

THE A-4 EVER

SKYHAWK ASSOCIATION JOURNAL VOL 29-4



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Hawkeye: Israel's Ace of Aces
Tribute to Rami Lothan
The ESCAPAAC Story
Operation Nickel Grass

Board Meeting/Reunion
March 11, 2024
Pensacola, FL

Winter 2023–2024

<https://skyhawk.org>



THE PREZ SEZ

Gene "Blade" Atwell

Another year dawns and we continue to build a website with more information about the venerable Scooter, which first flew 70 years ago on June 22nd of this year, less than two years from the issuance of its initial contract.

Since you probably came to our website at skyhawk.org to view this "open to the public" digital issue, we invite you to spend some time to further explore the site, including the Ready Room and other locations, which can be viewed by signed-in members. If you're not a member, look

for the *Join Us* link on the *Association* drop-down menu.

Our annual spring board of directors meeting will be held in Pensacola from March 11th thru March 14th. All members in good standing are invited to join us during our time there. Our annual director's meeting in conjunction with Tailhook 2024 will take place at the Grand Sierra in Reno from August 22nd to August 24th. Please check out our website for hotel discounts pertaining to our members at both locations.



Gene "Blade" Atwell

Most importantly, Hide and Stephanie have produced another memorable collection of A-4 history and facts, so please enjoy their hard work!

Happy New Year to All!
Gene "Blade" Atwell

NEW MEMBERS

Dan Gildner, Boulder City, NV

Dick Havican, Wilbraham, MA

Ron Picciotti, Whitehouse, TX

John Lawlor, Merritt Island, FL

Gary Knudson, Spokane Valley, WA

Dennis Cribb, Jacksonville, FL

Jim Sinkbell, Clarkston, WA

Luke Butkis, Clinton Township, MI



Join or renew, and give someone a one-year gift membership for \$20 more.

Contact Terry Cooney at skyhawkasn@gmail.com or at 2421 Clubside Dr., Beavercreek, OH 45431

Skyhawkers Reunion!

Please SAVE THE DATES!

USMC Skyhawkers have a reunion planned at the **Hilton and Holiday Inn Resorts, Pensacola Beach, FL, 11-13 November 2024 (Mon-Wed)!**

All drivers, maintainers and aficionados welcome!

Point of contact is Mark Williams at rogerwilco14@gmail.com, 10432 Button Willow Dr, Las Vegas, NV 89134, or 702-778-5010.



IN MEMORY OF
M. DAVIS "WHIZZER" WHITE, D.D.S.
(1939-2007)

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BOMBS AWAY!

• Winter 2023–2024 •

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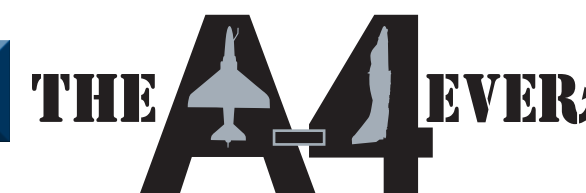
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Contributions

We actively seek contributions from members, including news, photos, historical documents, anecdotes and other items of interest. Submissions may be edited due to space limitations in the magazine. Contributions may be emailed to the Journal Editor at sa-journal-editor@skyhawk.net. Stephanie Davis, graphics, msleefi@gmail.com. Paper issues printed by Acculink, Greenville, NC.

On the Cover: The Skyhawk's final flight and opening of the 2015 Airshow by an A-4N with two Aermacchi M-346 trainers.
Photo by Mark Williams.

TAKE NO PRISONERS

Letters to the Editor

sa-journal-editor@a4skyhawk.net

■ **From: Paul “Booger” Valovich**
Subject: China Lake in the 80s and 90s

This is submitted to expand on the recent Naval Weapons Center (NWC) China Lake weapons development articles. I was assigned to NWC China Lake twice – 1979-81 as the first F/A-18 Deputy Project Manager (in honor of my stumbling contributions, the first NWC Hornet arrived the week after I transferred), then as Chief Staff Officer/Deputy Lab Director from 1986 – 1990 before assuming command of NAS Pt. Mugu.

At that time NWC China Lake was a fiercely independent organization, not necessarily beholden to dictates from inside the Beltway. The creativity of the NWC engineers was amazing – equaled only in leadership’s ability to adjust funding to support various creative weapons and tactical support schemes. NWC had its own sizeable stable of assigned aircraft separate from those assigned to VX-5: F/A-18’s, A-4’s, A-6’s, A-7’s, AV-8’s, AH-1’s, UH-1’s, and various logistics support aircraft. And F-86’s and F-4’s were being converted to drones but still required manned test flights.

When I transferred to Mugu I was current in the A-4 (TA-4, A-4M), A-7 (A-7B, A-7E, TA-7) and F/A-18. I flew as copilot on the UH-1 and MU-2, and logged time in other support aircraft – including some DC-3 time.

The R-2505 airspace was strictly controlled for project testing, but the Panamint Valley immediately to the east was Indian Country, especially on Friday afternoons before retiring to the very active CRUD-focused Barefoot Bar behind the O Club. One entered Panamint expecting to be jumped or hoping to jump someone. Hornets, A-4’s and A-7’s from Lemoore, F-4’s from George AFB, various aircraft from Edwards as well as any airborne China Lake birds all played. None of it briefed. I’m still amazed there weren’t any mid-air.

If ACM wasn’t your preference there was always the opportunity to explore



MWC China Lake – Google Earth



the then-uncontrolled Sierra Nevada Mountains or Death Valley at an altitude of your choosing.

The project flying was equally fascinating, much of it classified. An unclassified example, fiber optics were just being developed. A China Lake engineer wanted to determine how much fiber optic cable could be deployed from an A-7. They developed a converted 300 gallon fuel tank into a fiber optic cable dispenser (hardest part was figuring out how to wind the cable), then mounted that sucker on an A-7B with appropriate test wiring and controls and one end anchored to the runway. On a pleasant Saturday morning I manned up and flew the bird in large circles within R-2505 below 200 kts with partial flaps. I dispensed 66+ miles of fiber optic cable before the cable snapped. When I inquired what one does with 66 miles of fiber optic cable littering the complex, I was told not to worry about it!

I moved from the desert to Pt. Mugu in 1990. Duty there was fantastic, with very close relationships formed with

various civil organizations who thought China Lake was the end of the earth. When queried I always responded that duty in Ventura County was great, but given a choice, I’d go back to the remote desert in a heartbeat. They thought I was certifiably crazy – but the desert bites you on the butt and you end up either hating it or loving it. To this day, I love it.

■ **From: Craig Timmerman**

I “picked” this neat Vietnam tour jacket and was very interested in the history of it, the one patch in the front center, with the scuba goggles, wings and snorkel, also with a VA-155 patch. I cannot find this (scuba/goggles – ed) patch on any searches just wondering if they were retrieving down pilots?



From: Gary Verver

The jacket is an enlisted work “Blue” jacket that belonged to a 3rd Class petty officer (E4). The VA-155 patch on the jacket was in use from around 1953 to 1959 when VA-155 flew the AD Skyraider. The scuba/goggles patch belonged to someone on the flight-line crew, possibly air crew. It’s quite possibly unique to certain VA-155 flight/ground crew members.

■ **From: Peter Merskey**

Flying with then-Lt. Randy Compton, actually on August



Peter Merskey photo

1, 1990, we were in TA-4J, BuNo 158112, Side Number 6. It was the fourth time I had flown in that particular two-seater. At the time, I was a drilling reserve commander as well as a writer/editor of Approach magazine. (Later, I became the editor of the magazine.) I was fortunate to be able to occasionally fly with VFC-12, which had changed its designation to VFC-12 in June 1988 to indicate its role as an adversary

squadron. The squadron riggers took care of my flight gear, which was a great help. LCDR Vezey was, indeed, flying the A-4F single-seater.

I was lucky to shoot that particular scene, as I remember the F-14 was closing pretty fast and I had just enough time bring up my camera and press the button. My little Olympus did the rest. The best camera I ever had, and still do.

■ **From: Jim “Nomad” Lawrence**

A really dear friend of mine, Rod Schneider’s Dad, Mr.



Jim Lawrence photo

Schneider, presented me with this beautiful model of me and my A-4E, that’s on the cover of Bruce Cowee’s *Volume 3 of Vietnam to Western Airlines*. I was deeply touched by his thoughtful kindness and the hours it must have taken him to do this. Even now, long after we were all there some very wonderful people still remember us, VMA-211 1968-1969, 21 years old.

■ **From: Mike Lesnik:**
Subject: Seagull-O-Rama

In reference to the latest *Puresome Unplugged*, I don’t recall that episode, but do know that VMA-324 CO, Lt Col “Terrible Tom” Eddy was senior to the CAG on our Med Cruise. Just keeping my fingers crossed that Jack doesn’t dredge up a story that Major Mother & I starred in.

Second email:

Blunder correction, Lt Col Tom Elder.

From: Editor:

As Puresome would say, “I’ll let him spoke for himself.” Copied YP.

From Youthly Puresome:

My lips are sealed. It was a pleasure to have you guys on that cruise.

Send your letters to sa-journal-editor@skyhawk.net

Send your letters to sa-journal-editor@skyhawk.net

HAWKEYE ISRAEL'S ACE OF ACES

By CDR, Peter B. Mersky, USNR (Ret)

There are some 40 Israeli fighter aces, and it's doubtful there will be any additions to the list, even with the weeks of recent turmoil in the Middle East involving Israel and the forces of Hamas bent on destroying the Jewish state in a conflict with a terrible, bloody intensity that has caught the world by surprise, and against which Israel has responded with a parallel ferocity that perhaps has also surprised most if not all of the more than nine million inhabitants of the beleaguered small country.

To date and as far has been noted, the action has mainly been on the ground, with any air-to-air action having been limited to Hamas sending ground-to-ground rockets met by Israeli anti-missile Iron Dome interceptors supplied by the U.S. Any appearance of Arab aircraft such as what occurred in preceding wars has yet to be seen.



Painting by Roy Grinnell

The only example of the “traditional” manned aerial action since Vietnam and the 1982 engagements of Syrian aircraft versus Israeli interceptors had been the 1980-1988 Iraq-Iran War, and the now-so-called 1991 First Gulf War, with isolated instances that followed in that region. While there may be a few Iranian F-14 aces, the background of their status remains subject to confirmation that has yet to be forthcoming from either side.

Thus, the number of Israeli aces remains the only such list of sustained combat, which will probably stand for a long time. This relatively small group of fighter aces outside the U.S., as well as the lengthy compilation of *all* aces from World War II and Korea offers a few thousand military aviators whose careers and their related skills—not to mention their often-incredible luck—few would dispute. On the Israeli side, there is one pilot whose story is unique even in this small group.

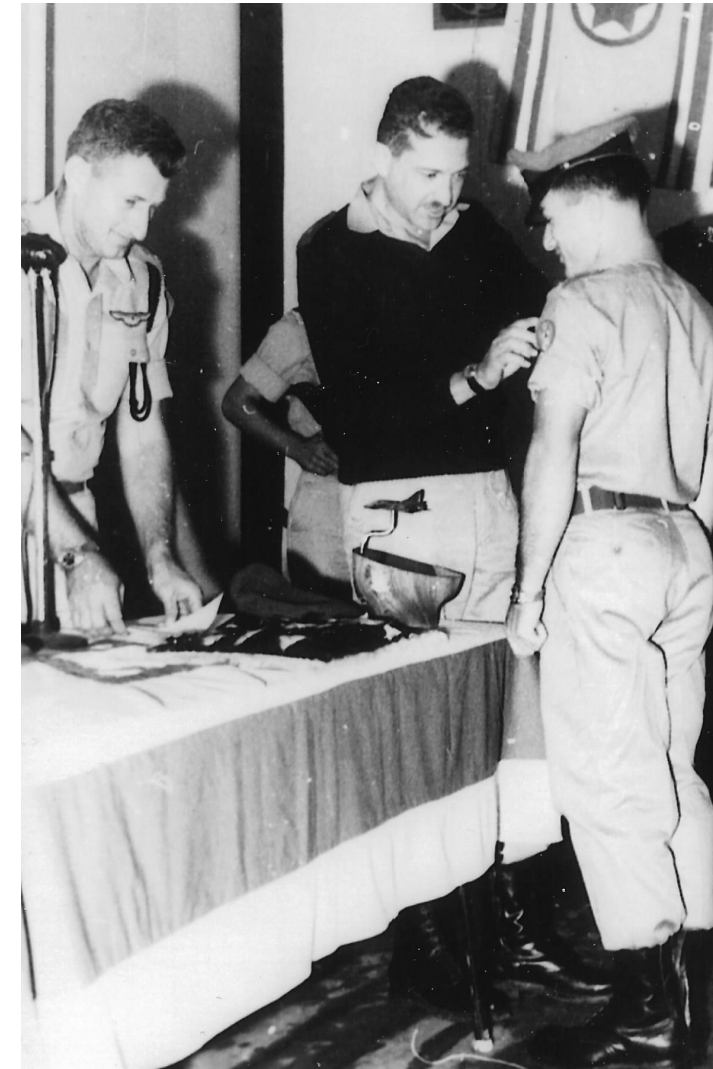
What is even more unusual is the fact that he started out as a paratrooper when the Israel Defense Forces (IDF) and Israeli Air Force (IAF) originally deemed him not physically able to fly in sustained combat but decided he would make an excellent paratrooper, deciding the danger of that highly dangerous profession was less than that of a jet fighter pilot.

After retiring at age 59 ½ and standing his last alert as a fully mission-capable lieutenant colonel aviator in an F-16 ready for his 18th kill, retired **Brigadier General Giora Epstein** remains one of the world's most incredible, colorful ace pilots.

He was born on May 20, 1938, at the hospital in the town of Afula about 23 miles southwest of the Sea of Galilee (sometimes called the Kinneret because of its shape. The nickname refers to its resemblance to an ancient harp or sometimes lyre). For a time, young Giora Epstein and his parents lived and worked in Kibbutz Ramat Yohanan near Haifa. By age 14, Giora was growing up in the new Kibbutz Negba established in July 1938 in the

middle of an Arab settlement in Central Israel. (A kibbutz is a settlement established by groups of Israelis and operates with the efforts of its inhabitants, sort of like a communal farm.) His parents came from Poland, his father working in construction and his mother worked with the children of the kibbutz. Giora was educated in the settlement's agricultural schools that were helping the young nation grow, providing the food and materials a country needs. He soon became interested in aviation and read everything he could about his chosen subject, especially about the early exploits of World War I pilots and quickly developed a desire to be one of a new generation of military aviators.

By the time he was of age, he wanted to fly the French-built Mirage III, a small, lithe, delta-wing fighter that was making a name for itself around the world. However, his dream soon hit snags in the application process. His first obstacle was a doctor's diagnosis that he had a “sportsman's heart,” a flutter in the heart's regular heart beat that prevented his initial selection to flight school. He joined the Gadna Forces, a youth corps, which gave high-school students an obligatory introduction to Army life and security concerns along the frontier.



On November 19, 1964, Ezer Weizman, commander of the Israeli Air Force (IAF), pins an aviator's wings on a young Giora Epstein, finishing a long journey and beginning another one for the future ace.

By the 1956 Suez War there was a new generation of air-minded young hopefuls including Giora Epstein. Incredibly, the IDF decided that a sportsman's heart would not prevent his assignment to the army's paratroops! Epstein would make nearly 500 jumps, even becoming an instructor, all the while continuing to apply to the Air Force's flight school.

During this time, while he was instructing paratroopers, he met world-famous World War II RAF ace Douglas Bader, who had been in a flight accident before the war and had lost both his legs. Not letting that terrible situation deter him, Bader persisted in getting reinstated as a fully-mission-capable fighter pilot and was ready when the war began, eventually flying combat as a squadron commander in Hawker Hurricanes and Supermarine Spitfires, gaining 20 kills before he was shot down and captured on August 9, 1941. His repeated attempts to escape became such a problem for his German jailers that they threatened to take away his prosthetic legs. Returning after the war, Bader left the RAF, retiring as a group captain (colonel, or captain), becoming a representative for the Shell Oil Company. He and Epstein kept up a friendship for many years.

By the time Epstein was approaching 24, the limit for being accepted for flight training, he had six years of military training, and was more mature and had gained several, useful contacts within the IDF. Eventually, he succeeded and began flight training with the IAF in 1963. He was a top student aviator, but his troubles were not over.

Four months before graduation, he learned that he would fly helicopters not the Mirage jet fighter he had been pursuing. When he asked the CO of the flight school why this situation had come about, the colonel told him that the doctor who had signed off on Epstein's medical qualifications had done so if he was assigned to fly helicopters. There was little he could do, and Epstein grudgingly moved on. But, again, the situation changed.

Two months later, he ran into now-General Moti Hod, deputy commander of the IAF. When Epstein related his sad story Hod sent Epstein to see the legendary Ezer Weizman, now commander of the IAF. The following day, Epstein's phone rang.

“I didn't sleep at all last night thinking about you,” Weizman complained. “You SOB, get your things and go to the OTU [the operational training unit, what we called the RAG in U.S. Navy]. I don't want to hear another word!” The phone went dead.

I have to stop here and offer a few thoughts of my own based on my own personal experience while trying to get into the U.S. Navy's flight program beginning in 1967 before graduating from college. The story of Giora Epstein is similar to that of many of us who served in some fashion and forever how long in the aviation community of their country's military service. It came from the desire to fly, perhaps to fly a type or even specific aircraft from a very early age. Most of us weren't looking for fame or recognition so much as a time of proving ourselves in a world arena that might have involved a war as much as our own capability. In our younger years, there might have been some derision from our friends, even our teachers, if we immersed ourselves in a single-minded approach to what would be our lives at a later stage.

continued...



Now assigned as a parachutist, Giora steps away from his Noratlas transport (out of shot).

In Epstein’s case, from the time he was able to read at perhaps six or seven and to enjoy, even thrill to what he read on page after page of people who went before us paving the way for us in what would become our chosen area of endeavor no matter how dangerous or hard to define to others. Many of our predecessors paid for the privilege with their lives but for those of us who earned their country’s wings, whether silver or gold, that satisfaction was immediate and a powerful personal recognition.

In my case, the failure to achieve those small metal definitions of who we were, was just as far-reaching but nonetheless just as meaningful if we let the failure not empower us to keep up the pursuit throughout the lives we lived. Giora Epstein was a gifted aviator, not just with phenomenal eyesight that earned him the nickname of Hawkeye, but also of a correspondingly high level of physical coordination and mental ability to quickly assess whatever engagement he found himself in, whether on the ground dueling with bureaucratic boulders placed on the route he had chosen and how best to negotiate his path through or around them, or in the air confronting an enemy who was often just as determined and capable as he was.

People like Epstein offer us less-endowed humans a high-level example we can continue to strive to emulate no matter how difficult the task seems at any particular time in our lives. I think his recently published autobiography, *Hawkeye*, offers any reader an appreciation—especially those of us who know—how hard it is to attain those wings, particularly those who have flown in the same arena he did, as well as maintain them through a 20 or more-year career in war and peace.

. By this time, Prime Minister David Ben-Gurion had asked people who were going outside Israel as representatives of the new state, to change their western-sounding names to a more Hebrew name. As he was going to the World Skydiving Competition in the U.S., Giora had chosen Even, which had the connotation of “stone,” a common Jewish interpretation. However, he still kept his family name of Epstein, sometimes using the compound of Even-Epstein.



Striking the traditional pose of a young fighter pilot, Giora is ready to get into the cockpit of his 101 Squadron Mirage III.



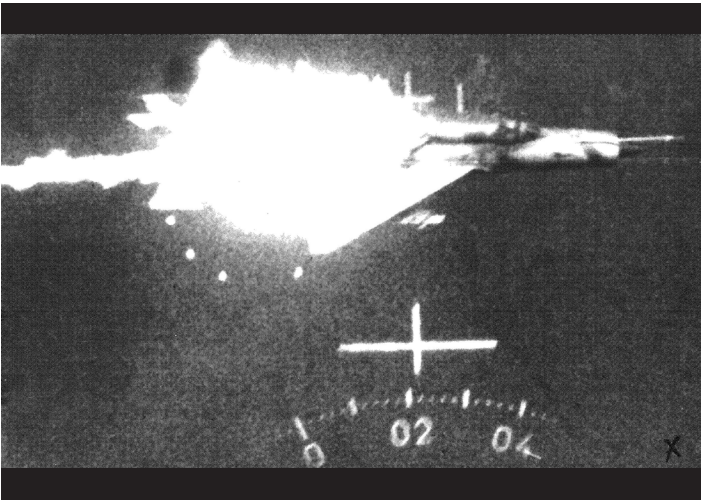
In 1976, while the CO of No. 117 Squadron, Giora met one of his childhood heroes, legendary RAF ace Sir Douglas Bader, recently knighted by Queen Elizabeth. Bader renews his wartime acquaintance with the Spitfire, in this case, Ezer Weizman’s all-black Mk 9.

Picking up Giora Epstein’s journey to a fighter’s cockpit, after Ezer Weizman got involved, things seemed to smooth out a little, and Epstein was assigned to the OTU flying the French Dassault Super Mystere, roughly comparable to the USAF’s North American F-100 Super Sabre.

Eventually, he moved to 101 Squadron to go through the transition syllabus and finally fly the Mirage III. He soon met Sara, who was one of three operations secretaries who had taken an obvious interest in the new arrival. Sara had read about Giora in a magazine article that said he had been a parachutist who had logged some 500 jumps. She asked a friend to bring Giora to, of all places, Negba, so they could meet. He was actually dating another girl in Negba, but Giora was trying to stay focused on his Mirage training courses.

His and Sara’s relationship blossomed, however, and he was finally “certified” as a Mirage pilot in March 1967. So, too, were Sara and Giora “certified” as in “married.” When the rabbi asked him if he was a pilot, Giora replied yes, and the pleased rabbi quickly offered him a “discount.” But Sara politely refused saying the rabbi “had to make a profit, too.” It was a fine bargain for she provided the young fighter pilot the support he would need in his forthcoming colorful and dangerous career.

During the 1967 war, Sara served in the 101 Squadron Operations room, where she could hear Giora’s voice and know he was OK. After the war, she told him, “If I hadn’t been able to hear you, I would have gone out of my mind with worry.”



This photo provides a spectacular view of a kill. On October 18, 1973, a MiG-21 erupts in flames after being hit by cannon fire from a Nesher flown by Gidon Livni, a pilot with 101 Squadron. Livni scored 2.5 kills on this day, and would eventually claim 5.5 kills overall. The Nesher’s compass is reflected in the Israeli fighter’s gunsight, an early version of a heads-up display (HUD), which was carried only in the Nesher and not the Mirage. Some pilots questioned the need for the compass, which was not only distracting, but perhaps the least important instrument in a dogfight.

He had made it through Mirage training and was soon assigned to 101 Squadron, the First Fighter Squadron, which had first formed in the 1948 War of Independence, gained the IAF’s first kills with prop fighters like the Spitfire and Mustang *and* a bastardized, unforgiving version of the Messerschmitt Bf.109, from Czechoslovakia designated the Avia S-199. The Israelis quickly labeled it the “Mezec,” or “Mule,” cobbled together with the engine of the wartime German Heinkel He.111 bomber and a large paddle-bladed propeller.

By the Six-Day War of June 1967, 101 Squadron was fully equipped with Mirage IIICJ single-seat jet fighters (the “CJ” indicated “chasse” for fighter, and the “J” meaning “Jeuf,” or “Jewish,” or perhaps “Israeli”). The Israelis named the Mirage “Shahak” meaning “Skyblazer.” They usually give their aircraft Hebrew names. The Mirages had early-on established themselves as a world-beating design, and several other eager countries had put in orders for the small delta-winged arrow-shaped fighter. Indeed, before the first shots of the 1967 Arab-Israeli War were fired, IAF Mirages had already gained their first kills beginning in July 1966 when then-Captain Yoram Agmon of 101 Squadron scored against a Syrian MiG-21 north of the Sea of Galilee.

More Mirage vs MiG engagements occurred before the Six-Day War, and when organized hostilities began on the early morning of June 5, 1967, the IAF was ready to finally meet a much larger coalition of Arab air forces. Among the determined cadre of young Mirage pilots was Giora Epstein, finally in the position he had always dreamed of and fought for: sitting in the ejection seat of a 101 Squadron Mirage.

Giora got his first kill on June 6th over an Egyptian Sukhoi Su-7 “Fitter” (the NATO code name for the type), a large, powerful ground-attack jet. He didn’t score another kill until July 20, 1969, over an Egyptian MiG-17, followed by another Egyptian Su-7 on September 11th. On March 25, 1970, he made “Ace” by shooting down two Egyptian MiG-21s.

The next day, June 7th, Giora was part of a flight sent to attack Egyptian armored vehicles that were threatening a column of Israeli French-manufactured AMX-13 light tanks. He dropped a 500 kg (1100 pounds) bomb on an enemy tank, destroying it. As he headed back to his base, a ground controller called for him to investigate a ship off the coast.

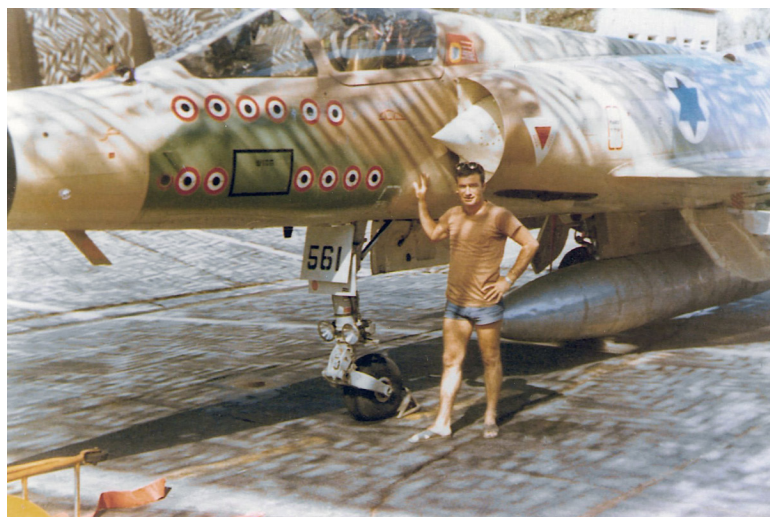
Giora saw the ship, which as far as he could tell, didn’t have any markings other than it was gray over all. He couldn’t see anyone on deck. The controller ordered Giora and the other accompanying Mirages to leave the area immediately. Back at their base, Giora learned the ship was the USS *Liberty* (AGTR-5), then under attack by Israeli aircraft and torpedo boats. The *Liberty* was an American intelligence-gathering ship that had apparently taken up station off the coast, and with its all-gray color and limited markings, it was difficult to identify, and the unfortunate subsequent Israeli attack became a major confrontation between two normally close allies, which still draws heated discussion from the ship’s survivors as well as Israel, who later offered apologies and reparations.

Giora soon earned the nickname “Hawkeye” because of his phenomenal 20/15+ eyesight which gave him the ability to see beyond wherever he was flying with his squadron mates and quickly spot in-coming bogeys, which were usually Arab MiGs or other aircraft. He came to know several other ranking IAF fighter pilots such as Shmuel Hetz, CO of 201 Squadron flying F-4E Phantoms, who was missing in action (MIA), but whose remains were not found for some time in the unforgiving desert, still in his Phantom cockpit. Then, there was capable aviator and squadron commander Asher Snir (13.5 kills), who people sometimes referred to as the “French Guynemer,” a legendary French ace of WWI (54 kills).

continued...



Taking a break before their next mission during the War of Attrition in 1970, pilots from 101 Squadron enjoy coffee and doughnuts. From left to right, Shlomo Levi, Eitan Ben Eliyahu, Giora Epstein, and 101 CO, Oded Marom. While three of these men made ace, Ben-Eliyahu (four kills) would be major general as the IAF CO (1996-2000).



In 1974 Giora renews his acquaintance with Nesher 561 in which he scored an amazing eight kills including two Su-7s, two Su-20s (swing-wing variants of the Su-7) and four MiG-21s) during the Yom Kippur War. Note the fighter carries 12 kill roundels. His casual dress is typical.

The war was something of a surprise, although the IDF did have an idea something big was building and would probably come sooner than later. Egyptian forces forded several water ways on October 6th, the beginning of Yom Kippur, the most important, most holy of days in the Jewish calendar, the Day of Atonement when most people of the Hebrew faith world-wide, take time to remember the past year and ask for forgiveness from God as well as those they may have offended, and promise to do much better in the days to come. In Israel, the streets are usually uncommonly quiet, with little traffic on the streets; indeed, it is frankly forbidden to drive or to shop, and the faithful were walking to day-long services at their synagogue.

However, there is provision to do both if lives must be protected. And, indeed, for several days, most people in the small state of Israel needed help to stay alive. Yet, as many IDF members shouldered their Uzis, or drove at high speed to get to their assigned air bases and aircraft, they might have been pelted with stones from ardent worshipers not yet truly understanding how great was the need to defend their country once again.



101 Squadron CO LtCol. Avi Lanir was a rising star in the IAF, destined for higher rank when he was shot down and captured in the Yom Kippur War. A popular CO with his pilots and ground crew, Lanir would probably have become an ace during the hectic fights of the war. His remains were returned to Israel from Syria in 1974.

Epstein was finally assigned to the Kirya, which is often referred to as the “Israeli Pentagon”. Like so many true military aviators he couldn’t outrun this seemingly unattractive set of orders, and it finally caught up with him. The Yom Kippur War of October 1973 found him flying a desk, listening to or reading all the combat reports that were coming from the front where he knew so many of his friends, squadron mates, fellow pilots were fighting and in too many cases were dying in their F-4s, A-4s and other IAF types in a desperate attempt to hold back the combined Arab forces determined to finally push Israel into the Mediterranean Sea.

Arab surface-to-air missiles (SAMs) were doing an unusually thorough job against the Phantoms and Skyhawks with the blue Star-of-David markings on their fuselages and wings. IDF tanks were scouring the desert trying to hold back the Egyptian tanks and infantry. So much of the land conquered in 1967’s Operation Moked (Focus) was either lost or under close confrontation, perhaps on the verge of being regained. The Golan Heights from which Syria overlooked Israel’s Hula Valley was in danger of being reconquered.



Giora relaxes while on alert at 101 Squadron.

The first 10 days were terrible, and the threat was high that Israel was really fighting for her life and the threat to not survive was the highest in years. LtCol. Giora Epstein, one of the IAF’s premier fighter aces had to wonder if he would be given the opportunity to fly in defense of his country again.

Epstein was not a man to stand by and let things change on their own. His superiors knew how he felt and finally cleared him to go back on temporary combat duty to where his heart was, 101 Squadron, where his friends were fighting for their lives as well as for their country. He had orders to fly on October 8, 11 and 14. However, he did not see any action. But the squadron did lose Avi Lanir, 101’s young, highly-respected CO, thought be now a PoW, but who was later learned to have died in captivity.



A rare in-flight color view of the IAF’s top MiG-killer Mirage with 13 kill markers. Giora scored a kill while flying No. 159 over an Egyptian MiG-21 on September 11, 1969. This Mirage was part of a batch of Mirages sold to Argentina following the 1982 Falklands War with England, but it was eventually returned to Israel and is on display in the IAF’s fine museum.

Giora had to return to his office in the Kirya, but he returned to 101 on the 18th and 19th when he shot down a helicopter (the only non-fixed-wing kill of his total of 17) and where he got *four* kills, respectively. He was definitely making up for lost time. It seemed that the tide was turning for Israel as the IAF received replacement A-4s and F-4s from the U.S., and the ground war was definitely changing in Israel’s favor, although certainly it was not a time for overconfidence. He continued to press to be allowed to keep flying. He surely was not needed as much at a desk as he was in the cockpit.

As the war moved to a conclusion and a hard-won victory for Israel, Epstein continued getting kills. Besides the Mirage III he also flew a variant, originally intended as a ground-attack version of the original Mirage III, designated the Mirage 5, with added wing stations and a rather long, heavy stick, and a characteristic long, black nose, which the Israelis wanted the enemy to think housed a powerful new radar, which it didn’t. It did occasionally carry a low-grade ranging radar, which most veteran Mirage pilots tended to ignore.

The Nesher was heavier than the Mirage, mainly because the Nesher included some 242 gallons, or 1,451 pounds more fuel in its wings and belly,

which was nearly a third more than the Mirage’s 650 gallons, or 3,900 pounds.

The Nesher’s landing gear was strengthened and two more wing attachment points were added to increase its load-carrying capability. Its centerline station under the belly was also reinforced so it could carry a multi-ejector rack (MER). The Nesher more than doubled the Mirage III’s bombload, but at a price. Like any other aircraft, the Nesher’s maneuverability was based on its wing-loading and power. While the engine remained the same, the aircraft was 1.5 tons heavier than the Mirage.

He reported, “When I first flew it, it was like a Mirage. But the first dogfight with it, I felt like a cripple.”

The Nesher was not for everyone, but he did not seem to have a problem with its more demanding flight needs. In fact, in what turned out to be his last flight of the 1973 war, flying a Nesher of 101 Squadron on October 20, 1973, he claimed four more MiGs, which brought his total in the war to 12 kills, and an overall total to 17, making him Israel’s Ace of Aces, and most likely

the highest scoring jet-mounted ace of all time. Four days later a cease fire brought an end to the war.

After the war, there were claims of mismanagement, and the war had been not only a case of national survival and not, as some people had thought, simply a continuation of the 1970 War of Attrition, but Epstein showed little outward concern for these matters although he must have certainly had his own beliefs.

After the war, Epstein met Randy Cunningham, the first U.S. and only Navy pilot Vietnam ace, as well as other Allied aces of WWII such as France’s Pierre Clostermann and Alan Deere of New Zealand, both of whom had written first-person memoirs that have since become classics (*The Big Show* and *Nine Lives*, respectively), as well as renewing his friendship with Britain’s now *Sir* Douglas Bader, who was knighted by Queen Elizabeth in 1976 and who was delighted in renewing his acquaintance with his war-time mount the Spitfire in the form of Ezer Weizman’s black Spitfire.

continued...



An Egyptian MiG-21 sports a typical camouflage paint scheme.

Operationally, still a qualified IAF pilot, he commanded No. 117, the First Jet Squadron, as famous as 101 Squadron with many kills to its credit. Struggles with further deliveries of French types led to Israel's going off on its own and resulting in further upgrading of the Nesher and eventually the Kfir, which took advantage of the U.S. J-79 engine that powered the incredible F-4 Phantom, which the IAF continued using in great numbers during and after the 1973 Yom Kippur War.

Giora began traveling, instructing the Chilean Air Force in using the Israeli-designed Shafir 2 air-to-air



A lineup of Kfirs on VF-43's flight line at NAS Oceana, in Virginia Beach. Another squadron's A-6 taxis past two VF-43 T-2 trainers and a TA-4J.



At the end of his last flight in the F-16, Giora hands the ground crewman his helmet. "Colonel Giora Epstein" in Hebrew letters can just be made out on the F-16 under the boarding ladder.



Giora surprises Ezer Weizman with the IAF wings Weizman presented to the new IAF pilot on November 19, 1964.

missile that surpassed the American AIM-9 Sidewinder. Then came a visit to the U.S. to attend the 1998 Gathering of Eagles. Sara even got into the act by meeting "Star Wars" actor Harrison Ford, who had become an active pilot himself with his own aircraft.

Giora finally relinquished command of 117 Squadron and left active duty to fly for Israel's flag airline, El Al, which followed his wife's wishes, although he remained in the reserves to fly the Kfir and command No. 254 Squadron, the "Midland Squadron." IAF squadrons often relied on their nicknames rather than divulging their actual numerical identity, which often confounded civilian authors wanting to write the colorful histories of the IAF. He noted that "Commanding 254 Squadron was three of my most satisfying years in the Air Force."

Operation Peace for Galilee in Lebanon in 1982 saw a number of engagements with the Syrian Air Force, which added to the IAF's record and the first kills for the U.S.-supplied F-16 Fighting Falcon, which many considered the "new Mirage." But Giora Epstein's reserve squadron did not participate, and only one F-4, former Mirage, pilot added a fifth kill to become the IAF's last Phantom ace. On July 14, 1982, then Lt.Col. Amir Nachumi, CO of No. 110 Squadron flying an F-16 shot down a MiG-21, one of six kills he would make during the war to become the first F-16 ace, and probably the *only* ace in both the F-4 and the F-16. And other F-16 pilot, a then-captain, later major, Israel Shafir was credited with one kill while flying an F-15 with 106 Squadron on September 24, 1979, and then, on June 9 and 11, 1982, four kills in 110 Squadron F-16s. Nachumi is the only IAF pilot credited with at least five (perhaps six) kills as an F-16 pilot, the only "full" F-16 ace, i.e., all five qualifying kills while flying the F-16.

It was, indeed, a time of transition for Israel's top ace, and at times he chafed at not seeing further combat, even though he

remained mission-capable. Even now, as he kept current, ready to fly for his country and maybe add to his score, his last Mirage flight ended with an emergency engine shutdown and a gliding landing at the municipal Ben Gurion airport with a puddle of oil on the ramp. No. 254 deactivated and its Mirages went to Argentina, including No. 59, which had been the high-scoring Mirage with 13 kill roundels on its fuselage below the canopy.

Unfortunately, Epstein ran into unexpected problems when he asked to transition to the F-16. At first the IAF OKed the training, but then changed its mind because of his age. Undeterred, Epstein visited the IAF general in charge of the Air Force, Amos Lapidot, bringing several positive recommendations for the training, but again, the general said no. It took four years, but eventually, the IAF permitted the now-50-year-old ace to go through the training. Giora flew the F-16 on weekends, as he was still flying for El Al during the week.

At this time, early 1991, Operation Desert Storm was going on, but Israel did not participate, although it was ready to. This was due to U.S. President



BGen Giora Epstein, Ace of Aces, Himself



During the promotion ceremony on September 13, 2018, everyone is all smiles as Sara removes Giora's colonel epaulets while Lt Gen Gadi Eizenkot, IDF Chief of Staff replaces them with the epaulets of a brigadier general. Giora's son Guy (right) looks on.

George H.W. Bush's diplomatic wish that Israel stay out of the war, even though Iraq was sending rockets to strike cities in Israel. Giora was also promoted to full colonel even though he was thinking about retiring.

But finally, he made his last flight on his 59th birthday, May 20, 1997, this time as part of a formation of IAF F-16s, even though up to this special day, he was still standing alert, ready to launch and maybe go after his 18th kill. His son Guy was invited to make the flight in a two-seat F-16B as part of a formation flyover at Ramon Air Base. His family was waiting for him, along with a former IAF Commander, Maj Gen. Eitan Ben Eliyahu and Israel's President Ezer Weizman (1924-2005), himself a veteran of the IAF's first operations and 101 Squadron. In a fitting ceremony after he had landed in an F-16 bedecked with 17 kill roundels, Giora gave Weizman the wings Ezer had presented to Giora on November 19, 1964, the day of the future the ace's graduation from flight training so many long, intense years before. Weizman was the nephew of Chaim Weizmann (1874-1952), the first President of Israel (1949-1952). Ezer had dropped one "n" from his name.

In 1985, he also went to the U.S., specifically, the U.S. Naval Air Station at Oceana in Virginia Beach, where the Navy had "rented" several Kfir fighters, variants of the Mirage 5, to play the role of adversary for whatever Navy and Marine Corps squadrons wanted to take advantage of flying against a very fast "enemy" type not seen in American skies. It was a chance for him to also gain up-close knowledge of how U.S. squadrons and their young aviators flew.

After retiring from El Al in 2003, another medical examination a blood clot resulted in a stroke, and he went through an operation to put in a pacemaker. Eventually, he also had an artificial heart pump installed. On September 13, 2018, a surprise ceremony elevated retired-Colonel Giora Epstein, Israel's Ace of Aces, to Brigadier General. He had been retired for many years but his many IAF friends and his country had not forgotten the stalwart pilot who refused to take no for an answer in many pivotal events in his colorful life.

In reality, many aviators never see an enemy plane during their careers, which makes Giora Epstein's story even more unique. As he once wrote, "There is still strong interest in the Arab-Israeli air war and the men who flew and fought it through several conflicts." He remains rather modest and somewhat retiring about his own personal participation but has also come to more of an understanding that while as a young man reading about the accomplishments of the first aces in WWI, WWI and Korea, he has now become one of that cadre of exemplary aviators.

Thanks to long-time friend Rick Turner, not only of mine but of Giora Epstein for his last-minute support while I completed this article. I Couldn't have finished it without his help. Same for well-published Israeli writer Shlomo Aloni for the same assistance when I needed it.



TRIBUTE TO RAMI LOTHAN

And Brief History of the Israeli Air Force (IAF) AYIT (Skyhawk)

By Dave "Hide" Dollarhide



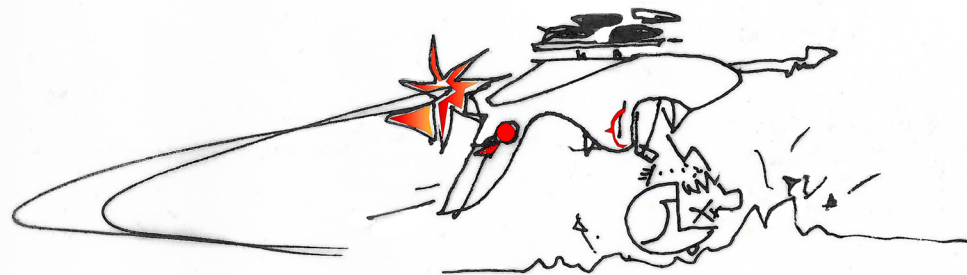
AYIT HISTORY

All IAF A-4 history begins concurrently with this 1967 pilot training class at NAS Cecil Field, FL; L-R Hagai Ronen, Yossi Sarig, Ohad Shadmi and Nissim Ashkenazy.

The following was taken from the Skyhawk Association Website <https://skyhawk.org>. "Israel was the largest customer for export Skyhawks. A contract for 48 was signed 02 June 1966. The first four (A-4Hs) arrived in Israel by ship at the port of Haifa on 29 December 1967. The Skyhawks were down-graded, some avionics removed and the airplanes were re-designated as the A-4H. They first flew as 'Ayits' on 01 January 1968 with #109 Squadron at Ramat David Air Force Base. Side Numbers assigned were 03, 05, 07, and 09. After the number of Skyhawks passed one-hundred, a third number was added to the front of the side numbers.

- **1968** - The IDF Ayit (Eagle) became operational and was used extensively in combat operations.
- **1971** - The Skyhawk had proven to be so successful in Israeli service that it actually blurred the differences between light and heavy attack. (Page 30 of *Israeli A-4 Skyhawk Units In Combat* by Shlomo Aloni.)
- **AUG 1971** - 'Crystal' Ayits were upgraded A-4E and A-4H aircraft with higher rated engines, improved heads-up display, and improved weapons/navigation systems which brought them to an A-4N standard.
- **08 DEC 2004** - Advanced Israel Air Force A-4 Performs its Inaugural Flight! In 2004: *RADA Electronic Industries Ltd.* announced that the first upgraded Israel Air Force (IAF) - A-4 Ayit had successfully completed its first flight. 'The A-4 Ayit is the IAF's advanced trainer. The upgraded aircraft has new electronics and the upgrade program was to be completed by the third quarter of 2005. 26 A-4N, 4 TA-4H, and 18 TA-4J aircraft were upgraded.'
- **03 Aug 2009** - *Defense Industry Daily* 'storied land-based career with the Israeli Air Force, who used this simple, pilot-friendly aircraft from late 1967 onward as a versatile attack aircraft with surprising air-to-air teeth.'

The Ayit was a much-beloved jet in the Israeli Air Force. The little A-4's agility, coupled with an equally surprising ability to take battle damage, made it a popular and reliable



Rami's artful sketch depicts the inverted missile hit.



choice over several wars. The type was used heavily in the 1973 Yom Kippur War, and the Israeli fleet took correspondingly heavy losses. Of 102 aircraft lost, 53 were Ayits. That war was not without its moments of distinction. In one engagement, an Israeli A-4 found itself facing 3 MiG-21s. The maneuverable little A-4 turned on them and brought 2 of them down, and was reportedly on the 3rd Fishbed's tail when an IAF Mirage IIIC zipped through and blasted the last MiG out of the sky. "The A-4 flew in service with the IAF for close to 48 years!"

RAMI

The Skyhawk Association has many Israeli Air Force friends who have flown our beloved Skyhawk (Ayit) and other tactical airplanes. Rami Lothan, however, deserves special recognition for his 40 years of flying the Ayit with the IAF, which surely must be a record. He was never forced to eject, but once had much of his tailpipe destroyed by an SA-7 Grail (Strela) missile. Despite the damage, he was able to return and land.



Rami appreciates the value of friendships and has continually coupled trips to the US with his wife Etty to visit friends and attend Skyhawk Association functions. There have been trips to events like the Tailhook Reunion in Reno, NV and the Sun n Fun Expo in Lakeland, FL. In another side trip, they both made a visit to see my wife Chris and me at our grass strip in North Florida. That included a flight in my RV-4, with larger-than-life Rami stuffed in the back seat -- head touching the canopy. The CG was almost within tolerance.

Rami has hosted many Skyhawk Association friends during visits to Israel, the most notable of which was in June, 2015 to



commemorate the approaching last flights of the A-4. It was timed in coordination with the celebration of an IAF pilot graduation class, an event that is always accompanied by an airshow. It was a perfect time for our Skyhawk Association contingent's visit and this was no one day affair. Rami was their host for an entire week, during which they were entertained at many interesting venues that included an overflight of the last IAF A-4 to fly.

Rami's last flight and IAF retirement was in 2012. He had logged 2,050 flight hours in several A-4 models.

Rami taking care of the Skyhawk Association flock

YP and surviving family of Ohad Shadmi.



Etty congratulates Rami on his last flight in 2012.

Postscript: What's Rami doing today? With Iron Dome explosions in the sky and candlelight vigils for hostages, he also helps in the war effort by standing watch as seen in this photo with his son at a smaller airport for single engine turboprop fire suppression flights as needed.

continued...



Rami and son on airborne firefighting watch.



Prime Minister Netanyahu speaks to pilot class.



Skyhawk Association visitors.



WHEN IT'S TIME TO GO... THEN GO

By Lionell "Digger" Rotelli
Published in Approach Magazine, December 1987

I don't remember where or when I first heard that phrase. It might have been in Primary flight training, or maybe it was the title of an obscure Air Force film on ejections, but it echoed in my memory every time I strapped in. Lower koch fittings attached, upper kochs attached, cinch'em down, wiggle the butt, cinch'em a little more, start the engine, raise the head-knocker, then "know when to go, then go!"

It seems that as we accrued flight hours, we tended to take that ejection seat for granted. It sure wasn't installed for its aesthetic beauty. But, it's there and as aviators, we know that it will get us out of any really lousy situation. Of course, "that won't happen to me," was the thought, but it was still a comforting thought. In most aircraft mishaps, "that seat can get you out of trouble," was proven time and time again. Why, then, are there so many fatalities suffixed by statements like, "delayed ejection until outside the envelope," or, "no apparent attempt at ejection."

I was involved in a midair collision many years ago over the Pacific Ocean. It happened at 26,000 feet, causing my A-4M to pitch violently down and left. Almost immediately, the severe negative "G" force pinned me up against the top of the canopy. Thank God, I tightened that lap belt!

The aircraft felt as if it was in a very tight inverted spin, but I had no way of telling --- I couldn't even locate the control stick and I had a relatively good idea where it should be, let alone pick up the turn-needle or AOA indicator. The negative "G" was increasing rapidly and my head was left-wing down, against my shoulder, held there securely by the canopy plexiglass. That's when it dawned on me --- "Know when to go, then go!" Upper handle is out of the question --- I'm above it? Lower handle, dammit, where is it? I thought I knew where it was! Can't go like this --- something about body position --- need to find that handle. Left hand off the throttle and up to the canopy. Press myself off the glass back into the seat. Wow! I didn't know it was that heavy. Severe tumbling sensations, right hand on the handle --- this should be interesting. What was that explosion? Oh, I'm not holding myself in the seat anymore because the canopy's gone.

Well, I missed the rails ride and came to my senses in a free-fall tumble clear of my stricken A-4. The chute didn't open until 14,000 feet and it was a long time coming. I made a rather uneventful water landing about 100 miles off

the coast of San Diego in 60 degree water, followed by a rather uneventful helo rescue 45 minutes later. Of course, having more than 12 minutes in the silk, plus the swim time, I had plenty of thoughts rush through my head. The main one was that *it had happened to me!* The realization was nauseating. Thoughts of long green tables with me at one end (no water glass, of course) entered my mind, but at least I was alive. It could have been worse.

What seemed like a long story, wasn't. Eyewitness accounts of the collision and ejection confirmed that both of us initiated our ejections two to three seconds after impact, at approximately 25,000 feet. **There was no doubt in my mind it was time to go.**

Of the many questions raised in the post-mishap investigations, a recurring one dealt with the fact that at 25,000 feet, there is plenty of time and altitude to assess and possibly recover from this situation. After all, NATOPS says "passing 10000 feet and out of control, eject."

Thank God NATOPS is just a guide, because I would have had a hard time determining just when I passed 10,000 feet. It is possible that the negative "G" buildup would have surpassed my physical strength to push back into the seat, or maybe I would have just blacked out.

Then, the last sentence on the accident report would read, "No apparent attempt to eject." You can bet that I would have been trying really hard! That may seem like a lot of Monday-morning quarterbacking on my part, but at least, I'm here to "take the snap."

The point to bring forth here is that delays in ejection are not necessarily confined to the low-altitude situations. Everyone agrees with the axiom, "Down low, gotta go!" Many times, Naval Aviation is a sequence of surprises (some pleasant, some so-so), and contingencies need to be dealt with as they arise. We've all been trained to the sharpest degree and earn our pay through the decision-making process. An out-of-control aircraft is not the place to be thinking about Field Flight Performance Boards, machismo, reputations or any other negative repercussions that may stem from such an incident. "Know when to go --- then go."

It brings to mind another phrase --- "They can't board a dead man." I don't remember where or when I first heard that one either, but I'm here to tell the story.

Note: Thanks to HS-10 rescue helos, and the USS *Ranger* for displaying the utmost professionalism during my extremis situation.

THE ESCAPAC STORY

By Robert Sadler

The ESCAPAC ejection seat was born out of necessity. While it may not be the smallest nor the lightest ejection seat, it had to be close to this to be compatible with the requirements of the new lightweight attack aircraft that Douglas Aircraft was designing for the US Navy.

The A-4 Skyhawk was designed to meet a US Navy requirement for a jet powered attack aircraft to replace the A-1 Skyraider. Ed Heinemann, Douglas Aircraft's Chief Engineer, committed to deliver a design that would minimize the aircraft's size, weight and complexity. He also committed to an airplane that would not require folding wings to use the flight deck elevators on the Navy's carriers. The resulting aircraft weighed only half of the Navy specified maximum weight and some sources say that it can carry the equivalent weapons load of a WWII B-17 bomber.

Needless to say, the resulting aircraft was small and compact requiring an equally small and compact ejection seat which resulted in the ESCAPAC. The initial version of the seat, the ESCAPAC I, was less than 18 inches wide compared to today's seats which are at least 20 inches in width. And the bare ESCAPAC I seat system weighed less than 150 pounds compared to 170 to well over 200 pounds for current seats.

From its initial design in the early 1950s, the ESCAPAC evolved and improved as new technologies became available. The following discussion will attempt to put a story to this evolution of an exceptional ejection seat; the ESCAPAC family.

The figure below shows three versions of the seat ranging from the initial production configuration, the ESCAPAC I to probably the most sophisticated version, the ESCAPAC IE-1 as used in the S-3 Viking aircraft.

continued...



ESCAPAC 1A-1



ESCAPAC 1C-2



ESCAPAC 1E-1

The table below lists the 14 most well-known versions of the ESCAPAC seat that were produced and includes some of the major subsystems/components of each version.

Main ESCAPAC Versions

ESCAPAC Versions	Aircraft	Rocket Catapult	Seat/Man Separation (SMS)	Pitch Control	Survival Kit	Recovery Parachute Configuration
I	A-4A, B, C & E	RAPEC 1 1140 lbsec	Bladder	None	PK-2 (Soft Pack)	NB-9 w/ 2 sec delay & Zero-delay Lanyard
IA-1	A-4A, B, C & E	RAPEC 1 1140 lbsec	Bladder	Stencel Snubber DART	PK-2 (Soft Pack)	NB-11 & NES-16 w/ 0.75 sec delay
IC-2	USN A-7A, B, C USAF A-7D	Talley 2174 2000 lbsec	Bladder	Stencel DART	USN RSSK-8A USAF KOCH	USN NB-10, USAF NB-10A w/ 2 sec delay & Zero-delay Lanyard
IC-3	A-4F, TA-4F & Subs	Talley 2174 2000 lbsec	Bladder	Stencel DART	RSSK-8A	NB-10 w/ 2 sec delay & Zero-delay Lanyard
IC-4 & IC-5 <i>Note 1</i>	TA-7 Fwd & Aft					
IC-6 <i>Note 2</i>	B-57 & RB-57 Series	Talley 2174 2000 lbsec	Bladder	Stencel DART	KOCH	NB-10A w/ 2 sec delay & Zero-delay Lanyard
IC-7 <i>Note 3</i>	F-15A & F-15B	Talley 2174 2000 lbsec	Bladder	Stencel DART		NB-10A w/ 2 sec delay & Zero-delay Lanyard
IE-1 <i>Note 4</i>	S-3 Viking	Talley 10407 1050 lbsec	DAC A115138 Rocket Motor 100 lbsec	STAPAC	RSSK-8A	NES-12C w/ Ballistic Spreader Gun, External Pilot Chute & 0.55 sec delay
IE-2	A-9	Talley 10407 1050 lbsec	DAC A115138 Rocket Motor 100 lbsec	STAPAC		Stencel 494P0010001 w/ Ballistic Spreader Gun, External Pilot Chute & 0.55 sec delay
IF-3	A-4F, TA-4F	Talley 2174 2000 lbsec	DAC A115138 Rocket Motor 100 lbsec	Stencel DART	RSSK-8A	NES-12C w/ Ballistic Spreader Gun, External Pilot Chute & 0.75 sec delay
IG-2 <i>Note 5</i>	A-7	MK16 1050 lbsec	DAC A115138 Rocket Motor 100 lbsec	Stencel DART	RSSK-8A	NES-12C w/ Ballistic Spreader Gun, External Pilot Chute & 0.75 sec delay
IG-3 <i>Note 5</i>	A-4F, TA-4F & Subs	MK16 1050 lbsec	DAC A115138 Rocket Motor 100 lbsec	Stencel DART	RSSK-8A	NES-12C w/ Ballistic Spreader Gun, External Pilot Chute & 0.75 sec delay
IH-8 <i>Note 6</i>	YF-16A	Talley 10407-3 1050 lbsec	DAC A115138 Rocket Motor 100 lbsec	STAPAC	American Safety 641000	NB-10 Mod w/Ballistic Spreader Gun, External Pilot Chute & 0.75 sec delay
IE-9 <i>Note 3</i>	A-10	MK16 1050 lbsec	DAC A115138 Rocket Motor 100 lbsec	STAPAC	American Safety 641000	J117140-1 w/ Ballistic Spreader Gun, External Pilot Chute & 0.55 sec delay

Notes:

1. Probably updated to IG-2 configuration with required mods for two-seater.
2. NASA's three WB-57Fs are believed to be only B-57s still in operation. ESCAPAC seats were replaced with ACES II seats in the 2012 to 2015 period.
3. ESCAPACs in initial production airplanes – replaced with ACES II.
4. 10407 rocket catapults and DAC 115138 SMS rocket motors replaced with MK16 and MK82 rocket motors.
5. Upgrade of IC-2 and IC-3 to IG-2 and IG-3 replacing the 2000 lbsec rocket catapult with the 1050 lbsec unit, replacing bladders with SMS rocket motor, adding BSG and EPC.
6. YF-16s only. FSD Aircraft (6ea) had Stencel SIIS ejection seats. All production F-16s have ACES II.

Limited production versions of the **ESCAPAC IC** including the **ESCAPAC ID** were provided for experimental and prototype airplanes. Special versions of the **IC** were used in the following airplanes:

- XV-5A - A US Army/Ryan lift fan experimental aircraft. Two were built. Each was involved in an incident – in both cases the pilots did not survive. Both pilots ejected. In the first the seat was improperly rigged while in the second the ejection was after the aircraft had impacted the ground.
- XV-4A/B - A US Army/Lockheed experimental aircraft that used jet engine thrust for lift. Two were built. Both were involved in incidents with the pilot not surviving the first while the pilot survived the second. Both ejected.
- XC-142A - A joint US Army, Air Force and Navy aircraft, the XC-142 was an experimental four-engine tilt wing transport. Both the pilot and copilot sat on ESCAPAC I seats which were similar to the IC-2 but without DART and pop-up canopy breakers. Five aircraft were manufactured. Of the five built, four were lost in incidents with one of those resulting in the loss of all three aircrew. Two ejected (too low and nearly inverted) while the third did not have an ejection seat.
- CL84 - A Canadian experimental twin-engine tilt-wing transport aircraft. Both the pilot and copilot sat on ESCAPAC IC seats.
- Charger - The Charger was the Convair competitor in the “COIN” competition eventually won by the North American OV-10 Bronco.
- F-111 - Several preproduction YF-111As were fitted with ESCAPAC seats to support flight testing before the production escape capsule was available.

continued...

The **ESCAPAC ID** version was a stripped-down IC which retained the 2000 lbsec rocket catapult but used a 26-foot diameter conical parachute canopy in lieu of the 28-foot flat circular canopy in all other versions. This smaller diameter parachute was faster opening. Combining a faster opening parachute with the higher energy rocket catapult, this seat was ideal for experimental VTOL aircraft such as this aircraft:

- **X-22A** - Bell/US Navy experimental transport with four tilting ducted fans for lift and propulsion. One X-22A built, damaged in an incident, and rebuilt with new fuselage and flight control system. No ejections.
- **ESCAPAC II** was the final configuration of the ESCAPAC family of ejection seats (right). It was intended to be available as a retrofit kit (depot) for earlier variants of the family and included many significant performance and crew comfort improvements including:
 - Seat mounted mortar deployed parachute
 - No more 20 pound plus backpack worn into the aircraft by the aircrew.
 - Positive forced deployment of parachute upward from behind the aircrew before SMS.
 - Seat mounted drogue parachute
 - Deployed behind the seat to provide both seat/aircrew stabilization and deceleration.
 - Provides faster deceleration of seat/aircrew allowing earlier deployment of the recovery parachute.
 - Multimode operation
 - Three modes of operation: 1) Low Speed, 2) High Speed, 3) High Altitude.
 - Allows optimized/minimum recovery parachute deployment timing to improve overall recovery performance.

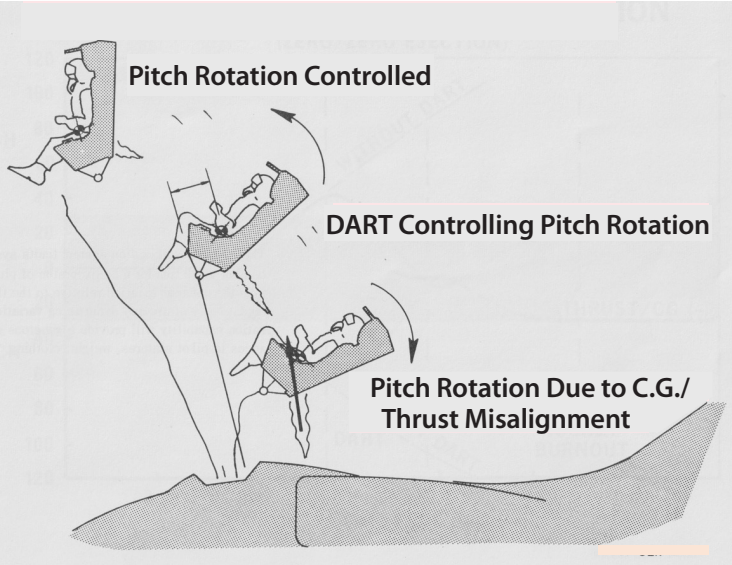
Ultimately this version was never produced but it became the basis for the USAF ACES (Advanced Concept Ejection Seat) which evolved into the production of the ACES II and the ACES 5 ejection seat which has now been selected by USAF as the NGES (Next Generation Ejection Seat) to be retrofitted into the F-15, F-16, and F22.

As seen in the Main ESCAPAC Versions chart above and listed here, the evolution of the ESCAPAC family of seats included numerous changes aimed at improving overall performance.

- **DART and DART Snubber** - DART is an acronym for Directional Automatic Realignment of Trajectory. It consists of a system of lanyards and brakes that generate corrective moments to counter the adverse pitching moments from any misalignment of the rocket catapult's rocket motor thrust line with the ejected mass center of gravity as shown in the figure below. While the DART system uses two lanyards attached to the airplane (about 20 feet long) that fall free of the seat as the rocket motor begins to burn out, the DART Snubber adds a third longer lanyard that remains attached to the harness release bell crank of the seat. When it reaches line stretch it rotates the bell crank which initiates bladder inflation, mechanically releases the aircrew restraint, and then snubs the seat into a separate trajectory from the aircrew.



ESCAPAC II Seat

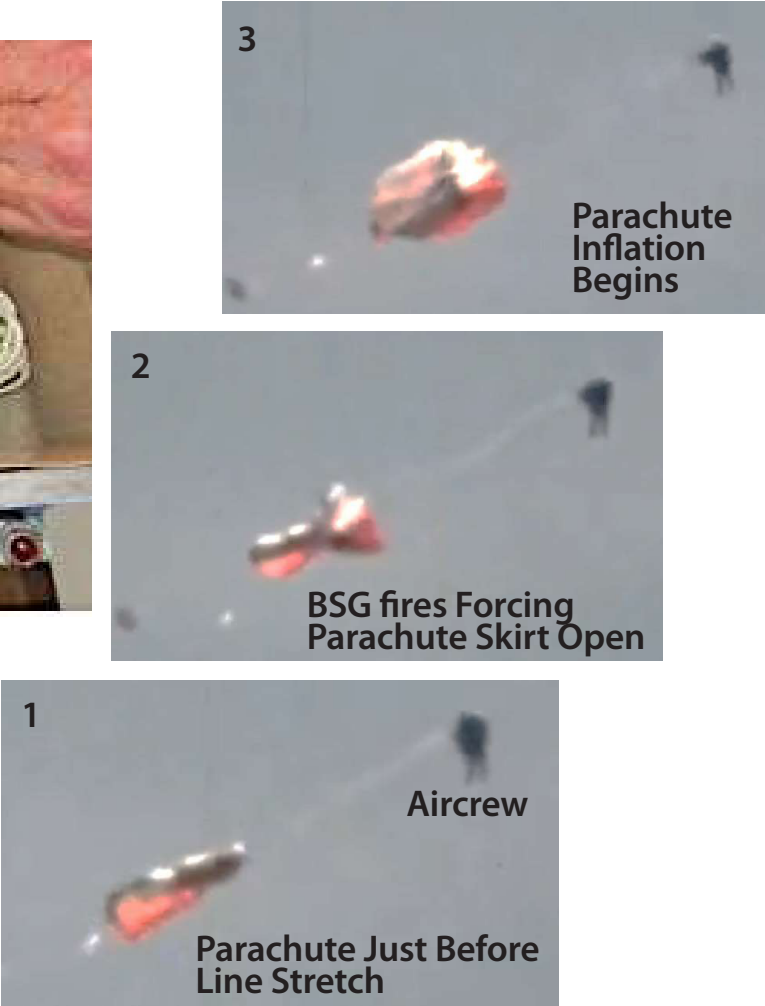


Dart Corrective Action

- **Rocket Catapult** - The rocket catapult is the natural continuation of the basic catapult-only propulsion unit for an ejection seat. Typically, the catapult-only consists of an outer tube and an inner tube. The inner tube, when pressurized by the catapult cartridge, telescopes upward and out of the outer tube pushing the seat out of the airplane. This inner tube has a large internal free volume. Taking advantage of this large free volume, the Rocket Catapult consists of a similar outer tube and an inner tube that is a rocket motor in place of the empty inner tube. This rocket motor is ignited as the seat, with rocket motor attached, exits the outer catapult tube thereby adding a second propulsion stage that pushes the seat further away from the aircraft into a higher trajectory as well as providing additional vertical tail clearance at higher speeds. This new technology also provided the added altitude necessary to provide recovery from a zero-zero ejection (safe escape on the ground with no forward airspeed).
- **The Ballistic Spreader Gun (BSG)** is packed into the parachute and consists of 14 slugs installed radially around a cartridge and firing mechanism which in turn is attached to the aircrew by a firing lanyard. The slugs are attached to the parachute skirt at every other segment. During parachute deployment the firing lanyard/firing mechanism initiates the cartridge in the BSG just before line stretch which ejects the slugs radially outward to rapidly open the parachute mouth/skirt to allow for faster inflation of the parachute, as depicted in these photos.



Ballistic Spreader Gun (BSG)

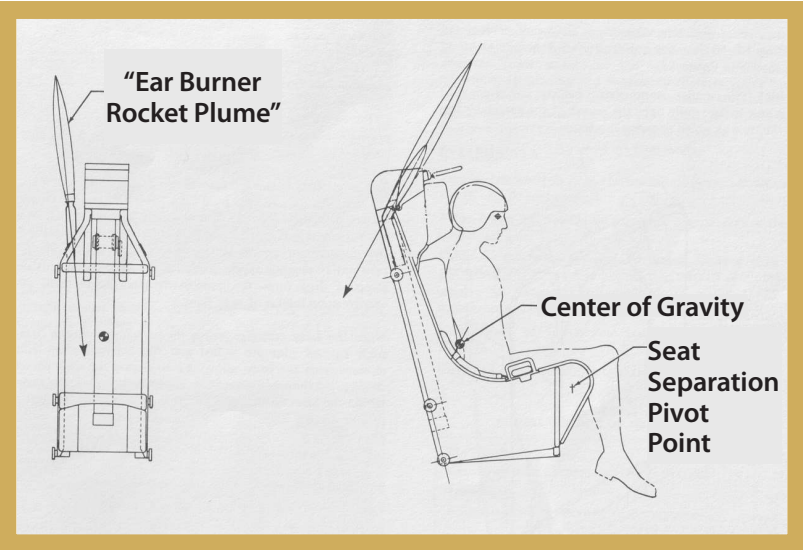


- **External Pilot Parachute (EPC)** - The ESCAPAC family of seats does not have any aerodynamic stabilization such as a drogue parachute. So, the EPC was developed to use aerodynamics to both stabilize and decelerate the aircrew following Seat Man Separation (SMS). Located externally on the side of the parachute pack and attached to the center of the parachute container flaps, it is deployed by the separation of the seat from the aircrew by the Rocket Motor Seat Man Separation system (see

continued...

item next page). The EPC is a tri-stage design which self-adjusts to the dynamic pressure at the time of deployment to provide the optimum deceleration and stabilization. When the parachute opener cartridge fires, opening the parachute container flaps, the force from the EPC is transferred from the pack to the main recovery parachute to rapidly extract it from the container out to line stretch.

- **Rocket Motor Seat Man Separation (SMS) - ESCAPAC IE-1** introduced the use of a rocket motor to separate the seat from the aircrew. This approach provided a continuous force on the seat in a downward direction away from the aircrew into a completely different trajectory. This rapid positive separation from the aircrew allows for the parachute deployment sequence to begin sooner in the overall sequence. Often called the “Ear Burner” because of its location.
- **Rocket Motor Trajectory Divergence - ESCAPAC IE-1** also introduced the use of small rocket motors to diverge pairs of ejection seats ejected at the same time in a side-by-side configuration such as in the S-3A/B Viking aircraft.
- **STAPAC** is the acronym for Stability Package, which is another pitch stabilization system. It uses a steerable rocket motor in place of the lanyard/bridle/braking elements of DART to generate the corrective moments. It was introduced to the ESCAPAC IE-1 because of the concern that if DART was used, there was potential for lanyard/seat entanglement in a multi-seat ejection sequence. The steerable rocket motor is controlled by a gyro that is spun up by a gas generator to a nominal 12,000 rpm. The gyro is uncaged as the seat leaves the rails of the airplane and is mechanically connected to the rocket motor so that its steering commands direct the thrust of the motor to counter adverse pitching motion of the seat.



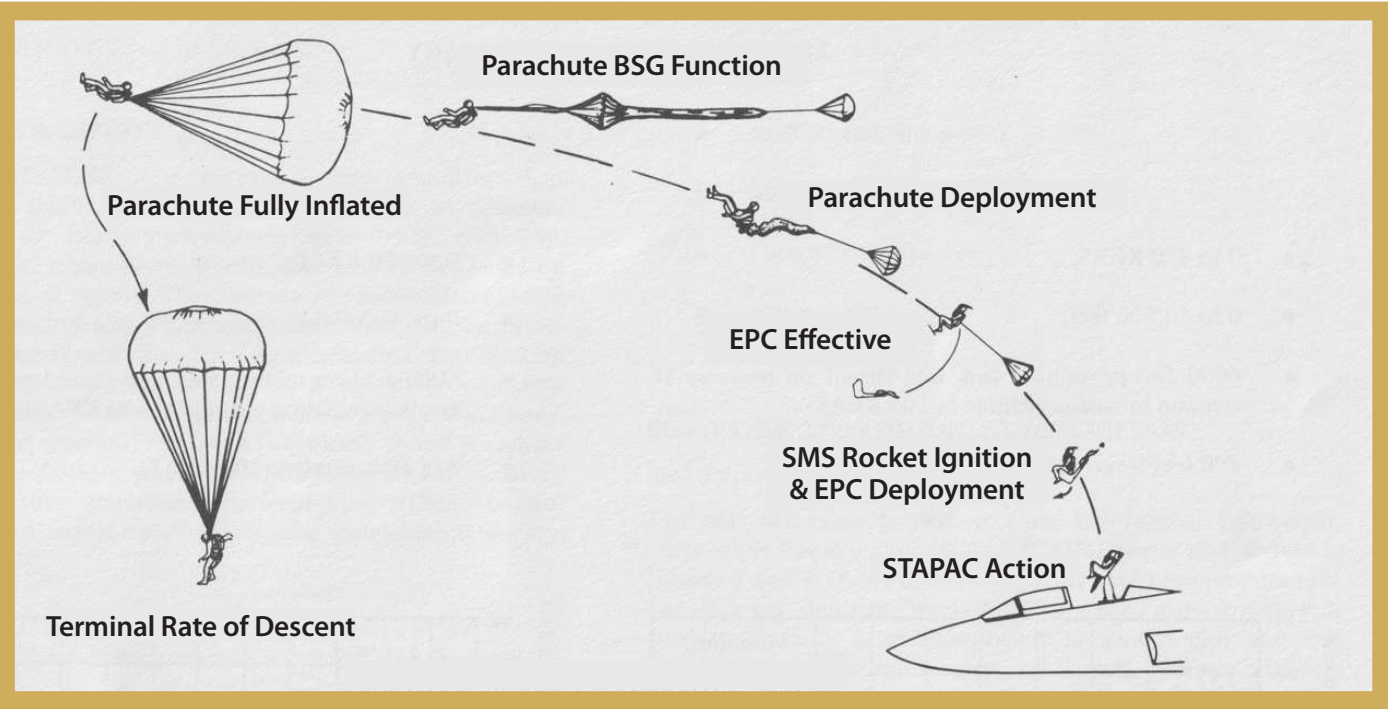
Comparable performance metrics of the different versions of the ESCAPAC family of seats are shown in the table below. Aircrew recovery performance shows a marked improvement from the ESCAPAC I to the IE-9 configuration but really is significant starting with the IE-1 configuration:

- Minimum altitude for inverted recovery was reduced from 400 feet to as little as 285 feet, a 29% improvement.
- Sink rate recovery capability increased from 2000 feet/minute to 4500 feet/minute, a 225% improvement.

These improvements correspond with the introduction of the BSG, the EPC, the rocket motor SMS and re-fined parachute deployment timing all combined with the 1050 lbsec rocket catapult.

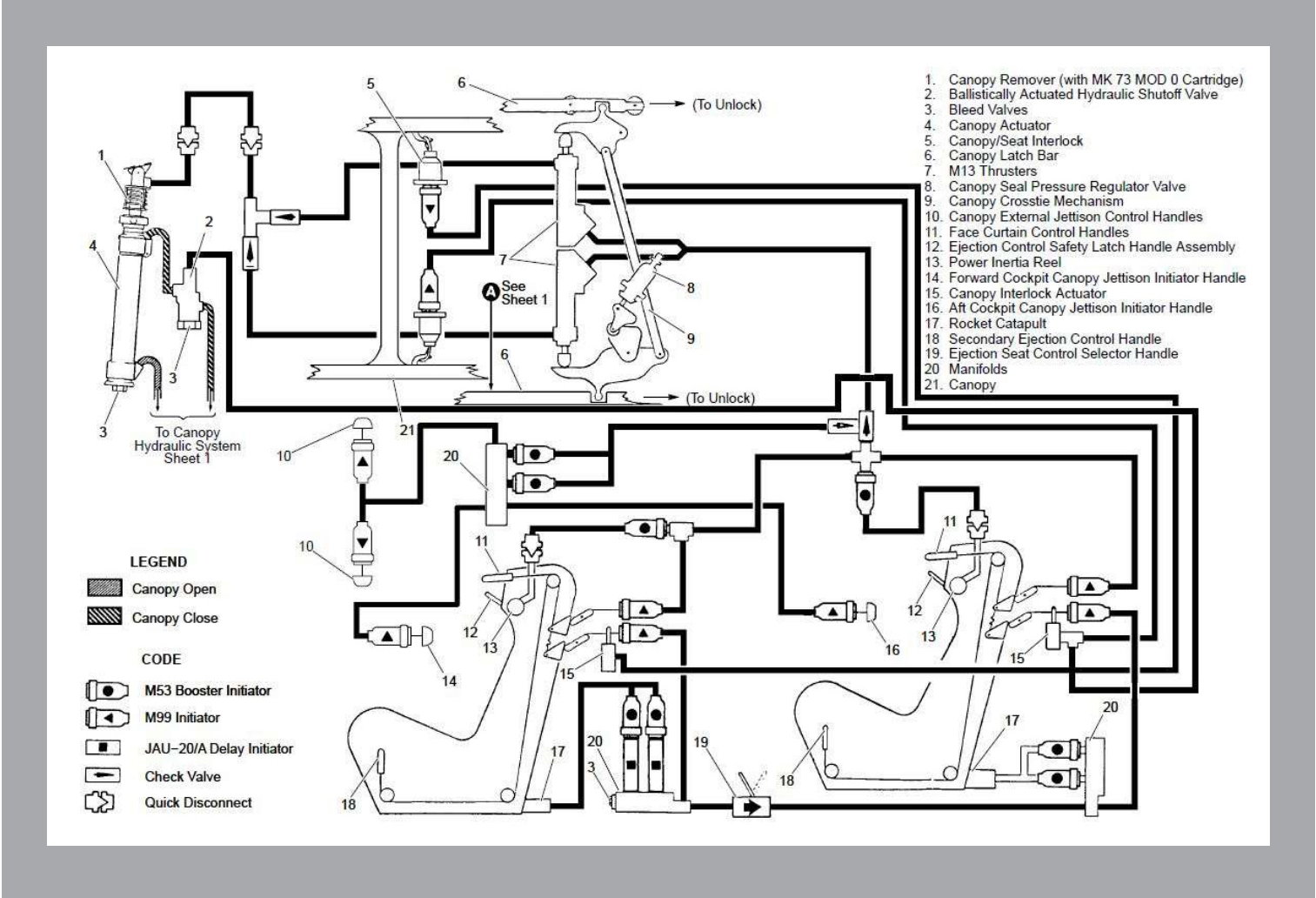
ESCAPAC Performance

ESCAPAC Version	Aircraft	Speed/Altitude Range	Time to Full Parachute Inflation	Inverted Capability Altitude Required (Level Flight)	Sink Rate Capability (Level Flight)
I	A-4A, B, C & E	0 - 50,000 ft 90 - 600 KEAS	4.2 sec @ 100 knots 3.3 sec @ 600 knots	400 ft	2000 ft/min
IA-1	A-4A, B, C & E	0 - 50,000 ft 0 - 600 KEAS	4.9 sec @ 0 - 0 3.1 sec @ 100 knots 2.8 sec @ 600 knots	NA	NA
IC-2	USN A-7A, B, C USAF A-7D	0 - 50,000 ft 0 - 600 KEAS	4.7 sec @ 0 - 0 4.8 sec @ 100 knots 3.3 sec @ 600 knots	400 ft	2500 ft/min
IC-3	A-4F, TA-4F & Subs	0 - 50,000 ft 0 - 600 KEAS	4.7 sec @ 0 - 0 4.8 sec @ 100 knots 3.3 sec @ 600 knots	400 ft	2500 ft/min
IC-6	B-57 & RB-57 Series	0 - 50,000 ft 0 - 600 KEAS	4.7 sec @ 0 - 0 4.8 sec @ 100 knots 3.3 sec @ 600 knots	400 ft	2500 ft/min
IC-7	F-15A & F-15B	0 - 50,000 ft 0 - 600 KEAS	4.7 sec @ 0 - 0 4.8 sec @ 100 knots 3.3 sec @ 600 knots	400 ft	3200 ft/min
IE-1	S-3 Viking	0 - 50,000 ft 0 - 450 KEAS	4.0 sec @ 0 - 0 2.8 sec @ 100 knots 2.5 sec @ 450 knots	285 ft	4000 ft/min
IE-2	A-9	0 - 50,000 ft 0 - 450 KEAS	4.0 sec @ 0 - 0 2.8 sec @ 100 knots 2.5 sec @ 450 knots	285 ft	4000 ft/min
IF-3	A-4F, TA-4F	0 - 50,000 ft 0 - 600 KEAS	4.1 sec @ 0 - 0 3.2 sec @ 100 knots 2.8 sec @ 600 knots	328 ft	4000 ft/min
IG-2	A-7	0 - 50,000 ft 0 - 600 KEAS	4.7 sec @ 0 - 0 3.1 sec @ 100 knots 2.7 sec @ 600 knots	258 ft	2300 ft/min
IG-3	A-4F, TA-4F & Subs	0 - 50,000 ft 0 - 600 KEAS	4.7 sec @ 0 - 0 3.1 sec @ 100 knots 2.7 sec @ 600 knots	258 ft	2300 ft/min
IH-8	YF-16A	0 - 50,000 ft 0 - 600 KEAS	4.3 sec @ 0 - 0 3.3 sec @ 100 knots 2.7 sec @ 600 knots	330 ft	4500 ft/min
IE-9	A-10	0 - 50,000 ft 0 - 450 KEAS	4.0 sec @ 0 - 0 2.8 sec @ 100 knots 2.5 sec @ 600 knots	285 ft	4000 ft/min



continued...

While the ejection seat is a critical subsystem of any aircraft escape system, the Canopy Jettison subsystem as well as the Inter-Seat/Canopy Initiation subsystem are also critical to the safe escape of the aircrew. This graphic is the schematic of a typical two-seat Skyhawk aircraft escape system that integrates all these subsystems and elements.



TA-4 Skyhawk ESCAPAC Escape System Schematic

Initiation of a sequenced ejection, consisting of canopy jettison and ejection of both seats, can be accomplished by pulling the Face Curtain (Item 11) or Secondary Control (Item 18) on either seat if the Ejection Seat Control Selector Handle in the aft cockpit (Item 19) is in the Down position. In the Up position, the forward seat can eject both seats while the aft seat can only eject itself. In the case of both seats being initiated, the aft seat will always be ejected first with the forward seat ejection starting approximately 0.6 seconds later.

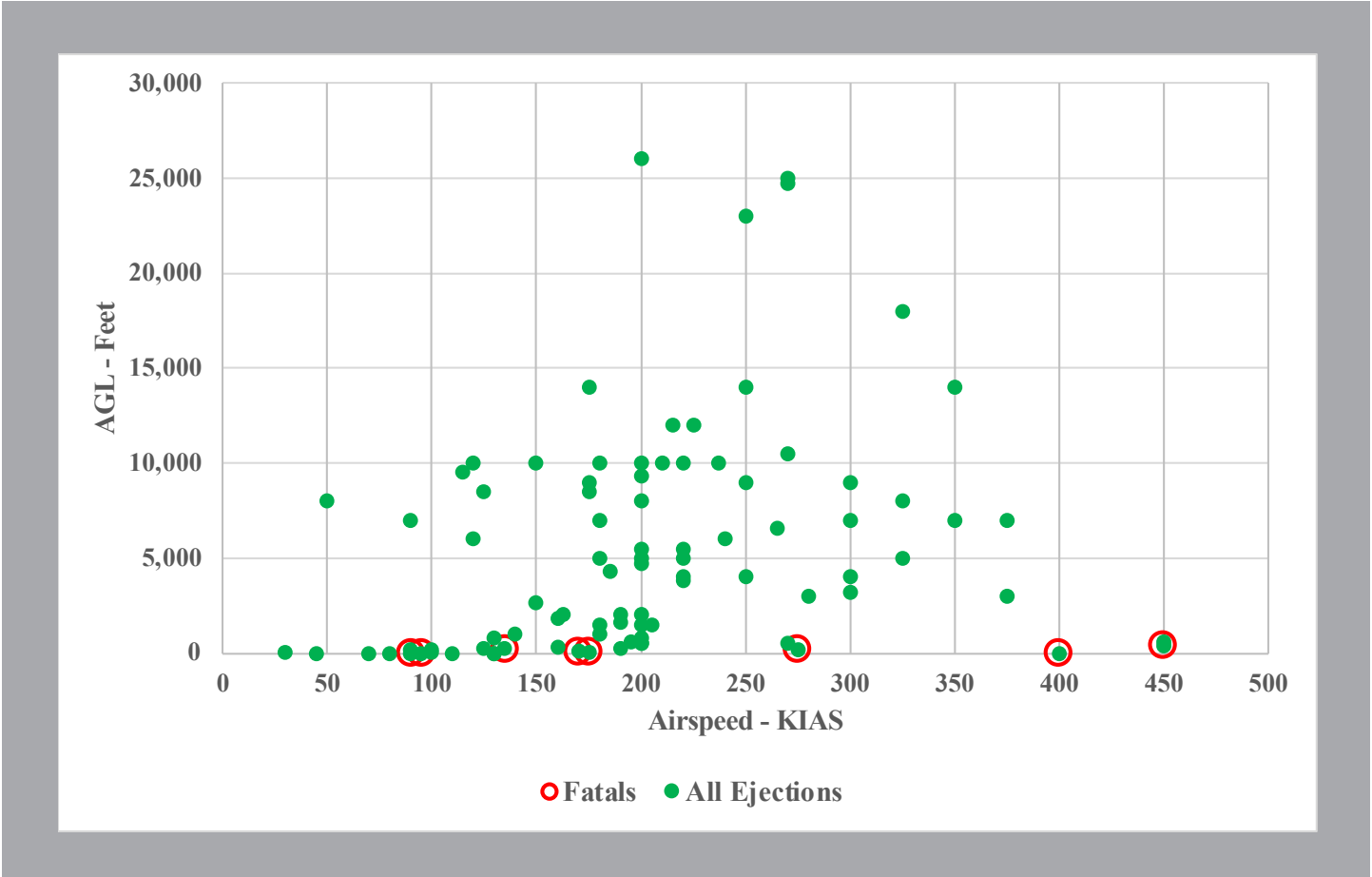
Also shown is the canopy/seat interlock. Seat ejection is not possible unless the canopy has first been jettisoned clear of the seat trajectory. Two M99 Initiators (Item 5) are mechanically connected to the canopy such that canopy motion beyond the normal open/close travel actuates them. The gas pressure from them is routed to the Canopy Interlock Actuators (Item 15) in both cockpits which move out of the way allowing seat ejection initiation.

As shown in this schematic, canopy jettison can be initiated separately for ground egress or rescue personnel access using the Canopy External Jettison Control Handles (Item 10) or by either aircrew using the Forward or Aft Cockpit Canopy Jettison Initiator Handle (Items 14 and 16).

The estimated elapsed time from initiation (by either seat) of a dual ejection to last seat out first motion (forward seat) will be approximately 1.2 seconds. This elapsed time is dependent upon temperature and airspeed at the time of the sequence initiation.

The single seat aircraft initiation system follows the same logic but without the added complexity of having to sequence two seats. Hence the time from initiation to seat first motion will be approximately 0.5 seconds.

The manufacture of ESCAPAC seats started in the early 1950s and ended in around 1979. It is estimated that at least 7000 were manufactured and delivered for installation in this period. In addition, it is likely that several hundred additional seats were manufactured to support system testing.



It is difficult to obtain ejection statistics for ESCAPAC seats. The Navy Safety Center no longer maintains data prior to 1980. One data set was obtained covering the period from 1980 through 1992. During this time there were 93 ejections with ESCAPAC IG-3 seats; 84 of those ejections were successful. The conditions at the time of these successful ejections ranged from 30 to 450 KIAS and 0 to 26,000 feet AGL. This chart graphically presents the altitude above ground and the airspeed conditions for these ejections. One fatal ejection is not included because the data provided is not clear.

Of the 9 unsuccessful, 8 were out-of-the envelope. The remaining unsuccessful ejection was within the envelope but there was not enough data to determine why it was unsuccessful. The conditions at the time of the remaining unsuccessful ejections ranged from 0 to 450 KIAS, 0 to 400 feet AGL, combined with high sink rates and various adverse attitudes in pitch and roll.

Typically, ejection seat success rate is based on the quantity of safe ejections compared to all in-envelope ejections. In this case there were 84 successful ejections out of 85 in-envelope attempts for a success rate of 98.8 percent which is outstanding. Success rate statistics for current Gen 3 seats (ACES II being an example) is around 91 percent. The next chart below breaks down the annual ejection statistics for each year.

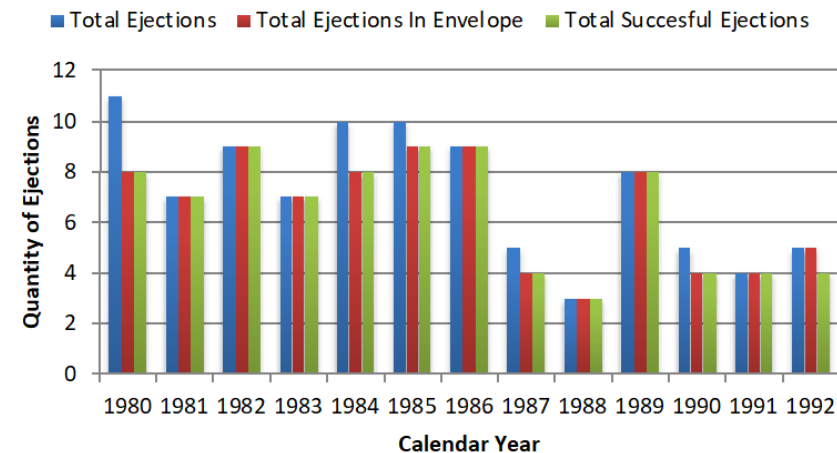
continued...

While the US military no longer operates any ESCAPAC equipped aircraft, there are other operators both commercially as well as militarily:

- Military - Both Argentina and Brazil continue to operate A-4 aircraft. The Argentine Air Force has 24 aircraft while the Brazilian Navy operates 6 (3 each A-4KUs and TA-4KUs). Both countries' aircraft have ESCAPAC IG-3 seats.
- Commercial - Two commercial organizations operate small fleets of A-4 aircraft. One, Draken International, operates a fleet consisting of former New Zealand and Israeli aircraft. The other company is Top Aces which also operates a mixed fleet of A-4s. Both organizations operate ESCAPAC IG-3 seats in their airplanes. Draken has experienced two successful ejections in two incidents with these seats. Both fleets provide Contractor Air Support (CAS) to military services around the world.
- The FAA registration list includes additional A-4s. It is not known what ESCAPAC seat versions are installed in these aircraft.
- At present, additional A-4 aircraft are being brought back into service by at least one of the commercial contract operators.

Without US Government support, sustainment of flying seats could be difficult. Fortunately, several organizations in the supply chain for this type of equipment have stepped up to the challenge and are providing product and services. TASK Aerospace, Inc. as well as Nammo Defense Systems are working together to provide CADs (Cartridge Actuated Devices) and PADs (Propellant Actuated Devices) while other organizations are supporting with their expertise. TASK Aerospace has also established an overhaul process for the basic ESCAPAC seat monocoque structure and is also set up to repack the parachute assemblies.

ESCAPAC IG-3 Ejections 1980 to 1992



Overhauled IG-3 Seats

The author graduated from the University of Wyoming with an engineering degree in 1967 and has spent a lifetime with various companies starting with Vought Aircraft working with the ESCAPAC and other seats and has continued as a consultant into his retirement.

Thanks to Kevin Coyne for his support in creating this article - Bob Sadler

OPERATION NICKEL GRASS

USA to Israel via an overnight aboard USS Roosevelt at sea

By John "Bear" Hildebrandt

It is time for another *Operation Nickel Grass* to support Israel! It is hard to believe that almost 50 years have passed since I was involved in a complex operation to ferry A-4E Skyhawks to Israel.

Nickel Grass was an airlift operation conducted by the US to deliver weapons and supplies to Israel during the 1973 Yom Kippur War. It involved the USAF Military Airlift Command (MAC), as the big mover and the Navy provided the A-4s as part of the program.

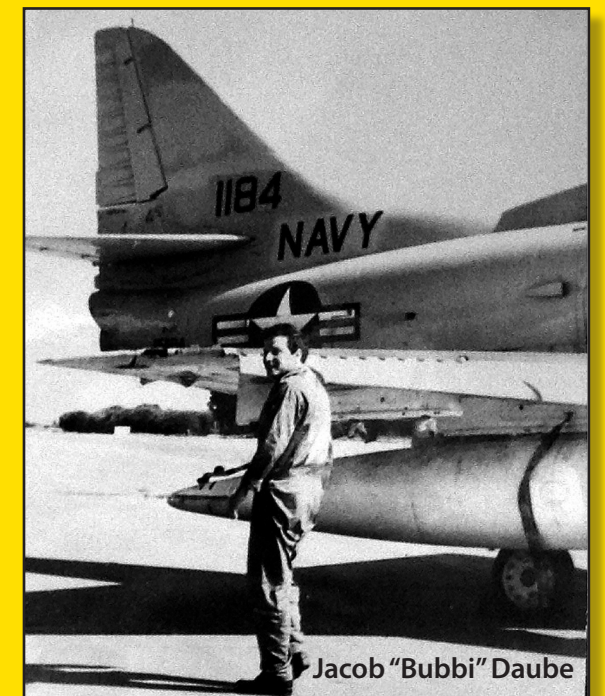
Bob Lewis and I were in VA-45 at the time and were selected to fly two jets to Israel. We had recently returned from a Med cruise on the *Intrepid* and were still somewhat current in carrier ops. We did complete a few FCLPs at OLF Whitehouse Field, just North of NAS Cecil and headed off.

I picked up my "ride" in Norfolk. It was a Marine A-4E from Yuma. I gave it a test flight and the next day we headed out to *Lajes AFB*. We were led by an Air Force KC-135 and tanked several times. After an RON at Lajes we departed once more. Since no country would provide us with landing rights, we headed for the *USS Roosevelt* (CVA-42), located just inside the "Med." We carefully threaded the Straits of Gibraltar and trapped aboard the *Roosevelt*.

After another RON, we were catapulted from the ship and headed for Israel. KA-6 tankers led the way and kept us pumped up with JP-5.

We landed at a fighter base in Israel. The Israeli maintenance personnel didn't want to hear about the problems I had experienced with the LOX system and the UHF radio. All they wanted to know was that the engine worked fine. They immediately started to paint over any US markings and got the bird ready to go into combat! We received a nice welcome ceremony and a few beers, then were hustled off to Tel Aviv and put on a El Al flight back to the States. Over the years, the Israeli Air Force has hosted a couple of reunions in Israel for the guys who delivered the A-4s. I just wish I had made an effort and gone to one of them. I doubt if there will ever be another reunion.

Other 1973 Delivery Flights - Ed



Jacob "Bubbi" Daube



L-R Unknown/Beef Rose/Bubba Segars/Jacob "Bubbi" Daube (116 Squadron)

SIZE DOES MATTER

Modelers' Corner

VA-34 A-4C

By Member Doug Peterson

I received an email from George Blosser indicating that there was interest in possibly including photos of an A-4C model I created for a future edition of A-4EVER. I'm more than happy to show off my work, so I am attaching some photos taken from different views. Feel free to use whatever you want.

It is a 1/48 scale Hobby Craft A-4C kit. I displayed it in the markings of VA-34 aboard Saratoga during our '66 Med cruise.

It's pretty much built out of the box except for the buddy store, which I crafted from a standard drop tank I had in my spares box. It's not entirely accurate (the buddy store), but it's close enough. I also shortened the nose gear oleo a tad to make the plane appear as though it had squatted a bit at full power. Some of the catapult gear is "stylized" because I didn't have the time or inclination to go into that kind of detail.

Decals of the markings I needed did not come with the kit, so I either made my own or used stock sheet decals. I airbrushed the boomerangs and fin flashes. The kit didn't include a pilot, so I used one I had on hand.



Editor retraction and apology:

Last issue's author for Hasegawa's TA-4F FAC in the Modeler's Corner was mistakenly shown as **Doug Peterson**, but should have been **Joe Turpen**.



The back story on the markings is that I had planned on putting my name on the nose, but around the time I was finishing the model our skipper on that cruise, CDR Bob Zajicek, passed away. So, I put his name on the side along with the AC301 MODEX and sent a photo of it to Bob's widow, Ruth. I told Ruth I hope Bob didn't mind my giving him a tanker hop. She sent me a gracious note of thanks and told me she had the photo enlarged and framed.

BOMB LOADOUT

A recollection by Steve "SOMF" Sanford



VMA-311 AL 8 A-4E BUNO 150028.

Photo by Steve Sanford

When I was the schedule writer for VMA-311 after we moved from Chu Lai to Danang in June 1970, we dropped the external tanks and sometimes carried 18 MK-82 "slicks" (1/5/6/5/1), or MK-83 slicks (2/3/2) during the dry season. We were somebody! I think the load in the picture

is 16 Mk-81 slicks (5/6/5). Unfortunately, the Tactical Manal would not allow Mk-77 Napalm cannisters on a multiple rack, so with that load, we were wall to wall with 5 Napalm cannisters, each on a parent station. With the Napalm delivered, it made for some fun RTBs with a clean A-4E.

★ TAPS ★



For lists of A-4 KIA and operational losses, members can sign into <http://skyhawk.org> and go to the "Ready Room."

RADM Richard C. Macke, 7 Dec 2022, Honolulu, HI
Maj Gen Dennis T. Krupp, 5 Dec 2023, Norfolk, VA
VADM William E. "Bill" Newman, 4 Dec 2023, St. George, UT
Richard A. Bandlow, 22 Aug 2023
Jerry "Possum" Terrell, 27 Aug 2023, Jacksonville, FL
Tim Cook, 20 Oct 2023, Canton GA
Dave Maskell, 4 Nov 2023, Pensacola, FL
Robert Alex "Bob" Maier, 8 Aug 2023, Connelly Springs, NC
Cal Calvert, 2 Feb 2021, Fountain Hills, AZ
Chuck Zangas, 17 Jun 2023, Rancho Bernardo, CA
Ed Jones, 21 Sep 2023, Plymouth, MA
Jude Lahr, 14 May 2023, Lincoln, CA

TAPS notices may be sent to Dave Dollarhide • davedollarhide@msn.com

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