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## Pain Beam to Get Tougher, Smaller, More Powerful

By David Hambling February 06, 2009 | 9:50:40 AM Categories: [Bizarro](#), [Lasers And Ray Guns](#), [Less-Lethal](#)

The Pentagon's pain beam weapon could get tougher, smaller, more powerful, and more mobile under a series of new research and development projects. And that could pave the way for the so-called "Active Denial System" to finally be sent to war.

The Pentagon first unveiled ADS in 2001. But in spite of repeated calls to send the system to Iraq for crowd control, the weapon has been held up by a series of legal, political, and technical issues. However, recent contracts may show the way forward for ADS, which zaps the target with a painful, but mostly harmless, microwave blast. The idea is to [start building 20 of the revamped systems](#), beginning in three years.



First off, the pain weapons are going to get tougher. The military is fit the system into an Mine Resistant, Ambush Protected (MRAP) armored vehicle that has become the infantry transport of choice overseas. System 1 of the ADS was mounted in a Hummer, System 2 is a containerized system that takes a sizable truck to haul it. Which sounds like a recipe for turning the beam weapon into a sitting duck. No wonder the military is [calling for](#) "studies for the integration of Directed Energy Non-lethal Active Denial Key Systems onto mine resistant armored personnel (MRAP) vehicles."

Secondly, get more sophisticated. The current system is gigantic, partly because of the requirement for supercooling -- System 1 would not function in very hot weather. So a Broad Area Announcement last month calls for for "alternative design concepts" to reduce the volume and weight of each of the System's four components: the power generation/storage/conditioning, thermal management, beam source and antenna.

We know a little more about what's going on from the [Joint Nonlethal Weapons Program's newsletter](#). It mentions that compact solid state beam sources are being investigated that are much smaller than the existing monster [Cyrotron](#). They're also looking at a [sheet beam Klystron](#), an advanced amplifier technology which could "increase system power by six-fold."

Last time the military tried to shrink the ADS to fit a smaller vehicle it was [not a success](#); they ended up with a beam which was only 400 watts (compared to about 100 kilowatts) and did not have the range and power needed. It was [deleted from an experimental, nonlethal-weapons-packed vehicle program](#). On the other hand, the action-packed, [game-show style field test](#) of the low-power ADS looked amazing...but this time they will be aiming for better results.

All the previous Active Denial Systems have been built by Raytheon; the company even makes a commercial version, [Silent Guardian](#). But this is a competitive contract, calling for at least two contractors and no favoritism.

Thirdly, it's going to have a new name. The official documents have now started referring to the vehicle-mounted version of the pain ray as Mobile ADS, contracted to MADS. This is probably because other versions, such as the Portable ADS or PADS are in the pipeline. I always thought that "Active Denial" was a weak name, but calling it MADS may not be an improvement... cue a slew of bad insanity jokes. Perhaps Danger Room readers can suggest a better name, preferably based on an acronym?

[Photo: U.S. Army]

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