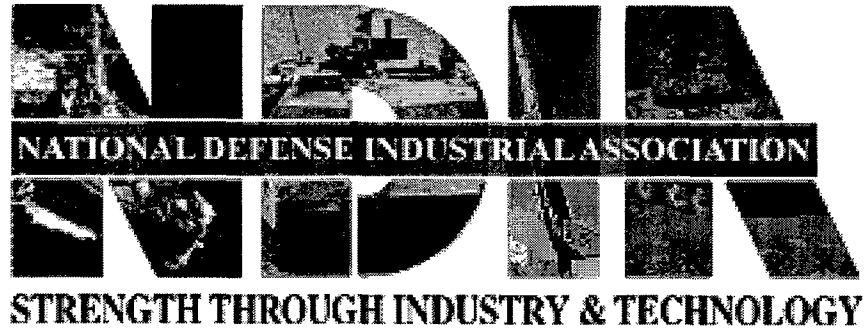
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10th Annual Special Operations/Low Intensity Conflict Symposium and Exhibition: "Confronting Emerging Threats"

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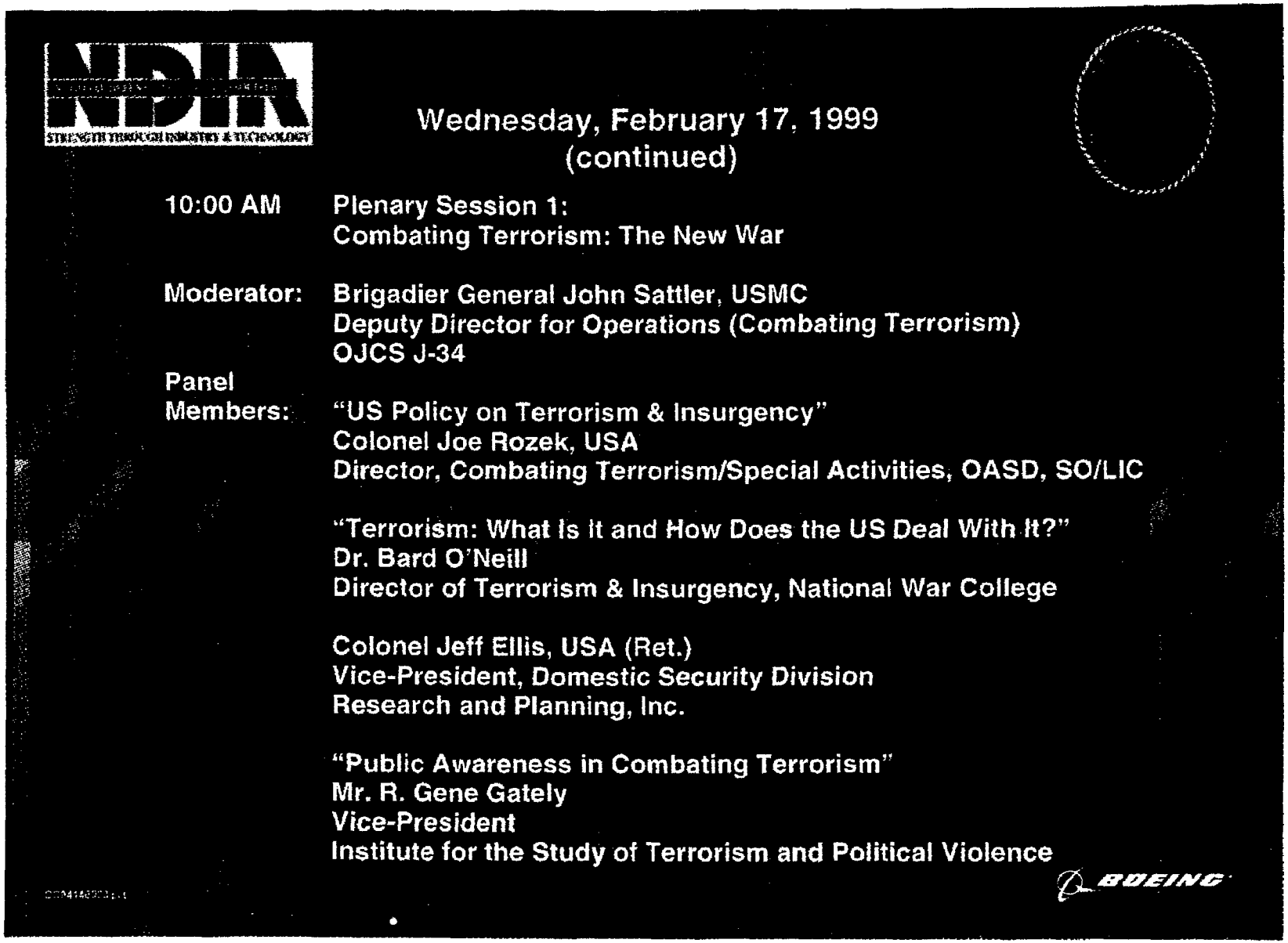
"Modernizing Army SOF Mobility Systems" by Lieutenant Colonel George Kunkel, USA., Systems Engineering and Integration Officer, HQ, 160Th Special Operations Aviation Regiment 201

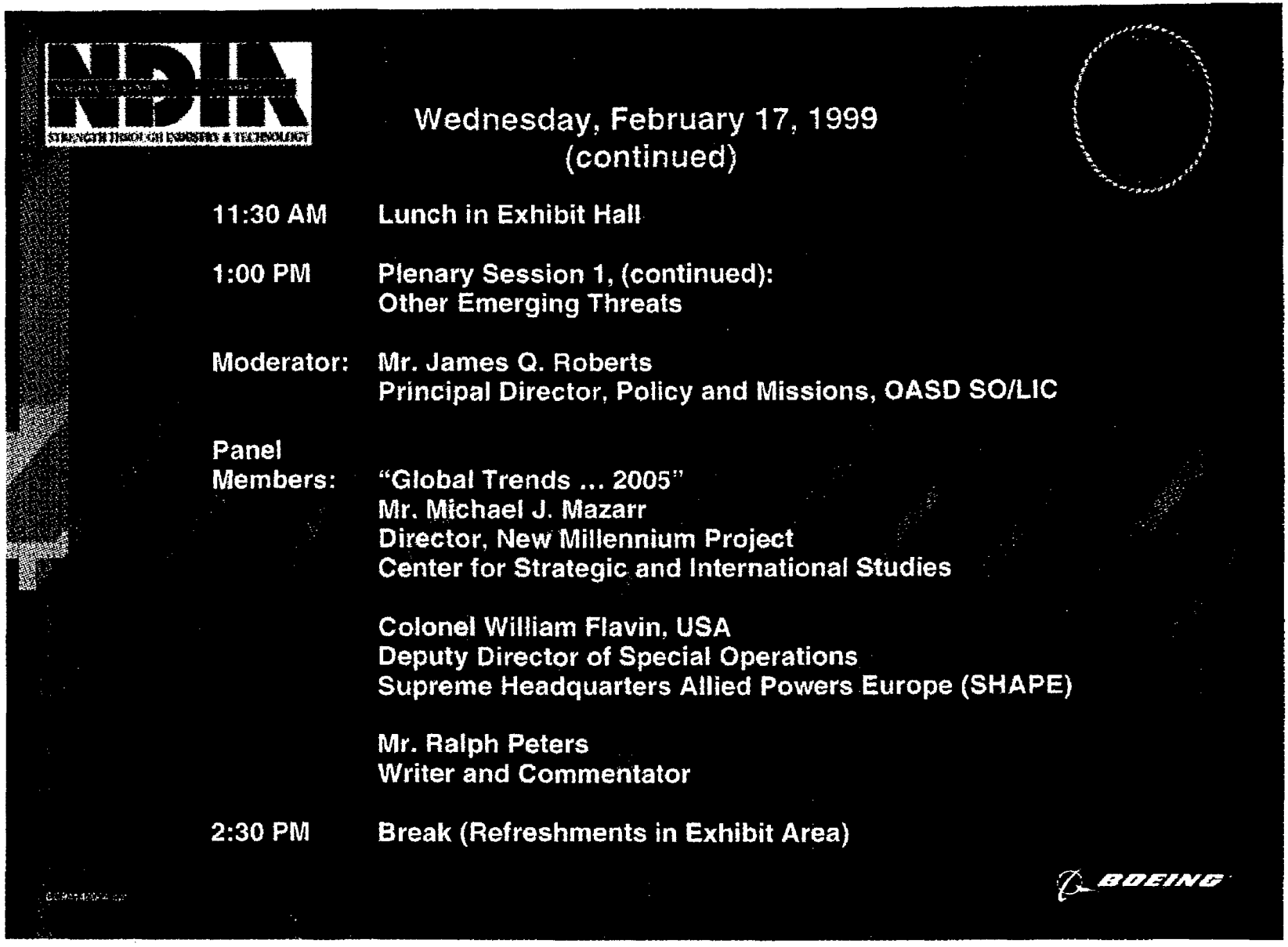
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NDIA
STRENGTH THROUGH POWERFUL & TECHNOLOGY
10th Annual
Special Operations/
Low Intensity Conflict (SO/LIC)
Symposium & Exhibition
BOEING


NDIA
Tuesday, February 16, 1999
5:30- Registration
7:00 PM Networking Reception for Exhibitors, Attendees and Special Symposium Guests in the Exhibit Hall
Wednesday, February 17, 1999
7:00 AM Registration and Continental Breakfast
8:00 AM Call to Order
Major General William C. Moore, USA (Ret.)
Chairman, SO/LIC Division, NDIA
8:05 AM Welcome
Major General Paul L. Greenberg, USA (Ret.)
Vice President, Operations, NDIA
8:10 AM Opening Remarks
Colonel Ronald F. Henderson, USAF (Ret.)
The Boeing Company
Chairman, SO/LIC Symposium, NDIA
8:30 AM Keynote Address:
"USSOCOM Strategy for Confronting Emerging Threats"
Lieutenant General William P. Tangney, USA
Commanding General, US Army Special Operations Command
9:30 AM Break (Refreshments in Exhibit Area)
BOEING


NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
10:00 AM
Plenary Session 1:
Combating Terrorism: The New War
Moderator:
Brigadier General John Sattler, USMC
Deputy Director for Operations (Combating Terrorism)
OJCS J-34
Panel Members:
"US Policy on Terrorism & Insurgency"
Colonel Joe Rozek, USA
Director, Combating Terrorism/Special Activities, OASD, SO/LIC
"Terrorism: What Is It and How Does the US Deal With It?"
Dr. Bard O'Neill
Director of Terrorism & Insurgency, National War College
Colonel Jeff Ellis, USA (Ret.)
Vice-President, Domestic Security Division
Research and Planning, Inc.
"Public Awareness in Combating Terrorism"
Mr. R. Gene Gately
Vice-President
Institute for the Study of Terrorism and Political Violence
BOEING


NDIA
STRENGTH THROUGH ENERGY & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
11:30 AM
Lunch in Exhibit Hall
1:00 PM
Plenary Session 1, (continued):
Other Emerging Threats
Moderator:
Mr. James Q. Roberts
Principal Director, Policy and Missions, OASD SO/LIC
Panel
Members:
"Global Trends ... 2005"
Mr. Michael J. Mazarr
Director, New Millennium Project
Center for Strategic and International Studies
Colonel William Flavin, USA
Deputy Director of Special Operations
Supreme Headquarters Allied Powers Europe (SHAPE)
Mr. Ralph Peters
Writer and Commentator
2:30 PM
Break (Refreshments in Exhibit Area)
BOEING

NDIA
STRENGTH THROUGH LOGISTICS & TECHNOLOGY

Wednesday, February 17, 1999
(continued)

3:00 PM Seminars

The six topical seminars will focus on, and be an extension of, the "Confronting Emerging Threats" theme. The objective is to provide specific information on doctrine, forces, tactics, training and equipment critical to the requirement to prepare SOF and Other forces for the future Low Intensity Conflict battlefield. Attendees may select from the six concurrent sessions:

Panel 1 Forward Presence for Low Intensity Conflict

A "Forward Presence" is essential to confront threats on an international scale. This Panel discusses the US plans for forward presence of Special Operations forces.

Moderator: Colonel John E. Binkley III, USA (Ret.)
Director, Market Development
Evergreen Helicopters, Inc.

Panel Members:

Captain Larry Metzler, USN
Chief, Integration Division
Headquarters, USSOCOM

Lieutenant Colonel George Adamakos, USA
Acting Deputy Chief of Staff,
Special Operations Aviation
Headquarters, USASOC

Major Joseph Hastings, USAF
Office of Plans, Policy & Programs
Headquarters, AFSOC

Lieutenant Colonel Scott Ritter , USA
Procurement Officer
Assistant Secretary of the Army, Research, Development and Acquisitions

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NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY

Wednesday, February 17, 1999
(continued)

Panel 2: Consequence Management for Weapons of Mass Destruction (WMD) Terrorism

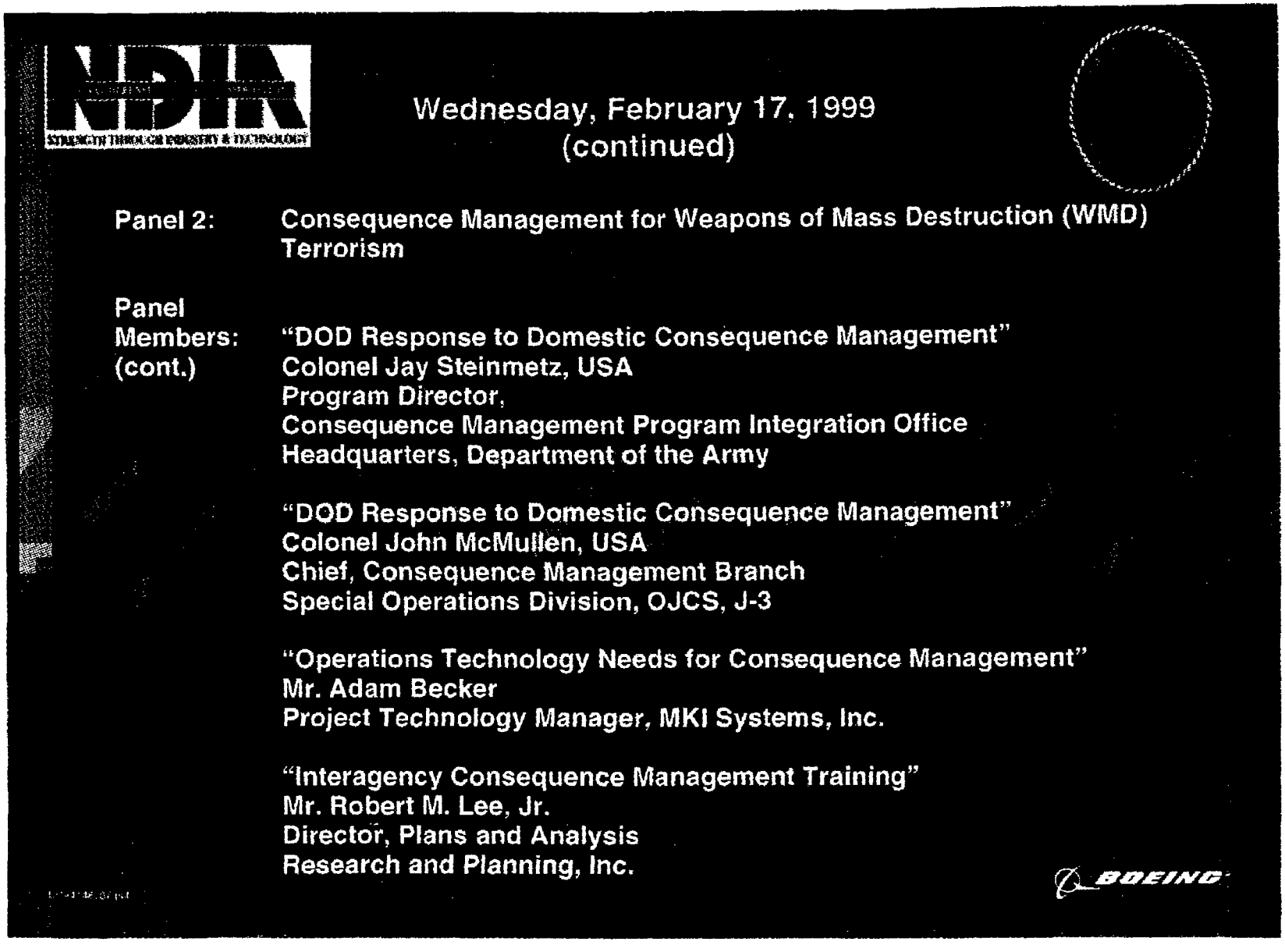
It is essential that the US be prepared to deal with actual acts of terrorism and use of Weapons of Mass Destruction within the Continental United States and its territories. This panel describes the new organization and policies being established to conduct Successful Consequence Management missions within the United States and for support to other countries in need of US support.

Moderator: Major Adrian T. Bogart III, MDARNG
Chief, Resource Management
Consequence Management Program
Headquarters, Department of the Army

Panel Members: "OSD Perspective on Consequence Management"
Colonel Joe Rozek, USA
Director, Combating Terrorism/Special Activities, OASD, SO/LIC

"The State of National Preparedness for Consequence Management"
Ms. Barbara Martinez
Unit Chief, Weapons of Mass Destruction Countermeasures
National Defense Preparedness Office, Federal Bureau of Investigation

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NDIA
Wednesday, February 17, 1999
(continued)
Panel 2: Consequence Management for Weapons of Mass Destruction (WMD) Terrorism
Panel Members: (cont.)
"DOD Response to Domestic Consequence Management"
Colonel Jay Steinmetz, USA
Program Director,
Consequence Management Program Integration Office
Headquarters, Department of the Army
"DOD Response to Domestic Consequence Management"
Colonel John McMullen, USA
Chief, Consequence Management Branch
Special Operations Division, OJCS, J-3
"Operations Technology Needs for Consequence Management"
Mr. Adam Becker
Project Technology Manager, MKI Systems, Inc.
"Interagency Consequence Management Training"
Mr. Robert M. Lee, Jr.
Director, Plans and Analysis
Research and Planning, Inc.
BOEING

Wednesday, February 17, 1999
(continued)

Panel 3: Specialized Weapons System Development for SO/LIC

Military operations have matured to the extent that our forces, including those engaged in Special Operations and Low Intensity Conflict (SO/LIC), require specialized weaponry and weapon support systems. This seminar will discuss the application of biology, chemistry, physics and engineering to meet the challenges of unique or special targets and environments, to include countermeasures.

Moderator: Colonel Al DeProspero, USA (Ret.)
Director, Aberdeen Defense Group

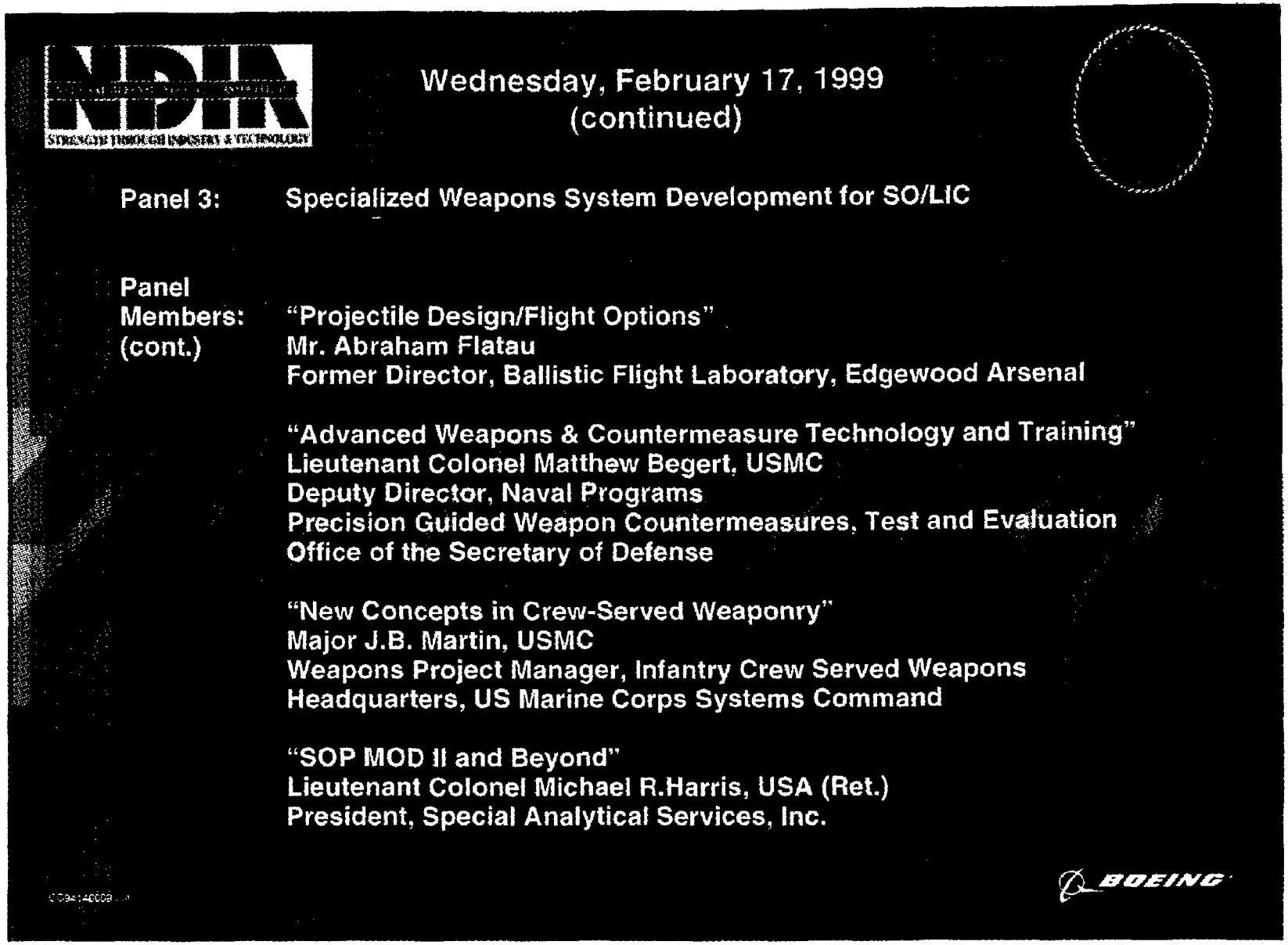
Panel Members:

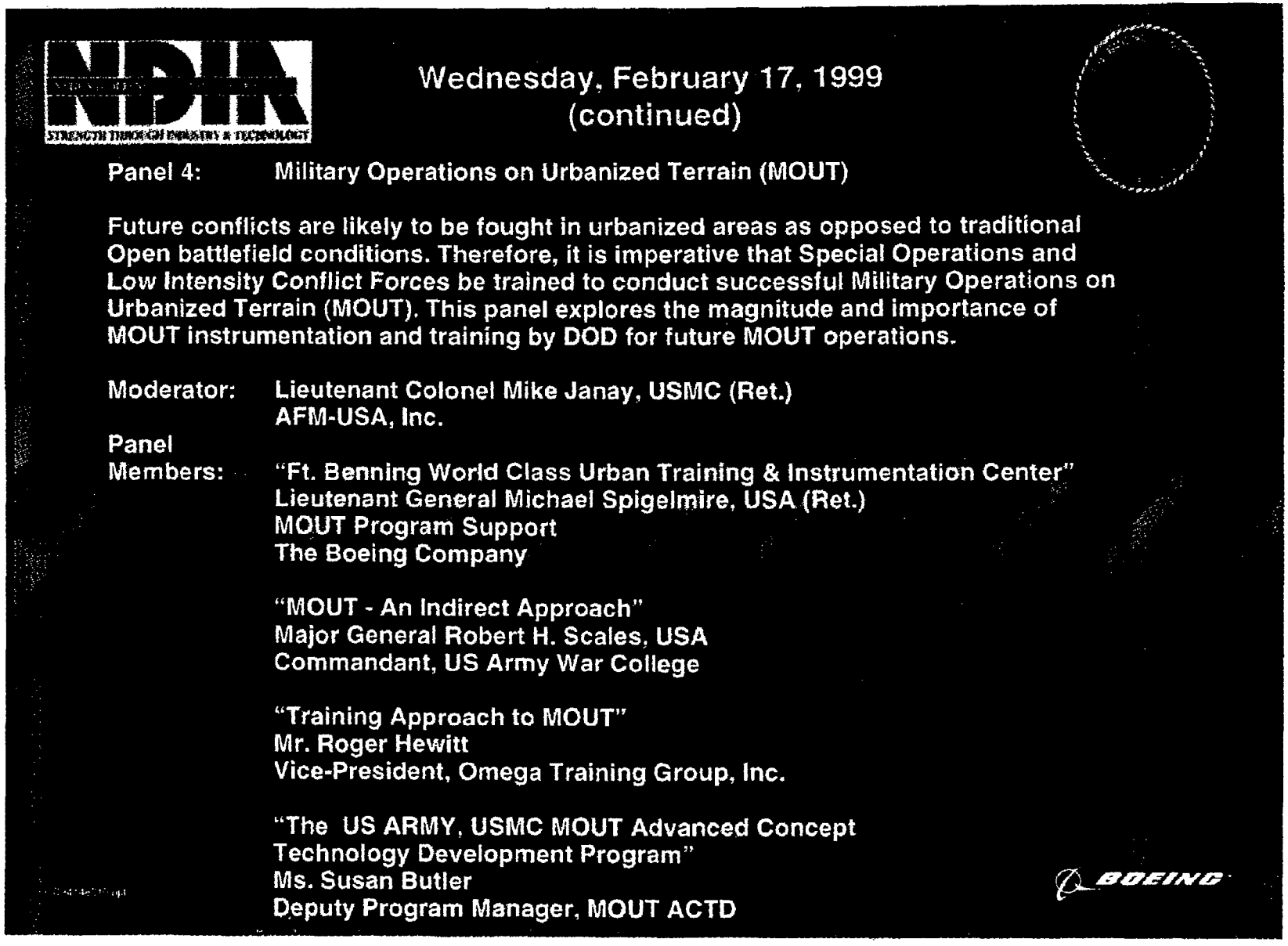
"Unique Applications of Chemical Weapons"
Mr. Rod Hudson
President & CEO, Quicksilver Corporation

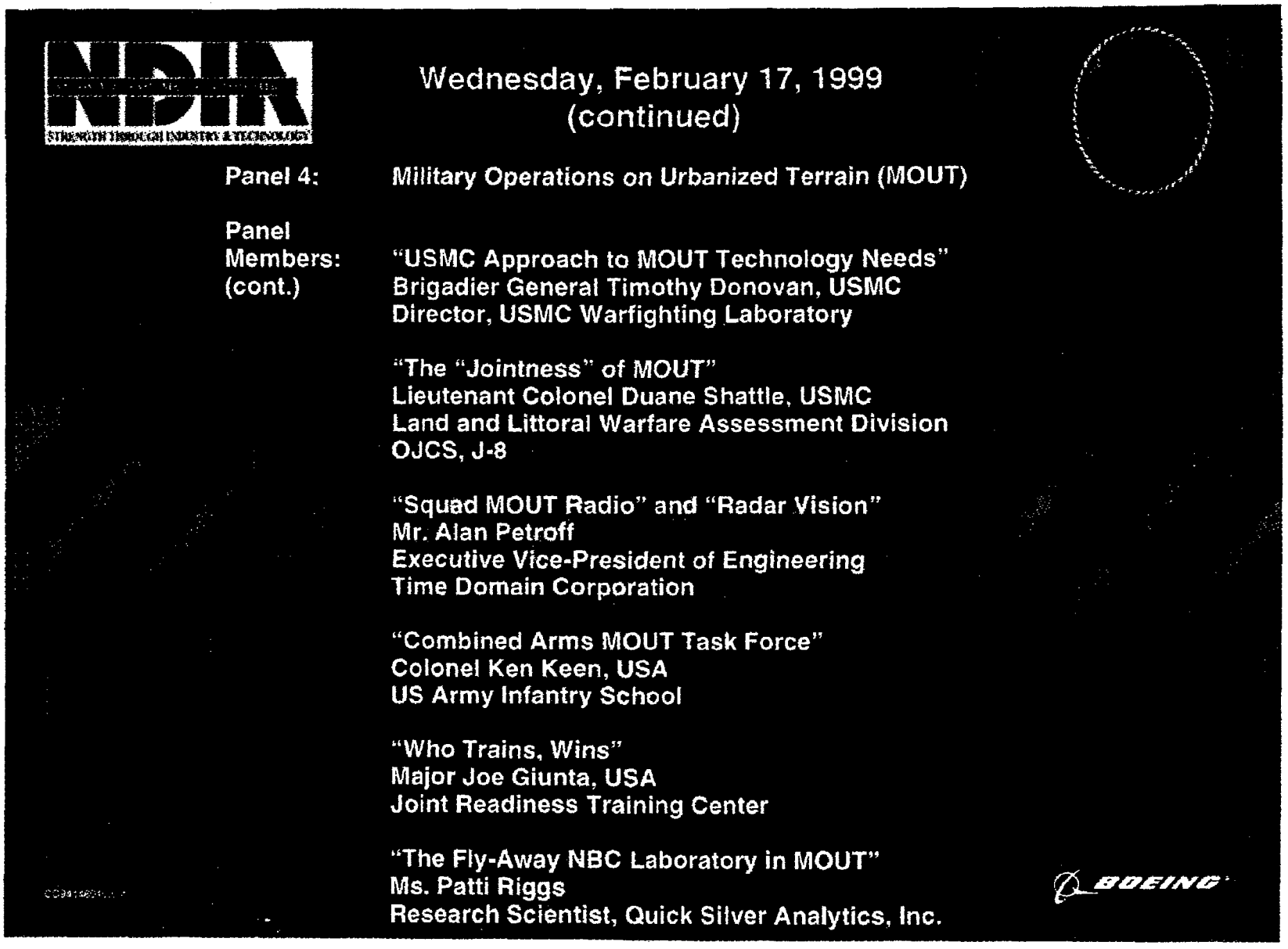
"Biological Weapons"
Dr. F. Prescott Ward, Ph.D. and
Business Area Manager
Midwest Research Institute

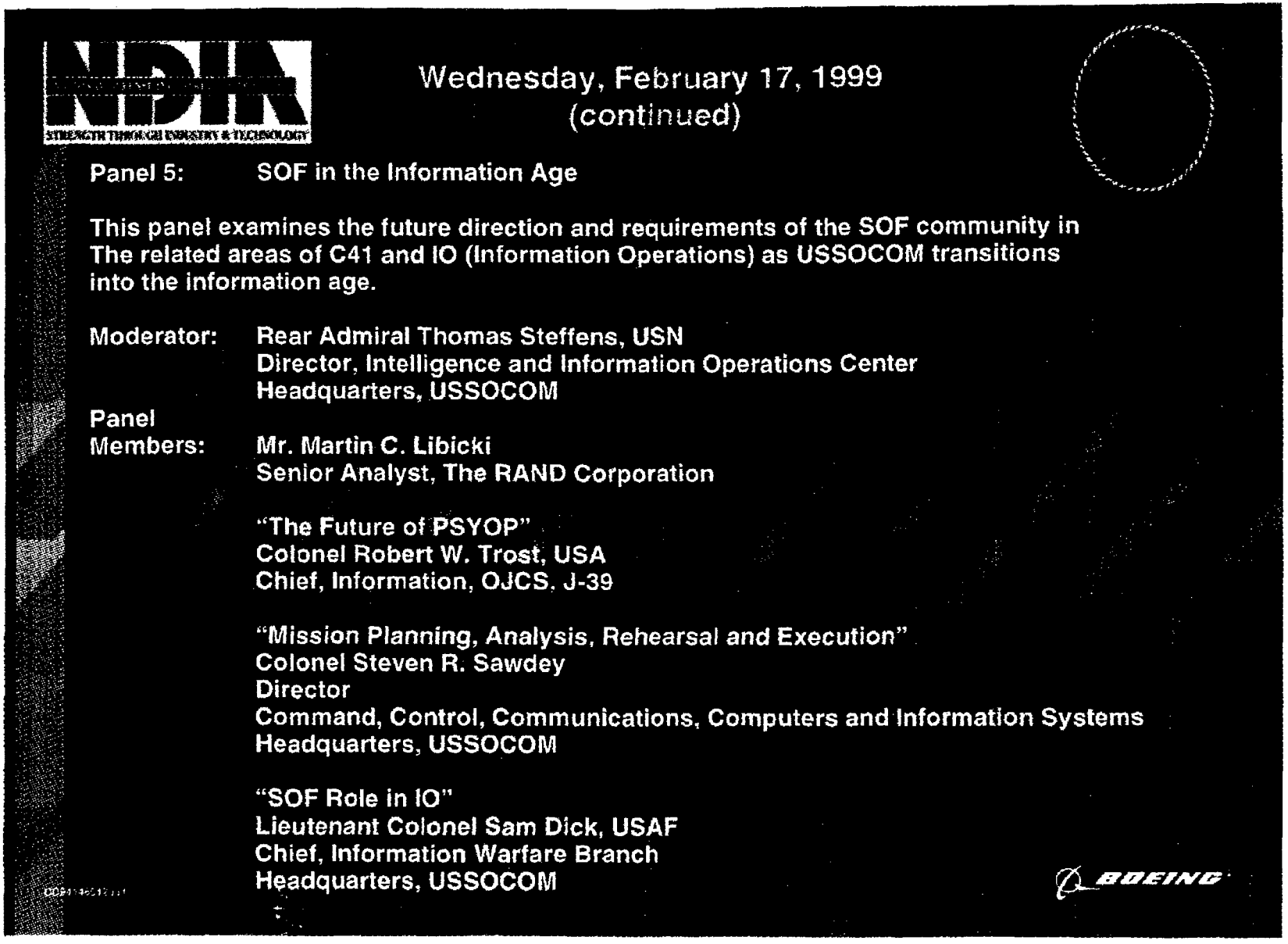
"Controlling Weapon Lethality"
Colonel George Fenton, USMC
Director, Joint Non-Lethal Weapons, Plans, Policy and Operations
Headquarters, US Marine Corps

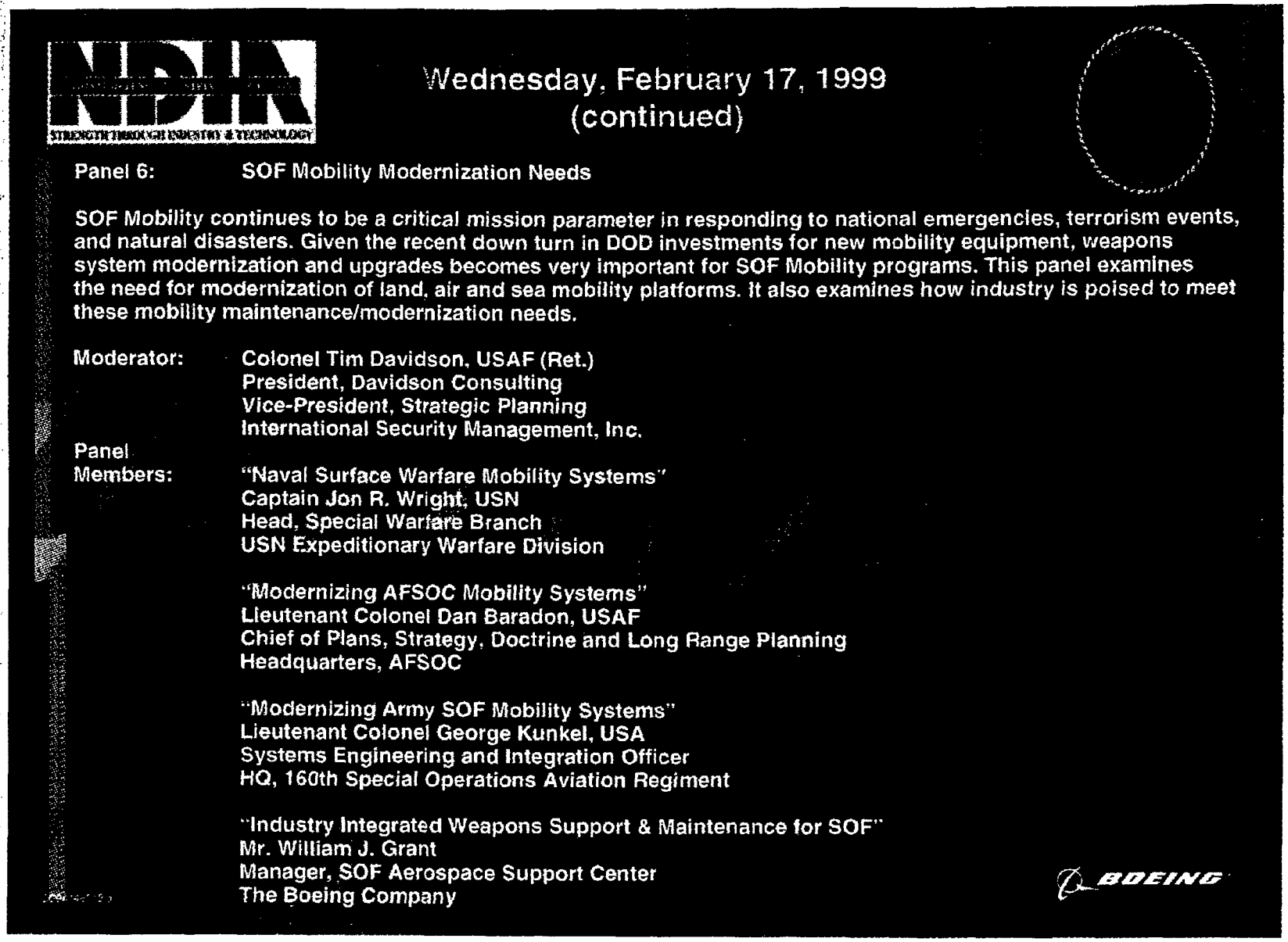
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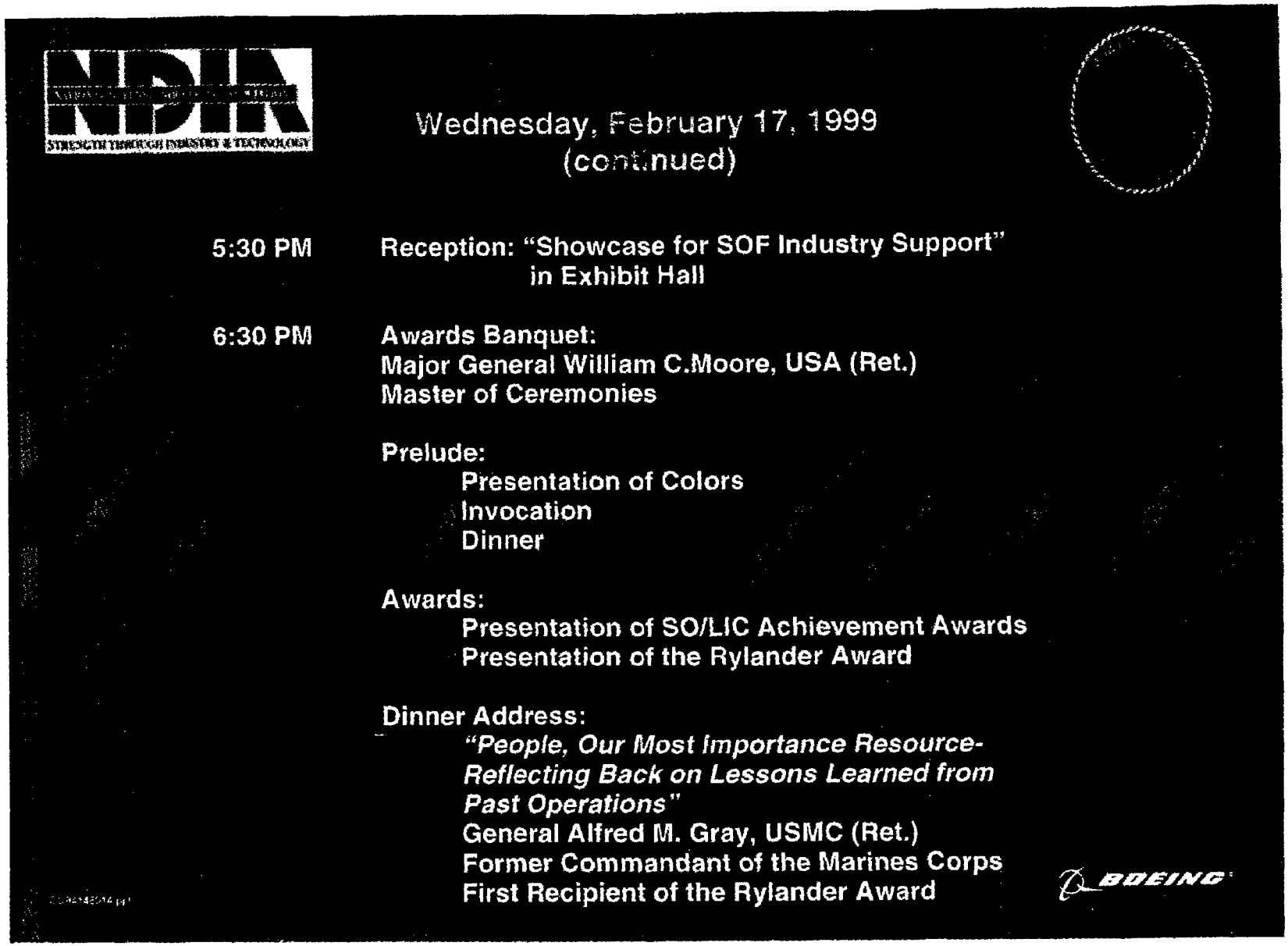

NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
Panel 3: Specialized Weapons System Development for SO/LIC
Panel Members: (cont.)
"Projectile Design/Flight Options"
Mr. Abraham Flatau
Former Director, Ballistic Flight Laboratory, Edgewood Arsenal
"Advanced Weapons & Countermeasure Technology and Training"
Lieutenant Colonel Matthew Begert, USMC
Deputy Director, Naval Programs
Precision Guided Weapon Countermeasures, Test and Evaluation
Office of the Secretary of Defense
"New Concepts in Crew-Served Weaponry"
Major J.B. Martin, USMC
Weapons Project Manager, Infantry Crew Served Weapons
Headquarters, US Marine Corps Systems Command
"SOP MOD II and Beyond"
Lieutenant Colonel Michael R.Harris, USA (Ret.)
President, Special Analytical Services, Inc.
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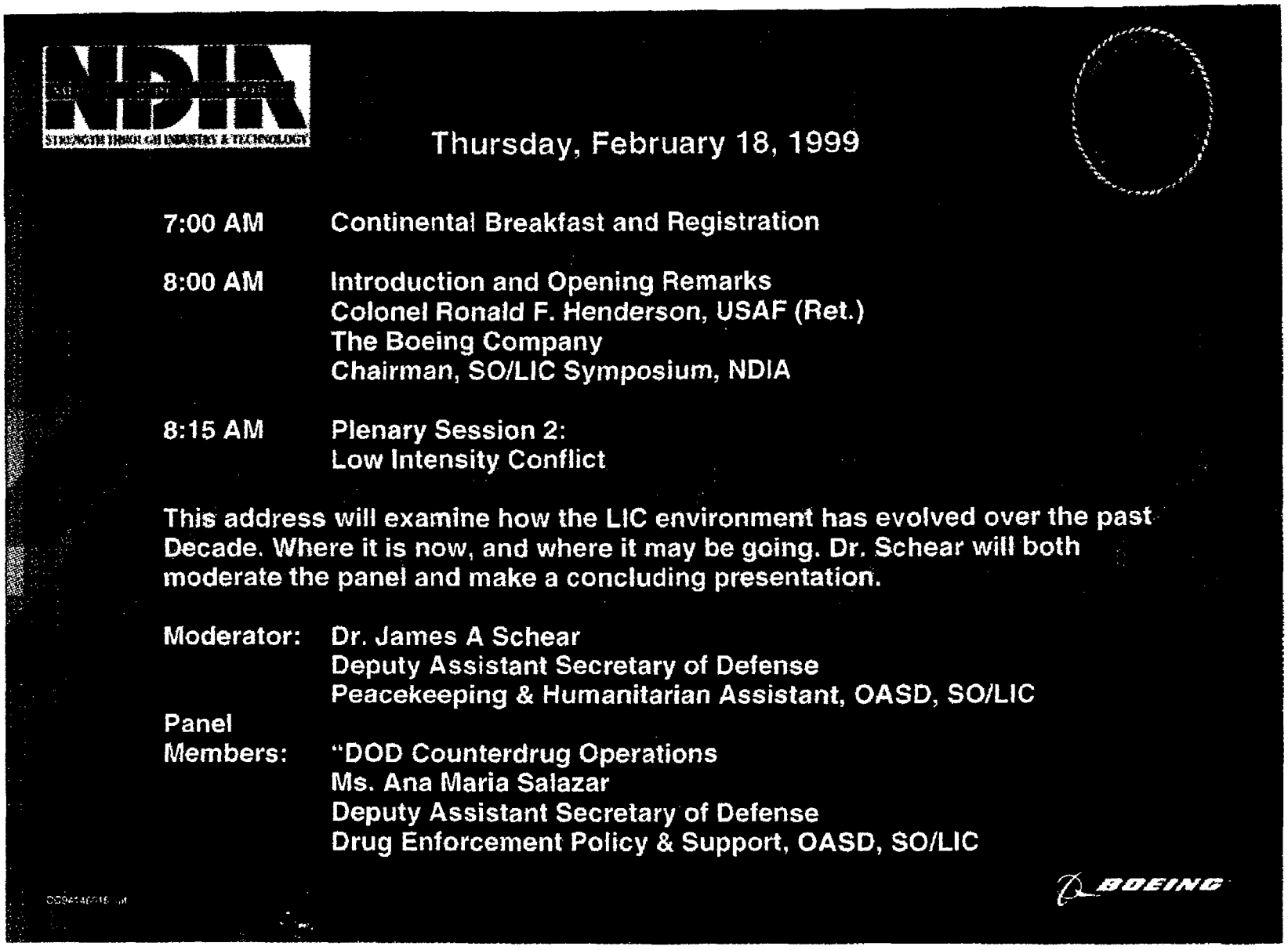

NDIA
STRENGTH THROUGH DEFENSE & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
Panel 4: Military Operations on Urbanized Terrain (MOUT)
Future conflicts are likely to be fought in urbanized areas as opposed to traditional Open battlefield conditions. Therefore, it is imperative that Special Operations and Low Intensity Conflict Forces be trained to conduct successful Military Operations on Urbanized Terrain (MOUT). This panel explores the magnitude and importance of MOUT instrumentation and training by DOD for future MOUT operations.
Moderator: Lieutenant Colonel Mike Janay, USMC (Ret.)
AFM-USA, Inc.
Panel Members: "Ft. Benning World Class Urban Training & Instrumentation Center"
Lieutenant General Michael Spigelmire, USA (Ret.)
MOUT Program Support
The Boeing Company
"MOUT - An Indirect Approach"
Major General Robert H. Scales, USA
Commandant, US Army War College
"Training Approach to MOUT"
Mr. Roger Hewitt
Vice-President, Omega Training Group, Inc.
"The US ARMY, USMC MOUT Advanced Concept Technology Development Program"
Ms. Susan Butler
Deputy Program Manager, MOUT ACTD
BOEING

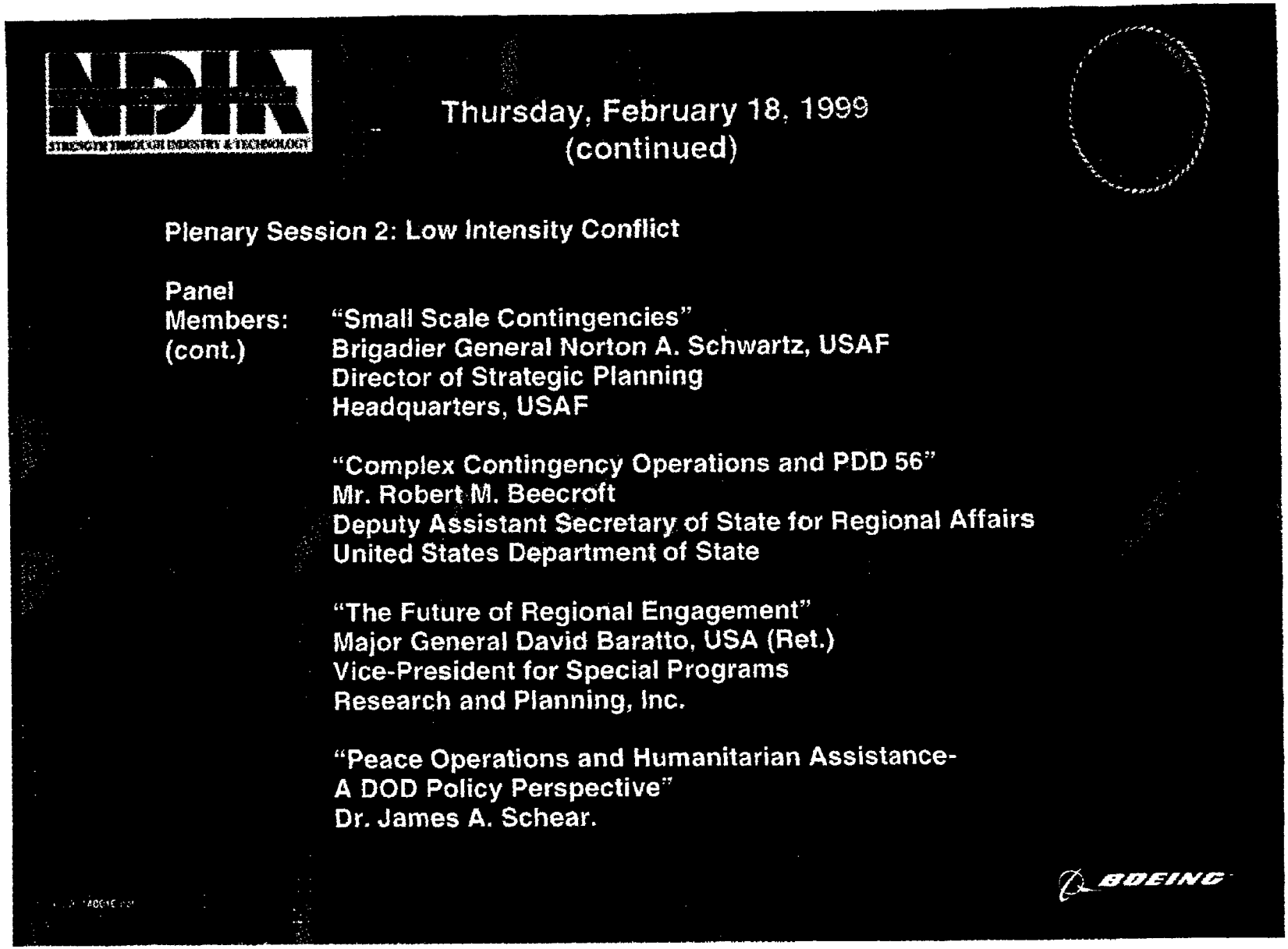

NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
Panel 4: Military Operations on Urbanized Terrain (MOUT)
Panel Members: (cont.)
"USMC Approach to MOUT Technology Needs"
Brigadier General Timothy Donovan, USMC
Director, USMC Warfighting Laboratory
"The "Jointness" of MOUT"
Lieutenant Colonel Duane Shattle, USMC
Land and Littoral Warfare Assessment Division
OJCS, J-8
"Squad MOUT Radio" and "Radar Vision"
Mr. Alan Petroff
Executive Vice-President of Engineering
Time Domain Corporation
"Combined Arms MOUT Task Force"
Colonel Ken Keen, USA
US Army Infantry School
"Who Trains, Wins"
Major Joe Giunta, USA
Joint Readiness Training Center
"The Fly-Away NBC Laboratory in MOUT"
Ms. Patti Riggs
Research Scientist, Quick Silver Analytics, Inc.
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NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
Panel 5: SOF in the Information Age
This panel examines the future direction and requirements of the SOF community in The related areas of C41 and IO (Information Operations) as USSOCOM transitions into the information age.
Moderator: Rear Admiral Thomas Steffens, USN
Director, Intelligence and Information Operations Center
Headquarters, USSOCOM
Panel Members: Mr. Martin C. Libicki
Senior Analyst, The RAND Corporation
"The Future of PSYOP"
Colonel Robert W. Trost, USA
Chief, Information, OJCS, J-39
"Mission Planning, Analysis, Rehearsal and Execution"
Colonel Steven R. Sawdey
Director
Command, Control, Communications, Computers and Information Systems
Headquarters, USSOCOM
"SOF Role in IO"
Lieutenant Colonel Sam Dick, USAF
Chief, Information Warfare Branch
Headquarters, USSOCOM
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NDIA
Wednesday, February 17, 1999
(continued)
Panel 6: SOF Mobility Modernization Needs
SOF Mobility continues to be a critical mission parameter in responding to national emergencies, terrorism events, and natural disasters. Given the recent down turn in DOD investments for new mobility equipment, weapons system modernization and upgrades becomes very important for SOF Mobility programs. This panel examines the need for modernization of land, air and sea mobility platforms. It also examines how industry is poised to meet these mobility maintenance/modernization needs.
Moderator: Colonel Tim Davidson, USAF (Ret.)
President, Davidson Consulting
Vice-President, Strategic Planning
International Security Management, Inc.
Panel Members:
"Naval Surface Warfare Mobility Systems"
Captain Jon R. Wright, USN
Head, Special Warfare Branch
USN Expeditionary Warfare Division
"Modernizing AFSOC Mobility Systems"
Lieutenant Colonel Dan Baradon, USAF
Chief of Plans, Strategy, Doctrine and Long Range Planning
Headquarters, AFSOC
"Modernizing Army SOF Mobility Systems"
Lieutenant Colonel George Kunkel, USA
Systems Engineering and Integration Officer
HQ, 160th Special Operations Aviation Regiment
"Industry Integrated Weapons Support & Maintenance for SOF"
Mr. William J. Grant
Manager, SOF Aerospace Support Center
The Boeing Company
BOEING


NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Wednesday, February 17, 1999
(continued)
5:30 PM
Reception: "Showcase for SOF Industry Support"
in Exhibit Hall
6:30 PM
Awards Banquet:
Major General William C.Moore, USA (Ret.)
Master of Ceremonies
Prelude:
Presentation of Colors
Invocation
Dinner
Awards:
Presentation of SO/LIC Achievement Awards
Presentation of the Rylander Award
Dinner Address:
"People, Our Most Importance Resource-
Reflecting Back on Lessons Learned from
Past Operations"
General Alfred M. Gray, USMC (Ret.)
Former Commandant of the Marines Corps
First Recipient of the Rylander Award
BOEING


NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Thursday, February 18, 1999
7:00 AM Continental Breakfast and Registration
8:00 AM Introduction and Opening Remarks
Colonel Ronald F. Henderson, USAF (Ret.)
The Boeing Company
Chairman, SO/LIC Symposium, NDIA
8:15 AM Plenary Session 2:
Low Intensity Conflict
This address will examine how the LIC environment has evolved over the past Decade. Where it is now, and where it may be going. Dr. Schear will both moderate the panel and make a concluding presentation.
Moderator: Dr. James A Schear
Deputy Assistant Secretary of Defense
Peacekeeping & Humanitarian Assistant, OASD, SO/LIC
Panel Members: "DOD Counterdrug Operations
Ms. Ana Maria Salazar
Deputy Assistant Secretary of Defense
Drug Enforcement Policy & Support, OASD, SO/LIC
BOEING


NDIA
Thursday, February 18, 1999
(continued)
Plenary Session 2: Low Intensity Conflict
Panel Members: (cont.)
"Small Scale Contingencies"
Brigadier General Norton A. Schwartz, USAF
Director of Strategic Planning
Headquarters, USAF
"Complex Contingency Operations and PDD 56"
Mr. Robert M. Beecroft
Deputy Assistant Secretary of State for Regional Affairs
United States Department of State
"The Future of Regional Engagement"
Major General David Baratto, USA (Ret.)
Vice-President for Special Programs
Research and Planning, Inc.
"Peace Operations and Humanitarian Assistance-
A DOD Policy Perspective"
Dr. James A. Schear.
BOEING

Thursday, February 18, 1999
(continued)

9:45 AM Break: (Refreshments in the Exhibit Area)

10:15 AM Plenary Session 3
"SOF Structure, Modernization, Readiness and Resources"

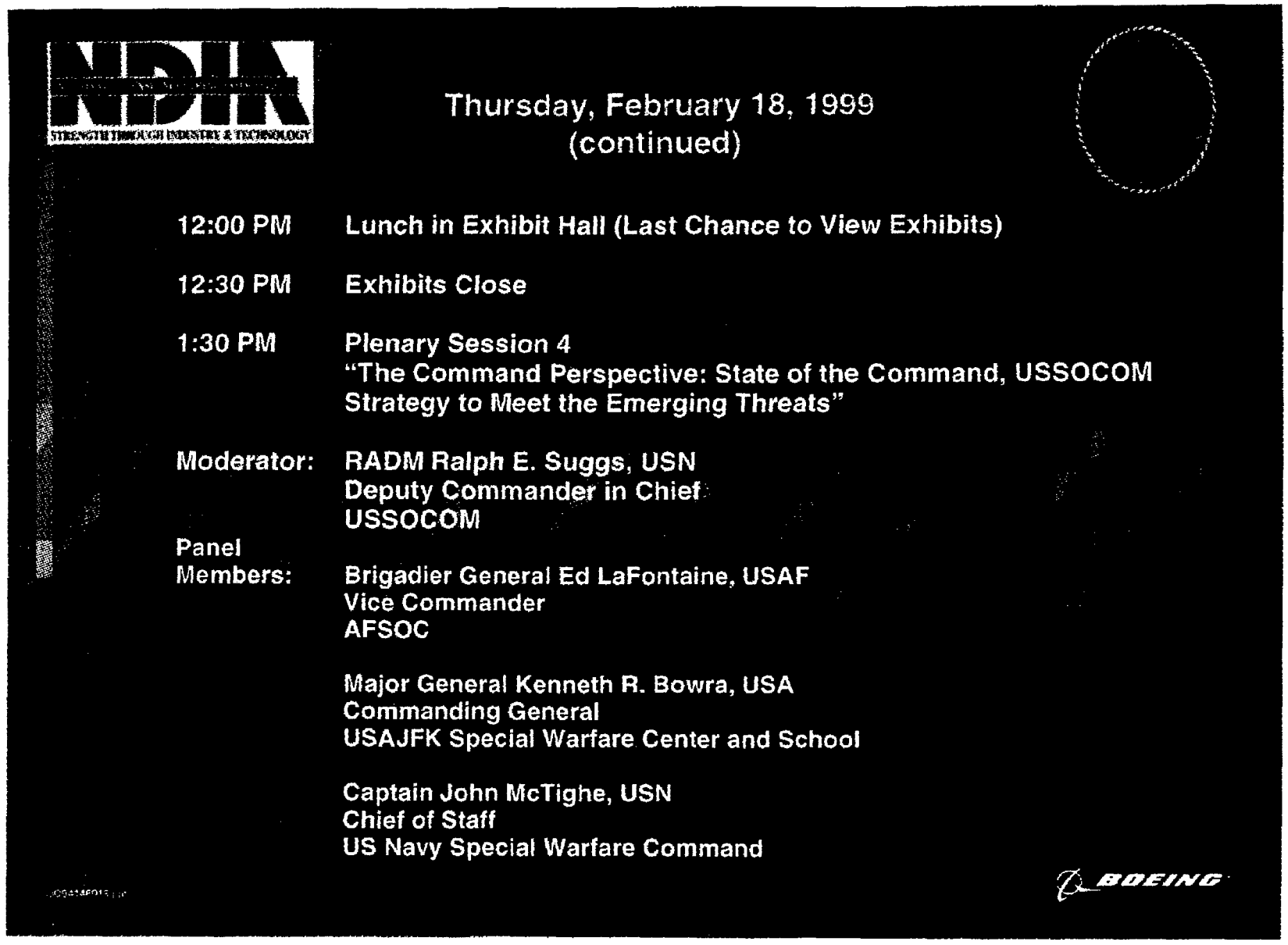
This panel focuses on the current programs in Major Force Program 11 and the critical issues facing US Special Operations Forces in the 21st Century.

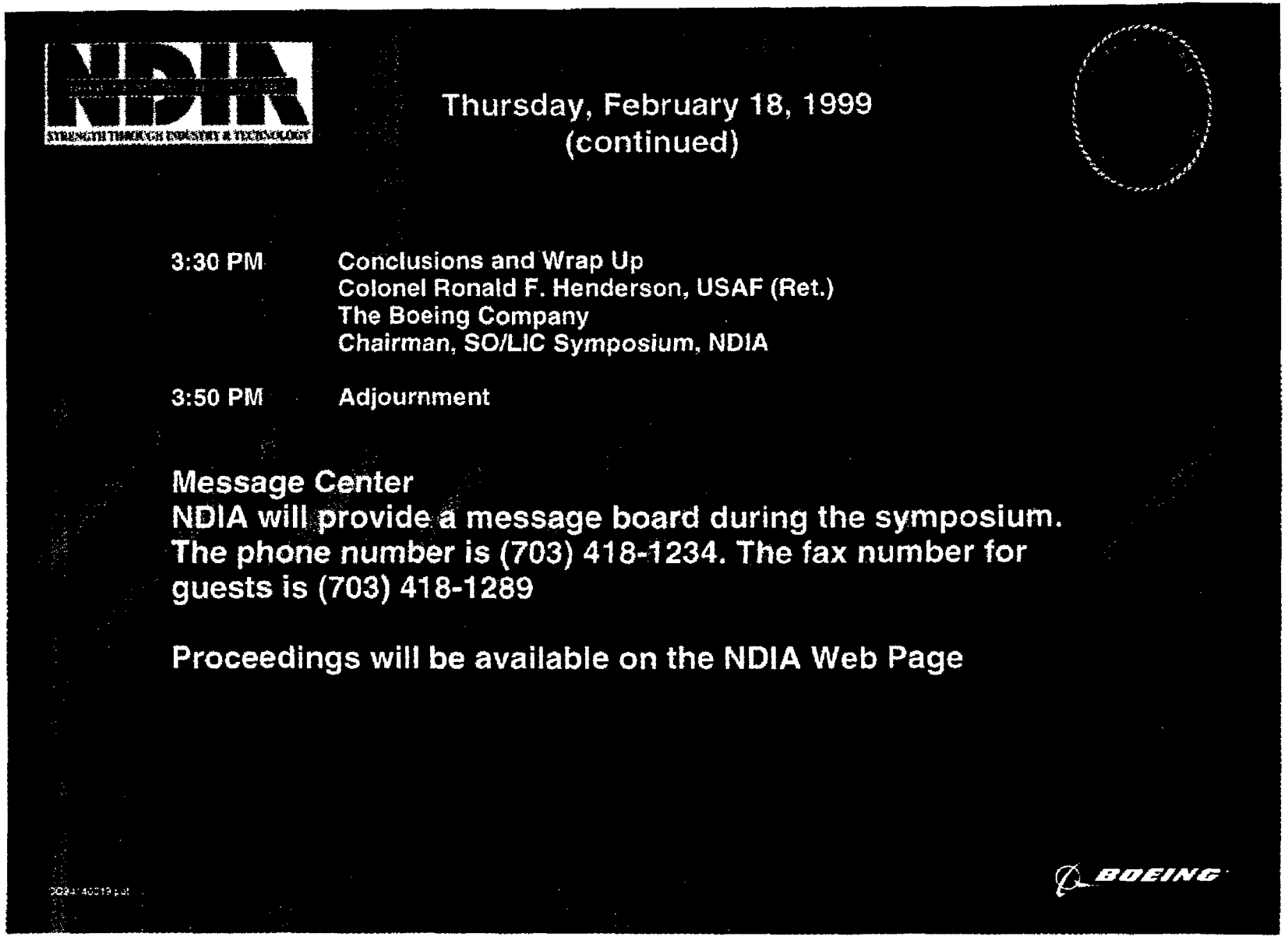
Moderator: Mr. Raymond Dominguez
Deputy Assistant Secretary of Defense
Forces & Resources, OASD, SO/LIC

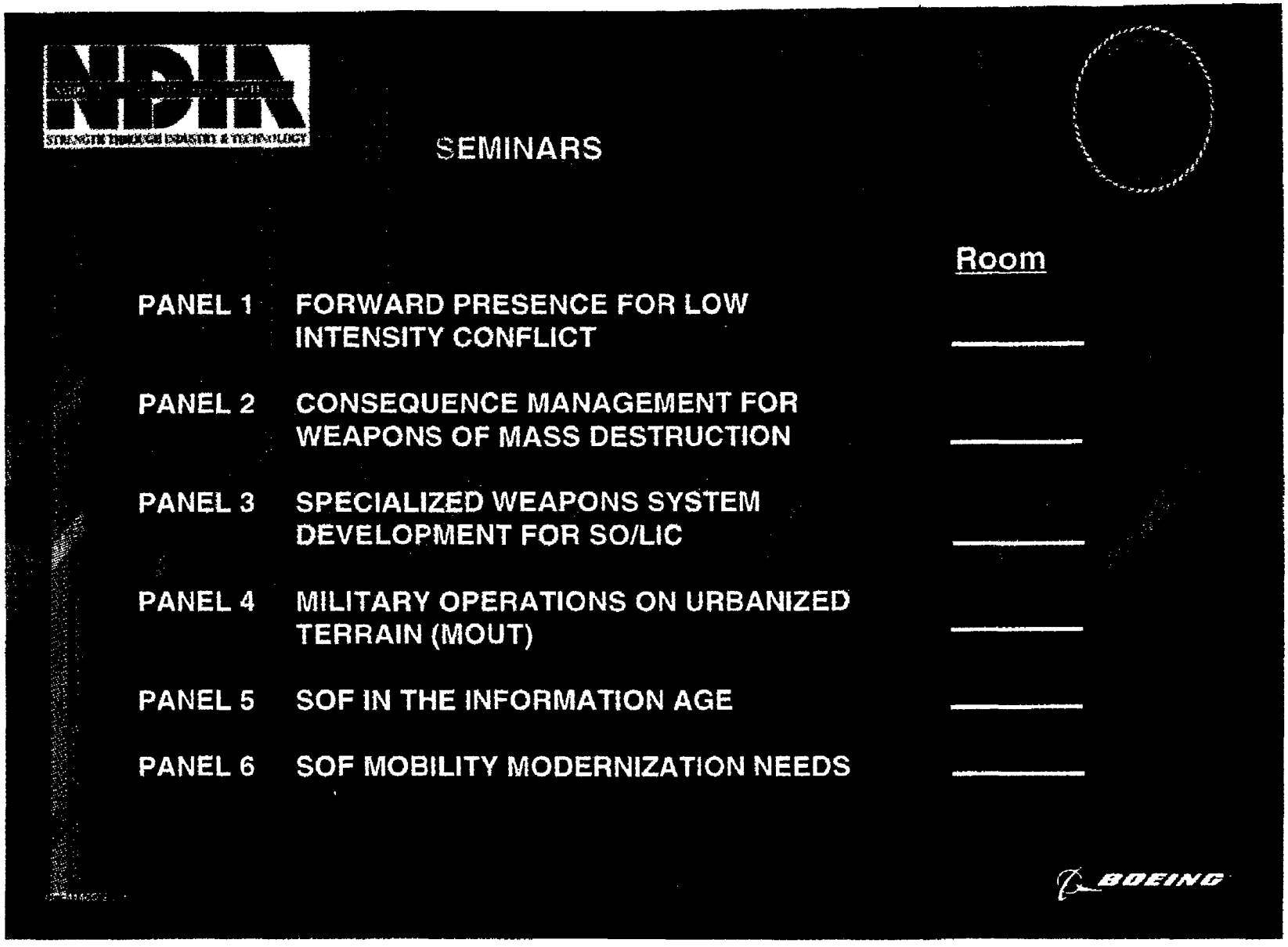
Panel Members: Brigadier General Gary W. Heckman, USAF
Director, Force Structure, Requirements, Resources and Strategic Assessment Center
Headquarters, USSOCOM

Mr. Harry E. Schulte
Acquisition Executive and Senior Procurement Executive
Headquarters, USSOCOM

BOEING


NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
Thursday, February 18, 1999
(continued)
12:00 PM
Lunch in Exhibit Hall (Last Chance to View Exhibits)
12:30 PM
Exhibits Close
1:30 PM
Plenary Session 4
"The Command Perspective: State of the Command, USSOCOM
Strategy to Meet the Emerging Threats"
Moderator:
RADM Ralph E. Suggs, USN
Deputy Commander in Chief
USSOCOM
Panel
Members:
Brigadier General Ed LaFontaine, USAF
Vice Commander
AFSOC
Major General Kenneth R. Bowra, USA
Commanding General
USAJFK Special Warfare Center and School
Captain John McTighe, USN
Chief of Staff
US Navy Special Warfare Command
BOEING


Thursday, February 18, 1999
(continued)
3:30 PM
Conclusions and Wrap Up
Colonel Ronald F. Henderson, USAF (Ret.)
The Boeing Company
Chairman, SO/LIC Symposium, NDIA
3:50 PM
Adjournment
Message Center
NDIA will provide a message board during the symposium. The phone number is (703) 418-1234. The fax number for guests is (703) 418-1289
Proceedings will be available on the NDIA Web Page
BOEING

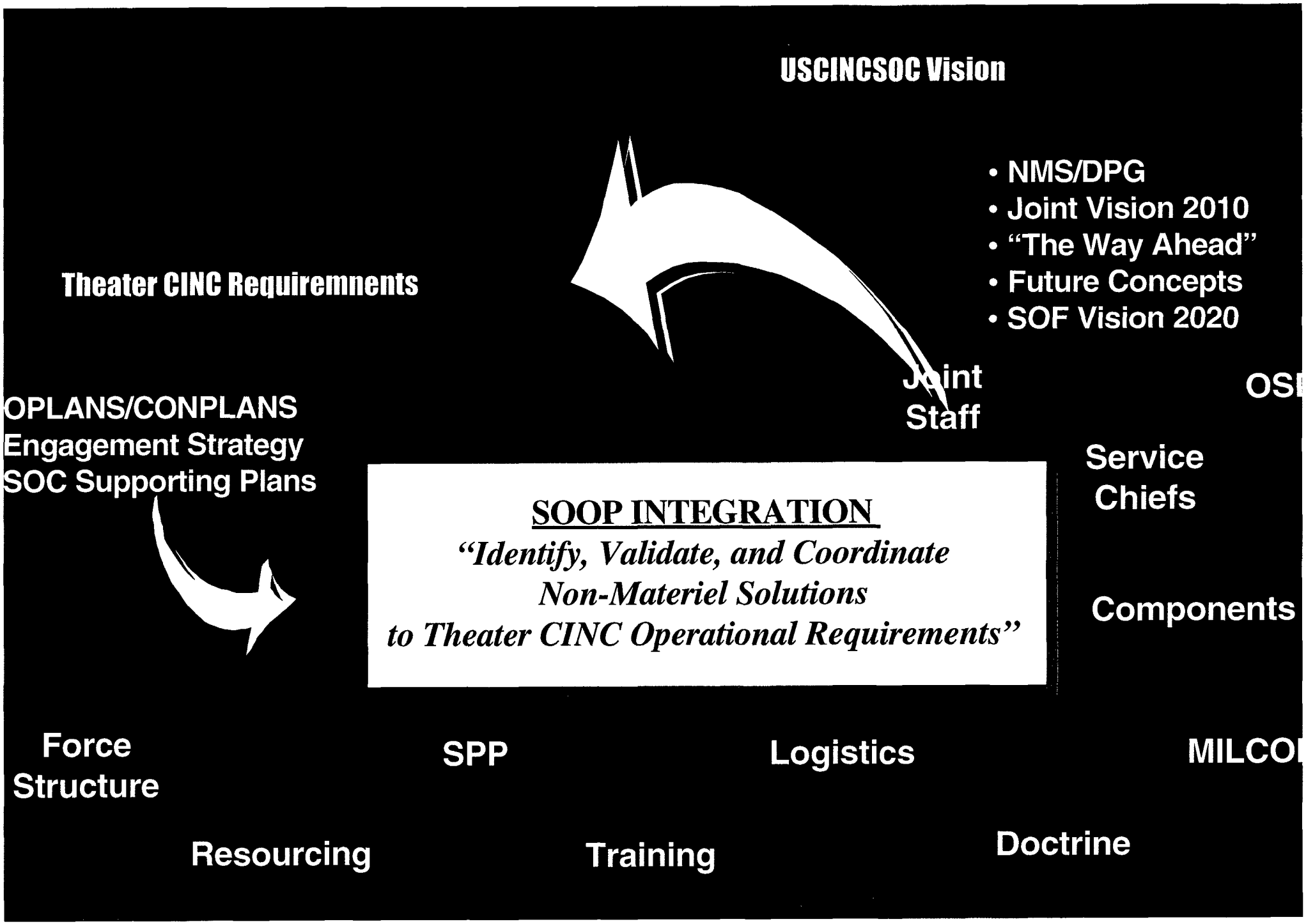

NDIA
STRENGTH THROUGH INDUSTRY & TECHNOLOGY
SEMINARS
Room
PANEL 1 FORWARD PRESENCE FOR LOW INTENSITY CONFLICT
PANEL 2 CONSEQUENCE MANAGEMENT FOR WEAPONS OF MASS DESTRUCTION
PANEL 3 SPECIALIZED WEAPONS SYSTEM DEVELOPMENT FOR SO/LIC
PANEL 4 MILITARY OPERATIONS ON URBANIZED TERRAIN (MOUT)
PANEL 5 SOF IN THE INFORMATION AGE
PANEL 6 SOF MOBILITY MODERNIZATION NEEDS
BOEING

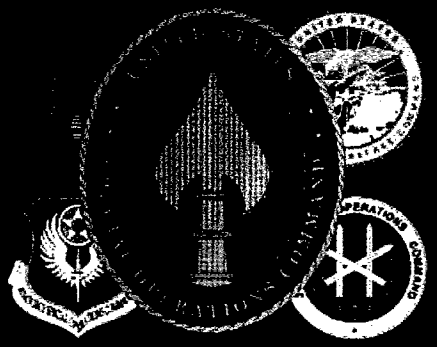
SOF Aviation Forward Basing

Integration
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Integration Division Mission

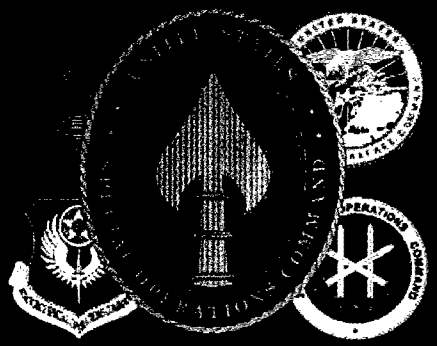
Identify, Validate, and Direct Implementation of Non-Materiel Solutions to Theater-CINC Operational Requirements Through Coordination with Theater-SOCs and USSOCOM Components In Support of USCINCSOC's Future Concepts and Strategic Planning Program


USCINCSOC Vision
• NMS/DPG
• Joint Vision 2010
• "The Way Ahead"
• Future Concepts
• SOF Vision 2020
Theater CINC Requiremnents
Joint Staff
OSD
OPLANS/CONPLANS
Engagement Strategy
SOC Supporting Plans
Service Chiefs
SOOP INTEGRATION
"Identify, Validate, and Coordinate Non-Materiel Solutions to Theater CINC Operational Requirements"
Components
Force Structure
SPP
Logistics
MILCOI
Resourcing
Training
Doctrine



Purpose

To provide an Overview of USCINCSOC's Forward Basing Initiative for SOF Aviation in PACOM and EUCOM



Agenda

- CINCSOC Vision
- Command Relationships
- Support Agreements
- Funding
- Timeline
- Summary

UNCLASSIFIED

USCINCSOC Guidance
Vision, Azimuth, Power Setting

Flexible Structure
- Unparalleled National Mission Capability
- Robust Theater SOCs
  - Imbedded JSOACs
  - Joint Basing

Global Scouts
- JCET
- CD
- Humanitarian
- Cultural Awareness
- Language

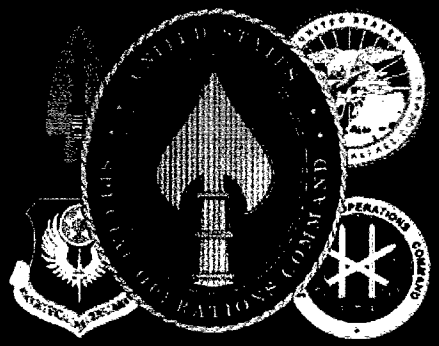


Unique Flagships
- FW-X
- RW-X
- ASDS/Trident
- CV-22

Information Avenues
- C4I Structure
- CNN Central
- Real-time Imagery
- Situational Awareness
- MPARE

Enhanced human dimension
"Equip the Man, not man the equipment"

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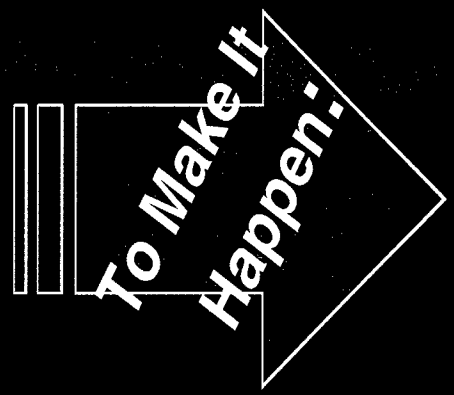


CINCSOC's Vision

- Unparalleled capability for warfighting, deterrence, and peacetime engagement
- Theater SOCs are our flagship organizations:
  - Forces, platforms and equipment forward
  - Enhanced C2
- Strategic Agility
- Resource Future Strategic Initiatives

To Execute the Vision:

- Robust the SOCs
  - Increased Manning
  - MH-47s Forward
  - Standing JSOACs
  - CV-22s



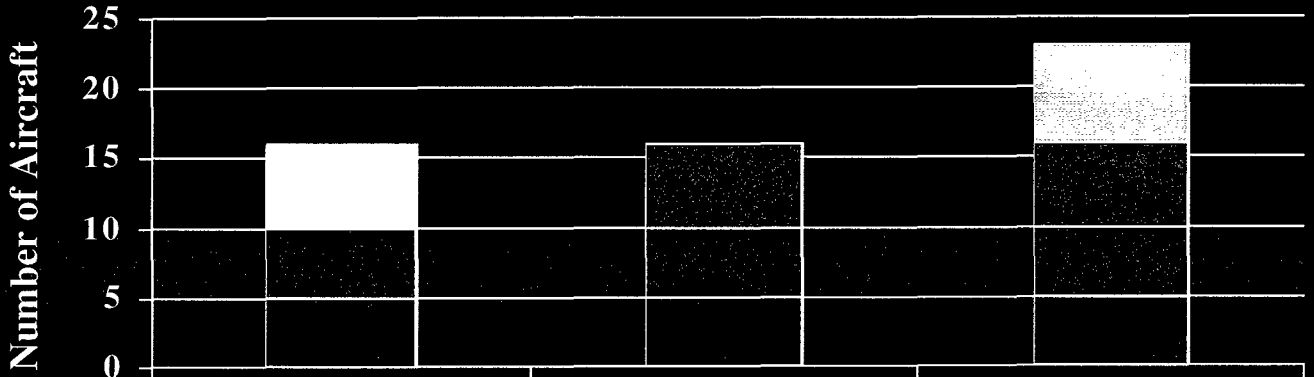
PACOM

- 5 MH-47E in FY 01
- JSOAC in FY 01
- 7 CV-22 in FY 06
-

EUCOM

- 5 MH-47D in FY 05
- JSOAC in FY 05
- 7 CV-22 in FY 07

Standing on the Objective SOF Aviation in PACOM

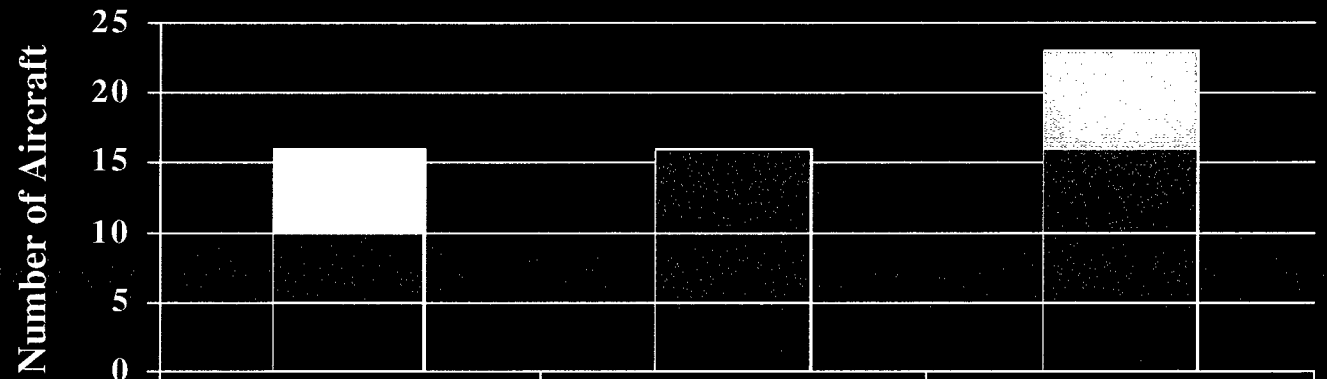


	1998	2005	2007
CV-22	0	0	7
MH-47D	0	6	6
MH-53J	6	0	0
MC-130P	5	5	5
MC-130H	5	5	5

*MC-130H modified as penetrating tankers

lanned PACOM SOF aviation capability growth

Standing on the Objective SOF Aviation in EUCOM



	2003	2005	2007
CV-22	0	0	7
MH-47D	0	6	6
MH-53J	6	0	0
MC-130P	5	5	5
MC-130H	5	5	5

*MC-130H modified as penetrating tankers

lanned EUCOM SOF aviation capability growth

PACOM Transition Requirements

The Keys:





Command Relationships
Basing Location
Support Agreements

Command Relationships

COCOM to CINCPAC

- COCOM - can't be delegated - authority to organize & employ forces, assign tasks; authority over all aspects of military operations, joint training and logistics. OPCON is inherent in COCOM.

OPCON to SOCPAC

- OPCON - may be delegated - does not include authority regarding logistics, admin, discipline, internal organization, or unit training.

ADCON to 160th SOAR(A)

- ADCON - authority over admin and support, internal organization, control of resources & equipment, personnel management, unit logistics, individual & unit training, readiness, and discipline.

Support Agreements with USARPAC and EUSA

Support Agreements

- Depend on Basing Location
- Base Operating Support Costs Require Negotiation
- EUSA, USARPAC, PACAF, 7 AF
  - ISSA
- Camp Humphrey's Logistical Hub
  - 17th AVN BDE

Funding Requirements

One-time Costs

FY 01 Dollars

Army Comptrol		MFP-11 Proc		MI	O&M
MTOE Equip	$ 3.0M	Tools/TMDE	$ 1.046M	Strat Air	$ 2.039M
		Closed Loop	$ 3.660M	CLS Mvmt	$ 0.820M
PCS	$ 0.95M	Avnx Spares	$ 4.706M	C4I	$ 0.150M
		PLL/ASL	$ 0.439M	STK Funded	$ 0.416M
BASOPS	$ TBD	Fwd Spt Pkg	$ 7.424M		
		Non-Avn Equip	$ 0.391M		
ACP	$ TBD				
		Total	$17.666M	Total	$ 3,425M

* Costs do not include facility modifications

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Recurring O&M Costs

Inflation Figures Applied

	FY 00	FY 01	FY 02	FY 03	FY 04
CFT*	965	2,396	2,880	2,929	2,979
Tech Reps		156	327	333	338
Contractors**		254	524	533	542
QTR SPT***		64	128	132	134
Flying Hours		400	817	831	849
Totals (K)	**965**	**3,270**	**4,676**	**4,758**	**4,842**

* Contractor Field Team = 35 mechanics (air and ground)

** QTR SPT = Quarterly TDY support for avionics

*** Contractors = 5 admin contract positions (non-mechanics)

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Funding Estimate

MFP-11	**$43.6M**
MFP-2	**> $ 4M**

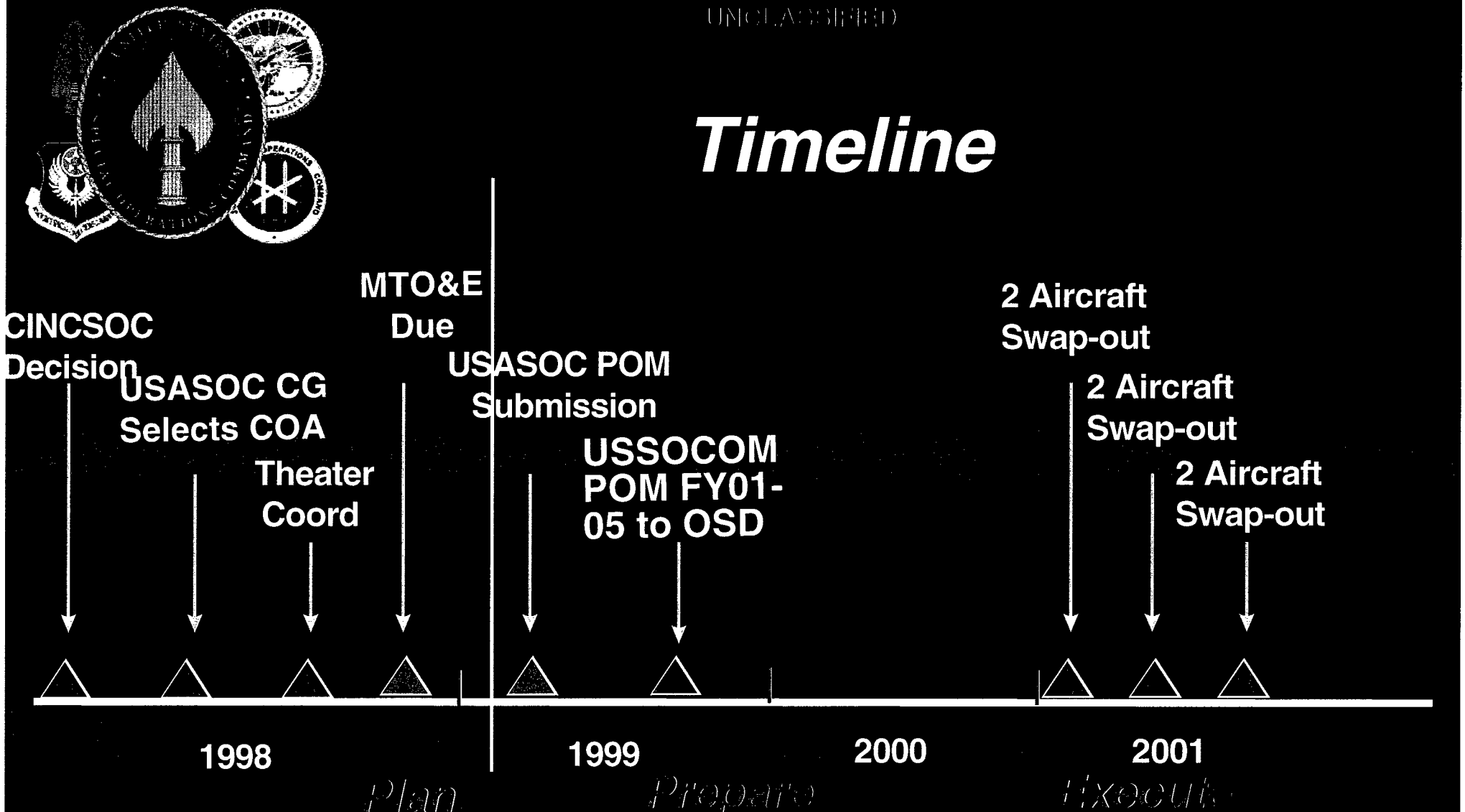
ding Estimate (MFP-11)

Required	= $43.6M
POM (FY01-05)	= $28.8M
Shortfall*	= $14.8M

* Does not include Taegu ($6.0M) or Osan ($1.1M) facility modifications

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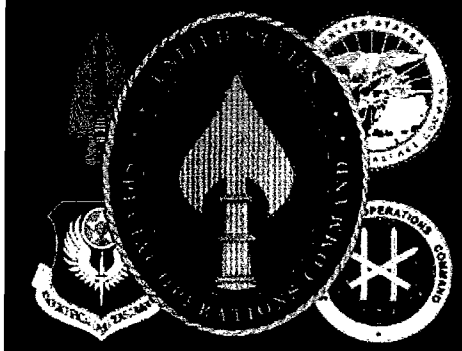
Timeline



Short time line accelerates need for theater wide support of planning and preparation phases

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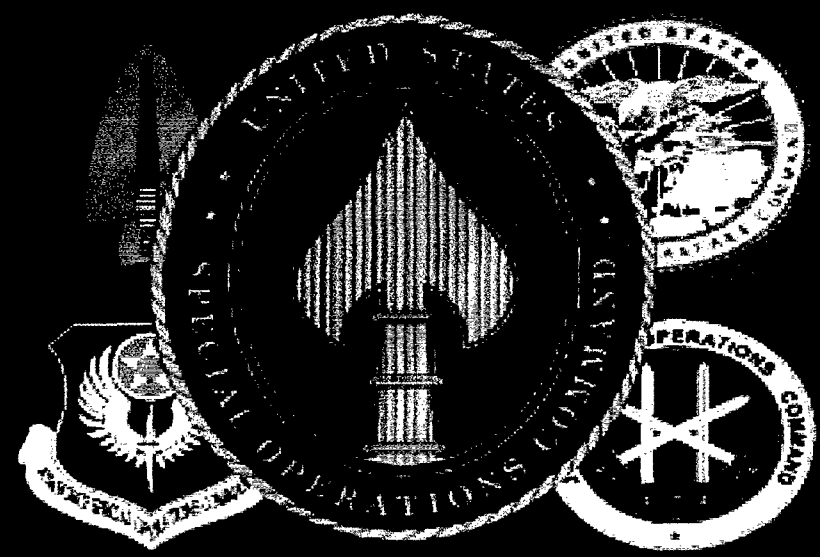


Summary

- Equal or better support
  - We're on track
- For a seamless transition:
  - We need a basing location decision.
  - A POM (FY01-05) adjustment is Required.
  - Recruiting & retention challenges will continue

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17 Feb 99

A Less-Than-Lethal Projectile For the Delivery of Chemical Agents

Abe Flatau
Consultant to GEA, INC.

Comments on Less-Than-Lethal (LTL) Programs

- Develop Tactics Based on Performance Characteristics of Specialized (Less-Than-Lethal) Weapon Systems (e.g., Ring Airfoil Projectile).

- Programs and Progress in Less-Than-Lethal (LTL) Are Affected By Lack of Innovative and Practical Thinking. Otherwise Known as a Conventional (Traditional) Paradigm.

- Must Have a Real Product (Hardware) to Evaluate—Law of 3rd Best in Practice.

DESIRED CHARACTERISTICS

- Will Need to Operate in an Unsettled Society
- Minimize Intrusion (in Societal Structure)
- Use of a Less-Than-Lethal System
  - ➢Selective
  - ➢Nominal Range Insensitive (0-50 Meters)
  - ➢Immediate (and Post-Impact) Identification
    - Through Marking and Olfactory Tagging

Conclusion

- If the Less-Than-Lethal (LTL) Ring Airfoil Projectile (RAP) is Unique and Useful, Why Not Develop Tactics, Techniques, Training and Procedures Needed to Operate in the Urban Environment with this LTL Chemical Delivery System?

Briefing Summary The Ring Airfoil Projectile

The less-than-lethal (LTL) Ring Airfoil Projectile (rap) system is intended to be an effective chemical delivery system. The RAP was eventually designed to carry the chemical agent CS in powder form, and to disseminate the CS upon target impact, thus combining both a kinetic energy and a limited but effective cloud of chemical agent.

The principal advantage of the RAP is that it is designed to be less-than-lethal at point blank range, or at the muzzle. Further by having low aerodynamic drag, combined with aerodynamic lift, and launched spinning to achieve gyroscopic stability, a relatively flat, non-ballistic trajectory results. These characteristics allow for versatile usage; from point-blank range to more than 50 meters.

Although RAP as initially developed for use by the US Army as a CS carrier, other chemical payloads are now being investigated. Another current development is a low-weight compact launcher unit, which can be readily used.

This brief presentation describe s the RAP System comparing its performance characteristics with other configurations that are based on conventional ballistics.

The National institute of Justice is presently supporting this project.

047

Technology, Training and Countermeasures--Controlled Lethality Weapons

Matt Begert
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Precision Guided Weapons Countermeasures Test and Evaluation Directorate
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A Theory

- Selection, Development, Research and Use of Technology is Best Done with a Clear End-State Objective
- Disruption is the End-State Objective
- Human Factors as Well as Human Effects Must be a Consideration
- Technology Only a Partial Solution

Disruption

- Interruption of Action or Intended Action
- Target: Any Part of a System
  - Personnel, Technology or Combination
  - "Hardware, Software or Wetware"
- Examples:
  - OODA Loop Interruption (Personnel)
  - Engine-Stopping Device (Equipment)

Technology

- Disruption-to-Destruction Capability
- Technical Improvement is a Discovery Process
  - Promising Candidate Technology
  - Suitable Effect
  - Useable Form, Modified Through Use
  - Improve by Experiment, Testing and Use
  - Function Follows Failure

Training

- The Goal is Engagement Proficiency
  - Technical Proficiency is Baseline but Insufficient
- Required Skills Include:
  - System Technology Limits
  - Skillful Situation Assessment
  - Individual Working Knowledge of ROE and Force Policy

Countermeasures

- The Art of Disrupting, Deflecting or Defeating an Opposing Action
- Essential Element of R&D
- May Influence Selection of Candidate Technology
- Process for Vulnerability Analysis
  - **Susceptibility, Accessibility, Feasibility**

Points of Emphasis

- The Capability Range is from Disruption to Destruction
  - One "System," But Different Tools
- Discovery Process, Like Gunpowder
  - Select Promising Technology
- Human Interaction + Technology
- Watson Watt's Law of Third Best

Watson Watt's Law of Third Best

- Best Never Comes
- Second Best Takes Too Long
- Identify the Third Best
- The design that can be validated in time to meet an identified need*...and get on with it.*

SOPMOD and BEYOND

MICHAEL R HARRIS
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2210 WHITLOCK PLACE, DOVER FL 33527
813-653-9356

OBJECTIVES OF SOPMOD

- THE OBJECTIVE OF THE SOPMOD PROGRAM IS TO INCREASE THE OPERATORS SPEED AND ACCURACY IN LOCATING, IDENTIFYING, AND NEUTRALIZING ENEMY PERSONNEL TARGETS, FROM CLOSE QUARTERS BATTLE TO 600M, BOTH DAY AND NIGHT

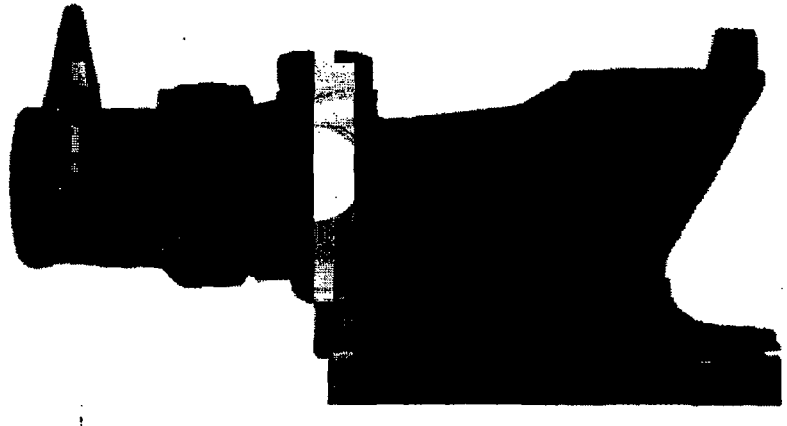
- UNWRITTEN SOF DEVELOPMENT IMPERATIVES
  DO IT FAST, SMART, AND CHEAP (COTS/BEST VALUE AWARD)
  LIGHTER AND MORE COMPACT IS BETTER
  MUST BE OPERATIONAL AND SUPPORTABLE WORLD WIDE
  MUST EVOLVE AS NEW TECHNOLOGY BECOMES AVAILABLE (POM P3Is / MAINTAIN LOW STOCKS)
  MUST BE WATER PROOF TO 66 FT

5.56MM M4A1 CARBINE



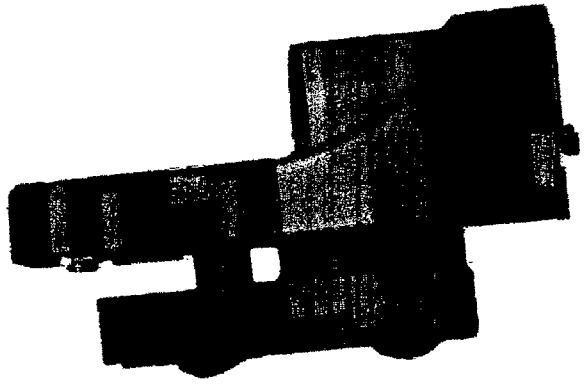
LIGHTWEIGHT COMPACT
MORE ACCURATE THAN M16A2 OR SVD TO 600M
FULL AUTO FIRE
RAPID ENGAGEMENT CLOSE MULTIPLE TARGETS
RAPID INCAPACITATION 6-10 RD BURST IN CRE
SHOCK & FIRE SUPERIORITY ON INITIATION
RAIDS, AMBUSHES, AND CHANCE CONTACT

DAY OPTICAL SCOPE



- FASTER- ALLOWS SHOOTER TO FOCUS ON TARGET NOT SIGHT ALIGNMENT
- INCREASES ABILITY TO LOCATE AND IDENTIFY TARGETS
- REDUCES FRATRICIDE
- ACQUIRING, RANGING, BALLISTIC CORRECTION, & AIMING DONE IN ONE STEP THROUGH THE OPTIC
- PROVIDES STAND OFF ADVANTAGE 250-600 METERS
- CRE SIGHTS OFFSET CLOSE RANGE (<25 M) DISADVANTAGE

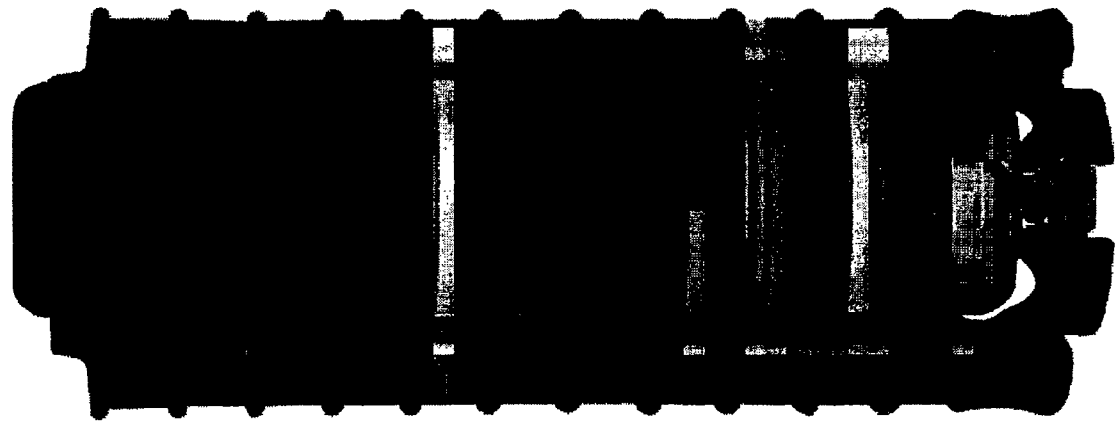
REFLEX SIGHT



- ACCURATE AS IRONSIGHTS TO 300M
- FASTER AND MORE ACCURATE ENGAGING MULTIPLE TARGETS, MOVING TARGETS, FIRING WHILE MOVING, AND IN CLOSE RANGE ENGAGEMENTS (<25M)
- THE AIMING DOT IS ALWAYS ON FOR CHANCE CONTACTS
- INCREASES EFFECTIVENESS OF AIMED FULL AUTO FIRE
- COMPATIBLE WITH NIGHT VISION EQUIPMENT

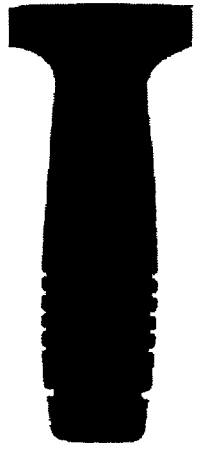
Special Analytical Services

RAIL INTERFACE SYSTEM



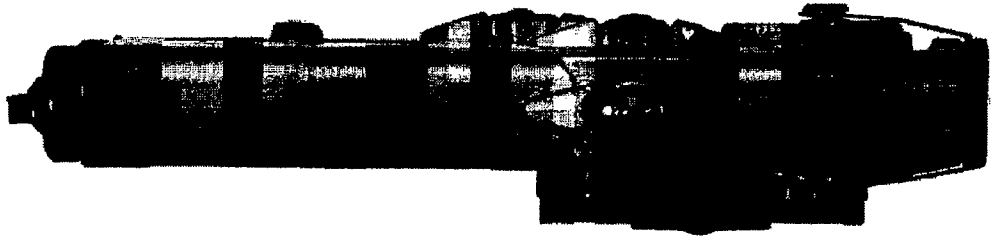
- PROVIDES RAIL MOUNTING SURFACE TO TOP, BOTTOM AND SIDES OF BARREL FOR SOPMOD ACCESSORIES
- AIDS IN SUPPORTING AND COOLING THE BARREL AND PROTECTS OPERATOR FROM HOT BARREL
- ALLOWS REFLEX SIGHT TO BE MOUNTED IN SCOUT SCOPE POSITION FOR SPEED.

FORWARD HAND GRIP



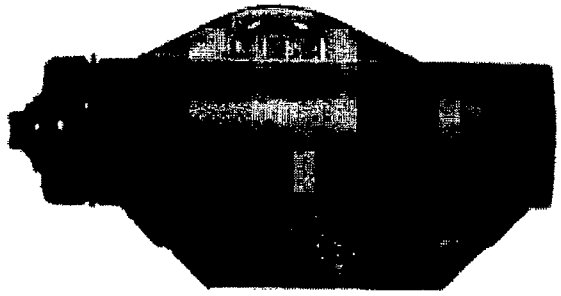
- IMPROVES GUN HANDLING WITH ACCESSORIES ON RAIL
- STEADIES UNSUPPORTED SHOOTING POSITIONS
- ACTS AS A MONOPOD IN PRONE POSITION (HAWKINS POSITION)
- MOUNTING PLACE FOR REMOTE SWITCHES

AN/PEQ-2 IR ILLUMINATOR/AIMING LASER



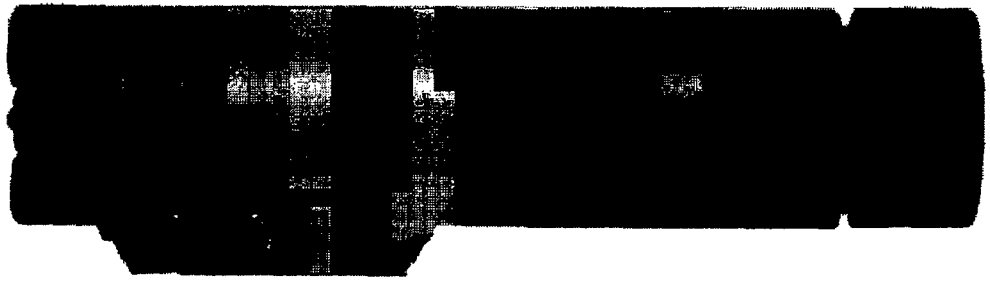
- PROVIDES A TARGET FOCUSED AIMING DOT TO 300 METERS
- IR ILLUMINATOR EXTENDS THE RANGE AND CAPABILITIES OF NIGHTVISION EQUIPMENT OVERCOMING LACK OF AMBIENT LIGHT I.E. OVERCAST, JUNGLE, INSIDE BUILDINGS, TUNNELS, ETC
- ELIMINATES BLOOMING ON THE TARGET FROM AIMING LASER (ZEROING AND CQB) AND SHADOWS IN THE ROOM.
- ALLOWS NIGHTVISION TO SEE INTO DOORWAYS, WINDOWS AND SHADOW AREAS.
- ILLUMINATING BEAM CAN BE USED AS POINTER FOR GROUND AND AIR ELEMENTS
- CAN BE USED ON MACHINEGUNS, AT-4, AND ZERO TO 500M

AN/PEQ-5 VISIBLE AIMING LASER



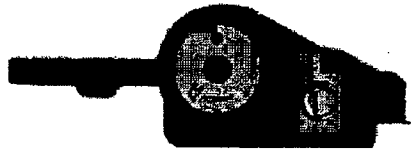
- EFFECTIVE TO 300M IN LOW LIGHT 10M IN SUNLIGHT
- FOCUS IS ON THE FULL VIEW OF THE TARGET=FAST AND ACCURATE IN CLOSE RANGE ENGAGEMENTS INSIDE BUILDINGS ESPECIALLY WHEN USED WITH VISIBLE LIGHT ILLUMINATOR
- OFFSETS DAY OPTICAL SCOPE CQB SHORT COMINGS
- FASTEST MOST ACCURATE MEANS OF ENGAGING CLOSE TARGETS WHILE WEARING PROTECTIVE MASK
- CAN BE USED FOR INTIMIDATION AND TO AIM LESS LETHAL MUNITIONS OOTW SITUATIONS

VISIBLE LIGHT ILLUMINATOR



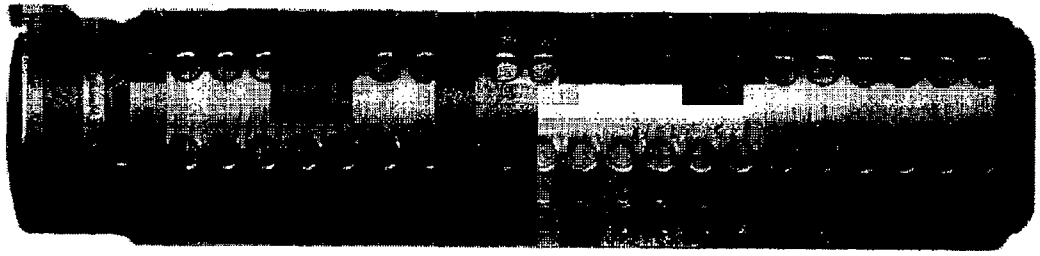
- PROVIDES VISIBLE WHITE, RED, OR IR ILLUMINATION TO SEARCH STRUCTURES AND ENGAGE TARGETS ALL SOPMOD SIGHT
- LIGHT IS BRIGHT ENOUGH TO DAZZLE AND AN OPPONENT
- OPERATES ON LITHIUM (DL123 50 MIN), AA ALKALINE,
- RECHARGEABLE AA OR LITHIUM AA (135 MIN) BATTERIES

BACKUP IRON SIGHT



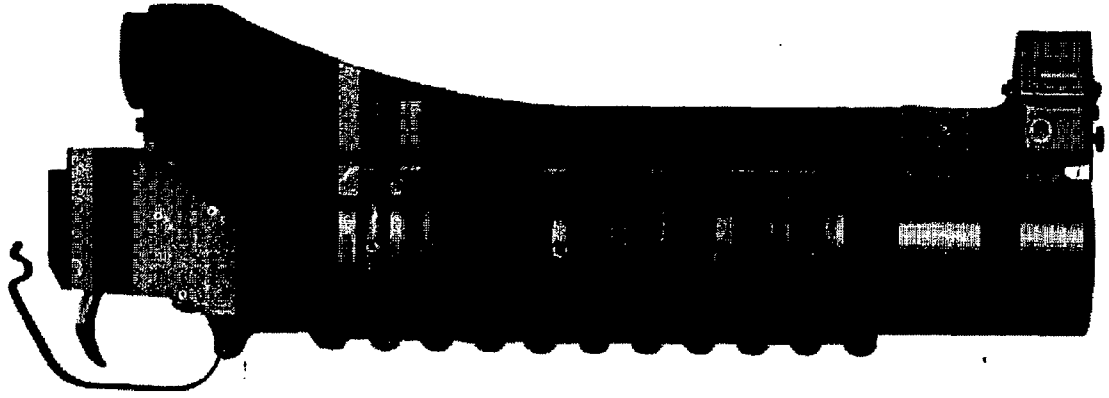
- FOLDS FLAT AND REMAINS ON CARBINE
- PROVIDES 300 METER SIGHTING CAPABILITY SHOULD ALL ELSE FAIL

QAD SUPPRESSOR



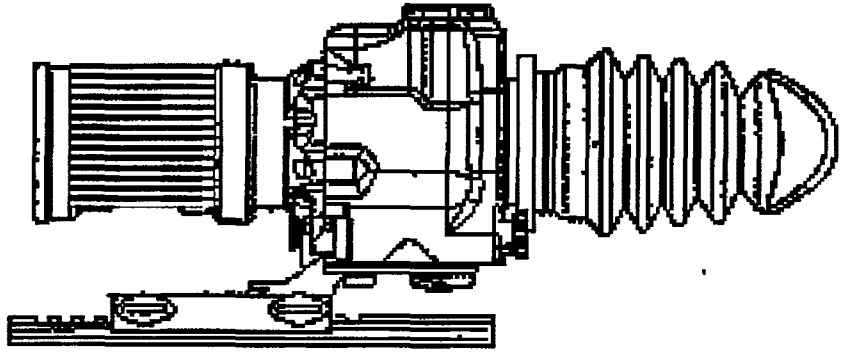
- PROVIDES 28 DB REDUCTION IN NOISE AND ELIMINATES MUZZLE BLAST AND FLASH MAKING DETECTION ENEMY HARDER
- SUPERSONIC CRACK WITH MUZZLE REPORT DECEIVES THE ENEMY AS TO THE SOURCE OF FIRE.
- SUPPORTS STAND OFF ATTACK WITH DAY OR NIGHT OPTICAL SIGHTS
- ALLOWS VOICE COMMANDS DURING CQB
- REDUCES RECOIL AND MUZZLE CLIMB IMPROVING FULL AUTO FIRE

QAD M203 W/ 9 IN. BARREL & FLIP-UP SIGHT



- PROVIDES AN ABILITY TO ENGAGE POINT AND AREA TARGETS, TARGETS IN DEFILADE, AND LIGHT ARMORED TARGETS
- LAUNCHER FOR VISIBLE AND IR ILLUMINATION FLARES, SIGNALS, SMOKE, AND LESS LETHAL MUNITIONS
- LAUNCHER FOR LESS LETHAL WHILE RETAINING INSTANT ACCESS TO LETHAL
- INCREASING THE NUMBER OF LAUNCHERS AND VOLLEY FIRE IS A MAJOR INCREASE IN COMBAT POWER

MINI NIGHT VISION SIGHT



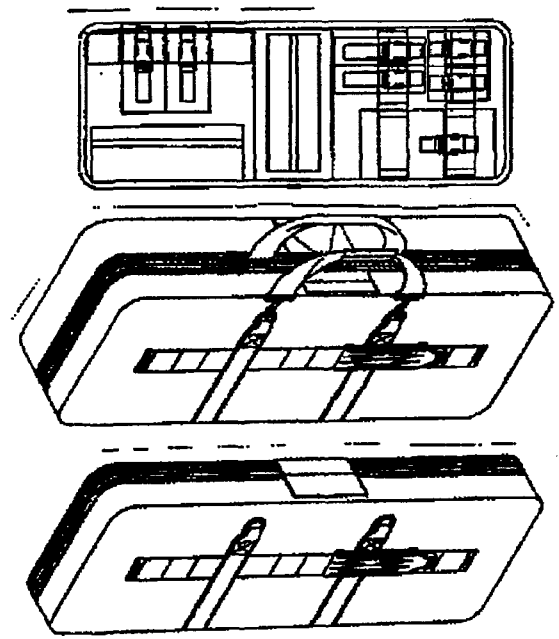
- VERY COMPACT AND LIGHTWEIGHT
- PROVIDES PASSIVE NIGHT ENGAGEMENT CAPABILITY 10-300M
- FAST AS REFLEX SIGHT AT CLOSE RANGE
- RAIL/MOUNTS ALLOW SWITCHING WITH DAY SCOPE WHILE RETAINING ZERO

COMBAT SLING



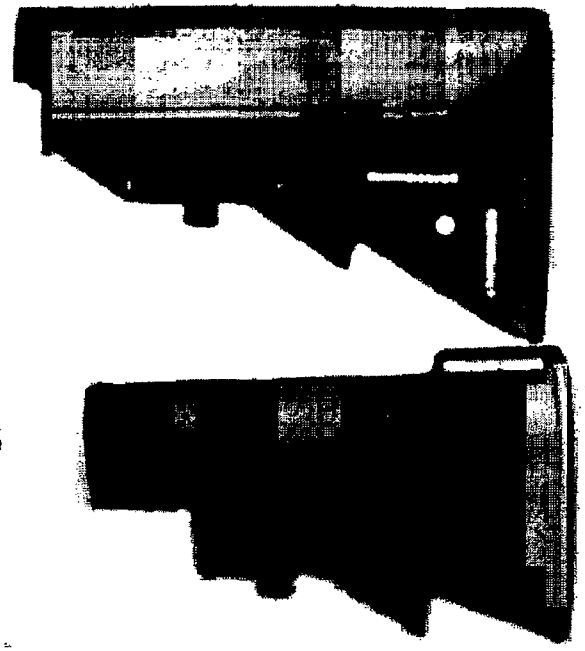
- PROVIDES COMFORTABLE READY AND SAFE HANDS FREE CARRY
- CROSS BODY KEEPS MUZZLE FROM SWEEPING OPERATOR OR OTHERS AROUND HIM

CARRYING/STORAGE CASE SET



- PROTECTIVE CARRYING CASE FOR KIT COMPONENTS AND ATTACHES TO CARBINE CASE
- PADDED CARBINE CASE HOLDS FULLY EQUIPPED CARBINE AND EQUIPPED FOR JUMPING
- LOCKABLE HARD STORAGE / SHIPPING CONTAINER HOLDS 4 KIT/CARBINE CASES

SOPMOD ENHANCED STOCK



- PROVIDES IMPROVED CHEEK WELD ENHANCING THE NATURAL POINT OF THE CARBINE
- PROVIDES STORAGE FOR EXTRA BATTERIES

BEYOND

HEAVY EXTRACTOR SPRING

- AS PART OF QAD SUPPRESSOR KIT

RAIL MOUNT FOR AN/PVS-14

- REFLEX SIGHT WITH POCKETSCOPE IS THE LIGHTEST, CHEAPEST, AND MOST PRACTICAL DAY/NIGHT SYSTEM IN THE WORLD
- VARIABLE HEIGHT/FOCAL LENGTH MOUNT

FULL FIELDING

4 PER KIT= REFLEX SIGHT, VISIBLE LASER, STOCK
1 M203 PER KIT

BEYOND CON'T

ENHANCED M203 SIGHT

- 50-400 METER CAPABLE
- SIMPLIFY RANGING, AIMING, AND BALLISTIC CORRECTION
- DAY/NIGHT/NIGHTVISON GOGGLE CAPABLE

REFLEX SIGHT II

- BRIGHTER DOT INDOORS
- BETTER VISION THROUGH THE LENS

BEYOND CON'T

COMBINED DAY OPTICAL SCOPE AND REFLEX SIGHT

- SMALL REFLEX SIGHT FORWARD MOUNTED ON TOP ENHANCE CLOSE RANGE ENGAGEMENTS WORK WITH NIGHT VISION GOGGLES
- INCREASE SCOPE EYE RELIEF

•ADVANCED TECHNOLOGY

LED TO DISPLAY RANGE FROM EXTERNAL
MINI-LASER RANGEFINDER
ELIMINATE OPTICAL ADJUNCT SIGNATURE

ENHANCED AMMUNITION FOR SOPMOD SYSTEM

GREATEST POTENTIAL

5.56MM

- ENHANCED BALL INCREASE VELOCITY/ACCURACY
- FRANGIBLE- CONTROLLED PENETRATION FOR OPNS AND TRAINING
- SNIPER/MATCH <MOA MATCH DOS RETICLE
- SUBSONIC
- ARMOR PIERCING (ADVANCED BODY ARMOR, BULKHEADS, LIGHTLY ARMORED VEHICLES)

ENHANCED AMMO (CON'T)

40 MM M203 LETHAL

- •AIR BURST ALGL PROJECTILE/M203 CASE
- • BOUNDING (AIR BURST, GRD/AIR BURST)
- • HIGH VELOCITY CANISTER (TWO STAGE)
- • THERMALBARIC
- • FLASH BANG
- • STAND OFF DOOR BREACH
- •

•40MM M203 LESS LETHAL

- •PEPPER GAS/DYE DISPENSER
- •STICKY NET

NDIA SO/LIC Symposium

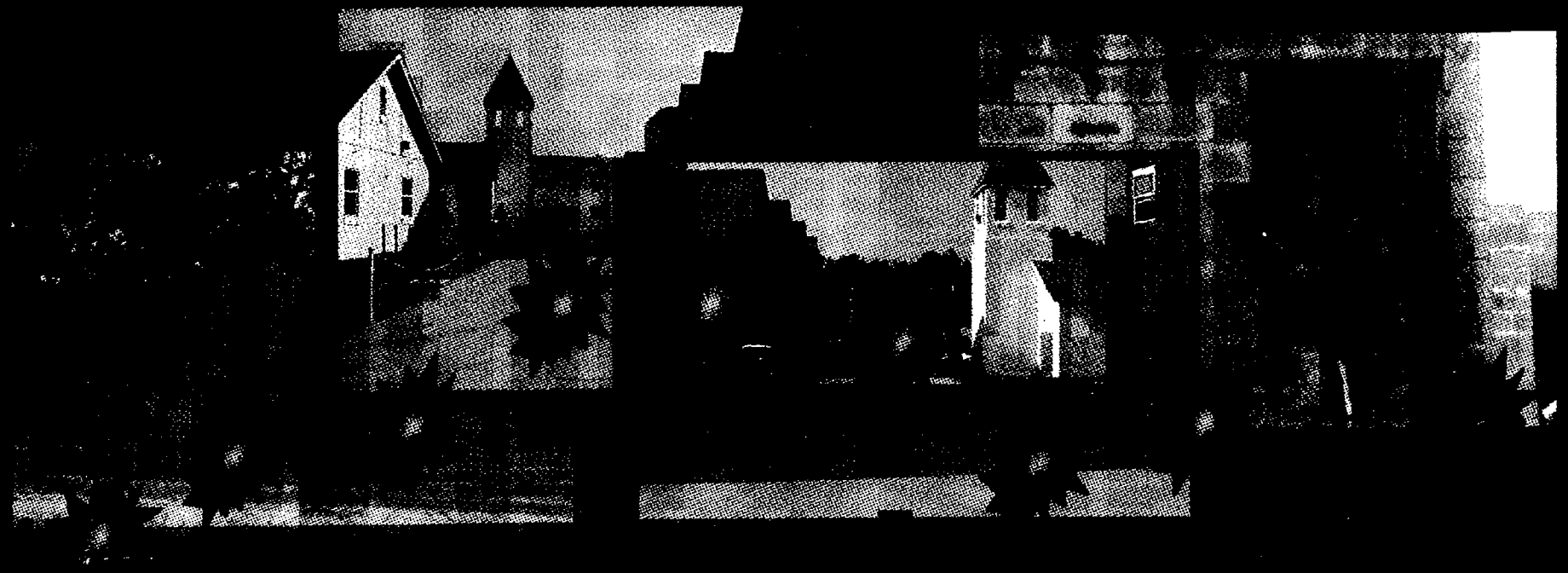
A Special MOUT Presentation

17 February 1999

Crystal City Hyatt Hotel

OERLIKON CONTRAVES Defense

Military Operations On Urban Terrain





- The 11th Air Assault used McKenna Range as a training site in the development of Air Mobile concepts.

1981 - A small village was erected as one of three Army designs of the European theater.





1996 - DBBL acquired McKenna in support of DOD MOUT ACTD.

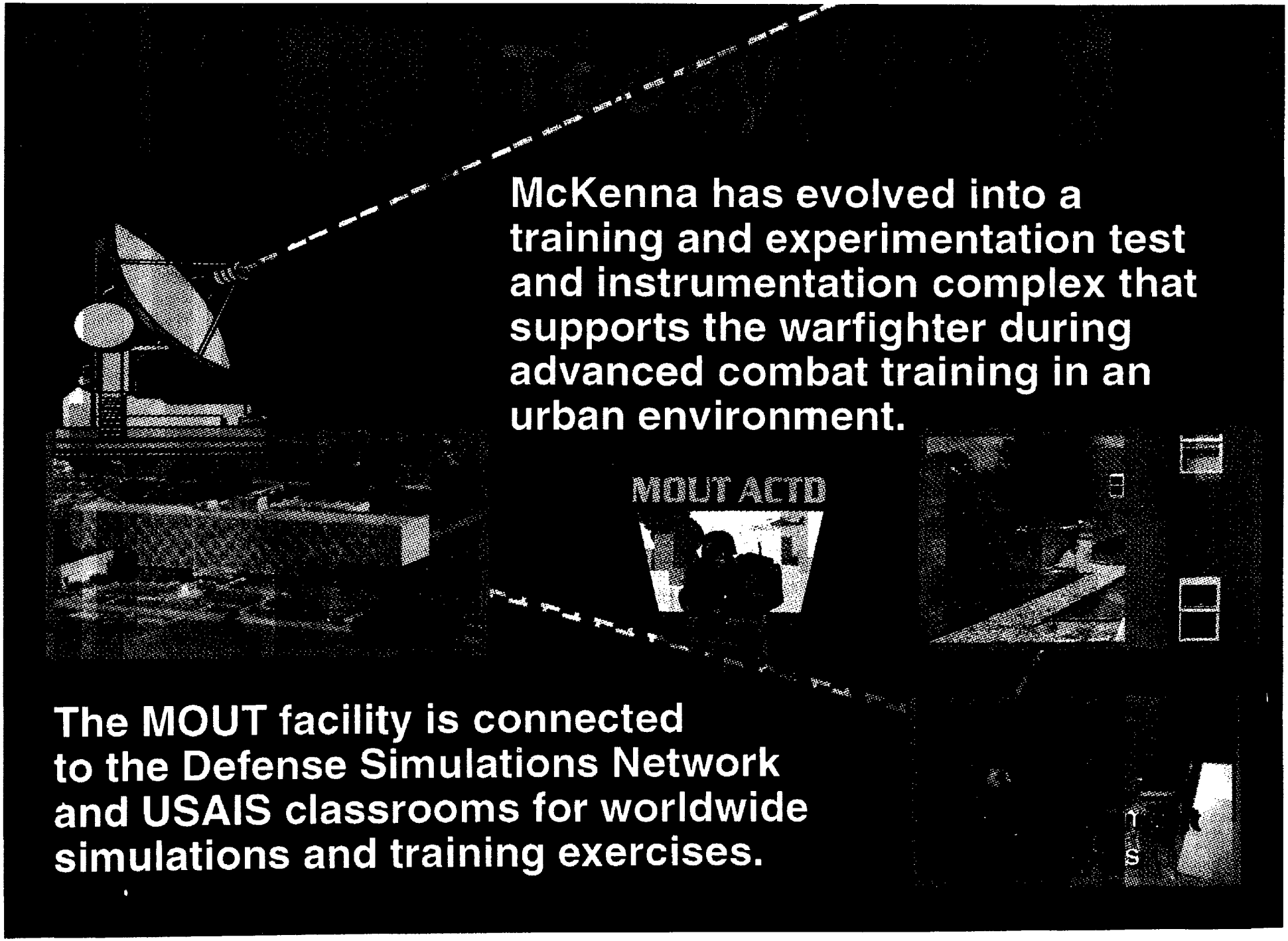


430 Acres

26,000 ft of Fiber Optics

42,000 Man-hours

$4.5 Mil Instrumentation


McKenna has evolved into a training and experimentation test and instrumentation complex that supports the warfighter during advanced combat training in an urban environment.
MOUT ACTD
The MOUT facility is connected to the Defense Simulations Network and USAIS classrooms for worldwide simulations and training exercises.

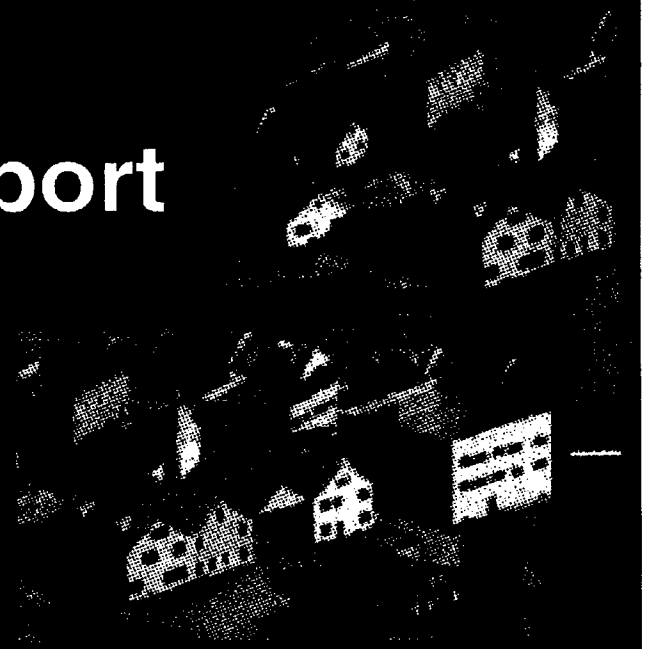


- Advanced Technological Test Bed
  - Force XXI Land Warrior
  - Target Engagement
  - Small Unit Operations
  - Integrated Combat Identification Dismounted Soldier
  - Robotics
  - Mini-UAVs



- Training Facility, Enhanced (Level 5)
  - Troop Maneuver Area (All Terrain)
  - Integrated Tracking and Surveillance Systems
  - Simulations to Support Virtual and Constructive Environment
  - Distance Learning Worldwide
  - Multimedia and CDROM Development Site

- On-site Lodging
- 5,000 ft Runway and Heliport
- 430 Acre Maneuver Area
- 29 Urban Structures
- Tunnel System
- Preplanning and After Action Review Facility
- Observer Controllers



- Battle Site and Troop Movement Area



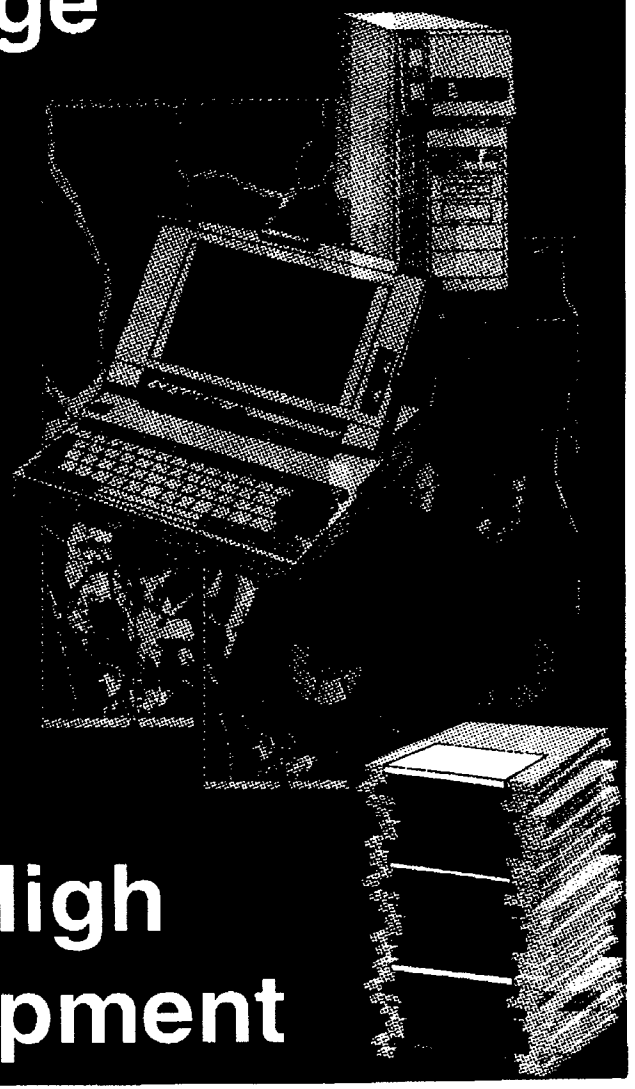


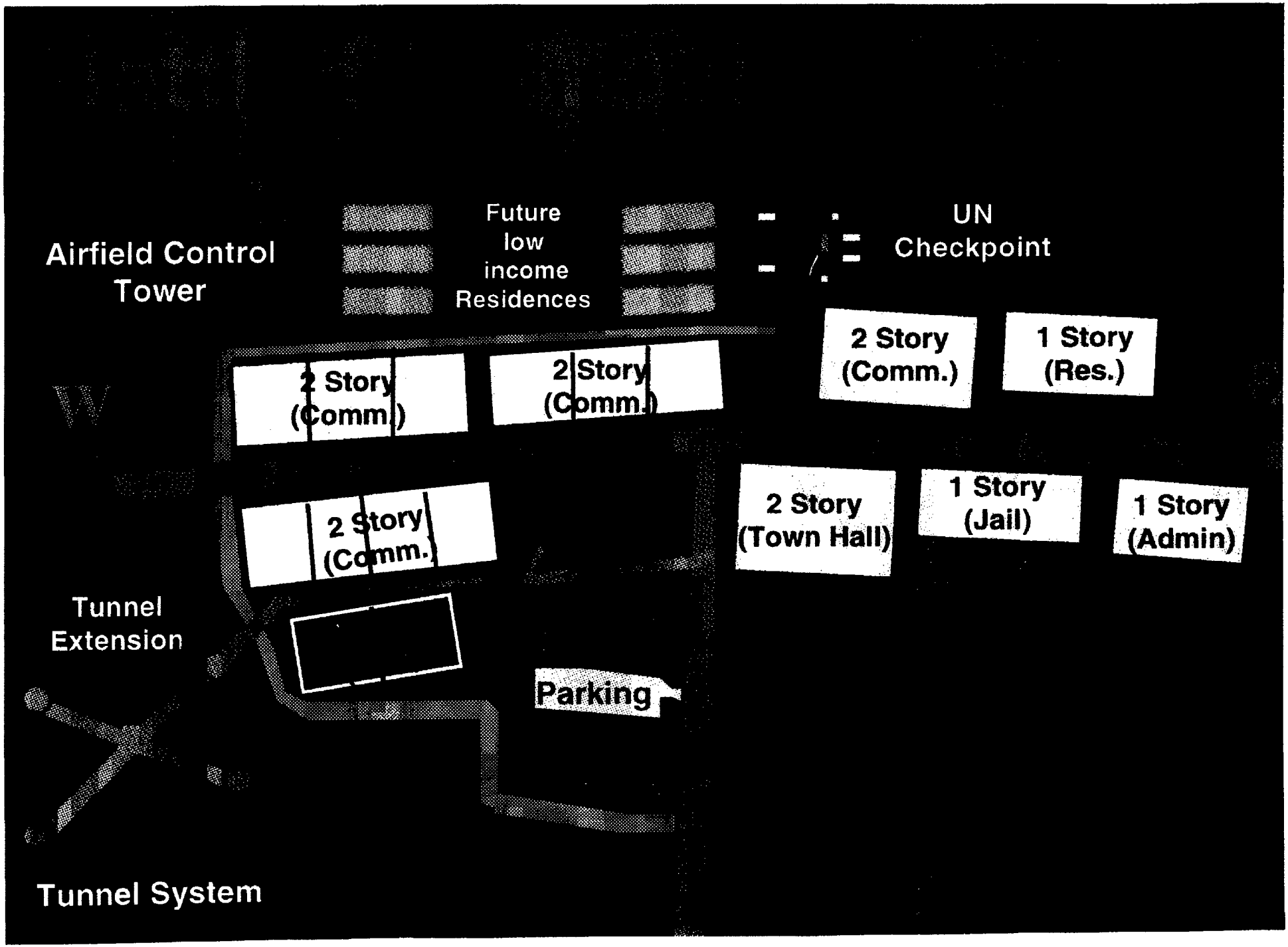
- Control Center



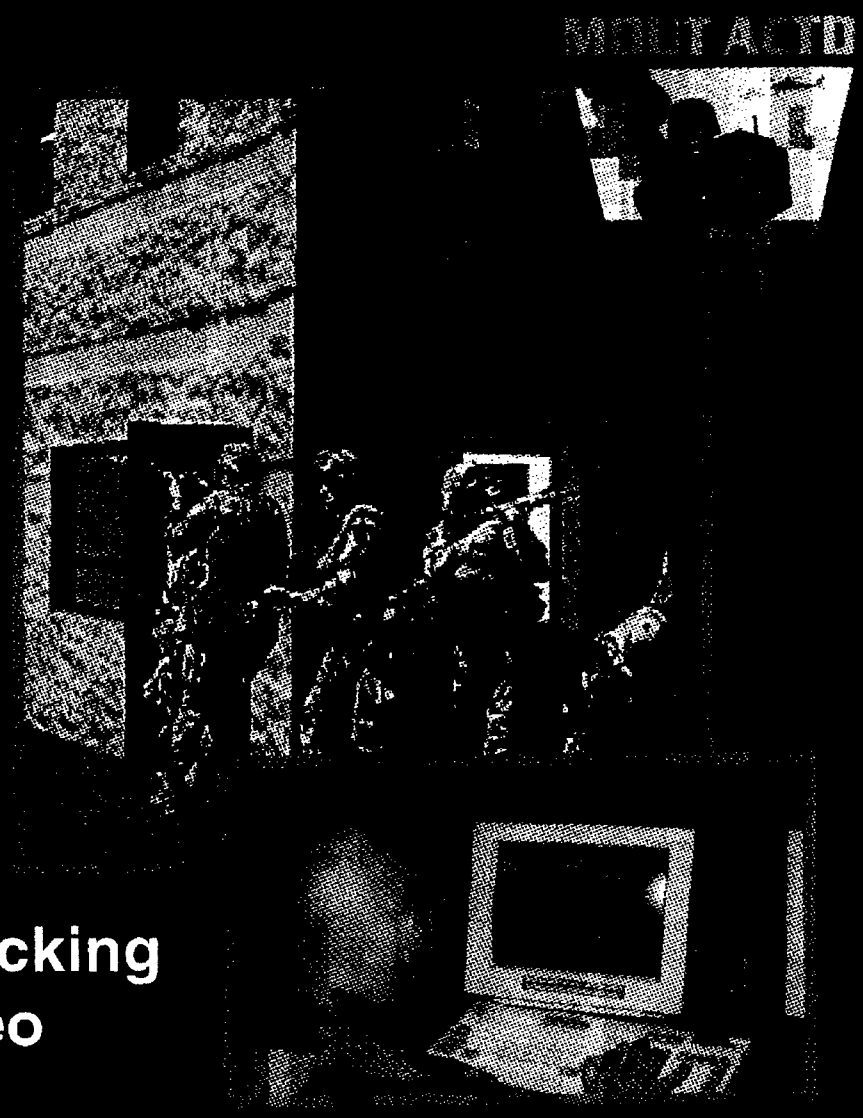
- Operations

- Data Collection and Storage
- Multi-Track Digital Video Recorders
- 128 x 64 Video Switcher
- 3D Computer Modeling
- 2D Mapping and Analysis Workstation
- Video Conferencing and High Speed Transmission Equipment




Airfield Control Tower
Future low income Residences
UN Checkpoint
2 Story (Comm.)
2 Story (Comm.)
2 Story (Comm.)
2 Story (Comm.)
1 Story (Res.)
2 Story (Town Hall)
1 Story (Jail)
1 Story (Admin)
Tunnel Extension
Parking
Tunnel System

- I-CIDDS Instrumentation
  - Indoor
  - Outdoor
- Video (Complete Coverage)
  - Indoor
  - Outdoor
  - Day and Night
  - Remotely Controlled
- Audio
  - Two Way
- Virtual Simulations
  - 3D
  - 2D, Soldier ID, Shot Tracking
- Industry Standard Digital Video
- Synchronized Playback



Soldier Components

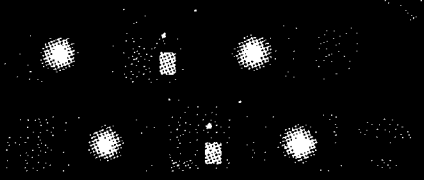
Helmet Unit



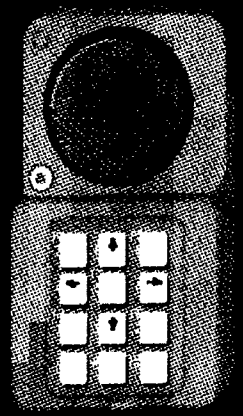
Smart Laser



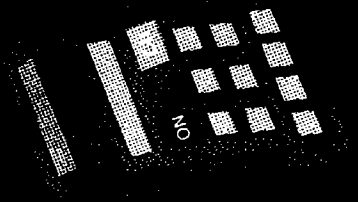
Arm Detector



Master Control Box

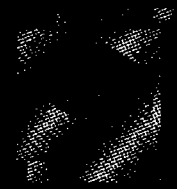


Umpire Unit for Guiding the Exercise and Data Collection



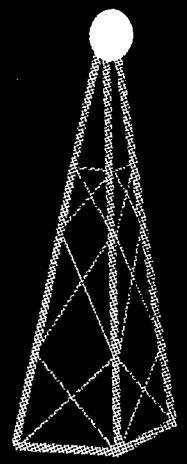
Sensors

Indoor





Outdoor Miles Compatible GPS



- All Weather Day and Night IFF Capability
- Proven System Performance Through Obscuration, Vegetation
- Interrogation and Response Up to 5 km Range
- Works in Dust, Smoke, Fog Within Soldier Visual / Weapon Range
- Sealed and Hardened to Withstand Specified Environments
- Proven Combat Mode Operation Through Extensive Exercises and Field Tests
- I-CIDDS to Be Part of Combat Unit's Mission Essential Task List (METL)



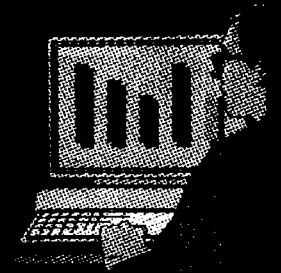
Smart Laser

I - CIDDS Provides Combat ID Through the "Bushes"

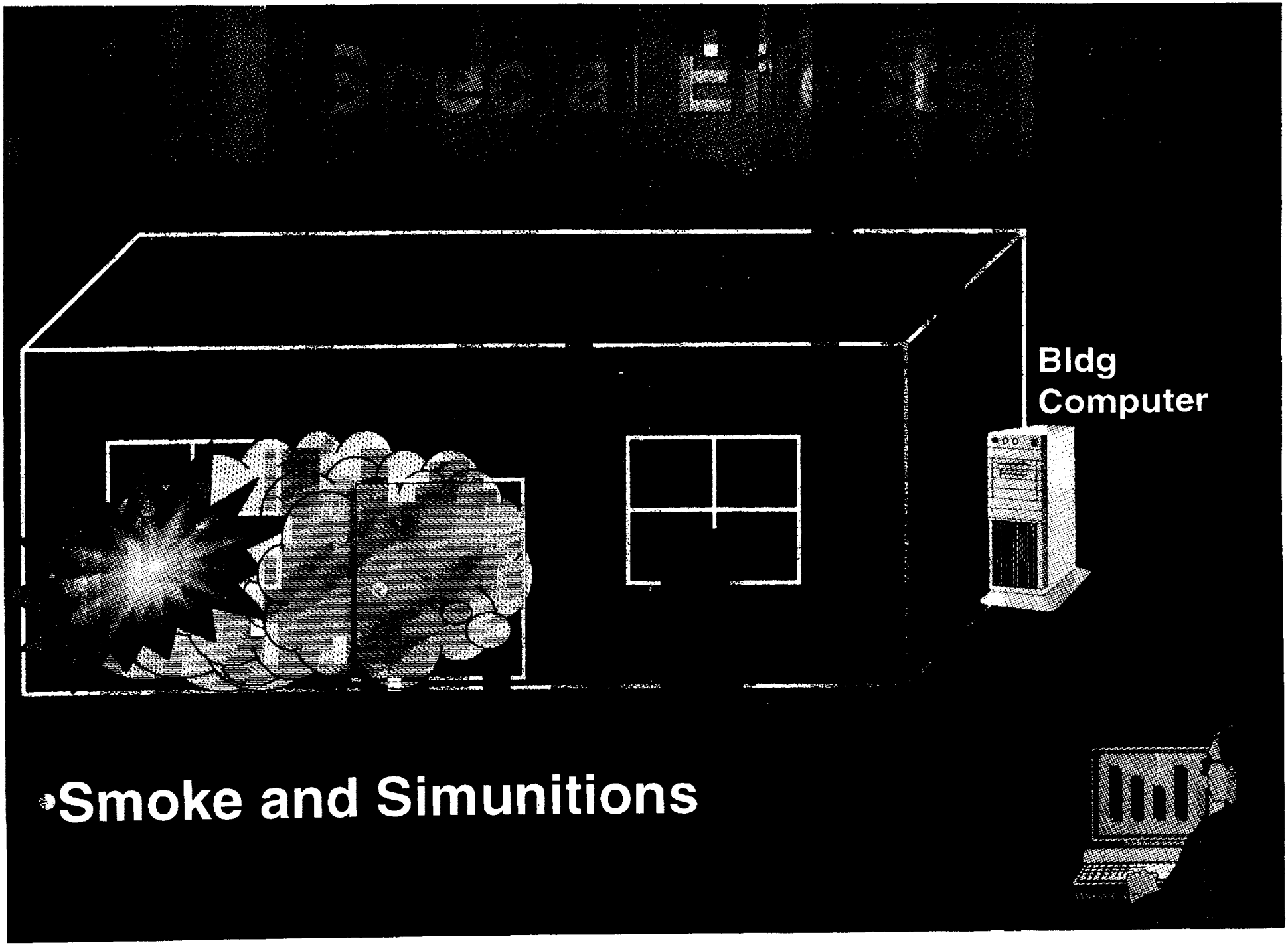
Building Sensor System



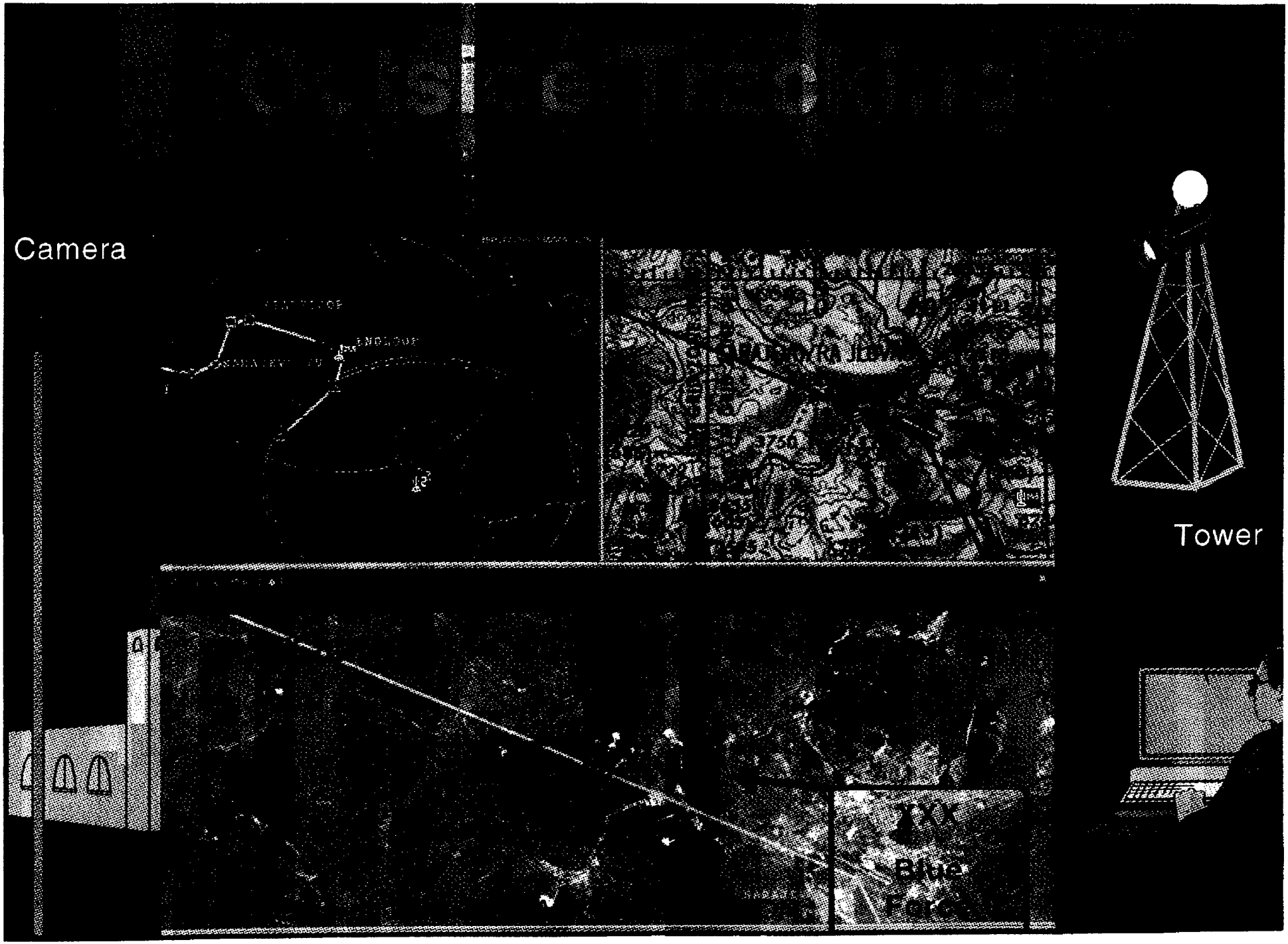
Bldg Computer

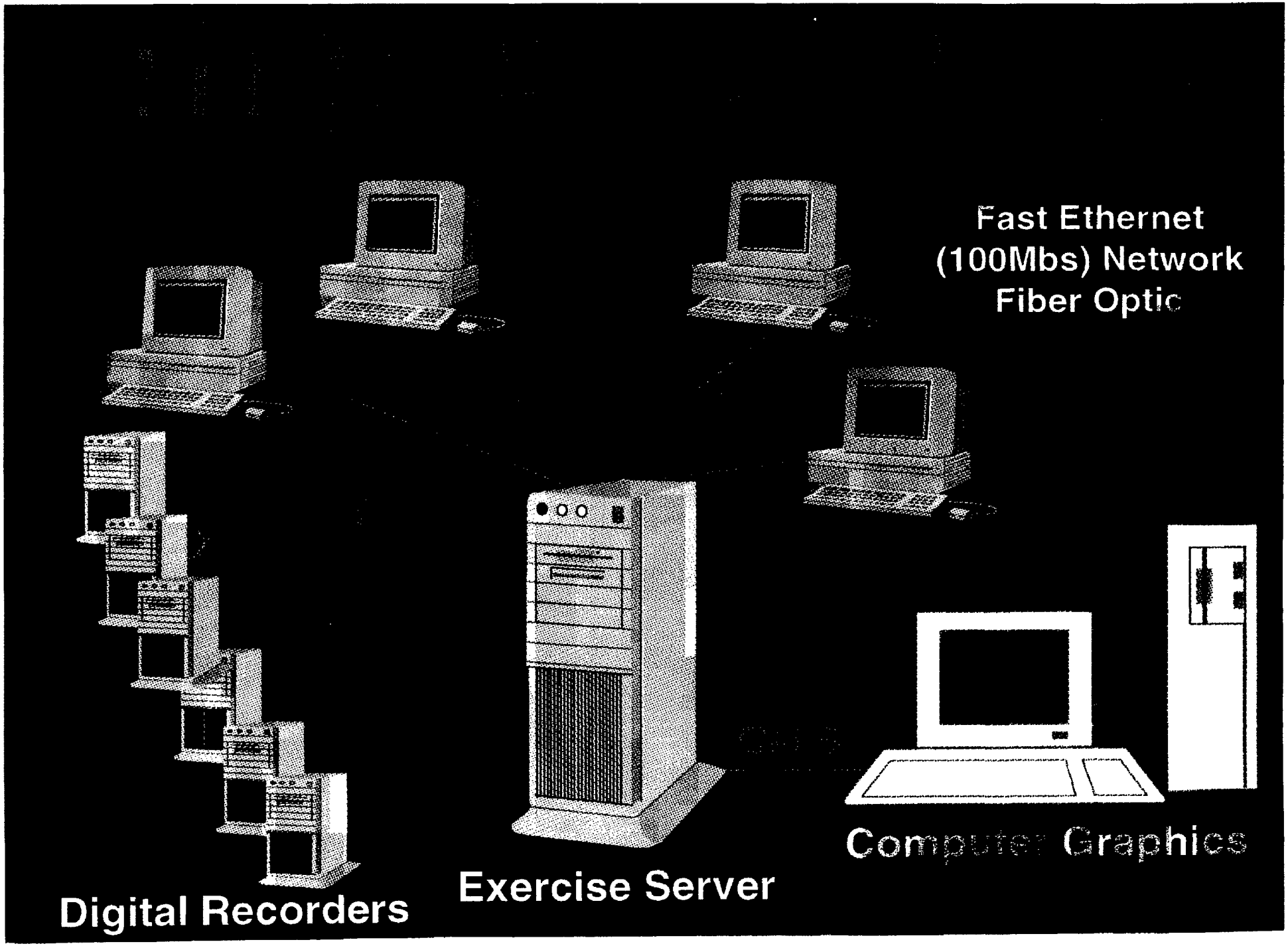


- Position Location and Data Sensors



- Smoke and Simunitions


Camera
Tower


Fast Ethernet
(100Mbs) Network
Fiber Optic
Digital Recorders
Exercise Server
Computer Graphics

Dynamics of Future War: Complex Terrain and the Indirect Approach

By Major General Robert H. Scales, Jr.

Urban warfare, fighting in cities, war in complex terrain. To the casual observer, the words seem detached, almost pristine. However, to military professionals, images of great destruction, and excessive casualties in cities such as Berlin, Stalingrad, Hue and Beirut come to mind. Urban warfare, a subject that many military professionals would prefer to avoid is still with us. Moreover, it may be the preferred approach of future opponents.

Consider one of the key lessons that emerged from the Spring, 1998 Army 2025 wargame conducted at the U.S. Army War College.

The enemy (RED Force) conducted a lightning assault to seize and control a web of complex urban terrain. This enabled them to decapitate the political leadership and control critical lodgment areas. Designed to dismember coalition efforts and collapse American resolve, the Red force dispersed their army within the cities and prepared to wage an attrition-based campaign.

As the National Command Authority was initially reluctant to turn to the military element of power, the friendly force, (Blue) was unable to prevent Red from occupying the urban areas. However, once Red moved into the

095

urban areas, the political fallout to regain control of the lodgment area and re-establish a legitimate government left Blue with little choice, but to wage an urban-warfare campaign. Although successful, the cost was excessive in terms of battle casualties and time.

In retrospect, the Blue approach was exactly opposite from what should have been taken. Why? By playing into the hands of the enemy, Blue illustrated one of the key issues for 21st century warfare. How can the force of the future achieve success in complex terrain?

A recent revival of interest in urban warfare has yielded a rich outpouring of intellectual energy and fiscal investment in an effort to exploit interest into a relatively unfamiliar form of warfare. As is often the case in the American style of inquiry, there has been too quick a leap beyond the more conceptual aspects of war in urban terrain and into the weapons and tactics necessary to fight street to street and door to door. This paper will suggest a measured approach to the study of urban warfare. Its premise is that the time-tested tenets of warfare must be applied as rigorously and with the same fidelity in urban warfare as they are applied to other forms of warfare.

In the next century, a future enemy might look to his urban masses as a possible refuge from overwhelming American military power. Technological precision and more

importantly, the will to carry out a strategic plan may enable him to pursue at least two possible options that might lead to a favorable strategic outcome. Each option would seek to nullify American technological advantages of speed and knowledge, while simultaneously pursuing a strategic end state that focuses on the attainment of limited objectives while avoiding defeat.

The first option combines the diplomatic, political and military elements of power into an operational concept that seeks to delay and disrupt our arrival into a strategic theater. Initially, an aggressor moves swiftly to seize military objectives in a neighboring country. Then, through skillful diplomatic efforts and political maneuvering, the enemy disrupts coalition-forming efforts while simultaneously offering a peace settlement. Central to the enemy's concept is the occupation of complex urban terrain that enables him to control key lodgment areas and national centers of gravity.

If the first option fails, the enemy can burrow his force in the urban terrain and prepare for combat operations. This places U.S. leadership on the horns of a dilemma. An urban assault largely neutralizes American high tech speed and mobility advantages. With the added risk of excessive casualties and prolonged campaign timelines, many would question a decision to undertake such an operation.

Urban fighting has always been one of the most destructive forms of warfare. During the Second World War, the Russian Army sustained over 300,000 casualties in their epic struggle for Berlin. American casualties were equally excessive; over 1000 killed in action to regain Manila and more than 3000 in the battle for Aachen. In the Vietnam war, the casualty rates for U.S. marines who fought in Hue exceeded those from the bloody amphibious assault of Okinawa. More recently, the ill-fated Russian attempt to seize Chechnya resulted in the deaths of thousands of soldiers and non-combatants.

But, it doesn't happen all that often. Both sides realize the destructive effects street fighting may cause. Only a desperate enemy, defending at great disadvantage, willing to sacrifice initiatives and willing to sacrifice his cities and a large portion of his military force has taken to defending cities. A casual glance at the last 500 years of major war history has shown that as more of the world blankets itself in urban sprawl, the incidents of actual street fighting has declined.

A large urban center is multi-dimensional. Soldiers must contend with subterranean threats as well as from high rises. Every building could contain a nest of fortified enemy positions that would have to be dug out, one by one. Moreover, an experienced enemy could easily create

connecting positions between buildings. With limited maneuver space, the urban environment precludes mobility operations and largely negates the effects of weapons while minimizing ranges. The close proximity of buildings plays havoc with communications further adding to command and control difficulties. Finally, the psychological effects of combat on soldiers are magnified. While the ever-increasing array of threats from multiple dimensions has a debilitating effect on soldiers, it further hastens the disintegrating process that haunts all units locked in close combat operations.

The proliferating sprawl of urban centers and populations makes the challenge of the future city fighting even more pronounced. Some estimates indicate that between 60 to 70 percent of the world's population will reside in urban areas by the year 2025. If current global demographics continue into the next millennium, we will see the growth of huge urban masses, many exceeding ten million inhabitants. The enormous problems of infrastructure and the demand for social services that threaten to swamp governing authorities in the urban centers of emerging states will most likely worsen. Moreover, the proximity of the disenfranchised with the ruling elite will provide the spark for further unrest and violence.

The future urban center will contain a mixed population ranging from the rich elite, the poor, and the disenfranchised. Day-to-day existence for most of the urban poor will be balanced tenuously on the edge of collapse. With social conditions ripe for exploitation, the smallest tilt of unfavorable circumstance might be enough to instigate starvation, disease, social foment, cultural unrest or other forms of violence.

Military leaders who believe that future warfare will not encompass this unpleasant environment are self-deluding. A little more than one third of all deployments by US forces over the past 20 years have occurred in complex terrain. As urban areas continue to expand, they will increasingly encompass regions of vital interest to the United States. Representing geo-strategic centers of gravity, these urban areas will contain all the vital functions of government, commerce, communication, and transportation activity. While some future urban operations may be limited in scope and capable of being controlled by special operating forces and other operatives, others may take place in strategic key terrain of a vital interest. Such an operation would require a major American investment of combat forces.

The dynamics of knowledge and speed that are ideal for open warfare take on an additional dimension when an enemy chooses to occupy key urban areas. An enemy occupies cities

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to slow us down and to avoid our strengths. Rather than suffer the brunt of American military power where speed and precision technology can be brought to bear, he understands that his intent must be not to seek a clear victory so much as to avoid losing. The enemy's only ally in these circumstances will be time. If he can delay, disrupt and diffuse our effort to achieve a quick decision, he might be able to force a campaign of attrition where disproportionate casualties could induce us to grow weary of the conflict. While he surrenders the tactical initiative, the close terrain offers protection from firepower and surveillance and further allows time to prepare a defense.

In open warfare, time is a disadvantage as the need to achieve a rapid victory pushes commanders to attain decisive results. In urban warfare, just the opposite is true. A premature rush into the city works to our disadvantage and plays to the strength of the defender. History is full of examples of armies that tried and failed to seize a city by *coup de main*. The Israeli Army performed brilliantly in executing a lightning counterstroke across the Suez Canal during the 1973 Yom Kippur War. However, once Israel's armored columns entered the streets of Suez, the Egyptians were able to inflict a high number of casualties while stopping their progress. The recent Russian experience in Chechnya is equally illustrative. There, a semi-trained and

poorly equipped force successfully waged a war of attrition that eventually wore down the superior Russian Army. While the different technology and tactical skills of armies are a factor, defensive urban warfare is a great equalizer for a less than modernized force. A vast body of historical evidence reminds us that urban warfare is a great casualty producer.

Thus, in urban warfare, we must avoid the enemy enticement that lures our forces into such an environment and use time to our advantage. If we are patient, time will disadvantage our opponent. The time advantage reversal occurs due to the enemy's inability to continue to provide for the populace. This will eventually lead to the displacement of the government leadership or hostile action on the part of the populace.

Picture for a moment a conflict against a future enemy state similar to some of our more recent post, Cold War adversaries. After a lightning campaign lasting only days, the mobile formations of our future foe are decisively beaten in open warfare. To avoid total defeat, the enemy rushes his remaining force into his capital city, a city of sprawling dimensions with millions of people that house his political, cultural and financial centers of gravity.

As soon as the enemy loses in the open ground, and elects to occupy complex terrain, a fundamental shift of

battlefield dynamics occurs. He loses the initiative. Time is now solely on the side of the intervening coalition. Without the capacity to maneuver, the enemy cannot escape. Attacking would only result in his destruction. Thus, he arrays his forces throughout the capital to avoid creating lucrative targets for American precision weapons. He impresses the local citizenry into national service, and appeals to the world to watch the impending slaughter of non-combatants.

Assume that Americans are leading a coalition effort, thus, how should the coalition respond?

The best option is to preempt the enemy from using complex terrain in the first place. Recognizably, a pre-emptive approach would require the political entity to build strong domestic and international support along with developing solid public underpinnings. Moreover, pre-emptive measures could come in a variety of forms. In the pre-hostilities phase, political and diplomatic means could be used to discourage future aggressive activity. We could also selectively implement force deployment options such as increasing the presence of naval or air forces and staging pre-positioned equipment. Once hostilities begin, we could force the enemy to fight his way into the urban areas by isolating his army, blocking the key avenues of approach and augmenting host nation forces that occupy friendly cities.

If, despite our best efforts, the enemy is able to fall back on a major city, we must be mindful of the limiting factors of using military power. Americans do not expect their military to wage war in an unconstrained manner. It is difficult to imagine fighting another World War Two campaign like Berlin or Dresden. In Berlin, between February and May of 1945, a third of the total tonnage of bombs were dropped on the beleaguered city resulting in the death of over a hundred thousand people. In our struggle to seize Aachen, the city was virtually destroyed.

With many of the major global cities experiencing a host of infrastructure and overcrowding shortcomings, the likely damage from unconstrained urban warfare would require a total rebuilding effort. It would result in the total dismemberment of basic services, the death of thousands of innocent people along with great collateral damage to homes, hospitals and other structures. These conditions would create a new mass of refugees. Rampant disease and starvation would quickly overcome those lucky enough to survive bombs and missiles. As the moral beacon for international law, global democracy and respect for human rights, the United States can ill-afford to undertake such costly operations. In all likelihood, the American people would not tolerate the casualties that an urban assault would produce, nor would they tolerate the civilian

casualties or extensive damage to the captive city. The trend to exercise constraint is clear. American-led coalitions and military operations must seek a better solution than physically destroying the city in order to rescue it from a hostile force.

Another limiting factor is the desire for a short conflict. One of the enduring legacies from the Gulf War is the expectation for quick victory with few casualties. While the American people have reluctantly tolerated high numbers of casualties and prolonged military campaigns in the past, events in Somalia and Bosnia indicate the American public has little stomach for excessive casualties in future wars.

In our example another viable option exists. If pre-emptive measures fail, rather than initiating a time-consuming, costly attack in complex terrain, this paper suggests that an indirect approach would accomplish the strategic end at a much lower cost in terms of human life and physical destruction. Implementing an indirect approach leverages the intrinsic instability of the urban mass to our own advantage. Moreover, by avoiding a direct assault on an entrenched force, we do not engage the enemy on his terms. The indirect approach enables us to maintain the initiative, employ our technologically superior forces to their fullest potential and leaves the enemy with little or no option.

This approach encompasses three fundamental concepts: Use the indirect approach; Use time to our advantage; let the city collapse on itself.

Use the Indirect Approach. In his landmark book on strategy, Liddell Hart contended that in most successful campaigns, the dislocation of the enemy's psychological and physical balance was brought about through use of the indirect approach. This view applies to urban warfare as well. The following discussion depicts how.

Instead of a conducting a direct assault and massive strike, coalition forces would establish a loose cordon around the city and establish control of the surrounding countryside. The cordon would eventually result in a complete isolation of the city from the outside world. All avenues to include air, sea and land arteries would be blocked. Moreover, the coalition would seek to control sources of food, power, water, and sanitation services. Any vital natural resources would be controlled. Finally, using technological means, all internal information sources, commercial, financial, and governmental nodes would be suppressed and only information emanating from the coalition would reach the city's population. Throughout the cordon operation, coalition forces would demonstrate their absolute mastery of the situation.

The coalition would use knowledge and speed to seize, control and strike selected decisive points within the city. High endurance Unmanned Arial Vehicles (UAVs) orbiting miles above the city will maintain unlimited surveillance with a minimum of manpower. Ground mounted cameras will provide observation of areas susceptible to infiltration. Unless the enemy attacks, coalition forces would not engage in close combat, but would use greater standoff advantages and technology to selectively strike point targets, key leadership and weapons of mass destruction. As history reminds us, a continued, massive use of firepower will often have the opposite effect from what was intended. Thus, the coalition will not attempt to achieve a complete destruction of the enemy force, but would only destroy those targets that would have the greatest impact on the government, the army and the people. The purpose is two fold: demonstrate the futility of further resistance and to create the conditions which will lead to collapsing the enemy will to continue the struggle.

Use Time to Our Advantage. Through the use of psychological operations and control of the media, the coalition will create an environment where the enemy army becomes an unwelcome force. The underlying purpose is to shape the perception that the enemy is a hostile occupying force. This perception will eventually turn the population

against the enemy. In this regard, the coalition will establish mechanisms to gauge the prevailing moods of the population.

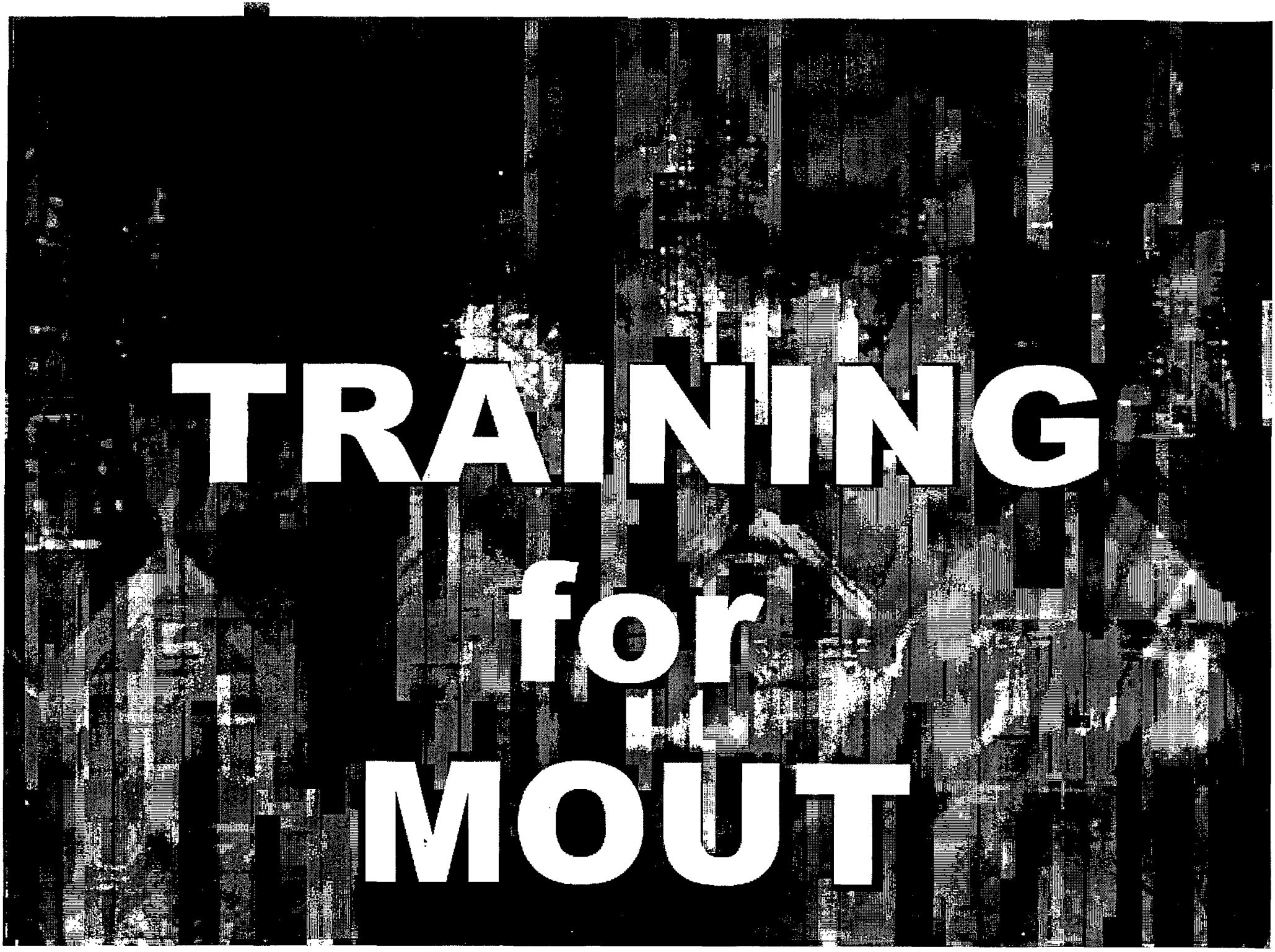
Let the City Collapse on Itself. As the coalition achieves control of the surrounding countryside, it will most likely collect resources to support the establishment of sanctuaries or safe havens around the city. Humanitarian organizations, both governmental and non-governmental will be encouraged to construct protected camps. The population within the city would be encouraged to leave and coalition forces would freely allow refugees passage through the cordon to the relative security and safety of the camps.

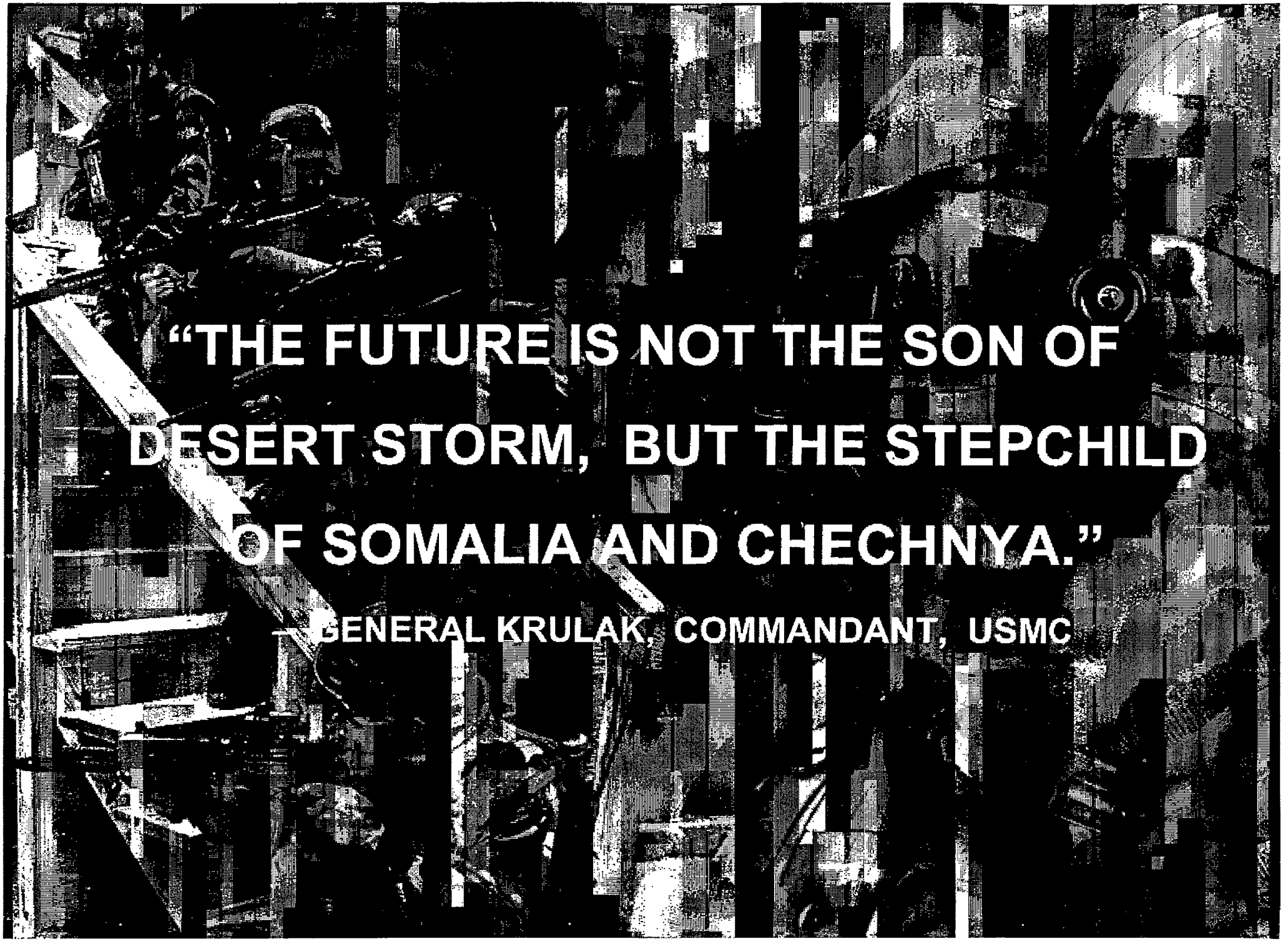
For those who stay, the isolation of the city will in time create a refugee problem for the enemy. With the ever-increasing depletion of resources, the remaining population will eventually see the government as an impotent entity that is incapable of providing basic services or providing for the welfare and security of the people. Inevitably, the military forces and their leaders will be seen, particularly among the dispossessed within the city, as the real enemy.

Although this approach has its advantages, this is not to suggest that it will always work. The following are key considerations before this approach is undertaken. How much popular support does the enemy have? How willing is the enemy's population to accept suffering? To what extent is

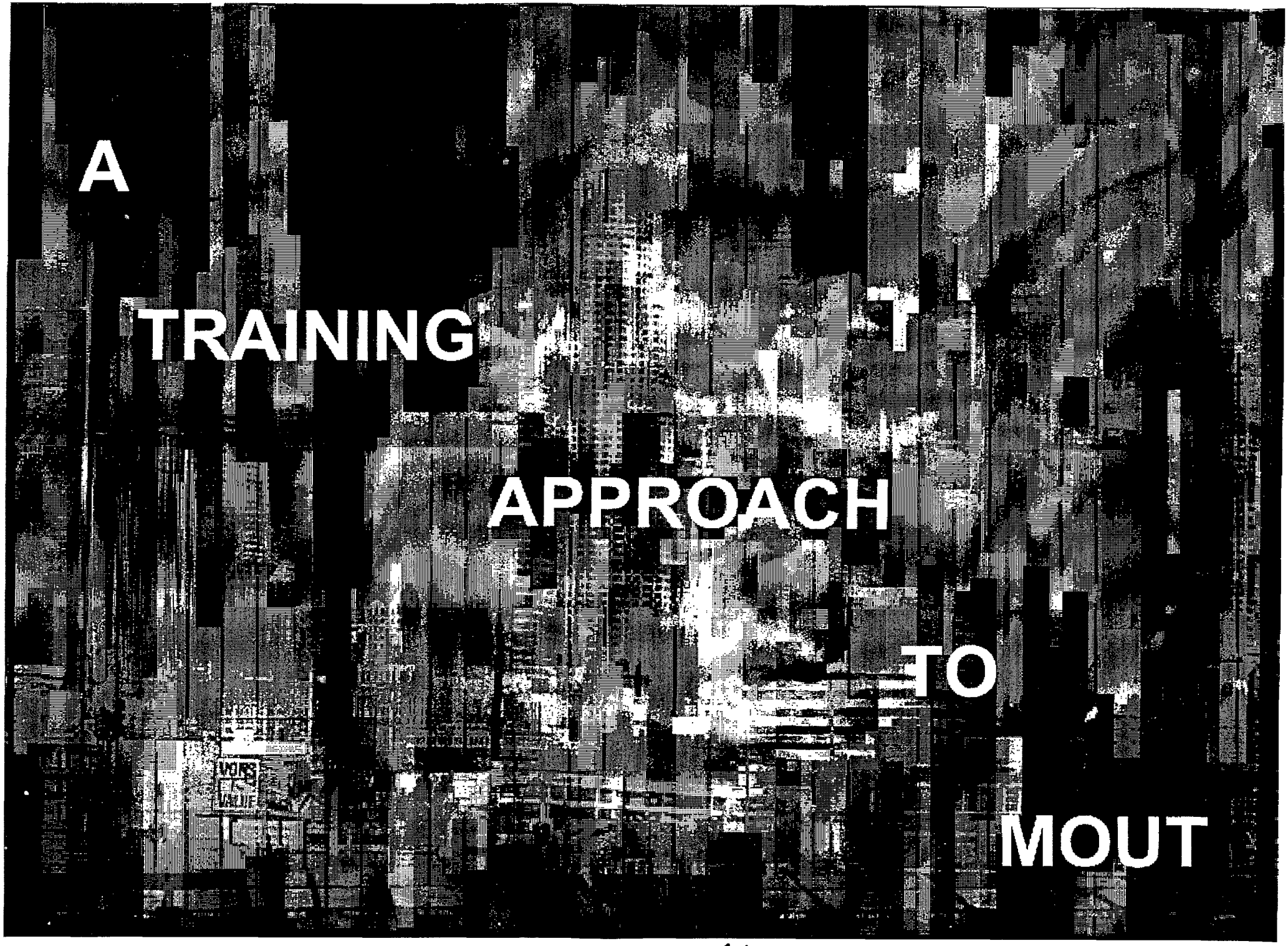
the city self-sustaining and for how long? Is there some sanctuary nearby that will allow forces to rest and recuperate in safety? To what extent are we relying on a coalition and how strong is the coalition? How coherent were the enemy's military forces when they occupied the city? How close was the city to collapse before the initiation of military operations?

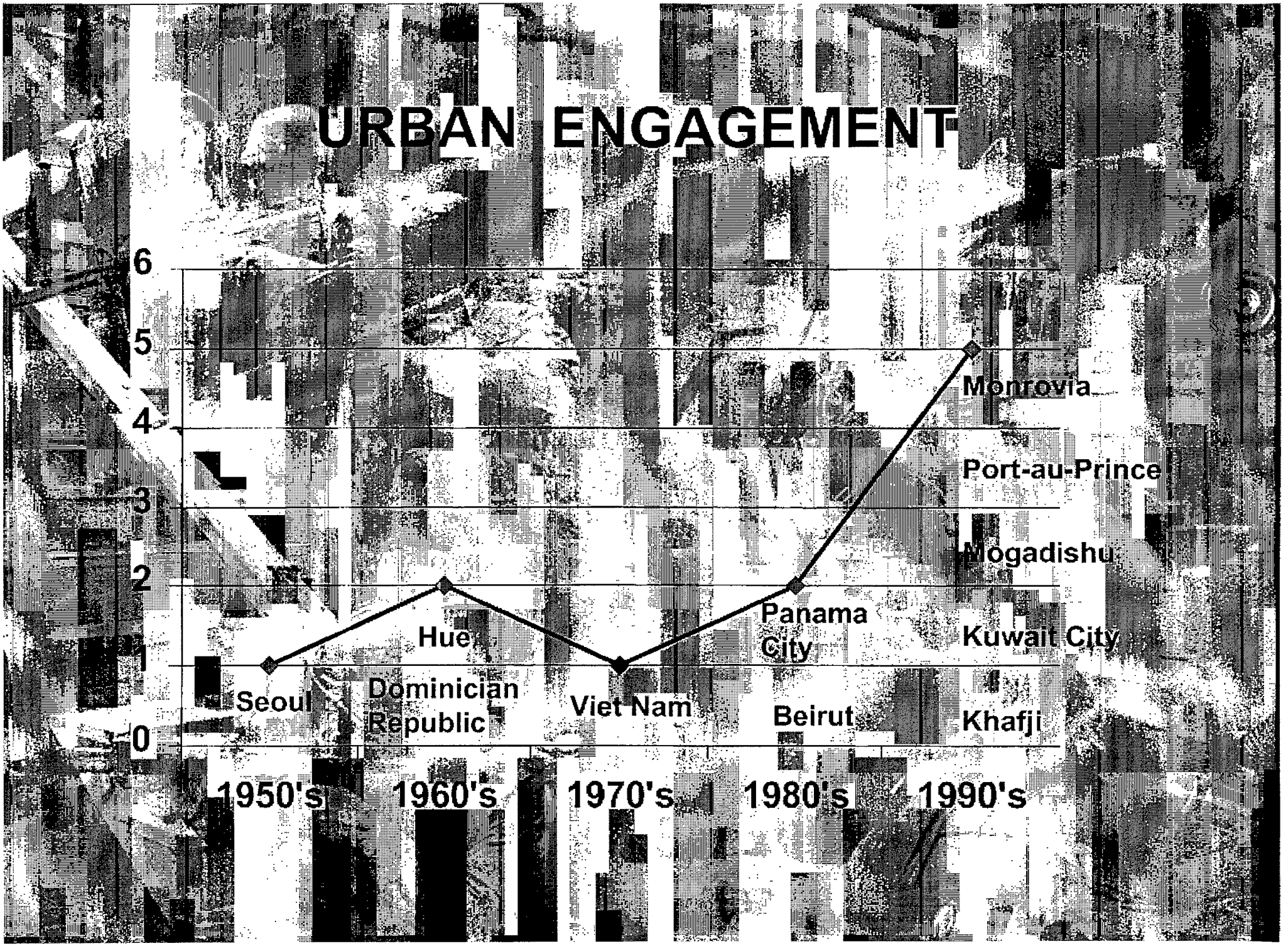
Future conditions will force us to fight in complex terrain. We can no longer fight the destructive campaigns of World War Two. The indirect approach enables us to use future knowledge and speed technology to its fullest potential and to achieve our strategic ends with the least cost in terms of human life and the destruction of physical property.

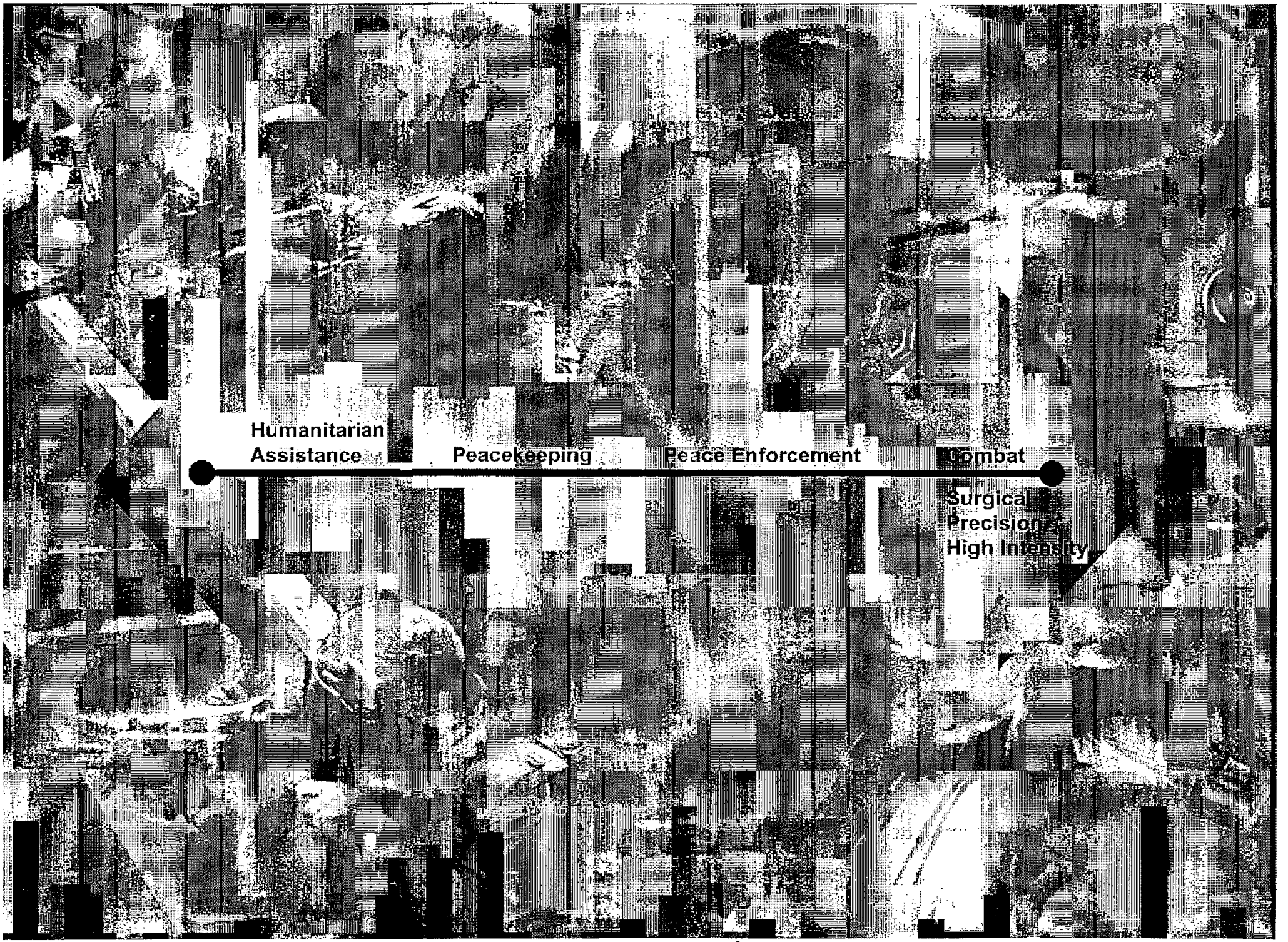

TRAINING
for
MOUT

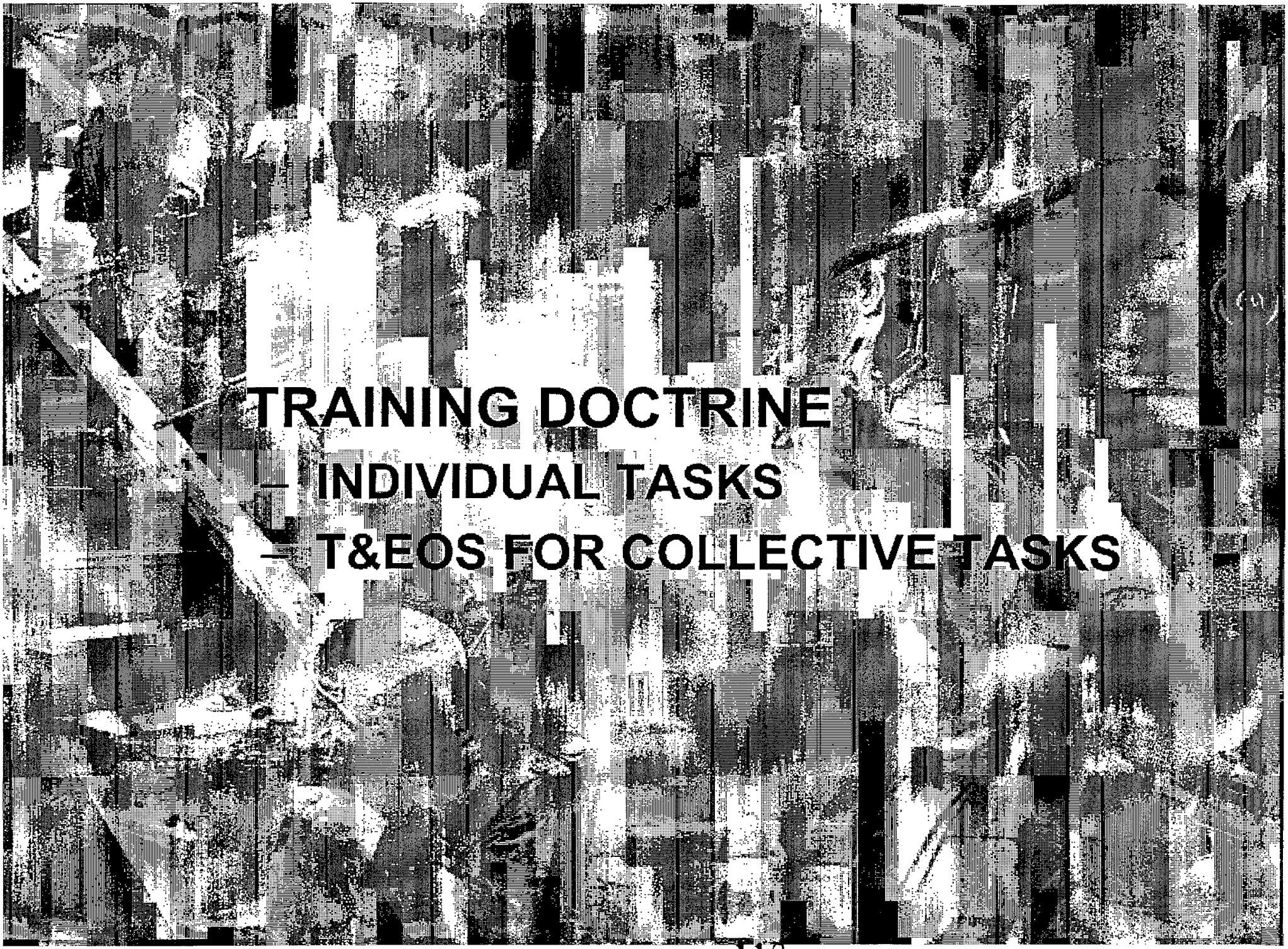

"THE FUTURE IS NOT THE SON OF DESERT STORM, BUT THE STEPCHILD OF SOMALIA AND CHECHNYA."
—GENERAL KRULAK, COMMANDANT, USMC


Roger Hewitt
Omega Training Group, Inc.
Vice President

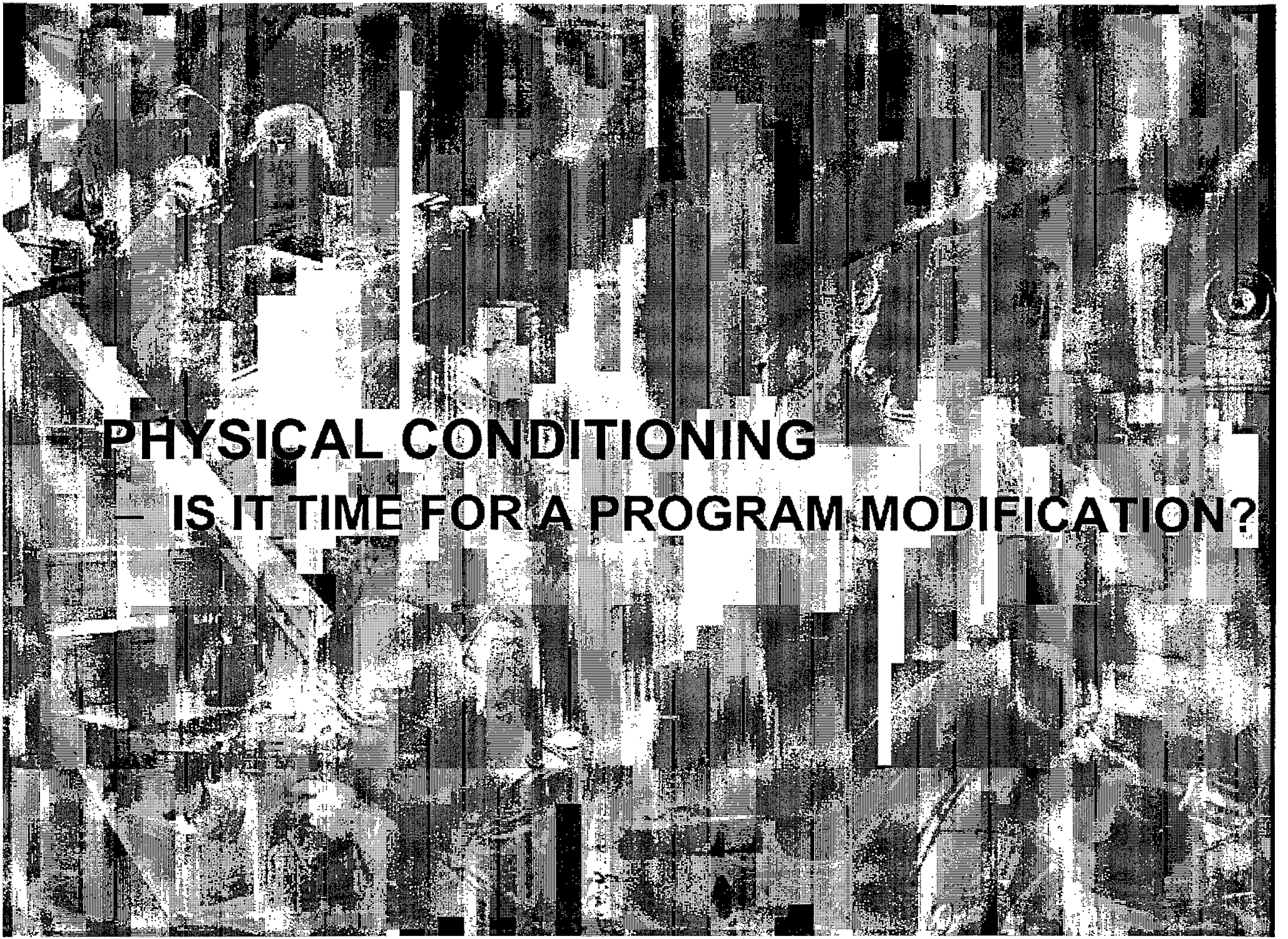

A
TRAINING
APPROACH
TO
MOUT


URBAN ENGAGEMENT
6
5
4
3
2
1
0
Monrovia
Port-au-Prince
Mogadishu
Kuwait City
Khafji
Panama City
Hue
Seoul
Dominician Republic
Viet Nam
Beirut
1950's
1960's
1970's
1980's
1990's


Humanitarian
Assistance
Peacekeeping
Peace Enforcement
Combat
Surgical
Precision
High Intensity


TRAINING DOCTRINE
– INDIVIDUAL TASKS
– T&EOS FOR COLLECTIVE TASKS

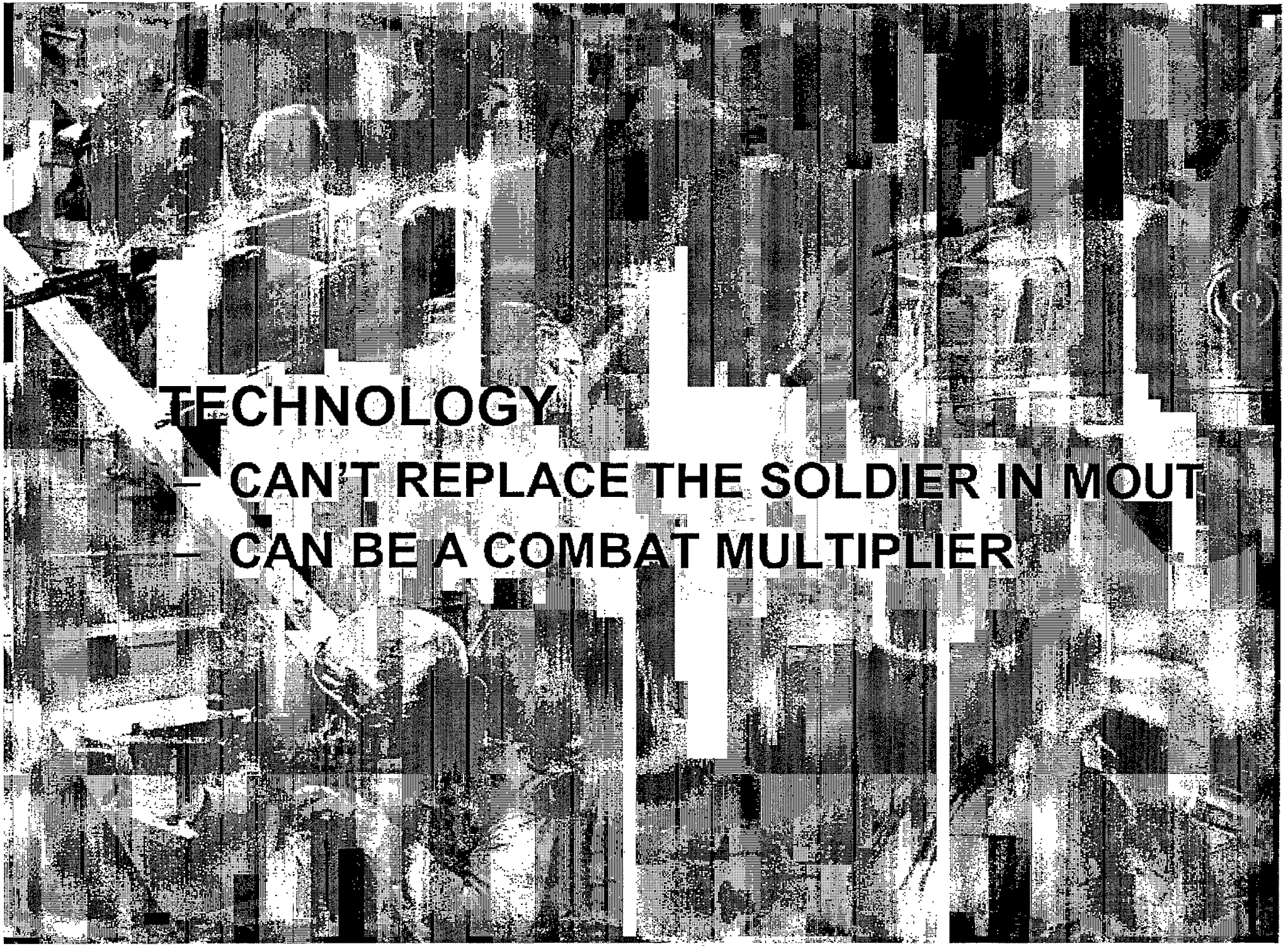

SOLDIER TRAINING
– PHYSICALLY CHALLENGING
– REPETITIVE
– LIVE FIRE
– DEMOLITIONS
– MARKSMANSHIP

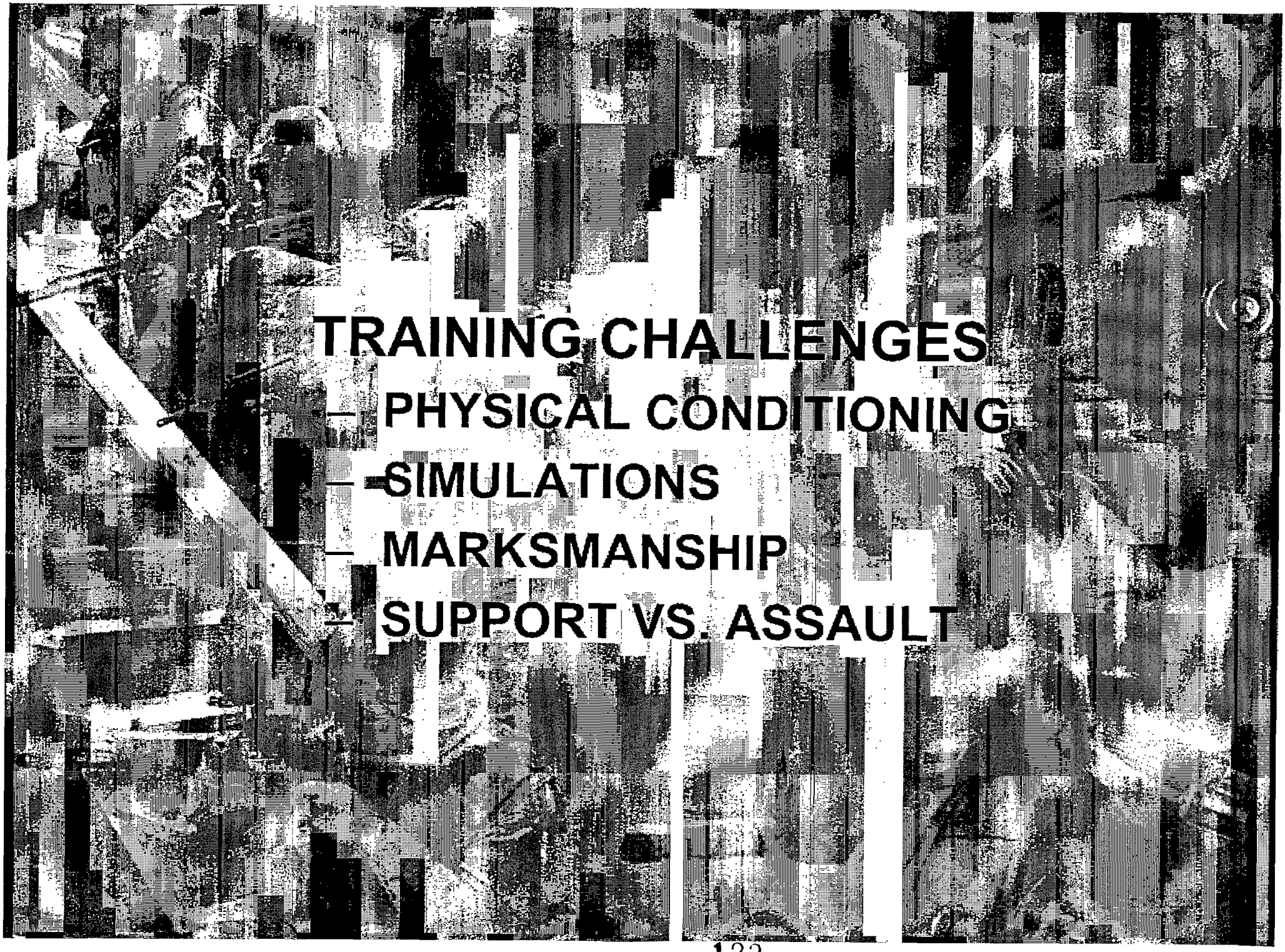

PHYSICAL CONDITIONING
— IS IT TIME FOR A PROGRAM MODIFICATION?


LEADER TRAINING
– TEWTS
– REHEARSALS
– SIMULATIONS


SIMULATIONS
LIMITATIONS
CAPABILITIES


SUPPORT VS. ASSAULT
– LOGISTICS
– CASEVAC
– CIVILIANS


TECHNOLOGY
– CAN'T REPLACE THE SOLDIER IN MOUT
– CAN BE A COMBAT MULTIPLIER


TRAINING CHALLENGES
– PHYSICAL CONDITIONING
– SIMULATIONS
– MARKSMANSHIP
– SUPPORT VS. ASSAULT


DOCTRINE CHALLENGES
– THE TRUTH IS OUT THERE

SLIDE 1 - COVER SLIDE

Roger Hewett

NO WORDS, LEAVE IT ON UNTIL I BEGIN TO SPEAK.

SLIDE 2 – KRULAK QUOTE

GENERAL KRULAK IS ABSOLUTELY CORRECT. THE PRECEDENCE FOR MOUT BATTLES OF THE FUTURE HAVE UNDERPINNINGS FROM SOMALIA AND CHECHNYA. BUT ALSO FROM PANAMA CITY AND BOSNIA. LET'S START WITH A REAL BASIC FACT. PEOPLE ARE MOVING TO THE CITIES. THEY HAVE BEEN EVER SINCE IRVING BERLIN ASKED HOW YOU WERE GOING TO KEEP THEM DOWN ON THE FARM. ACCORDING TO SOME SOURCES, 160,000 PEOPLE A DAY -- OR SO -- MOVE INTO URBAN AREAS.

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THE DEFENSE SCIENCE BOARD STUDIES INDICATE THE RAPID GROWTH OF URBAN CENTERS IN SIZE AND NUMBER -- ESPECIALLY IN POLITICALLY UNSTABLE REGIONS -- INCREASE THE LIKELIHOOD US FORCES WILL BE CALLED ON TO CONDUCT MOUT. THEY ALSO REPORTED THAT LIGHT INFANTRY FORCES RECEIVED RELATIVELY LITTLE ATTENTION AND RESOURCES AND HAVE NOT CHANGED MUCH IN DECADES; BUT -- AND THIS IS A BIG BUT -- HAVE GREAT POTENTIAL FOR ENHANCEMENT WITH NEW TACTICS AND NEW TECHNOLOGY.

SLIDE 3 – ROGER HEWITT AND OMEGA

GOOD AFTERNOON, DISTINGUISHED GUESTS, LADIES AND GENTLEMEN. AS YOU KNOW FROM THE INTRODUCTION, MY NAME IS ROGER HEWITT FROM OMEGA TRAINING GROUP, INC. IN COLUMBUS, GA, A SMALL BUSINESS FORMED BY COLONEL RAY KAUFFMAN AND MYSELF IN 1990. THE COMPANY HAS GROWN FROM TWO TO FIFTY-FIVE PEOPLE IN NINE YEARS. OVER 97% OF OUR PEOPLE HAVE MILITARY EXPERIENCE, AND MOST OF WHICH ARE RETIRED MILITARY MEMBERS FROM THE INFANTRY OR SPECIAL FORCES. OMEGA ORIENTS ITSELF PRINCIPALLY ON TRAINING AND DOCTRINE FOR THE ARMY TODAY, TOMORROW, AND THE DAY AFTER THAT. CURRENTLY, OMEGA HAS 33 PEOPLE WRITING DOCTRINE FOR INFANTRY FORCES. OF THESE, EIGHT (8) HAVE BEEN INVOLVED IN THE MOUT ACTD FOR THE PAST 16 MONTHS ASSESSING BASELINE DOCTRINE AND INTEGRATING TECHNOLOGY INTO EXPERIMENTAL HANDBOOKS FOR THE ARMY AND THE MARINE CORPS NOT JUST AS THEY ARE TODAY BUT AS THEY PREPARE TO ORGANIZE AND FIGHT FOR THE FUTURE. IN OTHER WORDS, WE LOOK FOR THE MILITARY UTILITY OF TECHNOLOGY AND DEVELOP THE TRAINING, TECHNIQUES, AND PROCEDURES FOR THE TECHNOLOGY BEING EVALUATED BY THE DISMOUNTED BATTLESPACE BATTLE LAB AND THE MARINE CORPS WARFIGHTING LAB FOR USE IN MOUT OPERATIONS BY GROUND FORCES.

SLIDE 4 – A TRAINING APPROACH TO MOUT

NOW LET ME TELL YOU WHY I'M HERE. I'M AN INFANTRYMAN, AND I SPENT MY WHOLE CAREER PREPARING INFANTRYMEN AND OTHER SOLDIERS FOR BATTLE. THE COMMANDANT OF THE MARINE CORPS AND OTHERS HAVE TOLD US THAT MUCH OF THE FUTURE WAR IS GOING TO BE FOUGHT IN CITIES -- MILITARY OPERATIONS IN URBANIZED TERRAIN. I AGREE, AND I BELIEVE THE SPECIAL OPERATIONS FORCES -- MOST OF YOU GUYS -- ARE EQUAL TO THAT TASK. BUT YOU'RE NOT THE ONLY ONES. WHAT YOU HEAR TODAY IN MY BRIEFINGS AND OTHERS NEED TO BE TAKEN BACK TO THE WHOLE FORCE -- ALL YOUR BRETHREN WHO CARRY PACKS AND TOTE RIFLES AND, TO BORROW A PHRASE, "SUPPORT AND DEFEND THE CONSTITUTION."

SO I'M HERE TO TALK ABOUT MOUT TRAINING AND REGISTER MY CONCERNS ABOUT HOW WE NOT ONLY TRAIN FOR THE MOUT BATTLE BUT TALK TO AND IDENTIFY THE CHALLENGES WE NEED TO MEET TO BE SUCCESSFUL IN THE FIRST MOUT BATTLE OF THE NEXT CONFLICT. THAT MEANS A LOT OF DIFFERENT THINGS AND I'LL HIT MUCH OF THAT LATER IN THIS BRIEFING. BUT UP FRONT WE -- COLLECTIVELY -- NEED TO UNDERSTAND ONE THING. MOUT BATTLES ARE INTENSE -- REAL INTENSE. THEY REQUIRE EVERYTHING SOLDIERS HAVE, AND THAT MEANS SOLDIERS WHO ARE EQUAL TO THE CHALLENGE THEY FACE -- MENTALLY AND

PHYSICALLY TOUGH ENOUGH TO ACCOMPLISH COMBAT IN URBAN TERRAIN.

SLIDE 5 – URBANIZED ENGAGEMENT GRAPHIC

US GROUND FORCES -- BEHIND AND AHEAD OF THE FORCE BEACHHEAD LINE -- ARE GETTING INVOLVED IN URBAN CONFLICT -- SOMALIA, GRENADA, PANAMA CITY, AND BOSNIA TO NAME JUST A FEW. GIVEN THE CURRENT WORLD SITUATION, THAT TREND IS LIKELY NOT SIMPLY TO CONTINUE, BUT TO CONTINUE TO GROW.

WE AREN'T TRAINED FOR THAT VERY WELL. MOST OF OUR TRAINING IN ALL SERVICES -- AT LEAST IN WHAT MIGHT BE CALLED THE "REGULAR" GROUND COMMUNITY -- OVER THE PAST SEVERAL DECADES HAS BEEN ORIENTED ON THE FULDA GAP MODEL AND ON THE DESERT STORM MODEL. THAT NEEDS TO SHIFT -- AND IT NEEDS TO SHIFT NOW. THE WORLD IS EVOLVING RAPIDLY INTO A PLACE WHERE NOT ONLY SPECIAL OPERATIONS FORCES OF ALL SERVICES BUT REGULAR FORCES OF ALL SERVICES -- LIGHT INFANTRY AND MARINE AMPHIBIOUS UNITS ALIKE -- WILL BE INVOLVED IN THE MOUT BATTLE. AND THEY NEED TO BE TRAINED FOR IT.

THE PROBLEM IS THAT SPECIAL OPERATIONS FORCES ARE BETTER PREPARED BY DOCTRINE, TRAINING, AND ORGANIZATION FOR MOUT. BUT THAT'S A SITUATION WHICH IS GOING TO CHANGE

SLIDE 6 – SPECTRUM OF OPERATIONS ARROW

LET'S REVIEW THE BIDDING FOR A MOMENT AND MAKE SURE WE'RE ALL SINGING TOGETHER (AND TRUST ME, YOU DON'T WANT TO HEAR ME SING ALONE). THIS CHART DEPICTS THE SPECTRUM OF OPERATIONS THAT CAN LEAD US TO MOUT OPERATIONS, BUT THE ONE THAT I WILL TALK ABOUT IS COMBAT. THE TERMS THAT ARE IMPORTANT ARE:

HIGH INTENSITY MOUT. COMBAT ACTIONS AGAINST A DETERMINED ENEMY OCCUPYING PREPARED POSITIONS OR CONDUCTING PLANNED ATTACKS IN AN URBAN CONFLICT SITUATION. THIS IS THE KIND OF COMBAT YOU MIGHT HAVE EXPERIENCED IN STALINGRAD -- OR GROZNY.

PRECISION MOUT. COMBAT ACTIONS WHEN THE ENEMY FORCES ARE INTERMINGLED WITH NONCOMBATANTS OR POLITICAL CONSIDERATIONS REQUIRE THE RULES OF ENGAGEMENT BE RESTRICTED -- SEVERELY. YOU MIGHT HAVE EXPERIENCED THIS KIND OF COMBAT IN MOGADISHU -- OR PANAMA CITY.

SURGICAL MOUT. COMBAT ACTIONS UNDER SPECIAL PURPOSE CONDITIONS TO ACHIEVE A LIMITED OBJECTIVE SUCH AS HOSTAGE RESCUE, RAIDS, OR OTHER SPECIALIZED ACTIONS. SURGICAL MOUT IS ALMOST EXCLUSIVELY THE PURVIEW OF HIGHLY TRAINED SPECIAL OPERATIONS FORCES. THIS IS THE KIND OF COMBAT WE ATTEMPTED IN DESERT ONE AND YOU MAY HAVE SEEN IN UGANDA.

WE HAVE A PROBLEM. OUR DOCTRINE IS NOT FULLY DEVELOPED TO ADDRESS THE FULL SPECTRUM OF THESE OPERATIONS. HOWEVER, THIS IS CHANGING AS WE SPEAK. MAJOR GENERAL CARL ERNST HAS TAKEN THE INITIATIVE AND IS BEING SUPPORTED BY GENERAL ABRAMS AT TRADOC. I WILL TALK A LITTLE BIT MORE ABOUT THAT LATER.

SLIDE 7 – TRAINING DOCTRINE

OUR DOCTRINE DOES NOT ADDRESS MOUT VERY WELL -- WHETHER IN THE FIELD MANUALS COVERING PLATOON, COMPANY, OR BATTALION OPERATIONS FOR THE ARMY OR THE FLEET MARINE FORCE. THE MISSION TRAINING PLANS OF THE ARMY TRAINING AND EVALUATION PROGRAMS DON'T HELP THE LEADERS PREPARE THEIR SOLDIERS FOR MOUT VERY WELL.

OUR TRAINING HAS NOT ADDRESSED MOUT VERY WELL. IN FACT, VERY FEW UNITS LIST MOUT ON THEIR MISSION ESSENTIAL TASK LIST. HOWEVER, OVER THE PAST SIX MONTHS THERE HAS BEEN A NEW DIRECTION AND EMPHASIS ON MOUT IN THE UNIT METL.

SO MOUT GETS SHORT SHRIFT IN WHAT WE WRITE, WHAT WE SAY, AND WHAT WE TRAIN. BUT AS WE SPEAK, THESE SHORTCOMINGS ARE BEING ADDRESSED WITH UPDATED DOCTRINE AND MISSION TRAINING PLANS. NEW TACTICS, TECHNIQUES, AND PROCEDURES ARE BEING DEVELOPED AND EXPERIMENTED WITH.

SLIDE 8 – SOLDIER TRAINING

MOUT POSES OUR SOLDIERS AND UNITS SOME DRAMATIC TRAINING OPPORTUNITIES AND SOME EQUALLY DRAMATIC TRAINING CHALLENGES. MOUT TRAINING MUST BE BASED ON SOME VERY BASIC PRINCIPLES. THEY ARE:

MOUT IS PHYSICAL. OUR SOLDIERS MUST BE PHYSICALLY AND MENTALLY TOUGH -- EQUAL TO THE INTENSITY THEY WILL FACE IN A HIGH INTENSITY OR PRECISION MOUT OPERATION.

MOUT SKILLS ARE PERISHABLE. THE SKILLS SOLDIERS AND UNITS EXERCISE IN MOUT SUCH AS CREATING FIRING PORTS, MAKING MOUSEHOLES, AND THINKING IN A MULTI-DIMENSIONAL ENVIRONMENT (SURFACE, ABOVE SURFACE, AND SUB-SURFACE) MUST BE TRAINED -- AND TRAINED AGAIN -- AND AGAIN -- AND AGAIN. AS SIMPLY ONE EXAMPLE AMONG MANY, THERE AREN'T ENOUGH ENGINEERS IN THE INVENTORY TO CONDUCT BREACHING OPERATIONS. EXAGGERATING ONLY SLIGHTLY, EVERY SOLDIER IN EVERY UNIT MUST BE TRAINED TO USE DEMOLITIONS EFFECTIVELY -- AT LEAST AS FAR AS BREACHING OPERATIONS ARE CONCERNED IN MOUT.

MOUT IS CLAUSTROPHOBIC. FIRING OCCURS IN ENCLOSED SPACES AT SHORT DISTANCES, NOT AT 400 METERS ON AN OPEN RANGE FAN. ENGAGING TARGETS IN CLOSE PROXIMITY IS A DAUNTING TASK AND OUR SOLDIERS NEED TO BE TRAINED TO DO IT – REPETITIVELY. CLOSE ORDER MARKSMANSHIP NEEDS TO BE A PART OF OUR MARKSMANSHIP PROGRAMS. WE ARE GETTING THERE, BUT MORE RESOURCES WILL HAVE TO BE MADE AVAILABLE.

SLIDE 9 – PHYSICAL CONDITIONING

LET ME TALK FOR A MOMENT ABOUT THE PHYSICAL PART OF MOUT AS COMPARED TO THE PHYSICAL CONDITIONING STANDARDS OF OUR SERVICES. THE ARMY AND THE MARINE CORPS BASE OUR PHYSICAL TESTING STANDARDS ON AEROBIC ABILITIES -- PUSHUPS, SIT-UPS, AND A 2 MILE RUN IN THE ARMY; PULLUPS, SITUPS, AND A 3 MILE RUN FOR THE MARINE CORPS.

THAT'S NOT ENOUGH BECAUSE IT DOESN'T ADDRESS THE MOUT ENVIRONMENT VERY WELL. MOUT DOES **NOT** REQUIRE THE ABILITY TO RUN TWO OR THREE MILES. IT DOES REQUIRE THE ABILITY TO SPRINT 25 METERS IN FULL COMBAT GEAR -- AND SPRINT ANOTHER 25 METERS AND ANOTHER AND ANOTHER – AND SPRINT UP STAIRS -- NOT ALL AT ONE TIME BUT ALL IN A SEQUENCE AND ALL IN A HIGH STRESS SITUATION. AT THE SAME TIME, MOUT REQUIRES SOLDIERS AND MARINES GET TO THE SECOND OR HIGHER FLOOR OF A BUILDING WITH THEIR COMBAT GEAR AND FOCUS INTACT. SOME EXPERIMENTS RECENTLY HAVE INDICATED OVER 50% OF OUR SOLDIERS AND MARINES EITHER COULD NOT GET TO THE SECOND FLOOR USING GRAPPLING HOOKS, OR, IF THEY COULD GET THERE, COULDN'T DO THE JOB -- COULDN'T PERFORM THE PHYSICALLY INTENSE MISSION OF CLEARING A BUILDING FLOOR BY FLOOR AND ROOM BY ROOM.

WE NEED TO REEXAMINE OUR PHYSICAL TRAINING AND CONDITIONING PROGRAM AND ADD IN UPPER BODY STRENGTH AND ANAEROBIC/ISOMETRIC TRAINING -- AND CONTINUE WITH OUR EMPHASIS ON AEROBIC PHYSICAL CONDITIONING AS WELL. DON'T TAKE ME WRONG, THE SOLDIERS AND MARINES OF TODAY'S INFANTRY FORCES ARE PROBABLY THE BEST CONDITIONED THAT I HAVE EVER SEEN OVER THE LAST 35 YEARS. WE JUST NEED TO ADD SOME EMPHASIS IN THE ANEROBIC AREA.

SLIDE 10 – LEADERS TRAINING

I RECOGNIZE MOUT TRAINING IS CHALLENGING. WE DON'T HAVE WHAT YOU WOULD CALL WORLD CLASS FACILITIES FOR TRAINING MOUT. THE INSTRUMENTATION SYSTEMS NEEDED IN OUR MOUT TRAINING SITES ARE FOR THE MOST PART NON-EXISTENT. SURE WE HAVE THE CTCS AND PLENTY OF MONEY HAS BEEN SPENT ON THE INSTRUMENTATION IN THOSE LOCATIONS TO PROVIDE THE REALISM AND FEEDBACK WE NEED TO EVALUATE OUR MOUT TRAINING POSTURE, BUT THE HOME STATION MOUT SITES HAVE LITTLE OR NO INSTRUMENTATION THAT ALLOWS PREPARATION FOR THE MOUT BATTLES AT THE CTCS OR THE NEXT REAL BATTLE. IT IS TIME FOR THE SERVICES TO PONY UP THE DOLLARS TO ACQUIRE A STANDARD HOME STATION INSTRUMENTATION PACKAGES THAT WILL PERMIT TRAINING TO STANDARD BEFORE GOING TO THE CTCS OR TO WAR. WE NEED SYSTEMS THAT WILL ALLOW US TO MEASURE PERFORMANCE AGAINST A STANDARD OR PREVIOUS PERFORMANCE. JUST AS IMPORTANT IS THE TASK OF TRAINING LEADERS. OUR TRAINING PROGRAMS AND DOCTRINE NEED TO CHALLENGE THE LEADERS TO THINK ABOUT THE ENTIRE BATTLE SPACE. SOME EXAMPLES ARE LISTED ON THIS SLIDE. OTHERS, INCLUDING TERRAIN WALKS – WHICH MIGHT BE CALLED BUILDING WALKS IN THIS SITUATION -- HAVE BEEN COVERED IN A RECENT ARMY TIMES ARTICLE IN A TECHNIQUE CALLED MANGUDAI -- WHAT

GENGHIS KHAN AND SOME OF HIS NEARER DISCIPLES CALL THEIR OFFICER PROFESSIONAL DEVELOPMENT.

IN 1983, WE IN THE BERLIN BRIGADE BEGAN USING COMPUTERS TO TRAIN OUR LEADERS FOR THEIR MOUT MISSIONS. EACH PAYDAY WE GATHERED AT THE SIMULATIONS CENTER TO NAVIGATE MODELS OF KEY BUILDINGS IN OUR SECTORS. THIS EARLY RENDITION OF MISSION REHEARSAL SIMULATION WAS USED TO DISCUSS HOW AND WHERE WE WOULD CONTROL THE FIGHT. WE DID THIS ON THE FIRST APPLE COMPUTERS. WHERE ARE WE TODAY WITH THE SIMULATION TOOLS TO DO THIS? WE CAN CERTAINLY DO IT FASTER AND WITH FAR MORE RESOLUTION THAN WE COULD IN THOSE DAYS, BUT THE FACT IS THE SERVICES HAVE NOT REQUIRED MUCH MORE THAN WHAT WE HAD IN 1983. OUR DISTINGUISHED PANELIST, MISS CAROL FITZGERALD, HADTHE MOUT ACTD LOOK AT SOME, BUT THEY DID NOT PROVIDE THE RESULTS THAT WE WOULD HAVE LIKED TO HAVE. THE REQUIREMENTS FOR SUCH A LEADER TOOL HAS BEEN SLOW IN BEING DEVELOPED. OUR LEADERS IN THE ARMY AND MARINE CORPS NEED THESE TYPES OF TOOLS TO DO THEIR JOBS MORE EFFICIENTLY AND EFFECTIVELY. REQUIREMENTS AND DOLLARS FOR THESE TOOLS NEED TO BE A PRIORITY.

THE POINT IS, OUR FIGHTERS AND LEADERS NEED TRAINING IN ALL ASPECTS OF MOUT AND THEY NEED THE TOOLS TO DO IT WITH.

SLIDE 11 - SIMULATIONS

EARLIER I TALKED ABOUT THE INTEGRATION OF TECHNOLOGY AND DOCTRINE. ONE AREA WHERE THAT IS RAMPANT IS IN SIMULATIONS. AS WE ALL KNOW, SIMULATIONS FOR MOUNTED WARFARE HAVE BEEN AROUND FOR OVER 10 YEARS NOW. EACH ITERATION OF DEVELOPMENT BRINGS US LESS LIMITATIONS, MORE REALISM, AND BETTER AND MORE ACCURATE FEEDBACK. HOWEVER, THE INDIVIDUAL COMBATANT VIRTUAL SIMULATIONS DO NOT GET THE PRIORITIES THEY NEED TO BE A MEANINGFUL TRAINING TOOL FOR LEADERS AND FIGHTERS. THERE ARE MANY INITIATIVES FOR THE INDIVIDUAL COMBATANT AND THEY HAVE BEEN TESTED. DETAILED REQUIREMENTS HAVE BEEN PREPARED BASED ON THESE EXPERIMENTS BUT INDECIVENESS AND LACK OF ACTION HAVE ALLOWED THE POTENTIAL INDIVIDUAL SIMULATIONS TO LANGOR IN THE TEST BED. THE CAPABILITIES REQUIRED TO BRING HIGH FIDELITY INDIVIDUAL COMBAT SIMULATIONS TO OUR SOLDIERS EXIST, BUT DECISION MAKERS AND RESOURCERS IN THE SERVICES NEED TO DECIDE HOW TO GO AND MAKE THE DOLLARS AVAILABLE.

OMEGA IS WORKING WITH THE ARMY ON THE NEXT GENERATION OF WEAPONS SIMULATION TRAINING THROUGH THE ENGAGEMENT SKILLS TRAINER -- OR EST – THIS TRAINER WILL HELP US ACHIEVE SOME OF THE

SKILLS REQUIRED TO FIGHT AND WIN ON THE NEXT MOUT BATTLEFIELD. THIS IS JUST ONE INITIATIVE. OUR FIGHTERS AND LEADERS DESERVE MORE. IN A TIME WHEN RESOURCES ARE BECOMING LESS AND MORE COSTLY, IT IS TIME TO MAKE THE SUNK COST INVESTMENT FOR INDIVIDUAL COMBATANT SIMULATIONS AND SUPPORT THE TACTICAL TRAINING OF OUR SOLDIER, MARINES, SAILORS, AND AIRMEN. I CERTAINLY AM NOT ADVOCATING SIMULATIONS TO REPLACE LIVE TRAINING – WE SHOULD NEVER ALLOW THAT TO HAPPEN – I AM HOWEVER CALLING FOR THOSE WHOSE COURT THE BALL IS IN TO MAKE THE COMMITMENT TO GETTING THE INDIVIDUAL COMBATANT SIMULATIONS OUT OF THE TEST BED AND INTO DEVELOPMENT.

SLIDE 12 – SUPPORT VS. ASSAULT

MOUT HAS SOME ADDITIONAL DIFFICULTIES -- MOST OF WHICH ARE SUPPORT RELATED. YOU KNOW, WE TRAIN OUR ASSAULT FORCES PRETTY WELL. THAT'S STILL A PROBLEM, BUT IT'S ONE WE CAN GET OUR HANDS AROUND.

I WANT TO TALK ABOUT SUPPORT AND TRAINING. MOUT IS SUPPORT INTENSIVE. ACCORDING TO THE FIGURES COMING OUT OF WORLD WAR II, KOREA, AND THE MORE RECENT MOUT BATTLES, MOUT IS AMMUNITION INTENSIVE -- USING TWO TO THREE TIMES THE AMOUNT ANY SIMILARLY SIZED FORCE MIGHT USE IN OPEN TERRAIN. CLASS V IS NOT THE ONLY DIFFICULTY. MOUT TENDS TO BE MATERIALS INTENSIVE -- REQUIRING LARGER AMOUNTS OF CLASS IV THAN THE SAME FORCE WOULD REQUIRE IN OPEN TERRAIN. WHAT I OBSERVE AND READ FROM REPORTS AND CALL, WE DON'T REQUIRE THE LOGISTICS TEMPO IN TRAINING THAT EQUALS THE TEMPO IN COMBAT. IN TRAINING, FOR THE MOST PART, OUR LEADERS FAIL TO ACHIEVE THE LOGISTICAL REALISM THAT IS A MAJOR FACTOR IN OUR SUCCESS IN ANY BATTLE OR WAR. LADIIES AND GENTLEMENT, LOGISTICS SUPPORT IS AS IMPORTANT TO WINNING AS THE TACTICS. IT DEMANDS WE TRAIN IT TO STANDARD.

AND THOSE AREN'T THE ONLY PROBLEMS. MOUT TENDS TO DEAL IN CITIES AND, BY AND LARGE, PEOPLE DWELL IN CITIES -- CIVILIAN PEOPLE. OUR SOLDIERS MUST BE TRAINED TO DEAL WITH THE NON-COMBATANT CIVILIANS THEY WILL FIND IN MOUT OPERATIONS INCLUDING THOSE INSTANCES, SUCH AS OUR SOLDIERS ENCOUNTERED IN MOGADISHU, WHEN CIVILIANS BECOME PART OF THE BATTLEFIELD. THEY MUST BE INTEGRATED INTO THE EVACUATION, EPW, AND CIVIL-MILITARY PLANS THAT ARE AN INTEGRAL PART OF MOUT. I HAVE SEEN THE SPECIAL OPERATIONS UNITS IN ACTION. THEY DO MOST ALL OF THIS VERY WELL. THE TACTICS, TECHNIQUES, AND PROCEDURES THAT THEY HAVE DEVELOPED TO ACHIEVE THIS SUCCESS MUST BE SHARED WITH THE REST OF OUR FIGHTING FORCES. THIS NEEDS TO BE A PUSH SYSTEM NOT A PULL SYSTEM. SHARING OF WHAT WORKS AND WHAT DOES NOT IS IMPORTANT. IT MAY SAVE A SOLDIER OR MARINE'S LIFE. AND THAT IS VERY IMPORTANT TO EACH OF US.

SLIDE 13 - TECHNOLOGY

I'VE TALKED A LOT ABOUT MOUT AND WHAT SOLDIERS CAN DO. AND LET'S FACE IT. THE SOLDIER'S JOB IN MOUT IS LIKE THE SOLDIERS JOB EVERYWHERE ELSE. WE ARE CHARGED WITH CLOSING WITH AND DESTROYING THE ENEMY. THAT VERY BASIC DEFINITION DOESN'T TALK ABOUT OFFENSIVE OR DEFENSIVE MOUT OPERATIONS -- AND WE HAVE ENCOUNTERED AND WILL ENCOUNTER BOTH. IT SIMPLY SAYS THAT THERE WILL BE SOLDIERS ON THE GROUND DOING THINGS SOLDIERS HAVE ALWAYS DONE WHEN THEY GO IN HARM'S WAY. THAT'S NOT TO SAY TECHNOLOGY CAN'T HELP. IT CAN -- NOT TO REPLACE THE COMBAT SOLDIER -- THE GUY ON THE GROUND WITH THE GUN -- BUT TO AUGMENT AND ENHANCE HIS CAPABILITIES -- TO MAKE THE COMBAT SOLDIER MORE EFFECTIVE IN MOUT OPERATIONS -- GETTING THE RIGHT JOB DONE -- BUT TO MAKE THAT COMBAT SOLDIER -- YOUR SOLDIER -- MORE EFFICIENT -- GETTING THE JOB DONE RIGHT. THE MOUT ACTD IS DOING THIS VERY WELL. THE TECHNOLOGY THAT THE ACTD WILL BRING TO THE FORCE WILL BE A SIGNIFICANT COMBAT MULTIPLIER FOR THE FUTURE MOUT BATTLES.

SLIDE 14 – TRAINING CHALLENGES

IN OTHER WORDS, WE'VE GOT A JOB TO DO. AND THAT JOB IS INTEGRATING THE PHYSICAL CHALLENGES, THE EXISTING AND EMERGING SIMULATION OPPORTUNITIES, THE CLOSE-IN MARKSMANSHIP TRAINING, AND THE LOGISTICS SUPPORT INTO THE TRAINING AND OPERATIONAL REQUIREMENTS YOUR FIGHTERS AND LEADERS FACE EVERY DAY.

I WAS ABOUT TO SAY, "THE OPERATIONAL REQUIREMENTS OUR FIGHTERS AND LEADERS FACE" AND THEN REALIZED THAT WHILE THE STATEMENT MAY BE FACTUALLY TRUE, IT DOESN'T CARRY QUITE THE WEIGHT IT NEEDS TO, BECAUSE MY TIME AS A SOLDIER IS YESTERDAY'S TIME. IT'S YOUR SERVICEMAN AND WOMAN AND YOUR LEADERS WHO FACE THE CHALLENGE OF MOUT TODAY. ALL I CAN DO IS USE MY EXPERIENCE AND WHAT'S HAPPENING TODAY IN SIMULATIONS, MARKSMANSHIP TRAINING, AND THE INTERFACE BETWEEN THE FIGHTER AND TECHNOLOGY, TO MAKE THAT FIGHTER'S LIFE BETTER AND, MORE IMPORTANTLY, MORE SURVIVABLE -- IF YOU WILL, TO FIGHT AND WIN ON THE BATTLEFIELDS WE FACE NOW AND IN THE INCREASINGLY URBANIZED FUTURE.

SLIDE 15 – DOCTRINE CHALLENGE

THE EXPERIENCE IS OUT THERE. YOU ARE OUT THERE. THE COMMANDANT OF THE US ARMY INFANTRY SCHOOL HAS TAKEN AN IMPORTANT STEP IN BEGINNING TO GATHER TOGETHER, IN A COHERENT PACKAGE, THE COLLECTIVE WISDOM ABOUT MOUT THROUGH HIS MOUT WORKING GROUP. THE SPECIAL OPERATIONS FORCES COMMUNITIES OF THE ARMY, NAVY, AND MARINE CORPS HAVE DEVELOPED TRAINING IN TACTICS, TECHNIQUES, AND PROCEDURES ON MOUT THEY CAN SHARE WITH THE CONVENTIONAL GROUND FORCES OF ALL SERVICES. THOSE ARE IMPORTANT – CRITICAL – FIRST STEPS. THEY ARE NOT THE ONLY ONES. PLEASE SHARE, AND SHARE SOON, IS MY PLEA. ON THIS POINT I WOULD LIKE TO TAKE THE TIME TO THANK COLONEL STAN MCCHRYSTAL. HE AND HIS STAFF HAVE BEEN VERY COOPERATIVE IN TRYING TO HELP US WORK THROUGH THE MOUT DOCTRINE, TECHNIQUES, PROCEDURES, AND THE RANGER REGIMENT CLOSE ORDER MARKSMANSHIP PROGRAM. THANKS STAN.

WE CAN GET THE EXPERIENCES FROM OUR PRESENT AND FORMER SOLDIERS WHO HAVE EXPERIENCED MOUT COMBAT FIRST HAND AND WRITE THEM DOWN AND DISTILL THEIR WISDOM FOR ALL OUR SOLDIERS IN TRAINING TIPS. WE CAN DEVELOP SIMULATIONS AS REAL AS POSSIBLE.

AND WE CAN CONTINUE -- AS OMEGA TRAINING GROUP IS DOING WITH THE ARMY AND MARINE CORPS -- TO ASSIST IN THE INTEGRATING THE TECHNOLOGY AND THE FIGHTER AND TO DEVELOP THE SUPPORTING DOCTRINE OUR THEY AND THEIR LEADERS NEED AND REQUIRE.

AND TOGETHER, AS GENERAL THURMAN – ONE OF THE ARMY'S GREATEST GENERALS -- WAS SO FOND OF SAYING, "**WE**, CAN MAKE IT HAPPEN."

LADIES AND GENTLEMEN, I THANK YOU.



SO/LIC Symposium

17 February 1999

BGen Tim Donovan
Commanding General,
Marine Corps Warfighting
Laboratory

Concept Based Experimentation

"Future MOUT"

- Enhancing Operational Capabilities:
  - •C2 in Urban Terrain
  - •Mobility / Countermobility
  - •Measured Firepower
  - •Survivability
  - •Adaptability
  - •Sustainability
  - •Awareness

Urban Warrior AWE
12-18 March 1999

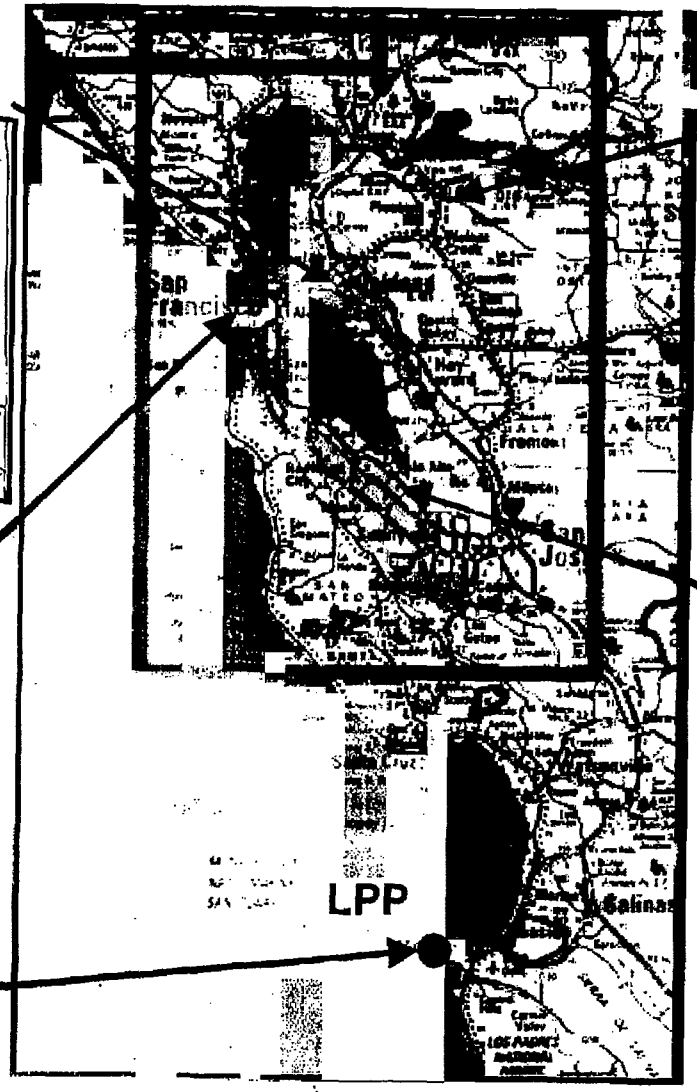
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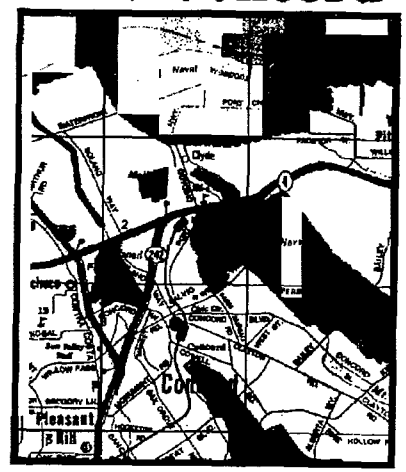
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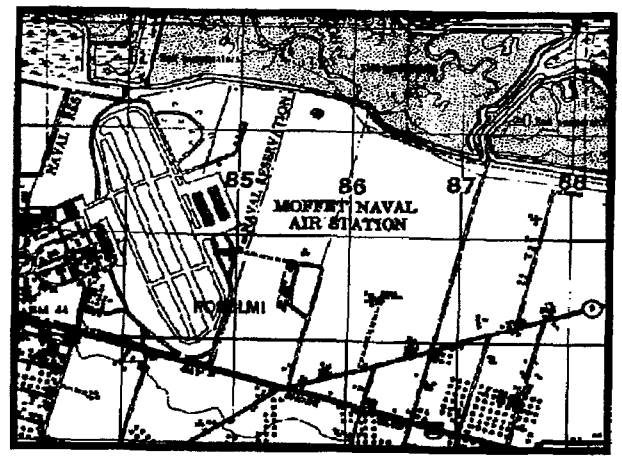
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Moffet Field



Fires

- Enhancing Close Air Support
  - Providing Measured Fire Power
    - Scalable Ordnance
  - Developing an Urban CAS Range
    - 'Yodaville' @ MCAS YUMA
    - No-Drop Scoring System
    - Virtual Interactive Targeting

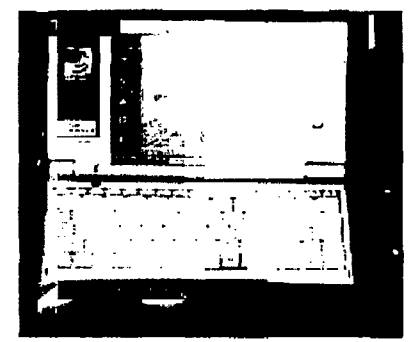


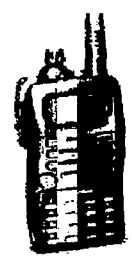
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Maneuver

- Enhancing Marine Rifle Squad
  - Squad Communications
  - End-user Terminal- SA Access
  - Hands-Free Comms
  - Information Warrior
    - Squad -- '14th' Marine
    - Platoon Guide
    - Company Gunnery Sergeant







JOINT MOUT
Mission Area Analysis and Mission Need Assessment

SOLIC SYMPOSIUM
17 Feb 99

LtCol Duane Schattle

J8 LLWAD

695-4657

JOINT MOUT STUDY DESCRIPTION

- **PURPOSE:** Conduct a JROC & DPG-Directed Joint Mission Area Analysis and Joint Mission Need Assessment of U.S. Joint Operational Warfighting Capabilities in the Urban Environment.
-
- DPG Guidance
  - Continue studies to assess & explore Joint capabilities
  - Assess alternative approaches to conducting MOUT
  - Recommend actions to address doctrine
  - ID M&S & training requirements
  - ID requirements to achieve dominant MOUT
    - Include NLW
    - Build a roadmap to 2010 to find alternative

JOINT MOUT STUDY DESCRIPTION

- **PHASE I (3 PARTS):**
  - Assess the need for Joint Operational MOUT Doctrine;
  - Conduct a survey of Analysis and Training M&S Tools for Joint MOUT operations;
  - Identify Joint Operational Mission Needs for MOUT.

PHASE I: JOINT MOUT DOCTRINE ASSESSMENT... COMPLETED

- **Findings:**
  - Current Doctrine Inadequate
    - Tactical, Ground Oriented, Linear and Attrition Driven
    - Not Joint, not Combined, nor Interagency
    - Operational Level Void
  - Needs
    - Joint Operational Doctrine
    - Joint Operational Concept
    - Short/Near-term Guidance

PHASE I: JOINT MOUT DOCTRINE ASSESSMENT... COMPLETED

-
-
- **Actions Taken (Urban Working Group Initiated):**
  - **JMOUT Doctrine (2001)... USMC Lead, USA Review Authority, J-8 Sponsorship**
  - **Ops Concept ...(w/Doctrine)...USMC Lead, UWG Guided**
  - **JTF Handbook (1999)... USAF Lead, UWG Guided**

PHASE I: JOINT MOUT M&S ASSESSMENT...COMPLETED

- **Findings:**
  - JWARS and JSIMS will not address MOUT in near-term and long term is questionable
  - Training Tools... Appears Adequate But it Lacks Urban Terrain Data Bases
  - Analytic Tools Are Inadequate
  - Needs
    - Analytic Tools (Tactical and Operational) For:
      - Capability Assessments
      - Campaign Analysis
      - Rehearsal Tools
    - Terrain Data Bases for Both Analysis and Training

PHASE I: JOINT MOUT M&S ASSESSMENT...COMPLETED

- **Actions Taken:**
  - JCATS identified as possible short-term solution and long-term bridge; requires:
    - V&V (JWFC, $500K)
    - Identifying Acceptability Criteria... What Should Model Do (UWG Can Help)
    - Terrain Data Bases (larger than normal data requirement)
    - CPR Language drafted to address it

"...Critical to this effort, the Department, through the Joint Staff, must develop short-term analytic tools to assess those capabilities..."

PHASE I: JOINT MOUT MISSION NEEDS COMPLETE

- **Findings:**
  - C4 and ISR require independent detailed assessment now
  - Lack of M&S tools makes assessments difficult and leads to qualitative not quantitative results
  - Because of closed terrain and population, etc., often tactical concerns become operational issues
  - No centralized focus to address Joint Requirements
  - Much more needs to be done... (Phase II&III address)
  - Current study identified 108 Candidate Mission Needs

PHASE I: JOINT MOUT MISSION NEEDS COMPLETE

- **Actions Taken:**
  - UWG Narrowed 108 Needs to Top 18

Communications	Rapid & Responsive Firepower
Knowledge of Cities	Precision Effects
Threat Detection/ Neutralization	Population Control
JTF Single Common Picture	Mobility
Information Control	Consequence Management
Precision Navigation	Medical
CID	Logistics
CSAR in Urban	Training
	Training Analysis
	Campaign Analysis

PHASE I: JOINT MOUT MISSION NEEDS (ACTIONS TAKEN CONT'D)

- Phase II Tasks Identified:
  - Follow-on Mission Needs...
    - Refine and prioritize Candidate Mission Needs/forward to JROC
    - Input C4 (J-6/DSC) and ISR (J2/DSC) Study Mission Needs
  - Transition Study...Develop
    - Concept Exploration/Roadmap
    - Institutionalization of Joint Mission Needs Options
    - MOUT Oversight Options
  - Address Terrain Data Base Issues
    - Prioritization
    - Sponsorship
    - Funding etc..
  - Address Future Joint and Service Studies

PHASE I: JOINT MOUT MISSION NEEDS (ACTIONS TAKEN CONT'D)

- Phase III Assessment Priorities Identified:
  - JMOUT Training and Facilities
  - Urban Information Architecture
  - JMOUT Center of Excellence/Analysis
  - Future Joint and Service Studies (Precision Effects, Combined Arms, Strike, Airpower, Artillery, Information Systems, RW, Armor, Space, Logistics, etc.)
  - Data Base Study
  - Others as Identified...

JOINT MOUT MISSION NEEDS PHASE I .....COMPLETE

- Reoccurring Themes
  - Joint capabilities required (ISR, C4, CAS, etc.)
  - The city is more than an environment, it is a living entity
  - The lack of analytic tools makes quantitative MOUT analysis almost impossible
  - In urban areas the distinction between tactical and operational concerns is often unclear
  - There is a need for a single focal point to address MOUT
  - The term MOUT inhibits progress
  - Much more needs to be done to address Joint MOUT capabilities and needs

DOD MOUT - INCREASED INTEREST



USMC UWG
- -Urban Warrior
- -Urban CAS
- -MOUT ACTD

SOCOM UWG
- -Wargame
- -MOUT ACTD

Experimentation
- -DARPA SUO
- -NLW
- -CID

OSD
DIA
ALSA
JWAC

USA MOUT Task Force
- - MOUT ACTD
- - Mounted Battlelab
- - Dismounted Battlelab
- -JRTC MOUT Exercises
- AAN 2025+
- -LIA UWG
- -Army S&MDC

Joint Staff UWG
- -JWCA Reps
- -DPG Studies

Conferences
- -MIT Briefing
- -NSSG
- -NDIA/ASD (SO/LIC)
- -Hurlburt, USAF
- -Maxwell, USAF
- -RAND
- -AWC Brief
- -AWC Study Group

USN
- -Fleet Battle Exercise 2
- -C2 Afloat
- -Precision Effects

USAF
- -MCDW
- -CAS

ACOM
- -J9
- -JWFC
- -Homeland Defense

2-Feb-99

"Squad MOUT Radio" and "RadarVision"

Alan Petroff

Executive VP of Engineering

Time Domain Corporation

Huntsville, AL

www.time-domain.com

February 1999

TIME DOMAIN

Time Domain's Perspective :

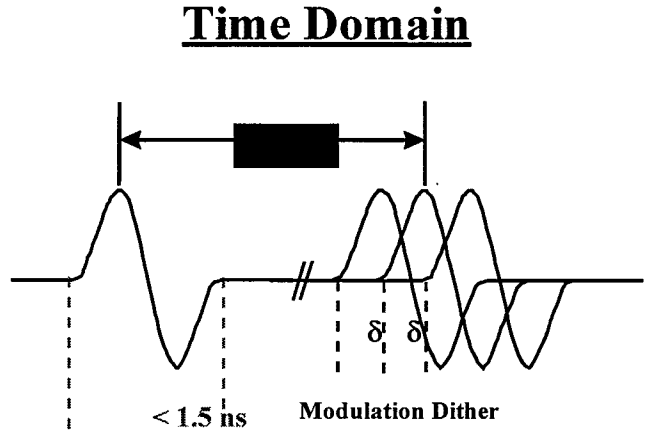
- Technology Inventors & Developers
- Background : Commercial Business
- Unique Technical Approach Having Special Features
- Not Compatible with "Legacy" Radios
- Radar Scaled to the Requirements of Small Unit Operations

TIME DOMAIN

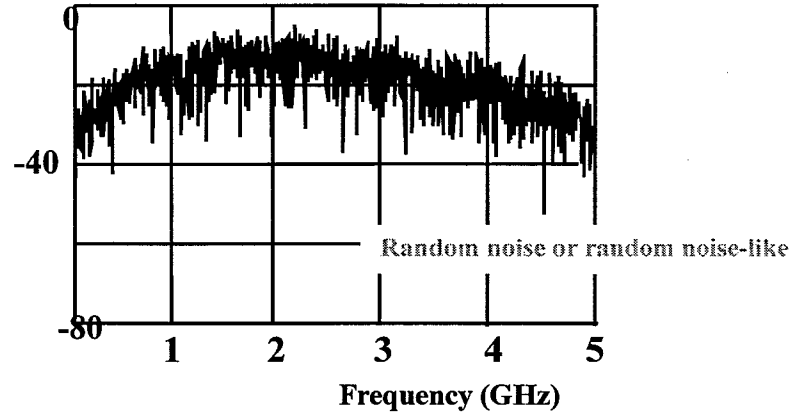
Time Modulated - Ultra Wideband How is it Different ?

- **PULSES !**

Not Continuous Waveform



- **Spectrum Sharing, "Noise-Like" Signal**

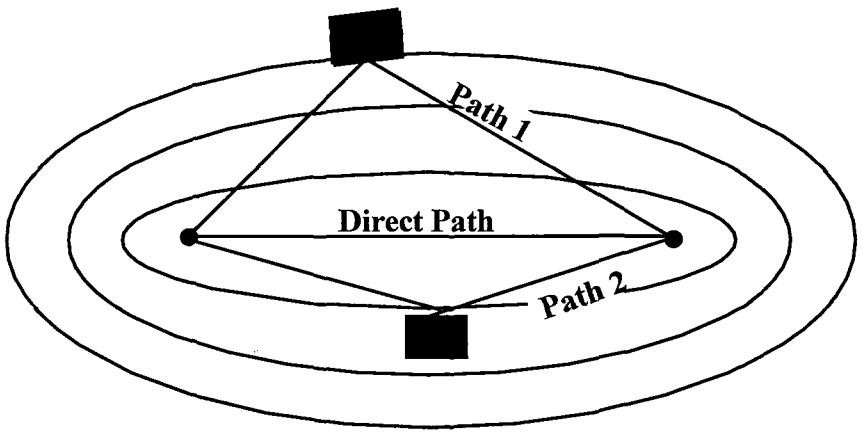


- **Extremely Low Probability Detection**

TIME DOMAIN

TM - UWB : How is it Different ?

- **Immune to Multipath Fading :**
-
-
-



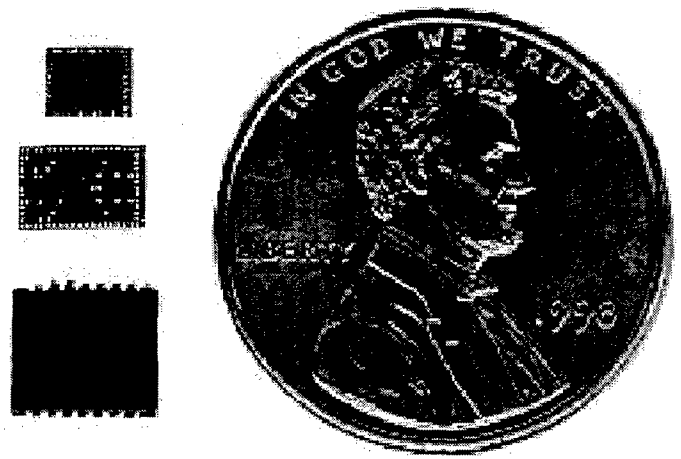
- **"Time Ranging" :**

  <u>Built-In</u> Geo-Positioning

TIME DOMAIN

TM - UWB : "Pure Digital"

- Simplicity of SiGe ASIC Design
- Low Power Draw
- Low Weight
- Small Antenna
- Low Cost
- Small Radio
-



Top: Timing Delay Generator ASIC

Middle: Multiple Correlator ASIC

Bottom: Digital Baseband ASIC

TIME DOMAIN

Developments:

- Theoretical Proof in 80's
- First Contracts in Early 90's
- Prototypes for Marines / CECOM, INS
- Miniaturized & Manufacturable
- Ready for Applications Development & Systems Integration

TIME DOMAIN

"Squad MOUT Radio" Features :

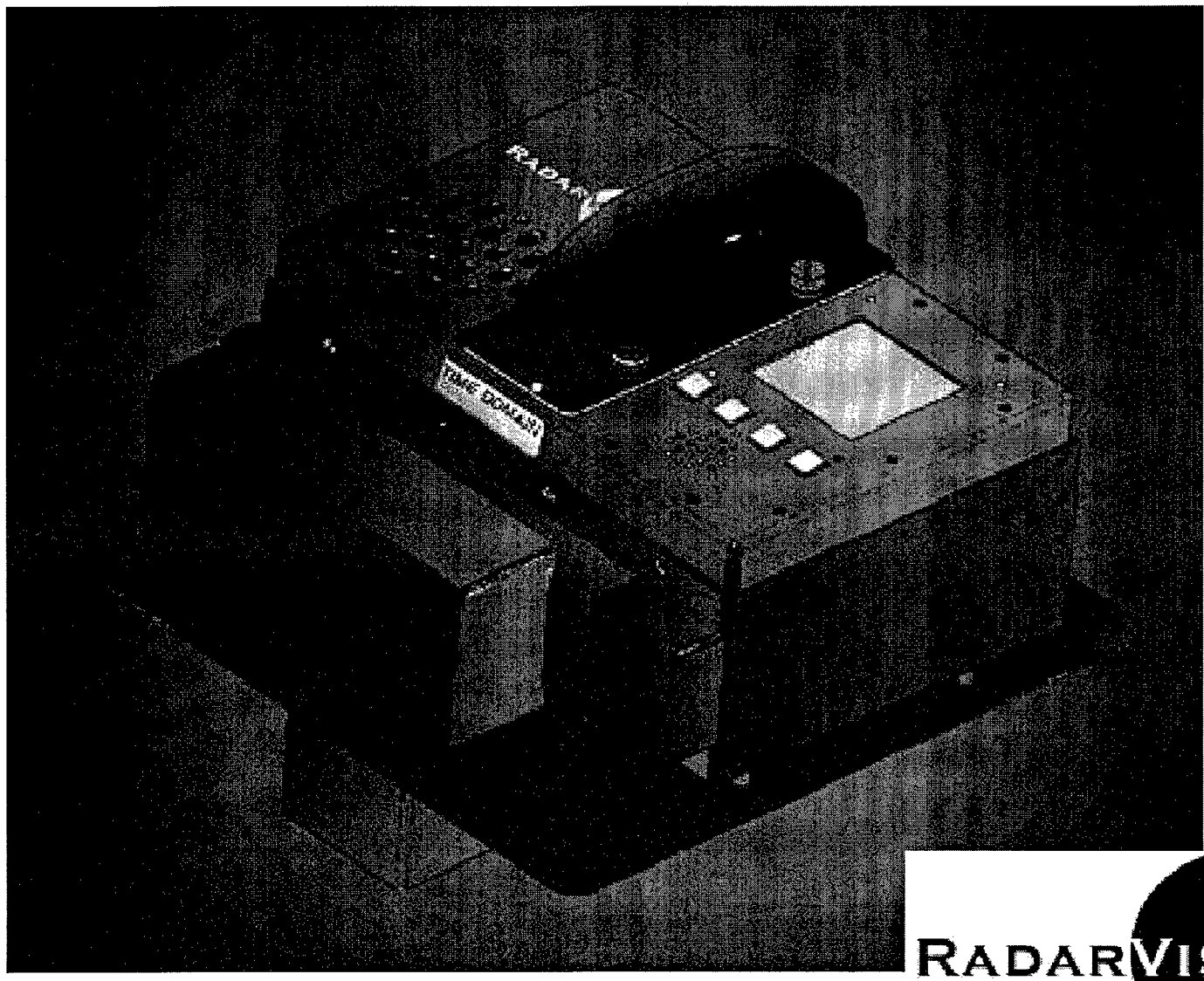
- Transmit Voice / Data / Imagery
- Superior Performance in "MOUT", Underground and Heavy Foliage
- Range Resolution to 5 cm Precision
- "JTRS" Compliant
- Law Enforcement & Public Safety Market Versions

TIME DOMAIN

"RadarVision 1000" Features:

- Detection of Motion Through Walls
- Overall Range : 30' (FCC Limit)
- Motion Detection Resolution to 5 cm
- 16 Lbs. Weight, 2 Hrs. Batt. Operation
- Development Platform for Other Uses
- Law Enforcement & Public Safety Market Versions

TIME DOMAIN

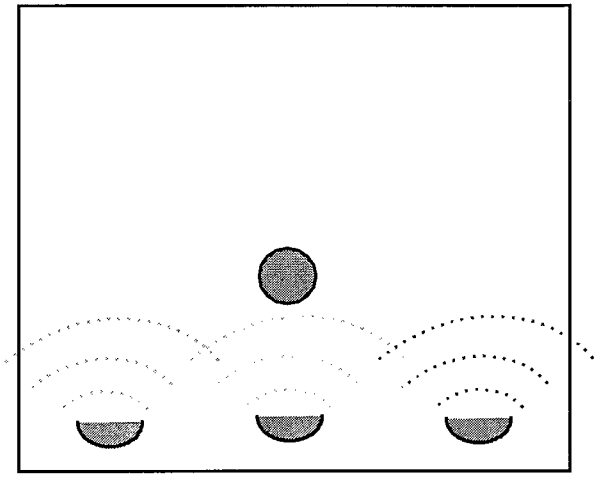


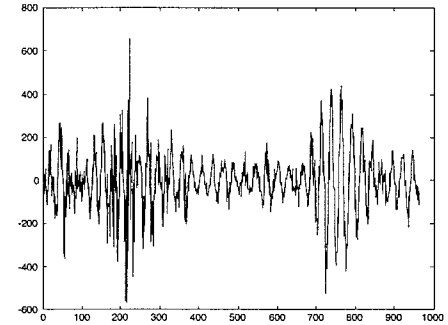
RADARVISION™

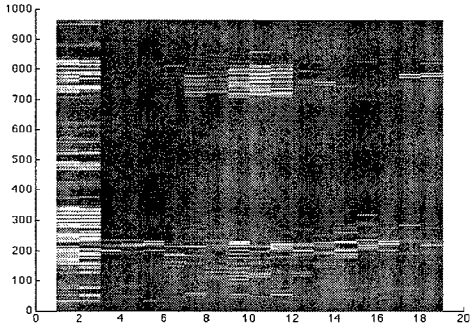
TIME DOMAIN

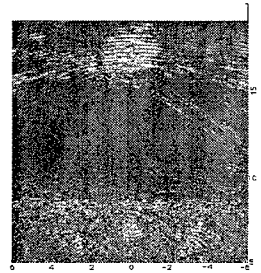
Building Imaging Radar

- **An Array of Radar Antennas Can Image a Structure**









- **Simple, Low Cost Design & Signal Processing**

TIME DOMAIN

TM - UWB Addresses :

- Need for Dedicated, Robust, "Safe" Wireless Communications
- Need for "Free Spectrum" & High Data Bandwidth
- Need for LPI / LPD / AJ
- Need for Efficiency in Size, Power Use, Low Cost & Minimal Support
- Need for "Leap Ahead" Situational Awareness for the Warfighter

TIME DOMAIN

Status of the Technology

- Building New Radios w/ SiGe ASICs
- Proposals to Defense Industry & Commercial Business
- RadarVision 1000 Product Introduction
- Target : Low Cost, High Reliability
- Partnerships & Licensing
- Application & Market Driven Business

TIME DOMAIN

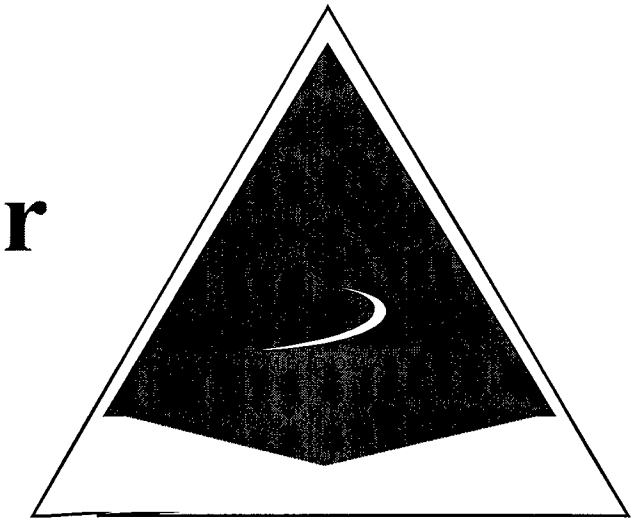
Lessons Learned :

- **Need for Well-Built, Reliable Radio that Works <u>When</u> & <u>Where</u> They Must**
- **Soldiers & Marines Want a Radio that <u>Won't Make Them Targets</u>**
- **Size, Weight & Simple Ruggedness is Key !**
- **Resistance to "Disruptive" Technology**
- **Enables Creative Operational Applications**

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NAVAL SPECIAL WARFARE

MARITIME MOBILITY

CAPT Jon Wright, USN

2/17/99

NAVAL SPECIAL WARFARE MISSION

Conduct or support special operations, primarily in offshore, coastal and riverine environments.

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NAVAL SPECIAL WARFARE FORCES

- SEALs
- Special Warfare Combatant Craft Specialists
- Patrol Coastal crews/maintenance teams
- Logistics, communications, admin support personnel

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NAVAL SPECIAL WARFARE PRIMARY TOOLS

- Our people
  - Personal equipment
- Combatant craft
- Patrol Coastals
- SEAL Delivery Vehicles/Dry Deck Shelters

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COMBATANT CRAFT History

- World War II - early 1960s
- Viet Nam era
- Post-Viet Nam/Transition period

COMBATANT CRAFT
General Characteristics

- TRANSPORTABLE (overland, air/parachute, ship)
- RUGGED/SEAWORTHY (> SS3)
- HIGH PERFORMANCE (acceleration/sustained (adult) speeds)
- ROBUST CAPACITIES (payload, comms, sensors, etc.)
- FLEXIBLE DESIGN (seating, weapons, comms, armor,etc.)

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COMBATANT CRAFT
Current Capabilities

• **Offshore**	Patrol Coastals	Long range (~3000NMs)
• **Nearshore**	MK V SOC	Medium range (~600NMs)
	11M RIB	Short range (~175NMs)
	24' RIB - MCADS	
• **Inshore**	MATC	Interim
	CAC	Interim
	MK II PBR	Training aids (TA)
	PBL	CD-only TA

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COMBATANT CRAFT
Future Vision

- **Near Term** (1-3 years)
  - Air-drop 11M RIB
  - SOCR (next MATC/CAC)
  - PC CCRS (?$$?)
- **Long Term** (7-10 years)
  - PC replacement
  - MK V replacement
  - RIB replacement

- **Concepts/Options**
  - VSV (wave piercing hull)
  - Semi-submersible
    - "Alligator"
  - Submersible/recoverable
    - "SUBBOAT"
  - "MFOB"
- **Developments**
  - DD-21 SOF support req't

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NAVAL SPECIAL WARFARE MARITIME MOBILITY

CONCLUSIONS

- As long as there are oceans and rivers, we'll need combatant craft.
- The maritime environment is **tough**.
- COTS is preferred, but commercial standards rarely match SOF needs.
- Future capabilities should take quantum leaps forward.

SOME FINAL THOUGHTS

- ➔ If at first you don't succeed, destroy all evidence that you tried.
- ➔ For every action there is an equal and opposite criticism.
- ➔ No one is listening until you make a mistake.
- ➔ To steal ideas from one person is plagiarism; to steal from many is research.
- ➔ If at first you don't succeed, then skydiving definitely is not for you.

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COMBATANT SUBMERSIBLES

- **Past**
  - Variations of small, short-range, wet personnel delivery vehicles
  - USS Tunney, USS Grayback (DDS-equivalents)
- **Present**
  - MK VIII Mod I SEAL Delivery Vehicle (SDV)
  - Dry Deck Shelter (DDS)
  - Modified 637, **608**, 640, 688 SSNs
- **Future**
  - Advanced SEAL Delivery System (ASDS)

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COMBATANT SUBMERSIBLES

- **Primary support platforms**
  - Current
    - 637 class SSN (2, single DDS capable)
    - 640 class SSN (1, dual DDS capable)
    - 688 class SSN (2, single DDS capable)
  - Future
    - SEAWOLF SSN (1, single DDS capable)
    - VIRGINIA class (6+, single DDS/ASDS capable)
    - SSGN (TBD, dual DDS/ASDS capable)
- **Secondary support platforms**
  - PC (1 w/CCRS), MK V (sled tow), COOP (with crane)

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COMBATANT CRAFT
World War II
(1941-1945)

- **Short range insertion/extraction**
  - A variety of small landing craft (LCVPs [Higgins boats] , LCPLs) provided pre-assault support for Scouts and Raiders units, NCDUs, then UDTs.
- **Direct action/special operations support**
  - 70', 71', 78' and 80' PT boats built (in the US) by Elco (418), Higgins (221) and Huckins (18) conducted patrol/direct action missions worldwide.
  - Some PT boats conducted special operations - inserting/extracting commandos/agents/coast watchers and supporting other clandestine missions.
    - Three boats, organized as MTBRon 2, supported OSS (forerunner of the CIA/USSOCOM) operations in 1944 in the English Channel.

COMBATANT CRAFT
Post WWII
(1946-1960)

- **Short range insertion/extraction**
  - Variations of the LCVP, then LCPLs (primarily MK IVs), operating from APDs (converted DEs) and Amphibs supported UDT operations. (UDTs operated their own craft until the mid-1960s.)
- **Direct action/special operations**
  - After 1945, the MTBRons were all disbanded and virtually all WWII-vintage PT boats were scrapped or sold (to allies/private citizens).
  - Four experimental PT boats were built in the late 1940s, with LOAs of 90', 95', 98' and 105'; max. (warload) speeds ranged from 38-52 KTs.

COMBATANT CRAFT
Early Viet Nam Era
(1961-1965)

- **Direct Action/Special Operations**
  - 14 Norwegian **NASTY**-class PTFs were acquired, initially for coastal SEAL support, eventually being "leased" to the South Vietnamese (in 1965) for covert operations into North Viet Nam. Six were sunk before the remainder were returned to the Navy in 1970.
  - In the early 1960s some attempts were made to improve/replace LCPLs for SPECOPSs support, but a reliable, tactically suitable boat never emerged.
  - The early days of SEAL Team ONE (and to a lesser extent TWO) saw that command primarily providing advisory personnel in-country.
- **Coastal/Riverine Patrol and Interdiction**
  - In the early 1960s conventional Navy, not NSW units, conducted this mission.
  - Initial requirements were for craft to equip the Vietnamese Navy, to augment/replace older craft left over from the French occupation.

COMBATANT CRAFT
Mid-late Viet Nam Era
(1966-1971)

- **SEAL support**

  - Early offensive SEAL platoon operations in-country were supported by organic UBs, indigenous craft, MK IV LCPLs and some modified LCM6s.
  - Boat Support Unit (BSU) 1 was established in 1964. It tested several hull forms, supported Nasty-class PTF operations and operated LCSRs for the UDTs. BSU 1 (and BSU 2) was officially assigned a SEAL support role in 1966. Initially, the few modified LCM6s were regarded as **HSSC** and modified MK IV LCPLs were regarded as MSSC.
  - SEAL Team TWO converted (by arming/armoring) and operated a small number of commercially available 26' trimarans that were referred to as SEAL Team Assault Boats (**STABs**).
  - 24' **LSSCs** evolved from the early STABs, replacing them in 1968.
  - 36' **MSSCs** also started to see service in early 1969.

COMBATANT CRAFT
Mid-late Viet Nam Era
(1966-1971)

- **Coastal/Riverine Patrol/Interdiction Operations**

  - The Navy conducted these operations from 1964, transitioning to an advisory role in 1968/1969.
  - Various craft were modified/developed to conduct these operations. MK I then II **PBRs** were introduced for river patrol/interdiction, MK II **PCFs** and USCG 82' **WPBs** conducted coastal patrols and (3) air-cushioned vessels (**PACVs**) were trialed by both the Navy and Army in-country.
  - LCM6s were reconfigured to be **ATCs** and **monitors**, **ASPBs** were developed.
  - Navy (and USCG) personnel both operated craft and advised the South Vietnamese Navy on coastal/riverine operations under commands such as TF 115, TF 116, TF 117, etc..
  - STABRon 20 was in commission from Aug 1969 through Oct 1970.
    - 26' Strike Assault Boats (**STABs**) were modified LSSCs.

COMBATANT CRAFT
Post Viet Nam Period
(1972-1979)

- Beginning in the late 1960s/early 1970s, all Navy/USCG coastal/riverine units that were operational during the Viet Nam conflict were disbanded.
- In 1972, the remnants of the conventional coastal/riverine training and operational units and the BSUs were redesignated, becoming components of the same commands that provided leadership for the SEAL Teams/UDTS - Naval Inshore Warfare Groups.
  - **MK III PBs** came into service as **MK II PCF** replacements.
  - **MATCs** replaced **MSSC**.
  - Remaining riverine craft were assigned, but began to be retired in the mid-1970s.
- In 1979 Special Boat Squadrons and Units evolved.
  - SEAL officers began to be assigned to command SBRs/SBUs.

COMBATANT CRAFT
Transition Period
(1980-1993)

- Special operations became the focus.
  - **SWCLs** replaced **LCPLs**.
  - SBU 26 evolved from PCZ HPU; assigned to NSW.
    - **MK IV PBs** (3) assigned to SBU 26
    - **UBs** became **PBLs** which began to evolve as CD "training aids."
  - **SWCM** and other CC programs were still-born (late '80s).
  - PBC became PC ('91).
  - **HSBs** (previously owned/new) introduced (limited employment).
- Combatant craft were operational in Grenada, Beirut, NAG, RPI, Panama, Desert Storm, Somalia and Haiti.
- The **RIB** became the preferred hull form to replace **SWCL** ('87).
- The requirement for **MK V** was born ('90).

COMBATANT CRAFT
Modern Era
(1993-1999)

- Special Boat Squadrons became Major Commands ('93).
  - SBUs 11, 13, 24 and 26 were decommissioned.
  - Facilities improved.
    - SBU 22 relocated to NASA Stennis.
  - MK III and IV PBs were retired.
  - HSBs were retired.
- PCs were introduced
- MK Vs were introduced.
  - Deployed to the Med, Africa, the Baltic, the Carib, Korea, Australia, Hawaii, NAG.
- NSW RIBs were introduced, began deployments.
- Air drop-capable RIB system was born.

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(BACK UP)

COMBATANT CRAFT
Commands

Mid 1960s	Early 1970s	Late 1970s
BSUs 1&2	COSRIVRONs 1&2 (COSRIVDIVs 12, 13, 22, 20, 24)	SPECBOATRONs 1&2 (SBUs 12, 13, 22, 20, 24)
NIOTC	COSRIVDIV 11	SBU 11
	HPU	SBU 26 (mid '80s)

COMBATANT CRAFT

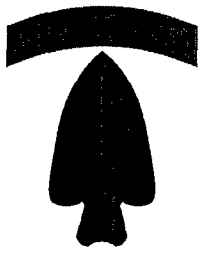
- **Nearshore operations**

PT	PTF	HSB	MK V
MKII PCF	MKIII PB		PC
LCVP	LCPL	SWCL	RIB
[24'RIB	IRIB	NSW RIB	11M RIB]

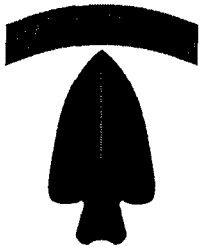
- **Inshore Operations**

LCPL	MKI PBR	MKII PBR
STAB	LSSC	-
LCPL	MSSC	MATC
LCM6	HSSC	-
LCM6	ATC/MONITOR	-
	ASPB	-

2/17/99 (BACK UP)



ARSOA Forward Presence and Force Projection

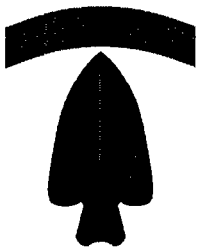


Agenda

- **Mission**
- **Personnel Requirements**
- **Contractor Logistical Support**
- **Pilot Recruiting/Retention**

Mission

CINCSOC directed USASOC to replace the AFSOC MH-53J helicopters in the PACOM and EUCOM AORs with MH-47E helicopters from the 160th SOAR (A) by 2001 and 2005 respectively.



Personnel Requirements

Personnel Requirements

Total	**148**
• **Army**	**104**
• **USAF**	**4**
• **CLS**	**40**

- **This manning structure cannot absorb additional requirements such as JSOACC, SOLE, SOC/CUWTF LNOs -- Mission Executors only**

CONUS Backfill Positions*

1 x 31U2 (Sig Spt Mntr)	1 x 75H3 (Pers Sgt)
1 x 31U3 (Sr Signal Spt NCO)	1 x 91B1 (Med Spec)
1 x 63B3 (Motor Sgt)	1 x 91B3 (Med Trmt NCO)
4 x 67U1 (Med Hel Rpr)	1 x 92A2 (Equip Parts Spec)
1 x 68F3 (Acft Electr Supv)	1 x 93P3 (Flt Ops NCO)
1 x 68H1 (Pneudraulics Rpr)	1 x 96B2 (Intel Analyst)
1 x 68K4 (Shops Plt Sgt)	1 x 96B3 (Sr Intel Analyst)

* 17 additional slots needed to ease low-density MOSs each time new unit is formed.

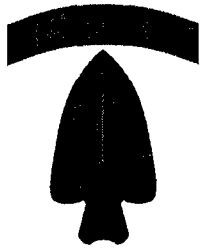
Contractor Logistical Support (CLS) Requirements



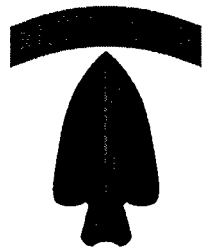
Required CLS Positions

1 x 75B2 (Personnel Sgt)
1 x 73D4 (Budget Analyst)
1 x 65D (Physicians' Asst)
1 x 91B2 (Medical NCO)
1 x 96D2 (Imagery Analyst)
1 x 92Y2 (Property Bk NCO)
1 x 63B2 (Shop Foreman)
1 x 52D2 (Pwr Gen Eqp Rpr)
1 x 93P1 (Flt Ops Specialist)
1 x 67U3 (MH-47E Flt Eng)

2 x 55B2 (Ammo Handler)
1 x 154CG (QC Officer)
1 x 67U3 (Tech Insp)
3 x 67U3 (MH-47E Repmn)
2 x 68D1 (Acft Pwr Trn Rpr)
2 x 68F1 (Acft Electrician)
1 x 68H2 (Acft Hyd Rpr)
1 x 68J1 (Acft Arm Msl Rpr)
2 x 68G2 (Acft Struct Rpr)
2 x 92A1 (Equip Parts Spc)

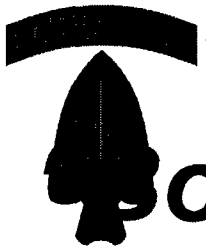


MH-47 Pilot Recruiting/Retention Strategy



Goal

Obtain and maintain a 1.5 crew ratio by March 2001



Bottom Line Up Front"

28 MH-47E and 8 MH-47D aviators must be trained over the next two years to meet the goal.

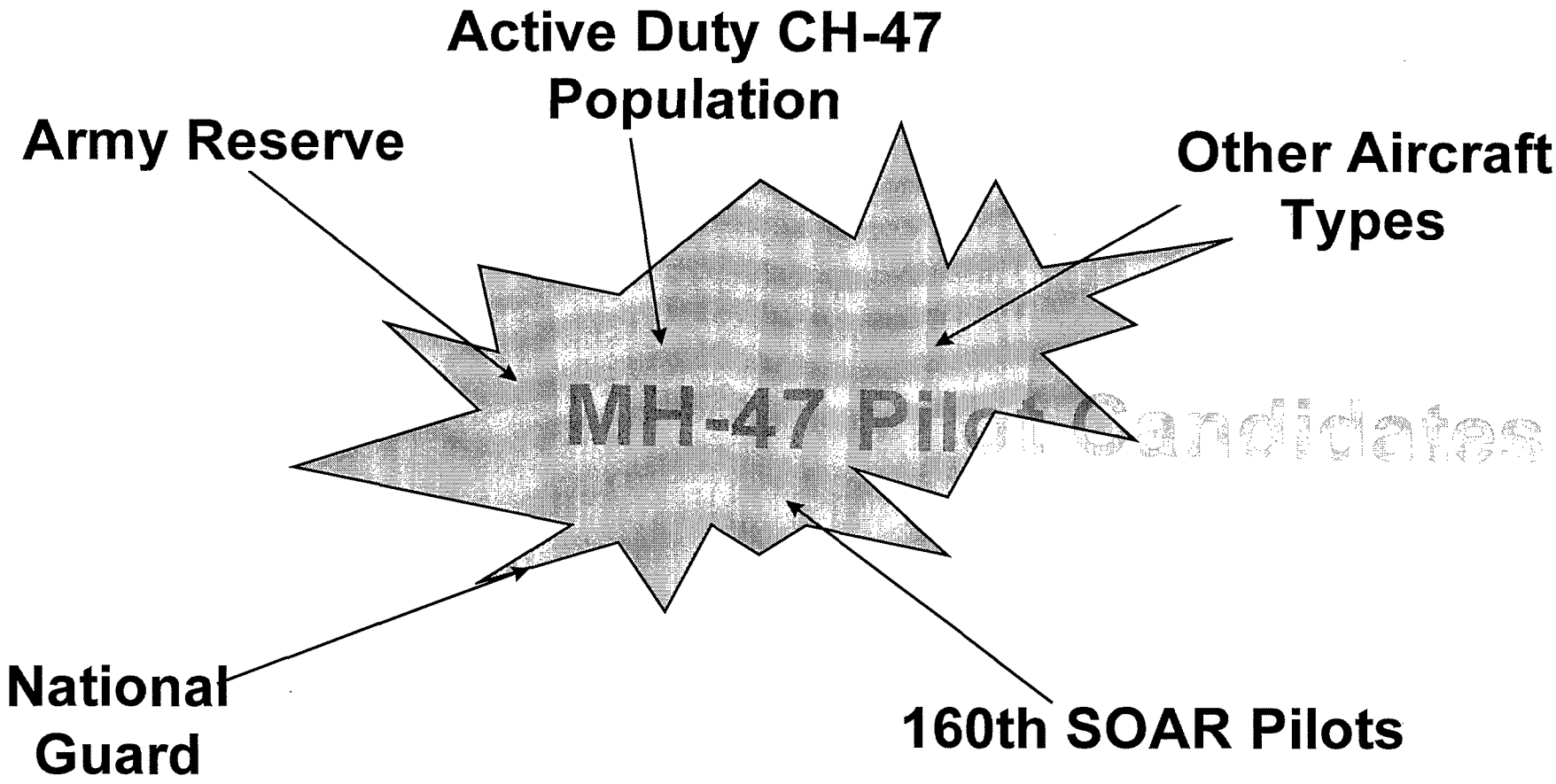
160th SOAR (A) MH-47D/E Warrant Officer Status as of 01 Jan 99

# AUTH	# On-Hand	Projected Losses Through Mar 01	# Pilots needed to Achieve Goal
96	78	18*	36**

* Based on 8% yearly attrition rate

** # Pilots = shortages + projected attrition (28 MH-47E & 8 MH-47D)

Possible 160th SOAR(A) MH-47 Pilot Sources



Active Duty Aviation Warrant Officer Inventory
as of 01 JAN 99

A/C Type	A/C Name	Require	Inventory	% Fill
OH-58	Kiowa Warrior	700	680	97%
AH-64	Apache	1059	925	87%
UH-60	Blackhawk	2006	2017	101%
CH-47	Chinook	566	527	93%
C-12	Huron	355	407	115%

Sample CH-47 Active Duty Aviation Warrant Officer Recruiting Population

as of 01 JAN 99

- **160th SOAR(A) Preferred Recruiting Population: CW2/3**
  - **Requisite Aviation Experience**
  - **Retention**
- **Recruiting Population Total 154C 407***
  - **Females 17**
  - **WO1 13**
  - **CW4 73**
  - **CW5 31**
  - **Current Night Stalker 78**
  - **Those 154C assessed as unfavorable 13**
  - **Inbound for Green Platoon 3**
  - **Total Preferred Recruiting Population 179**

*** Pilots in CH-47 Billets**

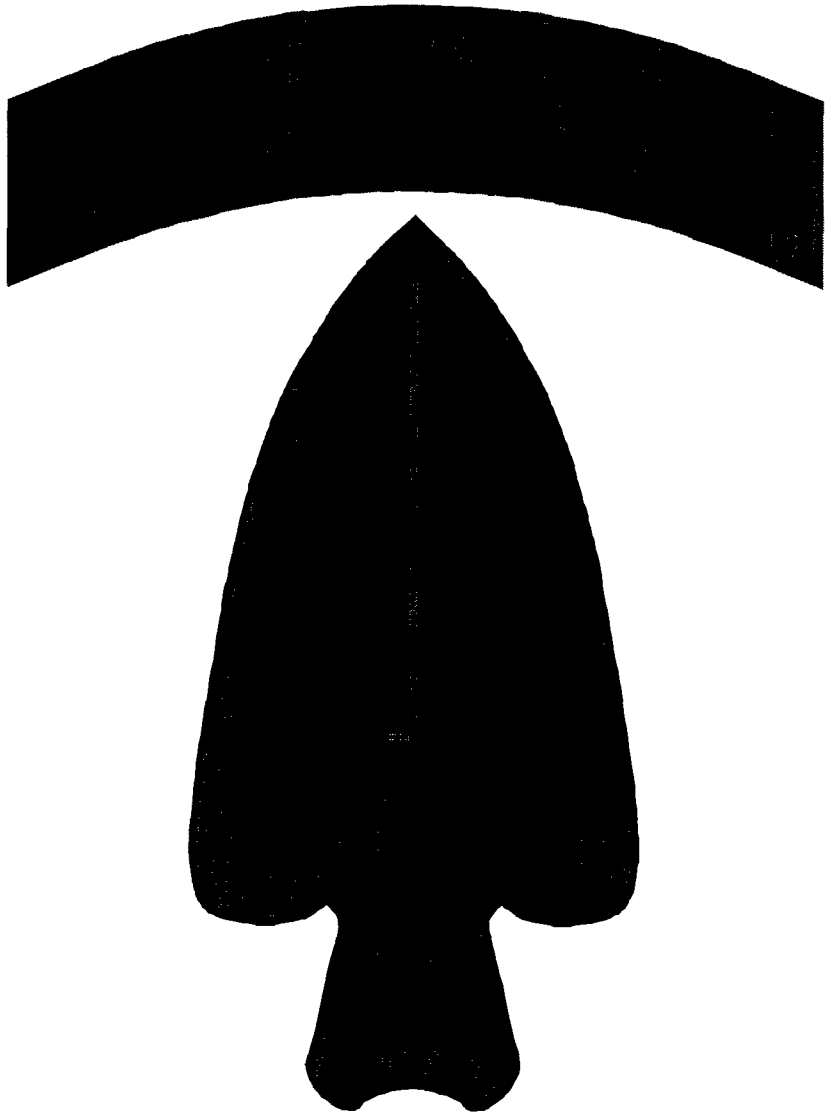
Plan of Attack

- Request modified directed assignments from DA DCSPER effective immediately.
- Direct 160th SOAR(A) to transition MH/AH-6 and MH-60 aviators into the MH-47D/E to help meet the goal. (approx 5 per year)
- Request DA DCSPER to fill required slots by:
    - Allowing dual modernization aircraft transitions.
    - Providing the necessary Ft. Rucker CH-47 transitions.
    - Tapping into National Guard and U.S. Army Reserve pilot pools.
- Request Aviation Continuation Pay (ACP) from DA for MH-47 Pilots.

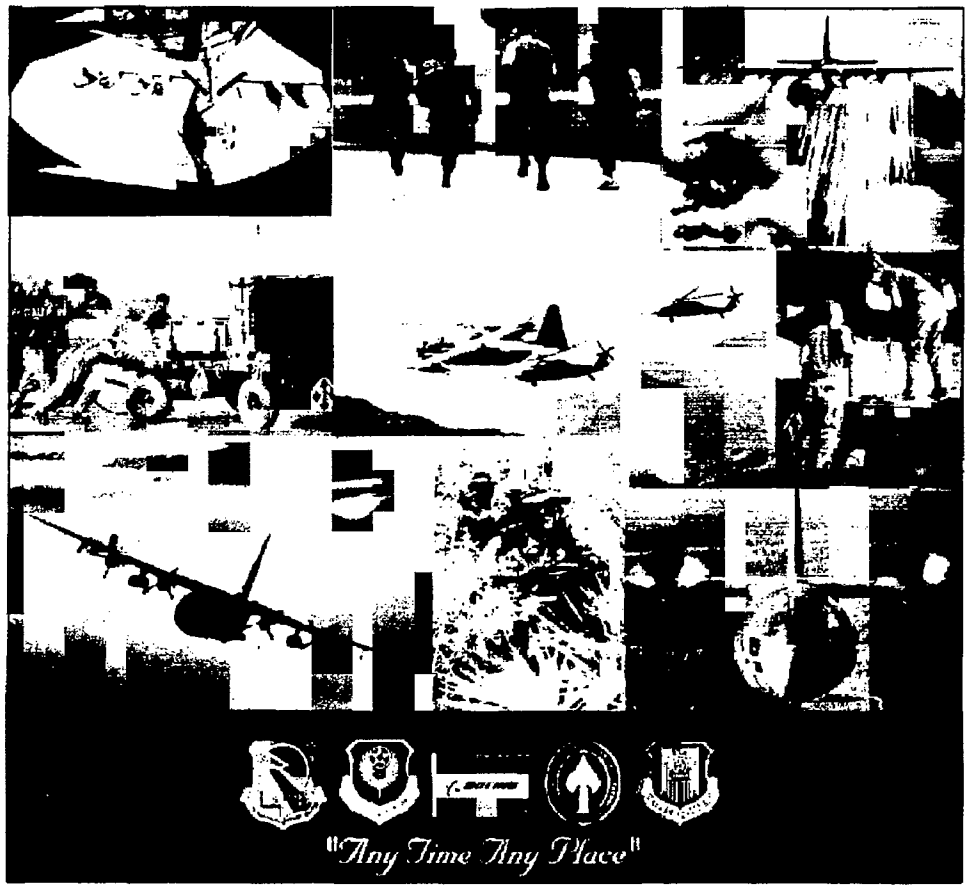
Pilot Training
Jan 99 - Mar 01

- CH-47 Transition Course - Ft. Rucker, AL * (10 Week Syllabus)
  - 26 Classes
  - 240 Seats
- MH-47D/E Transition Course/Green Platoon - Hunter AAF, GA and Ft. Campbell, KY (19 & 28 Week Syllabus)
  - 5 MH-47 E Classes - 5 MH-47D Classes
  - 30 MH-47E Seats - 10 MH-47D Seats

* Allows 28 week MH-47E transition at Ft. Campbell and 19 week MH-47D transition at Hunter AAF



Special Operations Forces
Integrated Weapon System Support Program



BOEING

Why IWSP?

- **Small fleet of 87 SOF C-130's**
  - 8 AC-130H's
  - 13 AC-130U's
  - 14 MC-130E's
  - 24 MC-130H's
  - 28 MC-130P's

SOF Customer needed a contract vehicle to reduce overall cost of ownership of these highly modified aircraft and provide rapid response capability to support urgent mission requirements

BOEING

Acquisition Reform Principles

- **Manage LCC, not just acquisition costs**
- **Treat CAIV relative to user requirements**
- **Make performance trades early in the acquisition process**
- **Put high priority on logistics and support cost visibility**

BOEING

IWSSP Objectives

- **Convenient, cost effective and flexible contract vehicle for SOF C-130 Weapon System Managers**
- **Uninterrupted, affordable, long term integrated weapon system support**
- **Reduce cost of operations and support**
- **Integrate modifications**

GOAL: Improve SOF Warfighter Support

BOEING

Improving Support to the SOF Warfighter

- **More aircraft available for the mission**
  - Reduced downtime for mods through integrated scheduling
  - Flexible MOD scheduling
  - Block upgrades
- **More capable aircraft - Maximize aircraft performance**
  - Better management of weight and balance, center of gravity; better use of electrical, cooling and computer capacities
- **Reduce O&S costs**
  - Predict component obsolescence
  - Commonality: training, spares, technical data
  - Increase supportability
  - Improve future sustainment

BOEING

Boeing's IWSSP Team

TRW

Ball

SEI

COMMITTED TO DEFENSE EXCELLENCE
MTI
SINCE 1984

BOEING

CALIFORNIA MICROWAVE

MACB
MACAULAY BROWN INC.

PARKER KOLSTER MFG. CO.

BOEING

Summary

Boeing's Mission:

Support the SOF Warfighters
Any Time Any Place
Faster, Cheaper, Better

BOEING

DASD Forces & Resources

Remarks to the 1999 SO/LIC Symposium

February 18,1999

Good morning ladies and gentlemen. Welcome to the plenary session on SOF structure, modernization, readiness and resources.

Today we hope to inform you on the plans for keeping our nation's Special Operations Forces on the leading technological edge.

Let me begin by introducing my fellow panelists.

First, I would like to introduce Brigadier General Gary Heckman. General Heckman is the Director of the Force Structure, Requirements, Resources and Strategic Assessments Center of the U.S. Special Operations Command. Gary brings unique qualifications to this position through an extensive career in special operations at all levels of command and in programming,

plans, and operational requirements in air mobility. He last served as the Chief of Staff of USSOCOM.

The second panelist is Mr. Harry Schulte, Acquisition Executive and Senior Procurement Executive for USSOCOM. Harry has extensive acquisition experience as a program manager and program executive officer. He was program director for the AMRAAM Missile Program and the Air Force Program Executive Officer for Weapons.

For those of you who don't know me, I am Ray Dominguez and I serve as the Deputy Assistant Secretary of Defense for Forces and Resources within the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict.

In today's presentations and discussions we will provide you with an overview of the major modernization programs for SOF. However, before examining these programs, I would like to provide you with my view of the overall health of the Special Operations community.

At this time, SOF is *healthy* and *well positioned* to meet the challenges of the twenty-first century.

As most of you know, our nation faces numerous challenges that are not easily overcome through traditional military means. Our forces are charged with preventing the proliferation and use of weapons of mass destruction; deterring, preventing, and countering attacks against our critical infrastructure; enhancing international stability, peacekeeping, and combatting international terrorism in all of its forms.

Since it is infeasible to structure, train and equip conventional forces to perform all facets of these complex missions, SOF, because of their unique versatility and applicability to today's problems, are busier than ever filling the operational void.

I am happy to inform you that key leaders within the Pentagon are increasingly cognizant of the important capabilities special operations forces have to meet and overcome these challenges.

Unfortunately, this recognition comes at a time of increasing fiscal pressures throughout the Department of Defense.

[Graph 1] –DoD Budget

As you can see in this slide, resources are extremely tight within the department. In constant dollar terms the DoD top line has shrunk by nearly $72 billion dollars over the past eight years.

Given that most of you have a connection with the defense industry, I am sure that you are not surprised by this fact. What may surprise you however, is what the magnitude of this figure represents. $72 billion dollars could fully fund the MFP-11 Budget at its current level for twenty years... As you might imagine, this kind of reduction has been an extremely difficult burden for our forces to take on.

This era of tight fiscal constraints has been a formidable obstacle, preventing SOF from doing all of the things it would like to do to maintain and modernize itself. However, as General Schoomaker mentioned in his recent article in *National Defense,*

this problem has helped us by forcing us to become "more efficient and more focused."

[Graph 2 – DoD Budget Projection]

As you can see in this slide, the SOF Budget remains a very small portion of the DoD Budget.

[Graph 3 – MFP-11 as a Percentage of the DoD Budget]

Over the next six years MFP-11 ranges from a high of nearly 1.35% of the DoD budget, to a low of less than 1.26%. This apparent decrease in the relative size of the SOF budget does not reflect a decreased interest in SOF—on the contrary—interest in SOF has *never* been higher. In fact, the size of the SOF budget is planned to grow from $3.5 Billion in FY 1999 to nearly $4 Billion in FY 2005.

[Graph 4 – SOF Budget]

This increase is good news—but let me be clear that the increase will probably not be enough to fully meet the demands of the future. Today, demands in other competing and important areas (strategic missile defense, conventional force readiness, contingency operations) precludes the department's ability to dedicate an additional $300-$500 million per year that SOF actually requires, particularly for RDT&E and modernization initiatives.

You might be asking yourself why I believe that SOF will require so much additional funding when the SOF budget is already growing by an average of $83 million dollars per year through FY 2005.

Here's why. If we look at the SOF Budget in more detail we can see that the real growth is primarily in the Personnel and O&M accounts. This follows a traditional pattern for SOF. Because we place our emphasis on retaining good people and performing current operations, we as a community, find it extremely difficult

to set resources aside for the purpose of modernizing our capabilities.

USSOCOM's rigorous strategic planning process has allowed it to make some difficult trade-offs in operational capability—but these trade-offs will become more painful in the future as we begin to examine alternatives for modernizing our major infiltration, strike, and information warfare capabilities.

Over the past several years SOF has shown that an additional $300-$500 Million per year is needed to meet its R&D and Procurement requirements. Given these trends, I am fairly comfortable in predicting that SOF will continue to have unfunded requirements of at least this magnitude for the foreseeable future.

So, you ask, what are we doing to ameliorate this situation? I do not want to steal any of General Heckman's thunder, so I will be brief.

First, we have increased our focus on the SOF community's future requirements. The CINC has established a Future Concepts Working Group that has already influenced where the command is expending its resources. This group is tasked with the development of future concepts that will drive the SOF community's future operational requirements.

Secondly, USSOCOM has reorganized its staffs and organizational processes to improve its capabilities to assess the development of requirements, technology and acquisition programs. From Joint Mission Analysis to Strategic Planning to development of the USSOCOM Program, SO/LIC remains fully engaged as a partner with the command to ensure that our nation's special operations forces have the best equipment that money can buy.

Thirdly, we are working closely with the Military Departments to ensure that our delicate infrastructure remains capable of meeting our needs. USSOCOM, the Theater Special Operations Commands, and each of the component commands are

absolutely reliant upon the Military departments to provide their base operations support needs.

In the past, USSOCOM has had to cover Base Operations Support when the Military Department's budgets have fallen short of meeting all of SOF's requirements. Absorbing these costs has taken its toll—adversely impacting both the operational readiness and the long-term capability of SOF. As we move into a future of scarce resources, we must remain vigilant that MFP-11 resources are not expended for purposes that should be borne by the military departments. MFP-11 was never intended as a tool for buying general-service repair parts or for conducting general facility maintenance.

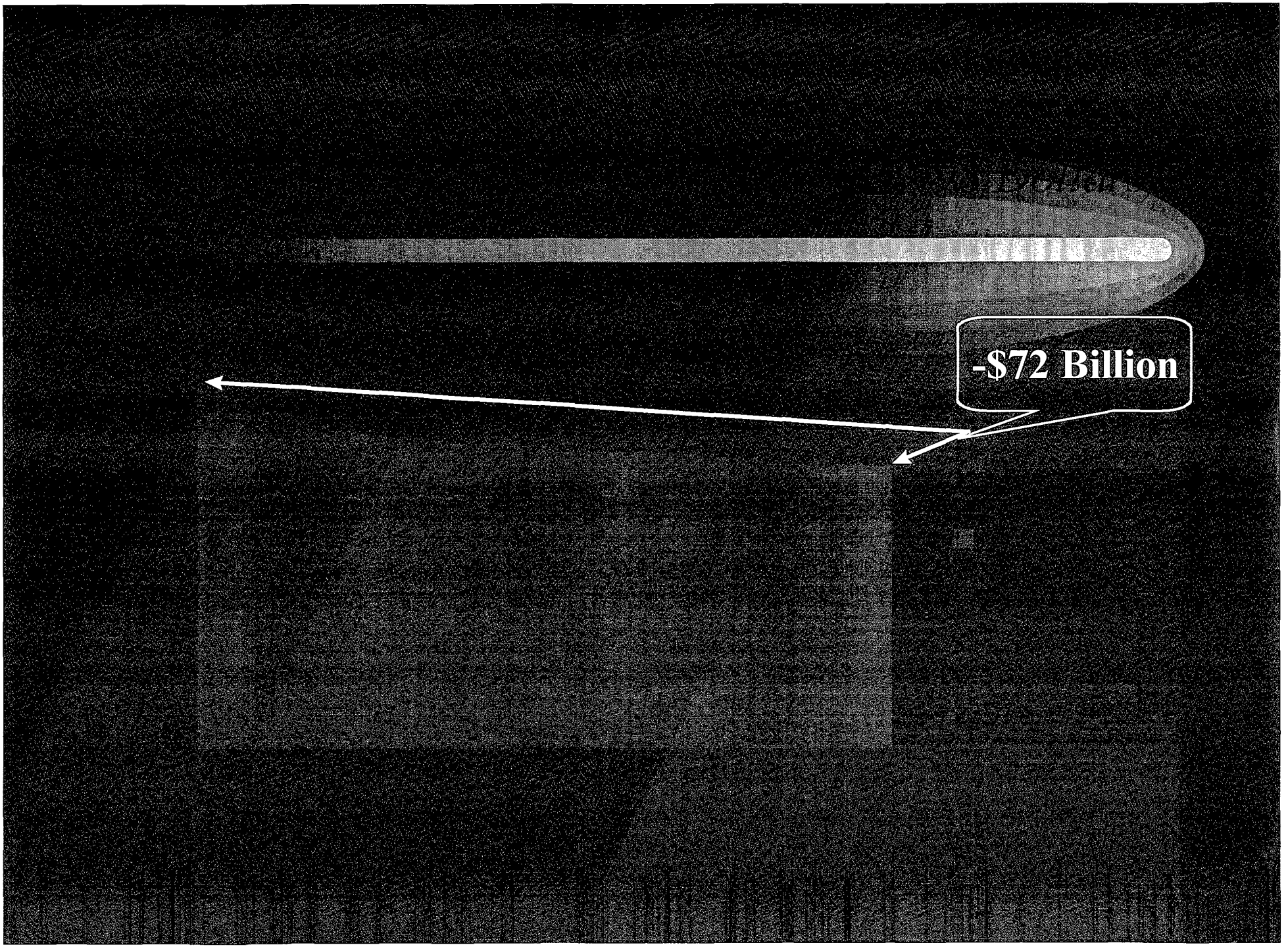
Let me conclude by assuring you that the SOF community is pursuing a robust modernization effort to replace aging and less capable systems. We are incorporating cutting-edge technologies and developing new capabilities through carefully tailored acquisition programs and advanced concepts, doctrine and organizations. Through proactive leadership, USSOCOM's

research, development and acquisition (RD&A) responsibility has supported activities that will provide the best equipped SOF in the world.

Our technological superiority continues to enable our small, highly trained teams or individuals to successfully accomplish tasks that would be too costly or physically impossible for larger forces. However, time has shown that technology does not resolve all of our problems.

Because of constrained resources, USSOCOM has adopted a process of prudent innovation, choosing carefully which technological paths to take and fully leveraging the research conducted by the military departments, national laboratories, other government agencies, and the private sector. Furthermore, USSOCOM applies commercial, off-the-shelf components and non-developmental items, whenever possible, to reduce development time and cost.

Special Operations Forces provide a unique and cost-effective military forward presence in pursuit of U. S. national security goals. As unconventional threats proliferate, it is vital that we ensure they remain robust, well-trained, and well-equipped.


-$72 Billion

