NAVAL WAR COLLEGE
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THE EGYPTIAN STAFF SOLUTION: OPERATIONAL ART AND PLANNING FOR THE 1973 ARAB-ISRAELI WAR

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Maritime Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Operation BADR, the coordinated Egyptian-Syrian attack on Israel which initiated the 1973 Arab-Israeli War, provides a clear historical example of a nation's use of a major military operation to achieve its strategic objective. Specifically, it ended the politically ambiguous relationship of "no peace", no war" between Egypt and Israel and set the conditions for the eventual negotiation of an Egyptian-Israeli peace treaty. Operation BADR also demonstrates that a relatively weak state is capable of reforming its military and overcoming a powerful adversary through skillful application of operational art and thorough planning. The paper first places the 1973 Arab-Israeli War in its strategic context. It defines Egyptian President Sadat's national policy objective, describes the historical background to the war, and explains the strategic alternatives available to Egypt. Next, it analyzes Egyptian operational planning, with emphasis on the analysis of Israel's critical factors and Egyptian analysis and balancing of the operational factors of space, time, and force. It then briefly describes the execution of Operation BADR and finally draws a series of conclusions useful to operational-level commanders.

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Operation BADR, the coordinated Egyptian-Syrian attack on Israel which initiated the 1973 Arab-Israeli War, provides a clear historical example of a nation's use of a major military operation to achieve its strategic objective. Specifically, it ended the politically ambiguous relationship of "no peace, no war" between Egypt and Israel, and set the conditions for the eventual negotiation of an Egyptian-Israeli peace treaty. Operation BADR also demonstrates that a relatively weak state is capable of reforming its military and overcoming a powerful adversary through skillful application of operational art and thorough planning. The paper first places the 1973 Arab-Israeli War in its strategic context. It defines Egyptian President Sadat's national policy objective, describes the historical background to the war, and explains the strategic alternatives available to Egypt. Next, it analyzes Egyptian operational planning, with emphasis on the analysis of Israel's critical factors and Egyptian analysis and balancing of the operational factors of space, time, and force. It then briefly describes the execution of Operation BADR and, finally, draws a series of conclusions useful to operational-level commanders. Its primary conclusion is that the key to Egyptian success in 1973 was skillful, thorough operational planning which allowed them to neutralize many of Israel's critical strengths (especially firepower and mobility) and exploit its critical weaknesses. Conclusions also address the Egyptian ability to achieve operational, tactical, and technological surprise, and the political impact of Operation BADR on the international community.

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THE EGYPTIAN STAFF SOLUTION: OPERATIONAL ART AND PLANNING FOR THE 1973 ARAB-ISRAELI WAR

I. INTRODUCTION

On 6 October 1973, the armed forces of Egypt and Syria executed Operation BADR,[1] the coordinated attack on Israel which initiated the 1973 Arab-Israeli War.[2] An understanding of the planning and execution of Operation BADR is important to operational-level commanders for two reasons. First, it provides a clear historical example of a nation's use of a major military operation to achieve its strategic objective. While the war ended in an Arab military defeat, it was also a partial Arab political and strategic victory, particularly for Egypt.[3] Specifically, it ended the politically ambiguous relationship of "no peace, no war" between Egypt and Israel, and set the political conditions for the eventual negotiation of an Israeli-Egyptian peace treaty. Operation BADR also demonstrates that a relatively weak state, even one which has previously experienced a decisive military defeat, is capable of reforming its military and overcoming a powerful adversary's significant advantages through skillful application of operational art[4] and thorough planning.

This paper presents an analysis of Egyptian planning for Operation BADR.[5] It first places the 1973 Arab-Israeli War in its strategic context. Second, it analyzes Egyptian operational planning, with emphasis on the analysis of Israel's critical factors and Egyptian analysis and balancing of the operational factors of space, time, and force. It then briefly describes the execution of Operation BADR and, finally, draws a series of conclusions useful to operational-level commanders.

II. THE STRATEGIC CONTEXT

Egypt's national policy objective in 1973, as defined by President Anwar el-Sadat, was to end the stalemate of "no peace, no war," between Egypt and Israel and to create favorable political conditions for the conduct of negotiations leading to a definitive solution of the Arab-Israeli conflict. The October 1973 war was the fifth in a series of military contests between Israel and her Arab neighbors (preceded by those of 1948, 1956, 1967, and 1969-70), the origins of which date back two millennia and whose immediate causes are directly related to the founding of the State of Israel in 1948.[6] Analysis of the results of previous Arab-Israeli wars reveals a pattern of increasing Israeli military success and territorial expansion, with no resolution of the conflict's underlying political causes (Figure 1).

The 1967 Arab-Israeli War resulted in a decisive Israeli victory over quantitatively superior Arab forces and in Israeli occupation of Arab territories three times its original size[7] (the Syrian Golan Heights, the Jordanian Old City of Jerusalem and West Bank of the Jordan River, and the Egyptian Sinai Peninsula). Israel's victory was decisive militarily, but not politically. Although there was some amelioration of hard line Arab attitudes marked by a grudging acceptance of Israel's national existence, Arab leaders remained firm in their demands for complete Israeli withdrawal from the occupied territories.[8] From the Arab perspective, perceived Israeli intransigence on this issue reflected a national strategy based on a policy of intentionally protracting rather than resolving the conflict, since resolution would require Israeli concessions and relinquishment of territorial gains.[9]

The subsequent War of Attrition, initiated by Egyptian President Gamal Abdel Nasser on 8 March 1969 and ending with restoration of the Israeli-Egyptian cease-fire on 7 August

1979, represented an attempt to end the static situation along the Suez Canal.[10] Beginning with artillery bombardments and commando raids by both sides, the war developed into a high-technology contest between the Israeli Air Force and Egypt's steadily improving, Soviet-supplied air defense system.[11] While the war ended with no clear military advantage for either side, restoration of the cease-fire in the Sinai served Israel's objective of maintaining the regional status quo.[12]

On 28 September 1970, a month after restoration of the cease-fire, Nasser died and Sadat assumed the Egyptian Presidency.[13] "From the day I took office on President Nasser's death," Sadat later said, "I knew I would have to fight."[14] At the time, however, war was not a viable policy alternative. Realizing that the Egyptian armed forces were incapable of defeating Israel, lacking both the firm support of his Soviet allies and the degree of Arab unity that he felt were necessary prerequisites for war, and beset with competing internal factions, Sadat was still willing to seek a diplomatic solution to the impasse with Israel.[15]

By the end of 1971, the abortive "Year of Decision," Sadat's diplomatic initiative had clearly failed, from his perspective, as the result of both Israeli inflexibility and growing détente between the United States and the Soviet Union.[16] Sadat was convinced that Israeli leaders were satisfied with the status quo and the de facto annexation of territories occupied in 1967.[17] By tacitly accepting the permanence of the post-1967 boundaries, however, Sadat would be recognizing the legitimacy of the forcible detachment by Israel of a vast stretch of Egyptian sovereign territory.[18] Sadat also lacked the luxury of time for further negotiations: he would probably fall from power; the Egyptian economy could not indefinitely bear its staggering military burden; and it was doubtful whether Egypt's social structure could long

survive the strains of "no peace, no war." In late 1971 Sadat declared, "There is no longer any hope whatsoever of a peaceful settlement. Our decision is to fight."[19]

Sadat apparently made a firm decision in November 1972 to go to war in 1973, based on readiness estimates supplied to him by Major General (MG) Ahmed Ismail Ali[20], who served concurrently as Minister of War and Commander in Chief of the Egyptian Armed Forces. Neither Sadat nor Ismail was under any illusion that Egypt had reached, or could reach in the proximate future, tactical-technical parity with Israel.[21] This effectively restricted Egypt to two strategic alternatives: a return to the War of Attrition, or a limited offensive aimed at establishing a bridgehead on the east bank of the Suez Canal.[22] Ismail believed that a repeat of the War of Attrition would be disastrous:

> Any attempt to do so on our part would be met with a more violent reaction on Israel's part...greater than the political and military importance of any action we took....Our strike, therefore, should be the strongest we could make.[23]

The only way Egypt could both retain the initiative and draw the Israelis into a battle of attrition would be to cross the canal in force and establish a large enough bridgehead to pose a permanent threat.[24] Israel then would have no choice but either to negotiate or commit its forces to what Lieutenant General (LTG) Saad El Shazly, the Egyptian Chief of Staff, dubbed a "meat grinder" war.[25] Accordingly, Sadat issued this brief political directive for the war to Ismail: "To prepare the armed forces to secure the land in an offensive operation that would break the political stalemate."[26]

III. EGYPTIAN OPERATIONAL PLANNING

Successful application of operational art is dependent on skillful, detailed planning, whose fundamental purpose is to ensure that tactical commanders act in consonance with the operational commander's desires, and that each engagement contributes to the ultimate objective.[27] Plans are the principal means by which the operational commander communicates his vision of how forces and assets are to be employed to accomplish strategic or operational objectives;[28] they are the "glue" that binds military activities together at the operational level.[29]

The requisite vision and operational leadership for Operation BADR was provided by MG Ismail; operational planning was guided by MG Ismail, LTG Shazly, and LTG Mohammed el-Gamasy, the Egyptian Director of Operations. Ismail believed that Egypt could achieve a limited military success on the basis of careful planning which would, in particular, be designed to limit or offset the known and undeniable elements of Israeli military superiority.[30] In his assessment of Israel's critical factors, Ismail concluded that

> [Israel] possessed four basic advantages: its air superiority; its technological skill; its minute and efficient training; and its reliance upon quick aid from the United States, which would ensure...a continuous flow of supplies. This enemy also had his basic disadvantages. His lines of communications were long and extended to several fronts, which made them difficult to defend. His manpower resources [did] not permit heavy losses of life. His economic resources prevent[ed] him from accepting a long war. He [was], moreover, an enemy who suffer[ed] the evils of wanton conceit."[31]

Operationally, after the 1967 war, the Israeli belief in the predominance of armor and air power had become fixed. Many Israeli leaders indulged in scriptwriting; they maintained that the next war would merely be the "seventh day" of the previous one, with the tank and the plane again dominating the battlefield.[32] Ismail's intent was to impose his own pattern of

battle on Israel in order to neutralize his enemy's advantages in mobility and firepower.[33] The operational concept which he issued to the planning staff working under LTG Gamasy was

> To undertake a joint strategic offensive, in cooperation with Syria, with the mission of defeating Israeli forces in the western Sinai by a deliberate assault crossing of the Suez Canal to seize five bridgeheads 10 to 15 kilometers deep on the eastern bank, to repel Israeli counterattacks, to inflict maximum casualties on the enemy, and to be prepared for further missions.[34]

Critical to the successful planning and execution of Operation BADR was the proper analysis and balancing of the operational factors of space, time, and force.[35]

Space. The Sinai Desert is an inverted triangle of sand and mountains that comprises the Asian part Egypt, separating the Nile Delta and the Suez Canal from Egypt's border with Israel in the Negev Desert (Figure 2). That portion of the Sinai which concerned Egyptian operational planners was its northwestern sector, including the east bank of the Suez Canal, stretching from the Mediterranean shore in the north to the Gulf of Suez in the south. It was in this area, between the canal and the line of high ground that starts at Ras al Sadr in the south and gradually veers off northeastwards toward El Arish, that the Israelis had deployed the bulk of their forces in the Sinai and constructed their main defense.[36]

Israeli defenses in the Sinai were based on the Suez Canal, itself a formidable military obstacle.[37] Stretching 107 miles from Port Said to Suez, the canal passes through both Lake Timsah and the Great Bitter Lake,[38] forming a continuous, water-filled channel[39] 180 to 220 meters wide and 16 to 18 meters deep. The water level is approximately two meters below the top of the canal's banks which are covered with reinforced concrete, making it impossible to ford the canal unaided at any point along its length.[40] The canal is subject to

tidal influences from both the Mediterranean and the Gulf of Suez;[41] its own tidal range varies from 60 centimeters in the north to two meters near Suez in the south. Because of the tide, the canal has a strong, rapid current which reaches 18 meters per minute in the north, and as much as 90 meters per minute in the south. The direction of the current within the canal changes every six hours with the change of the tide.[42]

Directly atop the canal's east bank, both to obstruct any crossing and to provide concealment for their own forces, the Israelis had built up a continuous sand embankment, rising in places to a height of 18 meters and varying in depth from 10 to 15 meters.[43] Several hundred meters east of the sand bank began the Israeli Bar-Lev Line, an extensive fortification and observation system stretching approximately 75 miles parallel to the Suez Canal from Qantara in the north to Port Taufiq in the south.[44] The Bar-Lev Line presented an obstacle composed of mutually supporting fortified positions as well as anti-personnel and anti-tank minefields, 30 to 35 kilometers in depth, comprising a total area of approximately 5,000 square kilometers.[45]

The most significant aspect of the Bar-Lev Line were two belts of strongly fortified positions. The first line of positions, located about a hundred meters east of the sand bank, consisted of 22 positions comprising 31 separate strong points, each covering about 40,000 square meters.[46] These positions were grouped opposite the most likely Egyptian crossing points, from Ismailia to Qantara and between the Great Bitter Lake and Port Suez (the salt marshes in the north, partly occupied by Egypt, and the shores of the Great Bitter Lake were not as strongly defended as the rest of the line). Each strong point was a self-contained post, designed to garrison 80-100 troops. An outer wall of sand covered an area approximately

100 by 60 meters, rising to a height of 20 meters, its face covered by wire entanglements and anti-personnel mines.[47] The core of each strong point was a three-story bunker, topped by a six meter-thick slab of steel-reinforced stone and concrete. The top story was the "operational floor," housing the garrison's automatic and anti-tank weapons. The second story provided storage for ammunition and supplies; the bottom floor served as the garrison's living quarters.

Each position was surrounded by dense belts of barbed wire as well as anti-personnel and anti-tank mines, which extended to a depth of about 200 meters. These forward positions were equipped with a system of oil storage tanks and pipes which extended to the canal so that the oil could be released into the water. Ignited electrically or by a thermite grenade, the burning oil could produce flames over one meter high with temperatures reaching 700 degrees Centigrade.[48] A two-lane hard surface road ran behind the first line of strong points for the length of the canal.

The second line of strong points was located 300-500 meters east of the first. While built to the same specifications, this line was less extensive and not continuous. Similarly constructed positions, beginning three to five kilometers east of the canal, defended the main roads leading into the interior of the Sinai.[49] Four main roads ran from the Bar-Lev Line toward the Israeli border. The northern route led from Qantara East along the coast toward Al Arish. The central route began at the canal bank opposite Ismailia, passed through the key communication center at El Tasa, and on through Abu Ageila to the Israeli border at Nitzana. The southern route ran from south of the Great Bitter Lake, through the Giddi Pass,

to the Israeli border at Kusseima. The southernmost road, the "Pilgrim's Way", ran from Port Taufiq through the Mitla Pass, terminating at the Israeli port of Eilat.[50]

Israeli defenses in the Sinai thus posed a formidable obstacle. Egyptian leaders concluded, however, that if their forces could cross the canal quickly enough, they could overwhelm the Bar-Lev Line by sheer strength of numbers.[51]

Time. The Egyptians realized that the overall time limit for Operation BADR would be set by the superpowers, who would intervene "as soon as they had been through the ritual dance of the Security Council, and [had] reached some sort of agreement between themselves."[52] They anticipated 10-14 days of freedom from extra-regional interference.[53]

Of more immediate importance to Egyptian planners was the need to forestall an Israeli preemptive strike and to delay the Israeli counterattack. At the strategic level, Israeli national security was dependent on the efficiency of its intelligence services. Israeli leaders depended on early warning to set in motion a defense plan based on containment of any major attack by its regular forces until reserve mobilization could take place.[54] The Egyptian Defense Intelligence Directorate's worst case estimate was that Israeli leaders would have unambiguous warning of Egyptian intentions 15 days before the assault across the canal.[55] If the Israelis had time to mobilize, the Egyptians knew that they would encounter approximately 20 enemy brigades, most of which the Israelis could commit along the line of the canal within a few hours. Without mobilization, Israeli forces would be at one-third strength. The Egyptians could then expect initial opposition by eight brigades, only four of which the Israelis would employ in the western Sinai.[56]

Although the Egyptians could not completely conceal their preparations for attack, they could conceal their intentions,[57] and sought to prevent Israeli preemption or mobilization through deception and strict secrecy. The Egyptian deception plan was based on preconditioning, that is, presenting Israeli intelligence analysts with an observable pattern of "normal" military activity.[58] For example, the Egyptians called up their reservists 22 times during the Summer of 1973. Similarly, they repeatedly brought bridging equipment to the canal and then removed it so that, as Shazly commented, "Israel was used to its presence."[59] Likewise, they disguised the deployment of key assault units by random troop movements along the length of the canal.[60] One of the most significant aspects of the Egyptian plan was Sadat's expulsion of Soviet advisers in July 1972. He expected this action to lead the Israelis to conclude that war was unlikely, since they believed that the Egyptians could would not attack without Soviet technical advice.[61]

Finally, proper selection of the attack date was critical. Ismail later explained the reasoning behind the selection of 6 October as D-Day:

> There was the general consideration that the situation had to be activated when Arab and world support for us was at its highest. More particularly, we needed: first, a moonlit night with the moon rising at the right time; second, a night when the water current in the canal would be suitable for crossing operations; third, a night on which our actions would be far from the enemy's expectations; and fourth, a night on which the enemy himself would be unprepared.[62]

Ismail had imposed the requirement of a long night so that the Egyptian buildup on the east bank would have cover of darkness, but he also wanted a night when the moon shone through the first half and then set. The last bridges might have to be laid by moonlight, but the tanks could find their way across by starlight. This requirement dictated an autumn attack, since only by September or October would there be ten or twelve hours of darkness.

The need to have moonlight, but not a full moon that would swell the ebb and flow of tide, reduced the possible dates in any one month to four or five days. Further limitations were imposed by the Golan front. By November or December, there was a risk of snow on the Syrian plain, which would bog massed armored formations in a sea of mud.[63] According to Ismail,

> These particular considerations suggested 6 October. On that day, astronomical calculations gave us the best times for moonrise and moon set. Our scientists examined the records of the old Suez Canal Company to assess the speed of water currents, and that day was found most suitable. In addition, the Israelis would not expect any action from our side during the month of Ramadan. And for their part, they would be preoccupied by a number of events, including their forthcoming General Election."[64]

The sixth of October was also the Jewish religious holiday of Yom Kippur, the Day of Atonement.

Force. Egypt's leaders began rebuilding their nation's armed forces immediately after the 1967 Arab-Israeli War with the help of Soviet arms and advisers.[65] Egyptian training and tactics during the period 1967-73 closely reflected Soviet methods,[66] with emphasis on numbers, massive firepower, and ponderous, but thoroughly planned, operations.[67]

Training exercises concentrated on obstacle crossings and, while there was some Egyptian resentment of the Soviets' harsh training methods, these eventually paid rich dividends.[68] Intensive training improved both Egyptian morale and self-confidence. Egyptian soldiers proved themselves capable of mastering the variety of sophisticated weapons provided by the Soviets. Egyptian anti-tank and air defense capabilities significantly improved, due to the missile expertise provided by Soviet advisers.[69] A new type of Egyptian officer was also emerging -- young, keen, and anxious to learn and to lead.

Many of the older-type officers, disinterested in their profession and their men, had been retired[70] as Egyptian military leaders set about developing a corps of efficient small-unit leaders and technical and maintenance specialists.[71] By the early 1970s, standards throughout the Egyptian armed forces compared favorably with those of other nations' militaries.[72]

Organization for Combat. Details of the Egyptian order of battle are at Appendix A. Command and control of forces allocated to Operation BADR was exercised by MG Ismail through Egyptian General Headquarters (GHQ) and component force commanders.

For the conduct of Operation BADR, the Egyptian Army was organized into three "armies" (actually corps-level formations), two of which were deployed along the Suez Canal with the third in operational reserve (Figure 3). Second Army deployed on the left from Port Said to the Great Bitter Lake with five divisions (three infantry divisions in the first echelon, an armored and a mechanized infantry division in the second echelon). Third Army deployed on the right from the Great Bitter Lake to Port Suez with three divisions (two infantry divisions in the first echelon and a single armored division in the second). First Army (two mechanized infantry divisions and one special forces division) remained in operational reserve.

Operation BADR was designed as a two phase attack along the entire length of the Suez Canal. The was to be no one schwerpunkt; the small Israeli defending forces would be divided and unable to counter the wide Egyptian thrust. Moreover, the widespread fighting would inflict high casualty rates on the Israeli units.[73] In the first phase, the leading brigades of the first echelon divisions were to establish three divisional bridgeheads on the east bank

of the canal -- two between Port Said and Ismailia, and one south of the Bitter Lakes. In the second phase, the second echelon divisions were to cross the canal to establish a total of five divisional bridge heads, which they would then consolidate into a single bridgehead up to 20 kilometers in depth. Second and Third Armies had only limited tasks beyond establishing the final bridgehead: Second Army was to exploit on its left flank to capture Romani, from which the Israelis had bombarded Port Said; Third Army was to exploit on its right, southward along the eastern coast of the Gulf of Suez, to capture Ras al Sudr.[74]

The Egyptian Air Force and Air Defense Service were placed under the Chief of Staff, LTG Shazly, for coordination.[75] The air force's mission was to conduct strikes up to 60 kilometers in depth in support of the canal crossing. Initial targets in the Sinai included Israeli forward command positions, radar and communications installations, missile sites, and forward air fields. Following the canal crossing, the air force was generally restricted to close air support and interdiction of Israeli armored formations.[76] The Air Defense Service, with its mix of surface-to-air missiles and anti-aircraft guns, was to provide support to the ground forces during the initial stages of the operation. The Egyptian Navy's mission was to protect the north and south flanks of the canal crossing through operations in the Mediterranean and the Gulf of Suez, and to blockade the Bab El Mandab Strait at the entrance to the Red Sea.[77]

IV. EXECUTION

At 1400 (H-Hour) on 6 October 1973, the armed forces of Egypt and Syria initiated Operation BADR. The Egyptian assault crossing of the Suez Canal, preceded by massive

artillery fires and supported by air operations throughout the depth of the Sinai (Figure 4), began at H+15 minutes. Eight thousand Egyptian infantrymen armed with Soviet-supplied anti-tank guided missiles (ATGMs) crossed the canal in 1,000 rubber boats. Quickly scaling the embankment, they bypassed the first line of Israeli strong points and established an anti-tank defense line.[78] At H+1 hour, Egyptian engineers began breaching the embankment with high-pressure water cannons.[79] By 1930, they had completed 60 cuts in the embankment, and by midnight 10 pontoon bridges (all of which had been structurally modified to allow interoperability)[80] and 15 ferries were moving additional Egyptian forces to the east bank of the canal. Total duration of the initial assault was 10 hours – 38 hours less than the required time estimated by Israeli intelligence.[81]

The sudden advance of Egyptian forces across the Suez Canal and the Syrian attack on the Golan Heights achieved both tactical and operational surprise,[82] and disrupted critical elements of Israel's reserve mobilization plan.[83] Early Arab successes rekindled Israeli fears of destruction of the Jewish state. "The events of May 1967 [immediately preceding the Six Day War] had revived the memory of the Holocaust. But the Yom Kippur War gave the prospect [of annihilation] even greater focus."[84] It was in response to such fears that Defense Minister Moshe Dayan may have at least tentatively suggested the arming of Israel's nuclear weapons.[85]

For the next two days, the Egyptians expanded their lodgment on the east bank (Figure 5), systematically reducing the Bar-Lev Line (Figure 6), and repelling local Israeli counterattacks (Figure 7). Ismail had successfully imposed his own pattern of battle on the Israelis. Egyptian infantrymen armed with rocket propelled grenades (RPG-7s) and

SAGGER anti-tank missiles repulsed Israeli armored counterattacks, inflicting heavy casualties.[86] The Egyptian air defense system, supplemented by mobile SA-6 missiles and man-portable SA-7s, effectively neutralized Israeli air power over the east bank.[87] The Egyptians also had good night vision equipment and were well trained in its use, allowing them to conduct continuous operations which severely strained Israeli ammunition stocks and reserves.[88]

By sunset on 9 October, all bridgeheads were six to seven miles deep. At this point, the Egyptians halted their advance and assumed the defense, according to plan. This phase of Operation BADR continued until the early morning of 14 October.[89]

At 0600 on 14 October, in an effort to relieve pressure on the Syrians, Egyptian armored forces attacked eastward in order to seize Bir Gifgafa and the Sinai passes. Outrunning the range of their air defense cover, the Egyptian columns were destroyed by Israeli tanks and aircraft in intense fighting that saw the heaviest concentration of armored forces since the World War II Battle of Kursk. The Egyptian advance faltered and ground to a halt 12-15 kilometers from the canal crossing sites, allowing the Israelis to gain the initiative and eventually drive the Egyptian forces back across the Suez Canal[90] (Figure 8).

V. CONCLUSIONS

Operation BADR shattered the twin myths of Arab military incompetence and Israeli invincibility, including the omniscience of Israel's intelligence services. After the 1967 war, the Egyptians had analyzed Israel's military strengths and weaknesses in great detail, and had based the rebuilding of their armed forces on the results. In 1973, the Egyptian Army

demonstrated that Arab soldiers – when properly trained, equipped, and led – could defeat the Israelis.

The key to Egyptian success was skillful, thorough operational planning which allowed them to neutralize many of Israel's critical strengths and exploit its critical weaknesses. By initially limiting his forces' advance to the range of their air defense cover and then assuming the defense, Ismail successfully overcame Israeli superiority in mobility and firepower, and effectively neutralized Israeli air power over the east bank of the Suez Canal. Ismail's overall intent was to draw the Israelis into a battle of attrition, exploiting both their sensitivity to casualties and the costs which a prolonged war would impose on the Israeli economy.

Surprise was central to Egyptian success. A well-orchestrated deception operation contributed to a near-catastrophic failure of Israel's indications and warning system, allowing Egypt to achieve both operational and tactical surprise. The Israeli intelligence services' failure to discern Arab intentions deprived Israeli leaders of the time required either for preemption or orderly mobilization of the nation's reserve forces, the cornerstones of Israel's security strategy. The Egyptians also achieved a degree of technological surprise. Relatively simple technological innovations, such as the use of high-pressure water cannons to breach the embankment and modification of bridging equipment, negated Israeli intelligence estimates of the time required for an assault crossing of the canal. Exploitation of technology, particularly the unprecedented employment of large numbers of ATGMs and the effective use of night vision systems, allowed the Egyptians to dictate the tempo of

operations, and presented the Israelis with operational challenges for which they were unprepared.

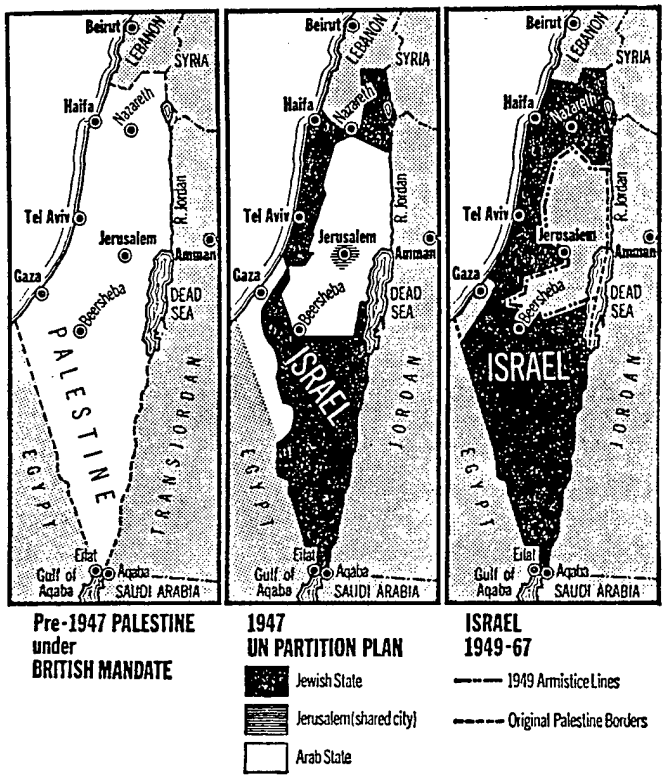
The most glaring Arab operational deficiency was their failure to achieve unity of command. There was no combined Egyptian-Syrian headquarters or single commander with the authority to issue operational orders on both fronts. Had there been, the Arabs might have exploited Israel's critical shortage of reinforcements through an Egyptian attack to capture the Sinai passes earlier than 14 October. This would have deprived the Israelis of the time required to mobilize adequate numbers of reserves for units in the Sinai while they were locked in a desperate struggle with the Syrians on the Golan Heights, close to Israel's vulnerable population centers.[91] As it was, the hastily planned attack of 14 October resulted in the destruction of Egypt's armored forces, allowing the Israelis to gain the initiative.

Despite Israel's eventual military victory over Egypt and Syria, Operation BADR had a positive political effect throughout the Arab world. The war gave all Arabs a new sense of self-respect, dignity, and prestige;[92] the shame of 1967 was dissipated, honor regained, and humiliation purged.[93] In terms of Egyptian-Israeli relations, the successful execution of Operation BADR resulted in the subsequent achievement of Sadat's ultimate national policy objective of ending the stalemate of "no peace, no war" between the two nations. In the aftermath of the war, Israel found itself in a state of diplomatic near-isolation. Not only the Communist and Moslem nations, but nearly the entire Third World, expressed support for Egypt, and European support for Israel had also begun to erode.[94] Israel's reduced position in the international community, along with corresponding changes in Israeli domestic politics

and the influence of its American ally, set the conditions for the political process which eventually resulted in a final Israeli-Egyptian peace treaty in 1979.

FIGURE 1: ISRAELI TERRITORIAL EXPANSION.

Source: Insight Team of the London Sunday Times, The Yom Kippur War (Garden City, NY: Doubleday, 1974), 40-41.



Map 1 The changing shape of Israel
Until 1948, Palestine—a land of two million people, in which two out of three were Arabs, and one in three was Jewish—was controlled by Britain under mandate from first the League of Nations and then the United Nations. In November 1947, the UN decided to partition the country into a Jewish state (57 per cent of the land) and an Arab state (42 per cent). Jerusalem was to be shared, and administered by the UN. The Jews accepted this advantageous plan, but the Arabs did not. When the British left in May 1948, Israel was born. Immediately, Arab forces attempted to crush the new Jewish state—and the Israelis attempted to extend their control over more of Palestine. The Israelis were more successful: In May 1949 Israel signed an armistice with its Arab neighbors, gaining more land than the UN had intended. Jerusalem was divided between Israel and Jordan. The proposed Arab state was never formed. Up to a million Palestinians fled from Israel and became refugees. The borders remained intact until 1967, despite the 1956 War, when Israel, in collusion with Britain and France, invaded Sinai.

Map 2
In the Six-Day War of June 1967, Israeli forces occupied the whole of what had been Palestine, together with the Sinai desert in Egypt and the Golan Heights in Syria. Israel subsequently offered to withdraw from most of the occupied territories, but not Sharm-el-Sheikh, the Golan Heights, or Jerusalem. In the absence of negotiations, Israeli forces continued to control the occupied areas.

FIGURE 2: THE SINAI DESERT.

Source: D.K. Palit, Return to Sinai: The Arab Offensive, October 1973 (New Delhi, India: Palit and Palit, 1974), 53.

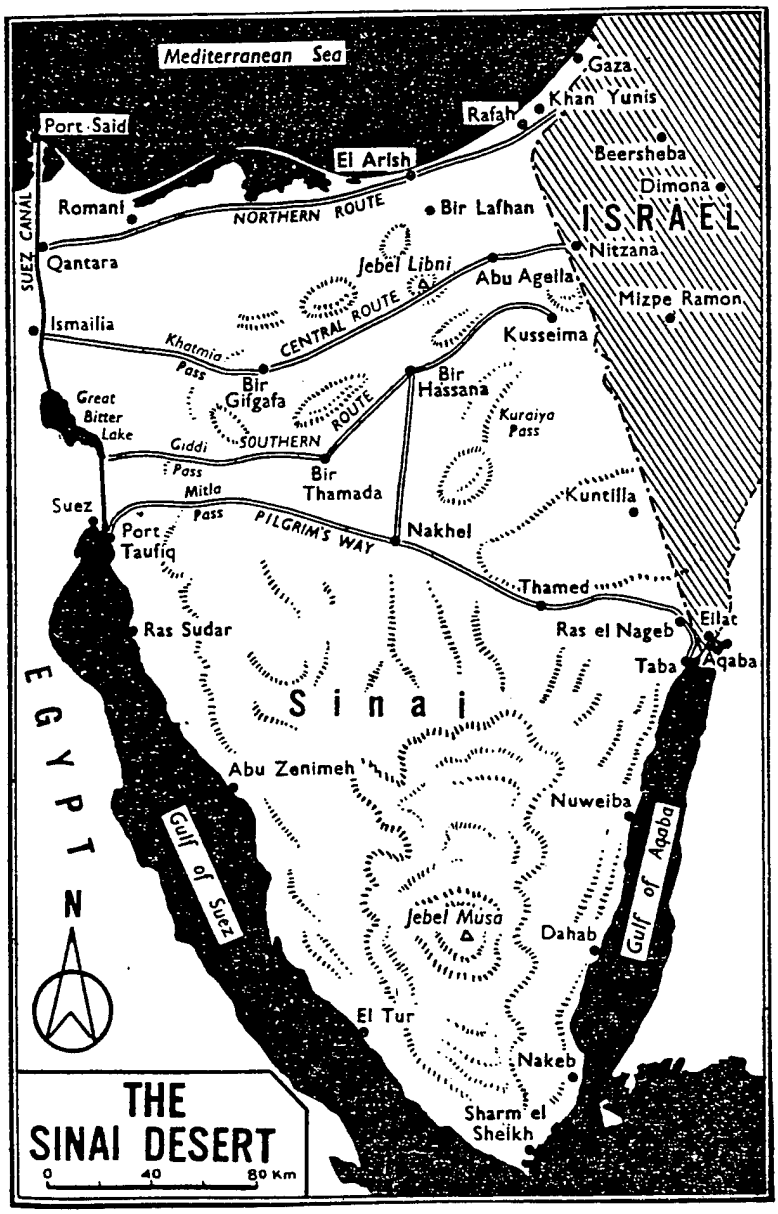


FIGURE 3: EGYPTIAN DISPOSITIONS, 6 OCTOBER 1973.

Source: D.K. Palit, Return To Sinai: The Arab Offensive, October 1973 (New Delhi, India: Palit and Palit, 1974), 73.

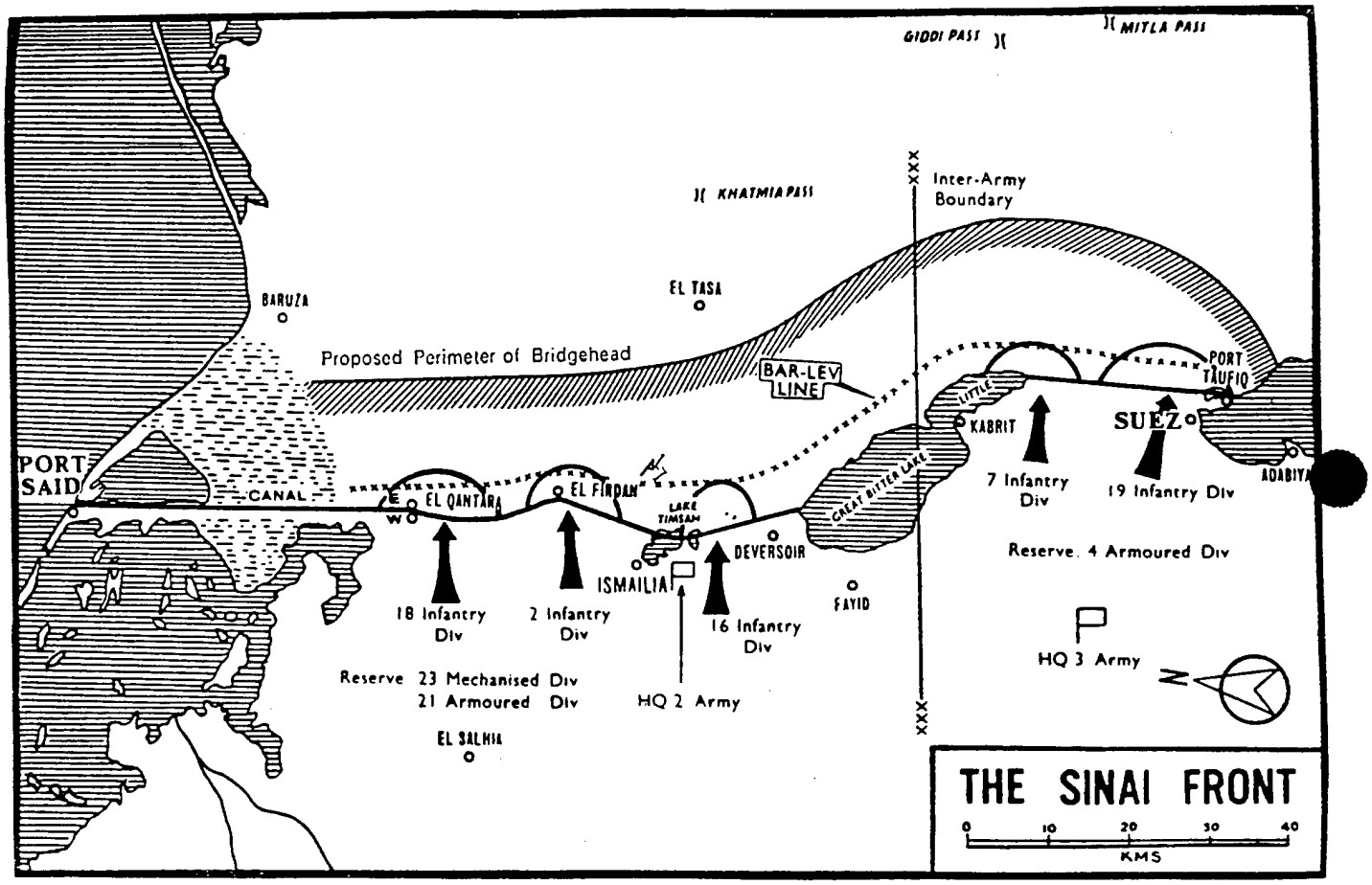


FIGURE 4: EGYPTIAN AIR OPERATIONS, 6 OCTOBER 1973.

Source: Edgar O'Ballance, No Victor, No Vanquished: The Yom Kippur War (San Rafael, CA: Presidio Press, 1978), 70.

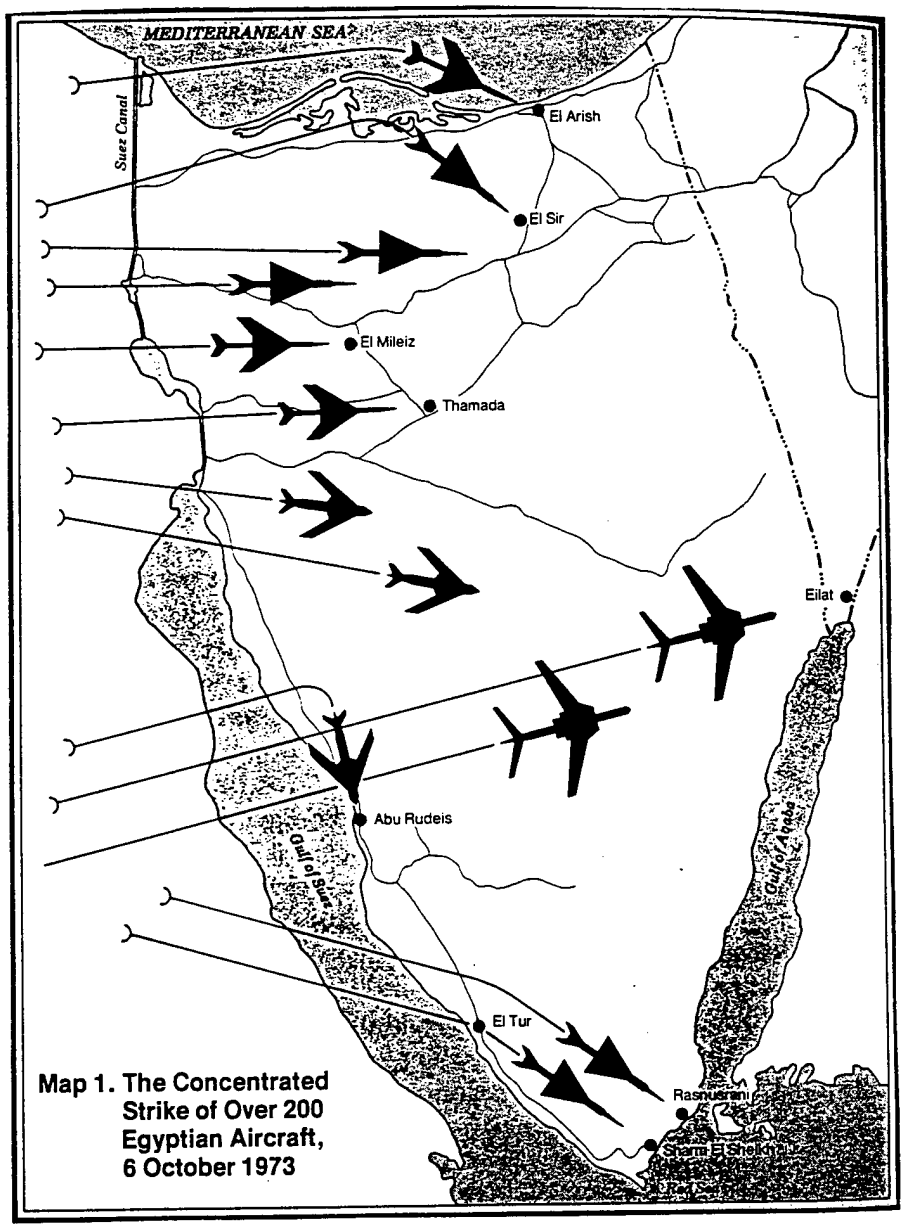


FIGURE 5: EGYPTIAN CONSOLIDATION OF THE EAST BANK OF THE SUEZ CANAL.

Source: Edgar O'Ballance, No Victor, No Vanquished: The Yom Kippur War (San Rafael, CA: Presidio Press, 1978), 95.

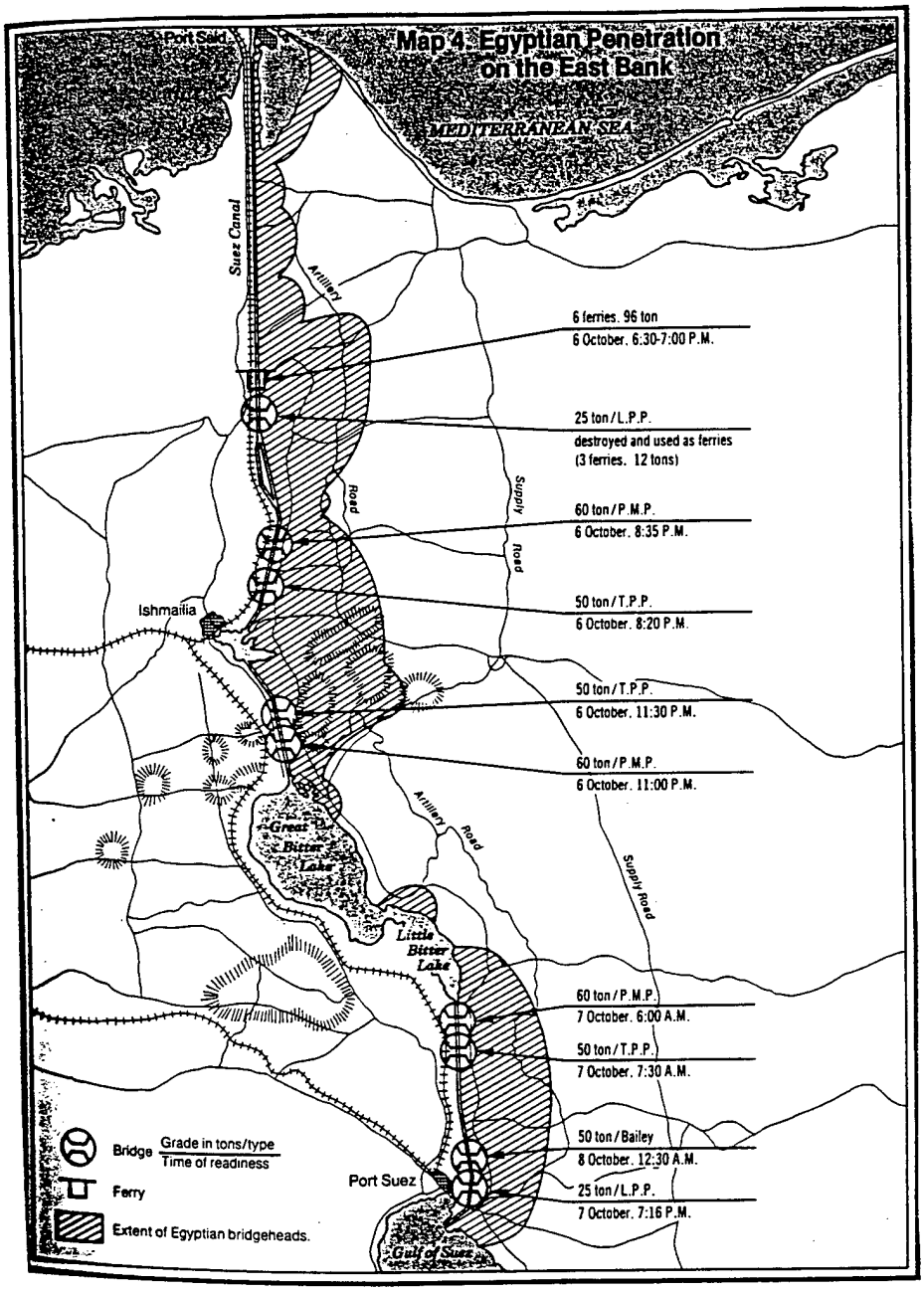


FIGURE 6: REDUCTION OF THE BAR-LEV LINE.

Source: Edgar O'Ballance, No Victor, No Vanquished: The Yom Kippur War (San Rafael, CA: Presidio Press, 1978), 80-81.

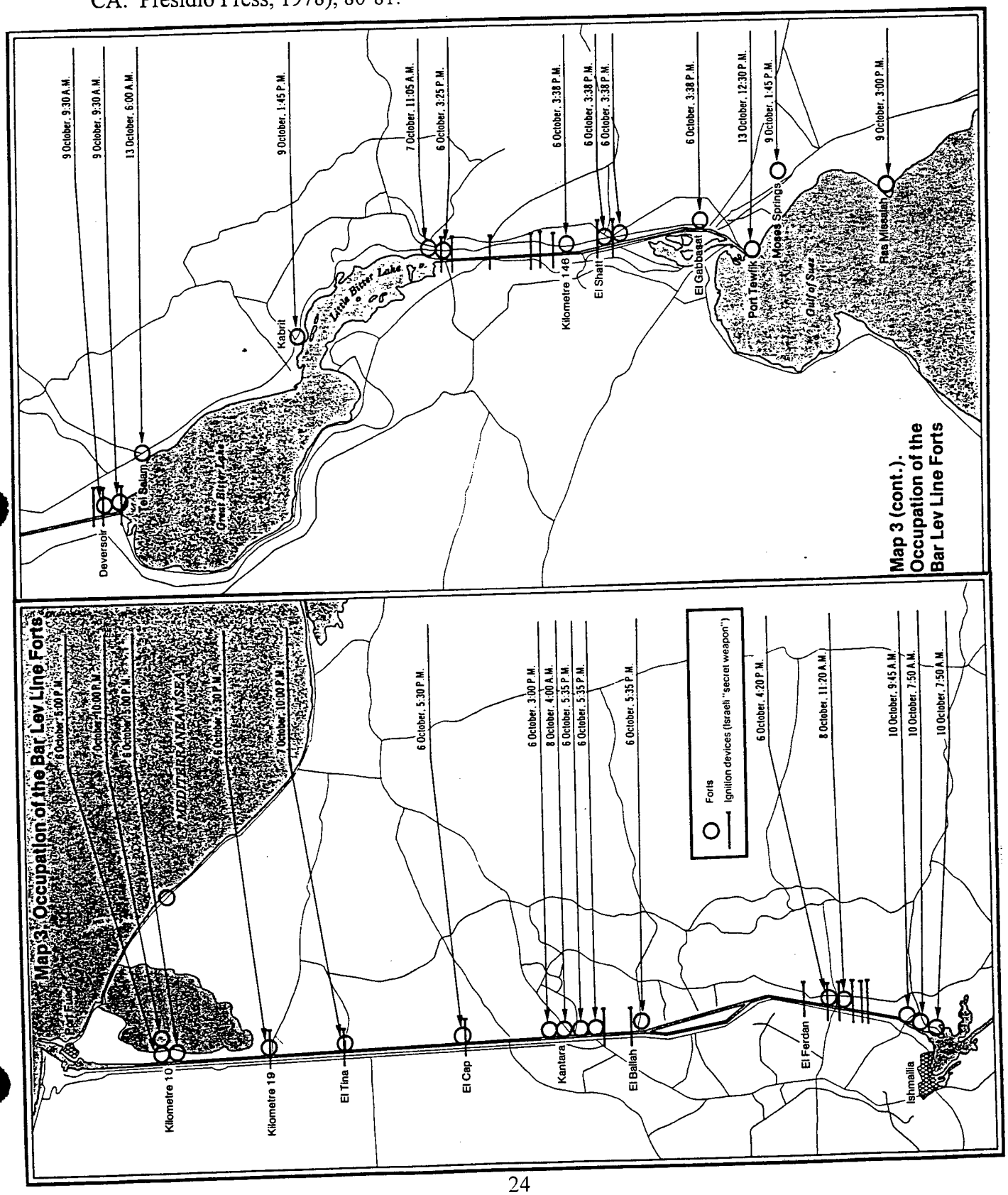


FIGURE 7: ISRAELI COUNTERATTACKS, 7-8 OCTOBER 1973.

Source: Edgar O'Ballance, No Victor, No Vanquished: The Yom Kippur War (San Rafael, CA: Presidio Press, 1978), 114.

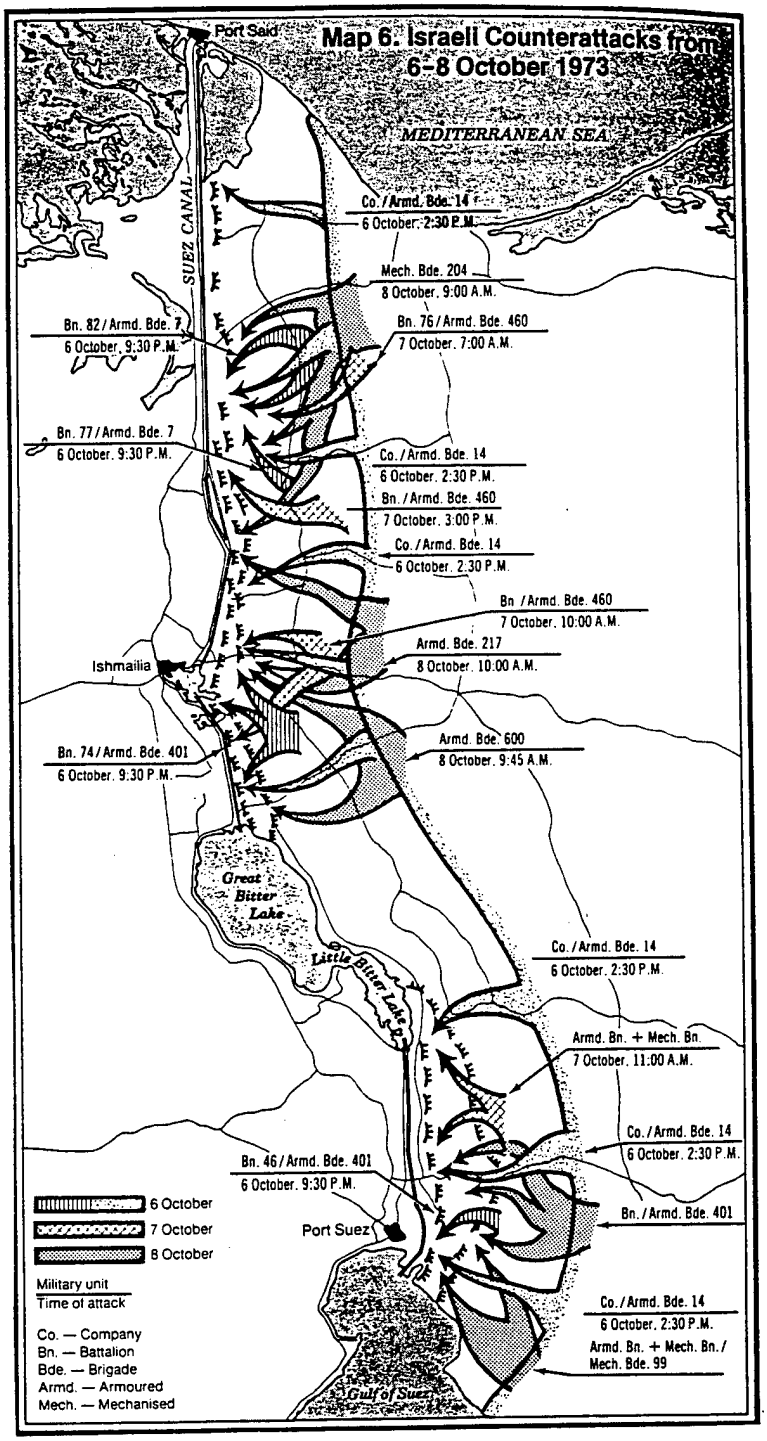
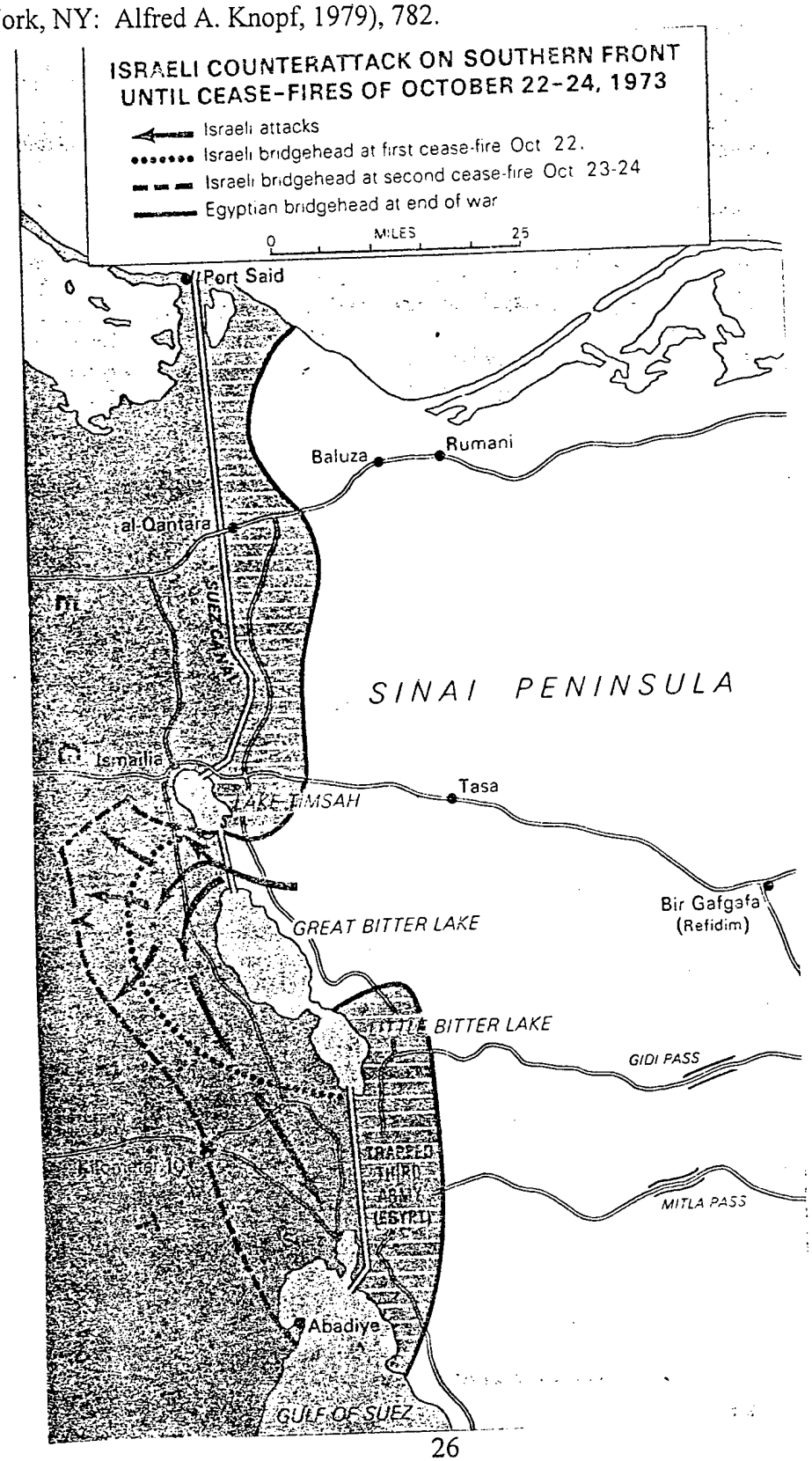


FIGURE 8: ISRAELI COUNTERATTACKS AND FINAL POSITIONS AT CEASE-FIRE.

Source: Howard M. Sachar, A History of Israel: From the Rise of Zionism to Our Time (New York, NY: Alfred A. Knopf, 1979), 782.



APPENDIX A

THE EGYPTIAN ORDER OF BATTLE

In 1973 Egypt, with a population of 35 million and a gross national product (GNP) of $7.5 billion, maintained a military establishment numbering 298,000 regular personnel and 534,000 reservists.[95] While a three year period of conscription remained in effect this tended to be selective, only the best and fittest being accepted for service.[96] The Egyptian armed forces included the nation's army, air force, navy, and a separate Air Defense Service.

The Egyptian Army numbered 260,000 regular soldiers organized into two armored, three mechanized infantry, and five infantry divisions. There were also two independent armored brigades, two independent infantry brigades, one airborne brigade, one parachute brigade, six independent artillery brigades, and 26 commando battalions. Total tank strength amounted to 1,700, primarily Soviet T-54/55 models, as well as 100 T-62s and 75 PT-76 amphibious reconnaissance tanks. The armored and mechanized forces also contained 2,000 armored personnel carriers. Finally, the army possessed a number of surface-to-surface missiles, including 24 FROG-3s, and undetermined number of FROG-7s, and 100 SAMLETS.[97]

The Egyptian Air Force comprised 23,000 regular personnel and 620 combat aircraft, including 210 MiG-21 FISHBED interceptors, 80 Su-7 FITTER fighter-bombers, 100 MiG-17 FRESCO fighter-bombers, and 25 Tu-16 BADGER medium bombers. The air force also possessed 190 helicopters (90 large MI-8s, 20-30 MI-6s, and 70-80 MI-4s).[98] The Egyptian Navy numbered 15,000 personnel manning 12 submarines (Soviet 6W- and 6R-class); five destroyers (four of them Soviet SKORY-class); four escorts (former British ships); one

Soviet-supplied corvette; 12 former-Soviet submarine chasers; 12 mine sweepers; and 12 OSA- and seven KOMAR-class Soviet patrol boats armed with STYX surface-to-surface missiles.[99]

The Egyptian Air Defense Service, organized along Soviet lines after 1967, operated an Integrated Air Defense System (IADS) consisting of approximately 130 surface-to-air missile (SAM) sites, each composed of six fixed SA-2 and SA-3 launchers, as well as mobile SA-6s and man-portable SA-7s in the forward areas. In addition, the air defense system included a variety of conventional air defense artillery guns and nine squadrons of Air Force MiG-21MF interceptors.[100]

NOTES

[1] Both the timing and code name for this operation had an atavistic appeal for the Arabs. In 1973, 6 October was the tenth day of Ramadan. On that day in the year 624, the Prophet Mohammed began preparations for the Battle of Badr, the first victory in the long campaign that culminated in his triumphant entry into Mecca, and the start of the spread of Islam. The Insight Team of the London Sunday Times, The Yom Kippur War (Garden City, NY: Doubleday, 1974), 75.

[2] The Egyptian-Syrian attack was not a truly combined operation. Egyptian Major General Ahmed Ismail Ali did serve as the commander-in-chief of the armies of the Federated Arab Republics of Egypt, Syria, and Libya. However, the responsibilities of his Joint Arab Command Headquarters and the Federal Operational General Staff were limited to operational security, deception, and coordination of the timing of the offensive; he did not exercise unified command of separate national armed forces. D.K. Palit, Return to Sinai: The Arab Offensive, October 1973 New Delhi, India: Palit and Palit, 1974), 44.

[3] Anthony H. Cordesman, After the Storm: The Changing Military Balance in the Middle East (Boulder, CO: Westview Press, 1993), 194.

[4] Operational art is the theory and practice of planning, preparing, conducting, and sustaining major operations and campaigns for the accomplishment of operational or strategic objectives. It is the vital link between strategy and tactical combat. Milan Vego, On Operational Art (Draft) (Newport, RI: U.S. Naval War College, September, 1975), 3-5.

[5] Behind the combined Federal Operational General Staff, most of the work was actually done by Egyptian staff planners under LTG Gamasy, the Egyptian Director of Operations. Insight Team of the London Sunday Times, 72.

[6] Ira C. Eaker, "The Fourth Arab-Israeli War," Strategic Review, Winter 1974, 18-19.

[7] George Lenczowski, Soviet Advances in the Middle East (Washington, DC: American Enterprise Institute Center for Public Policy Research, February 1972), 81.

[8] Palit, 24.

[9] Ibid., 18.

[10] For an account of the war see Ahmed S. Khalidi, "The War of Attrition," Journal of Palestine Studies, Autumn 1973, 60-87. In fact, Nasser's declaration of war was more symbolic than substantive. Hostilities between Israel and Egypt resumed within a month of the June 1967 cease-fire, and included air attacks, artillery bombardments, and the Egyptian

sinking of the Israeli destroyed Eilath. Hassan El Badri and others, The Ramadan War, 1973 (Dunn Loring, VA: T.N. Dupuy Associates, 1978), 10-12.

[11] Anthony H. Cordesman and Abraham R. Wagner, The Lessons of Modern War, Vol. 1, The Arab-Israeli Conflicts, 1973-1989 (Boulder, CO: Westview Press, 1990), 17. By the Summer of 1970, the Soviets had assigned several squadrons of MiG-21J fighter aircraft to Egypt. These units, entirely Soviet manned and controlled, were to help protect Egypt from Israeli air attack. Also during the summer, the Soviets introduced SA-3 (low altitude) SAMs, and had established approximately 50 sites in the canal area by the end of the year. Also by the end of 1970, the Soviets had also installed over 100 SA-2 (high altitude) SAM sites. Lenczowski, Soviet Advances in the Middle East, 151.

[12] Yair Evron, Israel's Nuclear Dilemma (Ithaca, NY: Cornell University Press, 1994), 64.

[13] Sadat had been a member of Nasser's original Free Officers group which, throughout the 1940s, had planned the overthrow of King Farouk. Since then he had held a variety of ministerial and political posts, rising to Vice President at the time of Nasser's death. Sadat was nominated for the Presidency of 4 October 1979 by the Executive Council of the Arab Socialist Union, Egypt's only political party. The rest of the process -- approval of his nomination by the National Assembly followed by a popular referendum -- was merely a formality. Insight Team of the London Sunday Times, 48-49.

[14] Ibid., 26.

[15] Ibid., 49-50.

[16] Alvin Z. Rubenstein, "Egypt's Foreign Policy," Current History, February 1974, 53-54.

[17] T.N. Dupuy, "The Ramadan War: An Arab Perspective of the October War," Army, March 1975, 13.

[18] Dwight James Simpson, "Israel After 25 Years," Current History, January 1973, 3.

[19] Ibid., 1-2.

[20] Dupuy, 13.

[21] Ibid., 13.

[22] El Badri and others, 17.

[23] Insight Team of the London Sunday Times, 60.

[24] Palit, 31-32.

[25] Ibid., 32.

[26] El Badri and others, 17.

[27] Frank Snyder and Robert Rubel, "The Art of Operational Level Military Planning (NWC 4122)," (Unpublished Paper, U.S. Naval War College, Newport, RI), 1.

[28] Vego, 195.

[29] Snyder and Rubel, 1.

[30] Dupuy, 13-14.

[31] Insight Team of the London Sunday Times, 66. So sweeping was the Israelis' military victory in 1967 that they saw no need to follow it with a searching examination of their remaining military deficiencies. Many Israelis felt that their country's military superiority over the Arabs could only continue to increase because of their conviction that the "qualitative gap" between Israel and the Arabs was widening. Such assertions were based on the assumption that, as warfare became more complex, Israel increased its edge over the Arabs because of more advanced technology. As proof of this conviction, Israelis cited their country's breakthrough into the production of sophisticated weapons. At the same time, Israelis tended to treat Arab weaknesses as if they were cultural and almost inevitable in the Arab approach to the art of war, rather than as the result of poor organization and leadership. That the Arabs could evolve their own effective style of war based on their previous experiences was discounted by the Israelis. Their facile victory in the 1967 war confirmed them in their assumptions of continuing Arab disunity and the inferiority of their armed forces. The prospect of Egypt and Syria, or indeed any two or more other Arab countries, uniting to make a coordinated attack was not taken seriously. Cordesman and Wagner, 17-18; Samuel W. Wax and Avigdor Levy, "Arab-Israeli Conflict Four: A Preliminary Assessment," Naval War College Review, January-February 1974, 8; Palit, 18; and Edgar O'Ballance, "The Fifth Arab-Israeli War -- October 1973," The Army Quarterly and Defence Journal, April 1974, 309.

[32] T.P. Toyne Sewell, "The War of Atonement -- And Its Lessons," The Army Quarterly and Defence Journal, January 1976, 68.

[33] Insight Team of the London Sunday Times, 67.

[34] Dupuy, 14.

[35] For a discussion of these factors see Vego, 73-83.

[36] Palit, 50.

[37] Ibid., 50.

[38] S.K. Sinha, "The Suez Crossings," Journal of the United Services Institution of India, July-September 1974, 219.

[39] Dupuy, 16.

[40] El Badri and others, 29-30.

[41] Palit, 50.

[42] El Badri and others, 29.

[43] Palit, 51.

[44] Dupuy, 16.

[45] El Badri and others, 30.

[46] Ibid., 31.

[47] Palit, 51.

[48] El Badri and others, 32.

[49] Ibid., 32.

[50] Palit, 52.

[51] Insight Team of the London Sunday Times, 67.

[52] J.D. Lunt, "A Commentary on the Fourth Arab-Israeli War," The Army Quarterly and Defence Journal, January 1974, 169.

[53] Ibid., 169.

[54] Wax and Levy, 8.; Sewell, 68.

[55] Saad El Shazly, The Crossing of the Suez (San Francisco, CA: American Mideast Research, 1980), 33.

[56] Dupuy, 16.

[57] Wax and Levy, 8.

[58] Wax and Levy, 8; Dupuy, 15.

[59] Insight Team of the London Sunday Times, 110.

[60] Ibid., 110.

[61] Dupuy, 14. After the Soviets were sent home by Sadat, the Israelis felt that the Egyptians would not be capable of handling sophisticated equipment without their assistance. They apparently did not attach much significance to the fact that many Soviets quietly returned to Egypt. Following the war, Sadat stated, "I expelled them to give myself completely [sic] freedom of maneuver.". O'Ballance, "The Fifth Arab-Israeli War -- October, 1973, 309, and Insight Team of the London Sunday Times, 58. For a discussion of the wider issues involved in Sadat's expulsion of the Soviets see George Lenczowski, "Egypt and the Soviet Exodus," Current History, January 1973, 13-16, 35, and 40.

[62] Insight Team of the London Sunday Times, 73-74.

[63] Ibid., 74-75.

[64] Ibid., 74.

[65] Before the 1967 war, the Soviets had only 500-700 military advisors in Egypt, many of them "second-rate officers who had relatively little influence." By 1968, their number had increased to "2,000-7,000, and most of them[were] believed first-rate men taken from key assignments in the Soviet Union and bloc countries." Soviet advisers and technicians were present at every air base, naval installation, military training center, and major repair depot. Soviet advisers liver permanently with each brigade, making daily visits to battalions and companies to make sure that training and field exercises were properly carried out. By 1970, there were an estimated 15,000 Soviet military personnel in Egypt. Of these, 3,000-4,000 were assigned as instructors and advisers to Egyptian units. The majority of the rest crewed SA-3 sites or were assigned to mixed Soviet-Egyptian SA-2 crews. About 200 Soviet fighter pilots were assigned to operational fighter units. William Bechner, "The Soviet Push in the Middle East," Army, April 1968, 22-23; Lenczowski, Soviet Advances in the Middle East, 152.

[66] Sewell, 67.

[67] O'Ballance, "The Fifth Arab-Israeli War -- October 1973," 312.

[68] R. S. Sirohi, "Arab-Israeli War of October 1973," Journal of the United Services Institution of India, July-September 1974, 28.

[69] Sewell, 67.

[70] O'Ballance, "The Fifth Arab-Israeli War -- October 1973," 312.

[71] Bechner, 24.

[72] Sirohi, 28.

[73] Evron, 68-69.

[74] Palit, 71-72.

[75] Sirohi, 30.

[76] Ibid., 33-34.

[77] Ibid., 29.

[78] Ray G. Roth, "Operation Badr: Crossing the Suez," Armor, May-June 1982, 24.

[79] Edgar O'Ballance, No Victor, No Vanquished: The Yom Kippur War (San Rafael, CA: Presidio Press, 1978), 74-76.

[80] Ibid., 83.

[81] Roth, 24. The Israelis assumed that it would take the Egyptians 24-48 hours to secure lodgment on the east bank, if they could do it al all. Dupuy, 16.

[82] Cordesman, 194. For a discussion of the Israeli indications and warning failure, see the following: Badri and others, 57-59; Insight Team of the London Sunday Times, 91-113; Abraham Ben-Zvi, "Between Warning and Response: The Case of the Yom Kippur War," International Journal of Intelligence and Counterintelligence, Summer 1990, 227-242; Abaraham Ben-Zvi, "Perception, Misperception, and Surprise in the Yom Kippur War: A Look at the New Evidence," The Journal of Conflict Studies, Fall 1995, 5-29; Michael I. Handel, Perception, Deception, and Surprise: The Case of the Yom Kippur War (Jerusalem: Jerusalem Post Press, 1976); Kathryn A. MacKinney, Egypt and Israel: The Intelligence Prelude to the October War of 1973 (Washington, DC: Defense Intelligence School, 1973); and Nadav Safran, Israel: The Embattled Ally (Cambridge, MA: The Belknap Press, 1981), 281-285.

[83] The IDF was capable of the orderly mobilization of 310,000 reservists in 72-96 hours. "Orderliness," however, was dependent on early warning. Since this was absent, Israeli mobilization took place in an atmosphere of haste, or near panic. Sewell, 68; O'Ballance, "The Fifth Arab-Israeli War -- October 1973," 310.

[84] Leni Yanil, The Holocaust: The Fate of European Jewry, 1932-1946 (New York, NY: Oxford University Press, 1990), 13.

[85] Evron, 72.

[86] Dupuy, 14.

[87] O'Ballance, No Victor, No Vanquished: The Yom Kippur War, 284; 290.

[88] Sewell,70.

[89] Roth, 24-25.

[90] Ibid., 25.

[91] Howard M. Sacher, Egypt and Israel (New York, NY: Richard Marek, 1981), 224.

[92] Rubenstein, 54.

[93] J. Bowyer Bell, "National Character and Military Strategy: The Egyptian Experience, October 1973," Parameters, January 1975, 15.

[94] Sachar, 227

[95] International Institute for Strategic Studies, The Military Balance, 1973-74 (London: International Institute for Strategic Studies, 1973), 31-32.

[96] O'Ballance, "The Fifth Arab-Israeli War -- October 1971," 312.

[97] International Institute for Strategic Studies, 31; Palit, 69.

[98] International Institute for Strategic Studies, 31-32; Palit, 69. A flight of MiG-25s, used mainly for high altitude reconnaissance and flown by Soviet pilots, was withdrawn when Soviet advisers were expelled in 1972. After the withdrawal of Soviet pilots, Egyptian air crews may have been supplemented by a limited number of North Koreans. Palit, 69; Shazly, 83.

[99] International Institute for Strategic Studies, 32; Palit, 70.

[100] International Institute for Strategic Studies, 32; Palit, 69-70.

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