

# **Nuclear Weapons Databook**

## **Volume I U.S. Nuclear Forces and Capabilities**

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## Chapter One

# The Nuclear Weapons System: An Overview<sup>1</sup>

The dominant factor in East-West relations is the nuclear weapon. Since the first explosion of a nuclear device over the New Mexico desert in July 1945, nuclear weapons have gained a preeminent position in U.S. and Soviet military and foreign policies. This has led to the creation of large military infrastructures to support nuclear weapons.

Today, 38 years after the first atom bomb was exploded, there are approximately 25,000 nuclear warheads in the United States arsenal. Well over 200,000 people and an annual budget of over \$35 billion are involved in U.S. development and production of new warheads, the care for those already in the so-called "stockpile," and the planning for their use. This volume presents a detailed picture of the present and future nuclear weapons capabilities in the U.S., including the nuclear weapons arsenal, the military structure which exists to support and eventually use those weapons, and the state of current and future nuclear weapons technology.

U.S. policy governing the control and possible use of nuclear weapons has gone through significant changes over the past 38 years. The use of the new and powerful atomic weapon was not initially treated as a fundamental break from previous "conventional" military requirements, particularly strategic bombing. U.S. nuclear strategy then evolved to a position of "deterrence," where the maintenance of large nuclear arsenals and the mutual consequences of U.S. and Soviet nuclear warfare were thought to "assure" that nuclear weapons would never be used. Today, policy is based on the belief that the limited use of nuclear weapons is possible. Indeed, a "war fighting" strategy involving nuclear weapons is seen as the only credible deterrent.

However one interprets policy, the vast arsenal of weapons and trends in its technological development provide insight into the dynamics of the nuclear arms race and evidence of its increasing dangers.

## Nuclear Weapons and Delivery Systems: Definitions

The terms "nuclear device," "nuclear warhead," and "nuclear weapon" are often used interchangeably, but the distinctions between them are noteworthy. A nuclear explosive device (or simply "nuclear device") is an assembly of nuclear and other materials and fuzes which could be used in a test, but generally cannot be reliably delivered as part of a weapon. A nuclear warhead implies further refinement in design and manufacture resulting in a mass produced, reliable, predictable nuclear device capable of being carried by missiles, aircraft, or other means. A nuclear weapon is a fully integrated nuclear warhead with its delivery system.

Although definitions are often subject to transient political considerations, nuclear weapons are generally categorized according to their intended use, as "strategic," "theater," or "tactical."

**Strategic (Nuclear) Weapons.** The category of long-range weapons generally allocated for attacking the homeland of the enemy or protecting the homeland. This includes intercontinental missiles, both land based (ICBMs) and sea based (SLBMs); long-range heavy bombers and their carried weapons (bombs and air-launched missiles); long-range cruise missiles not carried on bombers; and homeland defense missiles, that are both ground and air launched.

**Theater (Nuclear) Weapons.<sup>2</sup>** All other nuclear weapons earmarked for use in regional plans and confrontations where the intent is not merely tactical surprise or advantage, but the destruction of "targets"—bases and support facilities—that provide reinforcement for a battle. Theater weapons comprise bombs and depth charges on non-strategic aircraft, cruise missiles (air, sea and land based), short-range ballistic missiles used in surface-to-surface and surface-to-air missions, artillery projectiles, and atomic demolition munitions (nuclear land mines).

1 Information on the history of the U.S. nuclear weapons stockpile is contained in David Alan Rosenberg, "U.S. Nuclear Stockpile, 1945 to 1990," *The Bulletin of the Atomic Scientists*, May 1983, pp. 23-30; Milton Leitenberg, "Background Information on Tactical Nuclear Weapons," *Tactical Nuclear Weapons: European Perspectives* (SIPRI, 1978); Norman Polmar, *Strategic Weapons: An Introduction* (New York: Crane Russak, 1962) (Revised Edition).

2 "Theater" nuclear weapons and forces have undergone the most changes in terminology. They have been labeled both "intermediate-range" and "non-strategic" nuclear forces by the Reagan Administration due to the perceived negative connotation of the word "theater" in the European political debate which equates its use (as in "theater of war") with a postulated American policy to attempt to restrict the use of these weapons to Europe and spare U.S. territory in a nuclear war originating in Europe. In addition, "theater" is often used synonymously with "tactical," in referring to short-range weapons.

Table 1.1  
**Nuclear Warheads in the Stockpile (1983)<sup>1</sup>**

Warhead / Reentry Vehicle Model	Weapon System
<b>STRATEGIC OFFENSE</b>	
W53/Mk-B	TITAN II
W58/Mk-11C	MINUTEMAN II
W62/Mk-12	MINUTEMAN III
W68/Mk-3	POSEIDON C3
W69	SRAM
W76/Mk-4	TRIDENT I C4
W78/Mk-12A	MINUTEMAN III
W80-1	ALCM
<b>STRATEGIC DEFENSE</b>	
W25	GENIE
<b>TACTICAL</b>	
W31	HONEST JOHN/NIKE-HERCULES
W33	8-inch howitzer
W44	ASROC
W45-1	TERRIER
W48	155mm howitzer
W50	PERSHING 1a
W55	SUBROC
W70*	LANCE
W79*	8-inch howitzer
<b>ATOMIC DEMOLITION MUNITIONS (ADM<sub>s</sub>)</b>	
W45-3	Medium ADM
W54	Special ADM
<b>BOMBS<sup>2</sup></b>	
B28	Tactical and Strategic Aircraft
B43	Tactical and Strategic Aircraft
B53	B-52 Aircraft
B61	Tactical and Strategic Aircraft
<b>NUCLEAR DEPTH BOMB / BOMB</b>	
B57	ASW Patrol, Tactical and Strategic Aircraft

1 Two warheads—W66 and W71—are in inactive storage and are being retired.  
 2 All current nuclear bombs are referred to as "B-" followed by the warhead program number, e.g., B-61 (or simply B61) if the warhead of a nuclear weapon has other applications, it is designated with a "W." Modification(s) to the major assembly design of a warhead are designated by Mod. numbers (e.g., "B-61 Mod 1" or simply

"B61-1"); Mod 0 is the first version of a weapon design. Subsequent modifications of the weapon system are numbered.  
 3 The B28 and B61 bombs have numerous known Mods.  
 \* Enhanced radiation yield.

**Tactical (Nuclear) Weapons.** Refers to those "theater" weapons, more precisely termed "short-range" and "battlefield" weapons, whose purpose is to affect directly the course of a tactical maneuver or a battle. Tactical weapons include bombs, short-range missiles, nuclear artillery, and atomic demolition munitions.

### The Nuclear Stockpile Today

The U.S. nuclear weapons stockpile contains 24 warhead types (see Table 1.1). The oldest warhead is the W33, a gun assembly, low yield, fission nuclear artillery projectile, first deployed in 1956. The newest is the W80-1, a small thermonuclear warhead for the strategic

Air-Launched Cruise Missile (ALCM), deployed in 1981. The stockpile of about 26,000 nuclear warheads consists of eight strategic missile types, one strategic defensive warhead, eleven tactical warheads for missiles, artillery and atomic demolition munitions, and five nuclear bomb types. The bombs are carried by both strategic and tactical aircraft.<sup>3</sup>

The nuclear weapons stockpile remained fairly constant throughout the 1970s, stabilizing at about 25,000; a marked increase in the rate of production and retirements of nuclear weapons which began in 1981, will significantly change the complexion of the stockpile. While the stockpile was made up predominantly of tactical

3 Only one of the bombs, the large, nine megaton B53, is solely carried by B-52 bombers.