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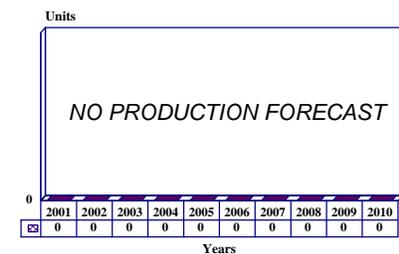
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ZM-87 - Archived 7/2002

Outlook

- Overwhelming disapproval of ZM-87 on humanitarian grounds greatly diminishes chance of future production
- Numerous bans and treaties make potential for international sales highly unlikely
- **Barring any future activity, this report will be archived next year, July 2002**

10 Year Unit Production Forecast
2001 - 2010



Orientation

Description. Directed laser system intended to cause temporary or permanent blindness, as well as damaging photo-electrical sensors of optical systems.

Sponsor

China North Industries Corp. (Norinco)
 12 A Guang An Hen
 100053 Beijing
 China
 Tel: +(86 10) 63473322
 Fax: +(86 10) 63401116
 Web site: <http://www.norinco.com.cn>

Contractors

China National Electronics Import & Export Corp (CEIEC)
 Electronics Building
 A23 Fuxing Road
 Beijing 100036
 China
 Tel: +(86 10) 68296509/68212361
 Fax: +(86 10) 68212320/68223907
 Web site: <http://www.ceiec.sz.com>

Licensee. No production licenses are known to have been granted.

Status. Assumed to have ended limited production.

Total Produced. Through 2000, roughly 22 units had been produced.

Application. The ZM-87 is primarily intended to blind humans; it is also reported to damage the photo-electric elements in laser rangefinders, video cameras, and missile seekers.

Price Range. Undetermined; no similar system is on the market with which to compare the ZM-87.

Technical Data

Characteristics	Metric	US
Power output:	15 mW	
Pulse repetition rate:	5 Hz	
Maximum range (blinding):	2 to 3 km	1.2 to 1.9 mi

	<u>Metric</u>	<u>US</u>
Maximum range (disabling):	10 km	6.2 mi
Dimensions		
Length:	84 cm	33 in
Weight (without battery):	35 kg	77 lb

Design Features. The ZM-87 consists of a portable electric energy converter supplied by a battery, an 84-centimeter-long optical energy transmitter mounted on a tripod, a sighting system, and the appropriate cabling connections. It resembles a heavy machine gun.

Operational Characteristics. The ZM-87 simultaneously transmits 15 mW laser pulses, at two different wavelengths, with a 5 Hz repetition rate. According to Chinese documentation, one of its major applications is to injure or dizzy the eyes of an enemy combatant by means of high-powered laser pulses. It is aimed

especially at any enemy agent who is sighting and firing at a ZM-87 user by means of an optical instrument, so as to cause this agent to lose combat ability, or experience a loss of sight. In addition, the ZM-87 is designed to damage photo-electric sensors in highly converging optical systems.

The ZM-87 is capable of causing permanent blindness at ranges of up to 2 or 3 kilometers, rising to 5 kilometers if a x7 magnifying optic is used. Temporary blindness can be caused at ranges up to 10 kilometers.

Variants/Upgrades

No variants or upgrades of this system are known so far.

Program Review

Background. The ZM-87 laser interference device was first revealed at a defense exhibition in the Philippines in May 1995 but gained major publicity as a result of its display at the Abu Dhabi exhibition shortly afterward. These exhibitions marked the first time that laser weapons intended to permanently or temporarily blind an opponent had been made available for export sale. While similar weapons have been developed by the UK, USA, Russia, and France, none have been made officially available to third parties.

The provenance of the system is highly uncertain. It has been reported that development work on the ZM-87 started in the late 1980s. A possible motivation was to provide a means of breaking up mass demonstrations of the type that took place in Tiananmen Square without the need for heavy armored vehicles.

Just as the ZM-87 arrived on the world weapons scene, the United Nations and the International Committee of the Red Cross (ICRC) stepped up their campaign to have laser weapons banned internationally. The resulting Certain Conventional Weapons Convention (CCWC) Protocol IV (also known as the Vienna

Protocol), adopted in October 1995, banned the use and transfer of any laser weapon designed to blind humans, as well as the proliferation of the technology behind such a weapon. In theory, international law prohibits export of the ZM-87. However, there is no known restriction on the development of lasers as electronic countermeasures.

The threat of eye damage caused by lasers was spotlighted again in April 1997, when a US Navy intelligence officer sustained a retinal injury consistent with exposure to an Nd-YAG laser. The suspected source was the nearby Russian freighter *Kapitan Man*, but evidence was inconclusive.

In January 1998, Hungary became the twentieth nation to ratify the protocol. Other nations that signed the protocol include the following: Australia, Cambodia, Cape Verde, Denmark, Finland, Germany, Greece, Ireland, Japan, Liechtenstein, New Zealand, Panama, Peru, the Philippines, Spain, Sweden, Uzbekistan, and the Vatican.

Funding

The source and value of funding for the development of this system have not been disclosed.

Recent Contracts

No contractual information is available.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Late	1980s	Development believed to have begun
May	1995	ZM-87 publicly revealed
Oct	1995	Blinding laser weapons banned in CCWC Protocol IV
Apr	1997	US Navy officer sustained retinal injury consistent with exposure to an Nd-YAG laser
Jan	1998	Twentieth nation ratified international ban
Dec	2000	Known production apparently ended

Worldwide Distribution

Though offered for export, the ZM-87 has most likely been restricted to use by **China**.

Forecast Rationale

Although war is hell, there are still some lengths to which most of the world's armies are loath to go to win on the battlefield. And if one military defense system could be picked as among the most widely opposed solely on humanitarian grounds, then China's ZM-87 would be it. The device is a directed laser system intended to cause temporary or permanent blindness to military personnel of opposing forces and to disable photo-electrical sensors of enemy forces' optical systems.

While the ZM-87 is not the only laser blinding system that has been produced, it is the only such system promoted for the primary function of blinding enemy forces. Although the dangers associated with laser blinding systems have been widely publicized, little information is available about specific systems such as the ZM-87 and Outfit DEC (the UK's version of a laser blinding system). Not surprisingly, in the wake of

worldwide condemnation, there is very little new public source information after the late 1990s on any of these laser blinding systems, let alone the ZM-87.

Therefore, it is believed that production of the ZM-87 was completed by the end of 2000. Though such a weapon could easily find itself in the hands of less scrupulous military regimes, the effective ban on the system by the countries of Australia, Cambodia, Germany, Spain and Sweden, to name only a very small few, all but negates the chances of procurement for ZM-87 anywhere in the world outside of China.

Given the dearth of information on the system and the strong desire for it to disappear from the world's defense markets, the ten-year forecast for this report has been omitted. Furthermore, barring any highly unexpected activity, this report will be archived next year, July 2002.

Ten-Year Outlook

There are no known orders for this system; thus, the forecast chart has been omitted. **Barring any future activity, this report will be archived next year, July 2002.**

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