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Ervin J. KIS

ISRAEL'S WAY OF GAINING AIR SUPERIORITY AND FEATURES OF THE 1973 ARAB-ISRAEL WAR, NAMED THE YOM KIPPUR CONFLICT

AZ IZRAELI LÉGI FÖLÉNY KIVÍVÁSÁNAK MÓDJAI ÉS SAJÁTOSSÁGAI AZ 1973-AS ARAB-IZRAELI, YOM KIPPUR-HÁBORÚBAN

The 4th Arab-Israeli conflict broke out on 6 October, 1973. In military history, it is known as The Yom Kippur War.

To attain new military success, Israel thoroughly processed and utilized its 1967 war experiences. At the same time, it can be stated that during the past seven years, the military leadership of Arab countries had built up a very reliable military shelter system, providing protection for their military aircraft. The system even resisted the 1000-kilogram fragmentation bombs. In addition, Arab military forces secured their airports and air defense system against short and medium-range air defense missile complexes and on top of that with effective deployment of air defense artilleries.

During the Yom Kippur conflict, Israeli military leaders insisted on military solutions applied in the previous war but did not take into account an important fact. By 1973, the Arab countries had already operated an effective air defense system. Although Israeli Air Forces planned massive air strikes against Arab airports, the air defense system could not be broken through and Israel suffered massive losses

By destroying the runways of Arab airports, the Israeli troops attempted to prevent the take-off of hostile military aircraft. The so called "mining" method used penetration bombs with impact and delayed-action fuses against concrete structures. The method wasn't a ground-breaking success as the Arab forces repaired the damage caused in the runways in 9-10 hours by using resin-based materials. The situation turned unfavorable for Israel. Lots of aircraft formations were needed for combats and Israel suffered massive losses to the Arab air defense. As a result, the efficiency of the Arab air-defense had hardly decreased.

Israel, before giving up the idea of a series of strikes against enemies' airports, applied a kind of luring method. Imitating a strike, Israeli fighters forced the Arab aircraft to take-off, while trying to surprise them while still on the ground. The Arab air defense did an efficient job. It became clear for the Israeli military leadership that their efforts did not yield the expected results. In autumn 1973, the military leadership renounced the ground destruction of enemy air force. A new way was chosen. The maneuvers were launched by the land forces, opening a gap into the Arab air defence system by infantry and armour forces.

It is obvious that the destruction of enemy airports is a fundamental prerequisite of success but in a limited war a new striking method must be introduced. The United States and England had already thought of solving the puzzle. On the basis of their agreement, the two countries developed the JP-233 system –a submunition delivery system - used for destroying airports. These containers became operational on the Tornado IDSs, F-15s and F-11-type combat aircraft. It should be recalled that the former Federal Republic of Germany developed the MW-1 type submunition delivery system by using the ID3 Tornados and F-4 Phantoms. The United States had even developed the GBU massive ordnance air blast bombs and later adapted them to the F4 Phantom, F-111 fighters, F-15s, F-16s and the F/A-18 military aircraft.

However, when releasing the unguided bombs, the military aircraft had to fly over their targets. Considering the air defense capability and preparational level of of military airports, this was a risky business. Missile weapons were used more frequently when delivering bombs.

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1st Figure F/A-18F

In the Yom Kippur War, between 8-14 October, Israel struck more than a hundred blows against enemy airports, while paralyzing Arab aircraft missiles and anti-aircraft artilleries. The Israeli military command assembled a group of military aircraft containing 18-26 F-4 Phantoms, Mirage - sometimes Skyhawks - military aircraft. For repeated strikes, 6-8 military aircraft were deployed.

It must be emphasized that a number o fair groups were deployed for deception, diversion, GBAD (ground based air defence) suppression, air strike and air cover.

The so-called deceptive forces imitated blows on the Arab air defense positions and missile complexes at a maximum speed - at a predetermined altitude and heading. Israeli aircraft carried out these actions at a low altitude, at 1,200 kilometre per hour and also at a medium altitude - at 1,800-2,000 kilometre per hour. The Israelis used passive jamming devices when reaching the enemy detection zone, while striking radio locators, launching missile-complexes and air defense artillery units.

Only after these events, did the Israeli combat groups attack the runways, hangars and enemy aircraft stored in shelters and outdoors. Expecting the counter-attacks of Arab fighters, members of the protective formation patroled the area of the airport.

The main group attacked the airport, the imitating forces recorded the effectiveness and, if necessary, the latter also carried out air strikes. Each unit was supported by active interceptive activities, commanded from Boeing 377 Stratocruisers stationing in Israeli areas. Military aircraft attacked the airports flying at the lowest altitude flying in a pair formation. 3-4 kilometres before the target, the fighter-bombers flying at 40-50 degrees pulled up suddenly and released their bombs. At times, when no air defense missiles were detected in the target zone, the bombing was carried out during a 45 degree dive.

After releasing the bombs, Israeli pilots -turning on their after-burners- descended as low as possible, protecting themselves against Arab air defense. They left the deployment location at maximum speed.

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2nd Figure, Boeing 377 Stratocruiser

Apart from fragmentation bombs and cluster munition, penetration bombs were also used by the Israeli forces.

For instance, the direct hit of a 340-kg bomb pierced the 50-cm thick concrete aircraft shelter. On top of that the Arab military aircraft stored in doorless shelters suffered substantial damages from the shrapnels of the cluster and fragmentation bombs. The F-4 Phantoms and Mirage III fighters excelled in rendering airport technology and equipment unusable. When Arab aircraft weren' t airborne, guided and unguided missiles were fired at them.

On 8 October, for example, one of the Israeli Mirage III-s attacked an open, barrier-free shelter, blowing up the ammunition stored beside the MiG-21 there. As reported, splinters of the Sz-5K missiles significantly damaged the nearby Arab military aircraft. Containers of the cluster munition were released in the air at a 150-meter altitude.

Part of the spherical-shaped bombs exploded on impact, while the rest rolled on the ground endangering human forces. The Israeli military leadership thought in a special way. They presumed that the ideal time of air strikes against Arab military airpoirts would be when the Egyptian and Syrian fighters were outside their shelters: this way, they were in a vulnerable situation after landing or take-off.

However, the Egyptian Air Force (EAF) had not suffered a devastating defeat because their radio technology companies held their ground. The Israeli air force attacked them with 4 aircraft. By establishing a smokescreen, the Arabs defended themselves quite effectively, though. To eliminate anti-aircraft missile units and ground-based radar stations, the Israeli army deployed AGM-45 Shrike and AGM-78 Standard ARM missiles and Maverick-type TV-guided air-to-ground missiles. Arab air defense missile batteries were installed 8-15 kilometres from each other, which provided a threefold or fourfold overlap. No wonder that Israeli military aircraft were unable to break through the defense line. Launching the Israeli bombers into action by taking advantage of the terrain's favorable features was considered a new method. The attackers reached their destination camouflaged and tried to carry out their tasks from the first sortie.

On 8 October, in the El Kantara area, pilots of the Jewish state attacked the gathering Arab land forces from an altitude of 10-20 metres. Four F-4 fighters abruptly „jumped" onto an altitude of 6-800 metres, 2-3 kilometres before the target, attacking at the second sortie, while the Mirage III aircraft-pairs provided support to the other deployed military aircraft.

The Golan Heights and the Lebanese-Syrian border provided natural protection for the Israeli military aircraft in this area. Arab radiolocator intelligence became almost totally ineffective. On the Egyptian frontline, the military aircraft of the Jewish state mainly flew in from the Mediterranean Sea, utlizing the advantages of the Suhni valley in the south. The Israeli military fighter-pairs flew 1-2 kilometres away from each other. The low altitude attacks determined the structure of the Israeli battle order. The application of visual observation posts were essential: the information received appeared on the air surveillance plotting board of the central command post.

Crews of the Arab air defense used the SA-3 and other type of missiles with the Carat-2 adaptor and were directed onto the combating Israeli planes by the so-called 3-point method. On 1 October, on the Syrian front, the Arab SA-3 missile complex shot down 6 Israeli Phantoms by a TV-guided system. Obviously, the event had a negative psychological effect on other Israeli pilots.

3rd Fig. F-4 Phantom

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During the Yom Kippur War, the combination of the Israeli Air Force's ground-level activities and the constant radio electronic jamming was considered very effective. To destroy land border crossings, AGM-62 Walleye guided bombs were used. During the military operation, the tactical solutions observed during the Vietnam War revealed that American pilots also fought in the Yom Kippur War. The F-4 Phantoms attacking solely airfields protected by air defense artillery was considered a new development. Fighter pilots of the Jewish state flew at an altitude of 20-30 metres to reach the target airport zone. Rising to an altitude of 400-500 metres, they flew horizontally towards the target object. 2-3 seconds later, the pilots did an opposite banking of 110-110 degrees. In the turn, he suddenly pulled and released the bomb. The accuracy of the bombing was considered almost perfect. During the sortie, the Israeli pilots combined protection against air defense and the effective attack of the target.

Among the imitated attacks, the deployment of the diversion and strike groups from the same direction must be emphasized. After the strikes of collegaues, the diversion forces returned and carried out an attack themselves.

On 10 October, an F-4 Phantom formation flew toward Damascus and imitated a breakthrough attack against the Syrian air defense system. At the same time, a group of 12 military aircarft flying at a very low altitude, zoomed out in a southern air corridor and carried out a surprise attack against another Syrian airport.

The Israeli unmanned aerial vehicles (UAV) must be mentioned. They were deployed to distract the attention of the Arab air defense from real attacks. Later, UAVs gathered information about Arab air defense in Lebanon and Syria. In 1982, during armed actions, the Israelis observed Arab airport activities by UAVs, By processing the obtained information, alternative plans were developed.

4th Fig. UAV

FEATURES OF THE ISRAELI AIR FORCE COMBAT ACTION AND NEW METHODS OF AERIAL WARFARE

In the Yom Kippur War, the Israeli Air Force was characterized by intensive activity. Their primary aim was to gain air dominance and support their own land forces. For this purpose, F-4 Phantoms and Mirage IIIs were used as fighter-bombers. Among the ground attack aircraft, the A-4H Skyhawk must be emphasised and among the helicopters, the Bell 205 (UH-1D), Alouette II. and III. and Super Frelon were deployed. The air battles revealed that the F-4 Phantoms – at a climb with a high angle of attack and significant overload – lost their airsped and got into a spin. Pilots of the Israeli aircraft shot down told later that it was difficult to maneuver the F-4s at medium and high altitudes at level turns, especially at 400-450 kilometres per hour. Based on this, at low speed, stability had to be ensured and driving improved. The problem was solved by fitting auxilliary, automatically controlled wings to 80 F-4 Phantoms. From then on, the jets were able to fight the Arab MiG-21s, if they were able to conduct low speed level turns.

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5th Fig. Bell-205

Another new element used by Israelis in the Middle-East was the deployment of attack helicopters capable of supporting battle tanks and armored vehicles. To break through enemy armor, the French-make AS-11 guided missile and the American TOW anti-tank guided missiles were launched. Helicopters mounted with guided anti-tank missiles smelled powder for the first time on 14 October, in combat for a diagonal route.

15-18 aircraft flew 3-10 metres over the ground demolishing more than 10 Arab tanks in 5-6 minutes. The Jewish helicopters fired mostly from a distance of 3 kilometres but they could have been used from closer, as well. In the latter situation, the missiles were launched from an altitude of 20-100 metres. The maneouver took 25-40 seconds and the pilots headed towards their own area afterwards.

A new addition of the Israelis was the infrared trap used for the interference of heat-seeking air defense missiles. The trap is a spherical metal tank with a diameter of 250 millimetre and thickness of 4 millimetre. It is filled with a special fuel mixture. Every couple of seconds, the Israeli pilots released these tanks. They were burning during the parachute descent. A military aircraft could carry an average of 10 infrared traps in two suspended containers. The mixture flew out of the bottom of the tank, burned at high temperature for 30 seconds, faking an infrared target for the heet-seeking air defense missiles this way. This is why 66 SA-7 missiles, launched by the Syrians hit no targets.

Among air-to-ground missiles, the TV-guided AGM-65 Mavericks were the most effective but guided TOW anti-tank missiles were also deployed. The AGM-65 Mavericks were used in the final stage of war against tanks, missiles and artillery batteries. Israelis launched a total of 50 AGMs and 40 direct hits were recorded. The Jewish Air Force used an arsenal of guided and unguided weapons on board. The most effective were the TV-guided Walleye AGM-62 and GBU-15 guided aerial bomb. Among the unguided devices, the 225-kg and 337-kg MK-82 Snake Eye, the MK-117 general purpose bomb, a 337-kg BLU-1 / B incendiary bomb, the BLU-26 / B and BLU -59 / B fragmentation bomb, the CBU-24B / B, the CBU-49 / B cluster bomb, and MK-20 Roykeye container equipped with MK-118 cumulative charged bombs lived up to Israeli expectations. The airports attacked by these bombs rendered useless for a period of 4-6 hours. To delay the repair work done by the Arab forces, Israelis equipped the bombs with 4, 6, 7 and 9-hour time delay fuzes. To destroy Arab fighter aircraft stored outside shelters, BLU-24 / B cluster bombs with impact were dropped in containers.

6th Fig. AGM-62 Walley

Naturally, weapons on board of the aircraft were also tested, especially in combat missions against ground forces. Furthermore, they were also used in aerial combat against Arab planes. No doubt, these weapons on board are essential in a succesful air-to-air combat.

THE SIGNIFICANCE OF JAMMING RADIO-ELECTRONIC COMBAT DEVICES

Israeli forces jammed Arab air defense missiles and radio-technical formations from Boeing Stratocruisers. These, as well as unmanned aircraft, were directed into the patrol zone 1-2 hours before the combat activitiy. Jamming commenced when Israeli fighter aicraft had reached the detection zone of the enemy's radar stations. Jamming lasted as long as the Jewish fighter-bombers stayed in the target area impeding the Israeli aircraft to leave the recce zone of Arab radars.

Active noise and impusle jamming must be mentioned among the equipment applied. They were broadcast as "transmitter" jamming signal. The dispersion of metal-coated, fiber-glass dipole reflectors were used as camouflage passive jamming device –for the purpose of limiting the simulated aerial position. It proved to be an excellent solution for camouflaging the striking equipment and aircraft. After periodically firing, 6-8 dummy target groups also appeared on the ground radar screens in addition to the target. They were located 1-2 kilometres apart and caused great confusion as it was difficult to choose which actually posed a real threat.

On 9 October, on the day of the air-strike led against Damascus, one of the Israeli F-4 Phantoms located two anti-aircraft missiles being launched towards it. It fired a couple of passive jamming charges. The Arab missiles headed for the two clouds formed by the metal-coated glass-fiber bundles. (Actually, this Israeli aircraft was shot down by a third missile.) The MQM-74A, an unmanned Israeli aircraft, was a deceptive air object, suppressing the Arab air radars, which were meant to act against the Israeli main air strike. It is interesting to note that Israel did not use this method properly. After the Yom Kippur War, it was concluded, that the pilots of the F-4 Phantoms often switched on their onboard jamming equipment right after the bombing, when leaving target area.

7th Fig. MQM-74A

CO-OPERATION BETWEEN THE ISRAELI AIR FORCE AND GROUND FORCES

From this respect, Israel's performance was excellent in the Yom Kippur War. Its Air Force liaison officers co-operated very well with the forward flight controllers, who were pilots banned from flying by the Air Force command. In many cases, officers with army training had also undergone training to direct air manoeuvers. Forward flight controllers integrated into the battle order of the army, recorded all the necessary data, consulted about the aircraft requirement of direct air support and recorded the so-called "safe bombing boundaries" on the map. If the boundary was located on the territory between the enemy and friendly forces, fighter pilots requested permission to strike from the forward flight controllers. The fighter-bombers were supported by helicopters too, when being guided onto their target. Helicopters

hovering at a low altitude carried out visual target reconnaisance, selecting the most favorable relative position of the target for the fighter-bomber.

Israeli artillery subunits couldn't fire without the permission of flight controllers, or else they could have jeopardized the safety of their own aircraft. Direct air support was carried out by a formation of 4-10 aircraft. Napalm and cluster-bomb strikes were delivered but enemy ground forces were also attacked with armour-piercing bombs. Israeli protective groups were divided into two parts: one acted in front of the combat group while the other behind it. Large targets, such as tank battalions, were attacked by 6-8 aircraft. The leading plane maintained communication with the forward flight controller, which facilitated the control of the destruction of the selected targets and the decisions necessary for repeated sorties.

2-4 sorties were carried out from an altitude of 1800-2000 metres, diving, against targets poorly protected by the Arab air defence. One sortie was allocated against highly protected targets. In these cases, Israeli military aircraft stayed over their targets for just a minimum period of time – i.e. 1-2 minutes.

In addition to aircraft, helicopters armed with anti-tank missiles were also used to provide direct air support to ground forces. They were equipped with armor-piercing bombs, which were dropped in containers. Each contained 247 small bombs. Bombing was carried out from an altitude of 1500-2000 metres, and the container opened up at an altitude of 400-500 metres. The cumulative radius of the bomb hit a 12-mm diameter hole on the tanks, for instance on the T-72 turret.

On the Egyptian front, the Israeli air units used a northern, two central and a southern air corridor. On the Syrian front, the northern corridor was formed by the Lebanese mountains and its territory. The western front was appointed on the Golan Heights, while the southern was located along the Syrian-Jordanian border, leading over the desert, south of Syria. In these directions, the Jewish air force opened a so-called air corridor in the Arab air defence system. It was highly beneficial, as on this air-route, the Israeli military aircraft weren't threatened by the ground fire of Arab air defense.

Before the Yom Kippur War, Israelis had developed methods of military aircraft interception. The interception of air targets on the Egyptian front, mainly concentrated on the territory 10-20 kilometres west from the Suez canal, while concerning Syria, it was an eastern conctact zone, with a 10-15 kilometres from the direct line. Interceptor aircraft led their comrades onto the targets after a 2-6 minute long air patrol. The interception itself took 20-30 minutes.

„Surprise attacks from below" war tactics used by the Israeli air force were worked out based on the 1969-1970's air combat experience. It proved effective in the 1973 war. For this purpose, the majority of the military aircraft flew at a low altitude in a closed combat order, while the previously mentioned aircaft-pair in formation measured an unexpected blow from the bottom. In such actions, the F-4 Phantoms' on-board radar equipment are designed to allow target location – launching of guided missiles even if there is a few kilometer altitude difference between the aircraft and the target.

As early as the combat operations of 1969-1970, the pre-determinded opening of fighter groups were used in manoeuvering air combat. In 1973, these opening operations were used by the Israelis against fighter-bombers of the Arabs. This method gave direct air support during combat operations for their own land forces. Israelis ambushed mostly with Mirage IIIs or F-4 Phantoms near the front line. To increase their patrol time, the aircraft flew with suspended spare fuel tanks. For ambush warfare, the Israelis deployed false aircraft formations fighting against the group of aircraft supporting Arab fighter-bombers. Israelis manoeuvering in ambush waited until the Arab pilots used up the majority of their fuel and delivered a heavy blow on the enemy.

The 'pincer' was a popular Israeli method where pairs of Mirage IIIs were informed about their tracking point. An open battle formation was created and if the Arab MiG-17s taking advantage of their better manoeuveribility abilities turned towards one of the Mirage-pairs, they were attacked by another pair of Mirages.

As the Israeli Air Force had not achieved a decisive success in destroying Syrian fighter aircraft on the ground, they attempted to gain superiority in air combat. Therefore, Jewish troops carried out dummy sorties over Lebanon. They penetrated the Syrian airspace at a low altitude, attracting the attention of Syrian fighters. The Israelis managed to gain

tactical superiority by launching camouflaged Israeli spare aircraft flying at low altitude, while the Syrian pilots were forced to continue fighting among unfavourable circumstances.

In 1973, Arab military aircraft enjoyed numerical superiority and Israeli fighter pilots did not benefit from the unexpected attacks. The latter had another method, though. It was called 'deviation from fighting' and could cause confusion. The F-4 Phantoms armed with bombs to attack ground targets were used and not the Mirage IIIs and F-4 Phantoms whose pilots fought as fighter pilots in air combats and were armed with air-to-air missiles. The latter generally avoided encounters with Arab MiG-21s. Subsequent analyses concerning the launching of the missiles confirmed that Israeli forces had weak capacities to launch missiles in front air space.

The Yom Kippur War, the 4th Arab-Israeli armed conflict, had clearly and repeteadly confirmed the previous experience, namely that Israel ought to confront its qualitative superiority against the overwhelming quantitative superiority of Arab countries.

Kulcsszavak: légvédelem, repülőgép, légi csapás

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