



# MOUT ACTD

MILITARY OPERATIONS IN URBAN TERRAIN  
ADVANCED TECHNOLOGY DEMONSTRATION



## MOUT ACTD Overview

Presentation to  
**NDIA 1999 International Infantry and  
Small Arms System Symposium**

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# Why a MOUT ACTD?



*“...the most complex and resource intensive battlefield in the 21st Century...”*

*“...a military unprepared for urban operations across the spectrum is unprepared for tomorrow...”*

*“...the most likely battlefield in the 21st Century...”*

## ***It's The Environment...!***

- *Noncombatants*
- *Electro-Magnetic Interference*
- *Densely Compacted Areas*
- *High Rise Buildings*
- *Modern Construction*



Bosnia, 1996

**Because of These Factors, POTENTIAL ADVERSARIES HAVE MILITARY PARITY WITH US FORCES in a MOUT Environment**





# *MOUT: The Russian Way*



## Chechnya

*No regard  
for collateral  
damage*



Not an option for the U.S.



*No regard  
for non-combatants*



*Rubble,  
then clean up*





# ***MOUT ACTD Mission***



Improve the operational capabilities of Soldiers and Marines in MOUT

- ***Evaluate advanced technologies to provide technological dominance in MOUT.***
- ***Provide interim capabilities to operational units with TTPs.***
- ***Set the stage for rapid acquisition of selected technologies.***





# Program Overview



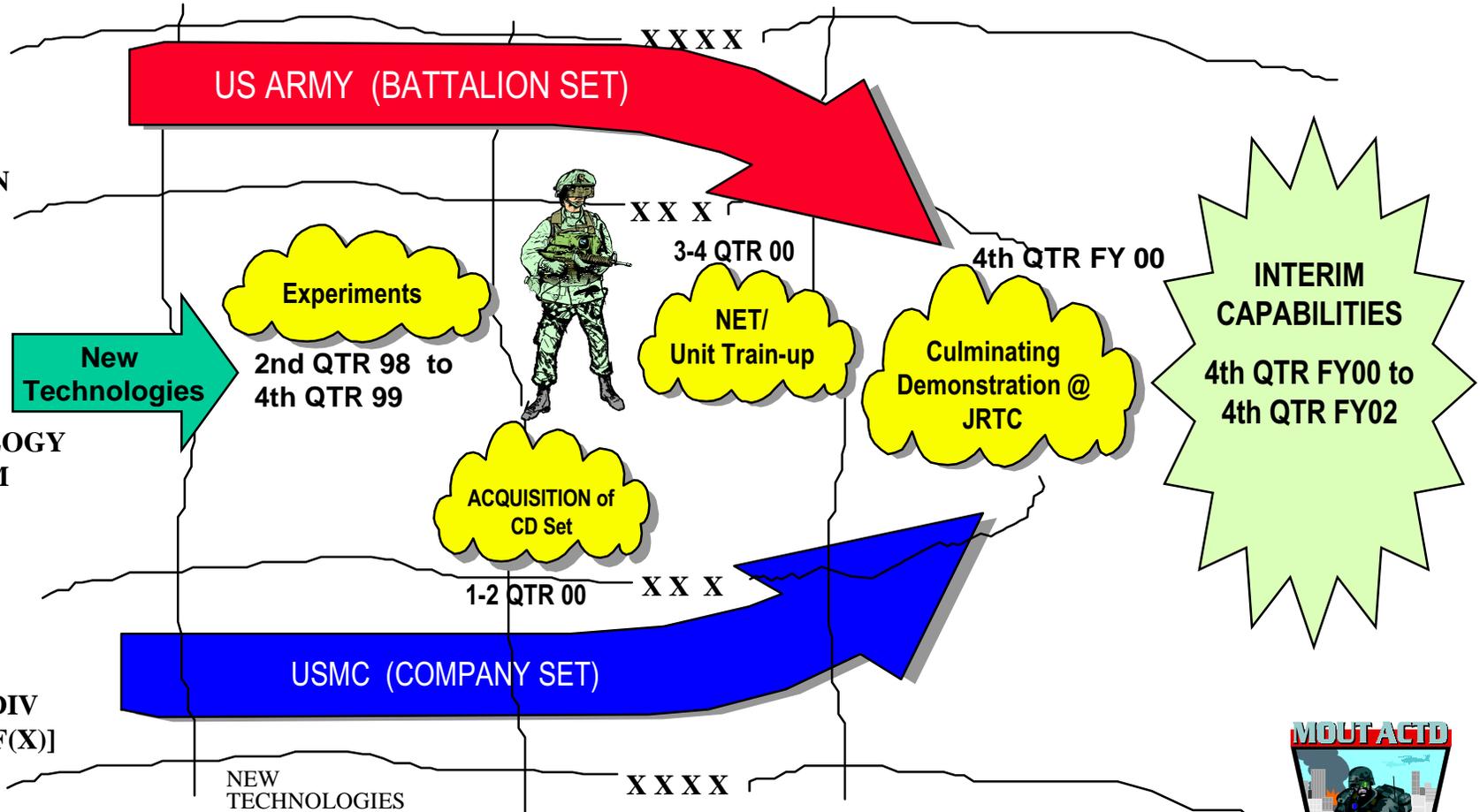
XVIII ABN  
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TECHNOLOGY  
PROGRAM  
OFFICE

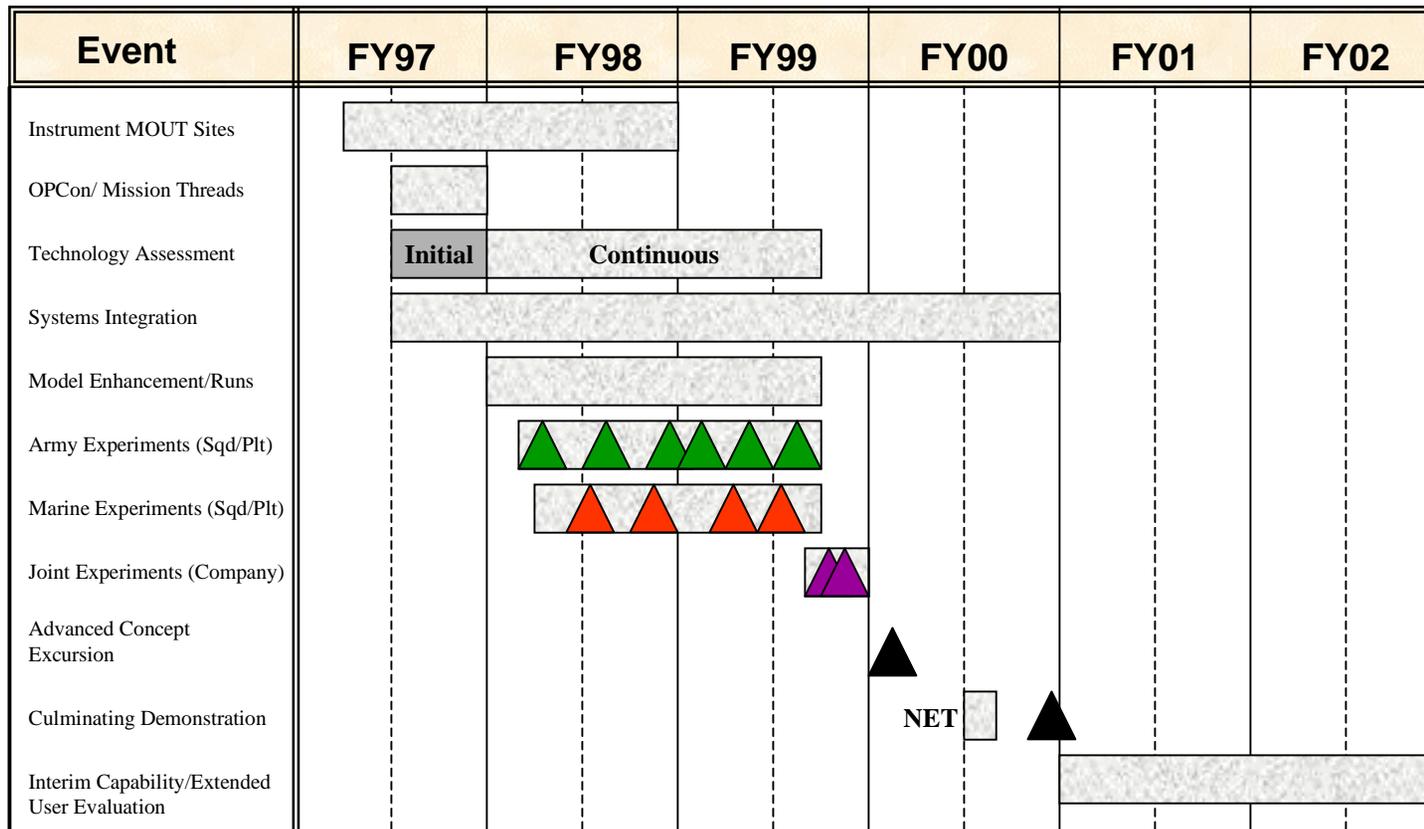


2nd MAR DIV  
[SPMAGTF(X)]





# Program Schedule





# Requirements



- Services and CINC inputs focused the MOUT ACTD on four primary areas
  - ◆ C4I
  - ◆ Force Protection
  - ◆ Engagement
  - ◆ Mobility
- Army & Marine requirements share commonality





# Requirements



## C4I

### Sensors

- R1: Identification of friendly, enemy, noncombatants
- R2: Powered optics
- R6: Night Vision/Light Source
- R7: Through wall sensor
- R33: Sniper detection
- R36: Hand Held Target designator

### Comm., Intel., Nav.

- R3: Hands-free non-line of sight communication
- R4: Produce/Update Maps
- R5: Intelligence Collection/Dissemination
- R41: Position/location in buildings

## Mobility

- R28: Get on top of building

## Modeling and Simulation

- R40: Mission Planning/Virtual Rehearsal Tools

## Force Protection

- R10: Man-portable shield
- R11: Clearly mark all friendlies
- R12: Joint protection
- R13: Lightweight mask
- R14: Personal protection kit
- R15: Hearing protection
- R26: Improved obscurant
- R42: Casualty evacuation
- R35: Flexible cuffs

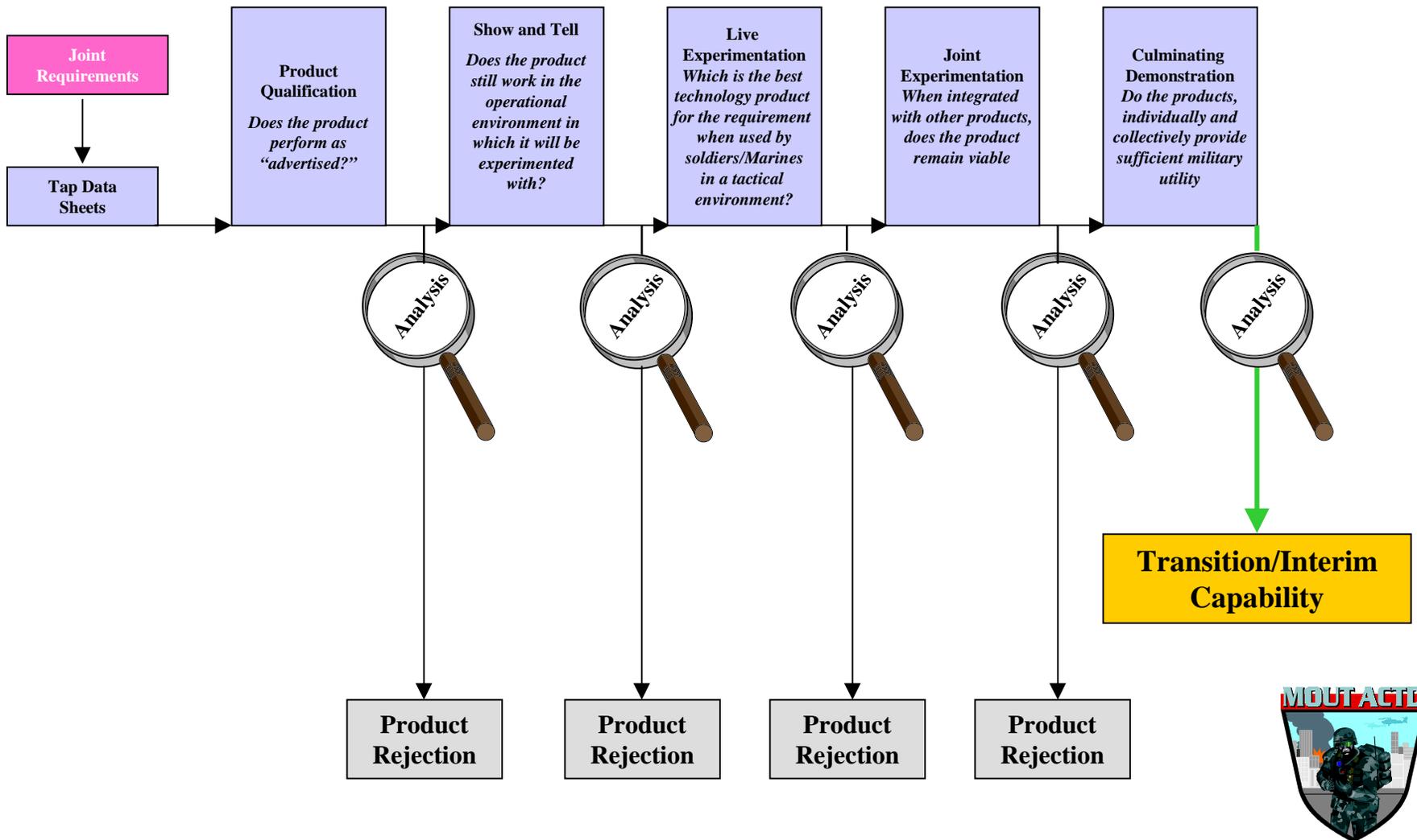
## Engagement

- R8: Remote marking
- R16: Detect/Disarm Booby Traps
- R21: Hands-free sling
- R24: Soft round
- R25: Non-lethal tools/munitions
- R27: Blow man-sized hole in concrete
- R29: Precision Mortar
- R30: Non-explosive breach
- R31: Non-lethal blunt trauma training round
- R34: Non-lethal grenade
- R37: Point munition





# Technology Flow





# Army Experiment 1

## 23 Jan - 13 Feb 1998



- R8, Remote Marking: No viable candidates.
- R12, Joint Protection: Five candidates, Bijan Knee and elbow pads demonstrated best fit, form, function; all units going into MOUT should be equipped.
- R13, Light weight Mask: Four candidates, Interoperability problems with with NODS and communications equipment; none fully met requirement, M45 best candidate
- R31 Non-lethal blunt training round: One ammo candidate, two upper receiver candidates, all met the requirement for M16 and M4. Simunitions, Olympic Arms
- R26 Improved obscurant: Three candidates, M83 provided best non-toxic alternative to HC smoke.



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# Marine Corps Experiment 1

## 6 Apr-2 May 1998



- **R10 Man-portable Shield (Level IV):** Five candidates, None accepted. Technology requires significant weight reduction and improved multiple impact resistance.
- **R30 Door/Window Breach:** Seven candidates, Hydra Ram and Simon Breaching Launcher System were successful. Rifle-launched Entry Munition (RLEM) transitioned to WRAP program.



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# Army Experiment 2

## 27 May - 19 Jun 1998



### ➤ R14 Personal Protection Kit::

- ◆ Eye Protection - Three candidates, none accepted SWDG base case currently best.
- ◆ Medical protection - Eleven candidates, all available through Class VIII Medical supply system.
- ◆ Cut protection - Eleven candidates, one accepted but later rejected after further technical testing; Four new candidates will be evaluated at AE6.
- ◆ R15 Hearing protection: Four candidates evaluated, Base case foam earplugs were most successful.

### ➤ R24 Soft Round: five candidates were demonstrated and underwent performance testing at Aberdeen Proving Ground. Report pending.

### ➤ R35 Flexible cuff: five candidates, Tuff cuffs successful.



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# Marine Corps Experiment 2 3 - 28 Aug 1998



- **R11 Clearly Mark All Friendlies:** Seven individual technologies were demonstrated, a combined technology solution (STRIFE) was demonstrated at Marine Corps Experiment 4.
- **R28 Get on Top of Building:** Seven candidates were demonstrated, none met the requirement. A promising new candidate is being demonstrated during Army Experiment 6.
- **R34 Stun Grenade:** Seven candidates demonstrated, three met the requirement. Further experimentation on NICO product during Joint Experiments 1 & 2.



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# Army Experiment 3

## 9 Sep - 3 Oct 1998



- **R3 Hands Free Non-line of Sight Communications: The MOUT ACTD is not testing specific radios per se, but is evaluating the operational utility of radios at the squad level in MOUT. Further evaluation will take place during Army 5 & 6.**
- **R42 Casualty evacuation - Three technology candidates were demonstrated, the poleless litter (base case, currently fielded) was successful.**



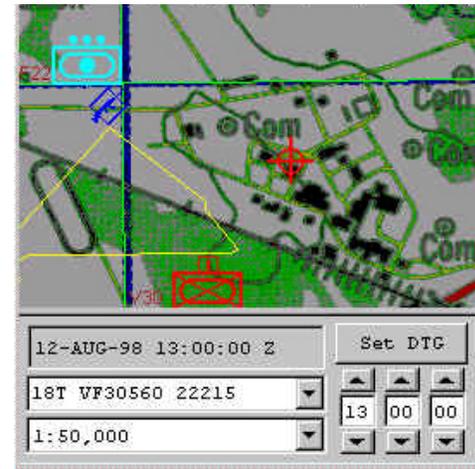
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# Army Experiment 4 12 - 20 Nov 1999



- **R40 Virtual Mission Planning and Rehearsal Tool:** Two candidates were demonstrated, neither fully met the requirement. Technology needs enhancement and further evaluation . Enhanced products will be re-evaluated at a 2-22IN CPX this in fall 1999.



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# Marine Corps Experiment 3

## 15 Jan - 8 Feb 1999



- **R2 Powered Optics:** Six technology candidates were demonstrated over a range of weapons platforms. Four capabilities Day, Night, Thermal, Magnification. Five candidates were successful.
- **R7 Through-wall sensor:** One technology candidate was demonstrated and was eliminated because it did not perform as advertised.

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# Army Experiment 5

## 23 Feb - 19 Mar 1999



- R3 Hands free non-line of sight communications: Shark microphone, earpiece headset, compatible with all candidates
- R5 Intelligence Collection/ Dissemination: Three technology candidates were demonstrated. Three additional candidates will be demonstrated during Army Experiment 6.
- R21 Improved Weapons Sling: Two technology candidates were demonstrated. Relook in Army Experiment 6
- R27 Blow man-size hole in concrete: The operational utility of three candidates were evaluated. Performance testing was completed at EMRTC; rebar still a problem.



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# Marine Corps Experiment 4

## 1-30 Apr. 1999



- **R6 Night Vision/Light Source:** Six candidates were evaluated. The Army and Marine Corps are fielding the PVS7D and PVS 14; Marines accepted both. However they do not see through smoke.
- **R33 Sniper Detection:** Three candidates were evaluated. None were accepted. The three candidates fell into two technology types, optical and acoustic. Both receive false alarms due to MOUT clutter, and none detect while on the move



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# Army Experiment 6

## 3-27 May 1999



- **R3 Hands-free Non-line of Sight Communications: Relook of Shark headset with with product improvements to push to talk (PTT) switch - more durable: Squad radio improved EXFORs overall situational awareness.**
- **R5 Intelligence Collection/ Dissemination: Evaluated three new products and relooked Matilda UGV and VCH-1 Digital Camera/Transmitter with product improvements. MATILDA UGV and Pointer UAV (Army Experiment 5) were most successful.**
- **R21 Improved Weapons Sling: Three technology candidates were evaluated. The Tactical tailor was successful, allowed soldier to keep weapon close to chest while hands-free.**
- **R27 Blow man -size hole in Concrete: Two products relooked in Army 6- BEAST Explosive Blanket and Explosive Cutting Tape. Both successful. Rebar Cutter by HEAT also needed as additional equipment.**
- **R28- Get on Top of Building: Two candidates evaluated LIMOR and Quick Step. Each provide different capability. Both successful.**



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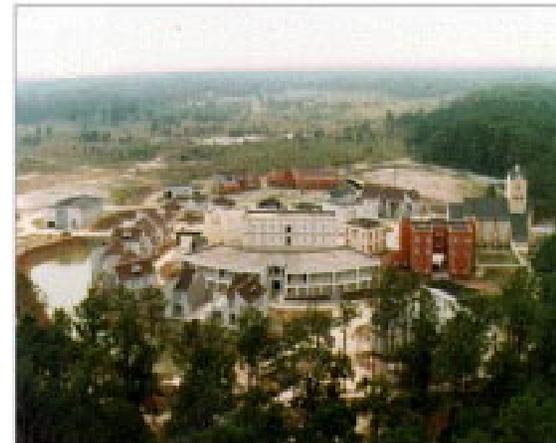


# Joint Experiments



- **Joint Experiment 1**
  - ◆ 8-30 Jul, Camp Lejeune
- **Joint Experiment 2**
  - ◆ 9-30 Sep, Fort Benning
- **Assesses collective military utility of proposed Interim Capability package**
- **Evaluates integration and interoperability of selected technologies & TTPs**

USMC Test Site



Army Test Site





# Advanced Concept Excursion (ACE) 1

## 12 Nov 1999



### What ACE is...

- Investigates MOUT-related technologies that are not mature enough for consideration in the MOUT ACTD
- Looking for technologies that can transition to S&T in the 2000 to 2005 time frame and can be fielded in the 2005-2015 timeframe
- Support development of S&T investment strategy for MOUT
- A significant increase to existing capability or is revolutionarily new
- Considers the full spectrum of operations in a MOUT environment at brigade and below

### What ACE is not...

- Not a new tech search for MOUT COTS and GOTS
- Not a dumping ground for efforts rejected by other government programs
- Not limited to the 32 MOUT ACTD requirements; ACE is technology/capability driven
- Not necessarily constrained by current doctrine; consideration of technologies is open

*For more information*  
*<http://mout.actd.org>*





# *Culminating Demo*



- **JRTC Fort Polk**
- **US Army INF. BN with USMC Rifle Company (REIN) Attached**
- **September 2000**
- **Currently, Joint Contingency Force Advanced Warfighting Experiment coincides with this event**



**Demonstrate the collective military utility of the MOUT ACTD “system of systems” at the Battalion level**





# ***MOUT ACTD Transition Planning***



- Transition approach, PM and follow-on programs are product/technology dependent
- Focus
  - ◆ Transition from experimentation to Residual Period
  - ◆ Transition to acquisition
  - ◆ Transition to S&T for frustrated requirements
  - ◆ Transition of Lessons Learned
- “Rolling” transition- transition products as soon as successful in experimentation and analysis of data
- Overarching Transition Plan drafted: individual transition plans for each product initiated
- Transition Planning IPT formed
- Transition Mechanisms: WRAP, SEP, MEP, GSA, EMD, P3I to existing EMD, S&T

