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HISTORY

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OF THE

37TH FIGHTER WING

5 October 1989 - 31 December 1991

VOLUME 1 - NARRATIVE

NO FOREIGN DISSEMINATION

If declassified, review under AFR 12-30 before release/PV.

22 MAY 1992

OFFICE OF ORIGIN: 37FW/HO
CLASSIFIED BY: Multiple Sources
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[redacted]

HISTORY

OF THE

37TH FIGHTER WING

5 October 1989 - 31 December 1991

VOLUME 1 - NARRATIVE

Assigned To:

Twelfth Air Force
Tactical Air Command

Stationed At:

Tonopah Test Range, Nevada

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Historian

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Commander

Date: 22 MAY 1992

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NO FOREIGN DISSEMINATION

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OFFICE OF ORIGIN: 37FW/HO

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NO FOREIGN DISSEMINATION

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F-117A Stealth Fighter (U)

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Preface (U)

(U) The production of this history was more than a little complicated by several factors. As the historian of record, my tenure with the 37th Fighter Wing at the time of publication is less than one year. This is hardly a sound basis for preparing a 2 1/4 year backlog record of the most revolutionary and dynamic organization in the Air Force.

(U) A second complicating factor which slowed production came in the form of untimely guidance on the regrading of SENIOR TREND documentation. The bulk of this history had already been prepared when it became necessary to return to the text and the footnotes to delete most Special Access Required (SAR) designations. In fact, only one supporting document used in the preparation of this history remains SAR. That document, the SENIOR TREND security guide itself, has been deleted from the supporting document collection and judged non-critical to future historical requirements.

(U) A third complicating factor is related to the second, as well as the ongoing transfer of Stealth assets to Holloman AFB, New Mexico. The current archives contain approximately 5,000 documents which must be reviewed for declassification or regrading action prior to shipment to Holloman. History production came to a virtual standstill while a project was set in motion to prepare for that shipment in June 1992.

(U) Nevertheless, I believe I have met the required learning curve with the production of an issues-oriented history covering the most important aspects of the Stealth Fighter's evolution. When used in conjunction with the DESERT SHIELD/STORM contingency historical reports from August 1990 - March 1991, the special studies "Nighthawks Over Iraq" and "History and Lineage of the F-117A Stealth Fighter Organizations," and the 1988 and 1989 histories of the 4450th Tactical Group, future researchers will find the answers to most of their questions. And that, after all, is as much as we can expect from any history.

VINCENT C. BRESLIN, SMSgt, USAF
Historian

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Chronology of Events (U)

1989	Event
5 Oct	(U) The 37th Tactical Fighter Wing relocated without personnel and equipment from George AFB, California, to Tonopah Test Range, Nevada. (p 1)
	(U) Col Anthony J. Tolin assumed command of the 37th Tactical Fighter Wing. Col Gary A. Voellger became vice commander on the same day. (pp 3, 103 & 106)
	(U) Headquarters Tactical Air Command activated the 415th and 416th Tactical Fighter Squadrons and the 417th Tactical Fighter Training Squadron at Tonopah Test Range, Nevada. (p 1)
	(U) Headquarters Tactical Air Command activated the 37th Combat Support Group, 37th Transportation, Supply, Medical, Security Police, Civil Engineering, Aircraft Generation, Equipment Maintenance, and Component Repair Squadrons, and Detachment 37 of the 4400th Management Engineering Squadron at Tonopah Test Range, Nevada. (p 1)
	(U) Lt Col Gary L. Henriksen assumed command of the 37th Medical Squadron. (p 106)
	(U) Col Klaus J. Klause became Deputy Commander for Operations; Lt Col William J. Lake assumed command of the 415th Tactical Fighter Squadron; Lt Col Gerald C. Carpenter took command of the 416th Tactical Fighter Squadron; and, Lt Col Keat Griggers took command of the 417th Tactical Fighter Training Squadron. (p 107)

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1989 (Cont.)	Event
5 Oct (Cont.)	(U) Col Dennis G. Haines became Deputy Commander for Maintenance; Maj John W. Weaver assumed command of the 37th Aircraft Generation Squadron; Maj George R. Kelty took command of the 37th Component Repair Squadron; and, Maj Louise A. Eckhardt became commander of the 37th Equipment Maintenance Squadron. (p 107)
	(U) Col Shelby N. Cordon became Deputy Commander for Resource Management; Lt Col F. Badger Johnson III became 37th Supply Squadron Commander; and, Maj Scott K. Claypool took command of the 37th Transportation Squadron. (p 107)
	(U) Col Raymond J. Bartholomew became 37th Combat Support Group Commander; Maj Jerry M. Kerby took command of the 37th Security Police Squadron; and, Lt Col Frederick C. Smith took command of the 37th Civil Engineering Squadron. (p 108)
30 Oct-2 Nov	
3 Nov	(U) Lt Col Ralph W. Getchell III assumed command of the 415th Tactical Fighter Squadron. (p 107)
3-7 Dec	
14 Dec	
17 Dec	

[redacted]

1989 (Cont.)

20 Dec

26 Feb-
9 Mar

23 Mar (U) Lt Col Robert J. Maher assumed command of the 417th Tactical Fighter Training Squadron. (p 107)

3 Apr (U) Assistant Secretary of Defense for Public Affairs, Mr. Pete Williams, publicly disclosed the F-117A's mission and capabilities at a press conference in Washington D.C. (p 14)

16-19 Apr

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1990 (Cont.)	Event
21 Apr	(U) Colonel Tolin and the 37th Tactical Fighter Wing hosted an open house at Nellis AFB to publicly display the F-117A Stealth Fighter. (pp 14-15)
10 May	
1 Jun	(U) Col Joseph B. Gaskin II became Deputy Commander for Maintenance. (p 107)
8 Jun	(U) Maj William M. Kanyusik took command of the 1880th Communications Squadron vice Maj Daniel R. Dinkins, Jr. (p 108)
19-28 Jun	[illegible] (pp 15-21)
1 Jul	(U) Col Robert C. Huff became 37th Tactical Fighter Wing Vice Commander. (p 106)
12 Jul	(U) Lockheed delivered the wing's 59th and last F-117A. (p 4)
27 Jul	(U) Maj Frank R. Bogart assumed command of the 37th Transportation Squadron. (p 108)
30 Jul-3 Aug	
1 Aug	

[redacted]

[redacted]

1990 (Cont.)	Event
10 Aug	(U) Lt Col Gregory T. Gonyea assumed command of the 416th Tactical Fighter Squadron. (p 107)
17 Aug	(U) Col Alton C. Whitley assumed command of the 37th Tactical Fighter Wing. (pp 37, 103 & 106)
	(U) Colonel Whitley convened a meeting of the 37th Tactical Fighter Wing battlestaff to begin planning the Stealth Fighter deployment in support of Operation DESERT SHIELD. (p 37)
19 Aug	
20 Aug	
21 Aug	
11-13 Sep	(U) Members of the 37th Tactical Fighter Wing took part in a meeting of a Site Activation Task Force (Relocation SATAF I) at Holloman AFB for the planned transfer there of the F-117A Stealth Fighters. (pp 88-89)
27-29 Sep	
3 Oct	

[redacted]

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1990 (Cont.)	Event
18 Oct	
25-26 Oct	
12 Nov	
15 Nov	
19 Nov	(U) Maj Kim Maurer assumed command of the 37th Supply Squadron. (p 108)
2 Dec	(U) Lt Col Timothy J. Schrader assumed command of the 37th Medical Squadron. (p 106)
4 Dec	
7 Dec	(U) Capt William M. Getter assumed command of the 37th Equipment Maintenance Squadron. (p 107)
10 Dec	(U) Maj Louise A. Eckhardt assumed command of the 37th Aircraft Generation Squadron. (p 107)
20 Dec	(U) Headquarters Central Air Forces redesignated the wing as the 37th Tactical Fighter Wing (Provisional) to reflect its temporary reassignment from Tactical Air Command. (p 42)

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1990 (Cont.)	Event
23 Dec	
24 Dec	
	(p 42)

1991	Event
17 Jan	(U) Twenty-nine Stealth Fighters opened the 37th Tactical Fighter Wing (Provisional)'s DESERT STORM wartime account against Iraq by hitting 26 high value targets in and around Baghdad. (pp 51-52)

NOTE: A day-by-day, wave-by-wave account of F-117A operations against Iraq is contained in the Contingency Historical Records of the 37th Tactical Fighter Wing (Provisional).

28 Feb	(U) Headquarters Central Air Forces suspended all air combat operations against Iraq to give that nation an opportunity to sign a cease fire agreement.
1 Mar-1 Apr	(U) In the wake of Operation DESERT STORM, the 37th maintained full presence in Saudi Arabia awaiting incremental return to the United States. (p 76)
5-7 Mar	(U) Members of the 37th Tactical Fighter Wing took part in a meeting of a Site Activation Task Force (Relocation SATAF II) at Holloman AFB for the planned transfer there of the F-117A Stealth Fighters. (pp 89-90)
8 Mar	(U) Maj James L. Wenzel took command of the 37th Civil Engineering Squadron. (p 108)

[redacted]

30 Apr	(U) Headquarters Tactical Air Command activated the 37th Communications Squadron and consolidated it with the 1880th Communications Squadron. (p 91)
10 May	(U) Lt Col Barry E. Horne assumed command of the 417th Tactical Fighter Training Squadron. (p 107)
31 May	(U) Col Charles K. Yard became Deputy Cormander for Resource Management. (p 107)
7 Jun	(U) Lt Col Bruce E. Kreidler assumed command of the 415th Tactical Fighter Squadron. (p 107)
1 Jul	
9-11 Jul	(U) Members of the 37th Tactical Fighter Wing hosted a meeting of a Site Activation Task Force (Reuse SATAF I) at Tonopah Test Range to place the airfield there in a caretaker status. (pp 96-97)
21 Jul	(U) Col Raleigh Harrington became Deputy Commander for Operations. (p 107)
25 Jul	(U) Capt Joseph R. Behrman took command of the 37th Component Repair Squadron. (p 107)
25 Jul (Cont.)	(U) Maj George R. Kelly assumed command of the 37th Equipment Maintenance Squadron. (p 107)

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1991 (Cont.)	Event
13 Aug	(U) Colonel Klause and other dignitaries broke ground at Holloman AFB for construction projects in preparation for the transfer there of the F-117A Stealth Fighters. (p 92)
14 Aug	(U) Maj Bennie L. Thurman took command of the 37th Component Repair Squadron. (p 107)
1 Oct	(U) Headquarters Tactical Air Command redesignated the wing as the 37th Fighter Wing. (pp 1-2)
22-24 Oct	(U) Members of the 37th Tactical Fighter Wing took part in a meeting of a Site Activation Task Force (SATAF III) at Holloman AFB for the planned transfer there of the F-117A Stealth Fighters. (pp 92-93)
1 Nov	(U) Headquarters Tactical Air Command redesignated the wing's three operational flying squadrons as the 415th, 416th, and 417th Fighter Squadrons. (pp 2 & 103)
	(U) The 37th Fighter Wing reorganized under an Air Force-wide restructure program, deleting its Deputy Commanders for Operations, Maintenance, and Resource Management positions and forming the 37th Operations and Logistics Groups in their place. (pp 2, 103-104, 107-108 & 110)
	(U) Headquarters Tactical Air Command inactivated the 37th Aircraft Generation and Component Repair Squadrons and renamed the 37th Equipment Maintenance Squadron as the 37th Maintenance Squadron. Each of the wing's three flying squadrons established Aircraft Maintenance Units to carry on the functions of the wing's outgoing maintenance squadrons. (pp 2 & 110)

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1991 (Cont.)	Event
1 Nov (Cont.)	(U) Col Raleigh Harrington became 37th Operations Group Commander. (p 107)
	(U) Lt Col Michael T. Merritt became 37th Operations Support Squadron Commander. (p 107)
	(U) Col Joseph B. Gaskin II became 37th Logistics Group Commander. (p 107)
	(U) Capt Jennifer Whitnack 37th Logistics Support Squadron Commander. (p 107)
	(U) Maj Louise A. Eckhardt assumed command of the 37th Maintenance Squadron. (p 108)
5-7 Nov	(U) Members of the 37th Tactical Fighter Wing hosted a meeting of a Site Activation Task Force (Reuse SATAF II) at Tonopah Test Range to place the airfield there in a caretaker status. (p 97)
21 Nov	
31 Dec	(U) Lt Col Donald P. Higgins, Jr. became 37th Operations Support Squadron Commander. (p 107)
	(U) Lt Col Michael T. Merritt assumed command of the 416th Fighter Squadron. (p 107)

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Executive Summary

(U) In the waning months of the Cold War the United States Air Force publicized its most advanced and most secret weapon of war, the F-117A Stealth Fighter, and set about the job of integrating Stealth technology with its more conventional methods of combat operations. To do that, it effected a "black world" to "white world" transition in the organizational, geographic, training, and operational aspects of the Stealth Fighter's environment.

(U) In October 1989, Headquarters Tactical Air Command replaced the purpose-made, covert group it had established in 1982 at Tonopah Test Range, Nevada, to guard and govern the development of the F-117A, with a unit rooted in the conventions of standard wing organization: the 37th Tactical Fighter Wing. After little more than two years and a name change later, the 37th Fighter Wing stood on the brink of organizational extinction--ready to hand over the custody of the Stealth Fighter to the 49th Fighter Wing at Holloman AFB, New Mexico.

(U) In the midst of transition, the Stealth Fighter made its presence felt at training ranges beyond the borders of Nevada, as it first migrated to nearby California and later moved east of the Mississippi to Louisiana and Florida. Publicly, the F-117A took its place in the limelight on a national and international scale as it became the darling of static displays at bases throughout the United States and Canada, and at the world famous Paris Air Show in 1991. At home on Tonopah, the cloak of invisibility lowered to permit pilot training with T-38s and F-117As flying in daylight tandem.

(U) In an operational theme, as the threat of global war declined with the gradual collapse of the Soviet Union, an era of heightened regional conflict emerged, challenging United States national interests around the world. The United States Air Force responded to this new and evolving threat by "front lining" the Stealth Fighter to spearhead its theater tactical forces in direct opposition to the enemies

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of democratic principle. Operations JUST CAUSE and DESERT STORM unsheathed a 'terrible swift sword' as the F-117A petrified the Panamanian Defense Force and neutralized the Iraqi war machine.

(U) DESERT SHIELD training and exercise regimes afforded an excellent platform for wing internal evaluation and procedural refinement. The 37 FW's 415th Aircraft Maintenance Unit (AMU) regenerated 17 of 18 415th Fighter Squadron (FS) F-117As to fully mission capable status within 30 hours after arrival in theater. Later, the 416 AMU regenerated the same number of

aircraft for the 416 FS within 18 hours. Stealth pilots honed their combat skills prior to the outbreak of war during three SNEAKY SULTAN operational readiness exercises, a camel shoot competition, and a CENTAF-sponsored exercise called IMMINENT THUNDER.

(U) Meanwhile at Tonopah, the wing's 417 FS (Fighter Training Unit) continued to provide initial qualification training (IQT) for newly assigned Stealth pilots. Additionally, the 417th assumed the mission qualification training (MQT) of IQT graduates normally handled by the two operational squadrons deployed to Saudi Arabia. At the outbreak of Operation DESERT STORM, the 417th ceased training and deployed its aircraft and instructor pilots to Saudi Arabia to assist in precision attacks on Iraq.

(U) Following the 37 TFW's redeployment to Tonopah, quarterly rotations of eight unit aircraft and 350 support personnel provided a measure of fresh people and fresh weapon systems for sustained Stealth operations in Saudi Arabia. Post war 37th wing operations reflected a new wing approach to contingency preparation. Instead of simply testing mobility buildup and simulated deployment as they had during local unit readiness exercises before the Gulf War, the wing's exercise evaluation team tasked squadron elements to actually mobilize and deploy to another USAF base, Mountain Home AFB, Idaho. That deployment featured veiled F-117A movements to and low visibility flying operations from the host base and a Stealth Fighter organization operating in classic conditions: covert night operations.

(U) Retaining the capability to perform covert war and contingency operations contradicted the 37 FW's prime peacetime drive toward conventional "white world" program conversion. Programmed to leave the sanctuary of its remote desert base at Tonopah Test Range, the 37th helped form site activation task forces (SATAFs) for a move to Holloman AFB, New Mexico, and the closure of Tonopah itself. By virtue of their detailed knowledge of Stealth-specific operations, 37th FW construction planners at Holloman AFB facilitated the special needs and characteristics of the Stealth Fighter. Hangar ventilation design revision alone saved $1.5 million in programmed construction costs. Similar insight fostered the decision to relocate other

systems-unique facilities and equipment from Tonopah to Holloman. These included the jet engine intermediate maintenance shop, an avionics repair and calibration facility, the materiel application and repair section's (MARS's) engine exhaust vacuum drying system, the inertial navigation system (INS) calibration laboratory, and an electrical test bench. Wing technicians designed and constructed each of these facilities, collectively saving the Air Force $2,800,000 in their first year of operation and more than $100,000,000 over the projected life span of the F-117A in depot maintenance costs. Quite apart from this material savings, most of these innovations immediately preceded Operation DESERT STORM and extended the combat durability of the F-117A during that conflict.

(U) Another important "white world" initiative entailed 37 FW airshow flying and static displays. Two F-117As stood static at the 1991 Paris Air Show, showcasing American technological advances to the world. Additional international airshows took the Stealth Fighters to two bases in Canada. Over Washington D.C., a single F-117A flew lead in a 16-ship flyover of the DESERT STORM Victory Day Parade. A detachment of F-117As flew out of Langley AFB, Virginia, for static displays and flyovers all along the east coast of the United States. Finally, Stealth pilots flew directly from Tonopah to take part in airshows throughout North and South America to include Hawaii. Combining this function with their normal aircrew duties at Tonopah, post-war media interviews, and speaking engagements, participating Stealth pilots and support personnel exceeded, on average, a staggering 300 workdays per year.

(U) Numerous individual honors were earned by members of the 37 FW, typifying the dedication and professionalism that permeated the Stealth Fighter Wing. Capt Marcel Kerdavid was awarded the Air Force's Silver Star for gallantry during the initial phase of Operation DESERT STORM's air campaign. Additionally, 133 Air Medals, one Legion of Merit Award, three Bronze Stars, two Meritorious Service Medals, 45 Distinguished Flying Crosses, 107 Air Force Commendation Medals, 89 Aerial Achievement Medals, and 101 Achievement Medals highlighted the wing's deployed as well as stateside efforts.

(U) These awards, combined with the achievement of functional category awards, set the 37 FW apart from other Air Force units. Specifically, SSgt Bill Knepshield earned the United States Air Force's and Tactical Air Command's 1991 Outstanding Supply Technician Award. MSgt Donald Collins was selected as Twelfth Air Force's 1990 Outstanding Senior NCO Supply Technician of the Year. TSgt Dan Thorsby and Mr. Dave Swenson, 37th Maintenance Squadron, were both awarded Twelfth Air Force's 1991 Leo Marquez Award. Mr. Swenson was later named Tactical Air Command's Civilian Technician of the Year. The Wing's Logistics Plans Division was selected as the Twelfth Air Force's Plans and Programs Unit of the Year for 1991 while TSgt Rene Simard won Twelfth Air Force Logistics Technician of the Year for 1991. These individual accomplishments characterized the qualities of the dedicated men and women who made aviation history with the application of Stealth technology and precision munitions in Operation DESERT STORM. Airpower will never be the same.

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I. RELOCATION AND ORGANIZATION

Unit Composition

(U) The fifth of October 1989 ushered in a new and dramatic era in the life cycle of the 37th Tactical Fighter Wing (TFW). Under the authority of Headquarters Tactical Air Command (TAC) Special Order GB-57 (20 September 1989), the wing moved from George Air Force Base (AFB), California, to Tonopah Test Range, Nevada, without personnel and equipment. Upon relocation, the 37 TFW absorbed the manpower, equipment, and stealth mission of the concurrently inactivated (and former Tonopah base host) 4450th Tactical Group (TG).[1]

(U) In conjunction with that move, Headquarters TAC activated the 415th and 416th Tactical Fighter Squadrons (TFS), and 417th Tactical Fighter Training Squadron (TFTS) (their World War II "Nightfighter" lineage figured strongly in their selection for activation) to assume the operational roles of the 4450th's three flying squadrons. At the same time, the activation of the 37th Combat Support Group (CSG), the 37th Transportation, Supply, Medical, Security Police, Civil Engineering, Aircraft Generation, Equipment Maintenance, and Component Repair Squadrons, and Detachment 37 of the 4400th Management Engineering Squadron furnished the organizational elements needed to sustain the mission support structure already in place at Tonopah.[2]

(U) Headquarters TAC redesignated the wing as the 37th Fighter Wing (FW) on 1 October 1991.[3] A month

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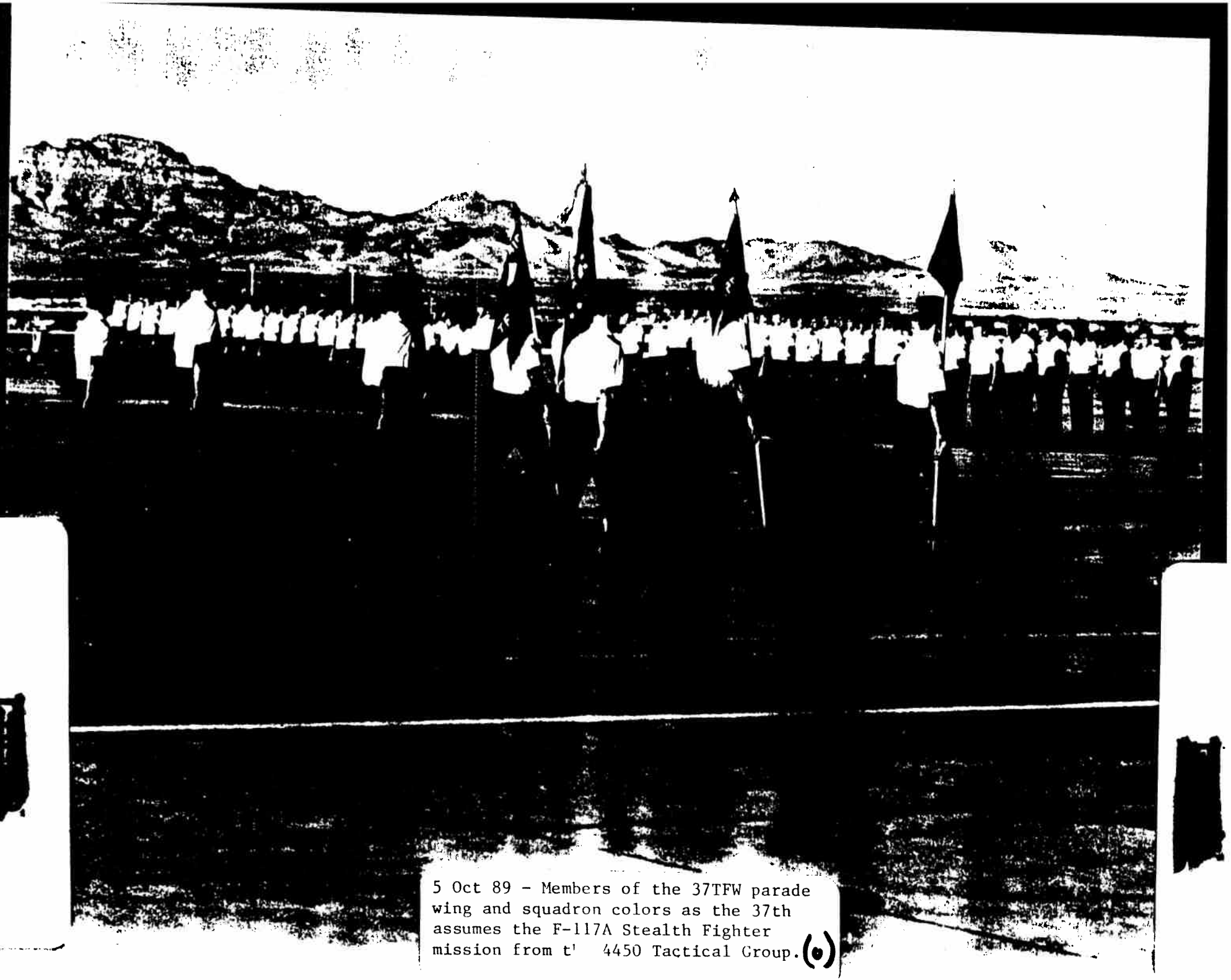
later, the Command redesignated the 415th, 416th, and 417th squadrons as Fighter Squadrons (FS)[4] and reorganized the wing under an Air Force-wide restructure program on 1 November 1991. That reorganization established an operations group and a logistics group in place of the tri-deputy structure used during the past several decades with flights under each group in place of staff agencies.[5]

(U) The functions of the 37th Operations Group (OG) changed dramatically. The Deputy Commander for Operations took on the mantle of Commander, 37 OG. The 415, 416, and 417 FSs realigned from under the 37 FW to under the 37 OG. Control over the wing's aircraft maintenance units (AMUs) shifted from the 37 Aircraft Generation Squadron (AGS) to the flying squadrons. Red AMU (F-117A) went to the 415 FS, Blue AMU (F-117A) moved under the 416 FS, and the 417 FS picked up White AMU (F-117A) and Black AMU (T-38A).

(U) The creation of the 37th Logistics Group (LG), however, entailed a similarly complicated restructure. The former Deputy Commander for Maintenance became the Commander, 37 LG, while the Deputy Commander for Resource Management became the Deputy Commander, 37 LG. All component units formerly aligned under the Deputies for Maintenance and Resource Management realigned under the new Logistics Group. In addition, the 37th Aircraft Generation Squadron and 37th Component Repair Squadron became inactivated and the 37th Equipment Maintenance Squadron became redesignated as the 37th Maintenance Squadron. That move consolidated

5 Oct 89 - 37TFW Commander, Col Tony Tolin, joins Lt Gen Peter Kempf, 12AF Commander, and Maj Gen Billy McCoy, USAFTFWC Commander, on the reviewing stand at Nellis AFB, Nevada, as the 37th assumes the F-117A Stealth Fighter mission from the inactivating 4450 Tactical Group. (U)



5 Oct 89 - Members of the 37TFW parade wing and squadron colors as the 37th assumes the F-117A Stealth Fighter mission from t' 4450 Tactical Group. (U)

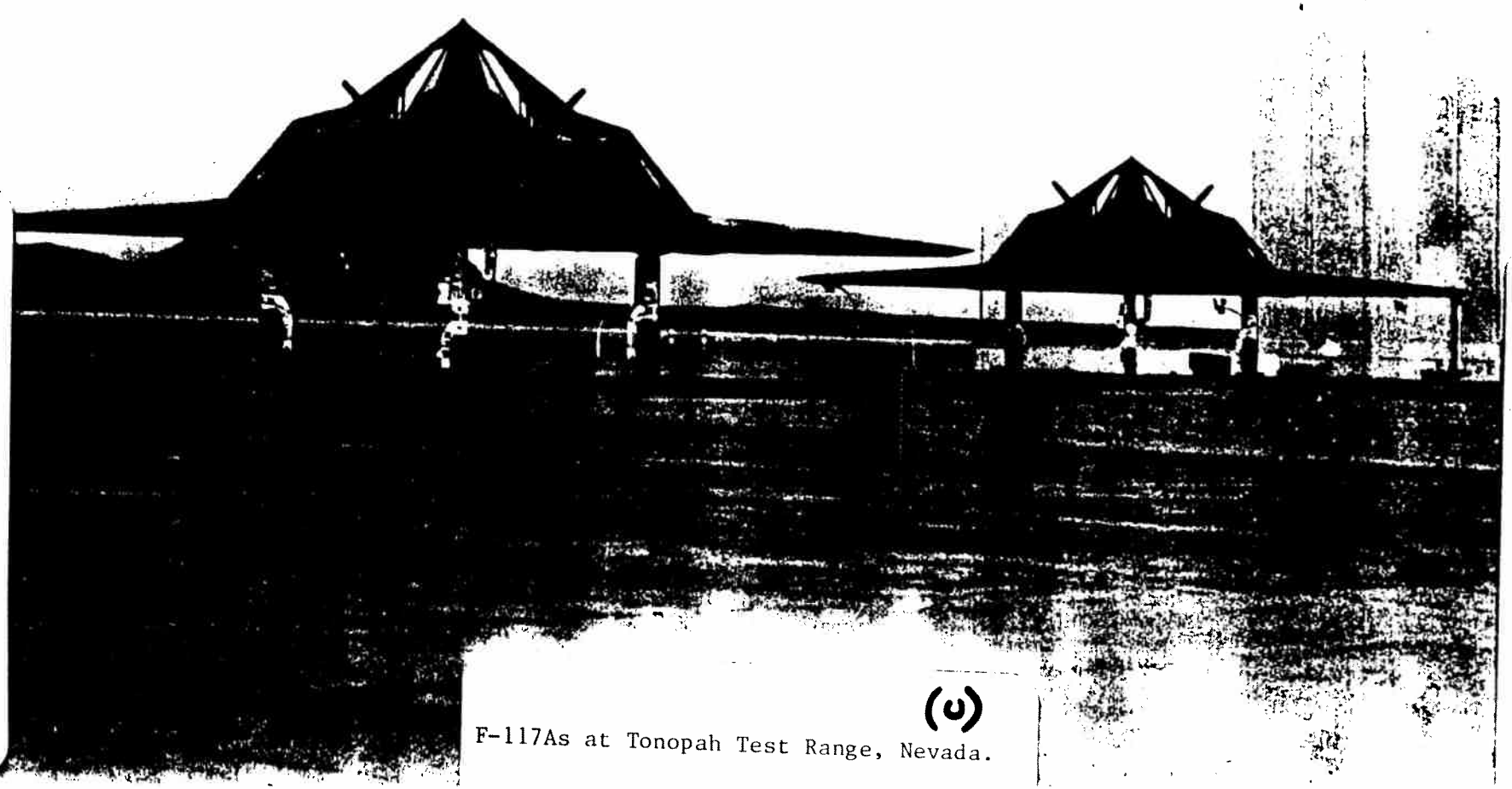
most wing maintenance functions under one squadron command, excepting the AMUs reassigned directly to the three fighter squadrons.[6]

Tonopah Test Range

(U) Situated approximately 150 miles north of Las Vegas in Nye County, Nevada, Tonopah Test Range hosted the secret Air Force/Lockheed Corporation development of the F-117A Stealth Fighter since program conception in the late 1970s. While bare base facilities at Tonopah (more specifically Range Area 10) predated the Stealth Fighter program, the activation of the 4450th Tactical Group in 1979 fostered large-scale construction of a full-fledged airfield. By the time the 37 TFW arrived on scene, Tonopah featured a 12,000 foot runway, 21 aircraft (four maintenance and 17 triple-bayed parking) hangars, 82 dormitories (ranging from 20 to 80 beds each), and a full range of mission support facilities. The four score and two dormitories housed more than 3,000 military and civilian members of the 37 TFW community who commuted each week from Nellis AFB (Las Vegas), Nevada, aboard a chartered fleet of American Trans Air Boeing 737s.[7]

Command and Control

(U) Col Anthony J. Tolin (formerly the commander of the 4450 TG) accepted the banner of command for the reassigned 37 TFW[8] from Lt Gen Peter T. Kempf, Twelfth Air Force Commander, during a brief change of command ceremony at Nellis AFB, Nevada, on 5 October 1989. The presentation of command by General Kempf to Colonel Tolin symbolized a chain of command revision relative



(U)

F-117As at Tonopah Test Range, Nevada.

to the 37th's relocation. Thenceforth, the 37 TFW operated directly under the administrative and operational command of Headquarters Twelfth Air Force vice its former subordination to the 831st Air Division at George AFB.*

Force Composition

* (U) Lockheed Corporation produced a total of 59 F-117As between 1979 and 1990. One crashed during early Lockheed testing, two others crashed while assigned to the 4450 TG, and a fourth (a preproduction aircraft incapable of operational missions) was used solely for aircraft battle damage repair (ABDR) training.

** (U) During most of the 'black program' years, F-117As flew at night only. Daytime flying began after public acknowledgement of the aircraft's existence in November 1988.

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Stealth Fighter Description

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Chapter I Endnotes

1. TAC Special Order GB-57 (U), Subj: Relocation of 37 TFW and Inactivation of 4450 TG, 20 Sep 89, SD 1.

2. Ibid; TAC Movement Order 7 (U), Subj: Movement of 37 TFW, 37 AGS, 37 CRS, and 37 EMS, 20 Sep 89, SD 1.

3. TAC Special Order GB-100 (U), Subj: Redesignation of 37 TFW to 37 FW, 27 Sep 91, SD 1.

4. TAC Special Order GB-12 (U), Subj: Redesignation of Fighter Squadrons, 1 Nov 91, SD 1.

5. TAC Special Order GB-15 (U), Subj: 37 FW Restructure, 37 EMS Redesignated 37 MS, and Inactivation of 37 AGS and 37 CRS, 1 Nov 91, SD 1.

6. Ltr (U), 37 FW/MO to 37 FW, Group, & Squadron Cmdrs, Subj: 37 FW Reorganization, 3 Dec 91, w/1 Atch: 37 FW Organizational Structure and Key Personnel Listings, SD 2; Chrtbk (U), 37 TFW "Organization and Functions Chartbook," 1 Nov 90, SD 3.

7. Records (U), 37 CES Real Property Maintenance Records, filed 37 CES/DEEVR; Contract (U), American Trans Air w/MAC, FH1626-91-D0028, 1 Apr 91, filed 37 FW/LGC; Hist (U), 37 CES "TTR...Then and Now: Home of the Stealth Fighter," 1 May 90, SD 55. Note: American Trans Air assumed this contract on 1 Apr 91 vice the original contractor: Key Airlines.

8. Biog (U), 37 TFW/PA Biography of Col A.J. Tolin, Nov 89, SD 4.

9. See note 1, Chapter 1.

10. Msg (U), TAC/LGMA-AVDO to 37 TFW/MAMP, Subj: F-117A Aircraft Assigned, 191355Z Apr 91, SD 5; Msg (U), TAC/LGMF to SM-ALC/MMER, Subj: Acft Battle Damage Repair (ABDR) Trainer, 261734Z Apr 90, SD 6; Rprt (U), 37 TFW F-117A "Monthly Data Analysis Report," Oct 89 SD 7; Rprt (U), 37 TFW F-117A "Monthly Maintenance Data Analysis Report," (hereafter known as "Monthly MDAR"), Nov 89, SD 8; Rprt (U), 37 TFW F-117A "Monthly MDAR," Dec 89, SD 9; Rprt (U), 37 TFW F-117A "Monthly MDAR," Jan 90, SD 10; Rprt (U), 37 TFW F-117A "Monthly MDAR," Feb 90, SD 11; Rprt (U), 37 TFW F-117A "Monthly

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11. Rprt (U), 37 TFW T-38 "Monthly MDAR," Oct 89, SD 26; Rprt (U), 37 TFW T-38 "Monthly MDAR," Nov 89, SD 27; Rprt (U), 37 TFW T-38 "Monthly MDAR," Jan 90, SD 28; Rprt (U), 37 TFW T-38 "Monthly MDAR," Feb 90, SD 29; Rprt (U), 37 TFW T-38 "Monthly MDAR," Mar 90, SD 30; Rprt (U), 37 TFW T-38 "Monthly MDAR," Jun 90, SD 31; Rprt (U), 37 TFW T-38 "Monthly MDAR," Jul 90, SD 32; Rprt (U), 37 TFW T-38 "Monthly MDAR," Aug 90, SD 33; Rprt (U), 37 TFW T-38 "Monthly MDAR," Sep 90, SD 34; Rprt (U), 37 TFW T-38 "Monthly MDAR," Nov 90, SD 35; Rprt (U), 37 TFW T-38 "Monthly MDAR," Dec 90, SD 36; Rprt (U), 37 TFW T-38 "Monthly MDAR," Jan 91, SD 37; Rprt (U), 37 TFW T-38 "Monthly MDAR," Feb 91, SD 38; Rprt (U), 37 TFW T-38 "Monthly MDAR," Mar 91, SD 39; Rprt (U), 37 TFW T-38 "Monthly MDAR," Apr 91, SD 40; Rprt (U), 37 TFW T-38 "Monthly MDAR," May 91, SD 41; Rprt (U), 37 TFW T-38 "Monthly MDAR," Jun 91, SD 42; Rprt (U), 37 TFW T-38 "Monthly MDAR," Jul 91, SD 43; Rprt (U), 37 TFW T-38 "Monthly MDAR," Aug 91, SD 44; Rprt (U), 37 TFW T-38 "Monthly MDAR," Sep 91, SD 45.

12. Plan (U), 37 TFW "Weekly Maintenance Plan," 30 Oct-5 Nov 89, SD 46; Plan (U), 37 TFW "Weekly Maintenance Plan," 4-10 Dec 89, SD 47; Plan (U), 37 TFW "Weekly Maintenance Plan," 18-24 Jun 90, SD 48; Plan (U), 37 TFW "Weekly Maintenance Plan," 3-9Dec 90, SD 49; Plan (U), 37 TFW "Weekly Maintenance Plan," 3-9 Jun 91, SD 50; Plan (U), 37 FW "Weekly Maintenance Plan," 9-15 Dec 91, SD 51.

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13. Newsclip (U), Nellis AFB Bullseye, "Last F-117A delivered to AF, 37th TFW," 20 Jul 90, pl, SD 52; Msg (C/Decl OADR), Ber Reiter, F-117 Program Director to Mult Address, Subj: Aircraft Delivery S.N. 88-0843, 061831Z Jun 90, SD 58; Msg (U), TAC/DO to USAF/XOO & OSAF/PA, Subj: F-117 Flyover and Static Display at Lockheed Facilities, 281230Z Jun 90, SD 59.

16. See above note, info used is (S/Decl OADR).

17. Ibid, info used is (S/Decl OADR).

18. Ibid, info used is (S/SAR/Decl OADR).

19. Ibid, info used is (S/Decl OADR).

[redacted]

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(U) The primary reason for acknowledging the existence was to allow full integration into theater war plans. We needed to work with other units in Red Flag, Blue Flag, and Checkered Flag. We needed to talk with war planners so their plans would incorporate tankers to refuel us and airlift to get the wing there to participate.[18]

Nellis Open House

(U) The normalization of Stealth Fighter operations shifted into high gear in April 1990. The 37 TFW satisfied another stated objective of the normalization process as it placed the F-117A on public display for the first time during an "open house" at Nellis AFB on 21 April.[13] That event closely followed the 3 April 1990 public disclosure of the aircraft's mission and capabilities* by Assistant Secretary of Defense for Public Affairs, Mr. Pete Williams, during a press conference in Washington D.C.[14]

(U) The F-117A's public debut at Nellis began at 0900 with the arrival of two Stealth Fighters from Tonopah Test Range. Lt Gen Peter T. Kempf, Twelfth Air Force Commander, Colonel Tolin, and Mr. Ben Rich, Lockheed's Vice President for Advanced Development Projects, provided welcoming remarks to a crowd of approximately 100,000 people. Next, security police lowered the security cordon around the Stealth Fighters parked on static display to allow 37 TFW personnel, their families, and members of the press to get a closeup look at the aircraft. Finally, at 1300, members of the general public got a good look at the Air Force's best kept secret.[15]

(U) In remarks concerning the F-117A's public debut, Colonel Tolin stressed the relationship between that debut and its impact on the evolution of the normalization process:

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* (U) Not to be confused with public disclosure of the aircraft's "existence" in November 1988 as mentioned earlier in this chapter.

F-117As of the 37TFW executed Exercise SERIOUS HARMONY at England AFB, LA, from 19-28 June 1990. (U)

[redacted]

Chapter II - Endnotes

1. Draft Msg (U), OSAF/PA to ALMAJCOM/CC/PA, Subj: Public Affairs Guidance - F-117A Announcement, 3 Oct 68, SD 56; Ltr (S/Decl OADR), HQ USAF/ADCS Plans & Ops to HQ TAC Senior Trend Prog Off, Subj: F-117A Reclassification Announcement, 031250Z Nov 88, w/1 Atch: Msg (S/Decl OADR), HQ USAF/XO to CINCAFLANT/CC, et al., Subj: F-117A Reclassification and Integration, 081203Z Nov 88, SD 57.

10. Ibid, info used is (S/Decl OADR).

11. Ibid, info used is (S/NF/Decl OADR).

[redacted]

12. Ltr (S/Decl OADR).

13. Ltr (U), HQ USAFTFWC/CC to HQ 12AF/CC, Subj: F-117A Disclosure Agenda, 26 Mar 90, SD 65; Msg (U), HQ TAC/CV to OSAF/PA, Subj: Public Disclosure Plan for F-117A, 152145Z Mar 90, SD 66; Videotape (U), F-117A Public Debut, 21 Apr 90, SD 145.

14. Newsbrief (U), Assist SECDEF/PA, Subj: Public Disclosure of F-117A, 3 Apr 90, SD 67; Videotape (U), DOD Press Conference, 3 Apr 90, SD 146.

15. Program (U), 37 TFW "F-117A Public Debut," Schedule of Events, 21 Apr 90, SD 68; Newsclip (U), Spring Valley Times, "Stealth stirs hugh crowd with debut," 25 Apr 90, SD 69.

16. Mag Art (U), Airman, "Secret's Out," Jul 90, pp 12-13.

17. Rprt (S/Decl OADR),

18. Ibid; Intvw (S/Decl OADR),

19. See above note.

20. See note 17.

21. Ibid.

22. Ibid.

23. Ibid.

24. See note 18.

25. Ibid.

26. See note 17.

27. Ibid, info used is (S/Decl OADR).

28. Ibid, info used is (S/Decl OADR).

29. Ibid.

[redacted]

30. Ibid.

31. Msg (S/Decl OADR),

32. Msg (S/Decl OADR),

33. Plan (S/Decl OADR),

34. Msg (S/Decl OADR),

35. Msg (S/Decl OADR),

36. Msg (S/Decl OADR),

37. Msg (S/Decl OADR),

(S/Decl OADR),

Msg (S/Decl OADR),

(S/Decl OADR)

38. Msg (S/Decl OADR).

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III. OPERATION JUST CAUSE

Panama Politics

(U) In the midst of the F-117A normalization process came real-world tasking for the 37 TFW. Following a long period of political unrest between the Government of the United States (US) and Panama's military regime, US prosecutors in Tampa and Miami, Florida, issued drug trafficking indictments against General Manuel Antonio Noriega on 5 February 1988.[1] In response, Noriega was quoted as saying that the indictments were "a joke and an absurd political maneuver."[2] The New York Times cited unnamed State Department, White House, and Pentagon officials on their fears that the indictments would be counterproductive, causing Noriega to perhaps retaliate against US installations and citizens in Panama.[3]

(U) In mid-February 1988, Panama's President Eric Delvalle tried to step up the pressure against Noriega by offering the General a US State Department-approved assurance that the drug charges against him would be dropped if Noriega would step down and go into exile. Noriega refused. A few days later, Delvalle announced on national television that he had dismissed Noriega as commander of the Panama Defense Force (PDF). The National Assembly of Panama, however, failed to back Delvalle's power play and fired him from the presidency.[4] After a brief, six-month interlude (during which the United States had hoped to see Noriega removed from power by his own countrymen), President

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George Bush authorized the planning of a military campaign to invade Panama and arrest its dictator."

(U) I wanted something that would act like a giant stun grenade so that I could stun them in the barracks long enough to get the Rangers on the ground. But I did not want the collapse of those barracks. I didn't want another situation like the Marines' barracks in Beirut, not under any circumstances. So when I asked my air component commander,...what system the Air Force had that was accurate enough to give me a 95 [percent] assurance that I could place those bombs [within] 150 meters and it would not blast or collapse the targets, he said there was only one system and that's the F-117, and it's because of two reasons. One is, it lasers for itself, and the second, it can use 2,000 pound-bombs which because of the technology..., it is the most accurate system in the inventory.[23]

[redacted]

Chapter III - Endnotes

1. John Dinges, Our Man in Panama, (New York, 1990), "A Note on Sources."

2. Ibid, p 295.

3. Ibid, p 296.

4. Ibid, p 296.

5. Ibid, pp 296-297.

6. Intvw (S/Decl OADR),

CAUSE, 27 Mar 90, SD 81.

7. Intvw (S/Decl OADR),

8. Hist (S/NF/Decl OADR),

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TG Phase IV Training," 8 Aug 89, SD II-70, of 4450 TG Hist
Ltr (U), COMTAC Gen Russ to AFCOS Gen Welch, SECAF Rice Tonopah Orientation, w/1 Atch: "F-117 Employment Exercise Results," 28 Aug 89, SD II-70 of 4450 TG Hist for 1 Jan-5 Oct 89.

9. See note 6 above.

10. See notes 6 and 8 above.

11. Transcript (U), Press Conference with Lt Gen Stiner, 26 Feb 90, SD 83.

12. See note 8 above; Brief (S/Decl OADR),

13. See note 6 above.

14. See notes 6 and 8 above.

15. Ibid.

[redacted]

[redacted]

16. See notes 6, 8, 11, and 12 above: Msg (C/Decl OADR), [illegible] Rprt (S/NF/Decl OADR), [illegible] (S/Decl OADR); Brief (U), 12AF/LGXS, Subj: The USAF Contribution to Operation JUST CAUSE, w/1 Atch: Talking Paper on Operation JUST CAUSE Logistics, 10 Jan 90, SD 87; Certificate (U), Recog Cert, Gen M.R. Thurman & Lt Gen C.W. Stiner, Joint Task Force South, "Operation JUST CAUSE," SD 89.

17. See note 11 above.

18. See note 11 above.

19. See notes 6 and 8 above.

20. Msg (U), SECDEF/ASD/PA/DDI to AIG 8798, Subj: DOD News Briefing, 270058Z Dec 89, SD 88; Newsart (U), Aerospace Today, "F-117 missed Panama target due to pilot error, Pentagon says," 5 Apr 90, p 31B.

21. See note 8 above.

22. Ibid.

23. See note 11 above.

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IV. OPERATION DESERT SHIELD

Leadership and Tasking

(U) On 2 August 1990, Iraq invaded the Emirate of Kuwait in Southwest Asia. More than 100,000 Iraqi troops overran Kuwait City, quickly took possession of Kuwait's oil fields, and pushed south to the Saudi Arabian border. Within a week, the Iraqi invasion force numbered 170,000. On 8 August, the United Nations (UN) Security Council unanimously demanded the immediate and unconditional withdrawal of Iraqi troops from Kuwait. Iraq's Saddam Hussein ignored that order and began massing additional troops at the Turkish border on 9 August. Saudi Arabia and Turkey, both fearing a possible invasion by Iraq, UN forces to set up defensive positions in their homelands.[1]

(U) On 7 August 1990, President Bush ordered US ground and air forces to Saudi Arabia as part of the UN Coalition Force. Operation DESERT SHIELD had begun. F-15s deployed from Langley AFB, Virginia, to Saudi Arabia and the USS Saratoga battle group left Norfolk, Virginia, on the same day for the Persian Gulf.[2]

(U) Earlier, on 3 August 1990, the 37 TFW Commander, Colonel Tolin, terminated local exercise FAST JOG 90-05 prematurely to prepare for DESERT SHIELD deployment tasking. He directed his Deputy Commander for Resource Management to keep war readiness support kits (WRSK) (already packaged for FAST JOG simulated CHECKERED FLAG overseas deployment) ready for immediate use.[3]

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Col Alton C. Whitley, Jr., assumed command of the 37TFW on 17 August 1990 at Tonopah Test Range, Nevada. (U)

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(U) Col Alton C. Whitley, Jr. assumed command over the 37 TFW on 17 August 1990 from Colonel Tolin.[4] A former Stealth Fighter pilot with the 4450 TG and a veteran of the Vietnam conflict, Colonel Whitley's assignment as commander came only hours before the arrival of wing deployment orders to Saudi Arabia for Operation DESERT SHIELD.[5] Upon deployment notification, Colonel Whitley convened the 37 TFW battlestaff to begin processing people, cargo, and aircraft to an unsurveyed location in Saudi Arabia.[6]

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(U) On 29 November, the UN Security Council passed a resolution authorizing the use of force against Iraq if Iraqi forces failed to withdraw from Kuwait by 15 January 1991. President Bush called the UN resolution a "a strong and powerful message" to Iraq that shows the world is "deadly serious." The next day, the President demonstrated just how serious he was as he called for the deployment of 300 additional combat aircraft (including F-117A Stealth Fighters), bringing the total US air strength to 1,200 aircraft in the Persian Gulf area.[18]

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(U) Beginning on 5 December, Headquarters CENTAF underwent an internal restructure resulting in the creation of the 14th and 15th Air Divisions Provisional (ADP). The Command assigned the 37 TFW to the 14 ADP and on 20 December redesignated the wing as the 37 TFWP (Provisional). CENTAF also established provisional combat support groups under each wing in the Command.[20]

(U) On 24 December, the wing stood down to observe the Christmas holidays, with the exception of 10 aircraft and pilots standing alert duty. On 26 December, both Stealth squadrons resumed flying operations on a daily basis through the end of the year. The calendar year ended with the wing having flown 1,366 sorties and 2,664.8 hours in support of Operation DESERT SHIELD.[22]

Mission Support

(U) Upon arrival of the 37 TFW initial cadre support element at King Khalid AB on 20 August 1990, organizational commanders and staff agency chiefs took quick action to establish support functions, services, and provisions. Within a day, members of the deployed aircraft maintenance unit (AMU) had set up house on the flightline, broken out the WRSK and aerospace ground equipment (AGE), and marshalled the F-117As to their hangars. Thirty hours after the last Stealth Fighter landed, 17 of 18 aircraft had been regenerated to full mission capable status.[23]

(U) Meanwhile, a 37th Medical Squadron trauma team had set up a rudimentary clinic and had treated their first patient.[24] By 23 August, the 37th Security Police Squadron (SPS) had established a security operations center, absorbed a 44-man airbase ground defense flight from the 554th SPS at Nellis AFB, and manned a security perimeter for the wing's area of operations.[25] The Deputy Commander for Operations had established a three-man mini-command post for Stealth operations within the Saudi war room.[26] And the wing's resource management team had initiated contracts for general purpose vehicles, compacts, mini-buses, bottled water, food, trash collection, and fuel.[27]

(U) Through the end of the year, the support infrastructure of the 37 FW continued to grow. By early December wing strength had grown from 500 to 900 personnel. A significant portion of that strength

constituted the combat support element (later designated 37 Combat Support Group Provisional (CSGP)). The combat support element represented a conglomeration of many units, bases, and commands. The organization was not built from standard unit type codes (UTCs), nor did its members come wholly from the ranks of the 37 FW. Rather, it evolved in bits and pieces. The SPS alone had policemen from nine different units, eight bases, and four major commands.[28]

(U) Persian Gulf operations entailed the first large scale mobilization of Stealth resources--assets previously employed only on a small package (four to ten aircraft), short term (two to five days) exercise and contingency basis. To support the new concept of operations, Col Whitley instituted around-the-clock work schedules both at Tonopah and in Saudi Arabia. Production rates sky-rocketed in practically every aspect of unit operation. Personnel Support for Contingency Operations (PERSCO) teams (security, medical, and personnel specialists) processed more than 900 people through deployment mobility work centers while achieving 100 percent strength accountability of deployed forces. Wing legal specialists prepared 912 Last Wills and Testaments and 823 Powers of Attorney. The communications squadron transmitted more than 99,000 AUTODIN messages. Base supply built, issued, and inventoried more than 1,300 mobility bags while stocking 47 WRSK pallets. Air freight teams shipped nearly 900 tons of cargo and ground support equipment aboard 40 cargo aircraft. The comptroller division managed 1,250 personnel travel vouchers and nearly 23,000 military pay transactions. Aircraft maintenance

units (AMUs) built-up and furnished 2,142 tons of precision guided munitions in support of more than 1,200 combat sorties and 6,900 flying hours. In a corporate sense, this was TEAM STEALTH at its very best.[29]

Lessons Learned

(U) Over the course of Operation DESERT SHIELD, 37 TFW deputy commanders, squadron commanders, and staff agency chiefs identified a wide variety of lessons learned which they later used to modify unit contingency and mobility plans and develop more appropriate deployment packages. They also furnished their findings to Headquarters CENTAF in the expectation that the more generic of these could be used, in conjunction with lessons learned by other wings, to improve overall Air Force operational concepts.[30]

* (U) See Chapter VI for discussion on FAST JOG 90-04 local readiness exercise.

(U) The 37 TFW ADVON arrived only two hours before the rest of the package airlift. The ADVON was responsible for ensuring the deployment base was prepared for the remainder of the aviation package. Specific tasks included setting up in-processing lines, coordinating billeting and messing, and determining the location of work centers.

> (U) Unless the ADVON arrives far enough in advance to accomplish these tasks, personnel and equipment in the main body will not be effectively employed immediately after arrival. The decision on ADVON flow is made by higher headquarters (TAC and theater staffs). The ADVON should arrive at least 24 hours in advance of the rest of the aviation package. Wing commanders must emphasize this issue with the TAC Battle Staff as soon as the unit's deployability posture is increased.[36]

(U) Weather squadron personnel deployed with the 37 TFW had some, but not enough, training on the climatology of the deployed area of operations. This illustrated the need to increase training requirements for areas other than the primary taskings of the wing to support a 37 TFW world-wide mobility commitment.[37]

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Chapter IV - Endnotes

1. Chron (U), Desert Defender, 'Desert Shield/Storm Chronology, c.May 91.

2. Ibid.

3. Rprt (U), 37 TFW/CVI, FAST JOG 90-05 Exercise Evaluation Report, 30 Aug 90, SD 95; Intvw (S/PV/Decl OADR), SMSgt V.C. Breslin, 37 TFW Historian with Maj W.E. Cockman, 37 TFW/CVI, 12 Jan 92.

4. Special Order (U), 37 TFW S.O. G-22, Assumption of Command, Whitley vice Tolin, 17 Aug 90, SD 1.

5. Msg (S/Decl OADR),

6. Rprt (S/Decl OADR),

7. Ibid.

8. Ibid; Rprt (S/Decl OADR),

9. See above note.

10. Rprt (S/Decl OADR),

.rt (S/Decl OADR),

11. Rprt (S/Decl OADR),

Rprt (S/Decl OADR),

12. Rprt (S/Decl OADR),

Rprt (S/Decl OADR),

[redacted]

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13. Rprt (S/Decl OADR),

14. Rprt (S/Decl OADR),

15. Rprt (S/Decl OADR)

16. See above note.

17. Ibid.

18. See note 1 above.

19. Rprt (S/Decl OADR),

20. Rprt (S/Decl OADR),

21. Rprt (S/Decl OADR),

22. Rprt (S/Decl OADR),

23. Rprt (S/Decl OADR),

[redacted]

24. Rprt (S/Decl OADR).

25. Rprt (S/Decl OADR).

26. Rprt (S/Decl OADR),

27. Rprt (S/Decl OADR),

28. Rprt (S/Decl OADR),

29. Nom (U), 37TFW/CC to 12AF/CC & TAC/DPAP, Subj: Recommendation for Award of the Outstanding Unit Award (AFOUA), n.d., w/2 Atch: Narrative Justification and Citation, SD 97.

30. Rprt (S/Decl OADR)

31. Rprt (S/Decl OADR).

32. See above note.

33. Ibid.

34. Ibid.

35. Ibid.

36. Ibid, info used is (U).

37. Ibid, info used is (U).

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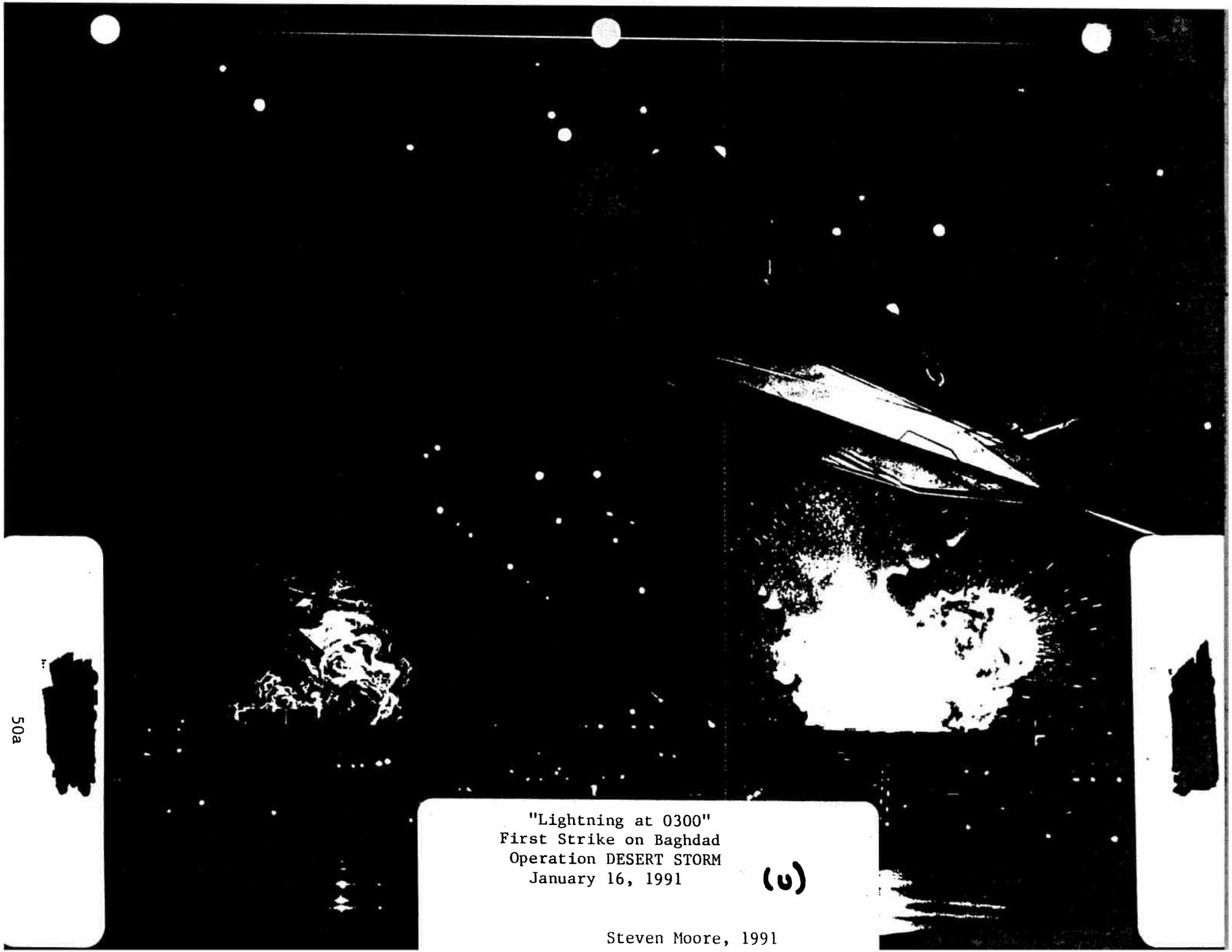

"Lightning at 0300"
First Strike on Baghdad
Operation DESERT STORM
January 16, 1991 (U)

Steven Moore, 1991

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V. OPERATION DESERT STORM

Stealth Validation

(U) Since assuming the stealth mission, the 37th twice took part in combat operations. The wing's F-117As led the attack against Panama on 21 December 1989 during Operation JUST CAUSE. It is important to note, however, that Operation JUST CAUSE did not test the F-117A's stealth technology since Panama had no radar defense network. Rather, the F-117A was picked for that mission on the basis of its bombing accuracy.[1]

(U) The proof of the pudding for stealth technology came during the F-117A's second combat employment. On 19 August 1990, the 37 TFW deployed to Saudi Arabia for Operation DESERT SHIELD. That deployment transformed into Operation DESERT STORM's combat operations against Iraq from 16 January to 28 February 1991.[2]

(U) On 12 January 1991 the United States Congress voted to go to war against Iraq. The resolution to use force passed in the Senate by a 52 to 47 vote and in the House by 250 to 183. A week later, the United States was at war.[3]

(U) The 37th Tactical Fighter Wing Provisional (TFWP)* opened its wartime account against Iraq on

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* (U) "Provisional" reflected the wing's temporary reassignment to Headquarters CENTAF.

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17 January 1991 at 0251 hours Baghdad time as Maj Greg Feest* and Maj Dave Francis attacked an integrated operations center 65 miles southwest of the Iraqi capital. Twenty-nine Stealth Fighters hit 26 high value targets on that first night alone. Employing just 2.5 percent of the USAF assets in theater, the 37th not only led the U.N. coalition force against Iraq, but also hit nearly 40 percent of the Iraqi targets that came under fire in the first three days.[4]

(U) Operation DESERT STORM featured the F-117A in its first real-world test against a modern, integrated air defense. The 'Nighthawks' of the 37 TFW repeatedly flew into and through intense anti-aircraft artillery and surface-to-air missile fire, accurately employing 2,000 tons of precision-guided munitions during 1,300 combat sorties. Wing pilots scored 1,600 direct hits against enemy targets in nearly 400 locations. Without suffering a single loss, nor experiencing any damage, they destroyed hardened command and control bunkers, aircraft shelters, production and storage facilities for nuclear, biological, and chemical weapons, and other heavily defended targets of the highest military and political significance. The F-117As were so effective that the Iraqi air defense system practically collapsed. Iraq's command, control, and communications network never recovered.[5]

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* (U) Feest: First in JUST CAUSE, first in DESERT STORM.

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(U) Thereafter, the wing repeatedly hit key political and military targets to further weaken Iraqi resistance and to prepare for the ground campaign. Early on, and employing only four F-117As, Stealth Fighter pilots attacked Baghdad's nuclear research facility, obliterating its three reactor cores. Of significance, the F-117A was the only coalition aircraft tasked to fly over Baghdad during the entire conflict.[6]

(U) In another strike, the wing destroyed a whole network of surface-to-air missile sites in central Iraq in the space of one hour, thus enabling B-52s to come in and carpet-bomb military production facilities without fear of interception. Immediately prior to the start of the coalition's ground campaign, the F-117As destroyed a complex of pumping stations and a distribution network that fed oil into anti-personnel fire trenches in southern Kuwait. This attack earned strong praise and the gratitude of the multinational ground forces.[7]

(U) The 37th's performance and devastating air power also drew high praise from military and political leaders. In particular, Senator Sam Nunn, Senate Armed Services Committee Chairman, stated that: "[The F117A was] the heart of our offensive power and targeting capability." Brigadier General Buster C. Glosson, Fourteenth Air Division Commander, called the wing "the backbone of the strategic air campaign." General Colin S. Powell, Chairman of the Joint Chiefs of Staff, commented: "You are showing the nation what it's all

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about--the combination of the very highest technology with the very best kind of people we can put together in the field as a team." Secretary of Defense, Richard B. Cheney, stated: "You have gone far beyond anything anybody envisioned. . .It has been phenomenal." Statistically, the 37th Tactical Fighter Wing compiled a record that is unparalleled in the chronicals of air warfare: the "Nighthawks" achieved a 75 percent hit rate on pinpoint targets (1669 direct hits and 418 misses) while crippling nearly 40 percent of enemy strategic targets.

Lessons Learned

(U) Combat operations in Operation DESERT STORM exposed the 37 TFWP to a wide variety of flying, logistic, and interservice complications they had neither anticipated nor practiced on the sheltered confines of Tonopah Range. From the seed of those complications grew a vast crop of lessons learned.*

(U) Several lessons of an intelligence nature strongly impacted the 37 TFWP's warfighting capacity. The Air Tasking Order (ATO) did not address the specific designed mean point of impact (DMPI) on many target installations. As such, the decision on exactly where to drop the bomb was often left to the wing's mission planning cell and targets cell. This entailed many

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* (U) A complete digest of those lessons is contained in the supporting documents of this history. For the purposes of this narrative, only a select few are addressed.

hours of research to determine what had and had not been successfully hit on earlier attacks. The wing intelligence division worked around that problem by designing its own method of tracking bomb damage assessment (BDA) to ensure tasked targets had not already been destroyed.[10]

(U) Maj Robert Heston, 37 TFWP Chief of Intelligence, considered DMPI inclusion crucial to ATOs. When using locally manufactured BDA tracking boards at the unit level, however, DMPI selection proved easier when DMPI information was not provided in the ATO. Makeshift solutions of this nature, on the other hand, could not always provide remedy for the ATO omission of mission critical information. Major Heston looked to another, more systems generic solution:

> (U) By using the alpha-numeric grid reference system on the Basic Target Graphics (BTGs), the ATO could identify very easily for every wing specific DMPIs to hit on an installation. This would decrease the need for much of the telephonic coordination that was necessary once the war was underway. In addition, HHQ needs to train mission planners on the method and then practice with wings during exercises in order to familiarize everyone with the method. Mission planners at HHQ need to become very familiar with the intelligence products used by the wings instead of the wings learning new systems developed by the staff.[11]

(U) Major Joseph Azzato, 37 TFWP Chief of Targets Intelligence, addressed the need for accurate BDA to an even greater extent:

(U) Readouts from various sources in describing BDA were not always specific enough. [They] did not always specify which structures on a facility had been destroyed or damaged. For instance, in some cases they would state "six bunkers destroyed", but would not identify specifically which ones they were, and it was not always readily apparent. Poor BDA availability made retargeting difficult and often resulted in a pilot restriking a destroyed target. This was resolved by maintaining our own BDA records and posting confirmed bomb damage on our own displays. This reduced the need to rely on HHQ for DMPI selection allowing the wing targets branch to recommend DMPIs for inclusion in the ATO.

(U) The Wing needs to maintain its own BDA displays to help in choosing DMPIs. This capability, however, is limited by camera system malfunctions, weather or smoke obscuration, and often bomb penetration. We can't always see the result of the attack. Mark on the imagery in some manner the location of bomb damage whenever possible so additional sorties are not tasked against those areas. Use the MSS-II [Mission Support System] or TDF [Tactical Digital Facsimile (with good imagery) to pass BDA among the wings. Have the National interpreters reference the BTG [Basic Target Graphics], CTG [Combat Target Graphics], etc. in their summaries. Pass all video confirmed BDA to HHQ targets shops to modify target nominations accordingly.[12]

(U) CENTAF target photograhic support proved very inadequate. Higher headquarters did not understand how the F-117A worked nor why it required high quality imagery. The wing's target intelligence cell found mapping, charting, and geodesy (MC&G) imagery difficult to acquire. Spot imagery was not of sufficient high resolution to support the technical requirements of a high technology system such as the F-117A Stealth Fighter. And, the available Analytical Photogram-

metric Positioning System (APPS) Point Positioning Data Base (PPDB) was grossly outdated. It was not until the last week of the war that more current PPDBs arrived, which was too late to have an effect on combat operations. One work around was Mission Support System II (MSS-II) which provided some usable imagery during the later stages of the conflict.[13]

(U) Higher headquarters personnel were not aware of the units requirements for support. Once briefed, or upon visiting the unit, they had a better understanding and often departed as some of the wing's staunchest supporters. For future operations, Major Heston offered some valuable recommendations:

> (U) HHQ needs to be fully cognizant of F-117A photo requirements. Points of contact need to be established at the 480th Tactical Intelligence Group and at the National Photographic Interpretation Center, to allow for ease in acquiring necessary imagery support for potential missions. The MSS-II, if it additionally used MC&G imagery, would be much more useful to the community as a whole. The targeting community must insist on updated and current APPS data bases. MC&G imagery of stateside areas is also needed for use on training missions. Continue to educate the rest of the Air Force on F-117A capability. Continue to task national-level data producers in hopes it will be available before the next war.[14]

(U) The quality of communication lines supporting the tactical digital facsimile (TDF) system proved poor and unreliable. Hence, the target images transmitted were often unusable. Using the MSS-II, target imagery often proved more reliable. Major Azzato observed that,

> (U) During certain parts of the day/night, the TDF system worked well enough for the wing to use its products. It appeared that during the high usage times for the telephone lines in theater, the TDF quality was directly and adversely affected. By using the lines during 'slack' times, we were able to work with the system, however this was not always possible given short notice changes. A better quality imagery transmission capability is needed, not only for us, but theater wide.[18]

(U) The wing intelligence cell relied heavily on theater communications; however, some systems had never been used before. The standard secure voice system available was the KY-68. The 37th had expected to use the more USAF conventional STU-III system. Nor was a tactical electronic intelligence processor (TEP) automatic digital interface network (AUTODIN) circuit provided for threat analysis during the early stages of the operation. Major Heston observed his staff's readiness to adapt by quickly learning how to use the KY-68. The later installation of an AUTODIN circuit also eased the burden for the wing intelligence community. He further observed that:

> (U) We should practice with what will be used. The 1880 CS needs to establish our requirement with those we'll be supporting in the future. Have 1880 CS install KY-68s for local exercises or identify STU-IIIs as the instrument of choice.[18]

(U) Major Azzato pointed out a basic lack of standardization among basic target graphics (BTGs), combat target graphics (CTGs), hard target graphics (HTGs), and operational support packages. Coordinates and facility names for installations with the same Basic Encyclopedia (BE) number would sometimes be different,

when moving from use of one product to another. In fact, sometimes images on the products did not even match the textual description, with photographs of different facilities having somehow been printed onto graphics with incorrect names, numbers, and textual data:

> (U) Cross referencing various products was an absolute must to ensure CENTAF and the wing were speaking on the same wavelength, and to ensure we were targeting the correct installations. Standardize BTGs and like products. This standardization would probably need to be established at a MAJCOM targets conference and forwarded to Defense Intelligence Agency production managers. In addition, the wing needs to forward the following suggestions to HQ TAC/INA. The following would be most helpful: standardized installation names and BE numbers on each sheet produced. There should be no printing on the backside of each sheet, in order to allow for use of the sheets side by side when necessary. There should be better quality control of the products to ensure accurate placement of North arrows, and actual images of the facility described in the text are printed on the graphic. Better identification of an installation's parts. All critical elements of a facility should be identified by priority of importance, and have mensurated points pulled for each. Clean images should be included as well as annotated ones. We should identify all problems immediately to HQ TAC.[17]

(U) Major Heston and his staff were equally critical of high technology satellite intelligence systems such as Constant Source (CS) and Sentinel Byte (SB):

> (U) The new CS (SUN/SPARC+ work station) is still full of bugs. While it is a nice tool for displaying EOB [electronic order of battle], confidence in the new system has to grow. It still

requires too much interaction from an operator and on many occasions the system would malfunction for no apparent reason requiring the operator to call the POC [point of contact] at HHQ for assistance. We were fortunate that we also had a TEP to provide us the necessary information.

(U) Units should maintain contact with the program office to work out bugs. The program office should also keep in touch with the units on a periodic basis to inform them of problems and impending changes. The program office should solicit more feedback from the users to ensure the system is providing the units with the information they need. The program office should help the units get operators trained.

(U) The new SB was of no use to us in its current configurations. The current configuration of the SB system supplied to us had only the Improved Many-On-Many and the SAC RAILS software; neither of which were useful for integrating the SB and CS systems. In addition, whenever a transfer of data between the CS terminal and the SB terminal was attempted, the CS system crashed. Several attempts to coordinate with HHQ were also unsuccessful. Because the SB system was not crucial to our operations, we made the decision to shut down the SB work station.

(U) This was our first attempt to integrate SB into our operations and much was learned about the system. However, at the present time, and in the current configuration, the SB system is not crucial to our operations. SB and CS need to be integrated, with SB taking much of the processing/data base management chores off of CS so CS can be faster. It also needs much better software for threat analysis.[18]

(U) From a mission planning point-of-view, the 37 TFWP also gained some valuable perspectives. Capt Doug Smith, 37 TFWP Plans Division, called the Mission Data Planning System (MDPS) wholly inadequate, even in the very limited Iraqi theater:

(U) The 23 UTE significantly exceeded the mature weapons system 14.0 UTE listed in the F-117A program management directive. While one should expect sortie surges during war, the support for sustained air operations apparently evolved over the years to meet the 14.0 mature UTE, and not much more. The high UTE rate, coupled with the very long ASD, pushed the deployed fleet far beyond what anyone close to F-117A development could have possibly envisioned. This maximum effort while supporting combat spawned literally hundreds of lessons from which we are gaining a great deal of insight into what it takes to maintain aircraft in such an environment.[31]

(U) In a comprehensive report to Lt Gen Horner, CENTAF Chief of Staff, Colonel Gaskin detailed just a handful of those lessons and their impact on DESERT STORM operations:

(U) The RAM maintenance was a daily challenge. We often ran short of critical supplies, especially butter.* On a dozen occasions we had to defer scheduled maintenance because we did not have adequate butter supplies to reseal panels. Although we never grounded an aircraft for the lack of butter, we did come close.

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* (U) "Butter" is a colloquialism for the conductive putty used to fill the seams between sections of RAM coatings. Consumption of low temperature BX-185 butter during DESERT SHIELD averaged 300 tubes each month. During Feb 91, consumption of this butter stock vaulted to 1,200 tubes. Consumption of the critically important high temperature butter, C-1004, jumped from 160 tubes to more than 600 tubes per month.

> (U) When the first squadron deployed to Desert Shield, we maintained the fleet with a low backlog of RAM deferred maintenance. Our goal was to keep each AMU with a total backlog of less than 20 man-hours. Also, at least twice each month, eight to 12 aircraft were 100 percent RAM coated for operational considerations. When Desert Storm began, we did not notice an appreciable increase in the stocks of sheet RAM consumption; however, butter consumption quadrupled.[32]

(U) Experiences while deployed to Saudi Arabia also underscored a need for butter improvements:

> (U) We can expect to use up to four times the butter we previously thought possible. Granted, long ASDs [aircraft sortie durations] and the high sortie rate generated more phases and tail pipe changes, (driving butter consumption up) but there are no guarantees of a better situation during the next war. Also, we wasted a lot of the butter because it is so messy to apply.[33]

(U) Consequently, Colonel Gaskin recommended increased butter supplies in the WRSK up to 400 percent. In addition, he called for the development of a butter that is stable at varying temperatures.

> (U) Currently, butter is shipped frozen in dry ice; shelf life begins once the butter is thawed. The long logistics tail between the source of supply and our deployed location often meant butter thawed during shipment. Consequently, shelf life problems occurred--sometimes resulting in butter that would not cure properly.[34]

(U) To round off the butter issue, Colonel Gaskin endorsed a better way to apply butter to the aircraft:

[redacted]

(U) The current procedure involves masking off the seam area with tape and then spreading the butter into the seam with a putty knife. This method is not only time consuming, but more importantly, it wastes butter. At least 25 percent of the butter ends up on the tape, the putty knife, a rag, or on the ground. HQ TAC/DRB knows about a hot butter gun used in the A-12 program which takes only a fraction of the time to use and leaves virtually no waste.[35]

(U) Exhaust system structural assembly with ceramic components and high temperature matrix compounds.

[redacted]

[redacted]

Inspect and Repair as Necessary (IRAN) and launched at the Tonopah Test Range in August 1990 with participation by SM-ALC/QL and Lockheed.[38]

(U) Maj Guy Fowl, 37th EMS Commander, applauded the wing's phase dock teams on their demonstrated ability to provide quality aircraft in the face of a tremendous growth in phase inspection requirements during DESERT STORM:

> (U) The F-117A phase inspections are spaced at 150-hour intervals. Each night during Desert Storm we flew an average of 150 hours, which equated to doing a phase each day just to stay even with the time line. During peacetime at home station, phase inspections took 3 to 7 days, depending on the type of phase and problems encountered. At that rate we would have had 23 aircraft grounded for overdue phase inspections after the first 30 days of combat operations. About 2 years ago we did a study to determine the feasibility of doing running phases (also called combat phases). Selected inspection and fix tasks were done spread over during a week or so, but the aircraft was buttoned up and made available for the flying schedule each day. The running phase concept turned out to be impractical for the F-117A from the stand point of stripping RAM to facilitate panel removal. Many of the same panels would have to come off more than once; RAM that was applied the day before would have to stripped off to remove panels again. Labor and RAM supplies simply would not support such an approach.
>
> (U) The AMUs met the challenge by forming large dedicated teams with superbly trained technicians who would "swarm" over the aircraft while fully complying with all work cards. In most cases aircraft would land from a mission one night, immediately go into the phase inspection dock, and fly a mission the next night. Only in a small number of cases were selected inspection items deferred, which were always due to a tem porary shortage of RAM sheet stock or butter. Eighty-five percent of the first sorties after phase flew code-one.[38]

[redacted]

(U) Aircraft maintenance technicians did not have sufficient training, tools, and essential supplies to do aircraft wiring repairs. The wing faced at least 30 tough wiring problems during DESERT SHIELD and DESERT STORM. It became quickly obvious that technicians were not properly trained or equipped to do anything more than the most routine wiring repair work. Colonel Gaskin put this problem down to unit training "which concentrates instruction at the system and LRU level, while only lightly touching on the aircraft wiring systems."

> (U) We need to create and teach a comprehensive 7-level wiring troubleshooting and repair course. This course should give a student instruction in correct and accepted methods used: wiring repair; installation of contacts, lugs, and RF connectors on wire and cabling; and in insertion and removal of contacts into and from multiple contact connectors. At the same time, supplies and tools will be procured.[40]

(U) Similarly, limited training among maintenance technicians impaired the wing's ability to execute microminiature repair of electronic components. When confronted with organizational level maintenance requiring the soldering of such components, technicians could not solder well enough to get the job done. In Colonel Gaskin's estimation:

> (U) Good soldering techniques are not skills that one just picks up along the way--they must be taught, learned, and practiced. Many on-aircraft repairs could be done easily with precision soldering, instead of large scale wire harness and connector replacement. DCMs often complain that their people cannot solder well enough to meet the demands of modern microminiature circuitry and associated connectors, pins, boards, etc. One reason for the shortage of skilled solderers can

be attributed to the certification requirements that go along with the courses which offer micro-miniature repair methods. The classes are always small, the waiting lists long, and graduates often leave the Air Force and go to work for private industry.

(U) If we do not teach some of our technicians how to do precision soldering, we can expect long down times while aircraft harnesses are replaced, connectors are replaced, or shoddy work does not fix discrepancies. The problem was mitigated somewhat by the presence of Lockheed CETS representatives who helped with wiring work when jobs came along. However, most Lockheed CETS are slated to leave the F-117A program by Oct 92. The Air Force Engineering and Technical Services (AFETS) personnel can pick up some of the slack, but not all.[41]

(U) Maj Bennie Thurman, 37th Maintenance Operations Division, extolled the virtues of an innovation adopted for the recovery of aircraft diverted to alternate airfields.

(U) On 10 occasions during Desert Storm it became necessary to recover an F-117 at one of two divert locations. Having fully trained crews prepositioned with some limited equipment enabled us to recover the aircraft, determine the malfunction, and call for parts as necessary. In every case the aircraft returned home in an expeditious manner. Prepositioned divert teams can save valuable time by returning aircraft to combat as soon as possible.

(U) We ended up establishing a detachment at Tabuk Air Base co-located with the 33rd TFW and Ha'il Air Base, which initially had no American presence. This Ha'il detachment, manned by two of our maintenance technicians, recovered over 38 aircraft including F-111s, Navy F-14s, A-6s, a P-3 and four F-117s.[42]

[redacted]

(U) TSgt Mark Singleton, 37th Maintenance Management Division, outlined a data tracking deficiency peculiar to deployed operations and the steps taken to overcome that deficiency through the introduction of a deployable smart data system (SDS):

> (U) There was no available means to document all the maintenance actions (maintenance data). The F-117 was developed utilizing an integrated data based management system which was tied into the wholesale logistics network. This was an outgrowth and a improvement over the Centralized Data System which was initially used by F-16 units. Currently, the Air Force has no real automated way to process maintenance data at a deployed location. The CAMS [consolidated aircraft maintenance system] which is hardware dependent at home station is now not deployable in its mainframe system.
>
> (U) The SDS is a large (over 500,000 lines of code) on-line interactive aircraft maintenance data reporting and analysis system. In addition to maintenance data, the system includes provisions for phase dock scheduling, TCTO [time change tecnical order] management, deficiency/service report management, configuration management, flight scheduling, debriefing, and aircraft status reporting. After the initial four months of the Desert Shield deployment, we acknowledged that the paperwork system was not working effectively. We asked Dynamic Research Corporation (DRC), the contractor that manages SDS for the Air Force, to develop the capability to capture SDS data at a remote location. They responded with the Remote Engineering Data Acquisition Program (REDAP) which allowed us to collect maintenance data in a stand alone mode. This system when loaded in laptop computers allows each work center to enter data. It is then compiled by a maintenance technician and transmitted back to home station directly into the mainframe data base with very little lost or duplication of effort.[43]

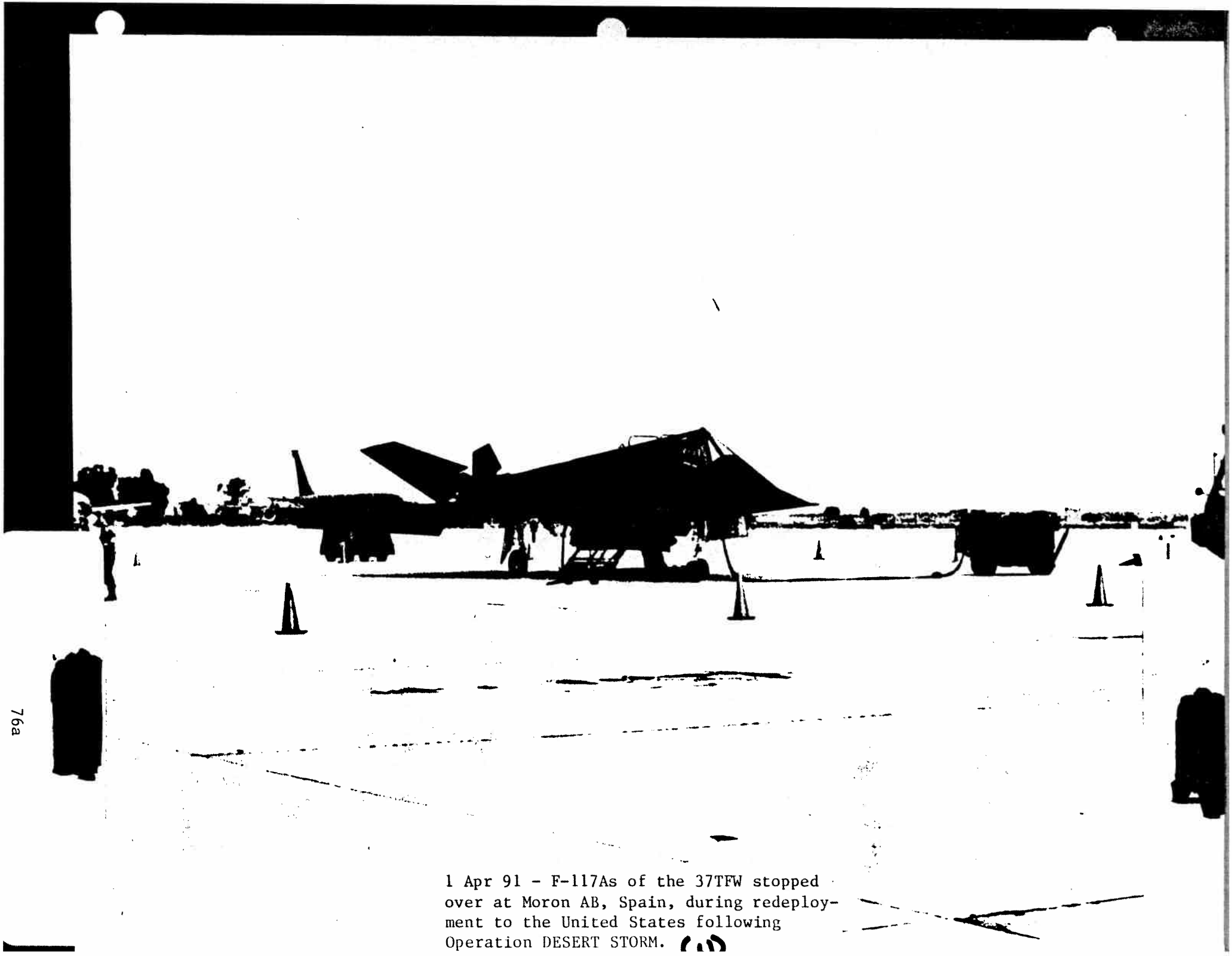
[redacted]

[redacted]

Homecoming

(U) In the wake of Operation DESERT STORM, the 37 TFW maintained full presence in Saudi Arabia from 1 March to 1 April 1991, awaiting incremental return to the United States. On 2 April, the first eight F-117As redeployed to Tonopah Test Range via stopovers at Moron AB, Spain, Langley AFB, Virginia, and Nellis AFB, Nevada. At Nellis AFB, Colonel Whitley and seven other Stealth pilots, together with 130 support people, arrived to the cheers of 25,000 people and the welcome arms of their families and friends. Thousands of American flags flew in the early afternoon breeze as crowds of enthusiastic spectators converged on the "Nighthawks" to show their thanks to the heroes of DESERT STORM.[44]

[redacted]



1 Apr 91 - F-117As of the 37TFW stopped over at Moron AB, Spain, during redeployment to the United States following Operation DESERT STORM.

2 Apr 91 - Thousands gathered to welcome home the 37TFW heroes of Operation DESERT STORM at Nellis AFB, Nevada. (U)

2 Apr 91 - The face of victory and a thumbs up by Col Al Whitley tells it all during victory celebrations at Nellis AFB, Nevada, following redeployment from Saudi Arabia for Operation DESERT STORM. (U)

[redacted]

Chapter V - Endnotes

1. Transcript (U), Press Conference with Lt Gen Stiner, 26 Feb 90, SD 83.

2. Rprt (S/NF/Decl OADR).

3. Chron (U), Desert Defender, 'Desert Shield/Storm Chronology, c.May 91.

4. Rprts (S/Decl OADR),

5. See above note.

6. Ibid.

7. Ibid.

8. Ibid.

9. Rprt (S/NF/Decl OADR)

10. Rprt (S/NF/Decl OADR),

11. Ibid, info used is (U).

12. Ibid, info used is (U).

13. Ibid, info used is (U),

14. Ibid, info used is (U).

15. Ibid, info used is (U).

16. Ibid, info used is (U).

[redacted]

[redacted]

17. Ibid, info used is (U).

18. Ibid, info used is (U).

19. Ibid, info used is (S/Decl OADR).

20. Ibid, info used is (U).

21. Ibid, info used is (S/Decl OADR).

22. Ibid, info used is (S/Decl OADR).

23. Ibid, info used is (S/Decl OADR).

24. Ibid, info used is (S/Decl OADR).

25. Ibid, info used is (S/Decl OADR).

26. Ibid, info used is (S/Decl OADR).

27. Ibid, info used is (S/Decl OADR).

28. Ibid, info used is (S/Decl OADR).

29. Ibid, info used is (S/Decl OADR).

30. Rprt (S/NF/Decl OADR),

31. Ibid, info used is (U).

32. Ibid, info used is (U).

33. Ibid, info used is (U).

34. Ibid, info used is (U).

35. Ibid, info used is (U).

36. Ibid, info used is (S/NF/Decl OADR).

37. Ibid, info used is (S/NF/Decl OADR).

38. Ibid, info used is (S/NF/Decl OADR).

39. Ibid, info used is (U).

40. Ibid, info used is (U).

[redacted]

41. Ibid, info used is (U).

42. Ibid, info used is (U).

43. Ibid, info used is (U).

44. Draft Book (U), Lockheed 50th Anniversary Book, "We Own the Night," 2 Apr 92.

45. Ibid; Hist (S/Decl OADR)

Move to Holloman

(U) In March 1990, Headquarters TAC elected to relocate the 37 TFW from its remote desert environment as perhaps the clearest signal of all that the Nighthawks were making a black-world to white-world transition. The Command made that decision in conjunction with the drive toward F-117A program normalization and a Defense Management Review (DMR) initiative to eliminate the excessive logistics and personnel support costs (approximately $130 - $145 million per year) of con-