

New and updated 2009 edition

Ra'anan Weiss

F-16I Sufa

in IAF service



Aircraft
in Detail **5**


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Lockheed Martin

F-16I Sufa

in IAF Service

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Acknowledgments

We wish to thank the following persons for their support and assistance in making this book possible:

Ofer Zidon
Ron Feldman
Nir Ben Yosef - www.xnir.com
Tal Shoham
Keith Robinson
Colonel Ziv, Ramon AF Base commander
Captain Adi - Ramon AF Base
Ramon and Hatzerim AF Base Control Tower, Security
& Public Relations Personnel
'The Negev', 'The Bat', 'The One' and 'The Orange Tail' squadrons air
and ground personnel

ISBN 978-965-7220-12-2

Printed in Israel

Approved by the Israeli Censorship Bureau

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IsraDecal
—PUBLICATIONS—

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Back cover photo: Tal Shoham

INTRODUCTION

To enable aircraft to fly faster and carry an ever increasing payload, designers and manufacturers have been using aluminum alloys for the structures of their aircraft since the early 1930's. Pound for pound, aluminum is stronger, lighter, cheaper and more ductile than any other material used for manufacturing aircraft. Like any other metal, aluminum does not retain these qualities indefinitely. As metal ages with time and use, it loses its resilience and is prone to cracking due to phenomena known as metal fatigue. In addition to metal fatigue and corrosion, advances in metallurgy, avionics and computers make even the best fighter in the world obsolete. As mid-1970's production A-4 Skyhawk and F-4E Phantom II airframes reached their 30 year useful life limit, the IAF sought comparable mission aircraft to replace them.

In 1994 Boeing's F-15E Strike Eagle was chosen over Lockheed Martin's F-16 to replace the Hammers Squadron's F-4E Phantoms. At the time, Lockheed Martin's proposal to add upper fuselage conformal fuel tanks (CFT's) was only a paper study that was considered an unproven strategic gamble for the IAF. As F-15I deliveries got underway, Boeing and Lockheed Martin were competing against each other for another round of IAF fighter replacement. By that time Lockheed Martin's CFT trials had proved viable, and the company was able to demonstrate that the addition of CFT's to the F-16 can grant it a maximum range of 1,480 kilometers that was only 40 kilometers short of the F-15I's maximum range. With significant cost reduction in operating a single engine fighter versus the F-15I's two powerplants, spare parts, support equipment commonality with other F-16's in IAF inventory and at only 60% the price of the F-15I – there was no contest. On July 19, 1999, the Israeli government headed by Prime

Minister Ehud Barak announced the decision to purchase fifty Block 52 F-16's in a contract worth \$2.5 billion. The deal was sweetened by an offset local manufacture agreement in which 25% of the F-16I purchase cost will be spent in Israel.

For the next fourteen months the F-16I program was to take shape in the form of the Peace Marble V program that was agreed upon by the governments of Israel and the United States on September 5, 2001. The program involved the purchase of 50 aircraft, with an option to order another batch of 52 aircraft at a reduced total value of \$2 billion, with all aircraft to be delivered between 2003 and 2008. All purchased aircraft were to be two seat F-16D airframes fitted with a Pratt & Whitney 29,000 pound thrust F100-PW-229 powerplant that also equips the F-15I. The radar chosen for the F-16I was the Northrop Grumman's APG-68 (V9), an improved version of the APG-68 (V7/8) radar that was operational on IAF Block 30 and Block 40 F-16C/D aircraft. The F-16I is equipped with a strengthened landing gear, capable of loads of up to 23.6 tons, the highest load capability of any F-16 variant delivered to date. Northrop Grumman's APG-68(V9) offers 30% increase in detection range, reduced false alarms, and mutual interference between radars and can track four targets simultaneously in comparison to only two in its earlier models. In the air to ground mode, it has a two feet resolution using a new synthetic aperture radar mapping mode. This feature is useful for the delivery of GPS guided munitions such as JDAM and allows an accurate bomb delivery at night, through clouds or fog conditions. The radar utilizes commercial off-the-shelf technology in hardware design that increases the radar's processing speed five fold and its memory capacity 10 fold over the previous generation of the APG-68. Use of the



Above: The first F-16I Sufa aircraft on the production line of Lockheed Martin Aeronautics at Fort Worth, Texas.

Photos: Lockheed Martin



Left: F-16I number 00-1001, tail number 253 at the roll-out ceremony, November 14th, 2003. This was the 4th aircraft produced and subsequently took off to its maiden flight on December 23rd. The aircraft entered service in the summer of 2006 with 'Manat' - IAF Test & Evaluation unit with tail number is 401.

Photo: Lockheed Martin



Above: Aircraft number 00-1022, tail number 444 landing at Fort Worth after one of its test flights. This F-16I is currently operational with the IAF 'Negev' squadron.

Photo: Keith Robinson



The Sufa patch. It is positioned on F-16I aircrew flight-suit right arm.

same components also provides a 50% increase in radar reliability with a mean time between failure-rate (MTBF) of 400 hours. A new inertial measurement unit fitted to the radar antenna improves its pointing accuracy and eliminates time consuming bore-sighting maintenance. Other benefits of adapting the APG-68(V9) radar, is that it will maintain installation commonality with the new AN/APG-80 "Agile Beam Radar" that features a wideband Active Electronically Scanned Array (AESA), fitted to the new generation of Block 60 F-16F, recently purchased by the United Arab Emirates, thus the support equipment, training, logistical base and knowledge gained in operating the (V7/8) can be put to use in operating the APG-68V9 and AN/APG-80. A new operational capability to IAF F-16's is the ability to launch beyond visual range (BVR) AIM-120 AMRAAM air-to-air missiles. The AIM-120 acquires its targets via the aircraft's radar and once launched it no longer requires additional radar information as it continues tracking its target with its own radar. To prevent interception of friendly aircraft, the F-16I incorporates four blade antennas fitted just forward of the canopy that interrogate BVR

targets to determine if they are friend or foe (IFF).

Another off-the-shelf system purchased is Lockheed Martin's AN/AAQ-13 LANTIRN navigation pod. The pod, positioned on the left side of the intake, enables low altitude nap-of-the-earth flight at night and in adverse weather conditions without pilot joystick input. New cockpit improvements introduced into the F-16I's cockpit include full color multi function displays, moving map displays, digital video recording and lighting compatible with night vision goggles.

The basic features offered by Lockheed Martin makes Israel's newest F-16 variant a Block 52 F-16D, what sets it apart from other F-16's operational world-wide is its local content which set the F-16I designation. Local manufactures include Israel Aircraft Industries, Israel Military Industries, Elbit Systems, El-Op, Cyclone, BVR, RADA, RAFAEL, Astronautics and RSL.

Elbit Systems supplies the F-16I's forth generation Dash IV helmet visor display that enables both the pilot and weapon-system officer (WSO) to slave sensors and missile seeker heads to their line of sight and also enables them acquire targets surrounding their line of flight. The helmet display also provides the pilot and WSO crew critical threat warning information from all directions, improving their situation awareness. The Elbit's Dash IV helmet has been chosen to equip the U.S. latest generation of F-18E/F, F-22 and F-35 fighters. Other Elbit systems fitted to the F-16I include a mission computer and digital processor that feed all sensor information to the aircraft's full color Astronautics multi function displays. RAFAEL armament development authority supplies the F-16I's secure communication transmitters and receivers operating in the HF, VHF and UHF bands. RAFAEL also contributes the logarithms for the aircraft navigation suite which integrates Lockheed Martin's pod, Elta's

Right: Aircraft number 00-1020, tail number 440, approaching landing after a test flight. The payload consists of two 370 gallon underwing and a 300 gallon centerline external fuel tanks.

Photo: Keith Robinson





Left: The second F-16I of the first pair delivered was aircraft number 00-1006, tail number 408, during air refueling from a USAF KC-135 on-route to Israel. Noteworthy is the USAF Marking applied only to the right rear section, while the IAF markings are covered.

Below: F-16I numbers 00-1005, tail number 407 and 00-1006, tail number 408 over the Negev Desert nearing Ramon AFB at low altitude after the long ferry flight from the USA. The aircraft are escorted by two 'Defenders of the South' squadron F-16A Netz number 275 (80-0656) and 138 (78-0325).

Bottom: F-16I number 408 taxiing towards the welcoming ceremony. The conformal fuel tanks (CFT's) were not applied during the ferry flights of the F-16I aircraft to Israel.

Photo: Ofer Zidon

satellite communications antenna and the laser gyro inertial navigation instruments. RAFAEL Litening II pod is installed to the right side of the intake and provides the pilot and WSO day and night optically magnified picture of the ground. The pod can both designate and view laser beams, enabling the delivery of laser guided bombs and missiles from any aircraft operating with the F-16I, including the new AH-64D Saraf.

Another RAFAEL system is the Sufa's aerial offensive punch, the aircraft's Python 4 and the upgraded Python 5 air-to-air missiles. The Python 4's capabilities were reported in October 1996 by Flight magazine. Its dimensions are similar to the Python 3 being 160mm in diameter and weighing 105Kg. Unlike the Russian R-73 and US AIM-9X of the same missile generation, the Python 4 incorporates aerodynamic controls to achieve its high



Right: F-16I number 407 during the arrival ceremony. Noteworthy is the baggage pod on station 3, most likely the MXU-648, which consists of the air-crew personnel gear and the aircraft safety pins.

All photos in this page: Ofer Zidon

Below: Aircrew of the leading aircraft exits the cockpit. The two aircraft consisted mixed USAF and IAF pilots. Lieut. Roei is seen in this photo.

Bottom: The first two F-16I aircraft after the welcoming ceremony can be seen on right photo. On the left photo, Defense Minister Shaul Mofaz and IAF commander Major-General Dan Halutz, apply together 'The Negev' squadron badge to the tail section of one of the first F-16I aircraft. Observing is Colonel Mimrod Sheffer, Ramon AFB commander.



angle of attack. The Python 4 has a 60 degrees off bore sight capability (looking sideways) in comparison to only 15 degrees of the Python 3. The missile's forward fin pairs are of a unique design. The front fins are fixed canards while the adjacent fin set to the aft provide pitch and yaw control. Further aft are two small blade fins that act as ailerons for roll stabilization. In the rear section there are four roll stabilization fins while the long streaks ahead of the aft fins are used for strengthening the missiles motor section during high-g maneuvering. The Python 4 is reported as capable of withstanding a 70g instantaneous maneuvering load which is twice that reported of the AIM-9X. In conjunction with Elbit's helmet mounted sight, the pilot can lock on to any target he identifies within 5.5 kilometers (~3 nautical miles) from the aircraft, even a target flying behind him!

Complementing the Python IV is the RAFAEL





'Spice' optically guided glide bomb kits that are fitted to standard Mk.83 – 1,000 lbs and Mk.84 – 2,000 lbs bombs. The Spice uses state-of-the-art navigation, guidance and homing technologies to achieve accurate and effective destruction of high-value enemy targets. Spice's Automatic Target Acquisition capability employs unique scene-matching technology that can take into account changes in landscape. The use of GPS, optical guidance and its internal memory bank of up to 100 targets makes the Spice immune to counter-measures, navigational and target location errors. The technology compares a real-time image received from the dual CCD/IIR seeker to a reference image stored in the

weapon's computer. The Spice has demonstrated a glide range of 60 kilometers and a circular error probability of less than 3 meters.

Israel Military Industries (IMI) contribution to the F-16I program, as well as to other variants of the F-16, does not end with external fuel tanks and store pylons. IMI manufactures the F-16I's long range 'spear', the Delilah. It is considered as a cruise missile and is powered by an air breathing turbo jet engine that enables the 187Kg air to ground missile to fly at a cruise speed of Mach 0.3 - 0.7, at heights ranging from sea level to 28,000 feet, to a maximum range of 250 kilometers. The advantage of the Delilah over other cruise missiles is its electro

Above: A day after the arrival of numbers 407 and 408, the first flight in Israeli skies took place. Aircraft number 408 was piloted by Lieut.-Col. Amikam and Major Yuval.

All photos in this page: Ofer Zidon

Below left: Lt. Col. Amikam and Maj. Yuval being interviewed by the media shortly before the first flight of the F-16I in Israeli skies.

Below right: Maintenance crew and squadron personnel approach Sufa number 408 soon after landing from the first flight in Israel.





Above left and right: 'The Negev' squadron Sufa number 408 (00-1006) in formation with 'The One' squadron F-4E Kurnass 2000 number 634 (73-1157). 'The One' will become the forth F-16I squadron at the middle of 2008.

Photos: 'The One' squadron



'The Negev' squadron patch.

optical system that enables the Sufa's WSO to view the missiles flight path and if needed divert it from its preprogrammed course. This in-flight flexibility enables the Delilah to strike targets of opportunity or to divert it from a pre-programmed target if collateral damage may be evident. Another advantage the Delilah has over air-to-ground missiles is its day/night, all weather dual electro optical/infrared seeker head which enables the crew launching the Delilah to destroy moving targets or targets that have changed their location, for example Scud surface-to-surface missiles on Transporter Erector Launchers (TEL's) and mobile SAM's.

The F-16I's on board RADA produced data link relays a wide range of information to ground stations. This information includes on board system failures for ease of maintenance and troubleshooting. Digital imagery from the aircraft's optical sensors such as the HUD and the Litening pod for real time mission evaluation and post mission debrief.

The Elisra self protection system is the most

advanced in the world. It consists of Radar Warning Receivers (RWR's) to detect incoming enemy radar signals. When radar guided or infrared homing missiles are launched at the Sufa, the aircraft's eight on board BAE Rokar chaff/flare dispensers eject flares or chaff to provide false targets for the incoming missiles.

On September 6, 2001 Lockheed Martin completed the first phase of flight testing of its new conformal fuel tanks for the F-16. Twenty four flights and 65 flight hours were conducted with dry fuel tanks. The tests took place from March through August 2001 at Edwards Air Force Base, California, confirmed the CFT design's ability to withstand operating loads, without fluttering and without adversely affecting the F-16's stability and control during flight. Wet fuel tank tests were performed on an F-16C of the 40th Flight Test squadron at Eglin Air Force Base, Florida. Between January 2001 and October 2002, 54 test flights and 135 flight hours validated the fuel system interface with the CFT's under various flight profiles proven in



Above and right: The former IAF commander Maj.-Gen Dan Halutz visited 'The Negev' squadron on March 22nd, 2004, and conducted an air-to-air training sortie with Sufa number 407, against the Phoenix squadron F-16A Netz.

On June 1st, 2005 Dan Halutz was appointed Israel Defense Force chief of the General Staff with a rank of Lieutenant-Genaral.





the dry fuel tank tests at Edwards Major Timothy S. McDonald, USAF project pilot for CFT testing said "The CFT's have very little adverse affect on the F-16's renowned performance. The aircraft retains its full 9g capability and flight envelope with the CFT's installed. The drag impact is very small, less than one percent in combat configuration and cruise conditions". A set of CFT's carry 50 percent more fuel than the standard 300 gallon centerline fuel tank carried by the F-16 with only 12 percent of the drag. Two CFT's provide a total of a 450 gallons of fuel that translate to 3,050 pounds of fuel. CFT's installed along the upper fuselage can be installed or removed within two hours. They provide added range while freeing the most needed high load inboard wing pylon locations. Although initially designed to meet the IAF's strategic reach requirement, production conformal fuel tanks first flight was on March 19th, 2003, fitted to Hellenic Air Force Block 52 F-16C/D aircraft. Israel's long range capability will be made possible by Israel Military Industries that manufacture the F-16's 300 gallon centerline, 370 and 600 gallon external wing fuel tanks and by

Israel Aircraft Industries that will produce the F-16I's conformal fuel tanks.

Long range flight is not related only to the amount of fuel the aircraft can carry, it is also influenced by the amount of oxygen available to the pilot. For the fighter to reach maximum range, it is flown at high altitude where the air is thin and fuel consuming drag is at it lowest density. At high altitude the amount of oxygen required for breathing is insufficient. The F-16I is equipped with its own oxygen generator that provides the crew an unlimited supply of oxygen for any duration of flight. Previous generations of fighters, such as the F-4 Phantom, used oxygen bottles that were limited in capacity and once depleted limited flight altitude to below 10,000 feet. The on board oxygen system also eliminates dangerous handling of extremely flammable oxygen on the ground, and frees the aircraft to operate from austere runways, free of the need for oxygen refills. The aircraft's air conditioning system is the envy of every pilot, able to cool both the cockpit and all onboard avionics even at +40 Degrees Celsius temperatures encountered in the desert environment

The official re-opening event of 'The Bat' squadron as the second IAF F-16I squadron, took place on December 28th, 2004. Noteworthy in the top photo are the bat motif and familiar red flash and also the right CFT. IAF Commander, Maj.-Gen Elyezer Shkedy is shown above in the welcome speech and applying the squadron badge to Sufa number 119, together with the squadron Commander Lieut.-Col. David.



'The Bat' squadron patch

Right: The 'Flagship' aircraft of 'The Negev' squadron taxiing after returning from an air-to-air training sortie. IAF aircraft number 253 (USAF number 00-1004) was one of the first aircraft to reach Israel. 'The Negev' squadron adapted their unique tail section motif, only two years and three months after it was re-activated.



The 'Orange Tail' squadron patch

Right: 'The Orange Tail' squadron was re-activated in a festive ceremony on July 5, 2006, at Hatzirim AFB, where the squadron is located. The 'Flagship' F-16I aircraft of the squadron, number 107 (USAF number 99-9400), can be seen with the 'Kurnass 2000' that signifies the aircraft that operated in the squadron from 1971 to 1997. During this period, 'regular' and photo-reconnaissance Kurnass aircraft were flown by the squadron.

Photo: Ofer Zidon



Above: Squadron leader Lt. Col. Tal shakes hands with IAF Commander, Maj. Gen. Elyezer Shkedy after applying 'The Orange Tail' squadron badge to the 'Flagship' aircraft number 107. Col. Tal is now the commander of the IAF Flight Academy. Photo: Ofer Zidon

of the Middle East, courtesy of the powerful PW F-100 powerplant.

To make the F-16I less conspicuous over the terrain of the Middle East, and to distinguish it from other F-16's operating world-wide, the Sufa retains the IAF original 1980 vintage F-16 colors of FS30219 Brown, FS33531 Sand, FS34424 Green with FS36375 Light Ghost Grey lower fuselage. Common to other production models of the F-16 world-wide, the radome, missile rails, antenna and sensor covers are all FS36270 Neutral Grey. Since the CFT's are manufactured in Israel, local Tambur paints are used as their camouflage colors, with the Tambur FS30219 Brown being slightly more reddish in comparison to its US equivalent. The forward sections of the CFT's are painted gloss FS14424 Green for aerodynamic smoothness.

The first production F-16I was presented to the IAF on November 14, 2003 in a roll-out ceremony held at the Lockheed Martin Aeronautics plant at Fort Worth, Texas. Attending the ceremony were Israeli Defense Minister Shaul Mofaz and IAF Commander, Major General Elyezer Shkedy. The aircraft, S/N 00-1001 was

marked with tail number 253 and displayed in a long range strike configuration carrying upper fuselage CFT's, 600 gallon fuel tanks, a centerline 300 gallon fuel tank, a pair of wingtip mounted AIM-120 radar guided missiles, a pair of Python 4 infrared homing missiles and a pair of JDAM GPS guided bombs under the wings. During the acceptance ceremony, the F-16I was officially given the name of 'Sufa', which means storm in Hebrew. On December 23, 2003, the first F-16I 'Sufa' took to the air in a 55 minute maiden flight in aircraft S/N 00-1004 that its current tail number is 253. This flight was conducted to assess the aircraft flight controls, landing gear, environmental controls (air conditioning) cockpit and basic avionics systems.

The first two 'Sufa' aircraft arrived to Israel on February 19, 2004, directly from Lockheed Martin's Texas facility to the Ramon AFB in the Negev Desert. These two aircraft were identified with tail numbers 407 S/N 00-1005 and 408 S/N 00-1006. During the acceptance ceremony, the two aircraft were adorned with 'The Negev' squadron's fin insignia. 'The Negev' squadron was one of the first three squadrons to be equipped with the F-16A/B Netz alongside 'The First Jet' and 'Knights of the North' squadrons, between 1980 and 1982. While the first two Netz operational squadrons moved on to operate Block 30 F-16C's, 'The Negev' squadron continued operating the F-16A/B until March 31, 2003. On that day, 36 Netz fighters of 'The Negev' squadron took off in nine formations of four to land minutes later at the Nevatim AFB, home of the 'Defenders of the South' squadron (previously known as the 'Flying Wing' squadron).

The second squadron to receive the F-16I Sufa was the 'The Bat' squadron with first aircraft delivered on December 28, 2004. The third and fourth Sufa squadrons received 800



series F-16I's were 'The Orange Tail' squadron that was activated on July 5, 2006 followed by 'The One' squadron two years later, on July 9, 2008.

Each Sufa squadron adopted different tail markings as chosen by the air and ground personnel of the squadron. 'The Negev' squadron adopted their tail markings only after their sister squadron adopted a Bat for the fin markings toward the end of 2004.

By the time the 33 day, July-August 2006 Second Lebanon War broke out, the first two Sufa squadrons were fully combat qualified and had their current tail fin markings applied. 'The Orange Tail' squadron that was just forming operated only Sufa numbers 107 (S/N 99-9400), 803 (S/N 99-9401) and 808 (S/N 99-9402). To enable 'The Orange Tail' squadron to generate sufficient sorties for training and combat, they received Sufa aircraft from 'The Negev'

Above: F-16I number 417 (00-1011) of 'The Negev' squadron exits a Hardened Aircraft Shelter (HAS) during 'The Second Lebanon War' of summer 2006. The aircraft payload consists of Laser Guided Bombs, AIM-120 AMRAAM Air-to-Air missiles, two 370 gallon under wing and a single 300 gallon centerline external fuel tanks and the RAFAEL Litening pod. Noteworthy is the squadron vertical fin motif that was applied from April 2006. Photo: Ramon AFB

Below: All IAF losses during 'The Second Lebanon War' were of aircraft and helicopters stationed at the Ramon AFB in the Negev. The only aircraft lost was 'Sufa' number 489 (00-1045). On July 19, 2006, during take-off, an exploded tire caused the aircraft to burst into flames. After releasing the ordnance and external fuel tanks, both pilot and WSO ejected safely. The photo below is dated April 10, 2006.





Above and right: The fourth 'Sufa' unit, 'The One' squadron was activated at Ramon AFB on July 9, 2008. The 'Flagship' aircraft of the squadron, number 201 (99-9426) is depicted in these photos after the squadron badge was applied by IAF Commander, Maj. Gen. Ido Nechushtan and the squadron leader, Lt. Col. Shaul. Photos: Ofer Zidon



'The One' squadron patch



and 'The Bat' squadrons. Amongst the 18,000 combat missions flown by the IAF during the 33 days of the 'Second Lebanon War' there were missions aimed at destroying Hezbollah command and control headquarters located in the Dahia enclave situated in the heart of Beirut, Lebanon. Hezbollah's headquarters was made up of a deep tunnels complex dug underneath high rise buildings housing their families. To minimize collateral damage, the precision strike missions were assigned to the pilots of the Sufa.

On the seventh day of the war, July 19, 2006, 'The Bat' squadron lost Sufa 489 (S/N 00-1045), due to a tire blow out at take off.

The long range ability of the Sufa came to play on the night of September 5-6, 2007. According to foreign reports, IAF aircraft penetrated Syrian air space and destroyed a nuclear facility under construction near the city of Dir A-Zur in eastern Syria. The following day Syrian



Aircraft numbers 863 (99-9425) and 855 (99-9420) commencing a take-off run during operation 'Cast Lead'. To prevent injury of innocent civilians and in attempt strike terrorists at high accuracy, the IAF operated extensively the 500 lbs. GBU-38(V)1/B. This ordnance is a Mk.82 iron bomb with a JDAM add-on kit and a GPS receiver for accurate strikes. Photo: Nir Ben Yesef - www.xnir.com



Above: Aerial refueling is common practice for IAF pilots. Illustrated in this photo are 'The Orange Tail' squadron aircraft numbers 803 (99-9401) and 836 (99-9410) approaching an IAF 'Re'em' (Hebrew for an Oryx) Boeing 707 tanker. The F-16s are armed with Laser Guided Bombs, two 600 gallon under wing and a 300 gallon centerline external fuel tanks.

Photo: 'The Orange Tail' squadron

Below: The first 'Sufa' aircraft, number 401 (00-1001) arrived to Israel long after the arrival of the first four aircraft. This special aircraft is stationed at the IAF 'MANAT' test and evaluation squadron and is operated for all tests linked to the 'Sufa' and for qualification of ordnance configurations and new weapon systems for the IAF 'Sufa' fleet.

Photo: Nir Ben Yosef - www.xnir.com

bulldozers were seen covering the craters made to conceal the incident. The discovery of F-15 fuel tanks on the Turkish side of the border with Syria was made public by the Turkish government, who condemned the use of their air space to conduct the mission. Several months after the event, the United Nations International Atomic Energy Agency (IAEA) located traces of nuclear material at the flattened sight which confirmed what the Syrians tried to hide. The range, precision and destructive force employed in eliminating the Syrian nuclear facility at Dir A-Zur was credited according to foreign reports to IAF F-16I Sufa and F-15I Ra'am.

At 11:35 am of Saturday, December 27, 2008, the sixth day of Chanukah (the Jewish Festival of Lights), IAF fighter aircraft and attack helicopters initiated operation 'Cast Lead' over the skies of Gaza. The 22 day operation was aimed to put an end to the six years of rocket and mortar attacks on the cities of Sderot, Ashkelon, Ofakim and other settlements surrounding the Gaza Strip. While IAF UAV's scout and attack helicopters sought rocket launchers, IAF F-16I Sufa fighters targeted rocket manufacturing facilities, weapon storage facilities and tunnels dug along the border with Egypt. In the initial strike, two waves of fighter aircraft hit 100 targets. On the second day of operations, 40 tunnels were hit within 4 minutes, some of which were destroyed by bombs released by the 'Negev', 'Bat' and 'Orange Tail' squadrons. Operation 'Cast Lead' saw the introduction of the GBU-38 'Baby JDAM' into combat with the IAF. The JDAM guidance kit was fitted to Mk.82 - 500lbs. bomb which enabled the IAF to strike targets in the densely populated Gaza Strip with minimal col-

lateral damage. Two days prior to the use of the GBU-38 in Gaza, the IAF 'MANAT' test and evaluation squadron flying the first production Sufa number 401 (S/N 00-1001) verified the bomb's radius of destruction, in order to limit its collateral damage. Although 'The One' squadron was re-activated five months prior to the operation it was not combat qualified and its pilots, aircraft and ground crews were assigned to the 'Negev' and 'Bat' squadrons who share the same Ramon AFB. The last four of the 102 F-16I Sufa fighters manufactured, tail numbers 893 (S/N 99-9448), 894 (99-9449), 896 (99-9450), 898 (99-9451) arrived to Israel on January 25th, 2009, making the IAF the world's second largest operator of the F-16 with 362 aircraft delivered in comparison to the USAF 2,230 F-16s.





Left: F-16I number 421 of 'The Negev' squadron taking-off to an air-to-air training sortie. This aircraft was the first to be painted with the tail motif of the squadron. The photo is dated to mid May 2006, approximately two weeks after the tail was painted with the chosen motif.



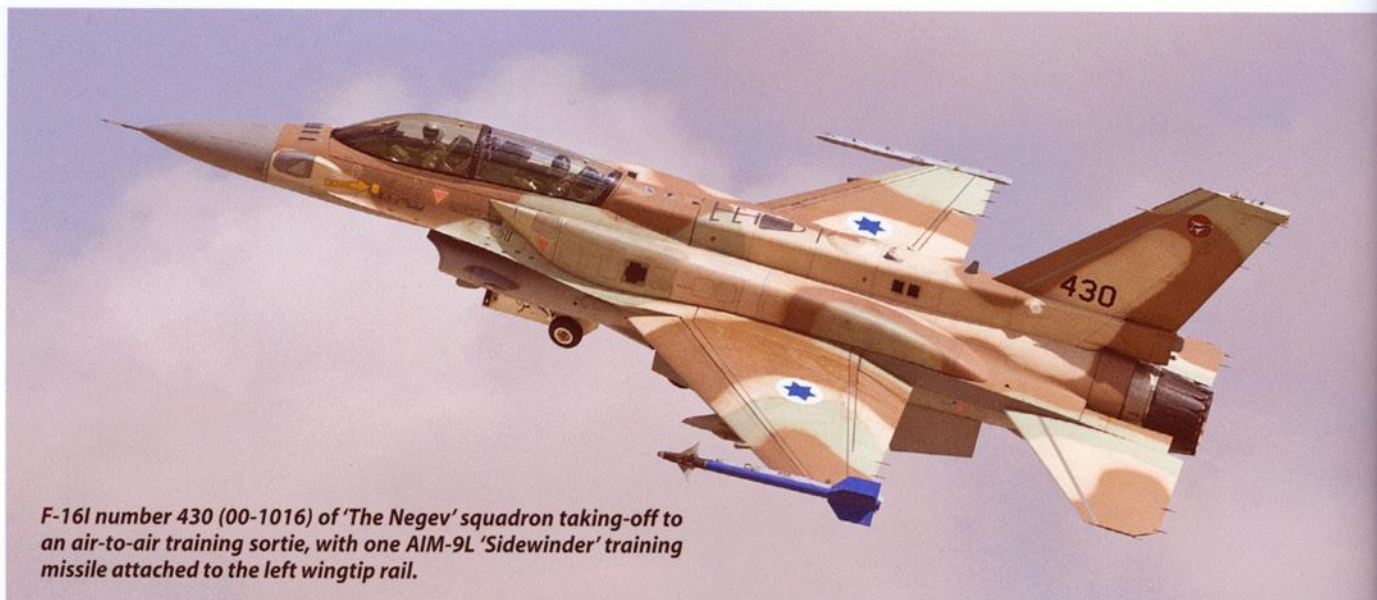
Above: A photo from an interesting angle of 'The Negev' squadron F-16I number 422 (00-1013), during flight. The aircraft is armed with two AIM-120 AMRAAM radar guided air-to-air missiles, two Python 4 infrared homing air-to-air missiles, two 2,000 lbs. GBU-10 Paveway II Guided Bomb Units, two 370 gallon external wing fuel tanks, one 300 gallon centerline fuel tank and a Litening II targeting pod and a Lockheed Martin LANTIRN navigation pod, positioned under the air intake.

Photo: Tal Shoham

Right: Two of the first lot of aircraft to reach 'The One' squadron during a northbound flight over the Sea of Galilee (Lake Kinneret), with the Golan Heights in the background. Aircraft's payload consists of Laser Guided Bombs, 'Python 4' and AIM-120 AMRAAM air-to-air missiles, 370 gallon under wing fuel tanks and a 300 gallon centerline external fuel tank.

Photo: 'The One' squadron





F-16I number 430 (00-1016) of 'The Negev' squadron taking-off to an air-to-air training sortie, with one AIM-9L 'Sidewinder' training missile attached to the left wingtip rail.



F-16I number 466 (00-1033) of 'The Negev' squadron taking-off to a training sortie with a practice GBU-15 missile attached to a left wing pylon.



Aircraft numbers 253 (00-1004) and 432 (00-1017) of 'The Negev' squadron in formation over the southern desert of Israel. While F-16I number 253 payload includes 2,000 lbs. GBU-10 Paveway II Guided Bomb Units and AIM-120 AMRAAM air-to-air missiles, aircraft number 432 is armed with 500 lbs. GBU-12 Paveway I Guided Bomb Units and AIM-9L 'Sidewinder' air-to-air missiles. Photo: 'The Negev' squadron



F-16I number 253 (00-1004), during a turn, revealing the upper camouflage scheme of the aircraft including that of the conformal fuel tanks (CFT's). Clearly visible is the different shade of brown on the CFT's, that were painted in Israel, compared to the brown that was applied to the aircraft.



Aircraft number 408 (00-1006) of 'The Negev' squadron taking-off to an air-to-air training sortie, with one AIM-9L 'Sidewinder' training missile attached to the left wingtip rail.



Aircraft numbers 253 (00-1004), 415 (00-1010) and 432 (00-1017) in a southbound formation flight over Mount Masada. The Dead Sea and Jordan can be seen in the background. The aircraft are armed with various ordnance configurations.

Photo: 'The Negev' squadron

'The Negev' Squadron



Above: Three aircraft of 'The Negev' squadron in formation flight over the northern section of the Sea of Galilee (Lake Kinneret). Clearly visible are the estuary of the north section of the Jordan River and the Golan Heights slopes on the right top section of the photo.

Photo: Tal Shoham

Left: Aircraft number 456 (00-1028), of 'The Negev' squadron taking-off from Ramon AFB with full afterburner, with a payload of two of each 'Python 4' and AIM-120 air-to-air missiles and three external fuel tanks. The round grey protrusion ahead of the vertical fin is a satellite communication antenna.



Aircraft number 470 (00-1036), landing at Ramon AFB, after an air-to-air training sortie. A 'Python 4' training missile is attached to the left wingtip rail. Yet, the real 'Python 4' can not be positioned on the wingtip rails.



Above: Aircraft number 476 (00-1038), taking-off to an air-to-air training mission.

Right: The first two 'Sufa' aircraft number 407 and 408 pass in a close formation after take-off, in November 2006. Payload of F-16-I number 408 is a classical air-to-air configuration that consists of two AIM-120 missiles on the wingtip rails, two 'Python 4' missiles, two 370 gallon under wing and a single 300 gallon centerline external fuel tanks. F-16-I number 407 payload is similar but with the addition of two 2,000 lbs. GBU-10 Paveway II Guided Bomb Units.



Below: F-16I number 422 (00-1013), taking off in a similar configuration of number 407 seen on the right. Payload also consists of a LANTIRN navigation and a Litening II targeting pod.



'The Negev' Squadron



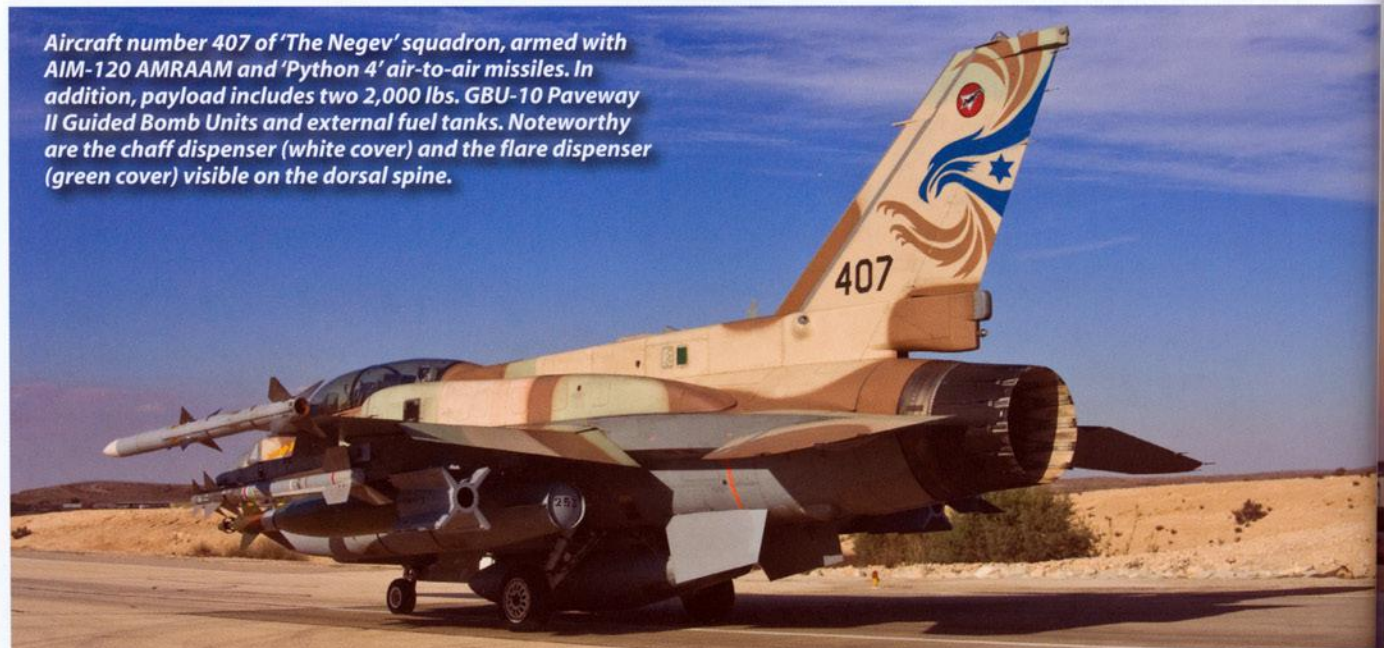
Above: 'The Negev' squadron aircraft numbers 407 (00-1005) and 408 (00-1006) with a payload of AIM-120 AMRAAM and Python 4 air-to-air missiles and three external fuel tanks. Aircraft number 407 is armed with two 2,000 lbs. GBU-10 Paveway II Guided Bomb Units.

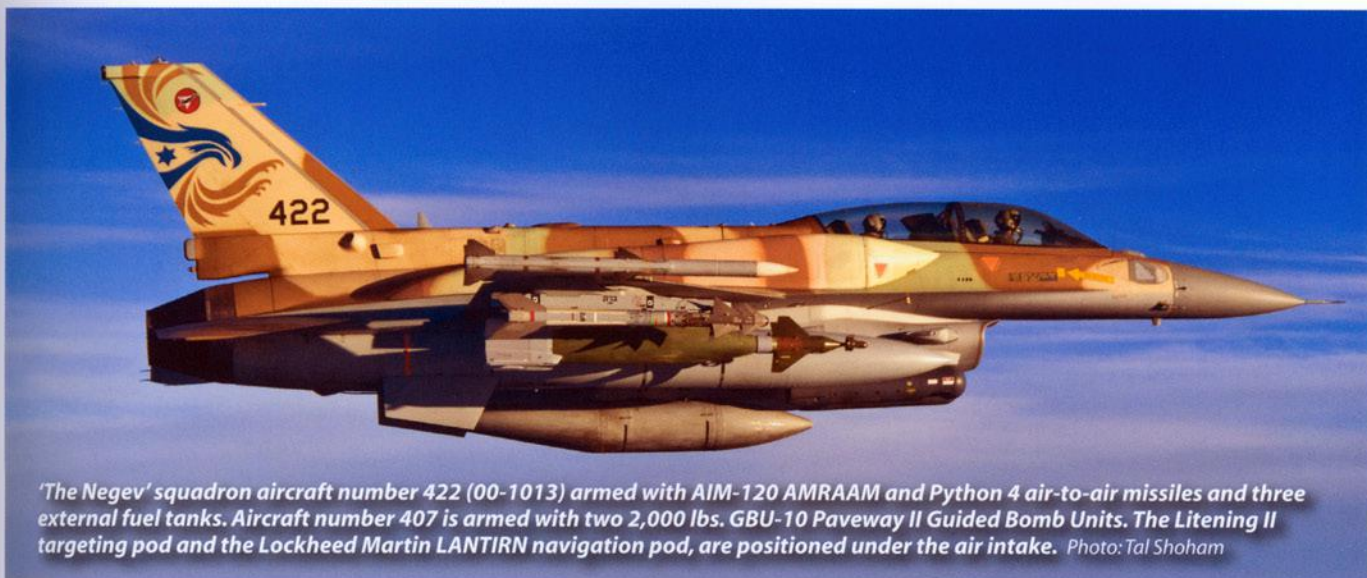
Photo: Tal Shoham



Left: Aircraft number 462 (00-1031), landing after a training mission.

Aircraft number 407 of 'The Negev' squadron, armed with AIM-120 AMRAAM and 'Python 4' air-to-air missiles. In addition, payload includes two 2,000 lbs. GBU-10 Paveway II Guided Bomb Units and external fuel tanks. Noteworthy are the chaff dispenser (white cover) and the flare dispenser (green cover) visible on the dorsal spine.





'The Negev' squadron aircraft number 422 (00-1013) armed with AIM-120 AMRAAM and Python 4 air-to-air missiles and three external fuel tanks. Aircraft number 407 is armed with two 2,000 lbs. GBU-10 Paveway II Guided Bomb Units. The Litening II targeting pod and the Lockheed Martin LANTIRN navigation pod, are positioned under the air intake. Photo: Tal Shoham



Aircraft number 466 (00-1033) taking-off to a training sortie without the conformal fuel tanks (CFT's). Photo was taken at Hatzirim AFB, shortly after the activation of 'The Orange Tail' squadron, when it was lent few aircraft from 'The Negev' and 'The Bat' squadrons to temporarily enhance its order of battle.



F-16I number 253 (00-1033), taxiing at dusk. Aircraft's heavy configuration payload includes two of each: 600 gallon external fuel tanks, GBU-15 glide weapon systems and AIM-120 and 'Python 4' air-to-air missiles. Also visible are the LANTIRN navigation and a Litening II targeting pods. The GBU-15 data link pod is attached to the fuselage centerline pylon.

'The Bat' Squadron

April 2006 - Aircraft numbers 459 (00-1030) and 494 (00-1048), landing on parallel runways at Ramon AFB, after an air-to-air training sortie. Both aircraft are without their conformal fuel tanks (CFT's). In the first years of the 'Sufa' operation, the numbers of available CFT's were not sufficient to equip all aircraft.



F-16I number 459 (00-1030) landing after an air-to-ground training sortie. In addition to training air-to-air missiles on the wingtip rails and an external fuel tank on the fuselage centerline pylon, the aircraft carries a practice 'Delilah' missile. In the training version, the Delilah smaller front section was adapted to the larger GBU-15.

F-16I number 451 (00-1026) taking off from Ramon AFB. Aircraft's payload includes GBU-10 Paveway II Guided Bomb Units, AIM-120 AMRAAM and 'Python 4' air-to-air missiles, AN-AAQ-13 LANTIRN navigation, Litening targeting pods and three external fuel tanks.





Above: Aircraft of 'The Bat' squadron in formation flight over the Negev Desert, armed with air-to-air missiles and air-to-ground missiles and guided bombs. Payload also includes targeting and navigation pods.

Photo: Tal Shoham



Right: Aircraft number 491 (00-1046) taxiing towards its Hardened Aircraft Shelter (HAS), after returning from an air-to-air training sortie.



Aircraft number 413 (00-1009) in a complete air-to-air configuration exits its Hardened Aircraft Shelter (HAS). Noteworthy are the guidance and targeting pods under both sides of the air intake.



Aircraft number 494 (00-1048) taking-off with a payload of two AIM-9L 'Sidewinder' air-to-air missiles, two 'Delilah' missiles, a pair of 370 gallon external fuel tanks and a 'Delilah' data link pod on the fuselage centerline pylon. Also carried are the guidance and targeting pods under the air-intake. Below is the same aircraft on landing approach. Above photo: Tal Shoham



F-16I number 459 (00-1030) taking-off to a training sortie. Without the conformal fuel tanks (CFT's), the top left side of the aircraft's camouflage scheme is clearly noticeable.



Above: View from above of 'The Bat' squadron aircraft number 455 (00-1027) during a low level flight, with a payload of two AIM-9L 'Sidewinder' training air-to-air missiles. Photo: Tal Shoham



F-16I number 451 (00-1026) exiting its Hardened Aircraft Shelter (HAS) and taxiing towards the take-off runway. The aircraft is armed with four air-to-air missiles and two laser Guided Bomb Units.

'The Bat' Squadron



F-16I number 451 (00-1026) in a low level flight over the farming communities in the northern area on the Jordan Valley. Aircraft is armed with air-to-air missiles and air-to-ground laser guided bombs (LGB's). Photo: Tal Shoham



Aircraft number 494 (00-1048) heading north along the Israeli Mediterranean Sea coastline. Payload consists of AIM-9L 'Sidewinder' air-to-air missiles, 'Delilah' air-to-ground missiles, external fuel tanks and targeting and navigation pods. Photo: Tal Shoham

Aircraft numbers 457 (00-1029) and 489 (00-1045), on landing towards the parallel runways at Ramon AFB, after completion of an air-to-air training sortie. Aircraft number 489 was lost in a take-off accident during the 'Second Lebanon War'.





Aircraft numbers 451 (00-1026), 494 (00-1048) and 413 (00-1009) in close formation at dusk over the mountain region of the Negev, heading towards its home AFB, Ramon. Photo: Tal Shoham



Above: Aircraft number 498 (99-9412) taking-off taking-of to an air-to-air training sortie. Of note is the RAFAEL Litening II pod. This F-16I was due to receive the IAF number 843, but its number was already changed at the Lockheed Martin plant in the U.S.A.



Aircraft number 451 (00-1026) on landing approach.

'The Orange Tail' Squadron



Aircraft number 857 (99-9421) armed with training air-to-air missiles, taking-off to an exercise sortie.
Photos in this page: Ofer Zidon



Aircraft number 858 (99-9422) taking-off to an air-to-air training sortie during a deployment of 'The Orange Tail' squadron to Ovda AFB Advanced Training Center, with 'The Flying Dragon' squadron.

The 'Flagship' F-16I of 'The Orange Tail' squadron, aircraft number 107 (99-9400), taxiing at Hatzertim AFB, the home base of the squadron.





Aircraft number 848 (99-9415) taking-off to a training sortie with exercise air-to-air missiles. Photo: Ofer Zidon

Main landing gear of F-16I number 107 touching the runway of Hatzerim AFB after a training sortie.



Above: Aircraft number 846 (99-9414) taking-off with full afterburner to a training sortie. Photo: Ofer Zidon

'The Orange Tail' Squadron



Aircraft number 852 (99-9418) of 'The Orange Tail' squadron taking-off during a deployment squadron to Ovda AFB.



Aircraft number 851 (99-9417) landing at Ovda AFB during the same deployment.

F-16I number 848 (99-9415) taxiing towards the runways at Hatzerim AFB.

Photos in this page: Ofer Zidon



Aircraft number 816 (99-9405) on landing approach to Ovda AFB. Photo Ofer Zidon



F-16I numbers 846 (99-9414) and 839 (99-9411), in formation flight over the Negev desert, configured for air-to-air missions with a payload of two 'Python 4' and two AIM-120 AMRAAM missiles and a single external fuel tank. Aircraft are without the conformal fuel tanks (CFT's). Photo: 'The Orange Tail' squadron

Aircraft number 848 (99-9415) landing at Hatzerim AFB, returning from an air-to-air training sortie with an AIM-9L Sidewinder training missile and a 300 gallon centerline external fuel tank. Photo Ofer Zidon



'The Orange Tail' Squadron



Above: Aircraft number 833 (99-9409) taking-off to a demonstration flight during the IAF Flight Academy graduation ceremony of June 2008.



F-16I number 863 (99-9425) landing at Hatzetim AFB after a training sortie. Photos in this page: Ofer Zidon



A photo from the period that followed the activation of 'The Orange Tail' squadron as an F-16I unit. Due to a limited number of available aircraft, few F-16I's of 'The Negev' and 'The Bat' squadrons were temporarily transferred to augment 'The Orange Tail' squadron. These aircraft are noticeable in this photo of six aircraft prior to a training sortie. Most aircraft are lacking the conformal fuel tanks (CFT's) due to the limited numbers available at that time.



Aircraft numbers 846 (99-9414) and 839 (99-9411), in formation flight over the Negev desert, configured for air-to-air missions with two 'Python 4' and two AIM-120 AMRAAM missiles and a single external fuel tank. The aircraft are lacking conformal fuel tanks (CFT's). Photo: 'The Orange Tail' squadron



Aircraft number 844 (99-9413) taxiing at Hatzerim AFB. Photo: Ofer Zidon



Aircraft numbers 816 (99-9406), 826 (99-9407) and 833 (99-9409) waiting for take-off approval, during a deployment to Ovda AFB for training Center, with other F-16 squadrons. Photo: Ofer Zidon

'The One' Squadron



The 'Flagship' aircraft of 'The One' squadron, F-16I number 201 (99-9426) in flight, with a heavy payload that consists of three external fuel tanks, the AN/AAQ-13 LANTIRN navigation pod, the RAFAEL Litening targeting pod, two 'Python 4' IR and two AIM-120 AMRAAM radar guided missiles. Two 2,000 lbs GBU-10 Paveway II Guided Bomb Units. Noteworthy are the grey warhead and control sections of the bombs typical to Lockheed Martin kits. The Raytheon kits are painted olive drab. Photo: 'The One' squadron



Aircraft number 839 (99-9411) exiting its HAS to join other aircraft at the edge of the runway, before take-off to an air-to-air training sortie





Aircraft numbers 869 (99-9429), 871 (99-9430), 872 (99-9431) and 201 (99-9426) in formation, all with a payload of 'Python 4' and AIM-120 AMRAAM air-to-air missiles, while only numbers 869 and 201 are also armed with laser guided bombs (LGB's).



Aircraft number 846 (99-9414) taking-off to a training mission.

Aircraft numbers 871 (99-9430) and 872 (99-9431) applying afterburners during a flight over the Negev, at dusk.

Top and bottom photos: 'The One' squadron



'The One' Squadron

Aircraft number 878 (99-9437) taking-off to a training mission.



Aircraft number 868 (99-9428) on landing approach after training sortie. Of note are the under-wing Israel Military Industries 600 gallon external fuel tanks and the open split trailing edge airbrakes.

Aircraft number 875 (99-9434) taking-off to an air-to-ground training sortie with a payload of a practice 'Delilah' missile under the right wing and a balancing training bomb under the left wing. Of note is the retracting landing gear.



A formation of four 'The One' squadron aircraft moments before landing at Ramon AFB. Aircraft are flying over the Ramon Crater. The town of Mitzpe Ramon can be seen on the left top section of the photo. Photo: 'The One' squadron



Aircraft number 892 (99-9447) taking-off to a training sortie. Payload consists of Israel Military Industries under-wing 600 gallon external fuel tanks.



Aircraft numbers 869 and 201 over fly Mount Carmel and the city of Haifa in northern Israel.



'The One' Squadron

F-16I number 201 in flight over the Jordan Valley.

Photo: 'The One' squadron



Aircraft number 813 (99-9404) taxiing towards the take-off runway. Of note is the 'Delilah' training missile.



Aircraft number 849 (99-9416) taxiing towards the take-off runway after exiting its HAS. Of note are the Israel Military Industries under-wing 600 gallon external fuel tanks.



Aircraft number 882 (99-9441) taxiing towards its HAS, after an air-to-air training sortie.



Aircraft number 892 (99-9447) landing at Ramon AFB.



Aircraft number 869 (99-9429) shortly after exiting its HAS.



The IAF Sufa aircraft fleet conducted hundreds of operational sorties in The Second Lebanon War of summer 2006 and attacked targets with a variety of armament types. GPS guided munitions (JDAM) and laser guided bombs (LGB's) were used in large numbers for the first time. Due to this requirement, "assembly lines" for attaching kits to the bomb units, were formed in the bases to allow constant delivery to the squadrons. The 'Orange Tail' squadron, activated just one month before the conflict, had its aircraft and crews transfer to the two existing F-16I operational units – 'The Negev' and 'The Bat' squadrons. All photos in this and opposite pages: Ramon AFB photography unit







The first stage of Operation 'Cast Lead' was an air operation in which IAF aircraft from all squadrons, attacked simultaneously multiple Hamas targets in the Gaza Strip. The Sufa squadrons were assigned a high number of high value targets. GPS guided munitions were used in a high numbers to prevent civilian casualties. Photos in this page: Ramon AFB photography unit unless mentioned otherwise.



Photo: Nir Ben Yosef © - www.xnir.com



Photos in this page: Nir Ben Yosef © - www.xnir.com



Photos on this page: Aircraft of 'The Orange Tail' squadron during Operation 'Cast Lead'. Top: Aircraft number 857 (99-9424) ready for take-off armed with 500 lbs. GBU-38 GPS guided. Above: Aircraft number 874 (99-9433) on landing approach after an operational sortie in which the payload of two 2,000 lbs. GBU-31 JDAM munitions were not released. Below: Aircraft number 848 (99-9415), prior to a sortie, in the 'last chance' point. Payload consists of two GBU-31 JDAM bombs and three external fuel tanks. Under the wings are Israel Military Industries 600 gallon fuel tanks. In the background are A-4 Skyhawk 'Ahit' aircraft of the 'Flying Tigers' squadron, that also operates from the 'Hatzirim' AFB in the northern Negev.





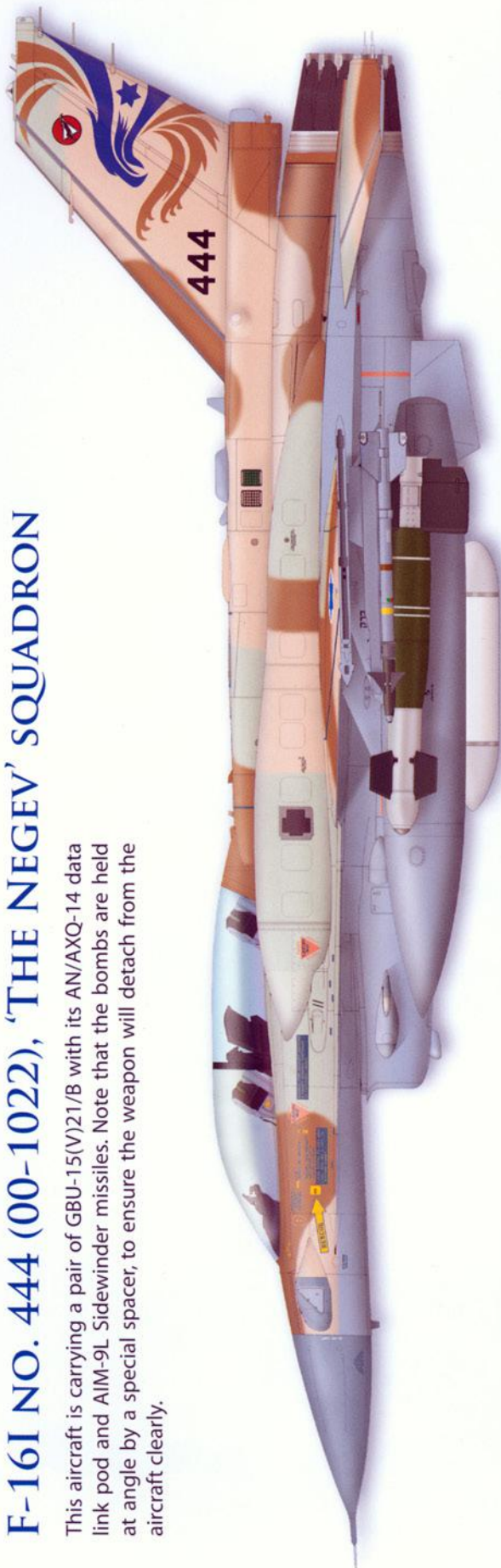


Photos in this page: Nir Ben Yosef © - www.xnir.com



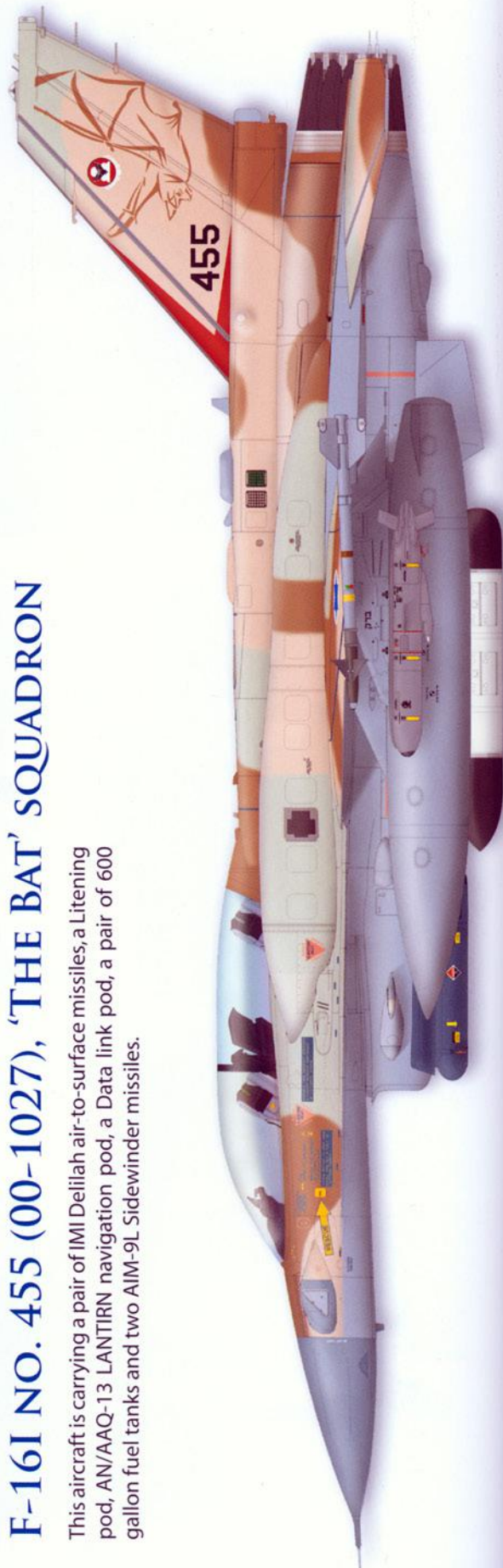
F-16I NO. 444 (00-1022), 'THE NEGEV' SQUADRON

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



F-16I NO. 455 (00-1027), 'THE BAT' SQUADRON

This aircraft is carrying a pair of IMI Delilah air-to-surface missiles, a Litening pod, AN/AAQ-13 LANTIRN navigation pod, a Data link pod, a pair of 600 gallon fuel tanks and two AIM-9L Sidewinder missiles.



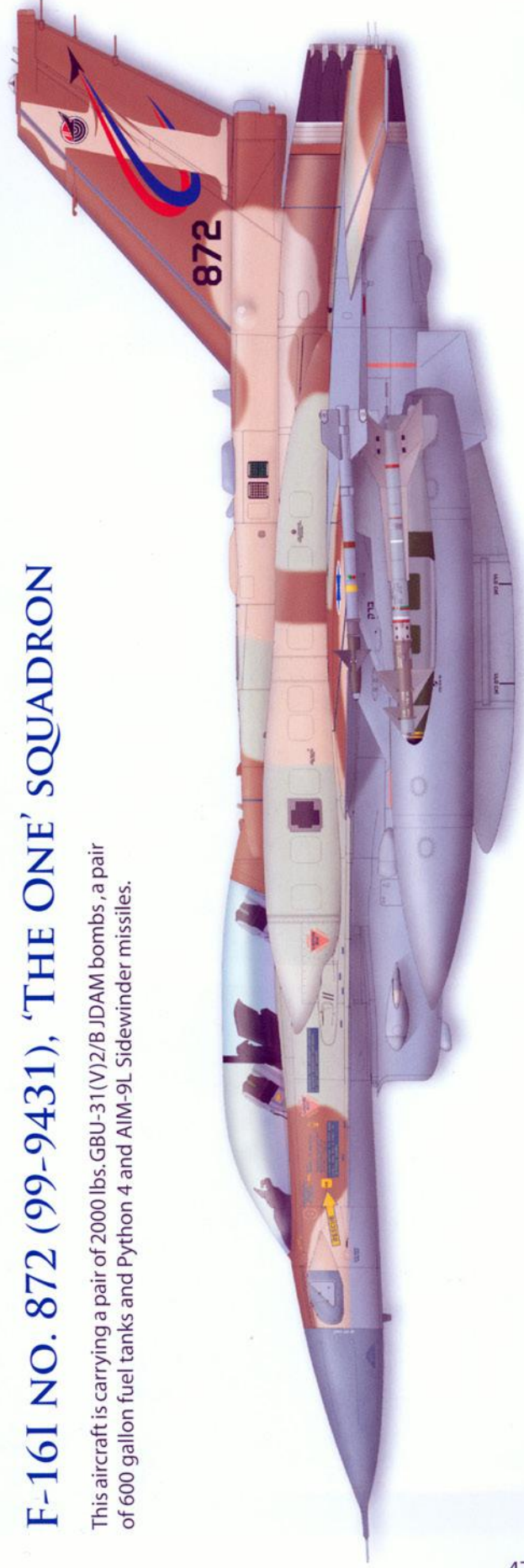
F-16I NO. 803 (99-9401), 'THE ORANGE TAIL' SQUADRON

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



F-16I NO. 872 (99-9431), 'THE ONE' SQUADRON

This aircraft is carrying a pair of 2000 lbs. GBU-31(V)2/B JDAM bombs, a pair of 600 gallon fuel tanks and Python 4 and AIM-9L Sidewinder missiles.



DAILY ROUTINE & MAINTENANCE

Photo on pages 48-57: Ofer Zidon and Ra'anana Weiss







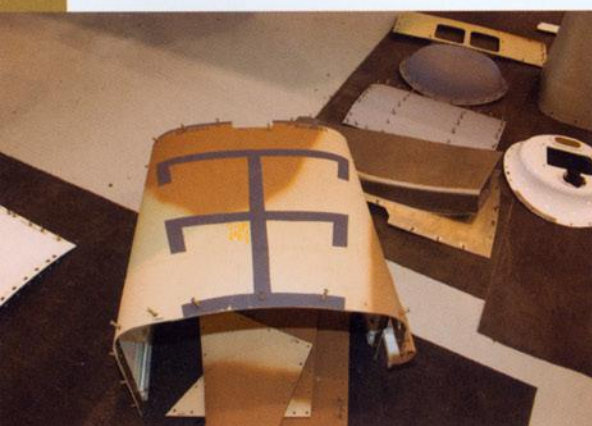






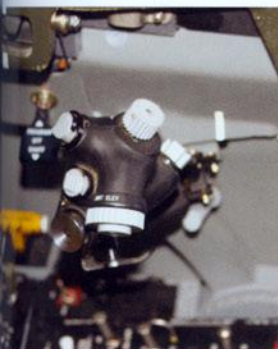


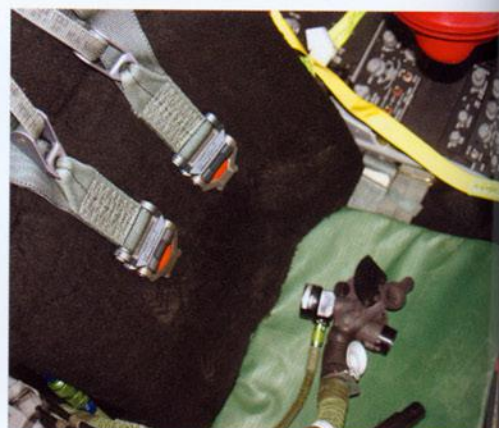
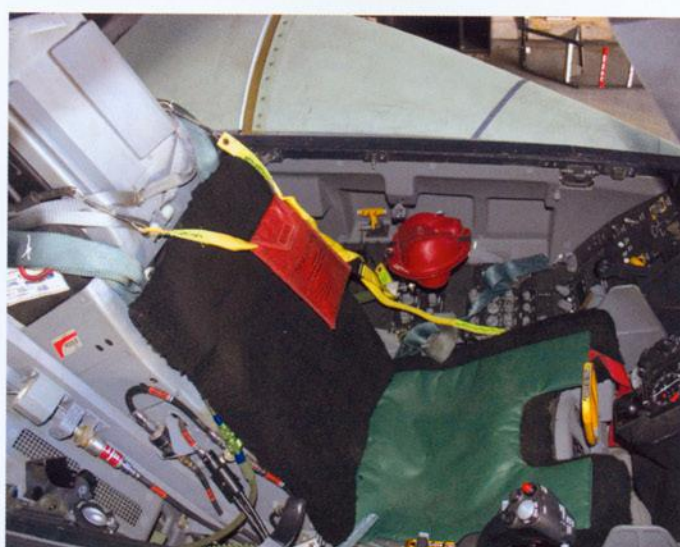




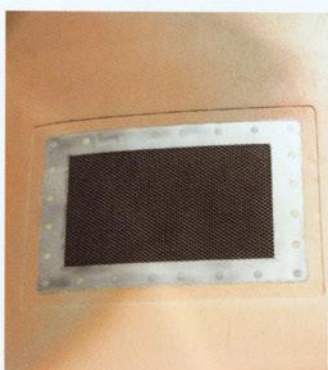
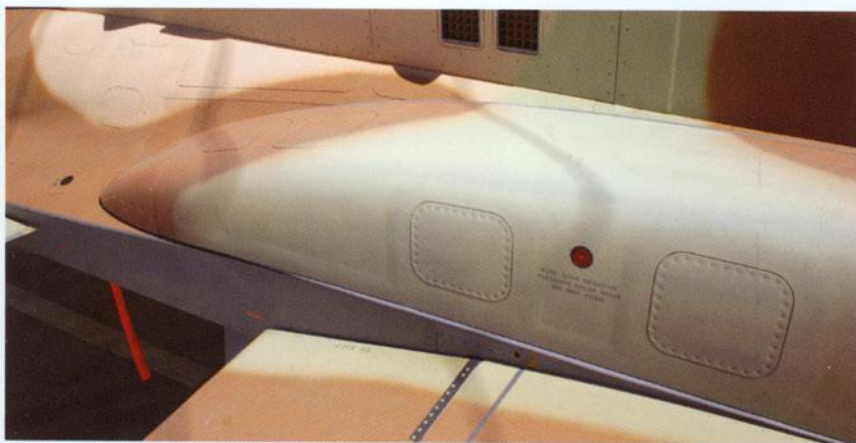


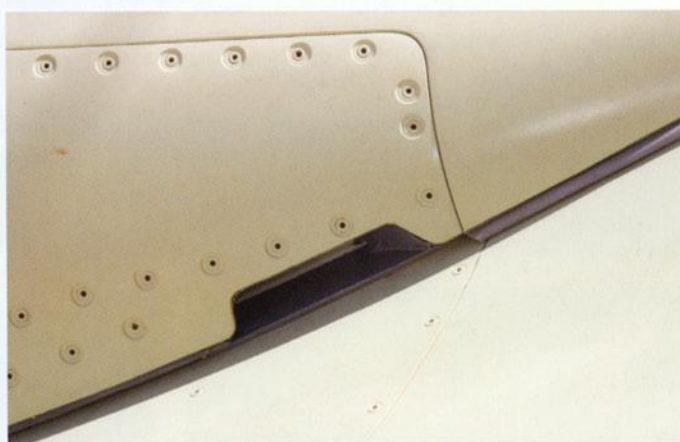




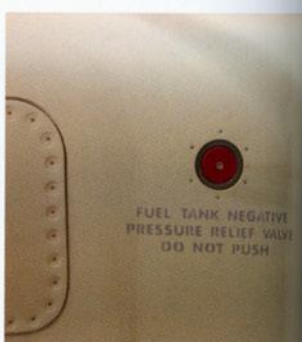
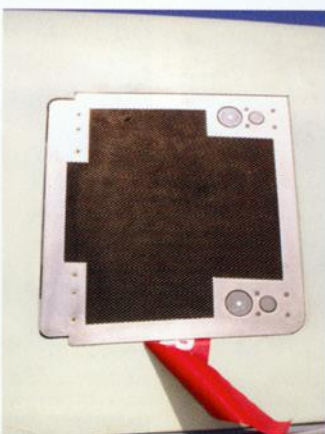
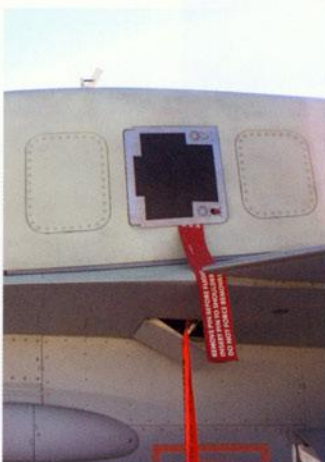


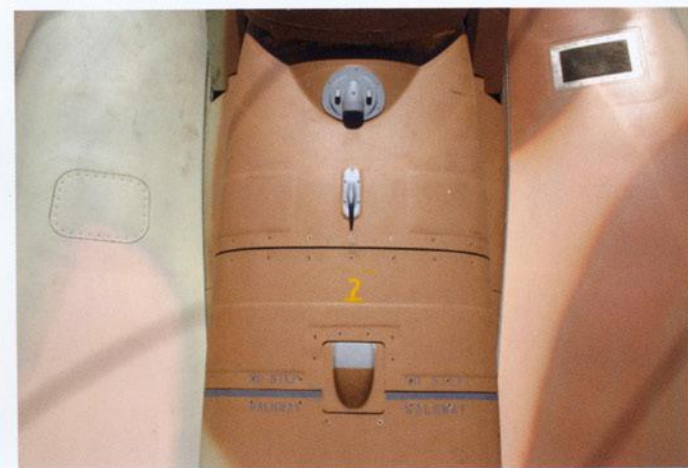
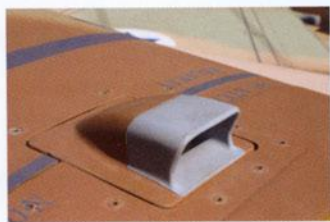
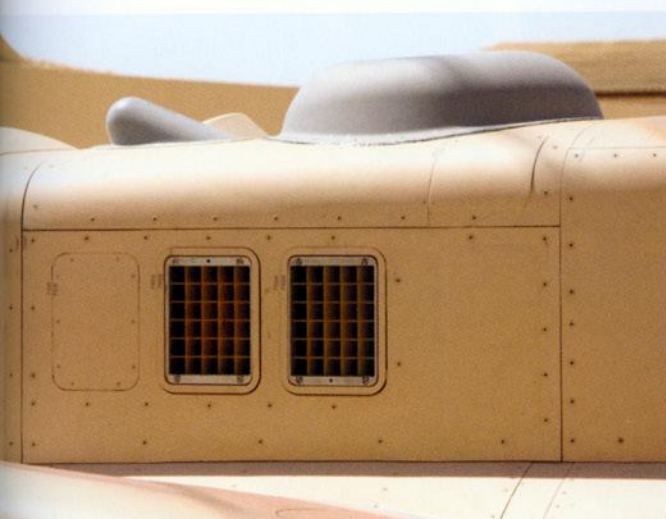
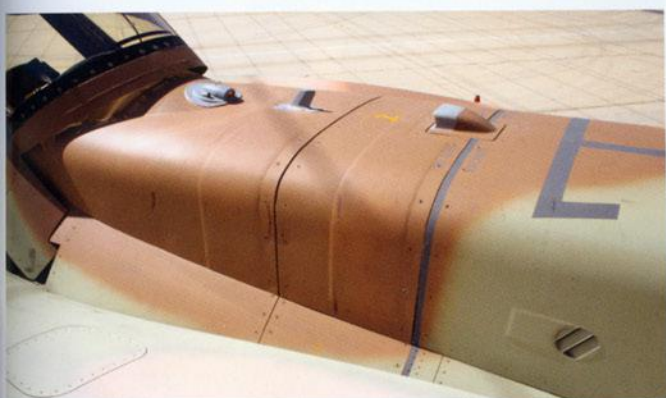
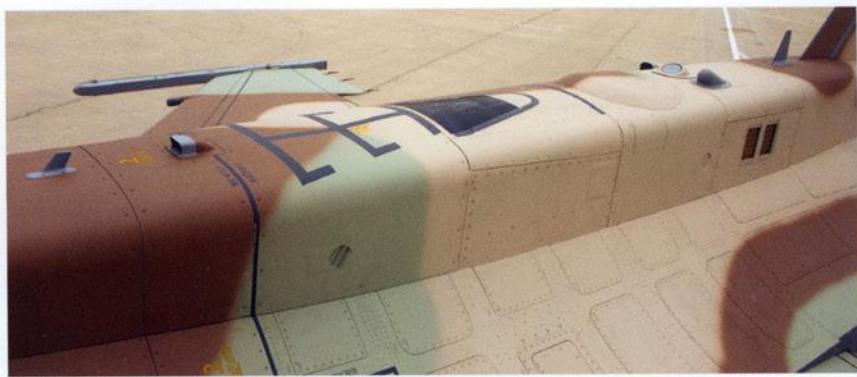
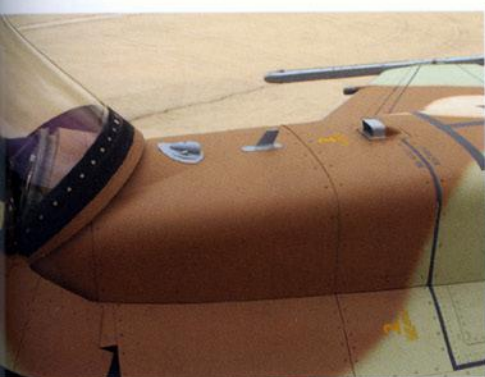




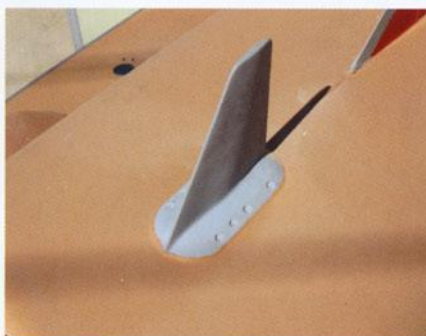
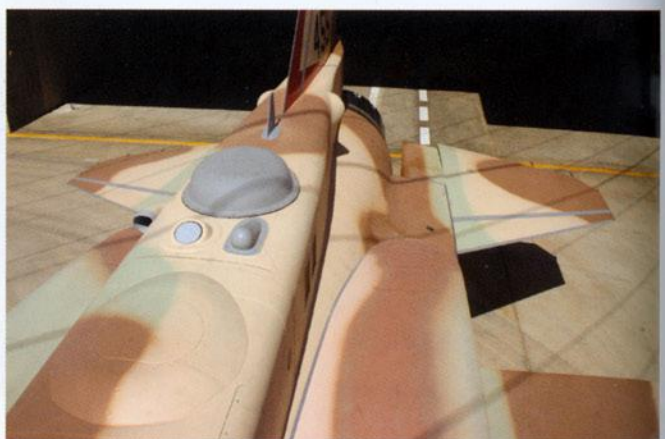
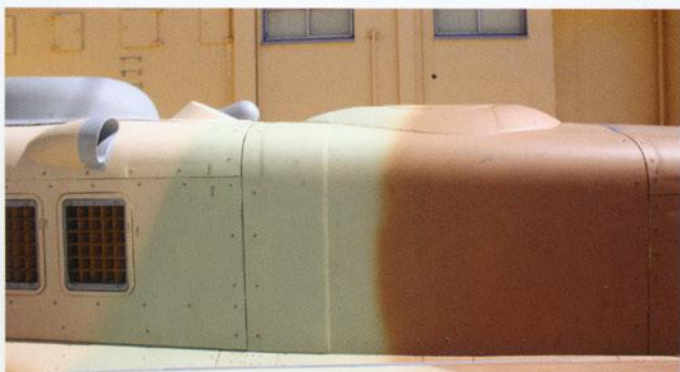


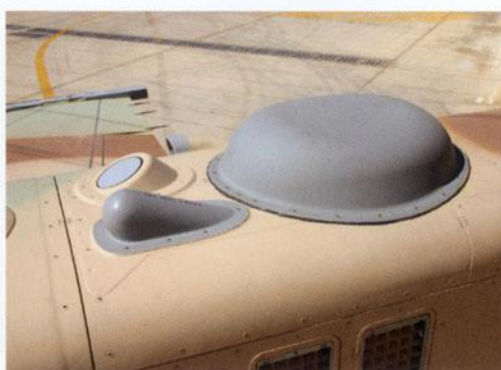
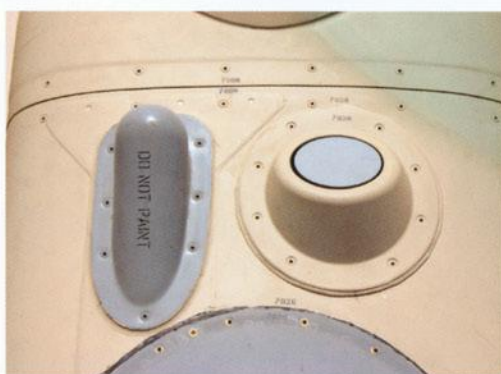
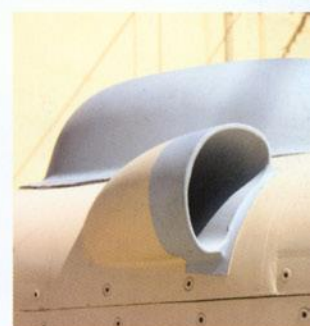
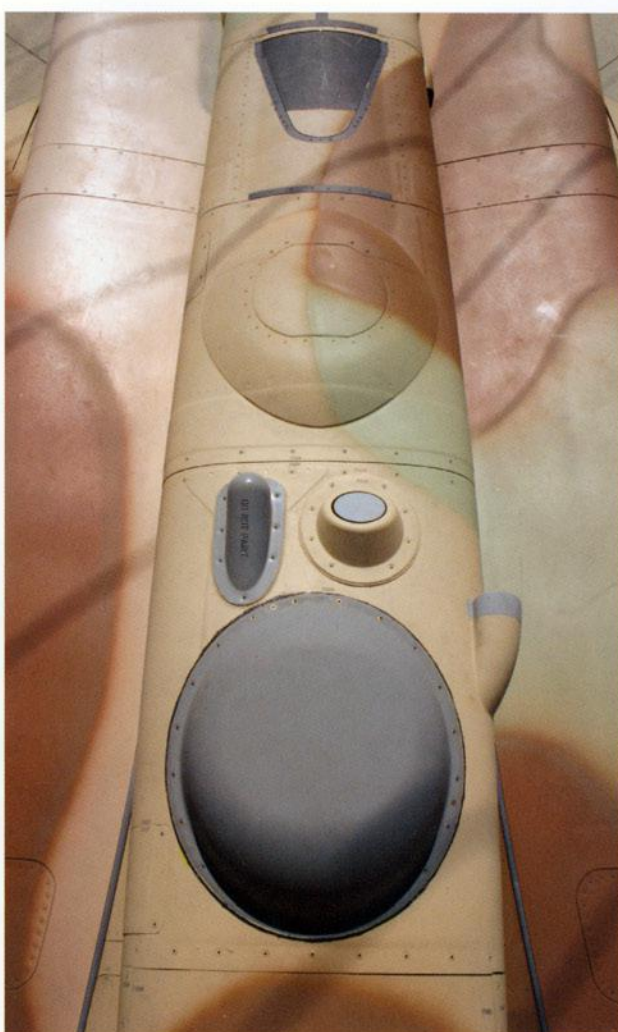
WALK-AROUND



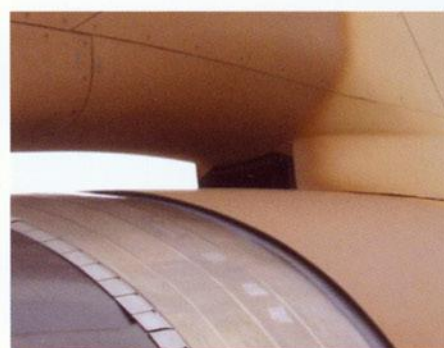
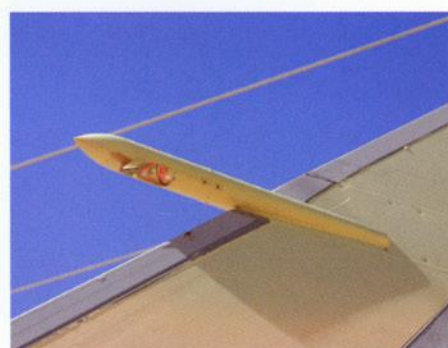
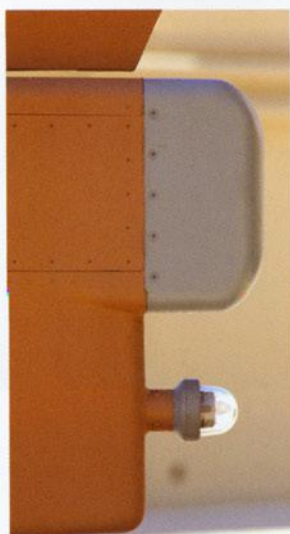
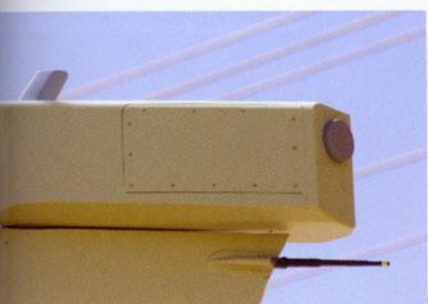


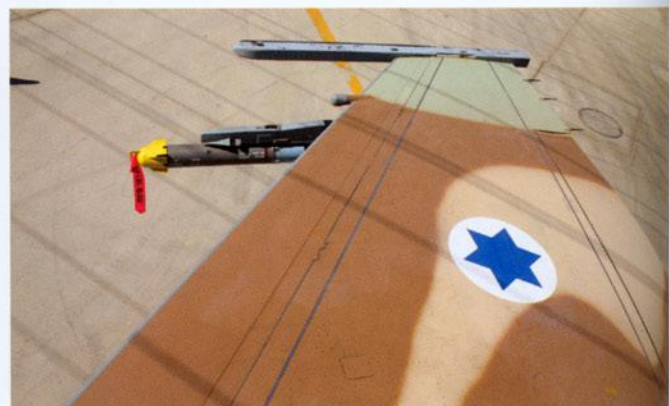
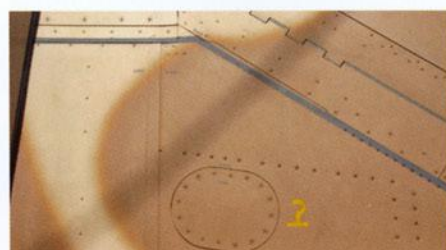
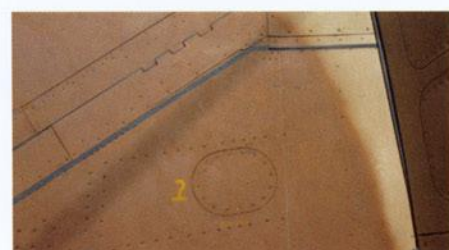
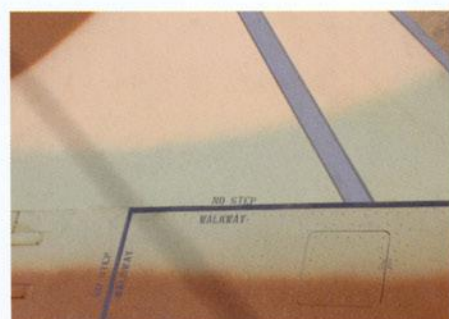
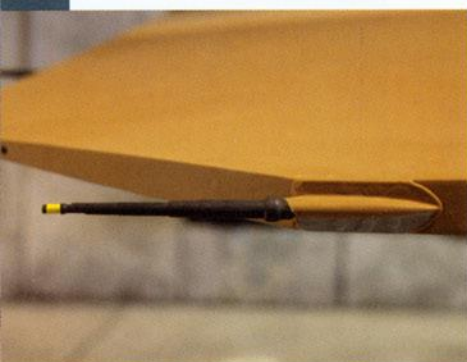
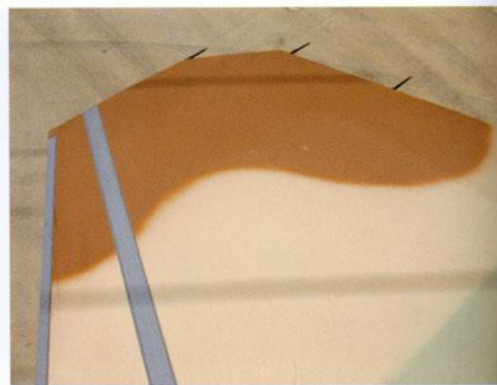
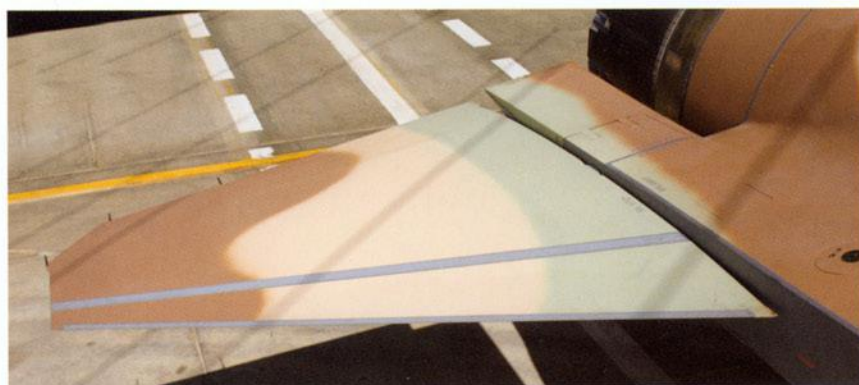
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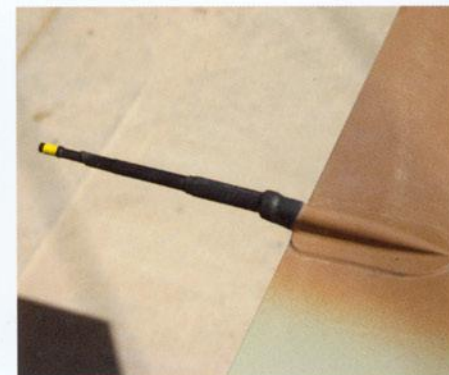
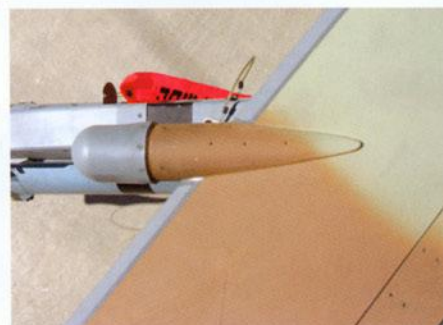
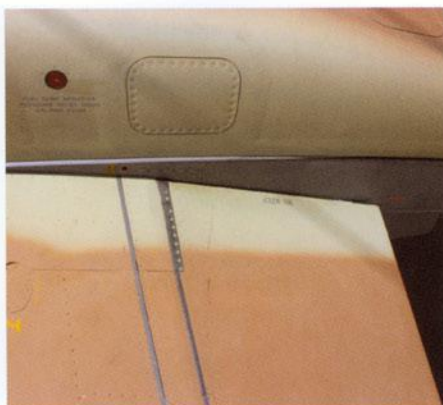




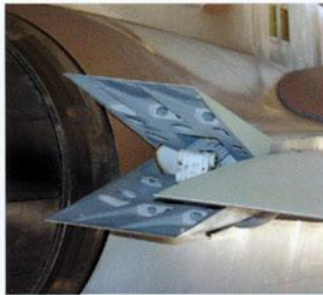
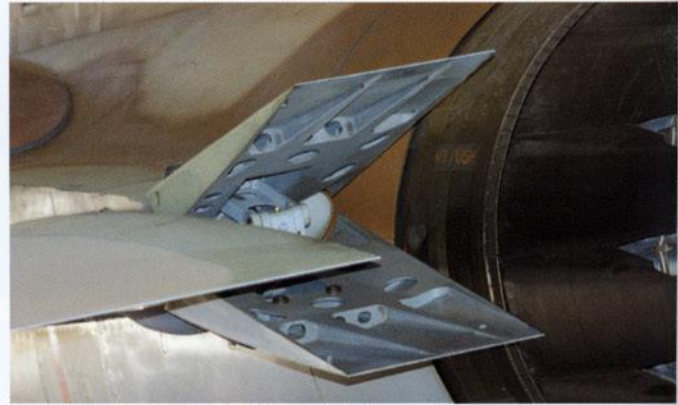


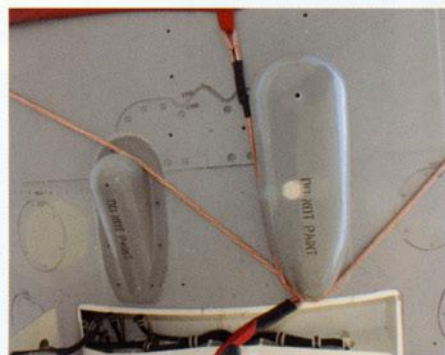
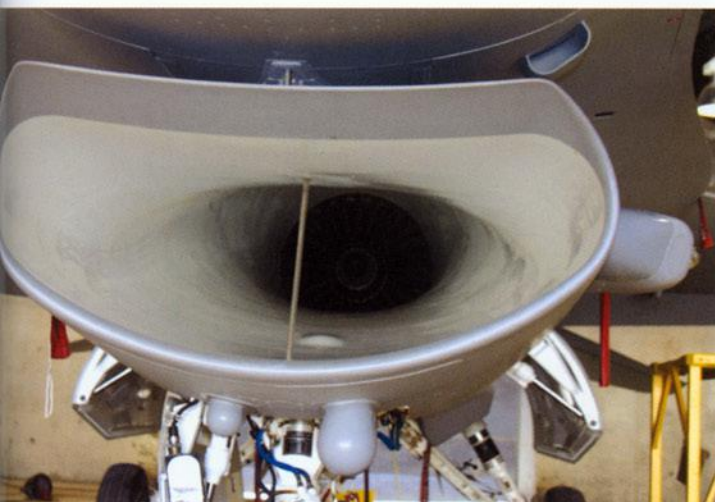


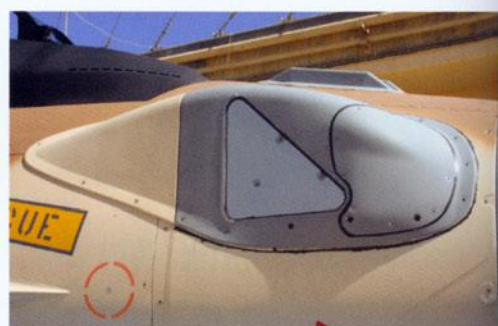
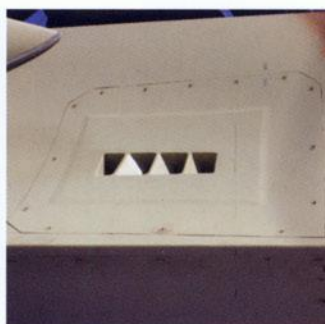


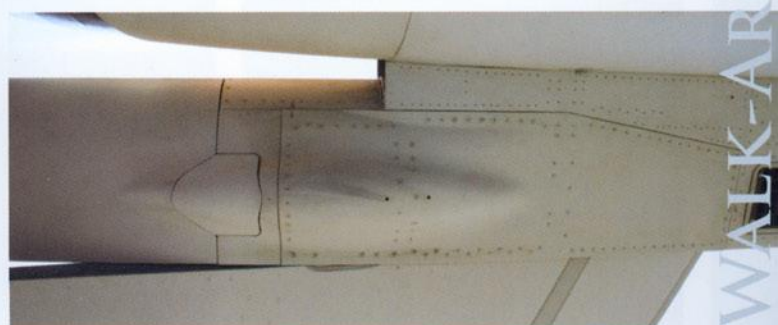
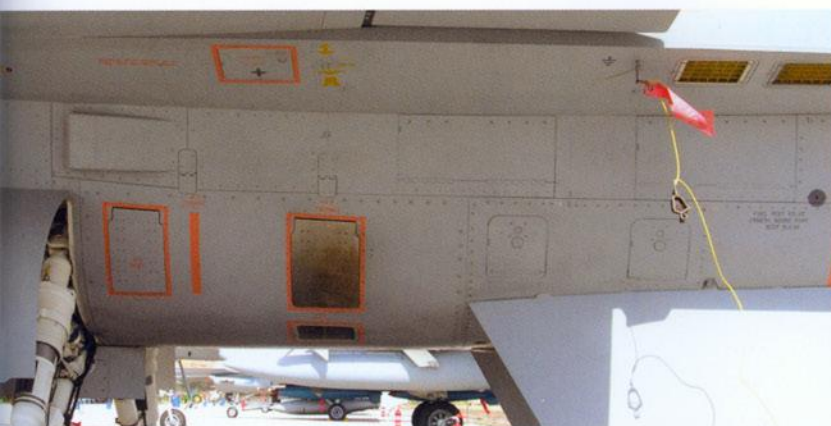


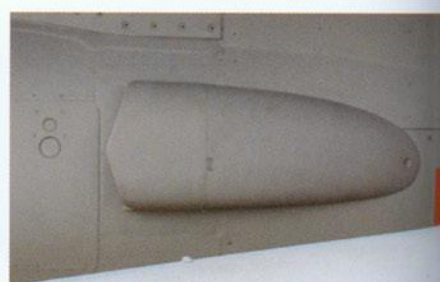
WALK-AROUND





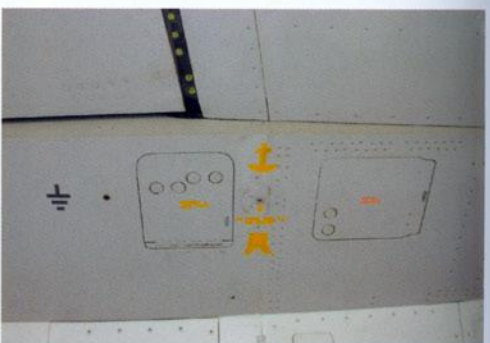


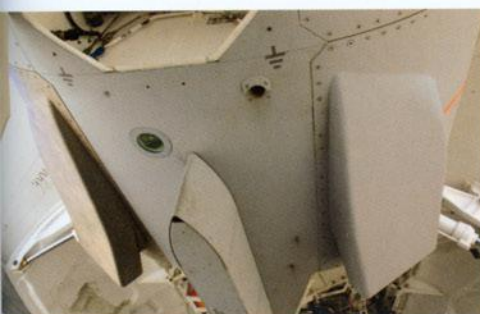
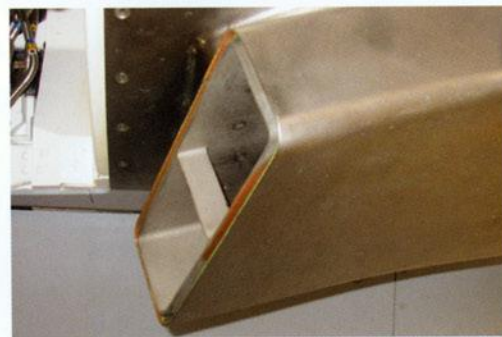


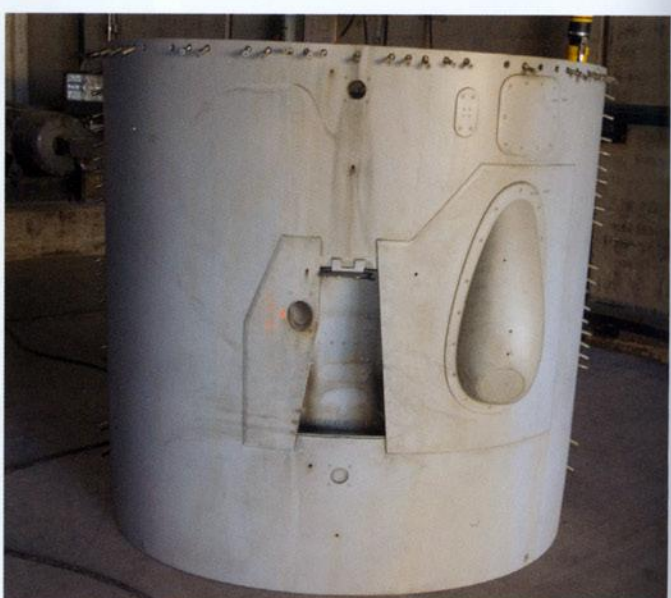


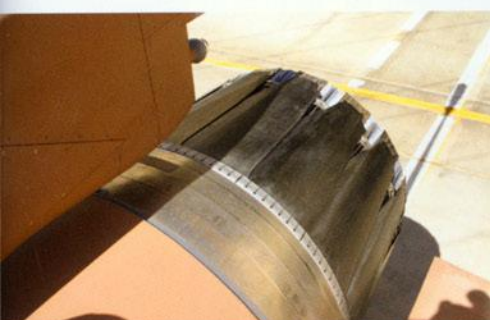


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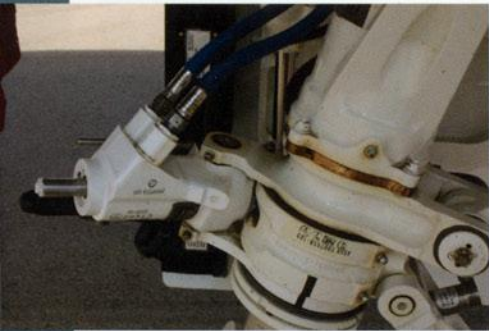
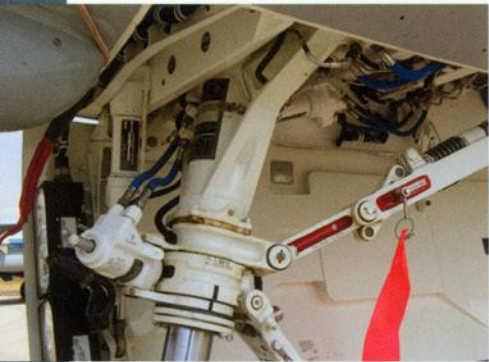
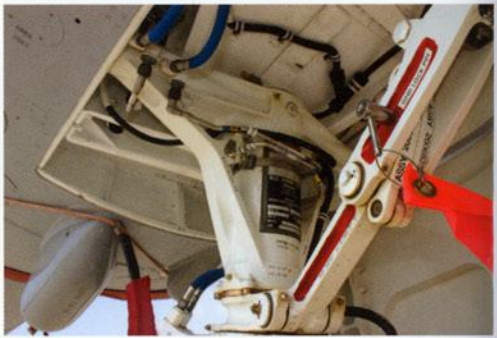


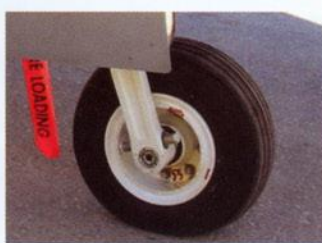
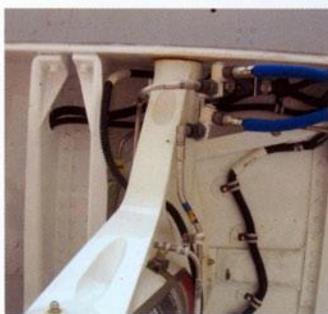
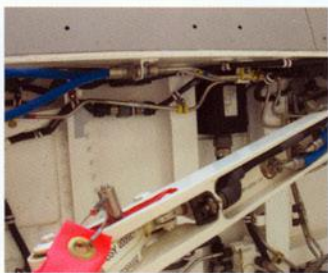
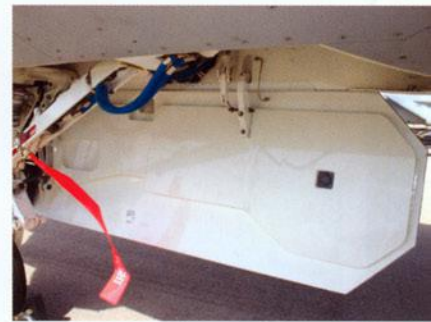
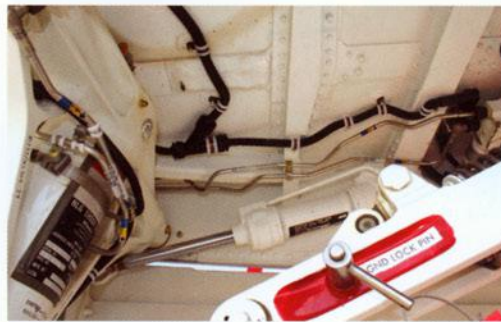
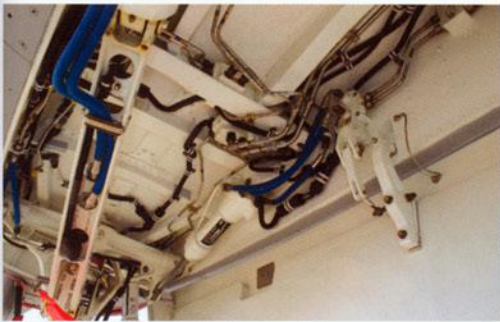
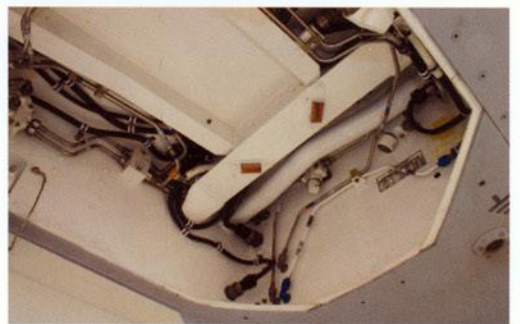
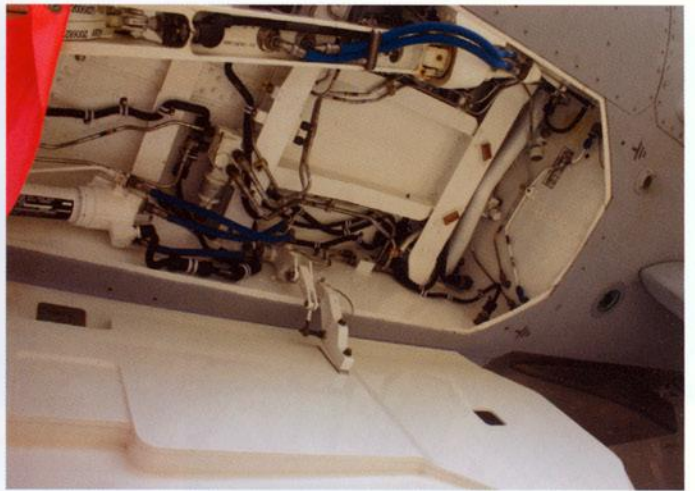
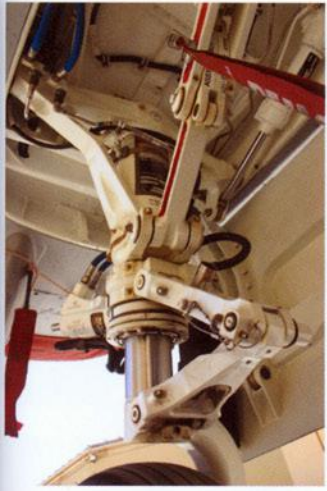




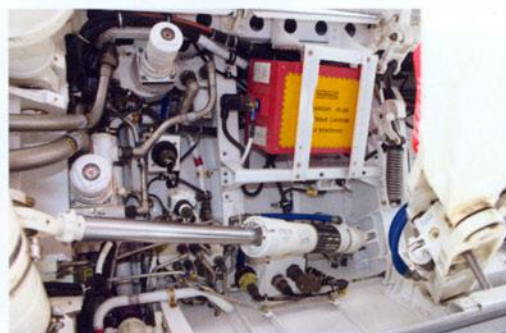
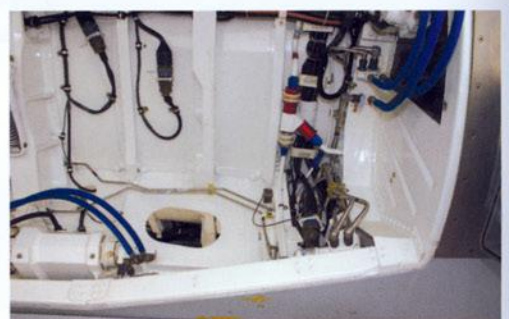
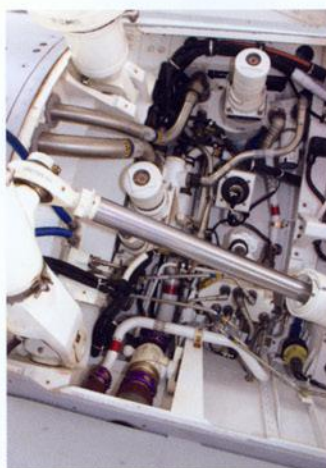


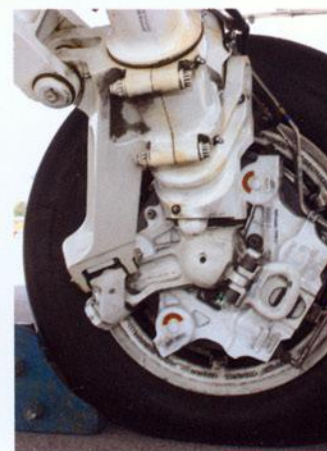
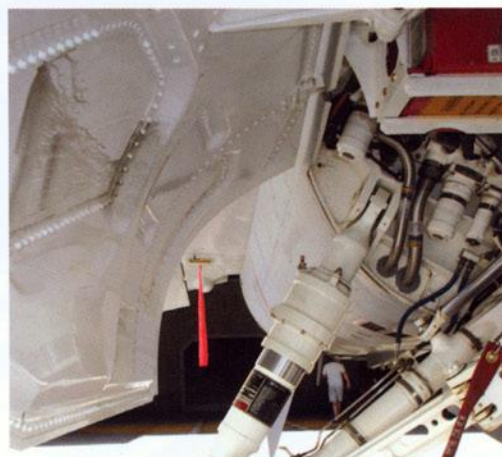
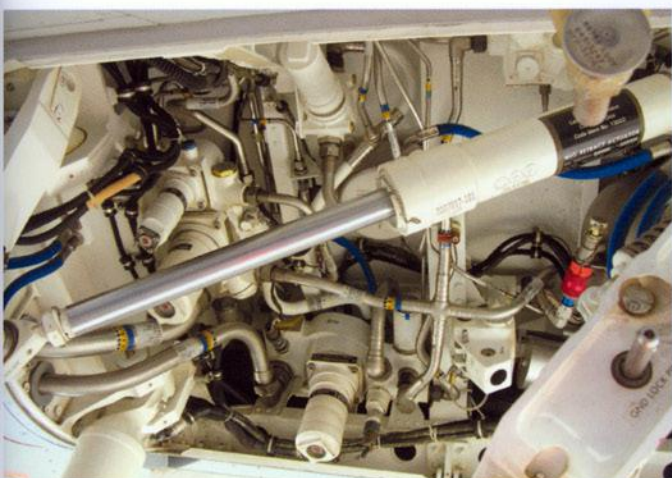
WALK-AROUND

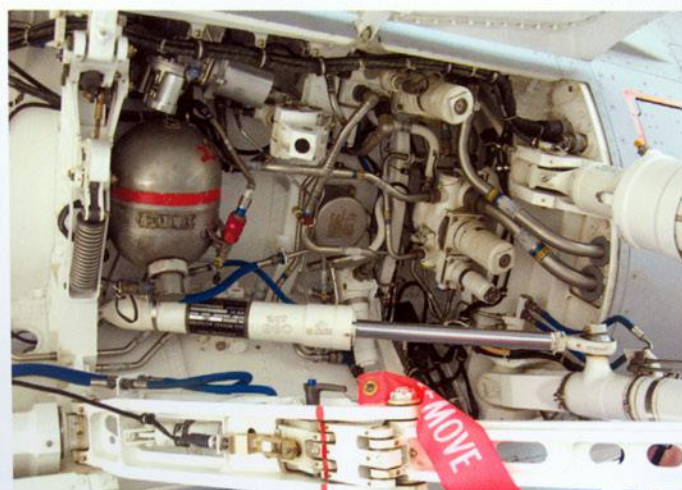
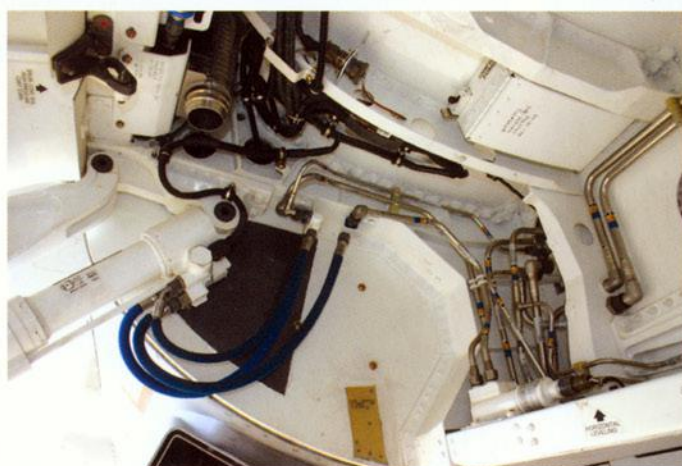
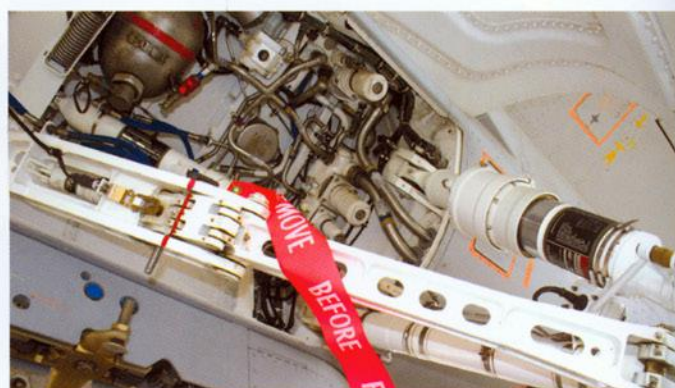


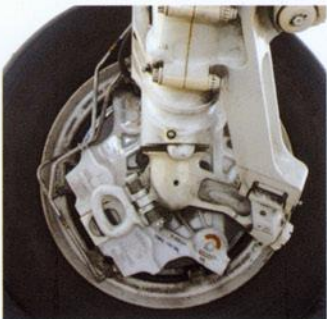
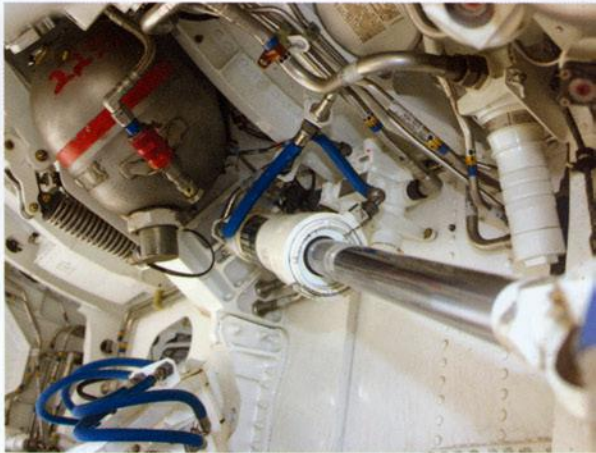
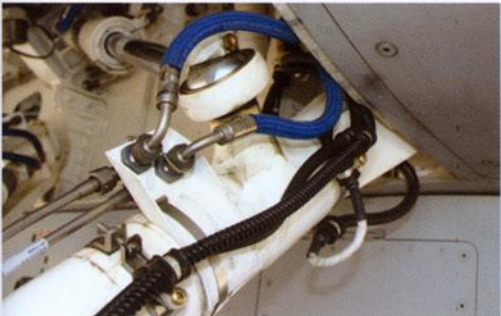
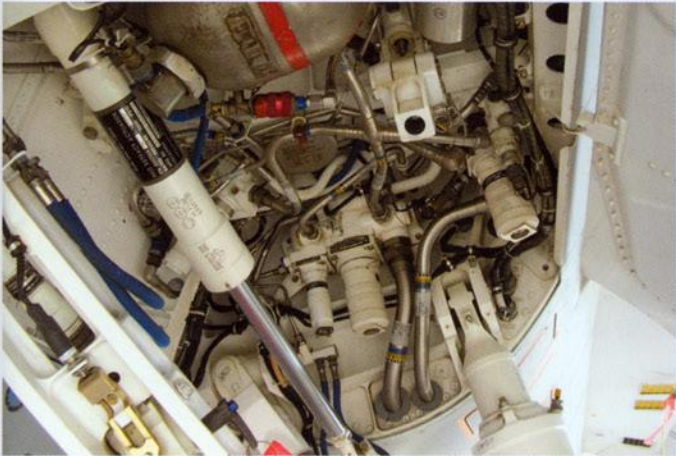


WALK AROUND



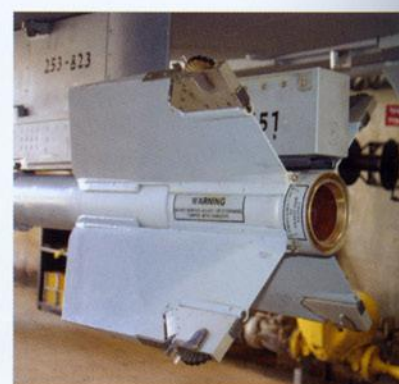
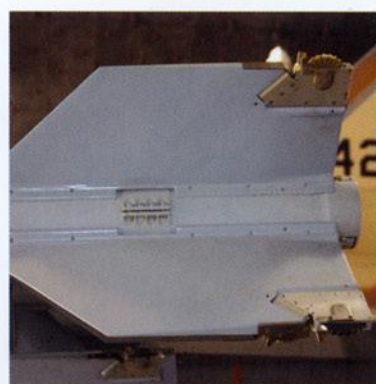
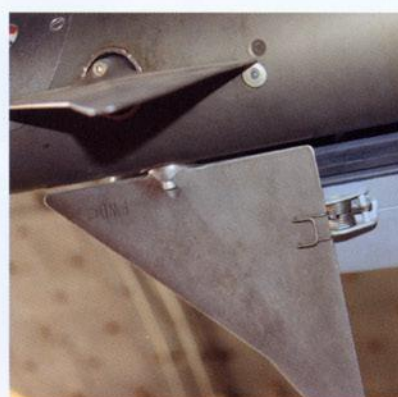
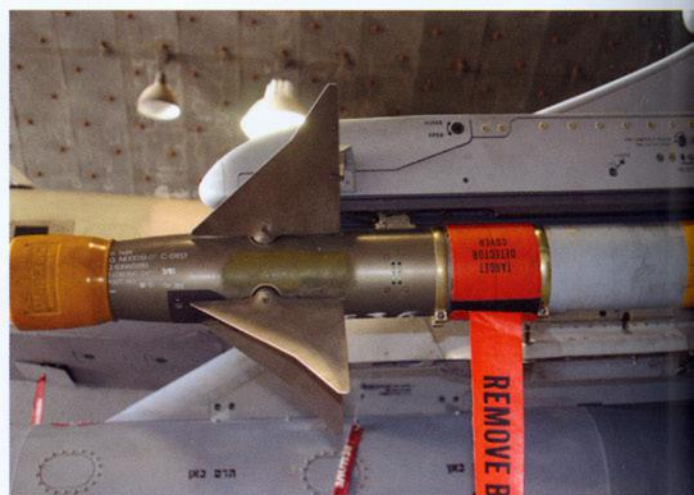


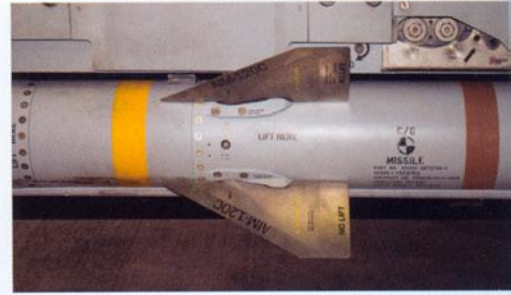






As all other IAF combat aircraft, the Sufa is also adapted to operate with the AIM-9L 'Sidewinder'. When the 'Python 4' Panther missiles became operational in the late 90's, it was decided not to order the less capable AIM-9X from the U.S. Since then, the more advanced 'Python 5' was available from RAFAEL.



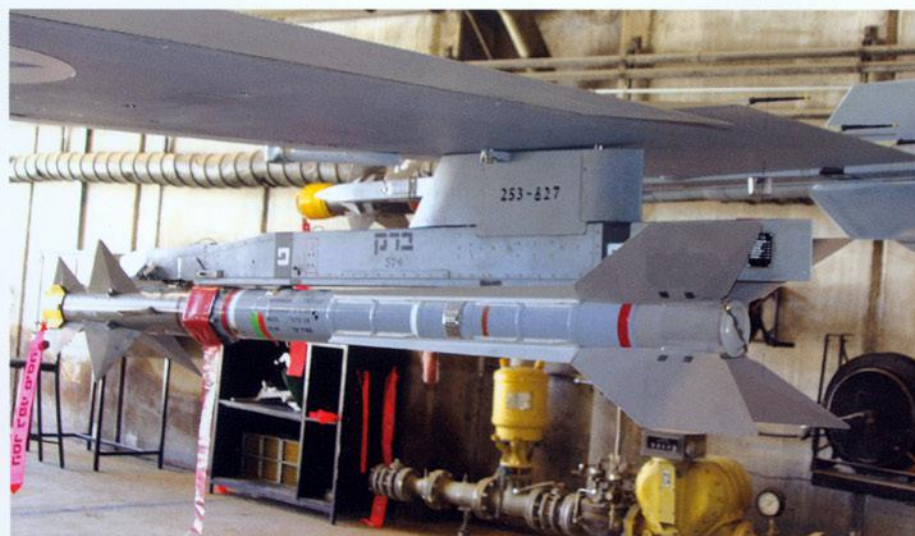


The AIM-120 AMRAAM Air-to-Air missile became operational in the late 90's with the arrival of the first F-15I 'Ra'am' aircraft to the IAF. It was just logical that the F-16I 'Sufa' could be armed with these advanced missiles. The 'Sufa' is the only IAF F-16 version with radar guided missile capability. Due to the missile's radome vulnerability to ground damage, it is frequently protected with a rugged sponge, as shown below.





'Python 4' or as it is designated in the IAF – 'Panther', entered service with F-16C/D 'Barak' at Ramat David AFB, in early October 1997. The missile is considered the world's best in its category and only few air-to-air missile types come near in performance. Most of the 'Python 4' capabilities are still classified. Operational missiles are positioned only on stores 2 and 8 and not on the wingtip rails.



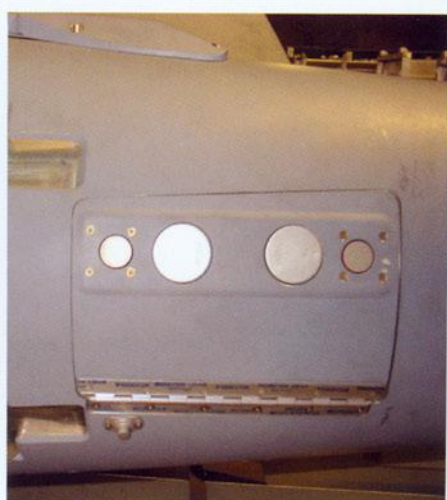


WALK-AROUND - ARMAMENT



The Israeli-developed RAFAEL 'Spice' is a precision guided kit, attached to a Mk.84 2,000 lbs. bomb. The 'Spice' is autonomous and as the U.S. 'Tomahawk' missile, when it approaches the target, it compares it to images embedded in its memory. The bomb incorporates a back-up GPS system. The 'Sufa' can be armed with 2 to 4 'Spice' units.





WALK-AROUND - ARMAMENT



The Delilah 2 is actually a sophisticated EO cruise missile with a back-up GPS system. The missile, developed and produced by Israel Military Industries, incorporates a miniature warhead and is optimized to strike high value targets as it controlled by the WSO of the attacking aircraft. The RAFAEL produced data-link transceiver pod is positioned under the fuselage centerline pylon.





WALKER BOUND - ARMAMENT

The F-16I payload include the RAFAEL Litening II targeting pod is installed under the right side of the air intake and the Lockheed Martin LANTIRN navigation pod is positioned under the left side of the air intake. These pods allow extremely low level flight, designation for precision guided armament, acquiring targeting points for GPS guided munitions such as JDAM and allow FLIR vision at night and adverse weather conditions.



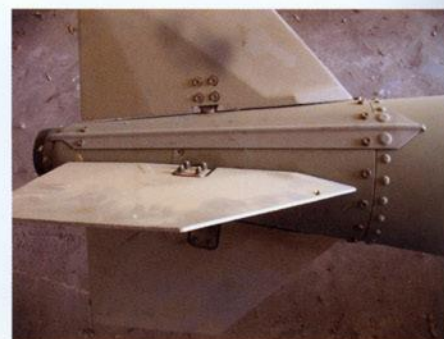


Following the acceptance by the IAF of the JDAM kit on the 2,000 lbs Mk.84 bombs, kit for the 500 lbs (Mk.82) bombs entered service as well as the JDAM kit for the BLU-109, 2,000 lbs bombs. These munitions were operational during operation 'Cast Lead' and enabled the IAF to strike targets in densely populated areas, based on accurate intelligence data, with minimal collateral damage. Photos on this page detail these smaller munitions that were named 'Baby JDAM' in Israel. On the following page on top, the JDAM kit on Mk.84 bombs is detailed, while on the lower section, a BLU-109 hardened penetration version is attached to the bomb. Both are of 2,000 lbs category.





Boeing GBU-31(V)3/B - BLU-109 2,000 lbs JDAM



F-16I Sufa color scheme

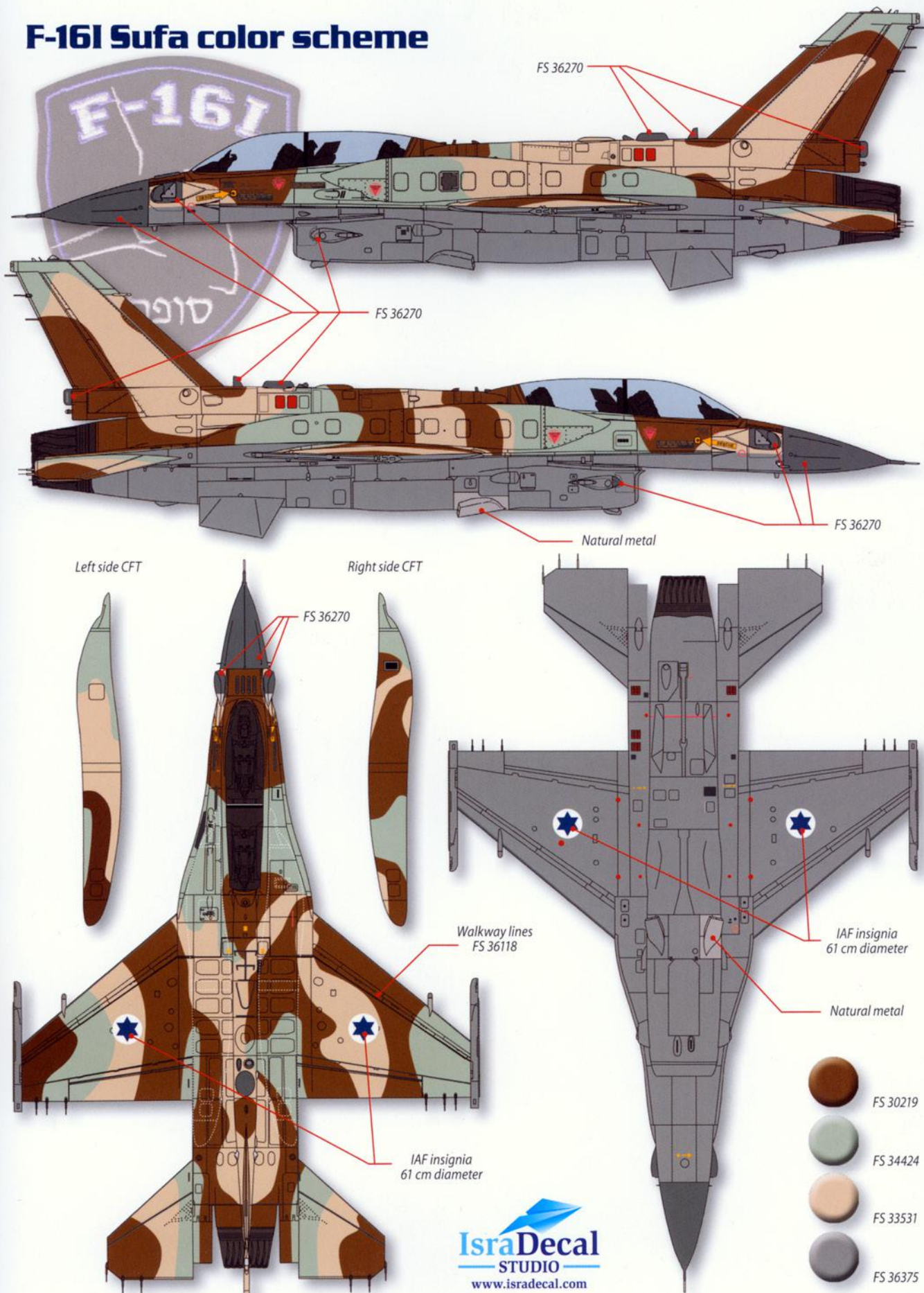




Photo: Tal Shoham

ISBN 978-965-7220-12-2



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