VII. PHASE FOUR: STALEMATE AND WAR OF ATTRITION ON THE LAND AND ESCALATION OF THE WAR IN THE GULF: APRIL 1984 TO 1986

7.0 The Beginning of the War of Attrition

Iran did not halt its offensives in March, 1984, but the cost of its battles had been so high that Iran did not launch another all-out offensive against Iraq until the Faw campaign of 1986, and did not seek to conduct a "final" offensive against Iraq until the battle of Basra in 1987. During the next two years, Iran conducted a war of attrition, punctuated by a few major offensives. Iraq, in return, escalated its "tanker war" and attempted to weaken Iran by attacking its major source of income. At the same time, Iraq increasingly sought to use outside fear of an Iranian conquest of Iraq and Kuwait as a lever to obtain foreign support.

The war put steadily increasing pressure on both regimes throughout this period as casualties and costs mounted. Both regimes, however, now had the ability to control their internal opposition. The main factor that shaped the course of the war continued to be the war on the ground, and this was shaped by the extent to which Iran could exploit its superior manpower and revolutionary fervor versus the extent to which Iraq could exploit its superior ability to obtain arms.

By and large, it was Iraq that took the lead. Iran was able to obtain about $3.9 billion worth of arms during 1983-1985, but Iraq obtained about $18.1 billion worth, or well over four times as much. Iraq's superior access to Western and Soviet arms also made a dollar of Iraqi expenditure on arms worth at least 50% more than an Iranian dollar, and the true Iraqi advantage was probably over 5:1.

Iran never succeeded in properly exploiting its potential advantage in manpower. In mid-1984, Iran had about 555,000 men of all kind under arms, with the ability to surge about 200,000 more. This added up to about 755,000 men, and the division into regular forces, Pasdaran, and Baseej, the constant political turbulence, and the failure to retain and train much of Iran's battle experienced manpower, deprived Iran's manpower pool of much of its effectiveness. In contrast, Iraq built up standing forces of around 675,000 to 750,000 men. In spite of its secular regime, and a population less than one third that of Iran, Iraq was usually able to deploy a larger and more experienced pool of manpower that Iran.

The overall trends in Iraqi and Iranian forces are shown in Figure 7.1. While the detailed numbers in Figure 7.1 are uncertain, they show that Iraq was building up a major advantage in land weapons strength and airpower.

Figure 7.1.

The Trends in Iranian and Iraqi Military

Forces: 1979-1984 -Part One

Force Category	1979/80		1984/1985	
	Iran	Iraq	Iran	Iraq
TOTAL ACTIVE MILITARY MANPOWER SUITABLE FOR COMBAT	240,000	535,000	555,000	675,000
LAND FORCES				
Regular Army Manpower				
Active	150,000	200,000	250,000	600,000
Reserve	400,000	256,000	350,000	75,000
Revolutionary Guards/		30,000 -	250,000	-
Baseej/Popular Army (a)		75,000	650,000	200,000 650,000
Hezbollah (Home Guard) (a)		-? -	2,500,000	-
Arab Volunteers		-- 6,000? -	10,000	
Gendarmerie	?	- -	-	
National Guard		10,000 -	-	-
Security Forces		- 5,000	5,000+	4,800
Division Equivalents				
(Divisions/Brigades)		9 23	21-24	22-26
Armored	3/1	12+3 3	6/2	
Mechanized	-	4 4	5	
Infantry and Mountain		3/1	4	3 5
Special Forces/airborne		-/2	-	2 1/1
Pasdaran/People's Militia		-		9-13 -/9
Major Combat Equipment				
Main Battle Tanks		1,735 2,750	1,050	4,820
	400 M-47/48	50 T-72	200 M-47/M-48	4,500 T-54/55/62/72
	460 M-60A1	100 AMX-30	200 M-60A1	260 T-59
	875 Chieftain	2,500 T-54/55/62	300 Chieftain	60 M-77
		100 T-34 100 T-72		
		150 T-54/T-55/		
				T-59/T-62
Other Armored Fighting Vehicles		1,075 2,500	1,240	3,200
Major Artillery		1,000+ 1,040	1,000	3,000

Figure 7.1.

The Trends in Iranian and Iraqi Military

Forces: 1979-1984 -Part Two

Force Category	1979/80		1984/1985	
	Iran	Iraq	Iran	Iraq
AIR FORCES				
Air Force Manpower	70,000	38,000	35,000	38,000
Operational Combat Aircraft	445	332	95	580
	188 F-4D/E	12 Tu-22	35 F-4D/E	7 Tu-22
	166 F-5E/F	10 Il-28	50 F-5E/F	8 Tu-16
	77 F-14A	80 MiG-23B	10 F-14A	45 Mirage F-1EQ/BQ
	14 RF-4E	40 Su-7B	3 RF-4E	100 MiG-23BM
		60 Su-20	95 Su-7	
		115 MiG-21	80 Su-20	
		15 Hunter	5 Super Etendard	
			25 MiG-25	
			5 MiG-25R	
			150 MiG-21	
			40 MiG-19	
			11 Hunter	
Attack Helicopters	205 AH-1S		41 Mi-24	80-90 AH1S 150
Total Helicopters (b)	744	260	390	380
Surface to Air Missile Forces	Hawk	SA-2, SA-3.	Hawk	SA-2, SA-3
	5 Rapier Sqns	25 SA-6	5 Rapier Sqns	SA-6, SA-9,
	25 Tigercat		25 Tigercat	30 Roland
NAVY				
Navy Manpower	20,000	4,250	20,000	4,500
Operational Ships				
Destroyers	3	0	1	0
Frigates	4	1	3	0
Corvettes/Submarine Chasers	4	0	2	0
Missile Patrol Craft	9	12	6	10
Major Other Patrol Craft	7	5	2-3	2
Mine warfare vessels	5	5	1	5

Hovercraft	14	0	17	0		
Landing craft and Ships			4	17	5	11
Maritime Patrol Aircraft			6 P-3F	0	2 PF-3	0

Source: Adapted by the author from the 1979-1980 and 1984-1985 editions of the IISS Military Balance.

(a) Total manpower pool. Active strength far lower or n.one
(b) Includes Army helicopters.

7.1 The Air War and "Tanker War"

While Wal Fajr 5 and 6, and Operation Kheiber, created a near stalemate on the land, they did nothing to halt the escalation of the air war and "tanker war". On February 1, Iraq threatened that it would strike at key Iranian cites like Abadan, Ahwaz, Dezful, Ilam, and Kermanshah, and called for their evacuation. On February 3, Iran threatened to retaliate against Basra, Kanaqin, and Mandali. Iraq struck heavily at civilian and economic targets during the Iranian land offensives in February, however, and fired Scud missiles at Dezful on February 11. Iran shelled Basra in response, and Iranian fighters hit Kanaqin and Mandali, Basra, and then Babubah and Musian. While Iran could only launch a few sorties per air raid, it was clear that Iraq still lacked adequate air defenses against low flying aircraft.

Iraq tired to initiate a ceasefire on civilian targets that was to go into effect on February 18 1984, but Iran rejected the offer. As a result, Iraq seems to have tried to avoid any attacks on its population centers by shifting to attacks on oil targets. The tanker war had already been going on during January and early February, but Iraq had been making far more claims than were credible and many of its claims seem to have been directed more at achieving a propaganda impact on its own population and friendly states than a military impact on Iran.

In late February, however, Iraq threatened to attack any any ship putting in to Bushehr and Bandar e-Khomeini. Iraqi aircraft struck at Kharg Island on February 27, and Iraq then again threatened that it would blockade Iranian oil exports and strike at any ship near Kharg.

Iraq then gave its threats teeth. Although the exact figures remain uncertain, Iraq seems to have use its regular fighters to hit seven ships in the Gulf between 25 February and 1 March. On March 27, 1984, Iraq finally launched the first of a long series of Super Etendard and Exocet strikes, and hit two small Indian and Turkish tankers southwest of Kharg. The next day, Iraq formally announced that it had used an Exocet missile to hit a Greek vessel. These initial Iraqi attacks followed an interesting pattern.

The Super Etendards generally flew at medium to high altitudes with a Mirage F-1 fighter escort. They covered an area from the Shatt to positions south and slightly east of Kharg Island and generally fired their missiles at a range of 30 kilometers without ever inspecting their targets. While Iraq did have some 200 Exocets at this time, it is unclear why it did not use conventional bombs -- which often would have been far more lethal against commercial ships -- and why it failed to overfly its targets and confirm their value. Iraq often seemed to be protecting its Super Etendards at the cost of using them effectively.

The timing of Iraq's first use of the Super Etendards is also interesting, because it coincides with its use of poison gas and the failure of its attempt to retake Majnoon. It also, however, may have had something to do with the fact that the Iranian National Oil Company was negotiating with Japanese traders for the renewal of a contract for 200,000 BPD of crude. Iran was trying to increase production to try to recoup some of the costs of

the fighting, and was exporting from Kharg Island at the exceptionally high rate of three million BPD.

Iran used its dwindling air assets to respond in kind. Iranian fighters hit a Saudi tanker on May 7, and Kuwaiti tankers near Bahrain on May 13 and 14, 1984. These were the first major Iranian attacks on foreign commercial shipping since the start of the war, although Iran rarely acknowledged responsibility for these or subsequent attacks.

Another tanker was hit in Saudi waters on May 16, near Jubail, and provoked the Saudi government to create its own air defense zone and start flying air cover over the area with the support of the AWACS aircraft in the U.S. ELF-1 detachment based in Dhahran.

Within five weeks, both sides had hit a total of eleven ships, ten of which were oil tankers. The rise in the "tanker war", however, still had only a limited initial international and economic impact. The U.S. did warn Iran against any efforts to close the Straits. The U.S. also had carrier battle group in the area, led by the USS Midway, and , but it did not take military action. While Iraq got a great deal of press play when it first used the Super Etendards, and was able to hit more targets than Iran, neither side could inflict enough damage to cut off a major part of the other side's exports on a sustained basis, or to affect world oil supplies in the face of a growing world "oil glut", and full stockpiles of oil in the major importing countries. See Figure 7.1 (Old Figure 4.10)

Oil prices showed little movement even in the usually sensitive spot market. Insurance rates rose, but Iran quickly offered compensatory price discounts. While Iranian exports fell by up to fifty percent for a few days as customers diversified their supplies, they quickly recovered. It rapidly became clear that five Iraqi fighters with Exocet might be able to harass Iran's exports, but could scarcely halt them. Iraq's attempts to bring Iran to peace negotiations also failed, in spite of a five-day suspension of attacks between May 19 and 24, 1984.

Iraq new launched air strikes in the southern Gulf in early June. The Iraqis sank a Turkish flag tanker off Kharg Island on June 3. This led the Iranian air force to start patrolling over the Southern Gulf, and the U.S. and Saudi Arabia then took steps to limit such escalation to the upper Gulf. Saudi Arabia set up an "air defense interception zone" (ADIZ) known as the "Fahd line," which went far beyond Saudi territorial limits and covered all of the Saudi oil zone to the middle of the Gulf. Saudi Arabia announced that Saudi F-15s, guided by U.S. E-3A AWACs and refueled by USAF KC-10 tankers, would engage any aircraft threatening Gulf shipping in the ADIZ.

Saudi jet fighters proved that this ADIZ was effective on June 5 by downing an Iranian jet flying over Saudi waters. The Saudi F-15s, assisted by the U.S. AWACS, shot down the Iranian aircraft before it could perform any significant maneuvers. Iran immediately ceased any further incursions into Saudi territory. Iran lacked the air assets, technology, and training to compete with the rapidly improving Saudi Air Force, which was equipped with F-15s. It never again seriously challenged Saudi air defense capabilities.

Iran faced similar problems in conducting attacks on Iraq. When Iran launched a new artillery barrage on Basra on June 5, Iraq made no attempt to reach another ceasefire on civilian targets. It replied with a raid on Baaneh the same day, and followed with raids on Dezful, Masjid Soleyman, and Nahavand the next morning. Iran then struck a Kuwaiti tanker was hit near Qatar, probably by an Iranian aircraft. This attack on the tanker was the first in the Southern Gulf, and led to considerable concern about the broadening of the war. Nevertheless, it was Iran that had to accept a ceasefire. On June 11, the day after the Kuwaiti tanker was hit, both Iran and Iraq accepted another U.N.-initiated halt to attacks on each other's towns and cities.

On June 15, the speaker of Iran's Majlis, Rafsanjani, proposed extending this truce to oil facilities and Gulf shipping as well. Iran's exports from Kharg were still averaging 1.6 million BPD, however, and Iraq made it clear that any such truce must allow it to repair or replace its own export facilities in the Gulf in compensation. Iran made no response to this proposal, but it set a pattern that was to last until the war ended. Iran would never accept a partial ceasefire in the Gulf that deprived it of a major strategic advantage over Iran without Iranian agreement to allow Iraq to export through the Gulf, and Iran constantly sought a partial ceasefire that would allow the fighting on land to continue while protecting Iran's oil exports.

Figure 7.1

Iranian and Iraqi Oil Production in Average Daily Production in Millions of Barrels Per Day

	IRAN	IRAQ
1978(peak)	5.2	2.6
1980	1.7	2.5
1981	1.4	1.0
1982	2.3	1.0
1983	2.5	0.9
1984	2.2	1.2
1985 (Monthly Low/High)	2.3 (1.9-2.6)	1.4 (1.3-1.7)
1986 (Monthly Low/High)	1.9 (1.5-2.2)	1.7 (1.6-1.8)
1987 (Monthly Low/High)	(1.7-2.7)	(1.7-2.6)
1988 (January)	2.1	2.4

Source: CIA estimates in its Economic and Energy Indicators

Iraq hit several more ships in the Gulf, and struck at the Iranian oil export facilities at Kharg Island on June 24, 1984. The Iranians later confirmed that their loading facilities at the western or Sea Island side of Kharg were damaged in this raid, but it rapidly became clear that Iraq was not ready to take the air losses necessary to destroy Kharg's ability to load tankers. Iraq, instead, escalated the war against shipping. Between 23 June and 25 July, the Iraqis launched at least four additional series of attacks against shipping.

Iraq's air strategy followed a similar pattern during the rest of 1984.

Iraq alternated strikes on Iranian cities and attacks on shipping to Iran, with calls for ceasefires and peace talks. Iraq, however, lacked the combination of sensors, air, and missile power to inflict major damage on Iran's civil and economic centers, and to sustain a blockage of Iran's export facilities.

This failure to achieve strategic results stemmed partly from a lack of technology--Iraq's aircraft lacked adequate range and endurance; its anti-shipping missiles were not sufficiently lethal to score quick decisive ship kills, and it had no maritime patrol aircraft. It also stemmed from a lack of adequate military organization and leadership. Iraq still failed to commit its air power in sufficient numbers to achieve the proper mass to destroy enough of a given target and did not follow up its attacks on a sustained basis. Finally, Iraq failed to properly exploit each successive improvement in its capability to strike at tankers or Iran's oil facilities with sufficient intensity to have a major strategic or political effect. Iraq's attacks always came in brief bursts and with a flood of rhetoric which greatly exaggerated the military reality.

Once again, Iraq made the kind of mistakes which are typical of recent attempts to "manage" escalation. Attackers often assume that relatively limited levels of military escalation can be decisive in their effect, and can change the political and military calculations of their opponent because of the potential for further escalation. In practice, efforts to achieve military or political goals through limited escalation, backed by implied threats, virtually always fail to have their desired effect. The opponent almost inevitably misunderstands "signals" which have so limited an effect, or reacts only to the size of the escalation and not to the implied threat. Limited or gradual escalation has often ended in doing little more than increasing an opponent's hostility.

Iraq generally made the mistake of giving Iran ample time to recover after each new major round of its attacks. Iraq sometimes pursued this path because of new rounds of ceasefires or peace initiatives. Iran used these new peace initiatives, however, to reduce the level of Iraqi attacks on its cities and shipping traffic, and then reiterated its demands for Saddam Hussein's ouster and for billions of dollars worth of reparations.

Iran also found ways to respond to put counterpressure on Iraq, even though Iran now had far less air power. Iran used artillery barrages against targets like Basra, and a few air raids, to deter Iraq from hitting Iranian civilian targets. Iran also made occasional threats to broaden the war to include the rest of the Gulf, although at this point Iran was taking the risk of provoking Western action into careful account. It then conducted occasional air attacks on Gulf shipping, used its navy to harass cargo ships moving to

southern Gulf ports, and/or exploited a mix of threats, subversion, and terrorism. These Iranian actions had at least some effect in persuading the Southern Gulf states to try to get Iraq to limit its attacks on Iranian shipping.

More broadly, many other nations have found that there are sharp limits to any effort to use fighter-bombers to force major changes in an enemy's behavior.

Attempts to use limited amounts of air power as a substitute for victory on the ground have rarely had any success except against the most unsophisticated or uncommitted opponent. While attacks by a limited number of fighters and bombers may produce initial panic or disruption, the economic, political and military structure of the nations that have been subjected to such air attacks has proved far more resilient than the advocates of strategic bombing estimated in launching such attacks. Supposedly critical vulnerabilities generally prove to be easily repairable or subject to substitution, particularly when the country under attack is given time to recover. The net effect of such attacks has generally been to unite a nation in hostility rather than to intimidate it.

7.2 Iran's Shift Towards Initiating a War of Attrition

Iran's land strategy during the rest of 1984 shifted from frontal assault to attrition. Iran occasionally maneuvered its forces in what seemed to be preparation for a new major offensive, but only made limited attacks which were clearly designed to gain key terrain advantages near the front. The reasons for this shift are relatively easy to understand. Iran's casualties in the 1984 offensives must have approached 30,000 to 50,000 dead. While Iran's leaders did not move towards peace, such losses demonstrated to Iran's religious leaders and revolutionary commanders that Iran's ground forces could not continue to attack in the same manner without far better training, leadership and organization.

Iran's military leadership also seems to have realized that it had made Iran's defeats much worse by attempting to hold on too long to initial territorial gains that had no strategic meaning, and by committing untrained volunteer manpower with inadequate leadership and equipment to attacks with no goal short of total victory. Iran's understanding of these lessons was reflected by changes in Iran's forces.

Iran scarcely reacted by developing professional forces, and could not react by acquiring the armor, stocks, mechanized mobility, air support, and air cover it needed. Iran did, however, increase its efforts to obtain new heavy combat equipment, and organized its popular and infantry forces to conduct more orderly and better structured mass attacks. Iran paid more attention to logistics and support, and created an impressive network of military roads and logistic storage areas, especially in the south. Iran did make limited improvements in the training of its volunteers, especially NCOs and junior officers. More importantly, it began to train its forces for new methods of attack and conducted extensive mountain and amphibious warfare training.

At the high command level, Iran also at least made an effort to plan its assaults more carefully and to limit its attacks to areas where it could infiltrate at night or take

advantage of terrain and achieve limited gains. This kind of attack still gave the Iraqis serious problems. In spite of all of Iraq's efforts, Iran could often seize a limited amount of territory and confront Iraq with the alternative of either ceding the loss or counterattacking and taking casualties for relatively unimportant objectives.

7.3 Iraq's Over-Confidence

Iraq countered these Iranian moves by continuing to build up its now massive superiority in firepower and its mix of fixed defenses, water barriers, cross-reinforcement capability, and logistics stocks. The failure of Iran's spring 1984 offensive, however, convinced Iraq that Iranian forces lacked the ability to make significant breakthroughs as long as Iraq could preserve its superiority in mass firepower and military technology, and that static defensive warfare within fixed positions would minimize Iraqi casualties. Iraq became overconfident and came to believe that static defense on the land, and limited attacks in the air, could force Iran to accept some form of peace settlement.

Iraq did launch a few limited counterattacks during the rest of 1984, but most of these attacks were far more limited than Iraq claimed, and few had any real impact on Iran. Iraq still lacked the skill to fully exploit its superior firepower and mobility and take offensive action. It also failed to properly improve its infantry assault, infiltration, and counter-infiltration tactics. Iraq sat behind its defenses, and failed to improve its capability to fight and patrol in mountain areas and in the marshes and wet lands in the south. Iraq's fear of losses, and its over-confidence in technology, helped paralyze a critical part of its military development, and Iraq failed to find any tactical solution to its lack of strategic depth.

There was some excuse for this failure. Iraq faced the strategic and tactical problem that its land forces could not succeed in defeating Iran simply by staying in place, but as long as Iran's people supported the war, Iraq could not force Iran to peace by taking limited amounts of Iranian territory. Even so, the problem Iraq faced in dealing with a war of attrition was scarcely all that unusual in military history and it had a clear solution. It was increasingly clear that unless Iran collapsed, Iraq's only hope of defeating Iran on the ground was to inflict such massive casualties on Iranian troops that the resulting losses would undercut popular support for continuing the war.

As for the air war, it is important to note that Iraq's superiority in numbers was somewhat misleading. Iraq lacked many of the elements necessary to make its overall force effective. Iraq did not have the range-payload, sortie generation capability, maritime patrol, sensor and target acquisition aircraft, and air defense fighter look down-shoot down and and loiter capabilities to target and strike effectively at the volume of shipping that was moving through Iranian waters.

Iraq also found it still had problems in using its Exocets effectively. The Super Etendard aircraft did not have the range and loiter capability to properly cover the area around Kharg Island. Many of the missiles did not hit their targets,

and the Exocet's warhead proved to be too small to do catastrophic damage to large

tankers. This deprived Iraq's missile attacks of much of the shock value they might have had if entire ships and crews had been lost. These problems led Iraq to order additional Mirage F-1s, equipped with extended range fuel tanks and capable of launching both Exocets and laser-guided weapons.

Iraq also failed to improve the effectiveness of its sporadic air and missile strikes against Iranian cities during the rest of 1984. Iraq lacked the combination of aircraft and missile numbers, and range and payload, to conduct the successful mass attacks against the Iranian population. At the same time, Iraq failed to concentrate on clearly defined sets of vulnerable economic targets like power plants and oil refineries. Iraq made the mistake of attacking a wide range of targets sporadically and never pursued any given mix of targets long or intensely enough to deliver unacceptable damage or to prevent relatively rapid recovery. The situation was somewhat different, however, when it came to close support. Iraq began to employ cluster bombs in close air support missions and steadily improved its sortie rates and mission effectiveness in support of its ground forces.

7.4 Iran's More Controlled Offensives in 1985

Iran launched nine land attacks in 1985, and Iraq launched three counterattacks. The Iranian attacks, however, usually had limited objectives and were more controlled than Iran's "final offensives" of 1984. Iran also was more careful in planning and training for its major attacks. Iran deliberately struck at a wide range of areas, particularly in the north and south where the terrain and water barriers made it difficult for Iraq to obtain tactical warning or make use of its defensive barriers and superior firepower. Iran also kept up considerable pressure on the Baghdad-Basra highway, and new fighting took place in the Hawizeh marshes, but it did not produce the massive levels of casualties common in early 1984.

The land fighting began with some small and inconclusive Iraqi offensives which took place at Qasr e-Shirin on January 31, and Majnoon on February 28. Iraq did not score any gains, and it suffered a significant political reversal elsewhere. It tried on February 13 to reach an amnesty agreement that was largely intended to halt fighting with the Kurds. Both the Barzanis and Jalal Talabani's PUK rejected this offer. This meant that Iraq was becoming increasingly vulnerable to Iranian pressure on its Kurdish areas in the north.

The land fighting did not become serious until March, and came after a long series of artillery exchanges during late February and early March, which were targeted against civilian and oil targets and killed up to 400 civilians.

Iran then launched a major new offensive called Operation "Badr" This Iranian offensive was designed to seize Basra, or cut it off from the rest of Iraq. Iran prepared for it for months. It repeated some aspects of Operation Kheiber in 1984, but the offensive was more limited in scope and was better planned and controlled.

Iran seems to have chosen the Hawizeh Marshes as the site of it first major offensive of 1985 for several reasons. It hoped to achieve tactical surprise by repeated an

attack in an unexpected area. It had learned that Iraq did not aggressively patrol the Marshes and that Iranian troops could successfully infiltrate large amounts of troops into the small islands in the Marshes.

Iran had acquired growing experience in marsh warfare and during the previous year. It had built up excellent lines of communications into the marshes, and acquired large numbers of small craft. Iranian troops patrolled the marsh area aggressively. It took advantage of reeds that often reach 10 feet in height, and forced Iraqi troops stay in their fixed defenses on shore. The Hawizeh Marshes also made it difficult for Iraq to take advantage of its superiority in airpower, armor, and artillery until Iranian troops hit the dry land near the Basra-Baghdad road. Armored vehicles could not move through the Marshes or their edges in the wet season and Iran had not way to acquire meaningful targets as long as Iranian forces were dispersed.

Iran had a total of some 75,000 to 100,000 troops available in this part of the front, but only some of these forces seem to have been prepared to participate in Operation Badr. Iran assembled an attack force of 45,000 to 65,000 men, organized in formations that were the equivalent of something approaching seven to eight divisions, including four to five divisions of Revolutionary Guards and Baseej volunteers. These forces were a mix of regular army and Pasdaran, and the Pasdaran were better trained and equipped than in 1984. Virtually all the forces now had assault rifles and ample supplies of ammunition and many of the troops had RPGs and large supplies of rockets. Iran established a chain of pontoon bridges through the marshes and developed floats, boats, and rafts carrying PRC 105mm and U.S. 106mm recoilless rifles and mortars. Iranian forces were equipped with German-made gas masks, protective capes, and Dutch atropine kits as an antidote to nerve gas.

The Iraqi forces, in turn, consisted of the equivalent of ten divisions of 4th Corps troops, with two of these divisions deployed to guard the Basra-Baghdad road and railway, and the approaches through the Hawizeh Marshes. By this time, Iraq also had formidable land defenses. It had an extensive chain of bunkers, earth mounds and observation points, mine fields, barbed wire, and obstacles to prevent landings. Iraq had established the capability to used flooding to create additional water barriers once the Iranian forces landed, and now kept some mobile brigades in the rear to provide for defense in depth, although both the terrain and Iraqi planning limited the preparation of defensive barriers to one main defense line in many areas.

Iran seems to have tried to distract the attention of Iraq's leadership by launching a massive artillery barrage against Basra on March 10-11, and by conducting its first air raid on Baghdad in months -- which Iraq replied to with an air raid on Tehran. The actual Iranian land assault began well before midnight on March 11. Three major groups of Iranian forces hit a 10 kilometer front between Qurnah and Uzayer.

The Iranian forces came out of the Hawizeh Marshes at the southern end of the 4th Corps defense zone, and achieved enough tactical surprise, and concentration of force, to immediately break through the initial Iraqi defenses and seize some positions on the dry land near the road. Iran had to employ human wave tactics from the start,

however, and immediately began to take heavy casualties. Even so, Iranian forces advanced about 10 kilometers on the first day and a total of 14 kilometers on the second. On March 14, the equivalent of a Pasdaran brigade reached the Tigris, and on the night of March 14-15, Iran was able to put two to three pontoon bridges across the Tigris. The next day, Pasdaran forces actually reached the Basra-Baghdad road.

The problem with this Iranian advance was that there was no clear way to sustain it. Iran could not move forward large amounts of armor and artillery, rapidly widen its breakthrough, and keep Iraqi forces off balance. It also experienced growing support and logistic problems with each kilometer it advanced, and its forces became steadily better targets as they emerged out of the wetlands and onto dry land.

By this time, Iraqi had fully identified the main thrust of the Iranian offensive and had forces equivalent to 20-25 brigades ready to counterattack. While Iraq never approached the point where it was on the edge of a major defeat, it fully committed their elite Republican Guard Division. Iraq also fully committed its air force for the time--flying as many as 150 to 250 sorties per day--and deployed massive artillery reinforcements. By the time the defensive battle was over, Iraq had a force of roughly five divisions and 60,000 men actively engaged on a single sector of the front.

By March 15, all of Iraq's forces were in a position to attack a relatively narrow Iranian thrust simultaneously from the north, south, and west. Iraq also was able to counterattack with virtual air supremacy and its armed helicopters could operate well into the rear of Iran's positions with no opposition other than machine guns and a few SA-7s. Iraq's helicopters destroyed a number of Iran's boats and bridges, and Iraq made the rear area difficult to traffic by flooding many of its former defense positions. As a result, the Iranian defense began collapse early on March 17, and by the end of the next day, Iraq had recaptured all of its positions. Both sides took very heavy casualties before Iran was driven back. Iraq lost 2,500 to 5,000 men and several thousand POWs, and Iran lost 8,000 to 12,000.

For reasons that are difficult to explain, Iran then launched a new phase of its attack and struck against the Iraqi positions near Majnoon. This attack took place nearly a week after it should have begun, if it was intended to divert Iranian forces or take advantage of the broader Iranian attack through the Hawizeh Marshes.

Iran had steadily improved its two access roads to Majnoon during the course of late 1984 and early 1985, and now had two major causeways to the northern island. It had deployed 15,000 to 20,000 men, or two division equivalents, in Majnoon. These forces were ready to attack Iran's positions in Majnoon and the northern sector of the Iraqi 3rd Corps by late February, and should have been used at the same time as the rest of the forces in Operation Badr.

Iran seems to have waited to use these troops, however, because it hoped that Iraqi would cut its forces in Majnoon and the 3rd Corps to deal with the attack further north.

In fact, this diversion of Iraq's strength never took place. As a result, Iraq was fully prepared when the Iranian forces finally attacked Majnoon on March 19 and again on March 21. By the time Iran halted its attacks on March 23, it had lost up to 3,000-5,000 more men without taking an inch, and Iraq had suffered only very limited casualties.

Iraq also inflicted at least several thousand more casualties using Tabun and mustard gas. While Iran's forces now had better protection against chemical weapons, they were still vulnerable to mustard gas, particularly when they were force to remain in the gassed area for any length of time. While Iraq still lacked extensive supplies of Tabun, and found it difficult to use gas to attack any target close to its own troops, mustard gas proved effective when Iraqi fighters, helicopters, and artillery could find exposed Iranian forces in a rear area.

This helps explain why there was little additional fighting for several months. Iran did launch another assault in the northern Hawizeh Marshes on June 14, but this at best scored limited gains before the Iranian forces withdrew. Similar raids took place near Qasr e-Shirin on June 19, and in Majnoon on June 28. Iran seems to have tried to keep up the pressure on Iraq without risking major losses, while it tried to increase its pressure on the Iraqi positions in Majnoon by surrounding them and inching forward through the wetlands. Iraq responded by steadily improving its defensive positions.

The overall impact of Operation Badr on the leadership of Iraq and Iran seems to have been somewhat similar to the impact of Operation Kheiber in that it tended to reassure each side that its respective tactics were correct. Iran's leadership almost certainly received more warnings from the regular army about the limitations of human wave tactics, but its initial successes encouraged to believe that it could overcome the effect of Iraq's lead in weapons and technology if it struck at the proper point, exploited revolutionary fervor, and pressed the attack home. While Iran did not treat the offensive's failure as a victory, it does seem to have seriously believed that it was still successful in terms of attrition and pushing Iraq to the position where it no longer could continue the war. Iran also seems to have become convinced that Iraq was vulnerable to any attack where Iran could use night attacks, mountain warfare, and/or water barriers to could deny Iraq the ability to use its armor, artillery, and airpower effectively.

Iraq, in turn, concluded that its basic strategy and tactics were correct, and that it could still rely on technology, limited counter-offensives, and fixed defenses. Iraq continued to fight relatively passively. It failed to give the proper emphasis to increasing its infantry and assault capability, and concentrated on increasing its reliance on technology.

As for the internal situation in each country, neither state faced a major internal threat. The war may not have been anywhere near as popular as either set of leaders claimed, but it did seem inevitable. The various anti-Saddam Hussein groups in Iraq had little practical influence, and little power to threaten the regime, although there were occasional bombs and assassination attempts. The People's Mujahideen of Iran, or Mujahideen e-Khalq, continued to explode bombs but their leader, Massoud Rajavi, remained in Paris. while there were a few anti-war demonstrations, they had little more

effect than the protests of the Freedom Party led by ex-Prime Ministers Bazarghan. Iran was able to hold new elections and Khameni was re-elected on August 16. The new cabinet was sworn in on October 23, and continued to support Khomeini and the war. The only major development was that Khomeini and the Assembly of Exports made the Ayatollah Hossein Ali Montazari the official successor to Khomeini on November 23.

7.6 The Air and Tanker Wars in 1985

Iraq's concentration on technology was reflected in new strikes against urban and oil targets. Between January 1 and March 31, Iraq claimed to have hit roughly 30 ships, while Iran hit seven. According to some estimates, this brought the total strikes in the "tanker war" since March, 1984, to 65 Iraqi and 25 Iranian attacks. Iranian ships also began to patrol more aggressively in the Gulf, inspecting occasional freighters and making new threats to halt any traffic being transhipped to Iraq. Iraq responded with naval artillery fire against the offshore wells and facilities in Iran's Cyrus oil field.

Iraq also launched a series of relatively large-scale air and missile strikes against Iranian cities. It carried out as many as 158 air strikes over a three-day period in March. It hit nearly 30 towns and cities, and struck as deep as Tehran. Iran responded to these strikes on March 12 and 14 by launching its first Scud B strikes against Iraqi cities, using what seem to have been Libyan supplied missiles, although they may have come from Syria and other deliveries came later from the PRC and/or North Korea.

The Scuds were fired by the Khatam ol-Anbya Missile Force, attached to the air element of the Revolutionary Guards.

The Scud's range exceeded 300 kilometers, and allowed Iran to strike against Baghdad. The missile only had a 1,000 kilogram warhead, however, and its accuracy was not predictable within less than 1-2 kilometers. Even after Iran fired enough missiles to be able to compensate for various bias errors in the the targeting and guidance system, it rarely hit meaningful targets.

Iran launched a total of 14 Scuds in 1985, 8 in 1986, and 18 in 1987. Most of these missiles were launched against Iranian cities, and Iran had an advantage over Iraq in that it could reach Iraq's major cities from the front, while Iraq could not reach key targets like Tehran and qom. Even so, most of the missiles Iran launched against Baghdad tended to strike in the southwest suburbs of Baghdad, rather than the Ministry of Defense -- which seemed to be Iran's main target. While Iran did score some accidental hits on civilian targets, most missiles hit vacant lots or buildings with only a few people, and did little more than knock out windows and make a loud bang. Iran did continued its attacks well into May, however, and eventually launched enough missiles to kill several hundred people.

Both sides continued their attacks on civil targets until yet another limited ceasefire was declared on 30 June. By this time, Iran and Iraq had been exchanging missiles for air raids against civilian targets for more than a month, and the ceasefire on civilian targets of June, 1984, was little more than a memory. The political and strategic

effect of the missile casualties Iran inflicted on Iraq was as limited, however, as the civilian casualties that Iraqi bombing inflicted on Iran.

Each side's strikes at population centers still failed to have the desired political or economic impact in forcing the opposing side to end the war. The attacks were too scattered in time, lacked concentration of force, and did not produce major effects in any given civilian target. In fact, once the initial shock of new rounds of attacks wore off, public opinion seems to have accepted each new round in "war of the cities" as yet another reason to hate the opposing side and continue the war.

Iraq, for example, conducted its 50th air raid on Tehran by mid-June, but the net effect of such raids was a best to make Iranians camp outside Tehran at night and then return to live and work in the city during the day. Although Iran had launched its 12th Scud attack on Baghdad by mid-June, it did so little real damage that life proceeded virtually as normal. This reaction became even more clear when attempts at a new UN-sponsored civilian bombing moratorium failed. Even a major series of Iraqi air strikes on eight Iranian cities in August, which lasted for nearly ten days, ended in "business as usual" in spite of several hundred more casualties.

Iraq was learning, however, that it could now conduct such raids with far less fear of losing aircraft to Iranian fighters. Iraqi pilots began to make extensive use of Matra 530 air-to-air missiles in addition to the Magic 1. Iraq limited its use of Soviet fighters largely to bombing and close air support roles, and increasingly relied on its Mirage F-1s for both air-to-air combat and deep strikes. By mid 1985, Iraq claimed to have shot down 12 to 14 F-14 fighters. While these claims were sharply exaggerated, Iraq found that its new French air-to-air missiles allowed it to achieve much higher kill ratios that the export versions of Soviet missiles like the AA-2 Atoll. Iran also was unable to put up much of a fighter screen to defend either its cites or oil targets. Iranian fighters rarely engaged Iraqi aircraft even when they attacked Tehran, Tabriz, Isfahan, and other cites.

7.7 The Fighting on the Ground During the Rest of 1985

The fighting on the ground still involved serious clashes involving thousands of men, but it did not lead to massive offensives. Iranian forces scored limited gains in the wetlands north of Fakken on July 3 and 13. Iran also conducted small operations near Sumar on July 26 and near Mandali on July 30. A more serious battle took place near Sumar on September 25, and Iran launched a limited ground offensive, and made some gains in the north in the Neimak region of Bakhtaran province.

In the north, Iran continued to outbid and outplay Iraq in gaining the support of the Kurds. Iran had shown in previous years that it had the manpower and ethnic unity to mercilessly put down any Kurdish resistance. At the same time, its victories in the north put it in a position to give the Barzani faction of Iraq's Kurds considerable military support. The Barzani-led KDP was able to steadily increase its raids throughout 1985 and early 1986, and the rival PUK finally decided not to reach a new autonomy agreement with Baghdad.

Iran succeeded in further undermining the Kurdish Democratic Party of Iran (KDPI) throughout the course of early 1985, and Iraq provided it with little support. The end result was that Ghassemlou, the leader of the KDPI, seems to have broken with Iraq in April and to have turned to Iran for terms. This led the KDPI to be expelled from the anti-Khomeini coalition in Paris headed by Massoud Rajavi, the leader of the People's Mujahideen. It also allowed Iran to increasingly work with the Barzanis and Jalal Talabani of the PUK to launch operations against Iraq. This led to new fighting during the summer and fall of 1985.

During July, constant guerilla and low level infantry fighting took place in the Kurdish border area of Iraq between a mix of Pasdaran and anti-Iraqi Kurds, and Iraqi troops backed by pro-Iraqi Kurdish scouts and home guards. Iran seems to have had the edge in this fighting, although it had little strategic effect. The pro-Iranian forces eased their pressure on Iraq in August, but only in preparation for a more serious attack on the Ruwandiz Valley.

This attack began on September 8, and lasted for more than a week. Iran took up to 200 square kilometers, although its gains had little more than limited tactical value. Iran also captured part of a 240-square mile area in Iraqi Kurdistan, west of the Iranian town of Piranshahr, about 550 kilometers north of Tehran. Both sides lost at least 2,000 men during this fighting in the course of one 10-hour encounter, and Iraq and Iran may have lost as many as 2,500 men in a day.

It was becoming increasingly clear that Iran now dominated the battle for the Kurds and could exploit its alliances to achieve limited gains of Iraqi territory.

At the same time, Turkey made it increasingly clear that it would secure its pipelines and help Iraq in suppressing the Kurds near the border area. Turkish forces continued to actively seek out and destroy Kurdish rebel groups in Turkey and actively hunted down such groups in Iraq as part of the Turkish-Iraqi "hot pursuit" agreement reached in 1985. Strong Turkish threats to cut Turkish trade with Iran kept Iran from exploiting Kurdish separatism in the areas near Iraq's northern oil fields and pipeline to Turkey. The Turkish Third Army also deployed some 12,000-20,000 men in the border area. When Iraq withdrew some of its troops in the Northern Iraq to reinforce in late 1985, it issued arms to the Christian villages near Kirkuk.

Similar skirmishing occurred on other fronts. Iran constantly kept up its pressure on Iraqi positions guarding the Western edge of the Hawizeh Marshes. The low level fighting that occurred on the southern front during the periods when no formal offensive action took place killed about 100 men a day, with most of the fighting occurring in the marsh areas. Similar fighting and losses occurred on the northern sector of the front.

Even minor clashes and battles could produce significant losses, and and one of Iran's small July attacks may have produced over 2,000 Iranian casualties in a single day. The net result was that Iran did not score any major gains during 1985, but it did gain about 150 to 220 square kilometers in the central and northern sectors by the time most of the land fighting halted in November.

The key tactical result of all of this scattered land fighting, at least in terms of its impact on shaping what happened in 1986, was that Iran continued to dominate the struggle for control of the marsh areas and the wetlands in the south. This was particularly true in the Hawizeh Marshes. Iraq tried to deal with this by improving its fields of fire and warning. It cut down the reeds in the marsh area near its positions to remove the cover available to Iranian forces. It built watch towers, with night vision devices and acoustic sensors, to try to provide warning of Iranian action. Iraq, however, followed passive strategy and largely conceded the wetlands to Iran. At the same time, the Iranians also increased their patrols off the Iraqi shore of the Shatt. As a result, Iran improved its ability to launching amphibious and wetlands attacks to both the north and south of Basra.

7.8 Iraq Again Escalates the Air War

As for the oil war, Iraq relied largely on strikes against tankers until August. It continued to use its Exocets. While Iran was now attempting to use decoy balloons, chaff, and special paint, Iraq also improved its tactics. It launched the Exocet at lower altitudes and flew closer to its targets. France helped Iraq make these improvements in its tactics, and France provided U.S.-made inertial navigation systems on its Super Etendards to improve their accuracy.

The Iraqi attacks were not able to interdict tanker traffic to Iran, however, and produced a relatively limited number of kills relative to total tanker movements. They also followed a pattern in which Iraq tended to fly its peak sortie numbers on Sunday. This seems to have reflect a pause on Friday (the weekly holiday and day of worship), extensive service and preparation activity on Saturday, and then a slow loss of operational capability during the week. Nevertheless, commercial tankers showed they were not interested in taking any chances, and many refused to come to Kharg Island.

Iran also created an effective tanker shuttle. It leased six tankers and started to shuttle oil on its own vessels between Kharg and Sirri Island which was well over 800 kilometers further away from Iraq. Iran felt that Iraq's Exocet attacks were largely limited to the area south and immediately east of Kharg Island and that Sirri would be beyond the range of Iraqi attack aircraft. The shuttle was also structured to allow Iran to conduct a "convoy" operation with the tankers moving close to the coast with Iranian ships providing escorts, and Iranian fighters and surface-to-air missiles providing some area defense coverage. Iran still lost some of the tankers to Iraqi Exocets, but the "Sirri Shuttle" was effective enough to lead Iraq to change its bombing tactics.

Up to the time the shuttle began in the Spring and Summer of 1985, Iraq had tended to avoid strikes on Kharg Island. Iraq did launch an air raid on Kharg Island on May 30, but this attack was more a symbolic gesture than an attempt to achieve serious results. The new Iraqi air strikes did little more than start new fires in the Island's sixty square mile tank farm. The new strike was the first successful strike on Kharg since June 1984, and Iraq did not repeat this attack for several months.

In mid-August, however, Iraq began a far more serious set of attacks on Kharg

Island whose timing strongly indicates they were a response to the new "Sirri Shuttle". These air raids began on August 14. While the new attacks did not damage Iran's newly repaired Sea Island terminal, they did seriously damage the main offshore loading point of "T-Jetty." They were followed by another major attack on 25 August, and may have temporarily cut Kharg's export capacity by about 30 percent.

In order to achieve these results, Iraq had made significant changes in its aircraft, tactics, and training. Indian and French experts had steadily improved Iraq's training and planning. Iraq had taken deliveries of new versions of the Mirage F-1 which could launch the Exocet missile and which carried additional fuel tanks and which could be refueled over Iraq before they struck at Iran. These measures greatly extended the operational range of the Iraqi F-1s and the range at which Iraq could launch Exocet attacks, and eventually. As a result, Iraq returned the Super Etendards it had borrowed from France, although one Super Etendard seems to have been lost in an accident or in combat.

This Iraqi experience with the need to improve its fighter performance reflects a general lesson of modern war. As is the case in the other wars under study, every improvement in fighter range-payload, and in navigation and munitions delivery avionics, proved to be important. Although Kharg Island is only about 225 kilometers south of the Iraqi coast, it was still close to the range limit of fully loaded Iraqi fighters of the type that Iraq had at the start of the war.

As for tactics, it is important to note that Iraq face a major challenge. Nearly 90 percent of Iran's wartime oil exports had to be exported from Kharg Island, and this made it a key target. The facilities on Kharg, however, were very difficult to for Iraq destroy without advanced long range attack aircraft or bombers. Kharg Island is comparatively large (32 kilometers miles wide by 60 kilometers long). All of the main pipelines and oil facilities on Kharg are well dispersed, redundant, and well buried or sheltered. Oil flows to Kharg from the mainland through buried and underwater pipelines. Iranian oil also flows under natural pressure, and oil production in Iran does not require the large vulnerable surface facilities like desalinization plants and gas-oil separators common in the Southern Gulf.

As a result, the loading facilities on Kharg Island the main air target for fighter bombers. These facilities include the "T-Jetty" on the Island's eastern side, and the much smaller "J-Jetty" or Sea Island loading facility on the western side. These targets are comparatively small, however, and Iran defended them with surface-to-air missiles and AA guns. Iraq could only successfully destroy them by committing large numbers of aircraft and hitting jetties with considerable accuracy. This meant that direct attacks on Kharg meant Iraq had to risk considerable fighter losses.

Iraq counted this vulnerability with French help in countermeasures and in changing its attack runs to reduce their vulnerability to ground based air-defenses. At the same time,. France may also have given Iraq a limited stand off capability. The precise munitions Iraq used in its attacks after mid-August 1985 are unclear. It is clear that from August on, Iraq's strikes were more accurate than in previous attacks. Iraqi reports claimed Iraq succeeded by using "some 100,000 pounds of bombs," but Iraq never

launched enough aircraft to remotely approach such a payload delivery capability.

Foreign reports differ on whether the Iraqis attacked on 14 August using two or four waves of aircraft, but some of these reports indicated that the first wave used French ECM and anti-radiation missiles to suppress the Hawk and Shilka surface-to-air missiles.

These same reports indicate that the succeeding waves of Iraqi aircraft launched stand-off missiles at ranges of 6 to 8 kilometers. Iraqi fighters also seem to have fired Brandt 68 mm rockets.

Other factors that indicate Iraq used AS-30 missiles in its attacks on oil facilities are the accuracy with which Iraqi aircraft hit the western jetties and control facility, and the size of the explosions. The AS-30 has a 240 kilogram warhead, flies at less than 100 meters above the surface, and is much more effective against hard targets than unguided rockets. The AS-30 and its associated Atlas laser designator pods are known to have been delivered to Iraq no later than November 1985, and Iraqi pilots are known to have trained in France during this period.

Iraqi fighters went on to hit Kharg with a total of four large-scale raids between mid-August and the beginning of September. Iran responded by stepping up its naval harassment of gulf shipping. By early September 1985, a total of more than 130 ships had been attacked by both sides since the renewal of the new "tanker war" in March. Iran also made new threats to attack ships going to southern Gulf ports.

Iraq ignored these threats and kept up its attacks on Kharg Island. By September 12, Iraq had launched its ninth major attack on Kharg since mid-August, and on September 19, it launched another major raid that cut export production by up to 50%. This raid was so serious that it led President Khameini to make yet another threat to close the Straits. Iraq again ignored such threats, and kept up its raids.

Each Iraqi attack, however, became progressively more difficult. Iran steadily re-organized and strengthened its air defenses on the Island and shot down several Iraqi Mirage F-1s. Iraq evidently benefited from virtual surprise during its first mass attacks on Kharg in 1985. It flew at extremely low altitudes and suddenly popped up to attack Iranian air defenses.

After this time, Iran countered by strengthening its SHORAD defenses to force Iraqi fighters to fly at higher altitudes, and learned to identify the flight profiles of the fighters illuminating targets on Kharg. Iran may also have begun to use radar reflectors and/or decoys to discourage AM-30 attacks on ships at Kharg, and it claimed to have made modifications to its oil facilities to reduce their radar return.

Nevertheless, Iraq seems to have scored new successes in damaging the loading terminals at Kharg on September 27 and October 3. By early November, some sources indicate Iraq had reduced Iran's shipments via its tanker shuttle to Sirri by 30 to 50 percent, and that Iran was forced to draw down on its limited strategic reserve (about 15 million barrels in tanks on Sirri) to supplement the 250,000 additional barrels it could ship from its southern fields at Lavan. By mid-November, Iraq had hit Kharg at least 37

different times.

By the end of December, 1985, some reports indicate that Iraq had conducted nearly 60 major air strikes against Kharg.

These Iraqi strikes had a considerable political effect. Iran announced it would open its new loading facilities at Ganaveh, and would soon issue contracts for a pipeline at Jask. Iran even went so far as to indicate it planned to "abandon" Kharg for the war's duration, although such plans proved to be far more ambitious than real.

The military and economic impact of Iraq's strikes is far more uncertain. Iraq took serious losses of skilled pilots and of Mirage aircraft. Iran's aggressive discounting and chartering of more shuttle tankers allowed it to keep its average monthly oil exports relatively high in spite of the damage it suffered, and Iran both continued to improve its short range air defenses and its ability to repair any damage to the jetties. Iraq found it difficult to sustain significant damage at an acceptable loss rate.

Part of the problem Iraq faced lay in the number of loading points involved. Kharg was designed for a maximum loading capacity of 6.5 MMBD, and had actually loaded a maximum of 6 MMBD before the war. The global "oil glut" had already reduced Iranian daily, and Iran had facilities for 14 small- to medium-sized tankers on the east side of the Island, and for 20 tankers on the west side, including three super-tankers. A well-sheltered computerized switching facility allowed Iran to avoid oil spills and rapidly shift from one loading point to another. The loading points target were also relatively easy to repair and this made it very difficult for Iraq to achieve enough damage to really halt Iranian exports.

This helps explain why the statistics on the overall impact of the oil war do not reflect a major loss of annual oil exports or earnings. Work by Wharton Econometrics, the Petroleum Finance Company, and John Roberts of the Middle East Institute shows that Iranian exports actually rose from 1.36 MMBD in 1984 to 1.8 MMBD in 1985 and dropped to 1.5 MMBD in 1986. Iranian oil revenues were $10.9 billion in 1984, $12.95 billion in 1985, and then dropped to $6.81 billion in 1986, largely as the result of the crash in world oil prices. In short, the flow of Iranian exports was far more affected by the growing world oil glut than by Iraqi bombing

Both sides continued the "tanker war" during late 1985, although both followed very different patterns. Iran was not yet ready to attack third country shipping in the Gulf or to try to put direct military pressure on Saudi Arabia or Kuwait. It concentrated largely on search ships moving through the Straits, and harassing shipping moving to and from Iraq's main allies to the Gulf. The Iranian Navy stepped up its search of ships moving through the Gulf in September. It intercepted nearly 300 cargo ships during the month of October, and kept these levels up during the rest of the early Winter. It also had its first encounter with a Western Warship since early in the war, when a French frigate prevented an Iranian gunboat from searching a French cargo vessel.

Iraq, in contrast, concentrated on doing physical damage to shipping in Iranian

waters. By the end of 1985, Iraq's use of Exocet helped it to raise the number of ships hit, damaged, or attacked since the first major air attacks on ships in the Gulf began in May 1981 to nearly 200. Over 150 of these attacks had occurred since March 1985.

In spite of its problems in sustaining any serious damage to Kharg, Iraq was confident enough to declare that 1985 was the "year of the pilot." It claimed to have flown 20,011 missions against Iran, 77 destructive raids against Kharg Island, and to have scored 124 effective hits on "hostile" maritime targets. An Iraqi military spokesman also claimed that Iran had lost 38,303 dead.

Iraq also was actively benefitting from a rise in its own oil exports. Its average annual daily production rose from 1.0 MMBD in 1983 to 1.209 MMBD in 1984, and 1.433 MMBD in 1985. In spite of cuts in the price of oil, oil revenues rose from $9.65 billion in 1983 to $11.24 billion in 1984, and $12.95 in 1985. Iraq now claimed to be exporting 1.0 MMBD through its Turkish pipeline, and 200,000 BPG of oil and product by road. It also began to export up to another 500,000 BPD in September, when it opened a connection to the Saudi pipeline to the Red Sea port of Yanbu.

As for Iran, it still avoided any major provocation in the Gulf. It did, however, put new pressure on the southern Gulf states. In December, Iranian sponsored terrorists conducted a series of car-bombings against the U.S. Embassy and other targets in Kuwait. These attacks were aimed at forcing Kuwait to halt its aid to Iraq. Iraq then responded by launching air and missile attacks against five Iranian towns. This led to a series of sporadic missile and artillery exchanges against area targets, but did not produce any significant results.

Footnotes

The analysis of Phase Four is based heavily on the author's trips to the region and interviews of Iraqi and Iranian officers and officials, plus his prior writing for the Armed Forces Journal International and in the Gulf and the Search for Strategic Stability, Boulder, Westview, 1984. It also draws heavily upon the work of Edgar O'Ballance, The Gulf War, London, Brassey's, 1988; Nikola B. Schahgaldian, The Iranian Military Under The Islamic Republic, Santa Monica, Rand R-3473-USDP, 1987; Sepher Zabhi, The Iranian Military in Revolution and War, London, Routledge, 1988; Keith McLauchlan and George Joffe, Iran and Iraq: The Next Five Years, Special Report 1083, London, Economist Press, 1987; and various working papers for the International Institute of Strategic Studies, Royal United Services Institute.

ACDA, World Military Expenditures and Arms Transfers, 1986, pp 120-121

The author's estimate is based on the IISS, Military Balance, 1984-1985, pp. 61-63.

Iraq claimed to have hit more than 10 Iranian ships. It is unlikely that it hit more than one or two.

There is at least one report that Iran planned to seize Goat Island in the Straits of Hormuz from Oman in mid-February and was only discouraged by an American warning. This report is very uncertain. See O Ballance, the Gulf War, p. 156.

See Jim Bussert, "Iran-Iraq War Turns Strategic," Defense Electronics (September 1984), pp. 134-136.

Ironically, Saudi Arabia's brilliant chief of operations was shunted aside for allowed the intercept and kill of the Iranian F-4. Saudi Arabia was trying to avoid any steps that could broaden the war.

Douglas Martin, "Iranian Jets Damage Japanese Tanker," New York Times (July 6, 1984), p. 3.

For example, the U.S. during many phases of the war in Vietnam and the USSR during many phase of the war in Afghanistan.

See Nick Cook, "Iraq-Iran--The Air War," International Defense Review (November 1984), pp. 1605-1606.

Estimates of Iraqi Mirage F-1 holdings differ sharply. One French journalist estimated in October 1985 that Iraq had taken delivery on as many as 87 regular Mirage F-1s by 1 October 1985, and was in the process of taking delivery on 24 more Mirage F-1s with extended range and the ability to use laser of optically guided smart bombs. This same journalist indicated that Iraq had ordered 24 additional such Mirages, and had taken roughly four months of training and technical effort to learn how to use smart bombs before launching its August 1985 attacks on Kharg Island. The IISS estimated in the

1986/1987 edition of its Military Balance that Iraq had 20 Mirage F-1EQ in the interceptor role, 23 Mirage F-1EQ-200 in the attack role, and 20 Mirage F-1EQ5 with Exocet in the interdiction role. U.S. sources note that Thompson CSF has copied the laser illuminator and laser-guided smart bomb technology that the U.S. first employed in Vietnam, and that Iraq is now using this technology with one fighter illuminating the target and the other launching the laser-guided bomb. This attack method is only highly effective because Iran lacks effective medium-to-long range air defense missiles and fighter cover.

These cluster bombs were Chilean copies of U.S. bombs, which were made using stolen U.S. plans.

These attacks included Iranian attacks such as Operation Badr across the Hawizeh marshes on March 11-23, an attack north of the Hawizeh marshes on June 14, an attack near Qasr e-Shirin on June 19, fighting around Mandali and Merivan June 20, an attack around Fakkeh on July 3, an attack near Sumar on July 26, an attack in the Ruwansddiz valley on September 8, an attack on Mehran on September 16, and an attack near Sumar on September 25. Iraq attacked Oasr e-Shirin on January 31, Majnoon on February 28, and Majnoon on June 28.

O'Ballance, The Gulf War, pp. 160-161.

According to some sources the Regular Army challenged Rafsanjani and the Mullahs over the wisdom of this attack because they felt that Iranian forces could not successfully exploit any initial successes and would become trapped in having to use human waves to penetrate Iraqi defenses once they crossed the Hawizeh Marshes. It is unclear that such reports are correct. See O'Ballance, The Gulf War, pp. 161-162.

Economist (March 30, 1985), p. 47; Jane's Defence Weekly (March 30, 1985), p. 532. Other sources report Iranian losses of 30,000, and Iraqi losses of 10,000; Washington Post (February 11, 1986).

O' Ballance blames Rafsanjani for the delay. See O'Ballance, The Gulf War, pages 165-166.

According to some Iranian sources this brought the total number of Iranian's killed during the war to around 650,000, with 490,000 seriously wounded, although Iran was later to claim that it had only about 150,000 dead during the entire war.

These figures are based on supposed Iranian government documents circulated by the People's Mujahideen and their reliability is uncertain.

The People's Mujahideen claimed in mid-August that Khomeini had now executed at least 50,000 and and imprisoned 140,000.

It is more likely that the missiles were Libyan. Libya had delivered 50 Scud missiles to Iran. Steven Zaloga, "Ballistic Missiles in the Third World," International Defense Review, 11/88, pp. 1423-1437.

Ibid. Also see The Middle East (May 1985), pp. 16-18; Washington Post (May 27 and July 21, 1985); New York Times (May 29 and June 13, 1985); Economist (June 22, 1985), p. 35.

New York Times (September 10, 1985); Chicago Tribune and Christian Science Monitor (September 9 and 11, 1985).

New York Times (September 10, 1985); Chicago Tribune and Christian Science Monitor (September 9 and 11, 1985).

O'Ballance, p. 171.

One must be careful about overestimating the impact of such temporary losses of export capability. Work by Wharton Econometrics, the Petroleum Finance Company, and John Roberts of the Middle East Institute shows that Iranian exports rose from 1.36 MMBD in 1984 to 1.8 MMBD in 1985 and dropped to 1.5 MMBD in 1986. Oil revenues were $10.9 billion in 1984, $12.95 billion in 1985, and then drooped to $6.81 billion in 186, largely as the result of the crash in world oil prices. The flow of Iranian exports was far more affected by the growing world oil glut than by Iraqi bombing.

New York Times, Baltimore Sun, and Wall Street Journal (August 16 and 17, 1985).

The validity of these reports is unclear. The IHawk radars on Kharg seem to have be inoperable during this period, and Iran was badly short of missiles. Some Swedish optically guided laser homing missiles may have been present on the island, but they would not have been affected by ECM.

See Gwynne Dyer, "The Gulf: Too Late for a Crises," Washington Times (November 6, 1985).

See Kenneth Timmerman, "Mirage Over Kharg," Defense and Armaments, No. 44 (October 1985), pp. 53-58.

According to some Western sources, this tactic allowed Iraqi planes to directly overfly Iran's surface-to-air missiles for optimal ECM effectiveness, and to fire their ARMs against targets with fully active radars. These sources claim Iran then rapidly improved its ECM techniques to counter Iraq's ECM (the Hawk is a very difficult system to jam), and adopted radar emission tactics that made Iraq's ARM strikes more difficult. It is uncertain whether these claims are accurate, or whether Iran simply redeployed some of its surface-to-air missiles to cover the jetties better, and move in new defenses from outside the island.

New York Times (September 10, 12 and 21, 1985).

One has to be careful about accepting such claims. CIA data show little variation in Iranian production during these months. Iran's average monthly production is estimated to have been 2.2 MMBD to 2.6 MMBD from July to January, 1986. There is little evidence of more than seasonal fluctuation in Iranian oil exports over any given month.

Chicago Tribune (December 30, 1985); New York Times (December 30, 1985).

Chicago Tribune and New York Times (September 3, 1985); Washington Times (September 4, 1985).

An interesting sidelight on the Iranian navy at this time is that Iran only failed to take delivery on a new landingship being built in Britain, called the Lavan, because the Iranian officer sent to take delivery defected. This ship could carry up to 280 troops and tanks and vehicles, and Britain then refused to deliver the ship to a new Iranian crew. This ship might have been very useful during the Iranian assault on Faw. O'Ballance, p. 172.

Los Angeles Times and Washington Post (September 7, 1985).

Ibid.