In one spectacular engagement in the skies over Lebanon, modern airpower took a dramatic leap forward.

THE BEKAA VALLEY WAR

By Rebecca Grant

In June 1982, Israeli ground forces pushed into Lebanon in an effort to put an end to cross-border terror attacks. Operation Peace for Galilee, as Israel dubbed it, led to a prolonged conflict with Lebanon and produced mixed overall results.

However, the initial phase of that operation included a spectacular moment when the Israeli Air Force destroyed 19 surface-to-air missile batteries, with no losses, and downed a huge number of enemy aircraft. With real-time intelligence and careful exploitation of adversary weaknesses, the IAF dealt modern air defenses their first major defeat.

So startling was the IAF success in that Bekaa Valley air war 20 years ago this month that it ever since has stood out as a critical turning point in the deadly duel of fighters and SAMs.

The Bekaa Valley success was long in the making. Israel's small but elite air force dominated the Six Day War of June 1967, pulling off one of the most successful surprise attacks of all time. Flying about 3,300 sorties, the IAF smashed the air forces of Egypt, Jordan, and Syria. The three Arab nations, taken together, lost around 400 aircraft on the ground and in the air. Thereafter, the Egyptian, Syrian, and Jordanian armies were routed in the Sinai, Golan Heights, and West Bank.

However, the IAF's dominance in the air was successfully challenged in the War of Attrition which officially started in March 1969 and ended in mid–1970. Egypt's campaign to harass Israeli forces in the Sinai was backed by a massive infusion of Soviet weapons, including modern aircraft and missiles. As a result, the IAF was the first air force that had to contend with advanced Soviet–made SAMs.

During these years, IAF raids destroyed some Egyptian SAM batteries, but sporadic action was not enough. Worse, the SAMs were taking a toll on the small Israeli Air Force. One historian of these events, retired RAF Air Vice Marshal Tony Mason, observed, "Squadron attrition exchange ratios had changed from 1-to-40 in the air to 2-to-4 against missiles" during the peak of the War of Attrition. It was only too apparent that the Arab states were shifting from fighters to SAMS for air defense.

The October War

Major changes were on display during the October 1973 war. When Egypt and Syria mounted their coordinated surprise attack on Oct. 6, 1973, the IAF faced a formidable air defense environment—"denser than anything in North Vietnam," according to a 1978 Air University report.

Egypt had only 20 mobile SA-6 SAM systems, but these were backed up by 70 SA-2s, 65 SA-3s, and upward of 2,500 anti-aircraft batteries and perhaps as many as 3,000 shoulder-fired SA-7s. Syria deployed another 34 SAM batteries. IAF pilots had to fight for air superiority while making frantic efforts to deliver close support to Israel's embattled ground forces east of the Suez Canal. "Israeli fighters and Arab missile sites engaged in mutual bloodletting," said one official Israeli report.

During this dangerous time, the IAF's second in command was David Ivry. Ivry, a fighter pilot who flew in the 1967 war (and who recently served as Israel's ambassador to the United States), recalls that the surprise nature of the attack meant "we didn't have any time to eliminate the air defense, and we had to fight within very dense air defenses, to participate in the land forces campaign, and we lost a lot of airplanes."

In the first three days, the IAF lost 50 aircraft in about 1,220 sorties. This was an unsustainable loss rate of four percent, rivaling the loss rate of the early US bomber offensives over Germany in World War II. The

losses tapered off, but the SA-6s, SA-7s, and ZSU-24 guns scored hits on 53 of Israel's prewar total of 170 A-4 Skyhawks and 33 of its 177 F-4 Phantoms.

Some of the battle damage was light and some serious, but the air defenses were finding their mark and making it difficult for the IAF to provide emergency close air support to Israeli ground forces. Egypt's air defenses stymied the IAF's attempt to support Israel's early counterattacks.

The IAF was undertaking very high-risk missions and, ultimately, Israel reaped the reward. The air support helped turn the tide in huge battles east of the canal.

On Oct. 14, Egypt moved up reserves to the Sinai and pushed ahead of its own air defenses. Egypt paid the price with the loss of 28 aircraft that day. The attack unraveled as Israeli air and ground troops quickly stopped the advance. One Egyptian division commander, in an interview with British historian Trevor N. Dupuy, said, "When we tried to move out beyond the SAM umbrella, we took unacceptable losses from the Israeli Air Force."

Fighting continued for several days more, ending in a cease-fire with Israeli ground troops ensconced west of the canal and all sides bloodied and battered.

Israel had prevailed, but the cost of the October War made clear the fact that the IAF's tactics would have to change. Even at the end of the war, Israel was still groping for solutions to the SAM problem, losing five Phantoms in a single raid.

Devastating Losses

To Ivry, the IAF's loss of effectiveness was devastating. "At the end of the war," he said, "we managed to come up with quite an impressive victory," but Israel's military leaders had "a very bad feeling" about the fact that the F-4 was "not successful against SAM batteries." SAM belts restricted the ability of the IAF to interdict an invading army. Surface-to-air missiles could also shelter batteries of short-range surface-to-surface missiles like the SS-21, which would be capable of holding Israeli territory at risk of attack.

As Ivry saw it, airpower's role in future wars had been placed in doubt.

Photo courtesy IAF Magazine

When SAM batteries in the Bekaa Valley threatened Israel's air superiority over its border with Lebanon, IAF F-4 Phantoms such as these used high-speed anti-radiation missiles to destroy the sites.

The 1973 war left Israel—not to mention other Western air forces—with the fear that fighters might no longer be able to gain air superiority against an integrated air defense. One such skeptic was Ezer Weizman, a former commander of the IAF. Ivry recalled Weizman's stated view as "the wing of the fighter plane was broken by the SAM."

Clearly, the IAF's freedom to operate in future battles depended on its finding a way to rapidly and systematically take out stationary or mobile SAMs. In Ivry's view, the main lesson of 1973 was simple: "We have to find an answer to the SAM batteries."

Years passed, and Egypt and Israel made peace, but the overall SAM problem did not go away. If anything, it intensified. In April 1981, Syria began to deploy its first SAM brigades to the Bekaa Valley of Lebanon. The move came in response to the IAF's shootdown of two Syrian helicopters which had been participating in attacks on Christian militia—Israel's allies—in southern Lebanon.

One who was studying Syria's move with great interest was Ivry, who had become head of the IAF.

"From our point of view," he said, the movement of SAM brigades into the Bekaa Valley was "crossing the red line" because it threatened Israel's air superiority over its border with Lebanon. SAMs in the Bekaa Valley restricted the IAF's ability to conduct reconnaissance or to provide air cover for ground operations.

However, the clock was ticking on implementing the final phases of the 1978 Camp David Accords and the 1979 Israel–Egypt peace treaty, which called for withdrawal of forces from the Sinai in 1982. The political situation was "very delicate," in Ivry's words. Israel was tempted to carry out an attack on the Bekaa Valley SAM brigades, but the IAF had a bigger challenge in mind: destruction of the Osirak nuclear reactor then under construction in Iraq. On June 7, 1981, in a stunning attack, a strike package of 14 Israeli fighters destroyed the reactor outside Baghdad.

A year later, however, the elimination of the Bekaa Valley SAM sites became an urgent priority. Palestine Liberation Organization forces in southern Lebanon had become part of an escalating cross-border conflict aimed at Israeli settlements. The PLO fired artillery and rockets against Israeli civilian areas in Galilee.

Israeli Defense Minister Ariel Sharon got Prime Minister Menachem Begin's support for an operation in Lebanon to attack the PLO forces there. Operation Peace for Galilee aimed to drive Israeli ground forces into Lebanon to keep Syria at bay, while Lebanese Christian militiamen drove out the PLO. The first week of the operation culminated with the most significant air battle of the 1980s

and one of the most important in the history of military airpower.

The Hunt Begins

On June 6, Israeli ground forces began an advance into the PLO settlements in Lebanon with the IAF fighters and attack helicopters providing support. Israeli forces moved fast, pushing north to Jazzin, where action stalled. Israeli ground forces needed continued air support, but the pace threatened to put IAF fighters, attack aircraft, and helicopters in range of the Bekaa Valley SAM sites.

Ivry and his headquarters staff at the Tel Aviv command post were watching Syria closely. One major concern was trying to "avoid any war with Syria," said Ivry. The SAM sites were in the Bekaa Valley in Lebanon with others in Syria itself, protecting the Bekaa Valley batteries. Syrian troops and Palestinian guerrillas were crowded into the small operational area along with Israeli helicopters and rescue operations.

"Sometimes we had more than 100 planes flying in this kind of environment," said Ivry. It was "a real saturation area," about 1,500 square miles of airspace, where command and control was paramount. Ivry ran the central control of the operation himself.

Initial plans called for attacks on 14 SAM sites. Then on Tuesday, June 8, Ivry learned that Israeli Remotely Piloted Vehicles (RPVs) had spotted an additional five SA-6s moving from the Golan Heights into the Bekaa Valley.

"They had a very dense belt along the Golan Heights to prevent Israeli penetration" toward Damascus, Ivry explained. "We found this out in the morning," Ivry said, and "it meant quite a lot for us."

The move signaled that Syria had no intention of becoming involved in a major war—or the SAMs would have been positioned to defend the approach to Damascus, instead of going north and reinforcing the Bekaa Valley. The redeployment suggested to Ivry that they could strike the SAM sites without drawing Syria into a wider war and achieve the goal of eliminating the SAM defenses from Lebanon.

Conditions were perfect. Ivry changed plans on the morning of Wednesday, June 9, taking into account the five newly spotted SAM batteries. He planned to launch the attack at noon but had to wait for Israel's Cabinet to approve the raid. The Cabinet's deliberations finished shortly after 10 a.m. and "we got the green light." Ivry by that time had postponed the attack until 2 p.m.

"Before the attack, there were a lot of Syrian patrols on the border," recounted Ivry, but no air combat engagements that morning. The Syrians avoided battle. "We'd shot down quite a lot of Syrian MiGs before," commented Ivry.

"Free-Fire Zone"

When Israel launched its strike force at 2 p.m., the Syrians ordered their combat air patrols to return to base and land. With their fighters down and safely out of the way, Ivry said, Syrian commanders thought they "were going to have a free-fire zone to shoot anybody who flies."

He added, "They've been so confident that their air defense is so strong that why should they risk any Syrian fighter planes?"

Now, Ivry directed his strike aircraft toward the nest of SAMs. The SAM sites were a combination of SA-2s, SA-3s, and SA-6s. "It was a challenge to attack," said Ivry. Key to the plan was gathering data to exploit weaknesses in the technology of the SAMs and the way they were operated by the Syrians.

Ivry recalled that "the intelligence-gathering effort which we did was an enormous one." Other sources describe how, prior to the war, Israeli drones tested out the radar and communications frequencies of the SAM batteries. In his 1991 book *The Samson Option*, Seymour M. Hersh writes that clandestine operations in May 1982 produced a wealth of data on SAM frequencies and radar coverage that later proved useful to IAF electronic warfare in the Bekaa Valley.

Attacking the SAMs in daylight relied on command, control, and intelligence to make the strike fast and effective—and standoff missiles to give the Israeli aircrews the first shots. The plan had been well-rehearsed. Aircrews practiced attack runs against dummy SAM sites in Israel's Negev desert for months before the operation. The IAF conducted mock jamming of fighter and ground communications in order to undercut centralized control of the air defense.

"You have to find a way when to jam and when not to jam," explained Ivry. "You can jam it when you need it to assist your fighter planes. And you cannot jam it when you want to get information, when you want to listen."

IAF aircraft also carried electronic countermeasures pods to foil radar tracking.

Ivry needed direct control over the attack to make it a success. The IAF command post in Tel Aviv gave Ivry a real-time command picture of the air battle through various data links. E-2Cs with their airborne surveillance radar downlinked their pictures to the command post.

Photo courtesy IAF Magazine

Remotely Piloted Vehicles (a Scout is shown here) detected additional SAMs deployed to the valley. This allowed IAF leaders to adjust their strategy. Later, the RPVs smoked out SAM sites for the F-4s to destroy.

Remotely Piloted Vehicles provided video. Israel had one squadron of RPVs; this was not enough, in Ivry's view, and it had limited nighttime capability, but the squadron was enough for Ivry to keep at least two RPVs in the air all the time. Israeli RPVs helped provide constant locations of the Syrian SAM batteries.

"We tried to follow them, because some of them had been mobile," said Ivry. He added, that morning "we'd been following them, all of them, [and] this was one of the conditions for that morning, to get all the information. Yes, we knew, no doubt, we knew all of them, where they were located."

The IAF also set up two-way voice communications between Ivry and his pilots. This real-time command, control, and intelligence capability, largely new to modern air warfare, delivered what Ivry termed the "real-time intelligence" to the local operators and the strike force.

When the attack was launched, F-15s and F-16s provided interception and air defense capability while F-4 Phantoms took the main role in attacking the SAM batteries. RPVs went in first to get the Syrian SAMs to turn on their radars. Then the F-4s destroyed them with high-speed anti-radiation missiles.

Because the fighters were striking known locations, the attack moved fast, minimizing the exposure of aircraft to the SAMs. The rapid flight time of the missiles also furnished just enough standoff to maximize the F-4s' chances of getting away. Immediately, the SAM batteries were "disrupted one after another," recounted Ivry.

When the shooting was over, the IAF had destroyed all 19 SAM batteries within two hours without losing an airplane.

The IAF had Laser-Guided Bomb capability, but Ivry said, "In this case we didn't use it. It's too slow. But then, after the attacks, after eliminating the SAM battery, you can come over to destroy part of the site" with no risk.

Score: 87-to-Zip

Meanwhile, Syria's fighters found themselves badly out of position when the Israeli attacks on the SAM sites began. "After about 20 minutes, they launched fighter planes to intercept, to try to disturb our attacks on the SAM batteries," Ivry noted.

Photo courtesy IAF Magazine

One at a time, four-ship formations of Israeli fighters flew into the engagement zone. The IAF pilots were able to shoot down as many as two or three out of four Syrian fighters. Here, three IAF F-15s carry out a patrol.

Helicopters, drones, electronic warfare, strike fighters, and now air combat made up a massive aerial melee.

"You have a kind of concert which you are conducting," recalled Ivry. "It's not only just the fighter planes that are killing MiGs and other ones on SAM batteries. Once you have them in the same area, you have to conduct a concert. You cannot play the drums in the same time as the piano is playing a different concert. And air combat is a different concert than [the attack on] the SAM batteries."

From the command center, Ivry had the E-2C air picture plus F-15s capable of sorting out engagements at shorter range. IAF pilots relied frequently on VHF radio, hoping to preserve their tactical communications and links to the command post.

Ivry's tactic was to vector four-ship formations of Israeli fighters into the engagement zone, one at a time. Each air battle lasted one to two minutes. Ivry did not want to let any more than one four-ship into the battle area. "Never mind if I'm not going to catch all the MiGs" he said; he wanted "to be on the safe side that I'm not going to intercept one of ours."

For the Syrians, the battle was hopeless, tactically and psychologically. Selective airborne communications jamming frazzled the airwaves for the Syrian MiG-21s and MiG-23s and cut them off from ground control.

Ivry described their lack of confidence as the Syrian fighter pilots launched and came up into the fight without any idea of the interception route they would run. When they did try something, the interceptions attempted by the MiG pilots were "not very efficient," in Ivry's opinion.

"So, we catch them slowly, one by one," he remembered.

Listening in the command post, Ivry heard the Israeli fighters shooting down "sometimes two or three out of four" of the Syrians. "And the more they came, the lack of confidence on their side was increased." Psychologically, as Ivry said of the Syrian pilots' state of mind, "you're losing and losing." He went on, "Once you start to lose, you think, 'Well, I'm going to be a target, and I'm going to go over there because I've been summoned?' "

The Israeli pilots kept the advantage. "I can only tell you that, within half an hour, we shot down about 26 MiGs," Ivry said. After two hours Ivry called off the SAM attacks. The tally grew so that by noon on Friday, when a cease-fire took effect, IAF pilots had shot down 82 airplanes without losing any in air combat.

Wiping out the Bekaa Valley SAMs cleared the way for the IAF to give full support to the Israeli ground forces. Subsequently, the IAF also scored hits on Syrian tanks using attack helicopters with TOW mis-

Photo courtesy IAF Magazine

The Bekaa Valley War forced Israel's enemies to consider alternative weapons and helped the IAF—whose F-15s still bear the kill markings from this battle—regain its stature within Israel's armed forces.

siles and fighters with LGBs. "We were attacking a lot of tanks," Ivry said. "We had an operation to prevent an armored division coming from the north, by night."

After Israeli and Syrian tank clashes, the IAF used F-4s and A-4s, with Mk 82 and Mk 83 laser guidance kits attached, to designate and attack tanks by night.

Real-Time Targeting

Two weeks later, Ivry got a chance to test out real-time command and control against another small set of SAM batteries. The Syrians moved a new SAM battery into Lebanon. One F-4 Phantom loitering in the area was shot down by the ambush and "attacked by a missile coming from Syria, not from inside Lebanon."

Ivry ordered an immediate strike and now believes they caught three out of the four batteries. The success came because the IAF constantly tracked the SAMs.

"In some ways it was much more a kind of hunting," as Ivry described it. "We had RPVs running after them [the SAM batteries] all the time." The SAM batteries ducked into villages, causing frustration. This left the IAF following them, "waiting to see that we are not going to miss them [the SAM batteries] getting out of the city and to attack them on a place which [was not] very populated."

The RPVs gave a video picture that matched up with a map grid system familiar to the Israeli pilots, who knew the terrain well. With a lot of practice, the system gave Ivry the ability to call each fighter and pass the information within "seconds."

"This was real-time communications," Ivry said. "By voice, I could speak with anyone from my command post. Sometimes I even knew the names" of the pilots in the formation, he added, especially when his son was flying.

A Change in Warfare

In contrast with the desperate air battles of October 1973, Israel's 46-hour Bekaa Valley air war set a new standard for orchestrated air operations and proved that even sophisticated mobile SAMs could be dismembered by well-coordinated air attacks.

"The ability to disrupt the SAM batteries, this kind of achievement, it made a major impact strategically," Ivry noted.

The lopsided scores against both Syrian SAMs and fighters put orchestrated airpower back in the center of modern warfare. Not losing airplanes was "mainly luck, I can tell you," Ivry said later, pointing to the close-packed nature of the air battles. Bekaa Valley underscored the value of electronic warfare and the benefits of coordination and careful planning. Ivry's role in coping with unexpected SAM batteries and altering attack plans in real time showed that success in air warfare rested on skillful execution in the heat of battle as well as prior planning.

For Israel, the Bekaa Valley air war established a strong deterrent against Syria, according to Ivry. It also helped the IAF regain balance within Israel's armed forces.

Yet the Bekaa Valley air war also helped drive Middle East strategy in a new direction. Potential opponents started to look for new weapons, since challenging the IAF in the skies was deemed pointless. Ivry cited conclusions drawn by the Syrian minister of defense, who felt that Israeli airpower and electronic warfare won the day in the Bekaa Valley and the next war would be a "surface-to-surface war and not the surface-to-air war anymore." As Ivry said, "That's when they started to buy the Scuds." He was referring to Syria and Iraq.

In Moscow, the Bekaa Valley operation threw military men into a kind of shock. Top Soviet systems had been trounced. On a visit to Czechoslovakia in 1991, Ivry met a Czech general who had been serving in Moscow in 1982. He told Ivry that the Bekaa Valley air war made the Soviets understand that Western technology was superior to theirs, and in this Czech general's view, the blow to the Bekaa Valley SAMs was part of the cascade of events leading to the collapse of the Soviet Union.

The Bekaa Valley also provided a preview of the technological marvels of the 1991 Persian Gulf War, with the US Air Force's destruction of integrated air defenses, to increasing real-time control by those in charge of fighter operations, to Laser-Guided Bombs hitting tanks in the desert. Used aggressively and skillfully by the IAF, airpower once again had come out on top. ■

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