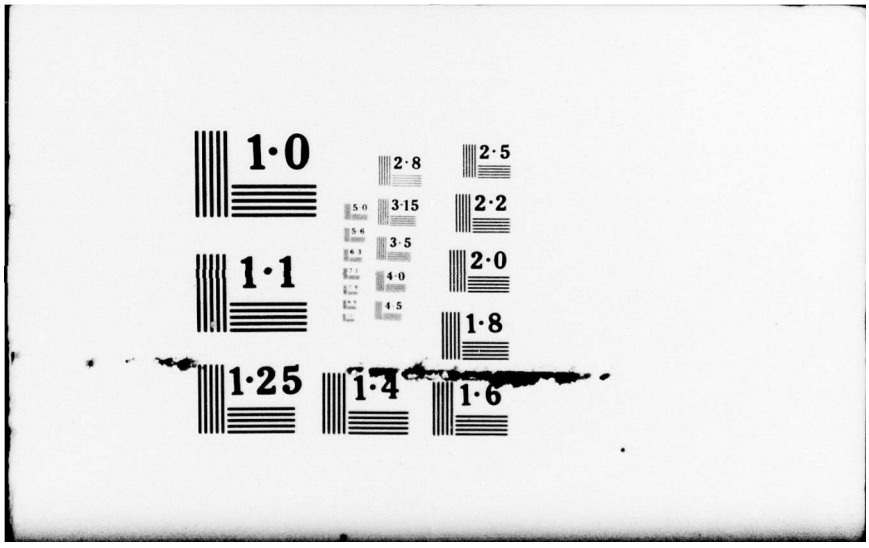
AD-A045 271 TACTICAL AIR WARFARE CENTER EGLIN AFB FLA F/G 16/4.1
COMBAT ECHO WEAPON SYSTEM EVALUATION PROGRAM. F-4/AIM-7/AIM-9E --ETC(U)
JUN 77

UNCLASSIFIED

1 OF 1
ADA
045271

END
DATE FILMED
11-77
DDC


1·0
1·1
1·25
1·4
1·6
1·8
2·0
2·2
2·5
2·8
3·15
3·5
4·0
4·5
5·0
5·6

TAC PROJECT 73E-134T

PROFILE OPERATING GUIDE

COMBAT ECHO WEAPON SYSTEM EVALUATION PROGRAM

F-4/AIM-7/AIM-9E SEQUENTIAL ATTACK PROFILE

IN AN ECM ENVIRONMENT

JUNE 1977

8 P.

TACTICAL AIR COMMAND

USAF TACTICAL AIR WARFARE CENTER

EGLIN AFB, FLORIDA 32542

PROFILE OPERATING GUIDE

TAC PROJECT 73E-134T

F-4/AIM-7/AIM-9 SEQUENTIAL ATTACK PROFILE

IN AN ECM ENVIRONMENT

1. INTRODUCTION.

a. Background. Tactical air forces are charged with the responsibility of obtaining and maintaining air superiority over enemy air forces. To ensure this capability, it is necessary to continously evaluate the total air-to-air weapon system against simulated tactical targets, representative of the threat. The Weapon System Evaluation Program (WSEP) will validate that tactical forces are properly trained and equipped to achieve and maintain air superiority against an increasing, enemy air-to-air threat. The program will measure the overall operational capability of air-to-air systems, identify those areas where improvement actions are required, and provide quantitative data to support the decision-making process. The program requirement is stated in USAF Directive 74-5 and the authority for the conduct of these profiles is TAC WSEP Plan 1, dated 15 June 1975. OPR is TAC/DOO.

b. Employment Concept. F-4/AIM-7E and F-4/AIM-9 profiles will be flown in conjunction with one another, as they are viable operational employment concepts against targets representative of the threat based on the following:

(1) AIM-7. Launches of the AIM-7 are recommended with the radar in full auto-track mode as would be the optimum launch condition used in an operational environment. However, in an ECM environment the shooter would be required to convert to the stern area and accept an AIM-7 launch at less than optimum firing conditions. Depending upon the type of ECM encountered, the AIM-7 may have to be launched in HOJ, AOJ, boresight or manual track. These alternate firing modes tax the aircrew to the utmost and demand a complete knowledge of the fire control system. Firing in a jamming environment also provides an excellent training opportunity for participating aircrews.

(2) AIM-9. Launching the AIM-9 in the caged condition is the optimum mode for end-game performance.

2. PURPOSE AND OBJECTIVES. The overall purpose is to evaluate the operational effectiveness and suitability of the total F-4/AIM-7E and F-4/AIM-9 weapon systems in an operationally realistic environment. Specific objectives are as follow:

a. AIM-7E. Determine the ability of the F-4 FCS to detect, track and launch the AIM-7E missile in an ECM environment. The two following subobjectives must be satisfied in determining whether the original objectives have been met.

(1) Estimate the interruption rate of the F-4/AIM-7E weapon system.

(2) Estimate the terminal effectiveness of the F-4/AIM-7E weapon system (guidance accuracy and fuzing).

b. AIM-9J. Determine missile performance launching the AIM-9 in the caged mode. The two following subjectives must be satisfied in determining whether the original objectives have been met. If AIM-9J missiles are employed:

(1) Estimate the interruption rate of the F-4/AIM-9J weapon system.

(2) Estimate terminal effectiveness of the F-4/AIM-9J weapon system (guidance accuracy).

(3) This is a tactically oriented profile in that the aircrew is given an aircraft with one AIM-7 and one AIM-9 missile. They are required to fly this weapon system to a position where the AIM-7 can be successfully launched. If AIM-7 launch is not possible, for a valid reason, then the AIM-9 will be employed against the target. Only one of the missiles will actually be fired. The other will be employed in a simulated attack. The crucial point is that the aircrew will have to:

(a) Be completely knowledgeable in all FCS firing modes for AIM-7 (i.e., full system, boresight, manual track, HOJ, AOJ).

(b) Be completely familiar with all tactical employment concepts for AIM-7 (i.e., altitude line problem and techniques for overcoming it; FCS malfunctions with associated alternate launch modes and the tactical methods for employment using these modes; tactical employment concepts in an ECM environment, i.e., what aspect angle do I fire from? Should I be high, low, or co-altitude with the target).

(c) Brief a cogent, coherent plan of attack based on the basic GCI set-up to include alternative plans to cover contingencies which might arise (i.e., ECM, FCS malfunction, negative radar contact).

3. METHOD OF ACCOMPLISHMENT. Flight Profiles--this paragraph contains the description of the baseline sequential attack profile to be used for the F-4/AIM-7, AIM-9 launches. AIM-7/AIM-9 Profile--shooter positioned for head-on (180° aspect angle) attack at 15,000 feet MSL, 350-400 KIAS. The target will be at 10,000 feet MSL, 300 KIAS. Upon radar contact or at 25 NM, whichever occurs first, the target will begin jamming with the DLQ-3 pod. The shooter will initiate a stern conversion with roll-out at a range less than 5 NM. During this phase shooter will use all available means to break out the target and initiate a full system lock-on. If this cannot be accomplished then shooter will utilize that degraded firing mode which is deemed to be the most tactically sound for the given set of circumstances (i.e., HOJ, AOJ, BST, manual track). In the stern, shooter will launch the AIM-7 and attempt to acquire the target visually while continuing to illuminate with CW radar. Drone will be accelerated to 350 KIAS. At "TALLY HO" a visual AIM-9 attack will be initiated. If a "TALLY HO" is not achieved, a radar assisted reattack will be accomplished. Regardless of the method of reattack (visual or radar) smoke will be available to provide visual cueing to the shooter at 2 NM range from the stern of the target. At 2 NM or a "TALLY HO" call by the shooter, whichever is closer, the target will begin a 4-G turn and the shooter will be cleared to launch his AIM-9. This sequential attack profile may be flown on either a hot AIM-7 pass with a simulated AIM-9 launch (AIM-7 loaded only) or simulated FOX I with subsequent hot AIM-9 attack (AIM-9 loaded only). This will keep the profile scenario constant while utilizing the F-4 in its air superiority role.

ANNEX A

RULES OF ENGAGEMENT

The rules of engagement governing the F-4 sequential attack profile are itemized below. They are presented within the specific categories of mandatory radio calls and mandatory operational equipment as well as within the normal sequence of events as they occur for each profile.

1. MANDATORY RADIO CALLS. The following radio calls must be made during each missile attack. Failure to make or receive any of these mandatory calls will result in the development of a hazardous situation.

a. GCI must clear the shooter aircraft to begin the attack with "COMMENCE PASS - DATA ON."

b. Wetstone GCI will give an "ARM HOT - RADAR" call at approximately 30 NM from the target.

c. The shooter will call "CONTACT" not later than 20 NM from the target/jamming.

d. The shooter must call "JUDY" not later than 3 NM from the target.

e. GCI must call "CLEARED TO FIRE."

NOTE: UNDER NO CIRCUMSTANCES WILL A MISSILE EVER BE LAUNCHED WITHOUT AN ACKNOWLEDGED "CLEARED TO FIRE" CALL FROM THE GCI CONTROLLER.

f. The shooter will make the appropriate "FOX" call at trigger squeeze.

g. GCI will call "ACCELERATING THE DRONE" and "DRONE SPEED SET."

h. GCI will call "ARM SAFE," "CLEARED TO REATTACK," shooter will acknowledge and begin reattack maneuver.

NOTE: IF THE SHOOTER DOES NOT MAINTAIN RADAR LOCK-ON OR VISUAL CONTACT DURING THE ATTACK MANEUVERS HE MUST CALL "NO JOY." IT WILL THEN BE NECESSARY TO REACQUIRE A CONTACT BY 4 NM AND JUDY BY 2 NM AND A TALLY HO BY 1 NM.

i. GCI will give an "ARM HOT HEAT" and "CLEARED TO FIRE."

j. At "TALLY HO" call by shooter, chase will call "TURN THE DRONE" (target will go into a 3 to 4-G turn).

k. Shooter will then maneuver to a valid launch position and fire the AIM-9 making the required "FOX II" call at launch.

2. NORMAL MISSION PROCEDURES. A typical sequence of events, together with all required radio calls, is presented here.

a. Initial set-up by GCI will be approximately 40 NM with 180° head-on aspect angle: 5,000 feet altitude differential, shooter lookdown.

b. GCI will give a "COMMENCE PASS - DATA ON" call ASAP.

c. GCI will give range and magnetic bearing to target.

GCI: "STAR 12, YOUR TARGET BEARING 090° - 28 MILES."

STAR 12: "STAR 12 CONTACT 095° AT 27."

GCI: "STAR 12 THAT IS YOUR TARGET, CLEARED ARM HOT - RADAR."

STAR 12: "STAR 12 IS ARMED HOT RADAR, JUDY 095° AT 25."

GCI: "STAR 12 - GOOD JUDY."

STAR 11 (CHASE): "CHASE SAFE."

GCI: "STAR 12 YOU ARE CLEARED TO FIRE."

STAR 12: "STAR 12 - CLEARED TO FIRE."

STAR 12: "STAR 12 - FOX I."

GCI: "ROGER 12 - FOX 1."

STAR 11 (CHASE): "ACCELERATE THE DRONE."

GCI: "ACCELERATING THE DRONE" AND "DRONE SPEED SET."

STAR 12: "STAR 12 HAS MISSILE INTERCEPT."

GCI: "STAR 12 CHECK ARM SAFE - CLEARED TO REATTACK."

STAR 12: "ARM SAFE," "CLEARED TO REATTACK" (TALLY HO IF APPLICABLE).

GCI: "STAR 12 - ARM HOT HEAT."

STAR 12: "ARM HOT HEAT."

STAR 12: "STAR 12 - TALLY HO JUDY."

STAR 11 (CHASE): "CHASE SAFE."

GCI: "STAR 12 - CLEARED TO FIRE."

STAR 12: "CLEARED TO FIRE."

STAR 11 (CHASE): "TURN THE DRONE."

GCI: "ROGER DRONE TURNING LEFT/RIGHT."

STAR 12: "STAR 12 - FOX II."

GCI: "ROGER 12 YOUR BREAKAWAY HEADING IS STARBOARD TO 360^{o} - CHECK ARM SAFE."

STAR 12: "ARM SAFE, STEADY 360^{o}."

The shooter will normally be handed off to a GCI recovery director who in turn will affect a handoff to Eglin Mission/RAPCON for single-ship recovery at Eglin.

3. MISSION INTERRUPTIONS. The shooter may be skipped out by GCI, chase, or at his own discretion at any point during the attack from the "COMMENCE PASS" call to just prior to launch. After being skipped out, the shooter, at the option of chase, may return to the trailing element for another pass or return to base. Reasons for being skipped may include, but are not limited to:

a. Flight safety.

b. Boats in the restricted firing area.

c. Weather.

d. Fuel.

e. Radar contact and JUDY not established as specified in ADWCR 55-1, Air Operations.

f. Loss of telemetry.

g. No TALLY HO with the drone (AIM-9 pass only).

h. Unusual telemetry indications which leave a question in the mind of the ground TM technicians as to the condition of missile being monitored.

i. Other reasons determined by the chase pilot or GCI.

From the "Commence Pass Data On" call until the appropriate "FOX" call by the shooter, the only terminology used to terminate a firing pass will be "KNOCK IT OFF" transmitted three times over the primary UHF firing frequency.

DISTRIBUTION LIST

HQ USAF (SAMI) 1
Bolling AFB D.C. 20332

HQ USAF
Wash DC 20330
- XOODE 1
- XOOR 1
- XOORT 1
- RDQRM 1
- RDQRT 1
- LGYYC 1
- LGYYS 1
- LGYW 1

TAC
Langley AFB VA 23665
- DRA 1
- LGM 1
- LGWS 1
- SEW 1
- DOO 1
- HO 1
- IG 1
- XPSY 1
- LGWMK 1
- DOOO 1

CINCAD
Peterson AFB CO 80914
- DOA 1
- DOO 2
- DOV 2
- IGA 1
- LGM 1
- XPAW 1

USAFE
APO New York 09012
- DOA 1
- DOOOW 1
- LGME 1
- LGMW 1

AFLC
Wright Patterson AFB OH 45433
- MMW 1
- LOL 1
- LOWMM 1

HQ PACAF
APO San Francisco 96533
- OA 1
- DOOF 1
- LGWS 1
- LGMW 1

AAC
APO Seattle 98742
- LG 1
- DO 1

AFTEC
Kirtland AFB NM 87115
- TE 1
- JT 1
- LG 1
- TEB 1

ASD
Wright Patterson AFB OH 45433
- SD4E 1
- YFEF 1
- YFA 1

9 AF
Shaw AFB SC 29152
- DO 1
- LG 1
- DOOF 1

12 AF
Bergstrom AFB TX 78743
- DOOO 1
- LGM 1
- LGA 1

13 AF
APO San Francisco 96274
- DOO 1
- LGM 1

56 TFW
MacDill AFB FL 33608
- CC 1
- DO 1

4 TFW
Seymour Johnson AFB NC 27530
CC 1
DO 1

31 TFW
Homestead AFB FL 33030
CC 1
DO 1

33 TFW
Eglin AFB FL 32542
CC 1
DO 1

35 TFW
George AFB CA 92392
CC 1
DO 1

49 TFW
Holloman AFB NM 88330
CC 1
DO 1

347 TFW
Moody AFB GA 31601
CC 1
DO 1

1 TFW
Langley AFB VA 23665
CC 1
DO 1

388 TFW
Hill AFB UT 84066
CC 1
DO 1

36 TFW
APO New York 09132
CC 1
DO 1

57 FWW
Nellis AFB NV 89191
CC 1
DO 1

58 TFTW
Luke AFB AZ 85309
CC 1
DO 1

Warner Robins ALC
Robins AFB GA 31098
MMNO 1
MMEB 1
MMER 1

Ogden ALC/MMEE
Hill AFB UT 84406 1

ADTC
Eglin AFB FL 32542
DLOSL 1
DLMQ 1
XR 1
DLYD 1
DLMI 1

USAFTAWC
Eglin AFB FL 32542
CCH 1
OA 1
TV 8

ADWC/TEU
Tyndall AFB FL 32401 1

USAFTFWC/TE
Nellis AFB NV 89110 1

Defense Documentation Cen
Cameron Station
Alexandria VA 22314 2

86 TFW/DOW
APO New York 09012 1

AUL/LSE-75-408
Maxwell AFB AL 36112 1

1 TESTS/CC
APO San Francisco 96274 1

475 TESTS/CC
Tyndall AFB FL 32401 1

OSD/PA&E/GPP-TACAIR
Wash DC 20330 1

Institute for Defense Analyses
System Evaluation Division
400 Army-Navy Drive
Arlington VA 22202 1

Naval Research Laboratory 1
Code 5309
4555 Overlook Ave
Wash DC 20375

Fleet Analysis Center 1
Code 821
NWS Seal Beach
Corona CA 91720

JSTPS/JLED 1
Offutt AFB NE 68113

414 FWS
Nellis AFB NV 89110
CC 1
DO 1

4756 Air Defense Sq/CC 1
Tyndall AFB FL 32401

AFAITC/TTMNL 1
Lowry AFB CO 80230