

Table of Contents	1
Preface	2
Chronology.....	3
Chapter I: The 90th Bombardment Group.....	11
Chapter II: The 90th Bombardment Wing and the 90th Strategic Reconnaissance Wing.....	15
Chapter III: The 90th Strategic Missile Wing.....	16
Chapter IV: ICBMs of the 90th.....	27
APPENDIX A - Stations.....	32
APPENDIX B - Commanders of the 90th.....	35
APPENDIX C - Unit Decorations, Awards, and Bestowed Honors.....	36
APPENDIX D - 90th Missile Wing Emblem.....	39
Glossary.....	40

PREFACE

During the last seventy years, the 90th Missile Wing (90 MW) under all its designations "Undauntedly" defended the United States of America from her enemies. The Mighty Ninety served its country with the highest levels of pride, excellence, and professionalism. From the bomber and reconnaissance aircraft of the 1940s and 1950s to the present-day intercontinental ballistic missile force, the 90th demonstrated its power and dedication toward world peace. This pamphlet walks through the many milestones and achievements that made the 90th the great organization it is today. This history pamphlet is broken down into the four chapters. The first chapter begins with the activation of the 90th Bombardment Group in 1942. Although the 90th Bombardment Group is not part of the 90th Missile Wing's lineage, the wing is authorized to display the honors earned by the Bomb Group during World War II, because it shares the designation number (90). For this reason, chapter one consists of World War II history, so you may learn where honors of the 90th Missile Wing originated.

The second chapter begins with the activation of the 90th Bombardment Wing in 1951 and redesignation of that unit in 1952 as the 90th Strategic Reconnaissance Wing. The third chapter contains the Intercontinental Ballistic Missile (ICBM) history of the wing with the activation of the 90th Strategic Missile Wing in 1963 and its redesignation as the 90th Missile Wing on 1 July 2008. This section brings you to the wing's present-day achievements. The final chapter includes statistics concerning the 90th's missiles and launch facilities. In addition, there are several appendices that provide information on the wing's decorations, past commanders, previous assignments, and World War II honors.

Mission Statement

Defend America with the World's Premier Combat Ready ICBM Force.

Vision

Ready to Fight... Anytime, Anywhere

Values

Integrity First, Service Before Self and Excellence in All We Do

CHRONOLOGY

- 1942 90th Bombardment Group (Heavy) activated on 15 April at Key Field, Mississippi. In September, moved to Hickam Field, Hawaii Territory for final Training. In October and November, moved to Iron Range, Queensland, Australia and assigned to 5th Air Force. Immediately entered combat and received first Distinguished Unit Citation for defense of New Guinea.
- 1943 90th Bombardment Group (Heavy) moved to New Guinea and was awarded second Distinguished Unit Citation for attacks on Japanese positions near Wewak on September 13-15.
- 1944 90th Bombardment Group (Heavy) moved to Phillippines and earned Phillippine Presidential Unit Citation for participation in liberation of the Commonwealth.
- 1945 90th Bombardment Group (Heavy) moved to Ie Shima near Okinawa.
- 1946 90th Bombardment Group (H) inactivated on 27 January at Ft. McKinley, Phillippines.
- 1951 The 90th Bombardment Wing activated at Spokane (later renamed Fairchild) Air Force Base (AFB), Washington on 2 January. The command of the 90th was an additional duty for the commander of the 92nd Bomb Wing. This wing was equipped with B-29 aircraft used for Strategic Air Command (SAC) operations and training. The 90th Bombardment Wing moved to Forbes AFB, Kansas, on 14 March. The 319th, 320th, and the 321st Bombardment Squadrons were concurrently activated and assigned to the 90th Bombardment Wing on 14 March.
- 1952 The 90th Bombardment Wing redesignated as the 90th Strategic Reconnaissance Wing on 16 June.
- 1953 The 90th began phasing out of its training mission and upgraded their aircraft to the all-jet RB-47 "Stratojet." The 90th's mission was amended to include a tanker force for in-flight refueling capability.
- 1954 On 25 June, the new "Stratojets" (RB-47E) began arriving at Forbes AFB, and were assigned to the 90th. The 90th becomes the RB-47 Combat Crew Training Wing for Strategic Air Command.

- 1958 Francis E. Warren (F. E. Warren) Air Force Base, Wyoming, became the first intercontinental ballistic missile base of SAC when it activated the 4320th Strategic Missile Wing (later the 706 SMW), its first Atlas wing.
- 1959 The first Series Atlas D missiles deployed to the 564th Strategic Missile Squadron at Warren AFB.
- 1960 The 90th Strategic Reconnaissance Wing inactivated.
- 1962 The estimate for the construction of 200 missile silos and 20 launch control sites for the Minuteman Missile Project came to \$150 million. Construction on the first silo began on October 25, 1962 and was completed approximately one year later on October 2, 1963. Over 2,000 contractors flocked to Cheyenne to bid on the project. During the October Cuban Missile Crisis all 24 Atlas missiles were made ready for launch within 17 hours of Washington D.C's warning message.
- 1963 The 90th Strategic Reconnaissance Wing was redesignated the 90th Strategic Missile Wing and activated on 1 July 1963 at F. E. Warren AFB, Wyoming. Concurrent activations of the 319th, 320th, 321st, and the 400th Strategic Missiles Squadrons also occurred.
- 1964 The last Atlas D removed from alert completing the Atlas D phase out.
- 1965 On 15 June, the wing's 200th Minuteman I missile was placed on alert. The unit became the first Minuteman I wing that controlled and operated 200 missiles.
- 1969 On 29 November, the 90th received its first Air Force Outstanding Unit Award covering the 1968-1969 time frame. During the same year, 214 structures on base were designated as Historic District under provisions of National Historic Preservation Act.
- 1971 The 4th Strategic Missile Division was assigned to F. E. Warren AFB.
- 1972 Strategic Air Command's force modernization program began at the 90th.
- 1973 The 400th Strategic Missile Squadron became the first all Minuteman III squadron in the 90th. The 37th Air Rescue and

Recovery Squadron assumed responsibility of the 90 SMW helicopter division. The 90th Security Police Group is formed.

- 1974 The last Minuteman I missile removed from F. E. Warren.
- 1975 The 90th received their second Air Force Outstanding Unit Award. SAC completed its Force Modernization Program by installing the last flight of Minuteman IIIs at the 90th Strategic Missile Wing; the nine-year program replaced all Minuteman I missiles with either Minuteman IIs or IIIs.
- 1976 Historic District designated Fort D. A. Russell as a National Historic Landmark.
- 1977 The base opened a new hospital, the Composite Medical Facility, making it the second hospital established at the installation. The 2149th Communications Squadron designated and activated.
- 1983 President Ronald Reagan announced plans to deploy 100 Peacekeeper missiles at F. E. Warren AFB, Wyoming on 19 April. Later the number was reduced to 50 Peacekeeper missiles.
- 1984 The 90th won the Blanchard Trophy at SAC Missile Competition on 10 May and received the Omaha Trophy for Best Wing in SAC on 21 June.
- 1985 The 90th Strategic Missile Wing received its third Air Force Outstanding Unit Award on 22 January. Launch Facility modifications for the deployment of the Peacekeeper missile system began at the Tango 7 launch facility and the Peacekeeper Reentry System Assembly, Surveillance, and Inspection building was completed. The 90th Munition Maintenance Squadron activated.
- 1986 Boeing Aerospace installed the first Peacekeeper missile canister into launch facility Quebec 2 on 16 April. Furthermore, LF Quebec 7 became the first strategically postured Peacekeeper site on 10 October. Quebec 11 became the tenth site postured for alert by the 90th Strategic Missile Wing on 16 December. This was the last sortie needed to reach the Initial Operating Capability for Peacekeeper.
- 1988 The fiftieth Peacekeeper was brought up on alert, making the wing Fully Operational on 30 December. The 88th and 89th Missile Security Squadrons activated. Thirteen Security Police personnel

from the 90th Security Police Group deployed to Howard AFB, Panama for 90 days.

- 1989 Maintenance personnel from the 90th were lauded as being the Best in SAC, and received the Chadwell Trophy on 28 April. The first Peacekeeper ICBM from the 90th was selected for an operational test launch at Vandenberg AFB, California (Glory Trip 1). Soviet General Gherman S. Titov, became the first Soviet military official to visit F. E. Warren AFB, Wyoming.
- 1990 The 90th Strategic Missile Wing received it's fourth Air Force Outstanding Unit Award on 16 January.
- 1991 As a direct result of Major Command reorganization, the 90th Strategic Missile Wing was redesignated as the 90th Missile Wing. The wing now consisted of five groups: 90th Operations Group (the original 90th Bombardment Group was redesignated as this on 1 Sep), 90th Logistics Group, 90th Security Police Group, 90th Support Group, and the 90th Medical Group. In addition, the newly formed 20th Air Force assumed command of the 90th Missile Wing.
- 1992 The 90th Services Squadron won the Hennessey Trophy for operating the Best Dining Facility in the USAF on 1 May. Strategic Air Command was inactivated and the 90th was reassigned to the newly formed Air Combat Command on 1 June. In October, the 90th Missile Wing was redesignated as the 90th Space Wing. The 90th Space Wing received the Chadwell Trophy for Best Missile Maintenance in Air Combat Command.
- 1993 The 90th Space Wing and all other ICBM units realigned under Air Force Space Command on 1 July. The missile modification program called Minuteman Integrated Life Extension (Rivet MILE 2010) began at F. E. Warren AFB, Wyoming. Headquarters 20th Air Force relocated to F. E. Warren AFB.
- 1994 The 90th Security Police Group was inactivated on 30 June. The 90th Space Wing reorganized under the Objective Wing concept. The Rapid Execution and Combat Targeting (REACT) missile modification program began. New consoles were installed in the missile capsules. In addition, training began for all missileers involved with the REACT system.
- 1995 The 90th Space Wing was awarded it's fifth Air Force Outstanding Unit Award. The 90th Missile Wing received the Air Force Space Command's Installation Excellence Traveling Trophy. The 90th

Space Wing completed Alteration 330, a major Peacekeeper warhead modification, a month ahead of schedule and with out incident. The 90th Comptroller Squadron was activated and assigned to the 90th Space Wing. The 790th Security Police Squadron was activated and assigned to the 90th Operations Group. The 90th Space Wing adopted a new mission statement: "Defending America with the world's most powerful combat ready ICBM force."

- 1996 The 319th Missile Squadron won the Blanchard trophy as the Best Missile Operations Squadron Team at the Guardian Challenge competition. The 90th Civil Engineer Squadron received the Brigadier General McAuliffe Award for the Outstanding Civil Engineer Housing Flight and the Colonel Riemer Award for Outstanding Civil Engineer Readiness flight of the year. Air Force Space Command bestowed the General Samuel C. Phillips Award for best missile squadron on the 319th Missile Squadron.
- 1997 The 90th Operations Group entered the integral flight alert concept with the 321st Missile Squadron as the first squadron tested. The 90th Medical Group and Tri-West Health Care Alliance opened the F. E. Warren (TRICARE) Service Center. The 320th Missile Squadron excelled in the 1997 Guardian Challenge competition by winning the Blanchard Trophy as the best Missile Operations Squadron team. The 320th also took home honors as the best Missile Maintenance Team and the best Missile Crew.
- 1998 The Wing was awarded it's sixth AF Outstanding Unit Award. The 37th Rescue Flight was redesignated the 37th Helicopter Flight. The 90th Supply Squadron was inactivated and Transtecs Corportation assumed responsibilities for supply operations. The 37th Helicopter Flight was awarded the Flight Safety Award from Bell Helicopter Corporation for 50,000 consecutive accident-free flying hours over the course of 23 years. On 1 Dec, the 721st Mobile Command and Control Squadron was activated.
- 1999 The wing won the AF Directors Excellence Award for Media Relations and the AF Gen Thomas D. White Restoration Award for Team Excellence. Other notable awards included the Chadwell Trophy for Outstanding Missile Maintenance, and the National Defense Transportation Association Military Unit award. The 721st Mobile Command and Control Squadron inactivated and the 4th Command and Control Squadron activated.
- 2000 The wing received it's seventh Air Force (AF) Outstanding Unit Award. The base Wilderness Challenge team won "best in Air

Force" honors at the Norfolk, Virginia based competition. The base also won the United States Air Force (USAF) Brigadier General William T. Meridith award for best expeditionary combat support during Readiness Challenge VII. The missile crew force transitioned from the blue Space and Missile Crew Uniform to the green Flight Dress Uniform. Atlas housing was completed and all homes were occupied.

- 2001 The 90th Space Wing awarded it's eighth Air Force Outstanding Unit Award. The events of September 11, 2001 occur and Warren goes from threatcon Bravo to threatcon Delta; Operation ENDURING FREEDOM began.
- 2002 90th Space Wing received the ICBM Command Trophy. 90th also receives USAF Space Command Maj Gen Tim C. Padden Facilities Excellence Award. The first phase of the Peacekeeper deactivation completed at the Peacekeeper Intercontinental Ballistic Missile Launch Facility (S-07), near Hawk Springs, Wyoming on 4 October 2002. The 90th Space Wing reorganizes to Air Force standard wing organization with four groups: Operations, Maintenance, Mission Support, and Medical.
- 2003 American and allied forces begin Operation IRAQI FREEDOM 90th Medical Group recognized for best clinical laboratory and best pharmacy team of the year. The 90th Operations Groups chefs won the Hennessy Trophy for missile food service excellence. 90th Space Wing adds 90th Security Forces Group as fifth subordinate group, and consolidates all Security Forces in single unit.
- 2004 90th Space Wing received the Air Force General Thomas D. White Award for restoration activities.
- 2005 90th Space Wing awarded it's ninth Air Force Outstanding Unit Award. The Wing receives Omaha Trophy as best ICBM unit in United States Strategic Command (USSTRATCOM). The Deactivation of the Peacekeeper missile system accomplished on 14 September 2005 with the 400th Missile Squadron deactivating in October. The 90th Space Wing conducted capabilities exercise (CAPEX) exercise concerning nuclear accident response for international audience. The 37th Helicopter Flight redesignated as the 37th Helicopter Squadron and maintained operations under the 90th Operations Group.
- 2006 The 90th Ground Combat Squadron was activated. The Air Force Space Command Nuclear and Space Security Tactics Training

Center trained the elite professional and nuclear space security forces assigned to the command. The citizens of Australia honored the 90th Bombardment Group with the Doomadgee Memorial Wall and Lockhard River Memorial Wall.

- 2007 The 90th Space Wing awarded it's 10th Air Force Outstanding Unit Award. The 90th won the Omaha Trophy as the best ICBM wing in United States Strategic Command, the Morman award as the best space wing overall and the Williams award as the best space wing in Air Force Space Command. The 319th Missile Squadron's Bravo Missile Alert Facility earned the 2007 Major Padden Facility Excellence Award. The 90th Mission Support Squadron and the 90th Services Squadron held a ceremony to merge both units to form the new 90th Force Support Squadron. Senior Master Sergeant Michael Lemke earned the recognition and honor when named as one of the Air Forces Outstanding Airmen of the Year.
- 2008 The 90th Space Wing was redesignated as the 90th Missile Wing. The 321st Missile Squadron was awarded the General Samuel C. Phillips award as the best missile squadron in Air Force Space Command. The groundbreaking ceremony held for the new Joint Forces Readiness Center held.
- 2009 In December, Air Force Global Strike assumed responsibility of the 90th Missile Wing from Air Force Space Command. F. E. Warren hosted the ICBM 50th Anniversary for the command.
- 2010 The 90th Missile Wing awarded the Blanchard Trophy, the Samuel C. Phillips Award, the Blackburn Trophy, the Colonel George T. Chadwell Memorial Trophy, the Major Duance W. Hollis Memorial Award and the Colonel Lee R. Williams Memorial Award as the best missile wing in Air Force Global Strike Command.
- 2011 The 90th Missile Wing awarded it's 11th Air Force Outstanding Unit Award. During the Global Strike Challenge, the 90th Missile Wing again won the Blanchard Trophy and the Blackburn Trophy.
- 2012 The Mighty Ninety was awarded it's 12th Air Force Outstanding Unit Award. The Warren Wranglers of the 90th Missile Wing won a number of awards at the annual Global Strike Challenge. The awards included the Klotz Trophy, for best ICBM operations. The 320th Missile Squadron won the Linhard Trophy for best ICBM operations crew, McMahan Trophy for best weapons system and the Neary Trophy for best emergency war order crew. The 37th

Helicopter Squadron competitors were named the best helicopter search and rescue crew. The 90th Security Forces Group competitors were named the best security forces firing team. Senior Airman Jay Suttor, 790th Missile Security Forces Squadron, was named the best security forces M203 shooter.

2013

The Warren ICBM and Heritage Museum re-opened at a new location. On the same date, the 90th Missile Wing celebrated its 50-year anniversary since activating on 1 July 1963. The Wing Safety Office won the Colonel William L. Tubbs Memorial Award for Ground Safety, the Air Force Nuclear Surety Outstanding Achievement Award, the Air Force Chief of Safety Outstanding Achievement Award for Weapons Safety, and the Air Force Chief of Safety Outstanding Achievement Award for Ground Safety, CAT II.

CHAPTER I

THE 90TH BOMBARDMENT GROUP (HEAVY) ("The Jolly Rogers" of World War II)

The 90th Bombardment Group (Heavy) was activated at Key Field, Mississippi, on 15 April 1942. The group consisted of four bombardment squadrons: the 319th, 320th, 321st, 400th flying a fleet of Consolidated B-24 aircraft. Between April and September 1942, the 90th traveled to many installations across the United States learning the mission of long-range bombing. Official records show that the 90th first entered combat over Bougainvillea in the Solomon's, but the old timers say it was in the driveway of the Orange Lantern Tavern in Michigan. Their adversary was not the Imperial Japanese forces, but the disgruntled workers of Ford's giant Willow Run bomber plant that had been experiencing labor-management difficulties. It was felt that the presence of a combat bound B-24 unit would help the situation by dramatizing the importance of the workers' efforts.

Labor activists, who sought to discount the importance of the visit, viewed the presence of the group with skepticism. One night a few men from the 319th Bomb Squadron felt the need for a little rest and relaxation. Following dinner, they bought a bottle and hailed a taxi to take them to a "peaceful, quiet place." The cabby selected the Orange Lantern Tavern in nearby Belleville, Michigan. The men had no sooner wet their whistles when a horde of Willow Run workers entered the Tavern. Soon one of their number grabbed a "Jolly Roger" by the arm, and proceeded to call him a "sucker" for wearing an Army uniform when he could be pulling in big money at a war plant. The instigator had made a poor selection by choosing a man who harbored a great deal of patriotic pride in his uniform, and who was powerfully built. At the tavern owner's behest, they adjourned outside, where the fight began. The Jolly Rogers soon "dispersed the crowd" and were entering a taxi when the local police arrived. Many of the men feared a trip to the cooler, but the police believed the airmen's story and offered to return them to the base. The next morning Major Rogers called the men to task for breaking the peace. However, their explanation fell on sympathetic ears, and Rogers was moved to reply, "I don't blame you, I'd probably have done the same thing myself." The 90th soon got their planes and went to war.

In September 1942, the 90th moved to Hickam Field, Hawaii Territory, and was assigned to the 7th Air Force. In October and November 1942, increments of the 90th left Hickam Field for Iron Range, Queensland, Australia where they immediately began bombing operations against Japanese installations on New Guinea as part of the 5th Air Force. In mid-November 1942, the airfields around Port Moresby, the only major allied base in New Guinea, were too crowded with other combat units to accommodate the 90th. Moreover, it was still the recipient of frequent nocturnal visits by Japanese bombers. Therefore, the 90th made Iron Range its home and staged aircraft up to Port Moresby until February 1943.

To the 90th, the war was new and fearsome, and its outcome seemed to be hanging in the balance. Actually, the crucial period for our hold on southeast New Guinea had occurred back in the summer and fall. In early May 1942, a Japanese

invasion force headed for Port Moresby was turned back in the fateful Battle of the Coral Sea. Thwarted by sea, in early September the Japanese Army penetrated overland from Buna to within 30 miles of Port Moresby. The gallant Aussies, the U.S. Army, and tactical aircraft drove them back across the Owen Stanley Mountains toward Buna. Thus, the initiative on land, sea and air in Papua had permanently passed to the Allies.

Although no longer on the offensive, the Japanese remained a deadly foe in the air as well as in the jungles below. The big lumbering bombers, not yet enjoying the protection of fighter escort, were fair game for hordes of Japanese interceptors stirred up at Lae and elsewhere along the north coast of New Guinea. Fortunately, the B-24's .50 caliber machine guns were potent weapons and the gunners were well trained. In addition, the combination of weather, distance and terrain encountered in this area posed a threat no less deadly than Zeros or flak. The massive unpredictable tropical storms that raged over this end of the world claimed many aviators. The vast distances over which many bombings and reconnaissance missions were flown proved exhausting enough, even in fair weather. When coupled with the nerve wracking anxiety of flying through bad weather, attack by enemy fighters and the realization that going down in the ocean or jungle meant almost certain death, a single mission could be a dreadful experience for even the toughest veteran. Certainly these conditions were bad enough to convince many of the fliers that they stood little chance of ever seeing their homes or loved ones again. Indeed, 820 would not.

In January 1943, the 90th was moved to Port Moresby to perform single plane reconnaissance and bombing missions, primarily against shipping. The 90th also received their first Distinguished Unit Citation for the defense of Papua. In March 1943, the 90th participated in the Battle of the Bismarck Sea, the crucial sea and air battle that protected Australia from a Japanese invasion. During the battle, the 90th Bomb Group was responsible for tracking the Japanese convoys, day and night, as they moved through the Bismarck Sea, Vitiaz Straits, and Huon Gulf. The 90th's reconnaissance aircraft were the first to detect convoy movement and provided accurate tracking so that the ships could be destroyed, ending the threat of invasion. Between April and September 1943, the 90th made numerous bombing attacks on Japanese airfields, troops, shipping and ground installations.

In September 1943, the 90th took on its first truly long range mission, when it struck the oil refineries at Balikpapan, Borneo and attacked the heavily guarded air-field at Wewak, New Guinea where it received its second Distinguished Unit Citation. In October the 90th struck the oil refineries at Balikpapan again. Later in October reconnaissance photos revealed numerous Japanese targets within Simpson Harbor, Rabaul, New Britain. These targets included a heavy cruiser, a light cruiser, 10 destroyers, 5 submarines and 25 merchant vessels within the harbor. Also seen were 87 medium bombers, 37 light bombers, and 59 fighters, the latter number increasing to 145 by the 11th of October, all in the harbor area. The target was enticing and the weather outlook for an attack on the 12th was good. The moment had arrived for the greatest aerial strike yet launched by the 90th.

The formula for success was the traditional one-two punch of coordinated high and low level bombardment. The basic idea was simple: B-25 Mitchells, working as strafers, would sweep over the airfield to paralyze the fighter defenses with gunfire and parafrags (fragmentation bombs with attached parachutes designed to delay the impact of

the bomb long enough to let the plane escape the explosion). The 90th's B-24s would then appear at high altitude to rain their brand of havoc upon the vessels and harbor installations. For extra assurance, P-38 escorts would engage any interceptors that managed to evade the B-25s.

At the morning briefing, Col Rogers detailed the 90th's attack plan: "Upon nearing the target area we will break into separate elements of four to six aircraft each and approach from different altitudes and directions in order to scatter the flak and allow each lead bombardier to concentrate upon his designated target. Each element will fly in the tightest possible formation in order to concentrate the defensive fire. Don't fly at full throttle--use a modest cruise speed so that any damaged aircraft can keep up. Remember, it may be you."

The intelligence officer then explained the location and concentration of anti-aircraft batteries. Moreover, he outlined the area along the New Britain coast to make a forced landing if necessary, as U.S. submarines would be in the area to attempt rescues. Col Rogers concluded with a final pep talk and the crews piled into their jeeps for the trip to the flight line.

Just 45 minutes after the last of the slower B-25 Mitchells took off, the 5th Bomber Command ordered the 90th Bomb Group airborne. One by one, at 45-second intervals they thundered down the runway into the clear morning sky over Port Moresby. Once assembled, the group joined the 43rd Bomb Group and two squadrons of P-38 Lightnings. The grand occasion was marred by the fact that 25 Liberators, one quarter of the force, aborted due to various mechanical difficulties. At high noon, the armada arrived over Simpson Harbor. Four miles below, the great harbor was filled with vessels of all descriptions--cruisers, destroyers, tenders, submarines and transports. Though the harbor looked peaceful, the sky was becoming littered with ragged, angry, black smudges of flak. The aircraft tried to hold course as bombardiers took control of their aircraft. This seemingly endless period left the pilots to dwell upon the menacing flak bursts and the horde of Japanese Zeros awaiting the heavy bombers. As the bombers left the zone of anti-aircraft fire, 40 to 50 Zeros pressed their attack for 45 minutes, during which time 10 enemy aircraft were downed. In spite of this onslaught, only three Jolly Rogers aircraft were lost. Many however sustained serious damage, including loss of engines, punctured fuel tanks, severed control cables and hydraulic lines, and wounded crewmen. As a result, many were forced to land short of Port Moresby at the forward bases of Kiriwina and Dobodura.

The 43rd Bomb Group that joined the 90th for the attack fared far better, suffering no combat losses--mainly because of the 90th drawing off the defending Zeros. The following day, 5th Air Force Headquarters listed the following enemy losses: 100 aircraft destroyed on the ground, 26 shot down in the air, and heavy damage to airfield and wharf areas. There were 3 large merchant vessels, 3 destroyers, 43 small merchant vessels, and 70 harbor craft sunk. Allied spies in the heights above Rabaul reported counting some 200 wrecked or damaged aircraft on the airfields after this attack. Postwar inquiries revealed that the Japanese garrison also suffered 300 casualties. Surprisingly, a number of these resulted from Japanese soldiers attacking falling parafrag bombs, mistaking them for airborne invaders.

From October 1943 until January 1945, the 90th continued its missions against the Japanese, in such places as Bismarck Archipelago, Papua, and the Southern

Philippines. In January 1945, the 90th supported the landings of Allied Forces on Luzon, the Philippines. They prevented the Japanese from being reinforced by their units on Formosa by bombing key industrial, rail, airfield, and harbor facilities on both Formosa and mainland China. In August 1945, the 90th moved to Ie Shima, Japan near Okinawa, where they proceeded to fly bombing and reconnaissance missions over mainland Japan. The 90th's last wartime mission came on 2 September 1945, after the atomic bombing of the Japanese cities of Hiroshima and Nagasaki and prior to Japan's formal surrender.

The last mission was over Tokyo with each bomber carrying loads of 500 pound bombs with orders not to drop them unless fired upon. During the mission briefing, the crews were told the battleship USS Missouri would be docked in Tokyo Harbor with General MacArthur aboard to sign a formal peace treaty. Pilot Captain Everett A. Wood related the following mission: "We took off easily and headed for Japan over the expanse of blue water. We soon sighted one of Japan's main islands and upon closing, could see the beautiful Mount Fuji in the distance. Flying up the coastline at 4,000 feet, we soon spotted the Missouri. As we had been warned not to fly over the ship, I veered left and passed over the mainland. Below me lay the ruins of Tokyo, mile after mile of desolation. Only the empty streets remained marking the blocks. The B-29 Superfortresses with incendiary bombs had done a thorough job. In the distance we could see the palace of the emperor. It was unscathed, almost a miracle that the bombers could devastate the whole city and leave one block of buildings unmarked. I found out later the palace was to remain unharmed. At last, from Pearl Harbor to Tokyo, we headed south for our little island, salvaged our bombs into the ocean and for the first time had a feeling of exhilaration that the war was truly over for us."

After the end of hostilities, the 90th flew many Allied prisoners from Okinawa to Manila in the Philippines, where these prisoners received medical treatment before their return to the United States. In December 1945, the 90th returned to the Philippines and was inactivated on 27 January 1946.

On 1 July 1947, the unit was redesignated the 90th Bombardment Group (Very Heavy) and activated in the United States. The unit became assigned to Strategic Air Command and was not manned during 1947 and 1948 leading to its inactivation on 6 September 1948. The unit was redesignated the 90th Bombardment Group (Medium) and activated again on 2 January 1951. This time the unit was assigned to the 90th Bombardment Wing (Medium) at Fairchild Air Force Base, Washington. The unit was inactivated again on 16 June 1952.

CHAPTER II

THE 90TH BOMBARDMENT WING (MEDIUM) THE 90TH STRATEGIC RECONNAISSANCE WING

(The Korean War and the Cold War)

The invasion of South Korea by North Korea on 25 June 1950 and the intensified conflict when Chinese Communist forces also invaded on 26 November 1950, brought about the activation of the of a new Bombardment Wing. The 90th Bombardment Wing (Medium) was activated on 2 January 1951 at Fairchild AFB, Washington. On 14 March 1951, they moved to Forbes AFB, Kansas, to begin SAC operations using B-29 type aircraft. During this initial period, three of the 90th Bombardment Group's squadrons became assigned to the 90th Bombardment Wing-the 319th Bombardment Squadron, 320th Bombardment Squadron, and the 321st Bombardment Squadron. The 400th Bombardment Squadron wouldn't be activated again until 1 July 1964.

With the Korean War raging in the Far East, trained bomber crews and support personnel were quickly needed. The 90th received the primary mission of training those crews to a combat ready status. The 90th's training would be the foundation for many of SAC's bomb wings, such as the 308th, 310th, and 376th, going to war in the B-29 "Superfortress." As the primary training mission continued, the 90th became experts in all configurations of the B-29, including reconnaissance B-29s and aerial refueling KB-29s.

In mid-1953, the 90th phased out of its training mission, and entered a force modernization upgrade of their aircraft from B-29s to the all-jet B47 "Stratojet." On 17 October 1953, the wing's mission was amended to include a tanker force for in-flight refueling capability as its first priority. In addition to the mission change, SAC activated the 90th Aerial Refueling Squadron. Prior to this action, the 90 BW (M) had been redesignated the 90th Strategic Reconnaissance Wing (90 SRW) on 16 June 1952. On 5 March 1954, the first crews entered training for the RB-47E. The 90th retired or transferred all of their B-29 aircraft by 19 April 1954.

The 90th's new aircraft, the RB-47E "Stratojet," didn't begin arriving until 25 June 1954. In addition, the 90th's aerial refueling aircraft were replaced by KC-97G "Tankers." With these aircraft the 90 SRW would be called upon to perform many operations, including deployments. The 90 SRW was responsible for the final mapping of Alaska, testing much of the Distant Early Warning System, evaluating Air Defense Command capabilities, and performing some of SAC's first tests of the Alert Force concept. Later in the 90th's flying career, it again become a major trainer. This time assuming the role of the RB-47 Combat Crew Training Wing for SAC. This mission continued until the wing was inactivated on 20 June 1960.

CHAPTER III

The 90th Strategic Missile Wing and the 90th Missile Wing

(Minuteman I, Minuteman III and Peacekeeper)

With its deactivation the 90th's flying career ended on 20 June 1960. On 1 July 1963, the 90th was reactivated and redesignated as a Strategic Missile Wing (SMW), maintaining Minuteman missiles within SAC. With its reactivation, the 90th was destined to become the home for SAC's fifth Minuteman Missile wing. The reactivation of the 90th resulted in the redesignation and reactivation of the four Bombardment Squadrons of the old 90th Bombardment Wing. The first squadron activated was the 319th Strategic Missile Squadron (SMS) on 1 October 1963, followed by the 320th SMS on 8 January 1964, the 321st SMS on 8 April 1964, and finally the 400th SMS on 1 July 1964. These activations were unique in history, as these were the original numerical designations of the unit's belonging to the 90th Bombardment Group from the World War II era. The wing also had the distinction of being the first unit to possess 200 missiles.

The 90th's new home was Francis E. Warren Air Force Base, Wyoming, collocated with the capital city of Cheyenne. The 90 SMW with its Minuteman ICBMs replaced the 389 SMW (previously known as the 706 SMW and 4320 MW) and its Atlas "D" and "E" ICBMs. The 389 SMW held the distinct title of being the first fully deployed ICBM wing in SAC. In May 1963, the Air Force recommended that the Atlas missiles be removed because the older liquid-fueled ICBMs were too expensive to operate and required a large work force commitment. Additionally, the missiles' reaction time was slower and they were more vulnerable as compared to the Minuteman ICBM.

The second generation ICBM, Minuteman I, represented a new concept in strategic systems. Smaller and lighter than the Atlas, the Minuteman I was capable of the same range and speed, yet was much more simple, less expensive, and was nearly instantaneous in reaction, hence the name Minuteman. Developed by the Boeing company (Aerospace Division), the Minuteman I was a three-stage, solid-propellant ICBM, with a variable range from 500 to 5,500 miles. It was capable of launch from underground silos and carried a single re-entry vehicle. The use of solid fuel significantly increased the ICBM's reliability and reduced the complexity of the launch facility, eliminating the need for a propellant loading and handling system. Additionally, this simplicity and low cost resulted in far greater numbers being deployed than earlier ICBMs. The 90th's basic tactical unit was a squadron consisting of five flights. Each flight consisting of 10 unmanned launch facilities (LFs) remotely controlled from a hardened, manned launch control center (LCC). The five flights were interconnected by a squadron-wide control and monitoring network, enabling status to be monitored by any LCC. The Minuteman launch facilities and control centers were hardened to withstand attack. The hardening included measures to resist a nuclear blast, heat, and radiation. In addition, Minuteman launch and control sites were geographically separated to minimize the effect on capabilities from any single attacking weapon. Site hardness, intrusion detection devices and alarms, and mobile defense (strike) teams maintained ground security.

The 90 SMW was equipped with the Minuteman I "B" series ICBM. On 15 June 1965, the 200th Minuteman I was placed on alert, making the wing fully operational across an ICBM complex encompassing over 12,600 square miles of Wyoming, Nebraska, and Colorado. The wing maintained its Minuteman I force through November 1972, when the SAC ICBM Force Modernization Program began. This program removed the Minuteman I missiles and made the training facilities and LCCs ready for the new Minuteman III "G" series missiles to be deployed at F. E. Warren. The Minuteman III consisted of a three-stage solid-propellant booster and a liquid-propellant propulsion system rocket engine (PSRE). The PSRE was designed to provide post-boost maneuvering thrust as the re-entry system deployed its re-entry vehicles. The missile was also equipped with a new re-entry system that consisted of a shroud assembly, multiple independently targeted re-entry vehicles, penetration aids and a deployment module.

The LFs were also modified with a new missile suspension system. The system was installed to protect the missile from the effects of shock and ground motion. In addition, the LCCs were equipped with a Command Data Buffer (CDB) system. This system allowed the missile combat crew members to change and update each missile's targeting without the need to travel to each LF.

In 1973, while the force modernization program continued, SAC conducted its sixth annual Missile Combat Competition at Vandenberg AFB, California. The competition was close, but when the dust cleared, the 90 SMW had won the Blanchard Trophy as the Best Missile Wing in SAC. Through 1973 and 1974, the wing continued with the force modernization program. The last Minuteman I missile was removed from alert on 3 September 1974. The program was finally completed on 26 January 1975, as the last of 200 new Minuteman IIIs were placed on strategic alert. The wing received an Air Force Outstanding Unit Award for its efforts in ensuring the success of the program.

Unlike an aircraft, an ICBM is totally expended after one use. For this reason, its testing was closely monitored and controlled. One such test of the wings' ability came during "Global Shield 79," the first truly comprehensive exercise of SAC's nuclear forces. On 12 July 1979, crews from the 90th dual launched two Minuteman III ICBMs from the Western test range at Vandenberg AFB, California. Their unarmed re-entry vehicles landed 4,200 nautical miles downrange at the Marshall Island test range in the southwest Pacific. The next year, in April 1980 at the Missile Combat Competition the 90 SMW captured the title of Best Minuteman Wing in SAC.

In January 1983, the 90 SMW again earned a place in history when President Ronald Reagan announced that the 90th would deploy the Peacekeeper (MX) missile system in existing Minuteman silos in Wyoming. Though 100 Peacekeepers were requested for initial deployment, this figure was lowered to 50 missiles while another deployment system was researched for the remaining 50 missiles.

The following year, 1984, was a year of outstanding achievements by the 90th SMW. On 9 February 1984, the 90 SMW was awarded the Riverside Trophy for being the best unit in 15th Air Force. In the spring of 1984, the 90th brought home the Blanchard Trophy from SAC's annual missile competition. In addition, the 90th achieved the highest score in the 17 year history of the competition. Later that year, the wing made a clean sweep by outperforming all other SAC units for the Omaha Trophy, earning the honor of being the best wing in SAC. For their efforts, the 90th received another Air Force Outstanding Unit Award.

In 1985, the wing began deployment of the Peacekeeper system within the 400 SMS to flights Papa, Qubec, Romeo, Sierra and Tango. Orders called for the 50 Peacekeepers to be placed within existing Minuteman III LFs. Peacekeeper was much like the Minuteman III missile in design and operation. It continued to use three solid-propellant stages and a liquid-propellant fourth stage. It was, however, capable of delivering 10 independently targeted re-entry vehicles. The Peacekeeper was about 71 feet long, with a diameter of 92 inches and weighed about 195,000 pounds. It was the first US ICBM to utilize a cold launch method. The missile was ejected from its canister (installed within the LF) by high-pressure steam to an altitude of 150 to 300 feet before first stage ignition. This launch method made it possible to house the Peacekeeper in Minuteman silos even though it was much larger than the Minuteman III.

The first milestone for the deployment of Peacekeeper came on 16 December 1986, when the tenth missile was placed on alert, meeting initial operating capability 10 days ahead of schedule. As the wing progressed toward the full deployment of Peacekeeper, the 90th continued maintaining SAC's highest alert rate for the Minuteman missile force.

In 1987, the 90th Services Squadron won the Rhiney Trophy for the best dining hall in SAC and the Hennessy Trophy for the best dining hall in the Air Force. This was the first time in over 9 years that a SAC unit had won the Hennessy. In 1988, the 90th's winning tradition continued as the 90th Services Squadron again won the Rhiney Trophy for the best dining hall in SAC. This was only the beginning as the wing won the Colonel Lee R. Williams Memorial Missile Trophy as the best missile wing in SAC, the Colonel Lowell F. McAdoo Trophy for the best missile wing operations in SAC, the Colonel George T. Chadwell Trophy for the best missile maintenance organization in SAC, the General Thomas D. White Natural Resources Conservation Award, and the Glowing Patriot Best Launch Control Facility in SAC. That year also marked a major achievement to this nation's strategic missile force as Peacekeeper achieved full operational capability on 30 December 1988.

In 1989, personnel from the 90th prepared for the first test launch of a Peacekeeper missile taken from an operational unit. The missile was successfully launched from Vandenberg AFB, California. This event marked a great milestone in Peacekeeper history. As a result of the unit's efforts, 15th Air Force presented awards to two of the units of the 90th. The 90th Security Police Group (SPG) was presented with the 15th Air Force Outstanding Security Police Group Award and the 90th Field Missile Maintenance Squadron received the 15th Air Force ICBM Maintenance Effectiveness Award. In addition, the wing received the Air Force Outstanding Unit Award for its accomplishments in the 1987-1989 time period.

The following year (1990), the 90th Strategic Missile Wing made history by hosting the first visit of Soviet military officials to an United States Air Force missile base. This event demonstrated the United States' procedures for counting the number of Re-entry Vehicles (RVs) on an ICBM in support of any future Strategic Arms Reduction Treaty (START) agreement. The fact that F. E. Warren housed the only Peacekeeper squadron in the world dictated this historic visit.

Furthermore, for its dedication to all-around safety, the wing received Safety Plaques for both Explosive and Nuclear Safety for 1990. Strategic Air Command awarded the SAC Outstanding Security Police Group Award for 1990 to the 90 SPG.

That year another of the 90th's subordinate units won an Air Force level award. The 90th Civil Engineering Squadron was considered the Best in the Air Force (Large Base Category).

The 90th Strategic Missile Wing had a year of organizational change in 1991. The wing originally consisted of two Groups with deputy commanders for operations, maintenance, and resource management. On 1 September 1991, the 90th was directed by the Department of Defense to reorganize into five groups that would report directly to the wing. As a result, the 90th became the higher echelon for the 90th Operations Group, 90th Logistics Group, 90th Security Police Group, 90th Support Group, and 90th Medical Group. [In addition, the wing was renamed the 90th Missile Wing]. On 11 November 1991, personnel from the 90th launched a Minuteman III missile (called Glory Trip 146GM) from Vandenberg AFB, California. This event represented the last Minuteman III missile from the 90th test launched while under the command of SAC. Lastly, national recognition for the wing's environmental programs was acknowledged with the 90th's receipt of the National Preservation Honor Award in 1991.

On 1 June 1992, Strategic Air Command was inactivated and the 90th Missile Wing became part of the newly formed Air Combat Command (ACC). Later that year, the 90th test launched its ninth Peacekeeper missile from Vandenberg AFB, California. This had the distinction of being the first launch in Air Combat Command. Also during 1992, maintenance personnel from the 90th Logistics Group received the Chadwell Trophy for the Best Maintenance Unit in Air Combat Command. On 1 October 1992 the 90th Missile Wing was redesignated as the 90th Space Wing.

The following year, the 90th's Operations, Support, and Logistic Groups won Air Force Outstanding Unit Awards for their efforts in the 1992-1993 time period. Twentieth Air Force, under the command of ACC assumed responsibility for all ICBM forces and became higher headquarters for the 90th Space Wing. In July 1993, Air Force Space Command assumed responsibilities for all ICBM forces, including 20th Air Force and the 90th Space Wing.

On 30 June 1994, the 90th Security Police Group, 90th Organizational Missile Maintenance Squadron, 90th Field Missile Maintenance Squadron, and 90th Munitions Maintenance Squadron inactivated in preparation for a wing reorganization that occurred on 1 July 1994. The Security Police Group's personnel were divided up among the 90th Operations Group under the new Objective Wing concept. The three maintenance squadrons were merged into one unit called the 90th Missile Maintenance Squadron; the new organization still remained part of the 90th Logistics Group. Some of the workcenters from these three maintenance squadrons were assigned to the 90th Logistics Support Squadron. Further, one unit from the 90th Security Police Group, the 90th Security Police Squadron, was assigned to the 90th Support Group. During this year the 90th Missile Wing began a capsule modification program that would bring the existing Missile Alert Facilities (previously called Launch Control Centers) into the 21st century. This program called REACT, combined the two existing combat crew consoles into a single system.

In 1995, the 90th Space Wing completed Alteration 330, a major Peacekeeper warhead modification, a month ahead of schedule and with out incident. A START inspection team performed an ICBM baseline inspection at F. E. Warren Air Force Base. The team consisted of 10 Russian inspectors and 7 On-Site Inspection Agency (OSIA)

escorts. The 90th Comptroller Squadron was activated and assigned to the 90th Missile Wing. F. E. Warren was selected as the winner of Air Force Space Command's Installation Excellence Award. The 90th Space Wing was awarded the Air Force Outstanding Unit Award. The 790th Security Police Squadron was activated and assigned to the 90th Operations Group. The 90th Missile Wing adopted a new mission statement: "Defending America with the world's most powerful combat ready ICBM force."

The year 1996 was a very good year for the wing. The 319th Missile Squadron won the Blanchard Trophy as the Best Missile Operations Squadron Team at the Guardian Challenge competition. Captain Eric Brown and Lieutenant Donnie Holloway of that Squadron were selected as the Best Missile Operations Crew. Four Minuteman III Missile Alert Facilities were renovated under the Alert Image program. This program removed asbestos, upgraded electrical circuits, replaced boilers, expanded female accommodations and increased interior floor space by over 1,100 square feet. Work began on the 90th Space Wing's first 1 + 1 dormitory. Renovations to building 222 converted it from the old group latrine style barracks to the new Tri-Service 1 + 1 style dormitory. Each room would house only one occupant, and two rooms would share a bathroom and small kitchen. The 90th Space Wing began the year-long celebration of the 50th anniversary of the Air Force with a groundbreaking ceremony for a monument in honor of Air Force Medal of Honor recipients. Headquarters, Air Force Space Command that the REACT-B configuration had reached Full Operational Capability (FOC). The 90th Civil Engineer Squadron received the 1996 Brigadier General McAuliffe Award for the Outstanding Civil Engineer Housing Flight and the Colonel Riemer Award for Outstanding Civil Engineer Readiness Flight of the year. The engineers also received Air Force Space Command General Thomas D. White Environmental Award in the categories of: Small Base Natural Resources Management, Cultural Resources Management, and Non-Industrial Recycling. The 90th Supply Squadron won the Air Force Space Command Supply Effectiveness Award. The 90th Mission Support Squadron Civilian Personnel Flight was named the Space Command Outstanding Civilian Personnel Flight in the II-C category. Finally, Air Force Space Command selected the 90th Missile Wing as the winner of the Major General Eubank award, and also bestowed the General Samuel C. Phillips Award for best missile squadron on the 319th Missile Squadron.

In 1997, the 90th Operations Group entered the integral flight alert concept with the 321st Missile Squadron as the first squadron tested. The 400th Missile Squadron travelled to Vandenberg AFB and completed the highly successful GT 24PA Peacekeeper missile launch. The 90th Medical Group and Tri-West Health Care Alliance opened the F. E. Warren TRICARE service center. Air Force Space Command conducted a site survey to identify a potential beddown location for the Mission Control Station Backup (MCS-B). The MCS-B was designed to assume control of all Space Based Infrared System missions during peacetime outages of the primary station at Buckley AFB. Four additional Minuteman III Missile Alert Facilities were renovated under the Alert Image program. The 320th Missile Squadron excelled in the 1997 Guardian Challenge competition by winning the Blanchard Trophy as the best Missile Operations Squadron team. The 320th also took home honors as the best Missile Maintenance Team and Missile Crew. This was the second year in a row that a team from the 90th Space Wing won the Blanchard Trophy. The wing also won the Omaha Trophy as the best missile

wing in Strategic Command. Dormitory 222 was ready for occupancy after being renovated to the Tri-Service 1 + 1 floor plan. The 90th Security Police Squadron was redesignated the 90th Security Forces Squadron, and the wing was once again renamed. The 90th Missile Wing became the 90th Space Wing.

The 90th Space Wing had some major achievements in 1998. The 37th Rescue Flight was redesignated as the 37th Helicopter Flight and received the Flight Safety Award from Bell Helicopter Corporation for 50,000 consecutive accident-free flying hours over the course of 23 years. The 90th Supply Squadron inactivated and Transtecs Corporation assumed responsibilities for supply operations. Higher Headquarters approved the movement of the 721st Mobile Command and Control Squadron from Peterson AFB, Colorado to F. E. Warren AFB, Wyoming. On 1 December, the 721st Mobile Command and Control Squadron supporting Air Force Space Command (AFSPC) and the North American Aerospace Defense Command was activated. By the end of the year, the Soviet Union still had not ratified the Strategic Arms Reduction Treaty II, already ratified by the United States. As a result, the Peacekeeper system remained operational as an integral part of the nuclear triad. Wing personnel test launched a Peacekeeper missile (Glory Trip 27 PA) from Vandenberg AFB, California. The wing's efforts were again recognized with the AF Outstanding Unit Award.

In 1999 the wing faced some adversity. An UH-1N helicopter assigned to the 37th Helicopter Flight crashed during a search and recovery mission. The crew was searching for a lost three-year old boy near Cameron Pass, Colorado. The helicopter was damaged beyond repair. Remarkably, all aircrew members survived with only minor injuries. That same year the 90th Civil Engineer Squadron housing office switched to a private contractor. The 721st Mobile Command and Control Squadron was inactivated and became the 4th Command and Control Squadron. Other parts of the wing continued to excel. The wing won the AF Directors Excellence Award for Media Relations and the AF Gen. Thomas D. White Restoration Award for Team Excellence. The 400th Missile Squadron was recognized as the Best Missile Squadron in AFSPC by winning the Gen. Samuel C. Phillips Award. Other notable awards included the Chadwell Trophy for Outstanding Missile Maintenance, and the National Defense Transportation Association Military Unit award.

The old millenium ended with significant concern over potential year 2000 errors in communications systems, but the wing continued with business as usual, experiencing only minor problems. In 2000 the crew force transitioned from the blue Space and Missile Crew Uniform to the green Flight Dress Uniform. Atlas housing was completed and all homes were occupied. The base Wilderness Challenge Team won Best in Air Force honors at the Norfolk, Virginia based competition. The base also won the USAF Brigadier General William T. Meridith Award for best expeditionary combat support during Readiness Challenge VII. The competition was to determine the best AF Civil Engineering, Services, and Chaplain Services in an international competition. The continued commitment to excellence was once again recognized with the award of the AF Outstanding Unit Award.

2001 proved to be a fateful year of significant changes not only for the 90th Space Wing, but the United States in general. Prior to the events of 11 September the 90th Space Wing distinguished itself by winning several major awards. The 90th Civil Engineer Squadron took home the Brig General McAuliffe Award for best housing

flight, the Maj General Lupia award for outstanding Civil Engineer Military Manager, and the General Thomas White award for environmental restoration (at both AFSPC and AF levels). The 90th Comptroller Squadron won the award as AFSPC's Financial Management and Comptroller Organization of the year. In a precursor to the terrorist attacks of September, the 90 SW suffered a small arms weapons theft from Missile Alert Facility F-01 on 8 September. The theft, engineered by two Air Force members assigned to the MAF, quickly resulted in their arrest when they tried to cross into Mexico, and put the 90th on heightened alert even before 9/11. As with the rest of the military, the 90th Space Wing went to the highest alert level on 11 September, and truly transformed to a war footing as Operation Enduring Freedom kicked off in the fall. For its efforts, the 90th received yet another Air Force Outstanding Unit Award.

2002 witnessed the 90 SW continuing with its primary mission of providing the national command authority with 24 hour a day ICBM deterrent forces, while commencing the deactivation of the Peacekeeper missile force. Pursuant to Air Force direction, the 90th adopted the standard wing organization with four subordinate groups including: Operations, Maintenance, Missions Support and Medical. The 90th won AFSPC mission support awards for excellence in education and enlisted professional military education. In the annual Guardian Challenge competition the 90th received recognition for best space security team, best chefs in 20th Air Force, best missile maintenance, best helicopter aircraft generation/reconfiguration, and best missile code controllers. At the Air Force level the 90th took home the ICBM Command Trophy, and the Air Force Space Command facilities excellence award named for Maj Gen Tim C. Padden.

During 2003, the 90th added a fifth subordinate group, reactivating the 90th Security Forces Group (formerly Security Police Group) and consolidating all Security Forces activities and personnel in one unit. This was followed by continued Peacekeeper drawdowns. During that year, the Wing received the Air Force General Thomas D. White Award for environmental restoration activities, while the 90 CES was honored for Outstanding Fire Protection Flight and Outstanding Readiness Flight. The 90th Medical Group scored the Outstanding Resource Management Team award, and their pharmacy was named best in Air Force. The 37th Helicopter Flight received the Crew Safety Award of Distinction. The chefs of the 90th Operations Group won the AFGSC Missile Food Service Excellence Award. In 2003, members of the Wing won the AFSPC, Military Traffic Management Command's Award for Excellence and the Air Force Male Athlete of the Year.

2004 was a year of community enrichment and national spotlight. On 25 July 2004, the 90th Space Wing was inducted into the Cheyenne Frontier Days Hall of Fame during Cheyenne Frontier Days 108th Daddy of 'Em All' rodeo. In August, the 90th celebrated the ground-breaking of the 42,600 square-foot Freedom Elementary school. In September, the Wing learned that SSgt Teresa Mossini, 321st Missile Squadron, was chosen as one of the Air Force's 12 Outstanding Airmen. The 90 CES won the CMSgt Ralph E. Sanborn award as the Air Force's outstanding fire protection flight and the Colonel Frederick J. Riemer Award as outstanding readiness flight in the Air Force. In the 90th Medical Group members won several Air Force awards to include: Best Clinical Psychologist Award, Best Pharmacy Technician, Best Biomedical Equipment Repair Technician, Best IMA Nurse, and Best Health Plans Management Airman. The Wing

won the General Thomas D. White Restoration Award and the base chapel won the Air Force's Best Small Chapel award. The Warren Fitness Center won the Air Force Five-Star Fitness award.

The year 2005 was a busy year for the 90th Space Wing. In March, the Guardian Challenge competition was cancelled because of budgetary constraints due to worldwide deployments. F. E. Warren became the testing ground for the Remote, Detection, Challenge, and Response System (REDCAR) an Air Force Research Laboratory program. REDCAR was a robotic scout security system specifically built to remotely assist security forces in the field. Groundbreaking ceremonies were held at the northern perimeter of F. E. Warren Air Force Base for two wind energy turbines. The renewable energy project was the first Air Force initiative in the continental United States. Air Force Space Command and F. E. Warren lead the initiative that complied with President Bush's 2002 executive order. The twin wind turbines, which cost \$2.2 million, produced enough electric power for 522 of the bases homes and potentially save the base \$231,210 in energy costs annually. The turbines became operational on 18 July. The 90th Space Wing staff added a new office with the creation of the Sexual Assault Response Coordinator. In support of Joint Task Force Katrina helicopter, 10 crew members from Warren's 37th Helicopter Flight and 44 Security Force personnel deployed to either Keesler AFB, Mississippi, Columbus AFB, Mississippi, or Lackland AFB, Texas on 1 September. On 14 September, the last Peacekeeper missile was removed from F. E. Warren. This completed the deactivation of 50 PK missiles in accordance with the 1997 Strategic Arms Reduction Treaty (START III) between the United States and Russia to reduce nuclear armament inventories to some 2,250 warheads. On 4 October, the 400th Missile Squadron deactivated following 19 years of faithful service with the mighty Peacekeeper missile system. Prior to the PK, the 400th service included the Minuteman III, Minuteman I, Atlas, and service during World War II. On 21 October, the 37th Helicopter Flight was redesignated as the 37th Helicopter Squadron and maintained operations under the 90th Operations Group. In 2005, the 90th Civil Engineer Squadron's fire department won the Air Force Space Command competition for the Ralph E. Sanborn award as the best fire department. The 90th Operations Support Squadron was awarded the Colonel Lowell F. McAdoo Award; the award recognized the best overall ICBM operations support squadron in AFSPC. The 90th won the Major General "Tim" C. Padden Award that recognized installation excellence through the construction and maintenance of first-class facilities for people to work, live, and play. The 90th Missile Security Forces Squadron was named Outstanding Active Duty Large Security Forces Unit Award for AFSPC. The 90th was awarded the Missile Food Service Excellence Award, recognizing the best missile food service operation in AFSPC and the 320th Missile Squadron was awarded the General Samuel C. Phillips Award, recognizing the best overall missile squadron in AFSPC. The 90th Services Squadron won the 2005 Eubank Award. Captain Eric Ward, 320th Missile Squadron, and Captain David Bristow, 90th Space Wing, received the Thomas S. Power award for Missile Combat Crew of the Year for 2005. The 90th Space Wing earned the Air Force Outstanding Unit Award for the period of 1 October 2003 through 30 September 2005 time frame.

2006 was a good year for the Wing as the Wing successfully conducted CAPEX 06 for an international audience. The exercise demonstrated the Mighty Ninety's ability to respond to an accident involving nuclear materials. The 90th Services Squadron

Chadwell Dining Facility awarded the Air Force Space Command Excellence in Food Service Award (single category) for the second year in a row. In addition, for the third year in a row F. E. Warren garnered the Hennessy Special Award for Best Missile Feeding Operations in the Air Force. The Warren fire department won another Air Force award as the best small unit fire department award. In June, Senior Master Sergeant Michael Lemke was named as one of the Air Forces Outstanding Airmen of the Year. In August the 90th Bomb Group, 'passed the torch' to the 90th Space Wing as this marked the legendaries group's Sixtieth reunion. In October, the 320th Missile Squadron started testing 72-hour alerts compared to the standard 24-hour alert. The 90th won the Omaha Trophy as best ICBM unit in USSTRATCOM, the Colonel Lee R. Williams Award and an Air Force Outstanding Unit Award for that year.

Change was the Wing's theme in 2007. In February, the 90th completed the 17-month, \$27 million dollar restoration, and lead abatement project on historic homes on base. On 1 March, the 90th Maintenance Group underwent a reorganization and merger, as did the 90th Mission Support Squadron and 90th Services Squadron to form the new 90th Force Support Squadron. In June, the Wing grieved the loss of A1C Eric M. Barnes, the Wing's first Airman to fall while fighting the Global War on Terrorism. In October, budget constraints caused the Wing to force major cutbacks to the base library, custodial contracts, the fitness center, and chapel activities. In 2007, the 90th Civil Engineering Squadron Readiness Flight learned of their winning the Colonel Frederick J. Reimer Award as the best readiness flight in the Air Force.

For the second year change shaped the Wing in 2008. In January, Camp Guernsey was validated as a Regional Training Center and deemed capable of providing Security Forces pre-deployment training in support of all Air Expeditionary Forces operations. On 25 February, General Roger W. Burg, 20th Air Force Commander announced the successful deployment of 450 new guidance sets throughout F. E. Warren, Malmstrom, and Minot AFB. The 2.4 billion dollar program started in 1999 and finished on 18 January at Minot AFB. In 2008, the Mighty Ninety won the Omaha trophy as the best ICBM wing in United States Strategic Command, the Moorman award as the best space wing in Air Force Space Command and also the Williams award as the best space wing with an ICBM mission in AFSPC. On 1 July, the 90th Space Wing was redesignated as the 90th Missile Wing.

2009 was a year of change and celebration. In January, the Wing announced the placement of its third wind turbine. The new turbine boasted a power rating to 2 megawatts; increasing the overall megawatts to 3.32. The Wing opened the new Communitary in June and also held one of the largest and comprehensive simulated terrorist attacks during the Nuclear Weapon Accident/Incident Exercise. In August, the Wing activated the 15th Munitions Squadron and in October hosted the ICBM 50th Anniversary for the command. The Wing was honored by the Arbor Day Foundation by being named a Tree City USA community for the 21st time and The 90th Missile Maintenance Squadron earned the 2009 Cheyenne Trophy. MSgt Phillip Watson, 90th Missile Wing superintendent earned his second Gerrald Cullins Award as the best chaplain assistant in the Air Force. The Visual Imagery and Intrusion Detection System Team, 90th Missile Operations Squadron, won an AFGSC General Edwin W. Rawlings award for team of the year. The 90th Missile Wing won both an AFSPC Missile Safety Plaque and an AFSPC Explosives Safety Plaque Category I. A1C Jennifer Viveiros, 90

MW Public Affairs, won the 2009 AFSPC PA Media Contest Award for Outstanding New Journalist of the Year, and the 2009 AFSPC HQ PA Directors Excellence Award for Outstanding Communications Airman. 1Lt Brooke Brzozowske, 90 MW PA, won the 2009 AFSPC PA Media Contest Award for Best Series of the Year. The public affairs office won both the 2009 Major Henry H. "Hap" Arnold Public Affairs Communications Effectiveness Award and the 2009 AFSPC HQ PA Directors Excellence Award for Best Integrated Communications. In January, the Wing learned that Captain Ian Holt, 319 MS had earned the title of Best Athlete in the Air Force. The Warren fire department continued in their excellent ways by winning the Department of Defense best small unit award in the Air Force. In December, Air Force Global Strike assumed responsibility of the 90th Missile Wing from Air Force Space Command.

Accomplishments and awards highlighted the Wing in 2010. In January, the Wing opened a new dorm 230. Also in January, the Wing participated in the first no-notice ICBM Nuclear Surety Inspection in over 18 years and the first carried out under Air Force Global Strike Command. In May, the Army's presence was felt on base as the \$44-million, 98,000-square-foot facility of the Wyoming Army National Guard's Army Aviation Support Facility open on F. E. Warren. In 2010 awards were numerous with SSgt Paul White, 90 SFS, winning the DoD African American History Month Award, SSgt Lawrence Vaden, 90 SSPTS, won the AFGSC 2010 Air Force Sergeants Association Pitsenbarger award and an AFGSC 2010 Noncommissioned Officers Association Vanguard award. The 90th Protocol office won the George Washington Award for Protocol Excellence. The 90th Medical Group garnered almost all medical Air Force Awards to include USAF Surgeon General Award for Best Clinic of the Year: Lieutenant Colonel George M. Prascsak, Jr., Outstanding Public Health Team of the Year, and the USAF Outstanding Patient Centered Medical Home Award. In individual awards the medics won: USAF Outstanding Achievement in Clinical Research Award: Lieutenant Colonel Steven Pflanz, Outstanding Dental Airman of the Year: Senior Airman Tommy Vinh, USAF Civilian Dietitian of the Year: Cynthia A. Mulcahy, USAF Colonel Donald D. Dunton Ophthalmic NCO of the Year: Technical Sergeant Edward Mayle, USAF Maxine Beatty Award: Major Matt Cowan, USAF Fred Coleman Award: Captain Sarah Hooker, USAF CMSgt Michael A. Gambuti Pharmacy Technician Airman of the Year: SrA Michael Martinez, USAF Company Field Grade Physical Therapist Award: Maj Evan Kelley, USAF Physical Medicine Craftsman Award: TSgt Micki Hinnershitz, USAF Outstanding Company Grade Social Worker of the Year: Capt Janelle Weyer, Health Benefits Advisor of the Year: Annette Lupo, Outstanding Medical Logistics CGO Officer of the Year: Capt Tobie Wethington, Outstanding Biomedical Equipment Repair NCO of the Year: TSgt Matthew Helms, Outstanding Civilian Medical Logistician of the Year: Bradley Guritza, CMSgt Anton Zembrod Award for the Outstanding Air Force Diagnostic Imaging Technologist SNCO of the Year: MSgt Christy Jones, CMSgt Anton Zembrod Award for the Outstanding Air Force Diagnostic Imaging Technologist Civilian of the Year: Patsy Tate, Olson/Wegner Outstanding Aerospace Medicine SNCO of the Year: MSgt Miguel Diaz, Group Practice Manager of the Year: Capt Chang Han, Outstanding Facility Manager of the Year for a Small Medical Logistics Activity: Brian Schaefer, USAF Expeditionary Medical Operations NCO of the Year: TSgt Christine Ramler. The 90th Safety office showed why they are considered the best in the Air Force with Air Force level awards: Flight Safety plaque,

Missile Safety Category II plaque, Explosives Safety Category I plaque and Nuclear Surety Category I plaque. The Safety office also won AFGSC awards won: Air Force Chief of Safety Outstanding Achievement Award for Ground Safety, Flight Safety plaque, Missile Safety plaque, Explosives Safety plaque, Nuclear Surety plaque, AFGSC Ground Safety Excellence Award and AFGSC Weapons Safety Excellence Award.

The Wing won the General Samuel C. Phillips Award, Blackburn Trophy, Colonel George T. Chadwell Memorial Award, Major Duance W. Hollis Memorial Award, Colonel Lee R. Williams Memorial Award and the Best ICBM Operations Trophy. The 90th also won the Commander in-Chief Installation Excellence Award for AFGSC. The 90th Missile Wing awarded it's 11th Air Force Outstanding Unit Award.

In 2011 the 90th continued to lead the command by example and awards won. Early in the year, the 90th Security Forces Group initiated the Defense Biometric Identification System for all personnel passing through the gates of the base. In March, the 90th Maintenance Group excelled as their personnel completed the replacement of all diesel electric units in the missile fields 18 - 21 months ahead of schedule. The Wing added the 90th Munitions Squadron under the 90th Maintenance Group. In 2011, the Wing was not shy about winning its share of awards. The 90th excelled by winning the Blanchard and Blackburn trophies for the second year in a row. The Wing also brought home the Neary Trophy for Best Emergency War Order score (319th MS), the Linhard Trophy for the Best Missile Combat Crew (319th MS), the Best Power, Refrigeration, Electrical, Laboratory Team Trophy and the Best Mechanical and Pneudraulics Team Trophy.

2012 started off with the grim reminder of the War on Terrorism's cost as one of the Mighty Ninety's Explosive Ordnance and Disposal (EOD), Technical Sergeant Matthew S. Schwartz, 90 CE was Killed in Action in Afghanistan. Warren's Weapons Storage Area added to their deterrence weaponry the Remote Targeting Engagement System (RTES). The RTES was made up of several parts to include six separate M-240 machine guns all controlled remotely from command consoles. In March, Balfour Beatty Communities (BBC) began operating base housing under a lease agreement. Also in March, the 150th Propulsion System Rocket Engine was completed at Launch Facility Golf-03. The Warren Wranglers of the 90th Missile Wing won a number of awards at the annual Global Strike Challenge. The awards included the Klotz Trophy, for best ICBM operations. The 320th Missile Squadron won the Linhard Trophy for best ICBM operations crew, McMahon Trophy for best weapons system and the Neary Trophy for best emergency war order crew. The 37th Helicopter Squadron competitors were named the best helicopter search and rescue crew. The 90th Security Forces Group competitors were named the best security forces firing team. Senior Airman Jay Suttor, 790th Missile Security Forces Squadron, was named the best security forces M203 shooter.

On 29 June 2013, the Warren ICBM and Heritage Museum re-opened at a new location. On the same date, the 90th Missile Wing celebrated its 50-year anniversary since activating on 1 July 1963. In 2013, the Wing Safety Office won the Colonel William L. Tubbs Memorial Award for Ground Safety, the Air Force Nuclear Surety Outstanding Achievement Award, the Air Force Chief of Safety Outstanding Achievement Award for Weapons Safety, and the Air Force Chief of Safety Outstanding Achievement Award for Ground Safety, CAT II.

CHAPTER IV

ICBMs of the 90TH

Minuteman I

Minuteman I was a small, three-stage, solid propellant fueled, rocket-powered Intercontinental Ballistic Missile (ICBM) with a range of approximately 5,500 nautical miles. It possessed an all-inertial guidance system and the capability of being fired from hardened underground silo launchers. The Minuteman I included two models: "A" and "B".

Each Minuteman I ICBM was housed in an unmanned, hardened, and widely dispersed (three-to-seven mile intervals) underground silo launch facilities (LFs). Every flight of 10 LFs (five flights per squadron) was monitored by a missile combat crew of two officers stationed in an underground Missile Alert Facility (MAF). For purposes of command, control, and communications, all five MAFs of a Minuteman squadron were linked together by a network of underground cables.

TYPE: Intercontinental Ballistic Missile (ICBM)

ENGINES: Three solid propellant rocket engines

DIMENSIONS: Length: 55.9 ft; Diameter: Stage I - 66 in; Stage II - 52 in; Stage III - 52 in.

WEIGHT: 70,000 Lbs

SPEED: 15,000 mph

ARMAMENT: Single re-entry vehicle

GUIDANCE: Inertial gimbaled

DEPLOYMENT: Hardened, underground launch facility

Minuteman III

The Minuteman III missile consisted of a three-stage, solid propellant booster (called the downstage), a liquid-propellant post-boost propulsion system (called the propulsion system rocket engine (PSRE)), an inertial type guidance system, and a re-entry system. When launched, the missile was boosted for approximately 3 minutes by the three solid propellant motors burning in sequence. Each stage (motor) was separated from the missile when no longer producing thrust. Boost flight could be terminated before third stage burnout. Post-boost maneuvering thrust was provided by the PSRE, with guidance by the guidance set. The re-entry system (RS) was capable of deploying up to three re-entry vehicles--Multiple Independently targeted Re-entry Vehicles (MIRVs) according to the flight program. The Minuteman III was also equipped with a computer operated Command Data Buffer retargeting system.

TYPE: Intercontinental Ballistic Missile (ICBM)

ENGINES: Three solid propellant rocket engines (stages) plus post-boost system.

DIMENSIONS: Length: 59 ft 11 in (718.8 in); Diameter: Stage I - 66 in;- Stage II - 52 in, Stage III - 52 in

WEIGHT: 76,000 lbs

SPEED: 15,000 mph; range: 6,200 nm

ARMAMENT: Capable of 3 Multiple Independently targeted Re-entry Vehicles (MIRVs)

GUIDANCE: All inertial gimbaled.

DEPLOYMENT: Fixed underground hardened launch facility (LF) with missile suspension system shock isolated floor and debris collection system.

Peacekeeper

The Peacekeeper was a four-stage intercontinental ballistic missile, designed to carry up to 10 re-entry vehicles and deliver them to independent targets. The Peacekeeper ICBM was about 71 feet long, with a diameter of 7 ft, 8 in, and weighed about 195,000 pounds.

Three of the four stages exhausted their solid propellant through a single adjustable nozzle that guided the missile along its flight path. These solid propellants were contained in motorcases made of kevlar epoxy material. The fourth stage, called the post boost vehicle, used a liquid bi-propellant rocket propulsion system that provided velocity and altitude corrections to guide the missile. The post-boost vehicle also included a completely self-contained inertial navigation system allowing the missile to be completely independent of ground reference or commands during flight.

The first stage solid rocket motor weighed approximately 108,000 pounds and was about 27 feet 6 inches long. It would boost the missile to about 75,000 feet. The second stage solid rocket motor weighed approximately 60,000 pounds and was about 17 feet 6 inches long. Stage II ignited after the burnout and release of Stage I and propelled the missile to an altitude of about 190,000 feet. Stage II's single moveable nozzle incorporated an extendible exit cone that allowed the nozzle to remain folded within the rocket so that it could ride flush atop the first stage engine during the Peacekeeper's early ascent. When the first stage fell away, the second stage ignited extending its nozzle for extra power. This extendible exit cone increased the second stage performance without increasing the missile's diameter.

The third stage solid rocket motor, weighing about 17,000 pounds, was approximately 7 feet 7 inches long. Stage III provided thrust to boost the missile to about 700,000 feet. Stage III ignited after burnout and release of Stage II. Like Stage II, the Stage III single nozzle also has an extendible nozzle exit cone to increase performance. A guidance and control system directed the second and third stage nozzles that were positioned by a hydraulic system powered by a solid propellant gas generator.

The fourth stage, also known as the post-boost vehicle, weighed about 2,300 pounds and was 3 feet 5 inches long. Following the burnout and separation of Stage III, the post-boost vehicle maneuvered to various positions in space where the re-entry vehicles were released in sequence. The propulsion system included the liquid propellants and tanks, an axial engine and its thrust vector actuation system, and attitude control engines. The attitude control engines used the same bi-propellants as the axial engine. Stage IV housed the Peacekeeper's guidance and control system, a system that included an inertial measurement unit, the missile electronics and computer assembly, ground and flight software, the inflight cooling subsystem, airborne power supply, missile interconnection cables, the missile ordinance arm switch, the power distribution switch, the missile umbilical receptacle, the supporting structure, and shields.

The re-entry vehicles, which contain the weapons, were cone shaped and covered with materials to protect the weapons during flight to the target. High speed re-entry caused extreme heating requiring a surface material to erode in a controlled manner to protect the weapons.

In addition to the stages and re-entry vehicles, the missile also included a shroud and a deployment module. The shroud, often called a nose cone, protected the re-entry

vehicles during the ascent phases of flight. The shroud was topped with a nose cap made of stainless steel and contained a rocket motor to separate it from the missile.

The deployment module provided the structural support for the re-entry vehicles and carried the electronics to activate and deploy them. These vehicles are mechanically attached to the deployment module. To free the re-entry vehicles from the module with minimum disturbance, exploding units were used to break the attachments. Each re-entry vehicle was deployed at a position that allowed it to follow a ballistic path to its target. In addition to the many new design features of the missile itself, the launching system was also new in design. Incorporating a previously used Minuteman III Launch Facility, the Peacekeeper ICBM used a canister (cold) launching system designed both to eject-launch the missile and to protect it from shock.

Massive in scale, the Peacekeeper launching system performed an array of critical functions. The canister itself, which was a length of 68.2 feet, had a smooth clearbore diameter of approximately 98.7 inches, supported the missile while in the LF. It provided environmental protection, lateral and vertical shock protection for the missile, a means of launching the missile before engine ignition, a guide for the missile during launch, and a means of lowering and raising the missile for maintenance.

TYPE: Intercontinental Ballistic Missile (ICBM)

ENGINES: Three solid propellant rocket engines (stages) with a fourth liquid propellant stage

DIMENSIONS: Length: 70.9 feet; Diameter: 92 inches

SPEED: Typical end-of-burn velocities: Stage I - 4,500 ft/sec; Stage II - 13,000 ft/sec; Stage III - 23,000 ft/sec

ARMAMENT: Capable of delivering 10 Multiple Independently targeted Re-entry Vehicles (MIRVs)

GUIDANCE: Inertial floating ball (advanced inertial reference sphere)

DEPLOYMENT: Underground hardened launch facility (LF) with canister insert. A Peacekeeper Rail Garrison System was also tested for deployment by train. 50 Peacekeeper missiles remained on alert between 1988 and 2005.

The Launch Facility

The launch facility was the remote unmanned missile site. At the 90th, 200 of these sites were constructed, spread over 12,600 square miles of Wyoming, Nebraska, and Colorado, with a minimum three mile spacing. All launch facilities were situated in unpopulated areas and consisted of a launcher, launch support building, security system, and service area. The launcher included the launch tube, missile suspension system (Minuteman III) or canister (Peacekeeper), the launcher closure, dual-level equipment room, and a personnel access hatch and or entry way. The launcher was also hardened to permit survival in the event of an attack/blast.

The launch tube was an underground cylinder where the missile was stored in a suspension system for the Minuteman III or a canister for the Peacekeeper. The launch tube contained a steel liner that extended to the closure door for the Minuteman system and only into the launcher equipment room for the Peacekeeper system. Access was provided at the upper liner for servicing the missile.

The launcher closure was a steel-reinforced concrete slab approximately 4 1/2 feet thick, weighing 110 tons. In the closed position, it rests over the launch tube opening on a steel bearing ring. Vertical movement of the closure was prevented by weight and mated beveled edges on the closure sides and launcher roof. Horizontal movement was prevented by a lock. The closure protected the missile from weapon effects and tampering as well as forming an environmental seal. For maintenance purposes the closure could be opened and closed by a hydraulic pusher set, rolling on two steel guide rails and four 18-inch diameter steel wheels. Opening the door during launch was accomplished by a ballistic actuator which blew the door open like a sling shot with fast acting ballistic gas generators.

The launcher equipment room was a bi-level cylindrical concrete structure which completely encircled the upper launch tube. Approximately 10 degrees of the first level floor was shock mounted and contained launch critical equipment. Each launch facility was also equipped with a security system to detect unauthorized activity. The system was divided into outer and inner zone functions. All detected security violations were instantly displayed on the launch control console in each launch control center for that flight.

APPENDIX A

COMMANDERS OF THE 90TH

Commanders of the 90th Bombardment Group (Heavy), 1942-1946

<u>NAME/RANK</u>	<u>DATES OF COMMAND</u>
Norman W. Enloe, 1st Lt	17 Apr 1942 – 17 May 1942
Eugene P. Mussett, Lt Col	17 May 1942 – 14 Sep 1942
Roger M. Ramey, Col	14 Sep 1942 – 16 Oct 1942
Eugene P. Mussett, Lt Col	16 Oct 1942 – 21 Oct 1942
Arthur Meehan, Col	21 Oct 1942 – 16 No 1942
Arthur H. Rogers, Lt Col	16 Nov 1942 – 18 Nov 1942
Ralph E. Koon, Col	18 Nov 1942 – 11 Jul 1943
Arthur H. Rogers, Lt Col	11 Jul 1943 – 20 Dec 1943
Harry J. Bullis, Lt Col	20 Dec 1943 – 16 Mar 1944
Carl A. Brandt, Col	16 Mar 1944 – 10 Jun 1944
Edward W. Scott, Jr., Col	10 Jun 1944 – 8 Dec 1944
Wilson H. Banks, Lt Col	8 Dec 1944 – 24 Feb 1945
Ellis L. Brown, Col	24 Feb 1945 – No date available

Inactivated on 27 January 1946

**Activated but probably not manned as 90th Bombardment Group (Very Heavy)
1 July 1947**

Inactivated 6 September 1948

**Commanders
90th Bombardment Wing (Medium)
Strategic Reconnaissance Wing (Medium)
1951 – 1960**

<u>NAME/RANK</u>	<u>DATES OF COMMAND</u>
William L. Gray, Lt Col	Jan 1951 – Unknown
Unmanned	16 Feb 1951 – 16 Jun 1952
Conrad F. Necrason, Col	16 Jun 1952 – 19 Sep 1952
Joseph S. Pirruccello, Col	19 Sep 1952 – 6 Dec 1952
Albert J. Shower, Col	6 Dec 1952 – 27 Apr 1953
Joseph S. Pirruccello, Col	27 Apr 1953 – 18 Mar 1954
Gordon F. Goyt, Col	18 Mar 1954 – 8 Apr 1954
Jack E. Cunningham, Col	8 Apr 1954 – 22 Apr 1954
Albert J. Shower, Col	22 Apr 1954 – May 1954
Vincent M. Crane, Lt Col	May 1954 – 7 May 1954
Albert J. Shower, Col	7 May 1954 – mid-May 1954
Joseph S. Pirruccello, Col	mid-May 1954 – 7 June 1954
Vincent M. Crane, Lt Col	7 Jun 1954 – 25 Jun 1954
Joseph S. Pirruccello, Col	25 Jun 1954 – 30 Jun 1954
Olbert F. Lassiter, Col	30 Jun 1954 – 3 Jul 1954
Albert J. Shower, Col	3 Jul 1954 – 6 Jul 1954
Gordon F. Goyt, Col	6 Jul 1954 – 31 Jul 1954
George L. Robinson, Col	31 Jul 1954 – 18 May 1955
Albert J. Shower, Col	18 May 1955 – 23 Aug 1955
Harold W. Ohkle, Col	23 Aug 1955 – 21 Apr 1958
William W. Wilcox, Col	21 Apr 1958 – 10 Jun 1960
Norman J. McGowen, Col	10 Jun 1960 – 20 Jun 1960

Unit inactivated from 21 June 1960 – 30 June 1963

**Commanders
90th Strategic Missile Wing
Missile Wing/Space Wing
Missile Wing
1963 - Present**

<u>NAME/RANK</u>	<u>DATES OF COMMAND</u>
Floyd E. Wilkstrom, Col	1 Jul 1963 – 26 Aug 1965
Donald W. Johnson, Col	26 Aug 1965 – 16 Aug 1966
Robert J. Hill, Col	16 Aug 1966 – 12 Aug 1968
Robert R. Scott, Col	12 Aug 1968 – 18 Aug 1969
Harold A. Strack, Brig Gen	18 Aug 1969 – 3 Jan 1972
Paul E. Bell, Col	3 Jan 1972 – 2 Jul 1973
Bobbie G. Guthrie, Col	2 Jul 1973 – 13 Jun 1974
Christopher S. Adams, Jr., Col	13 Jun 1974 – 3 Dec 1975
Ray E. Miller, Col	3 Dec 1975 – 29 Sep 1976
James E. Cowen, Col	29 Sep 1976 – 23 Mar 1979
Charles H. Greenley, Col	23 Mar 1979 – 11 Jun 1981
Martin M. Burdick, Col	11 Jun 1981 – 14 Dec 1982
James P. Henry, Col	14 Dec 1982 – 24 Jan 1984
Arlen D. Jameson, Col	14 Jan 1984 – 17 Jun 1986
Gary L. Curtin, Col	17 Jun 1986 – 8 Jun 1988
John A. Gordon, Col	8 Jun 1988 – 16 May 1989
Richard L. Farkas, Col	16 May 1989 – 30 Jul 1991
Thomas A. Fagan, III, Col	30 Jul 1991 – 19 Aug 1992
Lance W. Lord, Brig Gen	19 Aug 1992 – 5 Aug 1993
Thomas H. Neary, Brig Gen	5 Aug 1993 – 27 Oct 1994
Howard G. DeWolf, Brig Gen	27 Oct 1994 – 9 Jul 1996
Robert P. Summers, Col	9 Jul 1996 – 4 Sep 1997
William L. Shelton, Col	4 Sep 1997 – 20 Aug 1999
Roger W. Burg, Col	20 Aug 1999 – 26 Jul 2001
Thomas D. Shearer, Col	26 Jul 2001 – 14 Aug 2003
Evan J. Hoapili, Col	14 Aug 2003 – 15 Jun 2005
Michael J. Carey, Col	15 Jun 2005 – 21 Jun 2007
Michael J. Morgan, Col	21 Jun 2007 – 1 Jul 2009
Gregory S. Tims, Col	1 Jul 2009 – 30 Jun 2011
Christopher A. Coffelt, Col	30 Jun 2011 – 29 May 2013
George R. Farfour, Col	29 May 2013 – 17 Jun 2013
Tracey L. Hayes, Col	17 Jun 2013 – Present

APPENDIX B

UNIT DECORATIONS, AWARDS AND BESTOWED HONORS

COMBAT DECORATIONS (Bestowed Honors from the 90 BG, WWII)

	<u>DATE</u>
Distinguished Unit Citation, Papua	Nov 1942 – Jan 1943
Distinguished Unit Citation, New Guinea	13 – 15 Sep 1943
Phillippine Presidential Unit Citation	

CAMPAIGNS (Bestowed Homors from the 90th Bombardment Group, WWII)

Air Offensive, Japan
China Defensive
Papua
Guadalcanal
New Guinea
Northern Solomons
Bismark Archipelago
Western Pacific
Leyte
Luzon
Southern Philippines
China Offensive

NONCOMBAT DECORATIONS

Air Force Outstanding Unit Award	1 Jul 1968 – 30 Jun 1969
Air Force Outstanding Unit Award	1 Jul 1973 – 30 Jun 1975
Air Force Outstanding Unit Award	1 Jul 1982 – 30 Jun 1984
Air Force Outstanding Unit Award	1 Jul 1987 – 30 Jun 1989
Air Force Outstanding Unit Award	1 Oct 1994 – 30 Sep 1995
Air Force Outstanding Unit Award	1 Sep 1996 – 31 Aug 1998
Air Force Outstanding Unit Award	1 Oct 1999 – 30 Sep 2000
Air Force Outstanding Unit Award	1 Jan 2001 – 31 Dec 2001
Air Force Outstanding Unit Award	1 Oct 2003 – 30 Sep 2005
Air Force Outstanding Unit Award	1 Oct 2006 – 30 Sep 2007
Air Force Outstanding Unit Award	1 Jun 2008 – 31 May 2010
Air Force Outstanding Unit Award	1 Jan 2011 – 31 Dec 2012

APPENDIX C

AWARDS AND TROPHIES OF THE 90TH

John McNeil Trophy – Outstanding ICBM Maintenance in the 15th Air Force	1966
Blanchard Trophy – SAC Missile Competition Winner	1973
Chadwell Trophy – Best Maintenance Unit in SAC	1974
Chadwell Trophy – Best Maintenance Unit in SAC	1977
John McNeil Trophy – Outstanding ICBM Maintenance in the 15th Air Force	1978
Chadwell Trophy – Best Maintenance Unit in SAC	1978
Chadwell Trophy – Best Maintenance Unit in SAC	1984
Omaha Trophy – Best Missile Wing in SAC	1984
Blanchard Trophy – SAC Missile Competition Winner	1984
Riverside Trophy – Best Unit in 15th Air Force	1984
Riverside Trophy – Best Unit in 15th Air Force	1985
Rhiney Trophy – Best Food Services in SAC	1987
Hennessey Trophy – Best Food Services in the Air Force	1987
Rhiney Trophy – Best Food Services in SAC	1988
Commander-In-Chief's Installation Excellence Award for SAC	1988
Lee R. Williams Trophy – Best Missile Wing in SAC	1988
McAdoo Trophy – Best Operational Support Squadron/ICBM Mission in SAC	1988
Chadwell Trophy – Best Maintenance Unit in SAC	1988
USAF Gen Thomas D. White Award	1988
Secretary of Defense Natural Resources Conservation Award	1988
USAF Gen Thomas D. White Award	1991
Hennessey Trophy – Best Food Services in the Air Force	1992
Chadwell Trophy – Outstanding Missile Maintenance Unit in ACC	1992
Brigadier General McAuliffe Award – Outstanding CE Housing Flight	1996
Colonel Reimer Award – Outstanding Civil Engineer Readiness Flight	1996
Blanchard Trophy – SAC Missile Competition Winner	1996
Blanchard Trophy – SAC Missile Competition Winner	1997
Omaha Trophy – Best Missile Wing in Strategic Command	1997
Chadwell Trophy – Best Maintenance Unit in AFSPC	1998
McAdoo Trophy – Best Operational Support Squadron/ICBM mission in AFSPC	1998
Chadwell Trophy – Outstanding Missile Maintenance Unit in AFSPC	1999
USAF Directors Excellence Award for Media Relations	1999
USAF General Thomas D. White Restoration Award for Team Excellence	1999
National Defense Transportation Association Military Unit Award	1999
Brigadier General William T. Meridith Award	2000
USAF ICBM Command Trophy	2001
Major General Tim C. Padden Facilities Excellence Award	2001
Hennessey Trophy – Best Food Service in the Air Force	2002
ICBM Command Trophy	2002
Major General Tim C. Padden Award	2002
General Thomas D. White Award	2003
AFGSC Missile Food Service Excellence Award	2003

Air Force Male Athlete of the Year	2003
Air Force's 12 Outstanding Airmen (SSgt Teresa Mossini, 321 MS)	2004
CMSgt Ralph E. Sanborn Award (90 CES)	2004
Colonel Frederick J. Riemer Award	2004
General Thomas D. White Restoration Award	2004
Hennessy Special Award for Best Missile Feeding Operations in the Air Force	2004
Air Force's Best Small Chapel Award	2004
Air Force Five-Star Fitness Award	2004
Ralph E. Sanborn for Best Fire Department in Air Force	2005
Colonel Lowell F. McAdoo Award	2005
Major General Tim C. Padden Award	2005
Hennessy Special Award for Best Missile Feeding Operations in the Air Force	2005
Outstanding Active Duty Large Security Forces Unit Award for AFSPC	2005
General Samuel C. Phillips Award	2005
Eubank Award	2005
General Thomas S. Power Award	2005
2006 Cheyenne Trophy (90 MOS)	2006
Eubank Award	2006
Verne Orr Award	2006
Federal Energy and Water Management Award	2006
Hennessy Special Award for Best Missile Feeding Operations in the Air Force	2006
Colonel Lee R. Williams Award	2006
Omaha Trophy	2006
General Thomas S. Moorman Award	2006
Colonel Lowell F. McAdoo Award	2006
General Samuel C. Phillips Award	2006
Colonel Frederick J. Reimer Award	2007
General Thomas S. Moorman Award	2007
Colonel Lee R. Williams Award	2007
Major Padden Facility Excellence Award	2007
Air Force Electronics, Reuse and Recycling Award	2007
General Samuel C. Phillips Award	2008
DoD Firefighter of the Year (SRA Joshua Livingston, 90th CES)	2008
Air Force Athlete of the Year (Capt. Ian Holt, 319 MS)	2008
Edwin R. Chess AFSPC Award (Capt. John Sackett)	2009
Gerrald Cullins AFSPC Award (Master Sgt. Philip Watson)	2009
Charles R. Meier AFSPC Award (TSgt Michael Taylor)	2009
Gerrald Cullins Air Force Award (MSgt Philip Watson)	2009
DoD African American History Month Award (SSgt Paul White, 90 SFS)	2010
AFSA Pitsenbarger Award (SSgt Lawrence Vaden, 90 SSPTS)	2010
Vanguard Award (SSgt Lawrence Vaden, 90 SSPTS)	2010
George Washington Award for Protocol Excellence	2010
General Samuel C. Phillips Award	2010
Blackburn Trophy	2010
Colonel George T. Chadwell Memorial Award	2010
Major Duance W. Hollis Memorial Award	2010

Colonel Lee R. Williams Memorial Award	2010
Best ICBM Operations Trophy	2010
Commander in – Chief Installation Excellence Award for AFGSC	2010
Omaha Trophy	2011
Blanchard Trophy – Best ICBM Wing	2011
Blackburn Trophy – Best Missile Maintenance Team Trophy	2011
Neary Trophy - Best Emergency War Order score (319 MS)	2011
Linhard Trophy - Best Missile Combat Crew (319 MS)	2011
Best Power, Refrigeration, Electrical, Laboratory Team Trophy	2011
Best Mechanical and Pneudraulics Team Trophy	2011
Omaha Trophy	2012
Klotz Trophy, for best ICBM operations	2012
Linhard Trophy for best ICBM operations crew (320 MS)	2012
McMahon Trophy for best weapons system (320 MS)	2012
Neary Trophy for best emergency war order crew (320 MS)	2012
General Samuel C. Phillips Award (320 MS)	2012
Lowell F. McAdoo Award (90 OSS)	2012
Global Strike Challenge – 37th Helicopter Squadron best search and rescue	2012
Colonel William L. Tubbs Memorial Award for Ground Safety	2013
Air Force Nuclear Surety Outstanding Achievement Award	2013
Air Force Chief of Safety Outstanding Achievement Award for Weapons Safety	2013
AF Chief of Safety Outstanding Achievement Award for Ground Safety, CAT II	2013

APPENDIX D

90th Missile Wing Lineage and Honors



Emblem: Approved September 1993

Emblem Description: On a blue background a light blue demi-globe gridlined in gray, rises from the bottom. A red, triangular shaped pole strikes through the globe at the bottom of the shield and rises tapering to a point before it reaches the top. Two yellow lightning bolts rise diagonally, originating from the globe at the pole. There are three white stars that lie diagonally at a 45 degree on each side of the red pole.

Emblem Significance: Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The light blue globe on the dark field represents day and night vigilance of the Wing. The globe also represents the worldwide scope of the unit's mission. The pole reversed suggests the Wing's endeavor for peace through the strength of its assigned weapons. The lightning bolts refer to the swiftness and constancy of the Wing as a deterrent force. The six white stars symbolize the original squadrons of the unit and the honors awarded the Wing. In the scroll there is the 90th Space Wing motto: Impavide, which means undauntedly.

Glossary

90 MW	90th Missile Wing
90 SRW	90th Strategic Reconnaissance Wing
ACC	Air Combat Command
AFB	Air Force Base
AFSPC	Air Force Space Command
CAPEX	Capabilities Exercise
CDB	Command Data Buffer
F. E. Warren	Francis E. Warren
FOC	Full Operational Capability
ICBM	Intercontinental Ballistic Missile
LCC	Launch Control Center
LFs	Launch facilities
MCS-B	Mission Control Station Backup
MX	Missile Experimental (Peacekeeper)
OSIA	On-Site Inspection Agency
PSRE	Propulsion System Rocket Engine
REACT	Rapid Execution and Combat Targeting
REDCAR	Remote, Detection, Challenge and Response System
Rivet MILE	Minuteman Integrated Life Extension
RVs	Re-entry Vehicles
SPG	Security Police Group
SAC	Strategic Air Command

SMS	Strategic Missile Squadron
SMW	Strategic Missile Wing
START	Strategic Arms Reduction Treaty
TRICARE	Tri-West Health Care Alliance
USAF	United States Air Force
USSTRATCOM	United States Strategic Command