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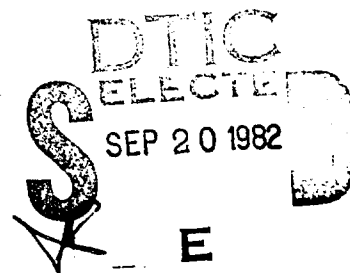
TECHNICAL MEMORANDUM 13-82

MILITARY OPERATIONS IN THE GULF WAR: THE
BATTLE OF KHORRAMSHAHR

R. D. McLaurin

July 1982
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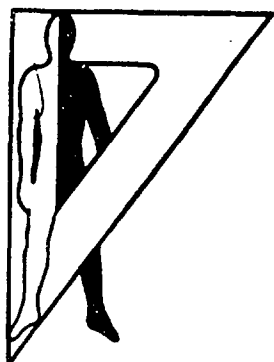
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variety of ill-trained, ill-equipped, uncoordinated, but highly motivated militias defended the city with little help from Iran's regular armed forces.

The Iranian militias continued to fight long after they were cut off. They contested virtually every inch of Iraq's advance, counterattacking and using snipers extensively. The Iranian resistance's instincts toward martyrdom contrasted sharply with the Iraqi leadership's aversion to taking casualties. Much of the initial "battle" was in fact an intensive artillery siege designed to drive out Iran's defenders. The relative inefficiency of artillery used against built-up areas meant, ultimately, however, that Iraqi ground forces had to engage the defenders.

Despite the fact that Iraq ultimately succeeded in capturing Khorramshahr, the battle for the city lasted almost a full month even though the 3,000 poorly organized defenders faced well over a division of the Iraqi Army. The month of fighting delayed overall Iraqi progress in the war to such an extent that Iraq's principal political and military objectives were unattainable.

MILITARY OPERATIONS IN THE GULF WAR: THE
BATTLE OF KHORRAMSHAHR

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July 1982

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FOREWORD

This report is the third in a series of reports by Abbott Associates, Inc. on actual combat in built-up areas. The first report entitled, "Military Operations in Selected Lebanese Built-Up Areas, 1975-1978," was published as US Army Human Engineering Laboratory (USAHEL) Technical Memorandum 11-79. A second report on the fighting in Jerusalem in 1967 and in Suez City in 1973 was published as USAHEL Technical Memorandum 12-82.

USAHEL has sponsored these historical reports as part of its mission as lead agency for Military Operations in Built-Up Areas/Military Operations in Urbanized Terrain (MOBA/MOUT) for the US Army Material Development and Readiness Command (DARCOM). It is felt that today's decision maker analysts and trainers should have available to them histories of fighting in built-up areas which identify realistic factors which tend to dominate outcomes. A tremendous amount of historical information is available on fighting in built-up areas in World War II, as well as Korea and Viet Nam, but there has been some reluctance to accept these histories because they are "out of date." Near Eastern histories were chosen for Abbott's investigation because they represent the most recent heavy fighting in built-up areas, but most importantly, they represent combat where the most recent materiel technology has been available to the combatants.

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PREFACE

This preface provides information on the methods used by the research team to compile relevant data and prepare the report.

The earlier reports in this series were based on a combination of interview data and print material already published or at least written. The Beirut reports were drawn almost exclusively from interviews, for example. The work on Jerusalem and Suez depended upon both interview and print sources, but benefitted much more from published material, since military operations in Beirut had not been systematically treated elsewhere.

For the present report we sent questionnaires to eyewitnesses to the fighting in Khorramshahr and discussed the battle with several others. Once again, we have also looked to existing print material on the battle, especially newspaper reports by correspondents located at or behind the battlefield. Our interview/questionnaire data have been limited to the Iraqi side. Coverage of Iran has depended upon journalistic coverage, particularly reports in French newspapers and on French radio.

The questionnaires were revised from our earlier studies. They reflect most of the subjects deemed important by those concerned with military operations in built-up areas.

Mc Laurin, R.D., & Snider, L.W. Recent military operations on urban terrain. Aberdeen Proving Ground, MD: US Army Human Engineering Laboratory, 1982. Jureidini, P.A., & Mc Laurin, R.D. Combat and communications in cities: Supplementary observations on the fighting in Beirut, 1975-1978. Alexandria: Abbott Associates, Inc., 1980 (typescript).

ABBREVIATIONS

AD	air defense
ADA	air defense artillery
AFV	armored fighting vehicle
APC	armored personnel carrier
ATGM	antitank guided missile (munition)
AWACS	Airborne Warning and Control System
C ²	command and control
C ³	Command/control/communications
CAS	close air support
FEBA	forward edge of the battlefield area
km	kilometer
LOC	lines of communication
mm	millimeter
MOBA	military operations in built-up areas
MOUT	military operations on urban terrain
SAM	surface-to-air missile

EXECUTIVE SUMMARY

The Gulf War between Iran and Iraq erupted as a full-scale conflict in September 1980 and was the culmination of a number of disputes that have caused intermittently poor relations between the two countries for years. The present study deals with the largest single city battle of the war as a modern example of MOBA/MOUT.

The city of Khorramshahr was the first urban area attacked directly by Iraqi ground forces in their invasion of Iran and the only major city captured by Iraq. The principal commercial port of Iran, Khorramshahr lies fewer than 10 km from the border. Although not a desirable objective, Khorramshahr was an obstacle to Iraqi objectives and came to have symbolic significance.

By the time Iraqi forces reached Khorramshahr, its civilian population had already evacuated the city except for medical personnel, security forces, and other necessary cadres. Neither, however, was there any significant Iranian military force defending the city. Instead, a variety of militias (including many deadly rivals), ill-trained, ill-equipped, uncoordinated, but highly motivated, was the principal defense, a defense that was soon cut off from supply by the Iraqi Army.

The Iranian militias continued to fight long after they were cut off. They contested virtually every inch of Iraq's advance, counterattacking and using snipers extensively. The Iranian resistance's instincts toward martyrdom contrasted sharply with the Iraqi leadership's aversion to taking casualties. Much of the initial "battle" was, in fact, an intensive artillery siege designed to drive out Iran's defenders. The relative inefficiency of artillery used against built-up areas meant, ultimately, however, that Iraqi ground forces had to engage the defenders.

Despite the fact that Iraq ultimately succeeded in capturing Khorramshahr, the battle for the city lasted almost a full month even though the 3,000 poorly organized defenders faced well over a division of the Iraqi Army. The month of fighting delayed overall Iraqi progress in the war to such an extent that Iraq's principal political and military objectives were unattainable.

BACKGROUND TO THE CONFLICT

The Gulf War between Iran and Iraq broke out as a full-scale conflict in September 1980. Yet, as evidenced by the communications of the two parties to the war, it may be more accurate to consider the Gulf War as merely one series of engagements in a war that dates back at least a millenium, a war between two civilizations, and to some extent a religious war, at least as much as a war between two governments. It would be futile to try to understand the outbreak or conduct of the war only in terms of contemporary events.

Iran, a country of about 40 million, is inhabited principally and dominated by Persians, and indeed the country was known as Persia until only several decades ago. Persians are speakers of one of several Iranian Indo-European languages, and Farsi (or "Persian") speakers constitute a majority of the population. Persians are not Arabs, differing linguistically and also socially from Arabs. Persians generally disdain Arab culture and society, and Arabs in general. However, there are a large number of Arabs in Iran, too, probably about 1,000,000, most of whom live in the oil-rich province of Khuzistan (called "Arabistan" by Iraq). This province was at one time peopled principally by Arabs, but by the late 1970s Arabs constituted something less than a majority of the Khuzistan population--probably about 40 percent.

Iraq is smaller than Iran in both area (445,480 km v. 1,647,240 km) and population (14 v. 40 million). Although Iraq has some Persian inhabitants, it is overwhelmingly Arab in composition, with a substantial Kurdish minority in the northeast.

Both Iran and Iraq are Muslim countries, and in both the majority subscribe to the Shi'a branch of Islam rather than to the "orthodox" Sunni branch which claims the loyalty of the vast majority of Muslims. However, Iraq's Shi'a adherents constitute only between 55 and 60 percent of the population, and the government has traditionally been controlled by Sunnis, while Iran's Shi'as comprise between 85 and 90 percent of the population in a country historically deeply attached to its Shi'a faith and ruled by fellow Shi'as.

Neither Iran nor Iraq is a unified nation-state. Iran is a large country incorporating many minorities (Kurds, Azerbaijanis, Bakhtiars, Baluchis, Arabs, Lurs, Qashqais, Armenians, Assyrians, and until recently, Jews). Several of these groups--notably the Arabs, Kurds, and Baluchis--have been restive under Iranian control and have sought greater autonomy or, in the case of individual dissidents, independence. Iraq's Kurds have caused similar problems, and the government in recent years has evidenced concern as well over the loyalty of its Shi'a citizens.

The border between Iran and Iraq must be seen as the boundary of the Arab and Persian civilizations, and as such has been a source of bitter dispute for ages. Although the immediate cause of friction is usually more specific (e.g., the status of the Shatt al-'Arab waterway, which forms the southern part of the Iran-Iraq border), the problem underlying conflict is the instability between these two civilizations. Legalistic disputes, minority wishes or activities, and other problems are merely the pretext for attempts to affect the status of the dividing line between the two societies.

In recent years, the Iran-Iraq conflict has centered on several issues--the status of the Shatt al-'Arab, Kurdish problems, the loyalty of each other's resident nationals, the arms race, the ambitions of the shah and, later, the export of Iran's Islamic revolution.

The Shatt al-'Arab

The Shatt al-'Arab or Arvand Rud is the estuary of the Tigris and Euphrates Rivers and forms the Iran-Iraq boundary from its mouth on the Gulf to a point almost halfway between Khorramshahr (al-Mohammarah) and Basra (a length of about 100 miles). The dispute can be traced back to a treaty in 1937 which formalized the border between the two countries. As regards its southern sector, the border was identified as lying at the low-water mark of the eastern shore of the Shatt with a few exceptions. Thus, the Shatt waterway lay almost wholly within Iraq. After the 1950s, as Iran grew more powerful, Shah Mohammed Reza Pahlavi challenged the legality of this portion of the 1937 treaty and demanded that the border should be revised in accordance with international custom to run at the thalweg (essentially the middle point).

In 1975 the government of Iran, which had supported the Kurdish insurgency in Iraq for years, agreed with Baghdad to settle their differences, including a withdrawal of all Iranian support to insurgent Kurds. The price of this action was Iraqi accession to Iranian demands regarding the Shatt, and the two countries signed a treaty in 1975 according to the terms of which the riverine and land borders between the two were to be re-demarcated as regards the Shatt (riverine) and a 1914 agreement (land). The border along the Shatt was to be the thalweg, thereby allowing for Iranian navigation in the Shatt. However, Iraqi leaders felt--correctly--they were virtually forced to concede the Shatt issue and resented Iran's taking advantage of its superior military position in 1975.

Kurdish Problems

The Kurds are a large ethnic community in the Middle East who reside in coterminous areas of Iraq, Iran, Syria, Turkey, and the Soviet Union. Kurdish de facto separateness has been a historic reality, in the sense that until recent years governments of these states were largely unable to exercise effective and thorough control over Kurdish areas and inhabitants. The rise of the modern states and growth of mass communications penetration altered this fact after World War I, with the result that Kurds have fought successive campaigns for autonomy or independence against each of the governments concerned (except the U.S.S.R.).

Over the last two decades, the most active Kurdish campaign was fought against Iraq, and the shah of Iran (to some extent with the complicity of the United States) supported an open Kurdish insurgency against Iraq. This campaign was especially troublesome for Iraq as major oil installations are located in the Kurdish area. Without Iran's support, which was eliminated by the 1975 treaty, the Kurdish revolt rapidly collapsed; although Kurdish separatist inclinations remain a constant in all countries of their residence.

Resident Nationals and Ethnic

Both Iran and Iraq are the sites of a number of important Shi'a holy places, and over many centuries tens of thousands of Persians have settled around the two principal Iraqi Shi'a holy cities, Najaf and Karbala. Because these Iranians have not integrated in language, custom, residence, or nationality with Iraq, they have become increasingly viewed as a fifth column, particularly during times of tension and in view of the proselytizing nature of Iran's (Shi'a) Islamic revolution (see below).

Iran, by contrast, does not contain any large concentrations of Iraqis. However, we have already pointed out that the province of Khuzistan contains a large Arab minority. While these Arabs have not identified with Iraq per se and conducted themselves in large measure as loyal Iranian subjects until the revolution, Iraqi, and indeed, Iranian leaders have often questioned their loyalty under the pressure of an Iranian-Iraqi conflict. This doubt was in fact one reason Iran settled so many non-Arabs in Khuzistan over the last two decades. Most Iranian Arabs are Shi'as.

The Arms Race

Starting in the 1960s, and especially in the 1970s, Iran and Iraq accumulated large quantities of weapons systems which increased in sophistication as well as number over the years. Iran armed against Iraq and, especially after oil revenues grew to vast proportions, against other potential aggressors such as the Soviet Union. (Not that the shah's objectives ever entailed defeat of the U.S.S.R. Rather, the idea was to make aggression against Iran too costly to contemplate.) Moreover, U.S. policy during the 1970s envisaged Iran's assuming the mantle of the principal Gulf policeman, a role the shah definitely coveted. To buttress this role, Iran bought vast quantities of hardware, and at the time the monarchy was disestablished had on order other highly sophisticated systems such as the Airborne Warning and Control System (AWACS).

Iraq armed because of Iran, which was seen as a threat, because of its own Kurds and because of its intermittent participation in the Arab-Israeli conflict. Until Iran's purchases far outstripped those of Iraq, both countries competed with each other in various elements of an arms race. (Iraq never seriously challenged Iranian naval supremacy in the Gulf.) The inventories of both countries are shown in Table 1.

TABLE 1

Iranian and Iraqi Arms Inventories, 1980

<u>SYSTEM</u>	<u>IRAN</u>	<u>IRAQ</u>
Tanks, medium	1,735	2,750
Chieftain, M60A1, T72, AMX-30	(1,335)	(150)
M-47/48, T-54/55/62, T-34	(400)	(2,600)
Tanks, light	250	100
AFVs		
M-113	325	
BTR-40/50/60/150	500	1,500
BMP	some	200
OT-62, VCR		some
Artillery		
75mm-155mm, towed	700	800
203mm, towed	14	
155mm-175mm, SP	478	
203mm, SP	14	
Assault guns, SP		240
ADA	1,800	1,200
Aircraft		
Bombers		22
Fighter/Ground Attack	354	195
Interceptors	77	115
Combat Helicopters	610	100
Naval Vessels		
Destroyers/Fighters/Covettes	11	
Fast Attack Craft, Missile	9	12
Large Patrol Craft	7	5
Fast Attack Craft, Torpedo		12
Hovercraft	14	

Imperial Iranian Ambitions

It is clear that the shah of Iran had developed extremely grandiose ambitions for his country by the mid- to late 1970s. He saw Iran as an emerging great power, imposing a Pax Iranica on the Gulf and becoming a major industrial giant as well. He made no secret of these plans, but the cost of the first step was borne by Iraq, for Iranian ambitions necessarily conflicted with an equal role for Iraq in the Gulf. The 1975 treaty symbolized Iran's gulf supremacy.

If the shah entertained and, in fact, advertised a substantial appetite for regional and global power, his operational goals were less clear. Consequently, many of Iran's neighbors were increasingly uneasy about the country's growing military arsenal. In view of Iraq's historically troubled relations with her larger eastern neighbor, such suspicions are easily understood. But Saudi leaders and the leaders in the smaller Arab Gulf states also looked with serious misgivings on the acquisition of naval craft, and especially hovercraft. There was a common undercurrent of concern that the shah might be planning to expand his empire to incorporate neighboring oil-producing areas as Iran's own oil reserves were exhausted over the succeeding two decades. Moreover, Iran's annexation of three small islands in the Gulf and gunboat diplomacy to secure a change in the status of the Shatt al-'Arab (see above) added fuel to these burning fears.

Export of the Iranian Revolution

Deposition of the shah and radical change in Iranian plans might have been expected to please Iraqi leaders. However, quite to the contrary, the proselytizing nature of the Iranian revolution dramatically increased Iraqi fears (as well as those of the other Arab Gulf states). The fulcrum of these concerns was (and is) the Shi'a majority in Iraq.

Most of the world's Muslim population belongs to the "orthodox" or Sunni branch. The largest non-Sunni branch is that of the Shi'as. Indeed, Shi'as are a majority in some countries, like Iran (about 90 percent of total population) and Iraq (about 55-60 percent). The revolution in Iran came to be symbolized, and to a large extent captured, by the Shi'a clerics--Ayatollahs Khomeini, Beheshti, for example, and their cadres. Soon after assuming power, several leaders of the revolution openly advocated Shi'a consciousness and activism and Islamic revolution throughout the Middle East. Even though the revolutionary appeal was a general one, Sunni elites viewed it as a threat focused on Shi'a and fundamentalist circles. In the Gulf, sizable Shi'a minorities (often Iranian) exist in Bahrain (almost 50 percent of the total population), Kuwait (10 percent), Qatar (25 percent), Saudi Arabia (5 percent at most, but concentrated in the Eastern Province), and the United Arab Emirates (15 percent).

All those countries with Shi'a populations, and especially those with monarchical forms of government denounced by the Islamic revolutionary zealots in Tehran, felt discomfited. However, Iraq (which borders Iran and is the site of Shi'a holy places more sacred than any in Iran), where a Shi'a majority has traditionally been ruled by the Sunni minority and where historic rivalry with Iran has already been discussed, felt most threatened by the Islamic historicities emanating from Tehran. And, indeed, as Iran-Iraq relations began to sour, the Iranian clerics and Khomeini himself called upon Iraq's Shi'a majority to rise against its government. This appeal, eschewed by the shah even at the nadir of Iranian-Iraqi relations during his reign, reached at the one target within Iraq that any Iraqi leader would be most certain to react to, for the Kurds do not represent a threat to the nature of Iraq, but an appeal to the Shi'as raises precisely this spectre.

CHRONOLOGY OF THE GULF WAR TO NOVEMBER 1, 1980

The starting point of the war is disputed. Iraqi leaders refer to Iranian attacks early in September and to numerous outbreaks of fighting along the border since 1979. Iranian leaders prefer to concentrate on the invasion itself as the opening action of the war. This chronology considers some of the events from 1975 through the end of 1980.

- March 7, 1975. Announcement of Algiers accord between Iran and Iraq.
- March 1975. Iran cuts off support for Kurdish rebels in Iraq.
- April 1975. Kurdish insurgency in Iraq collapses.
- June 13, 1975. Treaty delimiting border between Iran and Iraq signed by both parties.
- December 26, 1975. Iraq and Iran sign several good-neighbor agreements concerning the Shatt al-'Arab.
- May 1976. Boundary treaty concluded between Iran and Iraq.
- October 6, 1978. Ayatollah Ruhollah Khomeini departed Iraq for Paris.
- January 1979-February 1979. Shah Mohammed Reza Pahlavi departs Iran. The Bakhtiar government collapses as Iran's army refuses to defend it. A "provisional government" under Mehdi Bazargan is formed.
- June 5, 1979. Iraqi military aircraft, pursuing Kurdish tribesmen, bombs several Iranian villages.
- November 4, 1979. The Iraqi Embassy in Tehran attacked and a diplomat kidnapped.
- November 6, 1979. Iraq's consulate in Kermanshah attacked and occupied by followers of Ayatollah Khomeini. A similar attack is made on the Iraqi consulate in Khorramshahr.
- November 7, 1979. A small village near Abadan comes under Iraqi rocket fire.
- November 10, 1979. Ahvaz citizens occupy an Iraqi school.
- December 10, 1979. Iranians seize 16 Iraqi teachers in Khorramshahr.
- March 9, 1980. Iraq expels Iranian ambassador.
- March 29, 1980. Border fighting.
- April 1, 1980. Iraqi Deputy Prime Minister Tariq Aziz wounded by Iranian attacker.
- April 5-6, 1980. Iran and Iraq each expel one of the other's diplomats.
- April 7, 1980. Iranian Army placed on full alert along border. All Iran's diplomatic staff in Baghdad recalled.
- April 8, 1980. Border fighting near Bey Beyti.
- September 2, 1980. Border fighting near Qasr-i-Shirin.
- September 3-4, 1980. Border clashes again near Qasr-i-Shirin. Also around Nasrabad, Kalantari, and Khaniqin.
- September 9-10, 1980. Border clashes.
- September 13, 1980. Border fighting.
- September 15, 1980. Border fighting at several locations.
- September 17, 1980. Iraq announces unilateral abrogation of 1975 border agreement with Iran due to non-observance by Iran. Iraq considered the Shatt al-'Arab totally under Iraqi sovereignty.

September 18, 1980. Heavy fighting reported near the Shatt al-'Arab.

September 20, 1980. Iran calls up military reserves. Iraqi troops capture about 90 square miles of disputed territory.

September 21, 1980. Border clashes all along the boundary between Iran and Iraq, but especially in the south. Rocket and artillery fire deep in Iran, hitting Abadan and Khorramshahr.

September 22, 1980. Iraqi aircraft strike 10 Iranian airfields. Artillery exchanges across the Shatt.

September 23, 1980. Iraqi ground forces invade Iran at several points. Iraq states its objectives. Iraqi aircraft strike and set afire Abadan while Iranian aircraft hit Kirkuk, Mosul, and Basra oil installations.

September 24, 1980. Iraqi aircraft attack Kharg Island (oil terminal), and Iranian Air Force jets hit Iraqi oil centers again. Iranian ships shell Faw and Basra.

September 25, 1980. Iraqi ground forces continue to advance slowly in the south and other areas. Iranian aircraft raid Basra, Irbil, Kirkuk, and Mosul.

September 26, 1980. Iraqi troops attack toward Khorramshahr. Artillery bombards Abadan heavily. Each country's planes attack oil targets of the other again.

September 27, 1980. Iraqi troops near Dizful, Susangird, Khorramshahr. Iranian aircraft strike Bagdad, Kirkuk, and Mosul.

September 28-29, 1980. Fighting erupts in or at the outskirts of Ahwaz, Dizful, Khorramshahr, Susangird.

September 30, 1980. Iraqi nuclear research center and power station are attacked by Iranian or Israeli planes. Fighting rages inside Khorramshahr, Ahavaz, Dizful.

October 1, 1980. Iranian aircraft hit seven Iraqi cities while Iraqi aircraft attack a Bandar Khomeini petrochemical plant.

October 2, 1980. Public mobilization around Khorramshahr. Iranian paratroopers dropped into Khorramshahr.

October 4, 1980. Iraq announces unilateral cease-fire for October 5.

October 5, 1980. Ceasefire ends. Iraqi aircraft strike a Tehran military airbase.

October 6, 1980. Iraqi ground forces continue to advance slowly and have captured much of Khorramshahr's port area. Iraqi aircraft strike the airport and a refinery at Tehran.

October 8, 1980. Iranian jets strike Bagdad. Iraqi jets bomb Shushter, Abadan, and near Dizful. Iraqi artillery continue to pound Abadan and Khorramshahr.

October 9, 1980. Iraqi fires surface-to-surface missiles at Dizful and Andimeshk.

October 10, 1980. Some Iraqi ground forces cross the Karun River, and Iraqi Air Force jets hit Ahwaz while Iranian aircraft attack Bagdad, Kirkuk, and Mosul.

October 11-14, 1980. Intermittent Iraqi air attacks on Kharg Island facilities. Iraqi ground forces press toward Abadan and continue to besiege Khorramshahr. Heavy fighting around Dizful (Oct. 14).

October 15, 1980. Iranian Air Force strikes Bagdad, Irbil, Falluja, and Iraqi planes hit Tabriz and fly "CAS" near Dizful.

October 16, 1980. Iraqi artillery continues to hit Abadan while ground forces close to within a short distance of the city, and Iraqi jets attack Kharg Island and Tehran oil storage tanks. Iranian Air Force hits Bagdad, the Basra oil refinery, and a number of other targets in Iraq.

October 17-19, 1980. Iran's planes attack Bagdad, Penjwin, Sulaymaniyyah, and Aziziyyah.

October 20, 1980. Iraqi ground forces continue to fight in heart of Khorramshahr and in the outskirts of Abadan while Iraqi naval forces attack Khosrowabad.

October 24, 1980. Khorramshahr is captured but with pockets of resistance holding out.

October 30, 1980. Iran counter-attacks near Qasr-i-shirin.

OVERVIEW OF MILITARY OPERATIONS

Whatever the starting point or "cause" of the war--and, as we have pointed out, the parties disagree on these issues--it is clear that the major military operations commenced on September 22 when Iraqi aircraft attacked 10 Iranian airfields and Tehran. Ground operations began the next day as Iraqi armed forces crossed the border.

Overview of Ground Forces Operations

Initial fighting took place on the three fronts of the Iraqi invasion--in the north around Qasr-i-Shirin, a central front around Mehran, and the Khuzistan front in the south. Of these three attacking targets, the southernmost was the principal thrust. In all, only about three Iraqi divisions opened the attack: a half division in the north, a half division in the central, and two divisions on the principal axis in the south. These divisions were later reinforced by additional forces about equal to those in the initial assault. Thus, after reinforcement approximately one mechanized division represented Iraq around Qasr-i-Shirin, about one mountain infantry division in the Mehran area with perhaps an armored division in reserve, and, in the south, one armored division was deployed against Dizful, one (supported by a mechanized division) near Ahvaz, and a reinforced armored division (replaced by a mechanized division after the fall of Khorramshahr) deployed against Khorramshahr and Abadan.

The initial three-division-equivalent attack was probably too little firepower, but Iran had deployed only three divisions in the area: an armored division headquartered at Ahvaz and responsible for defense of Khuziatan, another armored division centered at Kermanshah, and an infantry division in the north at Sanandaj. An additional armored division and airborne units were also brought to the front after the fighting was well underway.

The Northern Front

The attack on Qasr-i-Shirin axis succeeded in capturing the town almost immediately. From Qasr-i-Shirin Iraqi forces moved eastward to the foot of the Zagros Mountains, approximately 50 km before stopping. At this point the front was perhaps 100 km north-south by 40-50 km east-west as the area of Iraqi control inside Iran. Gilan-e-Gharb was on the edge of this area, and the Naft-e-Shah oil field was also captured. A second front in the north was opened up in late December. This front, which was only barely covered by the media, was east of the Iraqi town of Panjwin.

The Central Front

The second axis of Iraqi advance through Mehran to the edge of the Kabir Kuh (also part of the Zagros Mountains) was, like the attack farther north, a two-pronged drive north and south of the town. Here the advance was almost 200 km long, but penetration extended only about 40 km at the most and was generally about half that much.

The Khuzistan Front

The major front in the war was clearly in Khuzistan. Here Iraqi forces attacked in several directions. In the northern sector, they moved toward Dizful, in the central, toward Ahvaz; and in the southern, they attacked Khorramshahr and Abadan. From a strategic point of view, Dizful may be the most important of these built-up areas. Near the town are an Iranian air force base, an underground command post and army base, and critical LOC. The oil pipelines to Tehran, railroad track, and main roads into Khuzistan all run near Dizful. Moreover, there is a pumping station there. However, Dizful was not the principal axis of the Iraqi advance. Nor was the move toward Ahvaz (the Khuzistan capital with the same railway, roadways, and pipeline) the focal point. Instead, the major Iraqi attack was aimed at Khorramshahr and Abadan in southernmost Khuzistan.

Interestingly, the oil fields of Iran do not appear to have been an objective. There is a large field near Ahvaz (the Ahvaz field), but it lies principally to the east of the capital. (A smaller field, Ab Teymur, was captured.) The drive toward Dizful did entail the seizure of Dehluran, Chashmeh Khush, and Paydar, but these are not major Iranian fields, either. There are no known oil fields in southwestern Khuzistan, near Khorramshahr or Abadan, where the principal Iraqi thrust was concentrated.

General

On all fronts the Iraqi ground forces moved forward slowly with only token opposition at first. The only major cities within 10 or even 50 km of the Iraqi border are Khorramshahr and Abadan. Generally, artillery preparation paved the way for what was essentially an armor-led attack. (Iraqi ground forces are armor-heavy.) The territory captured by Iraq in the early stages of the war, even in the southernmost sector, was largely uninhabited. The Iranian population, and whatever remnants of the Iranian armed forces may have been forward deployed, withdrew toward larger towns or better defensive positions.

In Bagdad, far from the front, announcements of the fall of Ahvaz, Khorramshahr, and other major towns came within days, sometimes hours, of the outbreak of the war. These statements may have been a calculated attempt to disrupt the Iranian withdrawal and demoralize and confuse the Iranian Army. More likely, however, is the speculation that the rapid withdrawal of Iran's ground forces convinced Iraqi leaders that their adversary would not fight. Moreover, when advancing at as slow a pace as the Iraqis were, and viewing the rapid withdrawal of the Iranians, and especially when the commander was aware he was near the outskirts of a city or town, it would hardly be surprising if he contacted his superiors to report its capture. What is the "capture" of a built-up area? Capture of its principal buildings? Of certain strategic sites? Of the area around it? Of population centers? Of the business district or port? Of most of the physically built-up area? The fall of Khorramshahr was reported and denied numerous times probably because of the confusion over what "capture" consists of.

Throughout their advance Iraqi forces used and faced substantial artillery fire, but there was little close combat for almost three weeks. When resistance was encountered, as in Khorramshahr, Iraq concentrated its artillery assets in an attempt to break the resistance before committing manpower to combat that was likely to produce casualties. Therefore, for almost three weeks casualties were very few.

The terrain along the border at Mehran and especially in Khuzistan is flat and largely featureless. Qasr-i-Shirin and Mehran are generally mountainous areas, but Qasr-i-Shirin is in a depression and really lies near the foot of much larger mountains to the east, while Mahran is on desert flatland about 20 km west of the mountains. The western two-thirds of Khuzistan is very flat; some of it marshland, much desert, and, especially along the Gulf littoral, seasonally flooded. Iraq's army moved slowly but relatively easily through this featureless terrain along all three axes. Then, however, they approached obstacles.

In the north and the center the obstacles consisted of mountains. At both Qasr-i-Shirin and beyond Mehran, Iraq stopped before the Zagros Mountains. In the south, however, the obstacles were built-up areas. Dizful is at the foot of the Zagros Mountains, and Ahvaz is in the desert plain. Neither was captured, although it seems apparent that both were among the objectives, the Iraqis would have liked to have capture them, if the cost were not prohibitive. Both cities, however, were effectively defended.

Overview of Air Operations

Air operations have been of four types--reconnaissance, strategic bombing, ground forces support (close air support and interdiction), and insertion of airborne personnel. Sophisticated reconnaissance aircraft were in Iran's inventory at the outset of the war, whereas Iraq had invested much less in recon. By contrast, only Iraq had bombers per se, notably the Soviet supersonic Tu-22. However, Iranian F-4 and F-14 fighter-bombers have substantial attack capabilities, and both (especially the F-4) can carry substantial ordnance. In terms of air support, both countries used combat helicopters (Iran the Cobra with TOW, Iraq the Gazelle with HOT), and both bombed and strafed each others' ground forces. Iranian and Iraqi air forces seemed unable to use air-to-air or air-to-surface missiles effectively. Iran air-dropped paratroopers into Khorramshahr and carried out interdiction.

There were a number of cases of air-to-air combat, but few, if any, aircraft were lost as a result. Both air forces displayed poor air-to-air combat skills, and neither proved capable of managing air engagements. It should be noted that Iran's wholly inadequate air defense was oriented toward air intercept, while Iraq's equally or more inadequate concept was centered much more upon the use of ground-based AD--ADA and SAMS. Indeed, much of Iraq's combat air arm was deployed to other Arab countries just before or in the early days of the war to protect it from Iranian attack.

Strategic air operations hit refineries, oil fields, petrochemical and oil shortage facilities, and major cities on both sides. Iran's F-4s were employed heavily against area targets, a sub-optional use of these high-performance aircraft. Among the targets were the large cities of Bagdad, Basra, Kirkuk, Irbil, and Mosul in Iraq; Tehran, Shiraz, Isfahan, Tabriz, Bushire, Kermanshah, and the cities of Khuzistan in Iran. The precision of these air strikes varied enormously, but, in general, they did little to depress morale and clearly failed to bring either country's government to its knees.

THE BATTLE OF KHORRAMSHAHR/AL-MOHAMMARAH

The first major city assaulted directly by Iraqi ground forces after crossing the border with Iran was Khorramshahr or al-Mohammarah. (Because the city has long been inside Iran, the common name for it has been the Iranian "Khorramshahr" rather than the Iraqi name, "al-Mohammarah.") Khorramshahr was primarily a port city serving Abadan and lies less than 10 km from the Iraqi border.

Significance of the Battle

As the closest large Iranian city, Khorramshahr represented an objective almost forced upon Iraq. By itself, the city was important both because of its port and because of its integral relationship with Abadan, a much larger and more internationally well-known city. The linkage between Abadan and the other major city of Khuzistan--Ahvaz, the capital--was through Khorramshahr. This linkage involved only the railroad and highway, but not the major oil pipeline. Nor did the oil pipeline between Abadan and Tehran--in other words between Abadan and most of the rest of Iran--run through Khorramshahr. Although there were some military facilities in the city, these were not considered a primary objective.

Despite these considerations, Khorramshahr was not considered a particularly attractive objective by the Iraqis. Military facilities were marginal. The whole southwestern area of Khuzistan was without oil or other valuable mineral deposits. Nor was Khorramshahr well known as a city, except to those involved in commerce. Thus, the "prestige" of victory would be limited. It was a relatively large city, but not as large as, say, Abadan or Ahvaz. The city was divided by rivers, complicating its possible military conquest. For a number of reasons, then, the best results would be obtained from destroying certain facilities rather than from fighting for capture of the city. Why did Iraq try to take Khorramshahr?

As we have indicated, capture of Khorramshahr was forced on Iraq. First, as the principal city on the road to Abadan, Khorramshahr apparently had to be secured in order to take Abadan. Second, the outside world expected Iraq to capture Khorramshahr (and Abadan). This expectation was strengthened by the premature Iraqi announcement of the capture of Khorramshahr which then added to the pressure to capture at least one of the major cities attacked and announced as taken--and Khorramshahr was the easiest and closest. Finally, Iraqi leaders and most other observers seriously underestimated the determination of the Iranian resistance. By the time their determination became clear, Iraq was committed to winning and any other outcome would have entailed unacceptable political costs. Indeed, the more that was invested in the attack, the more necessary was a victory.

The capture of Khorramshahr was important to Iraq, in the final account, then, for symbolic reasons and as a stepping stone toward the attack on Abadan (which, as it turns out, was never pressed to success). To improve morale, to have a "major victory," to prove Iraqi forces could win a battle--all these factors were more important in the determination to press the attack than the anticipated tangible fruits of victory.

The perception of the battle from Tehran was far different. Iraqi leaders believed they could "win" the war; i.e., that under conditions of defeats along the extensive front Iran's leadership would sue for peace or be overthrown or both. By contrast, Iranian leaders, recognizing Iraq could never do more than invade and capture a small part of the country, knew that for its part Iran would not concede defeat and, in fact, saw the Iraqi attack as a factor tending to unify the country behind its leadership rather than working against that leadership. To military leaders in Tehran, loss of Khorramshahr or even all of Khuzistan would be serious, true, but only a tactical setback because Iraq clearly had no means of knocking out Iran as a whole. The national leadership, whether secular (which was limited to President Abol Hasan Bani-Sadr and some of his aides) or clerical (Ayatollah Khomeini, the majlis [parliament], and many other national leaders--the clerics were in the process of consolidating their grip on Iranian power) was involved with the sense of victory in the revolution and believed it had the support of God. Whether a setback was dictated or precluded by God, however, there could be no compromise with the "Godless Ba'th" (the Ba'th Party ruled Iraq). This was not merely rhetoric, it was deeply felt in Iran.

Thus, Khorramshahr, in spite of its strategic assets (especially the LOC), was expendable. Indeed, any city in Khuzistan was expendable if necessary. Khorramshahr simply offered more of a chance to exact a high cost from the Iraqis than did the flat and largely featureless terrain outside the urban area.

As was the case in Iraq, the Iranian perspective on Khorramshahr changed over time. Once it became clear that the city could slow the Iraqi advance, that the Iraqi army was not capable of carrying out a blitzkrieg once its forces were engaged in a built-up area, then the value of Khorramshahr increased significantly. Keeping Iraq tied down in Khorramshahr gave Iran time to redeploy its forces, an unexcelled psychological operations opportunity, and a chance to demonstrate that the Iraqis were neither invincible nor even very formidable. Moreover, since, due to the several premature Iraqi announcements of Khorramshahr's fall, the loss of the city was already expected; its eventful fall would not damage Iran's image or enhance that of Iraq. It was, so to speak, already "discounted."

Description of the City

Khorramshahr has grown over the years to embrace both banks of the Karun River which divides the city on an east-west axis, and its outskirts reach east to the junction of the Bahmanshir and the Karun. (See Figure 1.) The southern portion of Khorramshahr (south of the Karun) is actually on Abadan Island. Khorramshahr lies along the east bank of the Shatt al-'Arab north of the Karun and straddles both banks of the latter, but only one bridge crosses the Karun in Khorramshahr and this Khorramshahr-Abadan Bridge is almost 6 km east of the junction of the Shatt al-'Arab and the Karun. (See Figure 2.)

Khorramshahr, formerly the capital of Khuzistan, was a port city; the largest commercial port in Iran. (Abadan had its own oil port but a relatively small commercial port.) It was also an Iranian naval base. Much of the land of the city was dedicated to four activities: the port, customs, the railroad station, and palm plantations. Its population had been about 150,000 in 1976, and because of the rapid increase in oil revenues was probably about 175,000 by late 1978 when the revolution took place. Economic conditions during and after the revolution almost certainly restricted the population growth rate, however, and it is unlikely that there were more than 175,000 residents in September 1980.

Street patterns in Khorramshahr reflect its crossroads location. Along the rivers the major thoroughfares run parallel to the shore. The other principal routes are the two roads to Abadan and the two to Ahvaz, the recent provincial capital. The bazaar runs perpendicular to the Karun, but relatively far to the east of the port area.

Khorramshahr is slightly elevated over the surrounding area. To the north of the city the terrain stretching to the Iraqi border less than 15 miles away is essentially a vast, dusty plain in the summer, a muddy floodplain in the winter. At Basra, the Khalid ibn Walid Bridge crosses the Shatt opening up this plain.

Khorramshahr has long been one of the principal cities of Khuzistan Province. It grew quickly as an oil and refinery town during World War II, and then (as noted earlier) again more recently following petroleum price increases. The building types and construction reflect the World War II and post-war growth periods, particularly in the port and suburban residential areas. Streets in the older sections are still narrow, often with alleys impassable to vehicular traffic. The newer quarters tend to be much wider and straighter.

The Combatants

The order of battle (OB) on September 23 and for the periods after that is still uncertain. The initial three-division Iraqi attack and the reinforcement of Iraqi positions have been based upon the regular army, and have involved all types of ground forces--including commandos and mountain infantry--and all branches. Iraqi divisions reflect Soviet standards, comprising over 10,000 men. They are armor-heavy. To say a unit is armor-heavy is also to say it is infantry-weak, however, since it means there is a lower infantry-to-armor ratio. Specific TOE for the attacking units is not known, but it can be assumed that the following represents general order of magnitude:

Northern Front

Iraq

1 reduced mechanized division
8-10,000 men
150-200 tanks

Iran

1 reduced infantry "division"
5,000 men
50 tanks

Central Front

1 reinforced brigade
5,000 men
50 tanks

1 reduced armored "division"
4,000 men
150 tanks

Southern Front

1 reinforced armored division
or 2 divisions
15-20,000 men
500-600 tanks

1 reduced armored "division"
4,500 men
200 tanks

As we have indicated, however, Iraq greatly reinforced its attacking army, roughly doubling its size over the next few months. By contrast, Iranian Army defenders were augmented much less, although unit manning was increased substantially. However, the army was not the principal defending force in built-up areas. This role fell to the Pasdaran (known in United States as "Revolutionary Guards") and other, smaller militia-like groups, especially the Mujahedeen-e-Khalq and the Fedai-ye. Moreover, other armed units, such as the police, customs police, armed forces trainees, and volunteers also participated. Total defender strength in Khorramshahr after the Iraqis entered the city was believed to be approximately 2,100 to 3,000, most of whom were Pasdaran members and volunteers (so-called "Basij" militias, Islamic-oriented but voluntary).

Iraqi enlisted personnel and junior officers are considered brave and reasonably competent fighters. Command levels have demonstrated great incompetence in past Arab-Israeli wars. Because of poor senior personnel, however, the armed forces as a whole are ill-disciplined. Most Iraqi forces also had little experience in modern warfare outside Iraq. Those who participated in the October 1973 war, essentially some armor units, were theoretically under foreign command and, in any case, did not retain responsibility for combined mass operations.

In most places in Iran, there was powerful political discrimination against Iranian groups not affiliated with the dominant Islamic Republican Party; i.e., virtually all militias except Pasdaran. However, this was generally not the case in Khorramshahr where Pasdaran helped arm and co-operated with the Mujahedeen-e-Khalq, the Fedai-ye, and even communist guerrillas. Even many distinctive marks of the different groups were dropped in accordance with Pasdaran's insistence on close cooperation against the Iraqi threat.

At the local level, Pasdaran generally directed the resistance, including even the operations of the regular Iranian Army. That is, when conflicts between the two arose, Pasdaran's decisions were considered authoritative. Pasdaran, as an Islamic militia, was characterized by a high degree of commitment, at times bordering on fanaticism. Iraqi soldiers commented frequently that Pasdaran fought quite literally "to the death." Moreover, Pasdaran members were reported to have forced other fighters to stay at their positions by threatening to shoot them if they withdrew.

While Iraq reinforced its attacking units, Iran, with a much larger population base and much less concern about other attackers (Iraqi leaders felt they had to keep several divisions along the hostile Syrian border), found itself unable to significantly redeploy. Opposition to central government has been endemic in Iran, particularly in Kurdistan, Baluchistan, and several other areas. Both the Kurds and the Baluch are overwhelmingly Sunni and have been far more restive under the militantly Shi'a republican government than they were under its quasi-secular imperial predecessor. Given the high degree of political and ethno-religious unrest in Iran, the central government never felt able to remove large numbers of its troops from troubled areas to confront the Iraqis.

The Iranian armed forces were, in any case, in shambles. Following and as a part of the revolution, virtually all senior and most middle-grade officers were executed, exiled, imprisoned, retired, or cashiered, and new military officers were therefore quite inexperienced. Yesterday's major was today's general officer. Notwithstanding the far-reaching personnel changeover, the Khomeini government long felt that its greatest threat came from a military-sponsored coup. Thus, the armed forces were under close scrutiny, distrusted, and penetrated by individuals loyal to the regime. Morale was very low. The Iraqi attack changed the situation to some extent--ex-military returned to the service, the armed forces were sometimes portrayed as heroic, and nationalist fervor at least partially overcame political divisions. In general, however, the military enjoyed only very limited political support from and trust of the government, which continued to place its faith in God and its hopes in Pasdaran to protect Iran from the Iraqis. Even in sectors where the regular armed forces bore the brunt of the fighting, Pasdaran tended to receive greater media attention and praise.

Again, as in the case of Iraq, regular enlisted personnel and junior officers were competent to perform their missions if led effectively, but command levels had neither experience nor competence. Iranian army and air force personnel were better trained than their Iraqi counterparts, but could not rise above their poor leadership. In any case, most of the fighting in Khorramshahr was militia-centered--Pasdaran, Basij, and the non-Islamic groups. Unlike the armed forces personnel, the militias were totally without adequate or appropriate weapons training. Pasdaran members had greater training than others, Basij less--generally a few hours' time. They had no coherent sense of unit organization or coordination, and no military command structure.

Militias generally operated as in Khorramshahr, with central direction from local religious leaders and headquarters in a local mosque. Coordination with outside personnel and forces was through the mosque as well. In Khorramshahr the central mosque is situated well to the east of the point of Iraq's attack, and therefore served effectively as command center throughout virtually the entire battle.

CONCEPTS OF OPERATIONS

The attacking Iraqi forces had very little coherent doctrine for attacking built-up areas. Trained in accordance with Soviet doctrine generally, even Iraq's limited combat experience in full-scale war (principally, the October 1973 Arab-Israeli War) had demonstrated that Soviet doctrine can be inappropriate to Arab forces and may, in any event, be beyond Iraqi capabilities in some circumstances.

In the Gulf War Iraq was unwilling to accept significant casualties, a fact that probably dictated strategy as much as or more than any other. Recognizing that combat in urban areas was likely to entail heavy casualties, the Iraqis sought to conquer Iranian cities without individual or small-unit fighting in the cities. Their approach was to rely upon artillery to drive out the defenders or at least reduce their number to negligible. At that point the Iraqi Army would move into the built-up area. The fact that military objectives were not related in a coherent way to political goals seems clear in retrospect.

If Iraq's offensive concepts were not well refined and historically ill-informed, an Iranian defensive concept was totally lacking. The destruction of all senior armed forces personnel had eliminated those capable of planning a defense, and the reduction of the regular army's role eliminated the possibility that residual planning capabilities could be brought to bear on the defensive problems posed by a superior, heavily armed, and (by third-world standards) well coordinated attacker.

With respect to Khorramshahr, it seemed clear at an early stage that Iraqi forces could not be prevented from capturing the city. Consequently, the civilian population was evacuated, and the army was withdrawn. The town was expected to fall without great resistance, and Pasdaran elements remained as much out of instincts toward martyrdom as with a conscious view to slowing the momentum of the Iraqi advance. Indeed, Iranian artillery and air may initially have been believed to pose a greater obstacle to Iraq's forces than close-combat groups.

OPERATIONS

After Iraqi troops crossed the frontier on September 23, they moved toward Khorramshahr, but moved relatively slowly considering that Iran's forces withdrew from the intervening uninhabited land (abandoning military supplies in the process). Although Bagdad announced that Khorramshahr was surrounded on the same day, there was, in fact, no basis for this report, as the city was neither surrounded nor under any particularly heavy pressure.

The slow advance of the Iraqi Army was based on several factors. First, the Iraqis did not want to fight in Khorramshahr, anyway, and since both sides appear to have concluded early that Iraq would capture the city, the Iraqis sought to facilitate Khorramshahr's evacuation. Second, the Iraqi advance from the very outset was unusually well supported. In order to preclude overextending its lines of resupply, Iraq had prepositioned large quantities of equipment, ammunition, water, and other supplies. As the army advanced, attention was given to maintaining adequate supplies and supply lines to the front. Third, the emphasis in Soviet doctrine on artillery preparation combined with the length of the front and the basic resistance of built-up areas to artillery bombardment resulted in the expenditure of significant artillery firepower to "sanitize" areas before the arrival of Iraqi troops. Finally, Iranian air strikes and artillery fires retarded the penetration to some extent.

On September 25, Iran took several important steps both in Khorramshahr and generally. The civilian population of the city was evacuated in large measure. Physicians, nurses, and security personnel were about the only ones who remained apart from the small cadre necessary to support them. However, large numbers of volunteers (Basij militia) began pouring into Khorramshahr in early October. Street barricades were erected on the 25th and 26th, and trenches were dug in some areas. The rear-guard or security forces were composed principally of police and Pasdaran personnel, with some customs officials and army cadets. Most were involved in mortar, sniper, or ambush positions. More generally, tax waiver privileges for Iranian armed forces were restored in order to attract the return of former military personnel and to boost morale of those already serving.

During the slow period of advance of the Iraqi Army, there was no air cover provided by the Iraqi Air Force, most of whose combat planes had already been sent out of the country. Nor, however, was the Iranian Air Force concentrating on CAS or even interdiction behind the FEBA at this time, dedicating its own resources to organizing and mobilizing its assets and to strikes against strategic targets, many of which were deep inside Iraq.

Iraqi artillery positions along the Shatt al-'Arab pounded Khorramshahr, Abadan, and other targets, using 130mm guns and heavy (160mm) mortars, as well as BM21 multiple rocket launchers, especially from September 26 onward. Iraqi batteries were spread in rows across the desert and located mainly in date palm groves, but also around al-Faw. Iranian artillery responded from the opening of hostilities, but also increased after the 26th.

Not until the 28th did Iraqi troops really reach the outskirts of Khorramshahr. Meanwhile, the invading Iraqi force continued to grow, units crossing the Shatt with bridging (e.g., hydraulic bridging trucks) and other engineering equipment, mobile communications centers, and medical support facilities.

This extended procession which constituted the invading Iraqi Army was only intermittently engaged on the ground, but was attacked increasingly from the air by Iranian F-4s. Although some Iraqi aircraft rose to challenge Iran for the skies, there were relatively few dogfights, and neither side demonstrated more effective air-to-air combat strikes than the other. Helicopter gunships were reported in action against Iraqi columns near Ahwaz and Dizful with some successes. Some of the gunships were U.S. UH1J Huey Sea Cobras equipped with TOW. Apart from these air attacks and artillery exchanges, however, there were relatively few skirmishes or casualties as Iran withdrew eastward to better defensive positions.

Over the night of September 29-30, just over a day after lead Iraqi units reached Khorramshahr's northernmost outskirts, elite units tried to attack into the city from the Iraqi shore using boats. Regular forces also attempted to take the city, but both were repulsed losing some tanks and APCs, and taking serious casualties for the first time. The skirmishes and attack demonstrated also for the first time to both sides the potential problems relatively small Iranian resistance could pose to the Iraqi advance inside the built-up area. Over the next two days, Iran's approach to Khorramshahr apparently changed, and the decision was made to exploit the built-up area to slow down the Iraqi advance, increase Iraqi casualties (and therefore operational cost), and optimize the deployment of Iranian resources in terms of the war as a whole.

As Iraqi forces moved into the outlying urban terrain, they encountered numerous Pasdaran ambushes. The Pasdaran firing positions used antitank rockets, automatic rifles, and machine guns, inflicting heavy casualties. Unprepared to engage in house-to-house combat and unsure of the size of the forces defending Khorramshahr, the Iraqis withdrew. Meanwhile, Iranian artillery fire increased in intensity, hitting the Iraqi rear--trucks, tank parks, and logistical support. (Major Iraqi tank parks had been developed about 6 km northwest of Khorramshahr.)

On October 1, Iran reinforced the city's defenders by heli-dropping Iranian Army paratroops into Khorramshahr while further stepping up artillery fires on Iraqi columns outside and on the approaches to the city. Notwithstanding the reinforced defense and the indications that Khorramshahr's defenders now intended to fight to the death, Iraqi forces undertook the serious and concerted assault. At various times the armored thrusts reached as far as the port authority and railroad station, but Iran's irregular Pasdaran continued to defend Khorramshahr with the line moving back and forth throughout the next day or two. Tanks and artillery were also used within the city by Pasdaran.

Here it may be apposite to note that Iranian and Iraqi fighters had trouble with sophisticated equipment. Repair was a constant problem for Iran, cut off from resupply of spares and bereft of many of its experienced personnel. Most important, since the bulk of the fighting was done by militias whose members were ill-trained (or untrained), poorly organized for combat, and unsystematically equipped, repair and cannibalization were insuperable obstacles unless more experienced cadres were also present. The Iraqi Army seems also to have been inadequately trained, however, failing to use night-vision and computerized aiming devices, for example.

Between October 2 and 3, Iraqi forces extended their effective control to most of the port running north and south along the Shatt, and captured the radio station. An Iraqi field headquarters for the Khorramshahr operation was established in a fertilizer plant on the northern edge of the port. Dug in T-62s surrounded the command post, with T-55s on each side of approaching roads. During this period electricity and water for large parts of Khorramshahr were cut off. Ample food stocks existed, and water and other supplies still arrived intermittently from Ahvaz for the defenders.

On October 3, in a major six-hour battle, Iranian marines or paratroopers using Chieftain tanks and rocket-propelled grenades fought an Iraqi armored column, knocking out about five tanks and more than 10 APCs. The engagement took place in the large customs area near its northern limits (the southern border of the railroad station). All of northern Khorramshahr was subject to intermittent attacks and counterattacks by both sides, and Iranian and Iraqi artillery fire continued to be exchanged from the distance. Sniping by both sides began to generate casualties as well. In addition, Iranian F-4s began strafing, rocketing, and bombing Iraqi roads and supply lines into the city, as well as storage areas behind the FEBA.

Iranian counterattacks tended to be brief but violent, relatively well organized if carried out by armed forces regulars, and often used armor still in early October. Ultimately, however, such attacks were defeated by the sheer size and aggregate firepower of the Iraqi forces, and the control of the latter spread farther south to the Karun River.

On October 5, Iraq announced a unilateral cease-fire. In fact, the cease-fire attempt reflected Iraqi control over northern Khorramshahr, Iraq's determination to consolidate its position and move supplies forward to support further attacks without being subject to Iranian air and artillery strikes, and to enter a negotiation phase with the control of substantial Iranian territory. The cease-fire was never accepted by the Khomeini government which vowed to drive Iraqi out of Iran.

After the collapse of the October 5 cease-fire attempt, Iraqi tactics changed. Until October 6, Iraq's military avoided small unit and individual combat as much as possible, relying on artillery and armor to drive out Iranian defenders. On October 6, Iraq launched a massive attack on Khorramshahr. Preceded by artillery barrages and led by tanks again, Iraqi soldiers (special forces) fought in hand-to-hand combat, and the assault was supported by Iraqi Air Force MiGs which attacked defenders' concentrations. The Iranians, principally Pasdaran, held out as best they could but were inexorably pushed back. Iraqi control over the docks and port was completed with only sporadic sniping remaining. Security was sufficient that Iraq escorted large numbers of foreign correspondents to the port area. The port itself was still in reasonable condition, although many of the storage buildings had been looted and damaged. All along the waterfront Iraqi tank positions were established, with many of the tanks firing down the principal streets of the city. However, central Khorramshahr, as well as the eastern industrial suburbs and the southern portion across the Karun, were still held by Iranian militias and some Iranian Army rangers. Moreover, the Iraqi reinforcement begun on October 2 and 3 continued, fresh Iraqi forces moving from Bagdad with tanks (T-72, T-54/55), APCs, heavy artillery, and repair equipment. These forces also had pontoon bridges and bridging equipment, and amphibious assault vehicles. While not all these assets were destined for Khorramshahr, a significant proportion directly or indirectly influenced the outcome there.

Fighting continued on the same individual level on October 7, with Iraqi armor and artillery concentrating on the city center, while Iranian artillery hit the northern access routes, Iraqi storage areas (such as the palm plantation just north of the city), and the port which was now in Iraqi hands. Communication between the Iranian defenders and the rest of the country had been interrupted on about the 5th, but the defenders were not yet cut off from contact, as the road from Abadan was still open (although under heavy bombardment) and that to Ahvaz still intermittently passable. Iraqi progress, slow but inevitable, had by October 7 progressed to the western dockyards, but docks to the east remained a no-man's land.

The Iranian militias, holding but withdrawing slowly toward the city center, continued to use the central mosque as their headquarters, and still operated on a hit-and-run basis, attacking and then retreating eastward to their areas of concentration. By the 7th, their combat resources were limited to light weapons, antitank guns and RPG-7s, and machine guns, but a few dug-in Chieftains also retarded the Iraqi advance.

Between October 7 and October 10, Iraqi continued to make painfully slow progress against the determined Iranian defenders, but was still unable to take and hold the part of Khorramshahr between the port and the bridge crossing the Karun. Although Iraqi forces engaged the defenders' positions and tanks, sniping was the dominant weapon on both sides, and the Iraqis, still concerned with saving lives, were unable to eliminate Iranian positions. While defeat of the defenders was only a matter of time, it appeared to be a costly time for Iraq.

Facing the grim prospects of a slow and costly capture of Khorramshahr, the Iraqi Army, instead, crossed the Karun about 30 miles north of Khorramshahr. The bridging operation utilized multi-section pontoon bridges and took place as Iraqi MiG-21s attacked nearby Iranian positions. The bridges were used at night, while ferrying was still preferred under daylight conditions. As soon as Iran's leaders realized what had happened, they deployed UH-1 Seacobra armed helicopters to attack the bridgehead, but nevertheless, the Iraqi party make a rapid and important flanking movement, cutting the city off entirely from Ahvaz, increasing pressure on the Abadan road, and moving to encircle Khorramshahr.

As Iraqi elements moved south and west to cut off Khorramshahr, special forces attacked toward the bridge across the Karun in the city on October 12. Also during that day, the Iraqi tactical headquarters was moved forward to the central city area. Some lead elements crossed the suspension bridge, but taking control of the corridor to and over the bridge consumed another four days of intermittent fighting. By this time, mid-October, Iranian defenders were almost totally cut off. The defenders were primarily young men, aged 16-20, and probably numbered about 300-500. They had been without electricity for almost two weeks, and had had very little food or water after about the 5th. The hospital, still in Iranian hands on the north bank but on the eastern outskirts of Khorramshahr, continued to operate but without dependable supplies or power, and with very few viable facilities.

Khorramshahr's defenders wondered why they were not reinforced by the army, having demonstrated the feasibility of resistance in the city. Why didn't they receive more ammunition and heavy weapons? By mid-October, many of the Iranian snipers were reduced to using World War II-vintage rifles.

The last stage in the defense of Khorramshahr was the Iraqi mop-up from October 16 to October 24 when the few remaining defenders on the north bank west of the bridge were eliminated, and access to the bridge was secured. Iran began strikes on Khorramshahr with its aircraft on October 20 signifying recognition that the city was controlled by the enemy, but large-scale Iranian shelling of Khorramshahr from Abadan began only on October 30. As late as that date, when all of the north bank was clearly controlled by Iraq, Iranian snipers in the southern part of Khorramshahr (i.e., on the south bank) made overly exposed movement in the town marginally risky and movement over the bridge without covering fire somewhat dangerous.

OUTCOME

Khorramshahr was captured by Iraq in late October 1980. Iraqi casualties are believed to have been 1,000-5,000 killed and another 3,000-4,000 wounded. Iranian casualties cannot be estimated at this time, but almost certainly the largest number of casualties was recorded from among civilian non-combatants rather than the actual defenders of the city.

At the time of this writing, the Gulf War has not ended. Consequently, no final disposition of Khorramshahr has been reached, and the city remains under Iraqi occupation.

FINDINGS

In this section we present findings in three sections: weapons; tactics; command, control, and communications. Our inability to interact with the defenders or those who have visited them during the course of the defense of Khorramshahr has precluded detailed consideration of the Iranian side other than what was visible to the attackers. Where this lacuna seems to have been most important is in relation to innovations.

WEAPONS

Iraq's attack on Khorramshahr was designed to advance without suffering casualties. Consequently, the offensive was based on the application of overwhelming force to drive off the Iranian defenders. The "force" employed was intense indirect artillery. Although Khorramshahr was captured, artillery and, later, armor proved ineffective in reducing the resistance to acceptable levels. There is no indication that any single weapon was considered especially invaluable or effective by the attackers.

The defenders, on the contrary, used a number of weapons with apparently devastating effect. Their heavy weapons were effective in the initial stages of the attack, but almost more as deterrents (by discouraging through the threat of heavy casualties a concentrated assault) than as vehicles of violence. Once Iraqi forces had entered the outskirts of the city and had begun their fight for the port, small arms, machine guns, and antitank rockets (RPG-7s) proved particularly effective, causing enough casualties to significantly slow the Iraqi advance. Air power was used intermittently by both sides. Although it could be argued that Iran enjoyed air superiority in the Khorramshahr sector, the fact is that both sides were able to attack ground forces from the air without any serious threat to aircraft. Clearly, Iranian tactical air support was greater than Iraq's, but the nature of city fighting and the availability of lucrative targets to the rear of the FEBA were such that Iranian air attack concentrated on LOC, storage sites, and other deployments behind the city rather than the attacking troops in Khorramshahr itself.

TACTICS

Clearly, the Iraqi approach to conquest of the city was poorly conceived. This is not to say it was a mistake. Had the air and artillery attacks scared the defense out of the city, even if only to organize in a more defensible area, Iraq could have secured a psychologically important victory at a critical stage and at little cost. However, the bombardment of the city, while it did bring about the general evacuation of the population, did not result in surrender of Khorramshahr. Rather, it reduced the defenders to those willing to martyr themselves for their cause; several thousand poorly organized, poorly equipped, poorly trained, poorly coordinated, but very highly motivated zealots.

The attackers' use of armor-heavy units proved rather ineffective, as tanks without infantry support were subject to constant sniping and ambush. Moreover, Iraqi forces, whose leadership is not offense-oriented, generally moved forward very slowly, digging tanks in, hull down, immediately. Thus, Iraq's armor eschewed its mobility advantage and invited counterattack. Moreover, it was Iran's C³, maintenance, personnel, and command problems that permitted the assault in the first place. The Iraqi columns moving across the Khuzistan dust plain were naked to air attack from about October 1st on, as some of the modern organic air defense (ZSU 23s and 57s) were sent back to Iraq along with SAM6s to counter Iranian air strikes there. Although SA-7s were abundant, and many ZSU 23s remained, some units had World War II-vintage, manually operated ADA.

Defender tactics were principally ambush and sniping, but their willingness to counter-attack even when vastly outnumbered has also been noted.

The use of Khorramshahr as a trap for the attacker--to slow down the Iraqis' advance, to give the Iranians time to redeploy and reinforce other more vital locations, and to increase the cost of the Iraqi invasion as a whole--was completely successful, although it is unlikely that this was the original Iranian intent. The near-month required to capture Khorramshahr permitted Iranian redeployment, some reinforcement, and spares and ammunition procurement. Moreover, it meant that the paralyzing winter rains, which convert much of Khuzistan to a vast pool of mud, would help immobilize the Iraqi Army before it could reach more important military or political objectives.

COMMAND/CONTROL/COMMUNICATIONS

Iraqi command and control are highly centralized for political reasons and congruent with the Soviet training experience in the Middle East. However, previous experience has demonstrated the communications support for this centralized C³ to be lacking. Although no Iraqis commented on C³ per se, nor on command and control deficiencies, contradictory reporting on locations, activities, and accomplishments from various elements of the Iraqi command appears to reflect communication and control problems as well as willful deception attempts. Some observers commented that lying was endemic throughout the command structure.

Various comments suggest a consistently high level of tactical communications breakdown inside Khorramshahr by the Iraqis, but it is far from clear that even, if true, these problems seriously affected Iraqi military effectiveness. Coordination between branches and specialized and regular forces in "combined operations" seems to have been rather primitive. Actually, Iraqi services operated largely independently of each other: there was no true "combined arms attack." A substantial communications effort was conducted by use of dispatches carried on foot or by motorcycle.

Iranian C³ was extremely poor. There was virtually no central command and control over field forces. Indeed, the effectiveness of the Iranian defense of Khorramshahr is astonishing in view of the lack of coordination, and indeed conflict, between different groups of defenders. Only because the defense of built-up areas is often essentially a series of independent small-unit actions was Iranian C³ not a definitive factor.

Great conflicts existed between militias, and especially between the Islamic militias and the regular forces (Iranian Army). Commanders of one group would be defied when they gave orders to a different or even a mixed group of followers. At the same time, it is also true that there was greater cooperation among the militias in Khorramshahr than elsewhere in the war zone or--especially--elsewhere in Iran. The communist militia, in particular, distinguished itself with many heroics.

CONCLUSION

The present research team has studied several battles during the Lebanese civil war, the 1967 Jerusalem battle, and the battle for Suez City in October 1973. Despite the fact that Iraq ultimately succeeded in capturing the city the Iraqis call Mohammarah, the fight for Khorramshahr is probably a better example than any of those previously studied of how potent a strategic weapon a built-up area can be in the hands of a determined defender. In the face of overwhelming force, a small, ill-coordinated, untrained, poorly equipped, but highly motivated group of defenders stood off more than a full division of the Iraqi Army for almost a month, delaying overall progress in the war enough to preclude the attacker from realizing his principal objectives and to improvise a general strategic defense.

BIBLIOGRAPHY

Articles and Books

- Benab. An analysis of the Iran-Iraq War. RIPHEN, IV, 2/V, 1 (Fall 1980/ Spring 1981), pp. 159-175.
- Griffiths, R. Iran begins to use Cobras, Mavericks. Aviation Week and Space Technology, CXIII, 15 (October 13, 1980), p. 24.
- Dowdy, L., III. Naval warfare in the Gulf: Iraq versus Iran. United States Naval Institute Proceedings, CVII, 6 (June 1981), pp. 114-117.
- Gorce, P.-M. Military gesticulations in the Gulf. National Defense, XXXVI, 11 (November 1980), pp. 53-59. French
- The Iraq-Iran War. International Politics. XVII, 63 (January 1981), pp. 57-125. Arabic
- Iraqi tank guns stop missile helicopters. Aviation Week and Space Technology, CXIII, 21 (November 24, 1980), p. 66.
- Khalil, E. Battle loss statistics. Arab Gulf, XIII, 4 (1981), pp. 191-196. Arabic
- _____. The progress of Iraqi Army military operations. Arab Gulf, XIII, 4 (1981), pp. 91-100. Arabic
- The Middle East and the Gulf. Strategic Survey 1980-1981 (London: International Institute of Strategic Studies, 1981), pp. 49-52.
- O'Ballance. The Iraqi-Iranian War: The First Round. Parameters, XI, 1 (March 1981), pp. 54-59.
- _____. The Kurdish factor in the Gulf War. Military Review, LXI, 6 (June 1981), pp. 13-20.
- Ranger. Conflict in the crescent. Britannica Book of the Year 1981 (Chicago: Britannica, 1981), pp. 298-291.
- Rondot. The Gulf War. National Defense, XXXVII, 6 (June 1981), French
- Sreedhar. Lessons from Iraq-Iran War. Strategic Analysis, IV, 11 (February 1981), pp. 533-536.

Sources Consulted Regularly

- Arab Report and Record. London, bi-monthly, English.
- Aviation Week and Space Technology. New York, weekly, English.
- The Christian Science Monitor. Boston, daily, English.
- Daily Telegraph. London, daily, English.
- The Economist. London, weekly, English.
- Foreign Broadcast Information Service Daily Report. Washington, D. C., daily, English.
- The Guardian. London, daily, English.

Sources Consulted Regularly (continued)

Los Angeles Times. Los Angeles, daily, English.
Le Monde. Paris, daily, French.
Newsweek. New York, weekly, English.
The New York Times. New York, daily, English.
ash-Sharq al-Awsat. London, daily, Arabic.
The Sun. Baltimore, daily, English.
Time. New York, weekly, English.
The Times. London, daily, English.
The Wall Street Journal. New York, daily, English.
The Washington Post. Washington, D. C., daily, English.
The Washington Star. Washington, D. C., daily, English.

Interviews and Correspondence

Interviews with American, French, and Jordanian observers of battlefield activities. Correspondence and interviews with American and British reporters (correspondents) who had observed various phases of the military action.

APPENDIX

QUESTIONS FOR INTERVIEWS

Planning and Tactics

1. What was the tactical plan for the capture or defense of (Abadan/Ahvaz/Khorramshahr) from your standpoint?
2. Had attention been given to the urban characteristics of the operation by the offense or defense and how those characteristics might be employed?
3. Were equipment or tactical modifications made to weapons systems for this operation?

Operations

4. To what extent was rubble a problem? How? How was it created?
5. How were buildings used offensively and defensively?
6. What tools, devices, or weapons were used other than regular armed forces issue?
7. How were barricades used and what was their composition?
8. Did personnel try to shoot through apertures?
9. Was smoke used? How? Why? What was the effect?
10. Was flame used? How? Why? What was the effect?
11. To what extent did noncombatants impede offensive or defensive operations?
12. Was the city prepared for defense? How? Were the preparations effective? If not, why not?
13. To what extent and how were snipers used? How effectively?
14. Was sniping integrated into offensive or defensive operations?
15. How were snipers attacked or defended against?
16. Were there any subterranean operations? If so, what was their nature?
17. How were parallel, perpendicular, and other dependent street patterns used in offense and defense?
18. Were topographical features exploited by either party? How?
19. How trafficable were streets after artillery shelling? Armor shelling? Mortars?
20. Did you observe modifications to logistics to enhance MOBA effectiveness?
21. How did personnel move within structures (i.e., vertically)? Between structures (i.e., horizontally)?
22. What was the distribution and deployment of personnel within buildings? (i.e., how many per floor or building? Which floors were favored for which types of operations?)
23. How were buildings cleared internally and externally?
24. What tactical organization was used? Were problems observed in command and control that derived from the urban environment? What were they?
25. Were medical units used?

26. How were medical units configured?
27. What relationship existed between medical configuration and combat conditions?
28. What expedients were adopted in transportation, drugs, communications, hygiene, treatment of wounded and dead, evacuation, etc.?
29. How and to what extent did disease degrade operations?
30. Describe the organizational structure of medical units.
31. How were casualties identified?
32. Break down wound types (flesh vs. serious, facial vs. thoracic, etc.)
33. Identify cause of wounds. In particular, note secondary wound effects.
34. What precautions were taken to guard against secondary wounds?
35. What equipment was used for communication purposes? Were enemy communications intercepted?
36. What frequencies (number, range) were used?
37. How much power did communications equipment have?
38. What were notable successes, failures, distances, and locations involved relative to communications?
39. What signals were employed?
40. What was the nature of netting?
41. Were scrambling or encrypting used?
42. Were night vision devices used? With what effect? What were they (brand, model, etc.)?
43. What differences arose, if any, between day and night operations?
44. What was the rate of ammunition expenditure, and how was resupply effected?
45. What sociological factors affected the nature of combat?

Equipment

46. What types of equipment seemed to you to be most effective in suppressing enemy fire from buildings or other structures?
47. What types of equipment seemed to you to be most effective in breaching walls?
48. What types of equipment seemed to you to be most effective in stopping assaults?

I would value any unsolicited comments relative to the employment, effects or effectiveness of armor, artillery, AT weapons, hand-held weapons, AAA, mortars, or other systems.

Firing from Enclosures

49. What do you recall about the effects of firing specific weapons systems from enclosures--effects on the room, on the personnel firing the weapon, on the target? Any circumstances that can be recollected (room size, ventilation, number of rounds, ear protection, etc.) would be useful.

Air Support

50. Did offense or defense employ air support? Why or why not? With what effect?

Energy, Water, Telephone

51. Were energy or water source/supply for the city's defenders interrupted? Was the telephone interrupted?

Holes

52. For each hole in a structure for which you can answer the following questions, please supply as much information as you can as to
- what weapon(s) was (were) used;
 - why it was used;
 - what the result was;
 - how big the hole was;
 - what type of wall was involved (composition, thickness, size, room size);
 - what type of structure was involved (purpose, composition, size, age);
 - range from which shot was fired;
 - whether the trajectory was perpendicular or angular;
 - whether the hole was used, once created, and how; and
 - what happened to those inside and outside the wall.

Conclusion

53. Were there any combat innovations you saw that were singularly appropriate to fighting in cities?