US Army EW Training Overview

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TRADOC Capability Manager Electronic Warfare (TCM EW)
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Agenda

- EW School Mission
- Doctrine
- EW Courses
  - FA29
  - 290A WOBC
  - 290A WOAC
  - 29E
  - AOEWC 1J ASI
- EW School Facilities
  - Classrooms
  - CREW Lab
  - EW Range complex
- Challenges
The Electronic Warfare (EW) School provides Career Management Field (CMF) 29 series Functional Area and MOS training for Officers, Warrant Officers, and Non-Commissioned Officers in order to enable EW personnel to serve at Battalion to ASCC levels and successfully integrate the Electronic Warfare tenets of Electronic Attack (EA), Electronic Support (ES), and Electronic Protect (EP) into US Army, Joint, and Unified Land Operations allowing the Ground Force Commander to gain and maintain freedom of action across all domains through domination of the electromagnetic spectrum.
FM 3-38 Cyber Electromagnetic Activities (CEMA):

• *Cyber electromagnetic activities (CEMA)* are activities leveraged to seize, retain, and exploit an advantage over adversaries and enemies in both *cyberspace* and the *electromagnetic spectrum*, while simultaneously denying and degrading adversary and enemy use of the same and protecting the mission command system. (Ch. 1, para. 1-1)

• *Cyberspace Operations* are the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace. (Ch. 1, para. 1-5)

• *Electronic Warfare* is any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. (Ch. 1, para. 1-6)

• The CEMA element is responsible for **planning, integrating,** and **synchronizing** Cyberspace Operations (CO), Electronic Warfare (EW), and Spectrum Management Operations (SMO) to support the commander’s mission and desired end state within cyberspace and the Electromagnetic Spectrum (EMS). (Ch. 1, para. 1-3)

• The CEMA element is led by the electronic warfare officer (EWO) and provides staffs expertise for the planning, integration, and synchronization of CO, EW, and SMO. (Ch. 2, para 2-5)
US Army EW School comprised of Five Courses

- 4 x CMF 29 series MOS, Functional Area, and Advanced PME courses spanning 9 to 15 weeks in duration
- 1 x ASI producing course 6 weeks in duration
- EW Course’s were evaluated by the American Council on Education (ACE) in OCT 2013 and all of the course’s earned a minimum of 6-9 college credit hours at the Lower Baccalaureate and Upper Baccalaureate levels
- AOEWC 1J Course attended by ALL services and multiple OGA entities to include FBI and USSS
Course Descriptions

- **FA29**: The Electronic Warfare Officer (O3-O6) Functional Area 29 serves as the principal staff Officer for all planning, synchronization, and deconfliction responsibilities concerning Cyber Electromagnetic Activities (CEMA) at BDE to ASCC Levels.

- **290A WOBC**: EW Warrant Officer Technician (WO1-CW2), organizes, implements, monitors, and evaluates operations, threat environments, unit maintenance, and intermediate level support maintenance of EW systems at BDE level.

- **290A WOAC**: (CW2-CW4) Train and educate Senior Warrant Officers to integrate CEMA into Division, Corps, Multi-national Corps, Army Component Command and Joint Theater Command Unified Land Operations.

- **29E**: EW NCO (E5-E6) serves as the EW Master Trainer; supervises and performs military actions to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum (EMS) at BN to BDE Levels.

- **AOEWC**: (ASI 1J) Provides basic EW knowledge and capability to deploying units with unresourced 29 series MTOE slots or units with no 29 series MTOE slots. Provides additional EW capacity in support of 29 series personnel. Teaches Soldiers, Marines, Sailors, and Airmen to integrate and operate as a member of the Electronic Warfare (EW) team. Attendance open to ALL services and Other US Governmental Agencies.
**Description:** The Electronic Warfare Officer’s Qualification Course provides Active and Reserve Components of the U.S. Army, commissioned officers CPT through LTC, accessed into FA 29 (CEMA), the education and training in the essential core skills necessary to successfully perform in brigade, and above, positions.

**History:**
2008 – Developed Electronic Warfare Officer Qualification courseware, began Pilot course instruction.
2009 - Validated course with TRADOC
2013 – CO planning block added to POI

**Course Duration:**
13 weeks taught at TS/SCI Level.

**What is Unique:**
- Established reach back network with home station, and deployed EWOs. (Army Corps through Brigade).
- On-Site Counter Radio Controlled Improvised Explosive Device Electronic Warfare Equipment (CREW) lab.
- VTCs with serving EWOs.
- Cyberspace Operations (CO) Training imbedded
- Hands on Electronic Warfare Range
- Follow on STO planner training for select personnel (2014)

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### Training Modules:

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Electronic Warfare Doctrine and Operations</td>
<td>78.5</td>
</tr>
<tr>
<td>C</td>
<td>EW Fundamentals</td>
<td>50.5</td>
</tr>
<tr>
<td>D</td>
<td>Electronic Warfare Systems</td>
<td>82</td>
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<tr>
<td>E</td>
<td>Plan EW Support to Operations</td>
<td>102.5</td>
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<tr>
<td>F</td>
<td>Plan Cyber Support to Operations</td>
<td>37</td>
</tr>
<tr>
<td>G</td>
<td>CEMA Capstone Exercises</td>
<td>121</td>
</tr>
</tbody>
</table>

**Lecture Hours**
194.5

**Practical Exercise/Test and Evaluation Hours**
281

**TOTAL ACADEMIC HOURS**
475.5

- Adding more TS/SCI Material to current curriculum

### Electronic Warfare Range Operations:

**Training Covered**
- Lesson on how to integrate EW into Unit Training
- Upload Firmware/Threat Load to appropriate system
- Leader PCC/PCI (Verify Current Threat load by UTS/ Spectrum Analyzer)
- Employ Electronic Attack Systems
- Provide overview of Spectrum Situational Awareness Tool (S2AS)

<table>
<thead>
<tr>
<th>Systems</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Mounted CREW Operations</td>
<td>Duke V3</td>
</tr>
<tr>
<td>Dismounted CREW Operations</td>
<td>THOR III, BALDR</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>Duke V3, THOR III</td>
</tr>
<tr>
<td>Fixed Site Systems</td>
<td>Duke V2 EA, Duke V3</td>
</tr>
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</table>
**Description:** The Electronic Warfare Technician Basic Course provides Active Army, Army Reserve, and Army National Guard Warrant Officers the education and training in the essential core skills necessary to successfully integrate EW in Unified Land Operations in a variety of Army organizations.

**History:**
- 2009 – Developed Electronic Warfare Technician courseware, began Pilot course instruction.
- 2010 – TRADOC validated the course.

**Course Duration:**
EWTC: 15 weeks taught at SECRET Level.

**What is Unique:**
- Established reach forward program with the Warrant Officer Candidate School to start the integration process for EW students prior to arrival at the WOBC.
- Established reach back network with deployed EWOs. (Army Corps through Battalion).
- On-Site Counter Radio Controlled Improvised Explosive Device Electronic Warfare Equipment (CREW) lab with all currently deployed systems.
- On-Site fully operational EW range with mounted and dismounted CREW training, fixed site training, and EW equipment maintenance lanes.

**Training Modules:**

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Introduction</td>
<td>4.0</td>
</tr>
<tr>
<td>B</td>
<td>Common Core</td>
<td>115.0</td>
</tr>
<tr>
<td>C</td>
<td>EW Doctrine &amp; Operations</td>
<td>31.0</td>
</tr>
<tr>
<td>D</td>
<td>Electronic/Electromagnetic Fundamentals</td>
<td>73.5</td>
</tr>
<tr>
<td>E</td>
<td>EW Systems</td>
<td>91.0</td>
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<tr>
<td>F</td>
<td>EW Threat</td>
<td>46.5</td>
</tr>
<tr>
<td>G</td>
<td>EW Planning &amp; Mission Command</td>
<td>101.0</td>
</tr>
<tr>
<td>H</td>
<td>EW Integration</td>
<td>16.0</td>
</tr>
<tr>
<td>I</td>
<td>CAPSTONE</td>
<td>96.0</td>
</tr>
<tr>
<td></td>
<td><strong>Total Academic Hours</strong></td>
<td>574</td>
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</tbody>
</table>

**Recommendations / Comments:**
- Bring course curriculum up to TS/SCI
- EW Range at Ft Sill
  - Continue to conduct CREW lanes.
  - Continue to conduct fixed site hands on training.

**Challenges:**
- Bringing course curriculum up to TS/SCI level (equipment and facilities availability)
- Remaining current with rapidly evolving doctrine.
Description: The Electronic Warfare Technician Advanced Course provides CW3-CW4 Active Army, Army Reserve, and Army National Guard Warrant Officers the education and training in the essential core skills necessary to successfully integrate EW into Division, Corps, Multi-national Corps, Army Component Command and Joint Theater Command full-spectrum operations.

History:
2012 – Developed WOAC courseware, began Pilot course instruction.
2013 – TRADOC validated the course.

Course Duration:
8 weeks at TS/SCI Level.

What is Unique:
- The course will focus on training the 290A to perform as a senior staff officer and advisor to senior commanders operating in Army, Joint, and ULO environments on the planning, integration, and synchronization of EW and CO.
- On-Site Counter Radio Controlled Improvised Explosive Device Electronic Warfare Equipment (CREW) lab with all currently deployed systems.
- On-Site fully operational EW range with mounted and dismounted CREW training, fixed site training, and EW equipment maintenance lanes.

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<tr>
<td>A</td>
<td>Introduction</td>
<td>4.5</td>
</tr>
<tr>
<td>B</td>
<td>Common Core</td>
<td>78.5</td>
</tr>
<tr>
<td>C</td>
<td>EW Doctrine &amp; Operations</td>
<td>25.0</td>
</tr>
<tr>
<td>D</td>
<td>EW Systems</td>
<td>50.0</td>
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<tr>
<td>E</td>
<td>Cyber Support to operations</td>
<td>26.5</td>
</tr>
<tr>
<td>F</td>
<td>EW Planning &amp; Targeting</td>
<td>58.0</td>
</tr>
<tr>
<td>G</td>
<td>EW Operations &amp; Assessments (w/CAPSTONE)</td>
<td>54.5</td>
</tr>
<tr>
<td></td>
<td>Total Academic Hours</td>
<td>297</td>
</tr>
</tbody>
</table>

Challenges:
- Updating course material to JWICS as systems are turned on
- Creating JWICS accounts for students.
- Remaining current with rapidly evolving doctrine.
Army Electronic Warfare Specialist (29E Transition Course)

Description: Specialized Training for Army Electronic Warfare Noncommissioned Officers.

History:
Dec 2009 – Specialist course validated by TRADOC.

Course Duration:
EWSC: 9 weeks taught at Secret Level.

What is Unique:
• 29Es currently assessed in as E-4(P) or higher
• Established reach back network with deployed EWOs. (Army Corps through Battalion)
• On-Site Counter Radio Controlled Improvised Explosive Device Electronic Warfare Equipment (CREW) lab with all currently deployed systems.

Training Modules:

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<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th># Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>Doctrine and Operations</td>
<td>56.5</td>
</tr>
<tr>
<td>C</td>
<td>Electronic/Electromagnetic Fundamentals</td>
<td>51.5</td>
</tr>
<tr>
<td>D</td>
<td>Electronic Warfare Systems</td>
<td>97.5</td>
</tr>
<tr>
<td>E</td>
<td>Plan Electronic Warfare</td>
<td>102.5</td>
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<tr>
<td>F</td>
<td>Culminating Exercise</td>
<td>36</td>
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<tr>
<td>Z</td>
<td>Administrative</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Course Total</td>
<td>400</td>
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</tbody>
</table>

Recommendations / Comments:
• Continue to acquire latest EW systems and equipment (e.g. Site Survey equipment, EGON, Gator, DUKE EA & DUKE Fixed Site)
• Keep ISR low to address the challenge of student fall out rate.

Challenges:
• POI rewrite and CBA approval as ALC is developed
• Student attrition rate (screening those entering the MOS)
• Realignment of course tasks for possible stand up of ALC
Description: The 29E SLC will train and educate 29E SSGs and SFCs to integrate EW into Division, Corps, Multi-national Corps, Army Component Command and Joint Theater Command full-spectrum operations, and to perform senior NCO leadership duties (PLT SGT and 1SG).

History:
7/3/2013 – Course validated.

Course Duration:
8 weeks at SECRET Level.

What is Unique:
- The course focuses on problem solving and training the 29E to perform as a senior staff NCO and advisor to senior commanders and their 290As and FA29s.

Training Modules:

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<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th># Hours</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>Leadership</td>
<td>79</td>
</tr>
<tr>
<td>C</td>
<td>Doctrine and Operations</td>
<td>23</td>
</tr>
<tr>
<td>D</td>
<td>Electronic Warfare Systems</td>
<td>29.5</td>
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<tr>
<td>E</td>
<td>CREW Systems</td>
<td>71</td>
</tr>
<tr>
<td>F</td>
<td>Plan EW</td>
<td>59.5</td>
</tr>
<tr>
<td>G</td>
<td>Culminating Exercise</td>
<td>40</td>
</tr>
<tr>
<td>Z</td>
<td>Administrative</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Course Total</td>
<td>357</td>
</tr>
</tbody>
</table>

Comments:
- Course Validation completed July 2013.

Challenges:
- Update of the course to support CREW Master trainer.
- Realignment of course tasks for possible stand up of ALC
- NCOA responsible for training of course.
- Support to NCOA (LAB, Range and Instruction with being resourced.
- NCOA very reactive not proactive to course challenges.
Description: The Army Operational Electronic Warfare Course is designed to give an individual a foundation of EW for battalions and brigades, deployed to OEF. Graduates are awarded the 1J ASI.

History:
- 2006 - Developed courseware, began Pilot course instruction
- 1385 1J Graduates to date
- ALARACT 260/2009 Mandate

Course Duration:
6 weeks taught at SECRET/NOFORN Level.

What is Unique:
- Reach back network with deployed EWOs (Battalion through Army Corps).
- On-Site Counter Radio Controlled Improvised Explosive Device Electronic Warfare Equipment (CREW) lab/range with all currently deployed systems.
- VTCs with EWOs currently serving in Afghanistan.
- “Joint” instructor staff with varied skill sets.

Training Modules:

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th>hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Introduction</td>
<td>3.5</td>
</tr>
<tr>
<td>B</td>
<td>EW Doctrine &amp; Operations</td>
<td>42.5</td>
</tr>
<tr>
<td>C</td>
<td>EW Fundamentals</td>
<td>32.0</td>
</tr>
<tr>
<td>D</td>
<td>EW Systems</td>
<td>67.0</td>
</tr>
<tr>
<td>E</td>
<td>EW Planning</td>
<td>28.0</td>
</tr>
<tr>
<td>F</td>
<td>EW Integration</td>
<td>4.0</td>
</tr>
<tr>
<td>G</td>
<td>CAPSTONE</td>
<td>43.5</td>
</tr>
</tbody>
</table>

Total Academic Hours 220.5

Recommendations / Comments:
- EW Range at Ft Sill
  - Continue to conduct CREW lanes.
  - Continue to conduct fixed site hands on training.

Challenges:
- No CEASAR hands-on training
  - Multiple crew members have attended the course prior to CEASAR assignment.
  - Recommend development of CBTs for ECCS/CEASAR Mission Planning Software/EWO Ground Station.
Facilities - Bottom Line Up Front

- The US Army has invested **over $5.6M in facilities and infrastructure** to build a **World Class EW training capability** at the US Army EW School!
  - US Army EW School average throughput is 500+ students (ENL, WO, OFF)
  - Dedicated SCIF (cleared to TS-SCI w/ seating for up to 45 students and 9 Cadre Instructors)
  - 6 dedicated EW Classrooms (cleared to SECRET w/ Open Storage and seating for up to 180 students)
  - Classroom XXI instrumentation in ALL classrooms
  - NIPR, SIPR & JWICS access in SCIF and SIPR & NIPR access in all SECRET classrooms
  - A Classified CREW Lab for student hands-on operation and trouble-shooting training
    - DUKE V3, CVRJ, THOR, BALDR and EGON
    - DUKE EA fixed site jammer
  - Dedicated EW Range complex
    - FAA approval for use of LIVE CREW and EA Jammers
    - Fixed site jammers
    - Mounted, dismounted, and troubleshooting CREW lanes
    - dedicated MRAP variant vehicles for mounted and troubleshooting lanes
  - Dedicated EW SVTC Suite
  - Classified and Unclassified EW Office Space for MIL, GS & CME instructors and cadre
  - 18,000 sqft total of dedicated space (Classified 15,000 sqft; Unclassified 3,000 sqft)

**No other US Army facility can rival Fort Sill’s EW training capability without significant investment in time and funding**
Electronic Warfare Classrooms

Snow Hall (FA29, 290A WOBC, 290A WOAC, & AOEWC 1J)
- RM 211 (FA29 & 290A WOAC) cleared to TS-SCI level
  - Split for 290A WOAC and FA29
  - Combined seating for up to 45 students
- RM 213E (290A WOBC)
  - Seating for up to 28 students
- RM 109 (AOEWC 1J) cleared to SECRET level
  - Seating for up to 54 students

Burleson Hall (29E BASIC, 29E SLC, and CREW Lab)
- 4 Classrooms (Rooms 2a/2b, 3a/3b), cleared to SECRET level
  - Room 2a/2b has seating capacity for up to 54 students
  - Room 3a/3b has seating capacity for up to 44 students
  - Secure office (14 desk spaces)
  - Secure storage area
TRAINING SYSTEMS

- CVRJ v1 - 6
- Duke V2 - 1
- Duke V3 - 11
- THOR III – 1 Set
- BALDR - 8
- EGON (USASOC) - 1
- Guardian – 1 Set
- Anritsu Spectrum Analyzer - 43
- Universal Test Set - 5

Trains personnel in EW from multiple services:

- US Army
  - US Army Special Operations Command
- US Navy
- US Marine Corps
- US Secret Service
- FBI
UNCLASSIFIED

Electronic Warfare Range Complex

IMPORTANCE OF EW RANGE (EWTS)

- FAA approval for utilization of LIVE CREW and EA Jammers
- Built for all MOS/ASI producing EW courses at Ft Sill
- Tough Realistic training environment
  - Incorporates Deployed equipment set
- Replicates duties of a deployed EW Professional
- Trains Soldiers how to setup and conduct sustainment training at their home station installation
- Dedicated Training site for EW School House
  - Covers Approximately 5 Acres
  - Electricity, Heat/AC
  - Latrines
  - Cadre Building

RANGE OVERVIEW

Vehicles
- MRAP and MATV

CREW Systems
- Duke V3, THOR III, Duke Surrogates, THOR III surrogates, BALDR, and EGON

External Coordination
- ASMO, FAA, FCC for 1494’s and frequency allocation
- PM CREW for systems
- TASC for TADDS

Training Covered
- LIVE CREW and EA Jammers
- Upload Firmware/Threat Load to appropriate system
- Leader PCC/PCI (Verify Current Threat load by UTS/ Spectrum Analyzer)
- Employ EA Systems
- Troubleshooting Lane
- Download Event Logs (Once approval of threat load)
- Post Mission Analysis (ELAT) Once approval of threat load.
RANGE IMPROVEMENTS

Fixed Site Training Complex
- Security fencing and lighting
- Generator or Shore power
- Containerized classrooms

Fixed Site Systems
- GATOR V2/V3 (T), Duke V2 EA and Duke V3 FS

Fully integrate Fixed Site
- Replicate EA and ES missions
- Operate inside containerized classrooms with displays

Future Range Capability Initiatives
- Pico-net
- ES Systems integration
Challenges

• CO planner; academic versus operational?

  • CMF 17 clearly requires a cyberspace planner

  • No specified/proscribed program of instruction for development of CO planner

  • The only CMF with imbedded CO planner training is the 29 series (Officer and Sr WO)

  • EW officers and WOs currently not programmed for ARCYBER or USCYBERCOM assignments

  • National Mission Team work roles have no 29 series personnel identified / assigned
Questions