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RESEARCH REPORT

EUROPEAN ROLES FOR THE F-15E

LT COL JAMES F. BOGGAN

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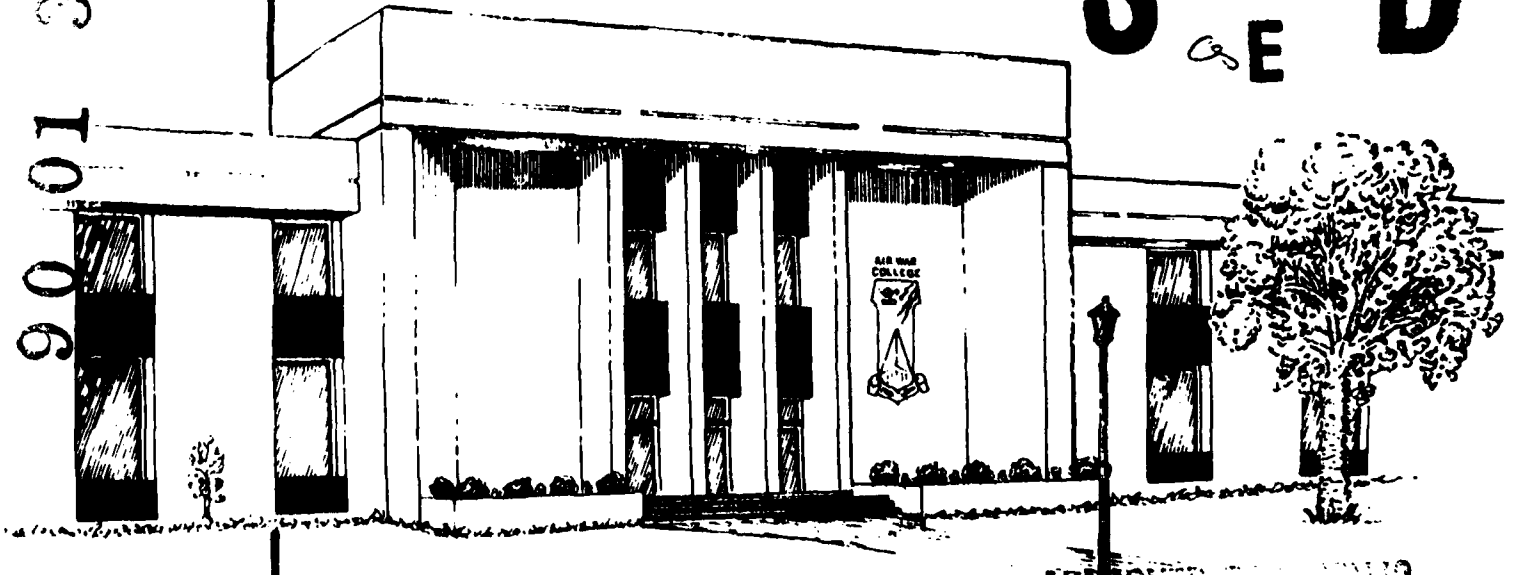

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EUROPEAN ROLES FOR THE F-15E

by

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A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE CURRICULUM

REQUIREMENT

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MAXWELL AIR FORCE BASE, ALABAMA

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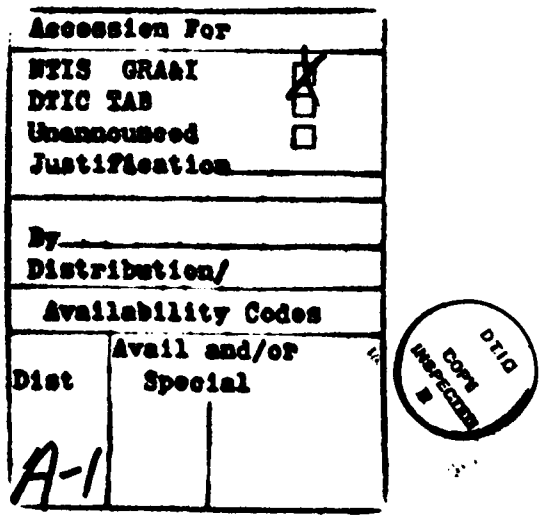

EXECUTIVE SUMMARY

TITLE: European Roles for the F-15E

AUTHOR: James F. Boggan, Lieutenant Colonel, USAF

Several preliminary documents have already addressed F-15E employment; however, this is the first to be based on direct experience with the weapons system. The study begins with a review of basic Air Force and North Atlantic Treaty Organization doctrine. It then analyzes F-15E capabilities and limitations, aircrew training, and European operational considerations. Finally, these criteria are assessed in terms of the doctrine to recommend one primary and two secondary role statements for the F-15E in Europe. Along the way, the study identifies employment considerations for those who will eventually develop European strategy and tactics for the F-15E.

BIOGRAPHICAL SKETCH

Lieutenant Colonel Boggan was commissioned in 1968 and entered the Air Force as a personnel officer. In 1970, he attended navigator training and F-4 conversion. He flew 147 combat missions from Udorn Royal Thai Air Force Base, including air defense and surface attack in Linebackers I and II. In 1973, he was reassigned to Mather AFB where he taught international officers slated to fly the F-4 and F-14. From 1977 to 1982, Colonel Boggan flew F-4s in Germany and Arizona.

In 1983, as Chief, Fighter Training Devices Branch, HQ TAC, he formulated the initial training strategy for F-15E aircrews. He directed F-15E training development at Luke AFB and subsequently commanded Detachment 1, 4444 Operations Squadron, the organization responsible for developing F-15E, F-16C, Low Altitude Navigation Targeting Infrared Night (LANTIRN), and Tactical Air Control System formal training. He coauthored the F-15E Concept of Training, guided development of the LANTIRN Concept of Training, and established an F-15E Aircrew Training System rated outstanding in two successive Inspector General evaluations.

He has flown over 2200 hours in the T-29/43, F-4, F-15, and F-16. Colonel Boggan is currently attending the Air War College.

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CHAPTER I

INTRODUCTION

General Russ, Commander, Tactical Air Command recently observed "When I look at the European situation, assuming the INF Treaty goes through, I see a greatly increased emphasis on conventional forces." He went on to say," The most important thing that the Air Force can do in that connection is to bring on the F-15E, maybe even at increased production rates, because it is dual-qualified--conventional and nuclear, ground attack and air-to-air."(1)

The purpose of this study is to recommend the most effective role for these aircraft in the European theater. Several preliminary documents have already addressed F-15E employment, however none were based on direct experience with the weapons system. In bringing the system on line, we clairfied a number of issues and raised some new ones.(2) These issues will be included in this analysis. Readers are assumed to be familiar with tactical fighter employment and the European theater.

The study begins with a review of basic Air Force and North Atlantic Treaty Organization (NATO) doctrine. It then examines F-15E capabilities and limitations, aircrew training, and United States Air Forces Europe (USAFE) operational considerations. Finally, these criteria are assessed in terms of the doctrine to produce recommended mission statements for F-15E European employment. In the process, the study will identify employment considerations,

but will leave theater strategy to operational commanders and tactics in the capable hands of unit commanders and aircrews.

CHAPTER II

BASIC DOCTRINE--A START

Since the F-15E incorporates new technology, it is appropriate to ask whether technology should drive doctrine or doctrine should drive technology. AFM 1-1 tells us that the role of doctrine is a two way street. Emerging technology may influence development of doctrine, but weapons procurement should provide capability to execute current doctrine.(3) Thus, current Air Force and North Atlantic Treaty Organization (NATO) doctrine should provide the framework for F-15E European employment. The following doctrinal roles from AFM 1-1 will be considered.

COUNTER AIR. The objective of counter air is to gain control of the air environment, with the ultimate goal of air supremacy.(4) From General Donnelly's view as Commander in Chief, United States Air Forces Europe (USAFE), "Whatever the choices for offense or defense, the air campaign cannot succeed until air superiority is achieved." (5) We recognize three subdivisions of counter air:

Offensive Counter Air. (OCA) OCA seizes the initiative to neutralize or destroy the enemy's aerospace forces and supporting infrastructure before they can be brought to bear on our own territory and forces.(6)

Suppression of Enemy Air Defenses. (SEAD) These operations neutralize enemy air defenses so our forces can accomplish their missions without interference.(7)

Defensive Counter Air. (DCA) DCA intercepts and destroys enemy air forces over friendly territory.(8)

AIR INTERDICTION.(AI) The objective of AI is to prevent the enemy's military potential from being brought to bear on friendly forces. Air interdiction targets are usually located deep enough to eliminate the need for coordination of friendly fire and movement. AI targets typically include enemy surface forces, lines of communication, command, control, and communications networks, and supplies. Battlefield Air Interdiction (BAI) is a subset of air interdiction. BAI targets are close enough to exert a near term effect on friendly land forces. Therefore, BAI requires joint coordination, but is executed as part of the AI campaign.(9)

CLOSE AIR SUPPORT. (CAS) CAS supports friendly forces in contact with the enemy.(10) General Russ envisions "...a fluid, nonlinear battlefield in the 1990s, with the forward line of troops ebbing and flowing--a chaotic and highly lethal environment."(11) Major General Al Logan, Director of Plans, Headquarters USAF, explained to the House Armed Services Committee: "CAS must support the depths of the battle area and may involve significant penetration into enemy territory. CAS is no longer tied to any line or area."(12) Thus, CAS must be supported by, and integrated with other tactical air missions.

The fundamental principles of NATO tactical air

doctrine agree with these AFM 1-1 roles. However, NATO doctrine is initially constrained by the assumption that political clearance will be required for NATO aircraft to attack targets in enemy territory.(13) It may take some length of time for attack units to receive border crossing authority. Air Marshal Sir Patrick Hine, Commander of NATO's 2nd Allied Tactical Air Force (2 ATAF), recognizes this constraint on doctrine when he outlines his strategy:

> So on Day 1 of any war we would have to concentrate heavily on air defence....In order to blunt the initial onslaught, 2 ATAF would need to use as interceptors most if not all its F-4s and F-16s with a dual air defence and ground attack capability...Moreover, unless there had been reinforcements of fighter aircraft from the USA, the in-theatre interceptors would probably be joined by so-called 'reinforcement fighters' - a proportion of the offensive support aircraft, such as Tornadoes, armed with air-to-air missiles in addition to their guns...Following the initial attacks by the enemy, we would go into the offensive ourselves by hitting his airfields hard.(14)

NATO doctrine also reserves first use of nuclear weapons in defense of the Alliance. Should the Warsaw Pact achieve unacceptable success against NATO defense, dual capable fighter-bombers like the F-15E would be tasked to perform nuclear strike.

With this brief review of U.S. and NATO doctrine as a reference, we can examine F-15E capabilities to support current doctrine.

CHAPTER III

F-15E CAPABILITIES

The F-15E is an enhanced version of the F-15C, retaining its world class air superiority capability. A close look at major enhancements should highlight the roles for which the F-15E has been optimized.

The F-15E rear cockpit is a revolution in information processing. Without taking his hands off the hand-controllers, the Weapon Systems Officer (WSO) can page through 12 displays on the 4 Cathode Ray Tubes (CRTs). The Tactical Situation Display (TSD) provides a constant dead reckoning position superimposed over a moving map display--no more awkward, time consuming strip charts in the cockpit! The WSO uses the TSD to cue his sensors, the radar and forward looking infrared (FLIR). Sensor displays often resemble high resolution television. For example, using the APG-70 radar 45 miles away from Luke AFB, we were able to clearly discern buildings, runways, parking ramps, and individual aircraft on the ramps. From 17 miles out, the two inch diameter arresting cables across the runway showed on the radar. FLIR displays during Low Altitude Navigation Targeting Infrared Night (LANTIRN) testing have been equally impressive. The bottom line is that the WSO spends less time finding, identifying, and designating targets, and more time outside the cockpit building his situation awareness and assisting the pilot in threat analysis and reaction.

The front cockpit has also been modified for im-

proved information flow. Primary flight instruments are state of the art electronic displays presented on three CRTs. As in the rear cockpit, the pilot can thumb through and operate 12 preprogrammed displays without taking his hands off the stick and throttles. Thus he has instant access to electronic instrument displays, TSD, radar, FLIR, armament control, terrain following radar (TFR) data, and Tactical Electronic Warning; all independent of the WSO's displays. His wide field-of-view HUD provides weapons and navigation data along with primary flight instrument data. These improvements enable the pilot to focus his attention on the mission outside his cockpit. They also optimize his cockpit for the LANTIRN system.

The LANTIRN system consists of two pods carried under the aircraft's belly. The navigation pod contains a navigation FLIR and a terrain-following radar (TFR). The targeting pod consists of a higher resolution, narrow field of view targeting FLIR and a laser designator. Projected on the pilot's HUD, the navigation FLIR picture is superimposed over the pilot's view of the world through his HUD. Invisible in bright daylight, the FLIR gives the pilot a 28 by 21 degree "window into the night," enabling him to navigate visually and use modified daylight weapons delivery tactics. The TFR can be coupled to fly the aircraft hands off, or the pilot can hand fly it using HUD symbology. The major improvement at night over systems like the F-111 is that, in all but the worst weather conditions, the F-15E pilot can

see where he is going, and adjust tactics accordingly.

Targeting FLIR can be cued by the navigation FLIR, radar, or TSD. Its range depends on weather and line of sight to the target, but once in range, it provides a high resolution television-like picture from which the WSO can designate targets as small as a four pane window. With the pod's laser designator, he can expect to put a laser guided bomb through the window consistently, which translates to more combat effectiveness from fewer sorties.

Other improvements in the F-15E also contribute to its unique capabilities. The airframe was strengthened to provide 9 G capability throughout much of the flight envelope. Maximum gross weight has been increased to 81,000 pounds and it can carry up to 24,500 pounds of air-to-surface ordnance or eight air-to-air missiles. Each aircraft will have a dedicated set of conformal fuel tanks (CFT) that provide a combat radius greater than 700 nautical miles.

In summary, the F-15E is well equipped to handle a number of combat roles. Air-to-air, it's another F-15C with an extra set of eyeballs. Air-to-surface, it can deliver ordnance with pinpoint accuracy on targets over 700 miles away without refueling. High resolution radar ground mapping and LANTIRN navigation, target identification, and designation, will enable it to hit targets most other aircraft can't find. With these capabilities in mind, we need to identify any limitations which might influence the choice of F-15E roles in Europe.

CHAPTER IV

F-15E LIMITATIONS

The F-15E, with its proven air-to-air and advanced air-to-surface technology, should be a world beater in any air combat role. But does it have an Achilles' heel that would render it ineffective in certain missions or combinations of missions? Having identified its strengths, we will now consider deficiencies that might influence F-15E employment in Europe.

As stated earlier, the F-15E retains the world class air-to-air capability of the most advanced F-15C. Configured strictly with air-to-air missiles, the F-15E is a deadly match for any current fighter. Unfortunately, adding CFTs and LANTIRN pods drastically changes the equation. F-15E pilots at Luke AFB estimate, from experience, that full CFTs reduce air combat maneuverability about 30 percent and empty CFTs by about 20 percent when compared to a clean F-15C. While pitch response is still impressive, they complain of slow acceleration, excessive energy bleed off, slower roll rate, and reduced turn rate. In fact, the F-15E with CFTs performs much like an F-4.(15)

LANTIRN pods further degrade performance. Their aerodynamic drag exacerbates energy maneuverability problems. To make matters worse, F-15Es with pods are restricted to a maximum of 30 units because of dutch roll tendencies above the 30 unit limit. With rapid energy

bleed-off, the 30 unit limit is a critical limitation in turning fights. Pilots flying F-15Es with CFTs and/or LANTIRN pods would be well advised to avoid maneuvering dogfights. Unfortunately, both CFTs and LANTIRN pods are bolted on. There's no way to jettison them before a fight, and an F-15E so equipped is at severe risk against Flankers and Fulcrums. Innovative tactics, like combat air patrol at 200 feet above the ground using TFR, could reduce probability of dogfights, but may reduce significantly DCA effectiveness.

Based on this information, combat units might consider reconfiguring F-15Es between air-to-air and air-to-surface sorties. On the average, the 405th Tactical Training Wing requires 2 1/2 hours to load and checkout a pair of CFTs. Download time averages 1 hour. According to the manufacturer, LANTIRN pods can be loaded in 30 minutes and downloaded in 15 minutes. However, a Martin Marietta technical representative cautioned that the pods were designed to stay on their aircraft unless shop maintenance is required. He suspects repeated downloading and uploading might adversely affect pod reliability.(16)

In summary, the F-15E can be extremely capable in air-to-surface or air-to-air employment, but the two capabilities do not automatically mix. The next chapter will factor aircrew capabilities into this analysis.

CHAPTER V

F-15E AIRCREW TRAINING

The F-15E has been optimized for night, under the weather surface attack while retaining the F-15's outstanding air-to-air capability. Success in combat requires aircrews trained to exploit the aircraft's full potential.(17) This chapter examines F-15E aircrew training programs.

Aircrews begin their F-15E qualification in one of two types of formal training. Until October, 1989, all incoming F-15E aircrews will transition from another fighter aircraft. There are three transition (TX) course tracks at the school house at Luke AFB. The "A" track is for F-15 pilots. The "B" track is for F-111, A-10, RF-4 pilots and F-111, RF-4 WSOs. The "C" track includes F-4, F-16, A-7, F-5, AT-38 pilots and F-4, AT-38 WSOs.(18)

The second transition path into the F-15E should begin about October, 1989 when the first "B" or basic course will be taught. "B" course students will include pilots and navigators fresh out of basic pilot and navigator training and Fighter Lead-In Training. The "B" course also provides training for nonfighter experienced aircrews and fliers who have been out of the cockpit for an extended period.(19)

The experience crews bring to the TX Course must be viewed with a critical eye. For example, a former F-15C pilot brings a wealth of air-to-air experience, but no surface attack experience. Much the opposite is true of an

F-111 pilot or WSO, and the transition is even tougher for A-10 pilots. It will be up to gaining operational units to make feast or famine of widely varied experience levels.

The pool of potential TX students may also present a challenge. Tactical Air Command (TAC) built the training program to frontload crews with previous fighter experience into the F-15E. Their goal is to settle the F-15E manning ratio by 1995 to a 50 percent experienced to inexperienced crew mix. This will require training an equal number of "B" and "TX" pilots and WSOs. While there are a number of sources for "TX" pilots, the major source for "TX" WSOs, the F-4, is being phased out of the active inventory.(20) There are not enough F/FB-111s to make up the difference. As a result, WSO experience will likely fall below the 50 percent mark, degrading unit combat capability. Also, WSOs will find the F-15E a closed loop system--once in, they're in to stay. This closed loop syndrome in the F-111 and RF-4C created, among some aircrews, the perception of decreased career opportunity and dissatisfying quality of life.(21)

The formal training program is the result of significant compromise, projecting major impact on gaining operational units. The Air Force originally planned on 392 F-15Es. To get the most combat capability, original plans were to accomplish about half the formal training in older F-15As and Bs, with an air-to-surface topoff in the F 15E. Therefore, the schoolhouse was allocated only 12 1/2 per-

cent of the fleet, versus 25 percent common in other fighters. Unfortunately, a subsequent TAC study showed the mixed training approach would involve an unacceptable 68 percent reteach rate during the E phase. (22) The program was restructured using only F-15Es, but the number of these aircraft dedicated to training remained constant.

Given limited training assets, the F-15E's Concept of Training focused on the anticipated primary role of the aircraft. When a crew graduates from Luke, they will be proficient in instrument and emergency procedures, formation, air refueling, and mission planning. Day or night, they will be able to fly a low level (terrain following) route, and deliver conventional or nuclear weapons, using visual, radar, and LANTIRN systems. They will also be proficient in basic defensive fighter maneuvers.(23)

In May, 1987, Tactical Air Command representatives briefed the following training strategy to the Commander in Chief, United States Air Forces Europe. Luke graduates will arrive in theater qualified to fly single ship low level surface attack with conventional bombs, day or night, using LANTIRN and radar. After completing mission qualification training, they will be declared "mission ready", and will concentrate on this mission for their first year in theater. Then when ready, they would upgrade in special weapons capability and air-to-air employment. Previous F-15 pilots would form the air to-air instructor cadre, previous

Maverick instructors would teach Maverick, and so on. Thus, everyone in the squadron will be qualified in the unit's primary mission, and enough crewmembers will be qualified to handle secondary missions and special weapons capabilities.(24)

This training strategy has two important implications in assigning F-15E combat roles. First, unit training programs will spend a lot of time introducing complex tasks like air combat, multiship surface attack tactics, and guided weapons employment. This entry level training will usurp valuable flying time that would otherwise be used to hone combat skills to a fine edge. The more varied the roles assigned to the F-15E, the more time units will spend on entry level training at the expense of combat preparation.

The second implication is that almost half of each unit will be qualified only in the primary mission. Therefore, secondary mission tasking must not exceed the number of crews qualified in that mission. Assigning more than one secondary role or special capability at the same time exacerbates the problem. These constraints may limit the number of missions that can be assigned to the F-15E. The next chapter will focus on additional operational considerations.

CHAPTER VI

OPERATIONAL CONSIDERATIONS

Aircraft capabilities and training constraints are important criteria in selecting F-15E European roles. Operational considerations may also affect mission capability. This chapter examines four missions: night flying, close air support, air-to-air combat, and nuclear employment.

If the F-15E is going to hurt the enemy at night, under the weather, crews have to train like they expect to fight--at night! A well documented study of night tactical fighter training recommended that slightly more than half an F-15E unit's sorties should be flown at night. But the study cautioned: "Given that night-tasked F-111 units today are only able to fly about 25 percent of of their sorties at night, it is likely that F-15E units will be constrained in peacetime night flying as well."(25)

Recent European objections to peacetime tactical fighter operations can only exacerbate this problem. Fortunately, a vision restricting device has been developed successfully for the F-15E front cockpit so the pilot can simulate night LANTIRN operations during daylight. Even with this device, F-15E crews are expected to need all the night flying time they can get. Most daylight training sorties will have to enhance skills that complement night employment.(26)

Missions complimentary to night surface attack

skills include daytime low levels using LANTIRN navigation and weapons delivery. Special weapons (laser guided bombs, Maverick, GBU-15) can be integrated because of the similarities between their day and night employment. Intercept training is essentially the same, day or night.(27)

On the other hand, air combat maneuvers and traditional close air support with a forward air or ground controller develop habit patterns antithetic to night employment. Both require extensive training using "out the window" references--either the hostile fighter, the ground, or both. Lapsing to these out-the-cockpit attitude references at night can be fatal.(28)

Because day and night flying are based on different habit patterns, ranging from instrument references to winding our biological clocks, USAFE F-15E units will have to assign aircrews to night duty for some period of time, ranging from a week to several months or perhaps designate a squadron or certain flights as "Night Owls." The planned crew manning ratio of 1.25 supports this contention because it is inadequate for around-the-clock flight operations. Quality-of-life and community relations will be nagging issues for commanders and schedulers. More important, wartime tasking must be sensitive to the day-night mix.(29)

Since close air support and air-to-air combat are difficult missions to mix with the night under the weather role, they deserve individual consideration here.

The fluid, non-linear, chaotic, highly lethal battlefield of the 1990s will require extremely capable, specialized close air support. The Air Force is exploring options for a new CAS aircraft to replace the A-10, which has become too vulnerable in Europe. Because of its size, cost, limited production, and value in other roles, the F-15E is not a candidate to replace the A-10. But could F-15Es perform specialized CAS missions?

NATO ground forces have developed significant night fighting capability, assisted by infrared equipped helicopters. Conversely, we have very limited night fixed wing CAS capability. Certainly the F-15E is equipped to kill night targets, but LANTIRN's 21 by 28 degree "window in the night" rules out flexible target area maneuvering. Aircraft availability and crew capability are also potential limitations. High value, deep targets outnumber F-15Es and F-111s available to destroy them. Commanders will therefore be reluctant to risk F-15Es in the CAS environment, even with heavy suppression of enemy air defenses. Also, training crews in complex CAS coordination and target acquisition would require considerable ground and flight time.

While aircraft availability is fixed, crew training could be made easier by devising night CAS procedures that closely resemble other F-15E missions. For instance, preplanned CAS targets could be attacked after a simple, authenticated "go" command from the ground FAC. Future F-15E

improvements like Global Positioning System may provide more flexibility, but will complicate training. In the end, the decision to use F-15Es for CAS rests on target priority and acceptable aircrew procedures and training.

Air-to-air combat presents similar challenges. In initial phases of war, NATO will want to use dual capable aircraft as interceptors. F-15E strengths and weaknesses have already been discussed. Aircrew capability is equally critical because their Warsaw Pact counterparts will outnumber them by about 2.3 to 1.(30) In the late 1950s and early 1960s, we did away with guns in fighters because we thought air-to-air missiles signaled the end of dogfights. Based on our early experience in Vietnam, we put guns back on our fighters, a necessary tradition that will continue with the Advanced Tactical Fighter.(31) Flankers and Fulcrums, quick and agile as the F-15, will not allow us the luxury of using the F-15E as a pure interceptor. If they fly air defense, F-15E aircrews must be proficient in air combat maneuvers and tactics.

Nuclear employment is the final role to be discussed. Since tactical nuclear strike resembles closely the air interdiction mission, this role would appear to be a small step from qualification in night, under the weather surface attack capability. Both missions require the same thorough mission planning, the same precise navigation and timing, and essentially the same inflight procedures. Three

factors could complicate life for a nuclear tasked F-15E unit. First, nuclear weapons procedures differ significantly from conventional operations. Therefore, USAFE nuclear certification is an extremely time consuming ritual that will usurp critical time from other training priorities. Second, extensive night tasking is hard on family life. A nuclear alert commitment would detract further from unit quality of life. It would also tie up aircraft that could otherwise be used for operational training.(32)

With these operational considerations in mind, we can begin to evaluate the F-15E's capability to fulfill doctrinal roles in Europe.

CHAPTER VII

ASSIGNING ROLES

This study began by reviewing basic Air Force and NATO doctrine to identify candidate roles for the F-15E. Then, analysis of the aircraft's capabilities and limitations, aircrew proficiency resulting from training, and other operational considerations provided criteria for selecting, modifying or eliminating roles. Now the analysis is applied to each candidate role with the goal of selecting primary and secondary roles.

Offensive Counter Air, Air Interdiction, Battlefield Air Interdiction. These missions are considered together because, from the aircrew's perspective, there is little real difference in their planning and execution. They all penetrate enemy territory and defenses. They are preplanned against fixed or relatively stationary targets, and do not require the aircrew to coordinate with ground forces during planning or execution. In some cases, Suppression of Enemy Air Defenses also fits this category.

Aircraft Capabilities: The F-15E is optimized to perform these missions. With its high resolution radar and LANTIRN, it complements the F-111 and provides our best capability to attack precision targets day or night, out to a range of about 700 nautical miles.

Aircrew proficiency: Graduates from formal training are most qualified to perform these missions. In fact,

these are the only combat missions in which inexperienced USAFE crews (about half the squadron) will qualify during their first year in theater.

Operational Considerations: It will be difficult for USAFE squadrons to fly enough night sorties to maintain a sharp combat edge. Therefore, most of their daylight sorties must exercise skills that complement night habit patterns. Still, "Night Owl" squadrons on a rotating or permanent basis will be necessary. Quality of life will be a constant issue in retaining qualified crew members. More important, wartime tasking must be sensitive to the day-night mix.

Defensive Counter Air. NATO's defensive posture may require dual capable aircraft fly DCA early in a conflict.

Aircraft Capabilities: Configured with air-to-air missiles, the F-15E is one of our best DCA fighters, but conformal fuel tanks and LANTIRN pods reduce performance well below that of some adversary aircraft. Therefore, DCA should be flown only with air-to-air missiles and jettisonable external fuel tanks. Since crews must practice as they intend to fight, units should keep several of their F-15Es in this configuration, rotating them periodically to ensure all aircraft systems are exercised regularly.

Aircrew Proficiency: New aircrews arrive untrained for DCA. Necessarily comprehensive DCA training programs will usurp time and resources from primary mission training.

Operational Considerations: Tasking must be limited because only half the crewmembers will be qualified. Tasking unqualified crewmembers invites unacceptable attrition.

Close Air Support. NATO does not have much night fixed wing CAS capability. The F-15E might be considered.

Aircraft Capabilities: With it's LANTIRN "window in the night", the F-15E could only handle preplanned night CAS targets. Army helicopters and perhaps the new CAS aircraft flown with improved night goggles offer better flexibility.

Aircrew Proficiency: CAS training would compound the adverse impacts of air-to-air training programs.

Operational Considerations: Critical AI and OCA targets outnumber available F-15E and F-111 sorties. Commanders will be reluctant to risk high value F-15Es in CAS. If necessary, less costly LANTIRN equipped F-16s could perform night CAS as well as the F-15E.

Tactical Nuclear Strike. The dual capable F-15E could be tasked by NATO in this role.

Aircraft Capabilities: The F-15E is fully capable.

Aircrew proficiency: Crews, already competent in AI, would have to spend some additional training time certifying in NATO strike procedures.

Operational Considerations: An alert commitment should not be assigned because it would compete for scarce training time and aircraft.

CHAPTER VIII

RECOMMENDATIONS

Based on the preceding analysis, the author recommends the following mission statements. USAFE planners may consider incorporating them in statements of designated operational capability for USAFE squadrons.

Primary Role: All weather penetration and under-the-weather day/night air-to-surface attack using guided and free fall weapons.

Qualifying remarks: none.

Secondary Role: All weather penetration and under-the-weather day/night tactical nuclear strike.

Qualifying Remarks:

1. Tasking not to exceed the number of certified crews.
2. No peacetime alert commitment.

Tertiary Role: All weather air defense.

Qualifying remarks:

1. Configured with air-to-air missiles, gun, and, if necessary, jettisonable centerline fuel tank. Remove LANTIRN pods and conformal fuel tanks for air defense tasking.
2. Tasking not to exceed the number of air defense qualified aircrews.

NOTES

1. James W. Canan, "Sorting Out the Air Land Partnership," from General Purposes Forces Employment--DS 612, Resident Supplemental Readings, Air War College, Maxwell AFB, Al., September, 1988, p. 32.

2. The author was responsible, both as Chief, F-15E Operations Training Development Team, and as Commander, Detachment 1, 4444 Operations Squadron, from August, 1984 to November, 1987, for developing F-15E aircrew training programs. He also participated in procurement of Aircrew Training Devices in duties ranging from writing initial specifications to acceptance testing at Luke AFB.

3. Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, Office of Primary Responsibili[illegible] USAF/XOXID, March 16, 1984, p. 4-8.

4. Ibid., p. 3-3.

5. General Charles L. Donnelly, USAF, in the introduction to The Air Campaign, Planning for Combat, by John A. Warden III, National Defense University Press, Fort Lesley J. McNair, Washington D.C., 1988, P. xxiv.

6. AFM 1-1, op. cit., p.3-3.

7. Ibid.

8. Ibid.

9. Ibid.

10. Ibid.

11. General Robert D. Russ, USAF, "The Air Force, The Army, and the Battlefield of the 1990's," Defense 88, from Department of Military Strategy and Force Employment, DS 615, Book 5, Air War College, Maxwell AFB, Al., AY 1988-1989, p.29-10.

12. Major General Albert L. Logan, USAF, "Close Air Support," Defense Issues, Vol 3, No. 32, (Testimony before the House Armed Services Committee, March 10, 1988), from Department of Military Strategy and Force Employment, DS 615, Book 5, Air War College, Maxwell AFB, Al., AY 1988-1989, P. 29-5.

13. NATO Tactical Air Doctrine, ATP-33(A), revised May 1979, pp. 1-1,2-1 thru 2-7, and 4-1 thru 4-13. From General Purposes Forces--DS 612, Readings: Book 2, Air War College, Maxwell AFB, Al, September, 1988, pp. 256.

14. Alfred Price, "View from the Top," Air Battle Central Europe, The Free Press, New York, New York, 1987, pp. 1 thru 26. From Department of Military Strategy and Force Employment, DS 615, Book 5, Air War College, Maxwell AFB, Al., AY 1988-1989, pp 26-6 and 26-7.

15. Telephone interview with Lieutenant Colonel Jack Moffatt, Chief, F-15E Training Development, Det. 1, 4444 Operations Squadron, Luke AFB, Az., January 23, 1989.

16. Ibid.

17. Lieutenant Colonel Michael E. Heenan, USAF, USAF Night Tactical Warfare Training for the 1990's, Research Report number AU-AWC-0134-85-080, Air University, Maxwell AFB, Al, 1985, pp. 1 thru 13.

18. F-15E Concept of Training, HQ TAC/DO, Langley AFB, Va. 23665-5568, January, 1988. pp. 3 thru 5.

19. Ibid.

20. Seymour-Johnson, the last active duty F-4E unit in the continental United States, is presently converting to the F-15E.

21. Tactical Air Forces (TAF) LANTIRN Conference, hosted by Detachment 1, 4444 Operations Squadron, Luke AFB, Az., August 11 thru 13, 1987. Attendees included representatives from HQ TAC, HQ USAFE, HQ PACAF, USAF Tactical Fighter Weapons Center, and test pilots from the F 16C LANTIRN and F-15E projects at Edwards AFB, Ca.. Closed loop syndrome was identified as a potential demotivator for night tasked crews in the F-16 and F-15E.

22. The TAC study, "F-15E Formal Training," approved by the TAC Commander in February, 1984, listed all the tasks to be taught in F-15A/Bs. It then evaluated the carryover of these tasks to the F-15E. It concluded that while the airframes were almost identical, the avionics were so different that, from the pilot's perspective, he was dealing with a different airplane. Of the tasks learned in the F-15A/B, 68 percent would have to be retaught during the F-15E phase. As a result of this study, the Concept of Training changed from using both A/B and E models to using only the F-15E for formal training.

23. F-15E Concept of Training, op. cit., p. 1.

24. "F-15E Training Strategy" briefing was approved by the TAC Commander. The USAFE Staff and leadership were briefed in March, 1984 by Maj Ron Heyden, 4444 Operations Squadron, Langley AFB, Va. 23665.

25. Heenan, op. cit., p. 18.

26. Ibid., p. 27.

27. TAF LANTIRN Conference, op. cit., consensus on training tasks.

28. Ibid.

29. Ibid.

30. Price, op. cit., p. 26-4.

31. In his book, Fox Two, as well as in person, Randy Cunningham, the Navy's pilot ace from the Vietnam War, argues strongly against tasking the same pilots for both air-to-air and air-to-surface roles. He contends, and the author agrees, that a pilot must train full time in one of these roles if he is to achieve the sharpest combat edge. Trying to cover both roles dilutes the pilot's combat proficiency in both roles. He blames this diluted proficiency, in part, for the Navy's fall to a two-to-one kill ratio against North Vietnamese Migs early in the war. He maintains that the Navy's kill ratio climbed to ten-to-one later in the war, in part, because the Navy changed to a "one unit, one mission" assignment of roles.

32. USAFE strike units no longer sit peacetime alert. It is the author's contention that even if units were tasked for strike alert, the F-15E should be excluded in recognition of the magnitude of operational training required, and potential impacts on quality of life and aircrew retention.

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