



# **FLAMELESS TRACER & MARKER**

## **2002 International Infantry & Small Arms Symposium**

**15 May 2002  
Atlantic City, NJ**

*Mark S. Leng, Stew Gilman, Leon Manole  
Close Combat Armament Center*



# AGENDA

- INTRODUCTION
- BACKGROUND
- TECHNOLOGY BENEFITS
- Modified M781 40mm TEST FIRINGS at TACOM-ARDEC
- QUESTIONS



# INTRODUCTION

- **WHAT'S A TRACER ?**
  - PYROTECHNIC MATERIAL (HEAVY METALS)
  - INITIATED UPON WEAPON FIRING
  - BRIGHT BURNING, TRAVELS WITH PROJECTILE
  - WEAPON CORRECTION
  - CAN START RANGE FIRES.....
  
- **AMMUNITION FIRES**
  - DANGEROUS
  - SMOKE IN SURROUNDING COMMUNITY
  - LOST TIME
  - COST TO EXTINGUISH



# BACKGROUND

- 1998 RESEARCH BEGAN UTILIZING VARIOUS ARDEC FUNDING SOURCES.
- PERFORMED PRELIMINARY TANK AMMUNITION TESTING.
- PATENT DISCLOSURE SUBMITTED.
- DEMONSTRATED M781 40mm GRENADE CAPABILITY.
- DEVELOPING TRACERS & MARKERS for MULTIPLE CALIBER AMMUNITION & VARIOUS MISSIONS.
- PROVIDING DEMONSTRATIONS to the USER COMMUNITY.



# TECHNOLOGY BENEFITS

- TRAINING BENEFITS
  - ELIMINATES TRACER FIRES.
  - ENVIRONMENTALLY FRIENDLY.
  - SIMULATES FLASH of EXPLOSIVE.
  - ALLOWS MODIFIED M781 to be USED AT NIGHT & DAY.
  - COST EFFECTIVE TO IMPLEMENT.
- TACTICAL BENEFITS
  - SIGNALING & IDENTIFICATION CAPABILITY.
  - INFRARED & VISIBLE LIGHT CAPABILITY.
  - ECONOMICAL



# 40mm M781 TEST FIRINGS

- DEMONSTRATED IR & VISIBLE TRACE MARK CAPABILITY with OVER 90 SUCCESSFUL FIRINGS in ARDEC ARMAMENT TECHNOLOGY FACILITY, OUTDOOR RANGE & FT BENNING.
- DEMONSTRATED TECHNOLOGY to PM, NATIONAL GUARD, INFANTRY SCHOOL, & OTHER USERS.
- SUCCESSFULLY ADVANCING PRESENT TECHNOLOGY to MEET USER NEEDS.



# FLAMELESS TRACER

## APPLIED to the 40mm M781 PRACTICE GRENADE



FIG 1. 40mm PROJECTILE WITH TRACER & MARKER CAPABILITY



FIG 2. ATF- 300M RANGE NORMAL LIGHTING



FIG 3. PROJECTILE IMPACTING CEILING

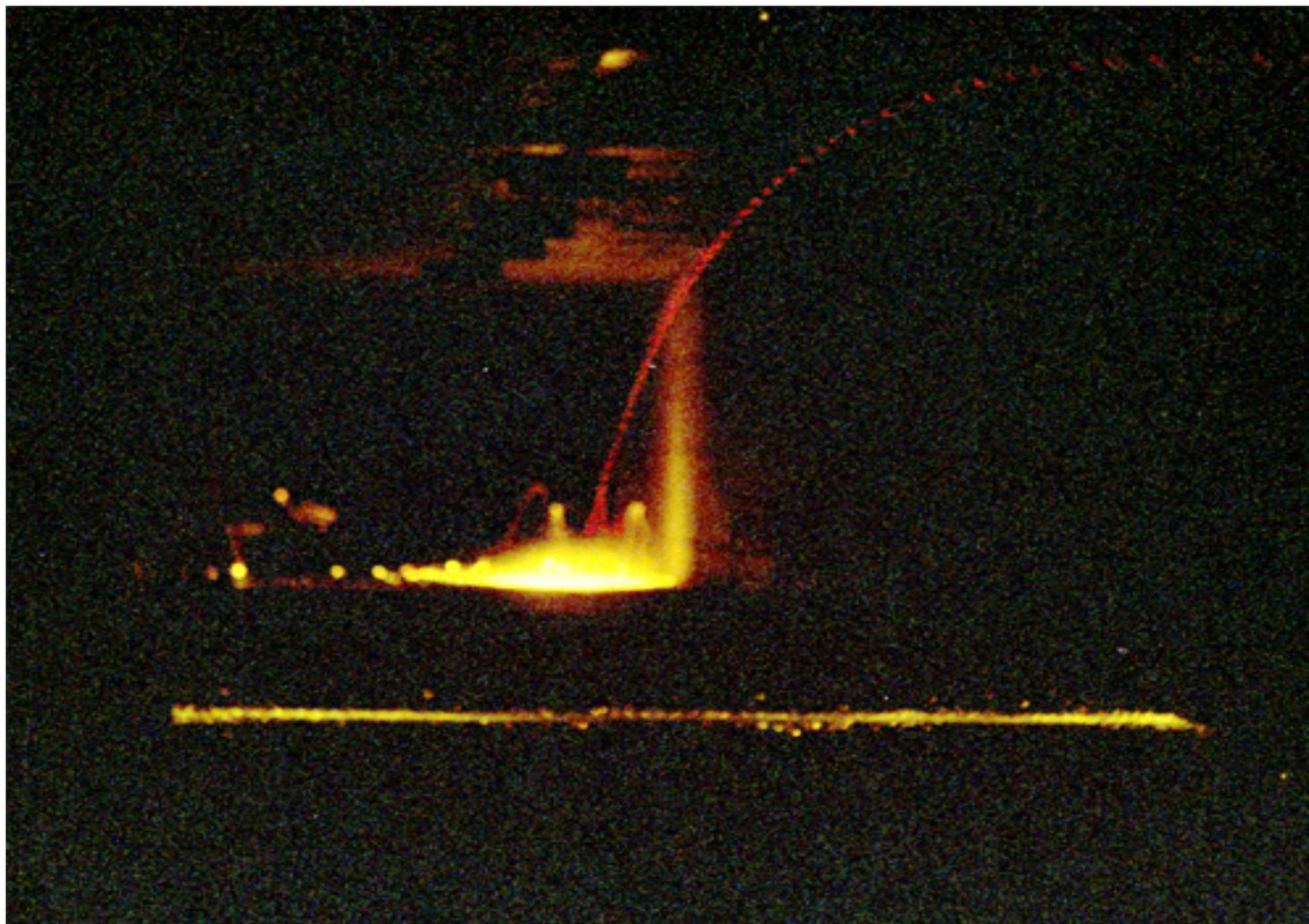


FIG. 4 40mm PROJECTILE with TRACE, IMPACTS FLOOR LEAVES MARK

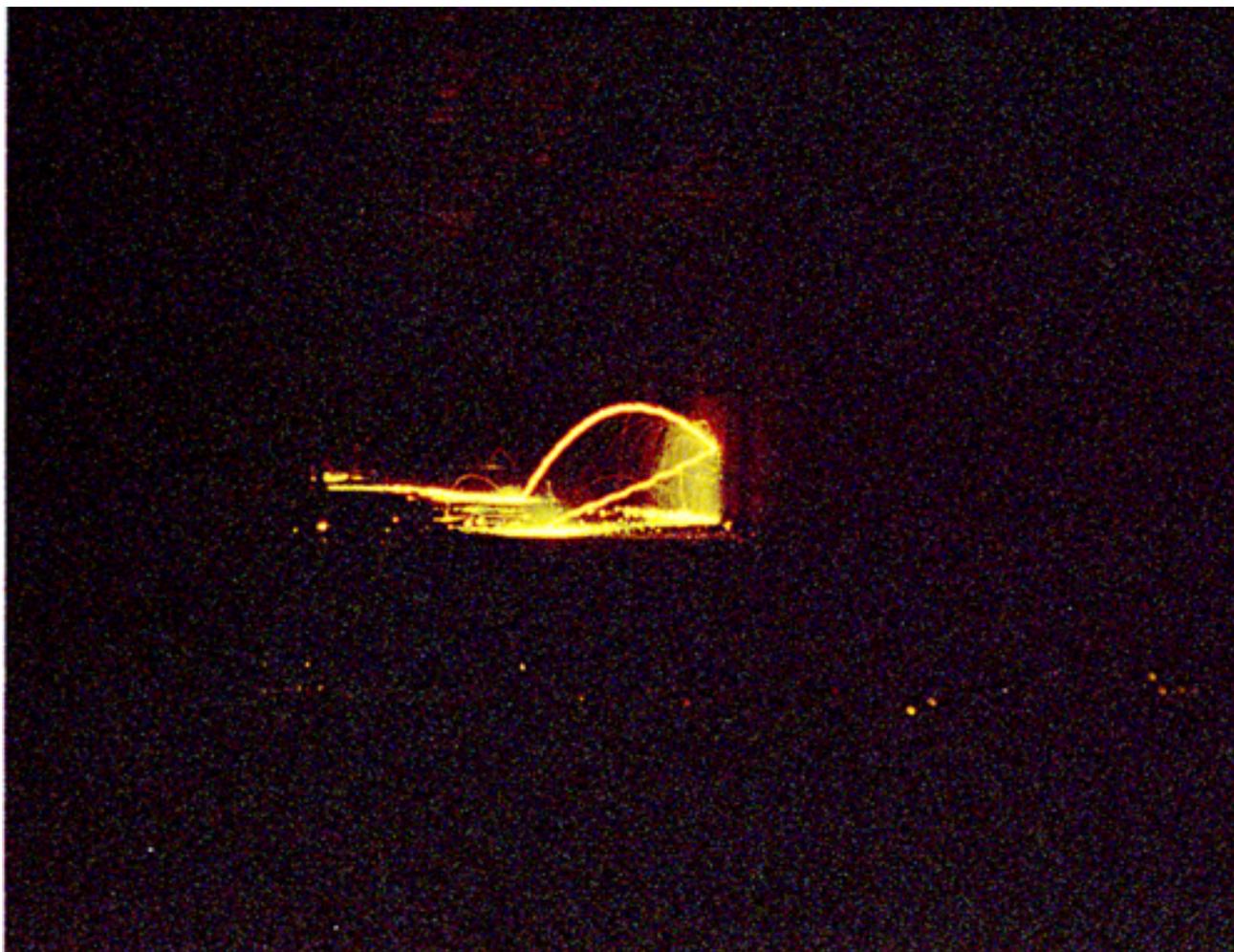


FIG 5. MARKER (NO TRACER), INITIAL IMPACT on FLOOR RICOCHETING off the WALL and IMPACTING BACK to FLOOR



FIG 6. VIDEO OF 40mm TRACE & MARK in TACOM-ARDEC ATF



FIG 7. DAY TIME VIEW OF TARGET  
at PICATINNY OUTDOOR RANGE



FIG 8. ROUND MARKING TARGET at DUSK  
at PICATINNY OUTDOOR RANGE

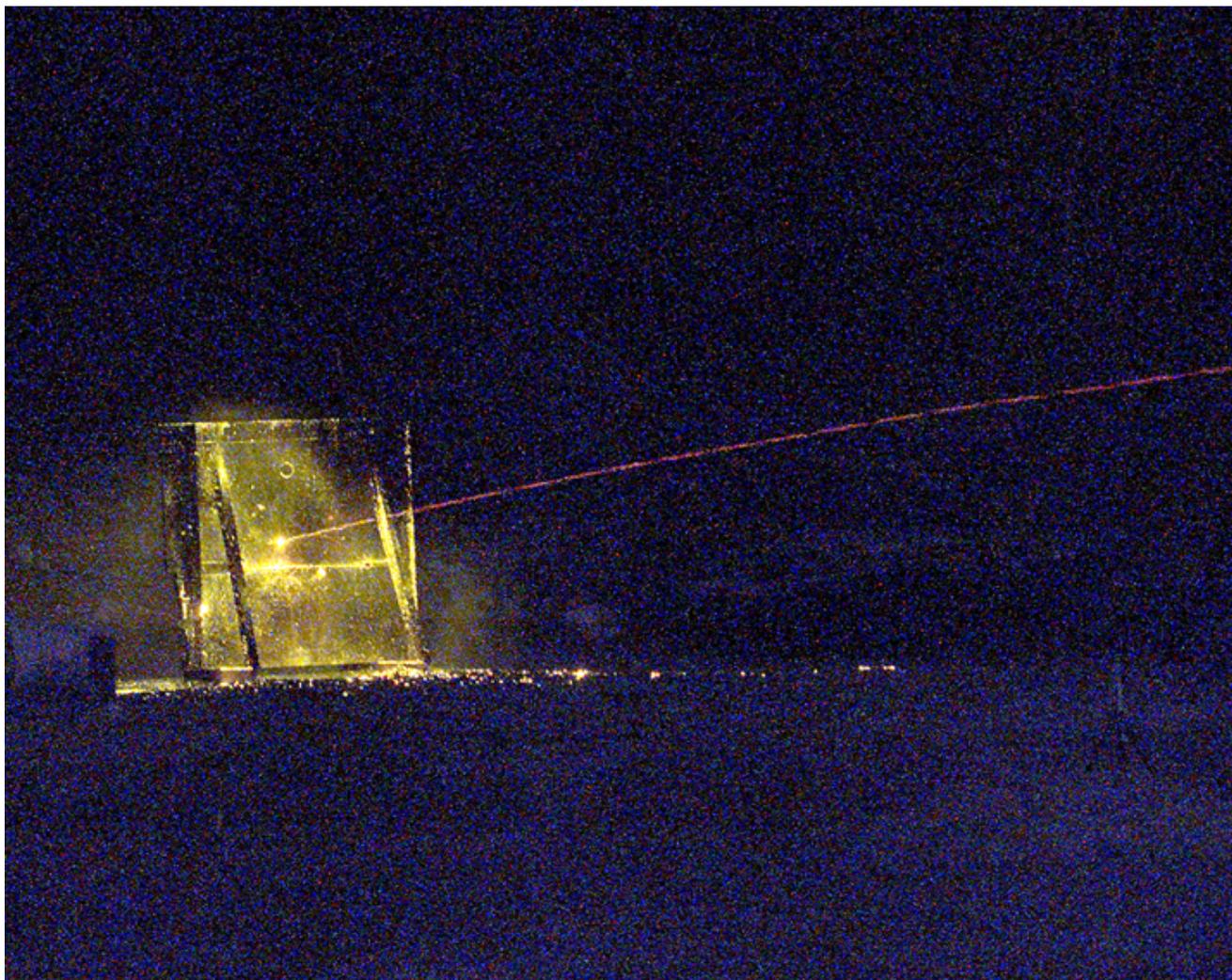


FIG 9. ROUND FIRED at NIGHT  
at PICATINNY OUTDOOR RANGE



FIG 10. VIDEO of FLAMELESS TRACE & MARK  
at PICATINNY OUTDOOR RANGE



# ARDEC Points of Contact

- Small Caliber Ammo Branch

Mark S.Leng

e-mail: [mleng@pica.army.mil](mailto:mleng@pica.army.mil)

(973) 724-5688

- Weapon Systems and Technology Branch

Stew Gilman

email: [sgilman@pica.army.mil](mailto:sgilman@pica.army.mil)

(973) 724-7088

Leon Manole

email: [lmanole@pica.army.mil](mailto:lmanole@pica.army.mil)

(973) 724-6516