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## Uranium weapons in 2001-2003

Occupational, public and environmental health issues

### Hazards of suspected Uranium weapons in the proposed war on Iraq (summary)

Updated analysis of collected studies and public domain sources  
compiled by Dai Williams, 24 September 2002

See also [Full report](#), and [US Patents confirm Uranium warheads](#)

On 24 September Prime Minister Tony Blair presented a dossier of evidence about weapons of mass destruction in Iraq to the UK Parliament to support military action proposed by the US Government. This is a summary of a new analysis that questions the weapons that may be used by US and allied forces in the proposed war on Iraq and raises issues for international decision makers and media. The use of these weapons may create serious and permanent health hazards for troops, expatriate civilians and the Iraqi population.

In January **Depleted Uranium weapons 2001-2002, Mystery metal nightmare in Afghanistan?** (available at <http://www.eoslifework.co.uk/du2012.htm> ) investigated the suspected use of Uranium warheads in a new generation of hard target guided weapons. It questioned their use in Iraq and the Balkans since 1991, and raised immediate health and safety issues for civilians and troops from their use in Afghanistan. It was sent to the UK Government and UN agencies. The new analysis **Hazards of suspected Uranium weapons in the proposed war on Iraq**, September 2002, is available at <http://www.eoslifework.co.uk/u231.htm>.

[**Update:** In October 2002 sick Afghan civilians with severe undepleted uranium contamination were reported by Canadian researchers (9). The Iraq analysis, US Patents for uranium warheads and a warning to the UK Government were published in **Uranium weapons 2001-2003: Hazards of Uranium weapons for Afghanistan and Iraq** - <http://www.eoslifework.co.uk/u232.htm>.]

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### Summary

Most public debate about US war plans for Iraq has been led by US allegations about Iraqi **weapons of mass destruction** justifying "regime change" by military action. UK and other governments appear caught up in the **group think** of the Bush Administration's "War on Terrorism". Group think involves self-justifying logic that generates an illusion of morality, demands unquestioning conformity, accepts dangerously high risk strategies and demonises enemies and dissenters (1). It explained strategic errors that led to the Bay of Pigs fiasco.

In time of war vital combat and aftermath data that may alter public perception, government decisions or arms procurement is classified, concealed or distorted on the pretext of state security. It is vital to separate facts from propaganda about terrorist threats and Iraqi or allied weapons. Since September 11<sup>th</sup> US and UK Government agendas have excluded any debate about **the weapon systems used by US and allied forces** (2). **Their potentially devastating effects on the Iraqi population and allied ground forces may far exceed hazards from weapons that Iraq may have developed.**

Most of the guided weapons that will be used in new air attacks on Iraq - **smart bombs and cruise missiles** - will be the same as those used in Afghanistan, see [Table 1 \(3\)](#). No independent assessment has been made of post-war health & environmental conditions there. It is feared that these weapons have already started widespread and irreversible health problems for civilians and troops - a potential Afghan War Syndrome.

Most of these "hard target" guided weapons contain **a mystery and highly secret "dense metal"**- over twice the density of steel and pyrophoric, creating intense heat inside their targets (see [Figure 1](#)). **The only metal that meets both requirements is Uranium**, depleted or non-depleted.

If Uranium is used in large, explosive "hard target" warheads (up to 1500 kg) it will create **levels of radioactive contamination 100 times higher and more widespread than the depleted uranium anti-tank "penetrators" used in the Gulf War**. After bomb attacks in the Balkans in 1999 increased levels of airborne Uranium dust were detected in Greece and Hungary. **Any warheads containing Uranium will cause permanent Alpha, Beta and Gamma radiation hazards in target areas. They are radiological bombs - weapons of indiscriminate effect in terms of the 1<sup>st</sup> Protocol additional to the Geneva Conventions**. 23 weapon systems are questioned see Figure 1 (warhead size) and Table 1 (combat use since 1991) in Appendix 1 and sections 4 & 5 in the full report.

All Parliaments that have been asked to support a new war on Iraq are strongly advised to ask these two basic questions:

- A. What is the secret, high density metal used in the new generation of hard target guided bombs and cruise missiles produced in US and other countries?**
- B. If this mystery metal is Uranium how will national leaders and parliaments justify attacking unconfirmed weapons of mass destruction with weapons of indiscriminate effect ?**

Weapons of mass destruction cause sudden death or destruction in target areas, some with long term or widespread effects. **Weapons of indiscriminate effect** cause widespread or long lasting contamination liable to cause injury, chronic illness, slow death or severe birth defects. Both are outlawed in the 1<sup>st</sup> Protocol of the Geneva Conventions.

## **Action needed by Parliaments and media**

The "heavy metals" used in hard target guided weapons have been a closely guarded military secret since 1990. They can only be Tungsten or Uranium. Why classify the use of Tungsten?

To establish the truth about suspected "conventional" Uranium weapons and their effects Parliaments and media across the world are urged to demand the following actions **before** sanctioning any new military action by the USA in Iraq or other countries:

- 1. Immediate, independent investigations by UN inspectors and Parliamentary representatives to verify the materials used in all the suspected Uranium weapons identified in this analysis ([Table 1](#))**. These to include current weapon stocks and manufacturing facilities in all countries, and full disclosure of combat use since 1990.

2. **Rigorous environmental monitoring for Uranium contamination in Afghanistan and re-survey of other recent combat zones.** Both UNEP studies (2001, 2002) of Depleted Uranium in the Balkans excluded guided bomb, missile and cluster bomb targets. And see [\(4\)](#) re Afghanistan.
3. **Independent and ongoing health monitoring of troops and civilians (local residents, refugees and expatriates) exposed to suspected Uranium weapons in Afghanistan, the Balkans and Iraq.**
4. **Medical aid and environmental protection for all civilian communities at risk of Uranium contamination.**
5. **Review of past medical research, hazard assessments and policy advice concerning Depleted Uranium (DU) weapons** based on Uranium exposure from small penetrator warheads (less than 6 kg), or overlooking widely varying levels of U235 (undepleted U), U 236 and Plutonium contamination (Dirty DU).

## **Urgent need for public debate about Uranium weapons likely to be used against Iraq**

There has been very little media coverage except Le Monde Diplomatique in March [\(5\)](#), ABC Australia in July [\(6\)](#), Guardian in September [\(7\)](#), and no public debate in the US or UK about the new generation of hard target guided weapons used in the Afghan war. Over 2,000 were used. **If the secret metal they use is Uranium then 1000+ tons of fine oxide dust will have contaminated many areas. Thousands of Afghans, and many expatriates, may have been exposed to moderate or severe levels of uranium contamination with grave implications for their long term health, similar to those in Iraq since the Gulf War.**

Hundreds or thousands of civilians in Afghanistan may already have died from acute Uranium exposure, their symptoms compounded by, or misdiagnosed as, common causes of death during the Afghan winter e.g. pneumonia, acute gastric infections and malnutrition. There are very few independent laboratory facilities for medical or environmental analysis of Uranium contamination in the world and none in Afghanistan.

International proliferation of known and suspected Uranium weapons - to over 20 countries since 1991 - is a major arms control problem. The **5 action points** identified above indicate **the complexity and scale of responding to Uranium weapons contamination and the public health disasters they may cause.** These effects can be seen already in Iraq and for Gulf War veterans since 1991. They represent a grave risk not yet assessed in Afghanistan.

To launch another military campaign in Iraq on the scale of the Afghan war - with the same suspected armada of Uranium weapons - and without attempting to evaluate their health and environmental impacts in Afghanistan and on allied troops and expatriates seems irresponsible beyond belief, verging on genocide.

Until these questions are raised in the national and international media, **most politicians will be unaware of the hazards and scale of problems of Uranium contamination that may now exist in Afghanistan caused by allied bombs and missiles.** If politicians and governments have been deceived about these hazards they may inadvertently support US action in Iraq with the same Uranium weapon systems - a grim responsibility.

The military are employed to conduct wars effectively by any means authorised by their governments. The legal, moral and ethical consequences of war are the ultimate responsibility of governments, not the military. **If the perceived threat from Iraq is considered serious enough to justify using weapons of indiscriminate effect - nuclear, chemical or radiological - this should be a decision for parliaments and the UN General Assembly, not the Pentagon or heads of state that rely totally on military briefings.**

In the absence of public questions and debate about Uranium weapons political representatives have had to rely on cumulative pro-Uranium propaganda since 1991. This includes statements from government, military and commercial sources (arms and nuclear industry) and several compromised scientific reports, even by UN agencies, that have relied on government or military funding and co-operation. Refer Part 4 of Depleted Uranium weapons 2001-2002.

Is Uranium the mystery metal in any hard target guided weapons? If so there may only be a few weeks left to prevent a new public health disaster in Iraq, larger than the one that already exists due to 300 tons of Uranium weapons and the effects of sanctions.

This briefing was originally prepared for the UK Government, MPs and media contacts for consideration in the **Iraq War debate in Westminster on Tuesday, 24<sup>th</sup> September.**

**These questions and actions need to be raised in all countries that are expected to support a US led attack on Iraq**, whether with troops, logistic facilities or by voting in the UN General Assembly. The USA, UK, France, Israel, Russia, Pakistan and any other country manufacturing suspected Uranium weapons must be called to account for their weapon systems by the UN General Assembly before their use is sanctioned in future military action. This includes weapons now being used by the US and UK in the Iraq no-fly zones. To widen this debate this updated analysis will be offered in the public domain via the Internet.

Any politician, leader or government that supports a new military offensive against Iraq before the identity and effects of suspected Uranium weapons used in Afghanistan are fully investigated would be wise to read Articles 35 and 55 of the First Protocol additional to the Geneva Conventions of 1949 very carefully.

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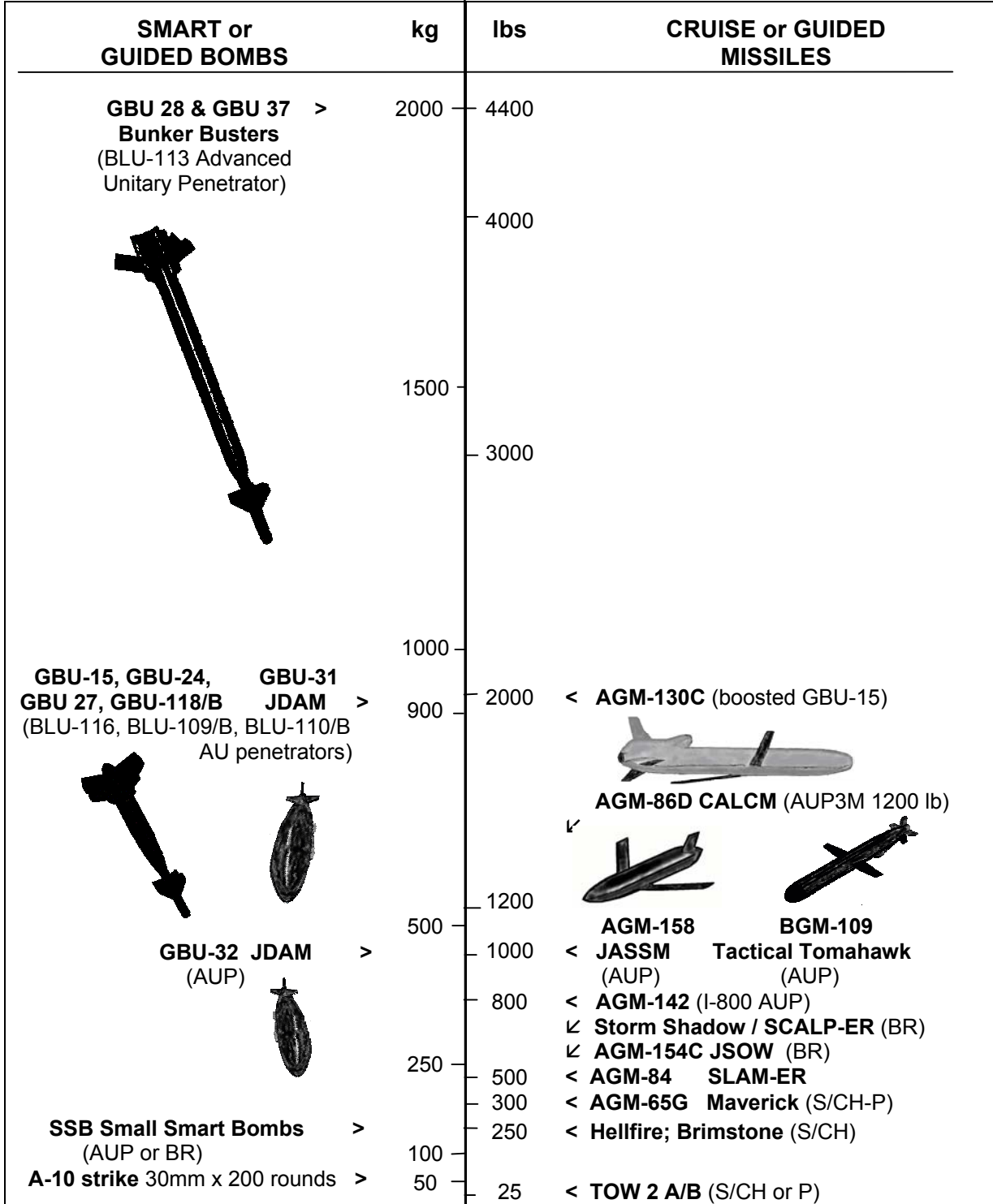
## Appendix 1

Figure 1 and Table 1 on the following pages were first published in **DU weapons 2001-2002** pages 89 and 131. They have been updated for the two new US hard target weapons - the Thermobaric bomb GBU-118/B first used in February and the 20,000 lb Big BLU reported to be under development in March (planned since 1997 and probably operational now). Both use "dense metal" Advanced Unitary Penetrators, suspected to be uranium.

Figure 1

**Hard target guided weapons in 2002: smart bombs & cruise missiles with "dense metal" warheads** (updated September 2002)

**Warhead weight**



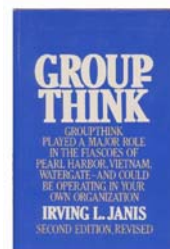
Warhead weights include explosives (~20%) and casing. Dense metal ballast or liners (suspected to be DU) estimated to be 50-75% of warhead weight - necessary to double the density of previous versions. **AUP** = Advanced penetrators. **S/CH** = Shaped Charge. **BR** = BROACH Multiple Warhead System (S/CH+AUP). **P** = older 'heavy metal' penetrators. © Dai Williams 2002

**Table 1: Combat use of known and suspected conventional Uranium weapon systems with dense metal penetrators or shaped charge warhead technology** (updated September 2002)

| Weapon  | Gulf War 1991 | Bosnia 1995 | Desert Fox 1998 | Balkans War 1999 | Iraq no-fly zone 1992> | Afghanistan 2001-2 | Iraq 2002 /2003 |
|---|---------------|-------------|-----------------|------------------|------------------------|--------------------|-----------------|
| <b>Guided Bombs</b> (AUP upgraded versions)   |               |             |                 |                  |                        |                    | <b>Big BLU</b>  |
| GBU-15  | e             | P           | ?               | Y                | ?                      | Y                  | ?               |
| GBU-24  | e             | P           | ?               | Y                | ?                      | Y                  | ?               |
| GBU-27  | e             | P           | ?               | ?                | ?                      | Y                  | ?               |
| GBU-28 B/B  | P             | P           | Y               | Y                | ?                      | Y                  | ?               |
| GBU-31 JDAM   | e             | e           | P               | Y                | ?                      | Y                  | ?               |
| GBU-32 JDAM   | e             | e           | P               | Y                | ?                      | Y                  | ?               |
| GBU-37 B/B  |               |             | ?               | Y                | ?                      | Y                  | ?               |
| GBU-118/B Thermobaric   |               |             |                 |                  |                        | Y                  | ?               |
| SSB   |               |             |                 |                  | P                      | P                  | D               |
| <b>Guided missiles</b>  |               |             |                 |                  |                        |                    |                 |
| TOW 2 A/B A/tank  | Y             | ?           |                 |                  |                        |                    | ?               |
| AGM-65 G Maverick   | Y             | ?           | ?               | ?                | ?                      | ?                  | ?               |
| Hellfire II / Brimstone   | e             | e           | e               | ?                | ?                      | ?                  | ?               |
| AGM-84 SLAM-ER  |               |             | ?               | ?                | ?                      | ?                  | ?               |
| AGM-86D CALCM   |               |             | P               | P                |                        | Y                  | ?               |
| AGM-130C  |               |             |                 | ?                | ?                      | Y                  | ?               |
| AGM-142 Hav Nap   |               | ?           | ?               | Y                | ?                      | Y                  | ?               |
| AGM-154C JSOW   |               |             |                 |                  | 154 A                  | P                  | D               |
| AGM-158 JASSM   |               |             |                 |                  |                        | P                  | D               |
| BGM-109 Tactical Tomahawk   | e             | e           | e               | e                |                        | P                  | D               |
| Storm Shadow / SCALP ER   |               |             |                 |                  |                        | P                  | D               |
| <b>Sub-munitions</b>  |               |             |                 |                  |                        |                    |                 |
| BLU-108/B A/Tank c/b  |               |             |                 | ?                |                        | ?                  | ?               |
| BLU-97B cluster bomb  |               |             |                 | Y                |                        | Y                  | ?               |
| <b>Armor-piercing ammunition</b> (DU confirmed)   |               |             |                 |                  |                        |                    |                 |
| 20mm Phalanx sea-to air   |               |             |                 |                  |                        |                    |                 |
| 25mm M791   |               |             |                 |                  |                        | ?                  | ?               |
| 30mm PGU-14/B   | Y             | Y           |                 | Y                |                        | ?                  | ?               |
| 120mm-US & Charm-UK   | Y             | ?           |                 |                  |                        |                    | ?               |
| <p><b>Key:</b> Y = reported use. ? = operational, not reported. P = prototype testing expected. D = due delivery<br/> Blank = not operational, not appropriate to combat situation. e = earlier versions not suspected of DU</p> <p><b>Note:</b> Data on warhead technology, operational status and combat use taken from:<br/> Federation of American Scientists; Jane's Defence; Center for Defense Information; Hansard.</p> |               |             |                 |                  |                        |                    |                 |

## References

- (1) Janis, I. L. & Mann, L. (1977). **Decision making: A psychological analysis of conflict, choice, and commitment**. New York: Free Press  
key points at <http://www.cedu.niu.edu/~fulmer/groupthink.htm>  
and  
Janis, I.L (1983) **Groupthink - Psychological Studies of Policy Decisions and Fiascos**, Houghton Mifflin Co Boston. 2nd ed. ISBN 0-395 33189 7.
- (2) The only debating question about **Depleted Uranium in Afghanistan** was asked by MEP Paul Lannoye in the European Parliament, Strasbourg on 9 April 2002. Transcript at: <http://www.xs4all.nl/~stgvisie/VISIE/europ-parliament-afghanDU.html>
- Written questions and answers in the UK Parliament are available in **Hansard** online, search at <http://www.parliament.uk/hansard/hansard.cfm> and in Part 2 of the first report, see (3) below.
- [**Update**: On 7 November 2002 **Alice Mahon MP** challenged the UK Government about allied weapons in the Iraq war: "First, can we have an absolute assurance that our Government will have nothing to do with the use of nuclear weapons, bunker busters or depleted uranium? Secondly, can we be told the truth about civilian casualties this time? Whenever there is a statement on Afghanistan, nobody in the Government seems willing to tell us how many civilians have died there." Both questions were not answered.]
- (3) Williams, D (January 2002) **Depleted Uranium weapons 2001-2002, Mystery metal nightmare in Afghanistan?** at <http://www.eoslifework.co.uk/du2012.htm>  
and from Politicos bookshop, London (<http://www.politicos.co.uk>)
- (4) The **UNEP PCAU study proposal for Afghanistan** contained no reference to uranium or depleted uranium monitoring see <http://www.postconflict.unep.ch/actafghassessment.htm>
- (5) Parsons R.J. (March 2002) **America's Big Dirty Secret**, Le Monde Diplomatique in English at: <http://mondediplo.com/2002/03/03uranium>
- (6) Barraud, A (1 July 2002) **Was depleted uranium used in Afghanistan?** ABC Asia Pacific radio (Australia) [http://www.abc.net.au/ra/asiapac/features/AsiaPacFeatures\\_595813.htm](http://www.abc.net.au/ra/asiapac/features/AsiaPacFeatures_595813.htm)
- (7) Hambling, D. (5 Sept 2002) **The heavy metal logic bomb**, Guardian (UK) <http://www.guardian.co.uk/science/story/0,3605,785897,00.html> (Subscription required).
- (8) **Big BLU Direct Strike Hard Target Weapon (DSHTW)**. USAF Concept 1997. Development reported March 2002 at <http://www.globalsecurity.org/military/systems/munitions/dshtw.htm>  
20,000 lb penetrator with dense metal ballast.
- (9) Durakovic Dr A. **New Concepts in CBRN Warfare in the Light of the Gulf War Experience and Current Reality of Global Terrorism**. At <http://www.umrc.net>. Afghan Uranium contamination report on page 4. Presentation to the Third GCC Conference of Military Medicine and Protection Against Weapons of Mass Destruction, Doha, Qatar, October 20-23, 2002. See also Afghan field team report at <http://www.umrc.net/projectAfghanistan.asp>
- Other references are provided by Internet links to sources in the full analysis.




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## Full report

The full analysis **Hazards of Uranium weapons in the proposed war on Iraq** (24 September, 2002, 18 pages) is available on the Internet as follows:

**As HTML** at <http://www.eoslifework.co.uk/u231.htm>

**As a PDF file** at <http://www.eoslifework.co.uk/pdfs/Uhaziraq1.pdf>

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ISBN 0-9532083-8-9 and online at <http://www.eoslifework.co.uk/u232.htm>

## APPENDIX 2:

Added 13 October 2002

**US Patents confirm Uranium warheads** (summary plus report link)

On 8th October another weapons researcher located US Patent application 6,389,977 submitted by Lockheed Martin Corporation on December 11, 1997 for a "Shrouded Aerial Bomb". This defined the upgrading of the 2000 lb BLU-109/B warhead with the Advanced Unitary Penetrator (now known as AUP or BLU-116). This provides an outer shell or "shroud" that looks like the earlier warhead to maintain similar aerodynamic characteristics and to use the same range of guidance and delivery options (see Figure 1). The upgraded warhead is used in the GBU-15, GBU-24, GBU-27 and GBU-31 guided bombs and in the rocket boosted AGM-130C version of the GBU-15. The patent also provides for adaptation to similar weapons of different sizes e.g. the GBU-32 1000 lb guided bomb.

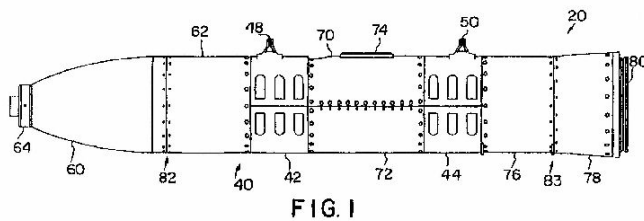


FIG. 1

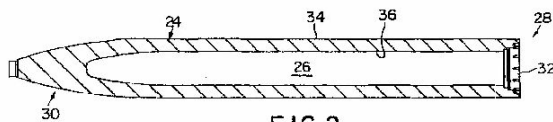


FIG. 2



Raytheon GBU-24 using the "shrouded aerial bomb" warhead with laser guidance systems attached to nose and tail. See illustrations of the Paveway III range of hard target guided bombs GBU-24, 27 and 28 at <http://www.raytheon.com/products/paveway/>

Illustrations from US Patent 6,389,977 for the Shrouded Aerial Bomb

The Patent clearly provides design concepts for both Tungsten **and Depleted Uranium** "penetrating bodies" (advanced penetrators) shown in Figure 2 of the patent application above. See extracts from the Patent record below:

"A target penetrating aerial bomb including a penetrating body shaped for improved target penetration, having a narrower impact profile at approximately the same weight as an existing bomb.

An aerodynamic shroud encases the penetrating body and emulates the aerodynamic shape of the existing bomb, and the weight, center of gravity, and moments of inertia of the bomb closely approximate those properties of the existing bomb. The bomb constructed according to the present invention may be qualified by similarity to the existing bomb, thus avoiding lengthy and costly qualification procedures.

## Claims:

1. a penetrating body having a nose section shaped with an ogive and having a hollow bore with an opening at a tail end and extending toward the nose section; and an aerodynamic shroud mounted to an outer surface of the penetrating body, the shroud including means for securing the shroud to the penetrating body, wherein an aerodynamic shape of the shroud is substantially identical to an aerodynamic shape of a selected, qualified aerial bomb and the penetrating body and shroud have a weight, center of gravity, and moments of inertia substantially similar to a weight, center of gravity, and moments of inertia of said selected, qualified aerial bomb ...

4. The shrouded aerial bomb as claimed in claim 1, wherein the penetrating body is formed from tungsten.

5. The shrouded aerial bomb as claimed in claim 1, **wherein the penetrating body is formed of depleted uranium.**



The present invention relates to aerial bombs, that is, bombs dropped from aircraft, and more particularly, to aerial bombs for penetrating hard targets.

More particularly, the present invention provides a bomb having an improved penetrating warhead, that is, a warhead that more deeply penetrates a protected target, however, the bomb is substantially identical in aerodynamic and mass properties to a qualified [already patented] bomb.

The bomb (20) includes a penetrating body (24) or warhead (shown in FIG. 2) and a shroud (40) shaped to emulate the aerodynamic shape of an existing, qualified bomb. In the exemplary embodiment, the bomb (20) is shaped to emulate the BLU-109/B bomb, that is, the outer shape of the shroud (40) is substantially identical to the outer shape of the hard case of the BLU-109/B. In addition, the weight, center of gravity, and moments of inertia of the bomb (20) are substantially identical to those physical characteristics of the BLU-109/B.

It is understood that the invention is not limited to a particular diameter or weight ratio as compared to an emulated bomb. The diameter and weight of the warhead are to be selected, for example, for the penetrating and explosive functions desired, within the constraint of the total weight of the warhead and shroud being approximately equal to that of the emulated weapon."

(Extracts from US Patent 6,389,977)

A further search of the US Patent database revealed **6 other warhead designs** that specifically include the use of Uranium as an alternative to Tungsten. These include the patent for the new **Tactical Tomahawk Penetrator Version warhead** (US Patent 5,939,662 of December 3, 1997) and for the Explosively Formed Penetrator (EFP) used in the **CBU-97 Cluster Bomb** (US Patent 6,308,634). The suspected use of Uranium warhead components in these systems was indicated in Part 3 of Depleted Uranium Weapons 2001-2002 (January 2002) available at <http://www.eoslifework.co.uk/du2012.htm>

Extracts from these patents, plus links to the US Patent Office database, are contained in the document **United States Patent Office references to conventional guided weapons with suspected Uranium components**, 12 October, 2002. (PDF format).

These Patent records verify that at least 8 of the guided weapon systems suspected of using uranium warheads in my January report were specifically designed to include Uranium warhead options (GBU-15, 24, 27, 31, 32 plus AGM-130C, BGM-109, BLU-108/B). The identification of Depleted Uranium as a direct option for Advanced Unitary Penetrators reasonably implies that it is also a design option in the larger GBU-28, GBU-37 and Big BLU Bunker Buster guided bombs.

This verification raises serious and immediate issues for troops and civilians in several countries, and for all governments that currently support the use of the same weapon systems in the proposed war on Iraq. It adds great urgency to the [actions required of governments](#) proposed on 24 September.

13 October, 2002

## Full US Patent report

"US Patent office references to conventional guided weapons with suspected Uranium components" 9 pages PDF format is available at: <http://www.eoslifework.co.uk/pdfs/USpats.pdf>

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