

AD-A192 108

LIGHT INFANTRY IN THE DEFENSE OF URBAN EUROPE(U) ARMY
COMMAND AND GENERAL STAFF COLL FORT LEAVENWORTH KS
SCHOOL OF ADVANCED MILITARY STUDIES L H SHERFEY

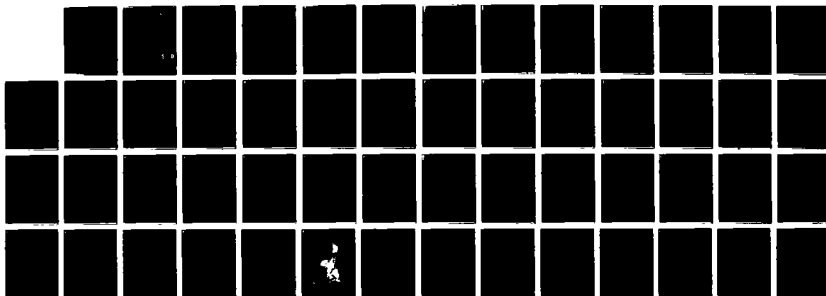
1/1

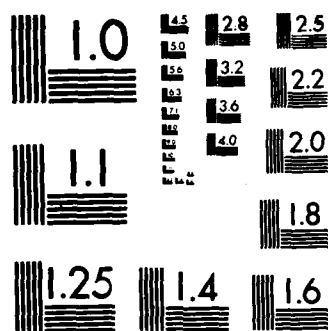
UNCLASSIFIED

14 DEC 86

F/G 15/6

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A192 108

DTIC FILE COPY

2

LIGHT INFANTRY IN THE DEFENSE OF URBAN EUROPE

by

MAJOR LLOYD W. SHERFEY
INFANTRY

SCHOOL OF ADVANCED MILITARY STUDIES
U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE
FORT LEAVENWORTH, KANSAS

26 October 1986

Approved for public release, distribution is
unlimited

DTIC
ELECTE
MAR 01 1988
S D
C6 H

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

A192108

REPORT DOCUMENTATION PAGE

Form Approved
OMB No 0704-0188
Exp. Date Jun 30, 1986

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release ; distribution unlimited.		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION <i>School of Advanced Military Studies, USACF GSC</i>		6b. OFFICE SYMBOL (If applicable) ATZL-SWV	7a. NAME OF MONITORING ORGANIZATION		
6c. ADDRESS (City, State, and ZIP Code) Port Leavenworth, Kansas 66027-6900			7b. ADDRESS (City, State, and ZIP Code)		
8a. NAME OF FUNDING / SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER		
8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
			WORK UNIT ACCESSION NO.		
11. TITLE (Include Security Classification) Light Infantry In The Defense Of Urban Europe (U)					
12. PERSONAL AUTHOR(S) MAJ Lloyd W. Sherfey, USA					
13a. TYPE OF REPORT MONOGRAPH		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 86/12/14	
				15. PAGE COUNT 48	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	Battle of Jerusalem Urban Combat MOUT		
			Battle of Beirut Light Infantry		
			Battle of Khorramshahr Battle of Suez City		
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
→ This monograph assesses whether the Light Infantry Division, in its current configuration, can conduct successful defensive MOUT operations against Soviet forces in Europe. The study first outlines the demographic trends in Western Europe and the documented light infantry missions which make MOUT operations inevitable in a future conflict. As background material an overview of Soviet offensive MOUT doctrine and capabilities is provided, followed by a review of U.S. defensive MOUT doctrine and experience. Lastly, four recent Middle East battles involving MOUT operations are reviewed: Jerusalem (1967), Suez City (1973), Khorramshahr (1980), and Beirut (1982).					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL MAJ Lloyd W. Sherfey			22b. TELEPHONE (Include Area Code) (913) 684-2138		22c. OFFICE SYMBOL ATZL-SWV

BLOCK 19

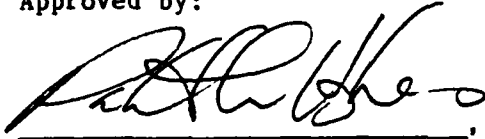
The study analyzes the Light Division in the areas of doctrine, training, organization, and equipment and among the conclusions drawn are the following: light force doctrine for employment of the covering force and reserves requires revision; a Light Force National Training Center is needed; a scarcity of engineers and engineer equipment will degrade defensive preparations; there is an urgent need for shoulder fired anti-tank and breaching weapons suited to employment in confined areas.

The study concludes that although the Light Infantry Division suffers some shortcomings it is capable of conducting a successful MOUT defense in Europe, and that the nature of urban terrain actually helps to mitigate some deficiencies, as in the areas of ADA and armored transport. In conclusion, urban terrain is judged to be an environment where the Light Infantry Division can achieve success with less corps augmentation than is required in most other scenarios.

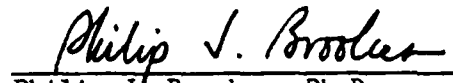
SCHOOL OF ADVANCED MILITARY STUDIES
MONOGRAPH APPROVAL

Name of Student: Major Lloyd W. Sherfey
Title of Monograph: Light Infantry in the Defense
Urban Europe

Approved by:


_____, Monograph Director
LTC Patrick M. Hughes, MBM


_____, Director, School of
COL Richard H. Sinnreich, MA Advanced Military
Studies


_____, Director, Graduate
Philip J. Brookes, Ph.D. Degree Programs

Accepted this 13th day of December 1986.

ABSTRACT

LIGHT INFANTRY IN THE DEFENSE OF URBAN EUROPE, by Major Lloyd W. Sherfey, USA, 49 pages.

➤ This monograph assesses whether the Light Infantry Division, in its current configuration, can conduct successful defensive MOUT operations against Soviet forces in Europe. The study first outlines the demographic trends in Western Europe and the documented light infantry missions which make MOUT operations inevitable in a future conflict. As background material an overview of Soviet offensive MOUT doctrine and capabilities is provided, followed by a review of U.S. defensive MOUT doctrine and experience. Lastly, four recent Middle East battles involving MOUT operations are reviewed: Jerusalem (1967), Suez City (1973), Khorramshahr (1980), and Beirut (1982).

The study analyzes the Light Division in the areas of doctrine, training, organization, and equipment and among the conclusions drawn are the following: light force doctrine for employment of the covering force and reserves requires revision; a Light Force National Training Center is needed; a scarcity of engineers and engineer equipment will degrade defensive preparations; there is an urgent need for shoulder fired anti-tank and breaching weapons suited to employment in confined areas.

The study concludes that although the Light Infantry Division suffers some shortcomings it is capable of conducting a successful MOUT defense in Europe, and that the nature of urban terrain actually helps to mitigate some deficiencies, as in the areas of ADA and armored transport. In conclusion, urban terrain is judged to be an environment where the Light Infantry Division can achieve success with less corps augmentation than is required in most other scenarios.



Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

TABLE OF CONTENTS

	Page
Section I. INTRODUCTION AND BACKGROUND.....	1
Section II. THE SOVIET ARMY AND MOUT.....	7
Section III. THE U.S. ARMY MOUT EXPERIENCE.....	12
Section IV. THE MIDDLE EAST: NEW LESSONS OR... VALIATION OF OLD ONES	18
Section V. EVALUATION.....	29
Section VI. CONCLUSIONS.....	38
MAP A: URBAN DEVELOPMENT IN WEST... GERMANY	40
ENDNOTES.....	41
BIBLIOGRAPHY.....	46

I. INTRODUCTION AND BACKGROUND

A general scenario for a NATO/Warsaw Pact clash in Western Europe might portray an intense, maneuver battlefield dominated by tanks and infantry fighting vehicles. In spite of the politically driven necessity of a forward defense, current U.S. doctrine emphasizes the use of maneuver and offensive action whenever possible at both the tactical and operational levels of war. This study will attempt to address a somewhat less glamorous and much more neglected aspect of such a future war, Military Operations On Urbanized Terrain (MOUT); and will do so in the context of a specific type of unit: The Light Infantry Division.

FM 90-10, Military Operations on Urbanized Terrain, defines MOUT as those military actions that are planned and conducted on a terrain complex where manmade construction influences the tactical options available to the commander. The manual further states:

urban combat operations may be conducted in order to capitalize on the strategic or tactical advantages which possession or control of a particular urban area gives or to deny these advantages to the enemy.

From a purely military viewpoint, the utility of defensive MOUT operations is well established and FM 90-10 lists five specific uses: 1) to control avenues of approach; 2) to act as a combat multiplier; 3) to conceal forces; 4) to retain key transportation centers; and 5) to deny strategic/political objectives.² John Mahan, in a study assessing past neglect of MOUT, presents more specific arguments for defensive use of MOUT in Europe, specifically to create a defense in depth similar in concept to that employed by the Germans during Operation Goodwood in World War II; and to utilize urban strongpoints as an "anvil" to complement the maneuver of mechanized forces.³ A final observation, and one especially germane to NATO's circumstances is the contention of a recent study (1983) by Litton,

Incorporated for the U.S. Army Research Institute that the attacker in a MOUT scenario requires eight to nine times more manpower than the defender to achieve operational equality.⁴

In examining the U.S. Army's attitude toward MOUT, one finds at best sporadic interest in spite of significant involvement in urban combat during World War II (of note is the fact that virtually all U.S. MOUT experience has been offensive in nature). There was a period of renewed interest in the 1970's resulting from the Army's reorientation from Southeast Asia to Europe and, to a lesser degree, assessment of MOUT experiences in Vietnam during the 1968 TET offensive. As a result the Army fielded two manuals (FM 90-10 and FM 90-10-1) but overall emphasis on MOUT training remained low.⁵ A significant indicator of this void is the fact that a search of six of the Army's professional publications (Army, Parameters, Military Review, Infantry, Armor, and the Field Artillery Journal) revealed only thirteen articles over a five year period (1978-1982).⁶ The fact that there has been a relatively recent resurgence of interest in MOUT reflects, in part, the current debates concerning the proper role of light infantry and the recognition of significant demographic changes in Western Europe which will now be addressed.

Since the end of World War II, the terrain on which any future European war will be fought has been steadily shaped and modified by the ongoing process of urbanization, currently proceeding at one to two percent annually. It is estimated that by 1985, ninety percent of Germans will live in urban areas. Addressing these Federal Republic of Germany (FRG) localities by size, one finds some 21,000 built up areas of less than 3,000 inhabitants and 235 towns with populations of 3,000 to 100,000.⁷ Another sixty cities exceed 100,000 and four exceed 1,000,000 inhabitants.⁸ One phenomenon of this urbanization process has been the formation of conurbations in which large

cities form the core of urban complexes that include small towns and suburbs, and which present the appearance of a single continuous strip city or urban corridor occupying a vast area.⁹ Currently such conurbations in the FRG include Rhein-Ruhr, Rhein-Main, Hamburg, Stuttgart, Rhein-Neckar, Munich, Hanover, Nuremburg, Bremen, and Saarbrücken-Völklingen.¹⁰ Of these, the Rhein-Ruhr, which extends west to Aachen and south to Bonn, contains 12.5 million people and 13,000 square kilometers; while the Rhein-Main complex includes Frankfurt, Darmstadt, Mainz, Mannheim, and Karlsruhe with five million people and 7,000 square kilometers.¹¹ As a final example, it is estimated that by the end of the 1980's, the Rhein-Ruhr will merge with the Dutch Randstad to form a continuous urban barrier 300 kilometers long (See Map A).

Tactically and operationally, the implications of this urbanization are profound. It is estimated that an American brigade on the inter-German border will normally have sixty percent of its sector composed of forest or urban area.¹² From the opposite perspective, it is estimated that an attacking Soviet division will have to contend with ten to fifteen built up areas at any given time.¹³ Whereas forty percent of the combat operations involving Allied Forces during World War II involved MOUT, one estimate places the percentage for a future war at sixty percent.¹⁴ Additionally, MOUT operations in Europe will encompass a vast variety of terrain to include old inner city, block construction, dispersed residential, high rise, and industrial-transportation areas. Indeed, one factor which tends to make MOUT one of the greatest challenges to a unit commander is the variation in urban terrain which can occur in a relatively compact area.

While current Soviet doctrine emphasizes speed and the bypass/isolation of urban areas whenever possible, the Soviets have apparently accepted the

fact that MOUT operations in a future war will be unavoidable. They currently devote a substantial amount of training time to MOUT and have published a multitude of articles on the subject.¹⁵ To quote one such source:

Under present-day conditions, combat action in a city will be a frequent occurrence. There are one or two large cities on an average for every 200-300 square kilometres. This means that in the course of offensive operations troops will have to fight to seize a city every 40-60 kilometres. As a rule, cities are located on important axes in regions rich in natural resources. They play an important role in the economic and political life of a country. Consequently, cities will have great military importance in any future war the imperialist might unleash.¹⁶

It is notable that many key objectives for attacking Soviet forces, especially for the Operational Maneuver Group (OMG) so much under discussion today, are often in or adjacent to urban areas: airfields, seaports, bridges, river crossing sites, major road and rail junctions, and logistical storage areas. When one considers the high density of wheeled vehicles in the Soviet inventory, control of major road networks are essential to sustaining the momentum of an attack. Finally there is the possibility that the Soviets might adopt "city-hugging" techniques in an attempt to preclude NATO use of nuclear weapons or even certain precision guided and multiple munitions. Even on relatively open terrain, the dispersal requirements caused by the Nuclear/PGM threat will be such that some Soviet forces will inevitably be operating in urban areas.¹⁷

Unfortunately, when one turns from the Soviet perspective to that of NATO, there appears to be a less realistic attitude toward the prospects of urban battle. During a recent Rand Corporation Study, a series of interviews with NATO officials revealed a reluctance to address the possibility of large

scale MOUT operations. In some cases this was apparently an aversion to planning for what, in effect, would be the destruction of their society ("destroying cities to save them"); while in other cases it stemmed from a perceived lack of military capability. To quote one West German general:

Fighting in urban terrain takes infantry on foot above all. In highly built-up terrain, armor and vehicles face special handicaps through the protection which buildings and ruins offer to the opposing infantry. My troops sit in vehicles, are trained to fight from vehicles, and their weapons are specially suited to fighting a mobile enemy in open country. I don't have the manpower, the training, the equipment suited for city fighting.¹⁸

To quote another

We are prepared to fight in front of cities and between cities but if we had to fight an enemy force¹⁹ in the Ruhr area the war would be lost.

To realists, the problems of maintaining a defense forward of all the large urban areas of the FRG make it impossible to ignore the advantages of using urban strongpoints to create tactical and operational defense in depth. One of the leaders in the call for increased consideration of MOUT operations has been General Franze Uhle-Wettler, who has contended that his army's obsession with mechanized war has produced a force that is deficient in the light forces he deems best suited for the defense of urban terrain.²⁰

Turning from background data to the central subject of this study, the Army's newly conceived Light Infantry Divisions (LID), it is worthwhile to note that perhaps no force has generated more controversy since the early attempts to create mechanized forces. In some instances the Army has been accused of creating a force without first assessing its proper missions. Others contend that the LID is too light for Europe and too heavy for low

intensity conflict. Its suitability for European employment in the MOUT role will be the focus of this paper.

As a point of departure, it should be noted that both FM 100-5, Operations, and FC 71-101, Light Infantry Division Operations, define a MOUT role for light forces. FM 100-5 states that light infantry can defend built-up areas in an armor dominated environment.²¹ Similarly, FC 71-101 contends that the light divisions can conduct defensive MOUT operations and thereby present their parent corps with an economy of force option.²² While our goal is to analyze the validity of these contentions, it should first be established that the employment of at least a portion of the Army's light forces, in any future NATO, conflict is inevitable. General (retired) W. E. DuPuy, in articulating the need for light infantry, contends that ideally such forces should be employed 1) against other light forces in any terrain; 2) against armor in general on "light infantry terrain"; and 3) against the most modern armor equipped forces only on terrain not physically negotiable by such armor. He continues, however, with the observation that the world is a "disorderly place where precise rules can rarely be followed."²³ Lieutenant Colonel R. B. Killebrew, addressing light infantry and NATO in Military Review, pictures three scenarios for war in Europe: an unreinforced Soviet surprise attack; an attack after full mobilization (no surprise); and a pre-emptive attack following uneven, partial mobilization on both sides.²⁴ Discounting the first two scenarios, the author views the last as most realistic and contends that in the pre-hostility stage of such a scenario there is a case for light infantry being chosen for initial reinforcement for the following reasons: 1) such forces could be partially moved with CRAF assets, preventing a drain of MAC assets, which could be kept on alert; 2) it would send a message to the Soviets (and to our allies), but one less

provocative than heavy unit deployments; and 3) it would have an additional deterrent effect by allowing repositioning of armored reserves.²⁵ The author sees such forces as particularly suited for use on the thickly urbanized German Plain (British and Belgian Sectors), which is one of NATO's most undermanned areas.²⁶

While Lieutenant Colonel Killebrew's scenario would result in a very early employment of light infantry in Europe hostilities, it is unrealistic to believe, regardless of scenario, that such forces would not be employed at some point. The Army cannot afford to withhold such a substantial portion of its combat power from a mid to high intensity conflict. Given this premise, it follows that potential MOUT missions of the Light Infantry Divisions together with the current demographic character of Western Europe will make defensive MOUT operations inevitable. In a sense, the renewed interest in MOUT and the coincident light force debates have had a beneficial synergistic effect, increasing interest in both topics and generating debate and analysis long overdue.

The specific question on which we will now focus is this:

Can the Light Infantry Division conduct successful defensive MOUT operations in Europe without a degree of unit modification which would decrease its flexibility and conflict with basic organizational and operational design limitations.

II. THE SOVIET ARMY AND MOUT

As a point of departure, the nature of the Soviet threat will be reviewed. Because of their significant MOUT experience in World War II, on both their native soil and that of neighboring countries, the Soviets have consistently maintained a greater interest in MOUT doctrine than have the U.S. and its allies.²⁷ Current Soviet MOUT doctrine has its roots in the offensive

techniques developed by the Red Army during the period 1944-45, when the Soviets possessed the strategic initiative.²⁸ During this period, actions were driven by the high command's dictum to maintain the speed of the advance, resulting in massive application of force to maintain momentum. When possible, leading forces by-passed cities, leaving assaults to the main force should capitulation be rejected.²⁹ At that point, unless the city had been overcome by a quick surprise assault, it was surrounded and the key points of resistance methodically assaulted and reduced. For these operations smaller units of all service arms were formed into assault groups and detachments capable of conducting independent but coordinated actions.³⁰ These groups and detachments contained tanks, artillery, engineers, flamethrower troops, and even antiaircraft artillery built around a core of infantry. One of their hallmarks became massive use of artillery in the direct fire role.³¹ While small groups of tanks were useful as direct fire weapons, the Soviets deemed massive armor formations to be ineffective. Interestingly this knowledge was disregarded in the final "race for Berlin" in which some Soviet commanders stormed the city with massed tank columns. In one week the Second Guards Tank Army lost sixty-four percent of its tanks, half of them to German infantrymen armed with individual antiarmor weapons such as the Panzerfaust and Raketanpanzerbuchse.³²

Current Soviet MOUT doctrine is best viewed as a refinement of the last war's lessons. As currently written, it is designed to apply mainly to heavily populated cities and towns, while isolated villages and groups of buildings are considered strongpoints for reduction by conventional attack.³³ Normally the decision to attack a city will be made at Combined Arms Army level with two or more divisions being committed to the seizure of a medium to large city (population 100,000 or greater by Soviet doctrine). As with

current U.S. doctrine, there are two techniques of attack — hasty and deliberate.

Whenever possible the Soviets prefer a hasty attack (from the march), a method designed for tactical surprise and suited for lightly defended areas. Normally such attacks are initiated by the advance security detachment battalion. Initially, regimental reconnaissance forces will attempt to draw fire to determine enemy strength, dispositions, and flanks. The rifle platoon of the advance party then assaults discovered positions in an effort further to define the situation.³⁴ Once strongpoints on the edge of the city have been seized, forces in the form of infantry-tank teams are rapidly passed through in an attempt to seize key objectives such as bridges or road junctions. Simultaneously, air assault or ground forces seal off the urban area to prevent withdrawal. If resistance is very weak the infantry may remain mounted in the interest of speed; and once key objectives are secured, pockets of resistance are eliminated by follow-on forces.³⁵

Should a hasty attack fail, the city will be surrounded and isolated, and if capitulation is refused, a deliberate attack will be conducted. The Soviet standard for deliberate assaults is two battalions per kilometer of frontage, normally attacking in three waves, with the first wave gaining shallow objectives, the second passing through, and the third following in reserve.³⁶ Actual battalion attack frontages will be 400-600 meters and a direction of advance is used as a control measure. For these operations, battalions are organized into assault detachments with company assault groups.³⁷ Typical combat organization for a company assault group consists of a motorized rifle company, one or two tank platoons, antitank guns, an artillery battery (for direct fire), a combat engineer platoon, and flamethrower or chemical specialists. These combat elements are normally configured as follows:

Attack or Seizure Groups (one or more):
One motorized rifle platoon with tanks.

Covering or Holding Group: One motorized rifle platoon with AT guns.

Fire Support Group: Includes direct fire artillery and flamethrowers.

Combat Engineer Group: Equipped with mineclearing devices and bangalore torpedos.

Reserve: One or two rifle squads.³⁸

During assaults, artillery preparations will be intense but short to minimize the restricting effects of rubble. Battalion commanders will be found well forward, 200-300 meters behind assault groups, and strong tank reserves will be found at battalion and regimental level.³⁹ A high emphasis is placed on the direct fire role of artillery and current literature indicates probable use of the BM21 Rocket Launcher in this role as well.⁴⁰ Above all, however, infantry is considered the key element. In anticipation of intense combat, assault troops normally carry two basic loads, extra grenades, and demolitions.⁴¹ Troops assault under artillery fire and smoke, with supporting fires shifting 150 meters from the objective and the final assault being conducted with automatic rifles, grenades, and demolitions. , Based on World War II experience, the Soviets expect a unit to suffer seventy percent losses before being relieved.⁴² Other areas of particular attention in Soviet MOUT literature are night operations, techniques for crossing water obstacles in urban areas, and use of psychological operations.⁴³

A final area worthy of note is the Soviet doctrinal treatment of nuclear weapons and MOUT. Overall there is little detailed elaboration on this theme, but the following points may be found: 1) The Soviets view nuclear weapons as best employed in an attack from the march; 2) If they are used, commanders must bear in mind that the resultant destruction, contamination,

and fires will reduce the tempo of the attack; 3) Nuclear fires are best employed against the edge of the city to aid the breakthrough or on enemy reserve locations within the urban area.⁴⁴

Turning from doctrinal and tactical concepts to an examination of the weapons in a Motorized Rifle Regiment, one finds a well armed, flexible combined arms force with a high potential for offensive MOUT operations and whose light weapons include: 1) RPG-16 and RPG-25 Antitank Weapons; 2) AGS-17 30mm Automatic Grenade Launchers; 3) RPK-74 Light Machine Guns; 4) SA-14 Surface to Air Missiles; 5) RPG-18's (equivalent of U.S. LAW); and 6) SVD Sniper Rifles. In the heavy weapon category, one finds ZSU-23 antiaircraft guns (capable of direct fire), tanks, and 120mm mortars. BMP Regiments have an advantage in that their 122mm Howitzers are self-propelled (superior to towed howitzers for direct fire tactics) and their IFV has both a 73mm gun and a Sagger missile launcher. Additionally, the BMP possesses somewhat better armor than the BTR. BTR equipped regiments have some compensation in the fact that they have a battery of the versatile SPG-9 73mm Recoiless Rifles and have a complement of "backpack" Sagger missiles. One equipment disadvantage of both types of regiments is the lack of a radio for the dismounted infantry squad.⁴⁵ Other specialized weapons are available and one that is held in high esteem by the Soviets is the flamethrower. Organized into companies, flamethrowers will often be found in lead elements entering a built-up area in the ratio of one company per battalion.⁴⁶

The final area for examination in analyzing the Soviet MOUT threat will be their efforts at MOUT training. Based on training facility expenditure, one can only conclude that they are far more interested in this area of combat than are the members of NATO. John Scharfen, in a 1975 study, describes eight Soviet MOUT facilities in detail, one of which is two kilometers deep.⁴⁷

Additionally, the Scharfen study references two other facilities described in Soviet publications, which are reported to be four kilometers deep, two kilometers wide, and capable of nuclear or non-nuclear training.⁴⁸ Since 1980, Soviet interest in MOUT has accelerated and a new facility has been built for Group Soviet Forces Germany (GSFG). The current trend in Soviet MOUT training appears to consist of an increased effort toward instilling initiative in soldiers and junior (conscript) NCO's below platoon level, thus allowing these forces to cope better with the small unit requirements of MOUT operations.⁴⁹ How such training may conflict with their rigid battle drill doctrine for more conventional offensive operations remains to be seen. It is clear, however, that the Soviets are devoting a serious effort to both the tactical and the psychological aspects of urban combat and are committing substantial amounts of resources to such training.

III. THE U.S. ARMY MOUT EXPERIENCE

The U.S. Army's interest in MOUT during the second half of this century has been at best limited and sporadic. Although the Army did in fact participate in a number of well known urban battles during World War II -- Palermo, Aachen, Brest, Cherbourg, and Manila to name a few -- they were exclusively offensive battles and never reached the magnitude of a Stalingrad or Berlin. Apparently, little thought regarding MOUT doctrine took place in the brief interlude between World War II and Korea. The major urban combat of that war (again offensive), the recapture of Seoul, was a striking success in part because of the scarcity of true building-to-building combat. Seoul was a relatively open city with wide avenues, parks, and few substantial buildings. This condition, and the fact that the North Korean Army was fighting a delaying action rather than a determined defense, contributed to a speedy success.⁵⁰ In retrospect the ease of that victory probably did little to

generate serious attention to MOUT in the later part of the Fifties; and it is worth noting that Seoul today would present military commanders with a significant MOUT challenge. An easy victory was not the case with America's major urban action of the Vietnam War, the battle for Hue (1968). The fact that Hue helped generate a degree of renewed interest in MOUT in the Seventies may be due in some measure to the negative impact it had on the U.S. war effort. Although the city was retaken, the time and effort required paid substantial strategic dividends to North Vietnam. In twenty-four days of fighting, three USMC and ten RVN battalions were required to clear the city (it took two USMC battalions thirteen days to clear a section of only seven blocks).⁵¹ Among the shortcomings of U.S. forces in this battle were a lack of training for urban combat, shortages of special munitions, difficulty in projecting the dramatic increases in Class V consumption, and refugee control. Several vintage weapons proved their worth, particularly the 3.5 inch Bazooka and 106mm Recoiless Rifle. Finally, Hue reaffirmed the lesson that massive use of artillery could not neutralize defenders and often enhanced their fighting positions through the effect of rubble.⁵²

In December 1971 the Assistant Commandant of the Infantry School directed the initiation of a study on combat in cities for the purpose of improving doctrine and training. This study resulted in the 1972 publication of the three volume Combat in Cities Report. Among other things, the committee observed that the Army's relative inexperience in defensive MOUT operations had resulted in a heavy reliance on foreign tactics, particularly German, British, and Soviet. It further noted that this lack of well defined U.S. defensive doctrine, in combination with extensive Soviet offensive doctrine, created an unfavorable situation and concluded that "this situation must be corrected to prevent a potential enemy from exploiting this doctrinal

weakness."⁵³ The study directly criticized the Army's current urban combat manual, FM 31-50, Combat in Built-Up and Fortified Areas, (1964) as lacking specific guidance in the areas of obstacles, antitank weapons, retrograde operations, force oriented defense, and reserve employment; and further noted a complete absence of brigade and higher level considerations.⁵⁴ This theme of a shortfall in MOUT doctrine was echoed in the 1976 version of FM 100-5, Operations which noted that

the whole subject of combat in built-up areas is one in which the Army is not well versed.⁵⁵

In 1978 a report by the Army Science Board on military operations in built-up areas also condemned the Army's MOUT doctrine. One outcome of this report was the publication in 1979 of FM 90-10, Military Operations on Urbanized Terrain, followed in 1982 by FM 90-10-1, An Infantryman's Guide to Urban Combat.⁵⁶ While these manuals represent the Army's most serious doctrinal effort to date, there are still serious shortcomings. Because of their time frame of publication, both FM 90-10 and FM 90-10-1 are written from a heavy force perspective. Furthermore, the current issue of FM 100-5 devotes less than one page out of two hundred to MOUT; and FC 71-100, Armored and Mechanized Division and Brigade Operations contains but three generalized paragraphs. Finally FC 71-101, Light Infantry Division Operations, devotes only eight out of over four hundred pages to MOUT (four of which cover MOUT defense). Conceptual thought "from the field" has hardly been better. As pointed out in the introduction, the period 1978-1982 saw only thirteen articles regarding MOUT in the Army's leading professional publications.

The current state of U.S. MOUT doctrine is perhaps best described as being founded on solid doctrinal principles but in need of expansion and

further adaptation to the light infantry perspective. FM 90-10 presents MOUT defensive doctrine in terms of the "Five Fundamentals of the Defense":

- 1) Understand the Enemy -- threat offensive MOUT doctrine.
- 2) See the Battlefield -- in MOUT the advantage to the defender increases because of greater restrictions on the attacker's routes of advance and difficulty in massing.
- 3) Concentrate at the Critical Time and Place -- in a MOUT defense, greater reliance must be placed on initial positioning. Here FM 90-10 stresses the need for the defender to maintain a mobility advantage through superior knowledge of the terrain.
- 4) Fight As A Combined Arms Team -- here FM 90-10 sees the dominant role in more open urban terrain (industrial/ transportation areas) as belonging to heavy forces.
- 5) Exploit the Advantages of the Defender -- the ability to shape and reinforce the terrain.⁵⁷

Further discussion of defensive planning considerations in FM 90-10 continues to reveal its mechanized orientation:

Dismounted infantry can contribute to this defense by occupying battle positions or strongpoints around which the mobile battle is fought.

If the retention of a built-up area is required, the defense may assume the characteristics of a position defense organized in depth and supported by strong mobile forces.⁵⁸

At no point is there a discussion of defensive operations exclusively by light forces.

Current doctrine, like that of the Soviets, envisions a three-dimensional battle — ground level, above ground (air space and buildings), and below ground (sewers, subways, etc.). The size of the built-up area is a significant factor. Villages (less than 3,000) may be suitable as company size strongpoints; battalions or brigades will often have towns and small cities (3,000 to 100,000) in their sectors; and divisions or even corps may be responsible for major urban areas (greater than 100,000).⁵⁹ Frontages of units are significantly compressed by the nature of urban terrain, with large urban areas requiring the greatest troop density and smallest sectors. A rule of thumb is to assign a unit one third of its normal frontage, and FM 90-10-1 provides the guidelines of four to eight blocks frontage for a battalion and two to three for a company (an average city block has a frontage of about 175 meters).⁶⁰ Companies may defend either by battle positions or sectors and reserves are relatively small: one or two platoons at battalion level. Tanks may be used in either battle positions or as reserves, but in either case require infantry support. With regard to artillery the direct fire role is mentioned but little emphasis is placed on it.⁶¹

Both FM 90-10 and 90-10-1 present the MOUT battlefield in terms of the three basic areas of the defense: the covering force area, main battle area, and rear area. The covering force area (CFA) is envisioned as being forward of the actual urban area and has the normal covering force missions of delaying the enemy, forcing deployment, and masking the location of the main defense (missions best suited to a mechanized force). Also stressed is the need for additional engineer support in the CFA. The main battle area (MBA) is envisioned as having antiarmor defenses on the edges of the city and the main defenses deployed in depth (note: a dilemma for the defender is that while city edges have the best fields of fire they are also easily targeted

and seldom have substantial buildings -- for cover and protection -- as are found deeper in the urban area); and emphasis is placed on destroying threat vehicles as soon as they are in range. The small, infantry heavy counterattack forces are normally attached to the unit in which the counterattack takes place.⁶² Rear area operations, in principle, are the same as for a normal defense. Movement may, however, be restricted and the inability rapidly to move reserves (and their small size) places greater emphasis on CSS internal security and self-defense.⁶³ Finally, like the Soviets, U.S. doctrinal literature realizes that urban combat will place a premium on the initiative, skill, and daring of small unit leaders.

Regardless of the adequacy of doctrine, it is all but useless without sufficient force training. In this regard the Army's efforts must be deemed modest at best. A 1983 study by the U.S. Army Research Institute on formal MOUT training at the U.S. Army Infantry School revealed the following periods of instruction devoted to the subject:

1) One Station Unit Training (Infantry)	14 hours
2) Advanced NCO Course (ANCOC)	11 hours
3) Infantry Officer Basic Course (IOBC)	11 hours
4) Infantry Officer Advance Course (IOAC)	13 hours
5) Infantry Pre-Command Course (IPPC)	3 hours ⁶⁴

In general the study group identified a need for increased detail in instruction, a point borne out by responses to questionnaires sent to IOAC graduates in the field.⁶⁵ An additional shortcoming identified was an absence of any Soldier's Manual MOUT tasks and, hence, an absence of SQT tasks related to MOUT.⁶⁶ (Note: A limited number of MOUT tasks have since been incorporated into the Army's Soldier's Manuals.)

In examining the status of unit training in the field, the study group concluded that no unit in the Army was adequately trained for defending a large European city with the exception of the Berlin Brigade.⁶⁷ While the

group observed limited training by other U.S. Army, Europe, units at both the Berlin and Hammelburg (West German Army) facilities, it concluded that U.S. training efforts were inferior to those of British and West German units.⁶⁶ Currently, it appears that increased attention is being given to MOUT in CONUS and in the past few years new facilities have been completed at Fort Benning, Georgia, and Fort Bragg, North Carolina. Facilities exist at Fort Campbell, Kentucky; Fort Lewis, Washington; and Fort Ord, California as well, but in all cases they permit company size training at best and in no way approach the size of Soviet facilities. While expense realistically prohibits larger facilities at individual installations, the Army would probably be well served by exploring games and simulations to familiarize battalion and higher staffs with the problems of MOUT. Furthermore, consideration should be given to adding MOUT material to CGSC instruction and tactical exercises.

IV. THE MIDDLE EAST: NEW LESSONS OR VALIDATION OF OLD ONES?

A review and analysis of recent combat involving MOUT operations in the Middle East is particularly germane as it provides cases in which relatively light and immobile defenders have opposed more heavily mechanized attackers; and also as it provides the only instances of MOUT actions in which U.S. and Soviet weapons have been employed against each other. Four battles will be reviewed in chronological order: Jerusalem (1967), Suez City (1973), Korramshahr (1980), and Beirut (1982).

The first battle to be examined will be the battle for Jerusalem (June 1967). The portion of Jerusalem under Arab occupation consisted of the Old City, lying atop a plateau and containing a maze of narrow streets, cul-de-sacs, vaults, caves, and tunnels; as well as an outer, modern urban area. Stone construction was widespread in both sections. Along the Arab-Israeli dividing line the Jordanians had built a system of bunkers and

trenches; while the Israeli defense approach had been to erect housing projects whose buildings were reinforced and designed to serve as fortresses if necessary.⁶⁹

The actual Israeli decision to seize the Arab portion of Jerusalem was driven by three factors: rapid success on the southern front; a desire to protect Israeli Jerusalem from any Arab counteroffensive; and Jordan's active entry into the war.⁷⁰ Israeli forces consisted of the Jerusalem Brigade (seven infantry battalions and one tank battalion); the Harel Armored Brigade (two infantry battalions on half-tracks and one tank battalion); and the "Q" Paratroop Brigade (three battalions). Most of the Jerusalem Brigade were reservists and residents of the city with intimate knowledge of the terrain. Jordanian forces consisted primarily of the 5,000-man 27th Infantry Brigade (three infantry battalions, one artillery regiment, and one engineer company). While elements of three other brigades were designated to lend support, they were not under the 27th Brigade's control.⁷¹

An examination of tactical concepts indicates that the Jordanian Army had no doctrinal precepts for urban combat. Defensive preparation in the form of obstacles and building reinforcement were minimal and supplies were not stockpiled. It appears that a point defense on the approaches to the city was intended and the commander's general concept seems to have included a desire to inflict maximum casualties on forces crossing the separating zone, a realization that buildings within the city could be defended more economically than those on the edge, and little regard for the utility of tanks or APC's in fight.⁷² Israeli doctrine for built-up areas emphasized forces built around tanks and supported by infantry and engineers. Night was considered the optimum time to seize initial footholds on the outskirts of a city, followed by quick penetrations to seize key crossroads and buildings. The Israeli

concept in Jerusalem envisioned using the Paratroop brigade to make the main offensive against Jordanian Jerusalem while the other two brigades seized urban approaches and controlling terrain. Each paratroop battalion was allocated one tank company.⁷³

The Israeli assault began at 2:20 am, conducted by the paratroops with tanks in supporting fire positions. Heavy casualties were suffered in breaching the initial defensive lines and at daylight the tanks moved forward to assist in the house-to-house combat with direct fire. Elsewhere, efforts against Augusta Victoria Ridge (part of the outer urban area) were driven back when the armor and infantry became separated; and to the south portions of the Jerusalem Brigade suffered heavy casualties in house-to-house combat. By the end of the day, Jordanian forces had withdrawn into the Old City. The following day was somewhat anticlimatic when the Jordanians abandoned Augusta Victoria Ridge and elected to withdraw rather than fight in the Old City.⁷⁴

In examining the lessons of this battle, it is significant that the Israelis suffered their heaviest casualties of the 1967 war in Jerusalem in spite of the fact that the defenders were ill prepared. Considering the restrictive nature of the city streets, an adequate obstacle plan might have proven decisive. Overall, the Israeli tactic of using tanks and APC's/half tracks in teams proved effective and most losses occurred when the elements became separated. A continuous problem was that of Jordanians reoccupying buildings after they were cleared. Air strikes were of little tactical value and the moderate effects of Israeli artillery were probably a result of detailed knowledge of the target area. It should be noted, however, that throughout the battle both sides were constrained by the desire to avoid undue damage to the Old City.⁷⁵ The only innovative weapons employed by the Israelis were a special demolition charge for penetrating stone buildings and

a catapult device for projecting explosive charges over short ranges. Lastly Israeli decentralized command and control, which allowed local commanders the ability to modify plans and exercise their initiative, must be considered a key to overall success.⁷⁶ While Jerusalem was unquestionably an Israeli victory, it is a striking example of a relatively heavy force suffering high casualties against a light infantry urban defense. Had the defending Jordanian forces adequately prepared the battlefield and made provision for effective command and control, the outcome might have been far different.

The battle of Suez City in 1973 is of even more interest in that it has been cited by the Army Chief of Staff as:

an example of light infantry conducting
successful military operations on urbanized
terrain against armored and mechanized
forces.⁷⁷

The battle for Suez City occurred during the closing days of the 1973 Middle East War, due to a combination of tactical, strategic, and political factors: tactically, it controlled the Egyptian Third Army's line of communication; strategically, it controlled the entrance to the Suez Canal; and politically, its seizure would firmly establish Israel's claim to control of the area in the eyes of soon-to-arrive United Nations observers (who were tasked to implement the forthcoming ceasefire and mark the zones of control for each army).

Although Suez was originally a city of a quarter million people, many of its inhabitants had fled during the artillery duels which followed the 1967 War. Of the remainder, two thirds were evacuated in 1972 when defensive preparations began.⁷⁸ The majority of buildings in Suez were two and three story residences of mud and stucco, while some government and business buildings were reinforced concrete. Additionally there were numbers of six to

eight story apartment buildings, also of reinforced concrete. Narrow alleys (in many places soldiers could leap from roof to roof), flat roofs, and upper story porches were widespread characteristics of the area. While there were few main streets, those that existed were wide and straight enough to permit ATGM employment.⁷⁹

Israeli forces committed to the capture of Suez consisted of two armored brigades less organic infantry, two paratroop battalions (mounted on trucks, buses, APC's, and half-tracks), one mechanized recon battalion, one tank company, and a reduced armored infantry battalion. Vehicle totals were 100 tanks, sixty APC's, and forty-two half-tracks.⁸⁰ Opposing Egyptian forces counted elements of the 19th Infantry Division, the equivalent of two mechanized battalions from the 4th and 6th Divisions, a commando battalion, and an armored brigade (on the East bank). Great reliance was placed on the city's 2,000 man militia who had been issued weapons and had begun training one month in advance.⁸¹

While the Israeli Defense Forces (IDF) possessed a general MOUT doctrine, a serious divergence had developed in that the armored forces had essentially created a doctrine of their own. This armored doctrine called for mechanized and armored forces to by-pass and then encircle cities, followed by a tactic called BUZZ -- the creation of shock by rapid armor thrusts. Armored columns with tanks and APC's were to move on parallel streets, firing on the move, to seize key objectives and inflict heavy losses on the enemy. Columns would then fan out to deal with pockets of resistance. This problem of dual doctrine would surface in Suez with the armor driving ahead and the paratroops dismounting (in accordance with standard IDF doctrine).⁸²

Unlike the defenders in the 1967 battle for Jerusalem, those of Suez were well prepared. The Egyptian commander had devised a four stage plan

consisting of a perimeter of outer trenches, an area defense of the city, a point defense of key facilities, and a group of reserves. Minor routes were blocked with mines and rubble in advance; major roads were prepared for demolition; command posts were in hardened positions; and supplies had been stockpiled. Kill zones were designated on principal streets. Generally, the Egyptians did not consider tanks useful for MOUT defense but did station a few on the perimeter, while two battalions guarded the canal bridge. Sappers and RPG's were sited on the main streets and troops were trained to fire only after the Israelis were in the kill zone.⁸³

The IDF attack began on 24 October with preplanned artillery and air strikes being restricted due to misty conditions. The main attack was made by the 217th Armored Brigade which assaulted in a column formation composed of an armored battalion of tanks and Zeldas (APC's with multiple machineguns) followed by two paratroop battalions and a scout company. As the column sped forward, it extended over 2.5 kilometers; and gaps had developed between elements by the time the leading armor battalion reached Arba'in junction, an Israeli objective and also an Egyptian kill zone. When Israeli forces entered the junction a hail of ATGM, RPG, ZSU-23, and automatic weapon fire killed virtually every tank commander and disabled a number of vehicles. Other vehicles, attempting to escape became trapped on narrow side streets. The survivors finally regrouped and advanced to their final objective where they were again stalled by fire. Meanwhile, the paratroops had followed their own MOUT doctrine, dismounting when the armor made contact to their front. Finally persuaded to remount by the brigade's deputy commander, they also drove into the Arba'in kill zone, were ambushed, and were forced to dismount again. Additional Egyptian actions separated and pinned down the second paratroop battalion and drove back the recon company at the edge of the

built-up area.⁸⁴ Although reinforced by elements of the 460th Brigade, the attack remained stalled. As the IDF cleared buildings, the Egyptians quickly occupied others and continued to destroy stalled vehicles with Saggars, Mosam grenades, and Molotov cocktails. The IDF armor was finally able to withdraw at dusk and the paratroopers exfiltrated that night; admitted losses for the entire operation were thirty-eight armored vehicles.⁸⁵

In analyzing the battle at Suez, the key factor must be seen as the excellence of Egyptian preparations in the form of rubble, obstacles, and kill zones, supplemented by excellent fire discipline. This skillful preparation was further complemented by the hasty IDF attack formation which did not integrate the armor and infantry forces. The Egyptians' ability to shift forces and constantly reoccupy cleared buildings contributed to keeping the attackers off balance and stalled. Although the IDF possessed air superiority neither air strikes nor artillery proved capable of denying use of rubble or structures (once engaged in close combat, IDF commanders were afraid to use CAS). Complemented by obstacles to stall movement, ATGM's, RPG's, Molotov cocktails, and Mosam grenades (magnetic grenades) all proved effective in the hands of determined light forces; and a particularly devastating weapon was the ZSU-23 in the direct fire role. Finally, the Egyptian method of extremely decentralized command and control, with actions fought by localized forces and some use made of runners and telephones, appears to have been well suited to the tactical situation.⁸⁶

Turning to the ongoing Iran-Iraq war, the battle for Khorramshahr (September - October 1980) represents the largest conventional action to date. It is of particular interest to this study because of the great disparity between attacker and defender in both numbers and equipment. While Khorramshahr itself contained only limited military objectives, it was the principal city

on the road to Abadan and Iraq perceived a need to secure it. Of greater importance was the fact that international expectation was that Iraq would quickly seize the city; and premature Iraqi announcement that the city had been captured made it an objective of political necessity for Iraq. Iran, conversely, saw the war as a long term struggle. Confident that Iraq could never occupy a major part of her territory, she was prepared to lose Khorramshahr but also viewed the city as an opportunity to inflict heavy attrition on the Iraqi forces.⁸⁷

In September 1980, Khorramshahr, the largest commercial port in Iran, had a population of 175,000, although most residents were evacuated before the battle. Split by a river, the city's construction reflected World War II and post war growth. While older sections of the city were marked by narrow streets, those in newer quarters were wide and straight.⁸⁸ Iraqi units committed to the battle totaled over a division and, being equipped on current Soviet lines, were armor heavy at the expense of infantry. Iranian defenders numbered 3,000 and consisted primarily of Pasdaran (Revolutionary Guards), supplemented by other militias, police, army trainees, and a few regular troops. The Iraqi forces, although trained on Soviet doctrine, appear to have had little in the way of a coherent MOUT plan. Driven by a desire to avoid casualties, they apparently hoped to attrit defenders by massive use of artillery before entering built-up areas. The Iranians apparently had no defensive plan whatsoever. Most regular army troops had been withdrawn and the Pasdaran remained primarily from a sense of martyrdom. Some trenches were dug but sniper and ambush positions predominated.⁸⁹

Iraqi shelling of Khorramshahr began on 26 September; on the 26th troops reached the outskirts of the city where they immediately encountered numerous ambushes. In the following days the Iraqis made penetrations with armored

thrusts and the few Iranian regular army troops available made limited counterattacks. On 6 October, a massive attack was launched which resulted in widespread close combat. Although their weapons at this point were primarily RPG-7's, some AT guns, and light weapons, the Pasdaran resistance was fierce. By mid-month the Iraqis completely encircled the city through a river crossing to the north but required from 16 to 24 October to gain full control of the city.⁹⁰ Iraqi casualties are estimated at 1,000-5,000 killed and 3,000-4,000 wounded.

In examining lessons learned, it is significant that massive use of artillery was incapable of reducing resistance by a significant degree, as were armored thrusts. While the defenders had some armor, small arms, "Molotov Cocktail" style grenades, machine guns, and RPGs proved to be the significant factors in slowing the Iraqi offensive. Although Iran had local air superiority, the nature of MOUT and the existence of more lucrative targets elsewhere limited its employment. Iraqi tanks when not supported by infantry proved extremely vulnerable to sniping and ambush, the principal tactics of the Iranians.⁹¹ Lastly, Iraqi command and control was clearly deficient. Iranian command and control was also extremely poor but the small-unit-action character of MOUT kept this from being a definitive factor.

Although it was not their original intent, Khorramshahr ultimately allowed the Iranians to redeploy and reinforce more critical sectors and prevented any semblance of a quick Iraqi victory. It is perhaps one of the best examples to date of an outnumbered, lightly armed force achieving operational and possibly strategic results through defensive MOUT actions.

The last Middle East example of MOUT combat is the Israeli siege of Beirut, 1 July - 22 August 1982. The IDF invaded Lebanon in June 1982, either to push back the PLO from her borders or to eliminate them completely (a

question of intent still unresolved). Following operations in southern Lebanon against the PLO and in the Bekaa Valley against Syria, the majority of the PLO were isolated in West Beirut; and Israel perceived an opportunity for complete elimination of a recurring threat.⁹²

Beirut is the largest city in Lebanon with a population of approximately one million. Its older structures consist of four to five story sandstone buildings reflecting the French influence, while new areas contain reinforced concrete high-rises of the post World War II American style. West Beirut, where the action occurred, is a predominantly Muslim area, noted in part for its numerous (over thirty) high-rise tourist hotels.⁹³

When planning this final operation against the PLO, the IDF realized that it had neither the training nor equipment for a major HOUT operation. Equally important was the realization that house-to-house combat would produce unacceptable levels of military and civilian casualties. As a result, the IDF essentially adopted a siege strategy: the PLO enclave was isolated on both land and sea; power and water were cut off (later restored because of U.S. pressure); and a massive bombardment was initiated to reduce the PLO positions. While the intense artillery fire severely damaged PLO camps, it merely enhanced their defensive strongpoints with additional rubble.⁹⁴ On 4 August the IDF launched a three axis attack (the largest of the siege) against the PLO headquarters in Fakhani district. Forces attacking from the northeast were halted but progress was made in the south, and by the end of the day IDF forces were closing in on the last three PLO camps. That day's close combat proved to be the IDF's costliest of the war. In the days that followed, lines remained static as the U.S. attempted to negotiate a cease fire, which was formally declared on 12 August. On 21 August United Nations peacekeeping elements arrived, and on 22 August the PLO began to evacuate. While a clear

victory for Israel, the action in West Beirut resulted in 38 killed in action and 750 wounded (sixty-one percent of whom were in the rank of Sergeant through Major). Furthermore, the cost of the operation equated to one and one half months of Israel's gross national product.⁹⁵

Although the IDF approach was somewhat unique (as was the political situation), this battle, like Korramshahr, demonstrates the tactical advantages that a MOUT defense can confer on even lightly armed and ill organized defenders. The PLO, lacking a well defined chain of command, used multiple positions, usually of six men or less. Heavy use was made of mines, obstacles, tunnels, and trenches. Additionally, the long presence of the PLO in Beirut had allowed the stockpiling of supplies.⁹⁶ While formal training was lacking, experience in the 1975 civil war was clearly of great benefit. PLO weapons included the RPG-7, LAW, and recoilless rifles for light anti-armor defense and AT-3 Sappers and MILAN's for use against main battle tanks. Significantly, it has been reported that the current generation Merkava tank with its state-of-the-art armor suffered no crew kills (a point to be considered in Section V). Finally, while the IDF's reduction-by-fire approach reduced the role of snipers, fifty-five percent of IDF casualties were the result of small arms fire.⁹⁷ From the IDF perspective, body armor was perceived as a significant casualty reducer. Both artillery and Vulcan anti-aircraft guns were used in a direct fire role and the Maverick missile proved a valuable precision guided munition (PGM) for the surgical destruction of selected targets.⁹⁸ Notably, the IDF suffered a significant increase in psychological casualties even though close combat was light by doctrinal standards.⁹⁹ In conclusion, Beirut again demonstrated the ability of light forces to delay an attacker possessing superior numbers, heavy weapons, and air superiority. Although the IDF could certainly have taken West Beirut

without the truce and evacuation, casualty levels would probably have been politically unacceptable.

V. EVALUATION: THE LIGHT INFANTRY DIVISION AND MOUT

Based on previous discussions of Soviet and U.S. doctrine, as well as examples of recent urban combat in the Middle East, the capability of the Light Infantry Division to conduct defensive MOUT operations in a European scenario will now be examined. Areas of analysis will include doctrine, training, unit organization, and equipment. As a point of departure, it must be remembered that one of the Light Division's greatest attributes is its relative ease of deployment: 500 C-141B sorties, compared to over 3,000 C-141B sorties (and C-5 sorties as well) for a heavy division.¹⁰⁰ A second equally important characteristic is its adaptability to a wide spectrum of missions. While this section will make limited recommendations that could improve the defensive MOUT capability of the Light Division, no changes that would affect the unit's deployability posture or versatility will be considered in answering the basic research question.

Doctrine/Tactics

While U.S. defensive MOUT doctrine is essentially sound, the Army's two principal references, FM 90-10 and FM 90-10-1, were both written prior to the advent of the Light Infantry Division. As a result, certain portions require refinement to coincide with the Light Division's capabilities in the three areas of the battlefield.

a) With regard to the Covering Force Area (CFA), current doctrine envisions a highly mobile force established well forward of the main battle area, utilizing natural cover as well as outer villages and strip areas; and complemented by large amounts of engineer and artillery support (both of which

are rather austere in the Light Division).¹⁰¹ Given its limited mobility assets, the Light Division's CFA effort will be greatly reduced. While a limited CFA action can be fought with Battalion Scout/TOW elements and the CAV squadron (two air and one ground troops), the major ground elements (the infantry battalions) are too immobile to conduct a fluid CFA battle against a Soviet force. Airmobile assets are an option, but a change in weather or loss of local air superiority could invite decisive engagement. Additionally, while the Division's CFA action may delay and force the deployment of some Soviet forces, it is unlikely that it can deceive the Soviets as to the true MBA location if they are approaching a major urban area. However, the idea of deception as a combat multiplier for light forces, particularly in MOUT operations, is a topic requiring more study. Ideally, the CF elements will strip away the Soviet recon/advance guard elements without revealing positions and two ideal assets are Copperhead and Hellfire. Unfortunately, the Light Divisions do not currently possess ground laser designators.

b. Turning to the Main Battle Area (MBA), a second concept in need of refinement is the use of the counterattack. Soviet and German World War II experiences continually reaffirmed the need to launch counterattacks as rapidly as possible to restore positions, even if it meant piecemeal use (the first thirty minutes were considered critical).¹⁰² U.S. doctrine does not lend sufficient emphasis in this area. In view of the Light Division's lack of mobility and armored protection, the use of numerous reserves of small size and positioned well forward will be necessary. Overall, the Light Division's high density of dismounted combat troops make it well suited to a MOUT MBA action. Shortcomings that do exist will be addressed in the areas of organization and equipment.

c. Finally, regarding the Rear Area it has been noted that limited availability of reserves will place increased emphasis on self-defense by CSS units, a task facilitated by the compact size of Light Division CSS units and their individual soldier skills.

Training

It is in the area of training that the Light Division possesses the greatest internal capability for enhancing its MOUT potential. Current trends indicate that the Army's light forces are devoting the most attention to this subject but further progress is needed. Perhaps the greatest constraint beyond the Light Division's control is the cost of truly adequate MOUT training facilities, and in this regard the ongoing Light Force National Training Center (LFNTC) initiative is of critical importance. The MOUT portion of the LFNTC (as envisioned in a 1984 study) will, for the first time, allow units to conduct Battalion Level MOUT force-on-force MILES exercises. Two other facilities will permit platoon level live fire exercises (both assault and defense); two mock industrial facilities are planned; and additional buildings will be located throughout the remainder of the LTC training area to simulate population density.¹⁰³

Based upon the general nature of combat in urban areas and past historical analysis, the following areas are recommended for increased training emphasis:

a) Soviet Tactics: Leaders at all levels must be familiar with Soviet tactical concepts for both hasty and deliberate attacks, as well as Soviet task organizations. Given the Soviet preference for hasty attacks, defenders should place major kill zones well within the urban area (as at Suez) and attempt to draw in forces without their reconfiguring to assault groups.

b) Terrain Analysis: Staffs and higher level commanders must be able adequately to analyze the urbanized battlefield; small unit leaders must be adept at analyzing building structures to select the best possible defensive positions. This complex area requires special emphasis by supporting intelligence units and personnel.

c) Weapons Application: Soldiers at all levels must understand the effects which their weapon will produce in urban combat (penetration, breaching effects, backblast, etc.).

d) Psychological Stress: Leaders must attempt to prepare soldiers for the psychological stresses unique to close quarters urban combat (e.g., subterranean operations in sewers and subways; isolation in strongpoints; face to face combat; and involvement by indigenous civilian personnel in combat activities).

e) Engineer Skills: The shortage of engineers will require infantrymen to be proficient in the use of demolitions (for rubbleing and breaching), mines, and obstacles. As previously illustrated such preparations were the key to Egyptian success at Suez, while a lack of preparation contributed to the Jordanian defeat in Jerusalem.

f) Snipers: Snipers were a great force multiplier in Hue, Khorramshahr, and Beirut. Some Marine units in Hue attributed as much as fifty percent of their casualties to snipers.¹⁰⁴

g) Use of Soviet Equipment: The close nature of MOUT combat means that quantities of enemy munitions and weapons may become available for friendly use. Light infantrymen should have a degree of familiarity with Soviet small arms, crew served weapons, and antiarmor weapons.

h) Artillery: Increased training for 105mm crews in the direct fire role is needed (to include selection/preparation of positions).

i) Aviation: The unique aspects of low level flying in an urbanized environment need to be analyzed. Flight simulators might be useful given the "real world" safety restrictions on such flying.

j) Medical: Difficulties inherent in evacuating casualties in urban combat will make more sophisticated first aid skills a necessity for individual soldiers. In this regard the first aid training programs of the Army's Ranger Battalions merit serious attention.

While the above categories of training are not all inclusive, they provide a startpoint for enhancing proficiency in MOUT operations. Of further significance is the fact that the majority of the areas noted will contribute to most other Light Division employment missions.

Organization/Functional Areas

Turning to an examination of the Light Division's actual force structure, one encounters the area of greatest criticism: that the unit is "too light" to function in mid-to-high intensity combat. While the use of corps plugs to complement the division structure is widely envisioned, there is no guarantee that such forces will always be available in a high intensity European scenario. Conversely, organic force increases will negate the division's rapid deployment capabilities. Six of the more frequently criticized functional areas of the Light Division will now be examined to assess unit adequacy for defensive MOUT operations.

a) Combat Service Support (CSS): As currently structured, the Light Division is capable of sustaining itself for forty-eight hours and is capable of conducting limited resupply for its supported units.¹⁰³ Operations in excess of two days will require corps support, in any scenario, and the static nature of a MOUT defense will probably impose fewer strains on corps assets than a fluid battle. A key consideration is that any reinforcing combat

support unit must bring its own CSS. The high usage rates of Class IV and V supplies will make initial stockpiling a necessity and the decentralized nature of the combat will make a "push system" of resupply preferable.¹⁰⁶ Finally CSS personnel must be adept at using local equipment, enemy or civilian, and in scavenging local supplies, especially Class IV related items. With regard to transportation, serious deficiencies clearly exist. The Supply and Transportation Battalion can move almost 700 troops but with no protection, and the CAB can provide thirty OH 60 from its Assault Helicopter Companies. With the exception of the covering force battle, however, this lack of transport is probably not a critical deficiency for a MOUT defense. At Suez, for example, the Egyptians maintained local tactical mobility (over and through buildings) against a mechanized Israeli force.

b) Artillery: The current division artillery structure consists of three 105mm howitzer batteries and one 155mm battery. As previously mentioned, a lack of laser designators prevents use of Copperhead in the CFA and ADA approaches. While the batteries could prove valuable in the direct fire role (with corps GS artillery providing indirect fire) their relative lack of mobility and the possibility of having to abandon guns must be considered. Based on the battles of Hue, Suez, Khorramshahr, and Beirut, it appears that indirect fire artillery will not be decisive in urban combat, but can provide critical support.

c) Engineer: The character of a modern urban area makes large quantities of demolitions and heavy equipment a vital aspect of a well prepared MOUT defense, and it is perhaps in this area that the Light Division is most lacking. The organic engineer battalion has only six armored combat earth movers (ACE) and eighteen small emplacement excavators. There are no dump trucks or other vehicles to haul the vast quantities of explosives needed

to conduct rubbleing and breaching operations.¹⁰⁷ However, it should be pointed out that even for a heavy division, corps engineer reinforcement is required when preparing MOUT defenses. Additionally, most manual labor is performed by maneuver units with engineer technical supervision and heavy equipment support.¹⁰⁸ Should corps heavy equipment be unavailable, possible shortfall options are use of civilian equipment or creation of additional rubble with friendly air force ordnance. Inadequate obstacle preparation could also be compensated for by PASCAL and GATOR priority from corps, at least on main approaches. Mines of other types will prove useful in any MOUT activity, but the methods to emplace and use them are ill defined and the logistics required to use them dictate external support in most cases.

d) Air Defense: Current capabilities consist of Stinger missiles and towed Vulcans. While these are not an optimal force for protection of maneuvering forces, experiences in the battles of Hue and Suez indicate that urban areas severely negate the advantages of air superiority of the attacker.

e) NBC: The lack of an organic chemical company may necessitate corps support. Currently, no data appears to be available as to the extent to which the shelter of an urban area may negate the value of persistent chemicals. Soviet doctrine regarding offensive MOUT operations is not definitive in this area.

f) Intelligence: Virtually all of the foregoing arms, munitions, and battle techniques require the best possible information about the enemy and his approaches to and use of urban terrain. Understanding the unique features of urban combat requires different training and analytical techniques fully to anticipate enemy actions. Adequate maps of urban areas are critical to achieving a complete intelligence picture and a concerted effort in this area is needed.

Equipment

Historically, official interest in MOUT weaponry has been slight and the Army's Combat in Cities Report noted that, as a rule, weapons had been developed with little regard for their effects on materials found in cities.¹⁰⁹ While there are conflicting schools of thought as to whether the Army should develop specialized weapons for MOUT, it is obvious that the Light Division is the unit least capable of being burdened with large amounts of additional specialized weaponry.

Turning first to the area of antiarmor weapons, it should be remembered that Soviet deliberate attack (MOUT) tactics are based on infantry heavy forces with tanks for support. While much of the current Light Division force structure debate has centered on the need for some sort of armored gun system to defeat enemy tanks, case studies indicate that such a system is not a necessity for a successful MOUT defense. Egyptian success at Suez did not rely on tanks but rather on infantry systems capable of defeating the attacker's armor and on imaginative individual attack against the vulnerable points of armored vehicles. Achieving such capability with infantry weapons is, however, more difficult today given the advent of spaced/laminated armor and the even newer reactive armor. While the TOW and Dragon systems are still presumed adequate for head-on attack, they are best suited to employment on the edges of the MOUT MBA and on major streets, as in Suez City. In the close quarter combat that is characteristic of most MOUT operations, they are handicapped by excessive backblast (for use from buildings) and long arming distances (sixty-five meters). The newly purchased AT-4 is superior to the LAW, but it appears that, for the present, the individual light infantryman will be restricted to rear, flank, and overhead shots in attempting to defeat the latest Soviet armor; and like the LAW, TOW, and Dragon, the AT-4 is

difficult to employ from enclosed spaces because of backblast.¹¹⁰ An ideal light infantry weapon for antitank MOUT use would be a minimum signature weapon such as the German Armbrust or French Jupiter, which employ the counter-mass principle and can be fired from confined spaces. (Note: Counter-mass weapons operate by expelling a mass equal to the projectile to the rear of the weapon, producing a smaller flash, blast, and smoke signature. An improvement on this principle uses two pistons driven by gases in the center of the weapon to expel both projectile and counter-mass, and then seal the weapon tube, eliminating launch signature.)¹¹¹ Consideration should be given to supplying such weapons to light units committed to a MOUT defense.

The second and related area in which light forces are currently handicapped is the lack of an effective breaching weapon (breaching is defined as the creation of holes to improve mobility, loopholes for weapons, or openings to allow grenades or demo to be thrown into structures). FM 90-10 notes that no current battalion level weapon has a one shot wall breaching capability: guided weapons are too expensive and inefficient while the LAW, even with multiple shots, cannot create a man sized hole.¹¹² A multipurpose, assault weapon employing the previously mentioned counter-mass principle would be ideal. Until then demolitions remain the best option.

In the antipersonnel category there are a number of proven weapons absent from the Light Division's inventory which would prove extremely useful in a MOUT defense, to include the .50 caliber machinegun, M2 flamethrower, and 90mm recoilless rifle (which has both HEAT and APERS rounds). While the Light Division could not afford to be burdened with extra weapons for normal operations, the static nature of a MOUT defense could allow packages of such weapons to be pushed forward (perhaps from special POLCS stocks). Finally, there is a variety of developmental weapons and munitions, some of which

resulted from the Israeli experiences in Beirut and other MOUT actions, which could rapidly be produced, but the requirement for them has not been articulated. Examples include illumination grenades for use in buildings, special ammunition for small arms, and vision enhancement devices for use in enclosed areas.

VI. CONCLUSIONS

As stated in Section I, the intent of this study was to determine if the Light Division in its current configuration could conduct a European MOUT defense against a Soviet force. Although problem areas have been identified, such an action is well within the unit's capability. It should also be noted that some problems identified pertain to the entire Army force structure; and it is suggested that in addressing these "MOUT problem areas," priority should go to the light forces, not only because of the high probability of their employment in MOUT in Europe, but also because of their possible use in Southwest Asia and Korea MOUT scenarios.

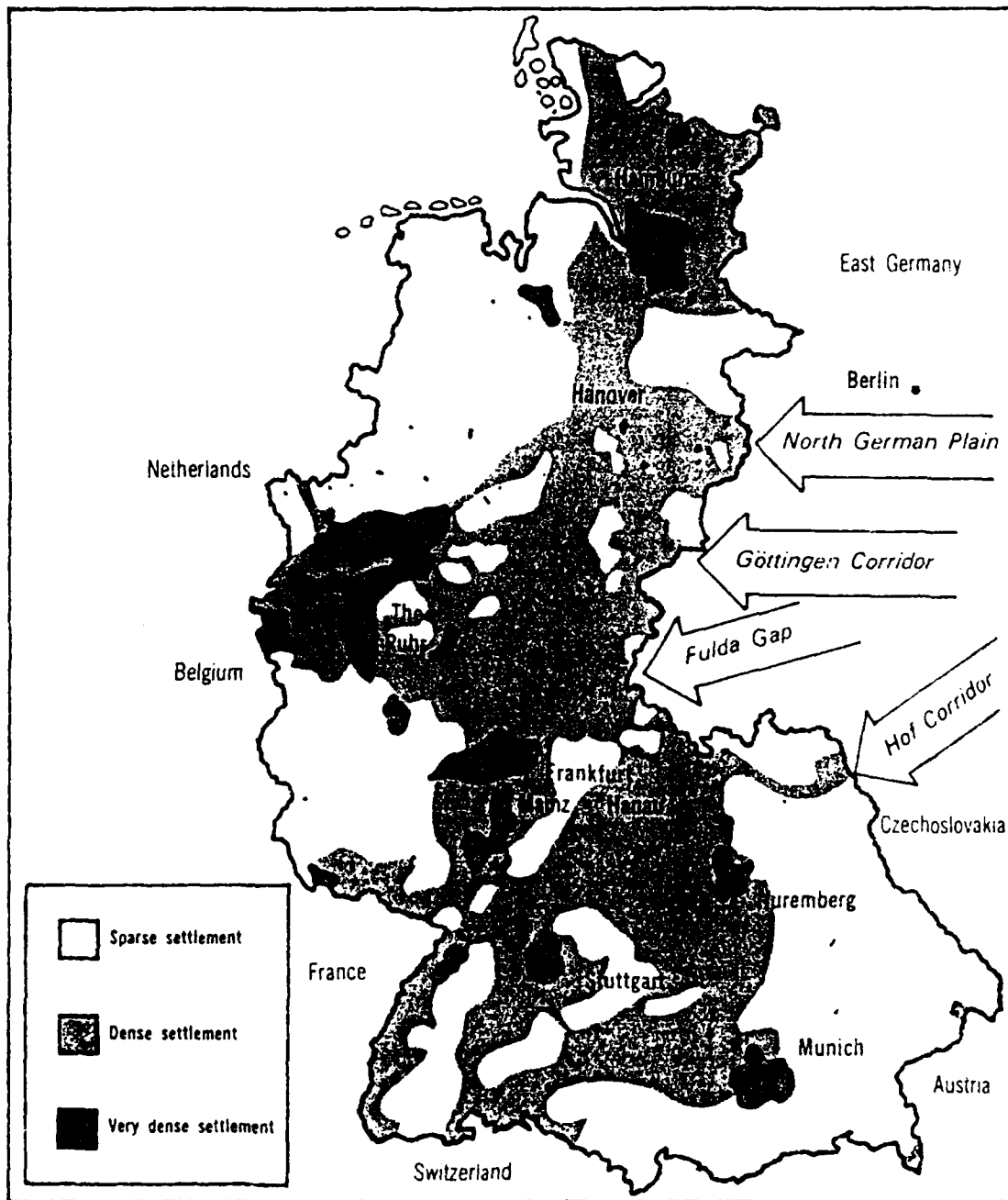
In the areas analyzed, U.S. doctrine is sound but requires modification, especially for the covering force, where the Light Division's fight will be relatively weak — a not entirely undesirable situation as this will invite a nasty attack, the preferable way to engage Soviet Forces. With regard to training, leaders must balance MOUT needs against other missions but should remember that many MOUT skills and areas of training support other missions as well. It is in the unit's organization and equipment that the greatest handicaps occur. The unit is only self-sufficient for forty-eight hours, but this is true wherever the Light Division will be employed and the static nature of MOUT facilitates corps support. A lack of engineer assets is perhaps the most serious organizational handicap and inadequate corps

reinforcement will require longer preparation times. Conversely, assets available in urban areas (civilian supplies and equipment) provide some assistance to the resourceful and imaginative commander in implementing defensive preparations. Furthermore, the nature of the MOUT battlefield actually serves to mitigate organizational shortfalls in protected transport and air defense artillery. As enumerated in the discussion of equipment, current armor advances give some cause for alarm but studies have shown that in urban combat infantry will be able to engage armor and infantry forces from protected and advantageous positions. In view of the emphasis on NATO commonality and sharing of equipment, consideration should be given to making allied munitions of the Armbrust type available, as well as packages of proven vintage or special weapons.

Of all the lessons presented in the Middle East case studies, perhaps the two most salient are that superiority in air and artillery assets cannot assure victory for the attacker; and that resolute and prepared infantry can defeat armored forces. Although light infantry clearly are the lightweight in any match with Soviet forces, MOUT is probably the employment scenario which requires the least corps augmentation for light infantry forces.

In a MOUT defense more than in any other battlefield environment, the individual soldier is still the ultimate arbiter. To avoid defeat in future battles, the U.S. Army must train and equip the soldier to fight and win on urban terrain. The potential for fighting such battles is growing at a quantum rate, and we must meet the imperative presented to us.

Area Development in West Germany



Source: Petraeus, D.H. "Light Infantry In Europe,"
Military Review, Dec. 1984, p. 41.

ENDNOTES

1. U.S. Department of the Army, FM 90-10, Military Operations on Urbanized Terrain (Washington, D. C., 1979), p. 1-1.
2. Ibid., p. 3-13.
3. John J. Mahan, "MOUT: The Quiet Imperative," Military Review (July 1984), p. 53.
4. Litton Systems, Incorporated, "Survey of Current Doctrine, Training, and Special Considerations for Military Operations on Urbanized Terrain," (1983), p. 4.
5. Ibid.
6. Mahan, pp. 43-44.
7. Ibid., p. 46.
8. John A. English, On Infantry, (New York, 1961), p. 201.
9. FM 90-10, p. 1-2.
10. English, p. 201.
11. FM 90-10, p. 1-2.
12. English, pp. 201-202.
13. Mahan, p. 47.
14. Ibid., p. 48.
15. U.S. Department of the Army, FM 90-10-1, An Infantryman's Guide to Urban Combat (Washington, DC, 1982), p. 1-1.
16. A. K. Shovkolovich, "Combat Action of a Motorized Rifle Battalion in a City," (1971), p. 3.
17. Paul Bracken, "Urban Sprawl and NATO Defense," Military Review (October 1977), p. 34.
18. Rand Corporation, "Military Operations in Built-Up Areas: Essays on Some Past, Present, and Future Aspects," (1976), p. 54.
19. English, p. 203.
20. John R. Galvin, "Heavy-Light Forces and the NATO Mission," Infantry (July - August 1984), p. 12.

21. U.S. Department of the Army, FM 100-5, Operations (Washington, DC, 1986), p. 41.
22. U.S. Department of the Army, FC 71-101, Light Infantry Division Operations (Fort Leavenworth, KS, 1984), p. 7-79.
23. William E. DuPuy, "The Light Infantry: Indispensable Element of a Balanced Force," Course Readings: Dynamics of Battle, (Fort Leavenworth, KS, 1980), p. 39.
24. Robert B. Killebrew, "NATO, Deterrence, and Light Divisions," Military Review (May 1985), p. 7.
25. Ibid., p. 9.
26. Ibid., p. 10.
27. John F. Meenan, "Urban Combat: The Soviet View," Military Review (September 1974), p. 42.
28. Rand, p. 26.
29. Ibid., p. 29.
30. Ibid., p. 32.
31. Ibid., p. 34.
32. English, p. 205.
33. U.S. Department of the Army, FM 100-2-2, The Soviet Army: Specialized Warfare and Rear Area Support (Washington, DC, 1984), p. 10-1.
34. Lester W. Grau, "MOUT and the Soviet Motorized Rifle Battalion," Infantry (January - February 1985), p. 25.
35. Ibid., p. 26.
36. Meenan, p. 44.
37. Grau, p. 27.
38. FM 100-2-2, p. 10-3.
39. Ibid., p. 10-5.
40. Grau, p. 27.
41. Meenan, p. 46.
42. Grau, p. 27.

43. John C. Scharfen, Soviet Tactical Doctrine for Urban Warfare, (Menlo Park, CA, 1975), p. 80.
44. Shovkolovich, p. 12.
45. U.S. Department of the Army, FM 100-2-3, The Soviet Army: Troops, Organization, and Equipment, (Washington, DC, 1964), Chapters 4 and 5.
46. Edward N. Luttwak, Incorporated, "Historical Analysis and Projection for Army 2000: The Soviet Army in the Second World War: Independent Flamethrower Units," (Chevy Chase, MD, 1983), p. 19.
47. Scharfen, p. 9.
48. Ibid., p. 56.
49. C. N. Donnelly, "Soviet Tactics for Fighting in Built-Up Areas," International Defense Review (July 1965), p. 1063.
50. INTREC, Incorporated, Weapons Effects in Cities, Volume I and II (Santa Monica, CA, 1974), p. II-12.
51. Ibid., p. II-9.
52. John C. Latimer, "Considerations for Defense of Urban Terrain by Light Forces," (MAAS Thesis, Fort Leavenworth, KS, 1985), p. 131.
53. U.S. Department of the Army, Combat in Cities Report, Volumes I and II (Fort Benning, GA, 1972), p. 52.
54. Ibid.
55. Latimer, p. 4.
56. Ibid., p. 16.
57. FM 90-10, p. 3-15.
58. Ibid., p. 3-16.
59. FM 100-1, p. 81.
60. FM 90-10-1, p. 4-18.
61. Ibid., p. 4-21.
62. Ibid., p. 4-29.
63. FM 90-10, p. 3-18.
64. Litton, p. 13.

65. Ibid., p. 22.
66. Ibid., p. 8.
67. Ibid., p. 2.
68. Ibid., p. 26.
69. R. D. McLaurin and Lewis D. Snider, Recent Military Operations on Urban Terrain (Aberdeen, MD, 1982), p. 27.
70. Ibid., p. 35.
71. Ibid., p. 34.
72. Ibid., p. 41.
73. Ibid., p. 42.
74. Ibid., p. 53.
75. Ibid., p. 56.
76. Ibid., p. 58.
77. John A. Wickham, Jr., "Light Infantry Divisions in Defense of Europe," NAID:s Sixteen Nations (January 1985), p. 103.
78. McLaurin, p. 8.
79. Glenn F. Rogers, "The Battle for Suez City," Military Review (November 1979), p. 30.
80. McLaurin, p. 12.
81. Ibid., p. 13.
82. Ibid., p. 15.
83. Ibid., p. 16.
84. Ibid., p. 20.
85. Rogers, p. 33.
86. McLaurin, p. 23.
87. R. D. McLaurin, "Military Operations in the Gulf War: The Battle of Khorrarnshahr," (Aberdeen, MD, 1982), p. 20.
88. Ibid., p. 21.
89. Ibid., p. 26.

90. Ibid., p. 31.
91. Ibid., p. 33.
92. Latimer, pp. 140-141.
93. Ibid., p. 142.
94. Ibid., pp. 146-148.
95. Ibid., pp. 149-153.
96. Ibid., p. 163.
97. Ibid., pp. 177-181.
98. Ibid., p. 180.
99. Ibid., p. 176.
100. Boeing Corporation, Report of Proceedings, Light Infantry Conference (Seattle, WA, 1985), pp. 243, 244.
101. FM 90-10, p. 3-16.
102. "Combat in Cities Report, Volume I and II," p. 140.
103. Office of the Deputy Chief of Staff for Training, "The Light Force National Training Center Concept," (Fort Monroe, VA, 1984), p. 13.
104. Litton, p. 30.
105. FC 71-101, p. 9-2.
106. Latimer, p. 194.
107. Wayne A. Downing, "Light Infantry Integration in Central Europe," Military Review (September 1986), p. 22.
108. FM 90-10, p. 4-4.
109. "Combat in Cities Report, Volume I and II," p. 2.
110. DuPuy, p. 58.
111. Edward L. Oliver, "Antiarmor," Infantry (March - April 1984), pp. 20-21.
112. FM 90-10, p. B-10.

BIBLIOGRAPHY

FIELD MANUALS AND CIRCULARS

- U.S. Department of the Army. FC 71-101, Light Infantry Division Operations. Fort Leavenworth, KS: U.S. Government Printing Office, 1984.
- U.S. Department of the Army. FM 90-10, Military Operations on Urbanized Terrain (MOUT). Washington, DC: U.S. Government Printing Office, 1979.
- U.S. Department of the Army. FM 90-10-1, An Infantryman's Guide to Urban Combat. Washington, DC: U.S. Government Printing Office, 1982.
- U.S. Department of the Army. FM 100-2-2, The Soviet Army: Specialized Warfare and Rear Area Support. Washington, DC: U.S. Government Printing Office, 1984.
- U.S. Department of the Army. FM 100-2-3, The Soviet Army: Troops, Organization, and Equipment. Washington, DC: U.S. Government Printing Office, 1984.
- U.S. Department of the Army. FM 100-5, Operations. Washington, DC: U.S. Government Printing Office, 1980.

BOOKS

- English, John A. On Infantry. New York: Praeger, 1981.

ARTICLES

- Bracken, Paul. "Urban Sprawl and NATO Defense," Military Review, October 1977, pp. 32-39.
- Donnelly, C. N. "Soviet Tactics for Fighting in Built-Up Areas: A New Look for the 1980's," International Defense Review, July 1985, pp. 1061-1067.
- Downing, BG Wayne A. "Light Infantry Integration in Central Europe," Military Review, September 1980, pp. 10-29.
- Galvin, LTG John R. "Heavy-Light Forces and the NATO Mission," Infantry, July-August 1984, pp. 10-14.
- Grav, LTC Lester W. "MOUT and the Soviet Motorized Rifle Battalion," Infantry, January - February 1985, pp. 24-27.
- Killebrew, LTC Robert B. "NATO, Deterrence, and Light Divisions," Military Review, May 1985, pp. 2-15.

Manan, John J. "MOUT: The quiet Imperative," Military Review, July 1984, pp. 42-59.

Meehan, MAJ John F. "Urban Combat: The Soviet View," Military Review, September 1974, pp. 41-47.

Oliver, LTC Edward L. "Antiarmor," Infantry, March - April 1984, pp. 17-24.

Rogers, MAJ Glenn F. "The Battle for Suez City," Military Review, November 1979, pp. 27-33.

Shovkolovich, A. K. "Combat Action of a Motorized Rifle Battalion in a City," MOSCOW: Order of Labor Red Banner Military Publishing House, 1971.

Wickham, GEN John A., Jr. "Light Infantry Divisions in Defense of Europe," NATO's Sixteen Nations, January 1965, pp. 10-107.

DOCUMENTS

DePuy, GEN William E. "The Light Infantry: Indispensable Element of a Balanced Force," Course Readings: Dynamics of Battle. Fort Leavenworth, KS: U.S. Government Printing Office, 1936.

Edward A. Luttwak, Inc. "Historic Analysis and Projection for Army 2000: The Soviet Army in the Second World War: Independent Flamethrower Units," Chevy Chase, MD, 1983.

Intrec, Inc. Weapons Effects in Cities, Volume I and II. Santa Monica, CA: Defense Advanced Research Projects Agency, 1979.

Latimer, John C. "Considerations for Defense of Urban Terrain by Light Forces," Master's Thesis, Fort Leavenworth, KS, 1983.

Litton Systems, Inc. "Survey of Current Doctrine, Training, and Special Considerations for Military Operations on Urban Terrain," Fort Benning, GA: U.S. Army Institute for Behavioral and Social Sciences, 1983.

McLaurin, R. D. "Military Operations in the Gulf War: The Battle of Khorramshahr," Aberdeen, MD: U.S. Army Human Engineering Laboratory, 1982.

McLaurin, R. D. and Lewis W. Snider. Recent Military Operations on Urban Terrain, Aberdeen, MD: U.S. Army Human Engineering Laboratory, 1982.

Rand Corporation. "Military Operations in Built-Up Areas: Essays on Some Past, Present, and Future Aspects," Santa Monica, CA, June 1976.

Report of Proceedings, Light Infantry Conference, 1965. Seattle,
WA: Boeing Corporation, 1965.

Scharfen, John C. Soviet Tactical Doctrine for Urban Warfare.
Menlo Park, CA: Strategic Studies Center, Stanford Research
Institute, 1975.

"The Light Force National Training Center Concept," Fort Monroe,
VA: Office of the Deputy Chief of Staff for Training,
TRADOC, 1984.

U. S. Department of the Army. "Combat in Cities Report, Volumes I
and II," Fort Benning, GA: U.S. Army Infantry School, 1972.

END

DATE

FILMED

5-88
DTIC