New bomb, no mission

By Greg Mello

The government says it is no longer building new bombs. So why is it deploying a new version of the B61 nuclear bomb?

The cold war may be over, but the nuclear arms race has not quite ended. The United States is fielding a new nuclear weapon—a bomb that was used to threaten Libya, a non-nuclear nation, even before it was deployed.

The B61-11 is a gravity bomb, the first new nuclear capability added to the U.S. arsenal since 1989. It was developed and deployed secretly, without public or congressional debate, and in apparent contradiction to official domestic and international assurances that no new nuclear weapons were being developed in the United States.

The B61-11's unique earth-penetrating characteristics and wide range of yields allow it to threaten otherwise incompressable targets from the air or on the ground. In Perugia, Italy, to hold such targets "at risk." That makes the B61-11 a uniquely useful warfighting tool.

The 1,000-pound B61-11 replaces the B53, a 9,000-pound, nine-megaton bomb that was developed as a "city killer" and was later designated as a substitute for an earth-penetrating weapon. The B53 was deliverable only by vulnerable B-52s; in contrast, the smaller and lighter B61-11 can be delivered by the stealthy B-2 aircraft or even by F-16 fighters.

The B61-11 was the highest-yield weapon in the arsenal. Although not a true earth-penetrating weapon, it was believed capable of taking out underground targets through brute force. When fired for a ground burst, a small percentage of its energy would be transmitted through ground and rock to limited installation. Even a small percentage of nine megatons is a lot of destructive power.

In contrast, the B61-11 offers a range of yields, the highest of which is only a fraction of the B53's. But because it can pierce deeply into the earth, "ground couponing" its energy output to efficiently produce a shock wave, the B61-11 is more efficient at destroying underground structures, enabling it to threaten the same deep targets as the B53.

Meanwhile, the B61-11's lower yields are said to enhance its credibility as a deterrent. The B53, with its tortured logic, was too big and too dirty to use. Its use would have caused "massive collateral damage" above ground. (As if the rest of a nuclear war would somehow not cause "massive collateral damage.")

Deployment of the B61-11, however, raises two fundamental questions. According to government officials, the United States no longer developing new nuclear weapons. But what is a new weapon? Those connected with the B61-11 program say it is not new because its "physics package" remains unchanged from an earlier model of the B53, the B61-7.

Indeed, the physics package has apparently not been changed. But an undisclosed number of B61-7s have been transformed, adding greatly enhanced capabilities against underground targets. Does that make it a "new" weapon or an "old" weapon?

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What is the mission of the B-61-11? For years, and particularly in the 1980s, nuclear planners sought to develop an earth-penetrating weapon to hit deeply buried Soviet command- and-control centers.

But there are no Soviet targets today, only Russian targets. Rovaniemi and the United States are no longer engaged in a nuclear arms race, and they are no longer adversaries.

Increasingly, U.S. nuclear strategists speak of holding targets at risk in "rogue states." But since 1976, U.S. policy has expressly forbidden U.S. forces from using nuclear weapons against non-nuclear states that are signatories to the Nuclear Non-Proliferation Treaty, unless they are allied with a nuclear state engaged in an act of aggression. The events surrounding the B-61-11 are difficult to explain in this context.

A long trajectory

Earth-penetrating nuclear weapons have a long history. A modified "Cattle-Bell" gat-type gravity bomb called the Mk-5 or "Elia" (which stood for "IC" or "light case") was deployed by the two in 1953 as a hard-target penetrator. By 1958, the weapon was adapted and deployed for the air force; it was called the Mk-11.

In subsequent years, other earth-penetrating designs were proposed but never reached deployment, each being eclipsed by the availability of greater explosive yields that seemed to make earth penetration irrelevant.

But in the late 1970s, earth-penetrator design resumed in earnest in the administration of Jimmy Carter. By 1992, Las Lomans had produced a prototype earth-penetrating warhead, the W-86, for the mid-range Pershing II. But in September of that year, the W-86 was cancelled in favor of a more versatile, non-penetrating design called the W-85.

The W-85 and W-86 had been developed in parallel; the latter was a version of the bomb-driven fraticide—and a change in the Pershing's targets from underground command-and-control bunkers to surface-based mobile missile launchers.

Like the new B-61-11, the W-86 (as well as the W-85) was based on a modified B-61. In 1984, interest in earth penetrators resurfaced again. The Reagan administration wanted a weapon to counter deeply buried, superhard time-urgent targets in the Soviet Union.

The aim was to arm some intercontinental ballistic missiles with earth-penetrating warheads. But that was quickly seen as a dauntingly large and expensive task. The high velocity speed of an ICBM warhead would have insured its destruction when it hit the earth. To slow it, and to allow the proper entry angle into the ground, the warhead required a maneuverable reentry vehicle.

The search for an ICBM penetrator was eventually downsized in October 1989, thus effectively killing the project. The technical uncertainties and costs were too great, and key strategists were having second thoughts.

After all, if a small-scale nuclear exchange ever began, someone would have to be left alive to call it off. The destruction of Soviet command-and-control centers would almost surely insure that a limited exchange would automatically turn into an all-out nuclear holocaust, involving the use of thousands of warheads and bombs.

Concurrently with interest in an ICBM penetrator, nuclear strategists also pursued a different and more technically feasible course for an earth penetrator, a B-61 bomb adapted to an air-launched cruise missile. That would give the air force a "hand-off" strategic weapon with earth-penetrating abilities.

In fiscal years 1985 and 1989 there were underground tests of two earth penetrator designs, both having a yield far greater than needed. But the program expired with the Cold War. There was no further need perceived for such a weapon.

The B-61-11 gathers momentum

Interest in a B-61-based earth penetrator approach to have been revived in October 1983, with a request by Harold Smith, assistant to the secretary of defense for atomic energy, to explore alternatives to the B-53. In a memo to air force strategic planners, he said:

"Should the Nuclear Posture Re-
view reallocate the mission for the B53 [as a substitute for an earth penetrator], then we should seek a replacement weapon, and the appropriate offices within the Office of the Secretary of Defense will work together to identify that goal. In the interim, I request the air force work with the B53 to identify, prioritize, and cost the available replacement options for the B53 that use existing warheads. This replacement should be based on existing data and keyed directly to the current B53 mission requirements. In case replacement is not possible, I have requested DOD define the options and costs for upgrading the B53 system.

The B53 was first deployed in 1960. Retirement of early versions began in 1967, but later versions remained in the arsenal until 1997, when retirement was halted. At that time, retired B53s were brought back into the active stockpile. The turnaround on B53 retirement came when the Reagan administration was seeking a capability against deeply buried targets. It reallocated to the B-53 mission. The bomber is too bulky to fit into the more modern (and therefore more survivable) B-2 bomber. But it has another problem, to which Harold Smith’s memo, cited above, also refers. It is the only weapon now deployed that lacks full “Enhanced Detonation Safety.” That makes it, by current standards, an “unsafe” weapon.

As officials considered alternate strategies, they emphasized this “safety” threat rather than the improved utility, versatility, or credibility of the B61-11.

By August 1994, an earth-penetrating gravity bomb based on the B53 had become the preferred replacement for the B53. In November 1994, the Nuclear Posture Review officially recommended that the B53 be replaced. On November 29, 1994, the Nuclear Weapons Council Standing Safety Committee endorsed the B61. If you were an executive assistant for the Office of the Secretary of Defense, you would probably consider this a significant step forward. By February 6, 1995, Deputy Defense Secretary John Deutch signed off on the plan.

On April 18, 1995, Energy submitted a request to Congress to reprogram $3.3 million in current-year funds within the Atomic Energy Defense Weapons Activities account for the B61-11. That request was submitted to the House Energy and Water Development Appropriations Subcommittee (approval from Tom Bevill and John Myers, May 15, 1995), the House National Security Committee (approval from Floyd Spence and Donald Dorgan, June 29, 1995), the Senate Armed Services Committee (approval from Strom Thurmond, July 19, 1995), and the Senate Energy and Water Development Appropriations Subcommittee (approval from Pete Domenici, June 22, 1995).

The request was classified; even the proceedings, if any, were secret. Not long afterward, however, rumors about the new weapon began to filter out. In a July 18, 1995 debate with local disarmament activists that was broadcast live on radio station KSFR in Santa Fe, Don Walkerstorfer, manager of the Above-Ground Experiments I Program at Los Alamos, seemed to confirm the rumors. He said:

‘The services are looking at replacing an existing weapon in such an earth-penetrating warhead to address hardened targets, that’s exactly right. The hope is to replace the high-yield B53, which has some safety problems.”

In early September 1995, Energy and its three nuclear weapons labs released a revised version of a report about the nuclear stockpile surveillance program, called “Stockpile Surveillance: Past and Future.” A footnote on page 11 said:

“A modification of the B61 is expected to replace the B53 for the year 2000. Since this modification of the B61 is not currently in the stockpile, there is no Stockpile Evaluation data for it. The B61-7 data can be used to represent this weapon.”

As a result of these revelations, the new weapon—or an odd weapon with a new capability—was the subject of newspaper articles in New Mexico and California in September 1995, and William M. Arkin wrote a column about it in the January-February 1996 issue of the Bulletin.

Meanwhile, on November 13, 1995, at a meeting of the Nuclear Weapons Council Standing Safety Committee, Smith requested that the B61-11 schedule be accelerated. He asked that the first unit be delivered “as soon as possible, with a goal of December 31, 1996.”

A bomb for all reasons

The B61-7, from which the B61-11 is made, has a selectable yield ranging from 0.3 to about 340 kilotons. It was first placed in service in 1965. (The original B61 entered the stockpile in 1957.)

According to Clack Hansen, one of the nation’s leading independent authorities on the U.S. nuclear stockpile, the B61-7 can be fired for air or surface targets, and it has “a hardened ground-penetrator nose” with a retracted contact-boost fusing option. It can be dropped with or without a parachute.

William M. Arkin and Robert S. Norris of the Natural Resources Defense Council (and authors of the Bulletin’s regular feature, “Nuclear Notebook”) estimate that there are about 750 B61-7s in the active stockpile, along with about 600 B61-3As, 4Es, and 198.

In recent years, some military strategists have advocated deployment and possible use of very small tactical nuclear weapons against Third World adversaries, especially in earth-penetrating roles. Some of this advocacy—per-
Three units were dropped from a B-2A aircraft, two units from about 6,900 feet above ground level and a third from about 25,700 feet sea level. Prior to November's tests, we had demonstrated compatibility with the F-16 and the B-14 aircraft. All objectives with the exception of recording the strain measurements were met. Another attempt to record strain measurements will be made in the upcoming test, now scheduled for early April in Alaska.

Thus, droning forms of the new weapon have been tested for delivery with a variety of aircraft, including the F-16, a tactical delivery system, marking a considerable shift in applications from the B-53, whose mission was to take out Soviet strategic targets.

The Energy Department confirms that deployment of the B61-11 is under way. The "front" components of the new weapon are being (or were) made at the Y-12 plant on the Oak Ridge Reservation, with the "tail" components made at the Kansas City plant. The new nose and tail have added about 450 pounds to the bomb and have enhanced its resistance to de-fection. Presumably the fusing has also been changed. The location or locations where the B61-11 "field modifications" are being done is classified, as is the number of weapons being converted. A cable to the speedup effort was provided by the March 1967 issue of Weapons Insider.

"The bomb's operational base recently received delivery of the first shipment of B61-11s. The B61-11 is now part of the stockpile, and that means the B53 can soon be retired. This is an accomplishment of which the entire laboratory can be proud. We have succeeded in meeting an ongoing military requirement while simultaneously ensuring the safety of the stockpile."

"Some people say that they are okay, but that's not enough for us. The lab and throughout the complex is back on track and back on board, the most aggressive deadlines ever set for such a project."

Shock waves

We did Harold Smith insist in November 1965 on setting such "ag-
gressive deadlines" for the B61-11 project? Perhaps the answer was hinted at in a series of statements offered the following spring by senior administration spokespeople, including Defense Secretary William Perry and his nuclear deputy, Harold Smith.

On March 28, 1995, Perry testified in the Senate in support of the Chemical Weapons Convention. At one point, he said: "We have an effective range of alternative capabilities to deter or retaliate against use of the ox [chemical weapons]. The whole range would be considered. We have conventional weapons, also advanced conventional weapons—precision guided munitions, Tomahawk land-attack missiles—and then we have nuclear weapons."

A few days later, Robert Bell of the National Security Council spoke about the United States having signed on to the African Nuclear Weapons-Free-Zone (ANWZ) Treaty, a treaty that Libya had signed. "Under Protocol I, which we signed, each party pledges not to use or threaten to use nuclear weapons against an ANWZ party. However, Protocol I will not limit options available to the United States in response to an attack by an ANWZ party using weapons of mass destruction."

And at a breakfast meeting with defense writers on April 23, Smith was more specific regarding the possible use of nuclear weapons. He spoke of the potential image presented by a Libyan chemical weapons factory under construction underground at Tarhuna, 40 miles southeast of Tripoli.

At present, said Smith, the United States had no conventional weapons capable of destroying the plant from the air, and such a weapon would not be ready in less than two years. However, by the end of the year the United States would have a nuclear warhead based on the B61 that would be able to do the job.

None of the writers at the breakfast meeting seemed to note that since 1978, the United States had assured the world that it would never use nuclear weapons against non-nuclear countries that signed the Non-Proliferation Treaty (NPT), unless the nation were allied in aggression with a nuclear weapon state. In fact, President Clinton had reaffirmed this policy April 3, 1995, as he sought to shore up support for the treaty's indefinite extension.

But a year later, in the spring of 1996, administration officials were clearly deviating that "no first use" pledge. The arms control community quickly took note of that.

At a press briefing on May 7, Defense Department spokesman Kenneth Bacon, engaged in a little damage control, saying that there had been some "coincidence" in the press regarding the nuclear issue. "Should military options be necessary against the Libyan plant, we can accomplish this with conventional means. There is no consideration to using nuclear weapons and any implications that we would use nuclear weapons against this plant preemptively is just wrong."

"Preemptively" seems to have been the operative word at the May 7 briefing. Bacon also reiterated that the United States for years had reserved the right to respond with "devastating force" if weapons of mass destruction were ever actually used "against us or our forces."

Bacon went on to quote Defense Secretary Perry, who said on April 26 at Maxwell Air Force Base: "In every situation that I have seen so far, nuclear weapons would not be required for response. That is, we could have a very devastating response without the use of nuclear weapons, but we would not foreclose that possibility."

Despite the ambiguity, hedging, and backtracking engaged in by Pentagon spokesmen regarding the nuclear option, work on the B61-11 project continued on its previously-accelerated schedule.

Collateral damage

From an Energy Department perspective, the B61-11 is a "modestification" to the B61-7 gravity bomb. And yet, these modifications provide significant new military capability. This new capability is clearly at odds with commitments made by the United States in the context of the NPT and in the Comprehensive Test Ban (CTB) Treaty.

Consider, for example, a January 1996 statement made in Geneva by John Holm, director of the U.S. Arms Control and Disarmament Agency, as he pushed for completion of the CTB.

"Even the open literature points to a broad array of new weapons developments... Many would involve directed energy weapons—ways to focus the release of energy with greater precision than is now possible, to enable military effects well beyond those available now. Without nuclear testing the nuclear weapon states will not be able to pursue confidently such technologies as the nuclear-explosion-primed X-ray laser, the so-called nuclear shotgun, enhanced electromagnetic pulse weapons, microwave weapons, and enhanced radiation weapons."

... And the true (yield) test ban will also place out of reach new "instant" and "micronuke" concepts—technologies designed to use nuclear explosive yields in small amounts.

"So let there be no mistake—the U.S. will help impede the spread of nuclear weapons. But its great practical impact will also be for arms control to end development of advanced new weapons and keep new military applications from emerging."

The B61-11 may be a mere modification, a new shell for an older physics package. It may not be the kind of exotic new weapon that Holm listed. But it is a weapon with a new capability. Should the need arise, it will allow the U.S. military forces—to borrow Holm's words—to "focus the release of energy with greater precision." In this case, against underground targets.

When all this is said, the B61-11 remains something of a mystery weapon. It offers a new capability at a time when there is no strategic requirement for such a capability, and it can be delivered by tactical aircraft at a time when—according to national policy—there is no tactical justification for it. Why was it developed and deployed now? That's a question the Clinton administration needs to address.