



The first fighter aircraft to arrive in the Gulf Region, on August 8 at Dhahran (Saudi Arabia), were the twenty-four F-15C Eagles of the 71st TFS (1st TFW, Langley). The aircraft are configured with four AIM-9s and four AIM-120 AMRAAMs. The personnel are members of the Security Police. (USAF)

Theo van Geffen

Starting in August 1990, U.S. and allied forces arrived in numbers in the Gulf region to persuade Iraq's Saddam Hussein to give up Kuwait, which was occupied on August 2, and claimed as Iraq's 19th province. In mid-January, a second front was opened from Incirlik Air Base (Turkey). A score of aircraft types were involved. In a multi-part article we will have a closer look at the involvement of several aircraft types, including the B-52G Stratofortress and F-4G Phantom. This part will discuss the 'birth' of Joint Task Force PROVEN FORCE (JTF-PF) and B-52G operations.

Air campaign

The first USAF aircraft to arrive in the Gulf region, on August 8 at Riyadh, were five E-3A/B Airborne Warning and Control System (AWACS) aircraft from Tinker's 552nd Airborne Warning and Control Wing (AWCW). They did so prior to the arrival in the afternoon from Langley AFB, Virginia, of twenty-four F-15Cs of the 71st TFS/1st TFW at Dhahran (Saudi Arabia). The Squadron immediately started to augment Royal Saudi Air Force (RSAF) air defense alert and CAP (Combat Air Patrol) operations. Also on the 8th, Great Britain committed itself, with the first Tornado F.Mk 3s arriving from Cyprus at Dhahran on August 11. The number of USAF aircraft in-theater on November 1 was 718 (Phase I), including 20/B-52G, 36/F-4G and 14/EF-111A. F-16s topped the list with 120 deployed.

January 15, 1991 was the deadline the United Nations Security Council had agreed upon earlier to expel Iraqi troops from Kuwait using force when the country would still be occupied. By then, the number of USAF aircraft had increased to 1,132 (Phase II). With 210 aircraft, F-16s once more topped the list. The number of B-52Gs had increased to twenty-one, the F-4G number was forty-eight and of the EF-111A, eighteen.

Normandy

On January 16, the DESERT STORM air campaign plan was completed with an Air Tasking Order (ATO) issued for each 24-hour period, 0300-0259Z (0600-0559L). However, the period for the Day 1 ATO was 16/1800Z-18/0700Z Jan. The air war began with two days of pre-planned operations, which were the most thoroughly planned and most complex air operations of the war.

H-hour was 17/0300L Jan. At H-90 (0130L) January 17 (16/2230Z Jan), Navy ships in the Persian Gulf and Red Sea started launching fifty-two BGM-109 Tomahawk cruise missiles towards targets in Baghdad, of which about one-third



At H-21 (0239L), twenty-one minutes prior to the start of DESERT STORM, Task Force NORMANDY was on their way to their targets in Iraq. It included four MH-53J PAVE LOW III helicopters, acting as pathfinders for eight US Army AH-64A Apache attack helicopters. An MC-130E was airborne as tanker support, while MH-47Ds were available with FARRP equipment to refuel the Apaches when necessary. Both sites were destroyed with AGM-114 Hellfire missiles, Hydra 70 rockets and the Apache's 30-mm gun. (USAF)

against the electrical power grid. Their Time-on-Targets (TOTs) was 0306-0311L. At H-21 (0239L), Task Force NORMANDY, four MH-53J PAVE LOW III helicopters (20th Special Operations Squadron (SOS)/1st Special Operations Wing [SOW, Hurlburt]) acted as pathfinders for eight U.S. Army AH-64A Apache attack helicopters (1st Battalion/101st Aviation Regiment [Ft Campbell, KY]) to their targets in Iraq, two Early Warning (EW) radar sites about fifty nautical miles (NM) north and north northeast of Ar'Ar. The MH-53J's FLIR (Forward-Looking Infrared) and TFR (Terrain-Following Radar) permitted safe flight at extremely low altitudes at night, with GPS (Global Positioning System) permitting precise navigation. The first rehearsal for the mission, initially called EAGER ANVIL, was flown in the second week of October. Five rehearsals followed. The joint briefing at Al Jouf, Saudi Arabia took place at 2130L. The border was crossed at 0212L. An MC-130E of the 9th SOS (also 1st SOW) was airborne as tanker support, while MH-47Ds of the 3rd Battalion/160th Special Operations Aviation Regiment (SOAR) were available

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with FARRP (Forward Area Refueling and Rearming Point) equipment to refuel the Apaches when necessary. Both sites were destroyed with AGM-114 Hellfire missiles, Hydra 70 rockets and the Apache's 30-mm gun. The result was the creation of a 'hole' in Iraq's electronic warfare coverage for the strike package, including, among others, twenty-two F-15E Strike Eagles and three EF-111As, which were fragged for the western Scud sites around H-2 and H-3 airfields. For the same purpose and at H-9 (0251L), an F-117A of the 37th TFW (all F-117A strikes were flown by single aircraft) dropped the first bomb of the war, a GBU-27 PAVEWAY III 2,000-lb penetrating LGB (Laser-Guided Bomb), striking the Nukhayb Intercept Operations Center. It was the central reporting node in southern Iraq and best positioned to coordinate Iraqi defensive efforts against succeeding allied SEAD (Suppression of Enemy Air Defenses) attacks by F-4Gs. Capt Marcel Kerdauid, Weapons Officer for the 415th TFS and F-117A pilot,

That first target was hit by two F-117s one minute apart. At 0300L, we hit Baghdad targets simultaneously with five F-117s, followed by two aircraft one minute later, also simultaneously, but with a different DMPI, Desired Mean Point of Impact. My target was the Khark Telecommunications Tower in downtown Baghdad. It required a laser spot on a latticed tower and I took that challenge. Original plan was to drop a 2,000-lb GBU-10 PAVEWAY II, but my #2 engine would not start on my scheduled aircraft, so I went to a spare, which was configured with a GBU-27. The GBU-10 was fused to blow the top off the tower. The fuse on the GBU-27 could not be changed as it was meant to be a penetrator. Luckily after entering the top of the tower it apparently did not have the energy to exit, which I feared it would, and it blew up halfway down the tower.

In the meantime, seven Barksdale B-52G aircrews had launched thirty-five CALCMs (Conventional Air-Launched Cruise Missiles) from two launch points in Saudi Arabia (see later). Also, four F-111Fs of Tactical Fighter Wing Provisional, 48 (TFWP 48) struck the heavily defended airfield Ali Al Salem, ingressing to the target area at low altitude and high speed in the darkness of night. BQM-74 drones were launched from just south of the Iraqi border towards Baghdad to decoy radars, create confusion and false targets to enhance F-4G Wild Weasel targeting. Fixed-wing Coalition aircraft flew 2,759 sorties, including 1,515 by USAF aircraft. B-52Gs flew thirty-one sorties (see 'Day 1').

Suspension

G-day started at 0400L on February 24 with 100,000 Coalition troops initiating the ground war, which turned out to become a 100-hour campaign. A total of 3,280 coalition sorties were flown that day, the largest number to date. Forty-three B-52Gs struck Iraqi defenses and infantry positions in the KTO (Kuwait Theater of Operations). Because of the rapid advance of ground troops into

Kuwait and Iraq, retargeting of preplanned Close Air Support (CAS) and BAI (Battlefield Air Interdiction) sorties was required, including of inbound B-52s. On February 27, Kuwait City was liberated and Pres Bush ordered the suspension of offensive military operations as of midnight eastern time. As a result, on 28/0800L, a Coalition-declared ceasefire went into effect. Sixteen days later, redeployment of 545,000 U.S. troops was initiated. Iraq, on April 11, accepted all terms of the UN cease-fire resolution and at 1000 EST, the Gulf War officially ended.

In the forty-three days of the war, Coalition forces flew 118,661 sorties with the USAF share being 69,406 sorties. Of note is that A-10As and F-111Fs flew more than double the peacetime UTE. Because of the long CAP missions, in which 8-hour sorties were not uncommon, F-15C Eagles flew an Average Sortie Duration (ASD), which was 3.5 times the peacetime average.

B-52G Stratofortress

According to the USAF, the role of the B-52 in the Gulf War was revalidated, with only the G-model being involved in DESERT SHIELD/STORM and PROVEN FORCE. The first of 193 B-52Gs built was delivered to Strategic Air Command (SAC) in February 1959.

Ninety-eight on-line Gs were modified to carry twelve nuclear AGM-86B ALCMs each. The thirty-nine non-ALCM modified B-52Gs received the ICSMS, Integrated Conventional Stores Management System, and were assigned the primary role of supporting the conventional requirements of theater commanders and naval anti-surface warfare operations. On September 30, 1990, the USAF had 135 B-52Gs. To abide to the terms of the Strategic Arms Reduction Treaty (START), the first B-52G was retired on May 11, 1989 and arrived at the Aerospace Maintenance and Regeneration Center (AMARC) at Davis-Monthan, Arizona to be salvaged. In the first 3½ months of 1991 no B-52Gs were retired.

From the start of DESERT SHIELD, SAC underscored the need to have forward basing. The first discussion to deploy B-52Gs to Southwest Asia was when CINCCENT (Commander in Chief, Central Command), through message 08/0330Z Aug 90 to the Joint Chiefs of Staff (JCS) 'Follow-on Forces Additions', decreased the number of F-16 squadrons requested by JCS 07/2153Z Aug message, from six to four, while adding, among others, five B-52Gs. One day later, at 09/1345Z Aug, JCS issued further deployment orders through C+30 (C-Day/L-Hour was designated as 09/0001Z Aug), which included twenty-three more B-52Gs to perform conventional operations.

On August 24, SAC activated Air Division Provisional, 17 (ADP 17) to organize and administer SAC assets assigned to the Area of Responsibility (AOR). Air Forces Central Command (CENTAF) received operational control of assigned B-52Gs and tactical control of assigned KC-135s and strategic reconnaissance assets. On September 9, Central Command (CENTCOM) was awaiting basing approval to increase theater B-52G strength to twenty-eight.



At H-9 (0251L), an F-117A of the 37th TFW dropped the first bomb of the Gulf War, a GBU-27 PAVEWAY III 2,000-lb penetrating bomb, striking the Nukhayb Intercept Operations Center. The photo shows three of the stealth fighters at their temporary base of Khamis Mushayt (Saudi Arabia). (USAF)

When the JCS issued the Phase II deployment order on November 16, for 283 aircraft, it included eight B-52Gs. Aircraft on-call for deployment within 120 hours of the commencement of hostilities included another fourteen B-52Gs. On January 11, 1991, at CENTAF direction, SAC accelerated its tanker force commitment to provide CINCCENT with the requested plus-up of B-52Gs and KC-10A/KC-135 tankers and aircrews.

Diego Garcia

On August 3, 1990, SAC deployed two KC-10A Extenders and one KC-135R Stratotanker from Hickam AFB, Hawaii and Andersen AFB, Guam to Diego Garcia, a tropical island in the Indian Ocean. A second KC-135R at the island remained in place. CENTCOM requested twenty-eight B-52Gs, with five to deploy to Diego Garcia by the 16th, fourteen by August 24, and nine more by September 6. In reality, deployments were on August 12 (seven), August 13 (seven) and August 15 (six). Each of the twenty aircraft was configured with forty-five M-117R 750-pound general purpose bombs. As not enough ramp space was available, the final eight requested B-52Gs could not deploy. The twenty aircraft were assigned to 69th Bombardment Squadron, Heavy (BS)/42nd Bombardment Wing, Heavy (BW) from Loring, AFB, Maine (fourteen) and of the 62nd BS/2nd BW from Barksdale AFB, Louisiana (six) and deployed from Andersen where they participated in a GIANT WARRIOR exercise. The squadrons were augmented by a handful of crews from Castle AFB, California (93rd BW) and Griffiss AFB, New York (416th BW). On August 24, nine days after the arrival of the last six aircraft, Bombardment Wing Provisional, 4300 (BMWP 4300) was designated, activated, and organized at Diego Garcia, and attached to 15th Air Force (15AF). On September 21, SAC went through a similar process regarding Bombardment Squadron Provisional, 4300 (BMSP 4300), Air Refueling Squadron Provisional 4300 (AREFSP 4300) and Consolidated Aircraft Maintenance Squadron (CAMSP 4300) and



B-52G 58-0164 'SAC Time' of the 668th BS (416th BW, Griffiss) sits ready at Jeddah on February 1 for its next combat sortie. The BMWP 1708 aircraft is configured with M-117 750-pound bombs and already flew twenty-five combat sorties. (PH3 Chester Falkenhainer)

assigned the Squadrons to the Wing. On February 1, the Wing possessed 19/B-52G, 7/KC-10A and 5/KC-135R. Effective June 3, the Wing was the last provisional B-52G unit to be inactivated.

Sizeable

On 31/2115Z Aug 90, 219 allied aircraft were on five minute-one hour day/night alert, including seven B-52Gs at Diego Garcia. On September 14, SAC stated that fourteen B-52Gs at Diego Garcia were on alert, loaded with CBU's or M-117 bombs. Also, that of its deployed 186 tankers, thirteen were at the island.

The number of BUFFs (Big Ugly Fat Fellows) in BMSP 4300 remained stable throughout the campaign. On January 16, 1991 the Squadron gained six aircraft which arrived from Andersen's Strategic Wing Provisional, 1500 (SWP 1500), but lost a similar number the next day when the aircraft launched on a combat mission and landed at Jeddah (New). The 1500th in turn received six B-52Hs from CONUS.

It was not surprising that the Diego Garcia BUFFs flew a sizeable number of flying hours. It was not possible to accomplish intermediate-level maintenance and heavy maintenance like corrosion washes, engine changes and phase inspections there (it had been discussed, but was never materialized) and for this reason Wing B-52Gs had to be flown to Andersen where an Intermediate Level Maintenance Center (ILMC) was established. After SWP 1500 had received four spares by August 22, it became possible to regularly rotate B-52Gs between the two bases to provide, for example, corrosion control treatment. However, an Andersen B-52G was to land at Diego Garcia before its B-52G could launch for Andersen. In this way, the number

of combat-ready aircraft remained at twenty. The swap-out also enabled the munitions resupply on Diego Garcia. Twenty-eight B-52G phase inspections were accomplished at Andersen, 122 engine changes and sixty BUFFs underwent wash and corrosion control.

Training

The aircrews and maintainers were experienced at conventional operations from deployed locations as they had been trained mostly on a conventional war in Europe. However, they lacked the specific expertise necessary in Southwest Asia. This made it necessary to set up a special training program, to be conducted some 3,000 miles from the AOR. To do this properly, access to the Arabian Peninsula and integration into CENTAF's Airspace Management System were required. On August 20, Saudi Arabia authorized B-52 training. The next day, two B-52Gs flew training missions in the AOR. The aircrews gained a basic orientation of the terrain characteristics and regional communication procedures, including coordination with E-3 AWACS aircraft. Through September 16, sixteen such training sorties were flown, of which eight night low-level sorties on the 16th, while eleven were flown at Diego Garcia. Thereafter, due to the long sorties and the scarcity of resources on the island, training involved only a low number of sorties per month. Mission profiles and routes were developed to provide navigation and packaged fighter operations to maximize efficiency. Two distinct training profiles eventually emerged, one to a local island and one over the Arabian Peninsula. The latter provided the most realistic training, which included, cell takeoff, low-level, heavyweight air refueling, bombing and Electronic Counter- Measures (ECM). Examples were the training

mission on September 23, when five B-52Gs flew a low-level strike mission, supported by F-4Gs providing defense suppression and on October 25, exercise INITIAL HACK, a night strike by a combined package against three airfields of twenty-seven aircraft, including two B-52Gs, two F-117As, two F-4Gs and six Saudi and eight RAF Tornados.

The island profile was much shorter in duration and included cell takeoff, departure and join-up, simulated bombing runs and touch and go landings. The formal result was the development into an Initial Mission Qualification Training (IMQT) program. After CINCSAC, General John T. Chain, had stated he wanted an increase in the frequency of training missions into the AOR, his Director of Operations directed in November that the tempo of training be increased for each bomber crew. As of December 20, Wing B-52Gs had flown 418 DESERT SHIELD sorties for 4,020 hours. On January 15, 1991, all training sorties were discontinued.

As SAC was still looking at increasing the number of B-52G Forward Operating Locations (FOLs), the Command and its 15AF recognized that B-52G aircrews had to be trained in CONUS prior to deploying. In October, 15AF proposed a series of exercises to simulate the combat situations the aircrews were likely to encounter. DESERT WARRIOR was developed by revising the RED FLAG schedule for SAC units. It was to give the aircrews exposure to the CENTAF ATO procedures and tactics. Eight Bomb Wings participated in DESERT WARRIOR and also flew in DESERT STORM. Although the exercise was regarded as a crash course that was beneficial, it was also a stop-gap measure that did not replace the training taking place in-theater.

Day 1

Including the 'Barksdale' sorties, B-52Gs flew thirty-one sorties, fifteen Offensive Counter-Air (OCA) and sixteen BAI sorties, encompassing fifty-six strikes. At about H+40 (0340L), thirteen B-52Gs of BMSP 4300 struck four Iraqi Forward Operating Locations (FOLs), which were located near the Saudi border. It was the first low-altitude B-52 mission ever. Munitions included, for instance, UK-1000 runway cratering bombs and CBU-58/89s. One B-52G received minor damage while leaving the target area. At around 2300L on January 16, the first of sixteen B-52Gs, including three spares, took off. The thirteen primary aircraft later formed four elements composed of three (3) and four aircraft (1). The aircraft were refueled four times by KC-10As. Before arriving at the target areas and to stay below Iraqi radar coverage, the aircraft's altitude dropped to about a few hundred feet above the desert floor. Also, one of the aircrews experienced technical problems and was forced to abort the mission.

Later that day five Squadron BUFFs, joined by twelve F-16Cs, struck telecom and C3 facilities, while the six 'Andersen' B-52Gs flew an early evening mission. Of the aircraft launched from Diego Garcia, five actually hit the Tawakalna Division of the Republican Guard, as one air-

crew had to air abort prior to reaching the target area due to maintenance problems.

Second FOL

After it became clear that not all twenty-eight requested B-52Gs could deploy to Diego Garcia, SAC tried for several weeks to find a second B-52 FOL. The Command had one in mind with outstanding facilities and collocation with other SAC assets, but to no avail. It looked like a FOL could be established as on August 23, SAC's Support Battle Staff (SBS) learned that military authorities of a country (its name was deleted) had tentatively approved to deploy fourteen B-52Gs to one of its bases (the name was deleted). However, the joy was short-lived, as on the 29th, SBS was informed by SAC Forward that the approval had been withdrawn. CENTCOM then advised SAC to explore possibilities with regard to Morón AB (Spain) and RAF Fairford (UK).

Efforts to find a second FOL in the AOR were halted on October 2 by Secretary of Defense (SECDEF) Richard B. Cheney, but could be resumed unless hostilities broke out. Eleven days later, the host country authorized the U.S. to deploy fourteen B-52Gs to one of its bases. It looks like the host country was Saudi Arabia and the base King Abdul Aziz IAP, Jeddah. In all Special Orders SAC called the airport 'Jeddah (New)', called from now on 'Jeddah'. (See later).

The highest number of BUFFS deployed on a single day (February 11) was sixty-three at four bases: (1) Diego Garcia, twenty-one; (2) Jeddah, seventeen; (3) Morón, seventeen; and (4) Fairford, eight.

Aircrews, except those at Jeddah, had to fly 2,400-3,000 miles to get to their target area. Being at Morón meant they were stationed furthest from their targets, with sorties averaging fifteen-plus hours. Sorties from Fairford averaged fourteen-plus, from Diego Garcia fifteen and from Jeddah four-plus flying hours.

This also meant a heavy reliance on SAC's tankers for pre- and post-strike air refueling. For this reason, AREFSP



The B-52G still had its .50-caliber tail turret gun when it got involved in the Gulf War. However, the gunner had moved to the main crew compartment where he operated the gun by remote control. On the photo SSgt Brian Land checks the gun of a BMWP 1708 B-52G at Jeddah. (PH3 Chester Falkenhainer)



An element of three B-52Gs of BMWP 1708 configured with M-117 bombs taxiing on February 6 at Jeddah on their way to takeoff. (USAF, TSgt Rose Reynolds)

808 at Milan Malpensa Airport was activated with seven KC-10As, including Extenders from Barksdale's 32nd ARS/2nd BW. The airport was 340 NM north of planned B-52 tracks. Operations began on February 9, but several difficulties had to be overcome, including, for instance, fuel limitation, de-icing of aircraft and the low priority compared to commercial flights. Another squadron that provided pre- and post-strike air refueling for B-52s was AREFSP 807 at Mont de Marsan AB in southwestern France, becoming possible after the country offered the U.S. KC-135 basing rights. The first of up to ten KC-135Rs arrived on February 7, the first U.S. aircraft to be based in the country since 1966. B-52Gs were involved in 2,166 KC-135 and KC-10 refueling events, with 137.2 million pounds of fuel offloaded.

Because of the heavy B-52G bomb loads, a concentrated effort had to be accomplished by, among others, the PACAF/SAC/TAC and USAFE (United States Air Forces in Europe) Directors of Logistics to provide SAC with the necessary munitions. For example, to get the munitions to Diego Garcia, Fairford and Morón, an 'air bridge' was developed, using C-5s, C-141s and CRAF, Civil Reserve Air Fleet, aircraft. The bridge was initiated on January 15, 1991 and terminated on February 27.

Jeddah (New)

After Saudi Arabia had authorized the use of Jeddah by B-52Gs, a three-man team of the 379th BW (Wurtsmith, MI) conducted a site survey for the aircraft's sustainability in the October 16-26 period. On the 28th, the base was approved for B-52G operations. Two days later, the site survey team and the Wing commander briefed the commander of the Eighth AF of the visit. One B-52G deployed on December 20 from Diego Garcia to Jeddah for taxi and parking tests, which proved to be successful. Crew and aircraft returned the same day. Effective December 21, SAC designated, activated and organized BMWP 1708

with assignment to SWP 1700. A similar process took place for BMSP 1708 and CAMSP 1708, both being assigned to the Wing.

On January 17, SAC informed the JCS it had directed the 379th BW to deploy ten B-52Gs to Jeddah. The aircraft closed on January 18 (see later). Ultimately, the number of Buffs assigned was sixteen to eighteen. However, the 379th B-52Gs were not the first BUFFs to call Jeddah their temporary home. The previous night, six aircraft had arrived after flying a combat mission from Diego Garcia.

A total of 823 sorties were flown by the 1708th, an average of twenty-four per day. The high for one day was twenty-nine sorties. Its Munitions Maintenance Support, consisting of twenty-nine load crews from ten different BWs, loaded 36,581 bombs, including 22,542 M-117s and 96 CBU-87s, twenty percent of all bombs expended during the campaign.

On February 23, six 524th BS aircrews deployed to Morón to augment the 801st BMWP. The Squadron employed eighteen aircraft at three different locations: eight at Morón and five each at Jeddah and Fairford. Its BUFFs flew a total of 380 combat sorties (3,189 flying hours), of which 235 by the five Gs at Jeddah. Six air aborts were experienced. Most sorties were flown by B-52G 57-6492 'Old Crow Express', fifty-four (233 flying hours), all from Jeddah. The redeployment of the Wing's personnel and aircraft, called PROUD RETURN, was initiated on March 9. Wing and Squadrons were inactivated effective March 22.

Morón

On January 9, the Spanish government authorized the deployment of B-52Gs to Morón, at least as long as there was no publicity and local authorities would receive advance notice of operations. At that time, AREFWP 801 was stationed at the base together with AREFSP 801 and CAMSP 801. The first six BUFFs arrived on January 16, followed the next day by another four.



A BMWP 1708 B-52G, configured with Mk-82s, is taking off on January 2 from Jeddah. Being based so close to the battle field, BMWP 1708 flew a total of 823 combat sorties, 50% of all B-52G sorties. (USAF, TSgt Donald McMichael)

Effective January 17, the Wing was re-designated as BMWP 801 and stayed attached to 8AF, with AREFSP 801 and CAMSP 801 being reassigned. On the same date, BMSP 801 was designated, activated, organized and assigned to the Wing, which was largely made up from elements of the 2nd BW. Its commander, Col Ron Marcotte, acted as BMWP 801's commander. Also, the Spanish approved to carry out offensive operations. The first four sorties were planned for the 18th, but cancelled for operational reasons. SECDEF Cheney authorized the deployment of another twelve B-52Gs after a U.S. request to station additional aircraft there to support DESERT STORM requirements had been approved on February 3. Morón B-52Gs flew the first combat sorties on Day 2, when three aircraft struck Scud facilities in northern Iraq. Another three BUFFs struck air defense, transportation, electrical and POL targets at Al Mawsil (Mosul) in cooperation with Incirlik F-111Es.

Because of a lack of facilities and ramp space in the AOR, a second location had to be found for intermediate-level maintenance once B-52Gs had arrived in-theater. Fairford was looked at (it still had an inactive maintenance capability), but the base was considered too far away from the AOR. Morón became the logical alternative as it was on the tanker air bridge and it was reasonably distanced from Fairford. Nineteen B-52G phase inspections were accomplished, twenty engine changes and nineteen BUFFs underwent wash and corrosion control.

Night off

Maj Kurt '2-Lips' Dittmer, 52nd TFW Deputy Chief of Wing Weapons and F-16C pilot, flew combat from Incirlik with the 23rd TFS. He collected his experiences and published them in 'Proven Force'. As to the Morón B-52Gs he recollected the following.

The BUFFs from Morón were still plugging away at their targets, even when we were trying to take a night off (to go party, but we told CENTCOM we needed to fix jets and rest our crews). So, night after night we ended up supporting them and keep them company—just like clock-work. Well, actually it wasn't 'clock-work', they wouldn't hit the targets at the times we wanted them to. In fact, they didn't hit many of their targets when they wanted to either! Okay, they were flying from a different time zone, their sorties were also ten hours long, and who really knows how long it takes their bombs to fall from as high as they were flying...?...

Restricted

Missions flown from Diego Garcia, Jeddah and Morón concentrated on the KTO with occasional runs into central Iraq. However, until mid-February Morón B-52Gs were restricted to flying missions in northern Iraq. They looked at JTF-PF at Incirlik for targets and support packages. With the arrival of the Computer Assisted Force Management System (CAFMS), Morón was able to receive ATOs from Riyadh. Without CAFMS, it was pretty unmanageable to include those BUFFs in the Saudi-based strike packages. At the time Morón received the CAFMS, the number of B-52Gs was twenty-two, of which eighteen flying combat and four undergoing intermediate level maintenance.

On February 8, six B-52Gs dropped nearly three hundred 750-pound bombs on Iraq's biggest oil refinery at Bayji on the Tigris, 100 miles south of Mosul. On the 14th, the Wing flew a mission against the missile production facility of the military research and development complex near the Tigris north of Mosul, when four JTF-PF F-111Es led four B-52Gs.

Of the 293 B-52G sorties flown, ninety were flown by the 524th BS. The B-52Gs departed for CONUS on March

21. The Wing and assigned units were inactivated effective May 15.

Fairford

On February 1, after the British government permitted conducting B-52G offensive operations from Fairford and the French government had opened its air space for those B-52s, the deployment of eight aircraft was directed on the 2nd. Personnel and equipment were assigned to BMWP 806, which was designated, activated, organized and attached to 8AF effective February 5. A similar process took place for BMSP 806 and CAMSP 806, with both being assigned to the Wing, which was primarily formed from elements of the 97th BW at Eaker AFB, Arkansas, and supported by four other Bomb Wings. The first BUFFS also arrived that day. Flying combat operations was initiated on the 9th with four sorties. The Fairford aircraft took over Morón's mission to strike targets in northern Iraq, as the base did not have CAFMS either. Aircraft were only scheduled to strike northern Iraq, when JTF-PF support aircraft were available. In general, a cell of four BUFFs shared the support package, which also supported the nightly strikes by F-111Es. Fairford and Morón B-52Gs flew 114 such sorties.

From February 9 through 27, except on the 22nd, four sorties per day were planned. However, the sorties on the 16th and 26th were not flown. B-52Gs flew sixty-three sorties from Fairford, of which forty-three were by 379th BW aircraft, and expended 3,008 bombs. Between March 1-9, the B-52Gs returned to CONUS. Inactivation of Wing and Squadrons was effective April 24.

Taji

Initially, war planners used B-52Gs for night strikes, employing the electro-optical viewing system, using FLIR and Low-Level Light Television (LLTV) sensors to improve low-level night penetration. After the Coalition had gained air supremacy, the aircraft started operating around the clock. After B-52G 58-0248 was apparently hit by a SAM on a January 19 night mission (see later), low-altitude missions gave way to high-altitude missions (above 30,000 feet). B-52Gs, which generally flew in threes, were not fraggged into the highest threat areas and always flew in conjunction with F-4G Wild Weasel and/or CAP aircraft in areas where a significant threat remained. Strato-fortress crews flew four distinct missions, (1) against strategic fixed targets, (2) Scud hunting, (3) against Iraqi Army and Republican Guard targets, and (4) supporting breaching operations.

As to (1), one example was the Taji weapons manufacturing complex, fifteen miles north of downtown Baghdad, which sprawled over several square miles, and containing multiple complexes and facilities. The Jeddah-based B-52Gs took the lead in forming packages with the ones stationed at Diego Garcia and (after mid-February) Morón. Sixty-six sorties were flown in the February 10-27 period. Nearly 3,000 bombs were expended, inflicting widespread and severe damage (the B-52G could be configured with



A B-52G is being refueled by a KC-135A while the BUFF is returning to its temporary base after flying a combat sortie. (USAF, SrA Chris Putnam)

up to fifty-one M-117 or Mk-82 bombs).

As to (2), tactical planners were driven to an increased emphasis on suppressive tactics due to difficulties in locating and striking individual mobile Scud targets. From February 19 through the end of DESERT STORM, dedicated B-52Gs, armed with CBU-58s made preemptive strikes in the Scud boxes. Aircrews dropped them at intervals from high altitude while on station. In this way the bomblets scattered over a wide area. Also, B-52Gs freed five Scud CAP F-15Es for other targets.

As to (4), CINCCENT confirmed on February 17 that 'battlefield preparations, including mine breaching by B-52s, would remain the primary focus of the air war.' In this way and by using dual-fuzed Mk-82s, B-52G efforts were devoted to opening lanes through Iraqi mine fields and other defensive systems like multi-strand concertina wire. An example was given on February 17 when eight B-52G strikes breached Iraqi defenses in southwest Kuwait. BUFFs were also used in psychological operations by dropping leaflets. Days before the start of the ground war, as many as eight aircraft were dedicated to this mission.

Strikes

B-52G aircrews participated in 616 strike packages, of which 174 against fixed targets and 442 as (B)AI. As to the latter, BMWP 1708's share was 377.

The largest number of sorties on a single day were flown on February 22, fifty-two. Twenty-eight originated from Jeddah, while no aircraft were launched from Fairford. The daily sortie rate for the aircraft exceeded the highest previously planned wartime rates. The 1,628 sorties flown (15,269 hours) encompassed 1,706 strikes (a strike was defined as the delivery of a weapon or weapons against a specific target. Therefore, the number of B-52G strikes was larger than the number of sorties): ninety-nine OCA strikes (for example radar installations and airfield-supporting infrastructure); 303 against strategic targets (for instance strategic and interdiction targets like industrial storage facilities, most of these were radar deliveries); forty-two 'other'; and 1,262 (B)AI. The majority of the latter

(1,175) were flown against the Republican Guard, armor and mechanized units and storage depots in primarily the 'kill boxes' in the KTO. After recognizing the impact of these sorties, General H. Norman Schwarzkopf, Jr., CENTCOM commander (CINCCENT), directed the BUFFs to focus on this mission. The result was a three-ship of B-52Gs, striking troops every three hours, twenty-four hours a day. Strikes began on Day 1 and continued throughout the campaign. The number in the major twenty-two boxes was 897. Most strikes, 229, were flown in Week 3, while kill box 'AF 7' underwent a total of 256 strikes. The BUFF's large area coverage and bomb load made it most effective in this role. For instance, on January 28, thirty-eight strike packages were flown. Ten, of which seven included B-52Gs, two additional B-52 strikes, and hundreds of separate ground-attack sorties pounded the Adnan Republican Guard Division around the clock. B-52 strikes against Iraqi's 20th Infantry Division were preceded by psychological propaganda broadcast EC-130E VOLANT SOLO operations with 'personalized' leaflets, warning personnel of the coming strikes. The EC-130Es were from the 193rd SOS of the Pennsylvania ANG (PAANG). On January 31, good weather permitted Coalition forces to fly thirty-three packages, including two PROVEN FORCE ones with 102 sorties. Seventeen packages struck the Republican Guard with focus on the Hammurabi Division. Five non-packaged B-52G strikes also hit Guard-related targets. With CINCENTAF Lt. Gen. Charles A. Horner's approval, two tactical air packages and one B-52 strike were diverted from Guard targets to ones near Khafji in southern Kuwait to support Coalition ground forces as Iraqi armor was moving to reinforce the initial Iraqi penetration.

BUFFs comprised only three percent of the Coalition combat aircraft, yet about thirty percent of all U.S. tonnage was expended from B-52Gs, 72,289 bombs for a total of 27,000 tons. As Iraqi prisoners reported, B-52 raids had a devastating effect on their morale.

Battle damage

General George L. Butler, SAC's commander, stated on February 6 that with sixty-six of his B-52Gs and 299 of his KC-10/KC-135s committed to DESERT STORM, additional tankers were scheduled to deploy to France and Greece by 'degrading' nine 'lines' from the CONUS strategic nuclear alert force.

In a White Paper 'USAF Performance in Desert Storm', it was stated that 'while fighters employed precision-guided munitions to destroy pinpoint targets, the B-52's successes demonstrated the need to preserve the large conventional bombers' ability to destroy large area targets'. It looks like the BUFF will be around for many more years to come!

The participating B-52Gs were procured in fiscal years 1957-1959, so were at least 32 years old. There were 143 aborts. Some cannibalization took place from non-tasked aircraft. The average mission-capable rate was 81.7 with Morón having the highest (91.0) and Fairford the lowest (71.4) rate.



Patch of the 596th Bombardment Squadron. (via André Wilderdijk)

B-52Gs suffered no combat losses. However, 59-2593 (42nd BW/BMWP 4300) was lost on 02/2145Z Feb, while returning to Diego Garcia after flying a combat mission. It crashed into the Indian Ocean, some fifteen NM northwest of the island. Three survivors were rescued at 2334Z, while the other three crewmembers were lost. No battle damage had been reported. Seven B-52Gs were damaged, of which four battle damaged. On January 19, after striking the Uwayjah petroleum refineries, 42nd BW/BMWP 4300 B-52G 58-0248 was damaged by apparently a SAM (6' of tail, aft of the 1853 bulkhead), but the crew was able to return safely to Diego Garcia. It was repaired for a one-time flight to Andersen. Two BUFFs of BMWP 1708 received battle damage on January 26 while on an (B)AI mission. The fourth B-52G, 58-0253 of the 42nd BW/BMWP 4300, was damaged on February 27 by an infrared SAM, resulting in multiple holes below the left wing, left aft fuselage and under its tail. The crew was able to Return to Base (RTB) safely. It took 570 man-hours to repair the aircraft.

Secret Squirrel

An important task in the opening night of DESERT STORM was given to the 596th BS. Since its organization at Dow AFB, Maine, on February 1, 1963, it had been flying the G-version of the B-52. On April 15, 1968, the Squadron moved to Barksdale AFB and was assigned to the 2nd BW. It had a conventional and a nuclear mission.

The 596th was fraggged to execute Operation SENIOR SURPRISE as part of a strike force with the mission to destroy Iraq's integrated air defense infrastructure and lines



B-52G aircrews of the 596th BS, including those of the seven aircraft that flew the SENIOR SURPRISE mission, but known as SECRET SQUIRREL to its participants. The B-52G is configured with CALCMs. (USAF, 2nd BW)

of communications on Day 1. Seven B-52Gs were to be involved. They were scheduled to take off from Barksdale, fly to the target launch points, release their weapons and RTB. The distance was some 14,000 miles, which would normally take thirty-five hours to fly, resulting in the longest combat mission in history at the time. Because of the distance, the B-52Gs would be the very first aircraft to get involved in DESERT STORM. They would be configured with AGM-86C CALCMs, the only time this version was to be expended in the campaign. Its foundation was Boeing's nuclear AGM-86B Air-Launched Cruise Missile (ALCM), which was capable of autonomous navigation to targets deep into enemy territory. The development was initiated in June 1986 as a 'black' project. It was equipped with a modified guidance package with a GPS, a newly deployed space-based navigational aid, which was embedded in the terrain contour matching system. It gave the AGM-86C increased precision and the ability to strike from well outside enemy's defense systems. The Initial Operating Capability (IOC) was reached in January 1988. The Gs that were modified with an improved conventional capability, could carry a full range of conventional munitions, internally and externally, along with the AGM-86C.

According to 2nd BW information, Pres George Bush approved the mission after which CINCSAC, Gen. Chain, personally selected those officers who would form the leadership regarding planning and execution of the mission.

Secrecy

Preparations for SENIOR SURPRISE at Barksdale were initiated in early August 1990 with Lt Col Jay Beard, the Squadron commander, taking the lead. With three aircrew members the mission plan was written, establishing, among others, aircraft, personnel, and aerial refueling requirements, plus the execution of the mission. Seven primary and one reserve B-52 aircrews were selected after the plan had been completed, discussed and approved. The fifty-seven crewmembers were augmented by personnel from the 49th Test and Evaluation Squadron. They were

given strict orders not to discuss the mission or any of its facets. This shroud of secrecy proved to be complete and created a great deal of curiosity at the base in the days leading up to the mission's launch, especially with regard to the fact that the alert parking area showed so much activity. In the meantime, the eight aircrews were being trained and the aircraft maintained to the 'minutest' detail to guarantee mission success. New intelligence required constant updating of plans. Tuesday was mission study day and a randomly selected aircrew conducted a complete mission briefing and certification. Two days after each study day, preflight of the B-52Gs on the alert pad was accomplished, while the CALCMs were updated with the latest GPS information.

Engine trouble

As the January 15 deadline approached, the pace quickened. For instance, all seven aircraft were generated. On the 14th, all aircrews were restricted to the alert facility and assumed an alert status. This was also the time that relevant mission information could be shared with the aircrews.

Lt Col Beard received the 'Go order' the next day at 0300L. The aircrews were immediately awakened with 'All SIERRA crews report to the vault'. Forty-five minutes later they were told they would launch twelve hours prior to the beginning of DESERT STORM. The aircraft had been time-phased into the Strategic Air Campaign. At that time the destination, the highly classified weapons systems and the very existence of the aircraft was still classified at the highest level. People in headquarters referred to the mission as 'flight of the bad dogs', a reference to Dale Brown's book titled *Flight of the Old Dog*, about a modified B-52. Lt Gen Ellie Schuler, Eighth AF commander and Col Marcotte, Wing commander, were the execution authorities for the launch and command and control of the initial portion of the mission.

At dawn on a chilly and rainy January 16, the seven B-52Gs, carrying a total of 39 AGM-86Cs, initiated their MITO, Minimal Interval Take Off, the first aircraft at 0636L. They formed three cells, call signs Doom 31-37, with the first cell having three aircraft and cell two and three, two aircraft each. Lt Col Beard was the airborne mission commander in Doom 31. All aircraft, except Doom 36, had an eight-man crew, including an extra pilot and navigator. Doom 36 had two extra pilots. All aircraft, except Doom 32, carried artwork/nicknames.

During the mission, the BUFFs were refueled four times, twice outbound and twice inbound. The first outbound refueling was over the Azores, requiring two AREFWP 802 KC-135 Stratotankers per B-52G, offloading 140,000 pounds of fuel. At check-in after the refueling, Doom 34's aircraft commander, Capt Bernard Morgan, informed Beard 'he was working on something right now and that I'd be back to you'. Morgan did so about an hour later. At that moment, the formation had passed its point of no return. Beard was informed that the aircraft was experiencing engine trouble and that an engine had been shut

down due to fluctuating oil pressure. SOP (Standard Operating Procedures) in such a case called for the crew to abort the mission and land at the nearest friendly base. It certainly looks like that was not a real option for the crew on this important mission. The second refueling took place by Morón KC-10A Extenders over the central Mediterranean.

Doom 33

Two launch areas were established in northwestern Saudi Arabia, about 100 miles from its border with Iraq and beyond the range of Iraq's EW and GCI radars. Cell one flew to the northern launch area, while cell two and three continued to the southern area. Close to launch time, four CALCMs, carried by three different bombers, proved to have software problems, preventing their launch. The remaining thirty-five missiles were launched over a ten-minute period at the designated launch points. One missile crashed into Saudi Arabia shortly after launch. At least twenty-eight CALCMs hit their targets, while three might have impacted in the target area. The eight pre-determined targets, including the AI Musayyib Thermal Power Plant, were hit by multiple CALCMs. SAC intelligence estimated that six targets ceased functioning, one damaged, and one was missed.

After expending their missiles, the three cells reformed over Saudi Arabia to prepare for the third air refueling. This was accomplished by Extenders over the Eastern Mediterranean, offloading 200,000 pounds of fuel to each B-52G, 50,000 more than planned. Head winds that were 60-80 knots higher than anticipated, caused an increased fuel consumption and would ultimately add some seven flying hours to the schedule. Some of the bombers were also experiencing equipment malfunctions, including seized engines and fluctuating oil pressure readings. Lajes-based KC-135s took care of the fourth air refueling. Due to a refueling malfunction and fluctuating oil pressure, forcing the engine involved to be shut down, Doom 33 received 40,000 pounds less fuel than the other aircraft. Lt Col Beard determined that it needed additional fuel to reach Barksdale. He contacted Eighth 8AF's Command Post and requested assistance. Two KC-135Rs from Robins, GA were launched and offloaded enough fuel for Doom 33 to reach Barksdale. All aircrews were ultimately awarded the Air Medal.

Operation SENIOR SURPRISE remained classified until January 16, 1992, when USAF published News Release #90-001. It mentioned, among others, not only the existence but also the use of the AGM-86C CALCM in the opening hours of DESERT STORM.

Miss Fit II

Doom 35 was B-52G 58-0238 'Miss Fit II' with Crew E-81. Its Electronic Warfare Officer (EWO) was Capt Todd Mathes. I met Todd on November 2, 1992, the day before I flew on a B-1B Lancer training sortie from Dyess, TX, on which he was our OSO, Offensive Systems Operator. When

I asked him about his background, he told me, among others, he had been part of SECRET SQUIRREL. Todd,

A couple of days after Iraq's invasion of Kuwait, the Squadron's eight most experienced aircrews (including one reserve crew) were briefed about the AGM-86C CALCM and its capabilities as preparation for a future mission against Iraqi targets. We would fly to pre-designated points to launch the missiles against eight strategic targets although these would remain unknown for the time being. The standard crew would be increased with a pilot and a navigator. In October, we started flying in the weekend to train the mission profile.

As it concerned an extremely secret mission, Barksdale soon called it 'Secret Squirrel' according to Todd. The aircrews then called themselves 'Secret Squirrels'. At launch, the BUFFs were at their maximum weight. Todd continued,

After takeoff we flew to New England where we initiated our Atlantic crossing. We flew in trail at a 1.5-mile interval. Via the Strait of Gibraltar we started crossing the Med from west to east at an altitude of 40,000 feet. During thirty minutes we were being tracked by surface-to-air missiles on Russian navy ships. Earlier it was agreed to not use defensive maneuvers and/or jamming, at least as long as we were not being attacked.

According to Todd, the Egyptian airspace was declared 'closed' for the BUFFs. Over Egypt they were also being tracked by radar. Via Saudi Arabia the mission continued towards Iraq. Before reaching the launch areas, the crews formed two cells, one with three and one with four aircraft, flying in trail as well. Some thirteen hours after takeoff from Barksdale, thirty-five CALCMs were expended in a coordinated action. Todd,

At each missile launch our aircraft shocked heavily. We carried six CALCMs and it took some ten minutes to expend them all. Through GPS signals the missiles were being directed to positions within sixty feet of the target, after which the final guidance was activated. While in the target area the Iraqis left us untouched. We then flew to a pre-designated rendezvous point to begin the flight home.

At 1800L on January 17, some 35 hours after takeoff, the BUFFs were back home. Each of the B-52Gs used one million pounds of fuel during the flight, 750,000 pounds through thirty-eight Lajes KC-135 tanker sorties and nineteen Morón KC-10 sorties. Todd once more,

When we took off I was actually stunned. On the one hand I realized we flew towards a war, but on the other hand I was proud I had been selected to get the job done. It was most encouraging to see that everything worked as advertised and that it was for a good cause.



On December 28-29, 1990, four KC-135As of the 917th AREFS (96th BW) arrived from Dyess at Incirlik. The photo shows 59-1502 'Lone Star'. (USAF)

Wurtsmith

The seven Barksdale B-52Gs were not the only BUFFs flying a combat mission from home base. Early on January 18, twelve B-52Gs configured with M-117 bombs and CBUs, including two spares, launched from Wurtsmith to strike Republican Guard targets in the KTO and then land at their new home, Jeddah. Although all flown by 524th BS aircrews, only seven of the aircraft were assigned to the 379th BW with the others to the 93rd BW at March (three) and 42nd BW at Loring (two). The two 379th BW spares were not needed and RTB'd, flying a total of ten hours. Three aircraft each then formed the first and second cells and the third one had four aircraft. While on approach to the target area, the three aircrews of cell one aborted the mission for operational reasons and landed at Jeddah. Because of confusion and an additional air refueling, their total flying time was 18.4-18.9 hours. Cell 2 (flying time 15.8-16.1) and 3 (17.4-17.7) expended their weapons and also landed at Jeddah. The flying hours for the ten primary BUFFs totaled 175.

SAC B-52G Sortie Summary

Unit/Base/Number of Aircraft	Sorties Planned/ Flown/Targeted	Ground/Air Aborts
BMWP 4300/ Diego Garcia/20	436/430/414	6/16
BMWP 1708/Jeddah (New)/18	882/823/795	59/28
BMWP 801/Morón/22	303/295/287	8/8
BMWP 806/Fairford/8	72/63/57	9/6
2 BW/Barksdale	7/7/7	0/0
379 BW/Wurtsmith	10/10/7	0/3
Totals /68	1710/1628/1567	82/61

Incirlik

When Iraq invaded Kuwait, European Command (EUCOM) had fourteen F-111Es (79th TFS/20th TFW, RAF Upper Heyford), which arrived on August 1 for a Weapons Training Detachment (WTD), and four F-16Cs (612th TFS/401st TFW, Torrejón, Spain) on a NATO (SIOP,

Single Integrated Operational Plan) commitment at Incirlik, Turkey. The 20th TFW deployed another eight F-111Es to the base, which was nicknamed the 'Lik,' but redeployed to Upper Heyford.

To participate in NATO exercise DISPLAY DETERMINATION 90, the 612th TFS, on September 18, deployed twenty additional F-16C/Ds and maintenance personnel. Nobody could have guessed then they would become part in January 1991 of what was to comprise Joint Task Force PROVEN FORCE.

The Honorable James Baker, U.S. Secretary of State, on August 8, offered the Turkish government increased military and intelligence cooperation in return for access to its air bases by DESERT SHIELD aircraft. On September 21, the Turkish Foreign Ministry expressed its intention to extend a defense pact, allowing the U.S. to use its military bases as launch sites for possible action against Iraq. However, a lot of water still had to flow through the Rhine before the Turks would not only actually permit an increased U.S. presence at Incirlik, but even allow unilateral combat operations.

Spangdahlem

The concept of opening a 'second front' was formulated in mid-August by a small cadre of aircrew members of Spangdahlem's 52nd TFW around the time the 561st TFS (35th TFW) deployed with its twenty-four F-4G Wild Weasel aircraft from George AFB, California to Shaikh Isa AB, Bahrain. Initially, the concept would focus on the disruption of the Iraqi integrated air defense network in the north of the country with the purpose to decrease the risk for allied operations in southern Iraq. However, while passing through the channels, the concept grew into a full-scale operation. Lt Col Edward 'Victor' Ballanco was the Wing's Chief, Weapons and Tactics Division, which had two F-4G pilots, two F-4G Electronic Warfare Officers (EWOs), and two F-16C pilots (the Wing was equipped with F-4Gs and F-16C/Ds). Victor,

We did not expect to get the call to deploy to the Gulf region as the 35th TFW at George had a second F-4G squadron assigned. I challenged the members of the Weapons Shop to determine how the Wing could get involved in what looked to be imminent military action. Maj Dittmer and Maj Rich 'Snooker' Snook, the Wing EWO, immediately picked up my glove. We first obtained the Iraqi SAM and fighter orders of battle and plotted them. We then developed an option to deploy to Incirlik to fight Iraq from there. We next ran the flight plans and determined we could stage out of Incirlik and even make it to Baghdad and back when called upon. This was to be followed by the most difficult step, selling our 'back door' option up the chain of command. By the way, about a week after we started planning, the Wing received a warning order to be ready to deploy personnel and twelve F-4Gs to the Gulf region, giving us our entry into the main operation.

The plan was first briefed to the Wing commander, Col Rudi Peskens. He then presented it to the 65th Air Division

(65AD), which was the parent headquarters for the Electronic Combat (EC) Triad, the F-4G, EF-111A and EC-130H. The second front option proved to be viable as it proceeded quickly through USAFE's chain of command. On September 4-5, USAFE's commander, General Robert C. Oaks, briefed General John R. Galvin, CINCEUCOM, on the concept. Galvin, in turn, discussed the plan with General Colin L. Powell, JCS Chairman. USAFE initiated a study on October 12 to determine if a deployment to Turkey could be supported by a number of its aircraft. As the Command expected a positive Turkish reaction to its request to retain its F-16Cs and F-111Es at Incirlik after completion of DISPLAY DETERMINATION 90, actions were postponed the next day to redeploy them to their home stations.

Proven Force

In the final months of 1990, the plan to operate from Turkey continued to be reviewed and refined. Maj Dittmer in the meantime had taken over the planning and coordination for the 52nd. On December 20, USAFE dispatched a logistics planner to Incirlik to lay the initial groundwork for the arrival of additional aircraft. EUCOM's Crisis Action Team was responsible to prepare the operations order (OPORD). On December 21, they telefaxed an advance copy to USAFE. Two days later, USCINCEUR issued this OPORD, establishing JTF-PF. Mission was to support multi-national forces in the CINCCENT AOR from Turkey (Generals Schwarzkopf and Galvin had earlier agreed that EUCOM was to maintain operational control, meaning the Command would organize JTF-PF and assign its tasks. However, CENTAF was to exercise tactical control, mean-



Patch of Composite Wing Provisional, 7440. (Via Eric Bosch)



The 552nd AWCW at Tinker did not only deploy E-3s to the Gulf Region, but also three to Incirlik to support JTF PROVEN FORCE. The January 11 photo shows E-3B 83-0008. (USAF)

ing it would provide data on the specific targets the JTF would strike. Gen Oaks was directed to appoint a commander in the rank of major general, establish a staff to support him, and to coordinate strike planning, mission execution activities and air refueling.)

On December 27, Maj Gen James Jamerson, USAFE's Deputy Chief of Staff of Operations (DCO), was appointed as JTF commander. His staff consisted of Lt Col Tom Hanton as the J-3 Air, members of the USAFE Weapons Shop and several other 65AD members. Tom, in his job as 65AD/DO, which was not a command position, was responsible to integrate the training of the EC Triad. For instance, he set up monthly 'Regular Training Missions' in USAFE that brought together the Triad along with U.S. and allied strikers. These training missions proved to be very valuable in refining the SEAD campaign approach and working out some of the tactics employed against Iraqi targets. The SEAD campaign planning template was used to create the Air Campaign Plan used by JTF-PF. Tom Hanton,

My initial role was to set the JTF up and organize it with a team of ten people. This meant, among others, to choose building(s) at Incirlik to house the JTF, communications requirements, organizing the operational and intel support manning requirements, including personnel and skills, and to establish processes to execute the war. This took about fourteen days. As the J-3 Air, my role was to organize its operations staff, to develop the air campaign, and prepare the Daily Operations Order (DOO), which informed the Turkish government and military, CENTAF, the Joint Staff and off-station units what we were planning. The Wing used the DOO, a high-level, mission-type order that was approved by the JTF/CC, to develop their daily ATO. Its targets were matched to the Air Campaign Objective and based on the phase of the Campaign itself and progress made.

On January 1, 1991, Incirlik AB hosted forty-eight USAFE aircraft, 10/F-15C (had arrived on December 16 for a WTD), 24/F-16C and 14/F-111E. In addition, SAC

had deployed four KC-135s. The aircraft remained under control of their respective home units until Turkey would have authorized the JTF's activation.

Warning Order

On January 2, Jamerson, in company of Brig Gen Lee Downer, the prospective wing commander, and Hanton, flew to CENTAF Forward (CENTAF-F) in Riyadh to meet with its campaign planners. Tom,

We briefed each other about the concept of operations, coordinated ATO procedures and established operations areas to de-conflict targeting. CENTAF-F would receive our daily operations order. Although we were to choose targets in our AOR only, we were requested several times to hit targets in the CENTAF AOR. Direct phone lines would be set up between the two headquarters.

CENTAF's single ATO had aimed to avoid 'route packages', but in case of USAFE's JTF-PF, an exception was made. Although the Task Force was under Horner's operational control, geography dictated a de facto route package. Although the targets were assigned, often ones recommended by the JTF, Incirlik decided, for instance, when to attack and what the strike package composition would be. This information became part of CENTAF's daily Master Attack Plan. As long as JTF-PF stayed north of the 35th parallel, there was little need to communicate with anyone other than Morón's and Fairford's B-52Gs. Or when F-117As struck targets there, like in the case of the strike against the Kirkuk sector operations center. Their assistance was necessary because of JTF-PF's lack of stealth and precision. In mid-February, CENTAF started calling upon Incirlik to assist in striking targets below the 35th parallel.

After returning to Ramstein, JTF-PF was activated by Gen Jamerson at 7/0800Z Jan. The JTF was composed of four components, (1) air forces, composed of eleven different aircraft types, (2) combat search and rescue (CSAR), (3) psychological ops, and (4) a Patriot SAM battalion. Concurrent with the activation, the deployment of a small ADVON, Tom Hanton and a staff of nine, to Incirlik was authorized by the Turks. Jamerson arrived on the 17th. Two days after a January 13 meeting between Turkish president Özal and Secretary of State Baker, the U.S. Ambassador in Ankara was formally informed that a 'temporary' deployment of additional aircraft to Incirlik had been approved. Hq USAFE staff, with support from the wings that were to deploy, already had a lot of planning accomplished and they were immediately given a JCS warning order to deploy. However, the approval did not encompass authorization to fly strike missions against Iraq.

On January 16, USAFE activated Composite Wing Provisional, 7440, (CWP 7440) at Incirlik as the JTF-PF's air component, with Brig Gen Downer as commander. The Wing, comparable to a Navy Carrier Air Wing, was the first such wing with a combat mission since World War II. It was believed that by putting more authority in the hands of



An F-4G and F-16C Block 30D on a wet Spangdahlem tarmac before deploying to Incirlik on January 17. The F-4G is configured with two AGM-88 HARMs and an ALQ-131 ECM pod, the F-16C carries two AIM-9 Sidewinders, two AIM-120 AMRAAMs and an ALQ-131. (USAF, 52nd TFW)

fewer commanders, working in a composite wing would allow pre-war planning to be cut by sixty hours to as little as twelve hours. However, it proved not to be the only plus. Many of the aircrews liked working face to face with colleagues flying other types of aircraft instead of hoping that everyone from the various bases would rendezvous at the right time. Incirlik's 39th Tactical Group (TGp) was attached to the Wing. Airlift began with the arrival of two C-5 Galaxy transports. Personnel arriving included the first 39-man echelon of JTF-PF headquarters.

Elusive Concept

In a 17/0001Z Jan message, 'Follow-up Execute Order-USCINCENT OPORD 001 for Desert Storm', USCINCENT/J-3 advised COMUSCENTAF to be ready to receive tactical control of JTF-PF tactical air and CSAR forces based in Turkey.

After the Turkish Parliament empowered its government on January 17 to employ the forces previously authorized, execution orders were given and within hours augmentation aircraft started to arrive at Incirlik with four F-111Es from Naval Air Station Sigonella, Sicily as the first aircraft. The remaining aircraft arrived by next morning. As EUCOM had sent all its F-111Fs to CENTCOM, no precision strike aircraft were available for deployment. Special Operations Forces also arrived, when Col Ben Josey, deputy vice commander of the 39th SOW at Rhein Main (FGR), deployed with a 52-man ADVON to the FOB, Forward Operating Base, at Incirlik. According to Tom Hanton the Wing fell under the umbrella of JTF-PF, but it was not controlled by them. All they could do was to request to conduct SAR operations if an airplane and crew(s) were lost. The special ops segment was called ELUSIVE CONCEPT. The Wing's vice commander, Col Eugene Ron-sick, commanded the FOB, while Josey commanded the FOL at Batman, seventy-two miles from the Iraqi border. Four PAVE LOWs arrived at Batman on January 20 and were operational that night. The fifth MH-53J was kept



Two F-16C Block 30Ds of the 52nd TFW taxiing to last chance prior to taking off. (USAF, SSgt Marvin Preston)

at Incirlik. By January 24, the 39th had grown to over 200 personnel.

Tornado Town

As authorization to use Incirlik for strikes against Iraq was received on January 17 only, it meant that JTF-PF entered the war on Day Two, January 18. Meanwhile, the 7440th was being reinforced with additional aircraft. The squadrons involved had prepared their deployment, while logistics personnel had worked hard to improve the Lik's capability to support expanded operations. After a January 13 Turkish approval to construct thirty 12-person tents at Incirlik, a PRIME BEEF Civil Engineering team constructed a tent city, dubbed 'Tornado Town'.

To maintain the variety of aircraft, seven Aircraft Maintenance Units were established, plus a combined component maintenance/equipment maintenance section, the 39th CAMS. In addition, a munitions branch was established from the 39th TGP and deployed units. As the majority of intermediate-level repair (all avionics except ECM and engine repair) was sourced out of European home stations, the Wing operated on a de facto two-level maintenance concept with Military Airlift Command (MAC) channel and special airlift providing lines of communication. This also applied to most of the units in the AOR, resulting in days that as many as 500 pieces of cargo required manual tracing.

Three waves

On 17/2350Z Jan, a 20-aircraft strike package, including twelve F-111Es, took off to initiate combat operations from Incirlik, only hours after Turkish authorization. With limited support, the F-111Es ingressed Iraqi airspace at low altitude, attacked the targets and returned. Targets were four EW sites in northern Iraq and relatively close to the border. All were destroyed. One F-111E received minor damage. Seventy-six sorties were flown that day, including ten air refueling and eight EW sorties.

As of January 18, 120 aircraft were stationed at Incirlik.

By 1200Z, 104 of them were mission capable, while one F-111E was in battle damage repair. This enabled the Wing to fly 50-60 sorties a day in three waves, two daylight and one at night (with twelve F-111Es, increasing to sixteen after the arrival of four additional aircraft), against targets in generally northern Iraq to destroy centralized air defense command and control, biological and chemical weapons storage and production facilities, and to achieve air superiority. Two of the new F-111E arrivals had gone through the Avionics Modernization Program (AMP), including a GPS receiver to improve navigation, enabling them to act as pathfinder for other F-111Es. The bigger daylight waves would encompass as many as twenty F-16C strikers.

JTF-PF conducted two strike packages on January 22 with a total of ninety-six sorties. Due to weather, the first package with seventy-one aircraft was forced to air abort. The second package with twenty-five aircraft successfully struck Mosul Airfield.

A few days after the JTF-PF/B-52G strikes on February 8-9 against Bayji oil refinery, CENTAF told Incirlik to use F-111Es and F-16Cs to attack further south to help F-117As bomb central Iraq. The target was the Taji complex in the middle of CENTAF's 'territory'. During the final two weeks of DESERT STORM, Taji was struck by some 140 F-16C and F-111E aircraft, supported by CENTAF support packages. Not being able to cross Syria, the missions were a third longer for the Incirlik aircraft than necessary.

On February 25, support personnel and equipment arrived at Incirlik in preparation for the arrival of the PAANG EC-130E VOLANT SOLO which was requested earlier by JTF-PF. The aircraft arrived the next day. The first mission was planned for the 28th.

CWP 7440 Air Order of Battle on Jan. 1/Feb. 1, 1991

Sqdn/Wing	Home Station	Eqpt	Phase	Total
			I*/II	
23TFS/52TFW	Spangdahlem	F-4G/ F-16C	-/13-12	25
32TFS/32TFG**	Soesterberg,	F-15C	-/5	5
42ECS/66ECW+	RAF Upper Heyford	EF-111E	-/6	6
43ECS/66ECW	Sembach	EC-130H	-/3	3
77TFS/20TFW++	RAF Upper Heyford	F-111E	14/-	14
79TFS/20TFW++	RAF Upper Heyford	F-111E	-/4	4
525TFS/36TFW	Bitburg	F-15C	10/9	19
612TFS/401TFW	Torrejón,	F-16C	24#/-	24
Total			48/52	100

* 'Phase I' involved the aircraft already at Incirlik prior to the augmentation.

** Aircrews and aircraft augmented the 525th TFS.

+ On January 25, reassigned to the 20th TFW.

++ F-111Es destroyed 423 targets, including, for example, signal intercept stations near the Tigris River in Mosul. Aircraft and the majority of personnel redeployed to Upper Heyford on March 9.

including four aircraft on a NATO SIOP alert commitment.



Because, after all, there was a great need for BDA at Incirlik, the 26th TRW received notification to deploy after SECDEF's direction on February 1. Within thirty-six hours, six RF-4Cs, 168 personnel, a PPIF and maintenance support equipment deployed to Incirlik as CREEK STORM. Another latecomer was the F-4E, of which four arrived from Clark (Philippines) on February 23 to fly combat missions with PGMs. However, to do so, they needed their PAVE TACK pods. They did arrive, but after the Gulf War was over. (Tom Hanton)

Later deployments:

Sqdn/Wing	Home Station	Eqpt	Total	Date
38TRS/26TRW*	Zweibrücken	RF-4C	6	Feb 6
77TFS/20TFW	RAF Upper Heyford	F-111E	4	Feb 25
Total			10	

* After PROVEN FORCE was initiated, it quickly became apparent that insufficient Bomb Damage Assessment (BDA) was received. In late January, the 26th TRW/CC was called and asked if the Wing still had the capability to provide intel collection. Bureaucracy worked quickly this time as on February 1, after SECDEF's direction, the 26th TRW received notification to deploy. Within thirty-six hours, six aircraft, 168 personnel, a Photo Processing Interpretation Facility (PPIF) and maintenance support equipment deployed to Incirlik as CREEK STORM. When this was taking place, the Wing was well into the closedown phase as it was slated for inactivation on March 31. The first combat sorties were flown on February 5. All sorties were flown in strike packages and at medium altitude. The average sortie duration was 2.6 hours. Redeployment was on March 11, followed by the inactivation of the 38th TRS on April 4 and of the Wing one day later.

Non-USAFE deployments

Sqdn/Wing	Home Station	Eqpt	Total
917ARS/96BW	Dyess AFB	KC-135	15*
552AWACW	Tinker AFB	E-3B	3
7SOS/39SOW	Rhein-Main	MC-130E	2
67SOS/39SOW	RAF Woodbridge	HC-130N/P	4
21SOS/39SOW	RAF Woodbridge	MH-53J	5**
7SOS/39SOW	Rhein-Main	C-130E	1
3TFS/3TFW	Clark AB, PI	F-4E	4+
61TAS/314TAW	Little Rock AFB	C-130E	8
37TAS/435TAW	Rhein-Main	C-130H	11
VQ-2++	Rota, Spain	EP-3E	2
Total			55

In addition, JTF-PF combat operations were supported by SAC B-52G, RC-135U/V/W, KC-10A and KC-135A/E/Q/R aircraft in France, Greece, Italy, Spain and the UK.

* assigned to AREFWP 804. Four 96th BW aircraft had arrived from Dyess on December 28-29, 1990. Additional aircraft first deployed to RAF Mildenhall, pending diplomatic clearance. SAC retained operational control with USAFE absorbing tactical control. This was the first time SAC tankers operated within a composite force. The tankers refueled 3,802 receivers, offloading 29.2 million pounds of fuel.

** two MH-53Js and three crews were from the 1st SOW. + Before JTF-PF was activated, all available USAFE precision attack aircraft, read F-111Fs, deployed from RAF Lakenheath to Taif, Saudi Arabia. The arrival at Incirlik as late as February 23 of four F-4E Phantoms must have been met by many with quite a bit of surprise. All non-recce F-4s had left USAFE's inventory and the only operational USAF F-4s, F-4Es, were assigned to the 3rd TFW at Clark. The aircraft arrived with a shortage of maintenance. The 52nd TFW leapt to the challenge and re-configured the aircraft to a combat configuration. Tom Hanton,

Initially there had not been a need for a PGM (Precision-Guided Munitions) capability based on early targeting and JTF-PF's purpose, preventing the Iraqi AF from having a sanctuary and safe rear supply system. These targets were easily destroyed by conventional bombing. However, a point in our campaign plan targeting strategy had been reached that only PGMs would be effective against certain targets, primarily weapon storage bunkers. Neither the F-111Es nor F-16Cs were PGM-capable. They were AGM-65 Maverick-capable, but none of their aircrews were currently qualified. The F-4G was Maverick-capable, their crews qualified and tasked on several occasions, but this was not really an option for sustained operations. This resulted in a USAF-wide (active and reserve forces) request by Gen Jamerson for aircrews that were current in employing PGMs and aircraft with laser designation pods. Both the USAF and ANG had F-4E units with PAVE TACK capability. Both PACAF and the 141st TFS of the New Jersey ANG at McGuire, NJ offered aircrews and aircraft. When I was asked which of the two units was wanted, my reply was the one that could get to Incirlik the quickest. This turned out to be PACAF's 3rd TFS. Crews and aircraft arrived safely, but the C-5 Galaxy with the PAVE TACK pods ran into maintenance problems en route.

The Westinghouse AN/AVQ-26 PAVE TACK pod was the first laser designation system to provide the capability to autonomously deliver PGMs at night. PAVE stood for Precision Avionics Vectoring Equipment. The size of the pod made it necessary to carry it on the F-4E's centerline, replacing the 600-gallon fuel tank. Due to the substantial drag, aircrews referred to the pod as PAVE DRAG. When the Clark aircrews arrived at Incirlik, they had to be checked out. As their pods had not yet arrived, part of the checkout included flying several combat sorties, dropping 'iron' bombs. Ten sorties were scheduled with six flown, for



Brig Gen Lee Downer, commander of the 7440th, is thanking the Wing's members for their dedication and hard work throughout the Gulf War before a flight line celebration with food and music. The four-star general on the right is Robert Oaks, USAFE/CC, with Col Gary Lorenz, 39th ABW/CC, standing with Oaks. (Tom Hanton)

sixteen flying hours. The PAVE TACK pods must have arrived at Incirlik as in his 'How goes it' assessment as of March 14, the 20th TFW commander, Col Lawrence Stelmon, stated the following,

High altitude drops of laser-guided bombs were validated with ground lasers at Konya Range immediately before the end of the war. As its end was announced, our F-111Es were on the ramp, loaded with LGBs, ready to drop precision-guided munitions in formation with PAVE TACK F-4Es on high-value Iraqi targets.

++ Fleet Air Reconnaissance Squadron.

Mirage F-1

The Wing conducted 100 strike packages. Engaged were 108 targets, including, for example, twelve support, production and storage depots and twenty-two C3 facilities, against which 3,500 tons of ordnance were expended. In addition, psychological leaflets were dropped, including 900,000 on February 27 by four F-16Cs expanding four M-129 bombs each on Iraq's 2nd and 38th Divisions.

Although no combat losses were suffered, an F-16C (86-0329) of the 612th TFS was lost on February 21. The pilot, Capt Strom, experienced engine problems after in-flight refueling over Turkey, attempted to reach Diyarbakir AB, but was forced to eject. He did so safely and was recovered.

There were forty aircraft emergencies, thirty-four in the air and six on the ground. Two F-15C Eagle pilots were each credited on January 19 with an Iraqi Mirage F-1 kill, the first of five kills achieved by JTF-PF F-15C Eagles. The kills, with AIM-7Ms, were made when Iraqi aircraft responded to a JTF-PF strike package against targets at Kirkuk and Quayyarah.

The number of airlift sorties was 963, involving the transportation of 7,223 passengers and 7,862 tons of cargo. Of the 5,499 tons of ordnance received, 3,494 were used. A total of 1,867 missiles were assembled and checked out.

Sorties flown/fighters

Type	Sorties	Sched/Flown	Flying Hours	MC Rate	Average Number
F-4E	10	6	16	54.4	4
F-4G	429	414	1247	68.0	13
RF-4C	109	109	286	79.5	6
F-15C	1088	1068	3540	79.9	27
<i>Ibid-ZULU</i>	0	144*	341		
F-16C	1191	1108	3122	86.8	26
F-16C WW	580	577	1760	85.6	13
F-111E**	553	553	1583	74.8	18
EF-111A	250	250	702	68.8	6
Total	4210	4229	12597	75.3	113

* 72 alert scrambles.

** including 456 night sorties (1,328 flying hours).

Sorties flown/heavies'

EC-130H	-	100	458	-	3
KC-135	-	526	1787	-	13
E-3B	-	89	483	-	3
Total	-	715	2728	-	19
Grand Total	-	4944	15325	-	132

Provide Comfort

Redeployment of aircraft from the Lik was initiated on March 9. Eleven days later, a USAFE F-15C downed an Iraqi SU-22 over northern Iraq. On the same day, the JTF-PF headquarters element redeployed from Incirlik. However, this did not mean the involvement in Iraq was over. To provide humanitarian relief and protect Kurdish refugees in northern Iraq, Incirlik hosted Combined Task Force PROVIDE COMFORT I, II and III. No-fly zones were initiated above the 36th parallel in Iraq.

Downer

In his article 'The Composite Wing in Combat' in the Winter 1991 issue of *Airpower Journal*, Brig Gen Lee Downer, commander of CWP 7440, stated that two persons were key in the PROVEN FORCE operation, the Chief of Combat Plans and the (package) mission commander. The former assisted JTF-PF/J-3, Air in developing the air campaign plan, consolidating the DOO and producing the ATO. Sometimes, CENTAF added special instructions and/or its priorities. The J-3 staff would then produce the DOO, providing campaign objectives for that day, the targets, Time-over-Target windows throughout the day, and other guidance. Next were the combat planners, who proposed an ops concept to the DOO after coordination with, among others, maintenance, the tactical squadrons and off-station supporting units. Subjects like force size, its composition and weapon configuration were essential. The plan, after the DCO's approval, would then be 'translated' by the J-3 staff into an ATO, a critical process, which was essentially a flying schedule for the combined force employment in time, space and purpose on a mission-by-mission basis. Next in line was the mission commander, who 'absorbed' the ATO. He was one of the most experienced flight leaders



Two members of USAFE's EC Triad, the F-4G/F-16C Block 30D and the EF-111A. Both the F-4G and F-16C are configured with an AGM-88 HARM and ALQ-131. In addition, the F-16C carries AIM-9s and the F-4G an AGM-65 Maverick. The third member, the EC-130H, also flew combat sorties from Incirlik. (Tom Hanton)

in the lead attack squadron. His job was to put the package plan together, picking the route(s) to the target, assign specific duties to the supporting forces, like SAC ELINT (Electronic Intelligence) RC-135s from Hellenikon, and conduct the mass briefing. This resulted in flight, launch, tanker and, tactics and backup plans. After completion of the mission, he was responsible for the mass debrief. After it had become obvious a mission commander needed some (non-flying) help, the job of 'mission monitor' was born. He was a captain or major with extensive operational experience, would assist the mission commander and relieve him from some of his tasks. He was assigned to a package from the ATO's creation until the mission results had been reported. Ultimately, the Wing would have six MMs.

According to Downer, the efforts to get the 7440th into the war was a special success story. He answered his own question, 'Did the composite wing work in combat?' with 'Absolutely, with no reservations'. He stated that as to the composite wing concept there were no fundamental reasons why it could not succeed. With a future leaner, meaner force, being tasked with responding to a wider range of conflict, the composite wing would prove to be a most impor-

tant capability, especially in the context of SECAF Donald Rice's vision of 'Global Reach—Global Power'.

USAFE Deployments

For Operations DESERT SHIELD, STORM, and PROVEN FORCE, USAFE deployed 297 aircraft from its 610 Primary Aircraft Authorized (PAA) aircraft. In Phase I, August 25-September 5, sixty-eight aircraft deployed to the Gulf region: 32/F-111F, 24/F-16C, and 12/F-4G. To support CENTCOM, USCINCEUR on November 19, ordered the Phase II deployment (November 8-December 31) of 114 additional USAFE aircraft (4/EF-111A, 32/F-111F, 24/F-16C, 18/A-10A, 12/F-4G and 24/F-15C), bringing the total to 182 (with 5,420 personnel). 110 aircraft were deployed to Incirlik (with 2,630 personnel, including some 450 aircrew members).

Of note is that the U.S. Government on September 7 approved the Foreign Military Sale (FMS) to Saudi Arabia of twenty-four USAFE F-15C/D Eagles (32nd TFG and 36th TFW) for delivery in September and October. The first six F-15Cs were delivered on September 20. ■

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Joint Task Force Proven Force and the Gulf War (Part 2)



The Squadron's first aircraft was the EC-121S with the first, prototype, delivered on July 16, 1968. To aid the Cambodian government by retransmitting civil radio broadcasts to outlying areas until ground transmitters were improved, JCS directed the unit in July 1970 to deploy two aircraft and personnel to Korat. The deployment was nicknamed CORONET COBRA and the operational mission, COMMANDO BUZZ. The Task Force redeployed to CONUS in the first week of January 1971. The photo shows one of the two Super Connies at Korat. (USAF)

Theo van Geffen

Starting in August 1990, U.S. and allied forces arrived in numbers in the Gulf region to persuade Iraq's Saddam Hussein to give up Kuwait, which was occupied on August 2 and proclaimed to be Iraq's 19th province. In mid-January, a second front was opened from Incirlik AB (Turkey). A score of aircraft types were involved. In a multi-part article we will have a closer look at the development and involvement of several aircraft types. In part 1 we did so at the B-52G Stratofortress and at JTF PROVEN FORCE at Incirlik. In this part we discuss the development of the EC-130E and EF-111A, and EC-130E operations.

Activation

After Iraq's invasion of Kuwait, the Air National Guard (ANG) began to survey its immediate assets in view of the needs of U.S. forces to initiate movement of troops and equipment to the Gulf Region. Mississippi's 172nd Military Airlift Group (MAG) at Allen C. Thompson Field in Jackson was one of the first ANG units to be contacted. The unit stated that four C-141As with crews were immediately available and that two additional Starlifters with crews would be the next day. The Group's 183rd Military Airlift Squadron (MAS) was activated on August 25 by Presidential Directive. The 183rd flew its first mission on the 7th into Dhahran, Saudi Arabia and through May 1991, 2,880 sorties were flown, airlifting 15,837 passengers and 25,949 tons of cargo.

Alerted

Up to August 24, ANG involvement in DESERT SHIELD had mainly been through tanker (KC-135E) and transport (C-5A, C-130B/E/H and C-141B) aircraft. On 24/2100Z Aug, six RF-4C Phantoms of the 106th TRS, Tactical Reconnaissance Squadron (117th TRW), departed Birmingham, AL, supported by two dual-role KC-10A Extenders. Arrival at Al Dhafra (United Arab Emirates, UAE) was 25/1320Z Aug. A total of 115 personnel deployed in a 60-day volunteer status. On November 13, the National Guard Bureau (NGB) announced plans to deploy 24 F-16As of the 169th Tactical Fighter Group (TFG, McEntire, SC) and 16 F-16As of the 174th Tactical Fighter Wing (TFW, Hancock Field, NY) to Al Kharj (Saudi Arabia, SA) with respectively December 12 and 16 as proposed deployment dates. Both were alerted on December 3 by U.S. Air Forces Central Command (USCENTAF) Rear for a forthcoming call-up and deployment. The order to deploy was issued on the 14th. On the same date, the NGB instructed both units not to repaint their F-16s in desert colors, but



A maintenance technician is performing a pre-mission check while on the wing of one of the four RIVET RIDER EC-130Es. The four fin-mounted pods contain the TV antennas. The aircraft were later modified with, among others, enhancement of self-protection (IR jammer and chaff/flares) and addition of WWCTV (Worldwide Color Television) capability. Modifications were performed during PDM at Lockheed Aircraft Services in Ontario, Calif. (LMAS, John Rossino)

to leave them in their ghost gray mode. The 169th TFG reported on December 30 that twenty-two of its F-16As had arrived at Al Kharj and that two had diverted into Cairo West with technical problems. A team was sent to repair them. Both aircraft joined the others on January 3, 1991. Air Tasking Order (ATO) #91-27 was issued on December 23 by USCENTAF Rear for a 02/1900Z Jan deployment of three cells of six 174th F-16As, plus two spares in each cell. Upon arrival, both units were assigned to 4th TFW (Provisional) at Al Kharj.

EC-121S Coronet Solo

The 193rd Special Operations Wing (SOW) of the Pennsylvania ANG (PAANG) at Harrisburg IAP was (and still is) the only ANG airborne Psychological Operations (PSYOPS) unit. The unit's airborne radio and television broadcast mission originated in the mid-1960s with EC-121S CORONET SOLO aircraft. As an outgrowth of the Dominican Crisis of May 1965, Secretary of Defense (SECDEF) Robert McNamara issued a directive to USAF to acquire a capability to electronically counter civil broadcasts and insurgent command and control nets in future limited war and counterinsurgency (COIN) action. This led TAC (Tactical Air Command) to direct TAWC (Tactical Air Warfare Center, Eglin AFB, FL), on February 5, 1968 to conduct an OT&E Cat III test (TAC Test 68-400) of the Tactical Electronic Warfare Support System that would be known as CORONET SOLO. It was to be installed in, ini-

tially, four C-121Cs with the capability to join or disrupt commercial radio and TV facilities and to broadcast pre-recorded AM/FM/TV, plus ECM, Electronic Counter Measures. The aircraft were direct equivalents to the Navy's BLUE EAGLE NC-121J. The prototype aircraft was expected to arrive at Olmstead State Airport, where the 193rd TEWG was stationed then, on July 15 for subsequent deployment to Eglin for Cat III testing to begin on September 2. The C-121Cs were modified by Lockheed Aircraft Services (LAS) at LaGuardia International Airport, NY.

The test program called for the development of operating procedures and the training of operations and support personnel. In July 1968, USAF directed the prototype C-121 to deploy to SEA o/a September 1 for 179 days or until the Navy's NC-121J, which it was replacing, completed a modification program. On September 3, JCS cancelled the SEA deployment. The prototype test aircraft was delivered on July 16. To support the CORONET SOLO Project, TAC on July 19, designated and organized Detachment (Det) 3, TAWC at Olmstead. A Quick-Look evaluation of the MF (Middle) and HF (High Frequency) system portion was completed successfully on August 18. As a result of the decision to cancel the SEA combat evaluation, TAC, on October 1, discontinued Det 3, TAWC. By the end of September, problems had arisen in the VHF/UHF transmitter console which caused slippages in the delivery of the CORONET SOLO aircraft. In addition, a labor dispute at the LAS plant resulted in a strike with consequent delivery slippages. While the strike was in progress, a planning conference was hosted by TAC October 24-25. It was determined that, barring further complications, the OT&E would start on January 6, 1969. The strike was terminated on November 18. The revised delivery schedule showed that C-121C #2 would be delivered on December 6, with #4's delivery date unknown. The second aircraft, containing the required electronic equipment, arrived on December 13. Cat III was finally initiated on February 24, 1969 after the test force of one EC-121C, eight officers, 35 airmen, three technical representatives and selected support equipment had arrived at Eglin on the 13th and had completed aircrew orientation and mission briefings. Through February 28, three sorties were flown with the first one 50 percent productive, the second one 35 and the third one only 25 percent. By April 30, twenty-three sorties were flown for 105 hours. In April, the antenna pattern measurements phase on all frequencies was completed (22nd) and active FM (99.3 MHz) broadcasting and jamming in the AM, FM, and TV areas began (29th). The active TV broadcasting and jamming flight test phase of the program was begun on May 27, but due to technical problems, only a video signal was radiated. During the latter stages of the OT&E, TV ops proved to be satisfactory, while operator proficiency improved. OT&E was completed on July 20. The CORONET SOLO system demonstrated a capability to broadcast programming material in the AM, FM and TV frequency range. Also demonstrated was the capability to jam commercial AM, FM and TV stations. A draft of the final report was submitted to TAC on December 17, 1969.

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In the meantime, on September 17, 1967, PAANG's 140th MAS/168th MAG were inactivated and replaced the same day by the newly activated 193rd Tactical Electronic Warfare Squadron (TEWS)/193rd TEWG. With 946 personnel, four EC-121S and four C-121C aircraft it would be TAC's first non-active TEW unit.

In a July 21, 1970 message, CSAF (Chief of Staff of the Air Force), Gen John Ryan, advised that the JCS (Joint Chiefs of Staff) had directed a 90-day deployment of two EC-121S aircraft with the necessary supporting elements to SEA to aid the Cambodian government by retransmitting civil radio broadcasts to outlying areas until ground transmitters were improved. Departure was to be within 72 hours after deployment notification by Pacific Command (PAC). Two days later, PAC notification was received with CORONET COBRA being the deployment nickname and the operational mission nicknamed COMMANDO BUZZ. Arrival of the Task Force at Korat RTAB with the aircraft and 75 personnel was on July 31. Over 250 Guardsmen rotated for periods of 30-60 days. The first mission was flown on August 5. On December 24, the final of 142 operational sorties was flown with 778.6 hours logged. Only one late takeoff was experienced due to failure of an engine-driven hydraulic pump. The next day, a US Army 50-Kilowatt (KW) ground radio transmitter located in Thailand assumed the EC-121S mission. The Task Force redeployed to CONUS in the first week of January 1971.

EC-130E Volant Solo

On November 9, 1977, the 193rd flew 54-0180, the last of its four C-121Cs, to MASDC, Military Aircraft Storage and Disposition Center, at Davis-Monthan (AZ) for storage. On June 30, 1978, aircraft assigned were three EC-121Ss and eight C-130Es. The first C-130E was received in August 1977 and all were to be modified to the EC-130E configuration. The first flight took place in November at LAS, Ontario (CA). The aircraft arrived in Harrisburg on March 16, 1979 with the first sortie flown six days later. With its introduction CORONET SOLO became VOLANT SOLO. The unit's second EC-130E arrived on May 9. On the 14th, the final EC-121S, ANG's and USAF's last EC-121, 54-0164, left Harrisburg for MASDC. On October 8, 1980 the units were re-designated to 193rd Electronic Combat Squadron (ECS)/193rd ECG, followed on November 15, 1983 to 193rd SOS/193rd SOG. In March 1983, MAC, Military Airlift Command, had gained the Group, while Air Force Special Operations Command (AFSOC) did so on May 21, 1990. On October 1, 1995, the Group became a Wing.

Mission

The Group's mission in 1990 was to provide combat-ready personnel and equipment for use during times of war or national emergency by maintaining a constant capability for short notice, global, tactical electronic warfare (EW) operations to, for instance, support VOLANT SOLO and SENIOR SCOUT/HUNTER. To perform its mission, the



The 193rd SOG had eight EC-130Es assigned, four RIVET RIDER-modified and four COMFY LEVI-configured aircraft. 63-7869 was a RR example and was one of the two VOLANT SOLO aircraft that deployed to King Fahd International Airport (KFIA). In early January 1991 it redeployed to Harrisburg, but returned to KFIA a second time in late February to replace 63-7773, which deployed to Incirlik (Turkey). (USAF, TSgt John McDowell)

193rd had 1,369 personnel, four EC-130E RIVET RIDER (RR) and four EC-130E COMFY LEVI (CL) aircraft assigned. With the former, PSYOPS (Psychological Operations), broadcasting in a frequency system which included standard AM/FM radios, television, short wave, and Command and Control Communications (C3) counter-measures were conducted. Secondary missions included limited intelligence gathering and communication jamming in the military spectrum. With the latter, SENIOR SCOUT and SENIOR HUNTER missions were flown, when required, on behalf of the AF Electronic Security Command (ESC) with its personnel as back-enders. The CL aircraft were basic, 'slick', C-130Es with palletized mission systems and clip-on antennas arrays. Non-configured, the aircraft were used to airlift passengers and equipment. The 193rd SOS was the most deployed ANG combat unit in 1990. On normal RR missions, the number of crewmembers was eleven, five aircrew and six mission, consisting of one officer and five enlisted personnel. All broadcast equipment was off-the-shelf (OTS).

Alert Notice

After Iraq invaded Kuwait, Pennsylvania Governor Robert Casey on August 10 approved DoD's request for use of PA Guard members and their resources. The next day, CENTAF, the Air Force component of USCENCOM, decided to request EC-130E VOLANT SOLO aircraft of the 193rd SOG. The CAT, Crisis Action Team, was activated on 21/1200Z Aug to support the deployment. This was followed on the 23rd by an alert notice to deploy two EC-130Es, two 'slick' EC-130Es and about 150 personnel to the tentative location of King Fahd International Airport (KFIA) in Saudi Arabia. In addition, transportation had to be provided for twenty-one personnel and equipment of the Army's 4th Psychological Operations Group (POG, Fort Bragg, NC). They would typically provide the messages, on reel-to-reel tape, compact disc, videotape, or laser disc, to be broadcast. Also on August 23, the NGB authorized the

Group to support DESERT SHIELD via a voluntary force, rotating every 30 days, the maximum volunteer period, as long as a fully operational status was supported in-theater. Many guardsmen returned for 3-4 rotations. The next day, a JCS tasking message directed the Group to deploy to a specific bed-down location in Saudi Arabia with no 'external' airlift or in-flight refueling support. Closure was to be 'as soon as possible'. When AFSOC notified on August 25 that airlift and in-flight refueling was non-available, attempts were made to tackle these problems by 'island hopping' and by self-deploying the assets. This would necessitate two round trips by unit aircraft to the AOR, Area of Responsibility, but would provide only the bare minimum assets to operate.

Desert Shield

On 28/1225Z Aug, deployment was initiated with two EC-130E (RR), 63-7773 and 63-7869, two EC-130E (CL) en route support aircraft, plus 72 unit and 21 4th POG personnel, and 30% of the required equipment to support the initial 60-day commitment. Although the itinerary was Keflavik (28/2026Z Aug), Aviano (29/1720Z Aug), and departure from Aviano for King Fahd (30/0820Z Aug), en route overnight stops were made at Lajes (Azores) and Aviano (northern Italy). After arrival at KFIA on 31/0736Z (the four aircraft flew a total of 49.7 deployment hours), accommodations included five tents, while an additional two were erected. Arriving with the aircraft was their first acting commander, Col Walter Ernst. Throughout DESERT SHIELD, a different acting commander would follow about every 30 days. A unit operations center, maintenance control, work space, and WRSK (War Readiness Spares Kit) storage areas were established. The two support EC-130Es returned to Harrisburg on September 1, with one returning to the AOR on the 5th with nineteen additional support personnel and another 13% of the necessary equipment. By that time, all necessary equipment had been received to reconfigure the EC-130Es to Arabic national standards for both TV and broadcast media to initiate PSYPOPS. The final initial deployment personnel and equipment arrived on September 10 with an USAF C-5B Galaxy, for a total of 121 personnel and 155,000 pounds of cargo.

As a way to provide capabilities of the Group's resources to mission planners and theater commanders, Liaison Officers were placed with USCENTAF (Forward), the Command Tactical Control Center, and the Army's 4th POG. This proved to be highly successful. The first familiarization and training sortie was flown over the Saudi desert on September 2. Two days later, '7773' flew a COMINT (communications intelligence) sortie for 4.2 hours. Iraqi and Kuwaiti commercial radio and television broadcasts were monitored as well as selected Iraqi tactical frequencies. Later that day, both EC-130Es flew to Masirah, Oman due to threatening conditions in the Northeastern region. Both returned on the 5th after the threat condition was lowered from *Charlie* to *Bravo*. It was reported that the mission priority for VOLANT SOLO



The broadcast studio in the cargo hold of the EC-130E VOLANT SOLO with six crew members and their (off-the-shelf) equipment. TSgt Barry Hein, foreground, an electronic communication systems operator, is coordinating a broadcast mission. (USAF, TSgt John Mcdowell)

would be PSYOPS and that personnel and aircraft would not move to Riyadh as originally planned, but remain at King Fahd, the home for all AFSOC aircraft. As of September 12, missions flown numbered 30 with 189.7 flying hours.

Swap-Over

On the day, September 18, Governor Casey signed the 'Fly the Flag-Support Our Troops' proclamation, urging all Pennsylvanians to support the troops of DESERT SHIELD, the first swap-over of personnel was accomplished by EC-130Es 63-7816 and -9816. Arriving were 88 personnel, while returning on the 24th were 98. Deployed were 94 personnel and two EC-130Es. A personnel swap-out would take place every month.

A 5.5-hour COMINT mission, which included in-flight refueling, was flown on September 29. The mission was to monitor and record specific frequencies and make contact with E-3 AWACS (Airborne Warning and Control System) aircraft and other friendly forces. Both aircraft were FMC, Fully-Mission Capable. After flying a COMINT mission on October 3, the Mission Control Commander (MCC) on board 7773 requested all future missions have linguists on board to distinguish significant traffic.

On October 15, CENTAF Forward reported that the mission of EC-130E VOLANT SOLO aircraft was to broadcast or jam radio and TV in support of psychological operations. Additional sorties were provided to the Joint Force Commander for tasking through the Joint Force Air Component Commander (JFACC). VOLANT SOLO was also to check in on electronic combat (EC) and the Voice Product Net (VPN) to receive HVAA (High Value Airborne Assets included AWACS, EC-130E ABCCC [Airborne Battlefield Command and Control Center], EC-130H CC [COMPASS CALL] and tanker aircraft) threat warning calls or to receive tasking for coms jamming of HF/VHF (High/Very High) frequencies. After language-qualified and regionally and culturally oriented personnel had been specifically organized, trained and equipped for PSYOPS, a combined cell

with representatives from the Egypt, Saudi Arabia, UK and US was formed by the end of October. The first actual 193rd PSYOPS mission airing *The Voice of America* into the Kuwait Theater of Operations (KTO) occurred on November 22, Thanksgiving, through a route called 'Gulf Coast South' by picking up the transmission from Greece, a little more than 90 days after arriving in Saudi Arabia. According to AFSOC, this meant it was the first major command (MAJCOM) to support a wartime mission.

Dispersal

The follow-on airlift support was not accomplished as scheduled. The crew of 63-9816 was tasked to leave Harrisburg on the 14th, to fly to Naples via Lajes on the 15th to offload the necessary parts to repair 63-7816, then continue to the AOR on December 17, return to Naples on the 18th and finally to Harrisburg on the 19th. '7816' would fly on December 17 to King Fahd after repair completion and return home on the 19th.

COMINT missions in general included monitoring, recording and rebroadcasting of assigned frequencies, including 'Baghdad Betty'. Although the EC-130E crew took off on December 24, the VHF and UHF (Ultra High Frequency) radios were inoperative and the mission was canceled. On December 31, the two RR EC-130Es had flown 492.7 hours, of which 243.7 by 63-7869 and 249.0 by 63-7773. On the same day, the 193rd SOG requested diplomatic clearances to deploy a third EC-130E (RR), 63-7783, to the AOR with a scheduled departure from Harrisburg on January 2, 1991 and arrival on the 4th to replace 869. It flew its first COMINT mission on the 5th for five hours.

On January 7, the scheduled EC-130E to fly a COMINT sortie was replaced due to the fact its #4 engine experienced mechanical problems. The logbooks showed the three EC-130Es had flown 154 COMINT and 305 support sorties for 1,140.7 flying hours. Via a 11/0750Z Jan message, USCENTAF concurred with a AFSOCENT (Air Force Special Operations Command Central) request to deploy one of the EC-130Es to Thumrait, Oman, considering the imminent hostilities. This plan was deemed necessary due to the serious SCUD threat at KFIA and a lack of revetments. It was considered to also disperse one AC-130H and two MC-130s, which were not tasked for missions in the early phase of war operations (all AFSOC aircraft were deployed at King Fahd). AFSOCENT, in a 15/0550Z Jan message, reported that USCENTAF did not approve the dispersal of assigned SOF (Special Operations Forces) assets and as a result would be dispersed as KFIA had no revetments. However, in a 15/0915Z Jan message, the 193rd SOG informed USCENTAF Forward that, in anticipation of forthcoming hostilities, its EC-130Es would be relocated to Thumrait and remain there until a return to King Fahd was advisable. The plan was to stand down until air superiority was achieved, but FMC from Thumrait would be maintained. Both aircraft landed at Thumrait on the 16th with EC-130E 63-7773 being PMC, Partly Mission-Capable. This fact is interesting as AFSOC's publication 'AFSOC in the Gulf War' stated that on January 14

HVAA (MC-130Es) which did not have an initial ATO mission were dispersed to Thumrait. Also, that CENTAF did not approve dispersal of their controlled SOF assets, the EC-130E and AC-130Hs. Since there were no revetments at KFIA, AFSOCENT dispersed the aircraft along the airfield (the eight MH-53Js, five MH-60Gs, and two HC-130P/Ns deployed on January 14 to the FOL, Forward Operating Location, Al Jouf, where they were on alert). Confusing?

During DESERT SHIELD, the 193rd SOS flew (training) sorties six days a week, while a nearly perfect mission-ready status was maintained. The sorties consisted of in-flight refueling, collection of Iraqi radio and TV broadcasts, plus the peaking of mission equipment. As of the first actual PSYOPS mission, every mission involved actual PSYOPS broadcasts in one or more formats. These missions were flown in northern Saudi Arabia and over the Persian Gulf. However, orbits were moved progressively closer to the Iraq/Kuwait border. The orbit had a racetrack pattern and was at an altitude of 18,000-20,000 feet. After every sortie, tasking and results were carefully reviewed by personnel associated with the VOLANT SOLO mission. Necessary field modifications to the broadcasting equipment were accomplished in minimum time with locally redesigned and produced equipment. Although the PSYOPS machinery had been in-theater since late August 1990, the permission to implement the campaign was granted by JCS only after a personal message from Gen Schwarzkopf. By January 12, 1991, all was ready for the campaign's initiation.

Desert Storm

Upon the start of DESERT STORM, January 16, the 193rd SOG Base Compound at Harrisburg IAP was put on a Threat Level B Alert as the possibility of local terrorism had become a serious threat. On D-Day, January 17, the Group reported it had one EC-130E on alert at Thumrait and that all its assets were prepared to carry out their mission. In the morning of the 18th, Thumrait was attacked



The author was unable to obtain any photos of EC-130E VOLANT SOLO aircraft involved in the Gulf War, except this 'not so good' photo of King Fahd International Airport. On February 1, 1991, KFIA not only was home to 32 USAF fixed-wing (special operations) aircraft, but also to 143 (O)/A-10A aircraft. (via AFSOC HO)

by SCUDs. All personnel and aircraft were undamaged and there were no impacts at the Group's location. The two aircraft returned to KFIA in a 2.6-hour sortie after which 7773 flew a 6.3-hour mission.

As psychological operations were assuming more significance at the CENTCOM level on January 20, the probability of multiple daily sorties were considered more likely. The need for additional personnel was unknown, however. Two COMINT sorties were flown on the 21st. On a 8.5-hour sortie, aircraft 7773 broadcast taped messages including news, a defection message, and music. Jamming was used on various SCUD HF C2 frequencies. Aircraft 7783 flew *Orbit Sea Isle* and also jammed SCUD frequencies. The longest EC-130E sortie was flown on the 22nd, when 7783 flew a 10.8-hour mission in *Sea Isle*. The assigned taped messages were broadcast and assigned frequencies jammed. Through January 24, the Group had averaged two 7-hour sorties/day. Operations were accomplished with high effectiveness and fourteen attack alerts were gone through. The first COMINT sortie that day, 7.2 hours, was flown in *Sea Isle*. Due to possible MiG-25 Foxbats in the area, the EC-130E's crew was warned by *Papa Bravo* and directed vector Southwest. The crew then temporarily established an orbit in the Jabaal area. The next day, 7783 flew a 7.4-hour mission in *Sea Isle*. Prior to orbit, *Papa Bravo* directed the crew to divert to a 080 heading for an additional tasking, which required a revision in the FM broadcast. Jamming was utilized, followed by broadcasts to support a leaflet drop by *Rattler 31*. As of five hours in the mission, SCUD frequency jamming was initiated, due to *Warlock's* ineffectiveness. Additional monitoring and broadcasts were accomplished. Jamming for a strike package was also being tasked upon EC-130E crews. While on a 7.0-hour COMINT mission in *Orbit Sea Isle*, a crew was requested by *Deep Sea* to jam for a strike package into Al Basra during 30 minutes. The unit stated they had been tasked to provide or supplement ECM support practically every night since the start of DESERT STORM.

Mobilization

After USCINCEUR supported JTF PROVEN FORCE's request to conduct one mission per day from Incirlik, JCS was requested by January 27 message for additional VOLANT SOLO assets. As a result, AFSOC requested on the 30th an increase in its mobilization ceiling to permit activation of the 193rd SOG. The Group already had two EC-130Es with associated aircrews, staff and maintenance personnel deployed in a voluntary status. In addition, the unit was also tasked for possible EC-130E (CL) support. Mobilization of 500 additional personnel would allow the Group to meet all projected requirements.

Two EC-130E COMINT sorties were flown on February 1 over the KTO. Both crews reported extremely heavy air traffic over the area. An E-3 AWACS aircraft was monitoring traffic to assist aircraft in mid-air collision avoidance. As the HVAA controller on board the E-3 became saturated, the possibility of such a collision increased. To help relieve saturation, it was suggested by the Group to



EC-130E 63-7773 on finals on March 28, 2006. Together with 63-7869 it arrived at KFIA on August 31, 1990. It flew its final sortie from King Fahd on February 25, 1991 for a total of 577.3 flying hours, was replaced there by 869 and deployed to Incirlik to support Operation PROVEN FORCE. The bulky pods on the outboards contain the WWCTV (Worldwide Color Television) VHF/UHF TV broadcasting equipment. 773 is on display at Fort Indiantown Gap, home of the Pennsylvania National Guard. (USAF, SSgt Matt Schwartz)

fly with two E-3 HVAA controllers and to establish a mission priority system. On February 3, the Group initiated a new orbit, *Baton*. In a 8.5-hour mission, an EC-130E broadcast a PSYOPS program of music and defection messages. Once more, the MMC recommended a linguist on board on each mission. Two days later, the crew of 7773 aborted their mission after 1.4 hours due to a broken HF antenna. After landing at King Fahd, the crew changed aircraft and flew another 6-hour mission in 7783, which had returned from an earlier mission.

Problems

With regard to the proposed deployment of an additional VOLANT SOLO EC-130E (RR), the 193rd SOG, on February 5, 1991 informed the Chairman, Joint Chiefs of Staff (CJCS) of relevant problems. The only two such aircraft the Group possessed, were at King Fahd. To support a more vigorous tasking for the G-Day Plan, two additional deployments were planned, one to Incirlik and one to King Fahd. The Group stated that a third VOLANT SOLO aircraft was undergoing modifications at Harrisburg with an estimated completion date of February 19 (the aircraft involved was 63-7869. The SCNS (Self-Contained Navigational System) modification was completed on February 8). The fourth aircraft, RIVET RIDER 63-9817, was at LAS in Ontario as of August 1, 1989 for PDM (Periodic Depot Maintenance), upgrade of the mission avionics, enhancement of self-protection (IR jammer and chaff/flares), and addition of WWCTV (Worldwide Color Television) capability. Estimated Time of Return (ETR) was December 1991 (it did return after two years at LAS). In addition, one of the two EC-130Es at KFIA was scheduled to be modified to the WWCTV configuration on September 1. Therefore, according to the Group, it was impossible to have four VOLANT SOLO EC-130Es deployed in 1991 at the same

time. It was also stated that preventive maintenance on a regular basis was already a problem. (In the early 1990s, USAF, LAS and Rockwell-Collins representatives had met at Wake Island to test what had previously been only a concept, airborne worldwide color television broadcast capability to transmit in any format. The resulting modification program involved six EC-130Es, of which the four RR aircraft. Although it was scheduled to return in December 1991, it arrived on July 29, 1992. Qualification, Operational Testing and Evaluation [QOT&E] was completed at Holloman, NM in 1993 and WWCTV was declared fully operational. With all the electronic equipment, the EC-130Es were among the heaviest in service. In most cases, the aircraft would take off with less than a full load of fuel, shortly later to be filled up by a tanker. Besides the bulky WWCTV pods, the outer wing also had two ax-head shaped blade antennas attached. There were eight large permanently mounted antennas. A fairing under the tail housed the HTWA, Horizontal Trailing Wire Antenna, which was primarily used for FM radio broadcasts. A winch assembly played the HTWA out to more than 600 feet behind the aircraft. Two 25-ton capacity air conditioners, mounted on the fuselage sides, kept the heat in the cargo hold from the equipment under control.

The third modified EC-130E arrived in January 1995. In November-December 1995, the 4th modified aircraft arrived at Harrisburg, while the two loaner C-130Hs, which had arrived in late 1991, departed. The fifth 'new' EC-130E aircraft arrived in the fall of 1996 with the sixth and final aircraft returning in February 1997. With the arrival of the 'new' EC-130Es, the mission name was changed from VOLANT SOLO to COMMANDO SOLO.)

Incirlik

With regard to the Incirlik deployment, the Group requested AFSOC approval on February 8 to deploy a liaison officer (LNO) there to coordinate the arrival of an EC-130E with support personnel and equipment. The LNO was to be followed by a site survey team, and finally an advance party to establish the bed-down location and prepare to receive and turn around the aircraft. AFSOC was also requested approval to deploy SNCS-modified EC-130E 63-7869 from Harrisburg to King Fahd and relocate 7773 to Incirlik to support JTF PROVEN FORCE. This plan, according to the 193rd SOG, allowing it to keep two SNCS-modified EC-130Es at King Fahd and making it possible to reduce maintenance/logistics problems. Also on the 8th, Hq Air Force Logistics Command (AFLC) permitted the 193rd to perform certain unit level inspections on their aircraft in lieu of the due major isochronal inspections. Due to their DESERT STORM tasking, it was not practical to return the aircraft to CONUS for this inspection.

Up to early February, EC-130E operations in the Gulf Region could be supported with rotations of volunteers. When the Group was tasked to support a second FOL (at Incirlik) with one EC-130E and support personnel, it became necessary to (partially) mobilize the Group, the first

time since the Korean War. For this reason, the 193rd SOG, on February 12, informed the NGB it was necessary to activate 44 officers and 222 enlisted personnel not later than the 25th. The partial mobilization of one EC-130E crew and 267 support personnel was reported by AFSOC on February 15, with 143 to deploy to KFIA, 95 to Incirlik, while thirty were to remain at Harrisburg. Two days later, USCINCEUR reported that the activated EC-130E, personnel, including two aicrews, and equipment were expected to initiate deployment on February 19. On the 22nd, CJCS issued the deployment order to deploy a third VOLANT SOLO EC-130E to the AOR, read Incirlik. The aircraft with approximately 150 personnel, materiel and its WRSK were to deploy as soon as possible, but not later than the 28th. 7773 flew its final sortie from King Fahd on February 25 for a total of 577.3 flying hours and deployed to Incirlik. According to the unit's history, the Incirlik FOL became operational only two days into the ground war.

Diplomatic

7783 was flown twice on February 19, with the first sortie, in Orbit *Baton*, lasting 8.9 hours. The second, 7.9 hours, was also flown in *Baton*. The crew broadcast two-minute messages on various frequencies. *Vacuum* requested the surrender tapes be used as a jamming tool. High-speed broadcast bursts were noted, interspersed by several minutes. After landing, the aircraft was FMC. On the 20th, both EC-130s flew one COMINT sortie each. In a 9-hour mission, the crew of 7783 broadcast a special B-52 message and a new, taped defection message. While airborne, a special request was received from SOCCE, Special Operations Contingency Communications Element, to monitor the 'Voice of Islamic Revolution'.





A unique picture of an EC-130E and EC-130J of the 193rd SOW together in the skies over Pennsylvania. The date was March 28, 2006 and according to the Wing, it was the first and the last time both types flew together. (USAF, SSgt Matt Schwartz)

Diplomatic clearances were requested by the 193rd SOG on February 21 for four unit aircraft: 63-7869 to replace -7773, and EC-130E (CL) 63-7816, -7828, and -7815 to transport support personnel and equipment to Incirlik. After arrival of '7869' at King Fahd, 7773 was to deploy to Incirlik to perform its VOLANT SOLO mission. All deployments were to begin at 23/1200Z Feb and to be completed by the 27th. In the meantime, on February 17, the Group announced that 7869 (RR) was FMC and ready for immediate deployment. This would be the aircraft's second deployment to the Gulf Region. It had deployed on August 28, 1990 and was returned to CONUS in early January 1991 after SNCS-modified EC-130E 63-7783 replaced it. Its final sortie was flown on the 3rd and the 5-hour duration brought 869's total flown to 257.8.

Ground Campaign

Both aircraft flew one COMINT sortie each in *Baton* on February 22, 7773 for 6.2 hours and 7783 for 8.9 hours. The crew of 7773 had to RTB early due to a pressurization problem. While airborne, the crew of 7783 was requested jamming support by *Deep Sea*. Tapes broadcast included 'Do It Now', 'Time Is Running Out', 'Final Preparation', 'February 22 Bombing', and 'The Cigarette'.

When the ground war begun at 24/0100Z Feb, the 193rd started to transmit an extensive series of PSYOPS broadcasts over the battle field in direct support of the Allied campaign. Missions were flown in Orbits *Baton* and *City Lights*. They included desertion and surrender messages to Iraqi troops. In addition, the unit supported the combined PSYOPS Leaflet/Bombing Campaign, which resulted in the surrender of thousands of Iraqi soldiers. On February 26, EC-130E 63-7869 flew its first (COMINT) sortie, 10 hours, after arriving at King Fahd.

The final two of a total of 76 COMINT sorties by the 193rd SOG were flown on the 27th, both in *City Lights*. A 4.7-hour mission by the crew of 7869 (total, 14.7 flying hours), but had to be aborted after some four hours due

to weather. The crew of 7783 flew a 10.1-hour mission (355.2), broadcasting the 'Voice of the Gulf' and 'Dial-a-Surrender' messages. The final EC-130E mission was flown on March 15. Eight days later, notice of demobilization was received by Col Larry Santerini, the 193rd SOG commander. On the 26th, the last EC-130E and unit members returned to Harrisburg. Over the 211-day period, a total of 560 Group members directly participated in the deployment.

While in the Gulf Region, the unit's VOLANT SOLO EC-130Es were utilized 300% above their program rate just to meet minimum PSYOPS tasking. Only fourteen hours of the desired twenty-four hour coverage could be sustained due to the limited assets. Personnel of the 193rd Consolidated Aircraft Maintenance Squadron (CAMS) achieved 60 continuous days of coverage, exceeding the wartime tasking by 130%. EC-130Es were generated by Maintenance at a rate of 289% above their normal peace time level. Not a single maintenance delay or cancellation was suffered. Ultimately, 1,348 hours were flown during the deployment, of which 845 in combat. In January-March 1991, Group aircraft flew 46% of their yearly allocation of 3,900 flying hours. While on a DESERT STORM mission, an EC-130E surpassed the unit's 130,000 hours of accident-free flying.

According to its history, the Group's EC-130E missions were 'major contributors to the overall success of the Desert Storm operations, both from the psychological operations and electronic warfare standpoints'.

EC-130J Commando Solo

Congress added \$70.5M in FY 1997 for the procurement of one C-130J, its modification to EC-130J configuration and support. Another \$48.8M was added in FY 1998 for the procurement of one 'vanilla' C-130J, plus \$23.5M for its conversion to the EC-130J configuration. A force structure announcement of March 22, 2002 stated that the 193rd would convert from three EC-130Es to three EC-130Js and that its PAA, Primary Authorized Aircraft, then would be three aircraft each of the EC-130E and EC-130J configuration. The award date for the first two aircraft was December 1997, with the first one to be delivered in October 1999 and the second one in December 1999. Lockheed Martin Aircraft Systems (LMAS) would provide the basic platform and after 'DD250' acceptance, Lockheed Martin Aero-Palmdale 'Skunk Works', under a separate contract, would convert the J to the EC-J configuration in two phases. Phase I included installation of an Info Warfare crew station, generator and intercom system upgrades, and installation of an in-flight refueling receptacle. The contract for Phase I for the first two aircraft was let in September 1999. Phase II was the mission equipment integration effort (existing mission equipment was to be removed from EC-130Es and integrated onto EC-130Js). Contract for this Phase was expected to be let by August 2000. Budget for the next three EC-130Js was added by Congress in FY 1999-2001. The President's Air Force Budget for FY 2002 was a little more



F-111As were modified to the EF-111A configuration by Grumman Aerospace Corporation at its Riverhead Plant, Long Island, NY. The photo shows several F-111As in various modification stages. (Courtesy of Northrop Grumman Corporation)

specific: eight EC-130Js were to be procured with all going through Phase I, but only six to go through Phase II. The remaining two aircraft would be referred to as 'EC-130 Super Js'. Of the five aircraft appropriated through FY 2001, three would be delivered in the COMMANDO SOLO and two in the Super J configuration. The fifth C-130J was contracted for in December 2000 with a November 2002 delivery date. On May 1, 2001, the 193rd SOW retired its first EC-130E, 63-7783. When on June 2, 2003, 63-7828 was airborne on its final sorties, it surpassed 28,000 flying hours, the highest number in the fleet.

In February 2002, three C-130Js were in Palmdale for EC-130J conversion, of which two Super Js to go through Phase I only. The first Super J was scheduled to be delivered to Baltimore in July 2002 and remain there until November, the planned delivery date of the second Super J. Both aircraft would then join the 193rd SOW. The first COMMANDO SOLO EC-130J was to be delivered to Harrisburg in April 2003. As Congress provided inadequate funding in FY 2003 for the fourth COMMANDO SOLO, US Special Operations Command (USSOCOM) stepped in and provided an additional \$23M.

The first flight of the COMMANDO SOLO EC-130J took place in November 2003. In 2006, in the midst of a demanding deployment schedule for the 193rd SOW, the conversion program was halted at three of the six scheduled aircraft. This resulted in a Total Active Inventory (TAI) of only seven EC-130Js, three COMMANDO SOLO EC-130Js and four EC-130 Super Js. The former's mission is broadcasting and PSYOPS, the latter's special operations mobility SOF-FLEX (Special Operations Flexible, like infiltration/exfiltration and combat offload) and, to supplement the PSYOPS EC-130Js. A crew generally is comprised of four officers (two pilots, a flight systems and a mission systems officer) and seven enlisted personnel (two loadmasters, five electronic communications systems operators).



Grumman was also the builder of the Navy's F-14 Tomcat. The photo shows EF-111A prototype 60-0049 in special markings and a Tomcat in flight over the Atlantic in 1978. (Courtesy of Northrop Grumman Corporation)

EF-111A Raven

The EF-111A was a twin-engine, two-seat, supersonic, long-range electronic warfare (EW) aircraft, based on the F-111 fighter/bomber, which denied, degraded, deceived and disrupted enemy early warning, ground-controlled intercept (GCI) and acquisition radars. Missions included suppression of SAM threats during close air support operations, barrier surveillance jamming and escort jamming for deep strike missions.

Already as far back as November 1967, the Tactical Air Command Liaison Officer (TACLO) at 7th Air Force (7AF, Tan Son Nhut, South Vietnam) noted in his Activity Report that EB-66 support jamming had been generally successful in disrupting the North Vietnamese early warning and GCI radar environment. However, because of the standoff distances from which EB-66 aircrews had to operate, 60-100 NM, the aircraft were not as effective as desired against terminal threat electronic systems. For this reason, the TACLO concluded there was a need for an EW system, being capable of penetrating to the target with the strike force. As a possible future solution, he mentioned the use of an EF-111 with ASQ-96 and high power jammers of at least three KW.

Void

In early 1968, CSAF John McConnell testified before the Senate Armed Services Committee (SASC) and told the Senators that in supporting USAF's FY 1969 budget, a new EW aircraft would be sought to replace the EB-66. A number of proposals and developments designed to provide additional ECM support to the USAF tactical forces were examined during 1968. This as an effort to fill the void that existed between the capability provided by self-protection ECM for tactical fighters and ECM standoff jamming provided by the EB-66. Substantial interest was generated for three such concepts. One of them was an ECM escort or support jamming capability applicable to tactical fighter



EF-111A 66-0049 was the first EF-111A prototype, initially being used as aerodynamic test bed without an operational system installed. It was then brought up to production standards and rolled out on June 16, 1981 at Grumman's Riverhead Plant. The photo shows 049 being prepared for its first flight on June 16. It was delivered to Mountain Home on November 20 and assigned to the 388th ECS. (USAF, SSgt Ernest Sealing)

aircraft as envisioned in SEAOR (Southeast Asia Operational Requirement) 167, which identified a requirement for ECM support incorporated in an aircraft that could operate as an integral part of the strike force. All three concepts were considered valid and their development was actively pursued, although their overlapping capabilities made it essential to consolidate them into a unified program. In a working level conference at TAC in early December, the Air Staff presented a plan for consideration to representatives of PACAF (Pacific Air Forces), TAC, USAFE (United States Air Forces in Europe), AFSC (Air Force Systems Command) and AFLC, proposing achievement of an early operational capability by three means, including provision of large capacity jammer pods of the ALQ-76 type to equip tactical fighters for the escort jamming mission. Also, JSOP (Joint Strategic Objectives Plan) 1971-78 discussed a number of new systems, including, for example, an EB-66 follow-on. In its 1968 View on the Major Program Memorandum (MPM), TAC had given considerable attention to the TEWS force and the aging EB-66 force. TAC predicted a requirement for four squadrons, one each for PACAF, USAFE, support for USSTRICOM (US Strike Command) contingencies and a CCTS, Combat Crew Training Squadron. CSAF, however, directed that the modernization program for the EB-66 not be implemented. In fact, the 1969 MPM did not address a follow-on airframe. TAC's reaction was that one of two avenues had to be exploited, either the development of an EB-66 follow-on, or the equipment of fighter forces for the future with self-contained EW systems.

Overgrown

In a January 16-17, 1971 Air Staff Board visit to TAC to, among others, obtain an insight into specific requirements, the F-111 was one of the discussed subjects. TAC's commander, Gen William Momyer, stated consideration should be given to use of the F-111, suitably modified, as

a standoff jammer. According to Momyer, the air war in North Vietnam had proven the necessity for a fighter-carried ECM capability. According to USAF, the Navy's proposal for the EA-6B Prowler was not the answer for several reasons. The aircraft was an overgrown EB-66 with no additional capabilities: it lacked endurance and speed, aircrew and maintenance training problems, and the creation of a new logistic support system.

One of the two TEWS organizations addressed in a USAF Programming Document (PD) in January 1972 involved the 39th Tactical Electronic Warfare Training Squadron (TEWTS) at Shaw AFB (SC), which was extended in support of continued PACAF requirements and would now inactivate in the third quarter of FY 1974. The PD also projected the loss of one F-111A squadron in the fourth quarter of FY 1976, with the UE (Unit Equipment) dropping to 54 aircraft.

In the same month, TAC began considering the long-range impact on its F-111 force, even though an EF-111 program was not firm. After review, the Aeronautical Systems Division (ASD) at Wright-Patterson AFB (OH) determined on February 22, 1972 that the risks were low and requested TAC tail numbers of two F-111As to be modified as EF-111A prototypes. On May 15, TAC/XP sent a memo 'F-4D Wild Weasel/EF-111A Structure' to Gen Momyer, stating that since the F-111A was designed as a specialized weapon system, he recommended it join the F-4D (italic by author) WILD WEASEL aircraft in the tactical EW support role to promote retention of the 21-wing fighter force. TAC's XP further recommended that its three 24 UE WW F-4D squadrons be stationed at George AFB (CA) and the EF-111As at Nellis AFB (NV). Also, that the Research & Development (R&D) effort be at Nellis for commonality and that the EF-111A not be charged against the fighter attack force.

Priority

While waiting for funding approval, TAC, on June 24, sent a message to USAF 'EF-111A Program Status', stat-



These 366th TFW maintainers were not exercising to improve their PT grades, but were trying to close the doors of the canoe-shaped radome manually. It was mounted under the fuselage, occupying the old bomb bay space and housed the antennas for the high-powered jamming transmitters. (Guy Aceto)



The aircrew of EF-111A 66-0020 of the 390th Electronic Combat Squadron at Mountain Home is taxiing to the runway to fly a training sortie on August 13, 1988. The emblem is of its parent wing, the 366th Tactical Fighter Wing. The aircraft was one of the original six F-111As of Det 1, 428th TFS, which deployed to Tahkli RTAB in March 1968 on Combat Lancer. (USAF, SSgt Matthew Gildow)

ing its TEWS priority was realigned, resulting in the lower risk EF-111A becoming its first priority. This resulted in the F-4D WILD WEASEL program being moved below the EF-111 (and the COMBAT ANGEL TEW drone system) priority as the F-4D's tactical jamming systems were considered as more risky.

On December 22, 1972, USAF informed TAC in a message 'EF-111A Prototype' that an EF-111A prototype program was approved with the AN/ALQ-99 being used to permit support jamming missions. A draft ROC was coordinated as DoD approved a request to Congress to reprogram FY R&D funds for the EF-111A. Late in April 1973, a Request for Proposals (RFP) was released to industry. By June 13 a third version of the RFP was prepared. It included a two-phase program with the first phase by two contractors and the second phase, the hardware development, by a single contractor. Grumman Corporation and General Dynamics were involved in Phase IA, in which they competitively conducted system analyses and design definition to develop the tactical jamming system. On December 26, 1974, Grumman was selected to qualify and test two prototype EF-111As during a 38-month Phase IB. One month later, on January 30, 1975, Grumman was awarded a contract, initiating Phase IB.

Funds were made available to modify 42 F-111As for EW and a 'larger' number for SCANA (Self-Contained Adverse Weather Night Attack) operations (although the F-111A SCANA program was validated in July 1969 by PACAF, TAC and USAFE and the Air Staff agreed in April 1971 with an accelerated prototype development, the program never materialized due to insufficient funding). On March 15, 1974, the last two EB-66 squadrons were inactivated, the 39th TEWTS at Shaw and the 42nd TEWS at Korat RTAB. The final EB-66, an EB-66C at Shaw, was retired on the 20th, becoming a static display. In its FY 1974 history, TAC stated that loss of EB-66s caused urgent attention to interim TEWS, which included the EF-111A, drones, TEREC (Tactical Electronic Reconnaissance) sen-

sors and Advanced WILD WEASEL.

In an effort to answer for the gap between the EB-66's retirement and the EF-111A's arrival, Savelist equipment, including ALT-28, ALT-31 and QRC-551, was taken in June 1975 from EB-66s and installed in a removable bomb bay pallet of an RF-111A. It was tested at Edwards in a F-111A in December 1975. However, it did not function effectively and it was concluded that the pallet items in the weapons bay of a F-111A was not the desired answer. As there was no off-the-shelf equipment available to improve the Savelist system, the F-111A was returned to its original status.

A Talking Paper 'EF-111A' of September 10, 1975, stated that experiences in the Air War in SEA and in Yom Kippur had shown the critical need to protect tactical strike forces from radar-augmented weapons. Even so, vital support jamming promised to be severely limited until the EF-111A would be ready in 1980. After retirement of the EB-66, the total jamming capability consisted of 24 EB-57Es, which were owned by Air Defense Command (ADC), and self-protection jammers on strike aircraft.

Jammer

The EF-111A, Grumman Design #273, was a conversion of the basic F-111A airframe, which meant TAC had to give up existing airframes from flying squadrons. F-111As were procured with FY 1966 and 1967 funds. The EF-111A had an operating envelope in excess of Mach 2.0 at altitudes of up to 44,000 feet and was supersonic on the deck. It carried over 32,000 pounds of fuel, allowing it to stay airborne for over four hours without refueling.

To cut down development time and technological risk, Grumman mainly used OTS electronic jamming subsystems of the EA-6B Prowler. Its Tactical Jamming System consisted of the AN/ALQ-99E jamming subsystem, which was a modification of the Navy's AN/ALQ-99, Sanders Associates ALQ-137 self-protection system, and the Dalmo-



F-111A 66-0041 was the second prototype to be configured to the EF-111A configuration, but the first one with EF equipment installed. The photo shows it at Mountain Home in early 1978 in distinctive color markings for visibility purposes. It was assigned to the 4485th Test Squadron at Eglin for use in the IOT&E. In the background three F-111As of the 390th TFS before the unit was re-designated as ECS with EF-111As. (Courtesy of Northrop Grumman Corporation)

Victor ALR-62(V4) RWR (Radar Warning Receiver). The crew compartment (side-by-side escape module) was rearranged with flight controls removed from the right side and the aircraft's navigation equipment relocated to allow access to both crewmembers. The resulting space was used for controls and displays of the EF-111A's electronic jamming equipment. In comparison to an EB-66C, which had a crew of six, including four EWOs, the Raven's mission was performed by a crew of two, a pilot and just one EWO, thanks to computer management. The automated AN/ALQ-99E system had exceptional agility and versatility to pick up, identify, and assign jammers to enemy emitters over a wide range of frequencies. Two of the many jamming variations included *obscuration* of any targets with powerful electronic noise and *confusion* by saturating the hostile radar display with a continuous stream of 'false alarm' signals. The AN/ALQ-99 was housed in a fin-tip pod, mounted on a reinforced vertical stabilizer. It encompassed ten transmitters, five exciters and one radio frequency calibrator, and associated equipment, including a processor to detect, locate and analyze hostile radar emissions. Jamming subsystem receivers scanned across frequency bands under computer or manual control. When threats were identified, the information was passed to a computer and appropriate electronic countermeasures were initiated, either automatically or with the EWO's assistance. Information about new threats, not in the computer's memory, could be fed into the system either through entries on the EWO's keyboard in the cockpit or by programming the computer via a cassette, which was plugged directly into the aircraft. When necessary, the EWO could make any corrections when testing the information. Exterior modifications also included a 16 feet long thin canoe-shaped weapons bay radome, mounted under the fuselage and housing the antennas for the high-powered jamming transmitters. Processors and other equipment were installed in what was the F-111's weapons bay. The electronics equipment weighed three tons. Unlike the EA-6B, the EF-111A could not be configured with the AGM-88 HARM. This meant USAF needed two aircraft to carry out the Prowler's mission, the EF-111A to jam and the F-4G to destroy.

'Raven'

With the planned 42 conversions, USAF wanted to equip two squadrons. The total cost of procurement, logistic support and spares was estimated at \$900 million. A 35-year operating life was projected for the airframe. A 25 percent reserve in computer data-handling capacity was accomplished by sound system engineering practices and some ingenious advances in EW technology, enabling it to cope with future new and more sophisticated threat radars.

The first EF-111A was an aerodynamic prototype fitted with a mockup of the ventral canoe mounted under the fuselage and a reinforced vertical stabilizer. The aircraft, 66-0049, made its first flight on March 10, 1977, initiating flight testing, which continued through December 1979. The pilot was Grumman's chief test pilot Chuck Sewell. That first flight, from the company's Calverton, Long Is-

land (NY) factory, was cut short when the pilot of the chase plane reported that stress wrinkle appeared on the vertical stabilizer. This was later found to be incorrect. The second aircraft, 66-0041, with an electronics suite, first flew on May 17, 1977 and was delivered to Det 3, 4485th Test Squadron (TS) at Mountain Home AFB (ID) for OT&E, beginning in September 1977. Early in 1978, both aircraft completed a 38-month development program at Grumman's Calverton and USAF facilities. Grumman's three-and-a-half month flight testing involved 84 sorties and 215 flying hours. The USAF team needed until April 1978 to complete the IOT&E, Initial Operational Test and Evaluation, which encompassed 78 sorties and 258 flying hours. It included, among others, verification of various mission operational concepts, the jammer's electromagnetic compatibility with other strike aircraft, and structural flight tests under all operating conditions, which demonstrated an 'infinite' life for all modified areas of the aircraft. It was also concluded that the performance of the jamming system was termed as 'outstanding' and that flying qualities were deemed virtually identical to those of F-111 strike aircraft. After the USAF review of the program, the first five production aircraft were budgeted in FY 1979. An EF-111A demonstration was conducted at Langley AFB for the TAC brass on January 4, 1980. On September 28, 1983, Secretary of the Air Force (SECAF) Verne Orr and CSAF Gen Charles Gabriel announced that 'Raven' had been selected as popular name for the EF-111A.

Mountain Home

The first operational EF-111A, 66-0051, was rolled out on June 19, 1981 and made its first flight on the 26th. Guest speaker was L/G Lawrence Skantze, the commander of the Aeronautical Systems Division. It was delivered to the 388th ECS (366th TFW, Mountain Home AFB) on November 5. This was fourteen years after the TACLO had suggested to use the EF-111 as the next standoff jammer and almost eight years after the EB-66 had left the inventory. The 388th Tactical Fighter Training Squadron (TFTS) was re-designated ECS on January 29, 1981, activated on



Three EF-111As of the 390th ECS at Mountain Home in April 1989. The aircraft adorned with '366 TFW' on the tail is 67-0038. (Via Guy Aceto)



The 50th TFW Commander's F-16C 84-1250 is leading F-111E 68-0040 of the 79th TFS and EF-111A 67-0042 of the 42nd ECS over the hilly country side of Germany. (USAF, SSgt David Nolan)

July 1 at Mountain Home and assigned to the 366th. As of September 1, 1977 its responsibility had been F-111A training. On December 15, 1982, it was inactivated and replaced by the 390th ECS. This unit was part of the original 366th Fighter Group, inactivated on October 1, 1982 (at Mountain Home), re-designated ECS from TFS on December 10 and activated five days later. As first EF-111A squadron, the 390th attained Initial Operational Capability (IOC) on December 23, 1983. Besides having an operational mission, the Squadron also acted as RTU, Replacement Training Unit. Det 3, 4485th Test Squadron at Mountain Home had two EF-111As for trials and evaluation purposes. The final Raven was delivered on December 31, 1985. In the first half of 1987, the EF-111A flight simulator became operational. After SECDEF Donald Rumsfeld's October 27, 1976 announcement that Mountain Home's F-111Fs would be sent to RAF Lakenheath (England), the first three aircraft departed on February 28, 1977 to act as maintenance trainers. The last four Fs departed on July 29, 1977. In return, the 366th TFW received the F-111As from the 474th TFW at Nellis. The first F-111A arrived on March 1, 1977 for maintenance training. The first squadron of As arrived on June 6. With the August 5 arrival of the final F-111As, one of the largest peacetime moves of men and machines in USAF's history was complete. The Operation was called READY SWITCH.

In April 1991, SECDEF Richard B. Cheney announced that Mountain Home would form the Air Force's first air-intervention composite wing after completion of required environmental studies. The wing was to consist of 76 B-52G, KC-135R, E-3A, F-15C/D, F-15E and F-16C/D aircraft. As part of a USAF-wide restructuring, the 366th TFW was re-designated as simply Wing on October 1, 1991. On January 10, 1992, the Final Environmental Impact Statement was filed with the Environmental Protection Agency, followed on March 11 by the Record of Decision, approving the composite wing buildup. Two days later, the 389th (F-16C/D) and 391st FS (F-15E) were reactivated. By mid-1993 the entire composite wing (4,500 personnel) was in place. This meant the departure of the EF/F-111As. The F-111As of the 389th TFS and 391st TFS were all

flown to AMARC, Aerospace Maintenance and Regeneration Center, at Davis-Monthan, with the final four arriving on July 31, 1991. Both squadrons were inactivated. As the 390th would remain at Mountain Home and become an F-15C/D Eagle unit within the 366th Wing, it was re-designated Fighter Squadron on September 11, activated on October 1, 1992 and equipped with F-15C/Ds. To accept personnel and equipment of the 390th, the 429th ECS was activated and assigned to the Wing on September 11. The 429th was re-designated ECS from TFS on August 1, 1992. Through Air Combat Command (ACC) Movement Order (MO) 2 of June 10, 1993, the Squadron PCS-ed to Cannon AFB, NM effective the 22nd.

RAF Upper Heyford

In August 1982, preparations to expand USAF's EF-111A force with a second squadron had begun in earnest with the first meeting of the Upper Heyford Site Activation Task Force (SATAF). It followed the footsteps of Mountain Home's SATAF and was composed of approximately 100 specialists from various USAF commands and contractors. Its mission was to insure early identification of problems and careful coordination of the numerous actions required to reach IOC. Four more SATAF meetings were held through June 30, 1983. An EF-111A conversion review was held on December 6, 1983. That second unit was the 42nd ECS, which was activated on July 1, 1983 and assigned to the 20th TFW. It had been re-designated ECS from TEWS on May 23, 1983. The Squadron was to receive 12 EF-111As and sixty personnel, including pilots and EWOs, and to be supported by some 225 Wing maintenance personnel. Its first aircraft (66-0037) was received on February 3, 1984, the final one (66-0057) in October 1985, bringing the total to thirteen. In the May 7-17, 1985 period EF-111As participated in Exercise DISTANT HAMMER '85, the first time the type deployed to participate in a NATO exercise (the first NATO exercise EF-111As participated in from home base was ELDER



The aircrew of EF-111A 66-0057 of the 42nd ECS (RAF Upper Heyford) is flying past the Rock of Gibraltar on April 24, 1989 while participating in Exercise Open Gate '89 from Moron AB (Spain). It was a JCS/NATO exercise designed to simulate air and sea power tactics, required to keep the Straits of Gibraltar open during a crisis. (USAF, SSgt David Nolan)



A 42nd ECS EF-111A Raven aircraft is leaving its shelter area at Aviano (Italy) and turned onto a taxiway by its aircrew for a sortie during USAFE exercise Display Determination '89 on September 18, 1989. (USAF, SSgt David Nolan)

FOREST 84, March 5-7, 1984). On April 1, 1986, USAFE notified NATO that the 42nd ECS was ready to accept its tasking. A little over one year later, on April 14, six of its EF-111As, including two spares, were involved in Operation EL DORADO CANYON, the attack on targets at Tripoli and Benghazi in Libya. On June 1, 1985, the Squadron was assigned to the 66th Electronic Combat Wing (ECW, Sembach AB, Germany), but attached to the 20th. This action was reversed on January 15, 1991. From December 21, 1990 through December 31, 1991, personnel and equipment were engaged in combat operations like DESERT STORM, PROVEN FORCE and PROVIDE COMFORT. On December 31, 1990, the 42nd was authorized 12 EF-111As and 13 aircrews and had assigned 13 and 17 respectively. USAF announced on February 5, 1991, it planned to return 12 EF-111As and 66 F-111Es from Upper Heyford to CONUS, beginning in 1992 with a scheduled completion and base drawdown by 1994. The EF-111As would transfer to Cannon to join the EF-111A unit realigning from Cannon or retire. The F-111Es would either be relocated to Cannon or retired to AMARC. With a ceremony on July 1, 1992, the 42nd was inactivated. The final EF-111A (67-0042) departed on August 7 for Cannon.

Upgrading the Raven

In the meantime, in December 1981, the Sacramento Air Logistics Center (SM-ALC) had developed the F-111 Avionics Modernization Program (AMP), which would involve all F-111 models. Its purpose was to significantly improve the reliability and maintainability. Improvements included upgrading the Terrain Following Radar (TFR) and cockpit displays, adding a new Inertial Navigation System (INS) and installation of Global Positioning System (GPS) equipment. In November 1982, USAF approved SM-ALC's expedited AMP schedule with a FY 1983 program start and the delivery of the first AMP-modified aircraft in December 1986. The AMP would be one of the largest and most expensive avionics program in history, eventually costing more than one billion dollars. All 349 F-111s were

scheduled to be modified. On August 2, 1985, General Dynamics officially rolled out an integrated AMP aircraft (FB-111A 68-0247) at its Fort Worth facility. SM-ALC rolled out its first AMP-modified F-111 on December 15, 1986, FB-111A 68-0287. The aircraft was delivered on December 18 to Pease's 509th Bombardment Wing. The first AMP-configured F-111A made its first flight from Calverton on May 20, 1988. As of October 3, 1990, 228 F-111s had been modified, including two EF-111As. Completion of all forty-two was planned in 1994. The Air Warfare Center at Nellis published its final EF-111A AMP report in March 1991.

In the late eighties, ASD was involved in a three-phase approach to improve EF-111A's AN/ALQ-99E processing and jamming subsystems, the System Improvement Program (SIP). This would enable the aircraft to counter advanced electronic defenses for the 1990s and beyond. Phase I involved updating the AN/ALQ-99E encoder/processor, the heart of the system. Consisting of the encoder converter interface, countermeasures computer, digital display indicator, and onboard loader/recorder, the encoder/processor provided the Raven with, for instance, increased signal processing, memory capacity, and improved reliability and maintainability. Also, ASD modified the exciter, which generated the types of waveform that were transmitted back at the enemy. In March 1991, Grumman was awarded a contract for the EF-111A SIP. In a five-year full-scale development program, the Grumman team was to develop and upgrade hard- and software to improve the Raven's radar jamming capabilities. On February 8, 1993, a SIP-modified EF-111A completed two weeks of testing in Grumman's Anechoic Chamber at Calverton. The first flight of the SIP-modified EF-111A prototype, 66-0047, took place on March 14, 1995 by the 46th Test Wing at Eglin. Phase I was approved and expected to cost \$300M, but approval of Phase II/III was still being awaited. However, partly due to budgetary reasons, ASD had to decide to stretch out the program. Should Phase II/III be approved, it was expected it would be close to the year 2000 before the fully upgraded weapon system could be welcomed into the inventory. However, on December 18, 1994 OSD (Office of the Secretary of Defense) issued Program Budget Decision (PBD) 753, zeroing all EF-111A SIP funding beyond FY 1995. Accordingly it became necessary for USAF to cancel PMD 2366 (1) of July 15, 1994, which it did on June 20, 1995. Congress was informed by CSAF on June 14, 1995. Terminated were the contract with Grumman Aerospace Corporation regarding the encoder processor and digital based exciter and with Motorola regarding Band 4. The contract with AEL Industries for Band 9/10 was to be transferred to the Navy.

A series of crashes attributable to the failure of the F-111's original analog flight control system prompted a Class IV safety modification, aimed at replacing the analog flight-control computers with a more modern and reliable Digital Flight Control System (DFCS). Flight testing began in May 1989 at Edwards with the DFCS installed in FB-111A 68-0254. In February 1990, '254' was modified to a tactical configuration by replacing its wing tips and the



An EF-111A Raven about to be refueled by a KC-10A Extender. (USAF, SSgt Kevin Bishop)

pitch feel frame assembly. It flew 65 sorties, completing Phase I of the flight test program in October 1990. All test pilots who flew the DFCS-modified aircraft were impressed with its performance. General Dynamics then was awarded a LRIP (Low-Rate Initial Production) contract for the DFCS. The program was completed in 1997.

Cannon

The first F-111 Aardvark, an A model, for the 27th TFW arrived in July 1969 from Nellis for maintenance training. The first Es were welcomed in October. However, their stay would be short as in the summer of 1971, all were transferred to the 20th TFW at RAF Upper Heyford. In November, the Wing received the first F-111Ds.

With the AF decision (1) to stand up a composite wing at Mountain Home without F-111s, (2) to return the 20th FW WOPE (Without Personnel and Equipment) to Shaw to replace the 363rd FW and retire its F-111Es to AMARC, except twenty-two, which were assigned to Cannon's 428th TFS, (3) to convert the 48th FW at Lakenheath from F-111Fs to F-15Es, and to reassign the Fs to the 27th FW, while retiring its Ds to AMARC, all remaining F-111s would find a home at Cannon. The last F-111Fs departed Lakenheath for CONUS on December 17, 1992. On August 1, 1992, the 430th ECS was re-designated from TFS, activated at Cannon and assigned to the 27th FW, taking charge of the EF-111As of the 42nd ECS which were re-deployed to CONUS. After arrival of the 429th from Mountain Home on June 22, 1993, all EF-111As were consolidated into one squadron, the 429th, with the 430th ECS being inactivated on June 29, 1993. By that time, all aircraft had been relocated to Cannon, although EF-111As remained TDY to Incirlik. The Cannon aircraft also included the three crews, four officers, ten enlisted personnel and two EF-111As of Det 7, 79th Test and Evaluation Group (TEG). Their mission was OT&E of the EF-111A. On March 25, 1995, the 429th ECS deployed six EF-111As to Aviano (Italy) to support Operation DENY FLIGHT. According to the Wing, the 429th ECS passed 2,000 days of continuous deployment to Southwest Asia by June 1996 in



After the decision to retire Cannon's F-111s and replace them with F-16C/D Fighting Falcons, the 522nd FS was the first unit to convert. F-16C 87-0277 was one of the first, if not the very first, operational F-16s at Cannon, arriving from the 35th FW at Misawa (Japan) on June 28, 1995. 'Of course' it was adorned with '27th FW' and the colors of the four F-111 squadrons of the Wing, red (522ndFS), blue (523rd FS), yellow (524th FS) and black (429th ECS) on its tail. The photo was taken on November 30, 1995. (Guy Aceto)

support of Operations PROVIDE COMFORT (begun in December 1992) and SOUTHERN WATCH.

After National defense priorities had dictated that older weapon systems, like the F-111, be retired for newer weapon systems, USAF, in its August 11, 1995 announcement regarding structure and realignment actions for FY 1996, stated the 27th FW's 74 F-111E/Fs would begin retiring in late 1995 and be replaced with 54 F-16C/Ds. In addition, the high cost of maintaining the small remaining EF-111A inventory played an important role. As a result, the 27th, on January 1, 1996, began the conversion to the Fighting Falcon. Its 429th ECS would then be the last F-111 squadron of any type in the Air Force. The 428th FS flew its first six F-111Es to AMARC on October 11, 1995 with its final two Es departing on December 15. It was inactivated on October 12, 1995. The F-111Fs of the 522nd, 523rd and 524th FS departed for AMARC in 1995/6. For instance, the 522nd FS sent its first increment of F-111Fs off on October 11, 1995, flew its final training sortie on December 18, and lost its final three Fs on January 11, 1996. The final four-ship of F-111Fs were delivered to Davis-Monthan after a farewell event at Lockheed Martin Tactical Aircraft Systems in Fort Worth, called 'The Last Hurrah-a 'Vark Farewell Reunion'. On December 31, 37 EF-111As were operational, while the PAA, Primary Aircraft Authorized, was 26.

Prowler

In FY 1994, DoD began a comprehensive series of studies to assess the future adequacy of US EW capabilities, including examination of requirements for, among others, EW aircraft, aircraft self-protection, and lethal and nonlethal SEAD, Suppression of Enemy Air Defenses. The first phase of the assessment resulted in the plan to retire EF-111A's and replace them with EA-6Bs. In his 1996 An-



The F-16C/EF-111A of the previous photo expanded with F-111F 70-2362 over Cannon's runway. The flight line still shows scores of F-111s, soon to be retired to AMARC. (Guy Aceto)

nual Defense Report, SECDEF William Cohen wrote that, in order to ease the transition to the new Joint Force concept, the retirement date for the 24-aircraft EF-111A force was slipped one year, to FY 1998, one year later than originally programmed. In addition, USAF planned to keep twelve operational in FY 1998-99. Once the EF-111A would have left USAF's inventory, the mission of tactical support jamming would be assumed by Navy and Marine Corps EA-6B Prowlers, the Joint Airborne Electronic Attack Program. For this purpose, the Navy would upgrade 120 EA-6Bs, extending their service life and updating their mission system, providing critical support for joint force operations. USAF would supply a number of EW-trained aircrews to selected Navy squadrons to facilitate such operations. In the meantime, the Marine Prowlers were retired and the Navy's replaced by the EA-18G Growler. USAF crewmembers are being trained at NAS Whidbey Island (WA). All USAF personnel at the Station are part of the 390th ECS, which provides administrative and logistical support. The Squadron is a geographically separated unit of Mountain Home's 366th Operations Group.

In its May 2, 1997 Force Structure Announcement for FY 1998, USAF stated the 27th FW would complete its EF-111A retirement, resulting in a reduction of 746 military and 12 civilian authorizations. On April 2, 1998, the 429th flew its final SOUTHERN WATCH sortie, followed by redeployment to Cannon. The final Ravens were retired

by the 429th ECS on May 2, 1998. The Squadron flew 35 EF-111As to AMARC, of which five in 1997 (the first, 67-0041, on July 30) and thirty in 1998 (final two, 66-0027 and 67-0039, on June 19). All except one were scrapped. Three of the 42 EF-111As were lost in crashes, one (66-0023), on February 14, 1991, during a combat sortie in DESERT STORM, one (66-0056) on April 2, 1992 near Fimmere, UK, and the final one (66-0044) on June 17, 1996 near Tucumcari, NM. At least three are on static display. While serving, the EF-111E had one of the highest utilization rates in USAF. The 'demise' of the 429th ECS occurred on June 19, 1998 when it was inactivated. ■

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 With special thanks to my photo man Sandor Kocsis, to Dianne Baumert-Moyik of Northrop Grumman Corporation, Guy Aceto and George Cully.

Joint Task Force Proven Force and the Gulf War (Part 3)



After their tasking order was received at Mountain Home (ID), ten EF-111As of the 390th ECS (366th TFW) launched for Seymour Johnson (NC) for a stopover before proceeding non-stop to Taif in Saudi Arabia. The photo shows one of the ten Ravens on a rainy flight line just prior to deploying. (USAF)

Theo van Geffen

When in early August 1990 the U.S. Air Force was called upon to deploy personnel, aircraft and equipment to the Gulf Region to persuade Iraq's Saddam Hussein to give up Kuwait, a score of aircraft types were involved, including the EF-111A. When the Gulf War ended, all Ravens redeployed from Incirlik (Turkey), but a number remained at Taif (Saudi Arabia). They would return to Incirlik however, and even assume an additional mission when they deployed to Aviano (Italy). In this part we will have a closer look at those deployments and the resulting combat operations.

On July 31, 1990, the EF-111A Raven inventory numbered 42, with 29 assigned to Mountain Home (ID) and 13 to RAF Upper Heyford (UK). When on August 7, C-Day, the initial deployment of USAF aircraft began to Saudi Arabia, EF-111As were not included. One day later, USCINCENT (Commander, U.S. Central Command) requested additional forces, including an EF-111A squadron. On 9/1345Z Aug, the deployment order was given for a number of aircraft, including six Ravens.

Importance

In DESERT STORM and PROVEN FORCE, electronic warfare aircraft like the EF-111A and Navy/Marine Corps EA-6B Prowler played a central role in the neutralization of Iraq's Integrated Air Defense System (IADS). As it was important to keep Coalition aircraft attrition low, Electronic Warfare (EW) aircraft were of greater importance to overall air operations than ever before. Unavailability of these aircraft was in fact reason to abort a mission. While in stand-off and close-in orbits, EF-111A/EA-6B aircrews provided high-powered, directional, electronic jamming, directed at detection, sorting and identifying Iraqi GCI (Ground Control Intercept), early warning, acquisition and height finder radars and IFF (Identification Friend or Foe).

A Raven aircrew consisted of an Aircraft Commander (AC, pilot) and an Electronic Warfare Officer (EWO) in respectively the left and right seat. As close coordination between the two was important, they formed a 'hard' crew more or less permanently. The EWO was responsible for navigation, terrain-following flight and EW operations. He planned and programmed jamming tactics in advance. Available was the ISS, Intelligence Support System, which was a computerized program that provided information about radars in the area where the aircraft's crew would be working. ISS data were fed into the MDG, Mission Data Generator, before the beginning of the mission and then loaded into the aircraft via a Raymond cassette, which plugged directly into the aircraft, and taking some five minutes. While airborne, the EWO op-

erated and monitored the jamming system. When threats were identified, appropriate countermeasures were initiated. Jamming could be done in two ways, (1) automatically by the computer, or (2) manually by the EWO. Information about new threats, which were not yet in the computer's memory, could be fed into the system by the EWO through entries on his cockpit keyboard. He could test the information, and in case corrections had to be made, he used the keyboard and cockpit display unit. In comparison to the Douglas EB-66C, which had a crew of six, including four EWOs, the Raven's mission was performed by a crew of two with just one EWO because its jamming system was much more automated.

Tactical forces were supported in three ways, (1) penetration: flying along with the strike force through critical phases of the mission, providing countermeasures as required to protect the force from acquisition and surveillance radars; (2) close-in jamming: calling for the EF-111A to jam GCI, early warning and acquisition radars, while the force delivered its weapons on Iraqi targets; and (3) standoff jamming: orbiting outside Iraqi territory and from there, safe from Iraqi ground-based weapons, the aircraft's jamming systems screened the routes of the strike force. Raven and Prowler aircrews proved to be highly effective in jamming Iraqi low-frequency early warning and higher frequency target-track and acquisition radars throughout the early campaign, providing an umbrella for strikers. Due to the success of, for example, AGM-88 HARMs, this jamming tactic was reduced as the war evolved.

48th TFW

When EF-111As, F-15E Strike Eagles and F-111F Aardvarks (initially non-PGM-capable F-111Ds were on the deployment list, but were replaced by USAFE Precision-Guided Munitions-capable F-111Fs after release from their NATO commitment) were called upon to deploy to the Gulf Region for Phase I of the DESERT SHIELD buildup, the initial plan was to send them to Seeb (Oman), as that is where USCENTAF (United States Air Forces Central) had stored their ordnance. As Oman did not want U.S. strike aircraft being displayed prominently at its international airport, USCENTAF decided to send the F-111s to Taif and the F-15Es to Thumrait (Oman) before eventually moving the latter to Al Kharj (Saudi Arabia).

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An EF-111A of the 390th ECS and an F-111F of the 492nd TFS (74-0182, blue) taxiing back to the flight line after flying training sorties during DESERT SHIELD. (USAF, TSgt Rose Reynolds)

On August 21, a 28-person ADVON deployed from RAF Lakenheath (UK) to Taif.

48th TFW Forward Deployed (FD) was the designation initially used as the generally recognized designation of the Wing's deployed assets. Basically, the organization functioned as a detachment of the 48th TFW, since Wing headquarters and many of its forces remained at Lakenheath. As it became evident DESERT SHIELD would last several months, 48th TFW (FD) eventually had three F-111F squadrons (492nd, 493rd and 494th), which had been reconstituted from the four 'rainbowed' units (the fourth was 495th). The many personnel from other home stations, like TAC's 390th ECS (which included 42nd Electronic Combat Squadron assets), generally continued to use their home unit designations, even though they functioned as components of 48th TFW (FD).

On December 5, Air Division Provisional, 14 and 15 were activated at Riyadh (Saudi Arabia) and Doha (Qatar) respectively and attached to 9th Air Force. They would exercise operational control of forward deployed USCENTAF-assigned TFWs (ADP 14) and combat support aircraft, like EF-111A, E-3B and EC-130H aircraft (ADP 15). Both were inactivated on April 20, 1991.

To standardize and stabilize its organizational structure, USCENTAF, on December 20, 1990, designated, activated and organized provisional wings and established provisional Combat Support Groups under each wing. The 48th became Tactical Fighter Wing Provisional, 48 (TFWP 48) and was assigned to ADP 14, with the F-111F squadrons retaining their designations. However, according to the 366th Wing history, the 390th detachment became assigned to a new unit, Electronic Combat Squadron Provisional, 390 (ECSP 390) and assigned to ADP 15, becoming a tenant unit of TFWP 48.

As the first USAFE Wing, it deployed the initial 18 F-111Fs (493rd) to Taif on August 25. Nearly 500 personnel departed in this first group with the final C-130 departing Lakenheath on September 4. Two days earlier, an additional 14 F-111Fs (494th) had deployed, also in Phase I. In Phase II, 32 F-111Fs were deployed. By December 11, 64 of the Wing's 70 F-111Fs with 100 pilots and 104 Weapons Systems Officers, WSOs, were deployed to Taif.



Three F-111Fs of the 48th Tactical Fighter Wing Forward Deployed and an EF-111A of the 390th ECS during a DESERT SHIELD training mission in Saudi Arabia. (USAF, TSgt Rose Reynolds)

Altogether, the base was host to some 100 jets and 3,000 personnel from 243 different units, 74 different bases and from all U.S. military services, making the 48th the largest single Wing deployed in Saudi Arabia. Lakenheath's share was 1,235 and Mountain Home's some 400 personnel.

The 48th Wing history stated this variety created very little fraction. Also, that its F-111 fleet flew 13,973 hours in 3,328 combat sorties. For 42 days, the 48th averaged 60 F-111F and 20 EF-111A sorties daily without a single non-delivery. No combat losses were suffered, although a 495th TFS crew and F-111F 40183 were lost on October 10 during a training mission. The first 18 F-111Fs returned to Lakenheath on March 11, 1992. However, not all aircraft returned home from the theater then as the final 12 F-111Fs were redeployed on May 10. When ADP 14 was inactivated on April 20, the Wing was reassigned to USCENTAF, Forward and attached to TFWP 4404. Its inactivation followed on August 2.

390th ECS

After receipt of the tasking order to deploy, ten EF-111As were launched on August 22 from Mountain Home, staging through Seymour Johnson (NC) for ancillary support by the 4th TFW. The next day, the aircraft were to fly non-stop to Taif. This was true for eight of them, as they, led by its Commander, Lt Col Dennis Hardziej, arrived on 24/1230Z August. Only fuel and ramp space had been guaranteed. According to Maj Delbert Parker, 366th TFW/MA Deployed, the decision to bring in 'the teeth before the tail' proved to be an awesome logistics challenge, which dictated innovative leadership and management actions at all levels. Within 12 hours after arrival, all eight Ravens were fully mission capable with two aircraft placed on 30-minute alert. On the 27th, the 390th ECS/AMU (Aircraft Maintenance Unit) began flying 2-3 training sorties per day. The two other aircraft diverted to Lajes (Azores) and Torrejon (Spain) for in-flight emergencies and arrived at Taif on August 29.

In the first week of September, seven C-141B Starlifters arrived from Mountain Home, bringing 120 additional personnel, WRSK (War Reserve Spares Kit), engines,

AGE (Aerospace Ground Equipment) and 204 ECM (Electronic Countermeasures) test stations and their NAV-Air shelters. The test stations, providing intermediate support for the EF-111A's jamming systems, were set up and running within 48 hours of arrival.

Eventually, the aircraft were moved from an open air environment on the RSAF (Royal Saudi Air Force) flight line to protected aircraft shelters within an area that would be totally controlled by U.S. forces. In this way, maintenance, operations, billeting and Wing command functions were concentrated fully within this area, enabling a more effective accomplishment of its mission.

With the improved supply capability, flying was increased to five-turn-three sorties daily, with an average sortie duration of four hours. In the latter part of September, the number of Ravens was increased to 14. During October, back shops and support fully integrated with the 48th TFW FD. In the next month, the 390th was tasked with a no-notice alert scramble with aircraft being airborne in less than 20 minutes. COMUSCENTAF (Commander, United States Air Force, Central Command), on February 9, 1991, requested deployment of an additional three EF-111As, which arrived at Taif on the 11th, increasing the total to twenty-one, including the four 42nd ECS Ravens.

Combat

The first DESERT STORM sorties by ECSP 390 aircrews were flown on the night of January 16 (see later). The final two sorties were flown by Socket 77-78, taking off at 0137L on February 27 and landing at 0917L. According to the 366th history, the 390th flew a total of 1,365 training/combat sorties at Taif, collecting 5,188 flying hours. These numbers are excluding the 42nd ECS ones.



Emblem of the ECSP 390. The flag remained at Mountain Home, ID, where the 390th ECS was part of the 366th Tactical Fighter Wing. (Via André Wilderdijk)



Aircrews of two EF-111A Ravens of ECSP 390 waiting at Taif for takeoff clearance prior to a mission in support of Operation DESERT STORM. (USAF, TSgt Perry Heimer)

The (combat) numbers for February were 473 and 2,453. In sharp contrast were the Mountain Home numbers for that month, 54 and 136 respectively. (In the February 28-March 4 period, the 390th flew an additional 40 and the 42nd ten sorties from Taif, while 23 sorties were canceled.) ECSP 390 used 22 different Ravens, including the four 42nd ECS examples. One, 60048, was returned to CONUS for depot repairs before DESERT STORM began and 60023 was lost (see later).

According to Maj Parker, the EF-111A, under austere working conditions and supported by cumbersome supply lines, sustained a 85+ percent Mission Capable (MC) and a 31.2 utilization rate during the 42 days of active hostilities, the highest utilization rate ever achieved throughout the history of the F-111. 'Teamwork' orchestrated the maintenance planning, scheduling and execution of all actions necessary to generate in excess of 704 combat sorties and 3,524 flying hours, and without a single maintenance non-delivery.

In January, SSgt Godsmen's EF-111A at Taif, 60033, flew 31 training/combat sorties for 130.4 hours. In February, SSgt Garcia succeeded in getting his Raven, 70038, airborne to fly 42 combat sorties for 209.4 hours.

42nd ECS

On November 16, JCS issued the Phase II deployment order for another 283 aircraft. To support CENTCOM, USCINCEUR (U.S. Commander in Chief, European Command), on November 19, ordered the Phase II deployment of 114 additional USAF aircraft, including four EF-111As and 32 F-111Fs. As a result, the 42nd ECS deployed four aircraft to Taif on December 21. They left Upper Heyford at four o'clock in the morning. The aircraft, 80 personnel, including eight aircrews, and equipment joined the 390th ECS. Through January 16, 1991, the 42nd flew 153 hours in 59 training sorties.

Aircrews flew four sorties on the opening day from Taif as Wrench 71-74. All took off at 0240L, but return was between 0659L and 0901L. The last day of DESERT STORM saw five crews flying a sortie, of which Ratchet 73-74 were the final ones with a 2115L take off and a 0240L landing. The longest sortie from Taif was 8.4 hours and flown on February 13 as Sander 77 by 42nd crewmembers Griffin/

Smith in 67-0038. According to the 20th TFW (the Squadron was reassigned on January 25, 1991 from the 66th Electronic Combat Wing to the 20th), the 42nd ECS flew 219 combat sorties during DESERT STORM, collecting 1,159 flying hours.

The EF-111A that was lost on February 13, 60023, was assigned to the 42nd and flown as Ratchet 75 by a 390th crew, Cpts Douglas Bradt and Paul Eichenlaub, who were both killed. They were part of a three-ship with a 2107L takeoff time for a night electronic combat mission. At 0139L, Ratchet 75 was reported overdue (the other two crews had already landed). A search resulted in finding both deceased crewmembers and the wreckage 26 nautical miles (NM) northwest of Badanah (Saudi Arabia). According to GWAPS, cause was reported as 'direct enemy action, other' (supposedly, the crew took evasive action when they believed an Iraqi aircraft was behind them and then crashed). The combat loss rate was 0.9 per 1,000 sorties. However, the 366th TFW history stated that 'while the loss occurred during a combat mission, it did not happen due to hostile fire. Instead the loss was judged a Class A flight mishap. Following a prestrike aerial refueling, the aircraft crashed about eight miles south of the Iraqi border in Saudi Arabia. The aircrew had been in Iraqi airspace and was returning to Saudi Arabia at the time of the crash. Apparently, 023's crew perceived a threat and initiated evasive actions, with three low-level evasion maneuvers leading to impact with the ground.' Since 023 was a 42nd ECS aircraft, it became part of the 20th TFW safety record. Only a limited on-scene investigation was conducted due to the short distance to the Iraqi border.

Incirlik

After the Turkish government authorized the U.S. on January 17 to use Incirlik for strikes against Iraq (Operation PROVEN FORCE), reinforcement of Composite Wing Provisional, 7440 (CWP 7440) with additional aircraft was initiated.

The 42nd ECS was tasked to supply six Ravens. They arrived on the 17th and by 1400L, four were MC. Orbits north of the border were established with EF-111As, COMPASS CALL EC-130Hs (jamming radio communications, data links and navigation systems) and KC-135E/R Stratotankers, supported by CAP (Combat Air Patrol) F-15C Eagles.

One hundred mission packages were flown from Incirlik and only the first one was flown without EF-111A support for the simple reason the aircraft had not yet arrived in Turkey. The targets for the 20-aircraft strike package, including twelve F-111Es, were therefore changed to lower threat areas. The first two sorties were flown by KK-01 flight, taking off at 0147L on January 17 and returning at 0430L (67-0035) and 0450L (67-0034). As of January 22, 'normal' call signs were used, like Fliers 11-12. On the last day of PROVEN FORCE, EF-111As flew seven sorties with Trap 1-3 as the final flight, taking off at 2241L and landing at 0202-22L. The 42nd had an average of six aircraft assigned. The total combat sorties flown totaled 252



TFWP 48, which had 'rainbowed' three squadrons (492nd, 493rd, 494th) from its four squadrons of F-111Fs assigned, the 495th TFS being the fourth, would ultimately have some 70 aircraft to fly combat sorties. With the F-117As, the F-111Fs were the only aircraft with an LGB-capability. The photo shows 72-1443 of the 494th TFS (red) taxiing at Taif prior to a combat sortie. (USAF, TSgt Perry Heimer)

with 704 flying hours, for an average sortie duration of 2.8 hours. The average MC rate was 68.6. The grand total for the 42nd (Taif and Incirlik) was 530 sorties, including 471 combat and 59 training sorties with 2,016 flying hours. Grand totaled, the 28 EF-111A Ravens at Taif (22, of which four assigned to the 42nd ECS) and Incirlik (six) flew 1,895 training/combant sorties, amassing 7,204 flying hours. Taif EF-111As were air refueled 1,262 times and Incirlik Ravens, 152.

Bed-down of EF-111As in Gulf War

Sep 1	Oct 1	Jan 1	Jan 17	Feb 27	Base
10+	14*	18**	18	20***	Taif
-	-	-	6	6	Incirlik

+ arrival August 24-29

* plus four latter part of September (Phase I)

** plus four (42nd ECS), December 21 (Phase II)

*** by February 9 USCENTAF request, an additional three Ravens arrived on the 11th, increasing the total to twenty-one. The next day, eighteen of them were MC, 85.7 percent. One EF-111A was lost on the 13th.

Training

It became apparent soon after their arrival in the KTO, Kuwait Theater of Operations, that aircrews of the Coalition Air Forces would lose proficiency if training programs were not reinstated. Development of the operational concept and plan for overall training was USCENTAF's responsibility. In response, USCENTAF initiated a Coalition staff to define and set training priorities, and arrange host nation training facilities. Two of USCENTAF's priorities were, (1) to maintain a deterrent and defensive posture; and (2) to practice mission profiles that would be expected during combat ops. Training sorties were of a wide variety to become familiar with the desert flying environment, local-area orientation and mission preparation. Initially, training was affected by bare base operating conditions, unfamiliar meteorological conditions and the gradual availability of (Saudi) airspace and weapon ranges. Aircrews also trained to carry out specific roles. This meant in

some cases refining medium altitude tactics and practicing multiple weapons deliveries.

Minimum sortie rates were established to ensure minimum combat capability. EF-111A aircrews, for instance, were to fly two sorties/week and eight/month. In this way Raven aircrews were to establish combat readiness and proficiency at the highest possible level. Night or instrument Terrain Following Radar (TFR) training at Mountain Home knew certain restrictions, preventing adequate training in its use in poor visibility. To ensure aircrews would have adequate practice before combat began, relevant night TFR training sorties were flown. As the Raven flew well over half of its combat sorties at night, this training proved to be very useful. Most training sorties were flown in the local area and in northern Saudi Arabia, just south of the Kuwaiti border. The latter required aerial refueling, further adding to aircrew training.

Weekly package training exercises were instituted by USCENTAF in September to promote interoperability and integrated training. They familiarized pilots and controllers with local terrain and meteorological conditions in possible combat areas and to demonstrate to Coalition land forces that air support could be used safely close to their positions. Each launch package was progressively larger and getting more complex with timing more severe. The final exercise, which potentially mirrored a day-one tasking order, went flawlessly for the 390th, with 20 consecutive aircraft being launched on time.

Unique

DESERT SHIELD training included unique and recurring exercises. Examples of the former were, (1) INITIAL HACK, conducting 48-hour continuous operations with an airspace control plan on October 24-26. Coalition forces practiced pre- and post-strike air refueling, airfield attacks, airfield defense, Close Air Support (CAS) and C2 (Command and Control) procedures against a simulated D-day Air Tasking Order (ATO). On the 25th, mock attacks were made on Al Dhafra, Taif and Al Ahso airfields by strike packages, which included 40 F-16Cs, two RF-4Cs, two EA-6Bs, eight Italian Tornados, and two French Mirage 2000s. A night strike against airfields was flown by two F-117A, four F-15E, two B-52G, two EF-111A, two F-4G, and one EC-130H aircraft, plus six RSAF and eight RAF Tornados. The *USS Kennedy* and *Saratoga* conducted dual-carrier operations. A total of eighteen air packages were flown, involving about forty coalition air units. The number of sorties totaled 431, including 88 tanker and 13 AWACS (Airborne Warning and Control System) sorties; (2) Exercise IMMINENT THUNDER was a fully-integrated, combined exercise, which was accomplished in five Phases in the November 15-20 period and included an amphibious operation. Phase 1 was flown throughout the Exercise. Its Concept of Operations included offensive air operations and CAS/AI (Air Interdiction). As to the former, alert notice was performed and aircrew/aircraft generation simulated, and D-Day simulated (coalition flight operations were planned to closely simulate the actual ATOs). As to the latter, the

TACS (Tactical Air Control System) C2 was exercised in a limited jamming environment, and integrated AC-130/A-10 night anti-armor operations were conducted. D-Day (dress rehearsal) on November 15 involved 12 composite force packages, 273 sorties, and six airfield attacks. For the first time, the Mission Commander (MC) operations order was exercised. On Day 2, the 16th, actual ATOs for D-Day+1 were simulated in CENTCOM/ Coalition flight operations. Twelve combined strike packages and a single CAS exercise were flown. The potential D-Day+2 ATO was closely simulated on November 17 by five combined strike packages and a CAS exercise. F-117As conducted a simulated night airfield attack. B-52Gs flew 11 sorties in support of the exercise on the 18th. A 296-sortie CAS exercise was conducted on November 19. On the final day of IMMEDIATE THUNDER, four strike packages were flown by U.S., Saudi, British, French and Canadian forces, plus a CAS package with U.S., Saudi and Kuwaiti forces. Thirty composite force packages flew 2,300 sorties. Phases 2 through 5 included amphibious operations, reinforcement, and re-deployment, and SAR/CSAR (Search and Rescue/Combat Search and Rescue). In the former, an amphibious operating area was established and Navy and Marine operations supported. Missions included DCA (ground alert), CAS, air-to-air CAP, and air refueling. In the latter, USSOCENT/USCENTAF exercised helicopters and A-10s with two preplanned pickups and an immediate launch. Combined U.S., Saudi and French forces participated on November 16 in CSAR exercises. The 4th Marine Expeditionary Brigade conducted a heli-borne assault in the vicinity of Ras Al Ghar, about 75 miles below Kuwait on the Persian Gulf. USSOCENT/USCENTAF forces completed over 35 unannounced CSAR scenarios. A total of 4,150 sorties were flown by eventually 1,000 coalition aircraft; and



Emblem of the 42nd ECS. The Squadron was involved in JTF PROVEN FORCE from Incirlik, Turkey and Operation DESERT STORM from Taif, Saudi Arabia. (Via André Wilderdijk)



EF-111A 60016 of ECSP 390 on the light line at Taif in January 1991. On the first day of DESERT STORM, its crew, Capts Jim Denton and Brent Brandon, as Ratchet 52, claimed the kill of an Iraqi Mirage F1. The crew felt their jamming efforts had fooled the F1's pilot into thinking their Raven was a fighter aircraft, and in trying to evade, the pilot flew his aircraft into the ground. (via USAF)

(3) Exercise FISH BARREL, January 7-9, 1991. Concept of operations included the performance of CAS and AI, using friendly ground forces, to fly dedicated AWACS/opposing air and concentrate package training. Missions were flown both day and night to test air-to-ground TACAIR procedures. The exercise began with 266 simulated CAS and AI sorties, flown by Coalition aircraft. For the first time, six B-52Gs completed a strike training mission in northeast Saudi Arabia. In addition, a USCENTAF/USMC/Italian Air Force package conducted simulated strikes against Al Dhafra airfield and an industrial complex in the UAE (United Arab Emirates). On FISH BARREL's final day, package training was flown by five Coalition partners, including the USAF with, among others, EF-111As, F-4Gs, B-52Gs and F-111Fs, and the FAF with Jaguar, Mirage 2000 and Mirage F-1CR aircraft. Navy package training was flown by four Coalition partners, including the Navy with, for instance, A-6Es, EA-6Bs, and KA-6Ds, and the USAF with EF-111As and F-4Gs. A total of 1,824 sorties were flown.

Recurring

Recurring and training exercises included (1) air defense, weekly with 178 sorties over fourteen vulnerability periods (to exercise C3, practice detection, identification and reaction; USAF fakers included EF-111A and F-4G aircraft); and (2) day and night package training, weekly in the September-January period. Its objective was to promote interoperability of friendly forces, conduct of integrated training, and to exercise actual operations and procedures, planning, tactics and C3, Command, Control and Communications. For instance, the execution of package coordination on September 12, included two EF-111As, four F-4Gs, four F-15Cs, and four F-15Es. Over 4,000 sorties were flown in which all aspects of the integrated air campaign were exercised. In addition, electronic combat integration of joint assets on UHF, HF, and VPN exercises were held with, for instance on September 25, EF-111A, F-4G and EC-130E aircraft.

While most pre-war training had centered on area and corridor support, a large majority of the combat sorties in-



EF-111A Ravens at Taif were adorned with two distinctive markings. One was an EF-111E silhouette with three lightning bolts emanating its nose area. Above this appeared the words 'DESERT STORM', while below were the words 'ROCKIN IRAQ'. Also, a marking was used to indicate the number of combat sorties flown by each aircraft. Aircrews flew 37 combat sorties with this Raven. (USAF, TSgt Fernando Serna)

involved package support. Although Raven aircrews had received some training in this area, Col Hardziej felt future training should include more package support missions. Through January 16, EF-111A aircrews at Taif flew 923 training sorties, resulting in 2,079 flying hours. In that period, the 390th also maintained aircraft on alert status. Initially, two aircraft were involved on a 30-minute alert, but the number was doubled to four when the probability of war increased. All four stood ready to launch within two hours, although two of them had the additional commitment of remaining on 30-minute alert.

D-Day

On the night of January 17, before the first strikes, two groups of aircraft penetrated Iraqi airspace. This occurred in conjunction with 52 BGM-109 TLAM (Tomahawk Land Attack Missile) strikes from Navy ships in the Red Sea and Persian Gulf against targets in and around Baghdad, with Time over Targets (TOTs) between 0306 and 0311L, followed shortly thereafter by 35 AGM-86B ALCMs (Air-Launched Cruise Missile), expanded by aircrews of seven Barksdale B-52Gs. The first group to cross Iraq's early warning line, at H-40 (0220L), included nine U.S. Army AH-64A Apache attack helicopters (101st Airborne Division [Air Assault]), and four pathfinder USAF MH-53J PAVE LOW III helicopters (20th Special Operations Squadron) of Task Force NORMANDY. They had taken off from their Forward Operating Location (FOL) at Al Jouf. Their targets were two border early warning radar sites about 50 NM north and north northeast of Ar'Ar in Iraq.

Although the attack at H-21 (0239) with 27 AGM-114 Hellfire missiles, 100 2.75-inch Hydra rockets and 4,000 rounds from the Apache's 30-mm gun was regarded successful, resulting in the creation of a 'hole' in Iraq's early warning coverage for several aircraft packages with early missions, sites personnel must have issued some warning as the AAA batteries in Baghdad began firing immediately before H-hour. Supposedly, this was the only time that Army air assets were included in the Master Attack Plans (MAP) or ATOs. The second group included nine F-117As of the 415th TFS (TFWP 37), which took off from King Khalid RSAB near Khamis Mushait (Saudi Arabia) at 0022L (the distance to the Iraqi border was 665 NM). After being refueled, they crossed the border. At H-9 (0251L) one of the aircrews dropped the first bomb of the war, a 2,000-lb GBU-27 PAVEWAY II, striking the hardened air defense Nukhayb Intercept Operations Center (IOC). It was the central air defense node in southern Iraq with the best chance to detect the F-15E strike package (see later) by directing Iraqi fighters in that region. In addition, the Center was best positioned to coordinate Iraqi defensive efforts against succeeding allied SEAD (Suppression of Enemy Air Defenses) attacks. Nine minutes later, at 0300, aircrews of two F-117As dropped the first bombs, four GBU-27s, on crucial installations in central Baghdad, including the AT&T Building and the Telecommunications Center. By 0315L, pilots of the other six F-117As had struck targets in and around Baghdad, including the Iraqi AF headquarters, the Tallil SOC (Sector Operations Center) and the ADOC, Air Defense Operating Center.

In the meantime, more than 160 tanker aircraft had taken their place in their assigned refueling orbits outside the Iraqi early warning radar range and were refueling Coalition aircraft; were RC-135, TR-1 and U-2R aircraft providing intelligence coverage of Iraq and Kuwait; were radars of AWACS E-3Bs and Navy E-2C Hawkeyes orbiting over Saudi Arabia probing deep into Iraq to look for any Iraqi reactions; and were initial strike packages marshalling south of the Iraqi early warning and GCI coverage, all being CAP-ed by F-15Cs and Navy F-14A Tomcats. That first night, 668 combat sorties were flown by Coalition aircraft, of which 530 by USAF and 138 by UK, France and Saudi Arabia. The start of the second wave attacks roughly coincided with sunrise. Of the 530 AF sorties, 30 were flown by F-117A pilots, who struck 37 high-value targets.

EF-111A Sorties

As the first group of F-117As was withdrawing and returning to base, an aircraft package consisting of two Taif-based ECSP 390 EF-111As, Ratchet 51-52, and 22 Al Kharj-based LANTIRN-equipped F-15Es, supported by KC-135s, approached their targets, western fixed and mobile Scud launch areas in the vicinity of H-2 and H-3 airfields. The first Lockheed Martin LANTIRN (Low Altitude Navigation and Targeting Infrared for Night) at Seymour Johnson was received on September 17, 1990. According to Squadron information, Ratchet 51 (60046) launched at 0042L and 52 (60016) at 0110L. The Ravens provided jam-

ming of Iraqi radars. After final air refueling, the package formed south of Iraqi's early warning line and then headed north, penetrating Iraqi territory through the gap. F-15C Eagles had moved up ready to pick up any Iraqi fighters which their controllers might have scrambled. While the Raven crews, using their TFR capability to fly low enough to elude Iraqi defenses, provided jamming support, Strike Eagle crews struck Scud sites with a combination of free-fall bombs and Mk-20 cluster weapons, with the first bombs hitting at 0305L. At about the same time, Iraqi fighters were launched.

An E-3B AWACS picked up bandits moving south in the general direction of the F-15Es as Penzoil and Citgo flights (F-15Cs of the 58th TFS, 33rd TFW, Eglin) were still refueling. Penzoil 63 and 64 then swept northward at .95 Mach at 30,000 feet. The first group of bandits turned back north, a single MiG-29, however, made its appearance 30 miles to the north at 11,000 feet and climbing. Final lock-on occurred at 20-22 NM. When the F-15C pilot of Penzoil 63, 50119, Capt John Kelk, was certain the aircraft involved was a bandit, he fired an AIM-7M at 16 miles and shot it down, becoming the first USAF pilot to be credited with a kill in the F-15.

After the Citgo four-ship had dropped off the tankers and rapidly entering Iraqi airspace, its aircrews picked up two trailing groups of Iraqi fighters, which were tracking F-15Es coming off their targets. However, these fighters turned north and out of range, but another group took off from the FOL at Mudaysis. An E-3B AWACS controller called "bandits airborne", Mirage F1s heading towards supposedly the two EF-111As. After the controller had declared the aircraft as hostile, the pilot of Citgo 65, Capt Rob Graeter, at 8.5 NM fired an AIM-7M at a Mirage F1 and seconds later the aircraft turned into a large fireball. As to Graeter's second Mirage F1 kill that day, the 366th Wing history told a different story: a single Mirage F1, picked up visually, was locked-on to a trailing Raven, 60016 of the 42nd ECS, Ratchet 52. Its aircrew, Capt Jim Denton and Brent Brandon of the 390th ECS, then countered by slicing down to the earth, while expending chaff and flares, and

still being followed by the Mirage pilot. His firing a missile was unsuccessful. Presumably the Iraqi pilot was so busy trying to get his kill, he got too low and flew into the ground. According to the history, the EF-111A crew felt their jamming efforts had fooled the F1's pilot into thinking their Raven was a fighter aircraft, and in trying to evade, the pilot flew into the ground. Also, this would have constituted the first and only aerial victory ever earned by an unarmed EF-111A, if confirmed. A subsequent higher headquarters investigation disallowed the claim. Instead, the credit was also given to Capt Graeter.

The 37th had requested jamming support for its first missions over Baghdad as being regarded the most difficult as Iraqi air defenses would still be undamaged. AFSAA, the Air Force Studies and Analysis, reconstructed aircraft mission profiles after the Gulf War. GWAPS stated in this respect about the mission the two Raven aircrews were later supposed to jam into the Baghdad area, but never supported the first F-117A strikes on the Iraqi capital. By the time the Raven crews were to have turned on their jammers at H-2 (0258L) at Baghdad, the first two F-117s would already be within range of acquisition and targeting radars from Baghdad's SAM defenses, as well as within the range of the missiles themselves. The F-117s returned safely to their temporary base at Khamis Mushait. The Ravens landed at 0525L (016) and 0537L (046).

Third F-117 Strike

Ratchet 51-52 were not the very first EF-111As to launch from Taif. At 0029L, 390th ECS EF-111As Wedge 21-23, 66-0044, -057, and -027 respectively took off. The flight was led by Col Hardziej. After takeoff they headed for an area southwest of Baghdad to provide electronic jamming for the second group of 12 F-117As, nine 416th TFS and three 415th TFS birds, and led by the TFWP 37 commander. The flying distance to the Iraqi border was 525 NM for EF-111A aircrews and 665 NM for F-117A pilots. The Ravens were CAP-ed by four F-15Cs of the 71st TFS (1st TFW, Langley) at about 50 NM west of Al Jarrah Airfield. Mirage F1s tried to disrupt the mission. After Capt Steve Tate, flight lead, had identified his target as hostile, he used an AIM-7M to down it. F-117A pilots struck 16 targets and scored ten hits. According to the book 'On Target', the F-117As gained little from the support by the EF-111As, as one crew departed before setting up jamming because they detected an Iraqi aircraft closing in, while the two other aircrews appeared to have set up jamming at a range so far from Baghdad they might have accomplished little.

Concurrently with the F-117As striking Sector and Intercept Operations Centers, C2 nodes in the air defense system and leadership targets, SEAD attacks on Baghdad were carried out by two large packages in the 0348L-0355L period. Navy aircraft launched from carriers in the Red Sea flying in from the west, while USAF F-4Gs came in from the south, heading straight for Baghdad and then just short of the capital swinging northeast. Three EF-111As, each in a separate orbit southwest-southeast of Baghdad, jammed Iraqi radars to further the confusion. In addition,



This Raven's 42nd ECS crew chief talks with Capt Askew, aircraft commander, and 1Lt Shintaku, EWO, as they sit in their cockpit in the HAS at Incirlik, prior to takeoff in September 1991 for a mission in support of PROVIDE COMFORT II. (USAF, SSgt Cynthia Alderson)

six USAF BQM-74 drones and TALDs (Tactical Air-Launched Decoys) dropped from A-6E Intruders increased the numbers on the Iraqi radar screens. During the mission, a Navy F/A-18C and its pilot (USS Saratoga) were lost, the first Coalition pilot to be killed.

After supporting the SEAD mission, the three Ravens supported six TFWP 48 F-111Fs which, between 0400L-0420L, struck Balad SE Airfield, northeast of Baghdad. In the meantime, at 0340L, a strike package of 11 F-111Fs and four Tornado GR. Mk1s struck runways, Scud shelters and storage bunkers at Al Jarrah and Jalibah Airfields with GBU-24s and CBU-89s (F-111F) and JP-233 munitions (GR.Mk1). The package was supported by two EF-111As and four F-4Gs.

The third F-117A strike on the first night took place between 0500L and 0510L. The eight F-117As were each configured with two GBU-27s. Targets included SOC's, and chemical and biological bunkers. However, due to bad weather only five out of the 16 bombs expended were reported as hits. Just subsequent to the F-117 strike, four F-111Fs struck biological weapons bunkers at Salman Pak just south of Baghdad with CBU-87 and CBU-89 munitions. The package was supported by four EF-111As and eight F-4Gs. This was large in relation to the flight of four strike aircraft, as planners had anticipated opposition.

Daylight

Two-hundred-and-ten Coalition attack aircraft participated in day strikes on D-day, including 140 F-16Cs, 30 F/A-18s, eight B-52Gs and four RAF Tornado GR.Mk1s. For instance, around 1500L and preceded by four BQM-74 drones, a strike package consisting of 32 F-16Cs of TFWP 363 (no PGM-capability) struck the Habbaniya Petroleum Storage Facility and Al-Taqqaddum airfield in Iraq. The Fighting Falcons were supported by four 42nd ECS EF-111As (Wrench 71-74) to provide jamming support, 16 CAP F-15Cs, and eight F-4Gs, meaning the 32 F-16Cs were supported by 28 aircraft. In addition, E-3B AWACS on the central orbit, and Navy E-2C Hawkeye aircraft over the Persian Gulf and Red Sea provided surveillance and control with their search and height-finding radar and communications equipment, to, for example, identify who was friendly. E-3B controllers alerted F-15C aircrews that two Iraqi MiG-29 Fulcrums were active in the area, which were shot down in the ensuing action by pilots of the 58th TFS, Marine Corps Capt Chuck Magill and AF Capt Rhory Draeger, using AIM-7F Sparrows. The first day's effort ended with heavy attacks in the early evening. For instance, seven B-52Gs struck the Republican Guard's Tawakalna Division and aircrews of 12 F-111Fs and eight Navy A-6E Intruders struck Iraqi airfields, using their laser-designator systems.

Coalition aircraft did not only strike targets in Iraq itself, but also in occupied Kuwait, with two groups of aircraft striking targets in the 0835L-0850L period. Sixteen F-16C of TFWP 401 attacked two Scud sites at Ali al Saleem and Ahmed Al Jaber Airfields with Mk-84 general-purpose bombs and CBU-89s. An additional 36 F-16Cs



An EF-111A of the 42nd ECS, deployed from RAF Upper Heyford (England), takes off from Incirlik in September 1991 to support PROVIDE COMFORT II. (USAF, SSgt Cynthia Alderson)

struck nine missile sites, including two at Kuwait IAP, with Mk-82s and Mk-84s. However, some of the attacks were broken off due to SAM launches. The F-16Cs were supported by two EF-111As and ten F-4Gs.

Day 1, second night

One more F-117A strike was flown on the second night of Day 1. The 12 aircraft of the 415th TFS were supported by two Ravens. Due to an air abort, pilots of 11 F-117As reached a score of targets between 2015L and 2030L, including C2 bunkers, the headquarters of the intelligence service and Baghdad's nuclear reactor. Ten hits were reported out of 18 attempts. This brought the number of F-117A strikes for Day 1 to 41.

A few minutes after the F-117As departed the Baghdad area, four F-111Fs, supported by two Ravens, were approaching Saddam Hussein's residence in his home town Tikrit, north of Baghdad. To reach a target so deep in Iraq, the aircraft were refueled over south-central Iraq by KC-135Rs, which were CAP-ed by F-15Cs. At 2040L, his leadership bunker was hit by PGMs. The same two EF-111As then supported two B-52Gs which penetrated into northern Iraq a few minutes before 2100L. The bombers struck the Al Sahra undergraduate pilot training base, some 100 miles north of Baghdad. As the Stratofortresses flew north of Baghdad, two EF-111As, four F-4Gs, and four Eagles supported eight F-111Fs and four RAF Tornado GR.Mk1s. The strike aircraft bombed the runways and base facilities at Al Jarrah to the south of Baghdad. At 2315L, six F-111Fs attacked Scud shelters at Qalat Salih. They were supported by two EF-111As.

On Day 1, EF-111A aircrews flew 29 support sorties in Iraq and Kuwait. The Coalition lost six aircraft on D-Day, an F-15E, one Navy A-6E and one F/A-18C, two RAF Tornado GR.Mk1s and a Kuwaiti A-4KU, while the Iraqis lost three Mirage F1s, two MiG-21s and three MiG-29s, of which six by F-15C and two by Navy F/A-18C pilots. Thirteen Coalition aircraft were damaged.

Early days

Especially in the first three days of the Campaign it was clear that not all of the deployed Raven aircrews had received adequate training in threat avoidance as training

guides at Mountain Home did not include enough practice to avoid air-to-air threats. This caused problems as many aircrews had brief engagements with Iraqi aircraft, especially at low and medium altitudes. However, none of these engagements resulted in a loss. Col Hardziej stated this was attributed to a lack of skill on the part of the Iraqis and not to effective avoidance by EF-111A aircrews. Hence his suggestion to also increase training requirements in this area after redeployment.

Also, aircrews of, for instance, EF-111As, B-52Gs, RAF Tornados and some Navy units conducted their attacks from low level, the way they trained at home. However, the intense AAA, the inability of the Iraqi Air Force, and the fact the SAM threat was reduced due to Coalition SEAD, led those units to conduct operations at medium-altitude.

Gorilla

LFE, Large Force Employment, also called 'Gorilla' packages, were typical for DESERT STORM operations. Such a package consisted of up to 90 aircraft, a dedicated SEAD package of F-4G WILD WEASEL and EF-111A aircraft preceding it. The tactic was to exploit the principles of mass and economy of force. LFE suppressed and overwhelmed defenses, while providing greater destructive energy on targets. It was easier to coordinate EC assets in support of a limited number of large forces than employing such limited assets in support of numerous smaller strike packages. LFEs demanded a great deal of coordination, increasing greatly with the size of the package, plus needed dedicated CAP. As to EC assets, the designated Mission Commander, the overall commander of the entire strike package, planned, integrated and executed coordinated tactics. With regard to EF-111As, their orbits would put them in a position to jam Iraqi radars, which would pose the highest threat as had been determined by pre-mission target area study.

Package Q

The Master Attack Plan called for three large daylight strikes against targets in the Baghdad area on day three, January 19, but due to weather only one was flown, Package Q, the largest of DESERT STORM. The major target was the nuclear research facilities southeast of Baghdad. Depending on the target, each mission cell would consist of up to eight aircraft. However, overnight crucial changes were made to the Air Tasking Order. For instance, the target for the F-16C pilots of the 614th TFS (TFWP 401) was changed to include three major sites in downtown Baghdad, one of which was the Iraqi Air Force (IAF) headquarters. In addition, the ATO was received late, preventing the mission's coordination and planning.

The MAP called for 72 F-16Cs, of which 56 of TFWP 388 (Al Minad, UAE and also supplying the Package commander) and 16 of the 614th TFS (Doha, Qatar) to strike targets lying on the axis from southeast to northwest across Baghdad. Support would be provided by two EF-111As, eight F-15Cs for CAP (Tabuk, Saudi Arabia), and eight F-



A 42nd ECS EF-111A Raven is approaching a KC-135 Stratotanker to get refueled during a PROVIDE COMFORT II sortie from Incirlik. (USAF, SrA Gudrun Cook)

4Gs (Shaikh Isa, Bahrain). The Phantoms were configured with two AGM-88s each because of distances and fuel consumption (they could carry four). Yet, this meant their crews would not have much time in the target area.

Orbits

The first aircraft, F-15Cs, began rolling at approximately 1346L (although the Iraqi border was only 250 NM away, it would take the aircrews one hour and 21 minutes to fly the 665 NM to their tanker rendezvous point), followed by the EF-111As at 1408 (415 NM, 59 minutes), and by the last, the F-4Gs, at 1443L (165 NM, 24 minutes). Support aircraft included KC-135E/R and KC-10A (each refueling track had 5-8 tankers), E-3B (to, among others, provide warnings of Iraqi aircraft threats and for airspace control), EC-130E ABCCC (coordination and giving updates before the force entered Iraq), EC-130H (jamming Iraqi communications centers) and RC-135V/W (monitoring Iraqi electronic signals) aircraft. The strike force took off from five different bases and at different times before they rendezvoused with their tankers, already being in their *Railroad* and *Weasel* orbits, south of the Iraqi border. TOT of 1630L meant the strike force would have to begin dropping off the Seeb tankers (it would take them approximately one hour and twenty four minutes to fly the 590 NM to their refueling tracks) at approximately 1547 to cross the Iraqi border eight minutes later. It would then take 35 minutes to reach the Baghdad area.

Ballistic

From the moment Package Q approached Baghdad and its air defenses, the Weasels engaged Iraqi SAM sites. However, according to MG Buster Glosson, in an April 1992 interview with GWAPS personnel, there was a problem with the Weasels allocated to the mission. Either because of fuel, timing, or the decision of the package commander, not all appeared to have made it to the Baghdad area. The GWAPS Database showed that only six HARMs were fired. Maj John Nichols stated in his July 1992 interview that up

to the Weasel call they were leaving, SAMs had been fired by the Iraqis the ballistic way. Following this, many SAMs were guided, forcing his flight members to take evasive action and jettison ordnance and fuel tanks.

Like the other F-16Cs, the 16 of the 614th were each configured with two Mk-84s, two external fuel tanks, two AIM-9s, fifteen flares and ninety bundles of chaff. The target for eight of them, led by Maj Jeffrey Tice, was a large oil refinery on the Tigris River. As the IAF headquarters was obscured by a cloud cover, the second group of eight F-16Cs, led by Nichols, rolled off to turn and strike the refinery. As the last Mk-84s were hitting the refinery, a SA-3 hit F-16C 87-0228, flown by Capt Harry Roberts. As the F-16s egressed Baghdad, a SA-6 impacted near another F-16C, 87-0257, flown by Tice. Both pilots ejected successfully, taken POW, and released on March 6, 1991. One of the F-16Cs was so low on fuel that it would have crashed short of Coalition territory, had a crew of a Kansas ANG KC-135E (190th Air Refueling Group) not crossed over in enemy territory to refuel the Fighting Falcon. F-16C pilots of the 388th struck the nuclear facilities.

Smaller

The conclusion of the Package Q mission commander was that a series of frictions -the ATO reaching late, certain crucial changes, not enough coordination time, a tactical approach that provided the Iraqis considerable warning and fuel problems for the Weasels and others, bad weather, and insufficient attrition of Iraqi defenses- combined contributed to a less satisfactory outcome: the loss of two pilots with their F-16Cs.

One of the lessons was that Iraqi defenses in the Baghdad area remained lethal and that it was not worth the risk sending conventional packages into the heart of those defenses, especially having F-117s around with their PGM capability. Also, for the remainder of DESERT STORM F-16 packages were smaller, so more manageable and easier to coordinate and fly.

Special Mission

The last time 15,000-pound BLU-82 *Daisy Cutters* were used, was in South Vietnam to create landing zones for helicopters. Around January 20, Lt Col Thomas Beres, the 8th SOS commander, introduced the concept of using it as a psychological weapon. It was capable of destroying everything in a three-mile radius within the flat type of terrain provided by the desert. Due to the threat, target assessment determined that the best tactic was to drop the BLU-82 from between 16,000 and 21,000 feet AGL, versus the normal 6,000 feet. AFSOC also decided to drop more than one BLU-82 at a time in order to increase the psychological impact. In addition, and as a final precaution, each of the drops was to be given a force package comprising of EF-111As, F-4Gs and EC-130Hs, to suppress radars and jam communications if threats appeared. Gen Norman Schwarzkopf, CENTCOM commander, was briefed on January 28 by AFSOCENT (deployed) and showed interest

in using the bomb to clear minefields. A requirement for eight bombs was anticipated. On February 3, the first two of ultimately 18 BLU-82s arrived from Hill. The first *Daisy Cutter* was dropped on a mine field by the MC-130E COMBAT TALON crew of Maj Skip Davenport during the late night/early morning hours of February 6-7. The blast created a safe passage through Iraqi defenses for U.S. Marines to start the ground offensive. The fifth and final BLU-82 mission was on the 22nd, one day prior to G-Day. Two bombs were dropped by MC-130Es, split by two hours. Both were on target. The first was the deepest into the area and came under radar threats. There was no response by SAMs or AAA. MC-130Es of the 8th SOS expended a total of 11 BLU-82s. The remaining seven BLU-82s were destroyed by EOD (Explosive Ordnance Disposal) personnel.

Ground

Pre-G-Day operations were initiated by XVIII Airborne Corps on February 15 with a series of cross-border reconnaissance missions. That evening, two teams of two AH-64s (1-101st Aviation) crossed the Iraqi border on a route recce. Other Apaches screened the mission along the corps line of departure. They were supported by Army EH-60A QUICKFIX and EF-111A aircraft.

The U.S. Army was also supported by coalition aircraft conducting SEAD. For instance, on February 20, EF-111A, F-4G and EC-130H aircraft provided SEAD support for an Army AH-64 attack battalion, which conducted a deep strike in the rear area of Iraqi's 45th Infantry Division. Although air operations in direct support of the four-day Offensive Ground Campaign were initiated on D+38, February 24, the Strategic Air Campaign continued. For instance, CWP 7440 at Incirlik sent a large force package to the Al Mawsil military research and production facility near Mosul in northern Iraq. The package consisted of F-



When the EF-111As of the 429th ECS departed Incirlik for good in June 1997 to return to home base Cannon, Marine Corps and Navy EA-6Bs assumed the Raven's mission. One of the squadrons was Electronic Attack Squadron (VAQ) 209, a Naval Reserve squadron from NAS Whidbey Island (WA). A ground crew carefully monitors their Prowler 161118 (AF-502), as the pilot lowers its folded wings into the launch position. An EA-6B crew consists of a pilot and three Electronic Countermeasure Officers, ECMOs. (USAF, TSgt Anna Hayman)



Maj J.B. Bobbitt, a pilot assigned to the 429th ECS, pre-flights his EF-111A, 60020, before redeploying on April 3, 1998 from Prince Sultan Air Bases to Cannon, NM. It meant the end of Raven operations in Operation SOUTHERN WATCH. (USAF, TSgt James Mossman)

16Cs and F-4Es and was supported by EF-111As, F-15Cs and F-4Gs.

Analysis

The overall performance results of the Raven crews indicated they were quite effective in neutralizing the Iraqi early warning system. Coupled with the total EW capability of the Coalition forces, the Raven and its crews were a major contributor to the low allied aircraft loss rate and the general breakdown of Iraqi's IADS. An analysis by USAF's Electronic Warfare Center concluded that when EF-111As were supporting Coalition aircraft, Iraqi abilities to detect, track and pass target information were seriously impaired and in some cases completely denied.

Redeployment

On March 9, USCENAF verbally approved JTF-PF's redeployment flow plan. The redeployment period was called Operation DESERT CALM. In what was termed a 'Joint Task Force/Proven Force retrograde ceremonial flow', the first USAFE units to return home from Incirlik were five of the six EF-111As and 22 F-111Es of the 20th TFW. In addition, one 42nd ECS EF-111A returned from Taif in company of one F-111F. Due to maintenance, the sixth Incirlik Raven returned to Upper Heyford on the 13th.

Aircraft and aircrews of the 390th ECS departed Taif on March 25, arriving three days later. Four KC-10A Extenders supported the redeployment, being configured to carry passengers in addition to fuel. Redeployment of support personnel was initiated earlier, with relatively small numbers of people returning when airlift would allow. Most personnel had returned to Mountain Home by early April. April was the 'great recovery month' for the 390th AMU with a reconditioning of its EF-111A fleet. This included full paints and complying with any overdue inspection. More scheduled maintenance was accomplished than in the previous six months. This trend continued in May (the Squadron's first Avionics Modernization Program-modified EF-111A, 60020, arrived for the 390th that month).

As to paints, policy from TAC, Tactical Air Command, directed all units to remove any unauthorized artwork from their aircraft. After DESERT STORM combat ops began, 390th maintenance added two markings. One was an EF-111A silhouette with three lightning bolts emanating its nose area. The center and largest of the lightning bolts intersected a radar dish. Above this appeared the words 'DESERT STORM', while below were the words 'ROCKIN IRAQ'. The symbol appeared on both sides of the aircraft just below the front windscreens. Also, a marking was used to indicate the number of combat sorties flown by each aircraft. This symbol consisted of a radar dish with a lightning bolt through its base and appeared under the canopy opening on both sides of the Raven. These markings were also used by the Upper Heyford contingent.

Turkey

When the Gulf War came to an end, the involvement of the Raven did not, not at Incirlik, nor in the Gulf Region. After the UN Security Council authorized a humanitarian relief effort for the Iraqi Kurds on April 3, 1991, U.S. European Command (USEUCOM) organized a Combined Task Force (CTF), Operation PROVIDE COMFORT (OPC), which deployed to Incirlik on the 5th. MG James Jamerson became its first commander, but when LG John Shalikasvili took over, Jamerson became his air component commander. In Phase I, U.S. and coalition fighter aircraft provided air cover for cargo aircraft like C-130s (air-dropping relief supplies), and C-5s and C-141s (moving relief supplies from CONUS into Turkey). USAFE fighter units that participated included Upper Heyford's 42nd ECS and Spangdahlem's 52nd (T)FW. To support OPC, the 42nd deployed EF-111As, personnel and equipment on April 6, 1991. They were welcomed back on August 14. Coalition forces flew 700 fixed-wing sorties in Phase I, including 500 by U.S. aircraft.

In Phase II, beginning on July 15, an established no-fly zone, north of 36°N, was enforced by British, French, Turkish and U.S. aircraft. On September 26, 1991 the 42nd ECS sent three Ravens, aircrews and support personnel to Incirlik. The number of aircraft was increased to five on April 4, 1992, remaining unchanged until the detachment returned to Upper Heyford on July 3. Two days earlier, the 390th ECS had taken over the commitment. With 19+ months of continuously being deployed (see later), the Squadron was the most deployed unit in USAFE. As the 42nd had already formally inactivated on July 1, as described in USAFE Programming Plan (PP) 20-1 of April 1, 1992, the 42nd ECS held an informal inactivation ceremony on July 10.

In December 1992 and January 1993, the northern no-fly zone was tested by Iraqi aircraft. On January 17, a MiG-23 was downed by 1Lt Craig 'Trigger' Stevenson of the 23rd FS (Spangdahlem), flying F-16C Fighting Falcon 86-0262 and using an AIM-120 AMRAAM. In the first eight months of 1993, USAF aircraft would strike Iraqi AAA and radar sites in both no-fly zones in five separate occasions after the Iraqis locked onto or fired at Coalition aircraft.

After the 42nd's inactivation, TAC's two EF-111A squadrons became responsible for OPC and support in the Gulf Region: the 390th ECS at Mountain Home (replaced by the newly activated 429th ECS on September 11, 1992) and the 430th ECS at Cannon, which was activated on August 1, 1992 to accept the Ravens and personnel of the inactivated 42nd ECS. In December 1992, the 430th deployed to Incirlik for the first time to provide support in OPC with three EF-111As. This number would not change during the Raven's presence at Incirlik. The number of EF-111A squadrons was decreased to just one after the PCS of the 429th from Mountain Home to Cannon on June 22, 1993 and the inactivation of the 430th ECS one week later. This meant the 429th became responsible to support both Operations, PROVIDE COMFORT/NORTHERN WATCH at Incirlik and SOUTHERN WATCH at Dhahran. Hence its deployment to Incirlik in July 1993.

On February 21, 1996, EF-111s reached a permanent milestone when they passed 2,000 days of continuous deployment to both Incirlik and Al Kharj/Dhahran. It occurred while the Raven, then assigned to the 429th ECS, was in its 21st rotation. At that time, the USAF still had 24 Combat Coded (CC) Ravens in its inventory. PROVIDE COMFORT II was ended on December 31, 1996 and replaced the next day by Operation NORTHERN WATCH (ONW). The U.S. flew over 42,000 fixed-wing sorties in OPC II.

EF-111As were involved in ONW until their departure from Incirlik, June 25, 1997. They were relieved by EA-6B Prowlers of Marine Tactical Electronic Warfare Squadron (VMAQ) 1, which deployed for six months from MCAS Cherry Point (NC).

PERIOD	UNIT/ NUMBER	SORTIES	FLYING HOURS	REMARK
CY91	42ECS			Apr 6-Aug 14, 1991
CY91/2	42/3*			Sep 26, 1991- Jul 3, 1992
CY92/3	390ECS**/3			Jul 1-
CY93	430ECS=/3			Mar 1993-
CY94	429ECS/3	487	1770	
CY95	429ECS/3	476	1659	
CY96	429ECS/3	406	1366	
CY97	429ECS/3	297	939	-June 25+

* increased to five on Apr 4, 1992; later decreased to three.

** aircrews only; 390ECS re-designated as Fighter Squadron at Mountain Home on Sep 11, 1992 and replaced by newly activated 429ECS.

= after PCS of 429ECS from Mountain Home to Cannon on Jun 22, 1993, the 430th was inactivated there on the 29th.

+ replaced by EA-6Bs of Marine Tactical Warfare Squadron (VMAQ) 1.

Saudi Arabia

The redeployment of personnel and equipment to Mountain Home did not result in the inactivation of ECSP 390. Nor, that no EF-111As remained, as four Ravens and



429th ECS maintenance personnel line-up at the flight line at Prince Sultan to bid farewell to their EF-111As, which are taxiing to the runway to begin their redeployment to Cannon. (USAF, A1C Greg Davis)

aircrews of the 42nd ECS and personnel of the 42nd AMU stayed behind as part of TFWP 48. As part of USAF's residual assets in the Gulf Region during the ceasefire period with Iraq the Ravens would provide an ECM capability to U.S. forces in case hostilities would begin again. To support flight operations, the 390th left its WRSK. It was returned to Mountain Home in July, although it was no longer 100 percent complete. Plans called for eventual rotation of the 42nd contingent with a small portion of the 390th ECS tasked to provide assets early in 1992 (see later).

On March 13, 1991 TFWP 4404 was activated at Al Kharj, replacing TFWP 4, assuming its mission, personnel and equipment. Assets initially assigned to its subordinate units were F-15C and E, F-16A and C-130H aircraft. Plans were in place to include EF-111As, F-4Gs and A-10As. As a result, maintenance representatives of the 42nd ECS visited Al Kharj on March 27 as part of an inspection of base facilities in connection with the upcoming move from Taif. The next day, F-4G Phantoms arrived, joining the 4404th. The four 42nd EF-111As, personnel and equipment arrived at their new home on April 11 and were attached to the 4404th, adding, as the Wing stated, "a new dimension and more versatility". When ADP 15 was inactivated on April 20, ECSP 390 was reassigned to USCENTAF, Forward, but stayed attached to the 4404th. 42nd AMU personnel returned to Upper Heyford in May and were replaced by other 42nd AMU personnel.

In the week of June 9, 1991, plans were revealed regarding, among others, the re-designation of the Wing, a realignment of six groups under it, the extension of Wing control from Al Kharj and Riyadh to Dhahran (King Abdul Aziz AB), and the move of Hq USCENTAF (Forward) from Riyadh to Dhahran. On June 15, the Wing initiated its official move to Dhahran with the departure of EF-111As and F-4Gs. Two days later, re-designation to Composite Wing Provisional 4404 (CWP 4404) was effected.

All scheduled normal flying operation sorties were temporarily cancelled on April 17, 1992 due to a sand-storm. This must have come as an unpleasant surprise for personnel of the 390th ECS, which had arrived in Dhahran eight days earlier with four EF-111As from Mountain

Home to replace the 42nd ECS detachment. On the 22nd, CWP 4404 organized a static display on its flight line, representing each type of fighter aircraft assigned.

SOUTHERN WATCH

After the UN Security Council (UNSC) adopted Resolution 688, designed to protect the Kurdish minority in Iraq, President George Bush announced on August 26, 1992 the establishment of a no-fly in Iraq south of 32°N to support '688', initiating Operation SOUTHERN WATCH (OSW), which complemented OPC and later ONW. Its duration was not determined at that time. The no-fly zone would be enforced by Coalition forces from the U.S., UK, Saudi Arabia, France (and later) Kuwait. In the meantime, Joint Task Force Southwest Asia (JTF-SWA) had been established on August 13 with the mission to support in-theater forces by provision of operational planning and tactical command. The first operational sorties were flown on the 27th, less than 24 hours after Bush's announcement. On September 2, the number of 390th ECS EF-111As was increased by two to six. Nine days later, the aircrews took off their 390th ECS patches and replaced them with new 429th ECS ones as back home, at Mountain Home, their unit had been re-designated as a Fighter Squadron and replaced by the 429th ECS. September also saw the arrival of personnel and equipment of the French Air Force. In October, the Wing conducted its first composite training exercise since the beginning of OSW, SANDSTORM. Participants included USAF fighters, aircraft from the carrier USS Ranger, and RAF Tornado GR.Mk1s.

Like in the north, Iraqi aircraft also tested the no-fly zone in the south. This resulted on December 27, 1992 in the loss of a MiG-25 Foxbat, which was downed by Lt Col Gary North, commander of the 33rd FS (Shaw), flying F-16D 90-0078 and using an AIM-120A AMRAAM. Four F-16Cs and two Iraqi MiGs were involved in the engagement. It was the first aerial victory ever scored by a U.S. F-16 pilot. A further re-designation, to Wing Provisional 4404 (WP 4404), occurred on January 1, 1993. Twelve days later, Coalition forces destroyed SAM sites in southern Iraq.

January saw the number of Ravens being decreased by two to four. This would continue to be the number through the remainder of the rotations. While in Dhahran, the detachment's parent unit, the 429th ECS, PCS-ed on June 22, 1993 from Mountain Home to Cannon and was reassigned from the 366th Wing to the 27th FW.

After Iraq had moved elements of its Republican Guards to Kuwait's border by October 1994, the U.S., on the 11th, began reinforcement of their in-theater forces in Operation VIGILANT WARRIOR by deploying almost 3,000 additional personnel (total 25,000+) and 100 aircraft (270+). Surveillance over the no-fly zone was increased with, for instance, on the 22nd, 165 sorties flown. In a November 5 message, USCINCENT recommended redeployment of the VIGILANT WARRIOR forces, which was initiated on the 19th.

In October 1995, the Air Expeditionary Force (AEF) concept was introduced. The AEF provided forces with the



When EF-111As ended their involvement in SOUTHERN WATCH and re-deployed from Prince Sultan to CONUS, the US Navy took over the commitment from the 429th ECS with EA-6Bs. Their first unit to deploy was VAQ-142 from NAS Whidbey Island. On the photo, Prowler 162936 (NL-621), configured with two AN/ALQ-99 Tactical Jamming System (TJS) pods, cruising over the Saudi Arabian desert after in-flight refueling. (USAF, A1C Greg Davis)

same or greater capability than the units being replaced. AEF I deployed to Shaikh Isa with F-16s in the October 28-December 18 period.

In February 1996, WP 4404 operated from nine geographically separated locations in three countries. It received mission tasking from JTF-SWA.

Khobar Towers

On June 25, 1996 Khobar Towers, which was used as living quarters for SOUTHERN WATCH coalition personnel, was hit by terrorists, resulting in 19 personnel killed and almost 500 wounded. A Task Force, the Downing Commission, was appointed to review the situation and assess force protection measures at other Wing locations within the AOR (Area of Responsibility). The Commission suggested Prince Sultan AB near Al Kharj. The first Wing units relocated in August. The EF-111A detachment of the 429th ECS followed suit on September 11.

After Iraqi tanks took Irbil in the northern no-fly zone in August 1996, President Bill Clinton expanded the southern no-fly zone to 33°N. To clear the additional territory of crucial air defenses, B-52Hs and U.S. Navy ships fired 44 cruise missiles on September 2-3 in an operation called DESERT STRIKE. The B-52s were supported by, among others, eight 909th ARS KC-135Rs (Kadena). Forces in the Gulf Region were increased to support SOUTHERN WATCH with eight F-117s (to Al Jaber AB in Kuwait), and F-16Cs of the 68th and 78th FS (to Al Kharj). Also, Air Mobility Command (AMC) transported Patriot-ready batteries to CENTCOM's AOR. By February 1997, Wing aircrews had flown 133,000+ operational sorties.

Implementation of the expeditionary nomenclature for the SWA AOR was adopted by Air Combat Command (ACC) in May 1997 through a two-phase approach. In Phase I, the organizational nomenclature for operational units rotating into SWA were modified, adopting the Expeditionary organizational nomenclature. For instance, 77th FS became 77th Air Expeditionary Squadron (AES). In an August 4, 1998 letter, USAF approved the Phase II changes of the numbers of provisional in-place SWA units from 44XX to other unit numbers. In this way the WP 4404

was inactivated at Prince Sultan on October 1, 1998 and replaced by the newly activated 363rd Air Expeditionary Wing (AEW).

Prowlers

On March 30, 1998, SWA's curtain started falling for the EF-111A Raven as well, when 429th ECS aircrews flew the final two OSW sorties. They flew two EF-111As, which, in 1968, had participated in COMBAT LANCER, the initial combat evaluation of the F-111A in Southeast Asia. On April 8, some 60 Squadron/Wing personnel redeployed. By the 11th, all four Ravens had returned to Cannon. This was for a total of 2,780 days in 32 continuous rotations in SWA, enforcing a no-fly zone over Southern Iraq. According to WP 4404, "the Squadron departed with distinction of providing the Area of Responsibility with the longest, continuous United Nations support in enforcing no-fly, no-drive zones in both Operation Southern and Northern Watch."

In the meantime, in February, an advanced U.S. Navy echelon (ADVON) team had visited Prince Sultan AB for a site inspection and to discuss details concerning the replacement of EF-111As with EA-6Bs. Naval personnel and equipment then arrived at the base to begin construction of the Expanded Mission Mobile Maintenance Facility, known as EMMMF2. Its mission was to maintain ALQ-99 jamming transmitter equipment of the Prowler and was under the command of Lt Cdr Don Patterson. During their final deployment, Raven aircrews worked especially close with their Navy counterparts of Electronic Attack Squadron (VAQ) 142 from NAS Whidbey Island (WA) to ensure a smooth transition from the Raven to its replacement, the Prowler. The official transition ceremony took place on March 31.

PERIOD	UNIT/ NUMBER	SORTIES FLYING HOURS	REMARK
Mar 25, 1991	42ECS/4		
Apr 9, 1992	390ECS/4		+2, Sep 2, 1992
Sep 11, 1992*	429ECS/6		
FY93	429ECS**/4	646	1953
FY93	27FW/4	619	430***429ECS
CY94	429ECS/4	713	1974
CY95	429ECS/4	823	2150
CY96	429ECS/4	790	2052
CY97	429ECS/4	766	2435
CY98	429ECS/4	403	1730 -March 30+

* 390ECS re-designated as Fighter Squadron at Mountain Home on Sep 11, 1992 and replaced by newly activated 429ECS.

** Jun 22, 1993, PCS from Mountain Home to Cannon and re-assigned from 366 to 27FW.

*** Aug 1, 1992, activated at Cannon and assigned to 27(T)FW; Jun 29, 1993, inactivated.

+ replaced by Electronic Attack Squadron (VAQ) 142.

DENY FLIGHT

EF-111A Ravens did not only support operations in Southwest Asia, but also in Europe: Operation DENY



An EF-111A Raven of the 429th ECS on 'last chance' at Aviano AB, Italy, prior to a September 12, 1995 takeoff to support a NATO air strike against Bosnian Serbs in Operation DENY FLIGHT. (USAF, TSgt Bruce Sherwood)

FLIGHT. The passing on March 31, 1993 of UNSC Resolution 816, authorized NATO to enforce a ban on military flights over Bosnia and Herzegovina by shooting down any violators. Coalition members included the U.S., UK, Italy, Holland, France, Spain, Turkey and Germany. Aviano became the most important of DENY FLIGHT bases, with at one time 140 aircraft. The Operation was initiated on April 12.

The first aerial victories were scored on February 28, 1994 when four of the six Serb Bosnian jets were shot down after being intercepted by two flights of F-16Cs of the 526th FS. Capt Robert Wright begged three of them. On March 25, 1995, the 429th ECS got involved when it deployed six EF-111As with personnel and equipment from Cannon to Aviano. This meant the Squadron was active on three fronts, Italy, Saudi Arabia and Turkey with personnel, equipment and a total of 13 Ravens. A truly imposing challenge, which was tackled successfully.

Through April 30, 1995, participating aircraft flew 72,000 sorties, including 58,920 operational and 13,080 training sorties.

However, the UN was very reluctant in authorizing close air support missions for the fear of the Serbs retaliating against UN peacekeepers on the ground. The Serbs did seize hostages after a strike against an airfield at Ud-bina and an ammunition depot at Pale and as a result the UN vetoed further NATO air strikes. After the Srebrenica debacle (July 6-11, 1995), during which urgent Dutch requests for direct air support had not materialized and some 8,000 Moslem men and boys were massacred by Bosnian Serbs, a bold new air campaign, called DELIBERATE FORCE, was ready by the end of July. It began on August 29 and ended on September 21. Overall, 3,515 sorties (including 2,470 sorties like SEAD, CAS, recce and SAR/CSAR) were flown in the August 29-September 14 period by some 400 aircraft, which operated from Italian bases and from two Navy and two French carriers. The U.S. flew 2,318 sorties, 66 percent of the total. The EF-111A detachment returned to Cannon on September 25, 1995.

In December, a peace agreement between Bosnia, Croatia and Serbia was formally signed at Wright-Patterson AFB. This ended DENY FLIGHT, which was replaced by Operation JOINT ENDEAVOUR to implement the agreements.

Its air aspect was named Operation DECISIVE ENDEAVOUR.

PERIOD	UNIT/ NUMBER	SORTIES	FLYING HOURS	REMARK
CY95	429ECS/6	498	1964	Mar 25-Sep 28

PDM

As to an interesting insight into the relation between an Air Logistics Center (ALC) and a Major Command after the latter cancelled a previously negotiated workload, the following.

PDM, Periodic Depot Maintenance, of an EF-111A, by Sacramento ALC (SM-ALC) at McClellan AFB, was accomplished after every 1,500 flying hours, in general, every four years. The work encompassed 24,000 man-hours in 342 calendar days at a cost of \$3.2M. In FY96, ACC contracted SM-ALC for six EF-111As to go through PDM and for FY97, five aircraft.

Although ACC had contracted 'Sacramento' for PDM of five EF-111As in FY97, it later decided to terminate work on three aircraft. According to SM-ALC this would cause an estimated \$6M loss to its Depot Maintenance Activity Group (DMAG). Referring to AFMCI 21-111, SM-ALC stated in an August 12, 1997 letter to ACC that "charges for cost due to cancellations of previously negotiated workload or reductions in quantities of previously negotiated workload were reasonable and businesslike expenses, which had to be borne by the customer who negotiated, but then cancelled the workload or part of the workload". Hence, SM-ALC's request to ACC for recoupment of the losses resulting from the termination of the EF-111 depot work.

ACC, through Col Ramon Luina, Chief, Resources, Requirements, Integration and Execution Division, responded by letter of September 19, stating that SM-ALC's request had been reviewed and was denied. The only reason consideration was given to performing these PDMs was to prepare for an Air Force decision extending the EF-111 retirement date. As that decision had not been made, ACC had no requirement to perform PDM on those aircraft in FY97. Doing so would have been a gross waste of money. ACC regretted the fact losses were incurred as result of the decision, but believed it was not obligated to pay 'penalty' costs in the current Fiscal Year.

At that time, there were three EF-111As going through PDM at McClellan with 60051 scheduled for completion on January 16, 1998 (FY96), 60046 on the 21st and the final Raven, 60015, on March 11.

Inactivation

On January 28, 1997, the 429th ECS had a total of seven aircraft with personnel deployed, four in SWA and three at Incirlik.

TAC Programming Plan (PP) 97-07 dealt with the inactivation of the 429th. Although an ACC Site Action Task Force (SATAF), 429th ECS inactivation/EF-111 retire-



EF-111A 60051 in flight over the Italian Alps while on deployment to Aviano to support Operation DENY FLIGHT, the NATO enforcement of the no-fly zone over Bosnia. The photo was taken on May 1, 1995. (USAF, SrA Tama Hamilton)

ment was already held at Cannon on June 3-6, 1997, it would take more than a year to realize the action. The SATAF was performed by five different working groups in the area of, for instance, Operations and Manpower/Personnel. The in-brief was presented by the 27th Fighter Wing commander, Col Michael Koerner, who presented all aspects of the Team's objectives and addressed particular concern for taking care of the personnel and identifying closure costs and funding sources.

As to Operations, the 429th ECS, by the end of June, still had personnel and four of its 37 EF-111As on rotation to SWA with a scheduled return to Cannon on April 15, 1998. A plan for the return had to be developed. The Squadron was attempting to send eight aircraft and personnel to the first period of GREEN FLAG in FY98. As to personnel, new assignments would have to be found for 683 mission and 69 base operating support manpower authorizations, which were identified for reduction. The milestones showed, among others, that the transfer of EF-111As to AMARC, Aerospace Maintenance and Regeneration Center, at Davis-Monthan was scheduled to begin on June 11, 1997 and to be completed on June 12, 1998. ACC was to publish the order to inactivate the 429th ECS by May 29 for a June 26 inactivation. The unit was to be removed from the UMD on June 30.

Some two months after returning from SWA, USAF's final EF-111A Electronic Combat Squadron, the 429th, was inactivated (June 19), after the EF-111A Raven had been retired in a May 2 ceremony. Thirty-five EF-111As were flown to AMARC with the final two on June 19. ■

Sources

On Target, Organizing and Executing the Strategic Air Campaign against Iraq (Richard Davis).

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GWAPS, Gulf War Air Power Survey.

Air Force History Index.

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Joint Task Force Proven Force and the Gulf War (Part 4)



North American Aviation's proposal 'F-100F Ferret Fighter Bomber' became USAF's first dedicated Wild Weasel aircraft. Seven F-100Fs were modified to the Wild Weasel I configuration. 58-1227 was one of the four WW Is, which deployed to Korat RTAFB on November 21, 1965 in accordance with Strike OPOD 190-65 'Wild Weasel I'. (Bob Krone)

Theo van Geffen

In August 1990, U.S. and allied forces arrived in numbers in the Gulf region to persuade Iraq to give up Kuwait, which was occupied on August 2. In mid-January 1991, a second front was opened from Incirlik (Turkey). USAF deployed many different aircraft types. In this part we look at the development of Wild Weasel aircraft, focusing on the F-4G Advanced Wild Weasel and its peacetime operations.

As a result of the first loss of a U.S. aircraft (Leopard 02, F-4C 37599 of the 47th TFS) by a North Vietnamese SA-2 Surface-to-Air Missile (SAM) on July 24, 1965, Chief of Staff of the Air Force (CSAF), Gen John McConnell, on August 13 established the 'Air Staff Task Force on Surface to Air Missiles in SEA' to study the serious threat posed by SAMs and to recommend means to cope with them. It was popularly known as the Dempster Task Force (TF), named after its chairman, Brig Gen Kenneth Dempster. The TF published its report on September 23. A score of solutions were identified. One of the proposals was the 'Hunter-Killer', which envisioned conversion of the rear cockpit of a two-place TAC fighter into an ELINT/ECM operators position and equipping the aircraft with an S, C and X-band omni-directional Radar Homing and Warning (RHAW) device. The aircraft could be loaded with standard ordnance. As it seemed to have considerable merit, the Task Force recommended immediate exploitation of the concept.

Wild Weasel I, IA, II and III

The most promising early capabilities appeared to be North American Aviation's (NAA) proposal to modify two F-100F Super Sabre aircraft with a RHAW device for test (called by NAA 'F-100F Ferret Fighter Bomber') and a Republic Aviation Corporation (RAC) proposal for a follow-on aircraft, the F-105F Thunderchief (called 'F-105F ECM Fighter Bomber'). Task Force recommendations with regard to the F-100F were to flight test the prototype, evaluate employment tactics, and deploy the modified F-100F to SEA. With regard to the F-105, to obtain funding, authorize the EF-105F prototype development, to flight test it, evaluate employment tactics and deploy the EF-105F to SEA. It is interesting to note the difference in F-100F and F-105F designations used by the Task Force. Seven F-100Fs were modified to the WILD WEASEL (WW) I configuration. Through Class V Modification 1778, F-105Fs were upgraded to the WW III configuration. Flight testing (TAC Test 65-85B) took place in the February 5-June 10, 1966 period with 276 sorties flown. Eighty-six F-105Fs were modified. Later on, 61 F-105Fs were upgraded to the F-105G configuration.

To determine the capabilities of an F-105D employing RHAW similar to that employed in the WW I F-100F, F-105D WILD WEASEL I ALPHA was flight tested, involving two F-105Ds, one configured with the AN/DPN-61 Maxson receiver

and one with the APR-25V (Mod 4A) capability. Yet another WW project at that time was WILD WEASEL II, the evaluation of an F-105F configured with the AN/APS-107 (XA-1) system.

Wild Weasel IVC

Although USAF, on February 20, 1966, had already authorized to establish Project Wild Weasel IV, tasking TAC to conduct a Quick Look test on four F-4C RHAW-configured aircraft (TAC Test 65-85C), it took until November 1967 the F-4C program for 36 1778-modified WW IVC aircraft was released and placed on procurement in December. This became feasible after the decision to convert the aircraft to an internal configured WW IVC with the equipment located in the left forward AIM-7 well, rather than in an external pod. By tri-command agreement 15 each aircraft were allocated to PACAF and USAFE and six to TAC for training.

Wild Weasel IVD

As early as February 26, 1965, the F-4D was suggested for the WW role, when TAWC (Tactical Air Warfare Center, Eglin) in a message to TAC urged it to be used rather than the F-4C. To no avail. However, when the existence of SA-2s and other threat radars in SEA generated a requirement for additional WW aircraft, USAF on August 11, 1966 directed TAC to conduct an IOT&E on two 1778-modified F-4D RHAW-configured WW aircraft (50657 and 50660), TAC Test 66-57 'Wild Weasel IVD'. A Modification Requirement (MR) released in late 1967 called for the modification to WW IVD configuration of 58 F-4Ds. However, due to continuing problems with the APS-107 RHAW system, TAC on May 30, 1968 cancelled the original TAC Test 66-57. Both F-4Ds were de-modified.

Advanced Wild Weasel, F-4D

With advanced technology in mind, USAF, in February 1968, directed AFSC (Air Force Systems Command) to conduct a cost and feasibility study of a new WW system. Its requirement was stated in paragraph II of TAC ROC (Required Operational Capability) 35-68 'Wild Weasel' of July 1, 1968. This was followed in November by a Required Action Directive. RAD's second of two Phases was to produce an advanced capability to meet Tri-Command's requirement for WW capability in 25 percent of all tactical strike aircraft. To meet '35-68', ASD (Aeronautical Systems Division) asked a number of vendors to submit preliminary technical proposals to the prime and integrating contractor, McAir (although McDonnell and Douglas merged in April



The F-4D Advanced Wild Weasel program encompassed the modification of 116 F-4Ds. As USAF decided to use F-4Es, the F-4D/APR-38 combination did not reach the full-scale development phase. One of the two F-4Ds that were modified to the F-4D AWW configuration was 66-7635. Along with 66-7647, '635' was subsequently de-modified and brought back to a standard D. (McAir)

1967 to McDonnell-Douglas and the latter with Boeing in August 1967, we use 'McAir' throughout the article). This ultimately resulted in selection of four major sub-contractors, who, with McAir, formed an industrial team to implement the F-4D/APR-38 Advanced Wild Weasel (AWW) system.

After a risk reduction study, accomplished by ASD and McAir in September 1969-June 1970, concluded an engineering development program could proceed, DoD, in August published performance, schedule, and cost threshold for an F-4D/APR-38 prototype effort and released funds for its DT&E (Development Test & Evaluation). Effective November 20, McAir was awarded a contract. The plan was to configure 116 F-4Ds through Class V Mod 2740 'F-4D/APR-38 Wild Weasel' to F-4D AWW. Selection would be from approximately 200 F-4Ds in Block 30 and above that could physically accept '2740'.

Two F-4Ds, 67635 and 67647, were modified as prototype AWW F-4Ds, the work of the industrial team being the base to design, fabricate and test eight preproduction models of the APR-38. A DT&E flight test program was performed by the AFFTC (Air Force Flight Test Center) at Edwards April 1973-early 1974 with 79 sorties flown. IOT&E with one F-4D was accomplished by the TFWC (Tactical Fighter Weapons Center) at Nellis in January-April, 1974.

However, on October 26, 1973 AFSC had informed CSAF the APR-38 would not pass full qualification testing for at least 18 months. With this, along with the relative scarcity and age of F-4Ds, CSAF, Gen George Brown, sent a message on November 12 to AFSC et al. AFSC, for instance, was requested to examine the feasibility of installing the APR-38 into the F-4E. Broad guidelines were to be followed with examples being, (1) installation of the APR-38 LRUs (Line Replacement Unit) in the gun/ammo bay areas; (2) installation of presently used APR-38 chin radome assembly on the F-4E radome; and (3) which F-

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4E Block number(s) would be recommended? AFSC was also requested to address the issues at a Joint Operation Technical Review (JOTR) in late November and to present that detailed follow-on data as soon as possible, but not later than January 1, 1974.

The JOTR was held on November 30 and examples of issues addressed by the commanders of AFLC (Air Force Logistics Command), AFSC and TAC were, (1) added capabilities and (2) F-4E versus F-4D. As to (2) it was found the F-4E airframe was preferred. The trio recommended to provide program direction in early January 1974 to, among others, (1) designate the F-4E for the AWW mission; (2) initiate modification planning for 116 F-4Es; and (3) authorize the highest priority for the program.

With the decision to use F-4Es, the F-4D/APR-38 combination did not reach the full-scale development phase. The two F-4Ds were subsequently de-modified and brought back to standard Ds.

Advanced Wild Weasel, F-4E/G 1974

As requested in CSAF's November 12, 1973 message, work was initiated to complete projection of cost, production and deployment schedules, and the first MPA (Modification Proposal and Analysis). With ASD's concurrence, engineers at OOAMA (Ogden Air Materiel Area) at Hill and McAir began preparing a work statement in January 1974 for installation of the APR-38 in the F-4E. Also, a cockpit configuration review was held in St. Louis with ASD, OOAMA and TAC representatives.

In anticipation of a PMD (Program Management Directive), OOAMA informed TAC in a February 12 message 'Identification of Two F-4E Aircraft by Tail Number for Mod 2740', a Certification Requirements Plan was being prepared to procure installation of APR-38 systems in two

F-4Es, i.e., Trial Installation (TI) and Kit Proof (KP). To facilitate its completion, TAC was requested to identify, not later than February 15, their serial numbers and location. Also, if Leading Edge Slats (LES) were required on these aircraft (all F-4Gs were LES-modified). AFLC had earlier directed OOAMA to use non-TISEO (Target Identification Set, Electro-Optical)-configured F-4Es in Blocks 40-45.

FY74-75 procurement and production planning was discussed at a February 26-27 meeting at OOAMA by F-4E AWW program officers from AFLC, ASD, and Warner Robins (WRAMA) and San Antonio (SAAMA) AMAs (on April 1, 1974, all AMAs were re-designated ALCs, Air Logistics Centers). The program was given the nickname PACER GROUND.

Pursuant to a March 5 Air Force Council meeting, USAF decided to install the AN/APR-38 in the newer and more maneuverable F-4E and to incorporate additional system capability. As a result, Hq USAF PMD 'Advanced Wild Weasel' was published on April 3, tasking AFLC to prepare an MPA, MPS (Modification Planning Supplement), and APP (Advanced Procurement Plan) for Class V modification of F-4Es with the AN/APR-38 AWW system. All had to be submitted by May 15. Examples of guidance items were, (1) program to be accomplished and funded as a Class V modification with June 1974 being considered as program approval; (2) the AN/APR-38 had to be interfaced with the Navy's High-speed Anti-Radiation Missile (HARM); (3) retrofit kits, except two systems for TI and KP, would not be given final go-ahead and contractor release until completion of F-4E IOT&E; (4) planned output of the first operational F-4E AWW should be FY4/77, building to a rate of 15 per quarter, with completion of four 24 UE operational squadrons by FY4/79; and (5) installation would be accomplished by OO-ALC. USAF validated the F-4E AWW as the TAF's (Tactical Air Forces included PACAF,

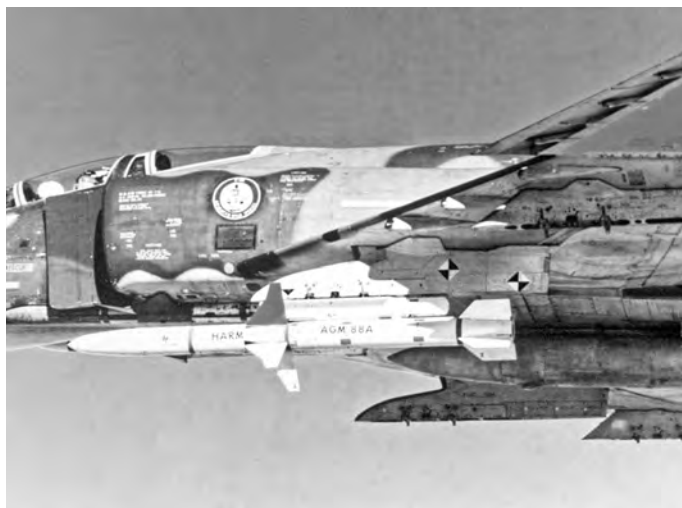


Block 43 F-4E 97254 of the 414th Fighter Weapons Squadron (Nellis) was selected as prototype for the R&D phase of the F-4E AWW program. Earlier it had served as kit-proof F-4E for the Leading Edge Slats modification. It is seen here at McAir in St. Louis in December 1975, prior to departing for Edwards for phase II of the DT&E. (McAir)

TAC and USAFE) number one priority program for FY74 Class V modification.

As a result of the PMD tasking, AFLC sent an April 18 letter to OO-ALC, requesting the Depot to prepare the MPA to include an APP and MPS. As required, WR-ALC and SA-ALC would support their Hill colleagues. Ogden's Director of Materiel Management forwarded the initial MPA to AFLC on May 14. As amended, it was sent to USAF three days later.

On June 28, Hq USAF published PMD 'Advanced Wild Weasel' for Class V modification of the F-4E. Its specific purpose was to implement Mod 2740 and provide the F-4E aircraft with the AN/APR-38 AWW system. The modification was planned for the 116 F-4E (including trial installation/kit proof) lowest time Block 40-45 non-PAVE SPIKE, non-RIVET BAT-equipped aircraft. All 1F-4E TCTOs (Time Compliance Technical Order) not yet complied with on the selected F-4Es would be accomplished during the modification process. Final program production release was withheld until successful completion of F-4E/APR-38 flight and qualification testing. McAir in St. Louis would accomplish trial installation. OO-ALC was responsible for modification, using both PDM (Programmed Depot Maintenance) and speed-line facilities. As to command responsibilities, AFLC would, for instance, initiate a request for re-designation for a new MDS (Mission Design Series), procure Group A kits, issue a TCTO, remove all Group B portions of Mod 2777 RIVET BAT. AFSC was to procure the Group B for the TI and KP aircraft with modification kits being the present baseline AN/APR-38 tested in the F-4D AWW. TAC was to select the 116 aircraft by tail number, to provide, upon AFLC request, the aircraft for TI and KP testing, and to develop aircrew training requirements. The schedule showed for instance (1) FY4/76 for trial installation completion and modification acceptance flight tests; (2) not later than FY4/77, start of aircraft modification; and (3) modification completion in FY4/79. FY76 funds would not be released until qualification test-



'254' was also used in the program to interface the Navy's AGM-88A HARM, High-speed Anti-Radiation Missile (HARM), with the AN/APR-38. As such, USAF, on April 3, 1974, published Program Management Directive, 'Advanced Wild Weasel'. The decal says 'F-4E Advanced Wild Weasel'. (McAir)

ing was completed and a decision made on total system configuration. It was specifically stated the PMD did not constitute funding authority.

The F-4E/APR-38 program was initiated on August 1 by awarding McAir the 'Update R&D and Pilot Production' contract. The basic development and pilot production contracts included the F-4E Research & Development (R&D) effort (engineering and modification of one prototype F-4E for system flight test and TAC IOT&E), the APR-38 added capabilities, design and testing of the Operational Flight Program (OFP), and Pilot Production (PP) of four APR-38 systems. Most of the Group B equipment involved refurbished assets from the AWW F-4D R&D program, while new Group B equipment was built to support F-4E trial installation and kit proofing. Group A kits were started upon completion of R&D definition. New production units would include the added APR-38 capabilities. Total system would be subject to final qualification testing. Any change, resulting from system flight or qualification tests would be retrofitted into the TI and KP F-4Es. Examples of major (structural) modifications to make the F-4E suitable included (1) removal of the M61A1 gun system and conversion of the gun bay into a supportive electronics compartment, and installation and critical alignment of the chin pod on the forward fuselage and modified radome; (2) the vertical fin to accept the new fin pod; (3) the cockpits to accommodate the Control Indicator Set (similar to the F-4D AWW arrangement); (4) doubling the memory size and reduction of the memory cycle; and (5) addition of new wire bundles in the radome, nose, cockpits, vertical fin, and forward, center and aft fuselages.

In an August 24 letter, OO-ALC informed AFLC a study had been completed of F-4Es, ranking them by serial number in order of fatigue damage. One hundred and sixteen aircraft made the list with two spares. Three aircraft, the prototype, TI and KP F-4Es should be designated from this group. For scheduling and planning purposes, certification of the dedication of 116 aircraft was required no later than October 1. The list showed the F-4E with the least fatigue damage (.00005) was USAFE's Block 43 69-7212 with 763 flying hours. The opposite was USAFE's Block 42 90248 with .081 and 1,217 respectively.

On November 1, McAir also received a contract 'Class V Mod 2740, F-4E Wild Weasel Group A Provisions'. It involved the engineering, design, and development of Group A provisions for retrofit installation of the AN/APR-38 AWW, including AGM-45 Advanced Shrike and AGM-78 Standard ARM capabilities, into the F-4E.

After the planned completion of system qualification slipped from January to July 1976, TAC's commander, Gen Robert Dixon, asked for a JOTR to investigate ways to maintain the initial production schedule or upgrade the capabilities of the F-105G and F-4C WW force. To help maintain the production schedule after pilot production, the Air Staff and TAC requested DoD to approve contracting for initial long lead time items prior to the Defense Systems Acquisition Review Council III, i.e., the full production decision point, initially set for April 1976, but postponed until July. The JOTR was held on November 4. Considered was



A second F-4E was modified in St. Louis in the AWW program, Block 44 F-4E 97263, which was reassigned from the 334th TFS at Seymour Johnson. It served as the dedicated Trial Installation (TI) aircraft. '263' is shown at McAir with a 13-man group of OO-ALC personnel before being flown to Hill. (McAir)

the long lead release option, along with the idea of installing Group A provisions prior to arrival of Group B components. The combination of early funding and phased installation would result in a January 1976-August 1977 schedule, with trial installation in January-May 1976 and first aircraft delivery in August 1977.

1975

Advanced Soviet technology, as revealed in the October 1973 Yom Kippur conflict through substantial Israeli losses by Egyptian SAMs, had accentuated the gap between U.S. defense suppression and enemy SAMs. As available WW forces in FY75 had limited capability against newer radar threats, the F-4E advanced WW was expected to correct the situation and therefore remained a top priority for the TAF.

Although a phased installation was recommended in the November 1974 JOTR and favored by TAC, it was opposed after all by AFLC's commander. In a February 10 message 'Production Schedule' to AFLC, TAC again urged phased installation to the maximum practical extent, willing to accept risks to improve the schedule. However, as OO-ALC's individual aircraft approach to install Group A and B items seemed to reduce risk (AFLC April 9 message), TAC accepted the Depot's position (TAC April 24 message). Later on, AFLC's position softened, when it agreed to pursue phased installation if Group B items were available at the start of production.

1976

Due to the high man-hours and extremely complicated nature of TCTOs 1F-4E-600/601, Col Dudley Foster, OO-ALC's Director of Materiel Management's Aircraft Systems Management Division, advised on February 26 to hold periodic coordination meetings for involved Hill personnel to keep abreast of program developments and solution of

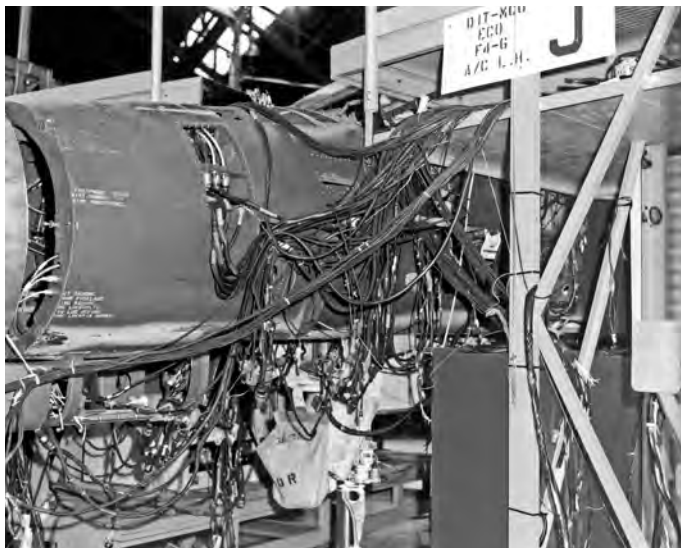
problems through action items. The first such meeting was called for March 11.

To develop an ICA (Independent Cost Analysis) as requested by USAF, a 13-man ASD team in April utilized the following buy schedule: FY75, four; FY76, 21; FY77, 60; and FY78, 29 for a total of 114 aircraft (117 kits to be produced, including three pilot production kits). It was anticipated PDM and A/B kits installation could be combined for some 78 F-4Es. The ten-year O&S estimate was based on 96 operational (one wing with four 24 UE aircraft) and 18 training F-4Gs, including spares. The number of flying hours would be 336/UE/year.

Air Force Regulation (AFR) 82-1 'Military Aircraft, Rockets and Guided Missiles', indicated a series mission symbol was appropriate when 'a major modification...resulted in a significant difference...affecting related system components or resulted in significant changes to the logistic support'. USAF had indicated in its June 28 PMD the aircraft 'may receive a new MDS' and the F-4 SM (System Manager) had planned for a re-designated aircraft in his first MPA to improve logistical support for the many components not common in other F-4s. In this case, there was sample evidence a series symbol change was justified. A F-4E/APR-38 Re-designation TF wrote the formal justification and request, which reviewed the aircraft's new capability and unique structural, cockpit, and logistic support features. Proposed was 'G', which also referred to the F-105G's precedent and the fact the F-4s sold to Germany for training purposes at George were designated F-4Fs. However, it was not the first F-4 with a G MDS, as the Navy had earlier re-designated 12 F-4Bs temporarily as F-4Gs, which had AN/ASW-21 data link equipment to make hands-off carrier landings. On July 9, USAF requested ASD initiate required actions to re-designate the F-4E AWW to F-4G. On August 7, ASD informed OO-ALC the Air Staff had approved the F-4G designation. (After receipt at OO-ALC of conflicting messages from AFLC and USAF about when an F-4E would become an F-4G, Neslin Bangerter of OO-ALC's Technical Services Branch advised in the January 1977 coordination meeting the aircraft would become an F-4G on completion of the final flight test.)

1977

In a January 12 letter, TAC's commander, Gen Robert Dixon, informed PACAF's commander, Gen Louis Wilson, that in preparing the 1978 Presidential budget submission, DoD had deferred the FY78 modification funds for the F-4G to FY79. According to Dixon, the reprogramming made it necessary to stretch the delivery schedule to prevent a break in the projected schedule (from five to three per month [precluding the need for speed-line], with the final ones in FY81). This would result in (1) a slippage of the first F-4G squadron's IOC (Initial Operational Capability) with three months; (2) a required revision of the F-4G Force Program projections; and (3) a slippage of the phase out of the F-105G/F-4C WW force. Predicted on a satisfactory cleanup of the program's major deficiencies, Dixon



The OO-ALC at Hill was responsible to modify an F-4E to serve as the dedicated Kit Proof (KP) aircraft, Block 44 F-4E 69-7290. The photo demonstrates the myriad of cables OO-ALC personnel had to deal with. (OO-ALC)

stated a JOTR, to determine if the F-4G system was ready for full production, could be scheduled for February.

By February, a DoD review was contemplated for the second week in March, following a JOTR and Air Staff review. The JOTR with Gen William Evans (AFSC/CC), Lt Gen George Rhodes (AFLC/VC), and Gen Dixon was held on February 23. Positions/recommendations included, (1) the earliest introduction of all F-4G WW assets into the operational force was a top priority, with #3 priority for TAF and #18 USAF-wide; (2) successful completion of the F-4G R&D program would result in a capability, satisfying basic operational requirements; and (3) full-scale production should be initiated immediately, providing ASD would pursue fixes for the deficiencies reported. The March Air Staff review showed substantially similar positions and recommendations were subsequently made to DoD. On the 11th, DoD announced the full-scale production decision, releasing funds four days later for the production of 60 additional kits (85 total, plus an FY79 option for the final 29 kits).

As recommended by February 1977 AFTEC (Air Force Test and Evaluation Center, Kirtland), TAC, AFSC and AFLC messages to USAF, the follow-on level of effort R&D task was being initiated for system growth and enhancement, essential to provide a WW capability that would remain effective against an ever increasing threat.

On May 6, USAF directed AFLC to prepare a third MPA to update the previous submission, using revised guidance. The second MPA of May 5, 1976, updating the initial MPA, which was based on a full production schedule, included, for instance, trial install and kit proof Group A and B kits, and to validate and verify TCTOs. The MPA was completed on September 19, dealing with the basic modification of 116 F-4Es. Also, for example, the weapons delivery system was to be improved by the employment of the AGM-45-9/10 Shrike, AGM-78C/D Standard Anti-Radiation Missile (ARM), and AGM-65D Maverick and improve overall effectiveness and safety by adding a role

change relay and second fuel quantity indicator gauge. Modification now had to be accomplished in conjunction with the selected F-4E's PDM cycle at a rate of three inputs versus five per month, in line with higher headquarters direction to defer funding for the last 29 kits. Estimated average installation man-hours were revised to 5,024 per aircraft, down from 6,093 of the second MPA. Program changes resulted in a revised (fourth) December 14 MPA, mainly due to adding a fourth simulator and additional support equipment.

After DoD had directed USAF in December 1976 via Program Budget Decisions to establish an F-4G enhancement program, USAF, on June 7, published the 'F-4G Development (Basic and Enhancements)' PMD. It provided direction to (1) complete basic F-4G R&D efforts; (2) correct APR-38 system deficiencies identified by the IOT&E; (3) conduct a FOT&E (Follow-on Operational Test and Evaluation); and (4) initiate a level of effort F-4G enhancement program. AFLC became the implementing command and was tasked with overall responsibility, except FOT&E management. Two of its responsibilities were, (1) to work closely with TAC, Air Training Command, AFLC, AFTEC, NASC (Naval Air Systems Command) and the NWC (Naval Weapons Center) to coordinate AGM-88/F-4G integration and testing as soon as possible to verify compatibility between the APR-38 and HARM; and (2) to start de-modification of the one remaining F-4D AWW testbed aircraft as soon as possible. TAC was to provide USAF with a revised ROC, which would address the desired enhancements as soon as practical, but not later than December 1, and to prepare the IOT&E test plan. With regard to program management guidance, AFSC should anticipate receiving direction by separate PMD to integrate an improved INS (Inertial Navigation System) so that it could be installed during the first scheduled F-4G PDM cycle.

The production prototype F-4G, Block 42 F-4E 90239, was input at Ogden on September 8, even though kit-proofing was not complete and despite the risks known to be involved due to non-availability of complete, update Group A kits. However, those risks were outweighed by the need to provide TAC with F-4Gs to meet its training schedule. '239' was #1 in the production sequence and received kit serial number four. It was delivered to TAC on April 24, 1978. Had KP's completion taken 373 calendar days, 239's took 228 days, although the retrofit production flow time was well over the 140-day target. It required time to establish the most expedient routine, the actual receipt of the new aircraft provisions and classified APR-38 components, along with their transport/routing to the appropriate storage/work stations and subsequent integration for installation.

In October McAir received a contract 'Production Group A Kits', valued \$19.7M. The period of performance was to June 1981.

1978

On January 12, the F-4G Ad Hoc Steering Committee met at Nellis to discuss several related topics, one of which was flight testing production aircraft. It was agreed that

the first ten F-4Gs, starting with 90239, were required to fly instrumented EW range sorties, with the first five to each fly the routine Functional Check Flight (FCF) and two range sorties ('239' required three range sorties). The next five, the FCF and just one range sortie. It would then be decided, based on system performance up to that time, whether additional range sorties were necessary. Although OO-ALC's Flight Test Branch had F-4E pilots assigned to fly F-4G FCFs and range sorties, it lacked a necessary qualified EWO. As TAC's priority was training operational F-4G aircrews, a solution had to be found to flight test the first production F-4Gs.

Capt T. Bear Larson arrived at George in January 1978 and was assigned to the 39th TFTS after six years flying F-4C/WW aircraft at Zweibrücken and Spangdahlem, Germany. He flew some F-4C and E sorties to maintain C model currency and gain F-4E model experience. His first F-4G sortie was flown at Nellis on February 28 during AFTEC's FOT&E. Training was based on the Integrated Test Bench, I-Bench, used by maintenance to wring out the 'black' boxes end to end, but giving all of the displays and BIT (Built-in-Test) tests, and processing some signals with a squirt box. He then became Chief of the F-4G Ready Team. Capt Larson,

The modification to F-4G configuration involved putting a digital system into the old trusty analog F-4E. Due to the nature of the APR-38 ranging system and its interfaces with the INS and other avionics on the platform, the mod could not be fully checked out on the ground. This drove TAC to request that at least the first ten aircraft that went through mod line be accepted with a test experienced F-4G EWO in the back seat, and fly it across an EW test range. That's when Capt Dennis Haney and I stepped in. This provided significant scheduling challenges. For instance, there were the standard depot slips in delivery time, as well as the relative inflexibility of the test range schedule.

For instance, T. Bear flew three sorties in 97566, the second production F-4G, before it was delivered on June 6 and also three in 90206 (#6) in June before delivery on the 21st. As he continued,

We worked around as many of these as we could, but Denny and I accepted them. The first couple were a little rough as we were breaking in the folks at Hill (both the existing aircrew and some of the depot folks as well). We would try to explain the system on the I-Bench to a Hill back seater. We would then get these first operational jets to George, where initially the first ones were used as hands-on aircraft to train maintenance personnel with the red lined tech data, so they were in high demand. But all was worth the effort: the jets started to come out standardized and there were qualified guys at Hill that could accept the aircraft.

That back seater was Capt John Andrews (388th TFW, Hill). After going through APR-38 school he took over acceptance testing and also coordinated range dates and times.



'290' freshly painted, on a wet Hill tarmac after its PDM and modification, seemingly ready for its transfer to Nellis. (OO-ALC)

By January 31, eight F-4Es had been input for PDM and modification. An earlier directed study of F-4G production flow time, based on incremental parts shipments, indicated that extraordinary effort was required to meet the FY78 output of 18 aircraft. To deliver them on time, Brig Gen Kenneth Milam, AFLC/DCM, on January 28 approved OO-ALC's overtime request of 51,000 man-hours. In addition, work was based on McAir's complete delivery dates and accomplished in three shifts. FY78 output was even 19 F-4Gs.

To evaluate corrections made by AFSC of the remaining deficiencies, a FOT&E and TD&E (Tactics Development and Evaluation) was conducted by AFTEC and TAC at Nellis with TAWC's two 'CB'-coded F-4Gs. It was initiated on February 6 and completed on July 29. A total of 223 hours were flown in 149 sorties with 121 being successful. TD&E began in June and approximately 40 of the 149 sorties were used to satisfy its objectives. While operational effectiveness proved to be satisfactory, deficiencies had to be corrected. For instance, the APR-38 MTBF (Mean Time Between Failure) was only 2.2 flying hours. Gen Bryce Poe, AFLC/CC, expressed his concern about this low MTBF and its performance to his TAC and AFSC colleagues. It also regarded the high cost to improve the APR-38 reliability, both in the short and long terms and indicated they would bear directly on the decision to purchase additional F-4Gs. Although aware of the commitment to the need for F-4Gs in USAFE, AFLC now considered the possibility of terminating the planned deliveries. ASD then began work on APR-38 reliability with better quality control, longer MTBFs for LRUs and improved fabrication methods. With other changes made, AFTEC gave the F-4G a satisfactory rating.

In September, USAF tasked AFTEC to prepare and schedule briefings for DoD, the Air Staff, the Air Force Council et al regarding the release of FY79 funds for conversion of the last 29 F-4Es and continued program support. A series of briefings were given by AFTEC, ASD, and AFLC at TAC, AFSC and to the Air Force Council. ASD

presented several ECPs (Engineering Change Proposals) to improve system reliability and Built-In-Test performance. In all, over 100 ECPs applied to the APR-38. According to ASD, the improved APR-38 MTBF would be 9.2 versus FOT&E's 2.2. AFTEC's commander, Maj Gen Howard Leaf, considered the ECPs adequate to justify continuance of the program.

During an October 16 General Officer Review, AFLC showed the program to be too expensive to pursue more F-4Gs and recommended careful consideration of overseas deliveries. To prove their fixes, ASD briefed the program, showing six aircraft with normal LRUs and six with improved LRUs flying at George and Nellis. With Gen Leaf's support, AFLC agreed to support the acquisition of 29 more F-4Gs, providing ASD would improve the APR-38 and its support equipment and AFLC would receive more money for, among others, spares. Based on continuing improvements and pursuant to DoD and Air Staff reviews, FY79 funds were released in November for the 29 F-4Gs. With a three per month production rate, all would be modified by May 1981. TAC believed the F-4G AWW had a good capability for defense suppression, but yet it was looking at an enhancement program to make it effective against increasing and changing threat environments.

Air Force Magazine reported in October that President Carter, after 'intense debate within the Administration' had denied Iran's request for the procurement of 31 F-4Gs. DoD had urged the sale, while the State Department was against it. Apparently, the aircraft's advanced EW equipment was thought to be too 'sensitive' to be given to another country. As an alternative, the U.S. offered an equal number of F-4Es and 1,000 AGM-45 Shrikes.

1979

On February 13, 30 of the first 34 TAC F-4Gs had been delivered. Three aircraft were in flight testing and one was about to enter it. Depot flow time was decreased to an average of 160 days with more than 5,000 maintenance man-



F-4E Block 42 69-0239 was the production prototype, reassigned from the 347th TFW at Moody and input at OO-ALC on September 8, 1977. '239' was delivered to TAC on April 24, 1978 and flown to George four days later by Col Dudley Foster, 35th TFW/CC, and Capt Denny Haney, EWO with the 39th TFTS. The May 1980 photo shows 239 while on a X-country in the colors of the 563rd TFS (red). (Jim Rotramel)

hours required to accomplish the two TCTOs. The initially proposed flow time of 140 days had not taken into account the extremely crowded condition resulting from the new wire bundles in the cockpit. A review indicated cockpit area work required some 600 hours and 14 days more per aircraft than negotiated with the F-4 SM. Not included either were time consuming requirements for overseas deliveries: at least two days to assure navigation and air refueling systems were ready and another day for a complete compass swing.

As with other F-4 types, F-4G engines left a trail of smoke which degraded its chances of tactical surprise. This prompted TAC in May to submit a SON (Statement of Need) for low smoke engines. It was expected to be reviewed in 1980. As AFLC had seventeen new production, low smoke engines left over from another program, they were delivered to George in December for installation. Starting with the 1982 PDM, smokeless engines were installed in F-4Gs.

The first F-4G to return to Hill for PDM, was 69-7263, which was fielded as the first 'real' F-4G in September 1977 and therefore returned early. It was input on July 18 and returned to George on October 17. Kit-proof F-4G 69-7290 was returned for PDM in April 1981. It was overhauled and returned in October. Like '263', it had test instrumentation and other features not found on production F-4Gs and also helped OO-ALC to establish a routine PDM production flow, which started in earnest in October 1981. Through December, six F-4Gs were input. During FY82 and 83, 36 F-4Gs were returned after PDM completion. Initially, flow time averaged 130 days, but by the summer of 1983, it had been reduced to under 110 days.

To manage the F-4G program with its numerous sub-programs and tests designed to increase its capabilities, USAF, on August 24, directed AFLC to take the lead with support from AFSC. AFLC then took steps to tie together all F-4G-related PDMs and to delineate responsibilities of concerned commands. Examples of present and future sub-programs were the AN/APR-38 OFP engineering evaluation (ASD), AN/APR-38 FOT&E and TD&E (TFWC), AGM-88 HARM (ADTC and AFTEC), and F-4G update tests (AFSC). Within TAC, the TFWC was directed to work its management of tactics development with TAWC's Det 5 at George. As AFTEC recognized the need for TAC to be the test schedule coordinator of the limited test assets (two F-4Gs), it promised to work with the TAC test force, even as AFTEC maintained the independence of its testing. By the end of 1979, AFLC's draft PMD for F-4G integration and management was being coordinated.

In 1979, the Air Staff started to delete WW aircraft as nuclear weapons carriers, meaning the F-4G was not to be certified for nuclear weapons. This caused TAC to seek information, leading to a TAF position on the matter. TAC did not have plans to use the F-4G as such. PACAF felt that a nuclear capability should be studied to increase the options available in future contingencies. USAFE stated the F-4G was not committed to a nuclear strike role, but was counted as nuclear capable for multilateral balanced force reductions. The eventual TAF position was that the

aircraft should be certified for carriage and employment of nuclear weapons.

1981

In response to AFLC’s message of February 27 ‘F-4G Force Structure’, OO-ALC responded on March 31, providing the information as requested in USAF’s February 25 message to AFLC. Additional F-4E candidates for conversion to F-4G configuration, plus compatible with existing Group A modification kit design, could be provided from Blocks 41-45. Aircraft from Blocks 40 and below would require redesign of the Group A kit. Available were 29 Block 41 and 19 Block 42-45 F-4Es. As all were PAVE SPIKE-modified, they had to be de-modified. Based on the initial 22 aircraft, the estimated cost would be \$51.7M, assuming modification was accomplished concurrent with PDM. Group A lead time was estimated to be 22 months with deliveries at the rate of five per month. Group B lead time, based on the longest item, was estimated to be 35 months with deliveries at the rate of three per month.

Although work on the Weapon System Training Sets began in earnest in 1978 as funds became available, the first of four F-4G trainers was not formally accepted at George until February 1981, with a second one following in June. Two months later, Clark received its trainer, with Spangdahlem following in November 1983. Due to the limited threat environment available for actual aircraft training, the F-4G simulator was far superior to the aircraft for WW combat training, as it had an almost unlimited threat environment capability. The trainers, consisting of six computers, simulating the particular inflight combat and simulating the F-4G systems, were more complex than the actual aircraft. Adding to the complexity of the trainers was the yearly F-4G OFP software update.

In June, OO-ALC’s Directorate of Maintenance completed its most significant single accomplishment, the complex multimillion dollar costing conversion of F-4Es to F-4Gs. The final F-4G of the original 116, 97268, departed Hill for George on July 1, 1981. In the foreword in a monograph about the F-4G, OO-ALC Commander, Maj Gen Marc Reynolds, stated that ‘the developers had a difficult time integrating the system and developing the support equipment and technical data necessary to maintain the aircraft’. The modification was the largest single production modification ever performed on a fighter aircraft. Modifications of this magnitude were previously performed by a contractor. In addition to TCTO 1F-4E-600, a standardized F-4G configuration baseline of 119 TCTOs was established. This work was accomplished concurrent with the modification. During the course of the modification, virtually every system in the aircraft was affected. After the M61A1 gun and ammunition rack were removed, the forward fuselage was rebuilt. Initially, this required over 1,000 line items. Installation of the skin required 1,175 fasteners. The Lead Computing Optical Sight System (LCOSS) was removed, 121 wire bundles were added with over 4,000 wiring terminations made. Some of the connector plugs had over 100 pins to lock in



The 39th TFTS received the first 12 F-4Gs out of production, including 69-7206, photographed on October 13, 1978. It still lacks its white fin cap and TAC emblem on the tail. It is configured with an AGM-65 Maverick under the left wing. (Theo van Geffen)

place. In addition, the new APR-38 system added 52 new antennas and 27 LRUs to the aircraft. Other existing equipment and black boxes had to be relocated to provide the space required to facilitate APR-38 system installation. The rear cockpit and instrument panel were completely redesigned. The final step in the total production process, testing the new aircraft, was accomplished by the Flight Test Branch. In all, it took some 600,000 depot maintenance man-hours to complete the 116 aircraft. Deliveries were as follows:

Command/Base	Number	Remarks
TAC/George	34*	Apr 78-Feb 79
USAFE/Spangdahlem	12	Mar-Jul 79
PACAF/Clark	12	Jul-Nov 79
USAFE/Spangdahlem	12	Nov 79-May 80
TAC/George	46**	Mar 80-Jul 81
* ten for the 39th Tactical Flying Training Squadron (TFTS, training) and 24 for the 563rd TFS.		
** 24 for the 561st TFS and 22 as backup.		

F-4Es to be modified to F-4Gs came from one USAFE and five CONUS bases. F-4E 90241, input for F-4G modification on October 19, 1979, was utilized as kit proof aircraft for the Airborne Video Tape Recorder, a Class V modification.

USAF PMD ‘Class V Modification, F-4G Wild Weasel’ of July 27 amended the one of March 20, 1978, addressing only the financial data provided and raising the funding limit. The change formalized direction/funding actions authorized by previous Air Staff direction. The amendment represented a cost increase of \$40.8M to \$366M, including the increase of \$5.4M for the over 100 approved and funded Group B ECPs under Mod 2740 that stemmed from deficiencies during APR-38 qualification tests.

1983

On May 18, USAF published PMD ‘Class V modification to F-4E for conversion to AN/APR-38 Performance



The next 24 F-4Gs were assigned to the operational 563rd TFS, although 69-0304 was later reassigned from the 39th TFS. Its crew chief makes the final checks prior to a sortie from Nellis during a 1987 Red Flag exercise. '304' is configured with an AGM-45 under the left wing. Note that by this time all F-4Gs were painted in 'European' camouflage. (USAF, TSgt B. Simons)

Update Program and AN/ARN-101 Configuration'. It directed the preparation of a Class V MPA and Acquisition Plan to modify another 18 F-4Es to the G configuration to include the AN/ARN-101 Digital Avionics System and AN/APR-38 Performance Update Program (PUP) modifications as described in TAC SON 315-80, 'Wild Weasel', November 14, 1980. With the additional 18 aircraft, the PAA (Primary Authorized Aircraft) was rebuilt to 84. TAC was to identify the 18 F-4Es. Re-designation to F-4G would follow after installation of the APR-38 PUP. For planning purposes modification would begin in FY4/87. The aircraft were upgraded and delivered in 1987/88. Included were PAVE SPIKE de-modification and Phase I of the PUP. In contrast to the 5,200 man-hour original conversion, the additional aircraft required some 8,100 depot production man-hours.

On September 1, the F-4G inventory numbered 105. Sixty-five were assigned to the 37th TFW (George), 25 to the 52nd TFW (Spangdahlem), 13 to the 3rd TFW (Clark), and two to Det 5, TAWC (George).

AN/APR-38 PUP

On May 23, 1979, USAF published a PMD for AN/APR-38 Performance Updates, providing direction for the follow-on engineering development of performance updates and technology improvements to the AN/APR-38 receiver system and integration of these into the F-4G weapons system. They would make the F-4G an effective lethal defense weapons system for the mid-1980s, enabling it to accommodate the constantly expanding hostile air defense system network, including expanded Pulse Recurrence Frequency (PRF) agile emitter systems. In addition, AFTEC's FOT&E had indicated its reliability and maintainability were less than desired and needed improvement.

The PMD stated that funding constraints, impacting both DT&E and procurement, did not allow simultaneous development of all desired capabilities. Therefore, a priority schedule was established. AFLC and AFSC, for instance,

were to prepare a coordinated Class V Modification Program Management Plan and Program Budget. All efforts had to be timed so as to facilitate initiation of engineering development as soon as FY81 funds were available. Two sets of AN/APR-38 Pilot Production LRUs, including the LCOSS, were authorized for the follow-on development program. Upon approval of full-scale development, authority to Class II modify one of the CB-coded F-4Gs at George would be granted.

As the operational scenario was not up to date, TAC was directed to conduct an operational requirements study to address the capabilities required of WW avionics, as applied to the F-4G or other appropriate airframes, for use in the late 1980s. Subjects to be considered included enemy employment doctrine, quantification of the number of aircraft and training devices. Results were to be used to formulate a SON, to reach USAF not later than September 1, 1979.

The scheduled projections, based on the known funding profile, indicated PUP production decision could not be made until FY86 or 87.

According to the FY83 history of AFSC's Air Force Acquisition Logistics Division, enhancing the F-4G weapon system was a primary goal set for the Full Scale Engineering Development (FSED) phase of the APR-38 PUP. Top operational priorities in this phase included, for example, computer memory and receiver set capability improvements to the overall APR-38 system. Additional factors were reliability, maintainability and survivability. May 1987 was set for the production contract award, 1988 for IOC and 1990 for program completion.

In October 1982, McAir was awarded the FSED contract. As prime integrating contractor, it became responsible for design, development and testing of the hard- and software to meet APR-38 PUP requirements. The overall T&E objective was to assure the development of a cost effective, supportable APR-38 PUP system with the capability to counter, suppress and destroy electromagnetic emitters through the 1990s.

McAir announced on October 2, 1986 USAF had awarded the company a \$55M contract to start production of an updated version of the AN/APR-38 as part of the F-4G PUP (TCTO 1F-4G-529). Involved was production of the CP-1674/APR-47 WASP (Weasel Attack Signal Processor), a major component of the AN/APR-47 radar receiving set. The AN/APR-47 gave the aircraft the capability to detect, classify, and localize enemy air defense radars. It was the only radar receiver then available to automatically provide HARM with bearing, ranging and enemy system information, significantly increasing its effectiveness. WASP was not only the first EW MIL-STD-1750A computer in production, but also the fastest one, able to perform more than one million instructions per second. To satisfy TAF's most critical operational priority, a two-phased approach was used with Phase I being WASP and Phase II involving extension of the frequency range of the Directional Receiver Group.

The Air Force Operational Test and Evaluation Center (AFTEC was re-designated AFOTEC on April 4, 1984) pub-



The 561st TFS was the second operational F-4G squadron at George, receiving its first aircraft on March 18, 1980 while converting from the F-105G. The photo shows 69-7561 with an AGM-78 and -45 under the left wing, forming a hunter-killer team with AGM-45 configured F-4E 66-0303. Both are equipped with AN/ALQ-119 ECM pods. (USAF, SMSgt D. Sutherland)

lished its IOT&E Plan in May 1985 and its final report (on Phase I) in December 1986. However, due to FY91 budget constraints, CSAF Gen Larry Welch announced on January 30, 1990 the early retirement of the F-4G and termination of follow-on WW development, including APR-38 PUP's Phase II.

AN/ARN-101

Installation of LSI's (Lear Siegler Inc.) modular digital AN/ARN-101 (V) INAS (Inertial Navigation Attack System) was a Class V modification of initially 60 RF-4Cs and 167 F-4Es and initiated in October 1978.

In their March 11, 1977 Memorandum 'F-4G Wild Weasel Program', DoD had not only approved F-4G full-scale production, but also expressed concern over the low reliability of its navigation/attack system with a resulting impact on the availability of operational aircraft. USAF was therefore directed to initiate a program to update the F-4G with a more reliable and maintainable system not later than the first F-4G PDM cycle, July-September 1982.

Early in 1979, TAC had strongly endorsed replacement of the F-4G's low-reliability LN-12 INS with the ARN-101 system. Both F-4G and F-4 fleet INS replacement issues were studied. Replacement of the WW item was seen as necessary because of the AN/APR-38's dependence on the INS: the F-4G's APR-38 memorized where a signal was if the emitter stopped radiating and continued to display its position based on this information. Not only was the need held to be mission essential, there was also a TAF consensus on the urgency of the situation. As a result, the Air Staff promised to find a source for modification funds in FY81 and arrangements were made whereby the work would be done during September 1982-June 1984.

The Class IV modification to improve the F-4G weapons system through the addition of the AN/ARN-101 INAS and interfacing all major avionics systems, was very complex. The 2,500 man-hour task was to be accomplished during PDM or by contractor field teams. With OO-ALC as

the procuring agent, LSI was awarded a contract 'F-4G/ARN-101 Integration'.

After LSI successfully integrated and installed the AN/ARN-101 in the trial F-4G, 97206, at George in December 1982, flight testing was initiated with the goal to have a production release available for the fleet by October 1983. Since arriving at George in July 1982, an LSI team had modified aircraft equipment, strung wires and cables, installed AN/ARN-101 boxes, updated the drawing package and finally tested the completed installation on the ground prior to the FCF. Flight testing was to continue through May 1983, with a follow-on test of USAF-requested operational software changes to extend into the fourth quarter. The AN/ARN-101 continued to be updated through OFPs.

The Test Aircraft

F-4E 69-7254, Advanced Wild Weasel (AWW) R&D Prototype

The purpose of the F-4E/APR-38 R&D effort was design, development, fabrication, installation, test, validation, verification and documentation required to integrate the AN/APR-38 into F-4Es. A prototype would be used by ASD to develop the Group A kit and to fly the DT&E and IOT&E.

Block 43 F-4E 97254 of the 414th Fighter Weapons Squadron (Nellis) was selected for that purpose.

'254' was delivered to McAir in St. Louis in February 1975 for preliminary measurements. After accomplishing DT&E's Phase I (instrument calibration and stores separation) at AFFTC in March-April 1975, the aircraft returned to St. Louis for layup to receive the initial Group A provisions and APR-38 LRUs updated from the F-4D AWW prototypes. For instance, the M61A1 gun system was removed to provide space for a new forward fuselage chin pod, installation of avionics shelves in the nose and of a new AI radome. Also, the vertical fin was modified to accept the new fin pod. To assure flight stability for selected test missions, ballast sets were necessary as weight replacement for various subsystems.

This was followed on September 15 by a six-week Group B integration period to prepare 254 for Phase II in December. It was formally initiated on the 6th with an APR-38 installation verification sortie at McAir. Four days later, USAF pilots flew the aircraft to Edwards. Full-scale structural, environmental, and avionics testing was conducted at China Lake's NWC and Nellis ranges by a Joint USAF-Contractor test team. In the first week, four sorties were flown to obtain data to verify the hardware baseline and a data base on the new 64K computer and software program. While on a December 19 high altitude high-G vibration test flight over the Edwards range, the crew heard a loud and sharp crack and RTB-ed. After expending close to 400 man-hours, it was determined the sound was caused by a crack in the canopy rail, supposedly a common F-4 maintenance problem. Repair by McAir personnel took some three days.

A problem encountered with 254 was that with the added weight of the chin pod and equipment to the



In December 1986, TAWC, Tactical Air Warfare Center, had one of its Det 5's F-4Gs at George painted in 'Hill Project' camouflage. It was a gray-on-gray pattern, used on F-16s to evaluate the effectiveness on WW missions. It must have been effective, as all F-4Gs were similarly camouflaged. '277' was one of (initially) two CB-coded F-4Gs. (USAF, TSgt Rob Marshall)

radome, it proved to be difficult to close and align it during normal maintenance. This prompted McAir to design a radome cam lock device that lifted the radome and aligned the pins during the closing procedure. The device would be installed on the Trial Installation aircraft and added to sub-kit #1 or #2.

Three days after DT&E was suspended on May 25, IOT&E was initiated at Nellis by AFTEC. All of the update goals from the F-4D/APR-38 program were demonstrated. After IOT&E completion in early July, 254 was returned to Edwards to receive a digital scan converter and AGM-65 Maverick Class V mods by an OO-ALC field team. APR-38 DT&E was to be continued in late July/early August, while IIR Maverick DT&E was being conducted. The reason to continue DT&E after IOT&E completion and even after the full production decision in March 1977, was to provide McAir a modified aircraft to refine software and to address specific hardware difficulties not previously resolved. As to the latter, IOT&E follow-up sorties were conducted in late 1976 by ASD and AFFTC at Edwards, which received mixed reviews. Although some system improvements were noted, many other problems, primarily with software debugging and interface with other F-4E subsystems cast doubt upon timely completion of the IOT&E follow-up by AFTEC crews. After ASD, in early January 1977, had successfully incorporated and flight tested several software changes to correct deficiencies, AFTEC conducted the final Group B (APR-38, which was to be installed upon completion of 1F-4E-600) IOT&E. Nine sorties were flown with the final one on February 4. AFTEC's conclusion was the system met the minimum level of acceptability for TAC, but needed improvement and further testing. The aircraft was then returned to McAir.

254 was flown to Hill on May 15, 1978 and as production sequence #24 it became a 'real' F-4G through kit serial

#27. It was delivered to George on January 7, 1979, where it served with the 35th and 37th (T)FW until retired to AMARC (Aerospace Maintenance and Regeneration Center) on June 5, 1992. It departed for MFSI at Mojave (CA) on June 17, 1999 for QF-4G conversion. While with the 82nd ATRS (Aerial Targets Squadron) at Tyndall, it was expended on June 4, 2002.

F-4E 69-7263, Trial Installation

McAir's trial installation was the development of the F-4E Group A design (Pilot Production, PP, hardware). Necessary ECPs, originated from the DT&E, were prepared, submitted and incorporated into the contract in a timely manner, allowing delivery of PP hardware on schedule. Trial installation also helped to define and deliver the production configuration to include data, kit material and tooling and installation support required for Ogden to perform the modification.

As prototype F-4E 97254 differed from the desired production configuration specified by flight test discrepancy reports and changed in Group B design, a different aircraft was necessary for trial installation. Block 44 F-4E 97263 was selected as the dedicated TI aircraft. It came from the 334th TFS (Seymour Johnson) arriving at Hill on November 10, 1975. As a first step, 263 was input for PDM where the baseline configuration was verified, i.e., accomplishment of prerequisite TCTOs.

After arriving at McAir, it was laid up in February-September 1976 for installation of Group A, which initially contained 13 sub-kits, and unqualified Group B APR-38 components. Unqualified, as the first qualified Group B would not be available until the kit-proofing process. Work on eight sub-kits started on February 9. Although the scheduled completion date for all was April 9, the eighth, sub-kit #9 'Cockpits', was not completed until September

16. That date also meant completion of Group A and Group B APR-38 equipment installation. In the process, OO-ALC maintenance personnel and observers began to perform and write TCTOs 1F-4E-600, installing Group A sub-kits, and 1F-4G-501, installing Group B. Uniform retrofit control drawings, parts lists, wiring diagrams, and detailed work statements developed as this and the third F-4E accepted the new components.

In the meantime, an OO-ALC team had visited St. Louis May 2-7, 1976 to observe the trial installation of Mod 2740. One of the team's conclusions was that overall progress was good, considering the problems encountered on sub-kit #2, the structural modification of the forward fuselage. It was about four weeks behind as it proved 263 had suffered battle damage by a .50 caliber hit in the ammo bay area, requiring field repair of bulkheads and panels. The resulting structural repair required funding, which was slow in coming about. Also, the initial structural repair by McAir was not compatible with the TCTO-kitted parts and consequently had to be removed, re-engineered and re-installed.

Another OO-ALC team visited St. Louis September 15-17. Examples of subjects covered were, (1) the 'tie down' phase was 99 percent complete; (2) incoming defects, immediate/urgent action TCTOs and calendar/time change requirements were being worked; (3) verification of the APR-38 system components on the 'hot mockup' at the McAir St. Charles facility was completed on September 9 with system/operational checkout on the aircraft rescheduled to the 29th; and (4) flight test was rescheduled from September 3 to October 1.

263 arrived at Hill on October 19, 1976 without black boxes for a two-week period for first article acceptance testing of the new automatic circuit analyzer, support of the APR-38 theory/organizational maintenance training and flight crew training. The aircraft would then depart for and be possessed by George AFB.

However, it was decided to keep 263 at Hill so that a number of kits could be installed before flight testing. Estimated flow time for this modification kit package was around 90 days. Although some kits were not yet available, work should begin on some of the more complex modifications, e.g., TCTO 1F-4E-1071 'Modify Fuel Cell Cavities'. The need to start work was accentuated by the fact FOT&E instrumentation was required (also for KP F-4E 97290). McAir would provide drawings by January 1977. Every effort had to be made to be sure that as much work as possible would be completed on 263, as instrumentation alone would take 1-2 months to install. On November 24, Maj Gen Edmund Rafalko, OO-ALC's commander, gave approval to start work on the aircraft.

McAir's inability to rectify the deficiencies identified by AFTEC's final IOT&E, resulted in Gen Rafalko to request a 60-day extension of kit proof completion in the TI aircraft. Two examples of deficiencies were the addition of an angle of attack and fuel gauge in the rear cockpit, as well as installation of an audio control for the AGM-45/78 missile tones in the rear cockpit. Both changes were contracted for on March 15. To proof the changes, McAir re-

quired a three-week re-access to the aircraft. Its personnel arrived for that purpose on March 8. Yet, officially, the completion date for 263 remained April 30, 1977.

The FOT&E instrumentation package contained, for example, video cameras and recorders, and a digital display. A meeting was held at McAir on January 18, 1977 to determine the precise equipment. In May, McAir was awarded a contract for both packages. Personnel began kit installation on July 26 with completion August 9. They returned on September 19 and installed the package on '290', September 20-30. Although package installation was completed, it still had to be signed off. The video and range time interface needed to be checked out after installation of sub-kits #16-18, followed by re-installing the APR-38. By November 29, McAir had successfully accomplished checkout of 290's package. They returned December 13 to certify its instrumentation package before the aircraft left for flight tests over the range. FOT&E would be conducted after kit proofing was completed and both aircraft were being flight tested.

In late August, one complete APR-38 set became available at Hill for 263. It was installed in early September. The aircraft, configured with some of the Group A kit-proof changes, test flight instrumentation, and complete APR-38 Group B, was flown on September 20, 22, and 26 over the Caliente Range (NV). Flight tests not only revealed the aircraft proved acceptable overall, but also showed weapons release system malfunctions.

Because of continuing delivery problems by McAir, it had been decided by mid-July 1977 to waive TOs 1F-4-1087 and -1090 for both TI and KP F-4Es if it would become a factor to delay the aircraft. As 263 could not be delayed any longer, it was decided in late August to waive both TOs. The result was that when 263 departed for Nellis on September 28, 1977, it still required portions of TCTO 1F-4E-600 in order to become a 'true' F-4G (according to the 1977 TAC Chronology, it was the first G to be assigned to the 35th TFW on that date). Some items were updates to match kit proof configuration and some baseline TCTOs. A Depot field team was sent to Nellis on January 14, 1978, to install both TOs, repair strip lights and to install the still missing sub-kits #16-18. On February 10, 263 returned to



The 563rd TFS participated with F-4Gs in Exercise Team Spirit 85 in South Korea. The March 1, 1985 photo shows three of their Gs with their accompanying KC-135As prior to takeoff. (USAF, MSgt Mike Dial)

the custody of the 57th FWW with the CB code and on July 27, it joined the 35th TFW CB-coded as well.

97263 was spared the fate to become an QF-4G and joined the National Museum of the United States Air Force in September 1996.

F-4E 69-7290, Kit-Proof

The purpose of kit-proofing was to verify the form, fit, and function of the changes made. It was accomplished by OO-ALC and initially scheduled for November 1976-April 1977. Block 44 F-4E 69-7290 was the dedicated KP aircraft.

It was input for PDM on July 15, 1976 and accomplishment of prerequisite TCTOs and those to be performed concurrently with the basic conversion. Output was due October 28. As to the 1F-4E TCTOs, (1) 47 prerequisite TCTOs were earlier accomplished; (2) 11 were during PDM; (3) 19 were accomplished between PDM completion and start of kit proofing; (4) 18 TCTOs to be accomplished between December 1 and April 20, 1977; while (5) 1F-4G-501 was to be accomplished between April 20 and May 3. Some of the TCTOs in (3) and (4) also had to be complied with on the TI aircraft. Layup at Hill was then planned through April 1977, followed by transfer to Nellis for FOT&E.

Delivery by trucks from St. Louis of the kit-proof A kit to Hill began on October 20, 1976. It included the draft TCTOs, a set of ballast, two sets of installation tools, and a spare set of Group A parts. Eventually, an entire Group A kit consisted of seven crates, weighing a ton with a shipping cube of 168.5 feet. On December 21, Maintenance formally transferred 290 from PDM status to Mod 2740. A Project Directive was published on November 16 to begin installation of TCTO 1F-4E-600. Work on TCTO 1F-4G-501 was deferred until IOT&E was successfully completed. In October, program managers at Hill considered to further delay kit-proofing 3-4 months. They did so due to ongoing system qualification and changes. However, due to the program's high priority and the risk of undermining requests for additional long-lead time item funds, Gens Dixon and Rhodes agreed it should begin on schedule, although it was realized there were risks associated with verification of parts that were subject to change.

As new TCTOs were identified, it was ensured McAir would include each one as a requirement for -600. When the basic TCTO was published in January 1978, it listed over 100 pre-requisite and concurrent TCTOs.

Initially, the KP F-4E was scheduled to receive the same 13 Group A sub-kits as the TI F-4E. Installation of the first sub-kit, 'Aft Fuselage/Fin Pod' was begun on December 21, 1976. The final two, 'Cockpits' and 'Equipment' were completed on October 7, 1977. However, as kit-proofing progressed, Maintenance personnel found a number of Group A structural provisions did not fit properly. Examples were (1) the radome did not fit its fixture, which was used to locate the position of the new chin pod; (2) the chin pod doors and fairing were mismatched; (3) the antenna pod for the vertical fin did not fit; and (4) the fin doors were not similar on the TI and KP F-4Es. The problems were



When the 39th TFTS was re-designated TFS on October 9, 1980 to become an operational F-4 squadron with 26 PAVE SPIKE-configured Es within the 35th TFW, its resources were absorbed by the 562nd TFTS, which had sent off its final two F-105Gs the previous day. The aircraft on the May 9, 1988 photo, 69-0292, is configured with two each AGM-65 Mavericks and AGM-88 HARMs. (USAF, Ken Hackman)

solved by McAir. Also, changes based on AFTEC's IOT&E deficiency report added significantly to the time required for kit-proofing. Examples included the central location of the calibration tapes near the HAWC for faster tracks, rerouting cables to the Aircraft Commander's Plan Position Indicator and replacement of electrical connectors to enhance safety. These and other changes affected all of the 13 original sub-kits and prompted the addition of five more sub-kits in May 1977, one of which was #18, 'IIR Maverick AGM-65D'. Any additional kits also applied to 263. During 1976-77, the Group A work statement changed ten times through negotiations with McAir. These changes and qualification of depot support equipment extended kit-proofing through 1977.

With regard to sub-kits #16-18, McAir was requested in early August 1977 to expedite delivery. They were authorized to use TI 263 at Hill for mockup. Personnel arrived on September 13 and mockup was completed eight days later. Structural installation on 290 by McAir began on October 17. An electrical team arrived the next day to install wire bundles, connectors, etc. Installation was completed on October 27. All parts for KP's APR-38 were received by October 18 and Group B was installed the following month.

In the meantime, the scheduled November 12-December 8 radar and flight tests had slipped to November 25. Two of the three reasons were, (1) fuel quantity problems; and (2) seals dried out because of length of time the aircraft was out of service. Hence the question, if it would be able to meet the December 9 range date. Range time was planned in the December 9-29 period, with December 14-16 for the Nellis range and December 19-20 for the Tonopah range. TAC wanted to fly the KP aircraft with the TI F-4E on range at the same time. By doing so, expenses could be cut. Checkout of 290's weapons release system was completed on December 5. It revealed that 263's earlier malfunctions were not associated with the modification design, but rather was peculiar to that aircraft. After the kit-proofing process was formally completed on December 13,



The 52nd TFW at Spangdalem was the second wing to receive F-4Gs, with the first two, 69-0273 and 69-7293 being delivered on March 16, 1979. The official arrival ceremony was held on March 28. The flight to Germany was led by Lt Col 'Duke' Green, the commander of the 81st TFS, on the photo second from right, with EWO Capt Mike Freeman in the back seat. (OO-ALC)

the aircraft departed for Nellis on the 29th, where it was used with 263 by AFTEC and TAC for the FOT&E, initiated in February 1978. It had proven that kit-proofing had taken twice as long as expected with over 11,000 man-hours to complete. On the other side, it allowed 1F-4E-600 to remain un-amended.

After serving with the 35th/37th (T)FW, 290 joined the 190th (T)FS of the Idaho ANG. It was flown to AMARC on January 4, 1996, departing on December 2, 1997 for QF-4G modification. It was expended on January 31, 2002 while serving with the 82nd ATRS.

The Units

35th/37th TFW, George AFB, CA

One of two important continuing programs in CY80 which impacted heavily on the TAC force structure, was the consolidation of training programs. A plan to consolidate training bed-down was approved by CSAF. He also authorized implementation actions. One of the four objectives was to reduce F-4 training locations from four to one by April 1983. At George, the 35th TFW had six fighter squadrons with F-4E/Fs and F-4Gs.

The first step in this process was the re-designation, effective October 9, 1980, of the 21st and 39th TFTS to TFS, and of the 562nd TFS to TFTS. The second step followed with the activation of the 37th TFW on March 30, 1981. It was formed by dividing the assets of the 35th, which retained the 20th TFTS (training of German Air Force aircrews in the F-4F), and the combat-ready operational 21st and 39th TFS with F-4Es. The combat-ready operational 561st and 563rd TFS, the 562nd TFTS (aircrew training) and F-4Gs were reassigned to the 37th TFW. The 35th had lost four F-4Gs before transferring the fleet to the 37th.

TAC F-4Gs not only participated in exercises in CONUS, like RED FLAG, but also deployed to South Korea

and Germany. As to the former, eight Gs deployed to Kunshan under CORONET SPRAY to participate in exercise TEAM SPIRIT 81, March 8-12 and a similar number (563rd TFS) deployed on March 5, 1983 to Suwon under CORONET SQUIRE for TEAM SPIRIT 83. As to the latter, 13 F-4Gs deployed on September 4, 1981 to RAF Wildenrath under CORONET FLEET as part of CRESTED CAP 81-III, a dual basing rotation from CONUS to Germany.

With regard to George the 1988 Base Realignment and Closure Commission (BRAC) had recommended to relocate the F-4E/Gs to Mountain Home to be consolidated with that base's EF-111As and close George. To accommodate the move, part of the 366th TFW (its F-111s) was to be realigned to Cannon.

With the pending closure of George in mind, USAF decided to reverse the 1981 actions. When on October 5, 1989 the 37th TFW PCS-ed WOPE (Without Personnel and Equipment) to Tonopah Test Range to replace the F-117A equipped 4450th Tactical Group, the then 35th Tactical Training Wing was re-designated TFW. Obtained were the 561st TFS and 562nd TFTS, while the 563rd TFS was inactivated.

However, as a result from analysis of the changing world order, other base closures, the threat and force structure plan, and the budgetary reality, USAF on April 12, 1991, announced changes to BRAC 1988. The composite wing concept was USAF's hot new item on the agenda with the first one to be established at Mountain Home. F-4G Phantom-related recommended changes included (1) realignment of 18 F-4Gs from George to Boise, ID and 18 to Reno, NV; (2) to inactivate the 35th TFW; (3) close George in December 1992; and (4) to retire Spangdahlem's and Clark's F-4Gs to AMARC by January 1, 1993. The 35th was inactivated on December 15, 1992 and George closed.

39th TFTS

The 39th Tactical Electronic Warfare Training Squadron was re-designated TFTS on June 1, 1977, activated on July 1, and assigned to the 35th TFW. Primary mission was training of F-105G and F-4C/G WW aircrews (accepting mission and resources from the 563rd TFTS), and secondary mission, to provide aircrews to support F-4G qualification tests at Nellis. After TAC's, 35th TFW's and 39th TFTS's first F-4G, 90239, was delivered at Hill on April 24, 1978, it was flown to George four days later by Col Dudley Foster, 35th TFW/CC, and Capt Denny Haney, EWO with the 39th. They were welcomed with a fly-by of three generations Wild Weasel aircraft, WW III F-105G, WW IVC F-4C, and AWW F-4G. On June 30, the 39th had six F-4Cs, six F-4Es and seven F-4Gs, of which two remained at Nellis with its Det 1 to complete FOT&E. On July 24, it initiated the first F-4G training course (F4G00WW) with two classes, 78AJG and 78ALG. The latter, with eight students, was designed to qualify F-105G aircrew members in the F-4G. On August 9, the Squadron began the final F-4C/WW course with four pilots and three EWOs, graduating on September 20. Det 1 flew the first flight test sortie of the AGM-88 IOT&E on November 16, 1979. Flight tests were flown from George and Naval Air



Who is not strong must be smart. This Belgian groundcrew is re-installing the drag chute of F-4G 69-7236 of the 480th TFS off the roof of his tractor after the Phantom arrived at Bierset on September 17, 1985 for a joint exercise. '236' still serves the 52nd, guarding the gate at Spang. (USAF, SSgt Fernando Serna)

Station China Lake (CA). IOT&E was completed on September 23, 1980.

As the 39th TFTS would remain in the 35th TFW to be re-equipped with 26 PAVE SPIKE-configured F-4Es, it was re-designated TFS on October 9, 1980 with mission and assets transferred to the 562nd TFTS.

561st TFS

The Squadron received its first F-4G on March 18, 1980, giving up its F-105Gs. In the final quarter of 1982, it became a combined F-4E/F-4G unit when it gained the E version of the Phantom.

Assignment of F-4Gs to the Air National Guard (ANG) resulted in the subsequent retirement of the F-4G from USAF's inventory. As a consequence, both the 561st and 562nd FS (re-designated from TFS and TFTS respectively on November 1, 1991) were inactivated on June 30, 1992. The 35th TFW sent the first of its 24 F-4Gs to AMARC on January 21, 1992.

562nd TFTS

The 562nd TFS at George was the last active USAF F-105G Thunderchief unit and its final two aircraft were flown to the 128th TFS (Georgia ANG) on October 8, 1980. The next day, the Squadron was re-designated TFTS, picking up the mission, resources, aircraft and related equipment of the 39th TFTS. The 562nd was authorized six F-4Es and 16 F-4Gs. The Squadron provided IPs and qualified aircrews for TAC, PACAF and USAFE F-4G squadrons.

563rd TFS

After the 563rd TFS was re-designated TFTS on July 15, 1975, it was activated at George on July 31st and assigned to the 35th TFW. Its primary mission was to train operational F-105G aircrews for the 561st and 562nd TFS and F-4C/WW aircrews for PACAF (Kadena) and USAFE (Spangdahlem) units. A secondary mission was to support the Wing in testing tactical warfare weapons and tactics. On December 31, 11 TF-coded F-105Gs and eight F-4C/WWs were assigned.

In the second quarter of 1976, the Squadron was tasked to design an additional, fourth, course to encompass the future transition to the F-4G, F4000WG. To meet TAC training requirements, the 563rd was designated an RTU (Replacement Training Unit) for two years, FY79-81. This would assure sufficient training assets to convert F-105G and F-4C/WW units to the F-4G.

In 1976, the 563rd TFS represented the 35th TFW in the AFTEC's IOT&E of prototype F-4E AWW, 97254. On July 1, 1977, it was re-designated TFS, transferring its resources and mission to the 39th TFTS and becoming non-operational. In the Wing history of July-September 1978, its Deputy Commander wrote in his quarterly report the 563rd was 'activated on August 12 and transitioning to the F-4G'. The first two Gs were received in August, with five following in September. On October 1, Lt Col Lucky Ekman assumed command versus Lt Col James Martin. IOC was reached on April 1, 1979. By then, TAC had 34 F-4Gs. The Squadron received its first ARN-101-modified F-4G in the final quarter of 1985. On October 5, 1989, the 563rd was inactivated.

Det 5, TAWC

Mission of Det 5 included F-4G Tactics Development and Evaluation, passing new systems through DT&E and integration, such as the AGM-88 HARM, AN/APR-47 and the AN/ARN-101. A 'special' relationship existed with the NWS at China Lake for HARM work/test shots in particular. Also, new software OFPs, which were developed as part of the continuing effort to improve F-4G capabilities and response to new threats, were test flown for validation.

The early problem with testing the F-4G/APR-38 involved the myriad of projects that needed use of CB-coded, instrumented aircraft. Early on there were two, while six primary hardware/software test configurations were being tested by four different test agencies. Also, the Navy supported the AGM-88 HARM, the prime contractors for each of the projects and 35th TFW personnel. As T. Bear stated,



A three-ship, consisting of two F-4Gs and one F-16C, photographed over the German coast on May 27, 1988. As part of Creek Hunter, the 52nd TFW received its first F-16C Fighting Falcons on April 23, 1987, losing its F-4Es in the process. The aircraft were assigned to the 81st TFS. (USAF, SSgt David Nolan)

At first it was a challenge to generate and schedule the required sorties, track software and hardware configurations, and garner appropriate instrumented test ranges to match the test issues. It took an inordinate amount of time to code, load, fly and analyze each change to each of the hardware and software programs as well as maintaining configuration control of the test aircraft for each of the test entities. The testing would slip due to configuration incompatibilities, coding delays, and the length of the analysis chain for determining if a change to the code had worked. We would fly a mission in the morning, debrief, review the cockpit videos, wrap up the recorder tapes and hand carry them down the hill to Ontario airport where the package was given to the crew flying the next flight to the contractor. We would alert them, and they would meet the aircraft, pick up the package and begin analyzing the results—which usually took several days. In the meantime, we continued flying test sorties not knowing if that software and/or hardware configuration was functioning properly. Something needed to be done to close this gap. We needed to consolidate the multiple teams into one structure, put someone in charge and get everyone operating from one set of rules and one schedule. We also needed to get the operational Weasel wing out of the testing business and turn the flight operation over to one of the professional test organizations. After considerable negotiations and funding discussions, we agreed about the makeup of the team, whom it would report to and who would be in charge.

The result was the activation at George on April 1, 1980 of Detachment 5, TAWC. Aircrews and maintenance personnel were hand-picked from the 35th TFW to support the (initial) two CB-coded F-4Gs. An onsite engineering team was put together from the participating USAF engineering groups. They also hosted representatives from the TFWC, AFTEC/AFOTEC and the acquisition and support centers of AFSC and AFLC, either in a TDY or PCS status. It was one of the first truly integrated product teams. On July 1, Det 5 assumed full control of their two F-4Gs (97206 and 97235), although the 39th TFTS (and later the 562nd TFTS) continued to support Det 5's flying activities with the aircraft being scheduled through Squadron Ops ('assigned' to TAWC, but 'possessed' by the 39th). On August 1, 1988, Det 5 was reassigned from TAWC to the 4443rd Test Group. On December 15, 1991, the 4443rd was consolidated with the newly activated 79th TEG. Capt Larson continued,

After weeks of difficult conditions and long hours we finally were up and running with an on-site data reduction facility and an integrated team for testing software, hardware and developing tactics for these new systems. We went from weeks to identify software changes to days. Instead of waiting up to a week to see if a change worked, we could turn it around in a couple of days. As a result, we successfully completed and checked out the first operational software load.

In 1985-88, Jim 'Uke' Uken was also a Det 5 EWO, pinning on Major in early 1986. He flew F-4s for 19+ and F-

4Gs for fifteen years, except for a 10-month assignment to the Air Command and Staff College. Maj Uken,

The Det's F-4Gs were specially instrumented to include pencil cameras for both cockpits, back seat hoods at times, and a Conrac Airborne Digital Recorder as a backup to instrumentation pods. It was essentially a recording device you 'plugged' into the nose door that used to house the Vulcan 6 barrel Gatling gun. It recorded every detail of what the F-4G RHAW gear saw, what you were looking at, etc. The beauty was, it 'captured' everything and I mean everything. Even what you personally interested (and what you were not interested in) at the time. After landing we extracted the Conrac and handed it to intel who had a couple playback consoles that looked just like the F-4G rear seat RHAW gear. In the Gulf War, this was to the point that Riyadh and other Wings in theater were calling us on classified phones asking for the 'real ELINT picture'. We also had ACMI (Air Combat Maneuvering Instrumentation) tie-ins and instrumentation pods that were tied to satellite link for real-time position measured in nanoseconds.

Uke was in the last F-4E class to graduate from the 414th Fighter Weapons Squadron before becoming known as the F-4 Division. The selection was a very competitive process with two classes a year. Jim's class started with fourteen students, but only nine graduated. Being senior, he became the Chief, F-4G TD&E in Det 5. With Capt Scotty Andersen, they had a 'license to steal' on tactics development. As he explained,

Let's just say we came up with some pretty amazing sxxx that higher ups were reluctant 'to buy the boat on'. At least a two-beer discussion. I'll give you one teaser, 'diddling' bore-sight constants to improve APR-47 blind bombing CEP mission to mission or even on the same mission. We used to go to Superior Valley with 24 BDU-33s on three MERs and two TERs. Obviously we were able to do a lot of 'in-flight'



Clark was the third USAF base to receive the F-4G, with the first two delivered on July 31, 1979. The 90th TFS of the 3rd TFW at Clark had the honor to form hunter-killer teams with F-4Es. Such a team, consisting of G 69-0283 and E 71-1088, is taking off from Clark on January 1, 1981. Eleven days later, the Squadron suffered its only F-4G loss, when '283' crashed just after takeoff from Clark. (USAF, TSgt G. Holland)



The October 18, 1984 photo shows a 90th TFS hunter-killer team while being refueled with the F-4G flying below the F-4E. Both are configured with AN/ALQ-119 ECM pods. (USAF, TSgt David Craft)

analysis / corrections and refine our processes, but probably beyond the scope of a line crew.

The ARN-101 configuration required testing the old LN-12 and the ARN-101 configurations of both the PUP (APR-47) and APR-38 software configurations, while the system introduced both navigation and computer systems to the field over a period of three years. This drove flying a larger number of sorties in two of the four configurations above, resulting in the addition of a third CB-coded ARN-101 F-4G to Det's 5 test team, 97206.

All three aircraft were reassigned on June 29, 1992, with 90277 and 97235 going to Gowen Field. F-4G 97206 was flown to Nellis to serve as a maintenance trainer until flown by a Marine Corps CH-53D to one of the Nellis ranges as a target. Det's 5 mission and functions were transferred to Nellis.

McAIR

The F-4G was an analogue aircraft that was being updated with digital equipment. These were the early days of digital equipment and putting it on an analogue aircraft certainly generated plenty of issues. As T. Bear Larson remembered,

Early on McAir had provided an onsite lead APR-38 / F-4G engineer. They had found over the years this would alleviate the identification of issues within the system and isolate the issue to which system (the aircraft or subsystem, or the item under test) was the problem and whether it was a hardware or a software issue! Soon we found ourselves leaning heavily on him (Bernie Conway) for all our programs. Due to teething issues with new programs, Bernie couldn't do it all, so we started a policy to ensure there was an onsite engineer for each unique test sortie for each specific system under test. This ensured each unique hardware and software items under test were represented at the mission setup, planning, briefing, debriefing and initial data reduction. Cumbersome at first, it ended up being very synergistic and enabled everyone in the new systems to better understand

the Wild Weasel mission and the stated and unstated requirements. Soon each of the programs would rotate their engineers in and out of the test site so they would all gain this insight. They contributed greatly to the mission, and soon were adding features to the software and suggestions for hardware that would improve either crew interface or combat capabilities.

Capt Larson concluded by stating,

The F-4G success was largely contributed to the can-do attitude of the Weasel community. A story that had started with the fielding of the first F-100F Wild Weasel aircraft.

AFOTEC had a Detachment co-located with Det 5, being responsible for FOT&E of updates.

TAWC, Eglin

The Tactical Air Warfare Center at Eglin was responsible for test planning and analysis for system upgrades, primarily software updates, and operational and/or tactics tests.

After Maj Victor Ballanco completed his assignment as an F-4G pilot at Spangdahlem in October 1984 (480th TFS), he was assigned as a staff officer to TAWC/EWEG, the F-4G Program Office. His job, working with TAWC's Det 5, the engineers and analysts, included developing the test plan, overseeing flight testing, analysis of test results and writing up of test reports. In this respect quite a few TDYs were made to George.

The way to develop a test plan was to take an existing test plan and modify it for the test objectives to be completed. Initial coordination was with the Det 5 project test officer to ensure test objectives properly met the intentions of the upgrades in question. This turned the test plan into a rough draft that was then evaluated by a TAWC analyst to ensure meeting the proper testing methodology and intent. After approval, Det 5 crews flew the missions and provided their initial observations. Next, the recorded test data were analyzed to determine trends and problem areas. In event of the latter, they were discussed with the engineers who developed solutions when possible. If needed, tests were repeated until the key tests passed. At conclusion, the test report was written, showing test objectives were met. Maj Ballanco,

Coordinating the test report through the TAWC staff was twice as hard as coordinating the test plan. At each staff level, people questioned test data and conclusions. In effect, they wanted to ensure that each 'i' was dotted and 't' was crossed. I learned this is where the assigned analyst's attention to detail really helped.

Victor's first project was the integration of the ARN-101 DMAS (Digital Modular Avionic System) into the F-4G. He already flew with the ARN-101 in the F-4E and understood how it worked and what it could do. The system had to be integrated with the WW avionics, which at that time was the APR-38 HAWC. When it was replaced in

Phase I of the PUP by a new computer, the WASP, both systems had to be integrated. TAWC ARN-101 testing not only provided its fielding decision, it also established a baseline for AFOTEC testing with the newly developed WASP. After WASP was fielded a few years later, F-4G's avionics designation was changed from APR-38 to APR-47.

While conducting the ARN-101 tests, preparations were made to integrate the AGM-88 HARM, with AFOTEC being responsible for testing. As Victor stated,

As one of TAWC's operational liaisons to its test program, I also worked on the HARM from an operational employment perspective, which involved working with the Navy and Det 5 on the missile's employment. One of the projects I was responsible for was the computer-simulated analysis of early HARM employment in a real-world scenario. The findings from this study contributed to the initial HARM targeting concepts that ultimately turned into the employment tactics we used.

For the employment analysis, a company in San Diego was contracted to develop a simulation with a radar threat laydown that the HARM was employed against. The launch aircraft location could be varied and the target priorities and rates of fire adjusted. The initial results were not very good. But by refining the tactics, it was possible to develop some sample tactics that could then be used during flight testing. According to Maj Ballanco, "Much of it was common sense, but it was common sense backed up with simulation results that showed its viability."

Victor's office also began running the HARM Six Degree of Freedom (6DOF) model that analyzed a HARM fly-out in very minute detail. Although he did not do any 6DOF simulations, he was privy to the results that were then compared to the actual HARM flight test results. Himself being a fighter pilot, this was some very advanced information that later served him well. Before HARM's FOT&E, Victor Ballanco left TAWC in October 1986 for a tour as ALO (Air Liaison Officer) in Korea, but returned to flying the F-4G one year later.

81st TFS, Spangdahlem

USAFE's dedicated WW squadron, the 81st TFS, received F-4Gs as replacement for its F-4Cs. CORONET EAST 55 was initiated on March 16, 1979 with the delivery of F-4Gs 90273 and 97293 under control of the 2nd Aircraft Delivery Group (ADG). The last F-4G of the initial group of 12 was delivered on July 6. The first aircraft of the next batch of 12 F-4Gs was delivered on November 14 with the last one on March 11, 1980. Conversion was completed on July 26. The Wing then had two squadrons with ARN-101-equipped F-4Es (23rd and 480th TFS) and the 81st. On March 13, 1980, the Squadron lost its and USAF's first F-4G, when 69-7213 crashed into Mount Moncayo, 36 miles west of Zaragoza AB, Spain, while in a holding pattern over the Bardenas Reales Weapons Range. Its replacement was delivered on May 15.

On June 16, 1983, the Wing reorganized into a 'Rainbow Coalition' defense suppression wing as each of its



As was the case with the F-105G Wild Weasel, the F-4G also joined the Air National Guard, the then 124th TRG at Gowen Field, Idaho. Their first two aircraft arrived on June 20, 1991. The photo shows 69-0249 on June 5, 1995 departing London IAP (Ontario) after participating in an air show. (Norm Taylor)

three fighter squadrons included a mixture of 16 F-4Es and eight F-4Gs, paired into hunter-killer teams, capable of locating and destroying hostile guidance radars and surface-to-air missiles launched by other means in any weather. The process was completed on November 28. To train F-4E and F-4G lead crews into the other aircraft type, resulting in experienced crews to be qualified immediately in both types, WTDs (Weapon Training Deployments) were made to Zaragoza in late November-mid-December. To perform mini-RTU training for former lead F-4E aircrews, the 52nd TFW set up a detachment at George with its own F-4Gs. In mid-January to late February 1984, three two-week training sessions were accomplished, basically following an abbreviated Wild Weasel 'C' instruction course.

On February 10, SACEUR (Supreme Allied Commander, Europe) deleted all of the Wing's non-defense suppression attack tasking with release from its nuclear alert commitment. In an effort to align its F-4G, EF-111A and EC-130H EW assets, USAFE activated the 65th Air Division at Sembach on May 31, 1985. The next day, the Wing was reassigned from 17th Air Force. CREEK HUNTER was announced by 17AF on November 22, 1985. It encompassed USAF's intention to replace Spang's F-4Es with Block 30 F-16C/Ds and increase the number of F-4Gs. Phase I included the assignment of 13 additional F-4Gs with the final ones arriving from George on September 26, 1986. In Phase II, the Wing received its first Fighting Falcons on April 23, 1987. The aircraft could be equipped with the AGM-45 and AGM-88. The 480th TFS had the honor of becoming USAF's first F-16C/F-4G integrated unit. With regard to the latter, TAWC, in June 1987, had published its final report on TD&E of F-4G/F-16C mixed force employment. The final six F-4Es departed Spangdahlem for George on December 8, completing the conversion.

After DoD notified the F-4G was to be withdrawn from active units, USAF announced three actions on April 12, 1991 with regard to Spangdahlem: (1) 18 F-4Gs to retire in late 1991; (2) the remaining 18 to follow in early 1993; and (3) at that time, the Wing would replace the F-4Gs with



F-4G 69-7297 of the 124th FG in the Idaho sky. The unit's F-4Gs were later adorned with the Whiskey Whiskey tail code. (via ANG Bureau)

an additional 18 F-16C/Ds and 24 A/OA-10As. According to USAF, most F-4Gs could be retired due to the declining Soviet threat. The first F-4G (69-0270) departed for Davis-Monthan on June 3, 1991. With the start of FY92 on October 1, 1991, the Wing's overall PAA was decreased from 72 to 60. This resulted in two fighter squadrons with 18 F-16C/Ds (23rd and 480th) each and one with 24 F-4Gs (81st). On March 26, 1992, the 81st FS received the USAFE Commander in Chief's Trophy as its outstanding fighter squadron for 1991. USAF formally announced on December 29 that Spang's remaining F-4Gs would transfer to Nellis by April 1994, marking the reversal of previous plans to retire the F-4G altogether due to budget constraints.

The 81st began its conversion from F-4Gs to F-16C/Ds when the first Fighting Falcons were received from MacDill on February 18, 1993. At that time, the unit still had F-4G resources in Turkey and Saudi Arabia. Another round of force structure and realignment actions, announced by DoD on July 1, showed a decrease in the number of F-16C/Ds at Spang with 18 by November, the inactivation of the 81st FS, and the return of the remaining F-4Gs to CONUS in January 1994 with most going to the 561st FS at Nellis. A Phantom-Pharewell ceremony was hosted on January 14-15, 1994 by the 81st FS, marking the departure of its, and USAFE's, final F-4Gs. The last four aircraft departed for Nellis on February 18, officially signaling the end of 27+ years of Phantom ops at Spangdahlem.

90th TFS, Clark

Like TAC and USAFE, PACAF was also programmed to receive F-4Gs, through USAF PD (Programming Document) 80-3 of May 23, 1978. It scheduled the conversion of the 90th TFS (3rd TFW, Clark AB, PI) to a 24 UE F-4E/F-4G composite squadron, consisting of 12 each F-4E and F-4G aircraft to provide an expanded theater defense suppression capability. In a July 7, 1978 letter, USAF provided PACAF with the delivery schedule: three in June, two in July, three in August, three in September and one in October 1979. Eighteen F-4G aircrews would be trained in two Classes (79 CJG with six and CKG with 12 aircrews) by the 35th TFW, April 9-September 17, 1979. The

objective was to provide the initial six F-4G aircrews from in-place (Kadena) F-4C WW assets. Upon receipt of the PAD (Program Action Directive), the Wing established an F-4G Project Office. After receipt of a F-4E Weapon System Trainer, it was modified to F-4G configuration. With the arrival of the F-4G, the Wing's primary mission changed from air-to-air superiority to air-to-surface (its other fighter squadron was the 3rd TFS). IOC was scheduled for the first quarter of FY80. Designated F-4E aircrews in the 90th began defense suppression training, including AGM-65 Maverick and PAVE SPIKE, in sufficient time to meet the desired IOC date. On January 13, 1979 13AF announced that F-4Gs would replace a like number of F-4Es in the 90th TFS. To accommodate the transfer to Elmendorf, PACAF published PAD 78-2 'Commando Anvil' on September 15, 1978.

On July 30, 1979, CORONET WEST 60 was initiated, the delivery of the first two F-4Gs, 90279 and 90275, to PACAF under control of the 2nd ADG. Hill delivered the last two of 12 F-4Gs on November 8. On January 12, 1981, the 90th TFS suffered its only F-4G loss, when 69-0283 crashed just after takeoff from Clark.

On December 19, 1990, the 90th TFS sent its first two of six F-4Gs to AMARC. The others were redistributed among CONUS-based units. On May 29, 1991, the unit was PCS-ed WOPE to Elmendorf and assigned to the 21st TFW. Five days before the first, low-level, eruption of Mount Pinatubo, the final of Clark's Phantoms departed at 0800L, June 4, 1991.

190th TFS, Gowen Field

As in the case of the F-105G, the F-4G was also assigned to the ANG. On April 15, 1991, it was announced the 124th Tactical Reconnaissance Group (TRG, Idaho ANG) at Boise's Gowen Field and the 152nd TRG (Nevada ANG) at Reno's Cannon Field would convert from RF-4Cs to F-4Gs. The 152nd, however, assumed the RF-4C RTU mission from the 124th. The 124th TRG was to decrease its PAA from 12 to six RF-4Cs in the first quarter of FY93 and to zero in the third quarter. In the meantime, the unit would convert to initially 18, but as of the third quarter FY92 to 24 PAA F-4Gs. The Group's flying units were the 190th TRS and the 189th Fighter Flight, FF (RTU). Its first two F-4Gs arrived on June 20, 1991, including 97551, which is still on display at Gowen Field. On October 1, the Group was re-designated Fighter Group and the 190th, Fighter Squadron.

On April 9, 1992, the Squadron commander received approval from the Organizational History Branch (Air Force Historical Research Agency, Maxwell) for the new 190th TFS organizational emblem. On June 30, the 124th FG had a PAA of 18 F-4Gs; the 189th six TF-coded F-4Gs in addition to 12 RF-4Cs, which flew the last sortie on March 31, 1993. This situation was programmed to change in FY94, when the 190th would lose and the 189th would gain six F-4Gs. In December 1993, an AFOUA (Air Force Outstanding Unit Award) was presented to the 124th by SECAF Sheila Widnall for the March 21-October 1, 1993 period.

The force structure, realignment actions announced by USAF on August 11, 1995 also regarded the Idaho ANG. As a result of USAF's decision to retire the F-4Gs, the 124th FG was to convert in early 1996 from 24 F-4Gs to 15 A/OA-10As. Also, a squadron was to be activated with four C-130Es. A further re-designation took place on October 1, when the 124th FG became the 124th FW.

It looks like that through August 1995, F-4Gs of the 124th flew without a tail code and that the first Phantoms with the Whiskey Whiskey tail code showed up in September. This did not last long though, as F-4G operations were ended on April 18, 1996 with the final four aircraft departing for AMARC two days later, making a last low-level pass over Gowen Field. All but one of the 29 F-4Gs that arrived at AMARC showed the WW tail code. Concurrently, a farewell celebration, which included social events and a golf tournament, was concluded. The 189th graduated 125 F-4G students. After arrival at AMARC, most, if not all, F-4Gs were flown to Mojave Airport for conversion to QF-4G full-scale aerial targets.

Det 6, 79th TEG, Nellis

Although the 35th FW at George had retired all its F-4Gs by June 30, 1992, F-4Gs were still active at Spangdahlem and joining the Idaho ANG. In fact, due to continuing operations from Turkey and Saudi Arabia, USAF decided to keep F-4Gs longer at Spangdahlem, through 1993, while there were (classified) plans to activate a new operational F-4G squadron within ACC. This meant a continuing need for CB-coded F-4Gs. As Gowen Field was the only CONUS location with F-4G facilities, it was decided to reassign two of Det 5's F-4Gs (90277 and 97235) to the 124th FG. As '235' was at Hill for PDM, it joined '277' in November 1992. This was scheduled to be temporarily with activation of the new F-4G squadron in mind. When Det 5's mission and functions were transferred to Nellis, they were absorbed by Det 6, 79th TEG, which was activated on September 30, 1992. Aircrews PCS-ed to Nellis and TDY-ed to Boise to fly their aircraft.

In the meantime, a site survey was being conducted at Nellis. An environmental impact assessment plan was completed by ACC on November 5, 1992. One month later, on December 4, the Air Staff approved the program change request.

422nd TES

One of the results of the December 4 approval was the inactivation of Det 6, 79th TEG on February 1, 1993 and the subsequent absorption of its resources by the 422nd Test and Evaluation Squadron (TES), which was assigned to the 57th Test Group. Its primary mission is OT&E of fighter aircraft, like the A-7D, F-111 in the past, and presently F-15E, F-22A and F-35A aircraft. In 1985, the F-4E was retired from the Squadron. However, on February 1, 1993, the Phantom returned to its line-up, when CB-coded F-4Gs 90277 and 97235 were reassigned from Gowen Field. The 422nd had two F-4G crews assigned with one pilot attached. The two aircraft were assigned to the 422nd, but maintained, 'possessed', by the 561st FS.



When it became obvious operations from Saudi Arabia and Turkey were to continue, USAF decided to keep F-4Gs longer at Spang and to activate a Fighter Squadron within ACC. After having been inactivated on June 30, 1992, it was reactivated at Nellis on February 1, 1993. The photo shows the tails of seven F-4G tails on the Nellis flight line. (Guy Aceto)

Like all other aircraft within the 57th FW, the two F-4Gs were adorned with the Whiskey Alpha tail code. Both aircraft were flown to AMARC on November 30, 1995.

561st FS

When the 561st was inactivated at George on June 30, 1992, its planned reactivation at Nellis, called PACER SWAP, was classified, although not a well-kept secret. A handful of F-4G pilots and EWOs, including Lt Cols Dan Constantini, the future Squadron commander, and Jan-Marc 'Juice' Jouas, received orders to relocate to Nellis as the Squadron's future initial cadre. As Juice stated,

When we arrived at Nellis, we were assigned to the 57th Operations Group (OG). Shop was set up and the task was initiated to stand up the Squadron, obtain personnel, receive aircraft, and to find and set up ops and maintenance buildings. As landing currency for experienced pilots was 45 days and F-4Gs were assigned to Gowen Field only, we would go to Idaho every 4-6 weeks to fly. Aircrews traveled to Boise via commercial airline, fly once or twice, enough to maintain currency, and then return to Vegas. I don't recall any problems with the Boise Guard regarding our flying. A few of their pilots and EWOs had been at George or Spang and were well known to us. We went to Boise about 3-4 times before we had our own F-4Gs at Nellis.

In the meantime, SATAF (Site Activation Task Force) surveys were being conducted. They revealed a bed-down with many problems. For instance, in operations, concerns centered around adequate aircrew flight training for SWA tasks and equipment. Also, training and maintenance experience levels lacked (which did so well into 1993), while spares and support equipment were a problem. These problems were exacerbated by an extended delay in declassifying the force structure change.

On January 22, 1993, the first F-4G, 90248, arrived at Nellis from Spangdahlem. Most Squadron F-4Gs arrived from the 52nd FW at Spangdahlem with the final ones in January 1994.



A Marine Corps CH-53D was needed to transport F-4G 69-7206 from Nellis to one of its target ranges. Will it have survived? (Guy Aceto)

The second result of the December 4 Air Staff approval of the program change request was the activation of the 561st FS on February 1, 1993 and its assignment to the 57th Operations Group (OG) with an initial PAA of 18 aircraft. Col Jouas became the acting Ops Officer until the arrival of Col Uken from Spangdahlem. USAF announced on May 27 that the 561st was to receive an additional ten F-4Gs in late 1993 with a gain of 508 full-time and ten civilian manpower authorizations. By the end of FY93, 42 F-4Gs were assigned to the 561st and 190th FS. By that time, the former had obtained IOC.

However, on February 28, 1994, USAF stated the May 27, 1993 announcement was amended to read the unit was to receive six (versus ten) additional F-4Gs, giving it a total of 24 aircraft by mid-1994. In a June 30 News Release USAF announced another round of force structure changes. As to Nellis four actions were announced, one of which resulted from USAF's decision to retire the F-4G: the inactivation of the 561st FS and, beginning in late 1995, the retirement of its F-4Gs. PAA on September 30 was 26, with TAI (Total Active Inventory) being 31. Jim Uken,

Knowing we had a bunch of deployments coming up this was the reason we had a 1.5 crew to jet ratio, the ability to plug and play CC to BAI as needed and the largest fighter squadron in the USAF with approximately 500 maintenance and another 100 ops personnel, and about 80 aircrew counting attached. The reason, early on, we went to six flights as opposed to the USAF standard of four.

On February 10, 1995, Jim Uken assumed command of the 561st. PAA on September 30 was 37, while TAI was 40. Led by Jim in the rear seat, with Lt Col Mark Bruggemeyer piloting 97295, the final eight F-4Gs were retired to AMARC on March 25, 1996. '295' was the last operational F-4G to land. As far as could be determined, 28

Squadron F-4Gs were flown to AMARC. The 561st FS was, once more, inactivated, on October 1. ■

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F-4 Phantom Aircraft and Ogden Air Logistics Center, Thirty Years of Pride and Progress

USAF News Release, October 10, 1995

December 19, 1997 Dave Sipe e-mail to the Weasel Net



'Death row' at Tyndall AFB. Twelve F-4s awaiting their ultimate destination of being downed by an air-to-air missile of visiting fighters during a WSEP, Weapons System Evaluation Program, conducted by the 53rd Weapons Evaluation Group. The F-4s are assigned to the 82nd Aerial Targets Squadron, 'Team Target'. The 'damned' aircraft consist of ten F-4Es and two F-4Gs: 69-7209 and -233. The former was lost February 1, 2006, the latter one week later. (Theo van Geffen)

Joint Task Force Proven Force and the Gulf War (Part 5)



Theo van Geffen

Shaikh Isa's living areas. (Victor Ballanco)

After Iraq occupied Kuwait on August 2, 1990, Saddam Hussein exclaimed it as his country's 19th province. The United States and their allies responded quickly and in force, by, among others, deploying a score of aircraft types to the Gulf Region. In mid-January, a second front was opened from Incirlik Air Base (Turkey). Earlier we looked at Joint Task Force (JTF) PROVEN FORCE, B-52G, EC-130E, and EF-111A combat operations, and the development of EC-130E, EF-111A and F-4G Advanced Wild Weasel aircraft. In this part 5, the focus is F-4G (combat) operations in DESERT SHIELD/STORM and PROVEN FORCE. Part 6 will deal with F-4G post-war combat operations.

After President Bush's meeting with the National Security Council on August 4 and an August 6 Saudi request for military assistance, it was decided to deploy U.S. forces. Prior to this, on August 2, CJCS (Chief, Joint Chiefs of Staff) had issued a warning order, alerting CENTCOM (Central Command), MAC (Military Airlift Command), SAC (Strategic Air Command) and TAC (Tactical Air Command) to prepare to deploy, and a partial deployment order to the U.S. Navy. In anticipation of air deployments, SAC tankers were operating from seven locations in Europe and Asia, while at 2130Z on the 6th, the NGB (National Guard Bureau), in response to a request, reported the ANG (Air National Guard) could provide 30 KC-135s for 30 days on a volunteer basis and began polling units for exact information.

Phase I Deployments

It is interesting to notice the Force Requirements and Deployment Schedule/U.S. Central Command Preliminary Planning for USAF for Week 1, mentioned no F-4Gs, but one squadron of F-4Es on C+3.

On 07/0050Z August 7 ('C-Day'), CJCS issued initial deployment orders, including two F-15C squadrons and 'sufficient' E-3A/B Airborne Warning and Control System (AWACS) aircraft to maintain one 24-hour CAP (Combat Air Patrol), plus air refueling assets as required. Later that day, CJCS issued additional orders for deployments 'as soon as possible' (two U-2Rs and three RC-135s) and 'over the next nine days' (including four C-130, one F-15E and six F-16 squadrons). At 1400Z, the USS Independence with its Carrier Battle Group arrived on station in the Gulf of Oman.

In a 08/0330Z August message, CINCCENT (Commander, Central Command) informed JCS the number of requested F-16 squadrons was decreased to four, while a large number of other types of aircraft was added, including four C-130 and four A-10 squadrons. Also added was an F-4G Wild Weasel squadron. At 1733Z, CJCS amended his requirements, decreasing the number of F-16 squadrons to two, deleting three E-3A/Bs, but adding an F-4G squadron.

Five E-3A/Bs from Tinker's 552nd Airborne Warning and Control Wing (AWCW) arrived at Riyadh (Saudi Arabia)

on the 8th, preceding 23 fully armed F-15Cs of the 71st TFS/1st TFW which arrived that afternoon from Langley (VA) at Dhahran, also in Saudi Arabia. One Eagle had to divert. In his 09/0355Z August message, CINCCENT designated Dubai (United Arab Emirates, UAE) as bed-down base for the F-4Gs. The Pentagon announced on the 10th the operation was called DESERT SHIELD.

With the September 12 arrival of the last of five AC-130s at King Fahd Airport, all Phase I aircraft had closed in-theater for a total of 962 fixed-wing (of which 600 combat) and approximately 1,100 rotary wing aircraft. Thirty-six F-4Gs were at Shaikh Isa, Bahrain. It was mandatory for all U.S. personnel arriving in theater at all bases, camps, etc. to read General Order #1, which was rather lengthy and covered pretty much all aspects of day-to-day life to include such as rules of conduct, prohibitions, host countries customs and sensibilities, and things not to do.

Phase II Deployments

After SECDEF (Secretary of Defense) Richard Cheney directed the deployment of additional forces to the Gulf Region, CJCS, in his 16/1540Z November message 'Follow-on Air Forces for Operation Desert Shield', to CINCCENT issued the deployment order of 283 aircraft, to arrive in the AOR (Area of Responsibility) not later than January 15, 1991. Included were 12 F-4Gs. Forty-two A-10As were to arrive not later than January 30. One-hundred-and-one aircraft were to be on-call for deployment within 120 hours after the beginning of hostilities.

To provide forces to support USCINCENT, US-CINCEUR (Commander, European Command) in a 19/1313Z November message 'Follow-on Air Forces' ordered Hq USAFE (United States Air Forces in Europe) to deploy 86 aircraft, including 12 F-4Gs. In addition, 24 aircraft were placed on-call.

To prevent too many units from reporting directly to CENTAF (Air Forces Central Command) after deployment of Phase II of the buildup, two Air Divisions Provisional, ADP 14 and 15, were activated on December 5 at Riyadh and Doha (Qatar) respectively and assigned to 9th Air Force (9AF). ADP 14 exercised operational control of CENTAF-assigned TFWs (Tactical Fighter Wing) and ADP 15, of CENTAF-assigned combat support aircraft like EW (Electronic Warfare), reconnaissance, and AWACS.

On January 1, 1991, the CENTAF AOB (Air Order of Battle) numbered 1,368 aircraft, 819 combat and 549 combat support aircraft. USAFE deployed 182 aircraft, 68 in Phase I and 114 in Phase II. On January 15, CENTAF assessed that 'we have essentially completed deployment of CENTAF forces for DESERT SHIELD. We have planned, trained and are ready to conduct air operations'. The U.S.

AOB numbered 1,847 aircraft, including 1,098 combat and 749 support aircraft, including 48 F-4G Wild Weasels. Air-to-air and air-to-ground forces units remained loaded out and all airfields were operational.

(Re)deployment, 35th TFW

The primary mission of the 35th TFW at George (CA) in early August 1990 was the destruction and suppression of SAM (Surface-to-Air) systems. For this purpose the Wing had two F-4G squadrons assigned, the 561st Tactical Fighter Squadron (TFS), the Black Knights, and the 562nd Tactical Fighter Training Squadron (TFTS), which was responsible to train PACAF, TAC and USAFE F-4G aircrews.

The Wing commander, Col Merrill Karp, was advised by 12AF on August 2 to prepare the 561st for deployment to the Middle East. TAC later established C-Day and L-Hour as 07/1700Z August.

As scheduled, Lt Col George Walton took command of the 561st TFS on August 7, five days after Iraq occupied Kuwait. The next day, the Wing received the deployment order from TAC's Command Post, stating that a package of 24 F-4Gs should be prepared to deploy to the staging base Seymour Johnson (NC) and to start conducting operations by August 16. Seymour's 4th TFW flew F-4Es and could help the 561st when necessary. After Col Karp was



Emblem of the 561st Tactical Fighter Squadron. (Via Eric Bosch)

Theo van Geffen has been an aviation journalist and historian since 1977. He is from Utrecht, The Netherlands. His focus is the history of the F-105 Thunderchief and the units it flew with, and of the Air War in Southeast Asia.



Emblem of the 81st Tactical Fighter Squadron. (Via Eric Bosch)

notified to send ten spare F-4Gs to Seymour, aircrews of the 562nd TFTS were tasked and launched on August 10. As no tanker support was available six aircraft staged through Holloman (NM) and four through England (LA). The ATO (Air Tasking Order) was received on August 9 and included configuration information: 12 of the aircraft had three external fuel tanks, three AIM-7s, two AGM-88 HARMS (High-speed Anti-Radiation Missile), a full load of chaff and flares in the ALE-40 dispensers, and an ALQ-184 ECM (Electronic Counter Measure) pod, while the other 12 aircraft were configured with one HARM and a travel pod versus two HARMs. The ALQ-184 would be reprogrammed locally with the most current program, allowing aircrews to counter the Kuwaiti I-Hawk surface-to-air missiles and Cyrano radar systems confiscated by the Iraqis. Also on the 9th, Col Karp was notified by TAC's Battle Staff that due to lack of airlift, the deployment might be delayed four days. The Wing was directed on the night of August 10 to deploy 24 F-4Gs to Seymour, without having a real prospect for transportation. The next day, the Wing was informed deployment would be to Shaikh Isa, that it would be the host wing and that deployment from Seymour would be August 14. Said Col Walton in this respect,

Our destination changed four or five times in as many days while we awaited our turn to depart. When I was told we were going to Shaikh Isa in Bahrain, none of us had ever heard of it. I was certain we could find our way to Bahrain, but there was absolutely no information available about Shaikh Isa. All I had was a satellite photo of a newly finished airfield at the southern tip of this 25-mile island. That had to be enough.

Twenty-four F-4Gs, in six-ship flights, departed George, were aerial refueled four times and arrived on the

12th, joining the ten 562nd aircraft. Each six-ship was escorted by two F-4Es of the 21st TFTS. In case of an emergency with one of the Gs, an F-4E would join up and escort it to an alternate base. This was not necessary and all F-4Es landed at Seymour as well.

After several delays, mainly due to the unavailability of airlift, the F-4Gs finally departed for Shaikh Isa at 16/1600Z August. Departure was in four eight-ships, including two spares, with a 30-minute separation between each cell. Each flight joined up with three KC-135s east of New Jersey over the Atlantic. Col Walton stated,

As planned, all eight aircraft would refuel to assure everyone could in fact take on JP-4. Once this was completed, the two spares were cleared off to recover at McGuire (NJ) and then return to George. Trust me, the spares were hoping someone would break down and they could replace them and continue on with us.

When the offload of two of the three tankers was complete, they left the flight and returned to Pease AFB (NH). Tanker #3 remained and was joined by two Mildenhall KC-135s mid-Atlantic, continuing the cycle. After splitting into one-mile trail spacing for straight-in approaches, twenty aircraft landed at Shaikh Isa, with Col Walton's crew as the very first one. Two F-4Gs diverted into Lajes (Azores) when an aircrew was faced with a generator problem and two into Sigonella (Sicily), when one crew was unable to aerial refuel.

As to urination and defecation on the 15.5-hour flight, Col Walton stated,

The latter was taken care of by pre-planned high-protein, low residue meals before we left, but of course, there were no guarantees. Frankly, when you sit on something as hard as an ejection seat, the sphincter muscles have a tendency to take care of that problem. As to the former, well...let's just say, the little plastic bag with the sponge in it, took some effort to use effectively. As Forrest Gump would say, 'and that's all I have to say about that'.

Fourteen C-141s, seven C-5s, one McDonnell Douglas DC-10 and one Lockheed L-1011 were loaded by George personnel between August 16 and November 16. The latter two (commercial) aircraft arrived on August 20 with almost no prior notification. The first maintenance and support personnel arrived on the 18th, five days later followed by HARVEST BARE equipment, including tents, showers and latrines.

JCS was informed by CINCCENT in his 18/0613Z August Sitrep (Situation Report) of the arrival of the first F-4G squadron at Shaikh Isa, with 1,062 personnel and 24 F-4Gs. After the arrival, it was soon realized that much work had to be done to prepare for war. Before tents arrived and were assembled, maintenance personnel also slept in the halls of maintenance hangars and claimed any available floor space there. Maintenance personnel labored under severe working conditions for most of their stay, working at least 12 hours per day. They and their equipment were packed into just a few buildings. In addition,



F-4G hardstands at Shaikh Isa. (Victor Ballanco)

temperatures as high as 130°F and a high humidity (70-100 percent) were not uncommon. Ultimately, tents, air-conditioners and building materials began to arrive. Portable toilets, shower and movie tents, etc. were built, resulting in 'Tent City'. Initially, the Weasels were parked wing tip to wing tip. Result was the development of the base's South Loop area, starting in October, which was solid rock, covered by a few inches of powdery sand. By January 16, 1991 all four F-4G/RF-4C units and nearly every shop in the Wing's maintenance complex operated out of the new facilities. Jim Uken, the 480th TFS Assistant Ops Officer (as the 81st did not have an ADO, Jim was selected to fit that need), in this respect,

All the squadrons had their own Ops hut and briefing rooms, but we shared the larger tents that housed big briefing areas, mission planning, intel, etc. While we never trained with the RF-4C crews, they were fond of trailing our elements in and out of Iraq, using 'unauthorized' beer call signs to make the Iraqis think they were Weasels, etc.

Initially, the 35th in Bahrain was referred to by CENTAF, USAF and TAC as 35th TFW (Forward), and its remaining portion at George as 35th TFW (Rear). On September 13, CENTAF designated all units under its command as 'Deployed', the 35th becoming 35th TFW (Deployed). Finally, on December 20, re-designation followed to Tactical Fighter Wing Provisional, 35 (TFWP 35) and assignment to ADP 15. At the same time, the 561st TFS was attached and Combat Support Group, 35 (CSG 35) activated and assigned to the Wing. All F-4Gs (and later the RF-4Cs) were OPCON (Operational Control) to the Wing. Attachment of the 561st ended when the Squadron redeployed to George.

On October 10, TAC, in conjunction with CENTAF, laid the final framework for a rotation policy for the Wing, calling for each of the three F-4G wings to maintain twelve

aircraft and their assorted equipment at Shaikh Isa, while the troops rotated on 179-day intervals. However, on December 6, the Office of the Secretary of the Air Force issued a statement which also included that a specific rotation policy had not been announced and was not planned to be announced in the near future.

The response posture for the entire U.S. Middle Eastern military community was increased by the Chief of CENTCOM intelligence from Threatcon BRAVO to CHARLIE (when intelligence indicated some form of terrorism action was imminent) on December 21. It lasted until January 2, 1991 when the threat level was lowered to BRAVO and in that period, all TFWP 35 personnel were restricted to base.

By the time DESERT STORM was initiated, USAF population at Shaikh Isa was 2,532, representing 86 different bases around the globe. In the first night of the war, the Iraqis launched Scud missiles at targets in the south and this resulted at 0400L in sounds of 'Scud alarm, Scud alarm, Scud alarm. Don your masks, gloves and take cover'.

Personnel began returning to George on March 22, 1991 with the first passengers boarding a KC-10A, which arrived on 23/0600L March, and 12 F-4Gs departing for George via Zaragoza (Spain) and Hulman Field (IN). The remaining 13 F-4Gs left on March 23. All Weasels were back on the 26th. In the meantime, attachment of the 561st was ended on March 25. Personnel received a red carpet reception. On April 20, the Wing was reassigned to CENTAF Forward (Fwd) and on August 2, both Wing and Group were inactivated.

(Re)deployment, 52nd TFW

The 52nd TFW at Spangdahlem (Germany) had three operational squadrons assigned, the 23rd, 81st and 480th TFS, to perform the SEAD (Suppression of Enemy Air De-

fenses) mission, destruction, neutralization and degradation of enemy radar-directed surface-to-air threats. Unlike the squadrons of the 35th, those of the 52nd TFW each had 12 F-4Gs and 12 Block 30 F-16C Fighting Falcons integrated to form hunter-killer teams. To realize this, the 37th TFW at George (all Wild Weasel aircraft were assigned to the 37th then) transferred 13 of its F-4Gs to Spang, with the final one arriving on September 26, 1986. Jim Uken about the 'Wild Weasel' F-16Cs,

In early 1987, USAF 'realized' that because of the earlier sale of F-4Es to Turkey and their due departure, a decision had to be made about their replacement. The answer was to divert the F-16s that were initially scheduled for Ramstein. I was at the F-4G test outfit at George, working primarily on tactics development when that news hit, to include an F-16C as a wingman in all future development. Originally F-16s weren't even capable of AGM-45 Shrike employment since the type was never intended to carry them and as a result was not included in their computer weapons list. We got around that by 'lying' to the computer, telling it an AGM-65 Maverick was loaded, thus able to send a direct fire pulse. It was not until later in 1989 they got their first ability to carry a HARM with the ALIC, Avionics / Launcher Interface Computer, where a single HARM could be programmed for a specific threat before takeoff. Once the programming was set, it could not be changed. A WW F-16C could be configured with two AGM-88s. The F-4G's EWO provided targeting information to get the best results, but the F-16 pilot could employ the missile without it, but in that case the probability of a kill was considerably lower. The HARM and the Shrike were employed by the 23rd TFS in Operation PROVEN FORCE. The HTS, HARM Targeting System, which the Block 50/52 F-16CJs use today was still six years in coming.

After Iraq invaded Kuwait and before the first units of the 52nd TFW at Spangdahlem were tasked, scenarios were planned as early as the spring of 1990 for possible contingency operations that included, among others, pulling back mobility plans off the shelves and updating them, the fighter squadrons flying more long-range attack profiles, the maintainers hammering away at their periodic maintenance requirements, and the supply folks updating their WRSKs (War Readiness Spares Kit).

At the beginning of Labor Day weekend, September 1-3, 1990, the Wing was requested to determine the requirements to deploy 12 F-4Gs to a classified location. As the three squadrons at Spang were mixed squadrons and the aircrews trained accordingly, the Wing prepared to deploy such a mixed force. However, the alerting message stated later very clearly that CENTCOM was looking forward to welcoming F-4Gs only and at Shaikh Isa in two days: CENTCOM already had enough AGM-88 HARM shooters, but wanted aircraft that could employ the missile to engage the most threatening system to strike packages, the radars necessary to support SAM and AAA sites. As Lt Col Randle Gelwix was the only squadron commander who was F-4G qualified, the 81st TFS was selected to deploy.

The result was that one-half of the Squadron was packed up and deployed overnight, something Col Gelwix had found difficult to tell his F-16C pilots. To do so, [81st TFS aircraft and aircrews were recalled from Karup (Denmark), where they participated in NATO exercise Oxboel, while those of the 23rd TFS were recalled from Zaragoza (Spain) while on a month-long semi-annual Weapons Training Detachment (WTD)], maintenance feverishly generated the F-4Gs for immediate combat operations (Intel had indications Saddam Hussein was about to launch his forces further south into Saudi Arabia), i.e., they were configured with three fuel tanks, two AIM-7 Sparrows, two HARMs, chaff and flares, and an ALQ-131 ECM pod. In the meantime, for instance, flight plans, dubbed DUE REGARD, were prepared, divert data arranged and was determined which people would be deployed. When USAFE finally announced that KC-10A Extenders were sent to Spang for the airlift of personnel and equipment, the load had to be re-planned, as the Wing's Resource Plans had prepared plans for airlift by C-130s, C-141s and C-5s, but not by KC-10s.

Twenty aircraft were prepared, 18 started and 16 were launched. When any F-4G would have an issue after launch, its aircrew and his lead/wingman would peel off as a two-ship, their place being taken by a spare element. At 0230L on September 5, led by Gelwix and Uken, 12 F-4Gs were launched, eight of the 81st and four of the 480th TFS, plus four spares. The best aircraft were picked, which would not need phase inspections for a while. The four aircraft, aircrews and maintenance/support personnel of the 480th flew under the flag of the 81st. Once into France by some 50 miles it was go-no go decision time. No spares were used. The flight went down the center of France, exiting into Mediterranean airspace, and turning east once in the middle. Once Cairo was off the right shoulder, a turn was made south, flying down the Nile, turning left at Luxor, flying east across the Red Sea to Jeddah. In Saudi airspace it



During DESERT STORM aircrews of the 561st and 81st TFS flew their missions separately. During DESERT SHIELD at least one exception was made, when aircrews of two 561st TFS F-4Gs (WW) and two of the 81st (SP) posed while on a training mission over Bahrain's coast line for MSgt Bill Thompson's camera. The F-4Gs are configured with four AGM-88 HARMs, High-speed Anti-Radiation Missiles, each.



F-4G 69-7202 of the 81st TFS in its hard stand at Shaikh Isa. The Weasel is configured with two AGM-88s. The 52nd TFW patch was removed. (Victor Ballanco)

was Wedj, Riyadh, Dhahran, basically flying about 100 miles south of the Iraqi border. Then into the Persian Gulf just north of Bahrain, down its east shore until landing at Shaikh Isa on the very southern tip, after eight hours and in 114-degree weather. All aircraft were 'Code One', bringing the number of F-4Gs to 36. The 35th TFW was supposedly surprised USAF had tapped the 81st to add WW forces. They had expected the Wing's second squadron, the 562nd TFTS, would be deployed for the augmentation, but the 562nd had a dedicated training mission and was not mission ready. The 81st was sensitive to this and tried not to act as invaders. After a few days, it was no problem.

The aircraft were parked on the taxiway south of the main ramp, approximately one mile from all support facilities. The aircrews spent their first couple of nights in tents on cots with sleeping bags. The support team arrived early next morning, while three KC-10s transported some 180 personnel and equipment. Within 24 hours after arrival, personnel and aircraft were integrated in 35th TFW Fwd. The 81st kept its unit identity as much as possible, but this was exclusively for internal operations. In this respect, Jim Uken stated,

The squadrons stayed pretty much separate. I never sensed any competition of any sort the entire time we were there. In general and being in a fairly small community, many of the guys knew guys in the other squadron from previous assignments. We deployed and flew in the same four-ships at Shaikh Isa from Day One all the way until the squadron realignment on January 1, 1991. My pilot was Capt Kirk Kingsley, who was also flight lead. Since I knew aircrews of both squadrons, I was tasked by Col Gelwix to build eight 'go-to-war four-ships'. As I was seeking an equal distribution in the new squadron 'blend', I paired myself with Col Gelwix. I don't remember a single exception where the 81st and the 561st flew a DESERT STORM mission together.

As the 561st TFS was the first to deploy, the structure was built around the 35th TFW.

It was the beginning of a very successful cooperation, living, working and flying side by side with the Wing. As of the third day of arriving, 81st crews went through a local area familiarization phase with both day and night sorties. Although at Spang it was not unusual to fly with just about everyone, at Shaikh Isa ultimately eight 'hard' four-ships were formed, which included the Clark aircrews: for the duration of the war, the pilot and EWO would fly together and in the same flight. By the end of the first week, the Squadron assumed one-third of the Wing's alert commitment with four aircraft pre-positioned and ready for 24 hours every third day.

In about week three, the 81st moved into its own facilities, having a separate, secure planning area. It was called the 'Secret Squirrel Cage' and discussion and details at Shaikh Isa were kept to only the Wing (CC and DO), Squadron commanders and MPC (Mission Planning Cell) members.

Maintenance made sure their Phantoms were ready to launch, while supply personnel jumped on the job to build the vital logistic train. Others were tasked to 'build an air base', like an immense hydrant system from scratch, fed by 50,000-gallon bladders, which they connected with more than 300 miles of portable pipe and to erect the tents that would prove to serve as home for the next seven months. When Shaikh Isa was constructed, it was planned for only 800 people. Eventually, the base would house 6,000, assigned to four AF units, eleven Marine Corps (MC) squadrons, plus two squadrons of the Bahrain Amiri AF. Over 200 aircraft were operating from a single runway. In the November 10-16 period, two replacement F-4Gs arrived from Spangdahlem as part of a scheduled F-4G rotation. By November 30, the 52nd had 219 personnel at Shaikh Isa.

After this initial deployment, the Wing was regularly tasked to perform studies to deploy either to one location or another, or reacting to alerting messages, resulting in the 52nd maintaining a constant readiness to deploy, anytime and anywhere. The week before Christmas brought clarity as the deployment order directed the Wing to deploy an additional twelve F-4Gs to Shaikh Isa, the remaining aircraft and aircrews of the 81st and 480th TFS. This time personnel had to be recalled from leave. When all preparations had been made, the weather showed its unpredictable side and waiting started on a day-by-day basis for it to clear. Finally, on December 26, weather allowed the twelve Phantoms to launch. In his 27/0800Z December Sitrep, CENTAF Fwd informed CINCCENT of the arrival of 11 F-4Gs at Shaikh Isa, followed by a latecomer, increasing the number to 48. A total of 596 Wing personnel accompanied the F-4Gs, including some 240 in the 81st AMU (Aircraft Maintenance Unit). When the second increment arrived, officers went back to eight officers to a room, while other personnel crammed even tighter into their tents. But yet, the new arrivals were welcomed warmly. To generate the high number of sorties in DESERT STORM, 'dining in' at the flight line and 'combat napping' became the rule for the personnel.

After departure of the remaining F-4Gs of the 81st and 480th TFS, the 52nd TFW was realigned, one squadron with 24 F-4Gs, the 81st, and one with 24 F-16C/Ds, the 480th TFS. The third squadron, the 23rd, remained unchanged, 12 F-4Gs and 12 F-16C/Ds.

Redeployment was initiated on April 5, 1991 when eight aircraft returned to Spang, followed on May 10 by another eight Phantoms. Of the remaining eight F-4Gs, four



Sgt. Todd Nelson of the 52nd TFW is checking the Mode 4 on an F-4G on the parking ramp area. Mode 4 is a military discrete variant of ATC's Identification Friend or Foe (IFF) used throughout the world. Mode 4 is an encrypted IFF, changed daily, and thus the reason for being checked before takeoff, especially when used in combat operations. (USAF, MSGt Bill Thompson)

returned on June 27, with the final four still at Dhahran as of December. Left behind at Shaikh Isa were the aircraft, aircrews and support personnel that had deployed there in late December 1990.

The 52nd also supported Operation PROVEN FORCE at Incirlik, Turkey with personnel and aircraft. The combined (Incirlik/Shaiikh Isa) 36 F-4Gs and 12 F-16Cs were supported by 1,300 personnel and 6,000 tons of equipment. More than 3,900 sorties were flown with 7,200 flying hours. Radars were hit 142 times. The deployment of the 23rd and 81st TFS meant only one of the fighter squadrons, the 480th, remained at Spang, not as a mixed squadron of F-4Gs/WW F-16Cs, but of 24 WW F-16Cs. Yet, they, commanded by Lt Col Jim Allgood, played an important role. For instance, they provided the senior supervision and instructors to bring the newly arriving aircrews to mission ready status and possible deployment and supplied 'spare' bodies for every other tasked deployment. As the 52nd TFW background document stated, 'The 480th TFS stayed at Spangdahlem in body, but not in spirit'.

In August 1990, Lt Col Edward 'Victor' Ballanco was the Chief of Weapons and Tactics Division of the 52nd TFW. He was attached to the 23rd TFS for flying. Wing Weapons had two F-4G and F-16C pilots and two F-4G EWOs. As he was assigned to the Wing, he did not expect to deploy. However, after receipt of the Execution Order, Col Rudi Peksens, the Wing commander, pointed at him and said, 'Victor, you're going, I want you to make a SEAD campaign happen' (based on the 1982 Israeli Bekaa Valley experience and the confidence in the HARM capability, Wing Weapons developed a SEAD Campaign concept for Wild Weasel employment in NATO. Analysis indicated it could be very effective even against the full-up Soviet IADS NATO faced across the Iron Curtain. The Wing wanted NATO to employ the Weasels using a campaign approach, not in a piecemeal fashion. Also, medium/high altitude airspace was required so that the F-4Gs could be loaded with four HARMs and one external fuel tank, rather than the usual two and three respectively. A timeframe in which 'low' was the standard, this was 'swearing in church'. This caused very heated briefings. During a Green Flag exercise in July 1990, the USAFE planning staff, with much resistance from the Green Flag Staff, tasked the missions at medium to high altitude and demonstrated a SEAD campaign. This concept was not well received by all the participants, but the two USAFE DOs were strongly behind the concept and training program. It would not be long, before the lessons learned in the training program and in Green Flag could be put into practice). Victor arrived at Shaikh Isa per KC-10 late in the evening of September 5. The Extender, which escorted and refueled the F-4Gs, also transported maintenance personnel. Victor said,

My primary job was mission planning, as a minimum for the 81st, and eventually for the 35th TFW, but also flew quite a few sorties, normally with different EWOs. Fortunately, after reading into the top secret Desert Storm plan, I quickly saw there was no need to convince anyone in CENTAF of the need for a SEAD campaign: it was already



There were 28 hot pit refueling stations at Shaikh Isa, ten of which, just north of the F-4G parking area, were solely dedicated to Phantom operations. After each mission, the F-4G/RF-4C would be taxied to the hot pits, stop, and be pushed back into a refueling position. Once gassed up, the aircraft was taxied to the parking area. It looks like the HARMs were expended. The ECM pod is an AN/ALQ-184. The refueling port behind the cockpit is open. (USAF)

planned. A few days after arriving I went to CENTAF in Riyadh to meet the planners in the “Black Hole”, where BG Buster Glosson was in charge of overall planning and BG Larry Henry of SEAD planning. After this trip I made several trips to meet the units and plan the missions face to face. Since the C2 aspect of the air campaign were well in-hand, we had to apply the proper SEAD to maximize our effort. The Israeli Bekaa Valley operation had also been studied by the CENTAF planners, and we more or less modeled the SEAD campaign on that. Gen Henry decided we needed drones to help stimulate the SAM radar environment. He was successful in finding and obtaining the drones, so this helped with part of the problem regarding how to stimulate the SAMs to turn on their radars for anti-radiation missiles to home on and destroy. Our preferred method was drones if available, and then EF-111A and EC-130H standoff jamming. We hoped to engage and kill the SAMs before the attackers entered the threat rings. If the threats did not cooperate, we would ensure we were positioned to protect them. This was the classic Weasel ‘First In-Last Out’ approach.

As the forces were plussed up beginning in November, most of the coordination was done, using ATO updates (ATOs specified the targets, TOTs, dedicated aircraft and air refueling information). SPINS, Special Instructions, also spelled out further coordination use, such as the WW SAM priorities, and communications through STUs, Secure Telephone Units. Many of the missions expanded after that time, but the basic plan remained essentially the same. F-4G flight leads were brought in on the plan about ten days before execution. This allowed them to continue the final coordination while the planners tried to look at the bigger picture.

Because of the threat environment (approximately 300 radar-guided SAMs, over 3,000 IR-guided SAMs and over 6,000 AAA pieces), the long distances that had to be trav-

eled, the fact that the first missions were at night, and the possibility the Iraqis could use chemical weapons, it was determined that medium to high altitude employ would be best. It would give the APR-47 optimum detection and ranging capabilities and the HARM had a longer employment range. It came with a disadvantage though, as the minimum range of the missile increased.

According to Victor he did not lead any of the flights, although he planned the missions. This enabled him to concentrate on the big picture and leave flying ops to the flight commanders, ‘who were damn good’, as he stated.

(Re)deployment, 3rd TFW

The 3rd TFW at Clark AB (Philippines) had two squadrons assigned, the 3rd and 90th TFS with the latter performing the defense suppression mission. The 90th had integrated its F-4Gs with the E model of the Phantom to form hunter-killer teams. Six complete F-4G aircrews, who were on volunteer standby status, arrived TDY at Shaikh Isa on January 30, 1991. The crews, attached to the 81st TFS, formed ‘hard’ crews and flew either as a hard four-ship, or two-ship, although crews were swapping positions. Uke in this respect,

When the ‘new’ 81st TFS was formed after arrival of the 480th TFS crews in late December 1990, Col Gelwix was tasked to put eight ‘hard’ four-ships together, comprised of a mix of aircrews that were already at Shaikh Isa with the newly arrived 480th aircrews, plus the 81st guys who had not deployed in early September. Every sortie the 81st four-ships flew until January 1, 1991, had the same lineup. As the 561st TFS had the ‘luxury’ of deploying many of the 35th TFW staff officers, they actually had about six more crews available for flying than we did. However, our tasking was the same as theirs and if one of the crewmembers got sick, that sortie did not go, as we had no spare aircrews. We finally got some relief when the Clark F-4G aircrews



A pair of F-4Gs of the 81st TFS being refueled by a KC-135 Stratotanker. The aircraft closest to Victor Ballanco’s camera, 69-7571, was lost on Day Three of DESERT STORM, January 19, on a night Wild Weasel mission. The aircraft ran out of fuel after it was hit by AAA. The crew, Capts Tim Burke and Juan Galindez (EWO) ejected safely and were back to business two days later.



The crew of this 561st TFS F-4G is banking away from the KC-135 they refueled from. The refueling port, located behind the cockpit, is still open. The aircraft is configured with at least two fuel tanks on the outboards and two HARMs on the inboards. (USAF)

showed up, allowing a four-ship to get a break every 8-9 days.

PACAF also planned for F-4Gs assigned to the 90th to go to George to back-fill any shortages. The aircrews returned to Clark on March 13.

Training

After arriving at Shaikh Isa, the 35th TFW maintained F-4G alert to accomplish the SEAD mission. However, in the light of the anticipated Iraqi threat into Saudi Arabia, aircrews expressed the need for air-to-air training. This necessitated live ordnance to be downloaded and external fuel tanks to be changed, obviously compromising mission preparedness. The solution was found in keeping the majority of the F-4Gs on alert and reconfigure six aircraft for air-to-air combat training. To meet both the USAF and Marine Corps fuel requirements, hot pit refueling quickly became the preferred method, establishing four hot pit areas. Each pumping unit contained four refueling points. During DESERT SHIELD, the hot pits dispensed an average of 280,000 gallons of fuel per day to USAF, MC and BAAF aircraft.

Two areas were noticed by Col Karp that needed attention after the arrival of the Spangdahlem aircrews, (1) inter-operability (to fly similarly and have similar procedures) and (2) night flying (the 81st flew night sorties, but the 561st did not). As to (1) Col Karp brought in the DO (Deputy for Operations), Col Gene Patton, who fixed it; as to (2) Col Karp decided to fly at least 50 percent of the sorties at night. In addition, both weapons and tactics officers, Lt Cols Victor Ballanco and Bradley Ellico, suggested training should also include more medium altitudes (10,000-20,000 feet) for both the direct support roles and CAS (Combat Air Support), as it would enhance the survivability of the F-4G and permit the aircrews to use the HARM

to its fullest potential, as AAA was considered their primary surface-to-air threat.

Training accomplished in DESERT SHIELD knew three categories, (1) desert acclimatization, (2) local-area orientation, and (3) mission preparation.

Until January 9, 1991, more than 160 ATOs were produced with an average of some 750 daily training/operational sorties. The next day, CENTAF units began a gradual aircraft load-out and increased their alert posture. By the 13th, 60-70 percent of the air-to-ground units and all air-to-air units were combat-configured and loaded.

On September 8, CENTAF initiated a weekly integrated-package flying training program. Initial packages were single-service. But after the 12th, emphasis was placed on the creation and operation of large force packages by including other services and Coalition forces with, for example opposition air, escort fighters and Wild Weasel support. The purpose was to promote interoperability of friendly forces, conduct integrated training with allies, and exercise package operations. As planners assembled packages, they coordinated their support to make scarce resources, such as F-4Gs and EF-111As, available to support as many of them as possible. For instance, targets and missions of B-52Gs were to be supported by as many F-4Gs as possible. The bulk of coordination with the external units was done by the Mission Planning Cell, most of it during DESERT SHIELD. Once DESERT STORM started, the MPC did the initial coordination and left the



561st TFS F-4G Wild Weasel pilot Capt Clyde Bellinger and EWO Capt Randy Thompson inspect an AGM-88 HARM prior to flying a nighttime combat mission during DESERT STORM. (USAF, TSgt Fernando Serna)



Air refueling was a mere necessity for F-4G aircrews due to the distances from Shaikh Isa to targets in Iraq. That's also why aircraft were configured with only two AGM-88s and not four as was in general the case on missions to Kuwait. F-4G 69-0286 of the 81st TFS is being refueled by a KC-135 of the 380th Bomb Wing (Plattsburgh, NY). (Victor Balanco)

contact information for the Mission Commander to do any final coordination over the phone.

Packages increased in size and complexity as DESERT SHIELD progressed. For instance, on October 7, 12 F-4Gs participated in three packages, (1) with 40 F-16s and four F-15Cs; (2) six F-16Cs and four RAF Tornados; and (3) 16 F-16Cs and six RSAF Tornados. Jim Uken in this respect,

Coordination was a never ending process, largely as additive forces kept arriving in the theater all the way into early January 1991. From a macro level, targets were selected, assets to attack those targets, and then timing and target de-confliction had to be considered and finally all the support assets added, such as Weasels, jammers, tankers and CAPs. One change in the Master Attack Plan (MAP) could have a ripple effect. To this day, I can't believe we never had a mid-air collision given 2,000 aircraft in the same airspace at the outset, many with no air-to-air radar.

Other training missions included practicing threat suppression profiles and communications by electronic combat assets (F-4G, EF-111A, EC-130 and EA-6Bs), the first of which was flown on September 9. F-4Gs also flew training missions with B-52Gs. For instance, on September 23, five B-52Gs on a low-level strike mission were supported by F-4Gs, which provided defense suppression.

Examples of training exercises were, (1) INITIAL HACK, October 24-26, included practicing pre- and post-strike air refueling, airfield attacks, CAS, and Command and Control (C2) procedures against a simulated D-Day ATO; aircraft in eighteen packages, involving some 40 Coalition air units, flew more than 300 simulated combat and 200 other sorties; (2) IMMINENT THUNDER, November 15-21, to closely simulate D-Day ATOs and practice CAS and CSAR (Combat Search and Rescue). Combined strike packages, CAS and CSAR were flown by U.S., Saudi, British, Kuwaiti, French and Canadian forces. One thousand aircraft participated with 4,000 sorties flown; and (3)

DESERT FORCE, December 5-7, by 317 aircraft in 12 packages, plus 114 aircraft exercising CAS.

Desert Storm

Gaining and maintaining air superiority was the prime concern during the first days of combat operations and in this respect Electronic Warfare was to play a central role in the neutralization of Iraqi's air defense system (air superiority was declared on January 27). It was planned as the second Phase of the campaign and took place in conjunction with Phase I, the physical attack of KARI, Iraq's automated Command and Control system, which was built by French contractors. Assets included airborne and space systems. EW's mission included collection of electronic intelligence and suppression of Iraqi electronic capabilities. To keep Coalition losses as low as possible, EW assets were of greater importance to overall air operations than ever before. As to airborne assets, an array of specialized aircraft was employed, like F-4Gs and EF-111As. In addition, two types of radar-decoy drones stimulated Iraqi radar activity, (1) Navy A-6E Intruders launched ADM-141 Tactical Air-Launched Decoys (TALD) and (2) Grumman (Navy) BQM-74C Chukars were launched from Saudi Arabia by personnel of USAF's 4468th Tactical Reconnaissance Group, SCATHE MEAN. The Group arrived on November 7, 1990 at King Khalid Military City, Saudi Arabia.

To destroy Iraq's air defense radars, USAF had 61 F-4G Wild Weasels stationed at Shaikh Isa and Incirlik, 63 percent of its F-4Gs. Like all EW assets, Weasels were in limited supply, resulting in a concerted effort to maximize their use by piggybacking as many attack packages as possible into a given area at a specific time. Jim Uken stated,

The demand for electronic warfare assets far exceeded the availability. There was a famous message that came from Gen Chuck Horner, CENTAF's Commander at Riyadh, stating that CENTCOM was doing their best to allocate available EW assets against the highest priority, best defended targets and commanders at the bases should stop complaining if they didn't get Weasel support. If we had followed standard USAF tasking rules, we would have generated 64 WW sorties a day between the two squadrons. Reality was we far exceeded this the first week, but it was beginning to become a safety factor as average missions exceeded five hours airborne and crew rest requirements were being waived between missions. Given the amount of adrenaline created by the many missions, many of the guys were having trouble trying to get what little sleep they should have been getting.

SEAD tactics changed when threat activity diminished toward the middle of the war, especially in the KTO (Kuwait Theater of Operation). For instance, by not accompanying all strike packages, each F-4G element was enabled to cover 30-40 strike formations there, resulting in an EW umbrella. EWOs conserved HARMs by using the F-4G's AN/APR-47 Radar Attack and Warning System (RAWS) to see and attack threats as they came on the air.

Wild Weasels then became more available to support packages as they struck 'kill boxes' in the KTO. Kill box designators were used by most everyone as a convenient and simple way to direct aircraft on missions. They were based on the Saudi Air Defense Map grid. There were 22 named kill boxes, like AE 5 through 8. A total of 732 strikes were flown by F-4G crews, of which 295 in named and 437 in unnamed boxes. For example, crews located and attacked mobile SA-6s deployed with the Republican Guard. As Jim Uken explained,

Our mission gravitated from almost 100 percent direct support to strike packages to a combination that included kill boxes, primarily for A-10s and F-16s striking targets of opportunity. This became known later as what we called the Weasel Police mission, or in other words, a Weasel Combat Air Patrol. The mechanics were simple. Take three 2-ships and stagger their takeoff times by 40 minutes. Hit a pre-flight tanker and then fly into southern Iraq, which was divided into 30-mile square kill boxes, each having an active time. Forty minutes on station time and the two-ship behind you arrived and you headed back to the tanker to get another load of fuel. Second two-ship was replaced by the third one and then you replaced them. And then do it all over again for what we called a 'triple pump'. In this way we had continuous presence in the region for six hours and with subsequent six-ships, were able to cover 24 hours with 24 sorties. They were long missions though, average was 5.5 hours.

Victor added,

We encouraged CENTAF to develop an airspace de-confliction plan for the KTO, as aircraft were all over the sky, which at night was both dangerous and nerve wracking, negatively impacting mission success. Towards the end of the war, the Weasel Police missions were pretty boring, as SAMs were not turning on their radars or shooting at anyone. We had achieved air supremacy from surface threats through our SEAD campaign. Many of the Weasels sat over the KTO at night and counted the oil well fires. One night 200 were counted, which was quite a sight.

When dominance became so complete that tanker aircraft could accompany F-4Gs further north, their aircrews were able to remain on-station even longer.

In addition, USAF had 12 'Wild Weasel' F-16Cs available at Incirlik with AGM-88 capability, while the Navy/Marine Corps deployed A-6Es, A-7Es, F/A-18A/Cs and (27) EA-6Bs from six carriers (Navy) and Shaikh Isa (Marines) with HARM capability.

F-4G aircrews flew three mission types, (1) autonomous, (2) direct support, and (3) area SEAD. During (1), targets were attacked in a particular geographic area to reduce Iraqi air defense threats or roll back the air defenses for upcoming Coalition air operations; during (2) F-4G aircrews joined aircraft flying attack missions and carried out SEAD that could pose a threat. Most of the missions were direct support ones; and on (3) F-4Gs were not

tied to a particular strike force, but provided SEAD support for numerous strikes against various targets. In-flight refueling was required for all missions. While over the target area, the crews planned on about ten minutes of serious 'hunt and kill' work. As the standard Weasel configuration used for long station times was two AGM-88s (and three fuel tanks), aircrews believed they would probably be out of the target area in quick order. As to the configuration Jim stated,

The first days, the 81st TFS had 16 F-4Gs that carried four HARMs each. On about the third day we reconfigured as there were not as many SAMs operating in the KTO. The difference was the depth of penetration into Iraq. Anything going into Kuwait or southeastern Iraq, carried four and all else had two. Since we trained as set four-ships and 'Weaseling' was such a fluid mission, I am sure all the four-ships set up their own HARM shot de-confliction plan. Something as basic as lead has SA-2 B/F, #2 has SA-2 C/E, #3 has SA-3 and #4, SA-6. Most four-ships reserved the option for lead to be directive, e.g., '#3, target the SA-6 at your 3 o'clock'. Since we literally had months to train together, we had every possible "if what" covered. A great example, our first mission quickly degenerated into four "singles", as we had all "gone defensive" from being targeted multiple times. First rule is to defeat the threat, then worry about where the other guys are. We all came out single ship, which was just fine with all of us. The other de-confliction rule, "If someone is launching on you, shoot back as your HARM is faster as long as you react quickly". Since only one jet could be targeted at a time, you know the other guys are clear from this one. Three of our shots the first night were reactions to SA-6s being fired at us. See also later.

The afternoon prior to the beginning of DESERT STORM, a general officer of the CENTCOM Staff arrived



F-16As of the Air National Guard also participated in (daylight) combat missions on the opening day of DESERT STORM. Included were 16 aircraft of the 138th TFS (New York ANG). Their target, SA-2 sites near Ahmed Al Jaber Airfield in Kuwait, was to be struck by the 32 Mk 84 2,000-pound bombs the F-16As were configured with. In addition, the aircraft carried two AIM-9s and an AN/ALQ-131 ECM pod. The photo shows F-16A 79-0352 of the 138th TFS on 'last chance' at Al Kharj, prior to its very first combat sortie on January 17. (USAF, MSgt John Luszczyk)

at Shaikh Isa from Riyadh and told the assembled aircrews, 'Gentlemen, tonight we ride'.

The Beginning

The Coalition's first weapons struck Iraqi targets on 16/2339Z January (17/0239L), D-Day (Army AH-64A Apaches, firing 27 AGM-114 Hellfire missiles, 100 2.75-inch Hydra rockets and 4,000 30-mm rounds. This was the only time Army assets were part of the [MAP or ATO, Air Tasking Order]). This MAP, called 'First 24 Hours', provided for 25 large-scale SEAD attacks. Sixteen F-4Gs of the 561st TFS and 12 of the 81st launched, starting at 0150L. Takeoff was in flights of four, with an interval of 20 seconds between each Phantom. Call signs used were brand name beer logos, like Miller, Strohs and Falstaff.

One of the SEAD strikes was directed at H+40 (0340L) on the first night, against the area south and west of Baghdad. USAF struck the former and the Navy the latter area. A total of 48 aircraft were involved, including 12 561st TFS F-4Gs, led by Col Walton. The 20-minute basic brief started a little before midnight. Split was then made to four-ship briefings with call signs Coors 31-34, Lonestar 41-44 and Michelob 51-54. As to the call signs, Col Walton explained,

They came up a few days prior to the beginning of DESERT STORM. I received a phone call from one of the planners in Riyadh, who asked me what call signs we would like to use. My first preference had already been taken by another fighter squadron, so I thought for a few seconds, remembered we had been without beer or alcohol of any sort for months, and proposed to use beers as our call signs. He responded, why not? Our call signs were distinctive, recognizable, unforgettable, and as the Campaign progressed, folks knew who the Weasels were.

The aircrews stepped at 0025L for a 0055L engine start and it was planned to have all aircraft armed and on the runway for a 0125L takeoff.

Other participants were three EF-111A Ravens (USAF), and three EA-6Bs, which carried no HARMs (Prowlers were primarily used as jammers, as carrying AGM-88s meant giving up room for jammers), with their three F-14 Tomcat escorts, two A-6E Intruders, ten F/A-18 Hornet and eight A-7E Corsair II HARM shooters, and three KA-6D tankers, all from carriers in the Red Sea. The effort was covered by four additional A-6Es with TALDs, to further confuse Iraqi defenders. In addition, slightly behind the western package, four A-6Es and four RAF Tornado GR.Mk1s struck Al Taqaddum Airfield. It was planned to approach from numerous directions, force a reaction and destroy the radars. Each of the three EF-111As (and EA-6Bs) established an orbit, while BQM-74Cs were launched to stimulate the IADS, Iraqi Air Defense System. When the Iraqis activated their target acquisition radars, they were jammed by Raven and Prowler crews, forcing the radars to increase their vulnerability to AGM-88s. A-7E and F/A-18 crews fired 51 HARMs, 45 in their pre-briefed mode, at targets already designated as known SAM



RF-4Cs were relative latecomers to Shaikh Isa. By December 25, the 192nd TRS (152nd TRG, Nevada ANG) had moved there from Al Dhafra (Saudi Arabia), bringing along two of its own Phantoms and taking over four RF-4Cs of the 117th TRW (Alabama ANG). On the photo, two RF-4Cs at Shaikh Isa after returning from a combat photo recce mission. RF-4C 64-1047 shows Alabama ANG markings, but is flown by 192nd TRS aircrews. Note '047' completed its 14th combat sortie. The ECM pod under the left wing is an AN/ALQ-131. (USAF, MSgt Bill Thompson)

sites, and six more at targets of opportunity. In addition, Intruder crews dropped 25 TALDs within 20 minutes spacing. One F/A-18C of Saratoga's Strike Fighter Squadron (VFA) 81 was supposedly shot down by a MiG-25 Foxbat. Its pilot, LCDR Michael Speicher, was killed.

After takeoff, the three F-4G flights joined in route formation and passed the lights of Dhahran. Over the Saudi desert join-up was made with the tankers, Tuna flight. Refueling took place at FL 210 and everyone topped off. Each F-4G crew was tasked to destroy high-threat mobile SAMs within their assigned area of responsibility. As F-4Gs possessed the capability to identify active SAM sites from the air, an EWO (Electronic Warfare Officer) could mark active sites from his equipment and then fire at the site by programming the HARM on board the aircraft. The F-4G SEAD package headed straight for Baghdad and then swung northeast, just short of the city. Crews picked up SAM activity 100 NM from the capital. At 0037Z, SA-8s, AAA radar, and I-Hawk came up, while 11 minutes later, activity became very heavy. While swinging northeast, EWOs picked sites that Intel had identified. When any proved to be inactive, the crew went after targets of opportunity. Col Walton and his EWO, Budman Redmond, fired two HARMs, one at a SA-2 and the second at a SA-3 radar site. With their missiles gone, Col Walton made a hard turn to the right to the egress point. All three flights post-refueled and returned to Shaikh Isa. After landing, the aircraft went through hot pit refueling. In all, 22 HARMs were expended, with ten shots being assessed as successful (46 percent), causing the targeted emitters to go off the air. Although BDA (Bomb Damage Assessment) could not be fully obtained, a significant reduction in electronic activity was noted by ELINT operators. Approximately one hour later, a flight of four F-4Gs followed on a direct support mission to the Salman Pak area, south of Baghdad. As Col Walton remarked,

None of us got a lot of sleep for the next three days. Nobody complained. Nobody second-guessed anything. Not sure how many folks needed to wind their clock, but I didn't worry about it after that night.

In the 0357-0420L timeframe, SEAD and strike packages struck two Kuwaiti air bases and Shaibah Airfield, south of Basra in Iraq. The three bases were probably no more than 30 miles equidistant. At Shaibah, the combined package was composed of three VMAQ-2 (Marine Tactical Electronic Warfare Squadron Two) and two USN EA-6Bs, ten HARM-configured Marine Corps and seven Navy F/A-18s, four Navy A-6Es, four RAF Tornado GR.Mk 1s, carrying bombs, and BQM-74 drones. The package was supported by four 81st TFS F-4Gs, Pearl 51-54, led in 97232 by Gelwix and Uken, who crossed the Kuwaiti border at H-2. CAP was flown by four USN F/A-18s. To coordinate F-4G support to Navy Alpha strikes, Jim made at least four trips to two different carriers. The Weasels carried four AGM-88s each, plus a centerline fuel tank. Jim Uken said,

It's almost like the Iraqis knew when H-hour was, as at that moment an SA-2 came up directly under our 4-ship and, since we were flying a loose route formation, we all got the same "you're being launched on" indications. As we all went defensive at the same time, that's pretty much the last we saw of each other that night. But we'd briefed every possible situation and just flexed to that plan.

At the same time, a package with one Navy EA-6B, CAP-ed by two F-14s, BQM-74 drones, eight F-16Cs with LANTIRN (Low-Altitude Navigation Targeting Infrared for Night) pods, eight F-111Fs, and two A-6Es struck the Ali Al Salem SOC (Sector Operations Center) and the Scud shelters at Ahmad al-Jaber and Ali al Salem Airfields in Kuwait. The Shaibah F-4G flight also supported the Kuwait package. Fifteen AGM-88s were expended, with one hang fire. Mission duration was 2.5 hours and Gelwix/Uken were credited with destroying two SA-6 radars and an unknown, probable SA-6 radar. The aircraft of Pearl flight were the first ones to return to Shaikh Isa. After the end of runway post-flight check, the parallel taxiway was lined with Airmen and Marines. The CONRAC recorder, which copies everything the RWR sees, HARM shots taken, emitter parameter data, etc. was given to Intel. After a quick verbal debrief, the aircrews were strongly advised to try to get some rest. Another 81st F-4G 4-ship came in 15 minutes after Pearl flight. The first night, a total of 200 AGM-88 HARMs was expended.

Victor Ballanco flew his first combat mission on the first day of Desert Storm. As he described,

On this early daylight mission (takeoff at 0722L), my EWO, Lt Col Don Whitley, and I were number six of a six-ship, Coors 36, to fly on the wing of Maj Mark Turberville/1Lt Steve Garland, Coors 35. Mark was the 81st SEFE, Stan Eval Flight Examiner. A total of ten 81st aircrews were involved as Coors 31-36 (Mission #1231W) and Blatz 41-44



Emblem of the 23rd Tactical Fighter Squadron. (Via Eric Bosch)

(Mission #1241W). The F-4Gs were each configured with four HARMs and a centerline fuel tank. To reach the targets in the KTO, pre-strike refueling was necessary. Yet, due to the configuration we could not go very far or stay on station very long. We briefed with the aircrews of Blatz flight, as we had a wide time window to cover across the full KTO. We hoped to provide overlapping coverage in the event anything went wrong. There might also be a possibility a flight might have excess missiles after covering the strike missions we were directly supporting, which would be a transition from a direct support to an area support mission. The mission briefing, which took place while aircraft of the initial F-4G flights were returning, was relatively uneventful, except that the weather was not as good as we had become accustomed to: a strong north wind and cumulus clouds throughout the area.

As Victor continued,

After arriving at the Squadron duty desk for our aircraft assignments, things started to go downhill. Only two of the six Coors aircraft were ready, Coors 35 and 36. Ultimately, eight F-4Gs got airborne with 26 HARMs expended, of which all eight by the crews of Coors 35 and 36, seven out of eight by the crews of Coors 33 and 34, for a total of 15 out of 16 HARMs. Blatz 41-44 all got airborne and their crews expended 11 out of 16 AGM-88s. Coors flight was scheduled on different tankers, but all were supposed to enter the KTO at about the same time with Coors 31-34 (Coors 31 and 32 did not get airborne) supporting F-16As of the 157th TFS (South Carolina ANG) in the north and west, and Coors 35-36 supporting F-16Cs of the 614th TFS in the southeast, striking Ali Al Salem and Al Jaber airfields. Since we would be the only ones going into the target area, focus would be covering the full area to the best of our ability, con-

centrating on direct support for the attack missions. Our target priorities based on SAM type was SA-3, SA-2, SA-6 for us and SA-2, SA-6 and SA-3 for Coors 35.

After takeoff, we joined on our tanker, Walleye 62, and took a full load of fuel. As we turned to the north, I got sight of the 614th F-16Cs, which were about ten miles in front of us, while it should have been the other way around. On radar we could see the F-16As of the 157th, which were even further ahead. Our flight plan called for us to take on more fuel as we flew north to the drop-off point, but, as we were further south than planned, we decided to depart the tanker and push it up to go as fast as possible to the target area. When we climbed away, the Swamp Foxes of the 157th asked about the status of the Weasels. I told them we were only a flight of two and several miles behind them. The impact of only two Weasels airborne early on was that the 157th pilots did a lot of defensive maneuvers. They were not happy and rightfully so. When I recommended them to make a 360 turn so that we could close the gap, they answered negative and continued on to their targets, most likely due to fuel. After the 157th pilots stirred up the SAMs, Don and I had several SAMs displayed on our nose, with good ranging on our APR-47s. After selecting the closest SA-6 to the F-16As, we fired a HARM, a long-range shot, about 40 miles with a 2½-minute missile time of flight. This was immediately followed by a second HARM, at 35 miles and two-minute time respectively. While in the firing process, we lost sight of our element lead. Continuing veering to the right, we fired our third HARM at an SA-2 to the east, the vicinity of the F-16C target area. Expending the three missiles took place within one minute. We then rolled out on a northerly heading while trying to find Mark and Steve, and the 614th F-16Cs. A few seconds later, we had a popup launching SA-2 in their area, at about ten miles and 20 degrees to the right of our nose. I turned to put the missile on the nose to reduce its time of flight and Don did the handoff. As soon as we rolled out, we took the shot and the HARM went like a spear directly towards the SAM location.

Coors 36 was out of HARMs, but still had plenty of gas remaining to make it back to Shaikh Isa, even without the scheduled post-strike refueling. Coors 35's crew was not seen until after arrival. A quick intel and maintenance brief were made, followed by a review of the tapes. As for analysis Victor stated,

Had we been on time and ahead of the attack force, we would not have been in a position to make as rapid a shot as we made. If we were past the target area, rather than pointing at it, it would have been a longer turn to point to the target, which result in a longer missile time of flight. On future missions, we made it a point to keep nose on to the target area whenever possible. To fly a four-HARM, single tank F-4G into combat with a target-rich environment proved to be the only one and highlight of my career.

Victor flew 18 combat sorties for 65 hours.

According to the Gulf War Air Power Survey (GWAPS), the first night of DESERT STORM was 'an elaborately cho-

reographed combination of stealth aircraft, specialized electronic warfare aircraft, decoys, cruise missiles, and attack aircraft, delivering a sudden, paralyzing blow to the integrated air defense system from which the Iraqis never recovered'.

By 17/0800Z (17/1100L), CENTAF reported that 30 air-to-ground, eight air-to-air, and two reconnaissance packages were flown against a variety of strategic targets, which included air defense, telecommunications and command facilities, and airfields. The Coalition supplied 669 aircraft, of which 530 were U.S. aircraft. One Navy F/A-18C Hornet was reportedly lost to a MiG-25, resulting in the pilot's death, plus an A-6E with both crewmembers taken POW and later released. The RAF lost an Tornado GR.Mk 1, with both crewmembers also taken POW and later released. Pilots of F-15Cs claimed six and of Navy F/A-18Cs two Iraqi fighters.

Throughout the first day, Air Force and Navy SEAD packages went after Iraqi air defenses, both control centers and SAM sites. For instance, 40 F-16Cs, supported by four BQM-74 drones, eight F-4Gs, four EF-111As, plus 16 CAP F-15Cs, struck the Tallil IOC/SOC (Integrated/Sector Operations Center). The F-4G aircrews expended all 16 HARMs. Also, F/A-18s, supported by EA-6Bs, attacked the Al Amarah IOC. Later in the day, 32 F-16s struck Al Taqaddum Airfield, which was one of the largest and best-equipped in Iraq, and the Habbaniya Petroleum Storage Facility. They were supported by eight F-4Gs, four EF-111As and 16 CAP F-15Cs. Two Eagle pilots shot down two MiG-29s.

At 2100L, high flying B-52Gs, supported by four F-4Gs, two EF-111As, and four CAP F-15Cs, flew the first bombing mission against the Republican Guard's Tawalkalna Mechanized Division.

Combat sorties on Day One were not only flown by Air Force pilots, but also by their ANG colleagues. CENTAF Rear on December 3, 1990 released information on the first call-up of ANG (F-16A) and AFRes (A-10A) fighter and support units. Included were two ANG fighter units, the 138th TFS/174th TFW (New York, flying F/A-16As) and the



Sixteen of the 72 Package Q F-16Cs on January 19 were flown by pilots of the 614th TFS, Doha (Qatar). Two aircraft were lost with their pilots taken prisoner, but later released. The photo shows F-16C 86-0288 of the 614th being configured with Mk-20 Rockeye anti-armor bombs. (USAF)



The crew of 561st TFS F-4G 69-0265 is about to strap in for the redeployment flight to George. The first 12 aircraft departed Shaikh Isa on March 22. The Weasel's configuration included an AN/ALQ-184 ECM and luggage pods. (USAF, Sgt Jeff Wright)

157th TFS/169th TFG (SC, with F-16As). The 4th TFW held a planning conference at Seymour Johnson on the 6th with both units on their upcoming deployment to Al Kharj. Eight days later, the National Guard Bureau (NGB) instructed the two units not to repaint their aircraft in desert colors, but to leave them in their ghost grey mode. A call-up message was issued by CENTAF Rear for the 169th (December 25) and 174th (December 29). On the 23rd, CENTAF Rear issued ATO 91-27 for the deployment of three 174th TFW F-16 cells, each containing six aircraft plus two air spares and to deploy with three external tanks, one travel pod, one ECM pod, full chaff and flare dispensers if available, two AIM-9s, and guns loaded and armed. Departure from Syracuse was scheduled at 02/1900Z Jan 91. Arrival was on the 3rd. Twenty-two F-16As of the 169th TFG arrived at Al Kharj on December 30. The other two aircraft were broken down at Cairo West. A team was sent to repair them and the aircraft arrived on January 3. The ANG F-16As were part of a force of 248 USAF F-16A/Cs, more than any other U.S. fighter aircraft. On the 7th, the ANG contingent included 100 officers and 804 enlisted personnel. One day later, CENTAF Rear tasked the 187th TFG at Donnelly Field (Alabama ANG) to be prepared to provide ten Block 10 F-16As and aircrews as replacement fillers for both deployed ANG units, while the 152nd Tactical Reconnaissance Group (TRG, Nevada ANG) was to be prepared to provide two additional RF-4Cs. On December 9, TFWP 4 reported that of the ALQ-119 pods possessed by the 138th and 157th TFS, 13 were NMC, Not Mission Capable. The Wing also stated that under the then current conditions, F-16s would not be launched without operational ECM pods. On January 13, the 138th TFS lost an F-16, when its pilot experienced an engine failure. The aircraft crashed in central Saudi Arabia after the pilot had ejected safely.

The ANG Fighting Falcons lacked the equipment needed for night and weather operations. For this reason their pilots staged a variety of daylight attacks on targets

in Kuwait and southern Iraq, including SA-3 missile sites, bridges, airfield and the Republican Guard. During their missions no F-4G Wild Weasel or ECM support were generally not directly attached to ANG F-16A packages, but would be in the area of their targets.

On the first day of Desert Storm, the two ANG F-16A units flew 68 sorties with 113.6 flying hours, 32/47.6 and 36/66.0 for the 138th (18 F/A-16A) and 157th TFS (24 F-16A) respectively. The first mission flown by pilots of the 157th TFS involved SEAD in support of a strike package that was tasked to strike Kuwaiti Ahmed Al Jaber and Ali Salem Airfields. During the 10-15 minutes in the target area, pilots struck ten Iraqi SAM sites in marginal weather conditions. The Squadron's second mission was planned late in the afternoon and involved re-striking Ahmed Al Jaber Airfield. However, near the end of the pre-briefing the pilots were informed their target had been switched to strike several SA-2 sites near the Airfield. In addition, takeoff time was delayed by two hours while the pilots were strapping in. Sixteen F-16As each of the 157th and 138th TFS took off, with the 138th taking off first. Each F-16 was configured with two Mk 84s, meaning standard 20-second single-ship takeoffs. On this mission the strike package included four F-4Gs and two EF-111As. The F-4Gs had arrived over the target area before the arrival of the F-16s. Pilots of the Weasels informed their F-16A colleagues that the lower cloud deck had lots of holes over the target area. One of the 157th TFS pilots was Capt Wayne Phillips. His flight lead was Maj John Bellinger. Capt Phillips,

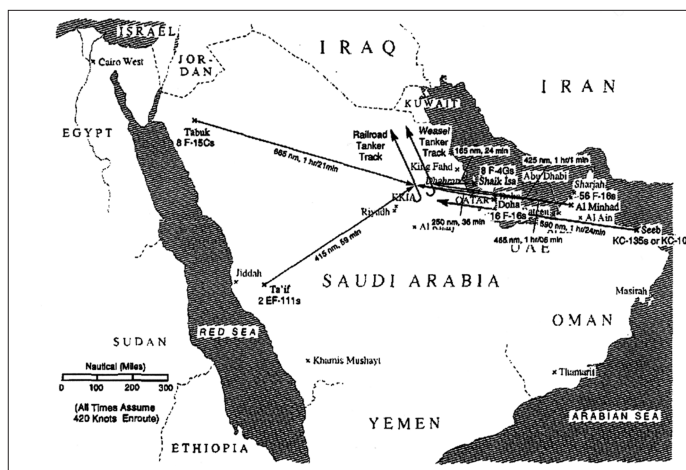
Because of clouds and the twilight, we soon lost sight of the other two flight members. Because our target was obscured by clouds, it was decided that Bellinger would do his best CCRP (Continuously Computed Release Point) delivery and I would release manually when I saw his bombs would come off. But due to the weather I could not see his bombs and with 15 other pilots on the radio, I did not hear his 'pickle' call either. When I heard him say 'off left', I pickled and felt the bombs leaving my wings.

Although the main concern of Phillips was to avoid colliding with another F-16, all 32 pilots made it back safely to Al Kharj, although nobody had landed there before after dark. Pilots of the 138th and 157th TFS flew 3,645 combat sorties, dropping 3,500 tons of ordnance without losing a single aircraft to Iraqi fire.

According to GWAPS, 79 F-4G sorties were flown from Shaikh Isa on D-Day, the most in DESERT STORM, with aircrews expending 123 AGM-88s. The 79 sorties resulted in 118 strikes, including 15 OCA (Offensive Counter-Air, against radar installations and radars collocated with SAM sites) and 103 SAM (like SAM sites/complexes) strikes.

Day Three, Package Q

To exploit the principle of mass and economy of force, large force employment packages, typical of DESERT



Package Q Air Elements, Day Three, January 19. (GWAPS)

STORM, consisted of up to 90 aircraft. They were preceded by a dedicated SEAD package of F-4Gs and EF-111As, plus dedicated CAP for protection from Iraqi fighters. However, a great deal of coordination was required, increasing dramatically with the size of the package.

The MAP for Day Three, January 19, called for three packages to strike targets against Baghdad, Package F, G and Q. 'F' (TOT, Time Over Target, 0700L) was composed of 70 aircraft, including four F-4Gs, while 'G' (TOT 0715L) numbered 60 aircraft, including eight F-4Gs. None of these sorties were flown due to weather, tanker, or scheduling problems, or a combination of these factors. In the meantime, however, in the KTO (Kuwait Theater of Operations), Package E of four F-4Gs and two CAP F-15Cs, supporting four B-52Gs struck the Madinah Division with an 0600L TOT, while two hours later, four F-4Gs supported a Marine Corps package with two EA-6Bs, four F/A-18s with HARMs, 12 strike F/A-18s and four CAP Hornets to strike the Madinah and Hammurabi Divisions. F-4Gs supported several other Packages with B-52Gs, like 'T', with eleven Stratofortresses and two EF-111As, striking Tikrit targets. The third package, 'Q', with an 1630L TOT, was the biggest package in DESERT STORM. As the ATO for this day was not in the GWAPS files, the movement up to the Iraqi border was described in general terms, such as probable take-off times and tanker rendezvous times on the basis of known distances and flying times. Participating aircraft were eight F-4Gs, two EF-111As, 72 (56 and 16) F-16Cs, and 12 F-15Cs, which meant that aircraft from five different bases had to proceed to the tanker tracks. Pilots of F-15Cs at Tabuk needed 2+ hours (620 NM, taking off at 1307L), those of the EF-111As at Taif 1.6 hours (485 NM, taking off at 1330L) and F-4G crews, only 30 minutes (105 NM, taking off at 1437L). Like a finely tuned watch, mission commanders adjusted their speeds so that their aircraft arrived at the tanker tracks on the mark.

Aircraft supporting the Package were KC-135 tankers (tracks used were Railroad and Weasel, each with up to eight tankers), E-3 AWACS, EC-130E ABCCC (Airborne Battlefield Command and Control Center), EC-130H COMPASS CALL, and RC-135V/W RIVET JOINT aircraft.

Depending on their tanker track, F-4G aircrews at Shaikh Isa in general had flights of 250-300 nautical miles (NM) before reaching Iraqi air space. In reality, they often faced longer distances, as missions formed up on tanker tracks and then crossed the border as integrated packages. To execute their missions, allied aircraft required extensive mid-air refueling and by January 1991, CENTAF had established a series of refueling tracks, which stretched from the Persian Gulf all the way across northern Saudi Arabia to the Red Sea. Each track was aligned north-south with anchors separated by 50 NM. Refueling altitudes were between FL 180-280. Most of the tracks had 2-5 tankers, which operated at different altitudes within their track. It required careful coordination as often tankers came from different airfields.

Due to distance and fuel consumption, Package Q F-4Gs were configured with only two HARMs. Yet, not much time could be spent in the target area and it also limited flexible maneuvering. Tanker drop off was at 1547L, some 175 NM and 40 minutes after reaching the tanker rendezvous point. It took another 50 NM and eight minutes before reaching the Saudi-Iraqi border. After crossing it, Baghdad was reached after some 265 NM at around 1630L. From the moment 'Q' approached Baghdad's air defenses, Weasel crews engaged SAM sites. The first F-16Cs to strike were the 56 of TFWP 388 (Al Minhad, UAE), hitting the nuclear research facility near Baghdad. A TFWP 401 (Doha, Qatar) report stated, among others, 'unfortunately, for the following F-16s, the F-4G SEAD package had fired all its HARMs and left the area, as did the covering F-15s'. However, according to MG Buster Glosson, in an April 1992 interview with GWAPS personnel, there was a problem with the Weasels allocated to the mission. Either because of fuel, timing, or the decision of the package commander, not all appeared to have made it to the Baghdad area. Moreover, some of the aircrews did not fire all their HARMs, which suggested they had to leave because of fuel problems. The GWAPS Database showed that only six HARMs were expended. Maj John Nichols of the 614th TFS stated in his July 1992 interview that up to the Weasel call they were leaving, SAMs had been fired by the Iraqis the ballistic way. Following this, many SAMs were guided, forcing his flight members to take evasive action and jettison ordnance and fuel tanks. Two F-16Cs of the 614th were hit by SAMs and crashed. Their pilots, Maj Jeffrey Tice and Capt Harry Roberts, ejected successfully, taken POW, and released on March 6, 1991. A number of lessons were learned from Package Q: Baghdad's defenses remained lethal and, consequently, it was not worth the risk to send conventional packages to strike targets there. Therefore, Package Q was not repeated, with F-16 packages becoming smaller, more manageable and easier to coordinate and fly.

Day Four

On D+4, January 20, F-4G aircrews flew a combined 61 combat sorties, totaling 69 strikes, 22 OCA and 47 against SAMs. B-52Gs flew 27 combat sorties, all air in-



After the Turkish Parliament gave its blessing, the U.S. was authorized to increase its forces at Incirlik. One of the units involved was the 23rd TFS, which, on January 17, 1991, deployed from Spangdahlem with initially seven F-4Gs and 12 F-16Cs. The photo shows an F-4G and F-16C of the 23rd on a wet 'last chance' before takeoff to the Turkish base. (USAF, TSgt Fernando Serna)

terdiction. As usual, the Stratofortresses were supported by F-4Gs. Four of those 61 sorties were flown by Michelob 61-64 flight, led by Col Gelwix and Uke, who made his most satisfying HARM shot ever. As he described,

It was a night sortie and we were supporting a three-ship B-52Gs with the call sign Boston 30-32. Their mission was striking the Headquarters of the Medinah Republican Guard Division, which was located just outside the north-west border of Kuwait. We had talked with Boston 30 on the STU III, so we knew their TOT and the attack axis was 150 with an egress to the south. We had already stepped and were checking the flight in at engine start time, when we received a call from Squadron Ops, informing us our tanker for the night had aborted and that according to Riyadh there were no spares. Knowing the BUFFs had already taken off and were already flying over the barrens of western Iraq, we were betting they were unaware of our dilemma. As we would already be going to be well beyond the planned Joker/Bingo fuel with no chance of a post-attack refueling, it would mean landing short at one of the Coalition bases just south of the Kuwait border. While still on the ground, we decided on breaking the flight into four singles with 20-mile in-trail spacing to extend our collective on-station time, allowing us to cover the B-52G's vulnerability period. Once airborne, it all went pretty much as planned. As we approached the target, we were able to find Boston 30 on the radar, still being 15 miles from the threat ring. Less than a minute later, an SA-6 target tracking radar was up and we started working it. As the bombers were still outside the target threat and betting the SA-6 was focused on the B-52s, we delayed the HARM shot for a few seconds. We fired, made the perfunctory Magnum call and verified the time to impact cue looked good. Just as the SA-6 guidance radar came up, we got an excited call from Boston 30's EWO, informing us he thought they were going to shoot. I was able to tell him OK, HARM time to impact is x seconds as they were launched on. He did not need to tell me, we were also seeing it, as the fly-out cue soon went :00

and four seconds later, the SA-6 'went dotted'. Boston 30 was one happy aircraft commander, who promised us a case of Scotch...still waiting. We then 'zoomed for the moon' for fuel, did our best imitation of a space shuttle descent and were able to make it back to Shaikh Isa, logging a single bag 1.9.

The 61 sorties flown from Shaikh Isa and Incirlik increased the combined total for the first four days to 286, 76 OCA and 243 strikes against SAMs (319).

Decrease

F-4G aircrews also participated in the Scud campaign. After rescheduling two packages of F-111Fs from air defense and SRBM (Short-Range Ballistic Missiles) targets in Kuwait and Tallil, 26 F-111Fs were sent on 21/0530L to Scud sites near H-2 and H-3. They were supported by eight F-4Gs, six EF-111As and 16 CAP F-15Cs. At 23/2015L January, four F-4Gs, two EF-111As and eight CAP F-15Cs supported 20 Taif F-111Fs which struck suspected Scud sites and shelters at Qalat Salih Airfield. The next morning, at 0400L, a similar package hit the H-2 airfield shelters.

On January 28, F-4Gs and A-10A Warthogs struck an SA-3 site northwest of Ali Al Salem AB, signaling "the birth of the 'Wart Weasel'." A package of three B-52Gs and four Saudi Tornado IDS aircraft were supported on a February 2 strike against the Republican Guard by F-4Gs of Coors flight. One of the F-4Gs were flown by a 90th TFS crew, Capt Vince Farrell and EWO, Capt Ed Fisher. He picked up several radar signals on his electronic gear, but not enough information to expend an AGM-88.

On February 4, CENTAF reported that the size of the average strike package was beginning to decrease. However, as the number of sorties remained essentially constant, this meant that the actual number of packages flown increased. Sixty-three packages were flown, including three by JTF-PF, Joint Task Force Proven Force. Thirty-nine CENTAF packages were flown against Republican Guard-related targets. In general, JTF-PF continued to fly three packages daily.

By Day 28 of the Air Campaign, February 13, it had become obvious the Coalition had established almost complete dominance in the skies over Iraq. This meant, for instance, that SEAD sorties no longer directly supported most KTO strike packages: F-4Gs flew orbits to seek out and strike SAM sites that came up. However, F-4Gs and EF-111As still accompanied packages, striking deeper in Iraq. That day, 14 large force packages were flown. For instance, a massive package of 12 B-52Gs were supported by eight F-4Gs, three EF-111As and four CAP F-15Cs. Struck was the Taji Missile Repair Facility. Fifty-seven combined F-4G sorties were flown.

In an 21/0300Z February Sitrep, ARCENT (U.S. Army Forces, Central Command) stated its aviation battalions continued their attacks on Iraqi forces. Elements of the 24th Attack Helicopter Battalion struck an early warning radar site near As Saman AB, 62 NM inside Iraq and in the 45th Infantry Division rear area, destroying a van, two



'McDonalds' at the Lik. It was next to the 23rd TFS Ops shelter for crews to have meals. L-R, Cpts Cal Tinkey, Keith Snyder, Dave Lujan, Billy Harvey, Eric Larson, and 1/Lts Sid Mayeux, and Mark Devane. (Karl Dittmer)

AA guns and several vehicles. On their way in, the AH-64A Apache helicopters were supported by F-4Gs, EF-111As and EC-130Hs, providing SEAD.

Liberated

CINCCENT reported on D+38, February 24, the beginning of the Offensive Ground Campaign, that Coalition aircraft flew the highest number of sorties to date (3,062, of which 1,648 by CENTAF. Its overall aircraft mission-capable rate was 94.3) with the majority in direct support of allied ground forces. RAF Tornado GR.Mk 1s and Buccaneer S.Mk 2Bs, escorted by F-4Gs, struck Hardened Aircraft Shelters (HAS) at Tallil and Jalibah Airfields. That number was surpassed two days later when 3,200 sorties were scheduled in 52 packages (JTF-PF flew 116 sorties). On February 27, Coalition forces flew 2,940 sorties (1,651 by CENTAF with an 93.1 percent overall mission-capable rate) and JTF-PF, 119 against the Tajo steel fabrication plant.

Also on the 27th, President Bush declared Kuwait as liberated and Iraq as defeated and ordered suspension of offensive air operations at 28/0500Z February. To celebrate, Col Karp hosted a TFWP 35 end-of-war party at the 'Weasel Dome', which was opened for business on Decem-



The 23rd TFS 'gang' at Incirlik. (Karl Dittmer)

ber 15 and was located just off-base. It included a bar, a Pizza Hut, a Baskin-Robbins and a stage area. In his assessment, Col Karp stated, for instance, that overall he was absolutely thrilled with the results: the aircrews performed brilliantly, the support forces did a tremendous job and the aircraft did extremely well.

In a 01/2115Z March message, CINCCENT informed the JCS that in 43 days of the air war, Coalition forces flew over 110,000 sorties.

The redeployment of US forces was called DESERT FAREWELL, popularly called DESERT CALM. Yet, defensive CAPs, reconnaissance, AWACS and Scud response sorties continued to be flown.

AGM-88

In a 06/0800Z October message, CENTAF Fwd requested CINCCENT, in addition to previously stated logistics priorities, to move, among others, all available AGM-88 HARMs. CENTAF Fwd, in a 13/0800Z November Sitrep to CINCCENT, placed munitions back on his logistics priority list by requesting immediate shipment of 1,000 AGM-88s.

Due to the relatively short distance from Shaikh Isa, F-4Gs of the 81st TFS were configured with four HARMs and a centerline fuel tank during two-thirds of the missions flown in the KTO. Weasels, scheduled for missions into the Baghdad area carried two -88s and three fuel tanks.

The AGM-88 proved to be the chief lethal component of effort to suppress enemy air defenses. It homed in on radar emissions and destroyed the emitter. Of the 1,961 HARMs expended by U.S. aircraft, F-4G and F-16C aircrews fired some 1,067. Aircrews of TFWP 35 fired 905 (13 were jettisoned), with 254 radars recorded as destroyed, for a 28 percent success rate. Navy and Marine Corps aircrews fired 894 HARMs. During the first week, some 1,000 HARMs were expended. Also, seven AGM-45A/B, eight AGM-65D and four AIM-7 missiles were fired. One of the eight Mavericks was expended from Jim Uken's F-4G against a Thin Skin height finding radar. He stated,

There was a big difference between firing an AGM-65 and a HARM, as the Maverick requires much closer in, lower altitude employment. Due to the requirement to place the target in the missile's narrow Field of View (FOV), located on your radar scope and which can be converted to a TV picture, is a rectangular depiction of the FOV. Once the target is placed within the FOV, you can track the threat, physically identify and lock onto the target, in this case the Maverick's infrared picture, and then make sure the missile 'sees' and is locked onto the target before firing. I estimate our shot was probably 2-2.5 miles out. On this mission we also carried a Shrike, but it was not frequency-capable against the Thin Skin radar.

Both -45s and -88s home in on the radar energy being emitted, but the big difference and advantage of the HARM is it memorized its position and killed the radar, even when it would be shut down quickly. On January 1, 1991, there were 2,579 HARMs on hand, with a requirement for 2,500.

USAF Air Order of Battle/Shaiikh Isa

Type	1 Sep	1 Oct	31 Dec	1 Feb+
F-4G	24#	36*	48**	49**
RF-4C	0	0	5++	18++
Total	24	36	53	67

all 561st TFS

* 12 F-4Gs of the 81st TFS/52nd TFW arrived on September 5.

** 12 F-4Gs of the 52nd TFW arrived on December 26. A 13th aircraft arrived on January 1, 1991 from Moron.

+ Shaikh Isa also hosted 125 Marine Corps aircraft: 12 EA-6Bs, 20 A-6Es, 78 F/A-18A/C/Ds, and 15 KC-130s.

++ The 152nd TRG was activated on December 3, scheduled to deploy to Al Dhafra, Saudi Arabia and then redeploy to Shaikh Isa. Initially to Al Dhafra, to enable the 117th Tactical Reconnaissance Wing (TRW, Alabama ANG) there to acquaintance their Nevada colleagues with the mission and desert flying ops and to transfer three of its aircraft. The first 152nd TRG C-141 departed on December 6. One day later, CENTAF Rear tasked 152nd to deploy three RF-4Cs to Shaikh Isa, beginning on December 10 via Seymour and Moron (Spain). The first 192nd TRS/152nd TRG personnel arrived December 7-9. On the 11th, a change to ATO 91-12 stated one of the three RF-4Cs to be deployed was to be from the 117th TRW. The three aircrews would meet at Seymour by December 14 and then deploy to Shaikh Isa. Change 2 to ATO 91-12 of the 12th changed the destination to Al Dhafra. The three aircraft arrived at Moron on December 16. Two aircraft arrived on the 19th from Moron, while the third one, an 152nd TRG aircraft, which required an engine change at Moron, arrived on January 1 at Shaikh Isa, in company of an F-4G. As the 152nd TRG aircraft apparently were not equipped with AIM-9 modifications, the unit was tasked to send mod kits so that the aircraft could be retrofitted. The five 152nd TRG RF-4Cs had relocated to Shaikh Isa by December 25, as on that date, the unit flew its first four of six scheduled recce sorties.

On November 18, 1990 CENTAF (Rear) notified TAC's 67th TRW at Bergstrom (TX) the 12th TRS was tasked to deploy aircrews, supporting personnel and 12 RF-4Cs to Shaikh Isa. Eleven C-141s, 358 personnel and the 12 RF-4Cs were deployed January 5-14, 1991. This meant all CENTAF F-4s were stationed at one location, Shaikh Isa. Radar-guided shots were fired at 12th TRS aircrews in only one encounter. Their final two recce Phantoms arrived at Bergstrom on May 18.

Aircraft Activity, Shaik Isa, according to TFWP 35

Unit	Desert Shield Sorties/Flying hours	Desert Storm Sorties°/Flying hours°°	Total
561TFS*	1,793/3,435	1,182/4,393**	2,975/7,828**+
81TFS+	1,006/2,007	1,149/4,194++	2,155/6,201+*
Total	2,799/5,442	2,331/8,587	5,130/14,029
12/192TRS	157/320	741/1,731	898/2,051+++
Grand Total	2,956/5,762	3,072/10,318	6,028/16,080

° 3,000th on February 27; °° 10,000th on the 26th.

* Twenty-six different F-4Gs were employed, including two that arrived on January 20 as attrition aircraft, 97254 and 97256. Averaged 28.1 sorties/104.6 flying hours per day.

** 3.7 sortie duration average.

**+ also flew 138 sorties/380 flying hours during March in DESERT CALM.

+ Twenty-five different F-4Gs were employed, including 97254 which was transferred from the 561st after the loss of 97571 on January 18. Averaged 27.3 sorties/99.8 flying hours per day.

++ 3.6 sortie duration average.

+* also flew 166 sorties/252 flying hours during March in DESERT CALM.

+++ also flew 221 sorties/425 flying hours during March in DESERT CALM.

Air-to-Ground Expenditures

Service	Type	AGM-45	AGM-88	Total	%
USAF	53		1,067	1,120	55
USMC	7		233	240	12
USN	18		661	679	33
Total	78		1,961	2,039	100

One month later, the numbers were 1,786 and 2,500 respectively. To replenish the HARM's inventory, the Texas Instruments FY91 production contract was increased from 1,400 to 3,841. Only five Coalition aircraft were lost to Iraqi radar-guided SAMs, four of those not having F-4G support. During the latter stages, with the remaining radars rarely emitting, F-4G aircrews used AGM-65Ds against non-emitting radar targets.

The Wing's highest one-day sortie total was flown on February 3 with 86 sorties by all four squadrons.

The highest one-day flying hour mark, 308.3, occurred on the 10th. On the 21st, both F-4G squadrons flew their 1,000th combat sortie, respectively by Lt Col Rodney Miller and Capt James Carnahan (561st) and Capt Gary Gray and Maj Victor Lin (81st). The 4,000 combat hour point was passed by the 561st on February 23 and by the 81st on the 25th. Three-hundred-and-forty-thousand feet of film, 'shot' by RF-4C crews, were processed, more than 65 miles, with 19,000 photos developed.

The GWAPS Composite Sorties Database for January 16-February 28, 1991 showed F-4Gs flew a combined 2,683 sorties from Shaikh Isa and Incirlik, 2,676 OCA, five training and two other. The average daily number for the period was 63.3 sorties.

At the peak of DESERT STORM, 308 KC-10A and KC-135A/E/Q/R tankers were either deployed in the AOR (222) or supporting from outside the AOR (86). They accomplished 60,184 DESERT SHIELD/STORM refueling events/sorties, of which 3,331 to TAC F-4G aircraft, while USAFE F-4Gs were involved in 1,730 in-flight refueling events/sorties.

Only one F-4G (81st TFS) was lost in combat, on 19/0255Z January on a night Wild Weasel mission. The aircraft, 97571, ran out of fuel after it was hit by AAA. The crew, Capts Tim Burke and Juan Galindez (EWO) ejected safely and were back to business two days later. With 2,676 combat sorties flown, the loss rate per 1,000 sorties was 0.4.

JTF Proven Force

On August 2, 1990, EUCOM (European Command) had fourteen RAF Upper Heyford (UK) F-111Es on WTD (Weapons Training Detachment) and four Torrejon (Spain) F-16Cs on a NATO (SIOP, Single Integrated Operational Plan) commitment at Incirlik, Turkey. However, it was not known if the Turkish government would allow strikes against Iraq.

While CENTCOM planners were wrestling with the details of the deployment and defense of Saudi Arabia, Pentagon air planners were requested to begin planning for offensive operations. In the meantime, a small cadre of 52nd TFW pilots at Spangdahlem were conceptualizing opening a second front in northern Iraq by conducting Electric Warfare from Incirlik. This would force Iraq to divert air defense resources from the south, thus helping CENTCOM's air component in case of a war against Iraq. However, while passing through Wing, 65AD, USAFE and EUCOM channels, the concept grew into a full-scale operation, which ultimately reached CJCS, Gen Colin Powell. He supported the concept, which was continually being reviewed and refined.

As a result, USCINCEUR, on December 23, issued an OPOD (Operations Order), establishing Joint Task Force Proven Force (JTF-PF). Four days later, MG James Jamerson, USAFE's Deputy Chief of Staff of Operations (DCO), was appointed as its commander. It was formally activated at Ramstein (Germany) effective 7/0800Z January 1991. Concurrently, the Turkish General Staff approved the deployment of a small ADVON to Incirlik.

Incirlik, nicknamed 'the Lik', on January 1, 1991 hosted 48 USAFE aircraft, ten F-15Cs (had arrived on December 16 for a WTD), 24 F-16Cs (on September 18, Torrejon deployed 20 additional F-16Cs and maintenance personnel for NATO exercise DISPLAY DETERMINATION 90), and the 14 WTD F-111Es, which had not redeployed. Also, SAC had deployed four KC-135As.

On the 13th, the Turkish government approved the construction of 30 12-person tents to house projected JTF



Block 30 F-16C 86-0232 of the 23rd TFS leads a gaggle of F-4Gs and F-16Cs, all configured with AGM-88s, for takeoff in a daylight combat mission from Incirlik. The aircraft that just took off must have been a KC-135A tanker. (Karl Dittmer)

personnel at Incirlik and Batman. Two days later, the U.S. Ambassador in Turkey was formally informed by the Turkish Foreign Ministry that the 'temporary' deployment of 48 additional aircraft was approved, which would bring the total of combat aircraft at Incirlik to 96. To house all incoming personnel, a PRIME BEEF Civil Engineering team constructed a tent city, dubbed 'Tornado Town'.

On January 16, USAFE activated Composite Wing Provisional, 7440 (CWP 7440) at Incirlik as the JTF-PF's air component, with BG Lee Downer as commander. It was attached to USAFE. The Wing assumed control there of the 39th Tactical Group. Also, the first JTF ELUSIVE CONCEPT Special Operations Forces and the first echelon of JTF's Headquarters arrived, deployment of the augmentation package was initiated with the arrival of four F-111Es from Sigonella (Sicily), the first two C-5 Galaxy aircraft arrived in support of PROVEN FORCE, and the Turkish Parliament approved the deployment of the 48 additional aircraft. Within hours, 30 arrived and by next morning, all 48 were in place. As of January 18, the JTF had 120 aircraft on station, including 12 SAC KC-135As, 12 SOF aircraft and two TAC E-3B AWACS aircraft, with 104 being mission capable by 1200Z. Units and aircraft were attached to CWP 7440. In an 02/0703 February Sitrep, CINCEUR stated SECDEF had directed the deployment of six RF-4Cs, CREEK STORM, which arrived on the 3rd. Support personnel and equipment for the requested Pennsylvania ANG EC-130E VOLANT SOLO propaganda broadcast aircraft arrived on February 25. The Hercules arrived the next day with its first sortie scheduled for the 28th.

(Re)deployment of the 23rd TFS

While DESERT SHIELD was in full swing, USAFE efforts were initiated to develop a concept to further the war effort, if one was to start. This would ultimately be Operation PROVEN FORCE. 52nd TFW personnel for this operation were identified early in the fall and trained nearly exclusively for this contingency. However, they had to wait

until January 16, 1991 before the Turkish Parliament authorized the use of Incirlik for strikes against Iraq. As a result, the only mixed fighter squadron still in USAF, the 23rd TFS, commanded by Lt Col Dave Moody, launched its initial elements of seven F-4Gs and 12 WW F-16Cs to Incirlik, arriving very late in the evening on January 17. Their ADVON team had arrived earlier with enough time to procure a few cots, some rooms, and most importantly, to lay the ground work for the first strikes. By 18/1200Z, all F-16s and five of the seven F-4Gs were mission capable. Another five F-4Gs arrived later that day, bringing the number to 12, which also meant that the Wing deployed 100 percent of its F-4G PAA, Primary Authorized Aircraft. As not all F-4Gs were MC and maintenance had not enough spare parts to get them ready for the first strikes, they had to cannibalize F-4Gs that were too broken to fly. A second problem was the fact that before all maintenance personnel could be deployed, weather closed Spang for three straight days. Spang personnel was then supported by F-16C personnel of the 612th TFS, which had deployed to Incirlik in September 1990. Some of them had an F-4 maintenance background. The opposite was also the case. For instance, Spang maintenance personnel launched RF-4Cs and when Clark's F-4Es arrived with insufficient maintenance personnel, they were reconfigured to a combat configuration by Spang personnel. After the weather broke, more personnel trickled in. It also enabled the Wing to fly 168 HARMs to Incirlik, just in time to not be forced to upload the aircraft with AGM-45 Shrikes as the AGM-88 inventory had been expended to about zero.

As of January 17, the Squadron was attached to the 7440th, which ended on March 15, 1992. In general, the Squadron participated in packages with three mixed fourships in the afternoon and two at night. The Wild Weasel Air Order of Battle on February 1 was 13 F-4Gs and 12 F-16Cs. The GWAPS Composite Sortie Database showed F-4Gs flew 389 sorties from Incirlik.

Combat Operations

On the first day of DESERT STORM Turkey approved operations against Iraq from its territory, Incirlik (combat) and Batman, which became a Forward Operating Location (FOL) for CSAR MH-53Js. EUCOM maintained operational control over the JTF, but CENTCOM exercised tactical control. While sorties were in CENTAF's daily MAP, JTF-PF built its own strike packages without formal coordination, while issuing its own ATO. At least, as long as JTF stayed north of the 35th parallel.

The Wing's focus was on targets in northern Iraq, flying two daylight packages and one at night against, for example, nuclear, chemical, command and control facilities and airfields. A package was as big as 71 aircraft (January 22, cancelled due to weather), while 147 aircraft participated in the three packages on January 24). Compared to the Coalition air forces in the Gulf Region, the 7440th lacked aircraft capable of designating targets for PGMs, Precision-Guided Munitions, (F-111Fs) and stealth aircraft (F-117As). As to the former, by request of Gen Jamer-



In general one nighttime and two daylight packages were flown from the Lik each day. The photo shows a 23rd TFS pilot standing in front of his Block 30 F-16C, 86-0260, prior to a nighttime combat sortie. The aircraft is configured with CBU-87s and a centerline ECM pod. (Karl Dittmer)

son, four aircrews and F-4Es of the 3rd TFW at Clark, modified to carry the Westinghouse AN/AVQ-26 PAVE TACK pod, arrived on February 21. However, the C-5 Galaxy with the pods ran into maintenance problems en route and arrived after combat operations had ended. As to the latter, no F-117A sorties were flown from Incirlik.

Combat sorties from Incirlik were initiated in the evening of January 17, when F-111Es struck radar targets in northern Iraq. This proved to be the only mission package flown without F-4G and/or EF-111A support. The planners played on that by changing the initial targets to a lower threat area. The first 'real' mission was flown at 18/0410L January, by a package of ten CBU-58 carrying F-111Es, which were supported by four F-4Gs, an EC-130H and eight CAP F-15Cs. Targets were in the Mosul, Tikrit, Kirkuk, Quayyarah and Erbil areas.

On January 20, JTF forces flew three packages, striking targets at Kirkuk and Quayyarah. One F-111A sustained minor battle damage. When Iraqi Mirage F1s tried to interfere, two were shot down by CAP F-15C Eagles of Capt David Prather and 1Lt David Sveden, both of the 525th TFS (Bitburg). In a 25/0703Z January Sitrep, CINCENR stated JTF PROVEN FORCE had noticed reduced Iraqi air defense radar activity on all missions. The first air-to-ground combat credits were accomplished on the 28th by pilots of F-111Es and F-16Cs, when they struck four B-767s at Mosul Airfield and eight SU-20/22 Fitters at Kirkuk.

On February 2, 109 sorties were flown by three packages against targets in northern Iraq. At Tuz Khurmatu, an F-4G crew scored a direct Imaging Infra-Red (IIR) AGM-65D Maverick hit on a parked IL-76 Candid, while F-16C pilots reported direct hits on dispersed fighter aircraft. On the 13th, three packages were launched, involving a total of 125 aircraft, including supporting aircraft. In the first, with a TOT of 0920L, four F-4Gs and four F-16Cs (SEAD), plus two EF-111As and six CAP F-15Cs supported 20 F-16Cs, striking the Kirkuk SOC. In the second, TOT 1545L, a similar number of F-4G/F-16C and EF-111A aircraft, plus eight CAP F-15Cs, supported 12 F-

Wild Weasel sorties according to USAFE Command Management Review

Type	Sched	Flown	Hours	Av MC	Av poss
F-4G	429	414	1,247	69.6*	13
F-16C	580	577	1,760	85.6	13
Total	1,009	991	3,007		

* versus USAFE 78.9 FY91 standard.

156 AGM-88s, 48 AGM-45s and 52 AGM-65D/Gs were expended.

16Cs, which struck targets in Qayyarnh West. The third package struck the Kirkuk SOC again at 2310L with 12 F-111Es, which were supported by three F-4Gs and three F-16C SEAD aircraft, two EF-111As and six CAP F-16Cs. The next day, 87 sorties were flown against targets in northern Iraq. Participating F-4G aircrews engaged Tall King, Flat Face and SA-3 sites at Erbil and Mosul.

In the final two weeks of the Air Campaign, JTF-PF F-16Cs and F-111Es came south, almost reaching Baghdad, for the first time on February 15. Four days later, for instance, F-4Gs supported F-16Cs on a daylight strike. Thirteen strike packages with some 140 F-16Cs and F-111Es, supported by CENTAF SEAD/EW aircraft, attacked the Taji military complex, which surrounded an airfield on the northern outskirts of Baghdad, and included, for example, air and ammunition depots, a steel fabrication plant and aircraft engine repair facilities. In addition, about 70 B-52G sorties struck Taji. The next day, a large package of F-16Cs and newly arrived F-4Es were supported by F-4Gs, EF-111As and CAP F-15Cs when they struck the Al Mawsil military research and production facility and the Al Shahiyat liquid fuel Research and Development facility. Eventually, after the SAM threat decreased, a few WW F-4G and F-16C aircraft were used for missions other than SEAD. For example, F-4Gs started to

employ AGM-65 Mavericks, providing pin-point accuracy on any target selected, while F-16Cs were used to protect HVA (High Value Assets) such as the E-3A/B and RC-135V/W when F-15Cs were tasked for other missions.

Aircraft in 100 attack packages flew 4,936 sorties and 15,313 hours, striking 108 targets and expending 3,500 tons of ordnance. There were no combat losses, although an F-16C was lost due to engine problems. Its pilot, Capt Strom, ejected safely and was recovered. Five Iraqi aircraft were downed by pilots of F-15Cs. The number of USAFE personnel deployed was 2,630.

The 52nd Chronology stated its deployed 36 F-4Gs and 12 F-16Cs flew 2,061 sorties with 7,200 flying hours, 1,000 support personnel were deployed, 142 separate radar sites were destroyed. According to the 52nd TFW background information publication the conclusion was, 'The F-4G/F-16C WILD WEASEL Team worked!'. Also, that SEAD worked and that the single organization structure of the 7440th was certainly a factor why no combat losses were suffered.

Overall, during the combat phase of both deployments, flying hours more than tripled and their average sortie duration doubled. Sorties and flying hours during DESERT STORM were equivalent to four months of peacetime flying. ■

For further JTF-PF information, see *Air Power History*, Winter 2021, Volume 69, Number 4.

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The first 23rd TFS F-4Gs and F-16Cs redeployed to Spangdahlem on March 15, 1991. The crew deplaning is Capt Keith Snyder and Randy Comer (EWO). The intake of their F-4G shows at least 15 silhouettes of killed Iraqi radars. It is supposedly also the aircraft of which the crew, on February 2, expended an IIR (Imaging Infra-Red) AGM-65D against an IL-76 Candid, which was parked at Tuz Khurmatu, for a direct hit. (Karl Dittmer)

Joint Task Force Proven Force and the Gulf War (Part 6)



An Air Force HC-130P Combat Shadow of the 67th Special Operations Squadron is framed in the cockpit of a Navy CH-53E Super Stallion of Helicopter Combat Support Squadron (HC) 4, while preparing to conduct an in-flight refueling during an Operation PROVIDE COMFORT (OPC) mission. The four HC-130N/Ps were part of the first group of aircraft to be deployed to Incirlik after the initiation of OPC. [USN, PH3 Klein]

Theo van Geffen

After the liberation of Kuwait City on February 27, 1991, President Bush ordered the suspension of offensive military operations as of midnight eastern time. As a result, on 28/0800L February, a Coalition-declared ceasefire went into effect. The next month, the redeployment of 545,000 U.S. troops was initiated. However, as part of USAF's residual assets in the Gulf Region during the ceasefire period, F-4G Wild Weasels would continue to provide SEAD (Suppression of Enemy Air Defenses) capability in case hostilities would begin again. Some three weeks after redeploying to Spangdahlem, part of the 23rd TFS returned to Incirlik with F-4Gs.

Earlier we looked at the development of EC-130E, EF-111A and F-4G Advanced Wild Weasel aircraft, and at Joint Task Force PROVEN FORCE (JTF-PF), B-52G, EC-130E, EF-111A and F-4G combat operations. In this 6th and final part the focus is F-4G post-war (combat) operations.

Post-Desert Storm, Turkey

1991

After Iraqi acceptance of the cease-fire terms on March 3, USCENTAF (United States Central Command Air Forces) on the 9th verbally approved JTF-PF's plan to redeploy personnel, aircraft and equipment. Return of U.S. forces from the Gulf Region and Turkey was called DESERT FAREWELL, popularly called DESERT CALM. For instance, aircraft of Tactical Fighter Wing Provisional, 35 (TFWP 35) flew 525 sorties with 1,057 flying hours from Shaikh Isa, of which 304 and 632 respectively by the two F-4G squadrons (561st and 81st TFS) and 221 and 425 respectively by the two RF-4C units (12th and 192nd TRS).

Aircraft being redeployed on the 9th from Incirlik (nicknamed the Lik) were 22 F-111Es of the 20th TFW (Tactical Fighter Wing) and five EF-111As of the 42nd ECS (Electronic Combat Squadron). On March 15, the first 23rd TFS contingent returned to Spangdahlem (nicknamed Spang). Five days later, the JTF-PF headquarters element redeployed to Ramstein, but Composite Wing Provisional, 7440 (CWP 7440) remained at Incirlik with a residual force until the official conclusion of the Gulf War ceasefire (it was announced by the United Nations on April 11). This meant continuation of defensive Combat Air Patrols (CAPs), reconnaissance, E-3 AWACS (Airborne Warning and Control System) and Scud response sorties.

Iraqi response to the rebellion of Kurds in northern Iraq, with the goal to establish an autonomous Kurdistan Region,



(Above) Army Sgt Frederick McMullen prepares for the start of his UH-60 Black Hawk helicopter before flying a mission in support of Operation PROVIDE COMFORT to protect and supply Kurdish refugees. [USAF, SrA Gudrun Cook]

(Below) USAF fighter forces returned to Incirlik Air Base in Turkey after President George Bush ordered U.S. European Command (USEUCOM) to assist the Kurds and other refugees in the mountains of northern Iraq, to begin on April 6. F-4Gs of the 52nd TFW were also involved. The 'hero shot' shows one of the aircrews, Captains Bruce 'Spike' Benyshek and Larry 'LA Bud' Allen (EWO). [via Bruce Benyshek]



resulted in an estimated 1.5 million refugees. On March 3, General Norman Schwarzkopf, commander of U.S. Central Command (CENTCOM), warned the Iraqis that Coalition aircraft would down any aircraft flying over the country, violating the ceasefire. The Iraqis did anyway and pilots of two Bitburg 53rd TFS F-15C Eagles, Captains John Donecki and Thomas Dietz, each downed a SU-22 Fitter in northern Iraq, on March 20 and 22 respectively.

As a result of Iraq's repression of its civilian population, the United Nations Security Council on April 5 passed Resolution (UNSCR) 688, which, among others, condemned Iraqi repression, demanded an immediate end to it, and insisted that Iraq would allow immediate access

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One of the Coalition partners in Operation PROVIDE COMFORT (and later in NORTHERN WATCH) was the UK, nicknaming their part Operation WARDEN. Provided were, among others, VC-10 tankers and Jaguar fighter/reconnaissance aircraft. The photo shows three Sepecat Jaguar GR.Mk 1As of RAF's No. 54 Squadron. [USAF, TSgt Anna Hayman]

by international humanitarian organizations to those in need of assistance in all parts of the country. Later that day, President George Bush ordered U.S. European Command (USEUCOM) to assist the Kurds and other refugees in the mountains of northern Iraq, to begin the next day. This resulted in a chain of reactions. On the 6th, only some six weeks after the Coalition-declared ceasefire, Operation PROVIDE COMFORT was initiated. USEUCOM assigned Major General James Jamerson, the former commander of JTF-PF, as its commander and directed him to deploy to Incirlik immediately, where he arrived by C-20 Gulfstream early on Sunday, April 7. With no prior planning JTF-PC was underway. Earlier, on the 6th, Colonel Bryan Hooten, commander of the 39th Special Operations Wing (SOW) at Rhein Main (Germany) had been alerted for immediate deployment to Turkey. He was directed to load three of his COMBAT TALON MC-130Es (7th SOS) and deploy them to Turkey as soon as possible to airdrop relief supplies to refugees, to be followed by three additional MC-130Es, four COMBAT SHADOW HC-130N/Ps (67th SOS) and six PAVE LOW MH-53Js (21st SOS). The three MC-130Es arrived on April 6 with two aircraft accomplishing the first airdrops the next day, totaling 27 tons, with coordinated fighter protection, supplied by aircraft of CWP 7440. 'Slick' C-130s followed. On the 9th, the mission was expanded to sustain the entire refugee population for 30 days. On arrival in Turkey, the 39th initially became part of JTF EXPRESS CARE in Silopi (Turkey), which was renamed on April 17 as JTF ALPHA. The 10th Special Forces Group and British marines were also part of JTF ALPHA. Its counterpart JTF BRAVO was established on April 18 near Zakho, northern Iraq. Its mission included, for example, the establishment of a 30-kilometer Iraqi security zone and construction of humanitarian service support bases. It was augmented by the 24th Marine Expeditionary Unit (MEU), which arrived on April 15 with 16 helicopters and also supported JTF ALPHA. Initial Naval involvement comprised USS Theodore Roosevelt's Carrier Battle Group.

During the first twenty days, C-5 Galaxy and C-141 Starlifter aircraft flew 75 missions from CONUS and Europe to Turkey. C-5s also transported allied troops from Italy to eastern Turkey, from where they moved overland to Zakho.



Another Coalition partner in PROVIDE COMFORT (and later also in NORTHERN WATCH) was France, which supplied, for example C-135FRs and Sepecat Jaguar As. The photo shows a C-135FR in company of a Jaguar A. The shadow of a second Jaguar A is superimposed on the tanker with the photo probably made by its pilot. *[via Bruce Benyshek]*

7440's Mission was to provide air security for air drops and combat air support for any ground forces committed in the future. To bolster the Wing, the 20th (42nd ECS, EF-111A), 36th (525th TFS, F-15C), 52nd, 81st (92nd TFS, A-10A) and 86th TFW (F-16C), plus the 66th ECW (Electronic Combat Wing, 43rd ECS, EC-130H) were directed to deploy additional aircraft to Incirlik. For instance, the 52nd TFW began deploying personnel and six F-4G WILD WEASEL aircraft of the 23rd TFS to Incirlik, also on April 6. After arrival on the 7th of personnel and cargo aircraft of Coalition partners United Kingdom and France, General Jamerson renamed his organization Combined Task Force Provide Comfort (CTF-PC) on April 9. Jamerson remained commander until April 17, when he was replaced by Army Lieutenant General John Shalikashvili, becoming the latter's deputy commander for air. That day, ground forces were added to protect the refugees, for whom temporary camps were built. To allow the Kurds to return to their homes, a safe zone was established, using air and ground forces.

At the same time, a No-Fly Zone (NFZ) was established north of 36° N, covering some 19,000 square miles, to be enforced by U.S., UK and French aircraft, specifically banning all Iraqi air activity. Although the NFZ technically was in CENTCOM's zone, EUCOM was allowed by CENTCOM to patrol northern Iraq. PROVIDE COMFORT's northern NFZ set the stage as model for NFZs elsewhere, notably Operations SOUTHERN WATCH in southern Iraq and DENY FLIGHT in Bosnia.

Delivery of humanitarian relief goods was the responsibility of a six-nation airlift operation, which also involved



An F-4G Phantom of the 81st FS at Incirlik about to taxi out for the next PROVIDE COMFORT mission. *[Bruce Benyshek]*



The 23rd FS still teamed up with F-4Gs in PROVIDE COMFORT, but this time the Phantoms were not theirs like in PROVEN FORCE, but of their colleagues in the 81st FS. Four 23rd pilots by one of their F-16Cs, from left to right, Cal Tinkey, Mark Kirchhoefer, Mark Altobelli, and Brad Cushman. *[Karl Dittmer]*

countries such as Canada, Germany and Italy. On May 7, in two separate incidents ten minutes apart, pilots of an A-10A and F-16C reported coming under AAA fire over northern Iraq.

CTF-PC withdrew from northern Iraq on July 15, with a residual force remaining in Turkey to deter Iraqi reprisals against the Kurds. By that time, 23,000 Coalition personnel, of which 12,300 U.S. personnel, had been involved in CTF-PC. USAF transport aircraft had transported more than 7,000 tons of relief supplies. Nine days later, July 24, PROVIDE COMFORT ended. U.S. and coalition fighter aircraft provided air cover for such aircraft as USAF C-130s, Italian G-222s, British Hercules C.Mk 1/3s and French C-160 Transalls. Coalition forces flew 700 fixed-wing sorties, including 500 by U.S. aircraft.

On the same day, Operation PROVIDE COMFORT II (OPC II) was initiated. It included 5,000 personnel of six Coalition nations, 70 helicopters, 26 Incirlik-based aircraft and a Carrier Air Wing. Air Force Reserve (AFRes) units supported the Operation with HC-130 rescue, C-130 transport and MH-60G special ops aircraft.

Operation WARDEN was the British contribution to PROVIDE COMFORT. On September 3, Jaguar GR.Mk 1As of No. 54 Squadron (RAF Coltishall) initiated patrol of the airspace over northern Iraq, supported by VC-10 K.Mk 2/3 tankers of No. 101 Squadron (RAF Brize Norton).

On October 1, the 52nd TFW not only was re-designated 52nd Fighter Wing (and the squadrons, Fighter Squadrons), but its overall aircraft authorization decreased from 72 to 60, to include one squadron with 24 F-4Gs (81st FS) and two squadrons with 18 Block 30 F-16C/Ds each (23rd and 480th, the latter unit transferring six F-16C/Ds to the 23rd). This resulted in a swap-out of personnel, F-4G and F-16C/D aircraft, and equipment. Non-authorized F-4Gs and F-16C/Ds, except for a small number of BAI (Backup Aircraft Inventory) aircraft, were transferred to other units. At Incirlik, the F-4Gs of whoever provided them were then teamed up with F-16s from various USAFE Viper squadrons. Also, ANG and AFRes F-16 squadrons would be deployed to Incirlik for 60 days for this reason.

On January 1, 1992, the 52nd FW had personnel and eight of its F-4Gs deployed to Southwest Asia, four aircraft at the Lik and four at King Abdul Aziz AB at Dhahran (Saudi Arabia, SA). According to the publication 'United States Air Forces in Europe, Historical Highlights, 1942-1992', the Wing maintained personnel and eight F-4Gs in Southwest Asia up to August 27, 1992 as part of CENTCOM's Operation DESERT CALM residual force to help enforce Iraqi compliance with the ceasefire conditions (see later).

During the winter of 1991-92, USAF transport aircraft, supplemented with Coalition and commercial aircraft, transported 119 tons of food and water and more than 4,000 bundles of clothing to the Iraqi Kurds.

After the A-10A's Combat Air Support (CAS) capability of the 81st FW (RAF Bentwaters) was no longer necessary in the course of the year and with the impending inactivation of the Wing, aircraft and personnel were redeployed and replaced by Precision-Guided Missile (PGM)-capable F-111Fs of the 48th FW (RAF Lakenheath), giving CWP 7440 a deep-strike capability. The 48th was converting to F-15E Strike Eagles with the first one arriving on February 21. While deployed to Incirlik, Aardvark pilots of the 48th, which included those of the 492nd FS, flew 1,185 sorties.

In 1992, the 52nd FW continued to support OPC II with all three squadrons participating. It looks like the F-16C squadrons deployed for 45 days at a time, joining the already present F-4Gs of the 81st.

1993

In the second half of January the Iraqis kept aircrews of Coalition aircraft quite busy while they flew their missions over northern Iraq preventing them from violating the NFZ. In two separate incidents on January 15 a pair of F-111Fs were fired at by Iraqi AAA, resulting in no hits



F-4G 90263 of the 81st FS taxiing at Incirlik. It is adorned with a shark mouth. Design and stencil was done during the Squadron's final deployment to the Lik in 1993 by Bruce Benyshek. He painted the first jet. According to him, six to seven F-4Gs had it at Incirlik. A violation of Air Force rules, but the Squadron Commander did it for the troops and esprit de corps. [Matt Ellis via Bruce Benyshek]



Aircraft supporting PROVIDE COMFORT also included EF-111A Ravens. A crewmember of an EF-111A is pre-flighting his aircraft in a shelter at RAF Upper Heyford before deploying to Incirlik in September 1991. [USAF, SSgt Cynthia Alderson]

and no retaliation. Also, the 81st FS deployed personnel and five F-4Gs to Incirlik, joining their Wing colleagues there of the 23rd FS with their F-16Cs. Two days later, Iraqi AAA fired at two F-16C Fighting Falcons. As on the 15th, there were no hits and no retaliation. On January 17, Captain Craig Stevenson of the 23rd FS scored the second F-16 kill with a single AIM-120 AMRAAM, while flying F-16C 86-0262. The Iraqi aircraft involved was a MiG-23 Flogger, whose pilot violated the northern NFZ. Stevenson's flight lead was Lt Col Steven Heil, the Assistant Director of Operations (ADO) of the 81st, who flew an F-4G and gave him the OK to press the attack. Also on the 17th, the aircrew of one of a flight of two F-4Gs struck an air defense site. F-4G aircrews came into action again the next day, when they struck SAM sites in northern Iraq, again with AGM-88s. Pilots of F-16Cs dropped CBU's on Bashiqa Airfield after being shot at by AAA. On the 19th, a 81st FS F-4G aircrew fired a HARM at a SAM radar site east of Mosul, after it 'locked on' their aircraft. About three hours later, pilots of two F-16Cs dropped CBU's on an AAA site after being fired at. A missile battery was struck on January 21 by aircrews of an F-4G and F-16C, who escorted a French Mirage F1CR recce aircraft when the Iraqi search radar began tracking the aircraft.

While personnel and aircraft were deployed at Incirlik, the 81st received its first (Block 30) F-16C on February 18 from the 56th FW at MacDill (FL), initiating its re-conversion from F-4Gs to F-16C/Ds.

On April 9, three F-16Cs, accompanied by an F-4G, were fired on by Iraqi AAA near the Saddam Dam in northern Iraq. The F-16 pilots expended their CBU's. Nine days later, a flight of one F-4G and one F-16C, flying north of 36° N, were illuminated by an Iraqi tracking radar site, which was situated south of the parallel. The crew of the Phantom fired an AGM-88 at the site and destroyed it.

To continue its SEAD mission after the phase-out of its Phantoms, conversion of the 52nd FW from Block 30 F-16Cs and F-4Gs to WW F-16CJ Block 50D aircraft was initiated on June 25, 1993, when the 480th FS received the first five of its complement of Fighting Falcons. It was expected the Wing would possess two Block 50D F-16C squadrons by early 1994 (squadrons would also receive a couple of Block 50 F-16Ds). A little over a month later, the 480th transferred the first of its 20 Block 30 F-16C/Ds to the 178th FG of the Ohio ANG at Springfield. Block 50D



The caption states that a USAF F-16 is refueled in flight over southern Turkey prior to a PROVIDE COMFORT mission over northern Iraq as the pilot of another F-16 awaits his turn. A closer look at the photo reveals the aircraft are F-16Cs of an Air Combat Command unit. [SrA Gudrun Cook]

(and 52D) F-16CJs were configured with the HARM ALIC, Avionics/Launcher Interface Computer, which furnished the aircraft an additional mission, the full autonomous HARM employment capability. In this respect, the AN/ASQ-213 HTS, HARM Targeting System, was developed by Texas Instruments, which received a contract in 1991. The pod, externally mounted on either the left or right engine inlet hard-point of the F-16, provides substantial all-weather situational awareness to pilots on the types and locations of surface-to-air defense radars, as well as passing ranging solutions to the missile when launched. As first Block 50/52 F-16CJ Squadron, the 480th FS achieved IOC (Initial Operational Capability) in January 1994. On the 15th, it deployed personnel and F-16CJs to Incirlik to support OPC II. The original HTS pod was upgraded in 1996 with software Release 5 (R5). R6 was fielded in May 2000 and R7 in September 2006, employing a new digital receiver and GPS hardware capability, along with using Link-16 connectivity between aircraft.

In September, personnel and F-4Gs of the 81st FS returned from Incirlik to Spang for the last time. They were replaced by personnel and six F-4Gs of the 561st FS, which deployed from Nellis for their first and only, but extended deployment to Incirlik. It was also the Squadron's first deployment since its reactivation on February 1, 1993. A



RAF VC-10 K.Mk 2/3s operated from Incirlik in Operation Warden. The September 1993 picture shows VC-10 ZA-142 'C' of No. 101 Squadron in company of F-4G 97232 of the 561st FS. The aircraft joined up for a picture as an F-4G cannot be refueled by a VC-10. [Bruce Benyshek]

swap-out of 561st personnel took place on December 27. The majority of Spang's F-4Gs and aircrews were transferred to the 561st FS, with the final four aircraft leaving for Nellis on February 18, 1994, ending more than 27 years of Phantom II ops at Spang. The 561st FS was reactivated at Nellis and assigned to the 57th Operations Group through Air Combat Command (ACC) Special Order (SO) GB-37 of January 27, 1993 as a second F-4G unit to support both PC and OSW. Idaho ANG's 124th FW was also responsible for F-4G training, while the 422nd TES with its two CB-coded F-4Gs at Nellis was responsible for test and evaluation of new equipment and development of tactics with maintenance being accomplished by the 561st. The total PAA (Primary Aircraft Authorized) on September 30, 1994 was 50, with 26 at Nellis and 24 at Boise.

The first 48th FW F-15E Strike Eagles to serve with OPC II arrived at Incirlik on August 2. It initiated a hectic pace of deployments that would, for nearly six years, keep at least one squadron constantly deployed. The deployment involved six aircraft, personnel and equipment of the 492nd FS. Seventeen days later, the crews of two mixed pairs of F-4Gs and F-16Cs reported possible SA-3 launches west of Mosul. Response was by the F-16C pilots with CBUs. Three hours later, 492nd aircrews of two F-15Es dropped four Laser-Guided Bombs (LGBs) on the site.

On October 1, USAFE re-designated the 39th Tactical Group at Incirlik as the 39th Wing. The mission of the Wing was to provide operational and logistical support for all U.S. forces in Turkey and to operate a Quick Reaction Alert Force for Supreme Allied Command Europe. As of October 15, 1971, the Wing was assigned to TUSLOG, The United States Logistics Group, until its reassignment to 16th Air Force on July 17, 1992. Attachment (since January 16, 1991) to CWP 7440 remained unchanged until November 30, 1995, when the Operations Group Provisional, 7440 was assigned to CWP 7440 as an element.

1994

A CTF-PC February 14 message to USAFE contained the Concept of Operations during the pending runway closure at Incirlik, which was a planned 6-9 month effort. The 39th Wing plan called for fighters to operate on the parallel, E-3 AWACS aircraft out of Adana and KC-135s out of Ankara.

In March, Lieutenant Colonel Jim 'Uke' Uken, Ops Officer of the 561st FS, took over the Detachment at Incirlik with a swap-over of personnel only. According to Jim deployments were made as 'packages'. When aircraft were rotated, a transport, usually an C-141, would accompany the jets with onboard a maintenance EST, Enroute Support Team, spare engines and 'all kinds of stuff' that might be needed to fix any maintenance problems. "We had the oldest aircraft on the ramp, but we were famous for our Fully Mission Capable (FMC) rate and never fell below the USAF standard. Ever!". He returned to Nellis in June. At that time, the 23rd FS with its F-16Cs were also deployed to Incirlik, still with its Block 30 F-16s. Uke, as to the standard OPC II mission,



While deployed with the 561st to Incirlik in June 1994, Bruce Benyshek completed his 2,000 F-4 Phantom flying hour. Result was the traditional water hose down. [via Bruce Benyshek]

It was flown with two F-4Gs and two to four F-16s. The Phantoms were configured with three fuel tanks, two AGM-88 HARMs, two AIM-7 Sparrows, an ALQ-184 and ALE-40 chaff and flare dispensers. When F-16s launched as a four-ship, they would split into pairs to enter east and west CAPs on border crossing. When there were only two F-16s, they became wingmen. As usual, we were out in front doing our own thing first. We had support from USAFE tankers, but they came in from a different base as they were no longer stationed at Incirlik as in the war. The refueling track was well east of Incirlik and not too far from where you could turn directly south into northern Iraq after refueling. If an F-4G had a problem requiring RTB, Return to Base, an F-16 would escort him home and we would revert to one F-4G and three F-16s operations. The two 'pushes' a day, and us flying six sorties a day, left us only two sorties a day to do local training like air-to-air currency, etcetera. We probably did some two versus two against the others in that case.

On April 14, two U.S. Army UH-60 Black Hawk helicopters and their crews (159th Aviation Regiment, 6th Battalion, Giebelstadt, Germany), assigned to Operation PROVIDE COMFORT II, were transporting U.S., United Kingdom, French, and Turkish military officers and diplomats of the MCC (Military Coordination Center) and Kurdish representatives to a meeting south of the security zone. Two 53rd FS (52nd FW, Spangdahlem) pilots of F-15C Eagles mistakenly identified the two helicopters as Iraqi Mi-24 Hind helicopters and shot them down, killing all 26 people on board the UH-60s. Improper coordination of Army helicopter activities with USAF operations, poor coordination aboard the 963rd Airborne Warning and Control Squadron (552nd ACW, Tinker) E-3, and poor recognition skills displayed by the Eagle pilots were examples that contributed to the tragic accident.

Not so long after the Black Hawk losses, Jim Uken was on a PC II mission with two F-16 elements, which were there as much for air-to-air as being Wild Weasel support. The F-4Gs were centered between the two F-16 elements. Jim stated,

An 'intruder' was called out by NATO AWACS as coming in high and fast heading to the no-fly line. This obviously spurred interest among the Viper crews with their see all radars and it soon became apparent the vector was to the northwest. With our 30+-year old radar I gained a contact, at some distance, and quickly assessed they were at approximately 65,000 feet and not fast. My immediate thought was it looked like a U-2. I warned the F-16s to not shoot until we had AWACs approval, etcetera. In the interim, the Viper pilots started losing their radar contact as the thought of moving their search pattern to higher altitudes didn't occur to them while their 'fangs hanging out'. The intruder 'punched' the line, went about 20-30 nautical miles northwest to Saddam Lake and did a 180 turning south. At mission debrief I relayed the events to Intel, etcetera, and it became a discussion point that PC II and OSW were not keeping each other informed. It was a U-2 on the OSW Air Tasking Order.

On November 27, the 190th FS deployed for the first time to Incirlik, relieving the 561st FS, which returned to Nellis with personnel and six F-4Gs on December 12. During its extended tenure at Incirlik, July 30, 1993-December 9, 1994, the 561st was concurrently at Dhahran for the October 30, 1993-January 4, 1994 and July 15-October 5, 1994 periods. Colonel Uken in this respect,

We set up three-month rotations as the standard. After returning home, it would normally take six months before somebody would deploy again. To keep track, I kept a 'good deal / bad deal' book. With rare exception, you did not go to Incirlik unless you'd been at Dhahran first. Given deployed and home station reality, e.g., accomplishing deployment training and playing in every Red / Green Flag at Nellis, we never 'maxed out'. In addition to the 24 F-4Gs we had 'on our books', we also had five spares, which never happens unless there is a reason. Normally, a squadron has to absorb major phase inspections and depot level maintenance with the number of aircraft it has. In our case, the spares allowed us to do so without losing any of our basic 24 aircraft. We also had two F-4Gs which were being used for BDR (Battle Damage Repair) and WLT (Weapons Load Trainer). So, we



An F-4G of the 561st FS streaks past the Erbil Observatory in the eastern part of the northern NFZ during a PROVIDE COMFORT II mission. It looks like it's not undamaged anymore. [Bruce Benyshek]

had six F-4Gs with eight aircrews at both Incirlik and Dhahran. If we had to bring jets home for major phase or depot level maintenance, two of the incoming crews would arrive a day or two early and the jets flown back by two crews going home. There was frequent airlift from Ramstein to both locations, so replacement aircrews and maintenance personnel arrived through Ramstein.

The 190th started three, thirty-day rotations to The Lik. The unit returned to Boise on March 15, 1995.

France's contribution at Incirlik in the 1993-94 period included four Mirage F1CR recce aircraft, four Jaguar As and one C-135FR. For 1995 this was five Jaguar As and one KC-135FR. Aircraft in Operation Warden in the 1993-4 period included eight Tornado GR.Mk 1s and two VC-10 K.Mk 2/3 tankers. For 1995, the number of Tornados was decreased by two, but the number of tankers did not change.

1995

The 190th returned to Incirlik on September 15 for its second and OPC II's final F-4G deployment. Eleven days later, an F-4G aircrew flew OPC II's 50,000th combat sortie, an accomplishment nearly five years in the making. As the CTF's Chief of Staff, Army Colonel Tom MacHamer, stated,

This is a Coalition accomplishment. It's not an American achievement, but true teamwork effort between the four Coalition partners. The presence and resolve of the Coalition proves the dedicated professionalism of all the people who have passed through Incirlik in the four plus years of Provide Comfort.

With regard to the scheduled departure of the F-4G from USAF's inventory in 1995, Major Mike Bell, the 190th FS Det commander, stated the unit had worked with F-4 Phantoms for 20 years, initially with the recce version, RF-4C, since 1975, and then with the F-4G, since 1991, and it would be a sad day when they were gone.

To celebrate the F-4G's departure from Incirlik, CWP 7440 organized a 'Pharewell Dinner' and an open house, including an F-4G four-ship flyby on December 3-4. Redeployment was initiated on the 12th. IDANG spent almost two years in the Gulf area, longer than any other ANG flying unit. More than 1,000 combat sorties were flown during two deployments each to Incirlik and Dhahran. HARMs were expended in four separate combat missions from the latter. Two aircrew members became the first, and possibly the only, ANG officers to fly 100 or more combat sorties over Iraq. F-4G operations at Boise were ended on April 18, 1996 with the final four aircraft departing Gowen Field, ID for AMARC two days later.

Epilogue

From the inception of PROVIDE COMFORT through 1995, 19 nations contributed. The cost to the U.S. of hu-



Training at Shaikh Isa got a boost when it was possible to coordinate missions with units of Carrier Air Wing (CVW) 9 onboard the USS Nimitz (CVN 68) after it replaced the USS Ranger (CVA 61) in the Arabian Gulf. The photo shows a formation with a Strike Fighter Squadron (VFA) 147 F/A-18C Hornet, an Electronic Attack Squadron (VAQ) 138 EA-6B Prowler, and two 81st TFS F-4G Phantoms. [via Bruce Benyshek]

manitarian aid alone was \$M 150.2. A total of 153,389 hours were flown by USAF aircraft, directly supporting the Operation for a cost of \$M 544.4. Through October 31, 1995 Coalition sorties numbered more than 50,000. Ultimately, the U.S. would fly over 62,000 sorties, including 42,000 fixed-wing and 20,000 rotary-wing, before OPC II ended on December 31, 1996 and was replaced by Operation NORTHERN WATCH.

Units deploying to Turkey were primarily USAFE units and usually did so with 4-8 aircraft. As major maintenance and inspections could not be accomplished at Incirlik, aircraft concerned were flown to home base and replaced by 'fresh' ones. Although, for instance, ANG and AFRes units stepped in, USAFE units had to deploy virtually every year, impacting training and scheduled maintenance. But it could even be worse, as elements of the 81st (T)FS not only deployed continuously to Shaikh Isa/Dhahran in the March 1991-May 1993 period, but also to the Lik in the 1991-September 1993 period.

F-4G post-DESERT STORM deployments to Incirlik (source, ACC/HO)

PERIOD	UNIT/NUMBER
Apr 6-14, 1991	81TFS/6
Mar-Sep 1993	81FS/4-6-5
Sep 1993-Dec 9, 1994	561FS/6
Dec 10, 1994-Mar 15, 1995	190FS/6
Sep 15-Dec 12, 1995	190FS/6

Post-DESERT STORM, Bahrain

1991

When the remaining 13 F-4Gs of the 561st TFS departed Shaikh Isa on March 23, 1991, the Squadron left behind personnel and 24 F-4Gs of the 81st TFS. As Tactical Fighter Wing Provisional, 35 (TFWP 35) still existed, OPCON (Operational Control) remained with that Wing, which was headed by Colonel Neil Patton, the DO (Deputy

for Operations) of the 35th TFW, who did not return to George. Redeployment of the 81st was initiated on April 5, when personnel with eight aircraft returned to Spang. Left behind at Shaikh Isa then were the 16 aircrews and some 100 maintenance/support personnel, a mix of those who remained and volunteers after the war, plus 16 F-4Gs, 'the Shaikh Isa 16'. The next rotations were scheduled and non-voluntary for the most part, but routine deployments for all personnel. Lieutenant Colonel Pete O'Day became the first 81st TFS Detachment commander.

On May 10, another eight Phantoms with personnel returned to home base. When Colonel O'Day returned to Spangdahlem in late May, his job was taken by Major Bart Quinn. He was a 1975 ROTC graduate and, except for a spell flying CT-133s while on exchange to the Royal Canadian Air Force, flew all four Air Force versions of the F-4 Phantom, of which the last 11 years the F-4G. On December 26, 1990, as an Assistant Ops Officer in the 480th TFS, he led a six-ship from Spang to Shaikh Isa, where all 480th personnel was reassigned to the 81st TFS, including scarves and patches.

After the departure of personnel and aircraft, those remaining of the 81st Det had Shaikh Isa for themselves except for the Bahraini Air Force units. For instance, rooms usually had one officer to a room. After the Gulf War, mostly training missions were flown, but no tankers were available, although in-flight refueling was accomplished for currency. There were no real radars to work against, other than the own air traffic control radar. Missions were in the 1.2 to 1.9-hour range. Aircraft were not configured with AGM-88 HARMs and/or AIM-7 Sparrows, which saved fuel. Day-to-day flying post-fighting was making up various scenarios. One involved defense suppression (weaseling), using APR-47's 'phantom ranging'. The computer in the F-4G's AN/APR-47 included a program that could generate its own Electronic Order of Battle (EOB). It could generate SAM symbols on the system's screen that the crew could use for training purposes. The EWO could input latitude and longitude coordinates to tell the computer where to center the simulated SAMs. Another scenario involved some of the other F-4Gs acting as interceptors, so 'turn and burn' could be done doing a little dogfighting. Although there were rails on the F-4Gs, no missiles were carried. No BFM (Basic Fighter Maneuvers) was flown, as this would require downloading the wing tanks while BFM was only flown with a centerline tank. It would take too much work to reinstall the wing tanks in case of an emergency. Major Jim Healy, EWO in the 81st TFS at Shaikh Isa, described the intercept scenario as follows,

Usually, two or four aircraft split up and flew to opposite ends of the airspace to get 20 or so miles of separation, and then turned toward each other. One airplane was designated as 'fighter', doing the intercept and the other as the 'target', being intercepted. The crew of the fighter tried to find the target on their radar and conduct an intercept, ideally resulting in a 'stern conversion', where the fighter ended up in a position behind the target. Then the target/fighter



'Shaikh Isa Shacks Moving Day'. The trailers that were used by the 81st TFS as Ops buildings were loaded on flatbeds/eighteen wheelers for transportation to their new home, King Abdul Aziz AB at Dhahran. The Squadron even brought its duty desk along and used it there for life support, helmets, etcetera. [Bart Quinn]

roles would be reversed for the next intercept. Often we'd brief that at the point in the intercept the target saw the fighter, the target would begin to maneuver and a 'dogfight' would ensue.

In general, forces flying in Saudi Arabia, including Shaikh Isa's F-4Gs, were very restricted on what they could do and where they could fly.

USS *Nimitz*, CVN 68, departed home port Bremerton on February 25, 1991 to deploy to WestPac, relieving USS *Ranger*, CVA 61, on April 18. Onboard was Carrier Air Wing (CVW) 9, with, among others, two squadrons with F-14B Tomcats and two with F/A-18C(N) Hornets. ATO (Air Tasking Order) tasking included maintaining a six-hour alert strike package, while the Wing's Carrier Airborne Early Warning Squadron (VAW) 112 with its E-2C Plus Hawkeyes, making the aircraft's maiden deployment, maintained an AEW barrier in the North Arabian Gulf. After being relieved by USS *Abraham Lincoln* (CVN 72), she returned to Bremerton on August 24, 1991. Major Healy stated the following,

They and the 81st TFS took advantage of our mutual proximity to do some training, inter-service cooperation, that was normally not available and to break up the routine of 'peace-time' ops at Shaikh Isa. It was also good both would become familiar with each other in case we would have had to restart combat ops. They appreciated the fact they could get ashore and off the ship for a couple of days either at our base or at the U.S. Navy base in Manama, Bahrain. And most of us had never been on a carrier.

Major Quinn in this respect,

*We developed a great working relationship with the Bahrainis and the aircraft assigned to the *Nimitz*. We flew composite training exercises down in southern Saudi Arabia, 'the Empty Quarter', an area of nothing than desert. Of*

course the Saudis were aware of this. It was package training like we would actually employ if required. Navy aircraft would fly out of Shaikh Isa with us or launch from the carrier and we would meet like in the war at a rendezvous point, form up and go in. Bahraini F-16s generally flew fighter cover and F-14 Tomcats would be Red Air or reserve, pending on training requirements. The Ops Order we followed was developed by our Ops Officer and EWO Major Tom Moe, who did a great job organizing all this.

Major Healy was deployed in late March from Shaikh Isa to CENTAF's TACC, Tactical Air Control Center, in the basement of the Royal Saudi AF headquarters building in Riyadh to coordinate Weasel operations and tasking when necessary, doing all phases or parts of a renewed air campaign. Joe drove back and forth to Shaikh Isa a couple of times to keep current, taking him 2-2½ hours each way. According to Jim 'the scenery was desolate and boring with hours of nothing but sand'. The second time to do so was May 2, driving from TACC to Shaikh Isa around noon. Joe in this regard,

After I had been in about an hour, I was suddenly tasked to provide a tentative plan to provide F-4G escort for a U-2 mission over Iraq. I put a plan together after getting the basic facts, like targets, TOT, threat, SAM EOB, and tanker tracks. I then called the Squadron to give them a heads-up and left for Bahrain. I got there later in the afternoon and briefed Bart Quinn on the plan and said I'd wanted to take part if it came off. My training flight on the fourth was cancelled because of a horrendous dust storm. The word was the U-2 mission was on hold. Then on Sunday, the mission was on for the next day. I did fly and it was probably a unique instance when someone on a staff planned a combat operation and then flew in it!

Joe teamed up with his Desert Storm pilot, Captain Jim Hartle. They flew as Pearl 02 on Colonel Patton's wing. Aerial refueling was accomplished over Saudi Arabia. The flight was directly over Al Taqaddum, just south of the cen-



Before flying their F-4G Phantom from Shaikh Isa to their new home in Dhahran, Bart Quinn, the 81st TFS Detachment commander, was interviewed by Bahraini TV. Getting into their jet in the background are Bruce Benyshek and his EWO Jim Parker. [via Bart Quinn]

ter of Baghdad and right over Salman Pak, which was Jim's and Joe's target on the first night of Desert Storm. No signals came up. Flying time was 4.1 hours.

Bart Quinn with regard to the U-2 escort mission,

On May 6, we flew in a large mission in support of a U-2. It was in response to some opposition / threats to U-2 flights over Iraq, i.e., SAM activity. It was flown on May 6, but was called Cinco de Mayo Raid according to Zulu time. Fourteen of the 16 F-4Gs at Shaikh Isa participated. The aircraft were configured with two AGM-88 HARMs, two AIM-7Fs, an ALQ-131 ECM pod and three fuel tanks. Six aircraft, led by me, were planned in western Iraq and another eight, led by Colonel Patton, in Central Iraq, including Baghdad. We had tanker support on the way in, but none on our return trip. The only opposition seen was AAA fire along a road out west, which appeared to be large caliber guns. We could see smoke coming from the barrels. Accordingly, we moved away to deny them any barrage or lucky hits. Not a single Iraqi radar came on the air. The mission was a success with all aircraft returning without incident. No ordnance was expended.

Bruce 'Spike' Benyshek, an F-4G pilot, added the following,

Notification and planning were a couple of days prior to the mission. The most important information for us would be where the U-2 would be and when, so that we could evaluate threats and which ones to shoot. Wasting a HARM on a SAM that could not hit the U-2 would be defeating half of one's weapons load. There was a mass-brief, then each flight individually. My EWO was First Lieutenant Jim Parker. The flights of two were staggered to cover the U-2's TOT, Time-over-Target, which was quite long. The flights apart gave one hour thirty minutes. One or two flights might have gone to the tanker, and come back north one more time.

On the evening of May 21, the 81st had a party with all personnel, the Navy crews and their maintainers. Of the remaining eight WILD WEASEL aircraft, four were returned on June 27, soon after the Det's move to Dhahran. The final four F-4Gs were still at Dhahran as of December. TFWP 35 and Combat Support Group Provisional, 35 (CSGP 35) were inactivated effective August 2, 1991 through TAC Special Order (SO) GB-78 of the same date. In the meantime, TAC SO GB-37 of March 13, 1991 had designated and activated TFWP 4404 at Prince Sultan AB, Al Kharj (SA) and assigned it to USCENTAF for the purpose of command and control, administration and the exercise of Special Courts-Martial convening authority (UCMJ), all effective March 13. In addition, CSGP 4404 was designated, activated and assigned to TFWP 4404, also effective March 13. The new Wing replaced TFWP 4, assuming its mission, personnel and equipment, which, together with CSGP 4, was inactivated effective March 13 through SO GB-37. Assets assigned to TFWP 4404's subordinate units were F-15C (53rd TFS) and F-15E (335th TFS), ANG F-16As (138th and 157th TFS) and ANG C-



When the remaining 13 F-4Gs of the 561st TFS departed Shaikh Isa on March 23, 1991, the Squadron left behind personnel and 24 F-4Gs of the 81st TFS. As Tactical Fighter Wing Provisional, 35 (TFWP 35) still existed, OPCON (Operational Control) remained with that Wing. On the 23rd, Colonel Neil Patton assumed command of the Wing. He was the DO (Deputy for Operations) of the 35th TFW and did not return to George. On June 18, Col Patton and Major Joe Healy flew the last F-4G, 97202, out of Shaikh Isa. It must have been his final F-4G sortie, as after landing at Dhahran he received the traditional hose-down, which should not have been too bad because of the temperature. The photo shows Major Bart Quinn presenting Colonel Patton with a 81st TFS plaque. Others in the picture are Bruce Benyshek and Jim Elwell. [via Bruce Benyshek]

130H (166th TAG) aircraft, while plans were in place to also include F-4Gs, EF-111As and A-10As. EF-111A maintenance personnel visited Al Kharj on March 27 to check out base facilities, while two F-4Gs arrived at Al Kharj in the final week of March for the same purpose. Personnel and EF-111A aircraft of the 42nd ECS supposedly arrived at Al Kharj on April 11. Although eventually a move of personnel and F-4G aircraft from Shaikh Isa took place, the destination was not Al Kharj (see later). In the first week of April, the government of Saudi Arabia approved a block of airspace for training sorties by Wing aircraft. Also, F-15C aircrews of the 53rd TFS started flying exclusively at night. On April 18, the mission was taken over by the 335th TFS. Five days earlier, the Wing was informed by CENTAF that its aircraft were not to fly north of 36° N. CAP missions up to 36° N were continued to be flown to protect redeploying U.S. ground forces.

Aircrews of Navy F-14 Tomcats and F/A-18 Hornets arrived at Al Kharj on the 29th to discuss how they could conduct CAP in conjunction with USAF aircraft.

The May 7 redeployment plan put in motion, changed the nature of CAP sorties: it was no longer flown north of the DMZ, Demilitarized Zone, in Iraq, while CAP sorties over Kuwait and Saudi Arabia were flown to protect allied forces from a potential air threat. As of May 10, the alert commitment for F-15E aircrews of the 335th TFS was ended. On May 29, the Wing added the A-10A to its inventory when the 91st TFS arrived at Dhahran from RAF Bentwaters. The first sorties were local orientation sorties. Redeployment was on September 13.

On June 15, the Wing initiated its move to King Abdul Aziz AB at Dhahran. Four days earlier it was announced that the 22nd TFS (F-15Cs) would remain at Al Kharj until its redeployment to Bitburg (Germany). Personnel

and four F-4Gs of the 81st joined the Wing from Shaikh Isa after Colonel Patton had been directed by CENTCOM to move Spang's Det to Dhahran. He arranged money for the contractors to move its buildings.

Maintenance was part of the detachment. All routine maintenance could be accomplished locally, however, major work/inspections required the aircraft to be swapped out with jets from Spang. Maintenance personnel made a couple of Dhahran site visits to check out base facilities and prepare for the coming move, resulting in setting up operations there very easily. The Det never stood down with ops ending at Shaikh Isa and jets being ready after arrival at Dhahran. Bart Quinn,

At Shaikh Isa the Det had a couple of Crown Victoria vehicles. The 4404th guys were aware of them. They would brief us how they would take them when they got to Dhahran. However, Colonel Patton threatened non-judicial Article 15 punishment for ANYONE who gave up a vehicle! Lol! Most of the CVs remained with the Det and it was always fun to drive to our jets in a convoy of four Crown Vics!

Bart led a flight of two F-4Gs out of Shaikh Isa with two Bahraini F-16s on his wing. Bart's wingman was Bruce 'Spike' Benyshek. The flight could have been 15 minutes, but a ceremonial flyby was made over the harbor in fingertip formation and close aboard to Hotel Diplomat with a bunch of VIPs out on the balcony on the top floor. With the wait for the final appointed time, flying time was some 45 minutes. In the meantime, the infrastructure at Shaikh Isa had been dismantled. Bart in this respect,

The ops buildings were loaded on flatbeds / eighteen wheelers. To drive them over the causeway, where they barely fit, the air in the tires had to be let out. The Saudi border guards were losing their minds. But we got them to Dhahran, otherwise our maintenance, intel and ops would not have had any space to work. We even brought the duty desk with us and used it for life support, helmets, etcetera.

One of the pilots making the move to Dhahran was Spike Benyshek. He was stationed at Spangdahlem from May 1988 to April 1994 and then continued to fly the F-4G at Nellis with the 561st FS until the Squadron was shut down in April 1996. Initially, he had three-year orders in 1988, but after the war he was asked if he would like to stay longer. "Hell, yes" he reacted. He loved his 81st (T)FS assignment, the best Squadron he was ever in. And he loved Europe, in fact still does. Bruce was single and volunteered to do a lot of rotations from 1992-1995, helping the married guys out. Spike in this regard,

It typically went like this, three months in Dhahran, come home to Spang for a month, deploy to Incirlik for a month, back home for one month, back to Dhahran for three months, etcetera. That's how I got 238 sorties, of which 31 [were] DESERT STORM sorties and 207 NFZ sorties. In the former we expended 11 HARMs and two Shrikes, in the latter, no missiles.



Two F-4Gs of the 81st FS in the de-arming area at Dhahran. The aircraft still have their chutes trailing. On the right, two F-15 Eagles of the Royal Saudi AF. F-4G 97210 was one of the F-4Gs which were reassigned to the 561st FS when the Phantoms departed Spang. [Bruce Benyshek]

Around June 10, another Nimitz detachment visited Shaikh Isa and Joe Healy visited the carrier for some 5½ hours, getting a tour of the ship and watching launches and recoveries of several aircraft.

Joe was Colonel Patton's back seater when on June 18 they flew the last F-4G Phantom, 97202, out of Saikh Isa. After takeoff they meandered around eastern Saudi Arabia at relatively low altitude, until enough fuel was burned down and the aircraft was at landing weight. This meant, with the scheduled return to Spang on the 27th, he, and others, would be at Dhahran only for nine days. Most of the redeploying personnel were not happy about this.

According to Major Quinn, his Det was the second unit to arrive at Dhahran with the EF-111As being first. For a short period, the F-4G and EF-111A detachments were the only ones there.

Post-DESERT STORM, Saudi Arabia

1991

Operations at Dhahran were different from Shaikh Isa. Initially, the Det had a squadron space in a RSAF, Royal Saudi Air Force, building. However, there was not much interaction with them. The F-4Gs were almost two miles away and it took a while to get to them after the briefing. Later on, a new building was built closer to the

jets, called 'Tad-Town'. Every deployed U.S. squadron was in it. As commander of TFWP 4404, Brigadier General Tad Oelstrom directed its construction. No routine type training was accomplished any longer, but all Det's missions supported ongoing coalition operations such as air defense CAPs over Kuwait. All missions came down on the CENTAF-issued Theater ATOs and in general had tanker support fragged. However, SOUTHERN WATCH changed this all. Flying was still accomplished off the ATO, but now it was over all of southern Iraq. The rest was very much



F-4G 97558 of the 81st FS is being refueled by a KC-135R Stratotanker near the Iraqi border while on a SOUTHERN WATCH mission. It was another F-4G reassigned to the 561st FS. [Bruce Benyshek]



The 429th Electronic Combat Squadron (ECS) of the 27th Fighter Wing at Cannon (NM) was the sole EF-111A Raven operator in 1993-1998. Hence it had the responsibility to deploy detachments to both Incirlik and Dhahran. The photo shows EF-111A 60033 on a mission over Saudi Arabia. The Squadron's call sign in the AOR was 'Elvis'. [Bruce Benyshek]

in-house. The Wing at Spang remained responsible for the Det, including personnel, aircraft, etcetera.

Not only operations at Dhahran differed from Shaikh Isa, but also the living conditions. As to his new living conditions, Bruce stated,

The stay at Shaikh Isa was not bad. Basically, Bahrain was much more westernized and normal place to be. We'd fly a training sortie in the morning over Saudi Arabia, had lunch and dinner and maybe go downtown to Manama, which was a nice city. In June 1991, the powers that be decided to relocate us to Dhahran, only 30 miles away, but a different world. We lived in Khobar Towers, four or more aircrews in a suite setup, which was OK, but it was a closed compound inside the city. Saudi Arabia was a much more strict and controlled country. We didn't really like it there (Bruce used a less diplomatic term, but this author preferred to use a more diplomatic 'didn't like it there').

On June 20, the 49th TFW sent personnel and F-15A Eagles of the 9th TFS to Dhahran for the Wing's first of two F-15A deployments. The 9th flew some 850 sorties and was relieved by the 7th TFS, which returned to Holloman on December 12 with some 650 sorties flown.

July 1 saw a total swap of 81st Det personnel with four of the F-4Gs remaining at Dhahran. The other four Phantoms were flown back to Spang at 1300L on June 27 with the support of a KC-10A Extender. Joe about the redeployment,

Today was incredibly hot. After engine start, the wind was behind us and blew the engine exhaust and the 105°F desert air over us in the cockpit. I don't think I've ever been that hot. We were refueled 2-3 times. The flight took us up the Red Sea, across Egypt south to north, then turning north, once west of Sicily, going feet dry at the French coast, then into Germany.

Bart Quinn, Bruce Benyshek and other personnel followed on July 1 by commercial charter plane. Bart then be-

came the Wing's Chief of Wing Stan/Eval. Lieutenant Colonel Byron Beale took over the Detachment. While Dets remained deployed longer, personnel rotations in general lasted 45 days.

TAC SO GB-78 of August 2 inactivated TFWP 4404 and CSGP 4404 effective the same date, activated Wing Provisional (WP) 4404, assigned it to CENTAF Forward, activated four Provisional Groups, including Operations Group Provisional (OGP) and Logistics Group Provisional (LGP) 4404, and assigned them to WP 4404. In addition, GB-78 moved USCENTAF Forward from Riyadh to Dhahran.

To bolster the 81st TFS Det, the 35th TFW deployed personnel and four F-4Gs to Dhahran in late June as part of the ongoing U.S. presence in the Gulf Region. Bruce in this respect,

I think they deployed because we needed to give 81st personnel a break, as some had only been home for three months. We flew joint operations in contrary to missions flown in the Gulf War, so a Spang pilot might fly with a George EWO, etcetera. However, the big difference between TAC and USAFE was respectively, 'You will not do anything unless I approve it' and 'Don't do anything stupid or prohibited', which was refreshingly trusting. I loved USAFE. George personnel and aircraft joined our Det, which led to the unofficial 'activation' of the 3552nd VSF, 35 and 52 for the parent wings we were assigned to. We told the Wing commander 'VSF' stood for 'Vast Saudi Frontier' or 'Vicious Sand Fighter'. But it really meant 'Very Severely F.d'. The Wing commander supposedly bought it and I designed a patch.



Of the eight F-4Gs which were flown to Dhahran, four redeployed to Spang on June 27. To bolster the 81st TFS Det, the 35th TFW deployed personnel and four F-4Gs to Dhahran in late June as part of the ongoing U.S. presence in the Gulf Region. The result was the 'activation' of the 3552nd VSF, the 'Desert Weasels'. It was designed by Bruce Benyshek. [via Eric Bosch]

Yet, '3552nd VSF' was used for tasking purposes on the ATO produced in Riyadh. A George personnel rotation took place August 11-17.

On August 11, higher headquarters cancelled six F-4G and two EF-111A sorties. Ten days later, F-4G 97550 of the 561st TFS, on a training mission, crashed about 63 miles southeast of Dhahran in the Saudi desert. The crew ejected successfully and was recovered. The 52nd was tasked to send a replacement aircraft. Between September 22-28, F-4G and unit aircrew movements took place.

1992

In April, the 3552nd VFS was 'inactivated', when George's personnel and F-4G aircraft redeployed, meaning the end of the involvement of the 35th (T)FW in the Gulf Region, which had started in August 1990 and leaving the 81st at Dhahran. Effective June 30, both 35th FW F-4G squadrons, the 561st and 562nd FS, were inactivated through SO GB-97 of July 15. This meant that between Incirlik and Dhahran there was never a time when 81st (T)FS personnel and F-4Gs were not dual-deployed to both bases until May 1993, when Idaho ANG's 190th FS took over at Dhahran. Added to this was the fact 81st FS aircrews were sent to Nellis, to get the 561st FS operational, which was reactivated on February 1, 1993. Jim Uken in this respect,

There was about a six-month period where every two weeks a new F-4G pilot and EWO would go to Dhahran for three months, then deploy to Incirlik for another three months, followed by two-four weeks at Spang, before starting all over again.

On June 1, TAC was inactivated and replaced by ACC, Air Combat Command, which was activated the same day. This meant units assigned to TAC were inactivated, reactivated and assigned to ACC, also effective June 1. For WP 4404 and its four Groups this resulted in two different SOs: TAC's SO GB-1 of June 10 inactivated the Wing and ACC's SO GB-68 of June 8 activated the 4404th. The Special Order also activated and assigned an additional six Groups to the Wing, including OGP 49 at Khamis Mushayt (SA) with F-117As and OGP 4401 at Rhiyad (SA) with U-2s (Reconnaissance Squadron Provisional, 4401) and KC-135 tankers (Air Refueling Squadron Provisional, 4401).

As the U.S. and UK deemed that Iraq's president Saddam Hussein was not complying with UNSCR 688 of April 5, President Bush, on August 26, announced Operation SOUTHERN WATCH (OSW) to ensure Iraqi compliance.

OSW involved the establishment of a No-Fly Zone (NFZ) in Iraq south of 32° N. The zone, called 'The Box', would be enforced by Coalition forces from the U.S., UK, Saudi Arabia (SA), France (and later) Kuwait. As a result, the 52nd FW deployed an additional four F-4Gs to King Abdul Aziz AB on August 27, bringing the total there to eight. The first operational sorties were flown on the 27th, less than 24 hours after President Bush's announcement. AFRes contribution included deployment of HC-130 and



When the 561st FS Det at Dhahran redeployed to Nellis in early October 1994, it was replaced for the first time by a F-16CJ Wild Weasel Detachment of personnel and six F-16CJs of the 79th FS of Shaw's 20th Fighter Wing. The photo shows an F-16CJ, configured with AIM-9s, AIM-120s and AGM-88s, being refueled by a KC-10A Extender near the Iraqi border. [USAF, A1C Greg Davis]

HH-60G rescue aircraft. The British contribution was called Operation Jural and involved Tornado F.Mk 3 interceptors stationed in Saudi Arabia and Tornado GR.Mk 1s, which operated out of Kuwait. France's contribution included Mirage 2000, Mirage F1CR and C-135FR aircraft. Bruce Benyshek was one of the pilots augmenting the 81st FS Det. On August 27, he was the F-4G SEAD commander for a mission where eight F-16s dropped leaflets from a cluster-bomb type clamshell container along the Tigris and Euphrates, warning the Iraqis to not fly anything in the NFZ. There was pre- and post-mission aerial refueling. Support was by F-15Cs and EF-111Es. According to Bruce, the Iraqis did not even turn on a radar. In OSW, SEAD missions were always flown as F-4G-F-4G.

In October, the 4404th conducted its first composite training exercise since the beginning of OSW, SANDSTORM. Participants included USAF fighters, aircraft from the carrier USS Ranger, and RAF Tornado GR.Mk1s.

Throughout the fall, Coalition aircraft flew an average of 100 sorties per day, at medium altitude to avoid shoulder-fired SAMs and AAA. When on December 27 an Iraqi MiG-25 Foxbat penetrated the southern NFZ, Lieutenant Colonel Gary North, the commander of the 33rd FS (20th FW, Shaw), shot it down with an AIM-120 while flying F-16D 90-0778 as 'Benji 41', after the Iraqi pilot ignored verbal warnings. It was USAF's first F-16 kill and one by an AIM-120.

Between November 10 and 16, the 52nd FW deployed two F-4Gs to Dhahran as part of a scheduled rotation. In December, Major Quinn returned to Dhahran for a 90-day TDY. As to the differences between his first, short, deployment in June 1991 and this one, Bart stated,

The biggest difference was that back then the war was over and it was really just post-war ops. The USAF was forming an Expeditionary Wing, but that would not be solidified for

months. Also, Dhahran was a big transportation port for flights in and out with troops and cargo.

Bart took part then in the limited punitive strikes ordered by President Bush (see '1993').

1993

By January, the Iraqis had moved additional SAM sites into both the southern and northern No-Fly Zones and openly challenged Coalition efforts to protect the Shiites in the south and Kurds in the north. In addition, they used their SAM radars to track Coalition aircraft while on routine patrol sorties, while Iraqi aircraft made incursions into the southern NFZ, supposedly trying to lure Coalition aircraft into concentrated SAM traps.

Although the U.S., UK, France and Russia on January 6, 1993 issued a joint ultimatum to Iraq, to expire at 28/2230Z January, demanding withdrawal of all SAMs south of the 32° N, missile sites were still operational on the 13th.

As Iraqi troops also made repeated forays across the new demarcation border with Kuwait, President Bush ordered limited punitive strikes against 32 SAM sites and air defense command centers. Strikes took place in the January 13-18 period. For instance, on the daylight mission of the 18th, 75 U.S., British and French aircraft re-struck three Interceptor Operations Centers (IOCs), which were also earlier targets on the April 16 night mission. The IOCs were destroyed. Bart Quinn in this respect,

On January 13, I led one of the two-ships of F-4Gs in support of F-117As bombing targets, including an SA-3 Goa site by Tallil Air Base, southwest of Nasiriya. My EWO was Major G. Tovrea and the other crew consisted of Captain John Goode and Lieutenant Colonel Mike York. Our aircraft were configured with three bags, an ALQ-131 ECM pod, two HARMs and two AIM-7s. The warning came that day for a same night launch. There was a mass brief with a time hack. The F-117As were from King Khalid AB near Khamis Mushait. Other aircraft that participated were EF-111As and F-15Cs. There was Bar Lock early warning radar and a Thin Skin height finder together on a hill to the north, which had been on and off. I wanted to hit them, but the ROE was no HARM shots until bombs hit and/or after TOT of 3:15 am. I had my thumb on the pickle button, but the darn F-117 bombs hit exactly at 3:15 am and the radars shut down simultaneously. The SA-3 site was destroyed and its missiles ignited from the heat of the explosions and went across the desert like bottle rockets. Flying time was some three hours.

To support USAF in meeting F-4G mission requirements in the Gulf Region, part of the 190th FS/124th FW of the Idaho ANG, which had converted from RF-4Cs to F-4Gs, on March 2 received tasking for a deployment to Southwest Asia. Its first deployment of (volunteer) personnel and six aircraft followed later that month. All deployments were supported by the Wing's 189th Wild Weasel FTU. It proved to be the first deployment of four almost



Personnel and the six F-4Gs of the 561st FS Det returned home from a 90-day deployment to Dhahran on October 5, 1994. Some twelve days later, the Squadron redeployed to Dhahran with personnel and ten F-4Gs to augment Coalition forces for Operation VIGILANT WARRIOR. One of the ten F-4Gs is being refueled by an KC-10A Extender over the Mediterranean. [USAF, A1C Brett Snow]

back-to-back deployments to support both SOUTHERN WATCH and PROVIDE COMFORT. The 190th replaced the 81st, which returned to Spangdahlem on March 30 with personnel and its six F-4Gs, officially ending the Squadron's 31-month deployment to the Persian Gulf. Over a 938-day period, its aircrews flew 5,450 sorties, logging 13,850 flying hours.

The crew of one of the two 190th FG F-4Gs, Majors Larry Kaufmann and Eddie Payne in 90298, who on June 28 were escorting OSW aircraft over the southern no-fly zone, fired a HARM at an air defense radar after it illuminated the aircraft, and destroyed it. A radar site encountered a similar fate on July 24, after it illuminated two F-4Gs on a routine patrol. Five days later, aircrews of two Navy EA-6B Prowlers expanded AGM-88 HARMs at another Iraqi radar site.

After being relieved by personnel and six F-4Gs of the 561st FS, the last IDANG personnel and F-4G aircraft returned home on October 2.

1994

The IDANG returned to Dhahran on January 9 for its second OSW deployment, replacing the 561st FS. On June 6, Major Mike Williams, EWO with the 190th FS, flew his 100th combat sortie over Iraq. This deployment also lasted



An air-to-air overhead view shows three of the ten deploying F-4Gs in formation over Saudi Arabia. Note the travel pods on the inboards. [USAF, A1C Brett Snow]

six months, departing mid-July and being relieved once again by the 561st on the 15th with personnel and six F-4Gs. Personnel and aircraft redeployed to Nellis, arriving on Friday October 7. This was when the very first Block 50/52 F-16CJ Wild Weasel aircraft (six) and personnel (Shaw's 79th FS) deployed on October 1 to Dhahran. For this deployment Fighter Squadron (FS) Provisional, 79 was activated by ACC and assigned to OGP 4404. At that time some 74 aircraft were in-theater, including 24 F-16Cs, nine F-15Cs, 29 fixed-wing support aircraft, including EF-111As, and 12 Coalition fighters.

For much of the year, the Iraqis seemed to accept the Coalition's daily patrols, since little activity warranted defensive protection and/or retaliation. However, when by the first week of October Iraq had moved elements of its Republican Guard to Kuwait's border, CENTCOM activated its Crisis Action Team (CAT) on October 7. As a result, President Clinton directed the sending of additional troops, aircraft and equipment. On the same day, the USS George Washington Carrier Battle Group, including the carrier's CVW-7, began moving to the AOR (Area of Responsibility) from the Adriatic, while KC-135 tankers, U-2s and RC-135s were directed to move to the AOR. Two days later, lead elements of the 24th Infantry Division (Fort Stewart, GA) and two Patriot air defense missile batteries (Fort Polk, LA) initiated their move to Kuwait. On October 11, the U.S. initiated Operation VIGILANT WARRIOR. U.S. troop strength was increased to some 25,000 personnel and the number of aircraft temporarily increased with some 200 aircraft to over 270, including Langley F-15Cs (1st FW), Pope A-10As and F-16Cs (23rd Wing), Shaw twelve F-16CJs (78th FS) and Nellis ten F-4Gs (57th Wing). Some ten days after arriving at Nellis from Dhahran, the 561st FS was directed to redeploy to Dhahran with a detachment of personnel and ten F-4Gs. The route was Nellis-RAF Lakenheath (11.6 hours)-Dhahran (8.5 hours), arriving on the 17th. Personnel and the F-4Gs were back at Nellis by November 19. On October 22, the 4404th flew 165 sorties. For the month, 2,889 sorties were flown with 8,726 hours.

USAFE placed some units on alert for possible deployment and provided en route and aerial refueling support to deploying forces from CONUS. Surveillance over the no-

fly zone was increased. As the Iraqi push south never developed, CINCENT in a November 5 message recommended redeployment of the VIGILANT WARRIOR forces, which was initiated on the 19th. On November 15, 1994, ACC's SO GB-26 activated, effective November 15, nine Provisional squadrons at Dhahran, of which five flew fighters, one EF-111As, one flew C-130Hs, one EC-130Hs and one EC-130E ABCCCs. All were assigned to OGP 4404. Among the activated fighter squadrons were Fighter Squadron Provisional, 79 (FSP 79) and FSP 561.

ACC SO GB-40 of December 23 activated two provisional and inactivated three provisional units, effective the SO's date. It seems GB-40 should have inactivated a fourth provisional unit, FSP 561, as ACC's Special Order GB-119 of September 18, 1995 amended GB-40: 'Change paragraph 2 to include the inactivation of Fighter Squadron Provisional, 561'.

1995

FSP 79 was inactivated effective January 27 by ACC GB-50 with the same date. In addition, FSP 78 was activated, replacing the 79th at Dhahran. After flying 1,150 sorties and 3,293 hours, personnel and its F-16CJ WW aircraft returned to Shaw. FSP 78 was inactivated, effective March 20, by ACC Special Order GB-71 of March 20.

When personnel and initially nine F-4Gs of the 561st FS redeployed to Dhahran on April 12 to replace FSP 78, it did so as 'Fighter Squadron, 561 (Detached)' as directed by GB-71, but effective April 7. The unit was assigned to OGP 4404 for the purpose of command and control, administrative support, and the exercise of UCMJ authority. This meant formally that up to GB-119's publication, there were two F-4G detachments at Dhahran, Fighter Squadron, 561 (Detached) and Fighter Squadron Provisional, 561.

According to the March publication 'Peace Operations' of the United States General Accounting Office, USAF had 33 F-4Gs assigned in June 1994, of which 19 were available for training and/or contingency deployment (others were used as test aircraft or undergoing maintenance) and 14 were deployed to peace operations. This latter and small number resulted in increased flying hours, plus additional wear on the aircraft. Were 561st FS aircraft undergoing major phase maintenance every 7-8 months one year earlier, this changed to every 4-6 months. Also, F-4G personnel approached or even exceeded Air Combat Command's recommended maximum number of TDY days in a year, 120. According to Squadron officials, this affected the morale of the personnel concerned.

Units assigned to OGP 4404 on December 31, 1995 included, among others, ECSP 41 (EC-130H), ECSP 429 (EF-111A), FSP 34 (F-16C), FSP 1336 (F-15E), and FS 561 (Detached) with (six) F-4Gs.

1996

USAF's final F-4G combat mission in the Gulf Region was flown on January 11 by aircrews of the 561st FS. Relieved on January 13 by personnel and 12 Block 50/52 F-



VIGILANT WARRIOR in October 1994 not only resulted in the deployment of additional fighter aircraft to the Gulf Region, but also made it necessary to deploy KC-10 and KC-135 tankers to refuel those fighters. The photo shows four KC-10A Extenders on the flight line at Moron AB in Spain. [USAF, A1C Brett Snow]

16CJs of the 77th FS, redeployment to Nellis was initiated on the 15th.

On March 25, Squadron Commander, Lieutenant Colonel Jim Uken, and his EWO, Lieutenant Colonel Mark Bruggemeyer, in F-4G 97295, led USAF's last eight F-4Gs into retirement at Davis-Monthan (AZ). The Squadron was, once more, inactivated effective October 1 through ACC SO GB-109 of August 15.

Epilogue

In the August 1992-February 1995 period, Coalition aircraft flew 58,000 sorties in Operation Southern Watch, of which 38,000 over Iraq. Involved were over 100 U.S. and a smaller number of allied aircraft. U.S. aircraft came primarily from CONUS bases and came under operational control of CENTCOM. In the years 1992-1995 (DESERT CALM and OSW), USAF aircraft flew 269,859 hours at a cost of \$B 1.94, including \$M 105 for Operation VIGILANT WARRIOR. With regard to the limited training in OSW, focus was mostly on air-to-air. Surface attack suffered the most due to altitude limitations and other restrictions. Normally USAF personnel were deployed on a 90-day rotational basis with operational flying units deploying the necessary aircraft, personnel and equipment.

However, emergency deployments, like VIGILANT WARRIOR, and routine deployments, like PROVIDE COMFORT I/II/NORTHERN WATCH, SOUTHERN WATCH, and DENY FLIGHT in Bosnia, created several personnel and operational problems. As to the former, some USAF personnel faced multiple TDY assignments within a year. For instance, E-3 AWACS or RC-135 aircrews deployed as many as 200 or more days. This resulted in problems, such as in proficiency training, quality of life, and pilot retention. After assessing its overall Ops-Tempo, USAF took a number of measures, such as limiting the number of days personnel deployed and cutting back higher headquarters inspection visits, competitions and peacetime training exercises. From August 1992 through

December 1996, ACC, activated 81 provisional wings, groups and squadrons at various times to meet the manpower and force structure requirements.

F-4G post-DESERT STORM deployments to Bahrain and Saudi Arabia (source, ACC/HO)

PERIOD	UNIT/NUMBER
Apr 1991	81TFS/16
May 5-Jul 21, 1991*	81TFS/16-8-6
Aug 24, 1991-Apr 1992	'3552 VSF'/8-9
Apr-Aug 1992	81FS/9-8
Aug 1992-Mar 1993	81FS/12
Mar-May 1993	81FS/6
May-Oct 3, 1993	190FS/6
Oct 3, 1993-Jan 9, 1994	561FS/6
Jan 9-Jul 14, 1994	190FS/6
Jul 15-Oct 5, 1994**	561FS/6
Oct 17-Nov 16, 1994***	561FS/10
Apr 12, 1995-Jan 15, 1996	561FS/9-6****
* moved to King Abdul Aziz AB, Dhahran mid-June.	
** replaced by six F-16CJs of the 79th FS (20th FW, Shaw).	
***in Operation VIGILANT WARRIOR.	
**** reduced from nine to six on July 10, 1995.	

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