

# AOC IN THE 1970S

By Wayne Shaw

The 1970s was the best of times and the worst of times for Electronic Warfare (EW). As the Vietnam War continued into the 1970s, EW was mainly being used by EW Officers (EWOs) in the USAF's B-52 and EB-66 aircraft and also by Naval Flight Officers (NFOs) in a variety of US Navy and US Marine Corps aircraft, such as the EA-6A, as well as the EA-6B, which was introduced in 1972. The B-52 was fitted with equipment to counter antiaircraft artillery, surface-to-air missiles (SAMs), aircraft interceptor and enemy communications to protect the aircraft itself. The EB-66E with one EWO was used as a standoff jammer to deny and degrade enemy radar systems to protect other penetrating aircraft. With a minor jamming capability, the EB-66C with 4 EWO's was used as a reconnaissance aircraft to identify and locate enemy radars and communications. The EB-66 was also fitted with many Quick Reaction Capabilities (QRCs) to counter evolving threats, such as infrared missiles and frequency hopping communications. USAF fighter aircraft, such as the F-105G, F-4 and others were being fitted with EW pods and other add-on self-protection gear and missiles to attack SAM systems. Many EWOs and NFOs gained valuable combat experience in the Vietnam War.

After Linebacker II in December 1972 and the winding down of the Vietnam War, came worse times for EW. As the war ended in 1973, the DOD's emphasis on EW decreased. The EB-66s were flown to Clark AFB in the Philippines and their EW systems were removed and put in storage as spares for the B-52. This left the USAF with no tactical EW aircraft. Much of the funding for EW systems was allocated elsewhere because it was believed a strong tactical EW capability was not needed. EWO's were assigned as instructors at the USAF EW School House, returned to B-52 duty, or were assigned to the RC-135.

While the Navy and Marine Corp moved ahead with the EA-6B in the 1970s, the Air Force's portion of the airborne electronic attack mission was at a standstill through the mid-1970s. In the late 1970s (and into the early 1980s), the Air Force decided to re-invigorate its EW mission with development of the EF-111 Raven and EC-130H Compass Call. The new EW equipment shifted from hard-wired to software-capable systems, which would rely on the EW Integrated Reprogrammable Data Base. As the equipment changed, so did the EWO/

NFO skill sets, which evolved from a pure "knob twister" in the 1970s to more of an ESM/ECM manager armed with sophisticated software-driven equipment using database information to help identify threats and manage jamming resources.

The 1970s also saw AOC make significant steps forward, transitioning from a purely volunteer-driven endeavor to a professionally staffed organization. Mary Blackmon, wife of Lt Col Larry Blackmon, volunteered as the first AOC Executive Director. She was followed by Gus Slayton, who was appointed as the first paid AOC Executive Director. This heralded a new era of professionalism and organizational growth, and the AOC

began to pursue on a trajectory toward greater influence and efficacy within the EW community.

Establishing itself as a legal entity, the AOC embarked on a series of foundational activities: bank accounts were opened, meticulous plans were laid for annual conventions, membership drives were held, and a "permanent" headquarters at 1750 Pennsylvania Avenue, Suite 1316 NW, Washington, DC, was established. The recruitment of dedicated staff and the rental of office space underscored the association's commitment to fos-

tering a robust infrastructure to support its objectives. The AOC also entered the international arena in the 1970s, when the first International Convention was held in Bonn, Germany, primarily staffed by volunteers.

Among the ranks of dedicated volunteers, Dan Graves emerged as a stalwart figure, earning renown as the go-to individual for annual conventions and a sought-after speaker for the AOC. His

unwavering dedication exemplified the spirit of service that permeated the AOC's ethos, further cementing its standing within the EW community.

In these formative years, the AOC epitomized the power of collaboration, vision and perseverance. From humble beginnings to a beacon of expertise and advocacy, the AOC's journey stands as a testament to the enduring impact of passionate individuals united in a common cause. It was the best and worst of times, but important foundational pieces were put in place for the future of EW and more broadly Electromagnetic Spectrum Operations in the 1970s. 🦅

The author would like to thank Ken Mathisameier, Sam Roberts and Paul Westcott for their contributions to this article.



EB-66E headed north on a mission over Vietnam. PHOTO COURTESY OF SAM ROBERTS



Rare 4-Ship of EB-66s en route to mission over North Vietnam. PHOTO COURTESY OF SAM ROBERTS

# AOC 60<sup>th</sup> Anniversary



By Wayne Shaw

**The Association of Old Crows (AOC)** began as an effort to preserve vital electronic warfare (EW) knowledge. The early leaders of the AOC recognized that they needed to foster the next generation of EW talent. Filling this need started with chapters. The Kittyhawk Chapter in Dayton, Ohio, established the very first AOC scholarship program in the 1969/1970 timeframe with AOC Headquarters (HQ) eventually following suit.

This wasn't easy! It required chapters to establish a separate 501(c)(3) part of their chapter with a separate bank account. At the national level, a separate AOC Education Foundation (AEF) was established in 1985. A separate and distinct Board of Governors was established to provide oversight of the AEF. Funds can flow from the 501(c)(6) part of the AOC to the AEF, but not in the other direction. So, there are several rules that chapters and national must follow to enable the scholarship program. The AEF articles of incorporation were amended in 2011 and since then the AEF has been a significant part of each face-to-face gathering of its Board of Governors – many, but not all of whom, are also on the AOC Board of Directors. The AEF's Board of Governors is striving to make the AEF financially self-sufficient.

## Chapter Scholarship Programs

Here are some specific examples of AOC scholarship programs. As mentioned, the Kittyhawk Chapter led the way introducing its scholarship program in the early 1970s. Currently, the Kittyhawk Chapter awards between \$10,000 and \$12,000 in scholarships annually. The chapter currently has scholarship programs with Wright State University, Sinclair College, the University of Dayton, Cedarville University, and Ohio State University. Since that time, it has awarded approximately \$500,000 in scholarships. Competition between the chapters has long been an ingredient of the AOC's "secret sauce." Not to be outdone by the Kittyhawk Chapter, the Dixie Crow Chapter established its own scholarship program in 1979 and since then has awarded approximately \$1,366,000 in scholarship funds! The Dixie Crow Chapter has a \$52,600 annual Educational Foundation Budget, which helps explain the \$1.37M total figure! In addition to these scholarships, the Dixie Crow Chapter also contributes \$5,000 each year to the Georgia Museum of Aviation, where the annual Dixie Crow Symposium is held. The proceeds from the Dixie Crow Symposium in turn are a key ingredient in the ability of the Dixie Crow Chapter to have such a well-funded scholarship program.



The Windy City Chapter started their scholarship program in 1983 and has thus far provided \$400,000 in scholarships to 180 deserving students. In the Golden Gate Chapter's "salad years" of the 1970s to the 1990s, they estimate that they gave out between \$12,000 to \$15,000 in scholarship funds to a dozen scholars. As is typical of most AOC Chapters' Scholarship requirements, the recipients must have expressed interest in "Defense Electronics" or US Government service. Also, a 1-year AOC membership accompanied a scholarship from the Golden Gate Chapter.

Unfortunately, there isn't room to discuss every one of the 33 chapters that support a scholarship program. All told, AOC chapters give out about \$175,000 in scholarships each and every year to approximately 100 recipients.

At the national level, the AOC HQ awards \$25,000 per year through the generosity of Raytheon. Since 2020, there has also been the US Army Cyber Warrant Officer scholarship provided by the Laurie Buckhout Foundation, which is currently a \$10,000 scholarship. Also funded at the \$10,000 level is the AOC HQ's "Future Five" program, with each recipient receiving \$2,000.

## Impact

But to what end you ask? We take it as an article of faith that awarding scholarships to students pursuing advanced education is "goodness," but have all these funds awarded over the last 60 years made an impact on our profession? Has this helped ensure a continued EW/EMSO workforce? With multiple chapters and the headquarters itself awarding scholarships using different criteria, of different amounts, it's difficult to assess the "dependent variable" when there are multiple and different "independent variables." But there

are compelling anecdotal stories of students who have entered the EW/EMSO workforce thanks in part to AOC scholarships received. For example, a Dixie Crows scholarship recipient, Andrew Ollikainen, now works for Northrop Grumman. So, the AOC scholarship program is helping to maintain the EW/EMSO workforce that is so important to our collective national security, both in the US and its allies and security partners.

Stay tuned for next month's installment which will cover exciting developments in EW equipment and the AOC during the 1980s. In the meantime, consider donating to the AOC Education Foundation through the QR code below. 🦅

*The author would like to acknowledge the contributions of Lisa Frugé-Cirilli, Bob Simmen, Paul Westcott and Glorianne O'Neilin.*



# AOC 60<sup>th</sup> Anniversary



By Wayne Shaw

**In the March** *JED*, we looked at how the AOC and US EW changed in the 1970s. The following decade, the DOD made key investments in electronic warfare (EW) that would pay dividends within the decade.

In November 1981, the US Air Force's 388th Electronic Combat Squadron at Mountain Home AFB, Idaho, took delivery of its first EF-111A Raven. After the demise of the EB-66 and a gap of nearly a decade, the Air Force once again possessed an operationally useful force of jamming escort planes. By December 1985, there were EF-111 squadrons at Mountain Home AFB as well as at RAF Upper Heyford in the UK. Just a few months later, five EF-111s from this unit would fly in Operation Eldorado Canyon in the night skies over Libya, marking the combat debut of the EF-111 and her crews.

The EF-111 would likely never have been built were it not for the mature ALQ-99 tactical jamming system (TJS). The airplane and her crews who made it possible and would perfect the ALQ-99 Tactical Jamming system was the US Navy's EA-6B Prowler. The EA-6B and its crews also flew in Operation Eldorado Canyon in 1986. They flew off the USS America and the USS Coral Sea. In addition, the final variant of the EA-6B appeared in the 1980s – the Improved Capability II (ICAP II) in 1984 and the Block 86 in 1988. ICAP II EA-6Bs allowed it to carry the AGM-88 High-speed Anti-radiation Missile (HARM), and the Block 86 EA-6B added the ALQ-126B pulse jammer.

The US Marine Corps (USMC) also flew the EA-6B, as well as operated ground EW systems. Of note in the 1980s, the USMC had units deploy to Beirut, Lebanon, and also took part in the short-notice intervention in Grenada. In 1989, the USMC took center stage in Operation Just Cause in Panama.

The US Army was busy in the early 1980s in Central and South America. There, they flew the RC-12G aircraft (a Beech King Air with lots of EW gear and antennas) outfitted with the Sanders URR-75 receiving system for the "Crazy Horse" program. These Crazy Horse planes and their crews and support personnel went on deployment to Honduras as part of the US effort to assist the government of El Salvador as it put down an insurrection. This was regarded as one of our first "Radio Shack wars" against adversaries who used HF and VHF communications systems purchased on the commercial market. (This was a foreshadowing of the counter-RCIED efforts in Iraq and Afghanistan in the coming decades.)

In Europe, in the early 1980s, the Panavia Tornado entered service and development work was undertaken on the ECR Tornado, which would enter service right after the next decade began in 1990. Tornados were in service with the Air

Force and Naval Air Forces of the UK, Germany and Italy, with much joint training, such as the training of German Air Force and German Navy weapons system officers/electronic warfare officers at Mather AFB, Calif., in the 1980s.

An important point for policy makers – all these investments in EW paved the way for a totally unforeseen security crisis in the early 1990s: Operation Desert Storm. (More on that next month.)



An EF-111A photographed in 1981.

USAF PHOTO

The AOC itself continued its progress toward professionalism when it moved into its then-new headquarters (HQ) building on North Payne Street at the end of 1986. This served as the AOC HQ until very recently. In 1983, the AOC Hall of Fame award was established with Dr. Fred Terman being the first person inducted into this hall of fame. The following year, Alfred Price published the first volume of *The History of Electronic Warfare*. In 1986, the AOC Educational Foundation (AEF) was established and approved by the Internal Revenue Service as a non-profit, charitable, tax-exempt organization. AOC's current 5-year Strategy and Annual Operating Plan contain aggressive "stretch" goals for growing our membership, as well as making the AEF financially self-sufficient. The 1980s were a great decade for the AOC with membership peaking in 1988 in conjunction with US President Ronald Reagan's buildup of the US military. AOC peaked at approximately 25,000 members. Just before the end of the decade, in 1989, the AOC published the second volume of *The History of Electronic Warfare* by Alfred Price.

Stay tuned for next month's installment when we cover the start of some key events between the AOC and the US Congress, as well as the first Gulf War and the first war over Bosnia, where EW played critical roles. ✈

# EW & AOC: THE 1990S



By Wayne Shaw

**The 1990s started** with a “bang” with Operation Desert Storm in the early morning hours of 17 January 1991. The exquisitely planned air war took out Iraqi air defenses and allowed Coalition ground forces to move into and through Iraq to expel Iraqi forces from Kuwait in record time. By the end of February 1991, the war was essentially over, faster than many of the most knowledgeable planners had imagined. Electronic warfare (EW) was an essential element. By one authoritative estimate, “without electronic countermeasures, fully 50 percent of all strike aircraft would not have returned.”<sup>1</sup>

“First blood” was drawn by Task Force Normandy: three US Air Force (USAF) MH-53J Pave Low helicopters pathfinding the way for nine US Army AH-64 Apache’s which took out two Iraqi “Tall King” radars in the opening minutes to form a narrow corridor for other Coalition aircraft to flow through. Mainstream EW activities were performed by Coalition EW aircraft, such as USAF EF-111s and US Navy (USN) EA-6Bs jamming Iraqi air defense radars, with the EA-6Bs also unleashing AGM-88 HARMs against the Iraqi air defense radars. USAF F-4G Wild Weasels used that same munition in a more precise way to provide suppression of SAMs to enable Coalition airstrikes. One F-4G and its crew dodged five SA-2s while hunting down and destroying its controlling Fan Song radar. One EF-111 was engaged by an Iraqi Mirage F-1 and the Raven crew had to slice left descending from their 1,000-foot altitude, then had to break right, descend to 400 feet while dispensing chaff for a missile launched by the F-1. Thanks to an assist from an F-15C, they witnessed the Iraqi F-1 explode against the desert floor.<sup>2</sup>

USAF RC-135V/W Rivet Joint and USN EP-3E Aries II crews provided real-time SIGINT, jamming refinement and “TACREPs” while Royal Air Force Nimrods kept an electronic eye on the Persian Gulf and helped enforce the embargo against Iraq. NATO E-3 AWACS provided “picture” calls to strike packages flowing in through northern Iraq. The USAF EC-130H Compass Call jammed Iraqi communications and its specialty, command and control between Iraqi ground-control intercept controllers and Iraqi airborne fighters. Other classic EW tactics were used: “BQM-74 Scathe Mean Drones, which flew missions in loose formations to simulate inbound bombers attacking Basra and Baghdad during the initial stages of the aerial campaign.”<sup>3</sup> Many adversary nations studied the Coalition’s success and started making significant investments in their militaries to include EW, Cyber, and other EMSO-related capabilities. Today we are faced with the fruits of those investments, which demand a new round of investments by member nations of the Association of Old Crows (AOC).

In the dynamic landscape of EW advocacy and strategic planning during the 1990s, the AOC played a pivotal role,

particularly through its initiatives such as the Capitol Hill Roundup (CHR) and the establishment of the Senior Advisory Board (SAB). The CHR, initiated in 1990 under the leadership of RADM (Ret.) Julian Lake, AOC President (1990-91), was a concerted effort to educate US Congressmen on the fundamental principles of EW and the necessity for funding this critical domain. Spearheaded by US Congressman Earl Hutto from Florida’s 1st District, the Roundup convened approximately 50 AOC members annually with their respective congressional representatives. These meetings focused strictly on educational discourse, adhering to guidelines prohibiting any form of company advertising. The presence of constituents was mandated, ensuring a grassroots connection in every interaction. Handout materials were permissible, facilitating the dissemination of pertinent information beyond the confines of the meetings. In 1999, Congressional members, led by Representative Joe Pitts, established the EW Working Group that continues today.

The AOC also recognized the need for broader strategic insight from experienced military and civilian leaders, leading to the inception of the SAB during Ken Mathiasmeier’s AOC Presidency (1998-99). Comprising luminaries like Dr. Paul Kaminski (Chairman), and Admiral William Owens, the SAB convened 2-3 times annually providing guidance and recommendations for the AOC’s strategic planning. Drawing from their wealth of experience, the SAB’s insights were invaluable in shaping the AOC’s long-term trajectory.

Both initiatives were instrumental in advancing the AOC’s mission during the 1990s. The CHR fostered direct engagement with policymakers, ensuring that the significance of EW was comprehensively understood within Congress. The SAB enriched the AOC’s strategic outlook, leveraging the wisdom of seasoned leaders to navigate the complexities of an evolving EW landscape.

As evidenced by these endeavors, the AOC played a vital role in shaping the organization’s advocacy efforts and strategic direction during a transformative decade in EW history.

\* The author thanks Ken Mathiasmeier for his input for this article.

<sup>1</sup>Hallion, Richard P., *Storm Over Iraq: Air Power and the Gulf War*, Smithsonian Institution Press, Washington, D.C., 1992, p. 172.

<sup>2</sup>History Channel series, *Dogfights: The Complete Season Two, Dogfights of Desert Storm*, Season 2, Episode 12, Produced by Digital Ranch for The History Channel, A&E Television Network, 2008.

<sup>3</sup>Nixon, Phyllis, *Deceiving the Enemy: These Are the Drones You Are Looking For*, Air Command & Staff College paper, Maxwell Air Force Base, Alabama, 2016, p. 8. 🦅

# AOC In The 2000s



By Wayne Shaw

**The 2000s started** with a terrorist attack on the USS Cole in the Middle East in September 2000. This “tremor” presaged a “seismic event” in the national security situation of the United States and in fact, the world, almost exactly one year later. The attacks of September 11th, 2001, on the Twin Towers in New York City and the Pentagon, as well as other bravely thwarted terrorist attacks, led directly to Operation Enduring Freedom (OEF) in late 2001 in Afghanistan and Operation Iraqi Freedom (OIF) in early 2003. The September 11 attacks were that generation’s “Pearl Harbor moment.” As in all modern warfare, both OEF and OIF included significant electronic warfare (EW) planning and execution, which helped ensure victory and preserve the lives of US and allied soldiers.



*In January 2007, airmen deployed to the 43rd Expeditionary Electronic Combat Squadron, in Southwest Asia, pose for a group photo in front of the EC-130H Compass Call Aircraft before a mission that will take the squadron past the 10,000 combat hour milestone in Operation Iraqi Freedom. From left to right: Maj Kyle C. Forrer, Capt Daniel W. Pritt, Capt Ronnie K. Blount, 1Lt Ryan W. Ellis, TSgt Everett L. Arnold, TSgt Paul R. Hampson and SrA Sarah O. McRae.*

USAF PHOTO

A member of the Billy Mitchell Chapter (BMC) in San Antonio, Texas, spent over a month at Shaw AFB, S.C., planning the EW aspects of “Shock and Awe” and gave an outstanding presentation to the BMC in the 2009 timeframe. The EW aspects of OIF included such staples as conditioning the Iraqi Air Defenses leading up to H-Hour, but they also included innovative and unique aspects, such as using end-of-life RQ-1 Predator drones to stimulate the Iraqi Air Defenses once it was “showtime” and BQM-74 Firebee drones dropping chaff on their ingress routes into Iraq. Although the EW plan contributed to the success of the Iraq invasion in 2003, the aftermath of the invasion quickly turned ugly in the form a full-blown insurgency.

By 2004, the insurgency had spawned a form of improvised explosive device (IEDs) seen first in Northern Ireland in the 1970s. Innovative Iraqi insurgents used available electronic components to fashion a variety of radio-controlled IEDs (RCIEDs). In

a surge of industry patriotism and energy reminiscent of World War II, a menagerie of RCIED jammers soon appeared in Iraq (and eventually in Afghanistan). To manage these RCIED jammers, which had in turn given birth to some new lexicon, such as Counter RCIED EW (CREW) two new EW organizations were established: Joint CREW Composite Squadron – One (JCCS-1), which would lead the operational effort to manage thousands of RCIED jammers in Iraq; and in Afghanistan its comparable organization was Task Force Paladin. There were also all manner of airborne RCIED jamming from US Navy and US Marine Corps EA-6B Prowlers and US Air Force EC-130H Compass Calls with the US Army starting developmental efforts for its own airborne EW capability (e.g., Communications Electronic Attack Surveillance and Reconnaissance, or CEASAR, system).

## AOC in the 2000s

The AOC was not isolated from the seismic shift caused by the 9/11 attacks, and in fact, while smoke was still rising from the Pentagon, the AOC staff and Board wrestled with the difficult decision of whether to proceed with the annual convention in Washington, D.C. Would even loyal AOC Convention attendees come to Washington, where terrorists had just recently flown an airliner into the Pentagon? Ultimately, the decision was made to not let the terrorists score another victory by altering our behavior, and the AOC Convention went ahead as planned. Due in part to the events of 9/11, the AOC staff had to nimbly deal with a union dispute in which union workers refused to unload the long line of semi-trucks that arrived at the convention hotel with exhibition materials. The AOC staff handled the potentially 11th-hour work stoppage with professionalism and finesse.

The 2000s was also the last full decade of the AOC Convention moving around the United States (e.g., Atlanta, Phoenix, etc.). Early in the next decade, a conscious decision was made by the AOC Board of Directors to keep the AOC Convention in Washington, D.C., to allow for more Washington-based decision-makers to walk the corridors of the AOC Convention Exhibit Hall, speak as Keynotes, attend sessions, and “be present” at the AOC Convention. That decision has paid large dividends for the AOC as a whole.

The 2000s is when the AOC created a full-time, paid staff position called “Director of Government and Industry Affairs” in early 2003. The very first person to fill that role in late April 2003 was Mr. A.R. “Trey” Hodgkins, who filled this position from 2003-2005. It was also at this same time that the AOC registered as a Federal lobbying organization and thereby entered the Washington, D.C., policy arena in a more official way. When Trey moved on, Mr. Ken Miller came onboard in 2005 and started providing his expertise to the AOC, which continues to this day. Look for some major exciting announcements along this lobbying line of effort in the months to come. 🐦

# AOC Chapters: Symposiums and Conferences

By Wayne Shaw


 ASSOCIATION  
OF OLD CROWS

**This month's column** concerns the history of chapter-led symposiums and conferences. Chapters started hosting technical conferences shortly after the AOC's formation. Prior to the early 2010s, they were major collaborators with AOC Headquarters (HQ) in the hosting of the Annual AOC International Symposium & Convention (AAISAC) in different locations around the United States. For sound reasons, during Lt Gen Robert Elder's term as AOC President, a decision was made to hold the AAISAC in the Washington, D.C., area for the foreseeable future.

In fact, an early 1980s decision to not return to San Antonio for the AAISAC spurred the Billy Mitchell Chapter to start its FiestaCrow Symposium in 1983. FiestaCrow continued on the odd-numbered years until its final iteration in 2011. But the tradition of chapters hosting technical conferences precedes FiestaCrow by decades!

The first chapter-led technical conference was executed in 1967 – only three years after the formation of the AOC – by the Southwestern Crows at White Sands Missile Range, N.M. Not only did the chapter organize this one and another in 1970, but they also secured a US Senator as the Keynote for both! Also in 1967, the Point Mugu Crows joined forces with another chapter to host the Pacific Region's first classified meeting, which was held at the Pacific Missile Test Center.

The chapter-level conference fever was contagious as the San Diego-based Cabrillo Crows started their own annual classified conference in 1971 that by 1997 had morphed into the very first classified electro-optic warfare conference ever held in the United States.

Also in the Pacific Region, the Golden Gate Chapter began hosting conferences in 1975. It focused on microwave, solid-state and computer data processing, and it included banquet speakers such as Dr. Bill Perry, GEN John Shalikashvili and Secretary of State George Schultz! Sadly, as the defense industry changed following the end of the Cold War, especially in Silicon Valley and the San Francisco Bay area, this excellent two-day technical event eventually faded away by the mid-1990s.

The 1980s also found AOC chapters in the Mountain-Western Region hosting several technical conferences, often in partnership with the DOD. In 1982, the Querque Crows in Albuquerque, New Mexico joined forces with the Air Force Test & Evaluation Center to host an EW conference. In 1986, the Golden Spike Chapter partnered with the Air Force's Ogden Air Logistics Center to host another EW conference. In 1988, the Pike's Peak Roost (formerly in the Mountain-Western Region) worked with NORAD to host a conference. In the odd-numbered years, Crows from this region flocked to San Antonio for FiestaCrow.

The Mountain-Western and Pacific Crows inspired their fellow Crows in other areas of the country. In the North-



Many AOC chapters organize EW conferences and symposia. The Aardvark Roost in South Africa, for example, has run the Little Crow and Big Crow conference series beginning in 2009. Above, the attendees at the EW South Africa 2019 Conference and Exhibition (a.k.a. Big Crow).  
AARDVARK CHAPTER PHOTO

eastern Region, the Patriots' Roost started hosting their annual two-day technical conference in 1982. This outstanding annual event continues to this day and gets bigger and better each year. In the Central Region, the Kittyhawk Chapter began their annual classified conference – now called "Kittyhawk Week" – in 1971 as a single classified presentation by a NORAD brigadier general followed by a dinner presentation by Senator Joseph Montoya. It continues to this day and as the name implies, it is now an entire week of Crow camaraderie. In the Southern Region, the Dixie Crows began hosting their excellent Dixie Crow Symposium in 1976. It continues to get bigger and better with each passing year.

The International Chapters have also been an integral part of this rich history of chapter-led technical conferences. In 1983, a three-day EW Technology Symposium was put on by the AOC's NATO Nest. Of note, attendees from every NATO nation were present at this conference—a Herculean feat of security paperwork processing, as classified papers were involved! This has morphed into AOC Europe which is held at the same time of year as that first conference in 1985. In fact, AOC Europe 2024 was the most successful AOC Europe ever with metrics approaching the AAISAC! In the western Pacific, the Taipei Chapter even preceded the NATO Nest event, holding their first annual convention in 1983. This was preceded by the AOC Japan Chapter, which started holding an annual technical EW symposium in 1981 and these continue to this day. There are many other AOC chapter conference and symposia organized across the globe today, including chapters in Australia, France, India, Israel, Republic of Korea, and South Africa.

This rich history and the steadfast commitment of so many chapter-level leaders who have gained experience planning, organizing and executing regional symposiums bodes well for the future of the AOC. There will continue to be the AAISAC, as well as chapter-led conferences with which AOC HQ assists. These are always topics of discussion and debate on the AOC international board of directors. 🦉

*Author's Note: I'd like to thank Robert Simmen, Paul Westcott and the team of Sam & Nancy Roberts for their help with source material for this column.*

# EW and Special Operations

By Wayne Shaw

**EW debuted in** World War II when the Royal Air Force (RAF) sought to counter German radars, which could locate RAF bombers on their night bombing missions. The Würzburg radar was excellent and a raid was planned to dismantle one and bring it back to the United Kingdom.

Operation Biting (OB) involved the infiltration (INFIL) at Bruneval on the French coast. The mastermind behind OB in terms of justification was Dr. Reginald V. Jones. OB was a great example of jointness, as the British Army paratroopers were parachuted in at night by RAF bombers. They numbered 119 troops, landing in the snow 600 yards from the radar station. They eliminated the sentries, then the radar operators, then began dismantling the Würzburg radar for transport back to Dr. Jones. Eventually, the jig was up and they found themselves in a firefight with responding German reinforcements as they retreated slowly to the beach where they were to be exfiltrated by Royal Navy landing craft. It was a “nail biter,” as the Royal Navy had a little run-in with a German destroyer and two enemy patrol boats and were late. In the end, the British Commandos made it onto the landing craft and the Würzburg radar parts made it to England.<sup>1</sup>

The Würzburg radar was eventually shipped to Hurlburt Army Air Force Base in Florida, where it was tested by EW Test & Evaluation (T&E) expert, Ingwald “Inky” Haugen. Inky passed the torch of EW T&E to AOC Past President Ken Mathiasmeier at Eglin AFB in the late 1960s.

EW support for special operations also played a role in the Vietnam War. According to Old Crow Sam Roberts, the CIA got the US Air Force to drop leaflets from the cavernous bomb bay of a B-52D using EB-66E aircraft to provide EW support both in front of and trailing behind the B-52D.

Fast forward to 1989 and Operation Just Cause (OJC) in Panama. The plan for OJC called for a quick, massive invasion by US forces, which began in the early hours of December 20. The US deployed 24,000 troops, including 3,300 that would be air dropped, to simultaneously attack 27 separate objectives inside Panama.<sup>2</sup> Among the top objectives was to find and capture Panamanian dictator Manuel Noriega and seize control of four main air fields used by the Panamanian Defense Forces (PDF). Denying communications between Panamanian Defense Forces (PDF) leadership and its units was essential, as was discouraging the Panamanian Defense Forces (PDF) from fighting at all. To accomplish these specific goals, the US de-

ployed EC-130H Compass Call aircraft to jam PDF communications, as well as EC-130E Volant Solo aircraft, which broadcast Spanish-language radio messages in support of the OJC psychological operations campaign. In addition, the US Army’s 525<sup>th</sup> Military Intelligence Brigade (Combat Electronic Warfare and Intelligence -CEWI) (Airborne) provided SIGINT support to XVIII Airborne Corps throughout the operation.



*This German propaganda photo shows Wehrmacht soldiers manning a Würzburg radar somewhere along the channel coast in France in 1943.*

PHOTO FROM GERMAN FEDERAL ARCHIVES

The EC-130H Compass Call achieved Initial Operational Capability (IOC) in 1983, and OJC represented its initial combat deployment. “The fog of war descended on the PDF at 12:45 a.m. local time as two EC-130H Compass Call aircraft began a precision jamming attack against all PDF radio communications — confusion reigned ... even Noriega, the so-called “Maximum Leader,” fled to Vatican Embassy where he eventually surrendered to US SF. Within 24 hours, all objectives of OJC were under US Control.”<sup>3</sup> EW operations were so successful in OJC that GEN Carl Vuono, Army Chief of Staff from 1987 to 1991, said at the time, “The Army will never again go to war without COMPASS CALL.”<sup>4</sup>

Fast forward to 2003 and Operation Iraqi Freedom (OIF). A series of US Army SF, Operational Detachment Alpha (ODA) needed to secure critical Karbala Gap routes that would be used by US conventional forces enroute to Baghdad. They were INFILed at an abandoned airfield at Wadi al Khirr, Iraq. It provided good access to the Karbala Gap and Najaf. How to get there? USAF MC-130 Combat Talons of course! Not only did the USAF INFIL the ODAs and other SF, but also HMMWVs and other critical gear. What was the only MC-130 protection? Its EW gear and its onboard EWO who would operate it. Without this EW protection, the SF may not have been able to get into Iraq and secure key pathways for the main invasion forces.<sup>5</sup> Bottom line? The invasion for OIF was successful. The synergy of EW and Special Operation continues today. ✈

*Author’s note: I would like to thank Ken Mathiasmeier, Sam Roberts and Paul Westcott for their contributions to this article.*

<sup>1</sup> Price, A. (2017). *Instruments of Darkness: The History of Electronic Warfare 1939-1945*. Frontline Books. pp. 71-75.

<sup>2</sup> Bonham, G. (1991). “Airfield Seizure – The Modern Key to the Country,” DTIC Archive: <https://apps.dtic.mil/sti/pdfs/ADA233189.pdf>

<sup>3</sup> Author unknown. (2014). 2014 Calendar. Celebrating More Than 50 Years of EW Excellence. BAE Systems. USA.

<sup>4</sup> Maday, James. (2017). EC-130H Compass Call presentation. Offutt AFB Web site, <https://www.offutt.af.mil/Portals/97/EC130%20Industry%20Visit%20Unclass%20Brief%20CAO%2017%20JUL%2017%20v1.pdf?ver=2017-08-24-110342-530>

<sup>5</sup> Robinson, L. (2004). *Masters of Chaos: The Secret History of the Special Forces*. Public Affairs. p. 254.

# Colorful Crows

By Wayne Shaw

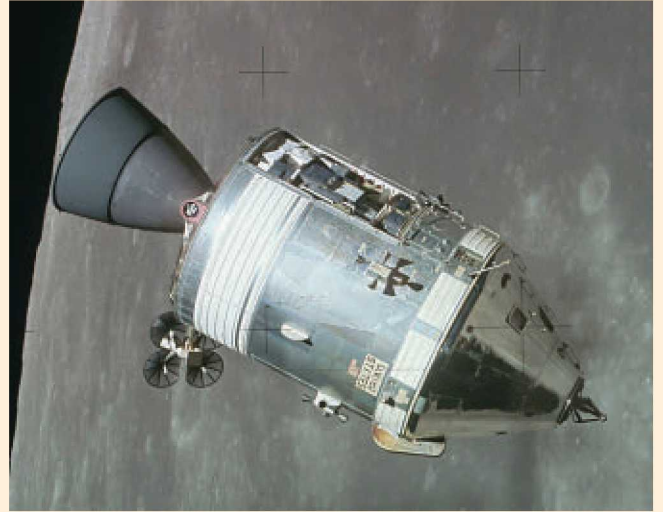
**The focus this** month is “Colorful Characters of AOC’s History.” As much as possible, I have tried to cover individuals who have not been mentioned in previous columns and to cover individuals who were volunteers and not paid AOC staff members.

The colorful history of the AOC begins with the origins of “Old Crows” and where it came from! John Paup, a student at the newly re-established “electronic countermeasures” (ECM) program at McGuire AFB (now Joint Base McGuire-Dix-Lakehurst) in New Jersey, in the late 1940s after the creation of the US Air Force, started referring to his instructors, mostly Ravens who had flown in World War II, as “those Old Crows.” His fellow students started using the term and soon the whole school was using the term. The rest as they say, is history. So Paup has to be the original “colorful character” actually preceding the establishment of the AOC as a formal organization. After retiring from the Air Force in the late 1950s, Paup worked for a company named North American and went on to become its program manager for NASA’s Project Apollo during the early years of that program.

The second colorful character has got to be another veteran ECM Officer, Mel Jackson, who just a few years later, in the mid-1950s, had the idea of creating an association for Old Crows. He had membership certificates printed and coins minted and began passing these out to military personnel with whom he dealt while conducting his civilian career as a marketing manager for an ECM company. The logo became quite popular and lives on as a legacy logo of the AOC. Sadly, this loose-knit, unofficial organization went dormant in the late 1950s/early 1960s as Mel moved onto other non-EW related pursuits. Yet, an all-important seed had been planted; one that would take root just a few years later when a few other former Ravens/ECM Officers would formally establish the Association of Old Crows in late 1964.

By 1967, the AOC already had 2,300 members. One of those was a man named Dan Graves. He is our next colorful character of the AOC’s history. He began publishing a collection of newsworthy items and humorous accounts of activities of chapters and members that he titled “Operator 750,” which was derived from his AOC member number (75). Both this newsletter and Dan became icons of the AOC ... for decades. For fundraising for the AOC Education Foundation, if the AOC Store ever sells an “Old Crows Trivia Game,” certainly Operator 750 and Dan Graves will be the basis for many trivia questions. Or if the AOC Store ever contracts with Parker Brothers to produce an AOC version of Monopoly for fundraising purposes, certainly there will be a “Dan Graves Boulevard” on the board.

In AOC’s early days, fundraising was certainly an important concern. Another colorful character was Bernie Zettl, who paid AOC operating expenses from his own personal funds in the

 60  
1964-2024  
ASSOCIATION  
OF OLD CROWS


John Paup, who coined the term “Old Crows,” went on to become an industry program manager for NASA’s Project Apollo. NASA PHOTO

early days to keep the fledgling non-profit afloat. Whom of us would do that today? According to those on the current AOC History Committee in a position to know, Bernie Zettl contributed more than any of the other early AOC founders “by a bunch.” In addition to contributing personal funds to keep the AOC financially afloat, he also served as the second and fourth AOC President. It is likely that had it not been for Bernie Zettl, the AOC would have ceased to exist as a formal organization just like it had as an informal organization under Mel Jackson. Rest in peace fellow Old Crows.

At a regional level, there are too many colorful characters to mention, so I will discuss one I knew personally. Daniel A.K. “DAK” Proctor was the driving force behind the creation of the Billy Mitchell Chapter (BMC) shortly after the creation of the AOC. He served as the BMC Chapter President (CP) and was always a guiding force behind the BMC even when he was not the BMC CP. Another of his significant accomplishments was the creation of the FiestaCrow regional conference in the late 1980s. I had the privilege of meeting DAK once at a FiestaCrow 2009 planning meeting, and it was obvious he was still the Old Crow everyone in the room listened to, although he was quite frail at this point in his life. I had the honor of speaking at his funeral at Ft. Sam Military Cemetery shortly after I became the AOC President in 2013. There were no empty seats at the gravesite service that day, no dry eyes, and the eulogies were done by many Old Crows. Rest in peace DAK.

Throughout AOC’s history, it’s been blessed by the right Old Crow coming along at the right time to continue its important mission. Will that be you? 🦅

*The author would like to acknowledge Paul Westcott for the inspiration for this column and the AOC History Committee for their review.*



# International Crows ASSOCIATION OF OLD CROWS

By Wayne Shaw

**AOC's 60<sup>th</sup> Anniversary** celebration would not be complete without addressing the history of our international chapters. Our international chapters represent diverse perspectives and form a strong, vibrant part of the AOC.

The AOC's international chapters are divided into two large regions. AOC International Region 1 is served by Regional Director Lt Col Erik Bamford who is the EW Branch Chief of the Norwegian Armed Forces. This region includes 13 chapters and covers a geographical area from the Arctic Roost in Norway to the Aardvark's Roost in South Africa, and from the UK Chapter on the western edge to the India Chapter on its eastern edge.

Some of the region's chapters have a long history within AOC dating back to the Cold War. The UK Chapter was established in 1972 and was followed by the Red Baron Roost in 1974 and the De Ooievaar Chapter (1975) in The Netherlands. The very first international AOC conference was organized by the Red Baron Roost just a few years after its formation. In addition, the UK Chapter represents one of the AOC's largest chapters in terms of membership, with more than 500 Old Crows currently on its membership list. According to John Stubbington, UK Chapter Treasurer, "Across the membership we have presence and influence in UK Electronic Warfare activities from initial requirements, through development, production, procurement and into training and operational use."

Other Region 1 chapters include the Viking Roost in Sweden, the Lafayette Chapter in France, the Swiss Crows, the Praetorian Chapter in Rome and the recently established Bohemian Crows in the Czech Republic. Outside of Europe, chapters include the Israeli Chapter and the Saudi Chapter, as well as the the India Chapter and Aardvark Chapter.

According to Colonel Bamford, the Russo-Ukraine War is easily the most defining event of the last decade for the European chapters in Region 1. The direct impact of the war is seen in the increased interest by the NATO countries directly bordering Russia or its close ally Belarus. New chapters have formed or are in the making in the Baltic area, Poland, and the Czech Republic. Also, NATO has become directly involved with AOC Europe – providing experts for a special session that has improved the warfighter-industry-academia common understanding of the threat posed, a dialogue on what solutions may be required, and what technologies to employ. The NATO special session has been part of the AOC Europe program for the last three iterations and is planned for the upcoming 2025 AOC Europe conference (May 6-8) in Rome.

In the Middle East, the AOC's history over the last decade has equally been shaped by conflict. Conflict between Western allies and the Russo-Syrian partnership while fighting ISIS provided many EW lessons to include EW's role in ballistic missile defense (BMD) and counter-UAS, among others. The 2025 attacks by Iran against Israel have helped shape new lessons on the use of EW in air defense and BMD. The AOC's Kingdom of Saudi Arabia Chapter, which was established in 2013, continues to be strong. And of course, the India Chapter puts on an incredible EW Conference of its own every two years in Bangalore. Many an AOC President has traveled there for this outstanding chapter-hosted event.

The six chapters that comprise International Region 2 are capably served by long-time AOC Board member Dr. Haruko Kawahigashi. Haruko is a member of the Japan Chapter of the AOC which has existed was established more than 40 years ago. It hosts the "Japan EW Research Group" conference, and Dr. Kawahagashi is always a driving force behind that event. In the past, the Singapore Chapter has helped host AOC Asia. According to Dr. Kawahigashi, "In the 2010s, chapter conferences were held regularly in Korea, Taiwan, and Japan." The chapter in Australia, which is nearly 40 years old, hosts major conferences almost annually and, with its own advocacy and education programs such as its Spectrum Working Group, remains an essential resource for the Australian government. The rising tensions in the South China Seas will likely translate into a stronger chapter in Taiwan, and perhaps new chapters in the Philippines and elsewhere. Meanwhile the chapters in the Republic of Korea, Japan, Taiwan, and Australia, as well as the most recent addition – the Kiwi Chapter in New Zealand – are all eager to host the next AOC Asia conference.

According to Immediate Past President Glenn "Powder" Carlson, "We continue to work on increasing our international footprint and influence to include adding an international director to the Executive Committee and international members serving as At-Large Directors." This is fitting given that approximately 23% of AOC's membership is comprised by our international members. 🦅

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