NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS

CNATRA P-813 (Rev. 12-23)

FLIGHT TRAINING INSTRUCTION

ADVANCED E-2 NAVAL FLIGHT OFFICER TRAINING SYSTEM AIRBORNE EARLY WARNING

2023

DEPARTMENT OF THE NAVY
CHIEF OF NAVAL AIR TRAINING
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CNATRA P-813
N712
21 Dec 23

CNATRA P-813(REV 12-23)

Subj: FLIGHT TRAINING INSTRUCTION, ADVANCED E-2 NAVAL FLIGHT OFFICER TRAINING SYSTEM AIRBORNE EARLY WARNING

1. CNATRA P-813 (Rev. 12-23) PAT, “Flight Training Instruction, Advanced E-2 Naval Flight Officer Training System Airborne Early Warning" is issued for information, standardization of instruction, and guidance for all flight instructors and students in the Naval Air Training Command.

2. This publication will be used as a guide for completion of Advanced E-2 Naval Flight Officer Training System (NFOTS) curricula for all Student Naval Flight Officers (SNFO).

3. Recommendations for changes should be submitted via the electronic Training Change Request (TCR) form on the Chief of Naval Air Training (CNATRA) Web site.

4. CNATRA P-813 (Rev. 03-21) PAT is hereby cancelled and superseded.

T. P. ATHERTON
By direction

Releasability and distribution:
This instruction is cleared for public release and is available electronically only via Chief of Naval Air Training Issuances Web site, https://flankspeed.sharepoint-mil.us/sites/CPF-CNATRA/SitePages/Publications.aspx.

FLIGHT TRAINING INSTRUCTION

FOR

ADVANCED E-2 NAVAL FLIGHT OFFICER TRAINING SYSTEM

AIRBORNE EARLY WARNING

P-813

LIST OF EFFECTIVE PAGES

Dates of issue for original and changed pages are:
Original...0...10 Feb 15 (this will be the date issued)
Revision...1...21 Mar 21
Revision...2...21 Dec 23

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 50 CONSISTING OF THE FOLLOWING:

Page No.	**Change No.**	**Page No.**	**Change No.**
COVER	0		
LETTER	0		
iii – x	0		
1-1 – 1-13	0		
1-14 (blank)	0		
2-1 – 2-8	0		
3-1 – 3-7	0		
3-8 (blank)	0		
4-1 – 4-8	0		
A-1 – A-3	0		
A-4 (blank)	0		

INTERIM CHANGE SUMMARY

The following Changes have been previously incorporated in this manual:

CHANGE NUMBER	REMARKS/PURPOSE

The following interim Changes have been incorporated in this Change/Revision:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE	ENTERED BY	DATE

SAFETY/HAZARD AWARENESS NOTICE

This course does not require any special safety precautions other than those normally found on flight lines.

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MISSION PLANNING

100. INTRODUCTION

This chapter covers general operational familiarization, mission planning procedures, and required preparation to properly brief and conduct E-2 specific missions in the Multi-Crew Simulator (MCS). Every successful event depends on thorough planning prior to the Flight. Mission planning for these events includes reviewing the Operational Tasking (OPTASK) Link, the Air and Missile Defense Commander (AMDC) Daily Intention Messages (DIM), comm cards, Card of the Day, and the Air Plan. Additionally, the student must choose own-ship stationing, and prepare a Tactical Administration (TAC ADMIN) card.

101. MISSION PLANNING

The following documents shall be reviewed prior to each event.

```
OPER/BRIMSTONE//
MSGID/OPTASKLINK/CCG 7/XX10/OCT//
POC/TIKI VARIAS/CDR/NIMITZ/LOC:NIMITZ/TEL:DSN525-1212
/TEL:619-236-2223/EMAIL:VARIAS(AT)NIMITZ.NAVY.MIL//
PERIOD/210001ZMAR/151200ZMAY//
DLRPGRID/DLRP/L5/GPLLM:2700N05200W//
AMPN/DLRP CHANGES WILL BE PROMULGATED VIA DAILY INTENTIONS//
IVCCN/ADCCN/ST800Z1/P/ASGN:4010.5KHZ//
IVCCN/DCN/DT607M1/P/ASGN:3030.0KHZ//
CORRDEC/MAN/2.0/1.0/6/12/3/60/50/20/3/12/1.7/3//
HEADING/MULTILINK INTERFACE COORDINATION REQUIREMENTS//
GENTEXT/REGIONAL INTERFACE INFORMATION/THIS SET IS USED TO PROVIDE
ADDITIONAL GUIDANCE WHEN REGIONAL MULTI-TADIL NETWORKS ARE REQUIRED.
THE JICO WORKS CLOSELY WITH THE RICO IN PLANNING THE REGIONAL
ARCHITECTURES//
GENTEXT/SECTOR INTERFACE INFORMATION/THIS SET IS USED TO PROVIDE
ADDITIONAL GUIDANCE WHEN SECTOR MULTI-TADIL NETWORKS ARE REQUIRED.
THE JICO WORKS CLOSELY WITH THE SICO IN PLANNING THE SECTOR
ARCHITECTURES//
GENTEXT/CHANGE DATA ORDER AUTHORITIES/THIS GENTEXT SET PROVIDES
AMPLIFYING GUIDANCE FOR IDENTIFICATION DIFFERENCE (ID) DIFFERENCE
RESOLUTION PROCEDURES. THE JICO MAY IN FACT PROMULGATE AN IDENTITY
DIFFERENCE RESOLUTION TABLE THAT MIGHT VARY WITH THE AREA OF
OPERATION//
GENTEXT/COMMAND AUTHORITIES/THIS GENTEXT SET PROVIDES GUIDANCE AND
DIRECTION TO C2 INTERFACE UNITS (IUS) WITH SPECIFIC COMMAND
AUTHORITY. ONLY THESE C2 UNITS WITH SPECIFIC COMMAND AUTHORITY SHALL
ISSUE INTERFACE COMMANDS. THE CJTF AND AADC ALWAYS HAVE COMMAND
AUTHORITY. THE CJTF OR AAD MAY DESIGNATE OTHER C2 IUS AS HAVING THE
AUTHORITY TO ORIGINATE COMMAND WITHIN THE INTERFACE AS NECESSARY.
THIS GUIDANCE WOULD BE PROMULGATE WITHIN THIS SET//
GENTEXT/INTELLIGENCE LOCAL DISCRETE IDENTIFIER/INTELLIGENCE AND ES
(J ONLY) LOCAL DISCRETE IDENTIFIERS (LDIS) ARE DECIMAL NUMBERS FROM
1-4,094 THAT MAY BE DEFINED BY AN OPERATIONAL COMMANDER FOR ANY
DESIRED PURPOSE RELATED TO INTELLIGENCE REPORTING OR EW OPERATIONS.
LDIS ARE NOT THE SAME AS THE PLATFORM DISCRETE IDENTIFIER (DI) CODES
USED BY THE U S NAVY. THE DI CODES ARE OCTAL NUMBERS AND ARE A FORM
OF SPECIAL CODE//
GENTEXT/CONTINGENCY PROCEDURES/CONTINGENCY PROCEDURES FOR NON-DIGITAL
DATA EXCHANGE. THE PARTIAL OR COMPLETE LOSS OF THE TADIL INTERFACE
IS ALWAYS A POSSIBILITY. TO ENSURE THAT OPERATIONS ARE NOT AFFECTED
BY PROLONGED OUTAGES, CONTINGENCY PROCEDURES OUTLINED IN THIS SECTION
WOULD BE OUTLINED FOR EXCHANGING DATA IN A NON-DIGITAL FORM//
INTCOORD/INTERFACE COORDINATION SEGMENT//
AMPN/WHEN THE AREA OF RESPONSIBILITY (AOR) IS DIVIDED AND TWO OR MORE
RICO/SICO(S) ARE DESIGNATED, COMMUNICATIONS CONNECTIVITY BETWEEN EACH
OF THE RICO/SICO(S) AND THE ICO SHOULD BE IDENTIFIED. THE ICO WILL
SOLICIT INFORMATION FROM EACH DESIGNATED RICO/SICO CONCERNING THE
TECHNICAL PARAMETERS THAT AFFECT THEIR OPERATION//
MULCDUTY/SHIP: NIMITZ/FRANCIS/LCDR/ICO/TEL:619-437-1234
/SECTEL:DSN553-1234/EMAIL:FRANCIS@NIMITZ.NAVY.MIL//
IVCCN/DCN/AB234G/P/TEL:619-437-3456/TELTAC:555-1011//
IVCCN/TSN/AB345A/P/TEL:619-437-6543/TELTAC:555-2314//
MULCDUTY/SHIP:BUNKER HILL/JOSEFOSKY/LT/RICO/TEL:619-553-8916//
166
IVCCN/DCN/AG342H/P/TEL:619-553-8756/TELTAC:456-2345//
```

Figure 1-1 OPTASK Link

```
JUDATA/E2:SUNKING/-/-/PRI:00003/00004/00005//16/BLOCK:06000-06776//-/ACFT(5/6/7)/15
/NORM/0200/PRI/Y//
JCNTROPT/2/11//
LKSXDUTY/821S//
JUDATA/SH60:VENOM/-/-/PRI:00024/16/BLOCK:03500-03676/-/ACFT(8)/15
/NORM/0200/PRI/Y//
JCNTROPT/2/10//
LKSXDUTY/821S//
JUDATA/E6B:SHADOW/-/-/PRI:00008/00009//16/BLOCK:03700-03776/-/ACFT(9)/15
/NORM/0200/PRI/Y//
JCNTROPT/2/10//
LKSXDUTY/821S//
LNKSAT/SATELLITE LINK 16 SEGMENT//
DAMA/34256/34/4800BPS//
SATINFOJ/23/CHAN45/345.78MHZ/34//
CRYPSATJ/KG-84/AMALS6789//
LNKJPADD/SHIP:NIMITZ/-/PU:68/BLOCK:0300-0400/C2P/YES/NO//
SPECTRK/LXVI:AB345/SAM SITE CHARLIE//
SPECTRK/LXVI:AB456/RADAR SITE ALPHA//
```

Figure 1-2 OPTASK Link (cont.)

The OPTASK Link provides data necessary for establishing and maintaining a Data Link network. The information that the student will need to gather from the OPTASK Link includes:

1. Own-ship Joint Tactical Information Distribution System (JTIDS) Unit (JU)

2. Own-ship track block

3. Surveillance net being used

4. JUs of other units

5. Other units' track blocks

Air and Missile Defense Commander Daily Intentions Messages

The AMDC, call-sign AW, will issue their DIMs (Figure 1-3) to supplement the current OPTASK Air Defense, as well as theater specific Special Instructions (SPINS). The DIMs will include the most up to date information regarding Carrier Strike Group (CSG) Air Defense. The DIMs will include:

1. Current threat warning Condition/Weapon control status

2. Updates to the current rules of engagement (ROE)

3. Positive identification (PID) criteria

4. Vital Area (VA); Classification, Identification, and Engagement Area (CIEA); Surveillance Area (SA)

5. Threat axis

6. Communication frequencies

7. Combat Air Patrol (CAP) stations

8. Bullseye

9. Other information

```
AIR DEFENSE COMMANDER
DAILY INTENTIONS MESSAGE
EVENT E2301

O P XX0001Z XXX 00 (TODAY)
FM USS BUNKER HILL
TO AIG 9251
EXERCISE EVENT E2301 UNCLASS //N03800//
MSGID/GENADMIN/TF70.2//
SUBJ/ADC DAILY INTENTIONS(U)//
REF/A/ NAVY WIDE OPTASK AD//
POC/AW WATCH OFFICER/LT/E-MAIL XXXXXX.XXXX(AT)NAVY.SMIL.MIL//
RMKS/
1. (U) TIME PERIOD: 0001 XX XXX 00 - 0001 XX XXX 00 (LOCAL) (TODAY)
2. (U) WARNING/WEAPON STATUS: AIR-WHITE / SAFE
3. (U) ROE: IAW CJCS STANDING ROE WITH THE FOLLOWING MODIFICATIONS:
     A. ALL COUNTRY RED MILITARY AIRCRAFT FEET WET AND INBOUND TO THE CSG
        WILL BE INTERCEPTED AND ESCORTED.
4. (U) PID:
     A. USE CODEWORDS OVER UNSECURE NETS FOR ID OF AIRBORNE CONTACTS
     B. COMM AIR PROFILE IS DEFINED AS:
          i. VALID IFF MODE 3 AND C
         ii. 30K - 40K FEET MSL
        iii. 420 - 540 KNOTS GROUNDSPEED
     C. ID CRITERIA FOR COUNTRY RED MILITARY AIRCRAFT:
          i. LACK OF FRIENDLY INDICATIONS
                1. NO PPLI AND
                2. ABSENCE OF VALID IFF MODE 2 AND
                3. ABSENCE OF VALID MODE 4 AND
                4. NOT ON AN APPROVED RTF PROFILE AND
                5. NOT ON A COMMAIR ROUTE OR PROFILE AND
         ii. PRESENCE OF ENEMY INDICATIONS
                1. THREE OR MORE ES LINES OF BEARING FOR AN UNAMBIGUOUS
                   EMITTER CORRELATED TO A CONTACT OR
                2. POINT OF ORIGIN: WITHIN 5NM OF RED MILITARY ONLY
                   AIRFIELD OR
        iii. VISUAL ID
     D. GUILT BY ASSOCIATION TO PROVIDE PID ONLY APPLIES WHEN GROUPS
        MANEUVERED FROM THE SAME PREVIOUSLY PID'D GROUP. LACK OF FRIENDLY
        CRITERIA MUST STILL BE MET ON ALL CONTACTS.
5. (U) THREAT AXIS: 040
6. (U) THREAT SECTOR: 010-100
7. (U) VITAL AREA: 60NM AROUND USS NIMITZ
8. (U) CLASSIFICATION, IDENTIFICATION, ENGAGEMENT AREA (CIEA): 100NM AROUND
   USS NIMITZ
9. (U) SURVEILLANCE AREA: 320NM AROUND USS NIMITZ
10.   (U) ASSETS: CHECK IN ON RED CROWN (PRI) / STRIKE (SEC)
     A. CVW ASSETS: SEE AIR PLAN
     B. INORGANIC ASSETS: NONE ASSIGNED
11.   (U) COMM: ADC&R (PRI) HF: 8.992 MHZ (SEC) JA: NET 1
12.    (U) DCA STATIONS
          STA NAME    LOS ANGELES       NEW YORK
          STA POSIT   N2600E05200       N2600E05300
          FREQ (PRI)  253.45 MHZ        253.45 MHZ
          FREQ (SEC)  372.00 MHZ        372.00 MHZ
          B/E NAME    WICHITA           WICHITA
          B/E POSIT   N2530E05230       N2530E05230
```

Figure 1-3 Example AMDC DIMs

Communication Cards/Card of the Day

The comm cards (Figure 1-4) and Card of the Day (Figure 1-5) will be generated by the Carrier Air Wing to be used by all organic assets. The comm cards will list the preset frequencies ("buttons") to be used by all aircraft in the Air Wing. However, it will not include every frequency that could be used tactically by Air Wing assets; other planning documents must be referenced. Depending on the specific mission and theater, a tactical comm card (Figure 1-6) may be generated, as well. This card might be used to list frequencies used for specific missions, along with associated code words.

The Card of the Day contains information necessary for conducting operations within the Carrier Strike Group. This information may include:

1. Strike Group assets, including:

    a. Call-signs

    b. JUs

    c. Link track blocks

    d. TACAN identifier

    e. IFF squawks

2. Mission specific Mode 1 squawks

3. Code words

NOTE

Non-organic assets may be unfamiliar with the information included on the Card of the Day, notably code words.

COMM CARD

BUTTON	ASSIGNMENT	FREQ
1	TOWER	360.2
2	DEPARTURE	288.3
3	STRIKE	266.8
4	REDCROWN	233.7
5	GREENCROWN	372.0
6	SCC C+R	263.5
7	IW C+R	253.2
8	SCC AIR CONTROL	325.4
9	SECURE STRIKE	254.2 / 127.2
10	FAD A	283.2 / 123.0
11	FAD B	258.4 / 133.45
12	FAD C	352.7 / 141.3
13	FAD D	253.45 / 119.65
14	ACC C+R	288.8 / 124.25
15	APPCH FINAL A	315.4
16	MARSHAL	323.05
17	APPCH FINAL B	317.8
18	APP OVERLOAD	342.6
19	AIRWING COMMON	357.0
20	SQUADRON TAC	xxx

Figure 1-4 Example Air Wing Comm Card

OPERATION BRIMSTONE CARD OF THE DAY

UNIT	C/S	MODE II	T/N BLOCK	JU/PU	AW C/S	TACAN
NIMITZ	T7U	7513			N/AF	2
BUNKER HILL	F2U	7313			H/AW	12
ARLEIGH BURKE	4DC	1760			A	23
STARKE	3VH	1677			S	19
ESSEX	2C9	1344			E/ICEPACK	45
E-2	KING	160X			T/U/V	
P-3	PELICAN	350X				
EP-3	DEEP SEA	221X				
SH-60	VENOM	161X			Y	

FORCE IFF

MISSION	MODE I
AEW	61
SUW	30
EW	63
USW	33
SAR	22
SIGINT	51
TNK	12
DCA	11
STK	3
CAS	23

MODE II = 1 + SIDE NUMBER
MODE III = 2340

MISSION CODEWORDS

EVENT	CODEWORD
ABORT	PUNT
SUCCESS	TOUCHDOWN
FAILURE	FUMBLE
RTB	HOMEGAME
TANK	GATORADE
EMCON	LIGHTS OUT

OPERATION BRIMSTONE CARD OF THE DAY

ID	CODEWORD
RED MILITARY AIR	DRUNK
MIRAGE 2000	COGNAC
F-4	BOURBON
F-5	RUM
F-14	VODKA
MiG-29	SCOTCH
Su-24	TEQUILA
P-3	PORTER
C-130	ALE
Boeing	LAGER
AB	MAI TAI
Bell	MARTINI
Chinook	CHARDONNAY

ID	CODEWORD
RED NAVAL	GLUTTON
HOUDONG	LOBSTER
COMBATTANTE	CHICKEN
VOSPER MK-5	VEAL
MURCE MIG G	SHRIMP
ASHOORA II	SNAPPER

ID	CODEWORD
RED SUB	YEAST
KILO	PRETZEL
NAHANG	MUFFIN

ID	CODEWORD
RED MERCHANT	PONY
COMM AIR	FLUFFY
MERCHANT SHIP	RAINBOW

ID	CODEWORD
CHARCOAL MIL AIR	SHREDDER
ORANGE MIL AIR	BEE BOP
ORANGE NAVAL	FENDER

ID	CODEWORD
RED SAM	BROWNIE
SA-5	TART
SA-2	SHORTCAKE
SA-6	COOKIE
MANPADS	PUDDING

Figure 1-5 Example Card of the Day

	OPERATION BRIMSTONE TACTICAL COMM CARD		
ASSIGNMENT	**CALLSIGN/PROWORD**	**FREQ**	**J-VOICE**
CCSGS C+S	SABRE	317.0	
TANKER TRACKS			
1	TEXACO	288.2	51
2	CHEVRON	254.6	52
3	CONNOCO	256.8	53
4	EXXON	283.0	54
5	PHILLIPS	244.6	55
6	SHELL	248.55	56
CAS/MDT C2 NETS			
1	KING	273.5	116
2	BROWN	275.8	117
3	WINE	269.55	118
4	SALMON	239.25	119
5	ROSE	291.65	120

Figure 1-6 Example Tactical Comm Card

Air Plan

The Air Plan (Figure 1-7) is the daily flight schedule for the entire Carrier Air Wing (CVW). A typical CVW fly-day will be broken up into cycles. Each cycle typically consists of launching aircraft for that cycle, followed by recovering aircraft from previous cycles. The Air Plan lists, by squadron, how many aircraft are launching each cycle along with the specific missions these aircraft will be conducting. It will also show which squadrons, if any, will be responsible for the different "Alert" packages.

The average duration of a cycle is 1.5 hours. However, in most cases, the E-2 flies at least a "double-cycle" (two consecutive cycles for a 3.0 hour flight), or possibly even a "triple-cycle" (three consecutive cycles). While in Advanced E-2 training, even though the E-2 may be shown on the Air Plan as flying a "double-cycle," MCS events will normally only be 1.5 hours long.

The Air Plan may also list additional information, such as aircraft load-out and control frequencies, in the notes section.

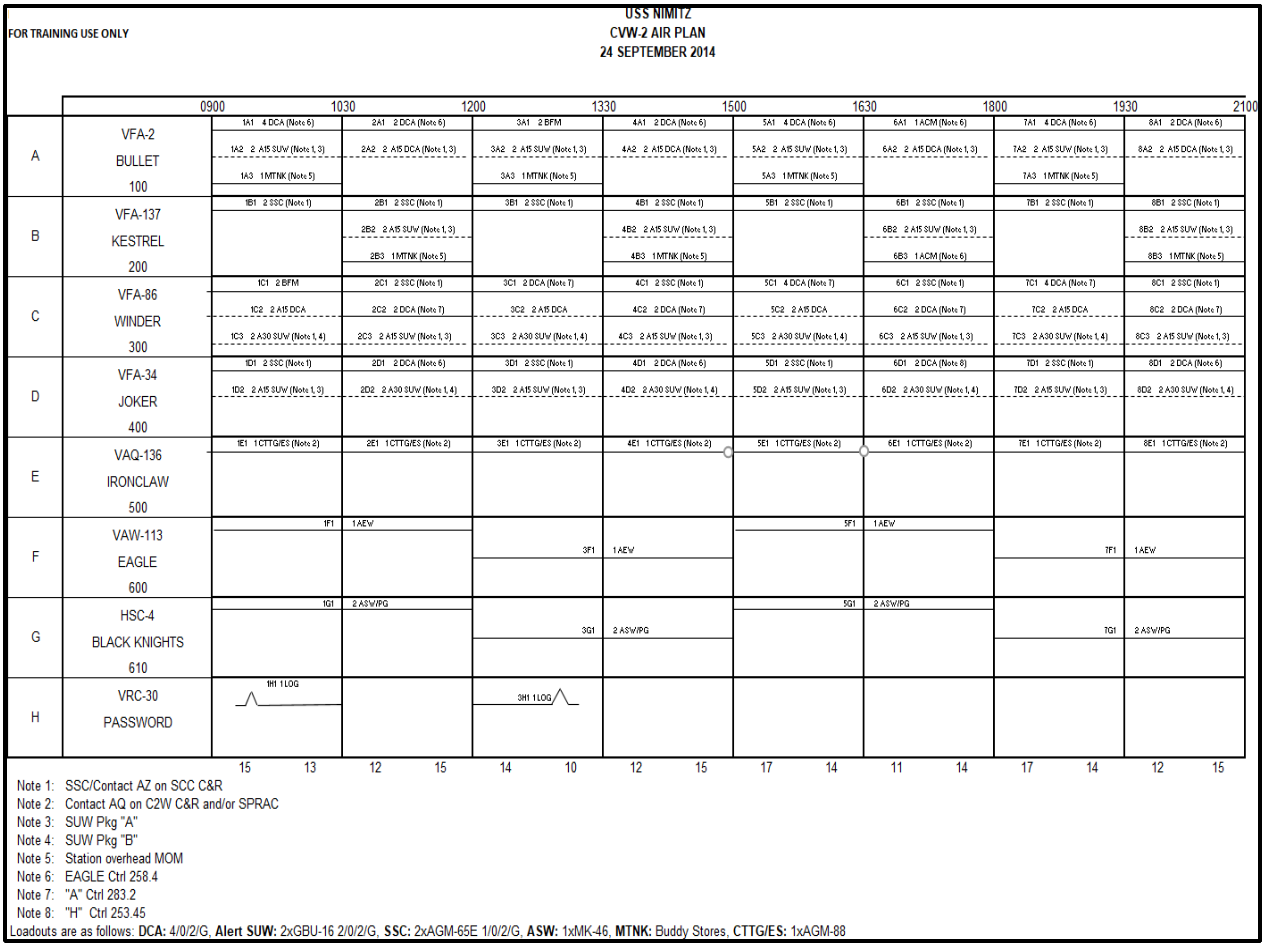

Figure 1-7 Example Air Plan

Stationing

Students will be required to select the optimum stationing for each Advanced E-2 MCS event based on a number of factors, which include:

1. Proximity to assets being controlled:

    a. To provide adequate communications

    b. To provide adequate RADAR coverage

2. Proximity to the threat:

    a. Close enough to detect and track enemy

    b. Perpendicular and offset from the threat axis

3. Far enough to maintain defensive posture for own-ship proximity to defensive layers:

   a. Within CG/DDG Missile Engagement Zone (MEZ)

   b. CAP stations located between own-ship and threat

In addition to mission planning materials, students shall plan for own-ship stationing, to include altitude. A higher altitude will provide a greater detection range. For Advanced E-2 MCS events, stationing shall include two waypoints forming a “racetrack” pattern, located approximately 50 NM apart. At the start of the event, after the location of stationing has been determined, the student shall select two waypoints from the list of pre-determined waypoints on the Flight Management System (FMS), Flight Plan (FPLN), Programmable Entry Panel (PEP), or add new waypoints, then select FLY.

102. TACTICAL ADMINISTRATION CARDS

The Tactical Administration (TAC ADMIN) card (Figure 1-8) is used by the E-2 crew. It is a tool that collates the most pertinent information that has been collected during mission planning and places it into one quick reference document. While a basic template for a TAC ADMIN card is provided, each student/crew should customize it to best suit their needs. Types of information that might be found on a TAC ADMIN card include:

1. Radio lineup and backup communication frequencies

2. Stationing waypoints/Lat./Long.

3. Friendly units/assets

   a. Call-signs

   b. JUs

   c. Track blocks

   d. Side numbers

4. Code words

5. System setup and parameters

6. Point locations and code words

   a. Bullseyes

   b. CAP stations

   c. Strike routes

MCS TACADMIN CARD								
EVENT	A/C	CALLSIGN	BRIEF	WALK	LAUNCH	VUL	LAND	DBRF
E33XX	602	NAPPER602/	0900L	0950L	1000L	000L-1130L	1130L	1135L

CREW STATIONS						
CREW	CICO	LCDR SMITH	LAUNCH	ON STATION	OFF STATION	LAND
	ACO	MR JOHNSON	1330L/1030Z	1330L/1030Z	1500L/1200Z	1630L/1330Z
	RO	ENS JONES				

POINT ENTRY				
WP1	25 45 E 053 0		B/E REEF	N 27 00 E 052 30
WP2	25 45 E 054 0		CAP WAKE	N 26 30 E 052 30
			CAP MIDWAY	N 26 15 E 053 15

RADAR SETUP		IFF SETUP	
MODE	AIR/GRD	MODE 1	61
GAIN	AS REQ.	MODE 2	1602
TILT	0	MODE 3	2340
BRIGHTNESS	4	MODE C	ON
360 SCAN	SELECTED	MODE 4	ON
NORTH UP	SELECTED	IFFI	TX CON

LINK SETUP		ESM SETUP	
NET	1	PWR	ON
JU	00005	VISIBILITY	AS REQ.
TRACK BLOCK	06000 - 06776		
J-VOICE	1		

COMM LINE UP			FRIENDLY ORDER OF BATTLE				
MISSION			UNIT	C/S	JU	SIDE	TRACK BLOCK
V/U-1	258.40	CNTRL	NIMITZ	N	00067		01000-01476
V/U-2	372.00	A/R	BUNKER HILL	H/AW	00052		02000-02476
HF	6.525	AW	ARLEIGH BURKE	A	00051		03000-03476
JA	1	AW	DBACK			100	
JB	10	AP	OUTLAW			502	
SAT	A/R	A/R	TALON			303	WARLOCK 31
USEFUL COMMS			TALON			307	WARLOCK 32
282.80	SAR COM						
121.50	GUARD						
233.70	RED CROWN		ENEMY ORDER OF BATTLE				
342.60	AIRWING COM		MIG -21	[illegible]	FLAMINGO		JAYBIRD
357.00	TANKER		MIG - 29	CARDINAL	HERON		SLOTBACK

CODEWORDS					
ABORT	HOUND	RED MIL AIR	CARDINAL	ES	LEXUS
SUCCESS	TERRIOR	MIG 21	FLAMINGO	PT OF ORIGIN	BUICK
FAILURE	BEAGLE	MIG 29	HERON	MODE 1	HARLEY
RTB	COLLIE	SU 24	EGRET	MODE 2	LINCOLN
TANK	BOXER	F-4	MOCKINGBIRD	MODE 3	PORSCHE
EMCON	DALMATION	F-5	WREN	MODE C	VOLKSWAGEN
		F-14	CRANE	MODE 4	MAZDA
		MIRAGE F1	PHEASANT	COMM AIR PROFILE	FIAT
RED SAM	PORCUPINE	MIRAGE 2000	GROUSE	VID	JEEP
SA-2	HAMSTER	COMM AIR	HALIBUT	BOGEY SPADES	SUZUKI
SA-5	WEASEL				
SA-6	BEAVER	WINGS CLEAN	CLIPPED	RED SUB	OCTOPUS
MANPADS	JACKRABBIT	WINGS DIRTTA/A	FEISTY	KILO	CLAM
		WINGS DIRTTA/S	MUDDY	ROMEO	OYSTER

WARNING AND WEAPONS STATUS			OP AREA			
ROE	WARNING	WEAPONS	VA	CIEA	SA	
IAW CJCS	YELLOW	TIGHT	30	100	320	
THREAT AXIS		015	THREAT SECTOR		330-070	

EMERGENCY DIVERTS					
AL UDEID AB	OTBH	99	APP 121.1	TWR 125.5	N 25 07 E 051 18
ISA AB	OBBS	123	APP 124.95	TWR 124.95	N 25 56 E 050 35

NOTES
MAKE THIS CARD YOUR OWN AND ENSURE YOU VERIFY ALL INFO ON IT
THIS IS TO BE USED AS A TEMPLATE ONLY

Figure 1-8 Example TAC ADMIN Card

103. BRIEFING

The brief for an Advanced E-2 MCS event will include several new items which are critical to mission success. The Advanced E-2 MCS Expanded Briefing Guide serves as an outline to be used for all Advanced E-2 MCS event briefs. The following is an explanation of the items which shall be covered in the brief.

1. Admin – This section of the brief includes general administrative information regarding the event.

    a. Read File/Duty Day/DOR/TTO/Human Factors – Review to ensure all crewmembers are safe to conduct the mission.

b. Call-Signs – All call-signs to be used as stated in the event vignette and mission planning documents.

c. Crew – Student, Instructor(s) (INFO), and observers.

d. Event – Curriculum event number and description of the type of event. For example, "E3101, Manual Tracking event 1."

e. Event Times – Actual event times as listed on the squadron flight schedule.

f. Mission Times – Simulated times, both local and Zulu, of the event as stated in the event vignette.

g. Training Objectives – Student specific training objectives. Select a training objective to focus on for the event. These objectives do not need to align with Course Training Standards, and should be the student's individual goals for that event. They should be both measurable and achievable.

h. Questions of the Day – Answer all questions of the day listed on that day's flight schedule.

2. TAC ADMIN – This section contains the tactical administration items that are critical to the mission.

a. Mission Objective – The actual mission objective described in the event vignette and mission planning documents. Note that Airborne Early Warning (AEW) will usually be a mission objective in addition to the specific mission for a given event. Include an overview of the current situation as outlined in the intelligence brief contained in the event vignette.

b. TAC ADMIN Card Review – A general overview of the information found on the card and where it is located. Do not go into specifics here, they will be covered elsewhere in the brief. For example, "On the top left, we have general admin. Below that are the points that I'll be entering, etc."

c. Enemy Order of Battle (EOB) – Cover the expected order of battle as listed in the event vignette. Include emitters of interest and code words, as appropriate.

d. Friendly Order of Battle (FOB) – Include pertinent friendly units, surface and air, listed in the event vignette and mission planning documents.

e. Standoffs – Include any territorial or threat standoffs as listed in the event vignette and mission planning documents, including hot dog ranges.

f. Communications – Describe radio setup and use to include which frequencies will be set in each radio, and which entities will be on each frequency.

g. System Setup – Detail the setup parameters for each mission system to include RADAR, IFF, Data Link, and ESM.

h. Tactical Aid (TACAID) – Describe how TACAIDs will be used during the event. For example, "Marks will be used to mark CAP stations and the bullseye. A line will be used to mark the operating area, etc."

i. Sensor Plan – Describe how each sensor will be utilized to accomplish the mission. For example, "RADAR will be used for initial detection and for tracking contacts. IFF and ESM will be used to aid in identification, etc."

j. Stationing – Describe where we will be stationed and why that location was chosen.

k. Own-ship Lookout – Discuss which crewmember will maintain awareness to own-ship position with regards to threats and traffic.

l. Bullseye/CAP Locations – Discuss the location of the bullseye and CAP stations and their respective code words. State what aircraft and call-signs will be manning the CAP station(s).

m. Controlled Assets – Discuss any assets that are under E-2 control for the mission. State all pertinent information regarding those assets, such as side numbers, Air Plan event numbers, mission, etc.

n. Timeline Review – For all AIC events, review the AIC timeline by giving the ranges in descending order and what that range represents. For example, "35 miles is no later than commit, 30 miles is the tac range call, etc."

o. ROE – Discuss the current ROE as delineated in the applicable mission planning documents.

p. PID – Discuss the PID criteria as outlined in the AMDC DIMs.

q. Warning/Weapons Status – Discuss the current warning/weapon status as stated in the AMDC DIMs and what they mean.

3. Mission Flow – Describe in as much detail as possible how the mission is expected to play out from the start of the event until completion. Describe how system setup will go, moving into initial evaluation of tracks, check in with the required entities, perform the actual mission, etc.

a. Manual Tracking/NCI/AIC Examples – This portion of the brief serves two purposes. First, it demonstrates knowledge to the instructor of the procedure being performed. Second, it serves as an opportunity for the student to practice prior to being evaluated in the MCS.

On the whiteboard, demonstrate examples of the procedure applicable to the event being conducted. For manual tracking and NCI events, one or two examples may be sufficient. Draw out the example, discuss what is being done, and make all required comms just as in the event.

For AIC events, one complete example should be demonstrated starting from the pre-commit phase of the intercept all the way through post-merge, making all required AIC comms. Additionally, multi-group examples will be given for all two and three group presentations, making only the post-commit picture calls for each. Additional calls such as maneuvers, spike, or threat calls, are also included.

4. Crew Coordination/Emergencies/System and Mission Contingencies – In this section of the brief discuss Crew Resource Management (CRM), Emergency Procedures (EPs), and pertinent contingency plans for the mission.

a. CRM – Discuss how to apply CRM to the event. Highlight one or two of the CRM principles and discuss how they will apply in the event.

b. Emergency Procedures/Crew Coordination – All Advanced E-2 MCS events start airborne, therefore, ground and takeoff emergencies do not need to be discussed. Discuss how in-flight and landing emergencies will be handled, and assign crew duties.

c. Search and Rescue (SAR) – Discuss how to handle a SAR situation if it is encountered during the event. Discuss E-2 priorities, crew duties, and how a SAR may affect the primary mission.

d. System/Mission Contingencies – Discuss contingency plans for areas of the mission that may likely not go according to plan. Minimum system requirements for the mission along with system fallouts and associated consequences are a good starting point. This is to be based off the Radar / Radios / IFF / Datalink / and ESM systems, for example:

"Today we are performing AEW, so RADAR will be REQUIRED. If we do not have a functional RADAR on deck, we will continue to troubleshoot until we have an aircraft with a working RADAR. If we lose our RADAR once airborne and cannot bring it back up, we will call AW and hand off surveillance responsibilities."

In addition to system contingencies, think of one to two more tactical contingencies to brief. As an example, typical Air Defense contingencies can include items such as CAP management, alert plan, and tanking plan.

5. Miscellaneous – This section of the brief includes any miscellaneous items that have not been covered elsewhere in the brief.

a. Keys to Success – Choose one to three items that will be the key to a successful mission. For example, "Maintain timeline awareness."

b. Discuss items – Discuss the required items for the event being executed.

Questions – Be prepared to answer questions posed by the instructor. The instructor should also provide the opportunity for the student to ask questions at this point.

104. FLIGHT CONDUCT

1. The student will be performing the role of Sensor Operator (SO) for all events. The instructor will simulate the role of Air Director (AD), Mission Commander (MC), or Flight, as required. The Instructor Operating Station (IOS) operator, normally a contract instructor (CI), will simulate the role of Flight and Fighters, as required.

2. All events will start airborne, at the scheduled event start time. Ample time is allotted at the beginning of each event to perform system setup and check-ins, as required, prior to the actual mission starting.

105. DEBRIEF

1. The debrief will be conducted by the student per the VT-4 Advanced E-2 NFOTS Debriefing Guide.

2. To the greatest extent possible, the student is expected to provide a mission analysis, recalling specific learning points from each manual track/run/intercept, as well as any emergencies or system malfunctions. During the MCS event, note taking should not be prioritized over the execution of the event. The instructor will provide additional feedback during the "tapes review."

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CHAPTER TWO
AIRBORNE COMMAND AND CONTROL

200. INTRODUCTION

This chapter covers the general mission set of ACC as it applies to Advanced E-2 NFOTS training. ACC is the basis of the E-2 community and is a function that is performed on every flight, regardless of the specific mission set being executed. The duties and responsibilities discussed in this chapter will apply to every Advanced E-2 NFOTS training event while at VT-4.

201. SYSTEM SETUP

All Advanced E-2 NFOTS training events will begin on station. However, as discussed in the previous chapter, the student will still be responsible for selecting own-ship stationing and entering the required waypoints into the Flight Plan. Any changes to own-ship flight profile will be made by the student communicating with "Flight," which will be simulated by the instructor or CI.

General system setup should be performed immediately after selecting a flight plan in accordance with the System Turn On/Setup checklist in the PCL. Initial setup for all Advanced E-2 NFOTS events shall be as follows:

RADAR

1. PWR – ON

2. MODE – AIR/GND

3. GAIN – As Required

4. TILT – 0

5. 360 SECT – Selected

6. DISPLAY – As Required

7. NORTH UP – Selected

8. RANGE – 320

ESM

1. PWR – ON

2. VIS – As Required

DATA LINK

1. PWR – ON
2. NET – As Required
3. JU – As Required
4. POOL MIN/MAX – As Required
5. VISIBILITY – All selected
6. J-VOICE – As Required

IFF

1. PWR – ON
2. TX CONT – Selected
3. IFFT – Set
4. REPLY – NORM

TACTICAL CONTROL

1. TAC – Selected
2. RDR – Selected

ICS

– As Required

RADIOS

– As Required

202. SCOPE SETUP

Depending on the event, various TACAIDs may need to be displayed on the Plan Position Indicator (PPI), also known as the scope. Reference marks shall be used for the bullseye, CAP stations, and any other points of interest depending on the mission. Lines may be used to outline working areas, strike routes, etc. Vectors may be used to display a bearing and range readout from one track or TACAID to another. Other TACAIDs may be used as desired.

TACAIDs are entered from the TACAID PEP by selecting the appropriate TACAID, pressing "NEW," and updating the label and LAT/LONG, as appropriate. The affiliation should be changed to something other than "NONE" to minimize the amount of orange on the scope.

203. ACC

Once system and scope setup are both complete, the student should evaluate all systems to ensure they are functioning properly and report the status to the MC over ICS. It is recommended to go to a large scale (160-320 NM) during the setup process to recognize the status of the systems more easily.

The student should then begin evaluating all tracks using RADAR, IFF, and ESM. Update the affiliations of all tracks in accordance with the ROE and PID matrix. There should be no pending (orange) tracks displayed. All tracks should also be reported in the Data Link. This is basic ACC. This should be the starting point for any mission: complete system setup, scope setup, evaluate, and report all tracks. At this point, any orange on the scope represents a new track and must be evaluated. However, the student should also be looking for any RADAR returns without a track. This will be discussed further in the next chapter.

The student should then check in with the AMDC, call-sign AW, on the AMDC Control and Reporting (AMDC C&R) net. All units communicating on the AMDC C&R net will use a single letter call-sign vice a tactical call-sign. The call-sign used with AW will be per the Card of the Day, based on the corresponding JU assigned in the scenario student notes. For Advanced E-2 events, the single letter call-signs shall not be used on any nets other than AMDC C&R. Check in with AW in the following format:

SNFO: *"AW, Tango, on station for the next 3+00, standing by for tasking, over."*

Upon checking in with AW, the student will receive the current Air Defense Situation Report (SITREP) and/or tasking from AW. The student should then voice report all air tracks to AW using the format provided later in this chapter.

ACC should continuously be performed throughout the mission. To do this, a large scale (160-320 NM) should be used until a smaller scale is needed for a higher priority task, such as manual tracking or controlling an intercept. The student should always scan the scope for the presence of new RADAR paint, new tracks, new ESM emitters, etc. At the same time, scan for any changes to previously evaluated tracks. For example, repeatedly check unknown air tracks for changes to IFF or look for new emitters that can be correlated to that track and update the identification if able. Also, look for any tracks that no longer have RADAR paint under them. All new tracks, and any changes to existing tracks, should be reported to AW.

Throughout the event, proper scope management can be the key to maintaining situational awareness (SA). In addition to using the proper scale, as discussed above, scope offset should be utilized to provide the greatest SA, regardless of scale. The center hook (CTR HOOK) function should be used to center the scope on an area of interest, allowing the most critical areas to be displayed for a given scale. In addition to maintaining SA to the threat sector, the student should maintain SA to any controlled assets, as well as own-ship. Controlled assets and own-ship should be monitored for threats as well as traffic. The student should make traffic calls or provide SA to blue fighters of known and possible threats.

204. AMDC C&R VOICE REPORTING PROCEDURES

When passing information to AW regarding tracks, Checkprint is used to provide amplifying information. Checkprint, much like code words, is a way to pass information on an unsecured net. A for-training-use-only Checkprint is used during Advanced E-2 NFOTS training (see figure 2-1 below).

FOUO – For training purposes only

Checkprint	
Line	Item
1	ES
2	Point of origin
3	Mode I
4	Mode II
5	Mode III
6	Mode IV
7	Mode C
8	No IFF
9	VID
10	Comm air profile

FOUO – For training purposes only

Figure 2-1 Checkprint

As an ACU, the role of the E-2 on the AMDC C&R net will mostly deal with the reporting of new air tracks and coordination of DCA/OCA assets. All new air tracks shall be reported in the DataLink and voice reported to AW using the format: **Unit being called, unit calling, track number, Checkprint, evaluation, and intentions**. This format is illustrated in Figure 2-2. Any changes to existing tracks should be reported using the same format as well. As AIC in control of CAP stations, track evaluations are passed to AW, who then designates that track (e.g., Unknown, Neutral, Unknown Suspect, Hostile, etc.).

AW will not refer to tracks as "bogey" or "bandit." AW is being supplied information from other platforms as well and the E-2's evaluations are used in the classification of contacts.

Unit Being Called	Unit Calling	Track Number	Checkprint	Evaluation	Intentions
Alpha Whiskey	**Tango**	**Update Track 3652**	**Checkprint line 2**	**Evaluate Cardinal Heron**	**Intend to intercept with Miami**

Example comms are:

SNFO: "*AW, Tango, new track 6013, Checkprint line 5, line 7, line 10, evaluate Halibut, recommend make neutral, over.*"

Or

SNFO: "*AW, Tango, new track 6014, Checkprint line 8, evaluate unknown, intend to track and report,over*"

Or

SNFO: "*AW, Tango. update track 6014, Checkprint line 1, evaluate Cardinal Heron, recommend make hostile, intend to intercept with Saints, over.*"

Or

SNFO: "*AW, Tango, update track 6015, Checkprint line 1, evaluate Thrush Robin, recommend make suspect, intend tointercept with Miami, over.*"

For all Advanced E-2 NFOTS events, ROE will be as follows: AIC will not call a group hostile until told to do so by AW or CICO. The CJCS standing ROE inherent right to self-defense only applies to the commander of the aircraft being attacked or threatened. As an example, AIC will not respond to a "spike call" with a hostile declaration (assuming that group was not previously declared hostile). If escalations have occurred, AW may grant AIC "hostile declaration authority" in the form of supplemental ROE. This is a blanket authority that will allow AIC and the fighters to call groups hostile that meet the Orange/Red PID criteria. For example:

SNFO: *AW, TANGO, track 6024 spiked side, 201, and was splashed in self-defense, say intentions, over.*"

AW: *TANGO, this is AW, roger. Warning/Weapon Status upgraded to red and tight. All Orange military aircraft will be declared hostile and engaged, over."*

SNFO: *AW, TANGO, Warning/Weapon Status upgraded to red and tight. All Orange military aircraft will be declared hostile and engaged, out."*

AW Coordination

When performing DCA, AW will want to know the status of the CAP stations at all times. Once the fighter check-in is complete, and the fighters call "set," the student should inform AW of their status. When communicating with AW regarding CAP stations we refer to the CAP station name, not the fighters' call-signs or side numbers, although it is good practice to inform AW of the assets under their control. The AMDC will not always be familiar with the tactical call-signs of the fighters, however, they will be familiar with the Air Plan and which events are supporting them. Therefore, the student should inform AW when the CAP station is set, and which event/aircraft are manning it. AW should be informed whenever the status of a CAP station changes. For example, the E-2 crew should communicate with AW whenever the CAP is committed to take an intercept, the results of the intercept upon resetting, any updates to fuel states, or when the CAP is unmanned. The ACU can also coordinate with AW to have tracks "covered" (monitored) or "taken" (shot down) with "birds" in the event of a "leaker." As an introduction, your instructor may coordinate "birds" for you if he/she as the CICO deems it necessary. As the student, you may also recommend "birds" as you see fit.

AIC: *"AW, Tango, Detroit set with sides 106 and 112, state green, over."*

AW should be informed whenever the status of the CAP station changes, such as when the fighters are taking a commit. It is best to communicate this well in advance of directing the fighters to commit.

AIC: *"AW, Tango, intend to intercept/commit on tracks 6031 and 6034 with Detroit, over."*

AW should be informed immediately whenever the fighters' fuel state changes. If the fighters are at fuel state yellow, the student should coordinate with AW for a relief or alerts, if available.

AW should then be informed of the results of any intercept. If the intercept required a VID, that will need to be relayed to AW expeditiously to obtain their intentions. If the intercept resulted in groups being splashed, AW will need to know that as well. Examples of this are:

AIC: *"AW, Tango, update track 6021, Checkprint line 9, evaluate Cardinal, Heron, Muddy,strength two, say intentions, over."*

<u>Or</u>

AIC: *"AW, Tango, splash track 6021 with Detroit, Detroit state green,over."*

Or

AIC: *AW, TANGO, splash tracks 6031, 6032, and 6037 with New York, resetting, state green, over."*

In most cases, even when not directly supporting air defense, the E-2 is still performing AEW, therefore, contributing to the air defense mission by building and maintaining the single integrated air picture (SIAP).

205. SEARCH AND RESCUE

SAR is a mission that an E-2 crew should be ready to execute at all times. Therefore, it should always be considered during mission planning and briefed accordingly. If a SAR situation arises during a mission, the student should first evaluate how the SAR will impact the primary mission. For example, during a Unit Level Training (ULT) mission, the SAR would take immediate priority. However, if the primary mission is DCA against an immediate threat, the SAR may not take immediate priority, but rather be taken on as a secondary mission. Either way, the E-2 crew shall communicate to allassets involved when transitioning to a SAR mission.

The steps to be taken by the student in the event of a SAR are per the MCS SAR Airborne Mission Coordinator (AMC) checklist are as follows.

Step 1. Set On-Scene Commander (OSC)/AMC as appropriate – The E-2 will usually assume the role of AMC unless another appropriate asset has already assumed those duties. The OSC, if not already selected, shall be chosen based on proximity to the scene, time on station, and capabilities. It is possible for the E-2 to assume both the AMC and OSC roles. However, the visibility limitations in the E-2 make it a less than ideal OSC platform. The student should assume AMC duties and designate an appropriate OSC. Direct the OSC to the scene, if not already visual.

Step 2. Set Max Endurance Profile/Calculate Bingo –Direct Flight to set max endurance flight profile and calculate our bingo profile. The available time on station will be important to note, as well.

Step 3. Locate Survivors and Mark Location – Location can be the most critical piece of information collected at the onset of a SAR situation. Although listed here as the third step, in the case of an immediate SAR, the student shall immediately mark the location, using a reference mark at the last known position. In this case, steps 1 and 2 above should occur almost simultaneously.

Once the location has been marked, the student should attempt to collect the following additional information. The OSC may be helpful in obtaining this additional information.

a. Call-sign

b. Number of survivors

c. Type Aircraft/Vessel

d. Survivors Physical Status

e. Weather/Sea/Winds

2. Assume Tactical Control – The student will then begin coordinating the recovery effort.

a. Contact appropriate agency: AP, ATC, USCG, etc.

b. Provide agency with location of survivors via Lat/Long, bullseye, etc.

c. Request recovery asset (helicopter) – In the event of an organic SAR effort, AP should be contacted to coordinate the launch of a SAR helicopter.

d. Monitor U/VHF Guard and SAR Common – Attempt to contact the survivor(s).

3. Maintain station until survivor recovered or relieved by a more capable asset.

4. Assign internal crew duties – The student shall direct Flight to perform the pilot and copilot duties listed below. The student is responsible for all other duties.

a. Pilot: If assuming OSC, proceed to survivor location. If visual contact with survivor/crash scene, maintain sight until more capable platform has sight.

b. Co-Pilot: See and avoid; calculate/monitor Bingo; maintain Time/Comm log.

c. MC: Comms with appropriate agency - AP, ATC, USCG, etc.

d. AD: Outside air control (> 25 NM); maintain Time/Position log.

e. SO: SRU control. Inside air control (< 25 NM).

CHAPTER THREE
MANUAL TRACKING

300. INTRODUCTION

Manual Tracking refers to the procedure that must be performed whenever the MCS fails to automatically build a track file for a RADAR contact. To maintain situational awareness (SA) concerning the contact and ultimately enter the track into the DATA LINK, a track file must be manually built. This chapter covers the procedures for conducting a Manual Tracking event in the MCS.

301. SYSTEM SETUP

Refer to Chapter Two for system setup procedures.

302. MANUAL TRACKING PROCEDURE

Once system and scope setup are complete, student shall tell the MC, “system setup complete, ready to check in with AW.” After checking in with AW, the student will begin evaluating the RADAR picture, using a large scale (160-320 NM). All unreported contacts shall be evaluated and reported over the DATA LINK, and voice reported to AW.

Pay close attention to any RADAR video that has not had a track built automatically by the Data Management System (Figure 3-1). If RADAR video is found without an associated track and that video appears to be moving, decrease the scope scale to better evaluate the potential contact. To aid in recognizing movement, drop a reference mark on the video to see if the video position changes on subsequent RADAR sweeps.

When performing the manual tracking procedure, the contact being tracked will most likely not be in the same position relative to own-ship on every RADAR sweep, therefore, the timing for the36 second, 1-minute, and 3-minute marks may not be precise. When making the 36 second, 1-minute, and 3-minute marks, the mark should be made following the sweep closest to the required time. This should minimize the error caused due to this relative position change. For example, when preparing to make the 1-minute mark and the previous sweep passed the contact at 56 seconds from the initial mark, wait until the next sweep, at approximately 1 minute, 1-seconds from the initial mark. In this example, the 1-minute distance will be 2 seconds late, instead of 4 seconds early. If the contact had been traveling at 360 knots (6 NM /min. or .1 NM /sec), using the sweep that is late would leave bring an error of 12 knots fast, vice 24 knots slow.

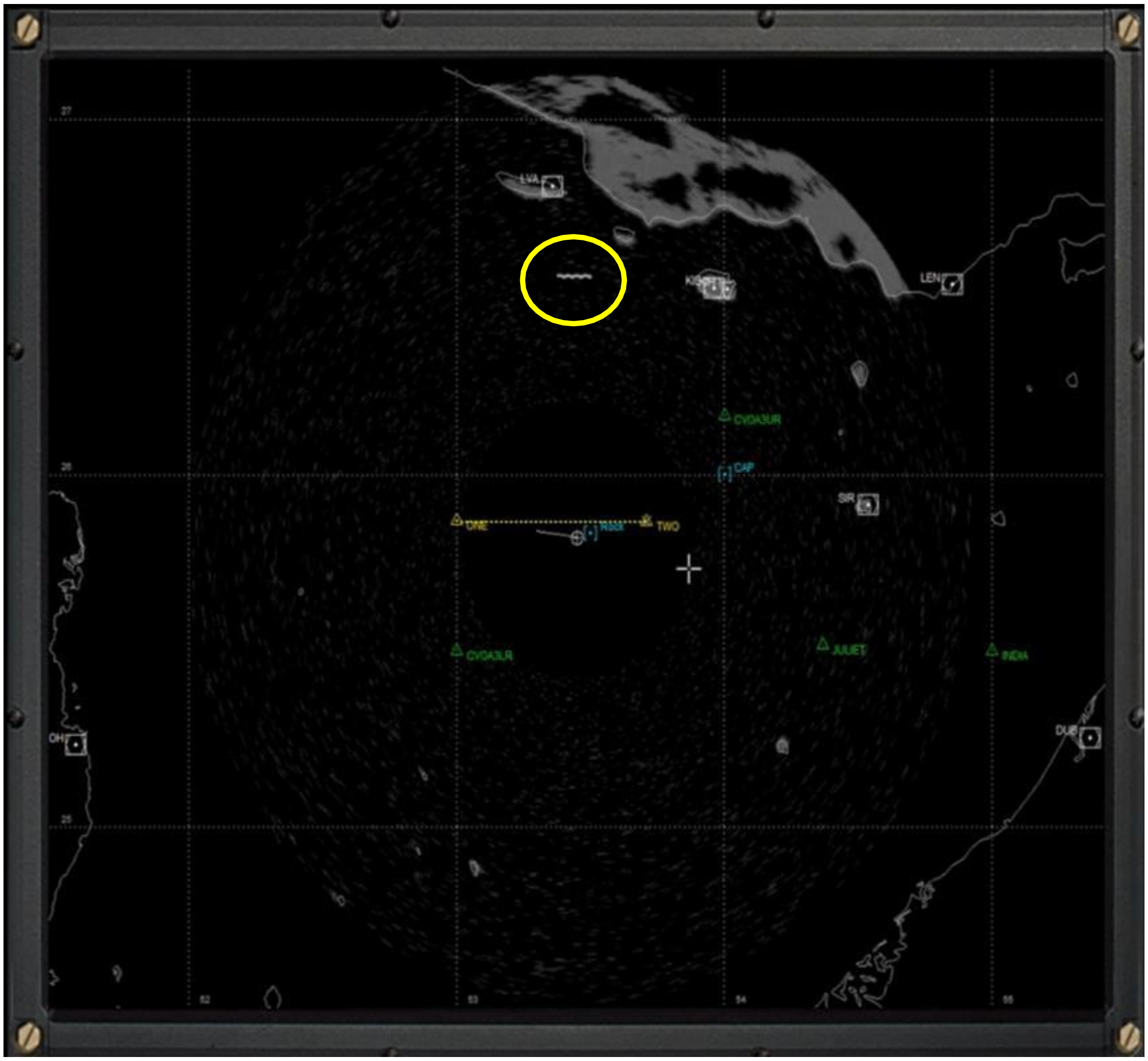

Figure 3-1 Radar Video Without an Associated Track

Once it has been determined that it is a valid RADAR contact, decrease to an even smaller scale (20-40) and begin the Manual Tracking process. Due to current system limitations in the MCS regarding the presentation of RADAR video when the TACPLOT scale is less than the RADAR range, the following workaround is allowed only when actively performing the Manual Tracking procedure. RADAR range may be temporarily reduced to 160 NM to provide a cleaner RADAR presentation. This reduction in RADAR range is only allowed when the Manual Tracking procedure is being performed. Upon completion of the procedure, RADAR range shall be increased to 320 NM. RADAR range shall be 320 NM at all other times.

1. Mark the RADAR video using a reference mark and note the time when the RADAR sweep actually produced the video and ***not*** when the mark was dropped (Figure 3-2). Ensure the mark is in the center of the RADAR video.

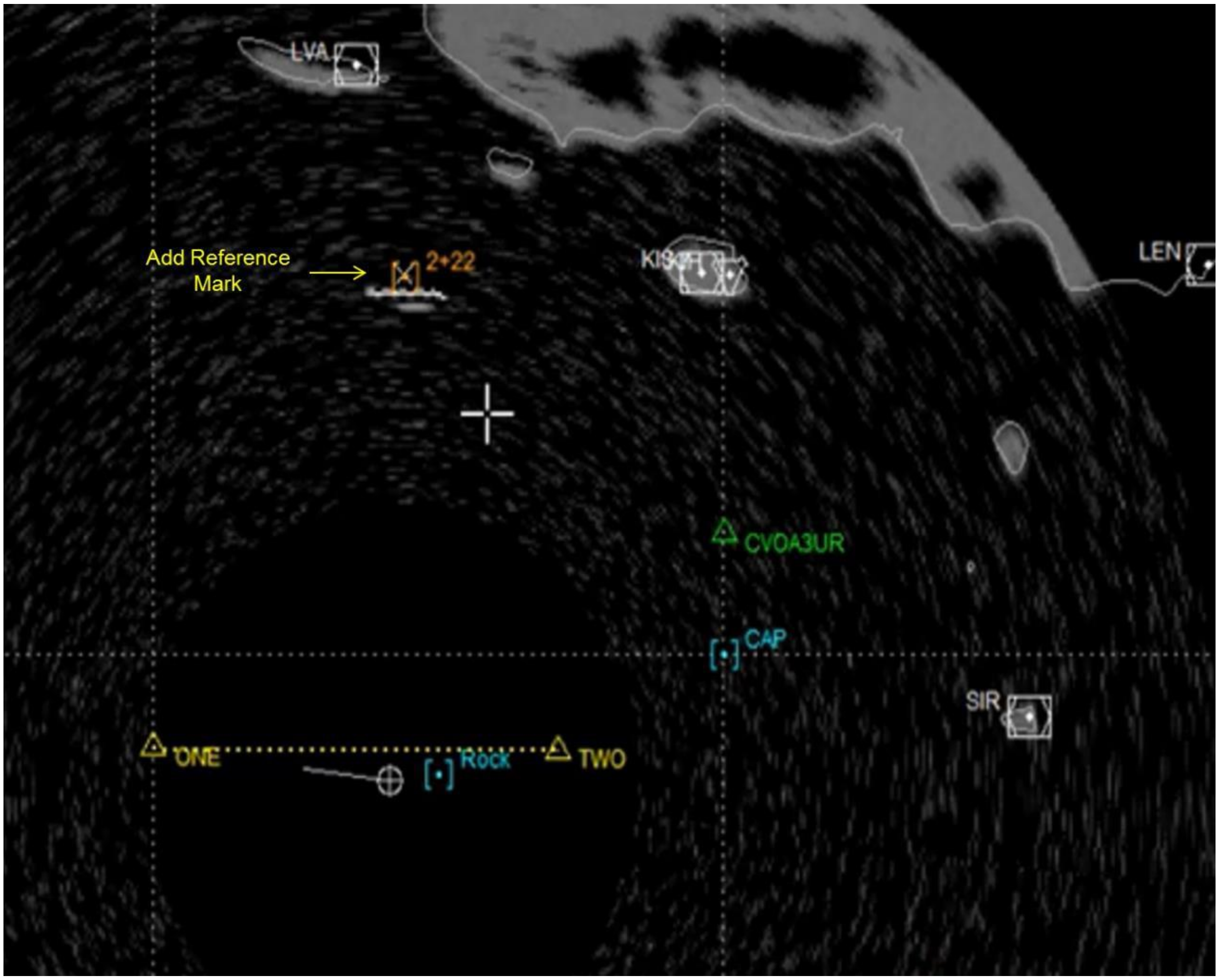

Figure 3-2 Manual Tracking Example Step 1

2. After 36 seconds (six sweeps), drop another mark (Figure 3-3).

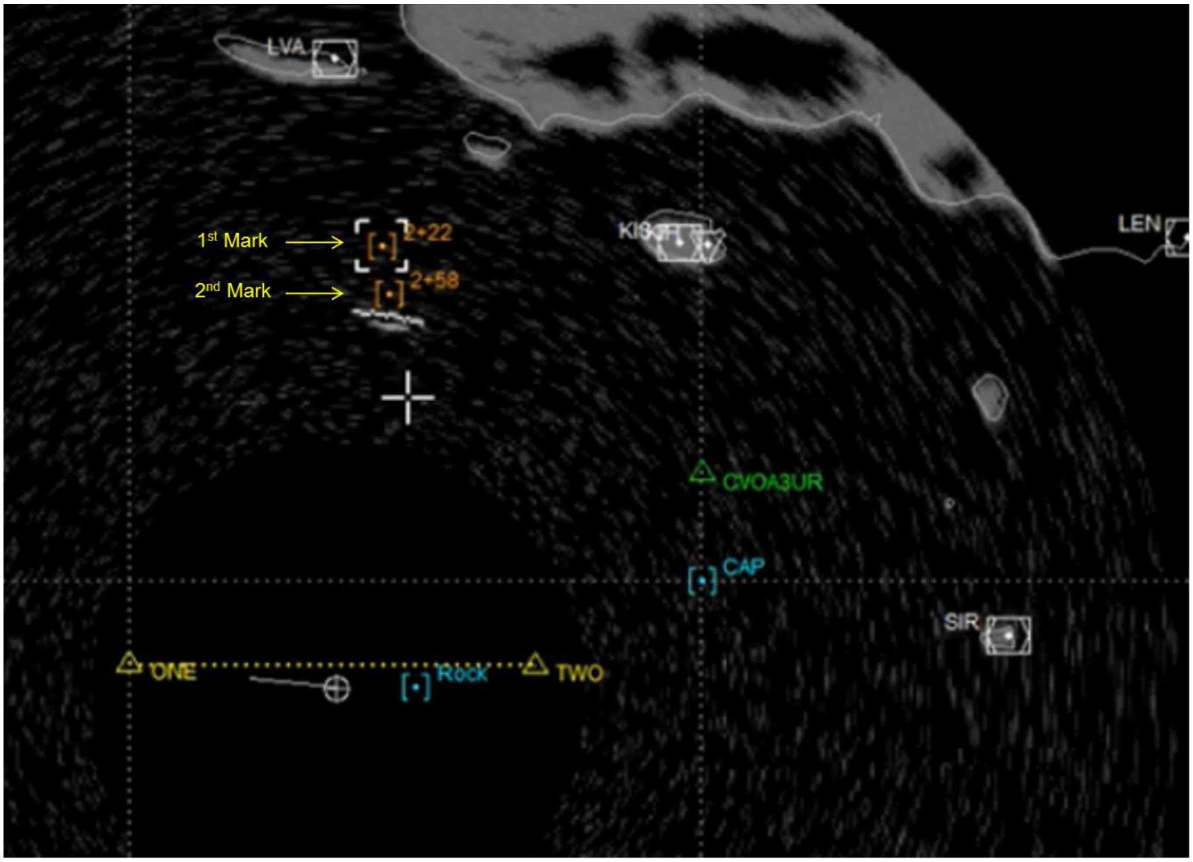

Figure 3-3 Manual Tracking Example Step 2

Hook the first mark and scroll the cursor to the second mark. Note the bearing and distance. The bearing is the rough course. Apply the 36 second rule by multiplying the distance by one hundred, or simply moving the decimal two spots to the right. This is the rough estimate of the contact's speed.

3. After one minute from the original mark (ten total sweeps), drop another mark (Figure 3-4). Check the bearing and compare with the 36 second bearing. Using the distance between the first and third marks, speed may then be calculated with NM per minute by multiplying by 60. The course and speed may be averaged, if needed.

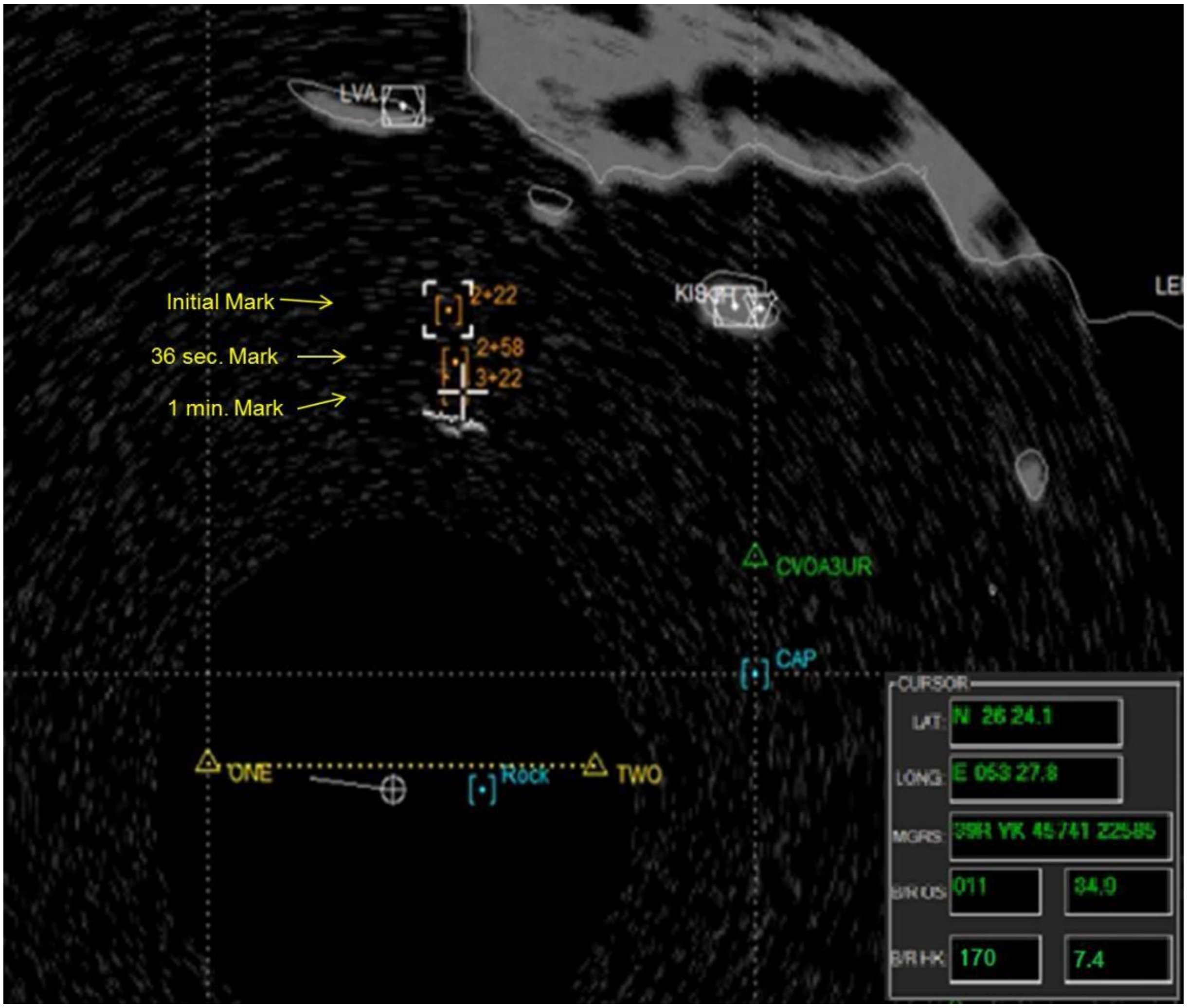

Figure 3-4 Manual Tracking Example Step 3

4. Once calculated, drop an operator air track, change affiliation to UNKN, and enter course and speed (Figure 3-5). With the new track hooked, move it to the side of the video by selecting the LAT or LONG field on the Track PEP, right clicking the desired location on the PPI, and pressing ENTER on the keyboard. At this point, the track should be to the side of the video to facilitate dropping the final mark.

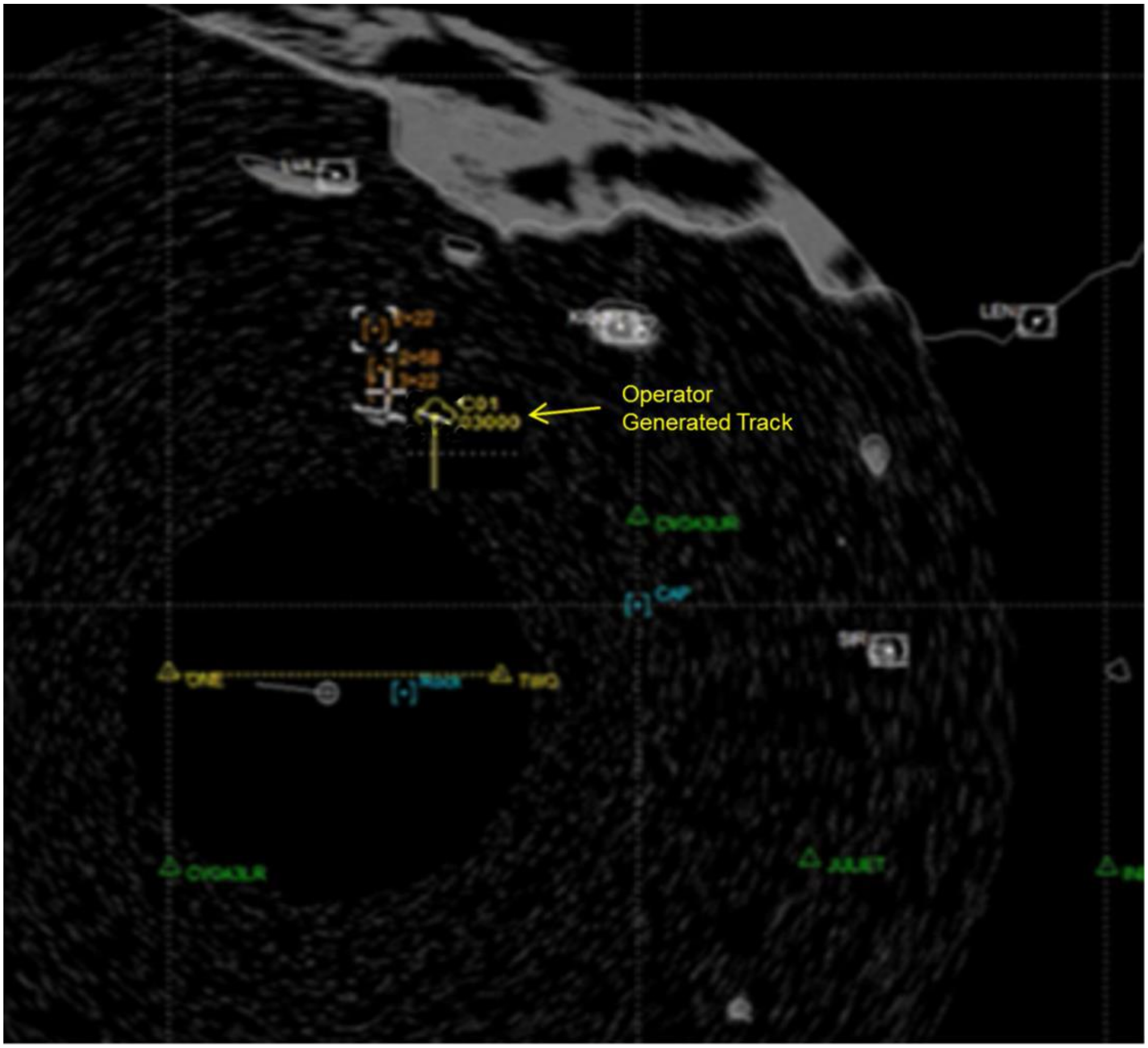

Figure 3-5 Manual Tracking Example Step 4

5. Report track via DATA LINK and voice report to AW.

6. Zoom out to a large scale to reevaluate the big picture and look for any additional contacts. Zoom back in several sweeps prior to the three-minute point.

7. After three minutes, make a final mark to confirm the course and speed. If course and speed were correct, the track should still be on the video (Figure 3-6). To calculate the 3 min. speed, multiply the distance by 20, or double the distance and move the decimal one spot to the right. Average the three course and speed solutions (i.e., 36 second, 1 minute, and 3 minute) and update the track.

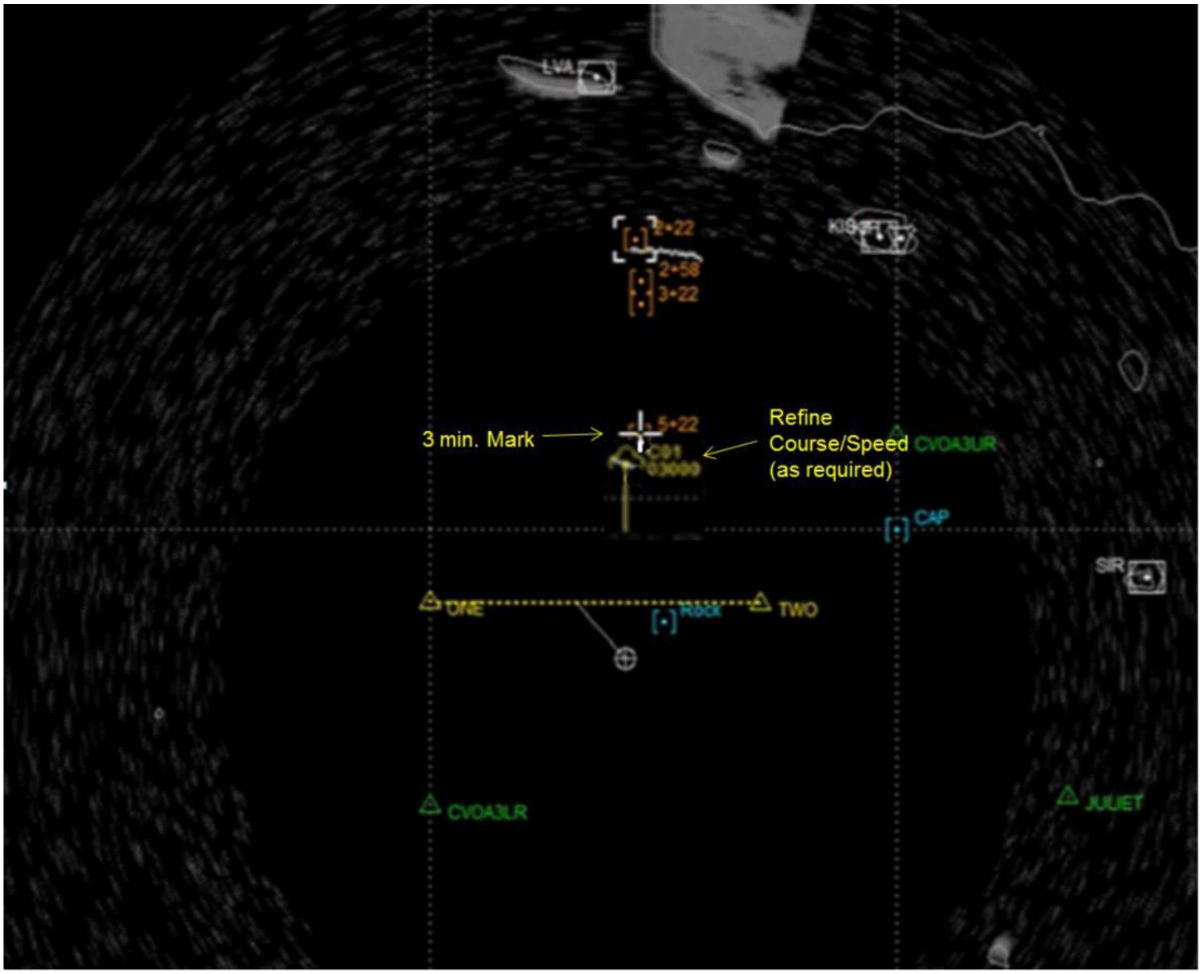

Figure 3-6 Manual Tracking Example Step 5

Maneuvers

Operator entered tracks do not receive any type of sensor data, therefore, they will not update automatically when the contact maneuvers. After successfully completing the Manual Tracking procedure, tracks must be continually monitored for any changes in course or speed, and updated as needed. This becomes difficult when manually tracking subsequent contacts on a smaller scale view, therefore, it is important to change the display to a larger scale frequently to monitor the big picture and not lose track of previous contacts.

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CHAPTER FOUR
NEAR COLLISION INTERCEPT

400. INTRODUCTION

Near Collision Intercepts (NCIs) are tools used to train both the E-2 Air Intercept Controller and fighter crews in basic intercept geometry. NCI involves determining the course required to be flown by the fighter needed to intercept a bogey. This chapter covers the procedures for conducting an Advanced E-2 NCI MCS event.

401. SYSTEM SETUP

Refer to Chapter Two for system setup procedures.

402. SCOPE SETUP

After completing system setup, enter the bullseye, as discussed in Chapter Two. Next, enter two CAP. Reference marks, circles, or waypoints may be used for the CAP stations. Label them appropriately (Figure 4-1).

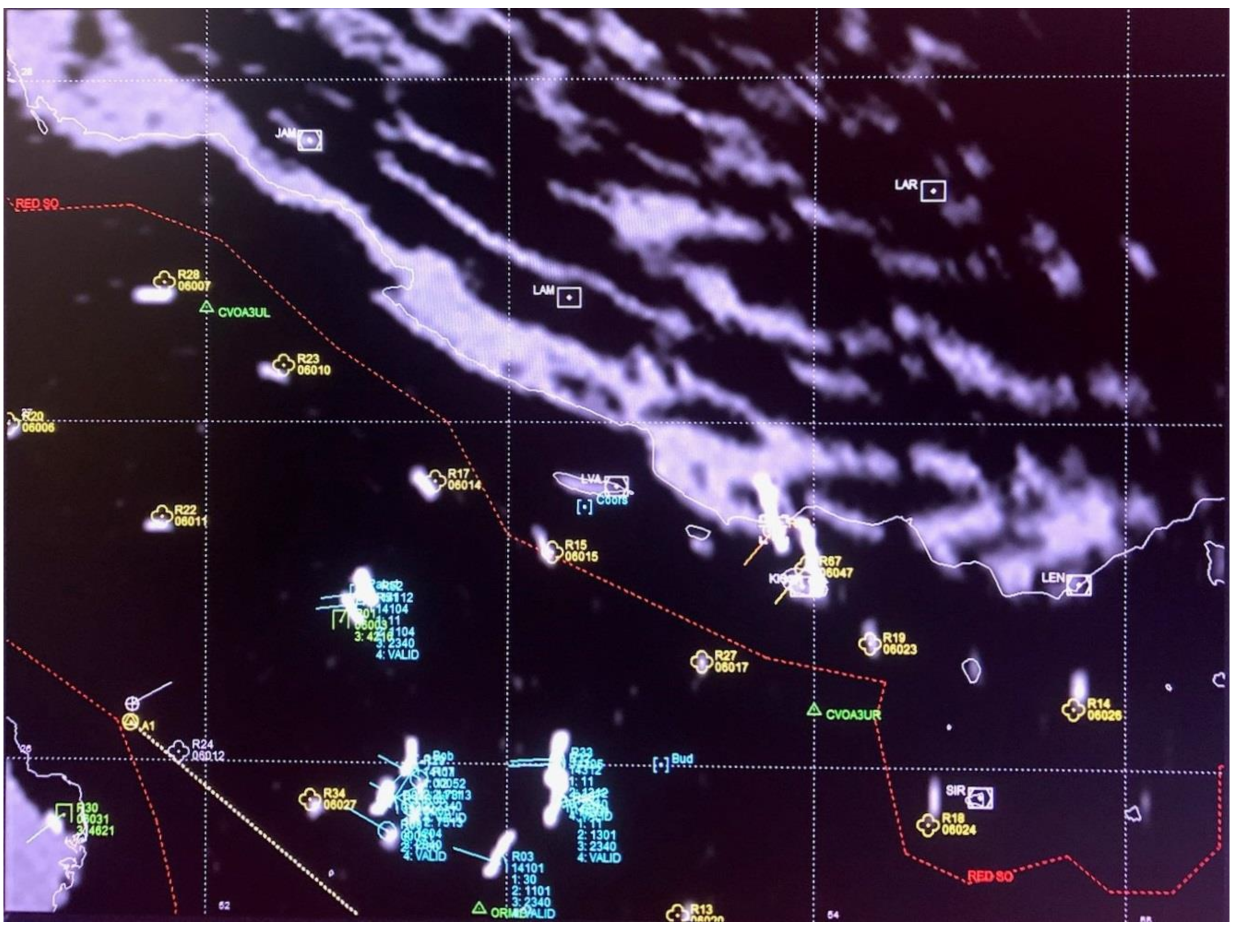

Figure 4-1 Near Collision Intercept Scope Setup

403. NEAR COLLISION INTERCEPT PROCEDURE

For the NCI events there will be one friendly fighter (F/A-18) each on two separate CAP stations, with a minimum altitude separation of 5000 feet. One will be playing the part of the "**red**" fighter (bogey) and one will be the "**blue**" fighter (friendly).

After the fighters launch, they will proceed towards their respective CAP stations and check in with the E-2 controller (student). The student shall identify the fighter using RADAR, IFF, and JU. To ensure the AIC and fighters' navigation systems are within the required tolerance for correlation of groups, the AIC must perform an "Alpha" check with each fighter element upon check in. This is performed by the AIC calling the fighter's bearing and range from the bullseye. The fighter will verify that the position called by the AIC is within the required 3 NM and 1-degrees tolerance. For example, when a fighter calls to check in AIC will respond with:

AIC: *"Enforcer 11, loud and clear, radar contact, alpha check Rock 173/38."*

If the fighter determines that the position called by AIC is within 3 NM: FTR:

"Enforcer 11, good alpha check."

If the fighter calls for a check in, and AIC cannot immediately determine their position, they can respond with:

AIC: *"Enforcer 11, loud and clear, standby, looking."*

Once the fighter is located, AIC can continue with the alpha check: AIC:

"Enforcer 11, radar contact, alpha check Rock 173/38."

If the fighter determines that their position is outside 3 NM, or 3 degrees of the position called by AIC, they will call their position off bullseye, prompting all parties to check their bullseye for correct location and/or nav for error:

FTR: *"Enforcer 11, shows Rock 170/32."*

In this case another alpha check shall be performed until the fighter determines that it is within tolerances. Next, as a technique, a vector may be created from the fighter to the bogey. This will aid in always having a quick reference to Bogey Bearing (BB) (Figure 4-2).

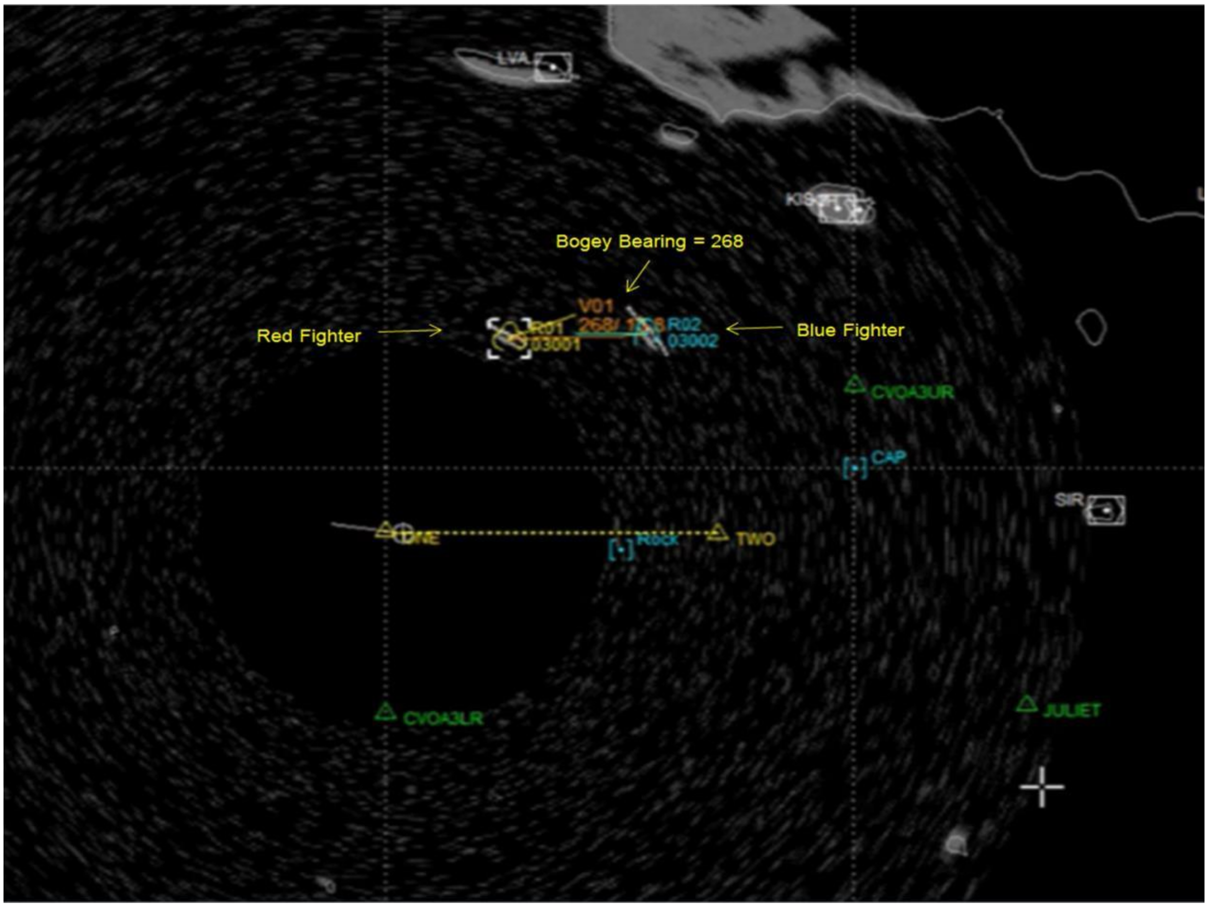

Figure 4-2 Near Collision Intercept Example

Once the fighters have reached their CAP stations, the “blue” fighter will call “tapes on, fight’s on.” The “red” fighter will echo this. This call starts the run. At this point AIC will provide a “picture” call in the form of a BRAA call to the fighter, with a recommended heading for the fighter to fly, to start the intercept. This initial heading should be done without calculation, just to get the fighter flying in the general direction.

> AIC: *“Eagle, single group, rock 270/31, 25 thousand, track northeast, bogey, spades. Condor 21 Flow 340.”*

Student should then calculate the Collision Course (CC) and provide an updated heading to the "blue" fighter. If the CC is correct, BB should remain constant. If not, either the CC was wrong or there is drift caused by a speed difference. Give the fighter an updated heading when needed. The goal should be to have the "blue" and "red" fighters merge with no lateral separation, with the least amount of updated headings. Calculate the CC using the following steps:

1. Determine Bogey Heading (BH) from the scope (Figure 4-3).

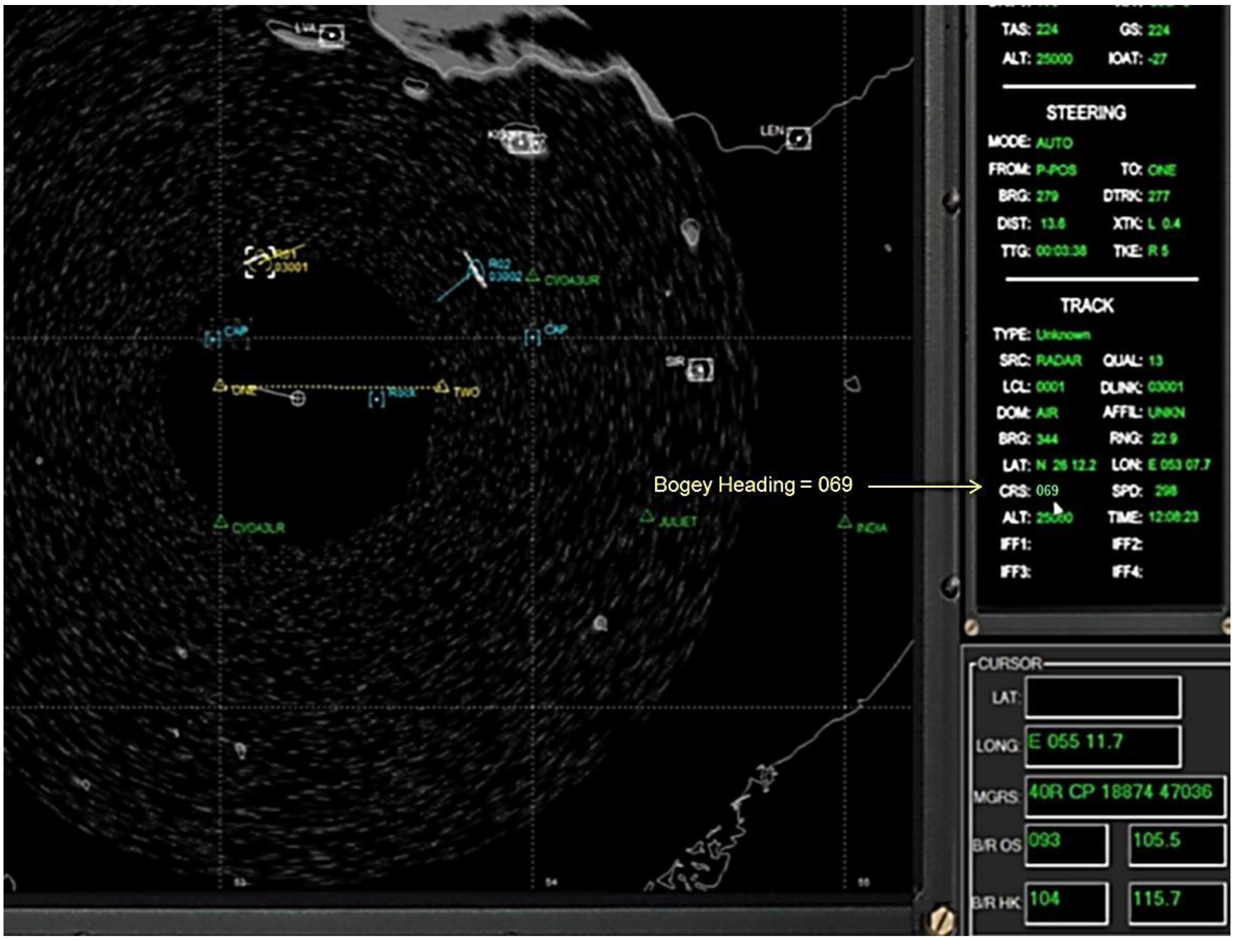

Figure 4-3 Bogey Heading

2. Calculate Bogey Reciprocal (BR): BH-180=BR

3. Determine Bogey Bearing (BB) using the previously plotted vector (Figure 4-4).

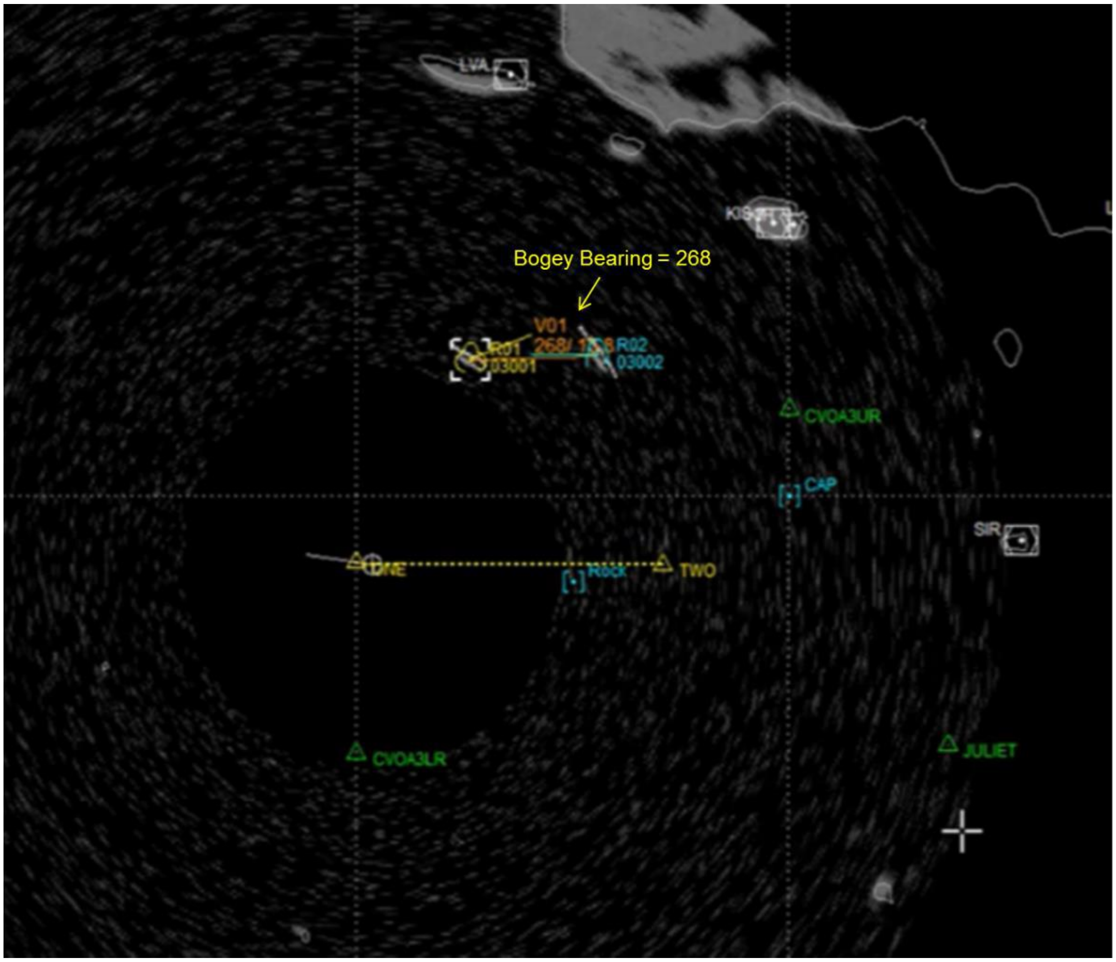

Figure 4-4 Bogey Bearing

4. Compute Target Aspect (TA) and add the amount equal to TA to BB to obtain a CC (Figure 4-5). Direct the fighter to turn to this heading.

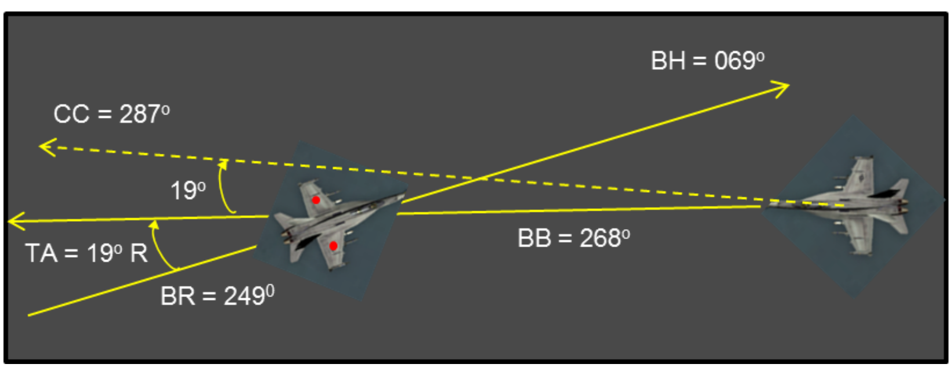

Figure 4-5 Calculating Collision Course

5. Monitor the BB for drift as the fighter closes on the bogey and make appropriate heading adjustment calls to the fighter.

If bearing is consistently changing in one direction, then drift is occurring. Drift can be corrected by changing the “blue” fighter’s heading by two degrees for every one degree of drift, turning in the same direction as the drift. For example, with the original BB of 268 and CC of 287, if the BB changes to 271, the corrected heading would need to be 293. Once the fighter is within 10 NM of the bogey, no additional heading changes are allowed. Speed differences of up to 20 kts may also be introduced, causing drift. The following is a recommended technique to stop drift due to speed differences. 10 knot speed difference = 1-2 degrees of additional correction. 20-30 knots difference = 2-3 degrees of additional correction.

At the merge, or closest point of approach (CPA), the “blue” fighter will call out the separation and call “terminate.” AIC will respond with *“[AIC call-sign] reset, say state.”* The fighters will then flow to the opposite CAP stations to facilitate a quicker setup for the next run. As the fighters are flowing towards their CAPs, the student will give BRAA calls from the “blue” fighter to the “red” fighter every five miles.

AIC: *“Warlock 11, single group, BRAA 350/5, 25 thousand, drag north, bogey spades.”*

The minimum separation to start a run is 25 NM. Once the minimum separation has been reached, both fighters will call “set” and the “blue” fighter will again call “tapes on, fight’s on.” The process will repeat as stated above until the end of the event.

Training Specific Calls

When conducting a training mission, also known as Unit Level Training (ULT), there are different training calls to understand. These calls will apply in all NCI and AIC ULT events.

When fighters and bandits are ready to begin the ULT event, the fighters will call “tapes on, fights on.” AIC should be expecting this call, and as soon as this call is heard, AIC should begin providing a broadcast call.

Blue FTR: *“Warlock 11, Tapes On, Fights On.”*

AIC: *“Banger, single group, rock 123/45, 32 thousand, track east, hostile, heron.”*

Whenever the fighters are ready to end the current run, known as the local engagement, they will make a “terminate” call. This call does not need to be echoed by AIC.

Red FTR: *“Viper 21, terminate.”*

Blue FTR: *“Warlock 11, terminate.”*

AIC: *Banger, reset, say state.”*

A "knock it off" (KIO) call can be given by any asset participating in the event and denotes the end of the entire event. The three most typical reasons for a KIO call are if the event is over, a fighter reaches a low fuel state, or if a safety of flight condition has arisen. All elements will echo the KIO call preceded with their role in the event.

Blue FTR: *"Fighters, knock it off, fuel."*

Red FTR: *"Bandits, knock it off."*

AIC: *"AIC, knock it off."*

Fuel

AIC shall obtain updated the fuel state from each fighter after each run terminates. This will apply to the AIC block as well. In Advanced E-2 training, fuel states will be communicated using the terms "Green," "Yellow," or "Red." The definitions of each of these terms will normally be established during mission planning. During Advanced E-2 training, the definitions shall be as follows:

1. Green – Enough fuel and ordnance remaining to accept multiple commits/intercepts.

2. Yellow – Adequate fuel and ordnance to accept a commit/intercept but may be at Red after completion. Therefore, the controller should start coordinating a tanker and/or relief.

3. Red – Fuel state is above bingo, but insufficient to accept a commit/intercept and remain above bingo. Fighters may be able to accept a commit/intercept at Red, but only if a tanker is available upon completion.

Traffic Calls

When a commercial airliner or other unknown aircraft enters the working area in which ULT events are being conducted, **OR** when a traffic call applies to multiple assets, AIC shall alert all players via a "99" call and use position off of bullseye.

{Comair enters ULT area, but is still outside of 10 NM of fighters}

AIC: *"99, traffic, rock 320/20, 20 thousand, track north, comair."*

By doing so, AIC is alerting the fighters that a comair flight has entered the working area. However, if the comair is within 10 NM ***and*** 10k feet of a controlled fighter, AIC will give a traffic call to that specific fighter.

{Comair gets within 10 NM AND 10k feet of Tallon 11}

AIC: *"Tallon 11, traffic, BRAA 109/10, 30 thousand, track north, comair."*

FTR: *"Tallon 11, looking"* or *"Tallon 11, visual/timber/radar."*

An E-2 NFO has the best SA of the crew as to what is around the aircraft, since E-2 pilots in the front cockpit (aka flight deck or Flight) have limited visibility and limited access to the scope. If an aircraft gets within 10 NM ***and*** 10 thousand feet of own-ship, Flight should be alerted, and given whatever amplifying information is available. Clock positions are used when talking to Flight to assist pilots in visually acquiring the traffic.

SO: *"Flight, SO, traffic, 9'oclock, 8 miles, 23 thousand, track northeast, Growler."*

APPENDIX A
GLOSSARY

Acronym	Definition
ACM(s)	Airspace Control Measure(s)
ACO	Airspace Control Order
AMDC	Air Defense Commander
AEW	Airborne Early Warning
AIC	Air Intercept Control
ASOC	Air Support Operations Center
ATO	Air Tasking Order
BB	Bogey Bearing
BH	Bogey Heading
BR	Bogey Reciprocal
B/R HK	Bearing/Range Hook
CAOC	Combined Air Operations Center
CAP	Combat Air Patrol
CAS	Close Air Support
CC	Collision Course
CIEA	Classification, Identification, and Engagement Area
CPA	Closest Point of Approach
CSG	Carrier Strike Group
DCA	Defensive Counter Air
DID	Digital Information Display
DIM(s)	Daily Intention Message(s)
DP	Decision Point
DT	Dynamic Targeting
ECP	Egress Control Point
FLOT	Forward Line of Own Troops

Acronym	Definition
FMS	Flight Management System
FPLN	Flight Plan
FSCL	Fire Support Coordination Line
IP	Initial Point
JEZ	Joint Engagement Zone
JTAC	Joint Tactical Air Controller
JTAR	Joint Tactical Air Strike Request
JTIDS	Joint Tactical Information Distribution System
JU	JTIDS Unit
MCS	Multi-Crew Simulator
MEZ	Missile Engagement Zone
NCI	Near Collision Intercept
OAS	Offensive Air Support
OCS	Offensive Counter Air
PEP	Programmable Entry Panel
PID	Positive Identification
PPI	Plan Position Indicator
ROE	Rules of Engagement
SA	Situational Awareness or Surveillance Area
SEAD	Suppression of Enemy Air Defenses
SITREP	Situation Report
SPINS	Special Instructions
TA	Target Aspect
TAC ADMIN	Tactical Administration
TACAID	Tactical Aid
TCP	Timing Control Point
TOT	Time on Top

Acronym	Definition
TST(s)	Time Sensitive Target(s)
VA	Vital Area
VID	Visual Identification

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