were in the region of Damour, north of Sidon in southern Lebanon.

In this sortie, the pilots manning the squadron aircraft were Lt. Colonel Shlomo, the first squadron commander in the F-16C era, flying aircraft number 392 and Lieutenant Chagi, flying aircraft number 389. Each aircraft carried 10 Mk.82 bombs, stationed on 4 TERs beneath the wings.

Such a routine strike was scheduled for noon of November 23rd, 1989. Four aircraft from the squadron took off, their bombs destined for an Ahmad Gibril bunker complex, located in the area of Sultan Ya'akub and Bar Alias. Lt. Colonel Lotan led the strike and the formation encountered AA fire over the target. During the strike, the pilot of aircraft number 388 reported he had a hydraulic malfunction. The pilot released the remaining bombs and headed back to Ramat-David, accompanied by the rest of the formation. The hydraulic malfunction had been caused by AA fire, which completely tore off the right horizontal stabilizer and punctured the vertical stabilizer. The aircraft spent a few months in a maintenance hangar and, after being serviced and repaired, was returned to flying status.

Like the rest of the IAF during the 1991 Gulf War the squadron went to its highest state of alertness. Reserve pilots were called to duty and, on January 13th, 1991, the squadron's pilots were briefed for a possible pre-emptive strike in Iraq.

On January 16th, orders were given to perform the strike, only to be cancelled when the pilots were already seated in the aircraft. During the conflict, however, some of the

F-16C Block 30 No.397, Knights of the North squadron, 1989

Knights of the North squadron F-16C number 397 is armed with six Mk.82 500lb. bombs mounted on TERs, a 300 gallon belly tank and AIM-9L missiles.







Above: With its flaps and slats extended and after-burner blazing, this Knights of the North squadron F-16C number 371 leaps to Jzreel valley's skies.
IAF Magazine

Left: Block 30 F-16D number 034 served with the Knights of the North squadron for a short period before it was transferred back to the First Fighter squadron.
Yoav Efrati collection

squadron's pilots were required to sit in their bomb-laden planes, waiting for the command to launch the strike, while other pilots were flying constant combat air patrols. This activity was shared with other IAF fighter squadrons in order to prevent possible Iraqi aircraft intrusions. During the conflict, the squadron performed a total of 82 CAP missions along the eastern border of Israel.

Increasing tension along the northern border of Israel during July 1993 resulted in an Israeli government decision to launch an aerial campaign against terrorist installations in southern Lebanon. During the one-week campaign, named operation "Accountability", the IAF launched a series of strikes, 20 of which were performed by the Knights of the North squadron. In addition, the Knights made two CAP sorties.

This campaign was an opportunity for the

Below: A quartet of F-16C from the Knights of the North squadron is neatly aligned before commencing their take-off run.
IAF Museum





F-16D Block 30 No.034, Knights of the North squadron, 1989

This aircraft was the only F-16D in service with the Knights of the North squadron.



Top: This 1991 Gulf war photograph shows F-16C number 374 with a full bomb load. This aircraft was part of an exhibition to the Israeli defence minister, Moshe Arens, displaying IAF capabilities for a possible strike in Iraq. The aircraft carries twelve Mk.82 500 lb. bombs on TERs, two AIM-9L missiles and a 300 gallon fuel tank.
IAF Museum

young and inexperienced pilots of the squadron to taste and smell the "real thing" and, for many, to make their first combat sortie. In spite of the intensive flight schedule and feeling of actual combat, Lt. Col. Dan, the squadron commander, described the campaign as "routine, one can say, almost boring. There was a challenge, because we were given targets, and we made every effort to hit and destroy them. Mostly, the hits were very good and we did a good job, but there was no feeling of war. This was operational activity, lacking air and ground opposition. It was like a practice range, only with much more adrenalin".

Operation "Grapes of Wrath" began on April 10th, 1993. It was similar to operation "Accountability", only more intensive and lasted for a longer period of time. During these two and one-half weeks the squadron performed 80 combat sorties, comprised of 72 ground attack missions, 6 combat air patrols and 2 sorties, which involved creating supersonic booms over Lebanese cities.

The entire squadron's cadre of pilots, including reservists and emergency postings, sortie and, in spite of the turmoil in the squadron's flight line, the ground mechanics didn't miss the opportunity to "baptize" them after returning from the flight.

The squadron commander, Lt. Col. Adi later remarked: "We attacked Katyusha launching sites and, later on, roads as well. The attacks were made from a safe altitude and extreme caution was taken not to injure civilians. The orders were to abandon the attack if there was a doubt or a problem identifying the target. This indeed happened when a flight of four aircraft returned to their base without delivering their bombs, because the harsh weather conditions above the target made identification impossible".

The continuation of Katyusha attacks, in spite of the intense bombing, resulted in picking an infrastructure target: a transformation at Salim in the vicinity of Beirut. A pair of squadron aircraft, together with two from the



First Jet squadron, attacked this target using iron bombs and caused extensive damage.

The date of February 4th, 1997 will be remembered in Israel as a horrible day. In the early evening hours, two IAF CH-53 heavy transport helicopters, fully-loaded with soldiers on their way to different IDF posts in southern Lebanon, collided in mid-air above She'ar-Yeshuv in northern Israel. Seventy-three warriors and aircrew members perished in this tragic event. After the collision a single aircraft from was launched to drop flares above the crash site, assisting in the rescue operations. The pilot, Lieutenant Tal, recalls: "Suddenly the siren sounded. I ran to the aircraft and, while boarding it, I was told there was a problem in the area of Kiryat Shmona. During the engine start-up I only knew about an accident and that

Above: Knights of the North squadron F-16C number 389 gets the right of way at Ovda AFB while a runway cleaning vehicle and a cargo truck wait patiently.
IAF Magazine



Left: Knights of the North squadron F-16C number 388 is in the final stage of its landing approach.
IAF Museum

Below: A very interesting photograph of the Knights of the North squadron F-16C number 364 taken at Ovda AFB during 1998. The large Shield of David was only half completed when the IAF jubilee sticker and squadron badge were applied. Note the lightning emblem on the tail's base extension is painted in "negative" colors. Normally, the background would have been black and the lightning silver. Finally, note that the tail number letters are typical to the First Jet squadron.
IAF Magazine





Above: Knights of the North squadron F-16C pair awaits take-off clearance with an A-4N duo from the Flying Tigers squadron.
IAF Magazine

CH-53 helicopters were involved. Upon reaching the area, I could see two blazing fires on the ground and the rescue helicopters activity below. The sortie lasted an hour and I wasn't informed regarding the number of casualties. I was only given orders concerning the mission - where should I fly to, where I should drop the flares, etc." Only after landing, Lieutenant Tal learned about the size of the tragedy.

On February 22nd, 1998, the squadron opened a new field of operations for the F-16C and the IAF: all-weather attack. It was a winter evening, with complete cloud coverage, when a pair of the squadron aircraft attacked a target in Lebanon. Each aircraft dropped two Mk.84 2000 lb. bombs through the clouds, completely destroying the target.

On August 9th, 1998, the pilot of aircraft number 368 was forced to eject after an engine flameout shortly after take-off. The pilot attempted to return for an emergency landing, but the aircraft lost height rapidly. Passing 800 feet, above a cotton field near the airbase, the pilot ejected from the aircraft and landed safely on the ground.

The latest addition to the squadron arsenal is the JDAM (Joint Direct Attack Munitions) family of bombs. This relatively inexpensive kit enables upgrading "dumb" iron bombs to highly accurate PGMs, by applying a new fin and a guidance kit. The bomb is guided by using GPS (Global Positioning System) and can hit the target within a 13-meter radius. These bombs can be released from approximately 15 miles from the target and each is independently targeted. The JDAM is an autonomous weapons system and relieves the pilot of the need to guide the bomb during its flight to the target.

The opportunity to use this new weapon came earlier than any squadron member could imagine. On October 4th, 2003, a Palestinian suicide bomber detonated a bomb in a restaurant in Haifa, killing more than twenty civilians. The woman was sent by the Islamic Jihad terrorist organization, its headquarters and training camps being given shelter by Syria. The Israeli government decided to retaliate by striking one of the Jihad's training camps, located 20 km from Damascus, thus sending a clear message to the Syrian leadership. The previous time an attack of this kind was made in Syria was 30 years earlier, sometime after the Yom-Kippur war. On October 5th, 2003, two aircraft from the Knights of the North

Below: Knights of the North squadron F-16C trio prepare for take-off during a squadron deployment to the Ovda AFB in southern Israel. Note the paint chipping on the vertical stabilizer of the aircraft in the center.
IAF Magazine





Left: Imagine climbing out from the aircraft you just landed, looking back and seeing this... the pilot of Knights of the North squadron F-16C number 388 must have been shocked. This photograph was taken on November 23rd, 1989, immediately after the aircraft returned from an attack sortie in southern Lebanon.
Knights of the North squadron

Below: The proud maintenance team members pose to the camera after completing the repair work on F-16C number 388.
Knights of the North squadron

Bottom: Knights of the North squadron F-16C number 329 is taxiing past one of Ramat-David aircraft shelter number 14.
Knights of the North squadron

(tail numbers 381 and 383) and two aircraft from the First Jet squadron (tail numbers 333 and 326), each carrying two Mk.84 JDAM bombs, attacked and destroyed the camp. Since this kind of strike requires precise accuracy, the squadron commanders led the formation themselves.

With its advanced systems the squadron will certainly remain a front line IAF unit for many years to come.





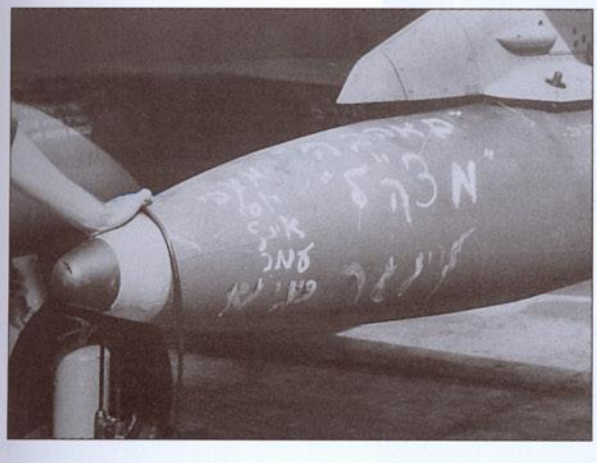




A selection of the Knights of the North squadron aircraft during the 1993 operation "Accountability". upper right pictures shows F-16C number 399 armed with six Mk.83 1000 lb. bombs attached to VERs, while the middle right photograph shows F-16C number 367 armed with four AIM-9L missiles and four MK.84 2000 lb. bombs. Below right and left: keeping the IAF tradition, the ground crew scribbled personal messages in white chalk to Hizbullah terrorists. The inscription on the lower left photograph says: "with love from the IDF".
Knights of the North squadron



Bottom: A-4N from the Flying Tigers squadron, an F-16D from the Valley squadron and Knights of the North squadron F-16C duo are seen in the last chance point before setting out to the runway.
Knights of the North squadron











Above: Knights of the North squadron F-16C number 397 is waiting for permission to taxi at Ramat-David airbase. The aircraft is armed with four inert SUU-30 cluster bombs mounted on VER-2 adaptors.
Ra'anan Weiss collection

Left: The pilot of Knights of the North squadron F-16C number 394 is making last minute checks in the cockpit while a ground crew personnel watch from the side.
Ran Yahalom collection

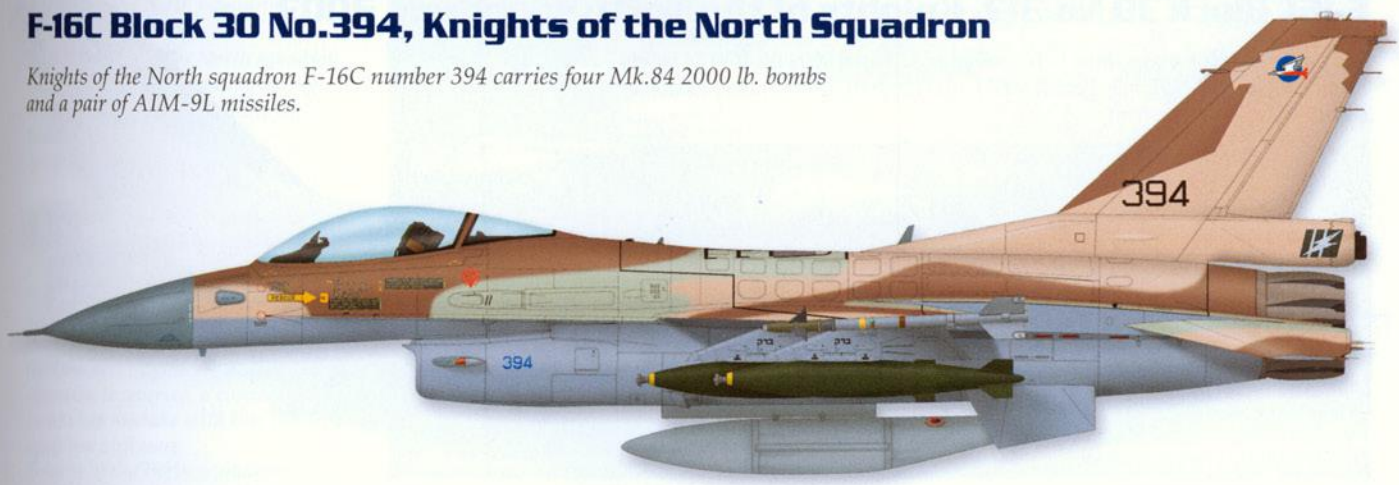
Below: Knights of the North squadron F-16C number 384 is seen on static display at Ramat-David AFB. An upgraded F-15 from the Knights of the Double Tail squadron is seen in the background.
Ra'anan Weiss collection





F-16C Block 30 No.394, Knights of the North Squadron

Knights of the North squadron F-16C number 394 carries four Mk.84 2000 lb. bombs and a pair of AIM-9L missiles.



Top: Knights of the North squadron F-16C number 388 is carrying an impressive array of weapons including 2000 lb. JDAM bombs, Rafael Python 4 missiles and AIM-9L Sidewinder at the wing tips.
Knights of the North squadron



Right: With its burner blazing, Knights of the North squadron F-16C number 386 is a heartbeat away from take-off speed. The aircraft is "clean", carrying only air-to-air training missile on its wingtips.
Ra'anan Weiss



F-16C Block 30 No.313, Knights of the North squadron, 2003

Knights of the North squadron F-16C number 313 is fitted with JDAM bombs, Python 4 and AIM-9L missiles. The IAF was the first international customer of the JDAM weapon system.





Top: Knights of the North squadron F-16C number 393, a rarely photographed aircraft, is seen taxiing with four Mk.82 bombs mounted on VERs, training AIM-9 missiles and full load of external fuel tanks. Ra'anan Weiss collection

Left: Knights of the North squadron F-16C number 359 is flying in formation with Valley squadron F-16D number 036. Note the patchy appearance of the wing fuel tank. Knights of the North squadron



Above: Knights of the North squadron F-16C number 386 in close formation with a pair of F-15A eagles from 199th fighter squadron, 154th fighter wing based at Hickam AFB, Hawaii. The photograph was taken during a joint IAF and USAF training.
Knights of the North squadron

Right: Knights of the North squadron F-16C number 386 is taxiing during an IAF deployment to a USAF air base.
Knights of the North squadron

Below: Knights of the North squadron F-16C number 359 is seen at the IAF deployment to the USA flight line with Scorpion squadron F-16D number 651 and an F-16C from the First Jet squadron. Note that the silver lightning on the tail extension is reversed, a common paint shop mistake with this squadron airframes.
Knights of the North squadron





The First Fighter Squadron

The First Fighter squadron is probably the most famous squadron of the IAF. The squadron was formed in May 1948, with the first real combat aircraft of the young Israeli state: a quartet of Avia S-199 fighter aircraft. One day after their arrival and hasty construction of these aircraft, they conducted an attack on an Egyptian Armored column heading for Tel-Aviv, forcing it to a halt. During its first years of operation the squadron operated a variety of fighters and utility aircraft, including the Avia S-199, P-51D Mustang, Spitfire, Seabee and the venerable Piper Cub. The Avia fighters were withdrawn from service after only one year, in May 1949. Attrition and obsoleteness forced them out of service. The Spitfires served until 1952, and were then transferred to the Scorpion squadron. In April 1956 the Mustangs were allocated to the Flying Wing squadron, giving their place to the newest aircraft in the IAF arsenal: the Mystere IV. The squadron operated the Mysteres during the 1956 campaign, and shot down seven enemy aircraft. In 1962, the squadron accepted the first Mirage IIIC fighters for the IAF, turning it again to a front line unit. During the following years, dozens of enemy aircraft were claimed by the squadron Mirage fighters. The squadron next mount, the locally built IAI Nesher (Hebrew for vulture), was received shortly before the 1973 Yom-Kippur War. The successor of this locally bred fighter was yet another local design: the IAI Kfir (lion cub). This fighter was taken into service in April 1975, and was later replaced with an advanced version, the Kfir C2.

The year 1987 saw the arrival of the Peace Marble II Block 30 F-16D aircraft, and the First Fighter squadron was chosen, after a struggle with the Scorpion squadron, to take these advanced aircraft into service.

Below: First F-16D, tail number 031, is seen during its ferry flight from Ramat-David to its reception ceremony at Hatzor AFB.
Moshe Weinberg

Bottom: The First Fighter squadron IAF first F-16D, tail number 031, is taxiing at Hatzor AFB runway on December 31st, 1987. Note the distorted red and white stripes applied at Ramat-David.
IAF Museum







Above: An early photo of the First Fighter squadron F-16D numbers 027 and 063 seen waiting at the last chance point, where final checks are made by the ground crew.
IAF Museum

The first F-16D (tail number 031) landed at Ramat-David AFB on December 27th, 1987, in spite the fact that the First Fighter squadron home was Hatzor AFB.

Ramat-David was chosen being the home base of the two existing F-16C squadrons, and the sole F-16C maintenance unit at the time. The new aircraft was tested and prepared for flight. In addition, the First Fighter squadron traditional rudder motif, consisting of diagonal red and white stripes, was awkwardly applied at Ramat-David, yielding a poor representation of the squadron famous tail. Three days after its arrival, the airplane was flown to Hatzor Airbase, accompanied by four of Ramat -David squadron's F-16C, temporarily transferred to the First Fighter squadron to allow initial training and operations. These aircraft were 317 and 318 from the First Jet squadron, and 394 and 397 from the Knights of the North squadron. The introduction of the two seat F-16D into service required the training of a large number of navigators taking the back seat. These crew members were actually weapon system officers, defined navigators for historical reasons. During the first months, the main active aircrews were the pilots, as there were only a few two-seat aircraft available. However, the new F-16D were arriving at a monthly rate of two aircraft, and gradually the navigators joined the flight operations.

In addition to the IAF standard ordnance, the squadron is also trained to launch a variety of laser-guided bombs including the TV guided GBU-15. The squadron became the IAF leading unit for all weather attack missions employing guided munitions.

In addition, the aircraft were supplied with new systems, one of which was the LANTIRN AN/AAQ-14 targeting pod that enables the crew to easily select and laser designate targets at night or adverse weather conditions, using the pod's FLIR system.

The squadron was training vigorously, and in November 9th, 1988 performed their first operational strike. The squadron took part in Operation "Blue and Brown" of the IDF in



Right: First Fighter squadron's first aircraft in the F-16 era, Barak I number 031, is carrying the unit's traditional rudder motif of red and white stripes. The Block 30 F-16D was the first IAF F-16 to be fitted with a larger air intake, required for the GE F-110 engine.
IAF Magazine

F-16D Block 30 No.061, First Fighter squadron, 1990

First Fighter squadron Block 30 F-16D number 061 is carrying a pair of GBU-15(V)1/B with its AN/AXQ-14 data link pod on the centerline and a LANTIRN pod under the air intake. Due to the heavy weight of the bombs, the AIM-9L missiles are posioned on stations 2 and 8, instead of 1 and 9.



Southern Lebanon. The operational purpose of the squadron was striking terrorist headquarters in Nu'aima.

As part of the 1991 Gulf war effort, the squadron sent a detachment to Nevatim AFB. Its task was interception and 59 CAP missions were launched.

A number of strike configuration aircraft were on alert, awaiting orders to attack positions in Iraq. This order was not issued.

This period also saw the squadron preparations for operating the Peace Marble III Block 40 F-16C/D aircraft. Delivery of these aircraft commenced on August 22nd, 1999 with the first two aircraft allocated numbers 502 and 503. While gradually receiving the Block 40 C/D



Left: First Fighter squadron Block 30 F-16D number 050 is seen on static display, carrying Mk.82 practice bombs on a VER-2. The partially opened airbrakes, tilted tailerons and dropped flaps are typical to all F-16 types when the engine is shut down and hydraulic pressure is off.
Yoav Efrati

Below: First Fighter squadron Block 30 F-16D number 046 is accompanying the Syrian MiG-23 MLD during a test flight. This MiG-23 pilot defected to Israel early in October 1989.
IAF Magazine





Above: First Fighter squadron Block 30 F-16D number 057 is taxiing at Hatzor AFB during a rainy day. Note the aircraft is carrying an empty LANTIRN pylon.
IAF Museum

models, the squadron transferred its 4 year-old Block 30 aircraft to the Valley squadron, which was re-established in Ramat-David for this purpose. However, while this transfer was in progress, the squadron still performed strikes and routine training with it's remaining Block 30 F-16D aircraft, until the transfer of these aircraft was completed.

July 25th, 1993 was the opening day of Operation "Accountability". At 10:30, a formation of 4 aircraft attacked Hizbullah headquarters in Ba'albeck deep inside Lebanese territory, close to the Syrian border. This mission was part of the initial stage of the operation, as the squadron commander, Lt. Colonel Ram later briefed:

"Prior to the ordnance release pass, I encountered an AAA position. I could see the soldiers running to man the guns, but they never made it... this was the most important strike performed by the squadron since we received the new F-16 (from Block 40)". During the operation, the squadron executed 74 sorties, 48 of which were conducted at night-time. Since the Lebanese battlefield was crowded with civilians, the aircrews had to face a critical dilemma almost on every mission.

A typical incidence occurred on the operation's second morning, when a pair took-off for a strike at the vicinity of Lake Kar'un. The target was a number of Katyusha launchers, which were identified and destroyed. But from that point on, the situation became complicated. Captain R., one of the crew members later said: "While finishing our pass we noticed AAA fired in our direction. We asked the controller for an approval to attack the AAA position.

After receiving the 'go-ahead', we headed the enemy position and while approaching, we realized the AAA position was located inside a certain building within the village. A quick check in the map revealed this building was actually the local school and was marked in our maps as a "sensitive site", a completely off limit location, like hospitals and mosques. We were facing a dire dilemma, since IAF explicit policy is to strike back if an aircraft is fired upon from the ground. We informed the headquarters about this sensitive situation, and again requested permission to strike. The permission was given. Now, formally we got our go ahead and could be content, but we felt we were misunderstood. We verified

Below right and left: Two photographs of First Fighter squadron early Block 30 F-16Ds numbers 055 and 075. Photographs of Block 30 airframes from this squadron are quite rare, since they were transferred to the Valley squadron after only three years of operation with the First Fighter squadron.
IAF Magazine







Left: First Fighter squadron Block 30 F-16D number 083 hurtles down the runway with full after-burner, seconds away from take-off speed. The aircraft's external load is only a pair of 600 gallon external fuel tanks.
IAF Museum

Below: First Fighter squadron Block 30 F-16Ds numbers 036 and 023 are seen at the last chance point near the main runway.
IAF Museum

our transmission was received correctly, and that this was a sensitive objective. When we repeated that, being frustrated, I believe it was the right thing to do. We don't have a reason to harm civilian population. We may disturb their daily life, bother them, but only for them to understand it's not worthy giving shelter for Hizbullah terrorists. We aim at nothing further than that". This story illustrates the delicate situation the IDF and IAF are forced to, and how crewmembers take risks upon themselves to prevent loss of innocent life.

On September 2nd 1993, the remaining Block 40 aircraft were accepted.

On September 6th, 1994, the squadron participated in a strike sortie that caused heavy losses to the Hizbullah organization. Four of the squadron's aircraft (IAF tail numbers: 652, 637, 682, 633) together with AH-64 Peten helicopters from the Hornet squadron attacked a Hizbullah training base located in Ba'albeck, within the Syrian SAM envelope. 45 terrorists were killed in this strike, and 70 were wounded.

July 18th, 1995 was a sad day for the squadron and the IAF. A pair of the squadron aircraft, performing a night training mission, collided in mid-air. The squadron's commander, Lt. Colonel Roni Shlomi, and his navigator Captain Yuval Benyamin perished in the collision, while the crew of second aircraft managed to eject and be rescued from the

Bottom: A unique photograph of three aircraft representing two generations of F-16s: Block 40 F-16C number 502, Block 30 F-16D number 045 and Block 30 F-16C number 345. The later temporarily transferrd from the First Jet squadron. After submitting its Block 30 F-16D to the Valley squadron and due to a slower then expected delivery rate of new Block 40 aircraft, the first Fighter squadron found itself with an inadequate number of aircraft. The shortage was filled with aircraft temporarily allocated from the northern F-16C squadrons.
IAF Museum







Above: First Fighter squadron Block 40 F-16D number 612 is seen with the One squadron F-4E Kurnass 2000 number 668 above northern Israel. The F-16 is carrying the first generation of the Rafael Litening pod, painted in white.
IAF Museum





Upper and lower right: Aircraft transfer between the squadrons is a common practice. Here, the First Jet squadron lent aircraft numbers 345 and 317 to the First Fighter squadron to assist operations, until all of the squadron's new Block 40 airframes were to arrive. The receiving squadron's badge was applied over the First Jet squadron badge, instead of re-painting the whole tail section.
IAF Magazine



F-16D Block 30 No.022, First Fighter squadron, 1990

First Fighter squadron Block 30 F-16D number 022 is seen with the IMI Delilah gliding decoy, 600 gallon fuel tanks and four live AIM-9L missiles. F-16s can carry up to two Delilah UAVs under their wings.





Top: First Fighter squadron Block 30 F-16D number 039 is taking-off with 600 gallon fuel tanks, captive AIM-9 missiles and an Israel Military Industries Delilah gliding decoy.
IMI - Aircraft Systems Division

Left: First Fighter squadron Block 40 F-16C number 523 air intake and turbine blades are about to be thoroughly checked by this ground crew member. The intake bright red FOD cover is placed on the runway near the aircraft.
IAF Magazine



Above: First Fighter squadron Block 40 F-16D number 612 is flying above the northern city of Haifa. Note the box like antenna fitted ahead of the engine nacelle. This system was later removed from the Block 40 F-16s.
IAF Magazine



Right: A twilight landing of First Fighter squadron F-16D Block 40 number 648. This aircraft is returning from an air-to-air training sortie.
IAF Magazine



Right: First Fighter squadron Block 40 F-16D number 624 starts its take-off run. The aircraft carries two red captive AIM-9 missiles, a single Python 4 training missile and an empty LANTIRN pylon.
IAF Magazine

F-16C Block 40 No. 519, First Fighter squadron, 2002

First Fighter squadron Block 40 F-16C number 519 carries a typical air-to-air configuration, consisting of a 300 gallon fuel tank, two Python 4 missiles and two AIM-9L missiles.





Mediterranean Sea. The exact circumstances of this accident ware never clarified. The Negev squadron commander, Lt. Colonel Nimrod was appointed to replace the late squadron commander.

In the summer of 1996 the squadron participated in Operation "Grapes of Wrath", and performed the highest number of sorties compared to other IAF squadrons.

Today, the squadron together with the Scorpion squadron operate the Block 40 F-16C/D's. These squadrons are the only non-homogenous units in the IAF, operating both single seat and two seat aircraft. This unique composition required the development of new doctrines, involving both single seat and two seat aircraft in the same formation, or mission. On many occasions, due to a higher workload in the C cockpit, the D aircraft crews assist in target designation.

The F-16C/D will certainly soldier on the ranks of the First Fighter squadron for many years to come.

Above: With its airbrakes deployed, flaps and slats extended, First Fighter squadron Block 40 F-16C number 528 is about to touch down on one of Hatzor AFB runways.
IAF Magazine



Left: First Fighter squadron Block 40 F-16C number 508 is seen refueling from an IAF Boeing 707 tanker. According to its weapon load, the aircraft is practicing long-range strike combined with air-to-air combat. For this purpose it carries large 600-gallon fuel tanks, Pave Penny passive laser tracker and two Mk.82 500 lb. bombs. In addition, the aircraft carries a 300 gallon belly fuel tank and inert AIM-9L missiles painted fluorescent red, to ease identification during air combat maneuvering.
Ra'anan Weiss collection

F-16D Block 40 No. 648, First Fighter squadron, 1998

First Fighter squadron Block 40 F-16D number 648 is carrying a pair of GBU-15(V)21/B with its AN/AXQ-14 data link pod, LANTIRN pod and AIM-9L missiles. Note that the bombs are held at angle by a special spacer, to ensure the weapon will detach from the aircraft clearly.



Right: First Fighter squadron Block 40 F-16D numbers 673, 637 and 656 are seen during a demonstration flight for the IAF Magazine. Each aircraft carries a full complement of external fuel tanks, two GBU-16 1000 lb. bombs and two live AIM-9L missiles.
IAF Magazine



Bottom: First Fighter squadron Block 40 F-16C number 522 elevates from its armored shelter, while a member of the ground crew watches closely.
IAF Magazine

F-16D Block 40 No. 656, First Fighter squadron, 2000

First Fighter squadron Block 40 F-16D number 656 carries GBU-16 LGBs, LANTIRN pod, a 300 gallon external fuel tank and four AIM-9L missiles. The aircraft has the large Shield of David applied on its wings and tail. Note the unique orientation of the tail roundel.







Left: A rare photo showing a First Fighter squadron Block 40 F-16D number 647 with a Pave Penny laser tracker. Normally, the LANTIRN pod is carried when there is a need to locate targets illuminated by laser.
IAF Magazine

Below: First Fighter squadron Block 40 F-16D number 603 is seen during an IAF deployment to Turkey. The aircraft is configured with 600 gallon external wing tanks and a 300 gallon belly tank. The Israeli air space is very limited and a deployment of this kind enables IAF aircrew to familiarize themselves with sorties of long intervals in a non-familiar terrain.
IAF Magazine

Bottom: A very tight formation of 3 F-16Ds from the First Fighter squadron. The aircraft are armed in a classical attack configuration including two GBU-16 1000 lb. laser guided bombs, two AIM-9L sidewinders missiles, two 370 gallon fuel tanks and a 300 gallon belly fuel tank.
IAF Magazine







Above: It's time for a bath! First Fighter squadron flight line during a squadron social event. During this event the squadron held a contest, the goal being to polish every aircraft down to the last nook and cranny. At the end of the contest the squadron commander himself inspected the airframes.
IAF Magazine



Right: A beautiful photo of First Fighter squadron Block 40 F-16D numbers 637 and 656 flying low over the Israeli desert.
IAF Magazine

F-16C Block 40 No. 520, First Fighter squadron, 1998

First Fighter squadron Block 40 F-16C number 520 is carrying Python 4 and AIM-9L missiles. Every Barak squadron performs both air-to-air and strike missions.







Above: First Fighter squadron Block 40 F-16D number 676 is taxiing before a mission carrying live GBU-10 2000 lb. Paveway II bombs, a LANTIRN pod and three external tanks. Note the spine of Block 40 F-16D has only two chaff/flare dispensers on each side, compared to three dispensers on each side of Block 30 F-16D aircraft.
Amos Peleg collection

Left: First Fighter squadron Block 40 F-16C number 520 moves slowly to its allocated shed.
Ra'anan Weiss collection

Below: First Fighter squadron Block 40 F-16D number 612 is with F-15s from the 199th fighter squadron, 154th fighter wing from Hickam AFB, Hawaii, participating in a joint exercise.
First Fighter squadron





Above: First Fighter squadron Block 40 F-16D number 612 with Scorpion squadron Block 40 F-16D number 619 seen in a joint exercise with the USAF.
First Fighter squadron



Right: First Fighter squadron Block 40 F-16D number 652 is taking-off carrying only a 300 gallon fuel tank.
IDF spokesman

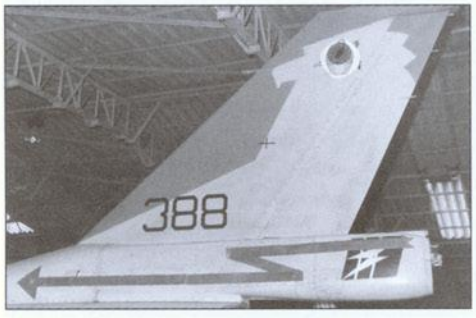
Below: First Fighter squadron Block 40 F-16D number 647 is taxiieng out from its sheletr heading an air-to-air training sortie.
IDF spokesman



The Scorpion Squadron

The Scorpion squadron was initially formed as a flight from the First Fighter squadron, serving also as the OTU of the IAF. When the P-51D Mustang's were accepted by their parent squadron, the Scorpions were formed as a separate unit, and equipped with the surplus Spitfires of their former unit. One of the squadron myths tells its name originates from the scorpions that swarmed the squadron's first habitat, but it is very unclear how much truth lies in this story.

The squadron received its next aircraft, the Mustang, a short while before the 1956 campaign, and performed close support missions. The heavy losses caused by the Egyptian AAA revealed the Mustang obsolescence and the squadron was disestablished less than three months after the hostilities ended.





In accordance with the IAF aim of converting from piston-engine fighters to jet fighters, the squadron received the IAF frontline fighter in the late fifties, the Super Mystere. The first six aircraft were received by the squadron at Hatzor AFB, on December 6th, 1958, and were later joined by no less than 30 aircraft, making the squadron one of the largest units in the IAF. With this type and its local hybrid improvement, the Sa'ar, the squadron participated in every conflict, fulfilling the missions of attack and close air support. The Sa'ar was replaced with the F-4's in March 1975, making the squadron once again a front line unit. With the F-4's, the squadron played a vital role in the opening stage of the 1982 Lebanon war, firing the first salvo of AGM-78 anti-radiation missiles, neutralizing most of the Syrian SAM sites guidance radars. In addition, one of the squadron's aircraft took credit for the only F-4 MiG kill of the war. This was also the last kill of a F-4 in the IAF. The F-4 era ended on December 28th, 1987, with all of the squadron's aircraft making an impressive fly-past over Hatzor.

After 4 years of hibernation, the Scorpion squadron was reactivated, this time as a Block 40 F-16C/D unit. Apart from technical issues, the establishment team had another dilemma: the squadron former aircraft types were adorned with the scorpion badge and a red lightning flash across the aircraft fuselage sides. But while this graphical concept was well suited for the Super-Mystere's and F-4's round and spacious airframes perfectly, the slim body of the F-16 had no surface area for a lightning flash. A few designs were suggested

Left: Early design attempts for the Scorpion squadron's motif yielded interesting results. Here, a temporary red lightning, familiar from the squadron's former aircraft, the F-4E and the Super Mystere, is checked on Knights of the North squadron Block 30 F-16C number 388.
Ra'anan Weiss collection

Below left: Merry Scorpion squadron members attach the Scorpion pattern to the tail of F-16C number 506. Closest to the camera is the deputy squadron commander, Major Benny Zuker.
Scorpion squadron

Below right: F-16C number 506 was the first to be painted with the sand scorpion, designed by Ra'anan Weiss, who actually cut the template by himself!
Scorpion squadron









Top: Scorpion squadron Block 40 F-16C number 506 is seen during the squadron's open ceremony. First Fighter squadron Block 30 F-16D number 046, was temporarily transferred to the Scorpions until their complement would be completed.
Scorpion squadron

Above left and right: The Scorpion squadron badge is applied to Block 40 F-16C number 506 and Block 30 F-16D number 046. Note the early double chevron design on the tail base of number 046.
Scorpion squadron

Below: Scorpion squadron Block 30 F-16D number 046 is taxing during the squadron's early days. The aircraft carries a training AIM-9 missile and an empty LANTIRN pylon.
Ra'anan Weiss collection

and applied, until the final solution, designed by Ra'anan Weiss, was adapted, the lightning flash was converted to a double spearhead and was applied to the fin base. In addition, the scorpion design of the squadron badge was enlarged and applied in the shade of sand across the vertical stabilizer.

When the Scorpions were reformed, the First Fighter squadron was already in full swing operating the block 40 F-16C/D. This provided the squadron a model and support for operating the new platform.

The squadron performed its first operational strike on October 21, 1992, using the LANTIRN targeting pod, when a pair of the squadron's aircraft attacked Hizbullah targets on the boundary of a SAM-2 defended area.

Between 1992 and 1993, the IAF initiated a thorough search for its next generation aircraft, intended to replace the aging F-4. At first, the main contenders were an improved version of the F-16 and an adapted version of the F/A-18. Unlike the F-16, the F/A-18 was unfamiliar to the IAF, so a team was sent to the USA to study the aircraft. Later on, McDonnell-Douglas sent two aircraft to Israel for evaluation. The Scorpions hosted the aircraft and their pilots for a month, and test flew them against the IAF's most advanced aircraft at the time, the F-16C/D and the F-15. Eventually, the F/A-18 was rejected due to the large number of modifications required, resulting with higher costs.

The LANTIRN was intensively operational during the July 1993 operation "Accountability", where the squadron illustrated its newly-acquired night capabilities. The Scorpions conducted 69 sorties in the seven-day period of the operation. Only two of these sorties were CAPs and the rest were ground attack missions. Munitions released by the squadron aircraft included: 28 Mk.83 Paveway LGBs, 15 Mk.82 Paveway LGBs and 14 Mk.84 iron bombs.





Above: Scorpion squadron F-16C number 503 and F-16D number 610 flying over the Temple Mount, Jerusalem. Note that number 503 carries the early chevron design on its tail extension, while number 610 already has the final version applied. IAF Magazine

These sorties were performed using the Pave Penny laser acquisition pod or the LANTIRN designation pod. Most of the missions were executed during night hours. The squadron operated in collaboration with the First Fighter squadron, using the LANTIRN system to monitor nocturnal activity and prevent the firing of Katyusha rockets on northern Israel.

During this operation the squadron crews gained some unique combat experience, which couldn't be acheived in training, and had to develop new combat tactics for certain mission profiles. The deputy commander at the time, Captain Yoav, later described: "There's a distinctive difference between regular strikes and the operation period. At regular times, you get sufficient notice before the mission, so the aircraft can be prepared and there's time to study the target. On the ground, dozens of people check the ordnance and every possible technical detail. In operation "Accountability" it was a different story. There were many alert takeoffs, with many mission changes while in mid air. We had to develop new fighting methods in accordance to the situation on the ground. For example, in order to cut off Hizbullah's operatives, we imposed an aerial blockade on the village of Jibshit. We were launched to hit traveling vehicles, so the blockade would be tightly kept. Hitting mobile targets is much more difficult than hitting a motionless vehicle and it requires unique skills. We learned something new on a daily basis".

On November 16th, 1993 the squadron attacked a Hizbullah broadcasting station at the region of Ba'albeck. This strike was part of a lager strike, performed by three of the IAF's leading attack squadrons: the Scorpions, the First Fighter squadron and the Valley squadron.

Like other IAF frontline squadrons, the Scorpion squadron was not operational only in southern Lebanon, using its precision strike capabilities to hunt Hizbullah terrorists and mobile Katyusha launchers. The 1996 operation "Grapes of Wrath" saw the squadron performing 168 sorties within one week.

One of these sorties was part of the opening chord for this operation. Its target was a Hizbullah logistics center in Tel-Kayal, located five kilometers west of Ba'albeck. Harsh weather conditions in proximity to the Syrian SAM-defended area and the complex flight profile required that experienced flight crew should perform this mission. The squadron

F-16D Block 40 No. 610, Scorpion squadron, 2003

This aircraft carries a LANTIRN pod, GBU-12 Paveway II LGBs, Python 4 and AIM-9L missiles.





Above: Shock waves form in the trail of Scorpion squadron F-16C number 503, taking-off from Hatzor AFB to an air-to-air training sortie.
IAF Magazine



Right: Scorpion squadron F-16C number 534, Landing at Hatzor AFB after an air-to-air training sortie.
IAF Magazine

Below: The pilot of Scorpion squadron F-16C number 503 deploys the aircraft's airbrakes and tilts the horizontal stabilizers in order to reduce the aircraft's speed.
IAF Magazine







Above: Scorpion squadron F-16C number 527 lands with its slats and flaps extended and airbrakes deployed.
IAF Magazine

Left: Scorpion squadron F-16D number 610 is directed out of its shelter.
IAF Magazine

commander at the time, Lt. Colonel B., led a flight of two F-16D's, manned by some of his most veteran pilots and navigators. The duo took off just after 3 a.m., spending the previous night planning the flight path and mission profile. Lt. Colonel B. later told the IAF Magazine: "We flew extremely low, just above sea level in order to avoid early detection. Through the canopy we could see only a black void and we could not discern the sea from the sky. The difficult visual conditions forced us to rely completely on our instruments. As a pilot, it is a very weird feeling". The aircraft crossed the shoreline at low altitude, and ascended above the two-kilometer high Lebanese mountains. As the formation closed on its target, the low clouds forced the aircraft to a lower than planned altitude. The target, two ammunition

Below: A quartet of Scorpion squadron F-16C's, tail numbers 534, 558, 516 & 557, await take-off clearance at Hatzor AFB.
IAF Magazine





Above: Scorpion squadron F-16C/D trio is seen in low level flight above the Dead Sea. Note the subtle differences between the chevrons on the aircraft tail bases.
IAF Magazine

containers, was acquired using the LANTIRN pod, and was designated by the navigators on board the aircraft. Each aircraft released two Mk.83 LGBs. Lt. Colonel B. continued his story: "Immediately after we dropped our bombs, strong AAA fire erupted from everywhere. Tracer shells exploded around us, the explosions being very impressive due to the total darkness outside. We climbed swiftly and headed home". After landing, the ground crew discovered some feathers and blood inside one of the aircraft engines, indicating a bird strike on the aircraft has occurred during the mission. A careful inspection of the engine indicated damage to the turbine blades, but fortunately the aircraft returned safely to base.

During the last years, the LANTIRN pods were phased out and replaced with more advanced Israeli developed Rafael Litening III pods.

The Scorpions will continue to operate the Block 40 F-16, as one of the IAF leading squadrons, for many years to come, thanks to its unique strike capabilities and special armament.



Right: A close-up of the formation members, aircraft numbers 503 and 535. Each aircraft carries a pair 370 gallon wing tanks, 300 gallon belly tank and four live AIM-9L missiles.
IAF Magazine

F-16C Block 40 No. 534, Scorpion squadron, 2003

This Block 40 F-16C is configured with a Pave Penny laser tracker, GBU-12 Paveway II LGB's, Python 4 and AIM-9L missiles.







Above: A ground crew member directs Scorpion squadron F-16D number 642. The aircraft's tail is adorned with the special logo designed for Israel's jubilee celebrated during 1998.
Ra'anan Weiss collection

Left: Scorpion squadron F-16C number 546 taxies at Hatzor AFB on a sunny day during 1998.
Ra'anan Weiss collection

Below: Scorpion squadron F-16D number 619 is captured precisely at touch down at Hatzor AFB, during dusk time.
IAF Magazine



Above: A breathtaking view of a pair of F/A-18D Hornet aircraft with Scorpion squadron F-16D number 615 flying over mount Masada. This photograph was taken during 1994, when the Hornet was one of the contenders for the IAF's next fighter aircraft. During their stay, the aircraft were hosted by the Scorpion squadron.
IAF Magazine



Right: Scorpion squadron F-16D number 642 is landing, as evident by its airbrakes state. The aircraft carries three external fuel tanks.
IAF Magazine

F-16D Block 40 No. 638, Scorpion squadron, 1998

This aircraft carries a LANTIRN pod, 600 gallon wing fuel tanks, a 300 gallon belly tank, Delilah decoys and AIM-9L missiles.





Above: Scorpion squadron F-16C number 516 begins its take-off run with full afterburner. The aircraft carries three external fuel tanks and two AIM-9 captive missiles.
IAF Magazine



Left: A pair of Scorpion squadron F-16D's prepares to take-off for a night training sortie. Naturally, both aircraft carry LANTIRN pods in addition to three external fuel tanks.
IAF Magazine

F-16D Block 40 No. 619, Scorpion squadron, 1995

This aircraft is configured for an air-to-air training sortie, with a 300 gallon belly tank painted fluorescent red and training AIM-9L missiles.

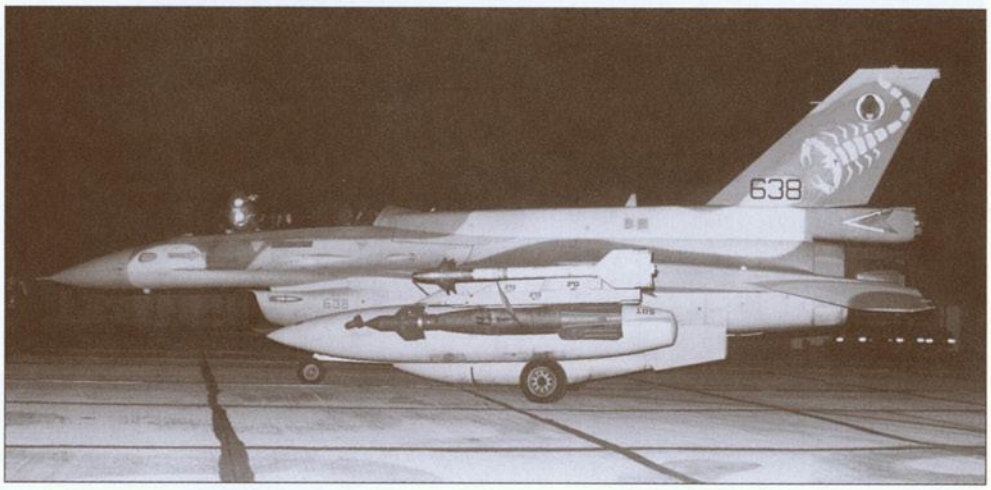




Above: Scorpion squadron F-16C number 503, one of the squadron's first aircraft, deploys its airbrakes in order to join formation with the photographing aircraft. The aircraft carries no armament, other than inert AIM-9L missiles.
Ra'anan Weiss collection



Right: A rare photo of Scorpion squadron F-16D number 630 carrying a single GBU-15(V)21/B with its AN/AXQ-14 data link pod at the centerline, 600 gallon external fuel tanks, and a Mk.84 2000 lb. bomb as a balance to the GBU-15.
Ra'anan Weiss collection



Right: Scorpion squadron F-16D number 638 is armed with two live GBU-12 Paveway II LGBs, AIM-9L missiles at the wingtips, 600 gallon fuel tanks and 300 gallon belly tank. The aircraft is about to take-off for a night strike at southern Lebanon.
Ra'anan Weiss collection

F-16D Block 40 No. 638, Scorpion squadron, 1998

This aircraft is carrying a pair of GBU-15(V)21/B with its AN/AXQ-14 data link pod, 600 gallon fuel tanks, a LANTIRN pod and AIM-9L missiles. Note that the bombs are held at a certain angle by a special spacer, to ensure the weapon will leave the aircraft clearly.







Above: Scorpion squadron F-16D number 619 being checked before setting out to a training sortie in Turkish airspace. The photograph was taken during a squadron deployment to Turkey.
IAF Magazine

Left: A female ground crew directs Scorpion squadron F-16D number 619 during the same deployment. Many women serve in the IAF as ground crew members and a variety of technical duties.
IAF Magazine

Below: Scorpion squadron F-16D number 619 returns from a training sortie during the same deployment.
IAF Magazine



Right: Scorpion squadron F-16D number 666 awaits take-off clearance together with an F-15 number 701, named "Fire Fox", from the Knights of the Double Tail squadron and First Fighter squadron F-16D number 603. These aircraft visited Turkey as part of an IAF training deployment.
IAF Magazine



Below: Scorpion squadron F-16D number 666 is about to align at the main runway of a Turkish air base.
IAF Magazine





Right: A Turkish Air Force member salutes to Scorpion squadron F-16D number 630. The IAF delegation flight line can be seen not too far away.
IAF Magazine





Above: Scorpion squadron F-16C number 547 is seen during a ground exhibition held on Israel's Independence day in 2003 at Ramat-David AF base.
Ra'anan Weiss

Left: IAF and Turkish Air Force F-16s mingle together. Scorpion squadron F-16D number 619 tail is seen in good detail, while a Turkish F-16C is in far background.
IAF Magazine

Below: Scorpion squadron F-16Ds number 619 and number 651 during an IAF deployment to the USA.
Scorpion squadron





Above, right and below: various IAF F-16C/Ds are seen during their deployment to the USA for a joint training with the USAF. All aircraft carry captive AIM-9D and Python 4 training missiles, and a load of external fuel tanks. The Scorpion squadron F-16D number 619 also carries a Rafael Litening pod beneath its air intake.
Scorpion squadron





The Valley Squadron

The Valley squadron is one of the most veteran squadrons in the IAF. The squadron is named after the Jezreel Valley in northern Israel, which is the home of the squadron from its formation and well into the present day. The squadron badge first included a preying eagle carrying a red bomb. The eagle was copied from the logo of "Eagle Beer", a local brewery. Later the motif was slightly changed, and instead of a red bomb, the eagle was posed diving and smashing a crescent (a symbol of the Arab air forces), portraying the shift in the squadron role, from a ground attack unit, to an interceptor unit. The squadron history goes back to 1951 when it was formed as a Mosquito squadron at the Hatzor AFB. The squadron received its next aircraft type, the Mystere, on December 12th, 1956, right after the Sinai campaign, and flew this type for more than a decade, gradually changing from a primary IAF intercept unit into an attack and close support unit. It was with this aircraft that the squadron moved to Ramat-David, making it its permanent home and changing its name to the Valley squadron. The squadron, with a complement of 36 aircraft at its peak, performed numerous strikes during the 1967 Six-Day War, and its pilots shot down two MiG-17 aircraft.

The Mystere era ended on February 8th, 1968, when the squadron transferred its aircraft to the Flying Wing squadron. The Mystere was replaced with the A-4H Skyhawk, marking the transit from French to U.S manufactured aircraft.

The era of the Skyhawk was covered





Far left: Checking the design. A rare photo of an early version of Valley squadron's tail design, applied to F-16D number 022. The diving bird of prey is painted in black while the final version was converted to the color of sand.
Valley squadron

Left: Valley squadron badge is applied to the tail of F-16D number 074 during the opening ceremony held on July 1991.
Valley squadron

Below: Three of the squadron's first aircraft are seen after landing at Ramat-David, with FOD covers on their air intakes and cockpit ladders besides each aircraft.
IAF Magazine







Above: Two views of Valley squadron F-16D number 074 shortly after the squadron was re-opened as a Barak equipped unit.
IAF Magazine

Below: The First Jet squadron transferred four of its F-16Cs to their new comrades, to help with initial operations. One of these aircraft, number 355 is seen carrying Valley squadron livery. Note the brown patch connecting the vertical tail leading edge and the aircraft's side, deviating it from the standard IAF F-16 camouflage pattern.
IAF Museum



thoroughly in our previous publication. The squadron, along with the other Skyhawk squadrons was one of the IAF workhorses during the crucial period of the 1969 War of Attrition and the 1973 Yom Kippur war.

July 20th, 1977 saw the transfer of the last Valley squadron's A-4s to its sister squadron, the Knights of the North. Only eight days later, the squadron brand new IAI Kfir aircraft landed at Ramat-David. With the Kfir in its ranks, the squadron became a unit with true multi-role capabilities, performing both attack and air defence missions. Though seniority in the air superiority role was quickly claimed by the new F-15 and F-16 fighters, the squadron held some responsibility within the air intercept role, and performed many CAP (Combat Air Patrol) as well as strikes against terrorist targets in southern Lebanon. After playing a minor role in the Lebanon war of 1982, the squadron was decommissioned. All remaining aircraft were transferred to the Midland squadron at Hatzor, on July 29th, 1985.

Six years had passed until the squadron's reformation, this time receiving the First Fighter squadron Block 30 F-16D aircraft. Even though these aircraft were already operational for few years in the IAF, the squadron managed to take the lead in many fields of operation, and was a true pioneer in many domains.

The squadron first four aircraft (IAF tail numbers: 074, 022, 034, 041) landed at Ramat-David on July 2nd, 1991, and were received with a festive ceremony. The neighboring First Jet squadron provided four additional aircraft to their new comrades, enabling the immediate initiation of operational activity, while awaiting all of the squadron's aircraft to arrive. As part of the renewed squadron spirit, a new design was applied to the aircraft tail, consisting of preying eagle, an enlarged version of the eagle silhouette appearing on the squadron badge. This design was sprayed using the standard IAF camouflage shade of sand, so the disguise provided by the paint scheme was not disrupted.

The squadron was quickly introduced to the intensive IAF operations in southern Lebanon, using its unique precision-strike capabilities. The two peaks of operations, the first being in July 1992 (operation "Accountability") and the second in April 1996 (operation "Grapes of Wrath") haven't skipped the squadron, sharing the burden with other IAF fighter units,

F-16D Block 30 No. 088, Valley squadron, 2003

This aircraft is configured for long-range precision strike, carrying 300 and 600 gallon external fuel tanks, two GBU-12 Paveway II LGBs, a Litening pod, Python 4 and AIM-9L missiles.





again providing its proficiency with PGMs for the benefit of accurate strikes. On operation "Accountability" the squadron performed 26 sorties, comprising 18 strike missions, 4 CAP missions on both daytime and nighttime, and 4 "Katyusha-hunting" sorties, where aircraft were to fly above known or suspected Katyusha firing zones and attempt to destroy the launching crews and vehicles while they were trying to fire their rockets.

On October 21st, 1996 the squadron participated in an IAF deployment to Turkey, made possible thanks to the developing military cooperation between the two countries. This kind of deployment enabled the execution of long-range sorties, combined with the challenge of navigation in unfamiliar terrain, which is not possible in the limited boundaries of Israel. These deployments also give the pilots the unique experience of mutual training with a foreign air arm – a scenario that becomes more and more common in today's theatres of operation. The fact that the squadron operates the F-16, also in service with the Turkish Air Force, eased the adaptation of the Israeli aircrews and technical echelon accompanying them at the local airbases. As this joint exercise gained momentum, another ally, the USAF, joined these deployments, making it a "local Red Flag", as described by senior IAF officers. These exercise scenarios have developed and now resembled the Nellis AFB original, dividing the participating units into even quantities of Turkish, Israeli and USAF units, forming a "blue" side and a "red" side, one playing the role of the aggressive force and the other acting as a defending force. Scenarios included air strikes, long-range low-level navigation, search and rescue practice, as well as air defense missions.

An interesting event involved the squadron in early 1999, when the IAF's first female combat navigator, Second Lieutenant Sari, joined the Valley squadron, opening the way for

Above: Valley squadron F-16D number 075 with a heavy war load that includes: two 600 gallon fuel tanks, a pair of GBU-15(V)21/B with its AN/AXQ-14 data link pod on the centerline station and AIM-9L missiles. The heavy bombs and fuel tanks require the mounting of the Sidewinder missiles on stations 2 and 8.
Ra'anan Weiss collection

Below: Valley squadron F-16D number 083 is about to land at Ramat-David, carrying two inert GBU-15(V)21/B bombs.
Ra'anan Weiss collection





Above: Valley squadron F-16D number 034 is seen during take-off, with AIM-9D and Python 4 training rounds. This aircraft served at the neighboring Knights of the North squadron during 1989.
Ra'anan Weiss collection



Right: Valley squadron F-16D number 022 is taking-off for an air-to-air training sortie. Note the unusually large Shields of David applied to the wings, almost completely covering it, and the tilted Shield of David on the aircraft's tail.
Ra'anan Weiss collection



Right: Valley squadron F-16D number 077 is armed with a live weapon load consisting of four Mk.84 2000 lb. bombs and two AIM-9L missiles. The aircraft is bound for a strike in southern Lebanon. This aircraft was lost in an accident during March 2000.
Yoav Efrati collection



Above: An impressive angle of Valley squadron F-16D number 034 and number 041 awaiting permission to taxi. The aircraft are configured for an air-to-air training sortie.
IAF Magazine

the integration of women into IAF fighting ranks. Since then, four more female crewmembers have joined various IAF squadrons.

On March 27th, 2000, a tragedy struck the squadron and the IAF family. Flying aircraft number 077, Major Yonatan Begin and Captain Li'or Harary were performing a routine night training mission. A few moments before 20: 00 hours, ten seconds after the aircrew's last transmission, their aircraft crashed into the Mediterranean Sea, killing both crew members.

April 2002 marked a very intensive period for the squadron. Early that month, a pair of squadron's aircraft was launched for a CAS sortie in southern Lebanon, following a Hizbullah attack on IDF positions. However, while making their take-off run, the port undercarriage of one of the aircraft (IAF tail number 088) collapsed, dictating a different ending for the already tense sortie. Lieutenant L., the pilot, later recalled: "We started the engine and approached the runway. Everything ran normally during the initial acceleration, but just before liftoff, at the speed of 180 knots, we felt the aircraft swerving off to the left. I couldn't figure out what was happening, but I pulled hard on the stick, forcing the aircraft to leave the runway. Only after take-off,

I understood that the port undercarriage collapsed, along with the failure of one of the aircraft hydraulic systems". This kind of emergency situation requires an immediate landing, but since the aircraft were on their way to an attack mission, they were loaded with bombs, air-to-air missiles and external fuel tanks. Lieutenant N., the navigator, later explained: "The first thing we had to do was to jettison our ordnance, so it would not be an additional hazard when landing. We had to retain the port external tank as a substitute for the missing undercarriage". Accompanied by the formation-leading aircraft, which was flown by the squadron commander, the aircraft turned seaward, while cautiously performing the ordnance jettisoning sequence. When this was complete the crew turned toward the southeast, preparing to land at the closest IAF base. The runway was prepared for the emergency landing



Left: A trio of Valley squadron F-16Ds line up for take-off, heading to a strike training sortie, as evident by the live Mk.82 500 lb. bombs and inert AIM-9L hanging from their wings.
IAF Magazine



Above: Valley squadron F-16D number 061 is about to take-off for a twilight air-to-air training sortie, carrying AIM-9D training missiles and a Litening III pod beneath its intake.
IAF Magazine

and arresting cables were positioned across the runway. Lieutenant N. continued:

"The starboard wheel was the first to make contact with the runway. Lieutenant L. stabilized the aircraft and, after 500 meters, he lowered the nose wheel and made contact with the runway as well. As the speed diminished we could feel the aircraft yawing to the left, and then we felt the port wing external tank hit the runway. I looked backward and saw a long shower of sparks behind the aircraft". A few seconds later the aircraft came to a final stop at the end of the runway. The crew opened the canopy and quickly vacated the aircraft, while the firefighting crew extinguished the small fire, and then secured the aircraft. Afterward it was discovered that fatigue had caused the undercarriage to collapse. The mission

Right: Valley squadron F-16D number 079 during routine night operation. In order to keep its unique operational night capabilities, the squadron divides its time between daytime and nighttime training.
IAF Magazine



F-16D Block 30 No. 057, Valley squadron, 2002

This aircraft carries a pair GBU-15(V)21/B with its AN/AXQ-14 data link pod, Litening III pod and AIM-9L missiles. Note that the bombs are held at an angle by a special spacer, ensuring a safe weapon release from the aircraft.





was subsequently performed by another pair of aircraft when it became clear that the mission could not be performed by the preceding aircraft.

A few months later, in what might seem an unlikely coincidence, a similar occurrence took place in the squadron. A flight of four took off from Ramat-David for a routine training sortie. As aircraft number three (IAF tail number 072) took off, the number four aircraft's crew noticed a white cloud emanating from number three's right landing gear. The number three aircraft crew had not felt anything unusual, but when they retracted the landing gear, the right undercarriage light remained red, indicating that the landing gear wasn't fully retracted. The flight leader inspected the damaged area and noticed the undercarriage arm was fully extended, preventing the landing gear from retracting normally into its bay. This situation was immediately reported to the squadron commander the technical staff on the ground, but the nature of this malfunction wasn't yet clear. Since this had happened immediately after take-off, the aircraft still had plenty of fuel, so time was not pressing as yet. Meanwhile, on the ground, another aircraft was quickly jacked up in order to find out what could go wrong with the landing gear. After consulting the IAF flight test center, it was assumed that the right dampener had lost its pressure liquids, hence the white 'smoke' seen from the number four aircraft. After another consultation it was decided to keep the wheels retracted and land on the wing-mounted fuel drop tanks. The aircraft crew made two low approaches above the runway while the flight leader checked that the landing gear would not prevent the right wing tank from touching the ground. Finally, after an hour and forty minutes in the air, the aircraft landed safely on its drop tanks and came to a stop by using the emergency

Above: Valley squadron F-16D number 047 is seen with its stable mate, preparing for take-off with two M117 750 lb. bombs and a 300 gallon belly tank.
IAF Magazine

Below: Valley squadron F-16D number 077 is seen before take-off, carrying external fuel tanks and an early version of Rafael Litening pod.
IDF Spokesman



A dramatic photographic sequence, displaying the April 2002 emergency landing of F-16D number 088.
The left column shows the aircraft touching the runway with its left landing gear and right wing external fuel tank. Note the trail of sparks and flames. The lowest photograph in this column depicts the crew opening the canopy and move to a safe distance knowing the aircraft might explode in any second. The aircraft came to a stop by using arresting cables.
The right column show fire fighters encircle the aircraft, covering it with foam and water for cooling purposes. The two lower photographs are close-ups of the failed landing gear.
Valley squadron



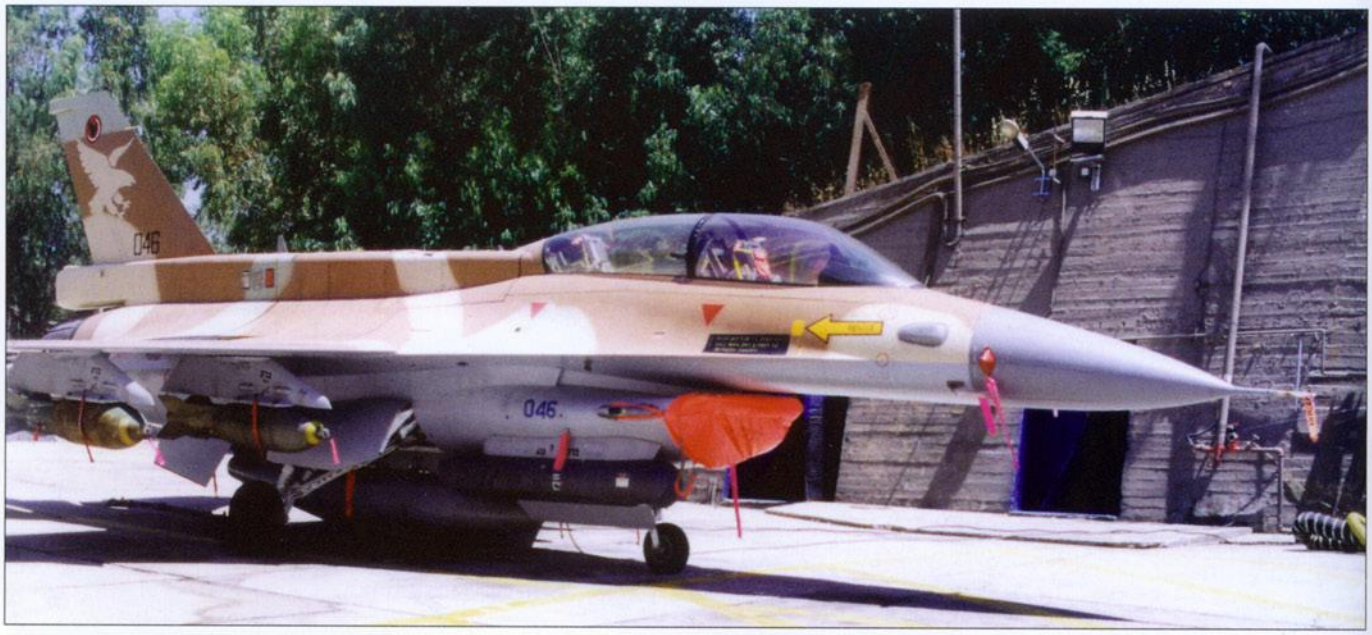










arrestor hook. When the aircraft was checked by maintenance, it turned out that a disk inside the right landing gear dampener had broken, causing the leakage of the damping liquids and gases. Amazingly, the aircraft was barely scratched during the landing and was quickly repaired and returned to service.

It is not surprising that, when the squadron commander ended his term, he was given a 1:12 scale model of an F-16 landing gear.

Following repeated attacks by Hizbullah on IDF positions, it was decided to attack Lebanese infrastructure targets. Three transformation stations were chosen for destruction, the execution of which was assigned to the IAF leading F-16 squadrons: the Valley squadron, the Scorpion squadron and the First Fighter squadron. Four of the squadron aircraft were sent deep into Lebanese territory, destroying two transformation stations near Beirut and

Above: Valley squadron F-16D number 046 awaits its pilot and navigator, armed with four live M117 750 lb. bombs and a Litening II pod.
IDF Spokesman



Left: Valley squadron F-16D number 041 is seen during trials of the Litening II pod, with Rafael engineers and IAF ground crew encircling it. The photograph was taken inside a hangar at Ramat-David's AFB.
IDF Spokesman

F-16D Block 30 No. 072, Valley squadron, 2003

This aircraft is configured to an air-to-air sortie, with a 300 gallon fuel tank, Python 4 and AIM-9L missiles.





Above: Valley squadron F-16D number 069 taking-off for a training sortie, carrying training air-to-air missiles and a 300 gallon fuel tank. The aircraft has large Shields of David applied to its tail and wings, with wing markings being extremely large.
Ra'anan Weiss collection

Tripoli, which imposed complete darkness on southern Lebanon.

May 2000 saw a hasty IDF withdrawal from southern Lebanon and the following period was very tense, with Hizbullah provoking attacks on IDF positions within the Israeli border. The Valley squadron performed a counter strike in November 2000 following a lethal attack was made by Hizbullah on an IDF post inside the Israeli border. Hizbullah attacks had not ceased and it was decided to send a message to the Syrian leadership by attacking a radar installation located 30 km northeast of the city of Beirut. Major K., then the deputy commander of the Valley squadron, later told the IAF bulletin: "We were sitting in the aircraft from 23:00 hours, waiting for the order to launch the strike. A few moments before midnight, an approval for the strike was received and we took off immediately". Four of the squadron aircraft took part in this mission, the formation being led by Lt. Colonel Chagy, the squadron commander. Major K. continued his story: "It was a rather dark night, and from our position every light showed up clearly. The area was densely populated. From Ramat-David the air we could see the command and control vehicles, antennas and different APCs in the vicinity of the installation". The first pair attacked one of the northern isolated radar antennas. The other pair launched their bombs, completely destroying another antenna, a command and control vehicle and damaging another antenna. Heavy AA fire was present during the whole

Right: Close up of the special design for the Valley squadron's jubilee celebrations held during 2001.
Ra'anan Weiss



Below: Valley squadron F-16D number 055 seen during a ground display in 2001, with the squadron's jubilee marking applied to its tail.
Ra'anan Weiss





attack phase of the sortie. Lieutenant A., one of the navigators, later told the IAF bulletin: "They shot at us with Kalashnikov rifles and even heavier weapons like 23 mm guns. Though it was a dark night, I could clearly see the bursts and flashes after each bomb impact". In spite of the heavy opposition the target was completely destroyed, and all aircraft returned unscathed to Ramat-David.

The last confrontation between squadron fighters and Hizbullah occurred on August 10th, 2003. Hizbullah gunners, in what became routine for northern Israel citizens, had fired AA barrages into the skies over the Israeli cities of Kiryat Shmona and Shlomi. Usually, this AA fire ended up causing minor damage, but this time shrapnel caused the death of an Israeli youngster and injured four others. The squadron, which was already on high alert status anticipating escalation along the border, got an order to destroy the gun that shot the lethal shells. A pair of F-16s took off for the mission, one of them flown by Captain Alon and Captain Sari as his navigator. This was Sari's first operational strike on Lebanese territory. The leading aircraft identified the target and released two laser-guided bombs, each weighing 1000 lb. After the smoke and debris cleared, the pilots could see that the gun was still intact. Captains Alon and Sari's aircraft made the second attempt, as Captain Alon later told the IAF bulletin: "Sari reacquired the target through the clouds and smoke rising from the area. We made a preliminary pass, making sure our bomb run was suitable for launch parameters. I flew the aircraft to the proper spot and pressed the trigger. The bomb was released from the aircraft". Captain Sari guided the bomb with the aircraft systems and scored a direct hit. An hour later the two aircraft landed safely at Ramat-David.

Today, the Valley squadron is one of the IAF leading units, and has some unique capabilities and weapons. One of the squadron's impressive capabilities is the Litening pod. Rafael developed this pod, in cooperation with the squadron, and its current version, the Litening III, is in service with the unit. This pod includes FLIR, CCD, and a Laser designator, enabling the aircraft to deliver PGMs and iron bombs accurately under adverse weather and lighting conditions. In addition, the squadron deploys the Python 4 AAM, one of the most advanced air-to-air missiles in the world, and the "Journal" system, a locally-manufactured night vision goggles. Like the other IAF F-16 squadrons, the squadron employs the GBU-15 EO guided bomb. The combination of these systems puts the squadron on the front line of F-16 units around the world, and makes it the one of the IAF leading multi-role fighter units.

Above: Valley squadron F-16D number 075 is seen flying over Turkish landscape.
Amos Peleg collection

Below: Valley squadron F-16D number 023 carries a Litening II pod, while flying over Turkey.
Amos Peleg collection







Top: Valley squadron F-16D number 022 is taking-off from Ramat-David bound to an air-to-air sortie.
Ra'anan Weiss colection

Above: Valley squadron aircraft during routine operations at Ramat-David.
Ra'anan Weiss



Right: Valley squadron Block 30 F-16D number 036 is pictured with Block 42 F-16C of the 144th fighter wing, California Air National Guard. The photograph was taken during a joint IAF and USAF joint exercise.
Valley squadron



Left: Valley squadron F-16D number 036 sheds some color on the otherwise gray flight line of California ANG F-16C squadron.
Valley squadron





Above: Valley squadron F-16D number 039 is seen with First Jet squadron F-16C number 355 at a USAF air base. Note the fire extinguisher cart near the aircraft.
Valley squadron

Left: Valley squadron F-16D number 072 is taking fuel from an IAF KC-707 tanker. The tanker modification is a pure Israeli design, manufactured by IAI after a USA refuse to sale tankers to Israel during the 1970's.
Valley squadron



Above: A lovely picture of Valley squadron F-16D number 036 during the IAF and USAF joint exercise. The aircraft carries Litening II pod, 370 gallon tanks and training Python 4 and AIM-9D missiles.
Valley squadron



Right and Below: The same aircraft in formation with First Fighter squadron Block 40 F-16D number 612, above US terrain.
Valley squadron



The Test & Evaluation Unit

The IAF Test and Evaluation unit is responsible for every airframe modification, avionics integration and weapon testing in the IAF.

The unit has three Barak aircraft in its service, representing each of the different F-16 types in IAF service. The first Barak to enter service with the unit was Barak I number 301, a Block 30 single seat aircraft that arrived as part of the Peace Marble II program. Shortly afterwards the unit received Barak I number 020, a Block 30 F-16D, also under PM II. Until a Block 40 Barak II aircraft were allocated, the unit operated a Block 30 aircraft modified with Block 40 avionic systems that were designed for the Barak II. In 1993, the unit received a special flight test F-16D Block 40 aircraft, designated CK-1 and given the tail number of 601. This aircraft was designed by Lockheed to meet the specific flight test requirements. The aircraft wings were wired and instrumented to measure buffeting and restraint. An external pod with additional instrumentation can be carried and more instruments can be added



Right page, top left: Manat's Block 30 F-16D number 020 is seen during late 80s on an open ground exhibition, an IAF tradition during Israel's anniversary days.
Yoav Efrati collection

Left: Block 30 F-16D number 020 destined to Manat (the Hebrew acronym for flight test center, an additional name for the Test and Evaluation unit). The aircraft is seen during its final test flights at the USA during 1987.
IMI - Aircraft Systems Division

Below: A close up of Manat Block 30 F-16D number 020, during testing at the manufacturer. The aircraft is checking a heavy configuration consisting of two inert GBU-15(V)1/B rounds, 600 gallon fuel tanks and a data link pod on the aircraft's port side. Note the rails beneath the rear section of the avionics spine. When anti-spin parachute is attached, these rails guide the airflow for an effective recovery from the spin.
First Fighter squadron







Above right: Manat's Block 30 F-16D number 020 in flight above Israeli territory.
Ra'anan Weiss collection

Right: Manat's Block 30 F-16C number 301 during flight tests at the USA. Note the different pylon at station 2 under the left wing, carrying a data link pod for the GBU-15 bomb. This pylon is an improved pylon produced by IMI, enabling the carriage of more stores other then air-to-air missiles.
Ron Feldman collection

Below right: Manat's Block 30 F-16C number 301 is seen on 1999 during an open day ground exhibition. By this time the Test and Evaluation unit insignia, consisting of orange stripes and the unit's badge were applied to the aircraft.
Ra'anan Weiss collection

Below left: A close up on Manat's Block 30 F-16C number 301 special pitot tube, with special vanes attached to it. Note the aircraft has the front landing taxi lights typical to Block 40.
Ra'anan Weiss collection









as an extension to the pitot tube. Since the aircraft has two seats, another advantage is for the project engineer join flights and monitor progress in real time.

The unit has been involved with almost every Barak modification, sometimes obtaining airframes from various IAF squadrons, for specific tests. Among the projects the unit was involved with were: The Popeye II, the Rafael 'Spice' autonomous bomb, the Python 3 and 4 missiles and many structural and avionics changes and upgrades.



Above: Manat's Block 30 F-16D number 020 is seen during a test flight with AIM-9 inert rounds, 600 gallon fuel tanks and a flare pod under its right wing. Note the longer pitot probe, typical to test aircraft and the camera calibration markings on the wing's external fuel tank.
Ra'anan Weiss collection

Right: Manat's Block 30 F-16D number 020 is testing a modified 370 wing tank. This project's purpose was to add the probe and drogue aerial refueling method to the F-16 capabilities, enabling it to receive fuel from KC-130s or other formation members carrying the Sargent Fletcher pod. It was thoroughly tested but wasn't taken into service.
Ra'anan Weiss collection

Below: An interesting view of Manat's Block 30 F-16D number 020. The aircraft is fitted with the anti-spin parachute device, attached behind the rails seen on page 82. Note that the tail base extension has to be removed in order to install the parachute.
Ra'anan Weiss collection





Above: A close encounter between adversaries. Tip of the Spear squadron F-15D number 450 and Manat's F-16D number 601 in close formation with a MiG-29. The MiG was lent to Israel from an undisclosed friendly country, during 1997, for possible upgrade by Israeli defense companies.
Ofer Zidon collection

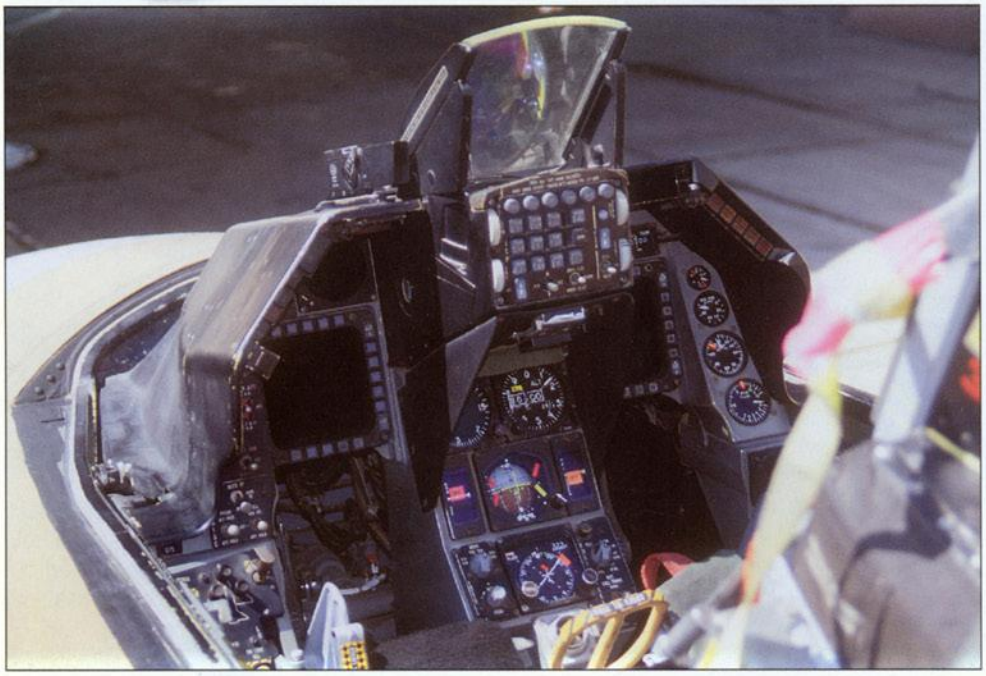


Right: Manat's Block 40 F-16D number 601 is seen during 1998, with the special logo designed for Israel's jubilee applied above the unit's markings.
Yoav Efrati collection

Below: The Test and Evaluation unit borrows aircraft from other squadrons on a regular basis. Here, Valley squadron Block 30 F-16D number 046 is carrying a JDAM 2000 lb. bomb, its guiding section parts painted fluorescent red so it would appear clearly on the pictures taken during the weapon's release.
Ofer Zidon collection



Walk Around

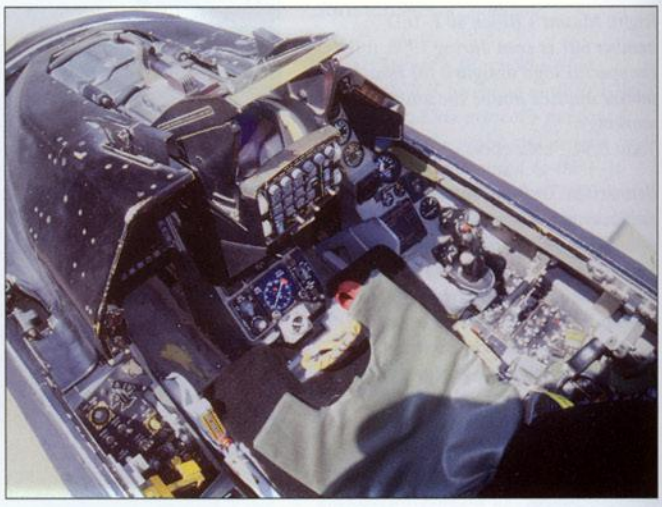




Several views on the front cockpit of a Block 30 F-16D Barak I. All of IAF Block 30 F-16 cockpits are painted medium gray.

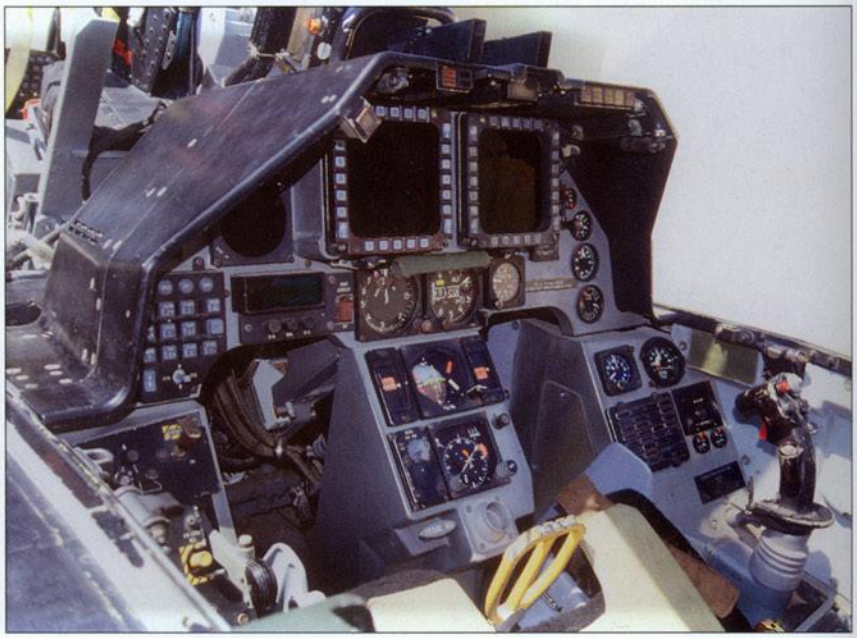
Photos in this page: Ra'anan Weiss





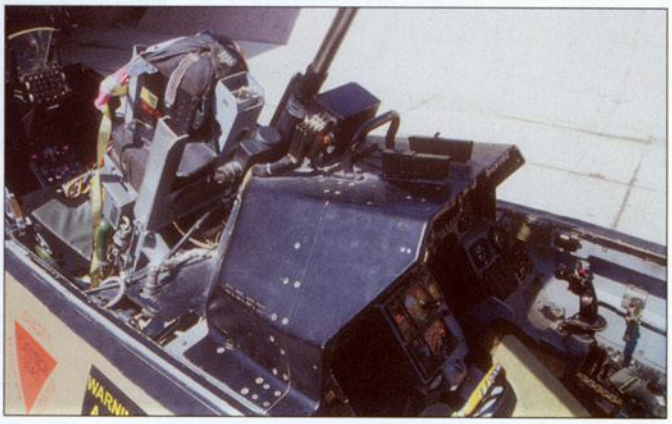
Two views of a Block 30 F-16D rear cockpit, which is externally identical to its USAF counterparts.



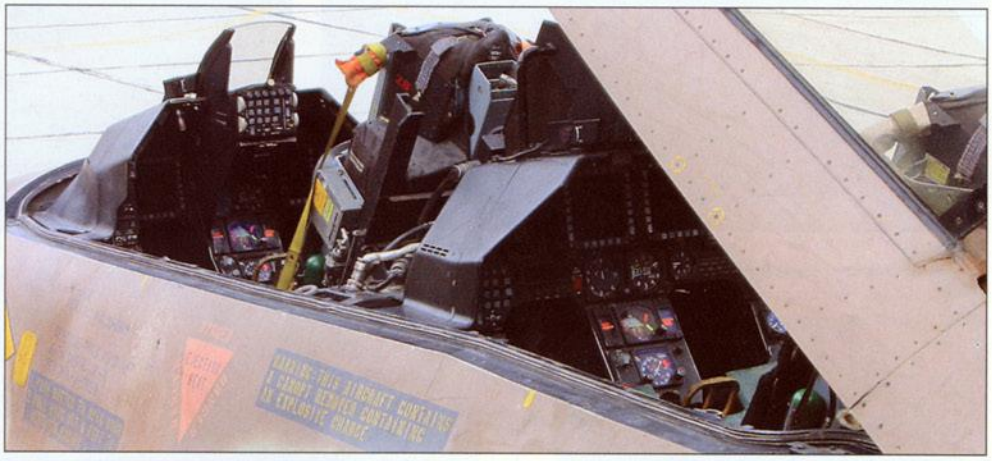








Above: Several views of the WSO's cockpit, and its instrument panel coaming.
Right: An excellent picture of a Block 40 F-16D cockpit. Note that all Block 40 F-16C/D cockpits are painted black, in order to assist aircrew using Night Vision Goggles (NVG).



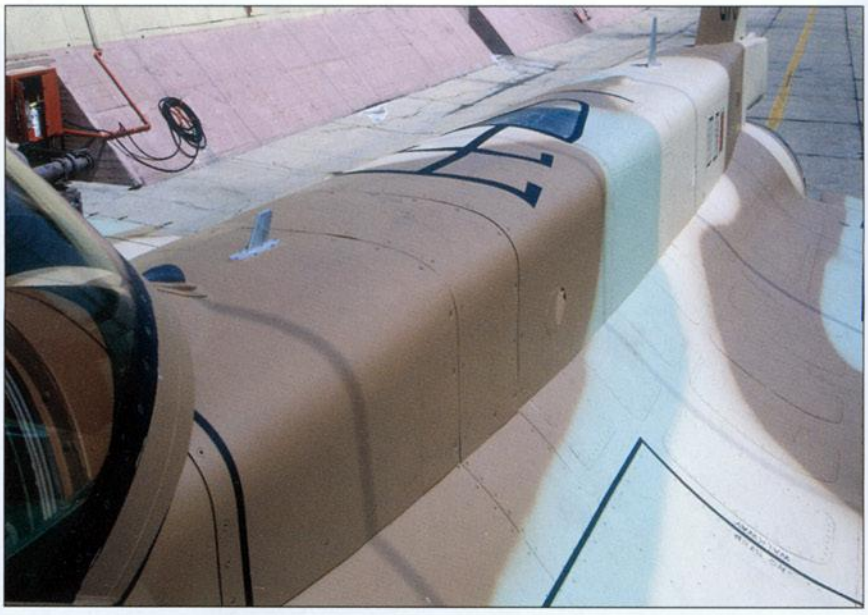
Photos in this page: Ra'anan Weiss



Left and below: Another feature of Block 40 F-16D is the HUD repeater screen, providing the WSO with a picture similar to the pilot's HUD. This screen can be retrofitted to Block 30 F-16D, requiring some modifications to the cockpit.

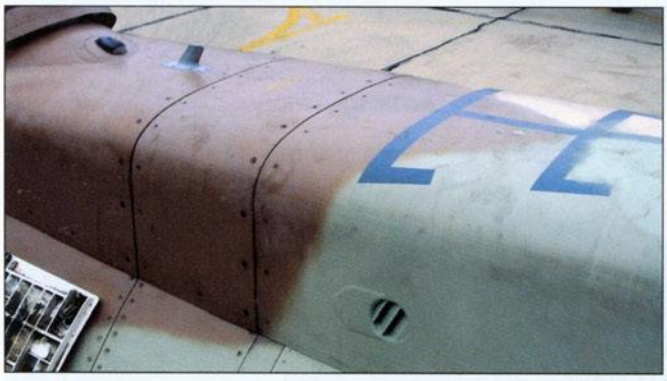


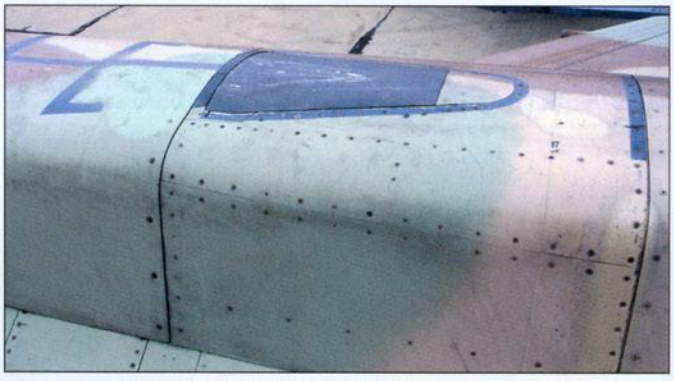


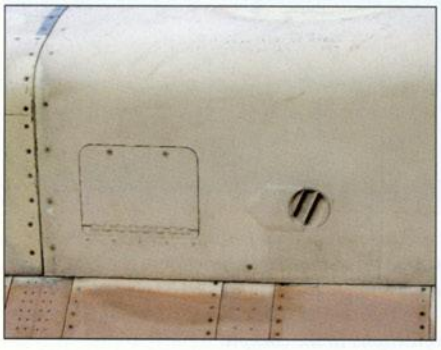


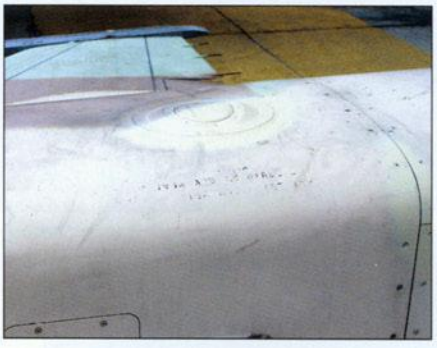
Several views of the dorsal spine fitted to all Block 30 and 40 IAF F-16D. Note how the spine contours fit the aircraft fuselage and the round antenna fitted to the middle of the spine. This antenna was not present at the beginning of aircraft service in the IAF.

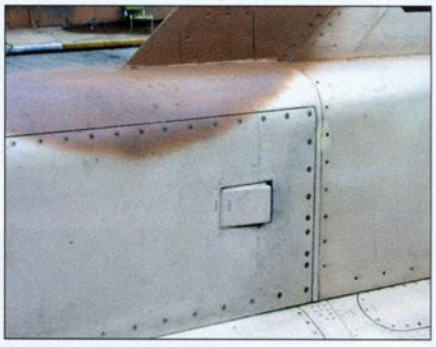
Photos in this page: Ra'anan Weiss





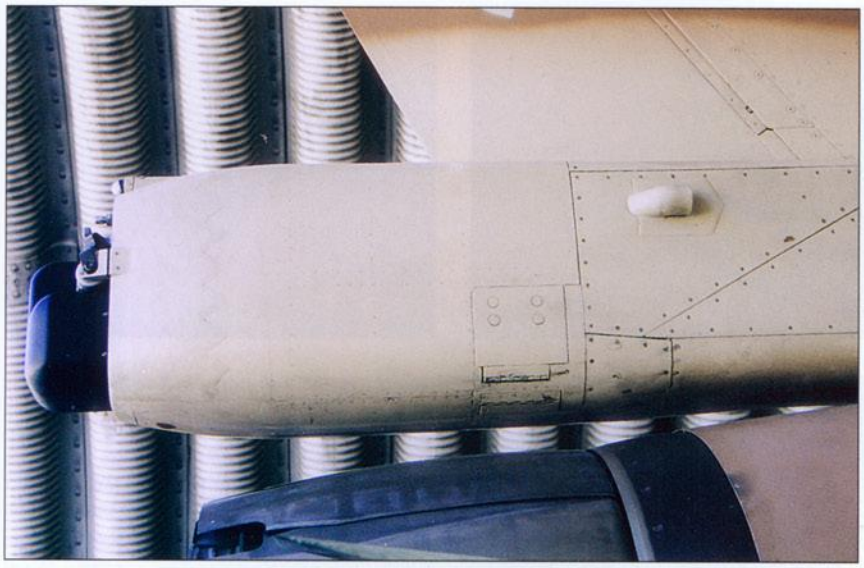


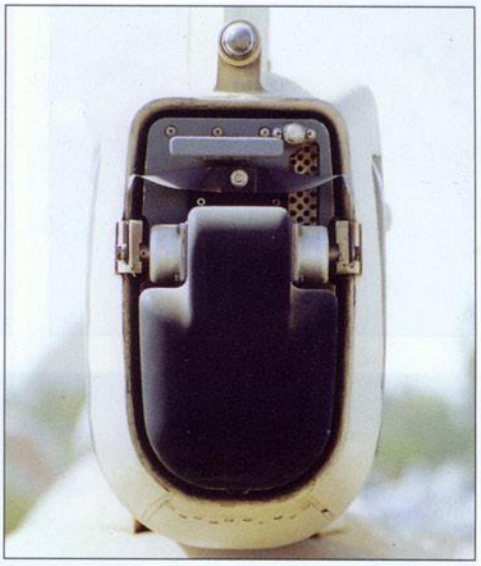




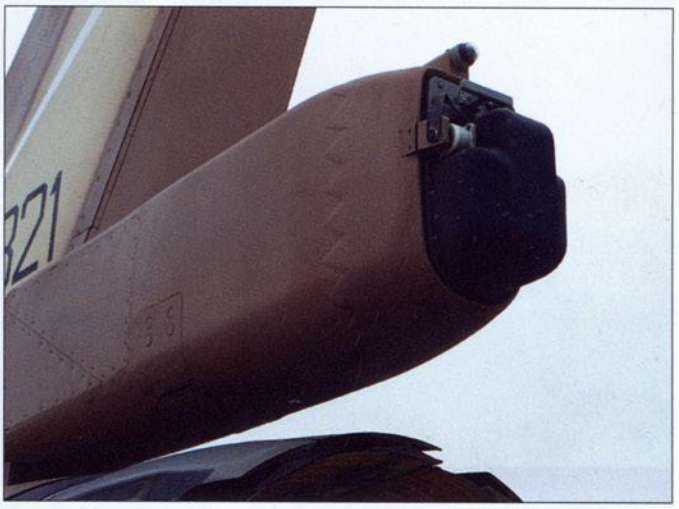


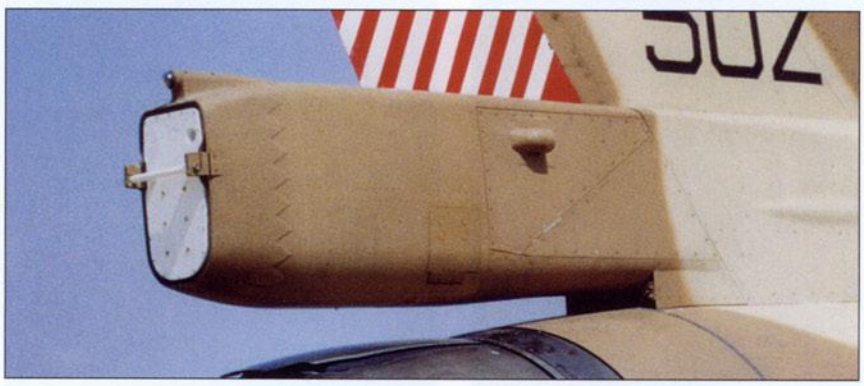








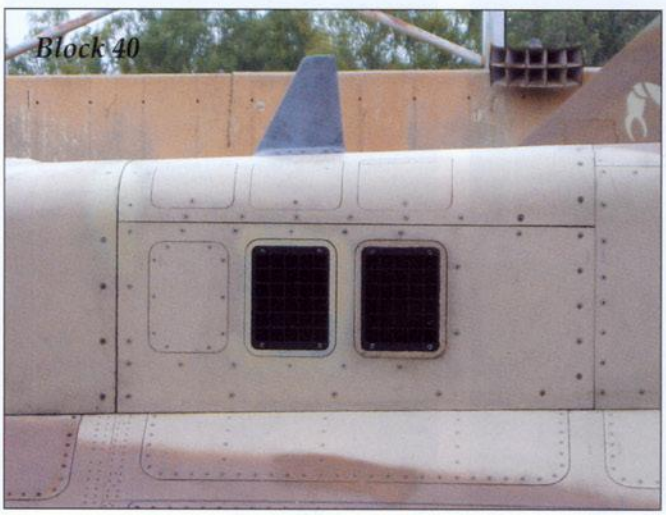


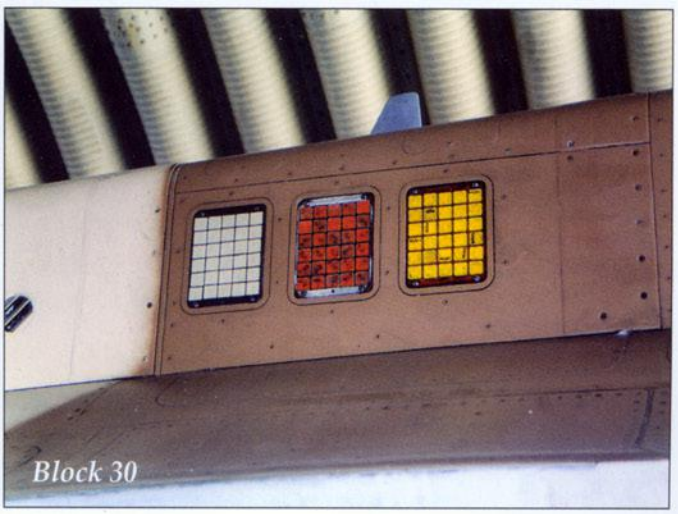


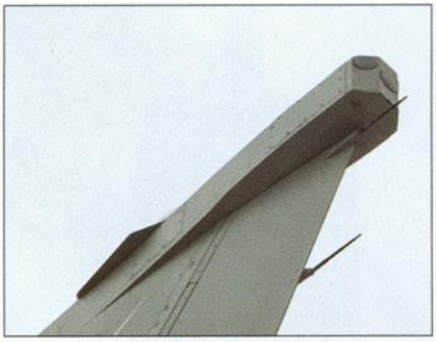
Above and left: The tail base extension from various angles. Note the different versions of the extension's end (compare aircraft number 321 and 502), and the fairing with the jagged pattern close to the tail's edge.

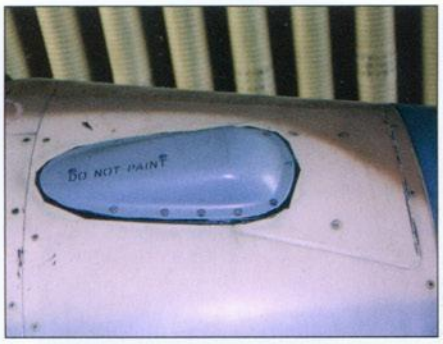
Below: Block 30 F-16D spine mounted chaff/flare dispensers (right) in comparison to the same area on a Block 40 F-16D. One dispenser was eliminated with its socket covered.

Photos in this page: Ra'anan Weiss & Yoav Efrati













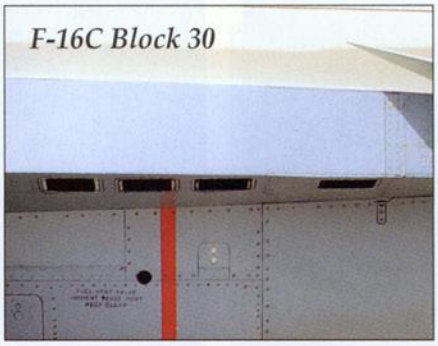


Above left: EW antennas fitted to the vertical tail top.

Above right and middle: All IAF F-16C/Ds have enlarged RWR fairings on the sides of the nose radome, with a large trapeze shaped strengthening plate.

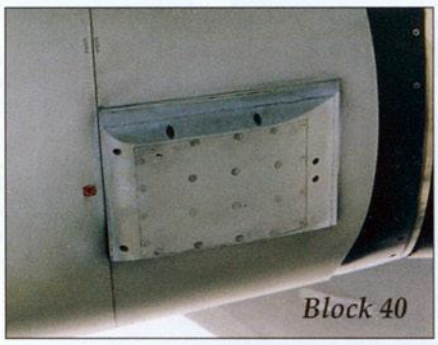
Left: Another feature of IAF F-16C/D is the enlarged housing at the sides of the air intake. These fairings contain EW systems.

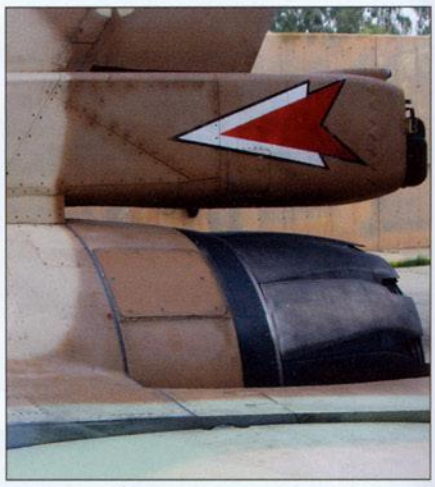




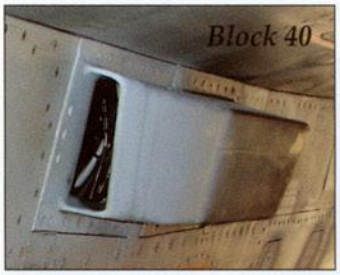


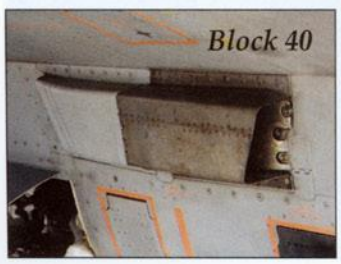
Above: IAF Block 30 and Block 40 F-16C differ in the number of chaff/flare dispensers carried. Block 30 aircraft have eight dispensers, while Block 40's number was reduced to six. The difference between Block 30 and Block 40 F-16D airframes is evident only at the spine. The original dispenser under the fuselage is common to both blocks.

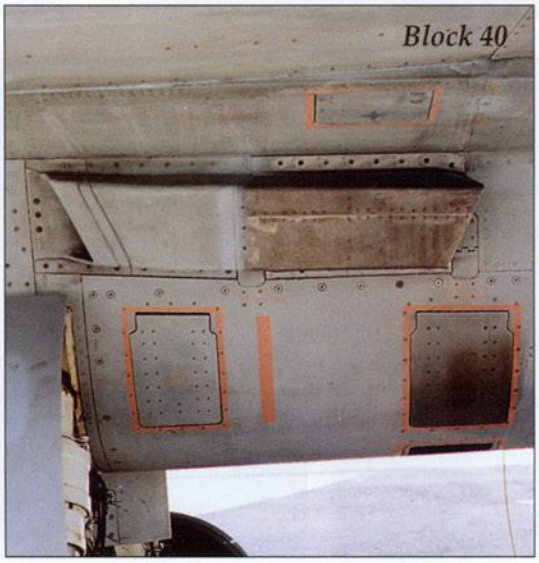




Photos in this page:
Yoav Efrati & Ra'anan Weiss

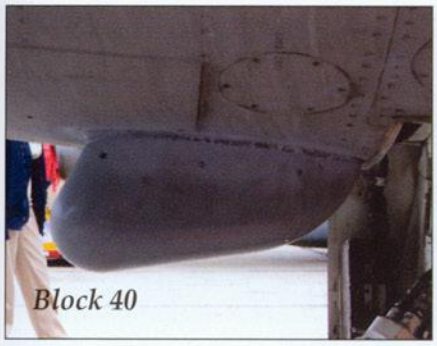


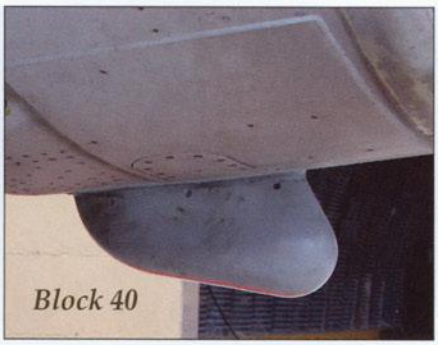


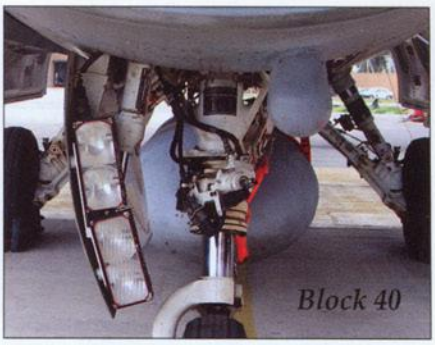


Above left & right: Block 40 aircraft were fitted initially with four box-like antennas around the engine nacelle. One can be seen in the left photo. This system was later removed as evident by the right photo.

Left: Another Block 40 feature is the pre-cooler intake, required for the aircraft's stronger engine. This intake is mounted only on the aircraft's left side above and slightly behind the main landing gear bay.







Above: An EW antenna mounted below a Block 40 air intake. Note the exact location of this antenna, slightly offset to the aircraft centerline.

Right and Below: Block 30 and 40 also differ in the location of the landing lights. While Block 30 lights are mounted on its main landing gear, Block 40 lights are mounted on the bay door of the nose gear.



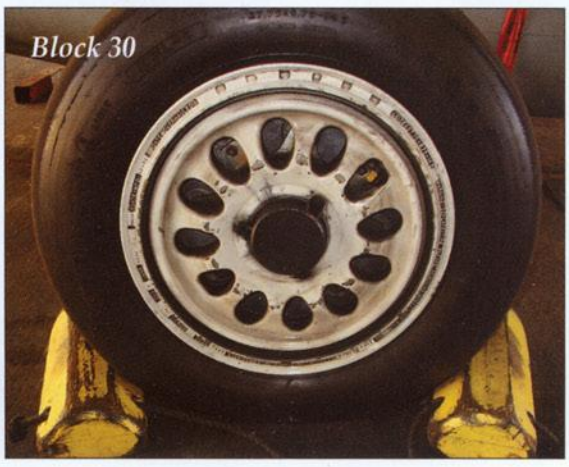












Above: Close-up of the main landing gear of the two blocks, reveal the differences. A close-up of the nose gear mounted lights is shown at left.

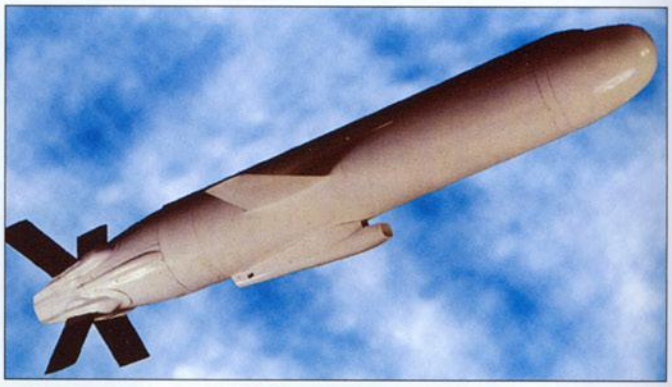
Left: The two blocks also differ in the area of the main wheel hub.

Photos in this page: Yoav Efrati





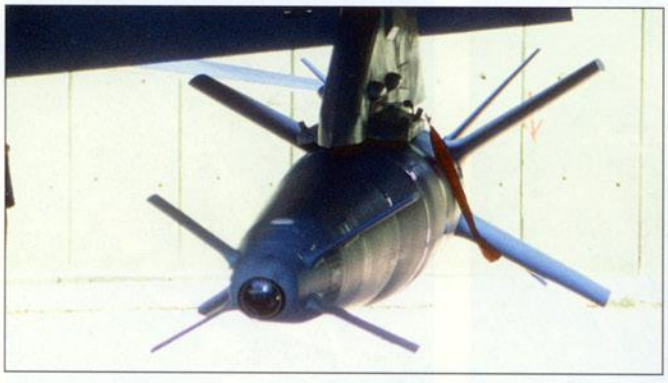




Top left: First Fighter squadron F-16D number 039 carries an IMI Delilah aerial decoy. These aircraft can carry up to two decoys under their wings. Top right and above: Two views showing the IMI Delilah decoy.
IMI - Aircraft Systems Devision

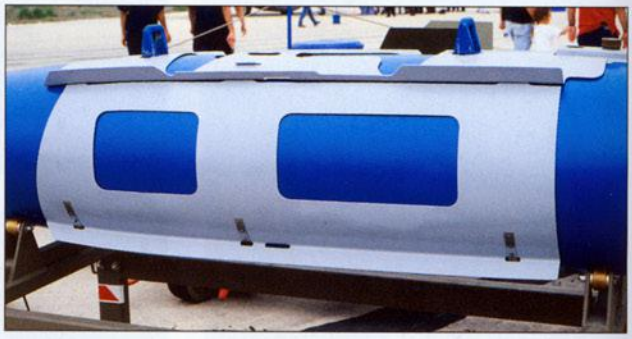
Left, below left: The Rafael Spice under the wing of First Jet squadron F-16C number 333.
First Jet squadron

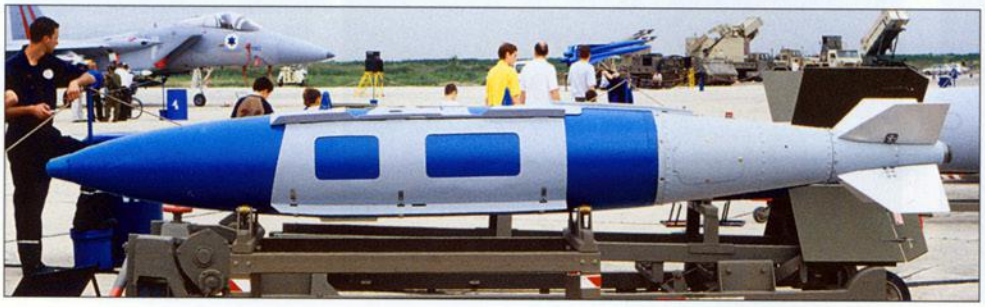
Below right: The Rafael Spice during trials in 1998. A Block 30 F-16C was allocated by the First Jet squadron for this purpose.
RAFAEL - Armament Development Authority Ltd.







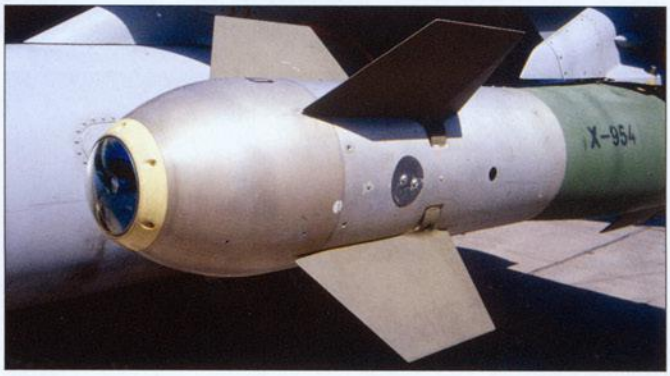




Left, above left and right: An inert JDAM 2000 lb. bomb seen during an open ground exhibition. Israel was the first international costumer of the JDAM system.
Opposite page: The GBU-15(V)21/B and its AN/AXQ-14 data link pod are thoroughly covered in this page. Note the bomb is held at a special angle, with a spacer, in order to clear the wing flaps.
Photos: Ra'anan Weiss

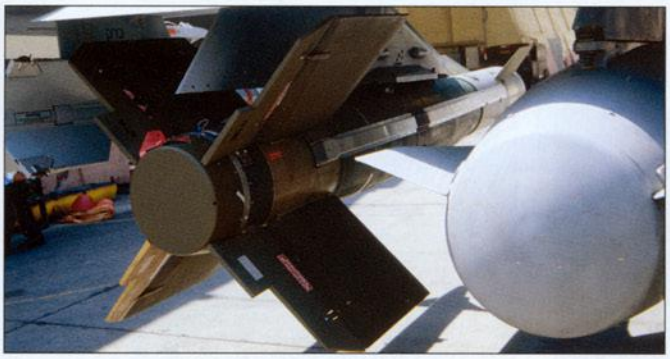

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Top left and right: Rafael's Litening III pod is seen on a Valley squadron F-16D. Note the angles between the pod, adapter and the air intake.
Photos: Ra'anan Weiss

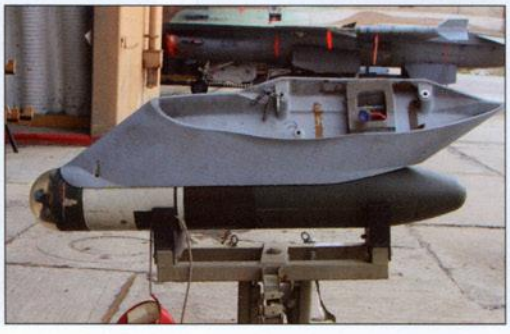
Above left and right: First generation Litening pod is shown on Barak II number 676.
Photos: Yoav Efrati

Left and below: The Pave Penny laser tracker and its special adapter. This adapter is identical to the one used by the USAF for the HTS (HARM Target Seeker) operational with its Block 50/52 F-16s.
Photos: Ra'anan Weiss









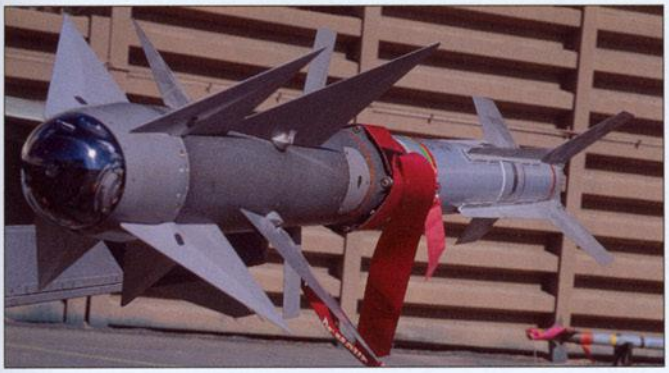






Photos in this page:
IAF Magazine &
Ra'anan Weiss





The Python 4 missile seen from several angles. This missile is usually carried on wing stations 2 and 8, due to weight and G-load restrictions.



Below: Several views of the AIM-9L Sidewinder missile.













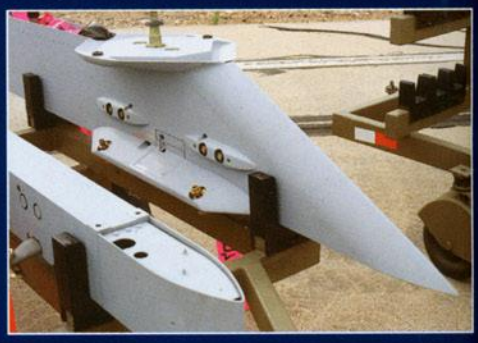




Above, this and opposite page: In order to increase the IAF F-16s range, Israel Military Industries (IMI) has developed the 600 gallon fuel tank, containing almost twice of the normal wing tank capacity. This tank can be carried on every F-16 version in IAF service.

Right, this and opposite page: The special pylon for the 600 gallon wing tank.









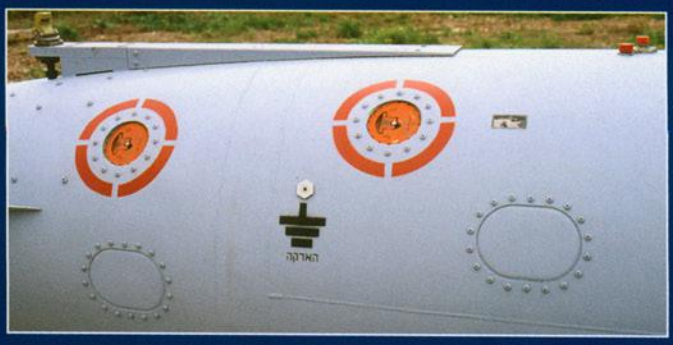
Below, this and opposite pages: IMI manufactured a 370 gallon wing tank. While the general appearance is similar, the Israeli made tank internal structure and casing are different. Compare the factory supplied tank, displayed on the right, to the IMI version seen on the other pictures.

Photos in these pages: Ra'anan Weiss & Yoav Efrati




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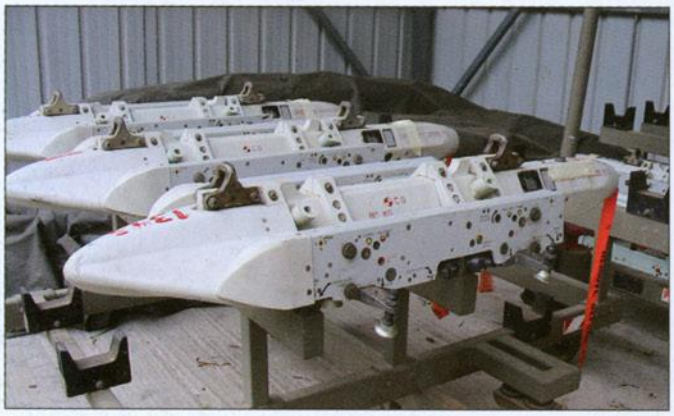

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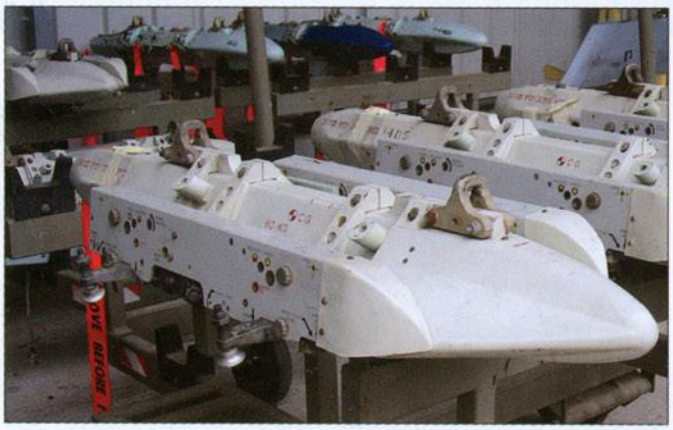
Left and Below: IMI produces the VER-2 and VER-4 bomb racks for IAF aircraft. The VER (Vertical Ejector bomb Rack) can carry two or four bombs, as demonstrated by the First Jet squadron F-16C number 355.

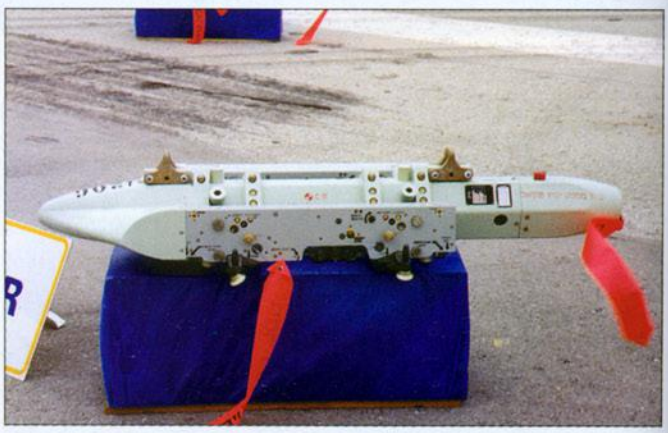
Photos: Ra'anan Weiss & First Jet squadron



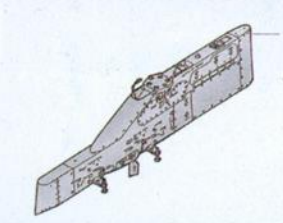






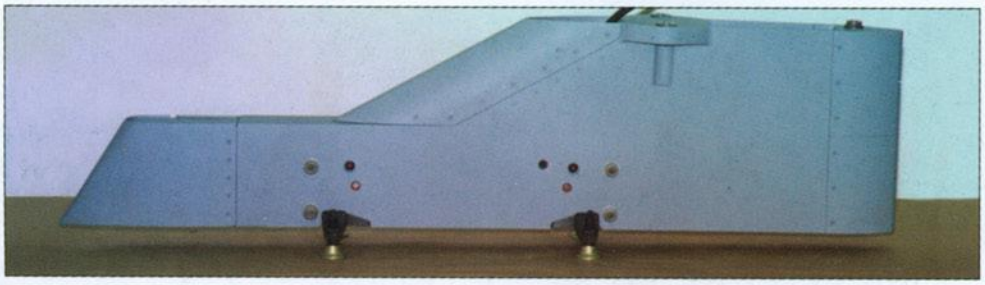






Left: Weapon stations 2 and 8 common pylons can only carry air-to-air missiles. In order to expand the potential of these stations, IMI has developed a special pod, enabling carriage of various stores such as data link and ECM pods.

Photo: IMI - Aircraft System Devision




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ISBN 965-7220-01-6

Top: A beautiful photo of First Fighter squadron F-16Ds Block 40 number 648 and 656 in air-to-air patrol, armed with 4 AIM-9L sidewinder missiles and a 300 gallon belly fuel tank. In this picture one can clearly see all the aerials and installations that have been added on the Israeli Block 40 F-16Ds.
IAF Magazine

Above: Valley squadron Block 30 F-16D number 036 and First Fighter squadron Block 40 F-16D number 612 are seen above US terrain. The aircraft are configured for an air-to-air training sortie and are armed with AIM-9L and Python 4 training missiles.
Scorpion squadron