

Appendix A Locations of U.S. Nuclear Weapons, by Type

	Warhead/Weapon	User	Number	Location/Weapon (number of warheads)
STRATEGIC FORCES <i>Bomber Weapons</i>				
	B61 Mod 7 Bomb	AF	610	Whiteman AFB, MO/B-2 (200) Barksdale AFB, LA /B-52H (50) Minot AFB, ND/B-52H (50) Nellis AFB, NV/storage (175) Kirtland AFB, NM /storage (85) Grand Forks, ND/(25) Fairchild AFB, WA (25)
	B61 Mod 11 Bomb	AF	50	Whiteman AFB, MO/B-2
	B83 Bomb	AF	600	Whiteman AFB, MO/B-2 (300) Barksdale AFB, LA /B-52H (90) Minot AFB, ND/B-52H (90) Grand Forks, ND/(60) Fairchild AFB, WA (60)
	W80-1/ALCM	AF	1340	Nellis, AFB, NV/storage (575) Kirtland AFB, NM/storage (365) Barksdale AFB, LA /B-52H (300) Minot AFB, ND/B-52H (100)
	W80-1/ACM	AF	400	Minot AFB, ND/B-52H (300) Barksdale AFB, LA /B-52H (100)
<i>Submarine-launched ballistic missiles</i>				
	W76/Trident I C4	N	3200	Bangor, WA (1,600) Kings Bay, GA (1,600)
	W88/Trident II D5	N	400	Kings Bay, GA (400)
<i>Intercontinental ballistic missiles</i>				
	W62/Minuteman III	AF	610	46 Warren AFB silos in CO (138) 85 Warren AFB silos in NE (255) 19 Warren AFB silos in WY (67=57+ 10) 50 Malmstrom AFB silos in MT (150)
	W78/Minuteman III	AF	915	130 Malmstrom AFB silos in MT (400) 150 Minot AFB silos in ND (455) 20 Grand Forks AFB silos in ND (60)
	W87/MX	AF	525	50 Warren AFB silos in WY (525)

Appendix A Locations of U.S. Nuclear Weapons, by Type, CONTINUED

Warhead/Weapon	User	Number	Location/Weapon (number of warheads)
NON-STRATEGIC FORCES			
B61 Mods -3,-4,-10	AF, NATO	1350	Kirtland AFB, NM (600) Nellis AFB (600) Europe (150)
W80-0/SLCM	N	320	North Island NAS, CA (160) Yorktown NWS, VA (160)
RETIRED WARHEADS AWAITING DISMANTLEMENT			
W56 Minuteman II	AF	450	Kirtland AFB, NM (450)
W69 SRAM	AF	700	Kirtland AFB, NM (550) Pantex Plant, TX (150)
W79 8-inch shell	A	200	Pantex Plant, TX (200)
WARHEADS IN RESERVE			
W84 GLCM	AF	400	Kirtland AFB, NM (400)
TOTAL		12,070	

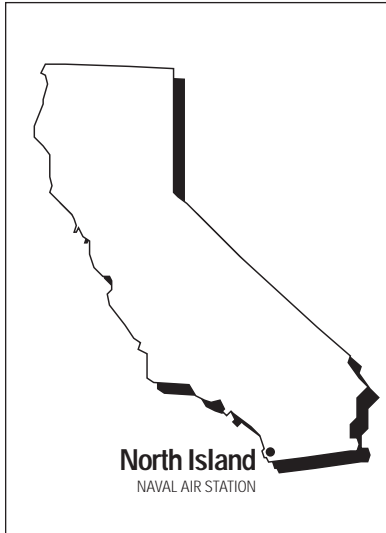
Appendix B U.S. Nuclear Weapons by Location

Bangor, WA	1600 W76/Trident I
Barksdale AFB, LA	50 B61 Mod 7 90 B83 300 W80-1/ALCM 100 W80-1/ACM
Fairchild AFB, WA	25 B61 Mod 7 60 B83
Grand Forks AFB, ND	25 B61 Mod 7 60 B83 60 W78/Minuteman III
Kings Bay, GA	1600 W76/Trident I 400 W88/Trident II
Kirtland AFB, NM	85 B61 Mod 7 365 W80-1/ALCM 600 B61 Mods 3, 4, 10 450 W56/Minuteman II 550 W69/SRAM 400 W84/GLCM
Malmstrom AFB, MT	150 W62/Minuteman III 400 W78/Minuteman III
Minot AFB, ND	50 B61Mod 7 90 B83 100 W80-1/ALCM 300 W80-1/ACM 455 W78/ Minuteman III
Nellis AFB, NV	175 B61 Mod 7 575 W80-1/ALCM 600 B61 Mods 3, 4, 10
North Island NAS, CA	160 W80-0/SLCM
Pantex Plant, TX	150 W69/SRAM 200 W79/8-inch artillery shell
Warren AFB, WY, CO, NE	610 W62/Minuteman III
Whiteman AFB, MO	200 B61 Mod7 50 B61 Mod 11 300 B83
Yorktown NAS, VA	160 W80-0/SLCM

Appendix C U.S. Nuclear Weapons, Location Profiles

CALIFORNIA

Rank: No. 12
Nuclear Warheads: 160



CALIFORNIA ranks 12th (tie) in number of nuclear warheads deployed, a decline from 6th place in 1992 and 4th place in 1985. A single storage site now exists—Naval Air Station North Island located in San Diego, with a notable support base at Travis AFB and the Lawrence Livermore National Laboratory. This is a significant change from three sites in the state in 1992 and five in 1985. Closed nuclear storage sites include former SAC bomber bases Castle AFB in Atwater and Mather AFB in Sacramento; one of two main Army central nuclear weapons storage sites at Sierra Army Depot in Herlong, near the Nevada border; and the Naval Weapons Station Concord in the San Francisco Bay area.

Naval Air Station North Island in San Diego is believed to be the only remaining nuclear storage depot supporting the Pacific Fleet (with closure of nuclear sites in Alaska, Concord, and Hawaii). Half of the Navy's stock of 320 nuclear Tomahawk missiles and W80 warheads are presumed to be stationed at North Island. The Special Weapons Office (Code 505) of the Weapons Department is located in Building 743. The Office formerly stored B57 and B61 gravity bombs for aircraft carriers and Marine Corps aircraft

and B57 nuclear depth bombs for Navy anti-submarine warfare. The bunkers are at the north-west tip of North Island, visible from Point Loma.

North Island claims to be the birthplace of naval aviation. The Navy's first aviator Lt. T.G. Ellyson was trained at North Island by Glenn Curtiss in 1911 and the first sea plane flight took place at North Island. Charles Lindberg started his famous journey to Paris from North Island in 1927. The air station grew rapidly during World War II as a major training, staging and deployment center for ships and squadrons.

From the early days of the nuclear age, North Island was central to the Navy's capability. A Nuclear Weapons Training Group, Pacific was established at the Air Station, an outgrowth of the early Special Weapons Unit Pacific (SWUPAC), which was established by the Chief of Naval Operations under Commander, Naval Air Force, Pacific, in June 1953. Personnel were drawn from Naval Special Weapons Units, then located at Sandia Base in Albuquerque. These small units provided technically trained teams temporarily to aircraft carriers which had nuclear weapons capability. By 1958 sufficient commands in the Pacific Fleet had developed nuclear weapons capabilities to necessitate assignment of teams as a permanent part of the ship's company. In June 1958 the Command was reorganized as the Nuclear Weapons Training Center, Pacific, with a mission to conduct training for Pacific Fleet units. The Center became the Nuclear Weapons Training Group, Pacific in September 1970.

During the 1980s the Command provided nuclear weapons orientation, employment planning, and technical training to over 8,500 personnel in 40 courses varying from one to 61 days. In addition to training, the Group conducted Navy Technical Proficiency Inspections and Nuclear Weapons Acceptance Inspections in support of the Pacific Fleet. Since the removal of nuclear weapons from ships and submarines, the mission has ceased, and the new Naval Weapons Inspection Center has taken over the nuclear role.

The Defense Department's Primary Nuclear Airlift Force (PNAF) mission is also flown out of California by the 60th Air Mobility Wing, Travis AFB, located at Fairfield, 40 miles northeast of San Francisco. Previously located at McGuire AFB in New Jersey and McChord AFB in Washington, the so-called "Bully Beef Express" PNAF units were transferred to California in 1994. The 60th Wing received excellent and outstanding ratings in its 1994 NSI and was awarded the USAF nuclear surety plaque "for distinguished performance." It also received 1995 and 1996 USAF Nuclear Surety Plaques for "outstanding achievements" and "contributions" to nuclear safety.

Given the nuclear certification of the 60th Wing, it is probable that Travis maintains the ability to store nuclear weapons for contingency purposes. The former nuclear weapons storage area (WSA) at Travis was initially constructed by the AEC between 1950 and 1953 as one of 13 original facilities built for storage, maintenance, and operational readiness of the nuclear stockpile. This storage area was originally separate from Travis AFB and known as Fairfield Air Force Station (AFS). The original nuclear storage complex included one storage buildings with vaults ("A" structure), a maintenance building ("C" structure), two other assembly/maintenance buildings, two types of warhead storage igloos, and a dry low-level radioactive waste disposal area.

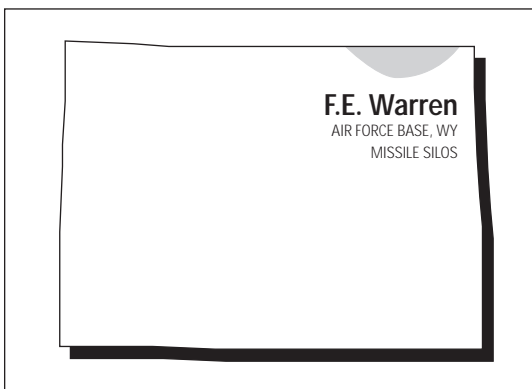
The first weapons arrived in the summer of 1953 for B-36 bombers of the 5th Bombardment Wing, and after 1959, B-52s, supported by the 3096th Aviation Depot Squadron (ADS). In July 1968 the 5th BW went to Minot AFB, and in February 1970 the 3096th ADS went to Nellis AFB. For the last 15 plus years, Travis has only hosted aerial refueling and transport aircraft.

Of note, it is probable that nuclear weapons, devices, components and materials are present on occasion at the Lawrence Livermore National Laboratory, one of two DOE nuclear weapon design laboratories.

COLORADO

Rank: No. 14

Nuclear Warheads: 138



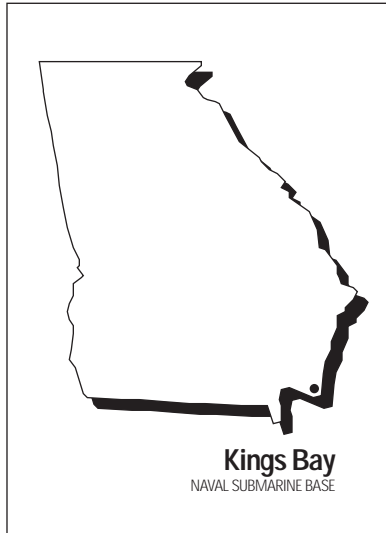
COLORADO ranks 14th in number of nuclear weapons deployed, and though the number of weapons has not changed since the Cold War, it has risen in rank from 22nd as other bases have been closed. Although there are no main bases where nuclear weapons are deployed in the state, Colorado hosts 46 remote Minuteman III underground missile silos of the F.E. Warren AFB in Wyoming. These silos are clustered around the northeast border. A total of 138 W62 warheads (MIRV x 3) arm the missiles.

With implementation of the START II Treaty, and the de-MIRVing of the Minuteman III ICBMs (to one warhead each), the number of warheads in the state will decline to 46.

GEORGIA

Rank: No. 2

Nuclear Warheads: 2000



GEORGIA ranks 2nd in number of nuclear warheads deployed, a rise from 11th place in 1992, and 12th place in 1985. The Naval Submarine Base Kings Bay is the homeport for the Navy's Atlantic-based Trident II-equipped (Ohio class) ballistic missile submarine force subordinate to the Submarine Forces Atlantic Fleet (SUBLANT). The base is just north of the Florida-Georgia border, about 40 miles north of Jacksonville, Florida.

The W88 and W76 warheads for the ten assigned submarines are nominally "stored" at the base, even though half of those submarines are at sea (or in overhaul) at any one time. The Strategic Weapons Facility Atlantic (SWFLANT) is responsible for storage, handling, and maintenance of nuclear weapons at Kings Bay. Because the number of W88 Trident II warheads manufactured was not sufficient to arm all ten of the Trident II capable submarines, W76 Trident I warheads from retired Atlantic fleet Poseidon submarines also arm the force.

The Army began to acquire land at Kings Bay in 1954 on which it planned to build a military ocean terminal which would be used to ship ammunition in event of a national emergency. Construction began in 1956 and was completed two years later at a cost of \$11 million. The most prominent feature of the terminal was a 2000 foot-long, 87 foot-wide concrete and steel wharf, with three parallel railroad tracks, enabling simultaneous loading of several ammunition ships. A 10 mile-long, 200 foot-wide channel, dredged by the Army to 32 feet provided access between the bay and the ocean via the St. Marys channel. Elsewhere the Army built 47 miles of railroad track. The base was never activated.

In 1975 there were negotiations between the U.S. and Spain over the continued basing of ballistic missile submarines at Rota, Spain. The resulting 1976 treaty called for withdrawal of the Navy squadron by July 1979. Some sixty sites along the Atlantic and Gulf coasts were evaluated as a replacement and by the summer of 1976 the number was reduced to five: Narragansett Bay, RI; Cheatham Annex, VA; Charleston, SC; Mosquito Lagoon, FL; and Kings Bay, GA. Kings Bay was chosen to be the support base for Squadron Sixteen in November 1976, with initial homeporting of the submarines and crews in Charleston, SC. The relocation occurred in July 1979 with a submarine tender (USS Canopus, AS-34), a floating dry dock (USS Oak Ridge, ARDM-1), and eight SSBNs. This modest four year effort cost \$125 million.

In May 1979 Kings Bay was selected as the permanent east coast Trident homeport, refit site, and training base for Ohio-class SSBNs. This major decade-long effort cost several billion dollars. On March 29, 1990 the Navy declared the USS Tennessee (SSBN 734) operational as it went on its first patrol from Kings Bay, carrying Trident II SLBMs. On September 6, 1997 the 18th and last Ohio-class submarine (the USS Louisiana) was commissioned, the tenth to be based at Kings Bay.

LOUISIANA

Rank: No. 9

Nuclear Warheads: 540



LOUISIANA ranks 9th in number of nuclear weapons deployed, a fairly steady rank (7th in 1992 and 9th in 1985). However, Barksdale AFB, south of Bossier City, has undergone a major change with the closure of one of the Air Force's three main nuclear weapons general depots at the base (the others, at Kirtland AFB in New Mexico and Nellis AFB in Nevada, remain open). The 3097th Aviation Depot Squadron, also one of three major nuclear support units in the Air Force, was deactivated.

Barksdale was one of six original national stockpile sites (NSS) storing nuclear weapons for the U.S. military (called Bossier Base). The former nuclear weapons storage area (WSA) was initially constructed by the AEC between 1949 and 1951. Bossier Base

was jointly operated by the AEC, the Armed Forces Special Weapons Project, and Air Force Materiel Command. The first weapons arrived in 1951. The original complex included three storage buildings with vaults ("A" structures), a maintenance building ("C" structure), two other assembly/maintenance buildings, two types of storage igloos, and a dry low-level radioactive waste disposal area.

Barksdale is today the main B-52H bomber base of the Air Force, housing 58 of the service's 95 planes. The base hosts the largest Air Combat Command bomber wing, the 2d Bomb Wing. Nuclear weapons stored at Barksdale for use by these bombers include 50 B61-7 and 90 B83 gravity bombs, 300 Air-launched cruise missile (ALCMs), and 100 Advanced Cruise Missiles (ACMs).

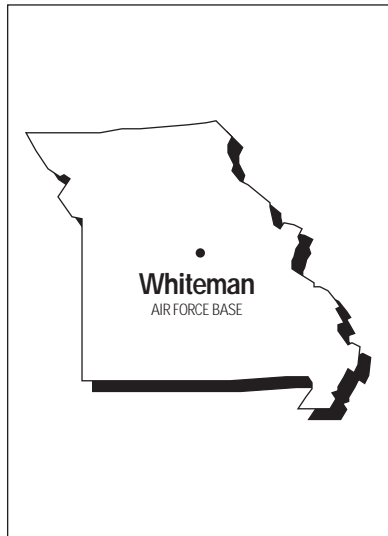
The U.S. stock of 1740 nuclear-armed air-launched cruise missiles—ALCMs and ACMs—far exceeds the number of bombers and most (an estimated 1,040) are in storage in Nevada and New Mexico. The operational ALCM and ACM stock, we estimate, is split between two B-52 bomber bases, one northern and one southern. Since the stealthy ACM has a greater ability to penetrate concerted air defenses, we estimate that more ACMs are stored in the northern base (for earlier arriving bombers) and more ALCMs are stored at the southern base. Additional B61 and B83 nuclear gravity bombs, not the normal post-Cold War load for non-penetrating bombers, are also assessed to be deployed at Barksdale to fulfill the requirements of certain war plans.

The 2nd Bomb Wing received the USAF Nuclear Surety Plaque for 1993 for "distinguished performance." Air Combat Command conducted Nuclear Staff Assistance Visits (NSAVs) in June 1994 and October 1995. The Wing and its subordinate 2nd Support Squadron again received a USAF Nuclear Surety Plaque in 1995 for "outstanding achievements" and "contributions" to nuclear security during their October nuclear mini-inspection. The 2nd Munitions Squadron also received the Safety Award of Distinction for maintaining "the highest safety standards" with its stock of over 700 air-launched cruise missiles and B83 bombs. From 16-28 March 1996, the 2nd Wing again underwent a Nuclear Operational Readiness Inspection (NORI). ACC again provided a Nuclear Staff Assistance Visit in January 1997.

MISSOURI

Rank: No. 7

Nuclear Warheads: 550



MISSOURI ranks 7th (tie) in number of nuclear weapons deployed, a rise from 21st since 1992. Whiteman AFB, west of Jefferson City is home to the new B-2 “Spirit” bombers of the 509th Bomb Wing of the Air Force Air Combat Command. The 150 Minuteman II ICBMs previously deployed around Whiteman have been retired.

Nuclear weapons stored at Whiteman AFB include 200 B61-7 bombs, 50 new B61-11 “earth penetrator” bombs, and 300 high-yield B83 bombs. As the primary nuclear penetrating bomber, the B-2 does not carry any air-launched cruise missiles.

The 509th Wing returned to operational status on 1 April 1993, the initial cadre coming from Detachment 509, 351st Missile Wing, which was inactivated. On December 17, 1993, the wing’s first B-2 arrived at Whiteman. It was dubbed the Spirit of Missouri. During 1994, four additional bombers arrived at Whiteman (17 and 31 August, 29 October, 30 December), and the first bomber was extensively tested to practice nuclear bomb loading. The 509th (and the subordinate 509th Security Police Squadron) was awarded excellent and outstanding ratings in the 1994

NSI and the Wing received a USAF Nuclear Surety Plaque “for demonstrating outstanding capability to support a nuclear airlift mission.”

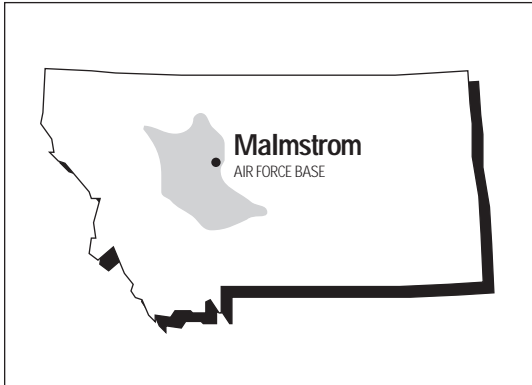
Three more planes were added in 1995 (17 February, 28 June, and 14 November) and the first B-2 returned to Northrop Grumman’s Palmdale, CA assembly plant to undergo upgrading to Block 30 status. In 1996, the ninth through 13th bombers arrived (11 and 24 January, 16 May, 3 July, and 17 December). On January 1, 1996, the Air Force announced that the B-2 fleet was operational for use in a conventional bombing role. From June 10-17, 1996, a Quality Air Force Assessment (QAFA) was conducted at Whiteman.

Preparations for permanent nuclear certification of the B-2 Wing at Whiteman began in August 1993 with an Air Combat Command Nuclear Staff Assistance Visit (NSAV). These were continued in March 1995, September 1995, January 1996, and September 1996. Between January 21-27, 1997, the first wing Nuclear Surety Inspection was held. After nuclear certification, on 19 February, the wing conducted its first nuclear war “generation” exercise to practice rapid take-off of aircraft in response to an alert order. The B-2s were added to the nuclear war plans.

MONTANA

Rank: No.7

Nuclear Warheads: 550



MONTANA ranks 7th (tie) in number of nuclear warheads deployed, a rise from 16th place in 1985 and 20th place in 1992. Malmstrom_AFB, six miles from Great Falls, is home to the 341st Space Wing (formerly Missile Wing) of the 20th Air Force, Air Force Space Command. By the end of 1998, the Wing will be equipped with 200 MIRVed Minuteman III ICBMs deployed with the 10th, 12th, 490th, and 564th Missile Squadrons.

The Wing received the USAF Nuclear Surety Plaque for 1993 for “distinguished performance.” This was a result of a NSI conducted 19-27 June 1993, where the Wing was rated excellent in all areas.

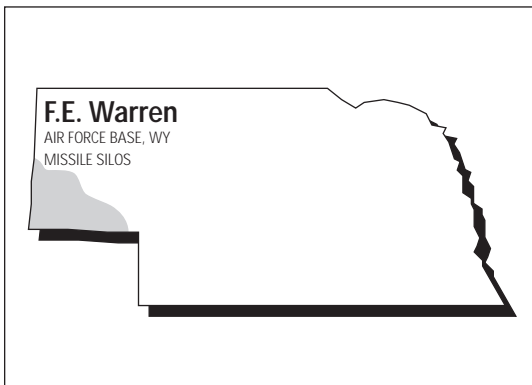
Construction of Malmstrom AFB began in May 1942 as a port of embarkation to Ladd Field in Fairbanks, Alaska as part of the lend-lease operations to the Soviet Union. In 1954 Great Falls Army Air Field became a Strategic Air Command base and in 1956 was renamed Malmstrom AFB. During the Cuban Missile crisis of 1962 the first Minuteman I ICBMs went on alert with the 341st Strategic Missile Wing. Eventually 200 Minuteman missiles were spread across 23,000 square miles of Montana.

A September 1991 Presidential directive ordered the deactivation of the Minuteman II force and the last of Malmstrom’s 150 Minuteman II missiles were removed from silos on August 23, 1994. Empty silos are now being filled with Minuteman III missiles transferred from Grand Forks, AFB, ND. The transfer began in October 1995 and should be complete during 1998.

NEBRASKA

Rank: No. 11

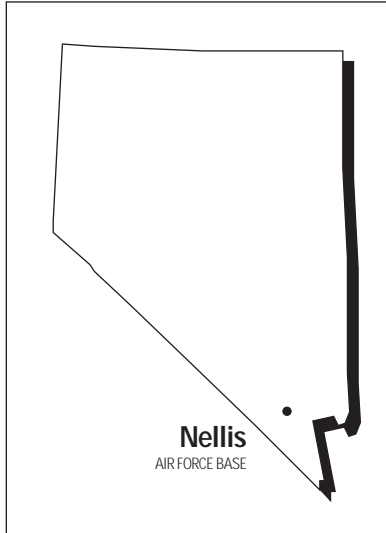
Nuclear Warheads: 255



LIKE COLORADO, NEBRASKA does not host any nuclear bases, but still ranks 11th in number of nuclear warheads deployed due to the presence of 85 Minuteman III underground missile silos of F.E. Warren AFB in Wyoming in the southwest corner of the state. A total of 255 W62 warheads (MIRV x 3) arm the missiles. These will be reduced to a single warhead configuration by the end of 2007 under provisions of the START II Treaty.

NEVADA

Rank: No. 4
Nuclear Warheads: 1350



NEVADA ranks 4th in number of nuclear warheads deployed, a significant rise from 14th in 1992 and 17th in 1985. Nellis AFB, north of Las Vegas, serves as one of two main Air Force nuclear weapons general depots in the United States (the other is at Kirtland AFB in New Mexico). Nuclear weapons are stored at the Nellis Area 2 (formerly Lake Mead Base) at a remote section of the Nellis complex. They are overseen by the 896th Munitions Squadron (formerly the 3096th Aviation Depot Squadron), a unit of the Air Force Materiel Command, though the nuclear facility is operated jointly for the AFMC and the Air Combat Command.

It is estimated that 775 gravity bombs are in storage at Nellis, including 175 B61-7 and 600 B61-3/4/10 types. Most of these bombs have been withdrawn from retired B-52 bomber bases or from Europe. In addition, a portion of the surplus air-launched cruise missile warhead stock is estimated to be stationed at Nellis, made up of 575 W80 ALCMs.

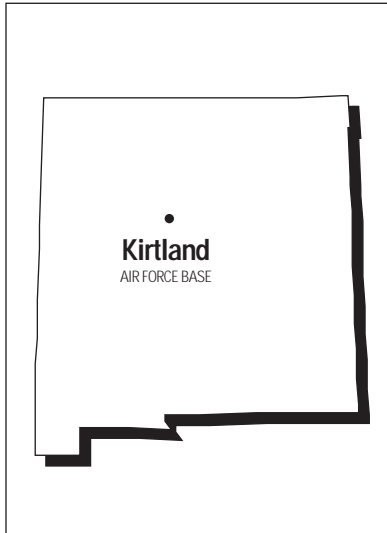
The nuclear weapons storage area (WSA) at Nellis was initially constructed by the AEC between 1953 and 1955 as one of 13 original facilities built for storage, maintenance, and operational readiness of the nuclear stockpile. This storage area was originally separate from Nellis AFB and known as Lake Mead Base. Jointly operated by the AEC, the Armed Forces Special Weapons Project, and the U.S. Navy, the first weapons arrived at Lake Mead in 1955. The original complex included up to 10 storage buildings with vaults ("A" structures), a maintenance building ("C" structure), two other assembly/maintenance buildings, storage igloos, and a dry low-level radioactive waste disposal area. An emergency holding tank was connected the "C" structure. Area 2 became part of the main base in September 1969. Today, the 896th operates the largest U.S. above-ground munitions storage facility in the world.

The 896th Squadron received the USAF Nuclear Surety Plaque for 1993 for "distinguished performance." The Squadron and the sister 554th Security Police Squadron again received Nuclear Surety Plaques in 1995 for "outstanding achievements" and "contributions" to nuclear weapons safety. They had an NSI from February 9-22, 1997. The 896th is scheduled to receive its next NSI on July 27, 1998. Air Combat Command conducted Nuclear Staff Assistance Visits (NSAVs) at Nellis in May 1994, March 1995, and June 1996, focusing on nuclear bomb delivery training at the Air Warfare Center and certification of the 57th Wing's F-15 and F-16 aircraft.

NEW MEXICO

Rank: No. 1

Nuclear Warheads: 2450



BECAUSE OF A BACKLOG OF WARHEADS awaiting dismantlement at the DOE's Pantex facility near Amarillo, TX, the Kirtland Underground Munitions Storage Complex (KUMSC) at Kirtland AFB, Albuquerque, New Mexico has emerged as number one in U.S. nuclear warheads deployed in a single location, a rise from 2nd place in 1992 and 11th place in 1985.

Kirtland AFB serves as one of two main Air Force nuclear weapons general depots in the United States (the other is at Nellis AFB in Nevada). And because of its 300 mile proximity to Pantex, Kirtland serves as a transshipment base and storage point augmenting the disassembly facility. Nuclear weapons are stored in the newly built, partially underground KUMSC facility, managed by the 898th Munitions Squadron of the 377th Air Base Wing (ABW), a unit of the Air Force Materiel Command. The 377th Air Base Wing received excellent and outstanding ratings in its 1994 NSI. They had another NSI on June 21-30, 1997. The 898th MUNS is scheduled to receive an NSI on September 28, 1998.

Kirtland AFB traces its origins to the 1920s when a private airstrip called Oxnard Field was created. In the late 1930's Albuquerque's municipal airport began operating in what is now the base's west side, and in 1939, military activity began with the leasing of 2000 acres. One of the country's largest bomber crew training bases was created soon thereafter, and a training depot for aircraft mechanics (later known as Sandia Base) was established during the Second World War.

In July 1945, Los Alamos scientific director J. Robert Oppenheimer formed Z-Division to manage the engineering, design, production, assembly, and field testing of the non-nuclear components of atomic bombs. The need for flight support and test facilities reasonably near to the Los Alamos Laboratory led to the movement of the Division to Sandia in September 1945. By July 1946 transfer was almost complete and Z-Division moved into four new buildings, 828, 838, 824 and 839. The unit became the Sandia Corporation in 1949 and later the Sandia National Laboratories, still the largest element and tenant at Kirtland.

During the Cold War, Kirtland became the U.S. military center for nuclear weapons administration and operation. The Armed Forces Special Weapons Project (AFSWP) (later the Defense Atomic Support Agency-DASA, then the Defense Nuclear Agency-DNA, now the Defense Special Weapons Agency-DSWA) operated the Sandia Base from its creation in 1947. In 1949, the Air Force Special Weapons Command (disestablished in 1976) was also established at Kirtland, and in 1949, the Naval Weapons Evaluation Facility, a Navy nuclear weapons research and test facility was established. It was joined by the Air Force Weapons Laboratory (which became the Phillips Laboratory in 1990). In 1971, Kirtland and Sandia Base merged.

In 1945, nuclear weapons first came to the Sandia Base, and a special Manhattan District Military Police unit was established to guard the bombs as they were brought down from the Los Alamos laboratory for practice and operational loading on specially modified B-29 bombers. Nuclear warheads came for permanent storage in 1949, when the Manzano Base Weapons Storage Area ("Site

Able”), a 2880 acre facility constructed amid a small range of foothills in the Manzano mountains near the southeast end of the base, was opened.

The facility at Manzano Base was a large complex of plants where weapons maintenance and storage occurred. During the initial phases of nuclear weapons development the AEC was responsible for the nuclear component of warheads, and the DOD was responsible for the non-nuclear components. The nuclear materials—stored in special rooms separate from weapons—required constant maintenance to insure readiness. This involved rotating individual weapons in and out of storage in igloos at Manzano and taking them through several rooms in four plants for various phases of maintenance.

Initially the Army was responsible for Manzano, but in early 1952, the Air Force 1094th Special Reporting Group was established and took control of the base. The 1094th went through a variety of redesignations over the years, until 1 April 1994, when the current 898th Munitions Squadron was established. The 56-acre KUMSC was completed in 1994, consolidating warhead storage in a new facility outside of Manzano mountain. KUMSC is located on the southeast side of the installation, approximately 3.5 miles east of the main base. Nuclear weapons moved by air in and out of KUMSC use the Albuquerque International Airport.

New Mexico has also been involved in the production of nuclear weapons in three phases. The first bombs were made at Los Alamos. And now, the Laboratory is again building up a capacity to design and assemble prototype nuclear “pits,” nuclear warheads, and weapons-like devices. The assembly of thermonuclear warheads also occurred in New Mexico, at the Technical Area II (TA-2) facility at Sandia Base in the early and mid-1950s. TA-2 is a diamond-shaped parcel of 45.5 acres. Buildings 904 and 907 were originally facilities where the fabrication of the high explosive spheres for implosion type weapons was carried out (this lasted until 1958.) Building 907, currently the Explosives Application Facility, was constructed in 1948 and is located in the northern portion of TA-2. Early Nagasaki-type bombs used up to five thousand pounds of high explosive and the buildings were designed to reduce damage if there was an explosion. Three blast walls, 12 feet-thick, separate each of four assembly bays. An earthen berm on the south side of the building was also built to try and isolate Building 907 in case of an accidental explosion. A fifth bay, located at the end of the building, was used to package and ship assembled weapons. An overhead crane would then be used to lift the weapon through the roof onto a truck for transport to the field.

In a definitive inventory taken in 1994, the Sandia Nuclear Materials Storage Facility (NMSF) had a total nuclear material inventory of approximately 57 metric tons, of which less than one metric ton was highly enriched uranium and plutonium. Nuclear materials were stored at the time at Manzano Base structures, NMSF cells, and at Technical Areas I and V.

The 49th Fighter Wing at Holloman AFB (F-117A stealth fighters) is also thought to be nuclear certified. Formerly known as Alamogodo Army Air Field, Holloman was originally designed for training British bomber crews, but was later adapted to serve as a training base for U.S. bomber crews (B-17s and B-29s). On July 16, 1945, the first atomic bomb (code named Trinity) was exploded in the northeast corner of the air field’s bombing range. After World War II most operations at the base ceased, but in 1947 Air Material Command reactivated the base to develop pilotless aircraft and guided missiles, and it was renamed Holloman AFB the following year. The base remained a primary location for guided missile and space research until 1968 when the 49th Wing arrived. On May 9,

1992 four F-117A Stealth fighters from Tonopah Test Range, Nevada arrived at Holloman, and over the next two months the rest of the aircraft arrived. The 49th Wing received an operational readiness inspection (ORI) from 23-31 June 1995 which included evaluation of the ability of the Wing to receive and guard nuclear weapons.

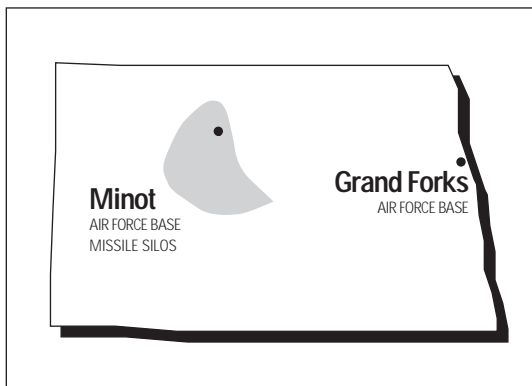
Air Combat Command also conducted Nuclear Staff Assistance Visits at Cannon AFB in December 1993, April 1995, and February 1997. The 27th Fighter Wing there (F-16C/D aircraft) is fully nuclear certified and capable of operations overseas with nuclear weapons.

Cannon AFB is located five miles west of Clovis, NM, about 190 miles east of Albuquerque. In 1942 the Army Air Corps took control of the civilian airfield, called Portair Field. The 16th Bombardment Operational Wing arrived in 1943 as a training unit for B-24, B-17 and B-29 aircraft. The base, renamed Clovis Army Air Field, was deactivated in 1947 but reactivated in 1951 and assigned to the Tactical Air Command and renamed Cannon AFB in 1957. From 1956 to 1968 the principal base aircraft was the F-100 "Super Sabre." Beginning in 1969 the base was home to the F-111 fighter bomber, which operated until the F-16's arrived. It is not believed that there were ever nuclear weapons stored at Cannon.

NORTH DAKOTA

Rank: No. 5

Nuclear Warheads: 1140



NORTH DAKOTA ranks 5th in number of nuclear warheads deployed, a decline from 4th place in 1992 (when 1,650 warheads were deployed), and 3d in 1985. There are two nuclear bases in the state, Minot AFB and Grand Forks AFB. Minot hosts a B-52H Bomb Wing and a Minuteman III ICBM wing. Grand Forks hosts a missile wing but is in the process of transferring 150 Minuteman missiles to Malmstrom. Though there will be no bombers or missiles there shortly a weapons storage area will be maintained and hold nuclear contingency weapons.

Minot AFB, located 12 miles north of the town of Minot and about 100 miles north of Bismarck, is host to bombers and missiles. A B-52H unit—the 5th Bomb Wing of the 8th Air Force, Air Combat Command—is armed with an estimated 140 gravity bombs (50 B61-7 and 90 B83) and 300 stealth Advanced Cruise Missiles (ACMs) and 100 ALCMs. The Minuteman III missiles at Minot are subordinate to the 91st Space Wing (formerly Missile Wing) of the 20th Air Force, Air Force Space Command.

The 150 Minuteman III missiles (with 450 W78 warheads) controlled from Minot are dispersed over 8,500 square miles in an arc from south of the base to within a mile or two of the Canadian border.

In the early 1950s the Air Force began surveying the northern plains states for suitable fighter-interceptor base locations, believing that the trans-polar route would be how Soviet bombers would

attack the U.S. Minot was chosen, construction began in 1956, and the 5,000-acre base opened the following year. While it began as an Air Defense Command base, the first permanent Strategic Air Command (SAC) unit came in 1958. Northern bases also offered advantages for trans-polar attacks on the Soviet Union, and B-52 bombers arrived in July 1961.

Construction of Minuteman I ICBM silos dispersed over 8,000 square miles of North Dakota began in January 1962 and 150 missiles were operational by April 1964. In 1970, a one year project to convert to the MIRVed Minuteman III began. These essentially remain the 150 Minuteman III ICBMs at Minot today, except for a W78/Mk12A warhead/reentry vehicle upgrade from December 1979 to February 1983.

The 91st Missile Wing at Minot received an NSI from February 19 to 26, 1993 and was rated excellent. ACC Nuclear Staff Assistance Visits (NSAVs) were conducted at Minot in January and October 1993, and again in January 1995 in preparation for a 1995 "Enhanced" NSI. The 5th Bomb Wing received a USAF Nuclear Surety Plaque in 1994 "for demonstrating outstanding capability to support a nuclear airlift mission." And it again received a USAF Nuclear Surety Plaque in 1995 for "outstanding achievements" and "contributions" to nuclear security during the ACC August enhanced NSI. Another NSAV was conducted in February 1996, and from June 9-22, 1996, the Wing underwent a Nuclear Operational Readiness Inspection (NORI). In 1994, the 321st Missile Group was also awarded the nuclear surety plaque "for distinguished performance." In 1995, the 321st and subordinate squadrons again received an excellent/outstanding rating in its NSI.

Grand Forks, much like Minot was originally conceived as an air defense base and the site was chosen in 1954. By 1956 plans had changed with the base to serve as a Strategic Air Command bomber and tanker base as well. Between 1960 and 1962 a variety of air-refueling, fighter-interceptor, and B-52 bombers (319th Bombardment Wing) arrived at Grand Forks. In December 1966 the 321st Strategic Missile Wing became operational with Minuteman II ICBMs, upgraded to Minuteman IIIs by March 1973. The 319th BW sent its B-52s to other units and received B-1B bombers in 1987. With reductions mandated by the START agreements, however, the make up at Grand Forks began to change after the Cold War. The last B-1Bs departed in 1994 and the Minuteman III missiles of the 321st Missile Group started being transferred to Malmstrom in a consolidation of four Minuteman III bases to three. The first missile was removed October 4, 1995. All fifty missiles from the 446th Squadron were removed by November 1996. The next fifty from the 448th Squadron were completed in October 1997. The final fifty from the 447th Squadron was originally scheduled for completion in September 1998, but is now estimated to be June 1998. The 321st Missile Group is scheduled to inactivate in September 1998. Actually of the 150 MM IIIs removed from Grand Forks, 120 will go to Malmstrom and 30 to Hill AFB, UT as spares.

Forty nine people will stay at Grand Forks after Group inactivation through at least the end of 1998 as transition team members required to finish up duties such as disposal of equipment, hand over of the WSA, and historical documentation. Grand Forks will have neither bombers nor missiles but will retain, much like Fairchild AFB (see below), a weapons storage area for the storage of reserve nuclear weapons

The remaining 319th Air Refueling Wing at Grand Forks has an odd status, fully nuclear certified and operating a Weapons Storage Area (WSA) even though bombers have left the base. The 319th ARW and the subordinate 319th Security Police Squadron at Grand Forks AFB received excellent

and outstanding ratings in their 1994 NSI. The Wing was awarded the nuclear surety plaque in 1994 “for distinguished performance.” It also received a 1996 USAF Nuclear Surety Plaque.

The Weapon Storage Area at Grand Forks is presumably being used to store the bomber weapons that are part of the “hedge” and/or reserve stockpile. The START II Treaty requires that, “Each Party shall locate storage areas for heavy bomber nuclear armaments no less than 100 kilometers from any air base where heavy bombers reoriented to a conventional role are based.” (Article IV, Section 10) Since the Treaty permits bombers reoriented to a conventional role to be returned to a nuclear role, the weapons at Grand Forks, Fairchild, and in storage depots seems to be for such a future contingency.

SOUTH DAKOTA

(Nuclear Warheads: 0)

SOUTH DAKOTA no longer hosts nuclear weapons, with the deactivation of the Minuteman II ICBM Wing at Ellsworth AFB and the 1996-97 conversion of the 28th Bomber Wing to conventional only B-1B missions. Prior to the removal of the last 170 B61-7 and B83 gravity bombs last year, the State ranked 14th in number of nuclear warheads deployed, a slight decline from 12th place in 1992. The last Nuclear Staff Assistance Visit at Ellsworth was held in April 1993.

Ellsworth AFB is located about 12 miles from Rapid City, and is home to the 28th Bomber Wing of the 8th Air Force, Air Combat Command. On January 2, 1942 the War Department established Rapid City Army Air Base as a training location for B-17 Flying Fortress crews. From September 1942 to July 1945 instructors taught thousands of pilots, navigators, radio operators, and gunners. In 1947, the base hosted the 28th Bombardment Wing (BMW), flying the B-29. In July 1949, the 28th began conversion to the gigantic B-36 bomber and in 1957 it received its first B-52.

Ellsworth was one of the original five Air Force Operational Storage Sites for nuclear weapons, and first received its atomic bombs in 1952. The base also hosted a nine-missile Titan I ICBM squadron from mid-1962 to early 1965. This was followed by deployment of 150 Minuteman I ICBMs dispersed over 18,000 square miles of South Dakota starting in 1963. On December 5, 1964 two airman were dispatched to an Ellsworth Minuteman I launch facility to repair one of the missile’s systems. In the midst of their work a retrorocket below the Reentry Vehicle (RV) fired causing the RV to fall 75 feet to the bottom of the silo. This is one of the 32 “Broken Arrows” or serious nuclear weapon accidents acknowledged by the Pentagon.

From 1971 to 1973 Minuteman Is were replaced by Minuteman IIs. In October 1991 the Minuteman IIs were deactivated, and a lengthy process of removing warheads, pulling missiles out of the silos, and blowing up the silos, took place. The W56 warheads were removed starting in late 1992, and missiles were removed from their silos starting in 1993 (the last was removed by April 7, 1994.) On September 13th 1996, the 149th and last silo was blown up at Ellsworth, well ahead of schedule. The 150th silo, and an associated underground launch control center were nominated as National Historic Landmarks.

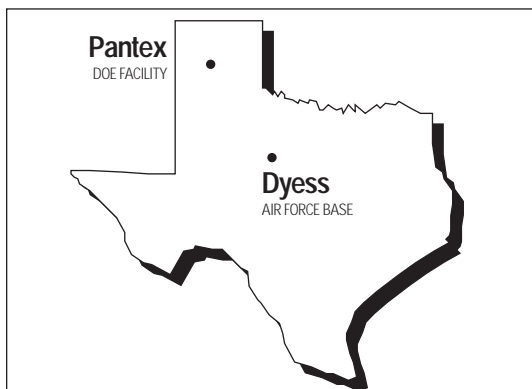
A Defense Special Weapons Agency (DSWA) funded and Air Combat Command sponsored force-on-force exercise, called “Mighty Guardian 94” was held at Ellsworth AFB in May 1994. The

exercise showed that increased physical delay is crucial in resource allocation and security police training and tactics for the security of nuclear weapons. On December 30, 1994, the Chief of Staff of the Air Force signed a memorandum, concerning “Nuclear Storage Area Security Improvements,” and emphasized the need to enhance the security facilities and tactics used to secure nuclear weapons and urged units with WSAs to “find effective and affordable ways to address the problems.” This has led to improved anti-terrorism security measures at nuclear facilities throughout the U.S.

TEXAS

Rank: 10

Nuclear Warheads: 350



TEXAS ranks 10th in number of nuclear warheads deployed, a change from 5th place (and 1,365 warheads) in 1992 and 6th place in 1985 (630 warheads). However, nuclear weapons are stored only at the Pantex Plant of the Department of Energy outside of Amarillo on a temporary basis while they await dismantlement. Though the composition is constantly in flux depending upon which warheads are scheduled, the current pool includes some 150 W69 SRAM warheads and 200 W79 8-inch artillery shells.

Dyess AFB, near Abilene, once hosted nuclear-capable B-1B bombers assigned to the 7th Wing of the Air Force Air Combat Command (ACC). As of the end of 1997 the B-1 have completed their conversion to conventional-only roles and the nuclear weapons

have been removed from the base. The ACC conducted Nuclear Staff Assistance Visits (NSAVs) at Dyess in February 1994, August 1994, and September 1995. The 7th Wing received a USAF Nuclear Surety Plaque in 1995 for “outstanding achievements” and “contributions” to nuclear security. The 7th Security Police Squadron received excellent and outstanding ratings during inspections. From 20 February-3 March 1996, the 7th Wing also underwent a Nuclear Operational Readiness Inspection (NORI) and ACC conducted another NSAV in October 1996, presumably the last.

The detailed history of the production and assembly of U.S. nuclear weapons is still an unwritten chapter of the post-war era, but some facts are known. In 1948 the Army Ordnance Plant in Burlington, Iowa began to produce chemical high explosive components for nuclear warheads, and the following year the first warhead, a Mark IV (Fat Man type) bomb, was assembled there.

In October 1950 the Atomic Energy Commission (AEC) determined there was need for a second facility, and Pantex was chosen in 1951. Originally built by the Army Ordnance Corps in 1942, Pantex was used during World War II to load conventional munitions (bombs and artillery shells) with TNT. Throughout late 1950 and 1951 the plant was rehabilitated and began full operation (with assembly of Mark VI nuclear bombs) in May 1952. The operating contractor, the Proctor & Gamble Company, ran it for the U.S. Army Ordnance Command beginning in 1953. In 1956 Mason & Hanger took over and has run it ever since.¹ With some exceptions Pantex evolved in the early years to become the assembly facility for the Livermore Laboratory, and Burlington assembled Los Alamos designed warheads.

By November 1951, with the Cold War heating up, the AEC estimated that five plants would be needed to match the future numbers of warheads that were planned to be built. A third facility was planned at Spoon River, Illinois. But by 1953 it was decided that two plants would suffice to meet production goals and plans for the other three were canceled. The Burlington Plant operated until 1975 when its functions were transferred to Pantex

Texas also hosted two of the original National Stockpile Sites (NSS). Killeen Base ("Site B") at Fort Hood, Texas, was the first of the initial three (with Manzano Base and Clarksville Base) to receive weapons, in 1948. The second NSS was Medina Base at Lackland AFB, San Antonio. The original storage area was constructed between 1953 and 1955. In 1959, the AEC built a Modification Center at Medina Base for disassembling weapons and storage operations for the military ceased.

On November 13, 1961 an explosion involving 123,000 pounds of chemical high explosive components of nuclear weapons occurred at Medina. On the southern boundary of the Medina facility workers were placing subassemblies from dismantled atomic bombs in a storage igloo. The subassemblies, which were being stored for further processing and disposal, contained chemical high explosives, aluminum, natural and depleted uranium. No longer covered by the metal bomb shell, the subassemblies were being stored in metal and plastic explosive cases which had openings on their surfaces leaving the explosive exposed. They were handled by a three-man crew—two fork lift operators who moved them from a straddle carrier into the igloo and one man on the carrier.

Most of the load was in the igloo when at about 10:24 the explosive in one of the subassemblies ignited. Seeing the flash, the drivers sprinted for cover, alerting the men outside. For about 45 seconds the explosive burned. Then it detonated with a force of over 60 tons of TNT. The first explosion set off other subassemblies in the igloo and those still on the carrier. The igloo disappeared in a cloud of smoke and dust, leaving a crater some twenty feet deep.

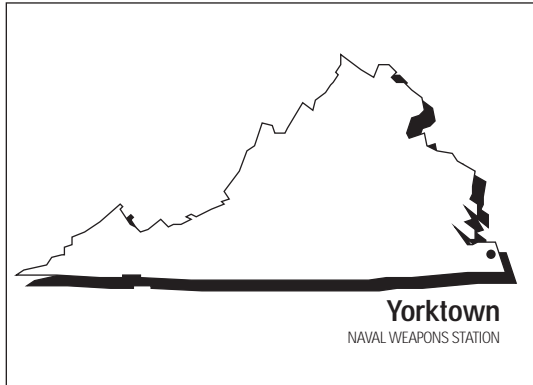
In the 45 seconds between ignition and detonation the three workers got away. Their injuries were minor. Adjacent igloos were not disturbed. The shock was felt for miles. Windows were shattered in downtown San Antonio, twelve miles away. This is one of the 32 acknowledged "Broken Arrows" or serious nuclear weapon accident confirmed by the Pentagon.

The disassembly/modification work continued at Medina until 1965, when all functions were transferred to Pantex. At the current 1,300 warhead per year retirement rate, it is estimated that some 300 to 400 weapons are present at Pantex at any one time. Warheads in the pipeline to be dismantled are also stored at Kirtland AFB in New Mexico. These include 200 W79s, 1,100 W69 SRAM warheads, and 450 W56 Minuteman II warheads. The last W48 155mm (6-inch) artillery warheads, W70 Lance warheads, W68 Poseidon warheads, and B57 nuclear depth and strike bombs have been completely retired.

Over the ten year period from October 1986 through September 1996, Pantex disassembled 12,514 warheads. It has more than enough capacity to disassemble the entire stockpile at current workload levels and will complete its current work orders in the year 2000. As of the end of 1997 there are approximately 10,750 "pits" (nuclear cores of warheads that have been dismantled) in storage at Pantex.

VIRGINIA

Rank: No. 12
Nuclear Warheads: 160

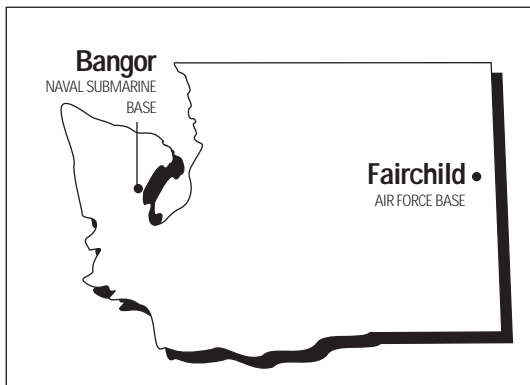


VIRGINIA ranks 12th (tie) in number of nuclear warheads deployed, a drop from 9th place in 1992. Its single nuclear storage site, the Naval Weapons Station Yorktown, serves attack submarines deployed in the Norfolk area and the Atlantic Fleet. In September 1991 President Bush announced that all tactical nuclear weapons would be removed from ships and submarines. For a time the Naval Weapons Station were filled with several thousand weapons. Later decisions lead to the retirement of most of them leaving only the W80/Tomahawk SLCM. We estimate that the Special Weapons Department at Yorktown now stores half of the inventory of some 320 W80 Tomahawk SLCM warheads.

The Naval Weapons Station was established first as the Naval Mine Depot during World War I. At the time it covered an area of 20 square miles. During World War II the Depot developed mines, depth charges, and new ordnance devices. The former nuclear weapons storage area (WSA) at Yorktown was initially constructed by the AEC between 1951 and 1953 as one of 13 original facilities built for storage, maintenance, and operational readiness of the nuclear stockpile. The transition to nuclear weapons came with the commissioning of Skiffes Creek Annex in July 1953, a storage area separate from the main NWS. The first nuclear weapons arrived in 1954. The complex included two storage buildings with vaults (“A” structures), a maintenance building (“C” structure), one other assembly/maintenance building, storage igloos, and a dry low-level radioactive waste disposal area. The name was changed in 1958 to Naval Weapons Station. Throughout the 1950’s and 1960’s the numbers and types of naval nuclear weapons grew to supply the Atlantic Fleet.

WASHINGTON

Rank: No. 3
Nuclear Warheads: 1685



WASHINGTON ranks 3rd in number of nuclear warheads deployed and has two nuclear storage sites—the Naval Submarine Base Bangor and Fairchild AFB in Airway Heights. Naval Submarine Base Bangor is located on the Hood Canal, approximately 175 miles from the Pacific Ocean with access through the Strait of Juan De Fuca. Nuclear warheads supplying the eight Pacific-based Trident submarines are stored at the Strategic Weapons Facility Pacific (SWFPAC) in Silverdale, part of the Bangor complex. The submarines are subordinate to Submarine Forces Pacific Fleet (SUBPAC). It is estimated that 1600 Trident I warheads are assigned to the base, the warheads for some four submarines estimated to be in port or overhaul at any one time (together with the main stock of spare warheads) and the remainder aboard submarines that are at sea in the Pacific.

The Bangor base was originally established as the Naval Ammunition Depot (Bangor Annex) in 1944 to ship and store ammunition and explosives. It went through various name changes and consolidations with other nearby facilities in the 1950's and 1960's but later fell into disuse. A three-year study that considered 88 potential continental and foreign sites to base the new class of Trident SSBNs concluded in February 1973 that Bangor was the best. Powerful Senators like Henry Jackson may have had something to do with the final selection.

Construction began in 1974 and was completed in 1981. On October 1, 1982 the USS Ohio (SSBN 726) went on its first patrol from Bangor. Over the next five years seven more SSBNs would arrive and deploy from Bangor. The eighth, the USS Nevada (SSBN 733) deployed in August 1987.

Fairchild AFB began as the Spokane Army Air Depot and served from 1943 until 1946 as a repair depot for damaged aircraft returning from the Pacific theater. In 1947 the base was transferred to the Strategic Air Command and assigned to 15th Air Force. The main unit over the years has been the 92d Bombardment Wing. The base has hosted B-29, B-36, B-52, and, for a time from 1961 to 1965, nine Atlas E ICBMs.

Fairchild AFB was one of the first bases to receive nuclear weapons in the early days of the Cold War. The nuclear weapons storage area (WSA) at Fairchild was initially constructed by the AEC between 1950 and 1952 as one of 13 original facilities built for storage, maintenance, and operational readiness of the nuclear stockpile. The storage area was originally separate from Fairchild AFB and known as Deep Creek Air Force Station (AFS). The complex originally included two storage buildings with vaults ("A" structures), a maintenance building ("C" structure), two other assembly/maintenance buildings, two types of storage igloos, and a dry low-level radioactive waste disposal area.

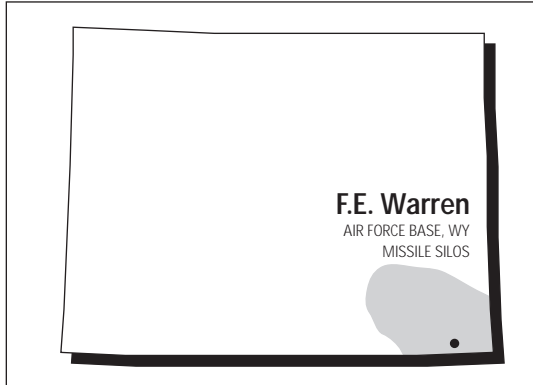
In the early 1990s during a time of base closings, consolidations, and reorganization of commands Fairchild lost its B-52s but not its nuclear weapons. The B-52s of the 92d Bomb Wing were reassigned to other units beginning in December 1993. The last bomber left on May 25, 1994. In July 1994 the 92d Bomb Wing became the 92d Air Refueling Wing, assigned to Air Mobility Command (AMC).

The 92d Air Refueling Wing has an odd status, fully nuclear certified and operating a Weapons Storage Area (WSA) even though bombers have left the base. The 92nd Wing received the 1995 Safety Office of the Year Award, recognizing the "Excellent" rating in the first-ever combined AMC/ACC Nuclear Surety Inspection conducted during March 1995. Air Combat Command conducted Nuclear Staff Assistance Visits (NSAVs) at Fairchild in July 1993, October 1994, and March 1996.

The Weapon Storage Area is being used to store the bomber weapons that are part of the "hedge" and/or reserve stockpile. The START II Treaty requires that, "Each Party shall locate storage areas for heavy bomber nuclear armaments no less than 100 kilometers from any air base where heavy bombers reoriented to a conventional role are based." (Article IV, Section 10) The Treaty does permit bombers reoriented to a conventional role to be returned to a nuclear role. The weapons at Fairchild seems to be for such a future contingency.

WYOMING

Rank: No. 6
Nuclear Warheads: 592



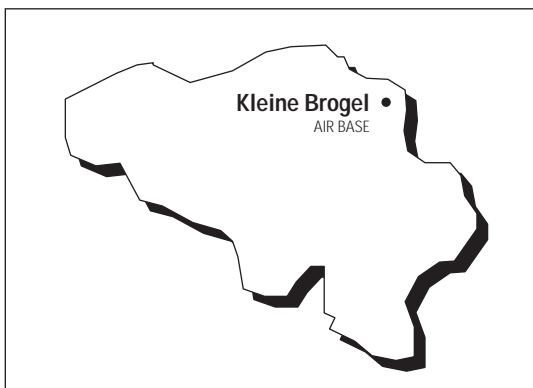
WYOMING ranks 6th in number of nuclear warheads deployed, a rise from 10th in 1992 and 19th in 1985. But the number of warheads in the state has remained virtually unchanged. F.E. Warren AFB in Cheyenne is the only nuclear storage site, hosting both Minuteman III and MX ICBMs (one of four—soon to be three—Minuteman III bases, and the only MX base). The missiles are assigned to the 90th Space Wing (formerly Missile Wing) of the 20th Air Force, Air Force Space Command, with three squadrons (319th, 320th, 321st) for the Minuteman III and the 400th Missile Squadron (MX). The Wing’s 200 missile silos are spread out over 12,600 square miles in eastern Wyoming, northern Colorado and western Nebraska; 19 Minuteman III silos and 50 MX silos are physically located in Wyoming. The warheads for the missiles are 57 W62/Minuteman IIIs (plus 10 spares) and 525 W87/MXs.

The 90th Missile Wing received a comprehensive NSI on June 4 to 11, 1993 and was rated “satisfactory,” the equivalent of a failing grade in nuclear certification. Problems were identified in the areas of Nuclear Control Order procedures, facilities, and communications hardware maintenance, all rated “marginal.” The marginal rating for Nuclear Control Order procedures resulted from failed inspections performed on the missile combat crews with the Missile Procedures Trainer. One crew opened the wrong positive control document and another performed an unauthorized launch of an ICBM. A Nuclear Surety Inspection (NSI) was conducted of the 90th Wing in March 1997.

Warren has had a long history with ballistic missiles. There were 15 Atlas D ICBMs deployed, all in Wyoming in the early 1960s as were nine Atlas Es, three in Wyoming, five in Colorado and one in Nebraska. Soon after there were 200 Minuteman I silos which were converted to Minuteman IIIs in 1975. In 1986 50 of the Minuteman III silos were used to house 50 MX missiles.

U.S. Nuclear Weapons Overseas, By Country

BELGIUM



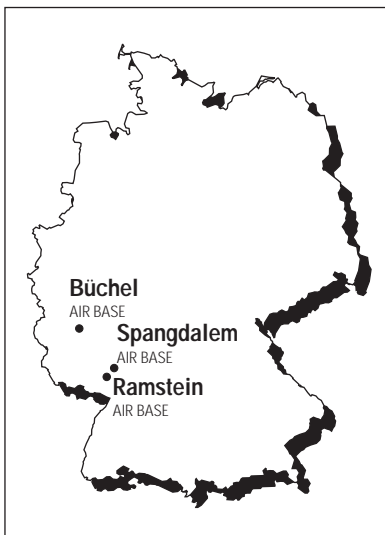
KLEINE BROGEL is the original and only remaining U.S. nuclear storage site in Belgium, having been joined briefly by Florennes Air Base (AB) in the 1980’s during the short-lived deployment of the Ground-launched Cruise Missile (GLCM). Today, Kleine Brogel is a 1100 acre Belgian Air Force main operating base located near the city of Meeuen in the northeast part of the country. It is host to the 10th Tactical Fighter Bomber Wing (10 W TAC) (*Wing Tactique*) flying F-16 aircraft. The Wing is home to four squadrons (*Smaldeelen*) of F-16s, including the two nuclear-certified units, 23 “Devil” and 31 “Tiger” *Smaldeelen*.

Kleine Brogel became an operational air base in 1953 and the 10th Wing was established, consisting of three fighter squadrons—the 23rd, 27th, and 31st (the 27th squadron was disbanded in 1960)—equipped with F-84 Thunderjets. In 1964, the first F-104 Starfighters were delivered and in 1981, the 23rd Squadron was the first non-U.S. unit to convert to the F-16. Since April 1984, both squadrons have been fully operational with the F-16 in the nuclear strike role.

In 1962, the first USAF custodial unit—Detachment 0600— was activated at Kleine Brogel to support the 10th Wing. Detachment 0600 came under the 306th Munitions Maintenance Squadron and was the first American military unit to be assigned to Belgium with a combat mission since the end of World War II. That mission was to receive, store, and maintain nuclear weapons, and to provide custody and control of nuclear weapons until receipt of U.S. authority to release them. In July 1964, Det 0600 came under the 7332nd Munitions Maintenance Group and became Det 1 under the 36th Tactical Fighter Wing (Bitburg AB, Germany) in 1967. On April 1, 1972, Det 1 was designated the 7361st Munitions Support Squadron (MUNSS). The Squadron was transferred to the 52nd Tactical Fighter Wing at Spangdahlem, Germany in July 1976. In October 1992, the 32nd Fighter Group at Soesterberg AB in the Netherlands took command as the support base for Kleine Brogel. A year later, in October 1993, support reverted back to the 52nd at Spangdahlem. In July 1993, the 7361st was redesignated the 601st MUNSS, to be further designated the 617th MUNSS in July 1994. In July 1996, the 52d Munitions Support Squadron was activated, reflecting direct subordination to the U.S. 52nd Wing under the post-Cold War nuclear weapons regional basing scheme.

The 52nd MUNSS is made up of about 110 members and cares for the nuclear warheads stored in the Weapons Storage and Security System (WS3) vaults located within Hardened Aircraft Shelters on the base. The WS3 vaults at Kleine Brogel reached initial operational capability on April 3, 1993 and eleven vaults are operational today. The MUNSS and the 10th Wing received excellent and outstanding ratings in their 1995 Nuclear Surety Inspection (NSI). Geographically separated units of the 52nd Wing again underwent Quality Air Force Assessments (QAFA) and nuclear surety inspections on April 7-11, 1997.

GERMANY



NUCLEAR WEAPONS ARE STORED at three locations in Germany (Büchel, Ramstein, and Spangdahlem), a marked contrast with an estimated 75 distinct nuclear storage facilities in the mid-1980's. But with the withdrawal of Army nuclear weapons, the closure of numerous Air Force main operating bases, and consolidation of nuclear custodial units (with the closure of U.S. sites at Lechfeld, Memmingen, and Norvenich), only three sites are left.

Ramstein Air Base, located seven miles west of Kaiserslautern, is the main nuclear storage site in Germany, despite the fact that it no longer hosts a U.S. tactical fighter unit. It began as an occupation base of French authorities in April 1951. The first U.S. unit, Detachment 1 of the 86th Fighter Bomber Wing (FBW) arrived from Neubiberg AB in February 1952. On August 5, 1952, USAFE took control of the base, with the south side named Landstuhl and the north side, which included HQ Twelfth Air Force,

named Ramstein, the two sides separated by an autobahn. The bases were consolidated as Ramstein-Landstuhl on December 1, 1957, into the largest NATO controlled air base on the continent, and the name was shortened to Ramstein on August 15, 1958.

The initial U.S. host squadron at Ramstein was the 7030th Air Base Group (ABG), activated August 5, 1952. The 86th FBW was fully active on the base on January 1, 1953 and was redesignated a Fighter Interceptor Wing (FIW) in August 1954. On November 10, 1957 HQ Twelfth Air Force was replaced by an advanced echelon of HQ USAFE, which was in turn replaced by HQ Seventeenth Air Force on November 15, 1959. Also on November 10, 1957 HQ 4ATAF (a NATO command) moved to Ramstein from Trier.

Over the years, the 86th Wing underwent numerous redesignations with changes in aircraft deployments. It was elevated to the 86th Air Division (AD) on November 18, 1960 and the 7030th ABG was elevated to a Wing on July 15, 1962. On October 5, 1966 the 26th TRW was also assigned to Ramstein from France, absorbing both the 7030th and the 86th and becoming host unit, until the 86th was again reactivated November 14, 1969 as the 86th TFW at Zweibrucken AB. On January 31, 1973, the two units exchanged designations with the 26th TRW moving to Zweibrucken and the 86th again becoming the host unit at Ramstein.

HQ Seventeenth Air Force also moved to Sembach AB in October 1972 to make room for a move of HQ USAFE from barracks in the town of Weisbaden to a new headquarters complex completed in March 1973. Headquarters Allied Air Force Central Europe (AAFCE) (NATO) was also established at Ramstein on June 28, 1974 with HQ 4ATAF eventually moving to co-locate with HQ CENTAG at Heidelberg in August 1980.

The 86th Wing flew nuclear-certified F-4 Phantom aircraft starting in 1969, to be replaced by F-16's in 1986. Nuclear weapons were stored at a central Weapons Storage Area (WSA) and a pair of aircraft were maintained on Quick Reaction Alert (QRA) with nuclear bombs loaded. Weapons Storage and Security System (WS3) vaults reached initial operating capability on January 24, 1992. A total of 54 vaults are operational in Hardened Aircraft Shelters at Ramstein, the most of any base in Europe.

On October 1, 1994, the 86th TFW was redesignated the 86th Airlift Wing, and the F-16 aircraft were relocated to Aviano AB in Italy. The 86th Airlift Wing is nuclear certified, though not in relation to its primary mission, which is operating and maintaining C-130, C-9, C-20, and C-21 transport aircraft. The certification is to maintain nuclear capability for aircraft that would deploy from the U.S. A wing officer was recipient of the 1995 Lieutenant General Leo Marquez Award for Outstanding Munitions Maintenance, Ramstein being the Air Force's largest Weapons Storage and Security Systems account. That year, Ramstein passed a combined DNA/USAFE Nuclear Surety Inspection (NSI). The 86th Security Police Squadron received an excellent/outstanding rating in its NSI. On May 12, 1997, USAFE undertook another Nuclear Surety Inspection (NSI) at Ramstein. From August 11-26, 1997, the 86th Wing also received a Quality Air Force Assessment (QAFA) and functional inspection.

Spangdahlem Air Base, located 20 miles north of Trier, began as a French occupation construction project in the spring of 1951 but became a USAFE air base on September 1, 1952. The 10th Tactical Reconnaissance Wing (TRW) arrived from Toul-Rosieres in France in May 1953, subse-

quently moving to RAF Alconbury in the U.K. in August 1959, to be replaced by 49th Tactical Fighter Wing (TFW), which moved from Etain-Rouvres AB as part of Operation Red Richard, the withdrawal of U.S. military forces and nuclear weapons from France in 1966.

In July 1968, the 49th TFW moved to Holloman AFB in New Mexico under the “dual-basing” concept of a forward USAFE unit backed up by a U.S.-based TAC Wing. The 7149th TFW was activated at Spangdahlem on July 1, 1968 to act as the forward host unit. Spangdahlem then became a “twin base” in September 1969 with nearby Bitburg AB, and the 23d Tactical Fighter Squadron (TFS) of the 36th TFW stationed at Bitburg moved operations to Spangdahlem.

On January 1, 1972, the 52d TFW was activated at Spangdahlem. The Wing flew all four versions of the F-4 Phantom, the nuclear-capable C, D, and E models and the defense suppression version the F-4G (“Wild Weasel”). The first F-16Cs arrived in April 1987 replacing the F-4s. Today, Spangdahlem serves as a regional nuclear headquarters for the three custodial operations in Central Europe (Belgium, Germany, and the Netherlands). The custodial squadrons are commanded by the 52nd Logistics Group, located at the main base.

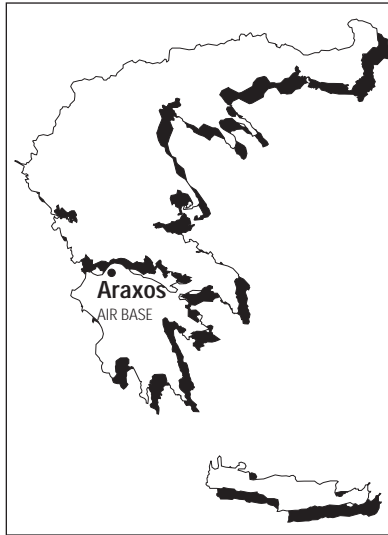
The 52nd Wing at Spangdahlem underwent a Nuclear Surety Inspection (NSI) in 1995. Its subordinate 52nd Security Police Squadron received excellent and outstanding ratings. From 21 April-6 May 1997, it again received a Quality Air Force Assessment (QAFA), including an NSI.

Büchel Air Base, a *Luftwaffe* main operating base host to the 33rd Fighter Bomber Wing flying Tornado strike aircraft, is located near the city of Cochem, about 35 miles from Spangdahlem. Nuclear weapons for use by the 33rd Wing are under the control of the 817th MUNSS, a unit of the 52nd Tactical Fighter Wing. The 817th was formerly the 603rd MUNSS (its name was changed in 1995) and before that the 7501st MUNSS.

The 817th MUNSS is the largest of the Air Force’s MUNSS, with about 135 members assigned. It is now the sole custodial base for nuclear weapons held on behalf of the *Luftwaffe*, becoming a regional center with the 1994 closure of permanent nuclear sites at Memmingen (605th MUNSS) and Norvenich (604th MUNSS) ABs. Büchel was also the first location to receive the USAFE’s Weapons Storage and Security System (WS3) vaults, which achieved their initial operational capability on August 9, 1990. Eleven are operational at Büchel, and eleven remain at Memmingen and at Norvenich for dispersal of nuclear-capable aircraft in a crisis or wartime.

The 817th MUNSS was awarded the USAF Nuclear Surety Plaque in 1994 “for distinguished performance” and “for demonstrating outstanding capability to support a nuclear airlift mission,” presumably the consolidation of nuclear weapons from outlying closed sites in Europe. It again received excellent and outstanding ratings during the 1995 Nuclear Surety Inspection (NSI), and an officer of the squadron received the Air Force Lance P. Sijan Leadership award for the effort to transform Büchel into the regional center for nuclear operations.

GREECE



GREECE was once host to a variety of Army nuclear weapons, including artillery, Honest John short-range rockets, and Nike Hercules surface-to-air missiles. These weapons were withdrawn or retired, and today, there is a single nuclear storage site in the country, located on the Greek Air Force base at Araxos.

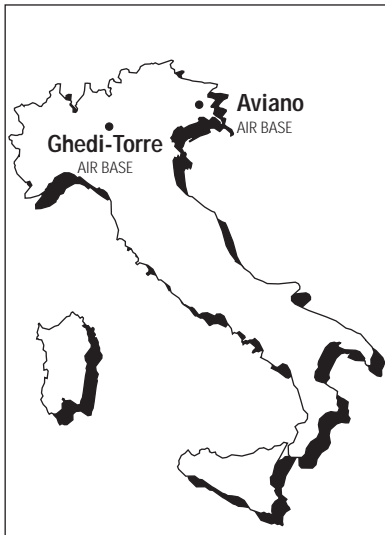
Araxos Air Base, located on the Ionian Sea coast, approximately 20 miles west of Patras (Greek's third largest city), is a main base of the Hellenic Air Force (*Elliniki Aeroporia*), hosting ex-U.S. Navy A-7E nuclear certified aircraft. Araxos is host to the 116th Combat Wing (*Pterix*), made up of the 335th "Olympus" and 336th "Tigreis" squadrons (*Mira*). The base is split between two facilities, the so-called Diasporo and the Aerodrome. The Diasporo is located about six miles from Kato Achaia near the town of Kalamaki and contains administrative and support facilities. The Aerodrome is located another five miles west of the Diasporo near Araxos and contains the nuclear facilities.

The USAF mission was first established at Araxos on July 14, 1962. It followed from a Top Secret agreement between the United States and Greece—codenamed "*Sheepskin*"—concluded at the end of 1959 that allowed the deployment of nuclear weapons in the country. The two initial sites were at Elefsis for U.S. Army nuclear weapons kept in custody for Greek ground forces, and Araxos for Air Force weapons.

On April 1, 1972, the 7061st MUNSS was activated as a custodial unit at Araxos. As a result of numerous post Cold War reorganizations, the 7061st MUNSS was redesignated as the 761st MUNSS effective June 1, 1993, the 716st MUNSS effective July 1, 1994, and finally the 731st MUNSS effective July 19, 1996. The 31 designation reflects subordination to the parent headquarters, the 31st Fighter Wing, located at Aviano AB, Italy. Six WS3 vaults are operational at Araxos.

The 731st is composed of approximately 130 personnel providing administrative, personnel, finance, communications, supply, transportation, security, munitions maintenance, and command and control support. The squadron received excellent and outstanding ratings during its Nuclear Surety Inspection (NSI) in December 1995.

ITALY



NUCLEAR WEAPONS ARE STORED at two locations in Italy—Aviano AB, a U.S. facility in the north, and Ghedi-Torre Air Base, an Italian air force base on the Adriatic coast. This is a marked change from 19 nuclear bases in Italy at the end of the Cold War, including U.S. Air Force, Army, and Navy nuclear weapons, the only European country to host all three services nuclear weapons.

Aviano Air Base, located two miles north of downtown Aviano near Udine at the northern end of the Po Valley, was originally established in 1911 and served as an airfield for Italian aerial operations in the First World War. The base served as a *Luftwaffe* base from 1943-1945 and was occupied by allied forces on May 15, 1945 and later served as an RAF base. After the war Det 1 of HQ Seventeenth Air Force arrived at Udine in November 1954 and the base was activated for U.S. use in February 1955 under the 7207th Air Base Squadron (ABS), which began hosting rotational tactical fighter squadrons on December 13, 1955.

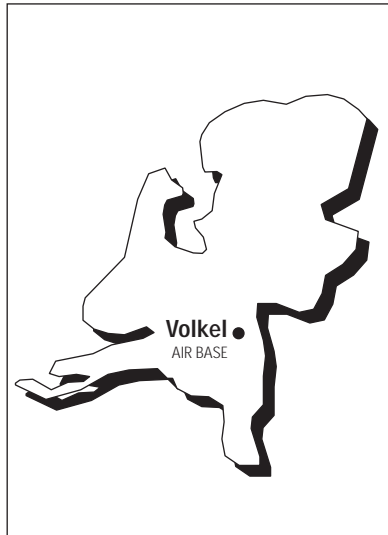
The 40th Tactical Group was activated at Aviano on April 1, 1966 to handle the rotational units from the United States on a permanent basis. With the closure of U.S. operations at Torrejon in Spain in 1992, the 401st Tactical Fighter Wing moved to Aviano, supplanting the 40th Tactical Group. The 401st was further redesignated the 31st Fighter Wing in April 1994. Two F-16 fighter squadrons moved to Aviano from Ramstein AB in Germany to permanently equip the Wing. Headquarters for the 16th Air Force, also at Aviano, is responsible for the southern region of NATO and the Mediterranean.

Nuclear weapons have been stored at Aviano since at least the late 1950's. They were initially stored at a secluded Weapons Storage Area (WSA), known as "Area D." Weapons Storage and Security System (WS3) vaults achieved initial operational capability on January 22, 1996 supplementing Area D. Eighteen are operational at Aviano. The 31st Fighter Wing was awarded excellent and outstanding ratings in its 1994 Nuclear Surety Inspection (NSI.) It also received a USAF Nuclear Surety Plaque in 1994 "for demonstrating outstanding capability to support a nuclear airlift mission." The Wing underwent a two-week Functional Inspection/Quality Air Force Assessment in December 1995, including subordinate dispersed elements with nuclear responsibilities: 31st Munitions Support Squadron Supply Support Element and the 731st Munitions Support Squadron Custody Flight, both at Araxos AB, Greece. In May 1996, the Wing underwent a full NSI, earning six awards of excellence. In July 1997, the Air Force director of security forces conducted an inspection of Aviano and Ghedi-Torre AB.

Ghedi-Torre Air Base is a main operating base of the Italian Air Force (*Aeronautica Militare Italiana*), near Brescia. It is home to the 6th Wing (*Stormo*), made up of 102 and 154 squadrons (*Gruppo*) flying the Tornado strike aircraft. Ghedi-Torre is the sole custodial facility remaining in Italy, with the closure of the U.S. site at Rimini-Miramare. Eleven WS3 vaults are operational on base.

The first custodial unit was established at Ghedi in 1963 as Detachment 1200 of the 7232nd Munitions Maintenance Group. Over the years, the 7232nd was redesignated the 7402nd MUNSS (activated April 1, 1972), and then the 616th MUNSS. The current designation, 31st MUNSS represents the close relationship with the parent unit, the 31st Wing at Aviano. The squadron underwent its initial Nuclear Surety Inspection (NSI) in June 1997.

THE NETHERLANDS

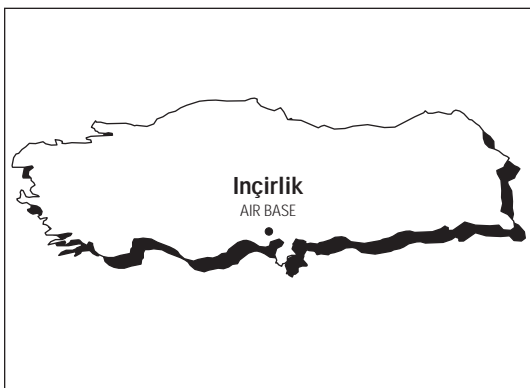


COLD WAR NUCLEAR DEPLOYMENTS in Holland included artillery shells and Lance missile warheads (there were also nuclear weapons kept for Dutch forces in Germany). For a short time Woensdrecht air base hosted ground-launched cruise missiles. Today there is a single nuclear base remaining

Volkel Air Base is a main operating base of the Royal Netherlands Air Force (*Koninklijke Luchtmacht*), hosting the F-16A/Bs, equipping nuclear certified 311 and 312 Squadrons. Volkel is located two miles from the town of Uden and about 85 miles south-east of Amsterdam. It was originally established by the German occupation forces in 1941 and was virtually completely destroyed prior to its capture at the end of the war. In 1945, it became a training unit base for Dutch Marines prior to their assignment to Indonesia, before being turned over to the Royal Netherlands Air Force in 1950. In the early 1960's, the first U.S. nuclear custodial unit was established, providing support for the Dutch 1st Fighter Bomber Wing.

The U.S. custodial unit is the 752d MUNNS, subordinate to the 52nd Tactical Fighter Wing at Spangdahlem. The Squadron is made up of over 100 American personnel. Its predecessor unit, the 717th MUNSS was awarded the nuclear surety plaque in 1994 "for distinguished performance." Geographically separated units of the 52nd Wing also received Quality Air Force Assessments (QAFA) and nuclear inspections on April 7-11, 1997. The Weapons Storage and Security System (WS3) vaults reached initial operational capability at Volkel on September 13, 1991. Eleven are operational.

TURKEY



DURING THE COLD WAR TURKEY ranked behind Germany, the U.K and South Korea as the four largest nuclear repository overseas. At the height there were ten separate storage sites with some 500 warheads. Army nuclear weapons (artillery and Honest John warheads) were eventually retired and air bases were consolidated, leaving only Inçirlik Air Base today.

In December 1950, the U.S. and Turkish Air Forces began work on Inçirlik, the activity started under the innocuous name "The U.S. Engineering Group (TUSEG)." The name was later changed to The U.S. Logistics Group (TUSLOG), a euphemistic code which

served to keep the military profile of U.S. nuclear weapons and intelligence operations in Turkey at a low level during the Cold War.

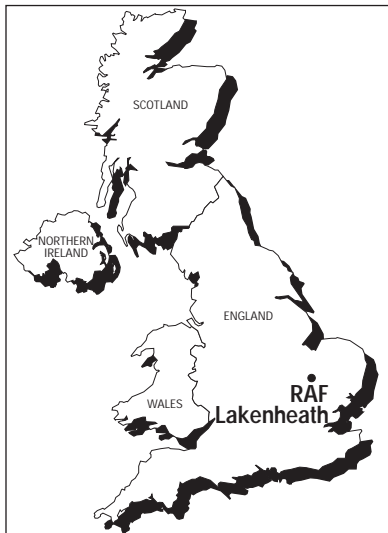
Inçirlik Air Base, located seven miles east of the city of Adana, on the northern Mediterranean coast, is the sole storage location for nuclear weapons in Turkey. The 7216th Air Base Squadron (TUSLOG Det 10) initially arrived at Inçirlik (then called Adana AB) to operate the base late in 1954,

with the main contingent coming from Wheelus Air Field in Libya on February 20, 1955. From the beginning, the base's mission was nuclear support, particularly for rotational Strategic Air Command (SAC) B-47 medium-range bombers. The Squadron was upgraded to the 7216th Air Base Group (ABG) on May 1, 1958 and the name of the base changed to InÁirlik about this time. After use as a staging base for Lebanon operations in July 1958, Tactical Air Command (TAC) began keeping permanent rotational fighter squadrons at InÁirlik until May 1966, when USAFE assumed the mission. The 39th Tactical Group (TG) was activated on April 1, 1966, still publicly called TUSLOG Det 10.

Today, the 39th Wing is the host and nuclear custodian at InÁirlik. The 39th Logistics Group of the Wing previously was made up of the 39th Munitions Squadron, the 39th MUNSS at Balikesir; and the 739th MUNSS at Akinci. Nuclear weapons in support of the Turkish Air Force (*Türk Hava Kuvvetleri*) were stored at Balikesir, Erhac, and Murted/Akinci. On April 25, 1996, the last two custodial detachments (Balikesir and Akinci) were deactivated and the nuclear mission was consolidated at the U.S. main operating base in InÁirlik. Twenty-five WS3 vaults are operational at Incirlik and six each are maintained at Akinci and Balikesir in stand-by status. When activated, the 39th Wing also is tasked to maintain a Supreme Allied Command Europe Quick Reaction Alert (QRA) force of nuclear laden aircraft.

The 39th Wing received the USAF Nuclear Surety Plaque for 1993 for "distinguished performance." The Wing again received a USAF Nuclear Surety Plaque in 1995 for "outstanding achievements" and "contributions" to nuclear security. The 39th Security Police Squadron received excellent and outstanding ratings during the inspections. The Wing is scheduled to receive its next inspection from August 17-25, 1998.

UNITED KINGDOM



THE U.K. HOSTED the first U.S. nuclear weapons overseas, an assortment of bombs for various types of bombers and aircraft. Britain has also uniquely been involved in the long term support of strategic nuclear forces hosting the largest overseas ballistic missile submarine base at Holy Loch. At the height of the Cold War the U.S. had twice as many warheads stored in Britain than were in the British arsenal. Tactical naval nuclear weapons stored in Britain were allocated for use by Dutch forces as well as British and American. Today the sole remaining base is at Lakenheath.

RAF Lakenheath, located 20 miles northeast of Cambridge, is two miles from the village of Lakenheath. Established by the RAF in November 1941 as a satellite base of RAF Mildenhall, it was closed for expansion from May 1944 to April 1947 and then allocated for U.S. use in July 1948. The 2d Bomb Group of the Strategic Air Command (SAC) arrived with B-29 bombers in August 1948. On January 16, 1951, when six B-36 bombers made their first deployment to Europe, Lakenheath was the host.

The initial U.S. unit at Lakenheath was the 7504th Base Completion Squadron assigned January 17, 1949. The Squadron was elevated to an Air Base Group (ABG) on January 28, 1950 and to a Wing (ABW)

on September 26, 1950. When the base was formally transferred to SAC on April 28, 1951, it was placed under the 3909th ABG, which was activated May 16, 1951. The 3909th moved to RAF Greenham Common in 1954 and was replaced by the 3910th ABG, redesignated a Combat Support Group (CSG) on January 1, 1959 and inactivated January 1, 1960. SAC returned RAF Lakenheath to USAFE control on October 1, 1959 as part of Operation "Red Richard," and the 48th Tactical Fighter Wing (TFW) arrived from Chaumont AB in France on January 15, 1960.

Lakenheath has always been the primary and most important tactical nuclear bombing base in Europe, hosting long-range F-111 fighter bomber aircraft through the early 1990's, and today, hosting the F-15E Strike Eagle. The Weapon Storage and Security System (WS3) vaults at Lakenheath reached initial operational capability on November 19, 1994. Thirty-three are operational.

The 48th Fighter Wing received two USAF nuclear surety plaques in 1994, one "for demonstrating outstanding capability to support a nuclear airlift mission" and the other "for distinguished performance." The Wing again received a USAF Nuclear Surety Plaque in 1995 for "outstanding achievements" and "contributions" to nuclear security. That year, an officer within the 48th Equipment Maintenance Squadron received the USAF Lt. General Leo Marquez Award for outstanding munitions maintenance. The citation stated that the officer "led the squadron and wing to an 'Excellent' rating on their Joint Defense Nuclear Agency and Headquarters United States Air Forces in Europe Nuclear Surety Inspection and then initiated a cross-functional wing working group to address the wing's conversion to the Weapons Storage and Security System." In 1996, the Wing was again recognized when it won the Department of Defense Phoenix Award as the most exceptional maintenance unit in the DOD. The Wing is scheduled to receive its next functional inspection from May 4-12, 1998.

Appendix D Location of Russian Nuclear Weapons, by Type

	Weapons Type/Base	Warheads	
STRATEGIC FORCES	<i>Intercontinental Ballistic Missiles (ICBMs)</i>		
	SS-18 ICBM		
		Aleysk (62.26N/082.45E)	300
		Dombarovskiy (50.46N/059.32E)	520
		Kartaly (53.03N/060.40E)	460
		Uzhur (55.18N/089.50E)	520
		Total	1800
		SS-19 ICBM	
		Kozelsk (54.02N/035.48E)	360
		Tatischevo (51.42N/045.36E)	606
		Total	966
		SS-24 ICBM	
		Bershet, near Perm (58.59N/056.56E)	120
		Kostroma (57.46N/040.55E)	120
		Krasnoyarsk (56.01N/092.50E)	120
		Tatischevo (51.42N/45.36E)	100
		Total	460
		SS-25 ICBM	
		Barnaul (53.20N/084.10E)	36
		Drovyanaya (51.53N/113.02E)	18
		Irkutsk (52.16N/104.20E)	36
		Kansk (56.13N/095.41E)	46
		Nizhniy Tagil (58.00N/059.58E)	45
		Novosibirsk (55.02N/082.55E)	45
		Teykovo (56.52N/040.33E)	36
		Vypolzovo (57.53N/033.43E)	18
		Yoshkar-Ola (56.40N/047.55E)	36
	Yurya (59.03N/048.17E)	45	
	Total	361	
	SS-27 ICBM		
	Tatischevo (51.42N/45.36E)	2	

Appendix D Location of Russian Nuclear Weapons, by Type, CONTINUED

Weapons Type/Base	Warheads
<i>Submarine-launched Ballistic Missiles (SLBMs)</i>	
SS-N-6 SLBM/Yankee SSBN (non-operational)	
Rybachiy (52.54N/158.30E)	16
Total	16
SS-N-8 SLBM/Delta I and Delta II SSBN (non-operational)	
Ostrovnoy (68.03N/039.38E)	36
Pavlovskoye (42.52N/132.31E)	60
Rybachiy (52.54N/158.30E)	24
Yagelnaya (69.15N/033.21E)	72
Total	192
SS-N-18 SLBM/Delta III SSBN	
Rybachiy (52.54N/158.30E)	432
Yagelnaya (69.15N/033.21E)	192
Total	624
SS-N-20 SLBM/Typhoon SSBN	
Nerpichya (69.26N/032.22E)	1200
Total	1200
SS-N-23 SLBM/Delta IV SSBN	
Yagelnaya (69.15N/033.21E)	448
Total	448
SLBM central storage (circa 10 percent of total)	
Okolnaya, Northern MD	100
Revda, Northern MD	100
Rybachiy, Far East MD	100
Total	300
<i>Strategic Aviation</i>	
Tu-95 Bear G	
Ryazan (54.37N/039.43E)	10
Total	10
Tu-95 Bear H6	
Mozdok (43.45N/044.43E)	12
Ukraina (51.10N/128.28E)	156
Total	168
Tu-95 Bear H16	
Mozdek (43.45N/044.43E)	304
Ukraina (51.10N/128.28E)	256
Total	560
Tu-160 Blackjack	
Engels (51.29N/046.12E)	72
Total	72

Appendix D Location of Russian Nuclear Weapons, by Type, CONTINUED

	Weapons Type/Base	Warheads
	<i>Strategic Defense Forces</i>	
	ABM (SH-08 Gazelle and SH-11 Gorgon)	
	Moscow area	100
	Total	100
	Surface-to-air Missiles (SA-5, SA-10)	1100
	Locations unknown (see Table 12)	
NON-STRATEGIC NUCLEAR FORCES	<i>Air Force and Naval Aviation</i>	
	Tu-22M Backfire (Air Force) (120 aircraft)	
	Northern MD (one base)	
	Moscow MD (one base)	
	Tu-22M Backfire (Naval Aviation) (70 aircraft)	
	Alekseyevka	
	Belaya, Transbaikal MD	
	Murmansk NE (Severomorsk)	
	Shaykovka, southeast of Smolensk	
	Sol'tsy, southeast of St. Petersburg	
	Su-24 Fencer (Air Force) (280 aircraft)	
	Voronezh, Moscow MD	
	Northern MD (two bases)	
	Moscow MD (two additional bases)	
	North Caucasus (two bases)	
	Ural MD (one base)	
	Transbaikal MD (two bases)	
	Far East MD (four bases)	
	Su-24 Fencer (Naval Aviation) (70 aircraft)	
	<i>Tactical Naval Nuclear</i>	
	Sea-launched cruise missiles	
	Abrek Bay, SE of Vladivostok	
	Rybachiy Peninsula, near Petropavlovsk	
	Severodvinsk	
	Severomorsk/Kola inlet	
	St. Petersburg area	
	Total	500
	Anti-submarine warfare weapons	
	Abrek Bay, SE of Vladivostok	
	Rybachiy Peninsula, near Petropavlovsk	
	Severodvinsk	
	Severomorsk/Kola inlet	
	St. Petersburg area	
	Total	300

Appendix E Russian Nuclear Weapons, by Location, CONTINUED

Abrek Bay, SE of Vladivostok, Far East MD	SLCM, ASW weapons
Alekseyevka, Far East MD	Tu-22M Backfire
Aleysk, Siberian MD (62.26N/082.45E)	SS-18 ICBM
Arkangelsk area, Northern MD	Naval Aux depot
Arzamas-16, Moscow MD	Laboratory warhead work and storage
Arzamas-16/Avanguard Plant, Moscow MD (55.23N/43.05E)	National depot(s) supporting warhead disassembly
Barnaul, Siberian MD (53.20N/084.10E)	SS-25 ICBM
Belaya, Transbaikal MD (52.51N/103.33)	Tu-22M Backfire
Bershet (Perm),Urals MD (58.59N/056.56E)	SS-24 ICBM
Chelyabinsk (55.10N/61.24E)	Warhead pit production and storage
Chita area, Transbaikal MD (52.02N/113.33E)	MD Aux depot SRF depot
Dombarovskiy, Volga MD (50.46N/059.32E)	SS-18 ICBM
Drovyanaya, Transbaikal MD (51.53N/113.02E)	SS-25 ICBM
Engels, Volga MD (51.29N/046.12E)	Tu-160 Blackjack
Irkutsk, Transbaikal MD (52.16N/104.20E)	SS-25 ICBM
Kansk, Siberian MD (56.13N/095.41E)	SS-25 ICBM
Kartaly, Ural MD (53.03N/060.40E)	SS-18 ICBM

Appendix E Russian Nuclear Weapons, by Location, CONTINUED

Kharbarovsk area, Far East MD	MD Aux depot Navy Aux depot Army Aux depot
Kostroma, Moscow MD (57.46N/040.55E)	SS-24 ICBM
Kozelsk, Moscow MD (54.02N/035.48E)	SS-19 ICBM
Krasnoyarsk Siberian MD (56.01N/092.50E)	SS-24 ICBM
Kuybyshev/Samara, Volga MD (53.12N/50.09E)	MD Aux depot
Lesnoy (see Sverdlovsk-45)	
Moscow area, Moscow MD (55.45N/37.35E)	MD Aux depot Four ABM depot
Mozdok (43.45N/044.43E)	Tu-95 Bear H6 Tu-95 Bear H16
Murmansk NE airfield (Severomorsk)	Tu-22M Backfire
Nalchik in the Caucasus (43.31N/43.38E)	Closed 12th Dir Depot
Nerpichya Northern MD (69.26N/032.22E)	SS-N-20/Typhoon
Nizhniy Tagil, Urals MD (58.00N/059.58E)	SS-25 ICBM
Novosibirsk, Siberian MD (55.02N/082.55E)	SS-25 ICBM MD Aux depot
Okolnaya, Northern MD	SLBM depot
Omsk area (55.00N/73.22E)	SRF depot
Orenburg area (51.50N/55.00E)	SRF depot

Appendix E Russian Nuclear Weapons, by Location, CONTINUED

Ostrovnoy, Northern MD (68.03N/039.38E)	SS-N-8/Delta I/II (retired boats)
Pavlovskoye, Far East MD (42.52N/132.31E)	SS-N-8/Delta I/II (retired boats)
Penza-19, Zarechnyy, Volga MD at Kuznetsk (53.07N/46.36E) 115 km east of Penza	Assembly and disassembly storage
Petropavlovsk area, Far East MD	Navy Aux depot
Primorskiy Kray area, Far East MD	Navy Aux depot (2)
Revda, Northern MD (67.58N/34.32E)	SLBM depot
Rostov, North Caucasus MD (57.11N/39.23E)	MD Aux depot
Ryazan , Moscow MD (54.37N/039.43E)	Tu-95 Bear G
Rybachiy), Far East MD (52.54N/158.30E)	SS-N-18/Delta III SS-N-8/Delta I/II SS-N-6/Yankee SLBM depot
Rybachiy peninsula, Far East MD	SLCMs, ASW weapons
St. Petersburg area, Northern MD	Navy Aux depot (2) MD Aux depot
Sarov (see Arzamas 16)	
Severodvinsk, Northern MD (64.34N/39.50E)	SLCMs, ASW weapons
Severomorsk/Kola inlet area, Northern MD (69.04N/33.25E)	SLCMs, ASW weapons
Shaykovka, SE of Smolensk (54.15N/34.23E)	Tu-22M Backfire
Snezhinsk (see Chelyabinsk-70)	

Appendix E Russian Nuclear Weapons, by Location, CONTINUED

Sol'tsy, SE of St. Petersburg (58.08N/30.20E)	Tu-22M Backfire
Sverdlovsk-45, Lesnoy Ural MD at Nizhnyaya Tura (58.37N/59.50E)	Assembly and Dissassembly storage
Tatischevo, Volga MD (51.42N/045.36E)	SS-19 ICBM SS-24 ICBM SS-27 ICBM
Teykovo, Moscow MD (56.52N/040.33E)	SS-25 ICBM
Tomsk (56.30N/84.58E)	Warhead pit production and storage
Trekhgornyy (see Zlatoust-36)	
Ukraina, Far East MD (51.10N/128.28E)	Tu-95 Bear H6 Tu-95 Bear H16
Uzhur, Siberian MD (55.18N/089.50E)	SS-18 ICBM
Vladimir area	SRF depot
Voronezh, Moscow MD (51.40N/39.10E)	Su-24 Fencer
Vypolzovo, Northern MD (57.53N/033.43E)	SS-25 ICBM
Yagelnaya (69.15N/033.21E)	SS-N-23/Delta IV SS-N-18/Delta III SS-N-8/Delta I/II
Yoshkar-Ola, Volga MD (56.40N/047.55E)	SS-25 ICBM
Yurya, Urals MD (59.03N/048.17E)	SS-25 ICBM
Zarechnyy (see Penza-19)	
Zlatoust-36, Trekhgornyy, Volga MD at Yuryuzan (54.52N/58.25E) 85 km southeast of Zlatoust	Assembly and Dissassembly storage

Appendix F British Nuclear Weapons By Type and Location

Base	Warheads
Faslane (submarine homeport)	160
Coulport (SLBM warhead storage)	40
RAF Marham (Tornado/WE-177) (being retired)	80
Aldermaston (Laboratory)	few
Burghfield (assembly and disassembly) Chevaline SLBM*	100
WE-177*	20

*Retired warheads awaiting disassembly

Appendix G French Nuclear Weapons By Type and Location

Base	Warheads
Ile Longue (submarine homeport) TN70/71/M4A/B SLBM	300
TN75/M45 SLBM	100
Istres (Mirage 2000N, Escadron 3/4 “Limousin”) TN80/81/ASMP	20
Luxeuil (Mirage 2000N, Escadrons 1/4 “Dauphine” and 2/4 “Lafayette”) TN80/81/ASMP	40
NAS Landivisiau (Super Etendard ,Flotille nos. 11F and 17F) TN80/81/ASMP20	
Limeil-Valenton (Laboratory)	few
Valduc (assembly and disassembly) TN61/S3 IRBM*	20
TN90/Hades SRBM*	30

*Retired warheads awaiting disassembly

Appendix H Chinese Nuclear Weapons By Type and Location

Base	Location*	Warheads
DF-3A (CSS-2)	40-50 launchers	50
8 Jianshui	23.37N/102.49E	
8 Kunming	25.03N/102.43E	
8 Yidu	36.41N/118.28E	
8 Tonghua	41.43N/125.56E	
4 Dengshahe	39.13N/122.04E	
10 Lianxiwang	30.09N/117.38E	
DF-4 (CSS-3)	10-20 launchers	20
Da Qaidam	37.50N/95.18E	
Delingha	37.23N/97.23E	
Sundian	33.15N/114.45E	
Tongdao	26.10N/109.46E	
Xiao Qaidam	37.31N/95.25E	
DF-5A (CSS-4 ICBM)		7
Luoning	34.23N/111.39E	
Xuanhua	40.36N/115.03E	
DF-21A (CSS-5 Mobile MRBM) 40 launchers		36
16 Tonghua	41.43N/125.56E	
8 Jianshui	23.37N/102.49E	
6 Lianxiwang	30.09N/117.38E	
Julang-1/CSS-N-3/Xia SSBN		12
Jianggezhuang		
Submarine Base	39.27N/119.09E or 37.25N/121.49E	
Tu-16 Badger (B-6)		120
120 aircraft, three regiments		
Datong	36.37N/103.21E	
Two unidentified bases		
Qian-5 (A-5)		30
30 aircraft, one regiment		
One unidentified base		
Tactical weapons (Artillery/rockets/ADMs)		120
Locations unknown at numerous storage sites		
Nuclear weapons laboratory		
Mianyang	31.28N/104.46E	
Warhead Assembly and Disassembly		few
“Special Parts Institute” near		
Zitong	31.38N/105.11E	

*Coordinates derived from the National Imagery and Mapping Agency's (NIMA) database at <http://164.214.2.59/gns/html/index.html>

Acronymns and Abbreviations

AB	Air Base
ABG	Air Base Group
ABM	anti-ballistic missile
ABS	Air Base Squadron
ABW	Air Base Wing
ACC	Air Combat Command
ACM	Advanced Cruise Missile
AFB	Air Force Base
AF/XON	Air Force Directorate for Nuclear and Counter-Proliferation
ALCM	air-launched cruise missile
ASM	Air-to-Surface Missile
ASMP	Air-Sol Moyenne Portee
ATSD(NCB)	Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
AWE	Atomic Weapons Establishment
CIA	Central Intelligence Agency
CSG	Combat Support Group
DDR&E	Director, Defense Research and Engineering
DF	Dong Feng
DNWS	Defense Nuclear Weapons School
DOD	Department of Defense
DOE	Department of Energy
DSWA	Defense Special Weapons Agency
FY	fiscal year
GLCM	ground-launched cruise missile
GUMO	12th Main Directorate
HMS	Her Majesty's Ship
ICBM	intercontinental ballistic missile
INF	intermediate range nuclear forces (treaty)
MD	Military District (Russia)
MINATOM	Ministry of Atomic Energy
MIRV	multiple independently-targetable reentry vehicle
mm	millimeter
MOD	Ministry of Defense
MRBM	Medium Range Ballistic Missile
MUNS	munitions squadron
MUNSS	munitions support squadron
NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NORI	nuclear operational readiness inspection
NSAV	nuclear staff assistance visit

Acronyms and Abbreviations, CONTINUED

NSI	nuclear surety inspection
NSS	National Stockpile Site
NWC	Nuclear Weapons Council
NWCSSC	Nuclear Weapons Council Standing and Safety Committee
NWS	Naval Weapons Station
OSD	Office of the Secretary of Defense
OSS	Operational Storage Site
QRA	quick reaction alert
RAF	Royal Air Force
RN	Royal Navy
RVSN	Strategic Rocket Forces
SAC	Strategic Air Command
SLBM	submarine-launched ballistic missile
SLCM	sea-launched cruise missile
SRAM	short-range attack missile
SSB	ballistic missile submarine
SSBN	nuclear powered ballistic missile submarine
SSGN	nuclear powered cruise missile submarine
SSN	nuclear powered attack submarine
SSPO	Strategic Systems Projects Office
START	Strategic Arms Reduction Treaty
STRATCOM	Strategic Command
SV	Russian Army (Ground Forces)
SWFLANT	Strategic Weapons Facility Atlantic
SWFPAC	Strategic Weapons Facility Pacific
TAA	tactical air army (Russia)
TAC	Tactical Air Command
TFW	Tactical Fighter Wing
TN	Thermonuclear warhead, designation (France)
TUSEG	The U.S. Engineering Group
TUSLOG	The U.S. Logistics Group
USAFE	United States Air Forces in Europe
USD (A&T)	Under Secretary of Defense (Acquisitions & Technology)
VMF	Russian Navy
VPVO	Troops of Air Defense
VVS	Air Forces
WSA	Weapon Storage Area
WS3	Weapon Storage and Security System

About the Authors

William M. Arkin is a consultant to the Natural Resources Defense Council (NRDC) and other organizations and columnist for *The Bulletin of the Atomic Scientists*.

Robert S. Norris is Senior Staff Analyst at the NRDC.

Joshua Handler is a doctoral candidate in the Woodrow Wilson School of Public and International Affairs at Princeton University.

Arkin and Norris are acknowledged nuclear weapons experts and leading authorities on weapon deployments and accidents. Handler is a specialist in Russian/Soviet nuclear weapons. Arkin and Norris have worked together since 1980, and have co-authored and edited five volumes of the *Nuclear Weapons Databook* series (1984, 1987, 1989, 1994), the standard technical reference work on nuclear forces and capabilities of the five acknowledged nuclear powers. Since 1987, they have written a column (“NRDC Nuclear Notebook”) for each issue of *The Bulletin of the Atomic Scientists* monitoring the state of nuclear arsenals worldwide. Arkin is also co-author of *Nuclear Battlefields* (Ballinger/Harper & Row, 1985), which was the first book to reveal the locations of nuclear weapons worldwide. The nuclear weapons estimates by Arkin and Norris are the standard data used by numerous institutions to track the nuclear arsenals—the International Institute for Strategic Studies (IISS) in London and the Stockholm International Peace Research Institute (SIPRI) in Stockholm. Their work has been published in *The Information Please Almanac*, *The World Almanac* and the *Encyclopedia Britannica*. Arkin and Handler have also collaborated since 1985 and co-authored numerous articles and monographs.

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