

2020

YEAR END REPORT



ASSOCIATION

OF OLD CROWS

Submitted by:

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Executive Director

Association of Old Crows (AOC)

The Association of Old Crows (AOC) is an organization for individuals who have common interests in Electronic Warfare (EW), Electromagnetic Spectrum Operations (EMSO), Cyber Electromagnetic Activities (CEMA), Information Operations (IO), and other information related capabilities. The Association of Old Crows provides a means of connecting members and organizations nationally and internationally across government, defense, industry, and academia to promote the exchange of ideas and information and provides a platform to recognize advances and contributions in these fields.

Advancing Electromagnetic Warfare TOGETHER

INTRODUCTION



ASSOCIATION
OF OLD CROWS

2020 has come to an end, and what a year it has been! We have nearly spent all of 2020 in a global pandemic, starting in the first quarter of the year and ending the year still in it. Although we were embarking on brand new territory, AOC found a way not just to survive but to thrive as an association. The word pivot became a part of our everyday vocabulary, shifting plans sometimes daily to continue providing relevant support for our members and our EMS community.

Our office already being "on the cloud" with VoIP phones and a cloud-based server meant shifting to a completely remote office in March could happen quickly and with minimal disruption to our day-to-day operations. We were very fortunate to get our staff home safe and sound as soon as we could.

This year, one of our biggest pivots was to provide training and continuing education to the large wave of at-home workers from around the globe suddenly in need of virtual opportunities. Fortunately, AOC's virtual professional development program had already been established years prior, so we had hundreds of hours of content at the ready. Because of this quick pivot, we more than doubled our annual goal for education and training.

Membership of AOC stayed constant through the year, with a small growth in industry memberships; an important indicator that AOC membership is considered an essential and necessary expense even in a questionable economy.

Despite the restrictions to in-person gatherings in 2020, AOC didn't miss a beat in convening the community leaders who shape the future of electromagnetic warfare. Within weeks of the US shutdown, AOC debuted our first-ever interactive virtual summit. Participation exceeded expectations with nearly 2,000 attendees from more than 35 countries. AOC has been viewed as a leader in the association learning space due to this swift and successful pivot.

The following report is a quick glimpse at the achievements of AOC for 2020. They are numerous and indicative of an active and financially solid program and way forward for the AOC.

BOARD ACTIVITIES

2020 AOC Board of Directors

President	Muddy Watters
President-Elect	Glenn "Powder" Carlson
Secretary	Mark Schallheim
Treasurer	Rich Wittstruck
Appointed EXCOM	Mike Ryan, Bob Andrews
At Large Directors	Amanda Kammier, David Stupples, Bob Andrews, Rich Wittstruck, Haruko Kawahigashi, Brian Hinkley
Regional Directors	Central Director – Keith Everly Mid-Atlantic Director – Jim Pryor Northwestern Region Director – Mark Schallheim Pacific Director – Rick Lu International I Director – Sue Robertson International II Director – Jeff Walsh Southern Director – Karen Brigance Mountain-Western Director – Sam Roberts Northeast Director – Mike Ryan
Past President	Lisa Frugé-Cirilli
Appointed Directors	Craig Harm, Joe Koesters

Annual Election

The annual election was conducted October 1-31, 2020, for the 2021 Board of Directors. Results of the election were:

Two (2) At-Large Directors: Greg "Patch" Patschke and Mike Ryan

Northeast Regional Director: Myles Murphy

International II Regional Director: Jurgen Opfer

Southern Regional Director: Karen Brigance

Out-going Board members: Amanda Kammier, David Stupples, Jeff Walsh, Craig Harm, Joe Koesters

Meetings

The Board of Directors kept busy in 2020, holding 14 board meetings, all virtual.

Date	Description
February 14, 2020	Virtual
March 27, 2020	Virtual
April 17, 2020	Virtual
May 8, 2020	Virtual
May 22, 2020	Virtual
June 19, 2020	Virtual
July 17, 2020	Virtual
July 31, 2020	Virtual
August 14, 2020	Virtual
August 28, 2020	Virtual
September 25, 2020	Virtual
October 23, 2020	Virtual
November 6, 2020	Virtual
November 20, 2020	Virtual

AOC Governing Documents

Two OpMans (AOC's Governing Documents) were revised during 2020; the effective dates are shown in the table below. OpMans can be found on the top menu bar (under About) of the AOC home page (crows.org) after you have logged in.

OPMAN	EFFECTIVE DATE
11 – Purposes and Responsibilities	February 1, 2017
13 – Bylaws of the Association of Old Crows	November 20, 2020
14 – AOC Strategic Positioning	July 25, 2018
15 – Code of Ethics	March 19, 2017
16 – Meeting Minutes	April 26, 2019
17 – Board/Chapter Operations	February 8, 2017
18 – Non-Discrimination Policy	October 31, 2019
21 – Financial Management	February 12, 2020
22 – Reserve Fund Policy	July 17, 2019
23 – Travel and Expense Reimbursement	September 27, 2016
24 – Records Retention	February 8, 2017
25 – Anti-Trust Compliance Policy	March 19, 2017
31 – Awards Program	October 31, 2019
32 – Nominations and Election Committee	September 12, 2017
41 – Conference Planning, Operations, and Reporting	April 26, 2019
51 – Conducting Classified Events	February 1, 2017
72 – Annual Chapter Recognition Program	October 31, 2019
73 – Publishing Chapter Events in the JED/eCrow	October 31, 2019
74 – Establishing, Maintaining, and Closing AOC Chapters	April 26, 2019
92 – Human Resource Management	September 2018

Strategic Planning

Mike Ryan and Powder Carlson led the strategic planning committee. The Board approved the 2021 Operating Plan (OpMan 14 Appendix A) in October 2020. This operating plan enables Board members, committee leads, Executive Director, and staff to have a common understanding of the overall objectives for the coming year.

A summary of the priorities and look ahead can be found at the end of this document. The specific details can be found in OpMan 14 Appendix A online at crows.org.

2021 AOC Board of Directors

President	Glenn “Powder” Carlson
Vice President	Brian Hinkley
Secretary	Mark Schallheim
Treasurer	Greg Patschke
International Executive	Bob Andrews
At Large Directors	Bob Andrews, Rich Wittstruck, Haruko Kawahigashi, Brian Hinkley, Greg Patschke, Mike Ryan
Regional Directors	Central Director – Keith Everly Mid-Atlantic Director – Jim Pryor Northeast Region Director – Myles Murphy Northwestern Region Director – Mark Schallheim Pacific Director – Rick Lu International I Director – Sue Robertson International II Director – Jurgen Opfer Southern Director – Karen Brigance Mountain-Western Director – Sam Roberts
Past President	Muddy Watters
Appointed Directors	Tuhin Das, Jesse “Judge” Bourque

Annual Assembly of Delegates

A virtual meeting of the AOC Delegates (chapter representatives) was held on December 4, 2020 featuring a recap of the year by the out-going president and the swearing in of the 2021 Board of Directors.

A recording can be accessed at <https://vimeo.com/488150502/d6a52df535>.



FINANCIAL

The Finance Committee held multiple meetings throughout the year to closely monitor the finances with a top priority of keeping the AOC relevant during the pandemic, all while doing their best to maintain the current staffing level. Due to COVID-19, the financial outcome for 2020 is anticipated to have a loss of \$679,800; this is down from our projected net revenue loss of \$1,490,300 earlier in the year. Seven (7) in-person events were cancelled (a primary source of revenue for the association), which resulted in a \$1,490,300 net loss of revenue. Fortunately, the expanded virtual online education and training sessions over performed by more than 100% for the year, which resulted in a recovered revenue net gain of \$810,500.

AOC Reserve Fund Allocation - \$2,116,000

OPMAN 22 mandated contingency (50% of internal operating budget and capital expense)

AOC Current Obligations - \$310,178

Chapter Sustainment, 3 Year/Life Membership, Accrued Time Off

AOC Account Balances - \$4,563,761

Schwab (Fixed Income & Equities) - \$4,430,529; Checking - \$133,232

We will not need to dip into reserve funds to pay out FY2020; because of all the performance in education and training, cutting of expenses, and a robust market portfolio, even after we pay out the \$679,800 that is needed to close out 2020, we still have more than \$900,000 of extra funds. AOC is financially solvent and sustainable coming out of 2020 and have a stable foundation to start FY 2021.

2019 Financial Audit

The 2019 independent audit report's release showed a \$674,770 surplus (income from operations) and that current financial operations reflect sound practices. There was another market correction in 2019, but this time in our favor compared to the market correction in 2018.

The 2020 audit is scheduled for March 2021.

The table below shows audit report income (loss) from operations for years 2014 through 2019.

	2020 projected	2019	2018	2017	2016	2015	2014
Revenue	~\$1,693,800	\$4,375,436	\$3,389,992	\$3,440,150	\$3,102,935	\$3,055,950	\$3,050,688
Expenses	~\$2,373,660	\$3,700,666	\$3,498,698	\$2,975,067	\$2,831,748	\$2,715,962	\$2,419,503
Income (loss) from operations	~\$679,800	\$674,770	\$108,706 *market correction	\$465,083	\$271,187	\$339,988	\$631,185

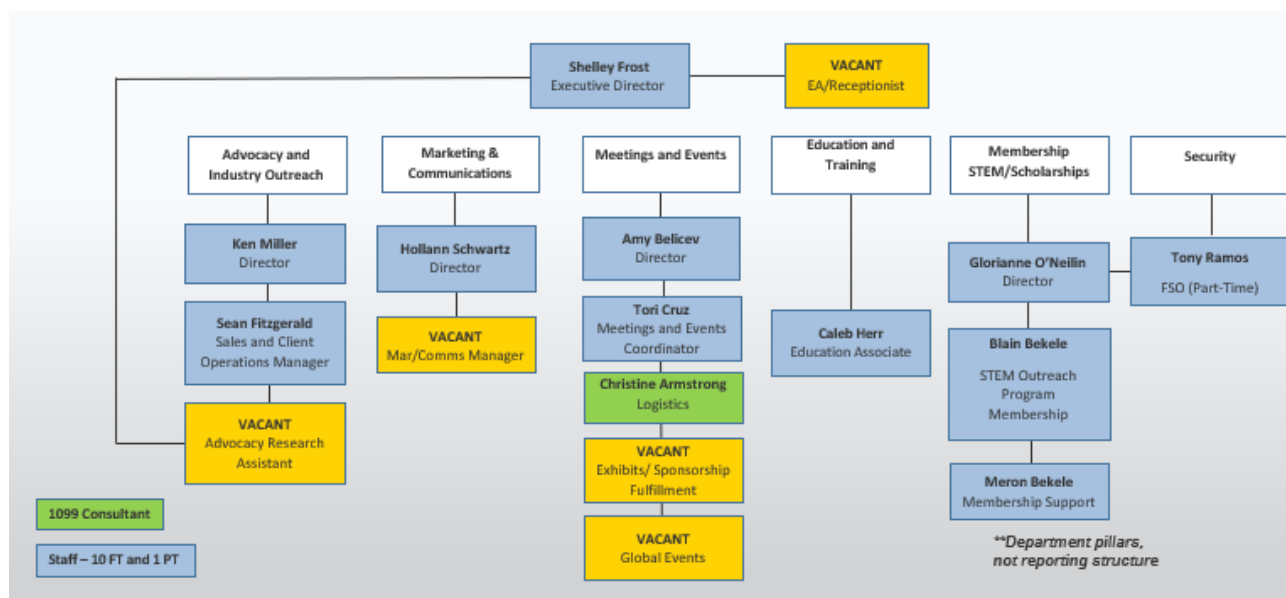
OPERATIONS

HQ Building

An AdHoc Renovation Committee was established in 2019 to oversee the renovations of the new office condo at 1001 North Fairfax Street, Alexandria, VA. The committee conducted a search for architects and general contractors and the AOC Board approved a budget of \$730,000 +/- 10%. Renovations began mid-July 13 and were completed mid-October 13. The renovation project remained on budget.

HQ Staff

As of December 2020, the staff is composed of eleven (11) AOC employees (10 full-time and 1 part-time) and one (1) consultant. An organization chart is provided below:



2020 Staff Changes

- Hollann Schwartz, hired in October, is the new Director of Marketing & Communications
- Departing employees: Brock Sheets, Director of Marketing & Communications (resignation); Tim Hutchison, Marketing Manager (resignation); Sylvia Lee, Exhibits Operations Manager (terminated due to COVID reduction in force).

Contractor Services

Outside contractor services will continue in 2021 with information technology services by TSI and bookkeeping & accounting by Consultance Accounting Services.

Naylor Agreement

AOC has contracts with Naylor Association Solutions to produce the weekly electronic newsletter *eCrow* and the monthly publication *Journal of Electronic Defense (JED)* on our behalf. The contract for e-Crow expires in 2023 and the contract for the JED expires 2024.

MEMBERSHIP

Despite chapters being unable to hold in-person meetings, overall individual memberships show a 4% increase in both individual and industry membership compared to 2019 (see chart below). AOC continues to offer special membership dues incentives such as student memberships, active duty military, and one-year memberships tied to certain AOC events/activities.

The Membership Committee consisted of chairman Amanda Kammier and Regional Directors Keith Everly, Jim Pryor, Mark Schallheim, Rick Lu, Sue Robertson, Jeff Walsh, Karen Brigance, Sam Roberts, and Mike Ryan.

Membership	Dec 2020	Dec 2019	Dec 2018	Dec 2017	Dec 2016	Dec 2015
US	11,306	10,849	10,419	10,078	10,340	10,519
International	2,948	2,901	2,643	2,722	2,493	2,416
Total	14,254	13,750	13,062	12,800	12,833	12,935
Industry	226	217	230	221	211	205

AOC Membership continues to provide potential crows with insight into “Why be a Crow?” and implement changes to increase both industry and individual member benefits.

Young Crow Membership

In 2017 AOC launched the “New Crow” initiative awarding free membership to individuals 25 years and younger for three years. 2020 was the first year for converting these individuals to paid members, resulting in approximately 30% converting. This initiative will be conducted over a 5-year initial trial period (ending in 2022). HQ will keep metrics and track these individuals' renewals but will need the chapters to take on the responsibility of engaging and retaining these young members.

24 and Younger Members	Dec 2020	Dec 2019	Dec 2018	Dec 2017
Total	1,058	1,014	565	331

AOC HQ always provides support for chapter membership drives upon request.

Chapter Sustainment Initiative Program – Assistance Fund

A chapter assistance fund was initiated in 2015 with the funds from a defunct Chapter. Monies may be disbursed to chapters with funding and/or financial needs based on stipulations contained in OpMan 74, Section II, Paragraph H. The current balance is \$50,728. A history of disbursements is provided below:

Month/Year	Balance	Note
June 2015	\$79,791	Initial Funding
2015	\$78,291	\$1,500 total disbursements
2016	\$76,291	\$2,000 total disbursements
2017	\$72,041	\$4,250 total disbursements
2017	\$86,729	\$14,688 funding from closing of two chapters
2018	\$76,634	\$10,095 total disbursements
2019	\$53,036	\$23,599 total disbursements
2019	\$53,378	\$341 funding from closing of one chapter
2020	\$53,946	\$568 funding from closing of one chapter
2020	\$50,728	\$3,218 total disbursements

Chapters

Northwest Region (5 chapters) – Frozen Crows Chapter, Joint Base Lewis McChord Chapter, Mile High Country Crows Chapter, Pikes Peak Roost Chapter, Whidbey Roost Chapter

Pacific (8 chapters) – Cabrillo Crows Chapter, Diamond Head Chapter, Golden Gate Chapter, Greater LA Chapter, Mugu Crows Chapter, Santa Barbara Chapter, Silver State Chapter, Mojave Green Roost Chapter (inactive)

Mountain West (9 chapters) – Cochise Roost Chapter, Billy Mitchell Chapter, Dallas Chapter, Desert Sun Roost Chapter, Fort Worth Chapter, Querque Chapter, Southwestern Chapter, Golden Spike Chapter, Capital of Texas Crows Chapter

Central Region (6 chapters) – Crane Roost Chapter, Gateway Chapter, KittyHawk Chapter, Windy City Chapter, Air Capital Roost Chapter, Ravens Roost Chapter

Northeast (7 chapters) – Empire Chapter, Garden State Chapter, Granite State Chapter, Maple Leaf Chapter, Metropolitan Chapter, Niagara Frontier Chapter, Patriots' Roost Chapter

Mid-Atlantic (8 chapters) – APG Susquehanna Chapter, Capital Club Chapter, Chesapeake Bay Roost Chapter, Dahlgren Chapter, Independence Chapter, Pax River Chapter, Charlie Yankee Roost Chapter

Southern (8 chapters) – Dixie Crow Chapter, Emerald Coast Chapter, Green Jacket Roost Chapter, Gulf Crows Nest Chapter, Palmetto Roost Chapter, Peachtree Roost Chapter, Barksdale Command Chapter, Redstone Rebel Chapter

International I (12 chapters) – Aardvark's Roost Chapter (South Africa), Arctic Roost Chapter (Norway), De Ooievaar Chapter (Netherlands), India Chapter (India), Israeli Chapter (Israel), Roma Chapter (Italy), La Fayette Chapter (France), Red Baron Roost Chapter (Germany), Saudi Arabia Chapter (Saudi Arabia), Swiss Crows Chapter (Switzerland), UK Chapter, (United Kingdom), Viking Roost Chapter (Sweden)

International II (8 chapters) – AOC Japan Chapter (Japan), Australian Chapter (Australia), Kiwi Chapter (New Zealand), ROK Roost Chapter (South Korea), Singapore Chapter (Singapore), Taipei Chapter (Taiwan, R.O.C.), Wild Parrots Roost Chapter (Brazil) and Condor Chapter (Chile)

Membership committee is working on creating two new chapters in central Florida and Ft Campbell.

Changes in 2020

Silver State Chapter – Closed

JED Rebrand

The renaming of the *Journal of Electronic Defense (JED)* to the *Journal of Electronic Dominance (JED)* was approved by the Board in December 2019; the rebranding of the new named was launched in May 2020.

2020 Chapter of the Year Winners

Large Category

Chapter of the Year: UK Chapter

Distinguished Chapters: Dixie Crow Chapter, KittyHawk Chapter

Medium Category

Chapter of the Year: APG Susquehanna Roost & Garden State Chapter (tie)

Distinguished Chapter Awards: Patriots Roost Chapter, Granite State Chapter, Mugu Chapter, Billy Mitchell Chapter, Palmetto Roost Chapter

Outstanding Chapter Awards: Windy City Roost Chapter, Dahlgren Roost Chapter

Small Category

Chapter of the Year: Aardvarks Roost Chapter

Distinguished Chapter Award: India Chapter

Excellent Chapter Award: Pikes Peak Roost Chapter, Whidbey Roost Chapter

Regional Chapter Greatest Increase Award

Northeastern Region: Maple Leaf Chapter

Mid-Atlantic Region: Capitol Club Chapter

Southern Region: Redstone Rebel Roost

Central Region: Windy City Chapter

Mountain-Western Region: Cochise Roost Chapter

Pacific Region: Golden Gate Chapter

Northwestern Region: Mile High Chapter

International Region I: UK Chapter

International Region II: Australian Chapter

Overall increase winner: UK Chapter

EVENTS

Conferences

Despite the restrictions to in-person gatherings in 2020, AOC continued to find new ways to convene the community's leaders who shape the future of the Electromagnetic Warfare enterprise.

Within weeks of the US shutdown, AOC events debuted our first-ever interactive, high-quality virtual summit. Participation exceeded expectations with nearly 2,000 attendees from more than 35 countries. AOC has been viewed as a leader in the association learning space as a result of this swift and successful pivot.

The initial platform was refined, and a second iteration of the virtual summit program, CEMAlite Virtual Summit, took place in September. We will continue building additional functionality into this new virtual space to carry this program through 2021.

The 2020 Conference Program had total revenue of \$148,190 and expenses of \$105,750, resulting in a net surplus of \$42,440.

Supporting Partners

A sincere thanks to the industry partners who supported the virtual summits and enabled the AOC to deliver quality programming to our community and membership.

Abaco	Annapolis Micro Systems	BAE
Booz Allen	D-TA	Empower RF
Epiq Solutions	HASCO	KBR
Keysight	Leonardo DRS	Lockheed Martin
Mercury Systems	Motorola	National Instruments
Northrop Grumman	Pacific Defense	Perspecta
Philpott Ball & Werner	Raytheon	Rohde & Schwarz
SRC Inc	TEVET	The Institution of Engineering & Technology
TRISTAR		

Finishing out the year, AOC developed a virtual forum for industry to connect with their government customer. This exchange brings together 120 industry solution providers with over a dozen government offices working to solve the latest challenges and threats facing the warfighter. The Program Manager Briefing Series kicked off in December 2020 and will run through February 2021.

With no in-person conferences being held in 2020 due to the COVID-19 pandemic, the ability to still assemble change-makers and truly engage our global community in a meaningful way virtually could be seen as the silver lining of COVID-19. Coming in the new year, AOC is launching a new initiative called AOC Discussions | EMSO Leadership, which is bringing together top leaders within each branch of the military and coalition forces.

It is anticipated that AOC will host two in-person conferences in 2021 in addition to two virtual summits. AOC is positioned to continue to connect and engage the community wherever they are.

Annual Symposium

2020

The Annual Symposium was canceled due to COVID-19. \$1,270,635 was contracted/invoiced for exhibits and sponsorship. \$899,240 was received - \$130,575 was refunded and \$768,665 rolled over to the 2021 books.

2021

We are on track for an in-person Annual Symposium scheduled for November 30-December 2, 2021 at the Walter E. Washington Convention Center in Washington, D.C.

Host sponsor: L3Harris

Global Conferences

AOC conducted EW Asia before COVID-19 became a global pandemic. Global Conferences were overseen by the International Advisory Committee, chaired by Sue Robertson, members Jeff Walsh, David Stupples, and Haruko Kawahigashi, and supported by our conference partner Clarion.

Conference	2020	2019	2018	2017	2016	2015
EW Europe (Clarion)	June 16-18; Nov. 16-18 Liverpool, UK	May 13-15, Stockholm, Sweden	June 6-8, Lausanne, Switzerland	June 6-8, London, UK	May 10-12, Rotterdam, Netherlands	May 26-28 Stockholm, Sweden
	Cancelled (COVID-19)	AOC Share \$315,118	AOC Share \$305,465	AOC Share \$254,747	AOC Share \$173,437	AOC Share \$170,000
EW Asia (Clarion)	Feb. 4-5, Singapore	Jan. 29-30, Singapore	June 6-8, Singapore	June 6-8, Singapore		
	AOC Share \$25,063	AOC Share \$18,929	AOC Share \$28,684	AOC Share \$13,935		
AOC EW Asia (Tangent Link)					Sept. 20-23, Kuala Lumpur	
					AOC Share \$3,899	
AOC EW Brazil (Clarion)						April 14-17, Rio AOC Share \$2,400

2021 Conference Schedule

- AOC EW Asia (Clarion) – Not holding in 2021
- EW Europe (Clarion) – TBD
- EW GCC (Tangent Link) – October 2021 - Abu Dhabi, UAE

PROFESSIONAL DEVELOPMENT

The 2020 Professional Development program had a total revenue of \$891,240, and expenses of \$216,500. Net Surplus from PDCs was \$674,740. The top achievements in 2020 for the Professional Development Program are:

1. A record high number of course attendees for both on-demand and Live Web Courses, with over 163 on-demand Course Registrants, and 269 on-demand Registrants, and 163 live course attendees.
2. This was the first year in the history of the AOC's education program that we have received high demand from industry partners and military units for educational course offerings, totaling 34 different requests received and accommodated.
3. The approval of the "Certified Specialist in Electromagnetic Warfare" (CSEW). An initial framework has been established with a benchmark of 100 credit hours of AOC professional development courses to be required for certification. This will launch in Q2 2021.

As mentioned previously, although the onset of the pandemic created new hurdles, the AOC's education program was uniquely suited to provide training and Professional Development offerings to the EMS industry. Having our entire library of professional development courses, both live and on-demand, existing online, we were able to not only continue to offer top-tier educational content, but AOC was also able to expand our offerings and set record-high numbers of live & on-demand attendees.

We began a major project to address some issues experienced with the software Crowd Wisdom, our learning management system (LMS), which housed the on-demand courses and on-demand virtual series webinars. After some research, we determined that we would be able to transition more than 100+ hours of digital content to our current association management system, Your Membership. This allowed us to save money on our LMS system and provide a more streamlined and concise experience for the AOC audience when accessing our course content. This full transition will be completed by the end of 2020.

Also, our virtual delivery platform, Adobe Connect, which AOC uses for webinars and professional development courses, experienced several outages throughout the year, making it difficult to deliver the top tier educational content that AOC members expect. Therefore, we chose to transition to a new virtual delivery platform that is entirely web-based and far more reliable. This will allow us to grow our program and provide a cleaner, more streamlined virtual presence across all AOC online events.

The primary source of professional development AOC strives to offer its members is instructor-led professional development courses, hosted, and administered by AOC. These exist in the form of:

- In-person (AOC facility)
- In-person (customer's facility)
- Virtual (Live)
- Virtual (Recorded)

The AOC's education program was overseen this year by the Education and Training Committee, which included chair David Stupples.

Supporting Partners

A genuine thanks to the industry partners who supported the professional development program and enabled AOC to continue delivering quality content to our community and members.

Annapolis Micro Systems	Cobham
CRFS	Custom MMIC/Qorvo
Keysight	National Instruments
Pentek	Plath-BUSP
Rohde & Schwartz	Tabor Electronics
TE Connectivity	Tektronix

Course History

In-Person	2020	2019	2018	2017	2016	2015	2014
# of Courses	6	11	3	5	7	8	14
# of Students	267	183	85	51	111	152	227

Webinars	2020	2019	2018	2017	2016	2015	2014
# of Courses	21	19	12	16	17	18	20
Attendees	7,627	3,336	3,173	2,389	2,183	2,811	2,992
Sponsorship	\$231,500	\$147,374	\$118,982	\$90,625	\$84,750	\$135,375	\$113,425

Courses in 2020

Course Name	Location	Instructor	# of Students Live	# of Students On-Demand
21st Century Electronic Warfare, Systems, Technology, and Techniques	Virtual (Adobe Connect)	Dr. Clayton Stewart	12	3
EW Against a New Generation of Threats	Virtual (Adobe Connect)	Dave Adamy	34	4
EW Modeling & Simulation	Virtual (Adobe Connect)	Dave Adamy	46	5
Missile Design, Development, and System Engineering	Virtual (Adobe Connect)	Eugene Fleeman	19	0
Introduction to Machine Learning for Electronic Warfare	Renaissance Hotel, Washington, D.C.	Kyle Davidson	133	2
Electro-Optical/Infrared Sensor Engineering	Renaissance Hotel, Washington, D.C.	Dr. Phillip Pace	23	0

Virtual Series Webinars

The number of webinars offered in 2020 increased to 21 with an increased revenue due to sponsorships. The 2021 webinar scheduled is already finalized with 21 webinars scheduled with 5 more webinars in the final stages and a forecasted sponsorship revenue of \$250,000.

Date	Title	Speaker(s)	Registered	Attended
1/16/2020	EW Modeling and Simulation	Dave Adamy	591	280
1/30/2020	Infrared Countermeasures: A Heated Topic	Dr. Clayton Stewart	383	183
2/13/2020	EW in the New Threat Environment	Dave Adamy	573	264
2/27/2020	Using COTS Equipment to Generate Complex Radar Signals	Alan Wolke	320	160
3/12/2020	RF Challenges in the Modern EW Battlespace	Dr. Patrick Ford	464	239
3/26/2020	How America is Losing the GPS War – and risking everything	Dana Goward	592	384
4/9/2020	Overview of Missile Design, Development, and System Engineering	Eugene Fleeman	615	392
4/23/2020	Pulse compression techniques inside LPI radars: basic principles and technology trends	Renan Richter	742	463
5/7/2020	The Basic Concepts of ELINT	Brian Moore	996	617
5/21/2020	Leveraging Publicly Available Information to Map and Track GNSS Interference	C4ADS	503	261
6/4/2020	Deep Learning and Waveform Classification	Kyle Davidson	965	608
6/18/2020	The Fundamentals of Electro-Optical/Infrared Sensor Engineering	Dr. Phillip Pace	678	373
6/25/2020	Introduction to Space EW	Col John Thein	757	488
7/9/2020	Denial & Deception: Getting back to SIGINT's roots	Danielle Simmons & Eric Famanas	786	437
7/23/2020	EW System Development: Critical Thinking in Design Tradeoffs	Joe Hulsey	480	250
8/6/2020	The Lost Art of HF: The Rebirth of Shortwave in a Digital World	Paul Denisowski	688	428
8/20/2020	High Resolution Direction Finding	Kyle Davidson	716	396
9/3/2020	Understanding how a Quantum Computer Works	Mark Elo	623	348
9/24/2020	Convergence of TDOA/AOA in operational environments	Luc Dondainas	818	386
10/8/2020	Specific Emitter Identification	Dr. Warren Du Plessis	793	352
11/5/2020	High Power Radio Frequency/Microwave Directed Energy Weapons (HPM DEWs)	John Tatum	756	352
Totals:	21		13869	7627

Career Center

Due to COVID-19 the AOC Career Center (careers.crows.org) saw a decline in job postings as well as net revenue. The sales for the Career Center are outsourced and still serves to further position the AOC as the best place to come for EMSO, CEMA, & IO talent.

	2020	2019	2018 (March-EOY)
Job Views	111,166	925,159	23,344
Job Postings	81	156	89
Gross Sales (includes pre-orders of posting packages)	\$65,205.50	\$87,193.75	\$65,658.15
Net Revenue to AOC	\$16,095.48	\$26,347.58	\$17,499.11

ADVOCACY AND OUTREACH

The mission of the Advocacy and Outreach (A/O) program is to direct, facilitate and integrate stakeholder outreach across the Department of Defense, military, the global defense industrial base, and all of government, including Congress. The program is also charged with building relationships internationally with stakeholders from international AOC chapters. Additionally, the A/O program is charged with integrating its value objectives across all other AOC programs and initiatives.

Advocacy and Outreach was overseen by the Government and Industry Relations Committee, which includes Chairman, Rick Lu, and members, Sue Robertson, and Jim Gigrich.

Value Objectives for Advocacy and Outreach

Value Objectives for Industry

- Provide data, analysis, and context of defense budget
- Influence policy development in Congress and DoD
- Educate and network Members of Congress and staff
- Provide business intelligence/market analysis for better business

Value Objectives for Congress

- Educate Members of Congress and staff
- Provide legislative/budget analysis and policy development
- Improve influence via congressional processes (committee and legislative)
- Strengthen grassroots so Congress knows what's happening on the ground

Value Objectives for DoD/Military

- Provide analysis and context on defense budget
- Collaborate with industry and academia
- Advocate for stronger leadership to provide authority and resources throughout DoD and the Services

2020 Accomplishments/Activities

Due to COVID, Advocacy and Outreach focused on deliverables that would apply across Congress, military, and industry.

- Vacuum Electronic Devices (VED) Industry Partnership Project (IPP) presentation at the AOC EW Asia conference in Singapore.
- Visited NAVAIR (Pax River, MD) to advance relationships with key program offices, most notably PMA 231 on Airborne Early Warning, a key adjacent market for the AOC.
- Met with the Government Accountability Office (GAO) to serve as a resource for analysis of DOD EMSO governance and oversight.
- Conducted targeted virtual outreach to Congressional Electronic Warfare Working Group staff and Professional Committee Staff.
- Published regular Advocacy Newsletter covering current events in government and Congress. Due to COVID, we increased the frequency of the newsletter from 1x per month to 3x per month.
- Published the following Issue Briefs:
 - Self-Protection: A Continued Requirement
 - E-2 Hawkeye EW Support Integration
 - Compass Call "Cross Deck" Funding Update
 - FCC Authorization of Spectrum License
 - Next Generation Jammer (NGJ)
 - Analysis of Section 173 (S. 1049) to Transfer EMSO to Joint Chiefs of Staff
 - Non-Kinetic Warfare in the Modern Digital Battlespace
 - Superiority Strategy
 - GAO Report on EMSO Governance and Oversight
- Developed read-aheads and post-event reports for new AOC virtual events, including the Virtual EMS Summit, CEMAlite, and the Program Manager Briefing Series.
- Maintained a defense budget database of EW-related programs and activities in the national defense budget.
- Monitored Mark-ups and Hearings in the House/Senate Armed Services Committees and provided analysis of FY 2021 National Defense Authorization Act and FY 2021 Defense Appropriations legislation.
- Conducted regular outreach to AOC Industry Members, including technical subject matter expertise, business development and sales.

2020 PRESTIGE AWARDS

AOC Gold Medal Recipient	General John Hyten, USAF
Hal Gershanoff Silver Medal Award Recipient	Mr. Shigeo Kazama
Col Anton D. Brees Lifetime Service Award Recipients	John Clifford, OBE Wg Cdr (posthumously), Lt. Col Michael "George" Arlt, and Dr. Masaaki Kobayashi
Joseph W. Kearney Pioneer Award Recipient	Mr. Donald L. Belmar
AOC Technology Hall of Fame Recipients	Mr. Lawrence "Larry" J. Rakos, Mr. Tor Holmboe, Dr. Guna Seetharaman
A.C. McMullin Electronic Attack Award	Mr. Noel Lynkew
Jerry Sowell Electronic Protect Award	Capt Andrew Zimmerman, USAF
John Marks Electronic Warfare Support Award	Capt Simon Paul Cooke, USAF
Electromagnetic (EM) Battle Management Award	Mr. Michael W. Akers
Jeffrey B. Jones Cyber Operations Award	Mr. Shane Snyder
Electro-Optical/Infra-Red Award	Mr. Kevin O'Hanlon
Spec 4 James Davis Maintenance Award	SMSgt Ron Jemmott
CTTCM Clay A Conner Training Award	MSGT Jacob T. Miller
Stanley B. Hall Executive Management Award	Mr. Juan M. Carbonell
Clark G. Fiester Program Management Award	Mr. Jason Dirner
Integrated Product Team Award	755 OSS XP/OSK Capabilities Team
Test & Evaluation Award	Mr. Sidney Wells
International Achievement	Dr. Seng M. Hong
Military Service Award – Air Force	Capt Alexander Shivers, USAF
Military Service Award – Army	Maj Christopher J. Denton, USA
Military Service Award – Coast Guard	CDR Boris Montatsky, USCG
Military Service Award – Marine Corps	LtCol Jason Berg, USMC
Military Service Award – Navy	LCDR Erik Dente, USN
Military Service Award – International	Capt Gianfranco Vizzini, Italian Navy
Outstanding Unit Award – Army	3rd Security Force Assistance Brigade (3SFAB)
Outstanding Unit – Coast Guard	USCG/CG-2 Intelligence Directorate
Outstanding Unit – NATO	NATO Emitter Database Advisory Group
Outstanding Unit – Navy – Shore	NIOC Colorado
Outstanding Unit – Navy – Air	USS William P. Lawrence
Outstanding Unit Navy – Surface	USS MITSCHER (DDG 57)

2021 LOOK AHEAD

Per the approved 2021 Annual Operating Plan, areas requiring attention in 2021 are outlined below:

ADVOCACY

- Expand AOC reach to adjacent markets, new communities of interest, and targeted demographics
- Solidify and Improve industry relations and partnerships
- Establish a new Podcast initiative to cover history, current affairs, and issue awareness

EDUCATION

- Develop a broad reaching, sustainable AOC STEM program
- Establish a certification program for EW professionals

SUPPORT

- Develop standard tools and processes for local AOC Chapter use
- Ensure AOC Conferences are Aligned with AOC Mission Areas
- Revamp the AOC Awards program
- Improve AOC HQs relationship with local Chapters
- Develop a deliberate approach to "Grow the AOC Bench"

AOC FOUNDATION



AOC EDUCATION FOUNDATION

2020 AOC Education Foundation Board of Governors

President-Elect	Glenn "Powder" Carlson
Secretary	Mark Schallheim
Treasurer	Rich Wittstruck
Appointed EXCOM	Mike Ryan, Bob Andrews
Regional Directors	Keith Everly, Jim Pryor, Mark Schallheim, Rick Lu, Sue Robertson, Jeff Walsh, Karen Brigance, Sam Roberts, Mike Ryan
Past President	Lisa Frugé-Cirilli
Appointed Directors	Gary Lyke, Nino Amoroso

Meetings

There were three (3) Board of Governors meetings.

Date	Description
June 5, 2020	Virtual
September 11, 2020	Virtual
December 4, 2020	Virtual

Foundation Governing Documents

The Education Foundation Governing Documents can be found on the AOC website after you login under the Foundation tab on the top bar.

Scholarships

In 2020, the AOC, made possible by a \$25,000 donation from Raytheon, awarded two \$12,500 scholarships; we partnered with an independent group at the Education and Training Center in Boston to review the applications and select two winners:

- Alan Sandoval – University of Tulsa
- Kristen Lilly Steudel – Lafayette College

AOC also established the Warrant Officer Scholarship with the generous help and donation from the Laurie Buckhout Foundation. AOC partnered with the US Army Cyber School in Fort Gordan, GA to review the applications and select the winner.

The inaugural scholarship of \$20,000 was granted to:

- CW3 Eric T. Colon, USA

AOC Chapters gave out approximately \$180,000 in scholarship money in 2019. Between HQ and Chapters, approximately 160 individuals received some form of a scholarship from the AOC.

Financial Status

The AOC Foundation balance as of December 2020 is \$219,104 which includes the following donations:

- \$25,000 – 2021 Raytheon Scholarships – Raytheon Missiles & Defense
- \$20,000 – 2020 Warrant Officer Scholarship – Laurie Buckhout Foundation
- \$17,000 – donation from Sierra Nevada Corporation
- \$3,079 – individual contributions in 2020

STEM Program

Vision

Investment and development of our "young" crows through EMS STEM education programs, mentorships, and AOC events encouraging collaboration while ensuring successful growth of our "EMS Leaders of Tomorrow".

Mission

The Association of Old Crows Education Foundation 501 (c)(3) organization provides a dedicated venue for AOC Chapters to post EMS STEM events fostering open communication and the sharing of ideas through our AOC website, Subject Matter Experts (SMEs) and by hosting global STEM events to include the Annual Convention to promote our chapters, academia, industry and government.

Due to COVID, we did not hold a face-to-face STEM Outreach Event and have plans to create a completely virtual online STEM presence for 2021 and beyond.

2021 AOC Education Foundation Board of Governors

President	Glenn "Powder" Carlson
Vice-President	Brian Hinkley
Secretary	Mark Schallheim
Treasurer	Greg Patschke
International Executive	Bob Andrews
Regional Directors	Keith Everly, Jim Pryor, Mark Schallheim, Rick Lu, Sue Robertson, Jurgen Opfer, Karen Brigance, Sam Roberts, Myles Murphy
Past President	Muddy Watters
Appointed Directors	Gary Lyke, Chuck Quintero