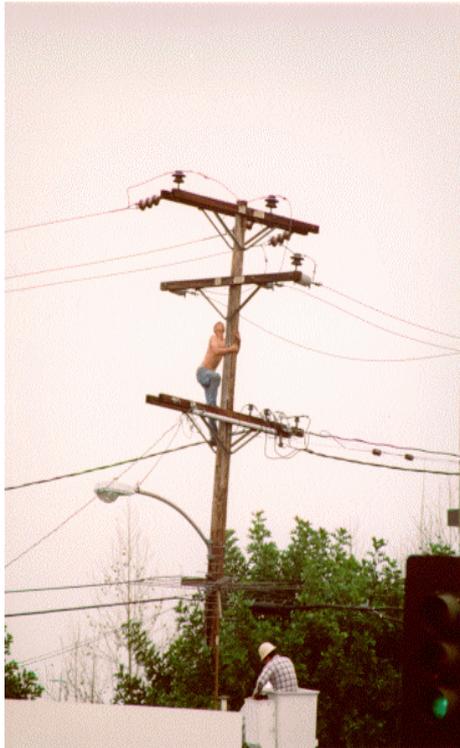


# TASER Anti-Personnel Munition (TAPM)

Daniel Murphy  
TACOM-ARDEC  
5 June 2002

# GETTING SMART ABOUT THE TASER

The TASER effect is not electrocution.



# GETTING SMART ABOUT THE TASER



- The TASER uses electrical impulses that are carried over a pair of fine wires.



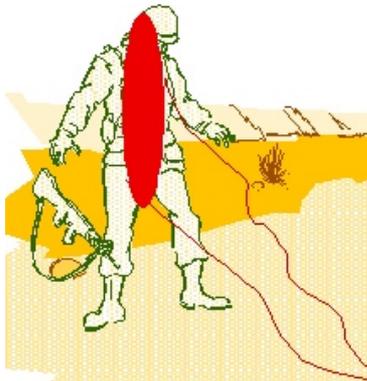
*Manufacturer of Tasertron™  
less lethal products*

**Taser Technologies, Inc.**  
4400 MacArthur Blvd. 9th Floor  
P.O. Box 10538  
Newport Beach, CA 92658





# GETTING SMART ABOUT THE TASER

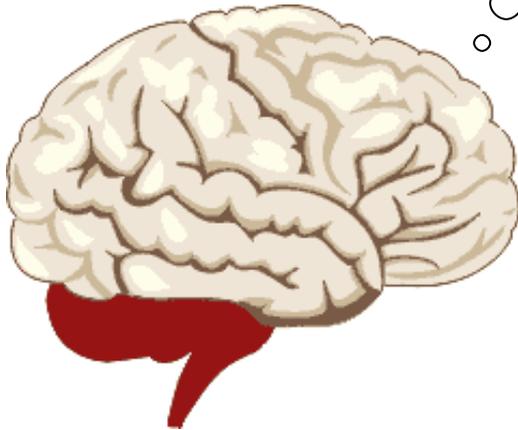


- The many impulses stimulate the nerves in the region between the dart pair.

# GETTING SMART ABOUT THE TASER



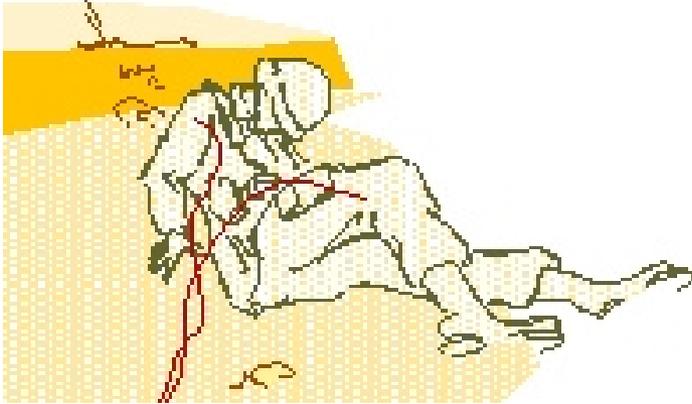
Motor Center  
has created  
errors and will  
be shut down.



- The amount of nerve input to the brain is too much for it to handle. The brain has no control of the voluntary muscles. They contract erratically and the body collapses.

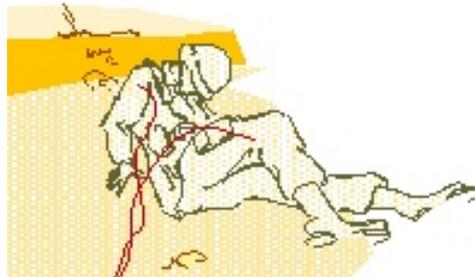
# GETTING SMART ABOUT THE TASER

Restarting.....  
Please wait...



- Once the TASER impulses cease, the brain has to re-establish control of its motor functions. The muscles have to purge themselves of the lactic acid from the contractions.

# GETTING SMART ABOUT THE TASER



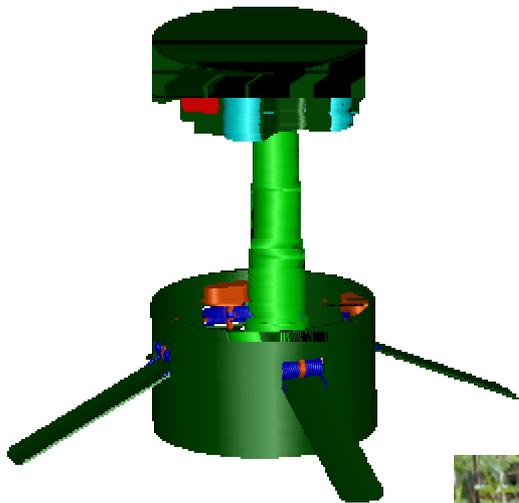
- It is reported that the target can be sore for 1-2 days after being subdued. Our efforts are leading toward effectively applying the TASER to lengthen the time a target is subdued.

# THE TAPM TIP



- General Dynamics (at the time PRIMEX), of Redmond WA teamed with Taser Technologies (at the time TASERTRON) of Corona, CA and made a **Technology Insertion Program (TIP)** proposal to the Joint Non-Lethal Weapons Directorate headquartered at Quantico, VA. The focus of the TIP effort is more to evaluate the technology than develop a munition.

# THE TAPM TIP

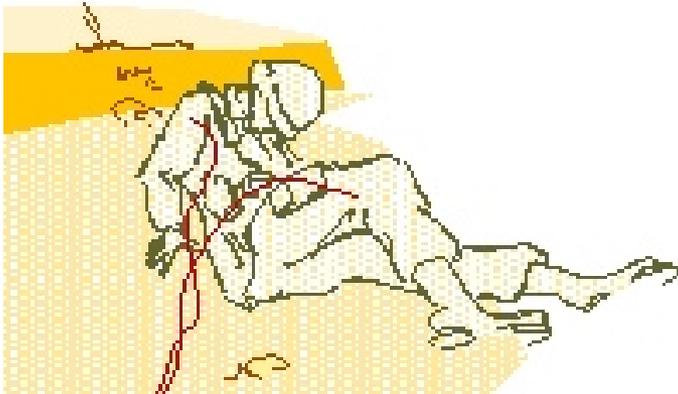


- The TAPM proposes to take the TASER technology and create a target-triggered munition. Current efforts are to develop a scatterable munition that will be deployed from a VOLCANO platform.

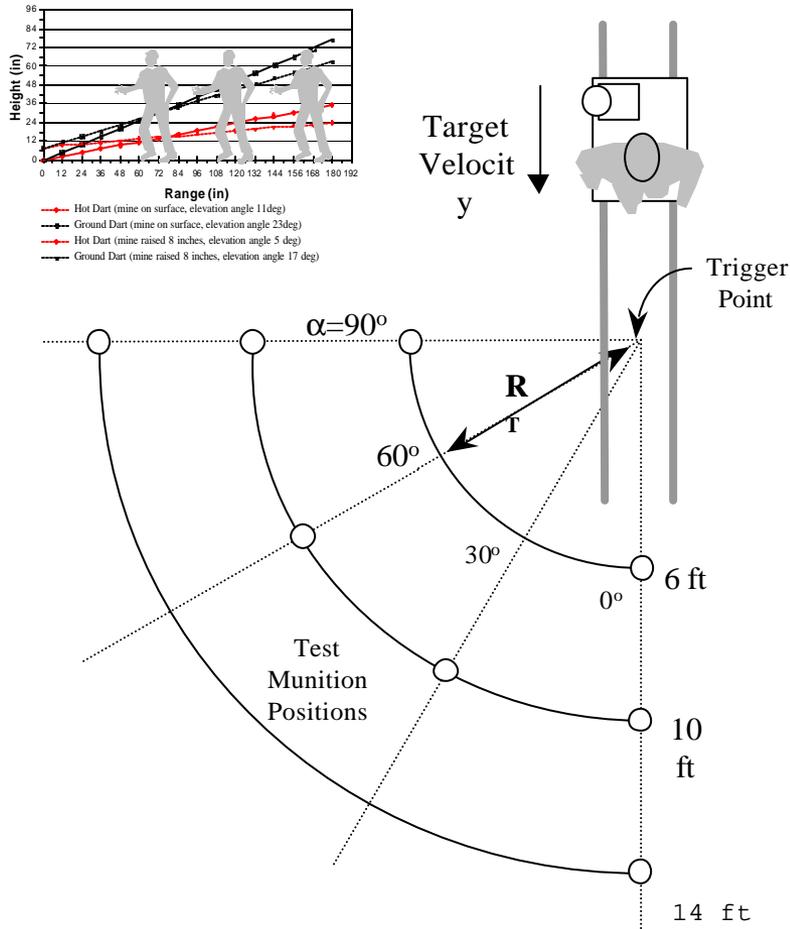


# THE TAPM TIP

- By effectively applying TASER pulses over time, it will be possible to render a target immobile for longer periods.



# THE TAPM TIP



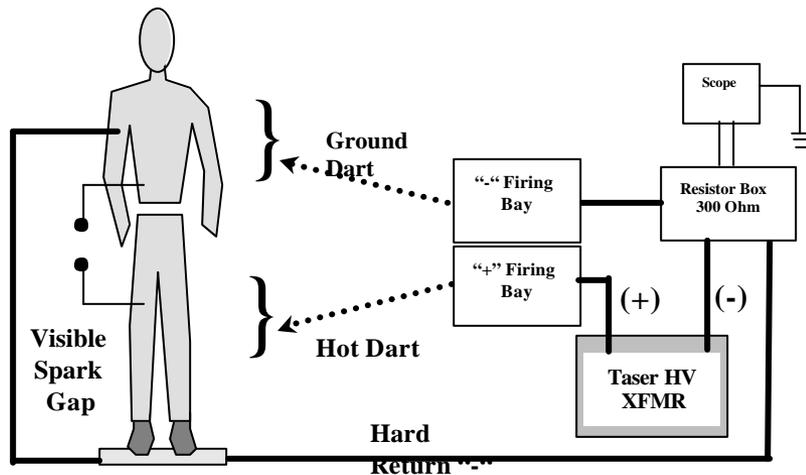
- The TIP effort was performed to determine:
  - Was the TASER effective against dismounted personnel wearing military clothing?
  - Could the TASER be effectively fired from a scatterable munition?

# THE TAPM TIP



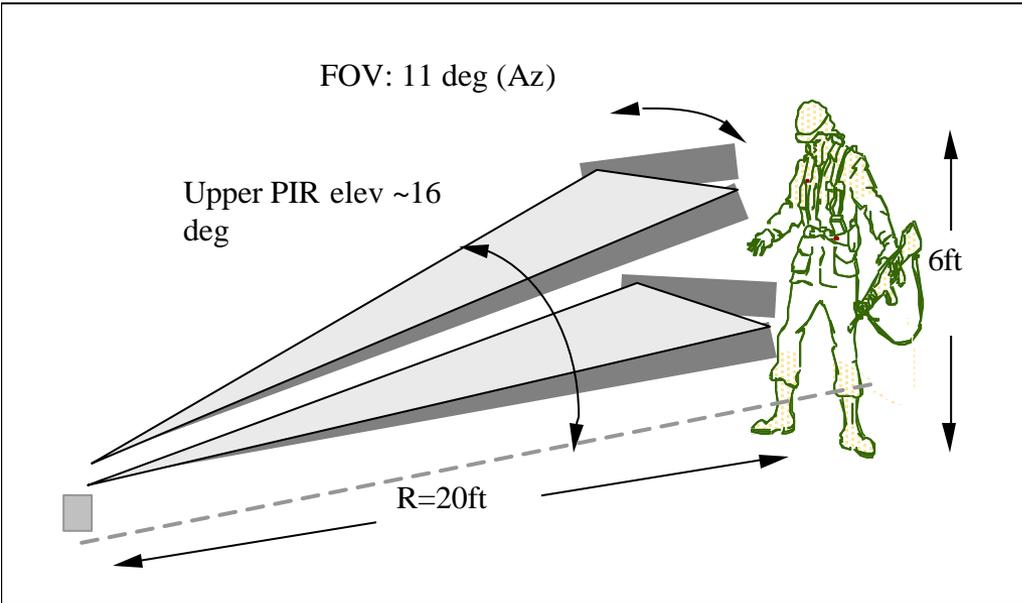
- Effectivity against military clothing was measured by an apparatus attached to a mannequin dressed in military clothing.

# THE TAPM TIP



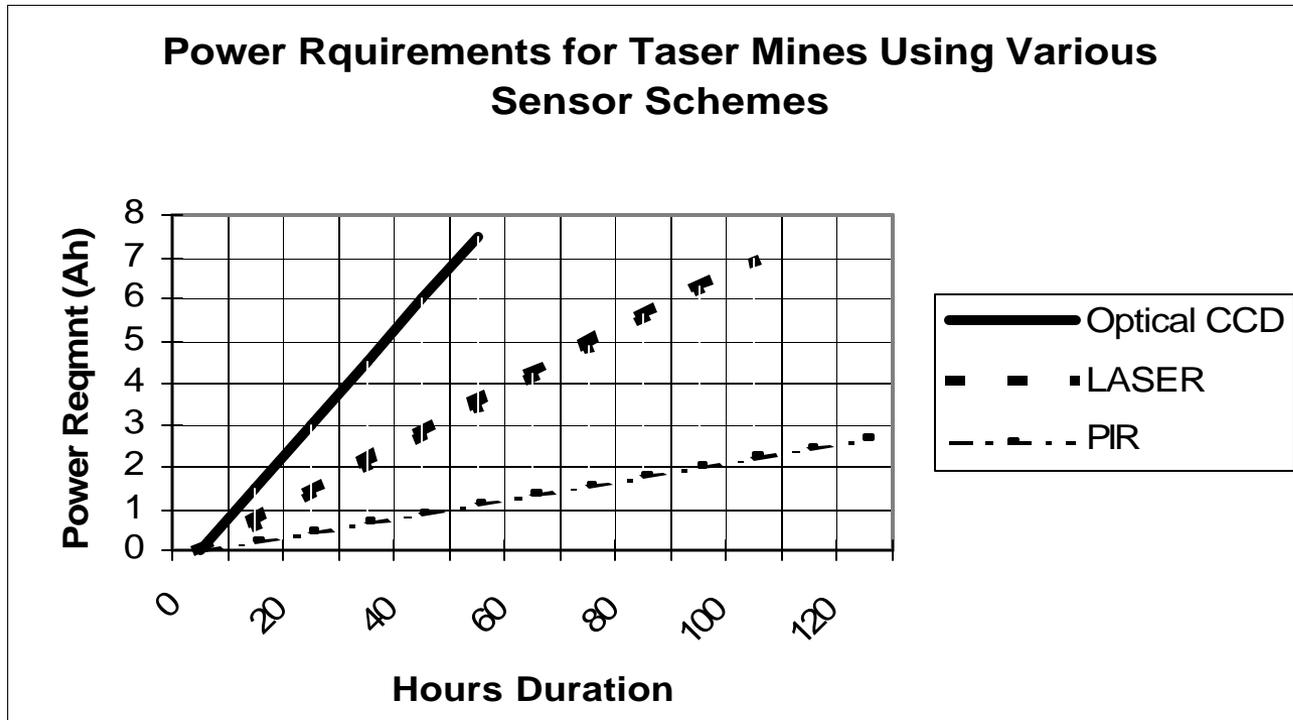
- The TASER dart pair comprises of an energized wire and a ground wire. A second ground path exists through the earth surface. Having the “hot” dart on the bottom allows prone targets to be engaged.

# THE TAPM



- Automatic triggering a direct-fire mechanism requires an on-board sensor. The trigger has to perform within an envelope determined by the speed, elevation and angle of a target.

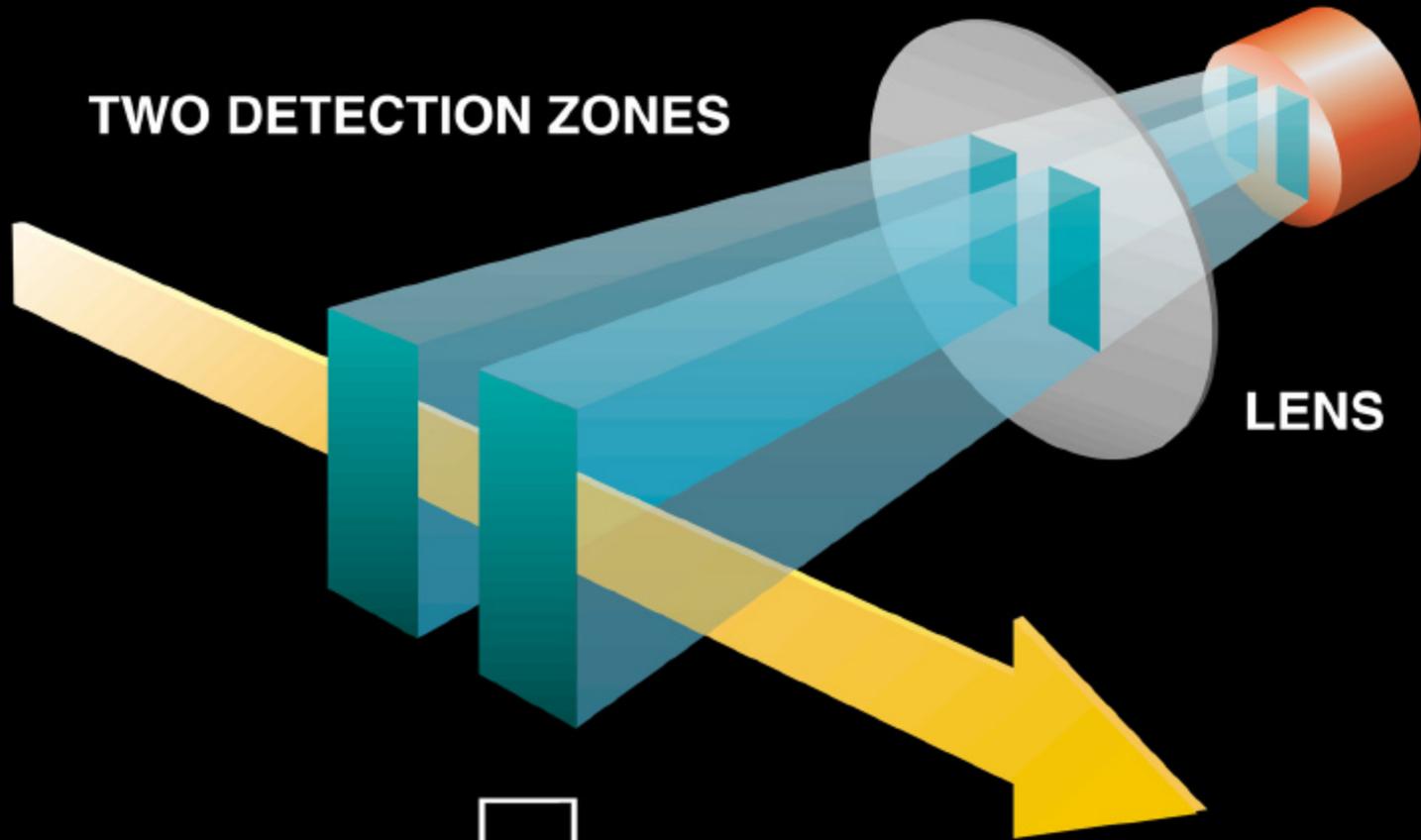
# THE TAPM TRIGGER



**DETECTOR ELEMENTS**

**TWO DETECTION ZONES**

**LENS**

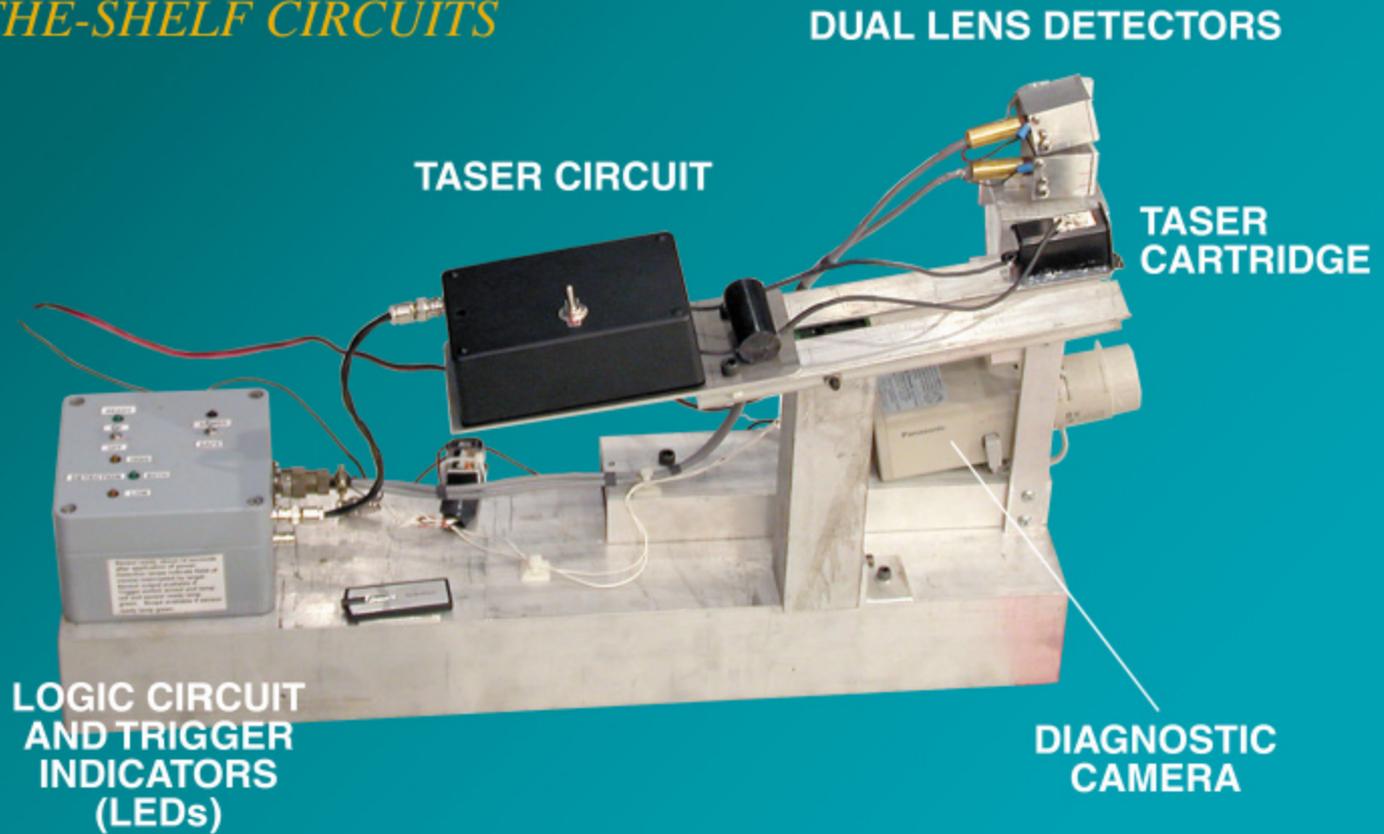


# PIR Sensor Development Status

- A single channel was locate viewing wooded scenes in North Andover Mass
- The system was operated continuously from 2 to 31 Jan 2002
- A person walked by to test response and was detected each time
- During the test period no false detections were recorded
- Rain, snow and windy, sunny and cloudy day-night conditions and temperature variations from 20 to 62 F were encountered during this test

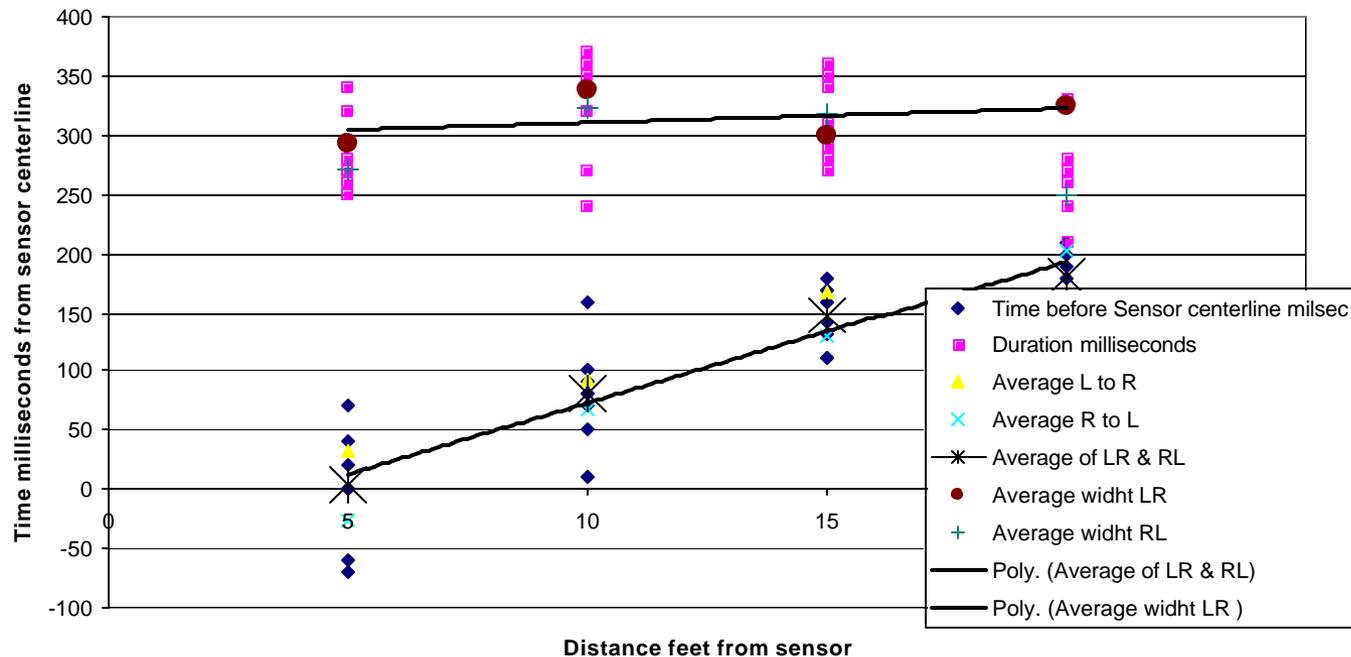


*SYSTEM BASED ON COMMERCIAL  
OFF-THE-SHELF CIRCUITS*

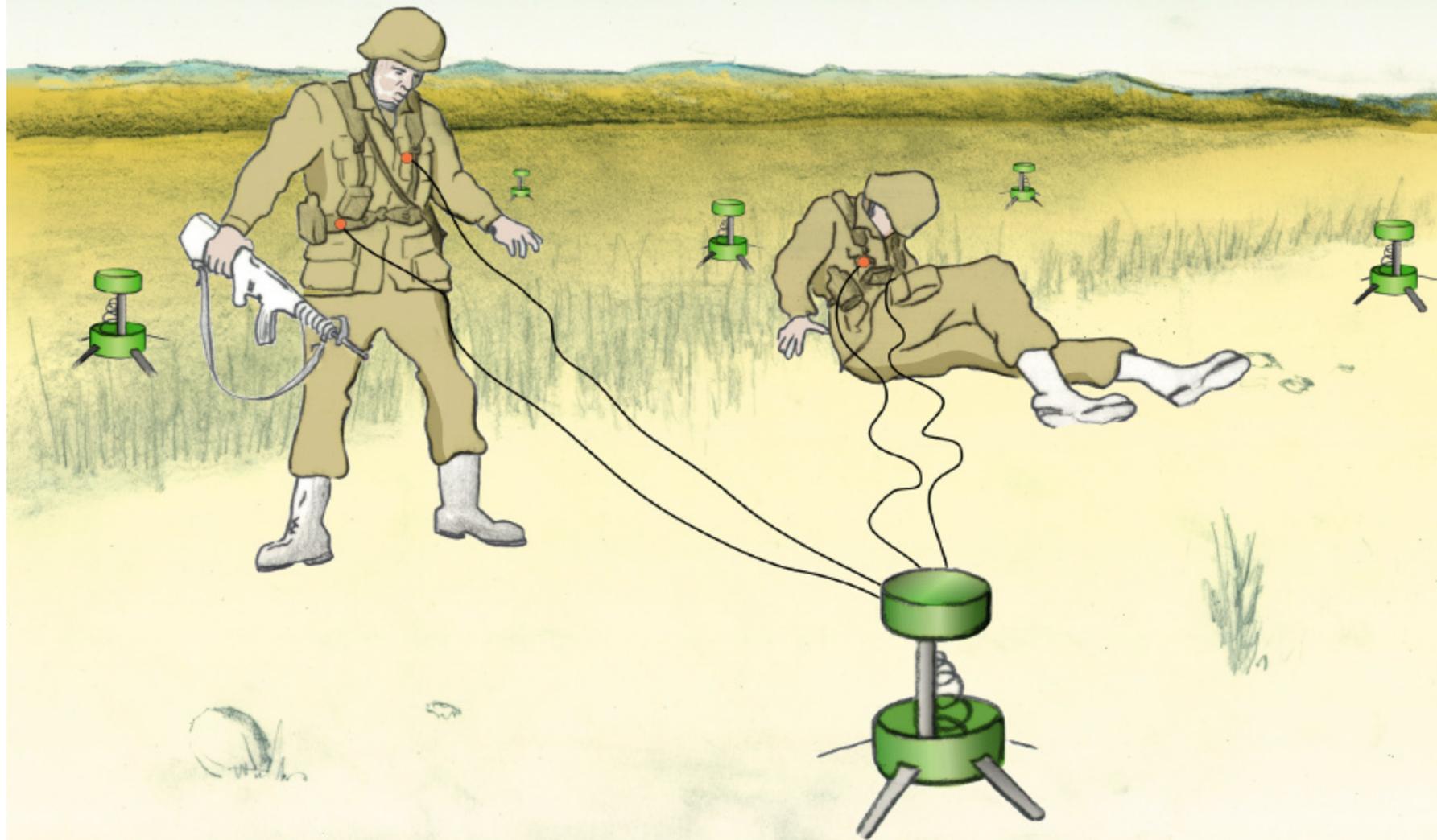


# PIR Sensor Development Status

The time at which the sensor issued a detection pulse relative to the on-axis line of sight of the sensor was recorded as well as the duration for a constant velocity target moving normal to the centerline to pass completely through the centerline of the sensor. The transit time is independent of range at about 300 milliseconds based on a 12 inch thick body moving at a velocity of 3.3 feet per second (2.3 miles per hour). The initial detection point of the target is at an angle of 33 milliradians (1.9 degrees) from the sensor axis.

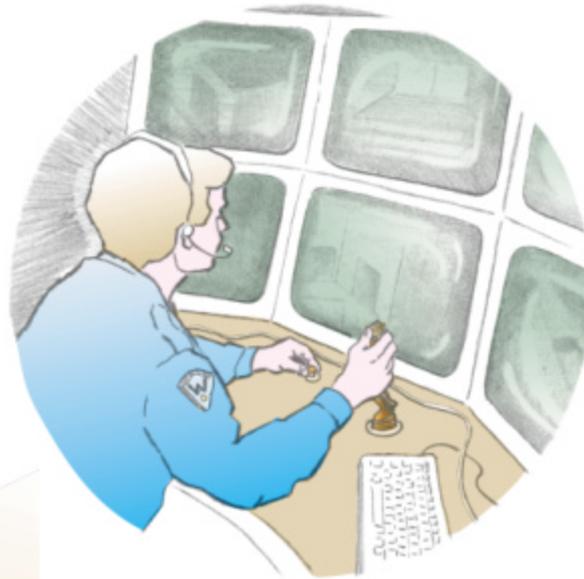


***The TAPM field densities are consistent with existing FASCAM densities and can be deployed in similar circumstances and configurations.***



- **'Air-Droppable'** (deep deployment)
- **Fast Response**
- **Deployment Flexibility**





CLEARANCE OF TECHNICAL INFORMATION FOR PUBLIC RELEASE	
TITLE: <u>TASER Anti-Personnel Munition</u> PAO Log# <u>169-02</u>	
PICATINNY	AUTHOR/PRODUCER (S): <u>Daniel Murphy</u> ADDRESS (IF APPLICABLE): <u>Building 5A</u> <u>Picatinny Arsenal, NJ</u> <u>07906-5600</u>
	OFFICE SYMBOL: <u>AMSA-AR-FSP-11</u> PHONE/BLDG#: <u>973-729-6133</u>
CONTRACTOR	AUTHOR/PRODUCER (S): COMPANY ADDRESS:
	CONTRACT NUMBER: NAME OF PICATINNY SPONSOR: SPONSOR OFFICE SYMBOL:
	SPONSOR PHONE/BLDG#: COMPANY PHONE:
PURPOSE OF RELEASE: <input checked="" type="checkbox"/> Presentation <input type="checkbox"/> Publication <input type="checkbox"/> Abstract <input type="checkbox"/> News Release <input type="checkbox"/> Other	
MEETING TITLE (If presentation, speech or conference paper): <u>NDIA Mines Demotions And Non-Lethal Conference</u>	
PLACE: <u>TAMPA FL</u> DATE(S): <u>3-5 June 2002</u> DoD Sponsored: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
PUBLICATION (Magazine, journal, newspaper, proceeding): <input type="checkbox"/> Solicited <input type="checkbox"/> Yes <input type="checkbox"/> No	
CERTIFICATION: I certify that this material has not been copied substantially without written permission from the author/producer and does not contain any sensitive, potentially controversial, POUO or classified information. <u>Paul Murphy</u> Author's/Producer's Signature	
<b>REQUIRED APPROVALS:</b> Signatures below certify that this material was reviewed for technical accuracy, classified information, security implications, proprietary information, competition-sensitive information and policy guidelines; that inventions have been previously submitted for patent review, and that the subject matter does not fall under the Militarily Critical Technology List.	
SIGNATURE (Division level) <u>Daniel G. Deane</u> Dennis G. Deane Sr. Sec'y Policy	Approve <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: <u>22 May 2002</u> Remarks: Recommend Distribution: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F
SIGNATURE (Chief/Director/PM level) <u>Robert J. Miller</u>	Approve <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: <u>24 May 2002</u> Remarks: Recommend Distribution: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F
SIGNATURE (OPSEC) <u>W.D. Sibley</u>	Approve <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: <u>20 MAY 02</u> Remarks: Recommend Distribution: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F
SIGNATURE (Patent/legal) <u>M. Jacobs</u>	Approve <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: <u>24 May 02</u> Remarks: Recommend Distribution: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F
SIGNATURE (Contracting Officer, if appropriate) <u>Mark Halpin</u>	Approve <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: <u>5/24/02</u> Remarks: Recommend Distribution: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F
	<b>DISPOSITION:</b> BASED ON RECOMMENDATIONS PROVIDED ABOVE, CLEARANCE IS GRANTED FOR PUBLIC RELEASE BASED ON THE APPROVED DISTRIBUTION CIRCLED BELOW.
	<u>Regina Kline</u> <u>5/20/02</u> Picatinny Arsenal Public Affairs Office Date
APPROVED DISTRIBUTION: A (Unlimited) B (U.S. Gov't only) C (U.S. Gov't & Contractors only)	D (DoD & DoD Contractors only) E (DoD Components only) F (Only as directed by or higher authority)

CLEARANCE OF TECHNICAL INFORMATION FOR PUBLIC RELEASE	
<b>INSTRUCTIONS</b>	
<b>IF AUTHOR/PRODUCER IS PICATINNY-BASED:</b> Picatinny-based authors/producers are responsible for initiating the clearance process and ensuring that their material is approved for public release. This is accomplished by attaching one copy of the material (manuscript, photos, videotapes and any other material that requires clearance) to this form and obtaining the necessary signatures. When clearance is granted, the Picatinny Public Affairs Office (the last office in the clearance process) will forward one copy of this form along with the attached material to the ARDEC Technical Library for archival purposes and provide another copy of this form to the author/producer. It is the author/producer's responsibility to notify all interested parties of the release approval and to make subsequent distribution.	
<b>IF AUTHOR/PRODUCER IS A CONTRACTOR:</b> A contractor initiates the clearance process by forwarding the material to a Picatinny sponsor, who in turn begins the clearance process in the same manner as a Picatinny-based request. When clearance is granted, the Picatinny Public Affairs Office (the last office in the clearance process) will forward one copy of this form along with the attached material to the ARDEC Technical Library for archival purposes, and provide another copy of this form to the Picatinny sponsor. It is the Picatinny sponsor's responsibility to notify the contractor and any other interested parties of the release approval and to coordinate subsequent distribution with the contractor. Because contractor submitted videotape material requires clearance at the Defense Department level, recommend that these submissions be made at least 90 days prior to the projected public release date. Only Picatinny-related portions of multi-topic videotapes will be reviewed here.	
<b>RECOMMENDED DISTRIBUTION:</b> Each signator in the <i>Required Approvals</i> section recommends distribution based on the categories listed at the bottom of the form. The approved distribution is circled at the bottom of the form and will equal the most stringent distribution category selected by the signators.	
<b>COMMENTS</b>	
(Use this space, and additional pages as necessary, to make additional remarks or written changes to the submitted material. If changes are made directly on the material, a note to that effect in the <i>Required Approvals</i> section under "Remarks" is all that's necessary.)	
For more information on the clearance process or this form, please contact the Picatinny Arsenal Public Affairs Office, DSN 860-4-465, (704) 724-6265.	