

DROP TODAY, KILL TOMORROW

Cluster Munitions as Inhumane and Indiscriminate Weapons

December 1997
Revised June 1999

Prepared by

Virgil Wiebe, International Law Consultant, Mennonite Central Committee
Titus Peachey, Staff Associate for Peace Education, Mennonite Central Committee U.S.

Acknowledgments

We wish to thank a number of persons who contributed to the research for this report. Timothy Dockery and David Guerra, summer associates from the New York law firm of Rogers and Wells in 1996, researched various aspects of cluster munitions use and development. All conclusions drawn in this report, however, are those of the writers and cannot be ascribed to the firm of Rogers and Wells. Rebecca Kauffman, the Mennonite Central Committee United Nations intern for 1996, updated research on the situation in Laos. Eric Prokosch made helpful editorial comments on drafts of the report.

Writers:

Virgil Wiebe
Supervising Attorney
Interfaith Community Services
308 W. 46th St., 34th Fl.
New York, New York 10036
(212) 399-0899 fax: (212) 265-2238

Titus Peachey
Staff Associate for Peace Education
Mennonite Central Committee U.S.
21 S. 12th St., Box 500
Akron, PA 17501
(717) 859-3889 fax: (717) 859-3875
E-mail: tmp@mccus.org

“Ton Kemla is only 15, but his fate is settled: He will never have children of his own. While tilling the family rice paddy behind a water buffalo [in May 1996], his plow hit a long-hidden cluster bomblet that exploded and ripped apart his genitals.”

- Account of Laotian cluster bomblet accident in 1996¹

“It looked like the ball boys and girls toss to each other during Hmong New Year festivities. [Six-year-old] Sia Ya threw it to her [4-year-old] brother. He couldn't catch it and it landed behind him, exploding and killing him instantly. Sia Ya died after two agonizing days and nights in the provincial hospital.”

- Account of Laotian cluster bomblet accident in 1993²

“19 March 1991. The first civilian cluster bomb victim died today. It was a child. These insidious bombs were sprinkled all over the desert. Despite numerous warnings to the contrary, people could not leave them alone. They seemed to be drawn to them, almost mystically.

“The devastation they caused on explosion was unbelievable. Shrapnel flew everywhere. Limbs were severed by the force of detonation. Massive abdominal bleeding and pulmonary pressure wounds occurred.”

- MASH unit account of Gulf War cluster bomb victims³

“Toy-size bombs designed to kill tanks and soldiers appear as white lawn darts, green baseballs, orange-striped soda cans—and have proved deadly to children.... ‘When you see a 5-year-old boy come to the hospital without any limbs,’ asked Kuwait City surgeon Dr. Mohammad Khaled, ‘how can you forget the sight?’”

- “Ft. Worth Star Telegram,” January 12, 1992⁴

“Saturation of unexploded submunitions has become a characteristic of the modern battlefield.”

- U.S. Military Procedures Report⁵

DROP TODAY, KILL TOMORROW

Cluster Munitions as Inhumane and Indiscriminate Weapons

Prepared by
Virgil Wiebe, International Law Consultant, Mennonite Central Committee
Titus Peachey, Staff Associate for Peace Education, Mennonite Central Committee U.S.

Contents

Introduction	Page 2
What Are Cluster Weapons?	Page 2
Where Have Cluster Weapons Been Used?	Page 4
A. The Example of Laos	Page 4
B. The Example of the Gulf War	Page 4
C. Other Regions of Cluster Bomb Use	Page 5
Why Are Military Establishments Opposed to Including Cluster Munitions in the Landmine Ban?	Page 7
Conclusion	Page 8
Appendix 1 – Cluster Weapons in the U.S. Federal Budget 1997-2001	Page 9
Appendix 2 – Submunitions in U.S. and Foreign Stockpiles	Page 10
Endnotes	Page 14

Introduction

The growing movement to ban anti-personnel landmines is a tribute to the courage and persistence of the hundreds of thousands around our world who suffer daily from the tragedy of landmines. While the world pauses to celebrate, then implement the provisions of the Ottawa Treaty, we join in urging all nations to fully support this remarkable effort. When international policies begin to reflect the aspirations for peace and healing among those who suffer most from war, it is truly a sign of hope.

This study continues the efforts of Mennonite Central Committee and others⁶ to draw attention to the human suffering caused by cluster weapons, “close relatives” of landmines. Cluster weapons, like landmines, continue to kill long after a conflict is over, because many fail to function as designed. Civilian adults and children are among the primary victims. Cluster weapons inhibit agricultural production, impede the return of refugees and displaced persons to their homes, sap families’ economic prospects by transforming breadwinners into disabled dependents, and overburden already deficient public health networks.

Meant to be illustrative rather than exhaustive, we seek here to demonstrate the immediate and lasting humanitarian damage done by even the “careful” use of cluster weapons and to advocate for the day when these weapons are banned. As in the case of landmines, we urge the international community to take a “victim-centered” approach to the regulation of cluster weapons.

This study considers both the legacy of cluster munitions’ use over the past 30 years, as well as technology now in production. The actual use and long-term impact of cluster munitions receives most focused attention in the cases of Laos and Iraq/Kuwait. Ongoing use of these munitions around the globe is also surveyed.

Ten years ago, a ban on anti-personnel landmines would have been unthinkable. The public awareness and political will needed to enact a ban were simply not strong enough. Thankfully, through the tireless efforts and vision of landmine survivors, NGO staff and government officials, the unthinkable has become the possible.

The many people around our world who have suffered injury from cluster munitions will not understand the careful legal and technical distinctions between landmines and cluster munitions. They await our action to once again turn the unthinkable into the possible. We hope this brief study will contribute to that effort.

I. What Are Cluster Weapons?

A cluster weapon is a munitions container which breaks open in mid-air and disperses smaller munitions or submunitions. These munitions are usually designed to explode on impact, just before impact or a short time after impact. Cluster weapons are carried by a variety of delivery systems, including bombs dropped from aircraft, rocket launchers and artillery projectiles.⁷

Cluster weapon delivery systems often carry hundreds of submunitions, saturating an area with flying shards of steel. These submunitions are small, often the size of a baseball or small lawn dart. Depending on the delivery system, the submunitions from one munitions container may cover an area the size of several football fields, or be dispersed over an even wider area up to 100 acres.⁸

Cluster weapons and landmines are different in design and intended function. Both weapons can be delivered by air, but only landmines are intended to rest in the soil indefinitely and blow up when disturbed. As noted above, cluster weapons are designed to explode close to the time of impact, so that their effect is felt during the time of military engagement.

The submunitions in cluster weapons generally have a higher explosive charge than anti-personnel landmines. This, coupled with the fragmentation pattern of the heavy outer shell, results in more upper-body injuries and deaths when compared to landmines. Understandably, these submunitions also have a longer lethal range than most anti-personnel landmines.

Despite these differences in technology and design, cluster weapons are very similar to landmines in their actual effect. The failure rate for cluster munitions has been placed between 5% and 30%, insuring that any use of these weapons will result in the reckless and unregulated creation of minefields. The fact that these weapons have “failed,” does not mean that they are harmless. They may explode with the slightest touch, when picked up by a child, or when stepped on or kicked by an unsuspecting passerby. Bomb disposal experts in Laos have noted repeatedly that cluster munitions become less stable and therefore more dangerous with each passing year.

Given the quantity of submunitions involved in most cluster weapons, even a low dud rate can result in large amounts of unexploded ordnance (UXO) after a battle is over. According to the U.S. Office of Munitions, some 30 million submunitions were dropped over Iraq and Kuwait during the Gulf War.⁹ An optimistically low dud rate of 5% would still leave 1.5 million unexploded submunitions strewn across these two countries after the war, all of them dangerous.

A Government Accounting Office report on Operation Desert Storm¹⁰ states that at the time of the Gulf War, over half of the Army’s MLRS (multiple-launch rocket system) cluster weapon lots exceeded the 5% dud rate goal, with some reaching a high of 23% duds. These figures are based on lot acceptance tests. Dud rates on the battlefield were likely even higher.

The cluster submunitions which fail to explode may rest on top of the soil in clear view. In many cases, their very size and shape make them almost mystically attractive not only to children and civilians but also to souvenir-hungry soldiers, even when warnings and orders have been issued to leave them untouched. In some cases, markers or streamers attached to submunitions to warn people away actually attract the unsuspecting child or farmer to pick them up.

Submunitions may also hide themselves if they land in weeds, soft soil, sand or a body of water. Alternately, those on top of the ground may become buried over time when they are covered by vegetation or soil erosion. In this way, they become “hidden killers” blending into their surroundings like landmines. One of the more “typical” cluster bomb accidents in Laos occurs in the fields and gardens, when Lao villagers use hoes and diggers to prepare the soil for planting. The hidden submunitions have in effect created a minefield.

Military experts recognize that unexploded cluster bombs transform themselves into landmines. A South African army officer at the Certain Conventional Weapons conference in Vienna in October 1995 completed the sentence of a nongovernmental representative in revealing fashion. The NGO representative was speaking about unexploded “bombies” in Laos. “When they don’t explode on contact,” began the NGO representative, “...they become mines,” finished the officer.

A U.S. military service procedures report on unexploded ordnance corroborates the S.A. officer’s statement, noting: “Although UXO is not a mine, UXO hazards pose problems similar to mines concerning both personnel safety and the movement and maneuver of forces on the battlefield.”¹¹ Reports from the Gulf War underscore this claim. For example, “When US Marine Corps forces attempted a night assault against Iraqi-occupied Kuwait International Airport, they reportedly were held up, not by fierce resistance, but by unexploded coalition cluster-bomb submunitions and mines.”¹²

The similarity of cluster weapons to landmines is also apparent in their violation of international humanitarian law. Cluster weapons are, by their very nature, indiscriminate. Their basic form of delivery, which discharges hundreds of bomblets over large areas prevents individual targeting of each bomblet. It is impossible to know the precise “footprint” made by the submunitions in each cluster weapon attack. During the Gulf war, “locations of UXO footprints [areas of possible UXO concentration] were not tracked, and never passed to mobility planners.”¹³ According to the U.S. military service procedures report cited above, “Currently no system exists to accurately track unexploded submunitions to facilitate surface movement and maneuver.”¹⁴

The indiscriminate nature of cluster weapons is not only present in their method of delivery but, like landmines, in their continued threat over time. The year 1998 marks the 25th anniversary of the end of the U.S. air war over Laos. During these 25 years of relative peace, a high percentage of injuries and deaths have occurred among children not

yet born at the end of the war. Weapons which lurk in the soil, waiting for the unborn to live so that they may be killed, are indiscriminate in the extreme.

In summary, while cluster weapons are different in design from landmines, experience demonstrates that their effects are nearly identical. Cluster weapons kill and maim civilian populations, and continue to do so long after hostilities cease. The rationale which led the international community to stand with the survivors of landmine injuries and enact a ban on anti-personnel landmines, also applies to cluster weapons.

II. Where Have Cluster Weapons Been Used?

Cluster weapons have made their most publicized mark on two war zones: Laos and Iraq/Kuwait.

A. The Example of Laos

Until a year ago, Kham Meung spent his days like many boys in rural Xieng Khouang Province [Laos]: planting rice seedlings, herding water buffalo, romping with friends. Then early one morning last November [1996], the 8-year-old's life changed forever. Kham Meung and two friends were digging for crabs when one boy struck something hard. As the boy turned to call the others, a buried cluster bomblet exploded, killing him. Shrapnel flew in Kham Meung's eyes. The third boy was only slightly wounded.¹⁵

Rough surveys of villages by humanitarian groups estimate that more than 10,000 people have been killed or injured by bombs since the end of the war.¹⁶

With a failure rate of 30 percent, an estimated 4 million BLU-26s [cluster bomblets] are still lying in rice fields, roadsides and village grounds.¹⁷

During the air war carried out between 1964 and 1973, the U.S. executed over 580,000 bombing missions over Laos. Some 2.3 million tons of bombs, a large percentage of them cluster bombs, were dropped, making Laos the most heavily bombed country in the world. On average, a plane load of bombs was dropped every eight minutes, around the clock, for nine years.¹⁸

In Xieng Khouang province, where young Kham Meung lost his sight and a friend to a "bombie" blast, an average of two tons of bombs per person living at the time was dropped.¹⁹ According to one Lao official, clearing the ordnance will take 100 years as compared to a mere nine years of warfare.

The consequences of this ongoing disaster go beyond obvious physical pain and suffering. An already burdened medical system is unable to cope with victims of bombie blasts. Large areas of land can only be tilled at great risk, at a time when populations are returning to pre-war levels. Efforts to reclaim land result in injuries and death—the greatest number of injuries occurs in February, when the field stubble is burned away to prepare the soil for planting. Rehabilitation, if it is even available, is often beyond the financial reach of poor families.

B. The Example of the Gulf War

Hundreds of civilians were also killed by these [cluster-type] bomblets. With the inordinate number of bomblets dropped in Iraq, thousands will become victims in future years. "Since the end of the war, more than 2,000 Kuwaitis have been injured from bombs and munitions, and most of these casualties have been children."²⁰

The use of millions of submunitions in the Gulf War created a giant minefield in Iraq and Kuwait.²¹ In 1994, unexploded U.S. bomblets in Iraq killed a brother (age 13) and sister (age 11).²² In 1993, a similar incident killed an Iraqi boy (age 8) and seriously injured his sister as they were playing at a family picnic.²³ Baghdad reported that as of August 1991, 440 injuries and 168 deaths befell Iraqi civilians as a result of unexploded bomblets that the United States dropped.²⁴

Former U.S. Attorney General Ramsey Clark decried the use of cluster munitions by the U.S. Army in the Gulf War, including the alleged use of cluster munitions banned under international conventions.²⁵ Unexploded bomblets were responsible for the death of nearly 10% of the U.S. fatalities in the Gulf War.²⁶ U.S. soldiers estimated that the dud rate for cluster bombs used in the Gulf War was between 10% and 20%, well above the “acceptable” level of 3-5%. The GAO had reported for over ten years about quality control problems in the manufacture of submunitions.²⁷

The line between “mines” and “cluster bombs” became impossibly blurred in Iraq. The U.S. Air Force used both conventional cluster weapons and the “gator” mine, a mix of anti-tank mines and “anti-handling devices” (i.e. anti-personnel mines). President Clinton recently claimed, in justifying his decision not to join the Ottawa process, that these devices posed no threat to civilians as they were “self-deactivating.” Contrary to such claims, hundreds of Iraqi civilians have been killed or injured by those devices which never got around to self-deactivating.²⁸

Iraq continues to clear unexploded ordnance from throughout its territory, including cluster bombs.²⁹ The Iraqi News Agency claimed on August 30, 1997, that a peasant was killed while working in his field by the explosion of ordnance from the Gulf War.³⁰

C. Other Regions of Cluster Bomb Use

Afghanistan. Not only has Afghanistan been visited with the scourge of anti-personnel landmines, but cluster bombs have also been used extensively in the ongoing conflicts.

During the Soviet occupation of Afghanistan, the Soviet Army used cluster munitions against civilians.³¹ In 1995, the Afghani Government claimed that Russian forces bombed the city of Taloqan and surrounding areas with cluster bombs. The Afghani Government disputed Russian claims that these bombings occurred on the Russian side of the border and that those bombed were guerrillas based in Afghanistan fighting for the independence of the Tajikistan region of Russia.³²

In 1997, the ongoing battles between the Taliban and their opponents have also involved the use of cluster bombs.³³

Angola. There have been reports of cluster bombs as unexploded ordnance in Angola, including the account of a young girl who was maimed after a shiny object she was playing with exploded.³⁴

Azerbaijan. Azerbaijani forces reportedly used cluster bombs as a tool of ethnic cleansing against both Nagorny Karabakh defense forces in 1994³⁵ and civilians in 1993.³⁶

Former Yugoslavian Republics. Cluster bombs have been used throughout the conflict in the Former Yugoslavia. Different examples include:

Livno. Bosnian Serbs use Orkan Rockets to carry out a cluster bomb attack against the town of Livno.³⁷

Bihac. Bosnian Serbs shell the proclaimed UN safe area of Bihac with submunitions; NATO retaliates for this action.³⁸

Banja Luka. Bosnia Serbs claim that NATO strikes include the use of cluster munitions. They claim that civilian targets were hit.³⁹

Zivinice. Bosnia Serbs shell a Bosnian refugee camp south of Tuzla with cluster bombs and kill seven in the attack.⁴⁰

On May 2-3, 1995, the Serbs in the Krajina region shelled civilian targets in Zagreb, Croatia, in retaliation for Croatia’s effort to regain territory in the Krajina. Orkan M-87 multiple rocket launchers delivered cluster munitions which reportedly killed five and wounded 130.⁴¹

Milan Martić, the leader of the Krajina Serbs, was indicted in July 1995 by the War Crimes Tribunal of the Former Yugoslavia for ordering the attack.⁴² Little has been actually done to bring Martić to trial, due to the hesitance of NATO to take Serb leaders into custody.⁴³

The War Crimes Tribunal indicted Martić because the Orkan cluster bombs worked as intended: They exploded on impact, murdering civilians. Could he have been indicted as well for those bomblets which failed to explode on impact and for which he could be held accountable knowing they would later explode indiscriminately?

According to press reports, NATO warplanes did not use cluster bombs against Serb gun and mortar positions in bombings in 1995. Cluster bombs would normally be used against such positions. This was seen as “unacceptable... as about one in ten of the bomblets fails to go off creating a long-term hazard for civilians.”⁴⁴

Chechnya. Both the Russian Army and the Chechen forces have allegedly used cluster munitions. The Russians killed 30 civilians in a cluster bomb bombardment of the Chechen capital in 1994⁴⁵ and 10 in a similar attack in 1996.⁴⁶ Both the Russians⁴⁷ and the Chechens⁴⁸ accused the other side of using cluster bombs banned under international conventions.

Colombia. The explosion of a cluster bomb in a crowded area killed 30 in Medellin. The bomb was set off in retaliation for the arrest of an alleged drug kingpin.⁴⁹

Ethiopia. In its efforts to suppress the Eritrean independence movement in the early 1990s, the Mengistu government then in power in Ethiopia repeatedly used cluster bombs against civilians.⁵⁰ For example, an aerial attack spared the facilities of a nearby port to concentrate its attack on civilians, killing 50.⁵¹

Georgia. In December 1992, Abkhazian fighters accused Georgian forces of using cluster bombs in the fighting within Georgia.⁵²

Lebanon. In the late 1970s, Israel used cluster bombs against civilian targets in Lebanon, prompting Jimmy Carter to threaten a cut-off of U.S. arms sales.⁵³ According to one military observer,

The Israelis used U.S. [cluster bombs] in large numbers during their first invasion of Lebanon in a rather indiscriminate way. They were scattered by dispensers and lay in fields, bushes and undergrowth. It took UN bomb-disposal teams a considerable time to find and destroy them. They looked like tennis balls and children tended to pick them up, suffering ugly injuries when the bombs went off in their faces. Farmers ploughing and animals also suffered badly.⁵⁴

Nicaragua. In 1987, the Nicaraguan government allegedly used cluster bombs against rebel forces. The government dropped 500-pound cluster bombs from Soviet planes.⁵⁵

Sierra Leone. In May 1997, a military coup in Sierra Leone toppled the civilian-led government of president Ahmad Tejan Kabbah. Under the aegis of the Economic Community of West Africa (ECOWAS), Nigerian forces attempted to force out the military junta. In October 1997, Nigerian ground troops reportedly laid plastic landmines, while Nigerian pilots were accused of dropping cluster bombs on civilian targets in Freetown.⁵⁶

Turkey. Turkey has used cluster bombs against Kurdish villages; this factor played a large role in Turkey's failure to obtain cluster munitions from the United States.⁵⁷ In 1994, the Turkish Government apologized to Iran for the accidental bombing of Iranian civilians with cluster bombs in an attempt to bomb Kurdish rebels in Iraq.⁵⁸ Kurdish rebels accused the Turkish army of continuing to use cluster bombs in northern Iraq in late 1997.⁵⁹

III. Why Are Military Establishments Opposed to Including Cluster Munitions in the Landmine Ban?

Opposition by the U.S. Pentagon to the Anti-Personnel Landmines Treaty and domestic U.S. legislation stems in part to definitions of landmines which potentially include a variety of cluster munitions. Pentagon briefers were “horrified” in July 1997 to discover that dropping the word “primarily” from a definition of landmines would result in the banning of a number of other systems.⁶⁰

Why is that one word, “primarily,” of so much concern? Proposed U.S. legislation to ban anti-personnel landmines by the year 2000, suggests a definition of landmines as those munitions “designed, constructed, or adapted to be detonated or exploded by the presence, proximity or contact of a person and that will incapacitate, injure or kill one or more persons.”⁶¹ The Anti-Personnel Landmines Treaty adopts a similar definition in this respect.⁶²

The Pentagon planners would insert the word “primarily” at the beginning of the definition, making it read that a landmine is a munition that is “primarily designed, constructed, or adapted to be detonated or exploded by the presence, proximity or contact of a person...” Their fear is that by not including the word “primarily,” munitions that incidentally operate in the same way, i.e. cluster munitions, might be covered by a landmine ban.

The cluster munitions experience of Laos was front and center in the minds of the briefers in July 1997 as they commented on a definition which did not include the “primarily designed” language:

Ninety-five percent of that problem [in Laos] is unexploded ordnance dropped there during the ‘60s and ‘70s. These were old cluster bomb type units. And under some circumstances, if you took the existing land mine ban definition, without that primarily in there it could be, in fact, stretched to include this high unexploded ordnance rate.

That could knock out a number of systems that we really do need—some of our runway and island munitions and that sort of thing, and that’s what we’re concerned about. We want to be sure that if we’re talking about a land mine ban we’re talking about land mines.⁶³

Essentially, in the eyes of military planners, so long as there is no primary intention for a munition to turn into a “landmine,” when it does turn into a landmine, it is not one.

Where does such an argument lead when there is foreknowledge of likely injury to civilians? Munitions manufacturers build dud rates into computer models designed to determine kill rates of cluster bombs in various situations.⁶⁴ Such programs relate not to “old cluster bomb type units” from 30 years ago, but for weapons now in use. If the known design of a weapon system includes dud rates, is that not an acknowledgment that de facto mine fields will be created?

Submunitions are increasingly “high-tech” and favored by modern militaries. Among the reasons militaries have been increasingly drawn to greater restrictions on landmines may well be because they are so “low-tech.” Banning the manufacture and sale of low-tech and cheap landmines, which often fall into the hands of insurgents willing to use them indiscriminately against soldier and civilian alike, becomes attractive to high-tech armies. Insurgents are less likely to get their hands on not only submunitions themselves but also the technology needed to deliver them to target.

New generation “Combined Effects Munitions” (CEMs) by design destroy and kill in a variety of ways that make them more difficult to restrict than anti-personnel landmines. A typical CEM, can do three things by design and a fourth “unintentionally”: (1) kill soldiers and civilians with anti-personnel shrapnel; (2) destroy tanks with anti-armor materials which burn through up to 18” of steel; and (3) ignite buildings with incendiary materials. Finally, they can (4) fail to go off on impact, in effect transforming them into landmines. Current efforts to ban landmines focus exclusively on their anti-personnel nature.

The U.S. military also sees in new cluster technology a way to adapt to war fighting in the post cold war era. The B1-B nuclear bomber, once considered a casualty of the end of the cold war, lives on as a rehabilitated conventional bomber. So unreliable that it was the only major air weapons system not to be unleashed in the Gulf War, the B1-B has found new meaning as the deliverer of a new generation of cluster munitions.

The first test of the new bomber’s cluster bomb capability occurred on May 28, 1997, at Eglin Air Force Base.⁶⁵ By September, enough refits were to have been completed to equip the B1-B fleet with ten 1,000-pound conventional cluster bombs.⁶⁶

While the multibillion dollar B1-B has never been used in a combat situation, two of the aircraft were recently deployed by the U.S. Air Force to Bahrain, equipped with cluster bombs.⁶⁷

The U.S. is by no means the only military to rely increasingly on air-delivered submunitions. This technology is finding its way into a growing number of military arsenals around the globe. For a partial listing of submunitions and the countries which have them, see Appendix 2.

Military establishment will oppose restrictions on cluster munitions because they are integral to future war fighting strategies and weapons systems. For example, cluster munitions with anti-personnel applications make up important elements of the so-called “Joint Stand Off Weapons” (JSOW) being developed for air forces around the world.⁶⁸

IV. Conclusion

We can take no comfort in the knowledge that cluster munitions are not designed to kill and maim indiscriminately long after a conflict has ceased. We know from experience that cluster weapons are difficult to target with precision, that their “footprints” may cover large areas of land, and that even low dud rates will result in large amounts of unexploded ordnance. These results are not isolated, but can be predicted with certainty any time that cluster weapons are used. On these things military planners and those living in countries torn by war agree.

The Campaign to Ban Landmines gave the world a remarkable gift when it demonstrated that weapons systems can be evaluated and regulated, based on the perspective of those who suffer from their use after hostilities cease. Landmine survivors and communities seeking agricultural and economic development in the presence of minefields have taught us that the cost in life, security and well-being is too great.

Cluster weapons, whose effects on individuals and communities are very similar to landmines, must be evaluated from the same perspective. There is a growing and consistent body of evidence which demonstrates the need for strong, clear action to remove these weapons from military arsenals.

Appendix 1

Cluster Weapons⁶⁹ in the U.S. Federal Budget 1997-2001

Procurement/RDT & E
(in millions of \$)

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
1. MLRS Rockets ⁷⁰	\$41.4	\$19.2		\$3.3	\$9.5
2. MLRS Launcher Systems	\$103.7	\$123.7	\$120.1	\$146.6	\$222.2
3. MLRS modification	\$6.4	\$0.6	\$2.2	\$6.7	\$16.7
4. MLRS RDT & E	\$64.3				
5. ATACMS ⁷¹	\$160.8	\$89.8	\$87.8	\$95.6	\$90.8
6. ATACMS/BAT ⁷²			\$48.9	\$76.8	\$91.8
7. BAT			\$100.1	\$149.3	\$136.4
8. BAT RDT & E	\$180.4	\$225.2	\$128.5	\$128.0	\$112.1
9. XM915 105 MM DPICM ⁷³	\$14.2	\$9.6			
10. M898 SADARM 155 MM DPICM ⁷⁴	\$93.7	\$65.3	\$31.5	\$54.5	\$563.6
11. SADARM RDT & E	\$10.1	\$10.4	\$31.7	\$19.3	\$9.8
12. Wide Area Munitions ⁷⁵		\$14.7	\$9.6	\$10.4	\$23.3
13. Sensor Fuzed Weapon ⁷⁶ (CBU 97/B)	\$152.0	\$148.6	\$125.1	\$61.3	\$101.5
14. CBU 97/B RDT & E		\$15.8	\$7.5	\$11.8	
15. Wind Corrected Munitions Dispenser (WCMD) ⁷⁷	\$56.0	\$11.8	\$13.8	\$48.9	\$99.2
16. Joint Standoff Weapon ⁷⁸	\$78.2	\$82.6	\$169.0	\$234.9	\$277.5
17. JSOW RDT & E	\$109.8	\$95.5	\$62.0	\$40.9	\$22.8
TOTALS	\$1,071.0	\$912.8	\$937.8	\$1,088.3	\$1,277.2

TOTAL for 1997-2001: \$5.29 billion = \$5,287,100

Source: *Procurement Programs (P-1), Department of Defense Budget for Fiscal Years 2000/2001*

RDT & E (Research, Design, Test and Evaluation) Programs (R-1), Department of Defense Budget for Fiscal Years 2000-2001

Summary by Titus Peachey

Appendix 2

Submunitions in U.S. and Foreign Stockpiles

from "UXO: Multiservice Procedures for Operations in an Unexploded Ordnance Environment"
Air Land Sea Application Center, July 1996

Foreign Submunitions

The following tables show typical foreign air and surface launched submunition ordnance. It is not intended to be all inclusive but for information only.

Foreign Air Dispensed Submunitions ("UXO" Table E-1)

Country	System	Submunition Type	Submunition Quantity
Russia	500kg	AT	15
Russia	500kg	APERS	108
Russia	500kg	AT	268
Russia	500kg	FAI	2
Russia	500kg	CP*	12
China	500kg	FAE	3
Poland	500kg	APERS	265

* Concrete piercing or cratering

Source: Foreign Science & Technology Center Briefing at HQ TRADOC on 21 Apr 93

Foreign Surface Launched Submunitions (“UXO” Table E-2)

Country	Delivery	System	Submunition Quantity	Submunition Type
Brazil	Rocket	180mm	20	DPICM
Brazil	Rocket	300mm	64	DPICM
Bulgaria	Artillery	122mm	15	DPICM
China	Mortar	120mm	18	DPICM
China	Artillery	122mm	30	DPICM
China	Artillery	130mm	35	DPICM
China	Artillery	152mm	63	DPICM
China	Artillery	155mm	63	DPICM
China	Artillery	203mm	100	DPICM
China	Rocket	122mm	39	DPICM
China	Rocket	273mm	320	DPICM
CIS	Artillery	152mm	42	DPICM
CIS	Rocket	220mm	30	APERS/AM
CIS	Rocket	300mm	72	APERS/AM
CIS	Rocket	FROG-7	42	APERS/AM
Egypt	Rocket	122mm	98	DPICM
France	Artillery	155mm	63	DPICM
Germany	Artillery	155mm	63	DPICM
Germany	Artillery	155mm	49	DPICM
Greece	Artillery	105mm	24	DPICM
Greece	Mortar	4.2 in	20	DPICM
Greece	Artillery	155mm	49	DPICM
Israel	Artillery	105mm	15	DPICM
Israel	Mortar	120mm	24	DPICM
Israel	Artillery	155mm	63	DPICM
Israel	Artillery	175mm	81	DPICM
Israel	Artillery	203mm	120	DPICM
Israel	Rocket	160mm	104	DPICM
Italy	Rocket	122mm	77	DPICM
Pakistan	Artillery	155mm	88	DPICM
Slovakia	Artillery	152mm	42	DPICM
Slovakia	Rocket	122mm	63	DPICM
S. Africa	Artillery	155mm	56	DPICM
S. Korea	Artillery	105mm	20	DPICM
S. Korea	Artillery	105mm	18	APERS
Spain	Mortar	120mm	15	DPICM
Spain	Mortar	120mm	21	DPICM
Yugoslavia	Artillery	152mm	63	DPICM
Yugoslavia	Rocket	128mm	40	DPICM
Yugoslavia	Rocket	262mm	288	DPICM

Source: Foreign Science and Technology Center Briefing at HQ TRADOC on 21 Apr 93

Submunitions in Army Stockpile

These tables list the submunition ordnance currently in the U.S. Army stockpile. With the exception of the M80 submunition, the current generation of these submunitions do not have self-destruct fuses.

U.S. Army Submunition Ordnance (“UXO” Table D-1)

System	Projectile	Submunition Type	Submunition Quantity
155mm	M449 ICM	M43A1	60
	M449A1 ICM	M43A1	60
	M864 DPICM	M42/M46	72
	M483A1 DPICM	M42/M46	64/24
8 inch	M404 ICM	M43	104
	M509A1 DPICM	M42/M46	180
105mm	M444 ICM	M39	18
	M915/M916 DPICM	M80*	42
MLRS	M26	M77	644
	M26A1	M77	518
ATACMS		M74	1000
HYDRA 70	M261 MPSM	M73	9

* Self-destruct fuse

Source: U.S. Army Materiel Systems Analysis Agency

U.S. Air Dispensed Submunitions (“UXO” Table C-1)

Weapon	Submunition	Submunition
CBU-7/A	BLU-18	1200
CBU-12/A	BLU-17/B	213
CBU-24/B	BLU-26/B	670
CBU-25/A	BLU-24/B	132
CBU-29/B	BLU-36/B	670
CBU-46/A	BLU-66/B	444
CBU-49/B	BLU-59/B	670
CBU-52/B	BLU-61A/B	217
CBU-55/B	BLU-73/B	3
CBU-58/B	BLU-63/B	650
CBU-59/B	BLU-77/B	717
CBU-60/A	BLU-24/B	264
CBU-63/B	M40	2025
CBU-70/B	BLU-85/B	79
CBU-71/B	BLU-86/B	650
CBU-72/B	BLU-73A/B	3
CBU-75/B	BLU-63/B	1800
CBU-75A/B	BLU-63&86	1420 & 355
CBU-76/B	BLU-61A/B	290
CBU-77/B	BLU-63/B	790
CBU-78/B	BLU-91/B& 92/B	45 & 15
CBU-81/A	BLU-49A/B	45
CBU-87/B	BLU-97/B	202
CBU-89/B	BLU-91/B	92
CBU-89/B	BLU-92/B	92
CBU-97	BLU-108/B	10
CBU-98	HB-876LE	24
MK15	M40	2020
MK20	MK118	247
MK22	M38	2020

Source: U.S. Army Materiel Systems Analysis Agency

Endnotes

1. Catherine Toups, "Vietnam War still takes toll on Laos; Unexploded bombs often maim, kill," *Washington Times*, June 28, 1996, p. A19.
 2. "Laos: War Legacy," Mennonite Central Committee (MCC), 1994. (Available from MCC, 21 South 12th St., P.O. Box 500, Akron, PA 17501-0500 or MCC Canada, 134 Plaza Drive, Winnipeg, MB R3T 5K9.)
 3. Brian Ginn, "807th MASH Operation Desert Shield and Operation Desert Storm 'Restore to Serve,'" 1995, from <http://www.iglou.com/law/mash.htm>.
 4. James Vincent Brady, "Kuwaitis dying from old menace: unexploded bombs," *Ft. Worth Star Telegram*, January 12, 1992.
 5. "UXO: Multiservice Procedures for Operations in an Unexploded Ordnance Environment," Air Land Sea Application Center, July 1996, ch. 1 p. 1.
 6. Bruce Shoemaker, "Legacy of the Secret War: The Continuing Problem of Unexploded Ordnance in Xieng Khouang Province, Laos and the Response of the Mennonite Central Committee and the American Friends Service Committee 1972-1994," March 1994.
- and
- Frederick Lim and Joshua Peirez, under the direction of John Rempel, "The State of International Law Relating to Cluster Bombs: A Report on the Issues and a Proposal for a Protocol Regulating the Use of Cluster Bombs." (Available from MCC.)
7. Eric Prokosch, *The Technology of Killing: A Military and Political History of Antipersonnel Weapons*, Zed Books, 1995, p. 82.
 8. Eric Prokosch, "Cluster Weapons," *Papers in the Theory and Practice of Human Rights*, #15, Human Rights Center, University of Essex, UK, 1995, p. 12.
 9. Lt. Col. Gary W. Wright, "Scatterable Munitions = Unexploded Ordnance (UXO) = Fratricide," U.S. Army War College Study Project, AD-A/264/233/C.2, March 22, 1993, p. 38.
 10. Government Accounting Office Report NSIAD-93-212, "Operation Desert Storm: Casualties Caused by Improper Handling of Unexploded U.S. Submunitions," August 1993.
 11. "UXO," ch. 2 p. 1.
 12. Christopher Centner, "Ignorance is Risk: The Big Lesson From Desert Storm Air Base Attacks," *Airpower Journal*, Winter 1992, p. 28.
 13. Wright, "Scatterable Munitions," p. 17.
 14. "UXO," ch. 1 p. 1.
 15. Pearl Sensenig, "For Bombie Victims and Their Families, The Toll is Financial as Well as Physical," *Mennonite Weekly Review*, Nov. 6, 1997, p. 6.
 16. Catherine Toups, "Vietnam War still takes toll on Laos; Unexploded bombs often maim, kill," *Washington Times*, June 28, 1996, p. A19.

17. Denis D. Gray, Associated Press, "War's Bomblets Continue to Kill 20 Years Later," *Chicago Tribune*, June 3, 1996, p. 8.
18. Linda Gehman Peachey and Titus Peachey, "Making War in Peace" (slide set), Mennonite Central Committee, September 1986.
19. Shoemaker, "Legacy."
20. Wright, "Scatterable Munitions," p. 1 (citations omitted).
21. For a summary of the use of cluster munitions during the Gulf War, see Stephen Goose, "U.S. Cluster Bombs for Turkey?" Human Rights Watch Arms Project, December 1994.
22. *Part 4: Middle East*, BBC Summary, July 5, 1994. (Available on Lexis.)
23. "Iraqi Boy Killed, Girl Injured in US Cluster Bomb Explosion," *Xinhua General Overseas News Service*, Nov 23, 1992. (Available on Lexis.)
24. "Iraq Says Bombs Left Over From Gulf War Kill 168 Civilians," *Reuters*, Aug. 7, 1991. (Available on Lexis.)
25. "Gulf War Americans Were Not Allowed to See," *San Francisco Chronicle*, Nov 23, 1992.
26. Thomas Williams and Karen Wagner, "GAO to Study Army's Use of Cluster Bombs in Gulf War," *Hartford Courant*, Feb. 5, 1992, p. A3. (Available on Lexis.)
27. *Id.*; Karen Wagner and Thomas Williams, "Look of Innocence Hides Lethal Military Killer," *Hartford Courant*, Dec. 21, 1991, p. A8. (Available on Lexis, News library.) "[T]he artillery rounds scatter 88 tiny M42/46 bomblets or 644 of the M77 bomblets across roads and surrounding areas. . . . The M42. . . is a sub-munition of a 155 mm artillery round used by the Army and Marines. A similar bomb, the M46 is shot from an 8-inch howitzer. The M77, a newer version of the bomblet, is shot from a multilaunch rocket system." *Id.* The military had produced 39 million of the M42s and 314 million of the M77s as of Jan. 1, 1991. *Id.* The size and shape of these cluster bomblets proved irresistibly attractive even to GIs, eager for war souvenirs.
28. William M. Arkin, "Landmine Decision: The President Draws a Line—But Not on the Ground," *Pacific News Service*, Sept. 22, 1997. (Available on Lexis.)
29. "Iraq Explodes 151 Gulf War Alliance Bombs," *Agence France Presse*, Sept. 4, 1997. (Available on Lexis.)
30. "One killed, another wounded when Gulf War missile explodes," *INA news agency: BBC Summary of World Broadcasts*, Sept. 1, 1997. (Available on Lexis.) The broadcast also claimed that the area, the Qadisiyah Governate, was bombarded with 8665 cluster bombs. *Id.*
31. "The Amnesty International Home Page," *Amnesty Journal*, Jan./Feb. 1996, "Afghanistan—The World's Guilty Secret."
32. "Russian Bombing Kills 150 People, Kabul Says," *Reuters*, Apr. 13, 1995. (Available on Lexis.)
33. "World Digest," Aug. 5, 1997, *Dayton Daily News*. (Available on Lexis.); "Kabul hit by early hour jet attack," *Agence France Presse*, July 19, 1997. (Available on Lexis.)
34. "Out of the Ashes," *Maclean's Hunter*, Jan. 16, 1995, p. 22.

35. "Part 1: Former U.S.S.R.: Caucasus," *BBC Summary of World Broadcasts*, Mar. 29, 1994. (Available on Lexis.)
36. "Part 1: Former U.S.S.R.: Caucasus," *BBC Summary of World Broadcasts*, June 24, 1993. (Available on Lexis.)
37. "Part II: Central Europe and the Balkans," *BBC Summary of World Broadcasts*, July 12, 1995. (Available on Lexis.)
38. "NATO, Expanding Bosnia Role, Strikes a Serb base in Croatia," *New York Times*, Nov. 11, 1994.
39. "Part II: Central Europe and the Balkans," *BBC Summary of World Broadcasts*, Sept. 13, 1995. (Available on Lexis.)
40. "Bomb Kills Six, Injures Dozens at Camp for Refugees," *Baltimore Sun*, Oct. 8, 1995.
41. Andrew Biliski, "A Deadly Turn," *Macleans*, May 15, 1995, p. 29; Tom Post, et al., "The Other War in the Balkans," *Newsweek*, May 15, 1995, p. 32.
42. Indictment, The Prosecutor of the Tribunal v. Milan Martić, International Criminal Tribunal for the Former Yugoslavia; See also Mike Corder, *Associated Press Worldstream*, July 25, 1995. (Available on Lexis.)
43. Martić reportedly lives only meters away from a house occupied by NATO troops. Ian Hunt and Greg Kent, "War Criminals in the Dock," *The Guardian*, July 1, 1997, p. 10. (Available on Lexis.)
44. *Independent* (London), Sept. 1, 1995. (Available on Lexis.)
45. Robyn Dixon, "Russia Blitzes Rebel City," *The Age* (Melbourne), Dec., 24, 1994; see also "Part I: Former U.S.S.R.," *BBC Summary of World Broadcasts*, Aug. 22, 1995. (Stating possible use of submunitions to deliver toxic agents in Chechnya).
46. "Russians Bomb Chechnya After Lone Wolf Dies," *Daily Telegraph*, Mar. 3, 1996, p. 11.
47. "Seven Russian troops killed over 24-hour period," Interfax news agency," *BBC Summary of World Broadcasts*, SU/2301/B, May 12, 1995. (Available on Lexis.)
48. "Fierce Artillery Duels Rage in Chechen Capital," *Agence France Presse*, May 4, 1995. (Available on Lexis.)
49. "Bomb Kills 30 After Drug Baron's Arrest," *The Independent*, June 12, 1995 p. 12.
50. Editorial, *Washington Post*, Dec. 30, 1991; "A War of Hunger and Horror," *Chicago Tribune*, Feb 21, 1991.
51. "The Ordeal of Eritrea," *Boston Globe*, May 3, 1990, p. 12.
52. "World and National News," *Star Tribune*, Dec. 27, 1992, p. 5A. (Available on Lexis.)
53. "The Cluster Bomb Furor," *Newsweek*, April 24, 1978, p. 50. (Available on Lexis.)
54. E.D. Doyle, "'Nuclear' Target Attack May Have Cost \$40m," *Irish Times*, Jan. 19, 1993, p. 6. (Available on Lexis.)
55. "Contras Open Major Offensive on Eve of Talks," *Los Angeles Times*, Dec. 12, 1987, p. 1.

56. "Sierra Leone Defense Chief Reports Gains Against Nigeria," *Agence France Presse*, Oct. 6, 1997. (Available on Lexis.)
57. "Arms Sale 'Conduct Code' Opposed," *Washington Post*, May 24, 1995, p. A6.
58. "Turkey Accepts Kurd Strike Killed Iranians," *Reuters*, Feb. 3, 1994. (Available on Lexis.)
59. "Kurdish Rebels Say Turkish Army Using Napalm, Cluster Bombs in Northern Iraq," *BBC Summary of World Broadcasts*, Oct. 9, 1997. (Available on Lexis.)
60. "U.S. Dep't of Defense Background Briefing," *M2 Presswire*, July 7, 1997. (Available on Lexis.)
61. George Seffers, "Pentagon May Resist Effort to Ban Antipersonnel Mines," *Defense News*, June 30/July 6, 1997, p. 11. (Available on Lexis.)
62. Under the draft Anti-Personnel Landmines Treaty to be signed in Ottawa in December 1997, the definition is as follows: "'Anti-personnel mine' means a mine designed to be exploded by the presence, proximity or contact of a person and that will incapacitate, injure or kill one or more persons. . . ."
63. "Background Briefing."
64. See, e.g. "IMI Analysis," *International Defense Review*, Feb. 1, 1991, p. 149. (Available on Lexis, News Library, Mag File.) The company conducting the test assumed a 10% dud rate for the ATAP-1000 munition and a 5% rate for rocket cluster munitions. Not surprisingly, in simulations, infantry were "neutralized" by submunitions much more easily than hard targets such as tanks. *Id.* In the clinical language of munitions research:
- A single aircraft equipped with a [fire control system] and armed with four ATAP-1000s could neutralize 21 per cent of a T-62 tank company, 18 per cent of a T-72 company, 15 per cent of an artillery battery, 56 per cent of the standing infantry [company], and 8 per cent of infantry in foxholes. . . . This compares with an aircraft carrying six Rocketeers, which obtained attrition rates of 16 per cent, 15 per cent, 11 per cent, 12 per cent and 4 per cent against identical targets.
65. "B1-B Crew Tests New Weapon," *Air Force Magazine*, Aug. 1997, p. 10. (Available on Lexis.)
66. "Robins Team Delivering on B1-B Modification Program," *FDCH Federal Department and Agency Documents*, July 10, 1997. (Available on Lexis.)
67. "U.S. to send two B-1 bombers to Bahrain," *Agence France Presse*, Sept. 24, 1997. (Available on Lexis.)
68. See, e.g., Bill Sweetman, "Scratching the Surface: Next Century Air to Ground Weapons," *International Defense Review*, July 1, 1997.
69. "Cluster Weapon" is a general designation for a munitions container which dispenses smaller munitions or submunitions. A variety of delivery systems have been developed to carry these submunitions, including bombs which are dropped from aircraft, as well as rocket launchers and artillery projectiles. Some of the submunitions, dispensers and delivery systems are interchangeable. Some dispensers and delivery systems also carry non-cluster warheads. These realities, coupled with incomplete information, make it difficult to offer a precise accounting of the federal dollars spent on "cluster weapons."

The figures above are thus a rough indication of the cluster weapons (anti-personnel and anti-armor) included in the federal budget for FY 1995-1999. Where information is available, costs are broken down between procurement, and research (RDT&E) associated with a particular weapons system.

It is also increasingly difficult to make clear distinctions between cluster weapons and landmines. We have tried

to include cluster weapons only in the budget tables.

70. MLRS (Multiple-Launch Rocket System): The MLRS is a tracked vehicle containing 12 missiles designed to deliver a large quantity of munitions to one area in a short time. The basic MLRS rocket (M26) contains 644 submunitions or bomblets. Range: 20 miles

The Extended Range MLRS (ER-MLRS) carries 518 submunitions, and has a range of 45+ km.

Recent Foreign Military Sales of the MLRS rocket pods, launchers and carriers include sales to Bahrain (202 pods on May 10, 1996), Korea (271 pods, 29 launchers, and 29 carriers on Dec. 10, 1996), and Turkey (270 pods on Aug. 11, 1994)

The **prime contractor** for the MLRS is Loral Vought, Dallas, TX, and Camden, AR.

Sources include: *Army Times* 10/9/95, Mr. Michael Courtney, Project Engineer, White Sands Missile Range, March 3, 1997, *Arms Sales Monitor* (Nov. 30, 1994, Feb. 1995, March, 1995, Dec., 1995, Feb., 1997). Website: <http://www.dtic.dla.mil/armylink/factfile/mlrs.html>.

71. ATACMS (Army Tactical Missile System): ATACMS are a "ground-launched missile system consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel warhead."

ATACMS Block I missile carries 950 antipersonnel/antimateriel bomblets and has a range of 165 km.

Recent Foreign Military Sales of the ATACMS include sales to Greece (40 ATACMS with launching assemblies, July 12, 1996) and Korea (111 ATACMS, December 10, 1996).

The **prime contractor** for ATACMS is Loral Vought, Dallas, TX; Horizon City, TX; Camden, AR. Subcontractor information is available on the website listed below.

Sources include: Mr. Michael Courtney, Project Engineer, White Sands Missile Range, March 3, 1997, *Arms Sales Monitor*, and website: http://www.dtic.dla.mil/armylink/factfile/army_tacms.html.

72. BAT is the Brilliant Anti-Armor Submunition. These submunitions are launched in the Army TACMS Block II missile. Each missile carries 13 submunitions. BAT has both acoustic and infra-red sensors, and is targeted against moving armored combat vehicles.

The **prime contractor** for BAT is Northrup Grumman (Hawthorne, CA and Perry, GA). The subcontractor is Raytheon, Manchester, NH.

73. XM915 105MM DPICM: an artillery projectile which dispenses submunitions, Dual-Purpose Improved Conventional Munitions

74. SADARM 155MM DPICM (Sense and Destroy Armor): A 155 mm artillery projectile can deliver two of these submunitions, while one of the MLRS rockets can deliver six. The munition can also be fired from aircraft. Parachutes are deployed once the munition has reached the target area. The parachute slows the munition, allowing it to scan the area for targets and to arm itself. Once the warhead is armed and a target detected, the warhead is fired.

The **prime contractor for the SADARM** is Aerojet Corp., Azusa, CA.

<http://www.dtic.dla.mil/armylink/factfile/sadarm.html>

75. **Wide Area Munitions (WAM)** can be placed by hand, by ground vehicles, rocket, or aircraft. “WAM, designated XM93, is a derivative of the Skeet submunition that is used in the BLU-108/B submunition...it can be dispensed quickly above ground over a wide area. Once on the ground WAM self rights and arms itself. It then uses acoustic sensors to detect any vehicle movement and doing so launches a submunition into the air over the target area. An infra-red sensor on the submunition searches the ground for the target, and once detected fires an explosively formed penetrator at the vehicle/tank top armor.”

The **prime contractor** for WAM is Textron Defense Systems. WAM is a US Army munition.

<http://www.btg.com/Janes/cgi-bin/eisdata?jalw-1043441-1074439>

76. **Sensor Fuzed Weapon (CBU 97/B)**: an air-launched anti-armor weapon system. Each dispenser contains 10 BLU-108/B submunitions. Each submunition carries 4 SKEET anti-armor warheads. *Jane's Air Launched Weapons*, Issue 9

The **prime contractor** for the Sensor Fuzed Weapon is Textron Defense Systems, Wilmington, MA. *Armed Forces Journal, International*

77. **Wind Corrected Munitions Dispenser (WCMD)**: “The WCMD kit is a modification kit that replaces the tails on a portion of current inventory direct attack cluster munitions... The intent is to enable Tactical Munitions Dispensers (TMD) to correct for the effects of launch transients, ballistic errors, and unknown winds between the release point and the dispenser’s functioning point... The threshold weapons for WCMD are the CBU-87/B (Combined Effects Munition ‘CEM’), CBU-89/B (Gator), and the CBU-97/B (Sensor Fuzed Weapon ‘SFW’).”

The **prime contractor** the WCMD is Lockheed Martin, Orlando, FL

Subcontractors: Simmonds Precision Motion Controls, Cedar Knolls, NJ; Honeywell Military Avionics, Minneapolis, MN; Litton Guidance and Control Systems, Woodland Hills, CA; PRB Associates, Hollywood, MD

Final Operational Requirements Document for Wind Corrected Munitions Dispenser, John M. Loh, General, USAF, Commander, Air Combat Command, Sept. 23, 1994.

Figures for FY 95-97 are from the President’s 1997 Budget, Program Acquisition Costs. Figures for 1998-1999 are from the 1998-1999 Biennial Budget.

78. **JSOW (Joint Standoff Weapon)**: a precision-guided weapon developed by the US and its allies carrying submunitions or bomblets. The guidance system allows the pilot to launch the weapon from a safe distance. The missile which carries the submunitions is designated AGM-154. The three variants are: AGM-154A, which carries 145 BLU 97A/B submunitions; AGM-154B, which carries six “sticks” of BLU-108/B sensor fuzed submunition arrays; and AGM-154C, which carries the BLU-111/B, a 500 lb. bomb. *Aviation Week and Space Technology*, July 22, 1996

The **prime contractor** for the Joint Standoff Weapon is Texas Instruments, purchased by Raytheon.