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## **Sensors in the Sinai: A Precedent for Regional Cooperative Monitoring**

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Prepared by

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# **Sensors in the Sinai: A Precedent for Regional Cooperative Monitoring**

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## **Abstract**

Without the stability provided by two superpowers, regional conflicts are more likely to escalate, motivating regional parties to seek weapons of mass destruction. Cooperative monitoring, when incorporated into a regional security agreement, can help counter these pressures. Egypt and Israel set a precedent for successful cooperative monitoring when they progressed from a state of war to peace within six years. The process occurred in several steps, and monitoring played a significant supporting role. In 1975, Israel made a key compromise to withdraw from the strategic Giddi and Mitla passes in the Sinai peninsula in exchange for monitoring by third parties. The United States established the Sinai Field Mission to monitor access to the passes with sensors and also performed overflights. U.S. monitoring was coordinated with the activities of UN peacekeepers. After an initial period of suspicion, the parties came to accept monitoring as routine. The system successfully distinguished between significant and inconsequential sensor activations. All violations were relatively minor and resolved by a Joint Commission. Political leaders in both countries eventually praised the system. The increased confidence resulting from cooperative monitoring was a major contributor to the 1979 Egypt-Israel Peace Accord. The monitoring system became unnecessary and was closed on January 25, 1980.



## Acronyms

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AAU	acoustic add-on unit
CBM	confidence-building measure
CFE	Conventional Forces in Europe (Agreement)
DIRID	directional infrared intrusion detector
DoD	Department of Defense
GAO	General Accounting Office
INF	Intermediate-Range Nuclear Forces (Treaty)
MAGID	Magnetic Intrusion Detector
MFO	Multinational Force and Observers
MINISID	Miniature Seismic Intrusion Detector
NTM	National Technical Means
PICS	Passive Infrared Confirming Scanner
SFM	Sinai Field Mission
SSM	Sinai Support Mission
UN	United Nations
UNEF	UN Emergency Force
UNTSO	UN Truce Supervisory Organization
VHF	very high frequency
WMD	weapons of mass destruction



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# Sensors in the Sinai

## A Precedent for Regional Cooperative Monitoring

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### Executive Summary

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#### **A Precedent for Cooperative Monitoring: Sensors in the Sinai**

Although the Cold War has ended, the world is not at peace. Without the stability provided by an international system dominated by two superpowers, local conflicts over military threats, resources, disputed territory, and ethnic antagonisms have escalated. The intense feelings generated by these local conflicts increase the likelihood that the countries involved will seek weapons of mass destruction (WMD). The international community has begun to recognize that preventing the proliferation of WMD and fostering a truly peaceful international system depends on achieving regional security.

The design and implementation of agreements to counter the destabilizing pressures in regional conflicts can benefit from the use of cooperative monitoring. *Cooperative monitoring* is the collecting, analyzing, and sharing of information among parties to an agreement. Information collection relies largely, but not completely, on monitoring technologies such as sensors. The technologies used in a monitoring system prescribed by an agreement must be sharable among all parties, and all parties must receive equal access to collected data. Since incorrect or incomplete information may be more damaging to regional relationships than no information, procedures for dealing with anomalous data or false positives must be included in a cooperative monitoring regime. If designed with consideration for local conditions, cooperative monitoring can strengthen existing agreements, build confidence, set the stage for continued progress, and lead to stability.

The Middle East region set a precedent for successful cooperative monitoring. The 1970s took Israel and Egypt from a state of active warfare to the stability of a signed peace treaty with formal recognition of borders. The peace process was regionally based and took place in a series of steps—sometimes small and sometimes dramatic. The 1973 Yom Kippur war ended somewhat inconclusively on the Sinai front. The cease-fire negotiation was the first time Egypt and Israel had met directly since 1949 and constituted a first, tentative confidence-



building measure. The November 11, 1973 cease-fire agreement, however, did not provide for long-term stability. U.S. Secretary of State Kissinger argued it was more important to achieve an Israeli withdrawal into the Sinai so that both sides would perceive the peace process as beginning.

The *Sinai Separation of Forces Agreement* (known commonly as *Sinai I*) was signed by Israel and Egypt on January 18, 1974. *Sinai I* created a temporarily stable arrangement: the Israelis withdrew to defensive positions an average of 20 km from the Suez Canal and a thin buffer zone with adjacent limited force zones was established. A significant breakthrough was the acceptance of third-party monitoring by the United Nations (UN) and the United States. The UN peacekeeping force performed on-site inspection and general observation, while the United States performed periodic aerial surveillance flights.

Terrain was the driving factor in the second phase of the disengagement. The *Sinai Interim Agreement* (known commonly as *Sinai II*) was signed on September 4, 1975. The key point of contention was the control of the strategic high ground of the Giddi and Mitla passes in west-central Sinai and the Israeli electronic signal collection (intelligence) station there. The passes are the primary route for large mechanized ground forces to cross the Sinai. Israel wanted to retain the station to provide defensive early warning.

The key compromise of *Sinai II* was Israeli withdrawal from the Giddi and Mitla passes in exchange for tactical monitoring of the passes by the

United States in combination with permitted national technical means (NTM). The UN provided 4,000 peacekeeping troops to perform observation and on-site inspections of garrisons in the limited force zones along the entire line of confrontation in the Sinai. The United States established a sensor system to monitor access to the passes and performed periodic overflights of the disengagement zone. A Joint Commission and Liaison System with representatives from all parties supervised and coordinated implementation of the agreement. Israel maintained control



*Sinai Field Mission Watch Station at Mitla East*



of its station for strategic warning, and Egypt established its own facility nearby. Both countries were permitted to fly reconnaissance missions over territory under their control up to the center of the buffer zone. Although no information was exchanged from these activities, they constitute what might be described as “cooperative NTM” or “self verification,” which can be viewed as a precursor to cooperative monitoring.

The United States established the Sinai Support Mission on November 14, 1975, to implement its role in the agreement. The Sinai Field Mission (SFM) was formed to perform ground-based monitoring. The sensor system to monitor the passes was established with remarkable speed. The U.S. Government contracted with E-Systems Corp. in October 1975, and the system became operational on February 22, 1976. The SFM established four sensor fields and monitored a total of 620 km<sup>2</sup>. In addition, the SFM remotely monitored the Israeli and Egyptian electronic intelligence stations and its own security perimeter. Sensors alerted operators, who characterized the intrusion and reported their findings. Optical and night vision devices supported characterization. Multiple sensor types (including seismic, acoustic, magnetic, strain, infrared, and video) were employed for redundancy and to support characterization of intrusions.

After a period of initial suspicion, the Sinai front stabilized and the monitoring activities became almost routine. The SFM system successfully distinguished between significant and inconsequential events, despite an average of 200 sensor activations per day due to permitted activity and natural disturbances. Between February 22, 1976, and January 25, 1980, only 90 violations were reported to the Joint Commission (67 assessed to Israel, 2 to Egypt, 19 to unidentified aircraft, and 2 to unidentified personnel). All violations were relatively minor and easily resolved by the Joint Commission.

The increased confidence resulting from the UN and U.S. monitoring was a major contributor to the “Camp David Agreement,” which led to the *Egypt-Israel Peace Accord* of March 26, 1979. The *Peace Accord* resulted in a phased Israeli withdrawal from the Sinai, which was completed in April 1982. As the Israelis withdrew eastward and relations improved, there was no further need for intensive monitoring of the passes. The monitoring system for the passes was shut down on January 25, 1980. Total cost of monitoring by the SFM during this period was \$92.7 million.

The SFM supported the Israeli withdrawal process with on-site inspections and low-altitude aerial surveys. It ceased functioning in April 1982. In that month, the Multinational Force and Observers (MFO) was formed to succeed the SFM. The MFO performs peacekeeping and monitoring functions, including on-site inspections in limited force zones and periodic low-altitude aerial surveys. The Israel/Egypt border is currently stable, and the MFO continues to function in the Sinai. The



MFO operates so discretely that many people outside the region are unaware of its operations and scope. This may be the best testament to its effectiveness.



# Sensors in the Sinai

## A Precedent for Regional Cooperative Monitoring

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### The Importance of Regional Security and Arms Control to International Peace

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During the Cold War, regional conflicts sometimes escalated to the point at which they became the basis for superpower intervention and conflict. Typically, however, regional conflicts and the means to control them were merely a sideshow to the superpower confrontation. In a paper written prior to the dissolution of the Soviet Union, Prof. Brian Mandell of Carleton University, Ontario, Canada, wondered why, given the importance of regional security to a stable international system, so little has been done to help resolve regional conflicts.<sup>1</sup>

*Given that certain regional conflicts, if left uncontrolled, could jeopardize international security, how do we explain the lack of attention to regional arms control in general and to the political and technical requirements for regional verifications systems in particular?*

*First, new arrangements for regional security have often been considered only as an after-thought in the wake of a crisis that has directly or indirectly threatened the strategic and economic interests of the great powers. Solutions to such crises have tended to be reactive and ad hoc, involving fact-finding missions and peacekeeping interventions, with little thought given to the requirements for longer-term stability. Second, some regional specialists argue that the prospects for any arms control agreements, and their attendant verification arrangements, in regions of endemic violence are severely circumscribed by the absence of conflict management experience among the parties and the inability of local adversaries to develop even the minimum level of political accommodation so vital for initiating a new security relationship.*

---

<sup>1</sup> Brian S. Mandell, *The Sinai Experience: Lessons in Multimethod Arms Control Verification and Risk Management* (Ottawa: Carleton University, 1988), p. 1.



Since the end of the Cold War, international interest in regional security has increased. Although the Cold War has ended, the world has not become more peaceful. There is concern that without the stability provided by a system dominated by two superpowers, local conflicts over military threats, resources, disputed territory and ethnic antagonisms are more likely than before to escalate. Such conflicts increase the pressure on national leaderships to seek weapons of mass destruction (WMD). The international community has begun to recognize that preventing the proliferation of WMD and fostering a truly peaceful international system depend on achieving regional security.

Over time the United States, the European community, and the former Soviet Union recognized the vital role played by arms control and confidence-building measures in enhancing security. The concept that arms control and increased openness can actually enhance security can be difficult for countries and regions unfamiliar with the process to accept. Mandell cautioned that, even if local parties develop sufficient political will and define the strategic context within which to establish a security relationship, they may still lack the organizational and technical expertise necessary to verify the new agreement. Given these obstacles to implementation, he thought that third parties could play constructive roles in facilitating negotiation of an agreement, design of a verification system, and integration of procedures, personnel, and hardware into a sustainable system. With the end of the Cold War, its former protagonists may be able to apply their arms control experience and tools from that period to prevent the escalation of regional conflicts.

The design and implementation of agreements to counter the destabilizing pressures in regional conflicts can benefit from the use of cooperative monitoring. *Cooperative monitoring* is the collection, analysis, and sharing of information among parties to an agreement. Information collection relies heavily, but not completely, on technologies such as sensors. Technologies used in monitoring systems must be sharable among all parties, and all parties must receive equal access to collected data. Since incorrect or incomplete information may be more damaging to regional relationships than no information, procedures for dealing with anomalous data or false positives must be included in a cooperative monitoring regime. If designed with consideration for local conditions, cooperative monitoring can strengthen existing agreements, build confidence, set the stage for continued progress, and lead to stability.

Cooperative monitoring is the process of collecting, analyzing, and sharing information among parties to an agreement.

Regional discussions and prospective agreements can involve a wide range of issues, ranging from nuclear arms control to environmental protection. In the initial stages of regional security discussions, it is important to identify issues in which progress is possible. Even if, for example, the primary regional arms control concern is nuclear weapons, the first series of discussions may need to focus on less volatile



issues, such as the environment or conventional weaponry. In regions where tensions are high, limiting armaments or ceasing controversial weapons development programs may be possible only after considerable confidence building in other areas.

The purpose of this study is twofold:

- Summarize the origin, strategy, technology, and implementation of a successful regional monitoring system
- Illustrate what is possible and applicable under contemporary circumstances



## Sinai: The Place and the Precedent

The primary color in the Sinai is khaki. Inhospitable and stark, the Sinai Peninsula of Egypt contains moving oceans of sand, hard flat deserts, and sharp granite ridges (Fig. 1). Weather varies from scorching heat to frigid winter nights with dense fog. Triangular in shape, 300 km along the Mediterranean coast, the land tapers to a point 370 km south at the junction of the Gulfs of Aqaba and Suez. One of the great engineering feats of the 19th century, the Suez Canal, lies at its western edge. The

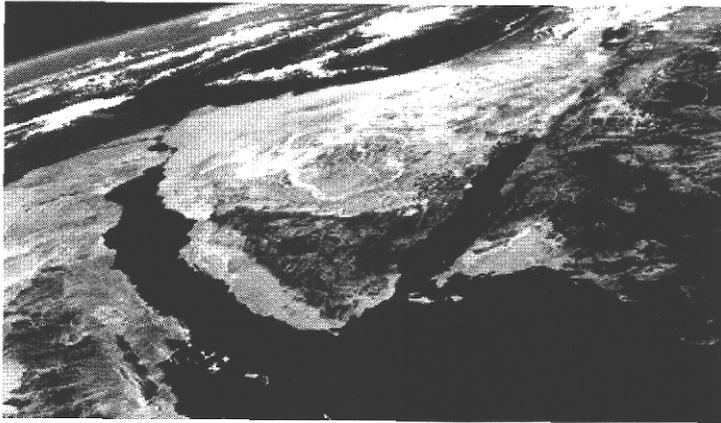


Fig. 1. Sinai Peninsula

much more recent state of Israel lies to the east. Seemingly unimportant, with few residents or natural resources, the Sinai acts as a giant hinge between Africa and Asia Minor (Fig. 2.).

Located between ancient centers of population, the northern Sinai has been a route for nomads, trading caravans, religious pilgrims, and invading or retreating armies since time immemorial. According to the Old Testament, Moses and the Israelites wandered here. Tiny green oases, such as the Monastery of St. Catherine, site of the biblical burning bush, are tucked into the barren landscape. The few roads that exist link oases and follow the natural passages through the mountains. Cutting

through an 800-meter-high ridge line about

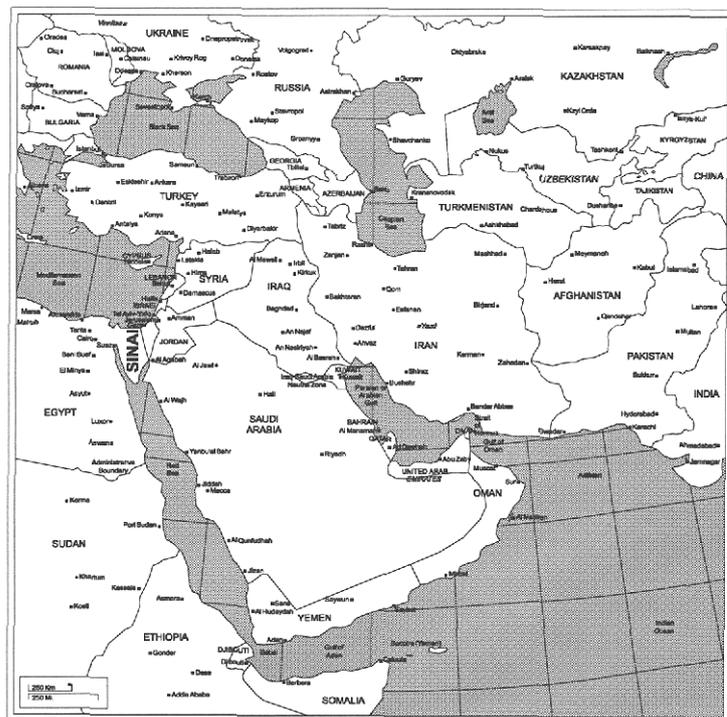


Fig. 2. Sinai, Middle East



*Fig. 3. Mitla Pass, View from West End(Courtesy of E-Systems Corp.)*

30 km from the Suez Canal, the Giddi and Mitla Passes (Fig. 3) have been traditional invasion routes between Asia and North Africa.

Modern warfare has not altered the strategic importance of the passes. Mechanized military units require a steady stream of supplies, illustrated by the supply train for a U.S. mechanized infantry division (Fig. 4) during the 1991 Persian Gulf War. Most of these vehicles are wheeled, which usually confines their effective movement to open areas with solid ground and roads. Consequently, choke-points along lines of movement, such as the passes, become more important than in historic times.

An isolated and historic area like the Sinai seems an improbable place for a politically and technically novel initiative in the pursuit of peace. The Middle East region has experienced nearly constant warfare or political tensions for half a century. But politics and nature sometimes have a knack for irony. The sequence of events from the start of the 1973 Yom Kippur War through the signing of the 1979 Peace Accord between Egypt and Israel offers a particularly interesting and useful precedent for implementing regional peace processes in the post-Cold War era.



*Fig. 4. U.S. Army Supply Train, Persian Gulf War(Courtesy of U.S. Department of Defense.)*

The actions in the Sinai, even though nearly 20 years old, still have relevance to the contemporary peace process in the Middle East and also to efforts to decrease tensions and foster constructive interaction in other regions such as the Indian sub-continent, Latin America, and northeast Asia. The Sinai agreements contained the first application of an integrated monitoring system of hardware and personnel that collected and distributed information to the signatories. Paradoxically, at the time of the implementation of cooperative monitoring in the Sinai in 1975, the United States and the Soviet Union had not entered into similarly comprehensive and intrusive agreements.



## Military Context

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Since the end of the “Six-Day War” of June 1967, Israel had occupied the Sinai as a military zone. On the morning of October 6, 1973, Egyptian military engineers succeeded in crossing the Suez Canal and quickly breaching the sand walls of the so-called “impenetrable” Bar-Lev defense line. Surrounded Israeli garrisons surrendered, and the sparse Israeli reserve tried valiantly to stem the Egyptian tide. The Egyptians, perhaps surprised by their success, did not pursue their initial gains aggressively, and the battle in the Sinai became a huge choreography of offensive and counter-offensive. During the conflict, vital supplies and reinforcements flowed through the Giddi (Fig. 5) and Mitla (Fig. 6) passes to Israeli units in the western Sinai. Some military historians have opined that if Egypt had rapidly exploited its early gains and captured the passes, the entire course of the war would have been different.

The most significant counter-offensive was the Israeli crossing of the canal at Deversoir north of the Egyptian crossing, which enveloped the large Egyptian Third Army and occupied the main Suez highway. Cairo was exposed to attack. Egyptian accounts of the Israeli counter-offensive, not surprisingly, downplay the strategic significance of the

western salient and emphasize its weakness. Egyptian Field Marshal El-Gamasy writes in his memoirs that the salient was contained by both geography and Egyptian forces and hints that it might have become an Israeli Stalingrad if conflict had resumed. He also states that the Egyptian Second and Third Armies west of the canal were securely positioned and sufficiently equipped to continue fighting for some time.<sup>2</sup>

The Soviet Union and the United States jointly requested an urgent meeting of the Security Council. On October 22, the Council, on a proposal submitted jointly by the Soviet Union and the United States, adopted *Resolution 338*, which



Fig. 5. East Entrance to the Giddi Pass (Courtesy E-Systems Corp.)

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<sup>2</sup> Mohamed Abdel El-Gamasy, *Memoirs of Field Marshal El-Gamasy of Egypt* (The American University in Cairo Press, 1989; English ed., 1993), pp. 148-150.



Fig. 6. East Entrance to the Mitla Pass(Courtesy E-Systems Corp.)

called for a cease-fire and a start to implementing *Resolution 242* (adopted after the Six Day War on November 22, 1967). The cease-fire call was confirmed in *Resolution 339* on October 23. The Resolution requested that the Secretary General dispatch UN observers immediately.

The fighting continued however. President Sadat issued direct appeals to the Soviet Union and the United States, requesting that they send troops to enforce the cease-fire. The U.S. Government opposed the request, but the Soviet Union agreed. The two superpowers, now in disagreement after their joint cease-fire initiative, were suddenly on a collision course, with each threatening military action. Some

historians believe it was the most dangerous situation since the Cuban missile crisis of October 1962.

At the request of Egypt, the Security Council was convened again on October 24. The non-aligned members of the Council worked out a plan calling for an increase in the UN Truce Supervisory Organization (UNTSO) in the area and the re-establishment of the UN Emergency Force (UNEF). The cease-fire took effect on October 25. The Yom Kippur War was brought to an end, but it was a chilling illustration of how regional conflicts can escalate to have global repercussions.

The Yom Kippur War traumatized Israel. Although Israel was ultimately victorious on the Egyptian and Syrian fronts, the shock and relatively heavy casualties ripped away Israel's sense of security. In the glow of smashing victory in the 1967 war and 1969-70 "war of attrition," Israel felt it had safe, stable, defensible borders combined with overwhelming military superiority. This feeling bordered on arrogance with their Arab neighbors. There was no inherent reason for the Israeli government to pursue a peace process aggressively, and the peace effort sputtered although it did not die. Nor did Egypt and Syria pursue the peace process aggressively, given their perception of having a weaker bargaining position. The 1973 war actually may have forced Israel to view its regional opponents as forces to be negotiated with seriously. In the long run, this may have been as great a benefit to Israel as repelling the combined Arab offensive. Only after the 1973 war did the regional parties recognize each other in order to establish formal cease-fire and separation-of-forces agreements.



## The First Steps in the Egypt/Israel Peace Process

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The *Six-Point Agreement* for formal cease-fire was signed on November 11, 1973, in a large green tent located at the kilometer 101 marker on the Cairo-Suez road, hence the common name *Kilometer 101 Agreement* (Fig. 7). Figure 8 shows the cease-fire line on the map of Sinai with the Israeli-controlled territory to the right and Egyptian-controlled territory primarily to the left.



Fig. 7. 1973 War Cease-Fire Agreement Signing Ceremony at Kilometer 101  
(Courtesy of United Nations)

Although discussions were limited to military officers negotiating the specific details of the military cease-fire and disengagement, it was the first time in 25 years of belligerency that Arabs and Israelis had engaged in direct discussions. “At last,” said Israeli Defense Minister Moshe Dayan, “we have arranged things by talking like human beings.”<sup>3</sup> The act of meeting directly to negotiate this agreement constituted a first, tentative confidence-building measure (CBM).

As a result of the Six-Point Agreement, the United Nations Emergency Force (UNEF II) returned to the region. It separated the two armies to prevent further entanglement, established checkpoints along the Cairo-Suez highway, and verified the non-military nature of supplies to the encircled Egyptian Third Army. The UNEF commander served as the chairman of the Egyptian-Israeli military disengagement negotiations.

<sup>3</sup> “Settlement on the Suez Road,” *Newsweek*, November 26, 1973, p. 44.

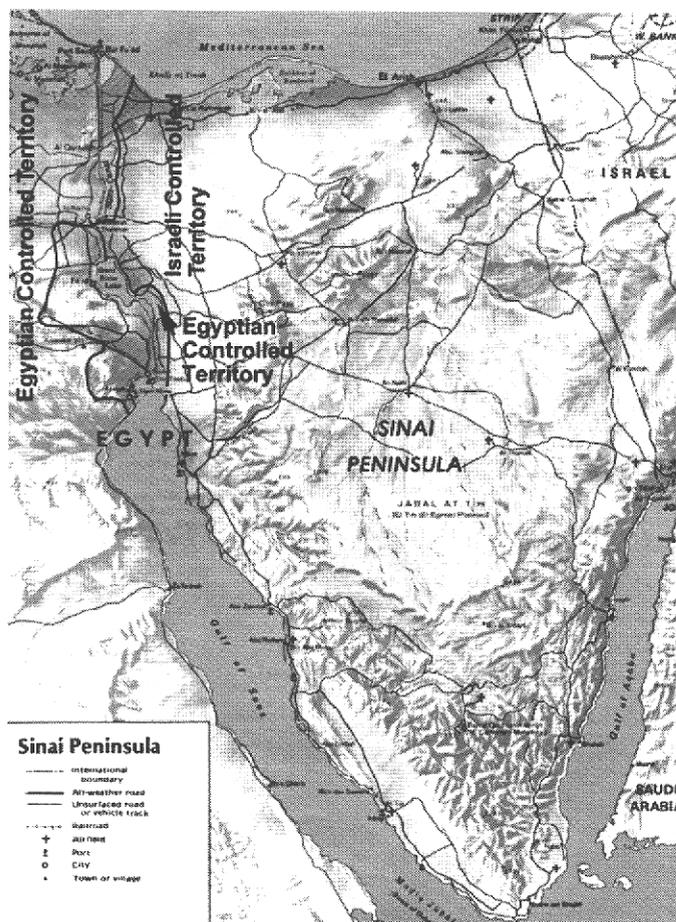


Fig. 8. November 11, 1973 Cease-Fire Line, Sinai

The *Kilometer 101 Agreement* did not offer long-term stability. Supplies had to be continually shipped under UN supervision to the Egyptian Third Army. An unexpected incident could have cut off this flow and risked the restart of the war. Cairo was still exposed to potential attack. Field Marshal El-Gamasy states that in spite of the arrival of the UNEF, “A war of attrition began west of the canal in order to prevent Israeli forces from consolidating their position. We wanted to inflict the greatest damage possible on men and equipment until the time came to attack. A total of 452 incidents occurred between the cease-fire and the signing of the first disengagement agreement between Egypt and Israel.”<sup>4</sup>

Egyptian and Israeli assessments agree that Israel was in a difficult position. The country was forced to sustain a garrison of about 100,000 troops to maintain their western salient. Israeli reservists were unable to demobilize, and the economy slipped to 70% of capacity.<sup>5</sup> In December 1973, U.S. Secretary of State Henry Kissinger persuaded Egyptian President Sadat to relax his demand for a return to the abortive October 22 cease-fire line and to seek a broader Israeli withdrawal of forces as part of a

disengagement agreement. To merely remove Israeli forces from the west bank of the canal would accomplish little in the long term if it did not begin a process of negotiation. The important thing, Kissinger argued, was to produce a more substantial Israeli withdrawal into the Sinai that both sides would perceive as the beginning of an ongoing process. Step-by-step negotiations would allow the participants to see some progress relatively soon rather than to make no progress until some comprehensive region-wide agreement was completed. This iterative process would accustom the parties to the process of negotiation, the rewards of self-restraint, and the utility of selected concessions.<sup>6</sup>

Secretary Kissinger entered into the negotiations with a zeal that is uncommon in international relations. He flew in his official U.S. air-

<sup>4</sup> El-Gamasy, *Memoirs of Field Marshal El-Gamasy of Egypt*, pp. 300-302.

<sup>5</sup> Herbert Krosney, “Shadow of Reality in the Sinai,” *The Nation*, February 9, 1974, pp. 166-168.

<sup>6</sup> Henry Kissinger, *Years of Upheaval* (Boston: Little, Brown, 1982), p. 636.



craft between Tel Aviv and Cairo as often as three times in a day. The press coined the term “shuttle diplomacy” to describe the process. After a week of such intensive negotiations, Kissinger and Egyptian and Israeli representatives reached a preliminary accord. El-Gamasy later wrote, “It is worth noting that the talks held on the military level faltered or stopped at every stage until the problems were solved by U.S. Secretary Kissinger in a practical application of Kissinger’s step-by-step diplomacy.”

The *Sinai Separation of Forces Agreement* (later known as *Sinai I*) was signed on January 18, 1974, by the Chiefs of Staff (David Elazar and Ghani El-Gamasy) of both nations (Fig. 9). *Sinai I* simplified the lines of separation and created a temporarily stable arrangement acceptable to both sides. The Israelis would withdraw to defensive high ground an average of 20 km east of the canal (Fig. 10, line “B”). A thin 6- to 10-km-wide buffer zone was established (Fig. 10, between lines “A” and “B”), and two zones (also 6- to 10-km wide) of limited forces (7,000 troops, 30 tanks, and 72 medium-range artillery) were created behind the lines of separation (the Suez Canal to line “A” and line “B” to line “C”). The buffer zone, which was 165 km long, consisted of desert covered by dunes except for the northern part, which was an inaccessible salt marsh. Finally, Egypt and Israel agreed that disengagement would occur as a process of phased withdrawal in which the parties would gradually establish a new set of guidelines for future military behavior and subsequent negotiations.<sup>7</sup>

Fig. 9. *Sinai I* Agreement Signing Ceremony  
(Courtesy of the United Nations)



<sup>7</sup> William Quandt, *Decade of Decisions* (Berkeley: University of California Press, 1977), pp. 208-209.

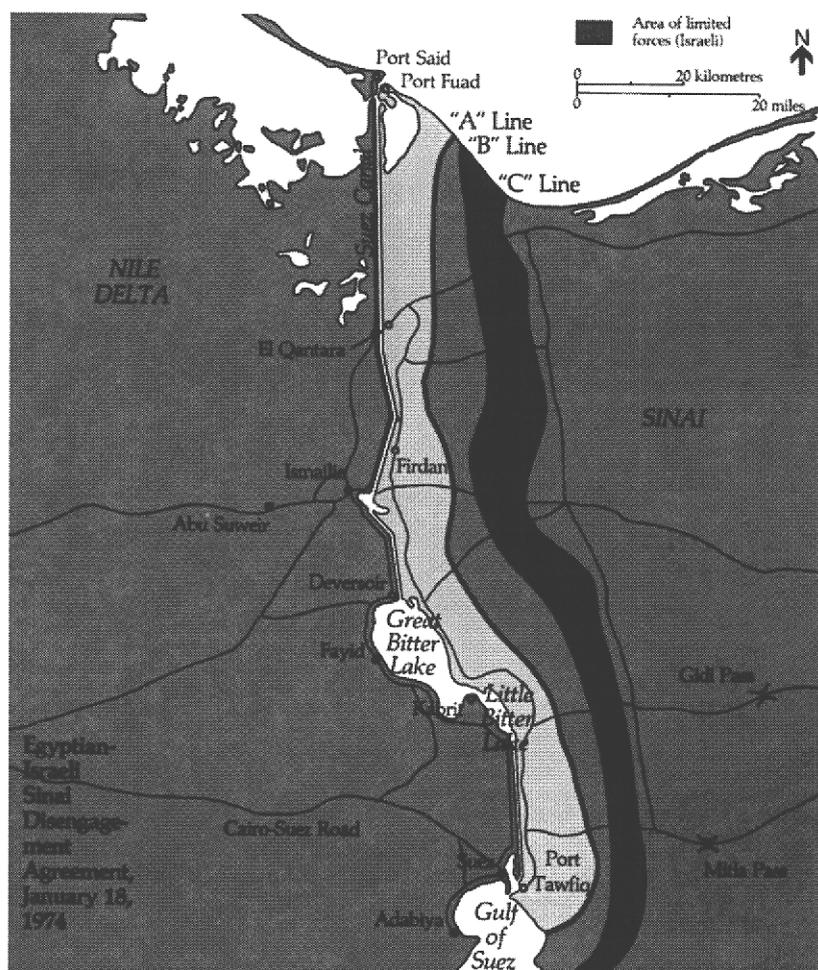


Fig. 10. Disengagement Zones for Sinai I Agreement (Courtesy of the Department of External Affairs of Canada)

The disengagement process began on January 25. The UNEF supervised the Israeli withdrawal across the Suez Canal and deployed inside the buffer zone. The operation proceeded in phases, and the UNEF established temporary buffer zones. During each phase, Israeli forces withdrew from a designated area after turning it over to the UNEF. The UNEF held that area for a few hours before turning it over to the Egyptians. UN military observers were responsible for the survey and for marking of lines of disengagement with the assistance of Egyptian and Israeli army engineers for their respective sides. No type of monitoring technology was used. The operation was carried out smoothly and was complete by March 4, 1974.<sup>8</sup>

The United States and the UN supported the agreement as third parties to Egypt and Israel. The acceptance of third-party support in monitoring the agreement was significant:

although the UN peacekeeping force did not perform technically based monitoring, the U.S. supported the UN with aerial surveillance flights. *Sinai I's* monitoring regime was thus composed of three main elements:

1. National technical means (NTM) of both Egypt and Israel — existing visual and electronic surveillance stations were allowed to operate and periodic reconnaissance overflights were performed up to each country's respective line of control.
2. UNEF on-site inspection, checkpoints, and patrolling units monitored forces and weapons systems in the limited force zones (Fig. 11).

<sup>8</sup> UN Department of Public Information, *The Blue Helmets* (The United Nations Press, 1990), p. 93.



Fig. 11. UN Peacekeeping Force Patrolling Sinai I Agreement Separation Line (Courtesy of the United Nations)

3. Periodic high-altitude overflights performed by the United States in coordination with the UN. The information collected by the United States was selectively shared with the UN and subsequently with Israel and Egypt.

Initially authorized at 7,000 troops, after several countries withdrew their units in late 1974, the UNEF force stabilized at 4,000 troops from states that were non-permanent members of the UN Security Council (Sweden, Indonesia, Ghana, Senegal, and Finland). Egyptian and Israeli officers were attached to the UNEF and participated in the monitoring activities. This new element contributed to the development of confidence between Egypt and Israel. The parties scrupulously adhered to the *Sinai I Agreement*.

Obtaining popular support for the *Sinai I Agreement* was not easy. Defense Minister Moshe Dayan had proposed a symbolic and voluntary Israeli withdrawal to a line in front of the Giddi and Mitla Passes in 1970 and again about 6 months before the Yom Kippur War.<sup>9</sup> The idea was not seriously considered either within or outside the government. Indeed, the *Sinai I Agreement*, which was similar and returned less than 10% of the Sinai to Egypt, was treated in Israel with caution, skepticism, and occasional outright opposition. Israel's past experience in agreements with Egypt had been disappointing. In 1970, after the "war of attrition," Egypt, contrary to the cease-fire agreement, advanced

<sup>9</sup> Krosney, *The Nation*, February 9, 1974.



its antiaircraft missile defenses up to the Suez Canal.

The Israeli government responded better to the aftermath of the 1973 war than did its citizenry. Prime Minister Golda Meir recognized the need for a formal peace process but cautioned, "One must not expect that we will sit down after lunch and sign a peace agreement. There must be a rather long period."<sup>10</sup> The hesitation expressed by a large portion of the Israeli public in 1974 seems difficult to understand based on the military situation alone. The following quotes reflect the tense feeling at the time and dramatize how far the Middle East has come since 1974.<sup>11</sup>

*There just won't be peace. It's our destiny to fight with the Arabs, so each hill is really important. They want to destroy us. Maybe it will take them years to change their goal, although if I were in their shoes I don't see why I would change it. And so we will fight back, and we can do it, and we'll do it very well.*

Ph.D. Candidate in Chemistry and military reservist,  
December 1973

*It's a question of imagination. The Arabs have by far a more active imagination than we do. We cannot imagine living in the Middle East without Arabs and without coming to terms with them. They can very easily imagine living in a Middle East without Jews, and Israel eliminated from the map.*

Israeli kibbutznik, late 1972

*The Arabs? They'll always hate us. They just will never recognize us. They'll never sit with us and we're never going to have peace here.*

Political Secretary to the Prime Minister, 1969

As Kissinger hoped, *Sinai I* began a psychological process whereby trust between the two countries began to develop, a dialog commenced, and a probationary period began. Each side could determine whether or not the other was meeting its commitment to the agreement.

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<sup>10</sup> *Newsweek*, November 26, 1973, p. 44.

<sup>11</sup> Krosney, *The Nation*, February 9, 1974.



## The Breakthrough of the Sinai II Agreement

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William Quandt described Kissinger's technique for arranging limited agreements between Israel and the Arab states as well developed by late 1974.<sup>12</sup> By eliciting proposals from each side, obtaining preliminary reactions, and identifying obstacles, Kissinger would start a diplomatic process that was intended to bridge the substantive gaps between the Israeli and Arab positions. This process included a heavy dose of reason and persuasion, as Kissinger explained the dire international consequences of failure to reach an agreement. It also involved marshaling forces that might influence the parties, such as other Arab countries and the U.S. Congress. Then Kissinger would commit his own prestige to bringing about an agreement, shuttling back and forth between the two sides. At this last stage, Kissinger was likely to involve the U.S. President if additional pressure on Israel or commitments on future aid were needed.

By late 1974, Kissinger had obtained a fairly good idea of the Egyptian and Israeli objectives in a potential second step in disengagement. Egypt wanted Israel to withdraw east of the strategic Giddi and Mitla Passes and to relinquish control over the Abu Rudeis and Ras Sudr oil fields (which by then were supplying Israel with about 50% of its total oil requirements). President Sadat wanted this step to be treated as another military disengagement, with only minimal political overtones. He felt at the time that he could not afford to be perceived as having withdrawn from the Arab conflict with Israel by entering a bilateral peace agreement with Israel.

Israel's objectives were quite different. Israel hoped to split Egypt from Syria politically and thus reduce the prospects of a combined Arab offensive such as had occurred in October 1973. To do so would require Egypt to make substantial political concessions as the price of further Israeli withdrawals. Israel would demand that Egypt renounce the state of belligerency and that the new agreement be of long duration. Furthermore, Israeli withdrawal would not include the passes or the oil fields.

During November and December 1974, Kissinger was able to clarify each side's position. He was convinced that Sadat would settle for nothing less than Israeli withdrawal from the Giddi and Mitla passes and the oil fields. Nor would he formally renounce the state of belligerency. Kissinger urged the Israelis to concentrate on the "functional equivalents" of nonbelligerency such as the Arab economic boycott.

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<sup>12</sup> William Quandt, *Peace Process: American Diplomacy and the Arab-Israeli Conflict Since 1967* (Berkeley: University of California Press and the Brookings Institution, 1993), pp. 229-243.



Despite Syrian and Soviet objections, Kissinger pressed forward. On December 3, 1974, Prime Minister Rabin openly stated in an interview with the newspaper *Haaretz* that Israel's goal was to separate Egypt politically from Syria and delay negotiations until after the 1976 U.S. elections. Rabin further said that if Israel could withstand international pressures for concessions motivated by the oil crisis for a few years, it would be in a stronger negotiating position. Israeli Foreign Minister Allon and the United States exchanged position papers, but these were not viewed as the true Israeli bargaining position.

Then something unexpected happened. Egypt-Soviet relations, rocky for some time, hit a new low when the planned visit by Party Secretary Brezhnev to Cairo was canceled. Sadat needed to demonstrate that his turn toward the United States had not been a mistake. Without Soviet arms, he would not easily be able to make war, but with American support he might recover his territory anyway and focus on economic development. Israel recognized that the environment had changed but made no new initiatives. On February 18, 1975, the Shah of Iran said Iran would be willing to provide Israel with oil if it gave up the Sinai oil fields.

In March 1975, Kissinger decided to make another attempt at shuttle diplomacy to complete the negotiations. Before his departure, Sadat publicly endorsed Kissinger's efforts. Israel seemed to be softening somewhat in its demands. Israel sought a separate agreement with Egypt that would not depend on agreements with other Arab states. The agreement would have to be a step toward peace in some practical aspects, such as free passage of Israeli cargoes through the Suez Canal. Egypt would have to agree to end the use of force through a "renunciation of belligerency." An understanding would have to be reached on the relationship between an interim agreement in the Sinai and what might ultimately happen in a future comprehensive peace agreement.

Israeli insistence on the formal renunciation of belligerency ultimately doomed the trip to failure. Sadat could not accept this for political reasons although he would consider a formula based on the "nonuse of force." Rabin was adamant that Israel would not withdraw from the passes for anything less than nonbelligerency. Complicating the problem was the Israeli insistence of retaining, in any agreement, the electronic signal intelligence station at the west end of the Giddi Pass. Sadat would not agree to Israel's retaining the station, even if it was formally placed in a UN buffer zone. Furthermore, Sadat would only renew the UNEF mandate for one year. President Ford announced there would be a reassessment of U.S. policy toward the Middle East.

Sadat again provided a stimulus to the process by unexpectedly announcing that the Suez Canal, which had been under repair since the Israeli withdrawal, would be reopened on June 5, 1975. In addition, he would agree to the mandate for the UNEF being extended. Ford and



Sadat met for the first time, in Salzburg, Austria, on June 1 and 2, 1975. Sadat was still opposed to the idea of Israel retaining the Giddi station but did say he might accept an American presence there.<sup>13</sup> The idea of an American military contingent in the buffer zone had been raised earlier in the spring, but Kissinger had not been supportive. The more modest concept of an American civilian presence, however, soon began to emerge as the solution to one of the problems in the negotiations.

By the time Prime Minister Rabin arrived in Washington for talks on June 11 and 12, the Ford Administration had decided to continue with the step-by-step approach rather than initiate a general and comprehensive peace conference in Geneva headed by the United States and the Soviet Union. Ford and Kissinger believed that further progress would have to be demonstrated in the Middle East and that could best be done through U.S. mediation to help Egypt and Israel reach an agreement. Ford said that “the overall settlement can be pursued in a systematic and deliberate way and does not require the U.S. to put forward an overall proposal of its own in such circumstances.”<sup>14</sup> Rabin’s rebuff of American pressure in March had consolidated his political support and he could negotiate with more confidence. Rabin was anxious to end the costly confrontation with the United States but, surprisingly, could not win cabinet authorization to make further concessions.

During the next six weeks, Kissinger remained in Washington while Israeli and Egyptian positions were refined and transmitted through his office to the other side. Sometime in the last half of June, the Israeli government apparently decided it would be impossible to obtain further political concessions from Sadat and undesirable to resist U.S. preferences indefinitely. Israel would agree to withdraw to the eastern slopes of the passes but would maintain control of higher ground above the passes. At the urging of Defense Minister Peres, Israel also sought to make the buffer zone between the sides into a genuine barrier to military surprise attack by stationing American civilians there to operate early warning stations. The Americans also could serve as a cover for continued Israeli use of the Giddi Pass intelligence facility. If Sadat objected, Israel would not be adverse to a similar Egyptian station being built in the area.

Sadat wanted an agreement. He indicated agreement to three annual renewals of the UNEF mandate and to continued use of the Israeli station on the condition that Egypt was provided with one facing Israeli lines. He pledged to ease the boycott of some companies dealing with Israel

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<sup>13</sup> Gerald Ford, *A Time to Heal: The Autobiography of Gerald Ford* (Harper and Row, 1979), pp. 290-291.

<sup>14</sup> Letter from Gerald Ford to Rabin, September 1, 1975, referring to their meeting of June 12, 1975. Reproduced in Michael Widlanski, ed., *Can Israel Survive a Palestinian State?* (Jerusalem: Institute for Advanced Strategic and Political Studies, 1990), pp. 120-121.



and to tone down anti-Israel propaganda. Finally, he was willing to have most of the terms of the agreement published.

Kissinger left for Israel on August 20. Only the exact location of the Israeli line, the levels of U.S. aid, and the technical aspects of the American civilian presence in the passes remained to be negotiated. Right-wing Israeli opposition parties greeted Kissinger with great hostility. Kissinger had misgivings about the American presence in the Sinai, but it was now an essential part of the Israeli package. Sadat also was willing to accept this condition. By late August, Israel finally agreed to give Kissinger a map of the lines of withdrawal for Sadat's consideration. Only at the last minute did Israel agree to complete military withdrawal from the Giddi Pass. Very detailed discussions on force limits and on the American presence also were required. In a non-stop session in Jerusalem lasting from 9:30 p.m. on August 31 to 6:00 a.m. the next day, the United States and Israel worked out the details of their bilateral military relationship, assurances on Israel's oil supply, and an understanding on the need for consultations in the event of Soviet military intervention in the Middle East. The U.S. provided \$13 million for the construction and outfitting of the new Egyptian station. Later that afternoon, both Egypt and Israel initialed the text of the agreement. The *Sinai Interim Agreement (Sinai II)* was formally signed in Geneva on September 4, 1975 (Fig. 12). The text of the agreement is contained in the Appendix of this document.



Fig. 12. *Sinai II Agreement Signing Ceremony (Courtesy of United Nations)*



## Monitoring and Verification in the Sinai

The detailed bargaining about monitoring procedures and geographic positions that occurred during the Sinai negotiations may seem petty to outsiders but has a serious basis. All the countries involved are adverse to risk. The perception of national risk becomes intertwined with domestic politics. The acceptance of risk defines what is politically possible and thus physically acceptable in a monitoring regime.

The area of confrontation in the Middle East is quite small in European or American terms. Figure 13 shows a map of Israel overlaid on the Washington, D.C. area. The linear distance between Tel Aviv, Israel, and Damascus, Syria, is approximately equal to that between Washington D.C. and Philadelphia, Pennsylvania. Israel's narrow mid-country neck between the Mediterranean and the West Bank is only 13 km wide. Although Israel acutely feels the lack of strategic depth, the other countries in the conflict perceive themselves at risk as well. Israel also faces a great asymmetry in population and military resources with its neighbors. The regional dilemma can be described as a "chain of escalation," illustrated in Figure 14.

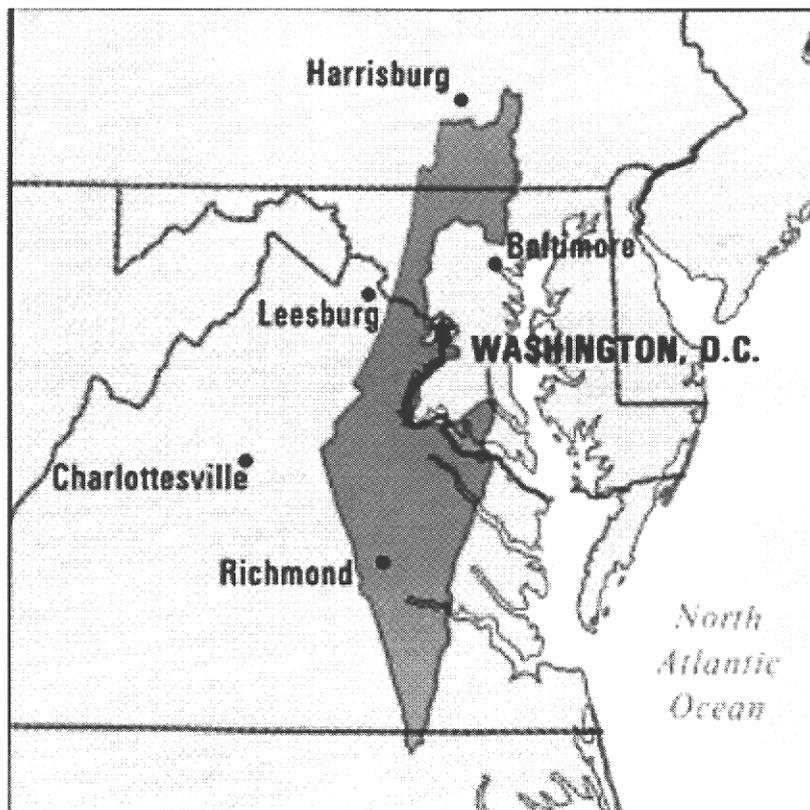


Fig. 13. Comparison of Relative Distances in Israel and the Washington, D.C. Area

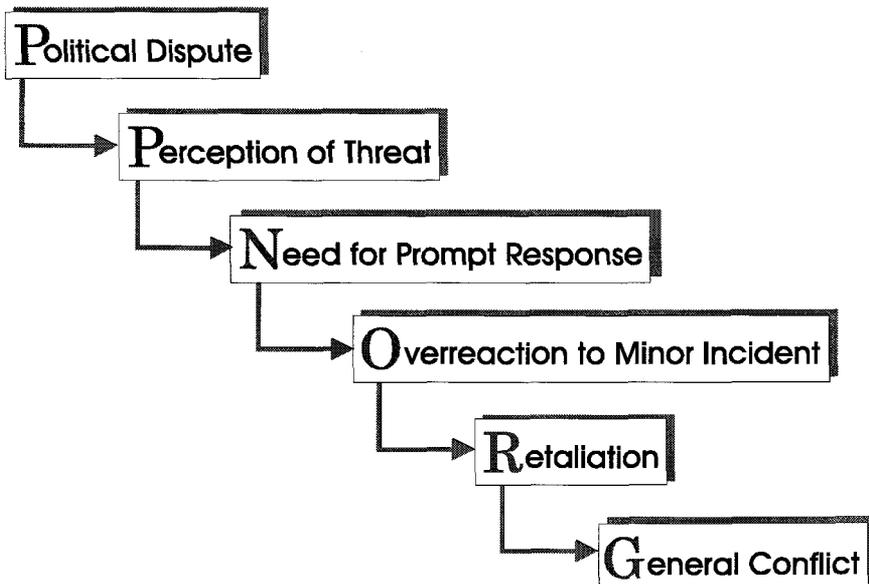


Fig. 14. Chain of Escalation

Defense Minister Shimon Peres emphasized Israel's concern over losing strategic depth in a statement in March 1975:<sup>15</sup>

*It is a question not just of the Passes but of our military (intelli-gence) installations that have no offensive purpose and are necessary. The previous Government could not overcome the psychological blow that the Syrians and the Egyptians launched a surprise attack. We need twelve hours of warning. Under the proposed agreement we'd have only six.*

Peres' "early warning system" became one part of the cooperative system of monitoring in the Sinai. The parties used the term to describe the ground-based technical information collection system at the Giddi and Mitla Passes. The system was part of a larger verification regime. ("Verification" is both the process and means by which parties to an agreement are able to ascertain, with confidence, that the other party (or parties) are abiding by the terms of the agreement.<sup>16</sup>) Sensors and people collect information by monitoring; only national authorities verify.

<sup>15</sup> Nadar Safran, *Israel: The Embattled Ally* (Cambridge, Massachusetts: Harvard University Press, 1978), p. 546.

<sup>16</sup> Richard Scribner, *The Verification Challenge* (Boston: Birkhauser, 1985), p. 24.



The classic purposes of verification are *detection*, *deterrence*, and *confidence building*. These results of verification are interdependent and cumulative. “. . . one’s ability to detect improves with the ability to deter and the ability to do both — that is both detect and deter — is what actually produces confidence.”<sup>17</sup> Within the context of the “chain of escalation” dynamic described earlier, monitoring — particularly cooperative monitoring — provides both time to assess and an alternative path if an incident occurs (Fig. 15).

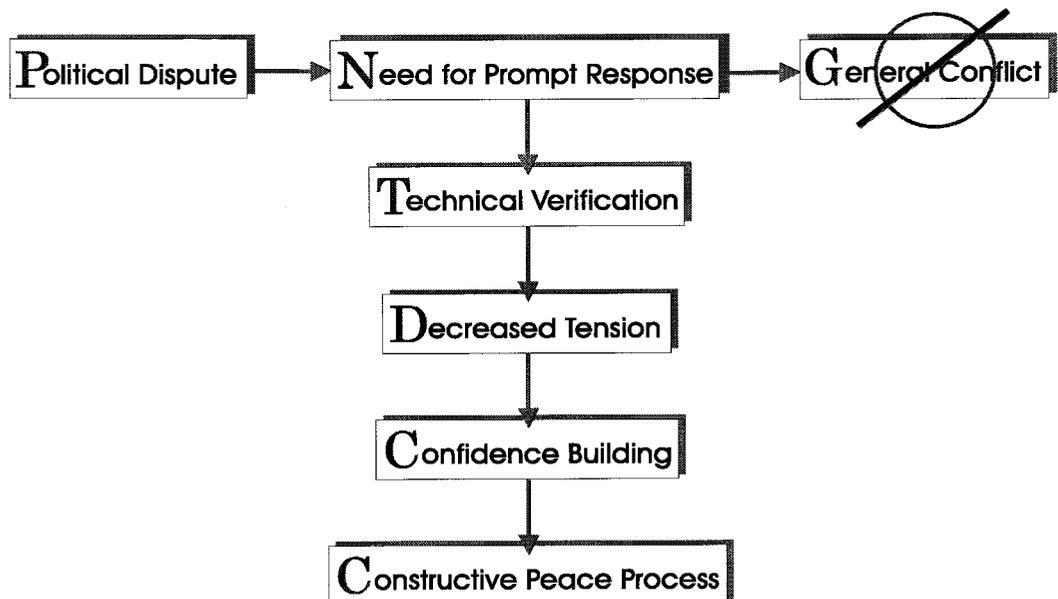


Fig. 15. *Breaking the Chain of Escalation*

<sup>17</sup> Richard Darilek, “Political Aspects of Verification: Arms Control in Europe” in *A Proxy For Trust: Views On The Verification Issue in Arms Control and Disarmament Negotiations* (Ottawa: Carleton International Proceedings, Carleton University, 1985), p . 65.



## UN and U.S. Roles in Monitoring

Unlike the January 1974 *Sinai I* accord, *Sinai II* was received more with relief than enthusiasm by the parties to the negotiations. Many people in both Israel and the Arab world were violently opposed to the agreement, although for entirely different reasons. The agreement itself was modeled, in part, on previous disengagement agreements. Egypt and Israel committed themselves to resolve the conflict between them by peaceful means and not to resort to the threat or the use of force against each other. The lines for each side's military deployment were designated on a map (Fig. 16). The Egyptian limited force zone expanded to an average of 30 km from the canal. The Israeli line was established just east of the passes. The front line of the new buffer zone was twice as long as in *Sinai I* and was four times larger in area. The oil fields at Abu

Rudeis were included as a separate zone. Egypt agreed to allow non-military cargo bound for or originating from Israel to pass through the Suez Canal. The agreement was to remain in force until superseded by a new agreement.

A detailed annex dealt with military deployments and aerial surveillance. At Sadat's insistence, the forces in the limited force zones were slightly larger than under *Sinai I*: up to 8,000 men with 75 tanks and 72 short-range artillery pieces. Neither party was permitted to locate any weapons in areas from which they could reach across the buffer zone to the other side's lines.

The UNEF would continue its previous function and increased in size slightly to 4,200 plus 124 UNTSO observers. Four helicopters and three light aircraft were added. The UNEF marked the lines on the ground with numbered, weighted oil drums painted white. The markers were placed so that the next in line was visible from the preceding marker.

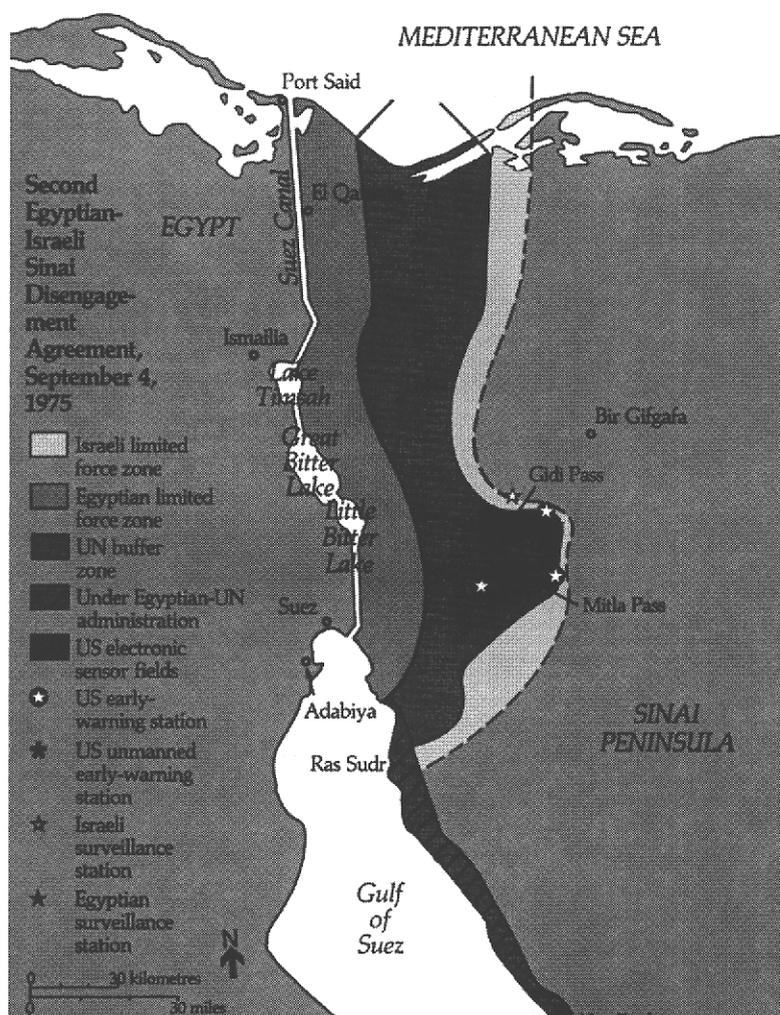


Fig. 16. *Sinai II* Disengagement Zones

UNEF personnel also supported the construction of the Egyptian early warning station. Peacekeepers escorted civilian Egyptian construction



workers and technicians and guarded the site until the Israeli evacuation took place. They provided similar support to the construction of the American station. A Swedish officer noted the odd situation in a report, describing the situation as “Swedish soldiers guarding an Egyptian working site within Israeli occupied territory waiting for American technicians.”<sup>18</sup>

The arrangements for the deployment of the U.S. tactical early warning stations and supervision of the Egyptian and Israeli strategic early warning stations also were defined in detail. Israel’s willingness to implement the terms of the agreement was contingent on U.S. Congressional approval of the U.S. role in the Sinai.

The United States was to perform three verification missions:

- Tactical monitoring of the access to the Mitla and Giddi Passes in the *Sinai II* buffer zone
- Monitoring of the operations of the Egyptian and Israeli surveillance stations
- Aerial reconnaissance over the areas covered by the *Sinai II* Agreement every 7 to 10 days

U.S. participation provided the necessary confidence for Egypt and Israel to sign. Each hoped the series of interlocking monitoring measures would provide a level of confidence commensurate with their security requirements. Both parties believed the *Sinai II* agreement was structured so that neither side would be better off, or at least not worse off, by adhering to its terms.<sup>19</sup>

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<sup>18</sup> Bertil Stjernfelt, *The Sinai Peace Front: UN Peacekeeping Operations in the Middle East, 1973-1980* (St. Martin’s Press, New York, 1992), pp. 102-113.

<sup>19</sup> Brian Mandell, *The Sinai Experience: Lessons in Multimethod Arms Control and Risk Management* (Ottawa, Canada: Department of External Affairs, 1989), p. 8.



## **Creation of the Sinai Support Mission**

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Time was short. A system needed to be operating by February 22, 1976, the date on which the phased turnover of Israeli-occupied Sinai territory to the UN was to be completed. The initial troop deployments would begin on October 4, 1975. On September 1, after the agreement was initialed in Jerusalem, President Ford sent a letter to Congress requesting approval and authorization for the U.S. support role. Saigon had fallen the previous May and the congressional mood toward any commitment that might lead toward potential U.S. military involvement was very cautious. While Congress deliberated, Kissinger, now Assistant to the President for National Security Affairs, issued a memorandum proposing the organization of the projected support mission. After interagency review, President Ford signed National Security Decision Memorandum 313 for "Establishment of the U.S. Sinai Support Mission."

The Sinai Support Mission (SSM) was headed by a Director reporting to the President through the National Security Council and advised by a Sinai Interagency Board.

The Director had a staff of 14 U.S. government employees in Washington who were detailed from the State Department and the Agency for International Development. This staff provided the technical expertise and staff support. Additional engineering and program support services were provided by MITRE Corporation under contract. Various administrative support services were furnished by the Agency for International Development under an inter-agency agreement.

In the meantime, Congress had somewhat reluctantly approved the mission subject to a report to Congress every six months. In addition, there was the requirement that no active Department of Defense (DoD) or intelligence personnel participate in the operation of the system. Given the shortness of time, however, they could support the establishment of the system. Retired military or intelligence personnel could be employed by the SSM in the field provided they had retired before October 13, 1975.

Contracting for services to meet governmental needs is a long-standing U.S. Government policy. There were compelling reasons for the SSM to do so. Given the Congressional directive not to involve the DoD or intelligence community, no other agency had the necessary resources and expertise. A private contractor would be better able to meet a short deadline. Secretary Kissinger's own caution about the project and the Congressional concern about military involvement also supported the strategy of minimizing direct participation by U.S. Government employees. A plan for an expedited procurement process (about 6 weeks) was developed. The decision had already been made to take monitoring equipment from U.S. Government inventory.



In the meantime, a site survey team was sent to the Sinai on December 3. The team was to define the technical and logistical requirements for the early warning system. It was also to determine the exact locations for the base camp, watch stations, and four sensor fields. The team spent only three days surveying the passes. Key issues of logistics, transportation access, communication, and water supply were worked out with the Israelis and Egyptians. The Egyptians accepted the survey team's site choices for the base camp, watch stations, and sensor fields. Israel asked that the sensor fields on the western approaches be moved farther west along the intersection with the main north-south road. This was posed as reciprocity for the placement of the new Egyptian station. This request was rejected based on the text of the signed agreement and the U.S. intent to operate the system only for tactical early warning.



## Establishment of the Sinai Field Mission

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A notice of intent to contract was published in *Commerce Business Daily* on December 5, 1975. The Sinai Support Mission notice asked for a response by interested firms by December 15, and outlined the project as follows:<sup>20</sup>

*The contractor will be required, with U.S. Government coordination and guidance, to install, operate and maintain the intrusion detection systems and watch stations in the Giddi and Mitla Passes. The contractor will be required to provide the necessary manpower and logistic support for the installation of the necessary facilities - including housing for as many as 150 persons - and to assure that the continuing mission functions are performed at all times.*

Forty-six firms expressed an interest in the contract. Six proposals were received by January 5. Three finalists were selected for the final review process: BDM corporation, E-Systems Inc., and Kentron Hawaii Ltd. The selection committee recommended on January 13 that the contract go to E-Systems Inc., an international electronics and air-craft systems development and production company from Dallas, Texas. A letter contract was signed on January 16, 1976. The total estimated cost from January through September 1976 was \$16.0 million (1976 dollars).

The SSM established the Sinai Field Mission (SFM) to be the organization responsible for operating the tactical early-warning system and supporting functions. The SFM was not intended to be linked with the aerial monitoring performed by Israel, Egypt, and the United States under *Sinai II*. The organization consisted of E-Systems contractor personnel along with a small cadre of State Department Foreign Service Officers. Subcontractors to E-Systems would participate during the construction phase. The SFM was headed by a State Department manager acting as director.

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<sup>20</sup> Department of State Publication, *Watch in the Sinai*, #9131, General Foreign Policy Series 321(Washington, D.C., June 1980).



## Building the Monitoring System

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On January 20, 1976, 10 U.S. Government and 21 E-Systems contractors arrived in Tel Aviv. The first of seven Boeing 747 cargo planes arrived the next day. Work began at the site on January 23. From that day on there was a continual frenzy of construction activity. The effort can only be compared to some of the World War II beach landings, albeit on a smaller and more peaceful scale. The weather was cold but unfortunately not cold enough to kill the ever-present and very annoying flies. Constant winds raised soil from the broken ground into choking clouds, which made equipment maintenance difficult. The SFM builders followed Israeli military engineers as they cleared landmines from the areas near the passes. The four primary sensor fields were installed in the remarkably short period of four days. By February 9, more than a hundred Americans were working on-site. Back in the United States, 30 E-Systems technicians began a course in sensor operation.

The SFM achieved full operational surveillance capability at 5:00 p.m. local time on February 19, 1976. This was 28 days from the start of construction and 3 days ahead of schedule. By this time, about 1 million pounds of equipment and supplies had been shipped to the Middle East. The SFM officially began operations on February 22. The SFM Director inspected the Egyptian and Israeli surveillance stations to establish that they were in compliance with the agreement. Several weapons at the Israeli station were in violation and removed before a follow-up inspection three days later.

Bureaucratic and personal obstacles sometimes impeded work and were a factor throughout operation of the SFM. A key shipment of supplies arriving by a British ship ran afoul of the Arab boycott against Israel when its port was changed for logistic reasons from Egypt to Israel. The Arab Boycott Office gave *de facto* permission for a variance, and the SFM convinced the shipping company that the risk of retaliation was slight.

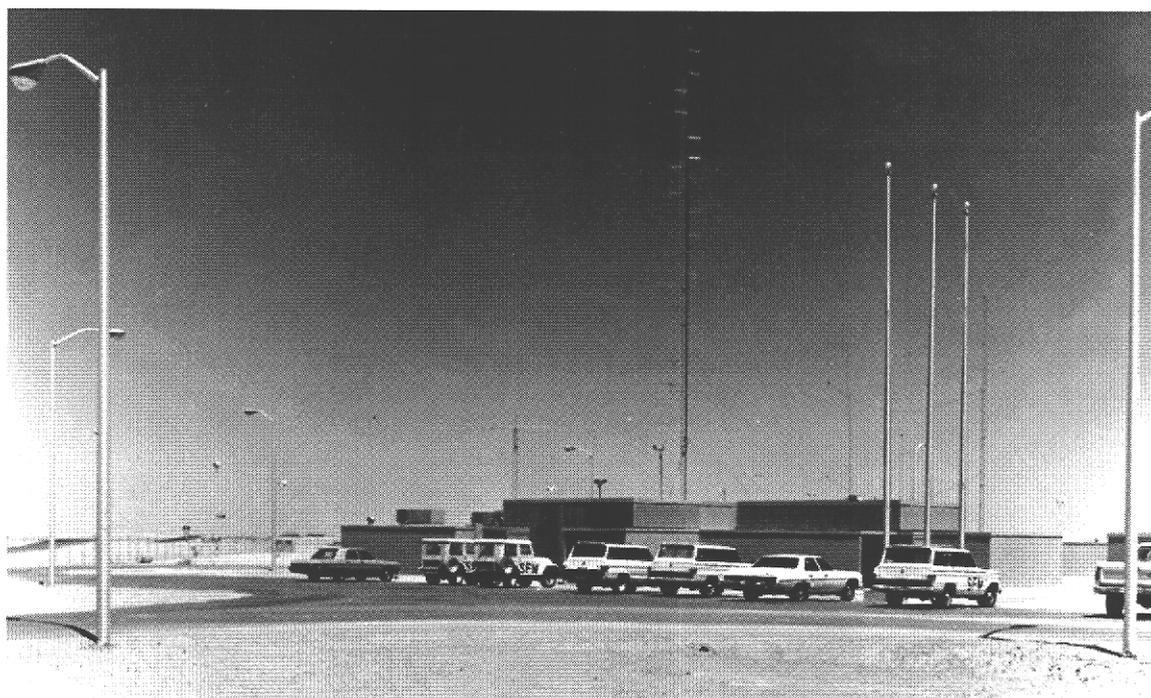
Cooperation at the working level with both the Egyptians and Israelis was often difficult. SFM members had to prove that everything they did or proposed was not harmful. The Israelis were the most risk-adverse but not by much. As previously described, there was a strong legacy of distrust, and the *Sinai II* agreement was not universally supported. It had been approved only at the top levels of government, and lower-level officials on both sides were slow to adapt. For example, the SFM initially used high-frequency radio, but soon switched to very high frequency for technical reasons. Given the terrain, radio repeaters are required for reliable communications. There was much difficulty in obtaining permission from both sides to mount relays on existing facilities that were intended to transmit SFM reports back to the host country.



The credibility of the SFM depended on scrupulously fair and even-handed performance. The principle of “symmetry” underlay all SSM policies, procedures, and interactions with the Egyptians and Israelis. It extended beyond the system operation to local procurement of supplies and services and even to rest locations for SFM personnel in both countries.

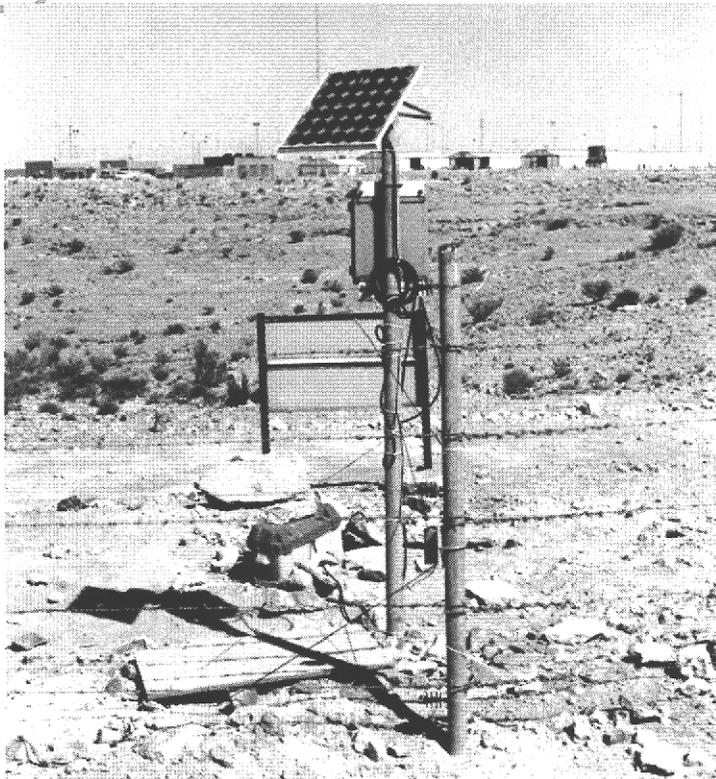
Work continued to build permanent facilities after the system became operational on February 22. Prefabricated buildings were assembled on-site. American visitors would comment that the base camp had a familiar look about it (Fig. 17). The buildings had originally been designed and fabricated to be a Holiday Inn in Florida. When its financing was canceled, the Zachary Company, the construction sub-contractor to E-Systems, bought the building and shipped it to the Sinai. All the “municipal” systems and services of a small town were created. Water was provided by a 4-inch diameter pipe from the town of El Arish in the Israeli sector. Living quarters consisted of two air-conditioned complexes with 4- to 6-person and 1- to 2-person units.

The entire 13-acre facility was surrounded by a sensor-monitored security perimeter (Fig. 18). The perimeter was monitored at a central monitoring station in the headquarters building (Fig. 19). Physical security was also provided by the Ghanaian battalion of the UNEF. All



*Fig. 17. Sinai Field Mission Base Camp (Courtesy of E-Systems Corp.)*

major facilities were completed and operating by July 1, 1976. The total



*Fig. 18. Sensor-Monitored Perimeter Fence at SFM Base Camp  
(Courtesy of E-Systems Corp.)*

startup cost incurred by the U.S. Government in establishing the permanent facilities was \$21 million.

Only three entrances to the passes had watch stations. The west end of the Giddi pass was monitored by remote means only. Remote monitoring of the west Giddi field was not intentional and resulted from the speed with which the SFM was established. The original October 1975 site plan called for the base camp to serve a double function as watch station for the west entrance to reduce costs.

Modifications were made to the plan during construction. The planned location of the SFM base camp had been marked by rocks during the three-day site survey. The rocks could not be found when construction began in January 1976.



*Fig. 19. SFM Base Camp Perimeter Security Monitoring Station  
(Courtesy of E-Systems Corp.)*



Since speed was critical and the original area for the base camp was generally unsuited for construction, the base camp was moved to a new location farther east without a line of sight to the west entrance. The pace of construction and lack of supplies prevented a fourth watch station from being constructed. It had to be operated remotely with patrols investigating intrusions until a TV camera was installed in 1977.

Both the Mitla and the Giddi Passes are quite rugged terrain: the canyon sides can drop 800 to 1000 feet and are only 400 feet wide in some places. The terrain blocked the direct transmission of the radio signals from Giddi West to the base camp. The sensor and video output was transmitted by microwave to Giddi East and then to the base camp.

As operations stabilized and became routine, the base camp became an incongruous slice of Americana recreated in the Egyptian desert. Fluorescent lights, paper towels, ping pong tables, Rice Krispies, electric typewriters, and Washington, D.C. telephone books normally struck visitors as out of place in a desolate wasteland. A “community center” contained a number of social services: kitchen and dining hall, medical dispensary, a theater for movies, meetings or religious services, a recreation room, a library, laundry, small store, and barber shop. There was even a bartender. Off-duty recreational options were completed by a softball field and a combined tennis/basketball/volleyball court. UN troops, housed in not nearly so comfortable facilities, referred to the SFM base camp as the “Sinai Hilton.”<sup>21</sup>

The motivation for members of the U.S. contractor team was a mixture of money, adventure, and idealism, probably in that order. E-Systems received a total of 6,000 applications for the initial 150 jobs at the SFM. Employees signed 18-month contracts, and many extended after its conclusion. State Department Foreign Service officers had a 12-month tour. Minimum salary for technicians was \$17,000 annually, and as one commented, “I don’t have to spend a dime if I don’t want to.” Food was free, as were bright orange work pants and jackets. Technicians had one week of leave after working four. E-Systems maintained hotel rooms at company cost in Cairo and Tel Aviv for recreation. Identification passes allowed employees to move freely within Egypt and Israel.<sup>22</sup>

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<sup>21</sup> Thomas Lippman, “U.S. Sinai Vigil Continues, Despite Sadat Gambit,” *The Washington Post*, December 7, 1977, p. A22.

<sup>22</sup> Edward Kolcum, “New Sensors Evaluated in Sinai Buffer,” *Aviation Week & Space Technology*, August 23, 1976, pp. 40-42.



## Monitoring Technologies Used

The SFM established four sensor fields (labeled **Giddi East**, **Giddi West**, **Mitla East**, and **Mitla West** in Figure 20) with supporting watch stations to monitor the pass entrances.<sup>23</sup> These fields were installed in only four days. A limited number of sensors were installed on the approaches to Egyptian (point E1) and Israeli (point J1) early warning stations, some minor north-south roads connecting the passes, and at a former Israeli tank maintenance park. In addition, the SFM monitored its own security perimeter. A concrete underground air raid shelter with sensors to detect intrusion was later added for the SFM staff. The speed of construction required some subsequent corrections. The locations of the original sensors were not clearly mapped; consequently, when maintenance was required, they were difficult to find. The fields were remapped but a few sensors were lost. The scheme for placement followed that recommended by U.S. Army field manuals.

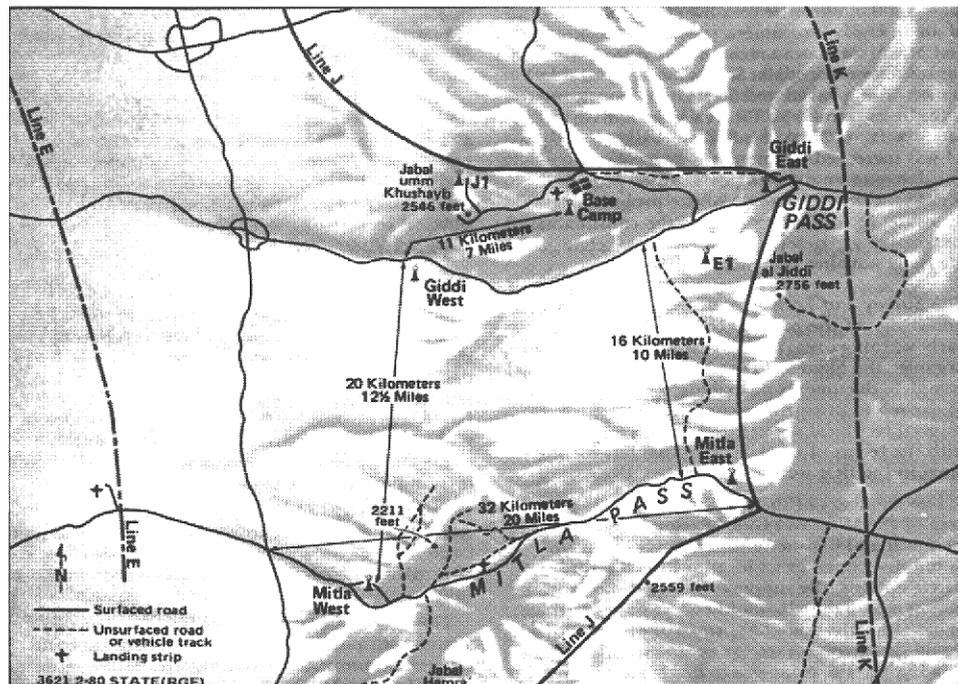


Fig. 20. Location of the SFM Monitoring Facilities in the Sinai

<sup>23</sup> Line E in Figure 20 is the eastern edge of the Egyptian Limited Force Zone. The UN-administered buffer zone is between lines E and J. The Israeli Limited Force Zone is between lines J and K.



The exact number of sensors used was not recorded and probably changed over time but was in the range of 200 to 300. The sensors were off-the-shelf, unclassified, and exportable. The seismic, acoustic, and magnetic sensors had been used during the Viet Nam war. Upgrades to add magnetic and acoustic sensors and imaging systems were made to the initial sensor configuration over time. Battery-powered sensors sent signals to the watch stations by unencrypted radio transmissions.



*Fig. 21. SFM Watch Station at Mitla East*

The ground-based sensors were intended only to alert operators. Characterization and identification of intrusions were to be performed by observers at the watch stations (Fig. 21) or on patrol. In practice, sensor data did give some degree of characterization (e.g., general weight, magnetic properties, speed, and direction of travel). The interior of a watch station is shown in Figure 22.



*Fig. 22. SFM Watch Station Interior (Courtesy of E-Systems Corp.)*



*Fig. 23. SFM Watch Station Monitoring Equipment*

The watch stations contained a variety of communications equipment and chart recorders for sensor reports transmitted by radio (Fig. 23). Activations from the minor fields were investigated by a patrol sent from the base camp — a 15- to 45-minute drive.

Observers used optical and night vision devices to characterize and identify sensor activations. The optical devices at the watch stations were wide-angle Zeiss 15 x 60 prism binoculars, a Questar terrestrial telescope, and a wide-angle image intensifier for night use. With these tools, the observers had a maximum visual range for large vehicles of 20 km during the day and 5 km at night. Individual people were detectable to 1-km range at night. Night vision scopes collected available light from the moon and stars and intensified the image by a factor of 50,000, permitting the human eye to detect movement.

Multiple sensor types were employed for redundancy and to support characterization of intrusions (Table 1).

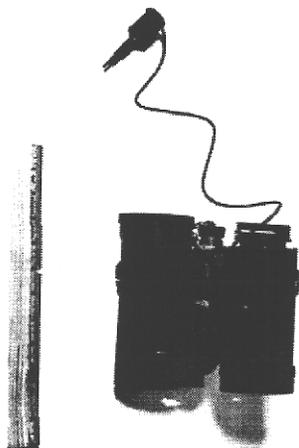
Seismic sensors were the most commonly used and were the only sensors used at the beginning of monitoring operations (Fig. 24). The dry, sandy terrain of the Sinai was ideal for seismic sensors; detection ranges exceeded manufacturer specifications. Care had to be taken not to place a sensor too close to a tree or bush, which could transfer vibrations from the wind to the soil and thus cause a false activation.



**Table 1. Sensors Employed by the Sinai Field Mission**

**Seismic Sensor (Fig. 24)**

Courtesy  
of DoD

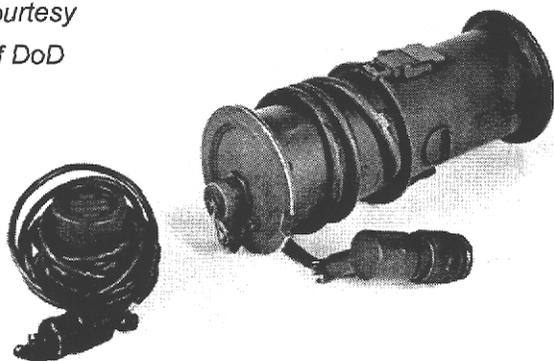


*The Miniature Seismic Intrusion Detector (MINISID-III) was the most commonly used sensor because of near-ideal conditions in the desert soil. The battery-powered MINISID provided three levels of sensitivity. An external geophone was permanently connected to the detector case by a 0.6-m cable. The MINISID detected vehicles at up to 500 m and personnel at up to 50 m (nominal ranges are 300 m and 30 m, respectively). The seismic signal was transmitted to an adjacent watch station by radio.*

*Dimensions: 19.0 cm L x 19.0 cm W x 7.6 cm H; weight: 4.1 kg*

**Acoustic Sensor (Fig. 25)**

Courtesy  
of DoD

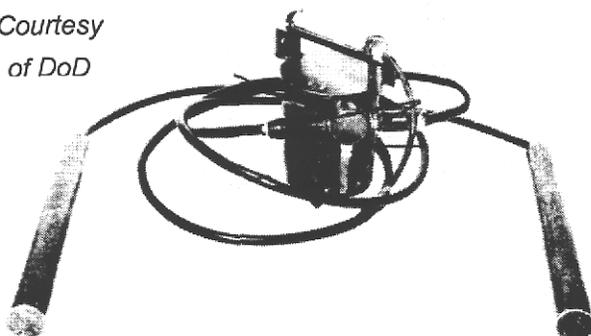


*The Acoustic Add-on Unit (AAU) was a modular addition to the MINISID-III and used its power and radio transmission system. The AAU microphone was attached to the electronics unit by a 3-m cable. Three seismic activations of the MINISID-III within 20 seconds activated the AAU to listen for 15 seconds. It could detect personnel at up to 30 m and vehicles at up to 100 m.*

*Dimensions: 25.2 cm L x 7.6 cm dia.; weight: 3.2 kg*

**Magnetic Sensor (Fig. 26)**

Courtesy  
of DoD



*The Magnetic Intrusion Detection (MAGID) system, which was a modular addition to the MINISID-III, detected changes in the earth's magnetic field caused by the motion of ferrous material.*

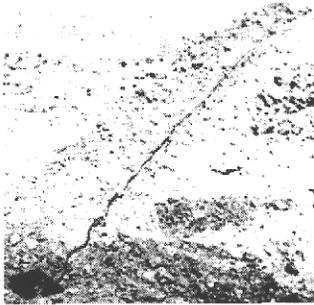
*The MAGID could detect a person with a rifle at 3 to 4 m and a medium truck at 15 to 20 m. The unit consisted of 2 solenoid assemblies interconnected by a 3-m cable. The main module contained the electronic processing and an interface plug for connection to the MINISID, which provided power and a radio link.*



**Table 1 (cont). Sensors Employed by the Sinai Field Mission**

**Strain Sensor (Fig. 27)**

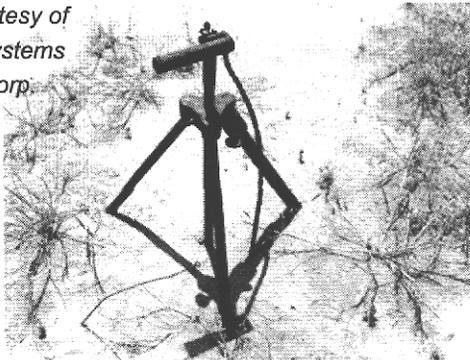
Courtesy of  
E-Systems  
Corp.



A strain sensitive cable sensor (SSCS) was buried under roads and main trails. The coaxial cable could be up to several hundred meters long. An electronics module was also buried alongside the path. The compression caused by the passage of an object induced a signal proportional to weight. The electronics unit sent a call-up pulse to a MINISID for transmission to a watch station when a crossing occurred.

**Infrared Sensor (Fig. 28)**

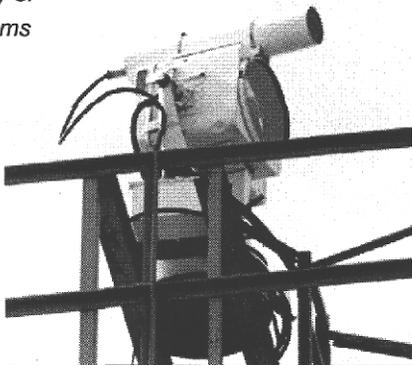
Courtesy of  
E-Systems  
Corp.



The directional infrared intrusion detector (DIRID) was used to monitor roads and large paths. The DIRID system consisted of a transmitter and receiver for two parallel infrared beams mounted on tripods above ground. DIRID could monitor a space 3 to 17 m wide. Passage of an object through the beam broke the circuit and caused an activation. The order of beam breakage indicated the direction of movement.

**Video Camera (Fig. 29)**

Courtesy of  
E-Systems  
Corp.



A commercial low-light TV camera with high-frequency radio transmission to the base camp was used at the western Giddi sensor field, which was beyond visual line of sight. A remotely controlled spotlight was used to enhance the video camera's night vision capability. Video also was used to monitor the security perimeter of the base camp.

**Imaging Infrared**

A prototype system called Passive Infrared Confirming Scanner (PICS) was used during 1977-78 to counter low-visibility conditions in dust and fog. The system was removed because of unacceptable reliability.



The seismic sensors were set in strings of three, perpendicular to the road. In addition to redundancy, this procedure provided a means to estimate the mass and thus type of vehicle detected. Increased vehicle mass caused sensors farther from the road to activate.

As the monitoring system became established, some additional sensor types were added for redundancy and to increase the probability of detecting intruders. An acoustic add-on unit (AAU) was installed on a few seismic sensors (probably the ones closest to the road) (Fig. 25). Auxiliary magnetic sensors were later added to a few MINISID III seismic sensor systems (Fig. 26). A strain sensitive cable sensor buried under roads monitored vehicle traffic (Fig. 27). The DIRID infrared break-beam sensor was used at a few road accesses to the area (Fig. 28).

The video camera used at Giddi West was a commercial system equipped with night vision (Fig. 29). A spotlight was added to the camera to improve visibility at night. The system was powered by solar panels with batteries for night operation. At the base camp, operators continuously monitored and controlled the camera view. The camera performed well at night except during periodic sand storms or winter fogs rolling in from the ocean. Figure 30 is an artist's concept of how ground sensors might operate in combination to detect a supply convoy.

SFM veterans describe the sensors as established hardware and the operational reliability as quite good. Internal maintenance reports on individual units show that between system activation on February 22, 1976, and August 30, 1976, approximately 5% of the sensor equipment failed. Each sensor field had sufficient backup so that overall system performance was degraded only slightly by the failure of a single sensor. A failed sensor was replaced within 24 hours from the SFM's inventory of spares.<sup>24</sup>



Fig. 30. Combination of Ground Sensors to Detect Convoy

Sometimes U.S. Army sensor development organizations used the SFM as a field test site for new equipment, as was the case with the Passive Infrared Confirming Sensor (PICS) infrared imaging system. The system was really a laboratory prototype. Although it provided a valuable function, PICS was not rugged enough to operate consistently in the harsh Sinai environment.

<sup>24</sup> *United States Sinai Support Mission, Second Report to Congress* (Department of State: Washington, D.C., April 13, 1977), p. 8.



In early 1977, a study of the SFM's technical capabilities by MITRE Corporation evaluated ways to improve the efficiency of personnel use in the system, improve the effectiveness of the system, and reduce overall operating costs. Four options were presented.<sup>25</sup>

***Option 1. Create centralized detection and identification patrols.***

Under Option 1, all watch station personnel would be moved to a centralized monitoring facility. Passes and access roads to the Egyptian and Israeli stations would be monitored by unattended ground sensors. A vehicle or aircraft would be dispatched to investigate an alarm.

***Option 2. Centralized detection and identification by remote***

***imaging devices.*** Under Option 2, all watch station personnel would be moved to a centralized monitoring facility, where both detection and identification functions would be performed. Facility personnel would use remotely controlled day/night video cameras overlooking the sensor field to characterize intrusions detected by the unattended ground sensors.

***Option 3. Substitution of radar for unattended ground sensors.***

Unattended ground sensors would be removed and replaced with a system of ground scanning radar transmitters. Intrusions would be characterized visually from watch stations. System effectiveness under adverse climatic conditions would likely improve.

***Option 4. Centralized radar detection and remote imaging.*** The current system would be replaced by a combination of Options 2 and 3.

Option 1 was unacceptable because the early warning area established under the *Sinai II* agreement allowed authorized traffic to pass through the sensor fields. An average of 6,000 vehicles entered the sensor fields per month. Thus, the system had to be able to distinguish quickly between authorized and unauthorized traffic, requiring more personnel and resulting in higher costs. Option 3 provided almost no advantages over the existing system and was more expensive. If operated for more than 2 years, the new equipment in Options 2 and 4 would have improved overall system performance while requiring fewer personnel and costing less. Given this result, the SFM decided not to make any major changes to the monitoring system.<sup>26</sup>

<sup>25</sup> Sergei Koulik, *The 'Sinai Experience,' Verification of Conventional Arms Control in Europe: Technical Constraints and Opportunities*, ed. SIPRI (New York: Westview Press, 1987), p. 221.

<sup>26</sup> *United States Sinai Support Mission, Report to Congress* (Washington, D.C.: Department of State, April 13, 1977), pp. 9-11.



## Tying It Together: Communications and Evaluation System

The on-duty State Department Foreign Service Officer prepared and signed all official reports from the base camp. Teletypes, which produced an instant written record of messages, were the preferred means of communication because they minimized the chance of misinterpretation in a multilateral undertaking. The teletype messages, which were transmitted by radio, were not encrypted. An English message was formatted on a teletype tape and copied onto several teletype machines (Fig. 31). The base camp had a radio link into the international telephone system. In addition, the State Department operated a separate, embassy-type secure communication system (single-sideband radio teletypewriter) in the base camp in a location separate from the main communication center.

When a sensor was activated, it sent a radio signal to the adjacent watch station, where a time history of movement was recorded on a chart recorder. If an illegal intrusion was characterized by the watch station observers, a very high frequency (VHF) radio message, backed by teletype, was sent to the on-duty State Department liaison officer at the base camp, who communicated the record of the intrusion and the SFM analysis of the intrusion. Messages were simultaneously transmitted to the Israeli Government (Jerusalem), the UN Chief Coordinator (Jerusalem), the Egyptian Ministry of Defense (Cairo), UNEF Headquarters (Ismailia), and the U.S. missions in each country. Reports of violations could reach the parties within 5 minutes. Reports also were made later to the Israeli and Egyptian early warning stations within the buffer zone.



The State Department produced the reports that were sent to Israel and Egypt in addition to regular weekly and monthly summary reports. E-Systems assisted in this activity but did not sign the reports. All sensor records, which consisted of paper recording strips, were kept on file by E-Systems as long as any incident remained open. Otherwise, the records were destroyed after 30 days.

*Figure 31. Multiple Teletypes Used for Simultaneous Transmission*



Evaluation of the SFM and other monitoring reports was performed by the Joint Commission and Liaison System, which was established under the terms of the *Sinai II* agreement. The Chief Coordinator of the UN Peacekeeping Mission, resident in Jerusalem, was the chairman of the Joint Commission and Liaison System, which contained representatives of all parties to *Sinai II*. The Commission, which met monthly in the buffer zone or as requested by the Parties to the agreement, had four primary goals:

1. Supervise implementation of the terms of the *Sinai II* agreement.
2. Coordinate military movements and supervise their implementation.
3. Evaluate reports from the UNEF and other observers and seek to resolve problems or violations.
4. Develop a schedule for periodic on-site inspections.



## Operating the System

Under the terms of the *Sinai II* agreement, a total of 620 km<sup>2</sup> was monitored. Two operators were present in each watch station for 24-hour shifts. All sensor output was recorded on strip charts and manually interpreted. The operators estimated, to the extent possible, the number, approximate size, speed and direction of the intruding event. The watch station had radio voice communication and teletype communication with the base camp. In 1978, an electronic display panel with lights representing sensor clusters was added to the base camp equipment (Fig. 32) and used primarily for briefings and as a backup system. Strip charts continued to be made throughout the operation of the SFM.

At the time of the monitoring operations, battery life was about 12 months — a great improvement since the Viet Nam War. There was no remote capability to command or assess the condition of the sensors. People and vehicles moved periodically through the fields to test sensor response. There was no auto-destruct or tamper indication on any of the systems. The seismic sensor (MINISID III) originally had an auto-destruct capability, but this was disabled for the Sinai application.

Even though the Sinai is a lightly populated desert, the background noise was significant enough to cause some problems for the sensors. Overflight by helicopters or sonic booms caused sufficient ground coupling to activate a seismic sensor. Very heavy winter morning and evening fog sometimes caused sensor activation. Rodents, attracted by the dried salty sweat on the connectors, gnawed the electrical connections causing false initiations and outages. The problem diminished significantly once the operators began to handle the hardware with gloves. Herds of gazelles and grazing camels were sufficient to give the seismic signature of a personnel intrusion. The ground radar sensor on the base camp perimeter security kept giving mysterious activations until it was discovered that a bird “like a prairie chicken” would wander into the zone while feeding at night.

Resident and nomadic Bedouins were a continual problem. Although citizens of Egypt, they did not recognize the *Sinai II* agreement or national borders and would graze their camels throughout the SFM monitoring area.

The sight of a camel generally indicated a Bedouin was nearby. The Bedouins were masters of concealment in

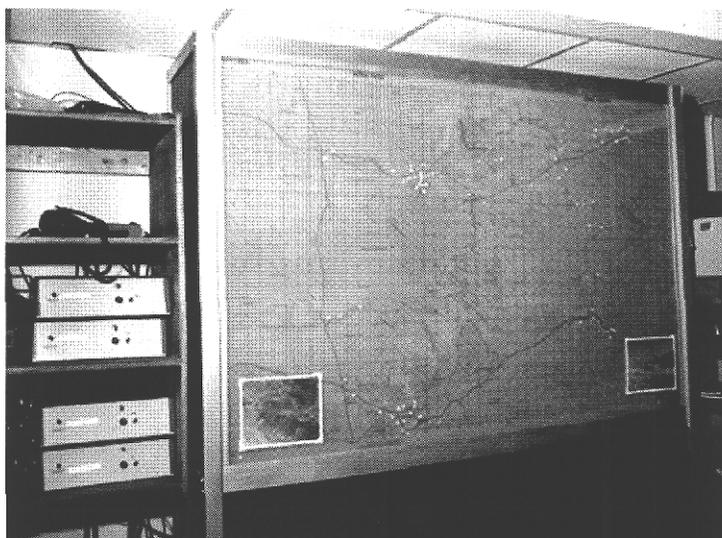


Fig. 32. Central Monitoring Panel at SFM Base Camp  
(Courtesy of E-Systems Corp.)



the desert so an activation was not always confirmable. In one incident, a Bedouin fired a warning shot when SFM personnel tried to move a camel out of a restricted area. (They left the camel alone.) Minor thievery was also a problem. The Bedouins had battery-powered TVs that were compatible with the 12-volt car batteries in the Giddi West TV camera. Theft of these batteries was chronic, and the SFM had to build a locked battery enclosure, a fence, and a loudspeaker to deter thefts. At least once, Bedouins threw rocks at the camera and solar panels causing some damage.

The SFM routinely monitored the Israeli and Egyptian strategic early warning stations. The Israeli station, which had been built first and had the best location, was probably more capable than the Egyptian station. Much of it was underground. The position of the stations on the ridge line permitted each side to have visual line of sight deep into the other's territory. Ships moving in the Suez Canal were visible. At the entry into force of *Sinai II*, the SFM inspected each station to verify that no offensive equipment was located there and that the staff size was within the agreement limits. SFM participants believed that any truly sensitive equipment in the Israeli station was probably removed before the agreement went into effect.

The Israelis and Egyptians treated the type or capability of the monitoring equipment as classified, and the SFM had no charter to determine anything except that a prohibited military capability was not present. Spot checks were performed about once a month, and the inspection team had access to the entirety of each station. A State Department official was stationed at the gate to monitor entry and exit 24 hours a day. The State Department representative also could request a special inspection. The perimeter was not routinely monitored because, given the terrain, no significant amount of equipment could enter. The base camp alerted the monitor when any sensors on the access road activated. Both stations were visible from the SFM base camp.

After a period of initial suspicion, the Sinai front stabilized and the monitoring activities became almost routine. An Israeli site commander at the nearby Refidim Air Base commented: "The Egyptians know what we do, and we know what they do." He added that both sides want to make the withdrawal work. A State Department administrative officer said that the U.S. presence was as important psychologically as it was technically. "Each considers us an effective deterrent with respect to the other."<sup>27</sup>

Early examples of "what the other is doing" consisted of Israeli small-arms practice and Egyptian construction blasting. Each of these incidents sparked fear by the other side that conflict had resumed.

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<sup>27</sup> Edward Kolcum. "New Sensors Evaluated in Sinai Buffer." *Aviation Week and Space Technology*, August 23, 1976, pp. 40-42.



Quick action by the SFM corrected the misunderstandings and averted what might have been serious incidents.<sup>28</sup>

The General Accounting Office (GAO) of the U.S. Congress visited the SFM in the spring of 1977 and assessed its operations relative to the SSM's Congressional charter.<sup>29</sup> The GAO team was told that there had been no technical problems involving the equipment. The technicians reported that operating the equipment was relatively simple and required little technical training. The Department of Defense had advised the SSM at the outset that it was technically feasible to install the sensor fields and operate them remotely — without watch stations — using substantially fewer than the 200 personnel authorized by the *Sinai II* agreement. According to SSM officials, at the time of the negotiations, primary importance was attached to establishing a credible American presence in the Sinai as a symbol of the American involvement in the peace process. The GAO report states, “The surveillance, inspection, and reporting performed by the SFM were of secondary importance to the actual American presence in the area. In our view, it appeared that it was always feasible to reduce the number of U.S. personnel at the SFM through technological changes. This contingency has been consistently outweighed by the desire for a credible U.S. presence.”

U.S. Government officials had considered hiring foreign nationals to operate the system at the onset of the program. Relations between Egypt and Israel were uneasy at the time, and the exact U.S. role in the buffer zone was somewhat uncertain. In addition to the goal of a credible U.S. presence, there was the desire to avoid dependence on the UNEF, Israel, and Egypt. Consideration was later given to using native Bedouins for certain housekeeping and administrative functions. This idea was discarded because of potential problems with security, housing, salaries, and emergency evacuation.

Political leaders in both countries eventually praised the SFM. The system performed quite reliably during its period of operation although refinements were made. The system successfully distinguished between significant and inconsequential events. On average, there were 200 sensor activations a day. This level of activity was almost entirely the result of permitted activity or natural occurrences. Activations were caused, in part, by support vehicles for the SFM, Israeli, and Egyptian stations, movement of UN peacekeepers, natural seismic disturbances, low-flying aircraft, wildlife, and nomadic Bedouins.

Between February 22, 1976, and January 25, 1980, only 90 violations were reported to the Joint Commission (67 assessed to Israel, 2

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<sup>28</sup> Dennis Mullin, “A Lonely Outpost Where Yanks Guard Against Sinai War,” *U.S. News & World Report*, May 17, 1976, p. 53.

<sup>29</sup> Comptroller General of the United States, *An Evaluation of the U.S. Early Warning System in the Sinai*, Report ID-77-11, June 6, 1977, pp. 12-18.



to Egypt, 19 unidentified aircraft, and 2 unidentified personnel). All violations were relatively minor and easily resolved by the Joint Commission. The relatively high number of Israeli violations is partly explained by the fact that the sensor fields were at the extreme eastern edge of the buffer zone. Compounding the problem was the fact that the Israeli limited-force zone separating the buffer zone from the unrestricted Israeli zone was quite thin. This design resulted from last-minute political compromises during the negotiations. Israel was unwilling to give up control of the Giddi Pass until almost the end of the meetings. The western sensor fields were placed well away from the Egyptian limited-force zone in the buffer zone. A further complicating factor was that the demarcation lines were not clearly marked in the early days of the *Sinai II* agreement. There are anecdotal reports from SFM operators that both sides deliberately tested the system to assess its performance and impartiality.



## The Camp David and Egypt-Israel Peace Accords

During *Sinai II*, high-level interactions between the Israelis and Egyptians continued. President Carter saw the peace process as at a key stage in 1978 and invited the heads of state to participate in a summit meeting in the United States. The Camp David Accords were concluded after a 13-day marathon meeting at the Presidential retreat in Maryland. President Carter personally mediated with President Sadat and Israeli Prime Minister Begin. The Accords were signed on September 17, 1978, and set the framework for the formal peace agreement between Egypt and Israel. They established normal diplomatic relations between the two countries, set Israeli withdrawal from the Sinai to the internationally recognized border, and assured free passage through the Suez Canal.

The Accords were not a final treaty and established only general principles of monitoring and verification of the Sinai as a functional demilitarized zone. They included deployment of UN peacekeepers

along the border and at Sharm al Shiek, a provision for removal of UN peacekeepers only by a unanimous vote of the Security Council, and recognition of the option for establishing early warning stations in the Sinai.

The formal *Treaty of Peace Between the Arab Republic of Egypt and the State of Israel*, signed on March 26, 1979, is probably the greatest breakthrough in the still evolving Middle East peace process. It has demonstrated in practice over 15 years that a stable agreement can be reached through negotiation and confidence building. Both Israel and Egypt have adhered to this *Peace Agreement* because the military and security arrangements and their verification regime have proven to be adequate. Certainly, the verification experience achieved through *Sinai II* provided a basis for the *Egypt- Israel Peace Agreement*.

According to the military annex of the *Egypt-Israel Peace Agreement*, the Sinai was (and still is) divided into four zones (Fig. 33). Each zone has a limitation on both personnel and weapon number and type:

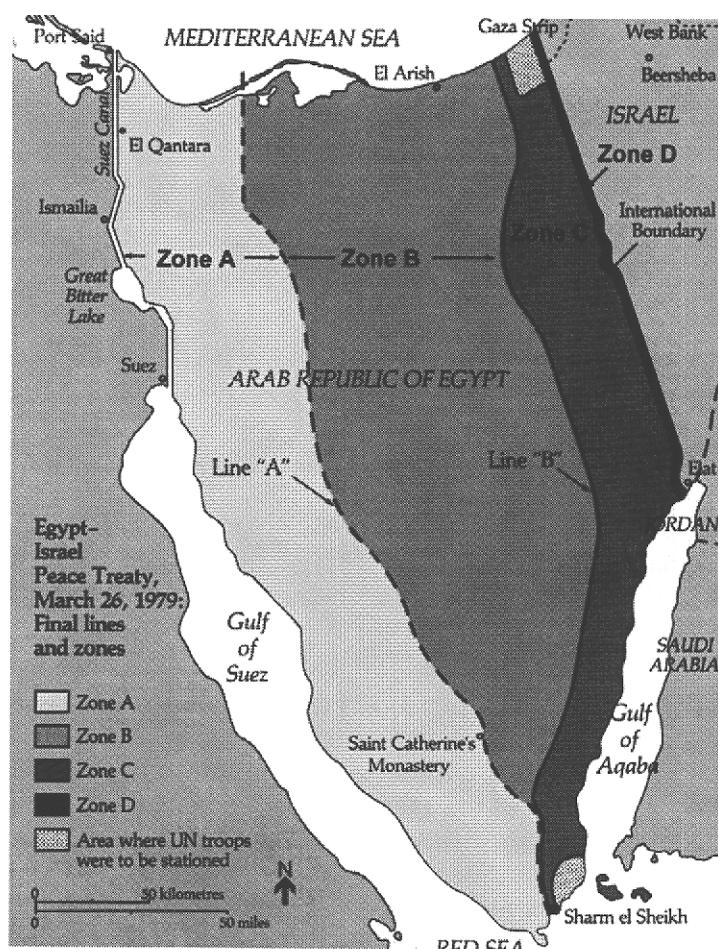


Fig 33. Limited Force Zones in the Sinai under Terms of the Egypt-Israel Peace Agreement



**ZONE A:** Egypt was permitted to station a reinforced mechanized infantry division in permanent facilities. Limits in Zone A were 22,000 troops, 230 tanks, 540 armored personnel carriers, 126 medium artillery pieces, 126 anti-aircraft guns, and ground-to-air missiles.

**ZONE B:** Egypt was restricted to stationing four battalions of light infantry (4,000 troops) with wheeled vehicles and light weapons.

**ZONE C:** Egypt could station only civilian police units.

**ZONE D:** Israel was restricted to four infantry battalions (4,000 men) and up to 200 armored personnel carriers. Artillery and anti-aircraft missiles, except for man-portable versions, were forbidden.

The monitoring regime consisted of a combination of National Technical Means (NTM) and UN peacekeeping coordinated with Egypt and Israel. The UN operated checkpoints and observation posts and conducted patrols along the border and lines B and C. Bimonthly on-site inspections also were to be conducted within the zones. Challenge inspections in all restricted zones were permitted within 48 hours at the request of either side. The right of passage through the Straits of Tiran into the Gulf of Aquaba was guaranteed.

The monitoring system for *the Egypt-Israel Peace Agreement* nearly foundered when the Soviet Union vetoed an extension of the UNEF mandate in July 1979. After the veto, Israel and Egypt approached the U.S. and requested that the SFM continue its monitoring role to replace the now defunct UNEF. The role of the SFM evolved to perform on-site inspection and low-altitude aerial surveys. Both countries monitored an interim buffer zone. Israel maintained four signal collection stations along ridges in the central Sinai, while Israel and Egypt performed reconnaissance flights up to the midpoint of the buffer zone.

As the Israelis withdrew eastward and relations improved, the need for intensive monitoring of the passes faded away and the system was shut down on January 25, 1980. Total cost of the SFM during its operation of the Giddi and Mitla Pass monitoring system was \$92.7 million.

The SFM, with approximately the same number of personnel, carried out bimonthly inspections. There were four inspection teams, each consisting of three inspectors (two U.S. civilians and a liaison officer from the country under inspection). Two days were needed to inspect facilities in Zone A, and one day each for Zones B and C. Personnel and agreement-limited items were counted manually. Low-level aerial reconnaissance was carried out during a 2-day period prior to the on-site inspections. The SFM used light aircraft, hand-held cameras, and viewing devices during this survey. The Israeli withdrawal took place very smoothly with only 29 minor violations cited by the SFM.



With the completion of the Israeli withdrawal in April 1982, Israel, Egypt, and the United States agreed to replace the SFM with a multinational force. This new organization would be responsible for implementing the monitoring regime of the *Egypt-Israel Peace Agreement*. Consequently, the Multinational Force and Observers (MFO) was established. The MFO still monitors the Sinai for the *Egypt-Israel Peace Agreement*. This organization is independent of the UN and is funded by the parties to the *Egypt-Israel Peace Agreement*. The United States initially provided an infantry battalion and a logistic unit. The United States, Israel, and Egypt eventually persuaded ten other countries to contribute units to the MFO for a total strength of 2,500. The administrative headquarters of the MFO is in Rome.

Egypt and Israel continue to use NTM. Early warning facilities can be operated only in Zones A and D. Egyptian reconnaissance aircraft are permitted to fly above only Zone A, and Israeli aircraft are restricted to Zone D. Similarly, maritime patrols are freely operated by Egypt in Zone A and by Israel in Zone D. Egyptian maritime patrols in Zone B are limited to light, armed boats and to police boats in Zone C.

The liaison system provided by the Military Joint Commission in *Sinai II* was retained and expanded upon. Liaison offices headed by Israeli and Egyptian senior military officers were established in El Arish and Bersheba. Direct telephone lines connect these offices and their respective Foreign Ministries. Unresolved difficulties are addressed by a joint committee headed by General Officers. This committee meets twice a year or as requested by each country. Disputes that remain unsolved at this level are forwarded to the ministerial level on both sides. Most disputes are minor and are resolved at the joint committee level or even in the field.



## Observations from Sinai Field Mission Monitoring

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Arms control agreements are generally adhered to when the parties, in their own political interests, are motivated to comply with the terms of the agreement. Monitoring only serves as a tool to check the agreement's execution. *Verification is the judgment of national leaders that the agreement has been properly executed.* The monitoring regime leading to verification becomes more efficient when the elements are integrated into a comprehensive system. The degree of coordination required in the monitoring regime becomes a confidence-building measure itself.

Monitoring in the *Sinai II Agreement* was not completely integrated. Ground and air-based monitoring were not directly linked except at the SSM Office in Washington. Certainly, information from the U.S. aerial surveys was selectively filtered before distribution to Egypt, Israel, and the UN. NTM, which by definition is unilateral and not shared, was a key part of the *Sinai II* process. *Sinai II* and the subsequent *Egypt-Israel Peace Agreement* made extensive and effective use of joint commissions. The joint commission used input from all available sources: the parties themselves (both overt and NTM sources), the UN, the SFM, and the SSM.

The UNEF paid particular attention to the verification of the limitations on troops and armaments. The areas of limited forces were inspected every 2 weeks. The UNEF was given the same information as Israel and Egypt on the results of the U.S. overflights (collected imagery from these overflights was interpreted by U.S. experts). This was an improvement over the practice in *Sinai I* in which the UNEF had been prevented from viewing aerial imagery except when one party complained about violations. The effectiveness of the on-site inspections improved significantly because of this additional information. It also enabled the UN to point out, at Joint Commission meetings, areas for which information was lacking and request additional information.<sup>30</sup>

Gen. Siilasvuo of Finland, the UNEF commander, does not credit the SFM with a prominent role in *Sinai II* and devotes only two pages to it in his memoirs. He concludes, "Thus the Sinai Field Mission could only supplement Israel's own and the UNEF's early warning system." This was precisely its purpose: to provide a highly capable system for tactical warning in the most critical area.

Gen. Siilasvuo, not surprisingly, is quite proud of the role of the UNEF and emphasizes its role within the context of the monitoring system. He writes, "Many people wondered why Israel considered the

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<sup>30</sup> Ensio Siilasvuo, *In the Service of Peace in the Middle East, 1967-1979* (New York: St. Martin's Press, 1992), p. 321.



American presence to be so important. Could it not trust the security offered by the UNEF? Had not their previous experiences with this force been positive? Having accepted UNEF as an essential part of their disengagement arrangements, the parties had reason to cooperate.” He goes on to say, “Some people thought that the main reason for Israel’s persistent demands for a concrete presence by the Americans was the fear that the UNEF was too weak and unreliable; therefore a presumably more effective system, like the Sinai Field Mission, was required. Later it became apparent that the additional security offered by the SFM was very small and the area it covered a tiny part of the vast Sinai desert. It was not located on the best hills for observation. Its technical apparatus was surprisingly modest and old-fashioned: Israel’s own devices on the Giddi Pass were technically much more advanced.”<sup>31</sup>

Gen. Siilasvuo, a military professional and World War II veteran, ignores a wealth of history in which control of small, key locations determined the fate of regions. The Egyptian blockade of the Straits of Tiran entering the Gulf of Aquaba, in May 1967, for example, was the spark that ignited the Six-Day War in June. He also fails to distinguish between tactical and strategic early warning. The Israeli and Egyptian stations primarily provided electronic signal collection and did not deploy any equipment beyond the boundaries of the facilities. The stations were not capable of monitoring their local area with any great effectiveness since they were limited to short-range optical devices. Furthermore, the placement of the stations prevented them from observing the Mitla Pass and gave only a limited view of the Giddi. Truly advanced monitoring equipment in the stations likely had been removed since they were subject to periodic on-site inspection by the SFM, and it was unlikely that Israel and Egypt would want such capabilities revealed.

The simplicity of the SFM monitoring system was, in fact, a virtue. Two tenets of cooperative monitoring are *using the appropriate level of technology* and *fielding the proper mix of technology and personnel*. “Highly sophisticated” does not necessarily mean more effective or even highly effective. Factors such as acceptance by the parties, reliability, and cost are significant factors in application. The ground-based monitoring technology used by the SFM was open to all parties. Being older and somewhat simple and having been proven reliable through years of use, this ground-based monitoring technology was relatively easy for the parties to understand and trust. A state-of-the-art system would have been more difficult to accept if for no other reason than the parties’ likely concerns about such a system’s “ulterior” (i.e., intelligence) functions.

Gen. Siilasvuo’s postulated concerns about Israel’s and Egypt’s trust in the UNEF are problematic and likely varied over time. Colloquial testimony during interviews for this report indicates that, particularly at the field commander level, there were suspicion and

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<sup>31</sup> Siilasvuo, pp. 308-310.



occasional outright distrust of the UN. The memory that President Nasser ordered UNEF I out of the Sinai and Gaza in May 1967 and accelerated the spiral into conflict was surely present in Israeli minds. The 1977 U.S. General Accounting Office (GAO) report evaluating the SFM function contains the following remark:

*As we previously noted, the U.S. participation became an integral part of the agreement because Israel lacked confidence in some members of the UN force and both parties had confidence only in the United States for operating the early warning system.*

Siilasvuo is probably correct in his assertion that Israel “wanted American bodies” but not for the reason he thinks. Israel likely wanted to diversify its dependence on third parties in *Sinai II*. Clearly the special relationship with the United States was a factor, but super-power/client relationships can change suddenly — as they did between the Soviet Union and Egypt.

Gen. Siilasvuo clearly understands the function of peacekeepers. The main value of the Sinai buffer zone was to reduce the risk of unforeseen clashes. “At best the presence of UN troops complicates the decision by a potential attacker by forcing him to choose between ordering them to step aside, and thus giving warning to the opponent, or driving through them and incurring opprobrium in the eyes of the world. UNEF II was never put to a test in this manner, but we know what happened in south Lebanon in 1982, where the UN force was passive and weak and the attacker did not care about world opinion.” The General concurs with other writers in saying, “The presence of the SFM in the middle of the Sinai had a strong restrictive effect on attacks from either side.” The SFM, then, contributed to the overall stability of the *Sinai II* agreement and was an assurance against a Lebanon-type breakdown.

The 1977 U.S. GAO report summarizes the relations of the various parties implementing monitoring of the *Sinai II* agreement as follows:

*In conversations with SFM and UN officials, we were told that no real problems exist between SFM and UNEF, although each performs a different peacekeeping role in the Sinai. UN officials indicated that they viewed relations between SFM and UNEF as quite good and felt that the peacekeeping responsibilities carried out by each were complementary. These officials, along with the Israeli and Egyptian officials with whom we spoke, fully accepted the U.S. presence in the area and the manner in which the U.S. is carrying out its peacekeeping role.*

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<sup>32</sup> Comptroller General of the United States, *An Evaluation of the U.S. Early Warning System in the Sinai*.



Israeli Defense Force Lt. Col. Itshak analyzed the Sinai and Golan disengagement agreements and their associated monitoring as part of his Ph.D. research. He addressed the issue of the appropriate application of technology in 1989:<sup>33</sup>

*The prompt execution of the Interim Agreement and the successful operation of its complex verification regime created the atmosphere and confidence needed for completion of the Israeli-Egyptian Peace Agreement in 1979. The assorted verification measures provided both Israel and Egypt the assurances required to lessen the possibility of a surprise attack. It also proved that a complex verification regime can be operated successfully where there is a political will on the signatories' part in addition to an appropriate mechanism of coordination between all the parties. Too, the right combination of technical measures and manned operations proved to be vital to the successful operation.*

The role of NTM is worth investigating. NTM enables parties to monitor compliance with the agreement and to request challenge inspections where violations are suspected. NTM can and should be formally coordinated with the overall monitoring framework. Without this context, misunderstandings may arise that are counterproductive. *Sinai I* and, to a greater extent, *Sinai II* are unique in that clauses in the agreements specifically state that NTM can be freely implemented behind the international borders of a signatory state but that their operation in restricted zones must be defined and coordinated as part of the overall monitoring regime.

Detailed procedures are important to the cooperative operation of monitoring regimes. This contributes to prevention of misunderstandings and misinterpretation in the implementation of an agreement. Lederman writes,<sup>34</sup>

*It is a well-established tactic of negotiation to phrase difficult and controversial issues vaguely and later 'iron out' the obstacles. But mixing good intentions with vague terminology is sure to become counterproductive at a future time — during implementation or when governments change. When each side interprets an agreement — or even part of its verification regime — differently, there is always the*

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<sup>33</sup> Itshak Lederman, *The Arab-Israeli Experience in Verification and Its Relevance to Conventional Arms Control in Europe*, Center for International Security Studies, University of Maryland, Occasional Paper Series, ISSN 1044-288X, (College Park, Maryland, 1989).

<sup>34</sup> Itshak Lederman, *The Arab-Israeli Experience in Verification and Its Relevance to Conventional Arms Control in Europe*.



*potential of certain actions being pursued by one party which are then perceived as violations by the other signatory.*

*Sinai I* and *Sinai II* both had specific terms and provisions for monitoring. *Sinai II* increased the level of monitoring and its specificity. It is useful to remember that the Camp David Accords, popularly viewed as the break-through to peace, were in fact only a statement of principles and goals. It took several more months to negotiate the specific terms for implementation and formulate the formal *Egypt-Israel Peace Agreement* that has proven to be so successful.

Liaison teams, joint working committees, and direct lines of communication are shown to be essential in implementing monitoring agreements. They contribute to the process of confidence building. Confidence helps resolve alleged violations at the working level in the field without the need to involve political leaders.

Monitoring technology by itself, either ground or air-based, probably cannot perform the whole job. Some personnel presence on the ground is needed. For example, the routine presence of the UNEF in the Sinai combined with regular on-site inspections was essential. A provision for challenge inspections also is quite useful. Challenge inspections provide a means to verify suspicions of violations detected by NTM. The challenge inspections can be carried out by third parties with liaison representatives from the parties to the agreement. Such provisions can increase public political acceptance of the agreement as an argument that the monitoring and verification regime is credible. Certainly, the SFM contributed to public acceptance in Israel. Recall the opposition by the public and the U.S. Congress in the late 1970s to ratifying the Strategic Arms Limitation Treaty (SALT II) with the Soviet Union. However, too extensive a use of challenge inspections may doom a prospective agreement as well.



## Application to Other Regions

### Framework for Developing Cooperative Monitoring

The design of a cooperative monitoring system rarely is separable from the political process. Balancing political concerns and technical capabilities can be frustrating to technologists accustomed to designing the best “technical” solution. Implementation of cooperative monitoring can best be thought of as a linear process (Fig. 34).

The process of implementing cooperative monitoring comprises four primary steps: (1) define the context for a potential agreement, (2) define the potential provisions of the agreement, (3) define the physical parameters (“observables”) associated with the provisions, and (4) propose and assess the options (both technical and non-technical) for monitoring the agreement. Several iterations may be needed within a step or between steps, which are described more fully below:

1. The *context for a potential agreement* includes the desired list of participants, regional concerns and politics, and the strategic goals of the parties. If the primary goal of an agreement is to initiate a regional dialogue, a rigorous monitoring regime may be unnecessary.

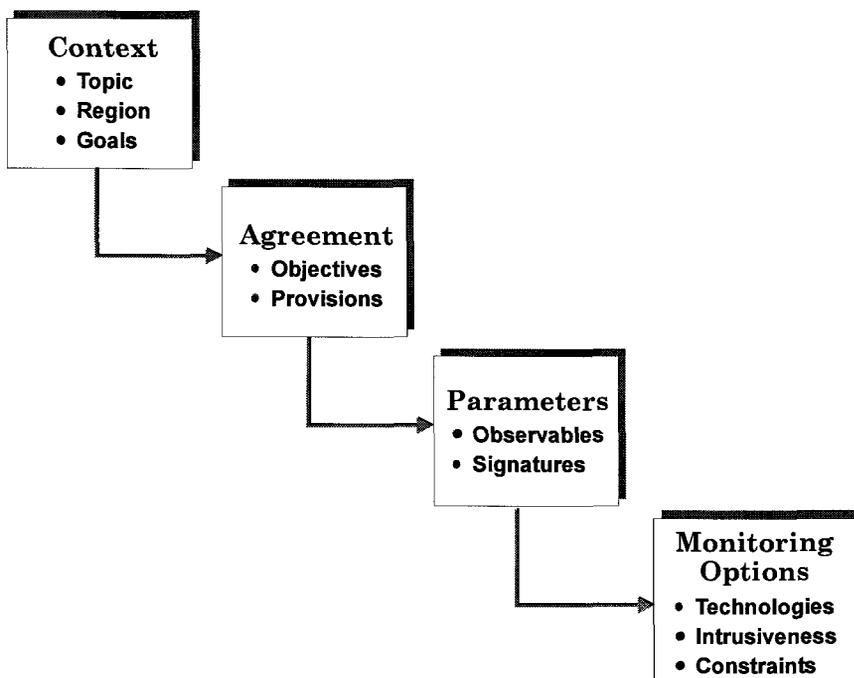


Fig. 34. Framework for Cooperative Monitoring



2. General statements about the objectives of potential verification measures should evolve into the *provisions of the agreement*. Cooperative monitoring provides a method of openly documenting compliance with these terms and makes any act of noncompliance difficult to ignore. If an agreement forbids the production of a particular item, but does not provide for a verification process, developing cooperative monitoring options becomes a moot point. Although an external party can assume responsibility for monitoring the terms of an agreement, regional parties should be involved.
3. Defining and characterizing the *observable physical phenomena* of items or activities limited by the proposed agreement is the key step in initial selection of candidate monitoring technologies.
4. Designing acceptable *cooperative monitoring options* requires identifying technologies that can detect relevant observables while accommodating trade-offs between monitoring intrusiveness and system vulnerability. The monitoring technology and the information it collects must be completely shareable. Other constraints include cost, level of skilled support required, reliability, ruggedness, and local logistics and support infrastructure.

Many monitoring technologies developed for the Cold War and other national security purposes in the United States and elsewhere are neither export controlled nor classified and are applicable to a broad spectrum of regional arms control and confidence-building applications. Examples include technologies for detection and assessment, such as unattended ground sensor systems, aerial overflight systems and commercial satellite systems; technologies for data security, such as data authentication and tamper indication; and technologies for access control. These technologies, combined with data management, analysis, and integration capabilities, provide powerful tools for the implementation of regional agreements.

## Regional Applications

Regional discussions involve a spectrum of issues, ranging from nuclear arms control to environmental protection. In the initial stages of regional security discussions, it is important to identify issues for which progress is possible. Even if the primary regional arms control concern is nuclear weapons, the first series of discussions may need to focus on less volatile issues, such as the environment or conventional weaponry. In regions where tensions are high, limiting armaments or ceasing controversial weapons development programs may be possible only after considerable confidence building in other areas. Table 2 lists potential discussion topics for regional arms control and confidence-building measures.



<b>Nuclear</b>	<b>Conventional</b>	<b>Delivery Systems</b>
Fissile material production cutoff	Demilitarized zones	Missile non-deployment
Reactor closure	Arms reductions or limitations	Missile destruction
Nuclear weapon-free zone	Pre-notification of military exercises	Missile production limitations
Material disposition and safeguards	Incidents at Sea Agreements	Missile test limitations
Test limitations	Arms transfer registers	Missile ban

## Other Considerations

Precedents are important and useful, even though no two countries or regions are the same. Nor are political and strategic circumstances ever identical. However, successful precedents, such as the Sinai process, may serve as starting points for contemporary definition of protocol and use of technology in a postulated agreement. The basic issues — detection of troops in demilitarized zones, monitoring the permitted presence of personnel in limited zones, procedures for on-site inspection, accounting of sensitive objects or material, and preservation of privacy beyond the agreement — are present today.

Technically based monitoring has a potential role in resolving all these issues. Useful precedents for technically based regional cooperative monitoring include the Intermediate-Range Nuclear Forces (INF) treaty between the United States and the Soviet Union, the multilateral Conventional Forces in Europe (CFE) Agreement between the members of NATO and the former Warsaw Pact, the bilateral agreement between Romania and Hungary for aerial overflight, and the Argentina-Brazil Agreement for the reciprocal inspection of nuclear facilities and control of nuclear materials.

A lesson recurring in various precedents for regional security agreements is that all issues do not have to be completely resolved to begin constructive cooperative measures. The step-wise approach used by Kissinger in the Sinai illustrates that the fundamental causes of a dispute need not be solved to make meaningful progress. Overall political circumstances can improve as a result of the benefits received from relatively small steps. Similarly, the function of technology in an agreement need not initially cover all contingencies. The monitoring



system in the Sinai was gradually improved during its period of operation.

Although specificity is a virtue, agreements and the role of technically based monitoring in the agreement should be viewed as a foundation for continuing progress. It may be more beneficial to have a monitoring system with limited capabilities functioning in the present rather than a comprehensive system that cannot be fielded until the future.

## The Sinai Today

The MFO currently consists of about 2,500 troops and civilian contractors, primarily from the United States, Fiji, and Columbia, who maintain watch stations with attended optical devices but no remote monitoring. Divided into three sectors with supporting bases, the MFO also performs on-site inspections in limited force zones and periodic low-altitude aerial surveys. Lederman observes that the lesson to be drawn from the evolution of the UNEF in *Sinai II* to the MFO in the Peace Agreement is that the most important element behind the execution of an agreement is the political interests of the signatories. If they have strong political incentives, changes in either the organization or the composition of its verification regime can be accomplished without undue damage to the agreement and its execution.

The following anecdote told by Gen. Siilasvuo, former commander of UNEF II, dramatically illustrates this principle. The General attended an Israeli Independence Day reception in Israel in May 1978 (before the Camp David Accords). He relates his conversation with Israeli President Ephraim Katzir as follows:

*Israel is now facing difficult decisions which involve great risks. Tell me, General Siilasvuo, can we trust the Egyptians?*

*I answered the President that in this world I would not trust anybody.*

*'What do you mean?' the President asked, surprised.*

*'Has Israel been able to trust the British, the Russians, or the French? Can you, in the end, trust your good friends the Americans?' I asked the President and continued: 'I think that Israel should try to create such economic and other relations with Egypt that it would be in the interest of Egypt to adhere to the agreement.'*



The Israel/Egypt border is currently stable and the MFO continues to function indefinitely in the Sinai. The system created by the *Egypt-Israel Peace Agreement* has successfully operated for 16 years even in times of crisis such as the Israeli incursion into Lebanon and the assassination of President Sadat. It operates so discretely that many people outside the region are unaware of its operations and scope. This may be the best testament to its effectiveness.



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## Appendix

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### — Sinai Interim Agreement (Sinai II)

SEPTEMBER 1, 1975

**The Government of the Arab Republic of Egypt and the Government of Israel have agreed that:**

#### **Article I**

The conflict between them and in the Middle East shall not be resolved by military force but by peaceful means.

The Agreement concluded by the parties on 18 January 1974, within the framework of the Geneva Peace Conference, constituted a first step towards a just and durable peace according to the provisions of Security Council Resolution 338 of 22 October 1973.

They are determined to reach a final and just peace settlement by means of negotiations called for by Security Council Resolution 338, this Agreement being a significant step towards that end.

#### **Article II**

The parties hereby undertake not to resort to the threat or use of force or military blockade against each other.

#### **Article III**

The parties shall continue scrupulously to observe the cease-fire on land, sea and air and to refrain from all military or para-military actions against each other. The parties also confirm that the obligations contained in the annex and, when concluded, the Protocol shall be an integral part of this Agreement.

#### **Article IV**

A. The military forces of the parties shall be deployed in accordance with the following principles:

- (1) All Israel forces shall be deployed east of the lines designated as lined J and M on attached map.
- (2) All Egyptian forces shall be deployed west of the line designated as line E on the attached map.
- (3) The area between the lines designated on the attached map as lines E and F and the area between the lines designated on the attached map as lines J and K shall be limited in armament and forces.
- (4) The limitations on armament and forces in the areas described by paragraph (3) above shall be agreed as described in the attached annex.
- (5) The zone between the lines designated on the attached map as lines E and J will be a buffer zone. In this zone the United Nations Emergency Force will continue to perform its functions as under the Egyptian-Israeli Agreement of 18 January 1974.
- (6) In the area south from line E and west from line M, as defined on the attached map, there will be no military forces, as specified in the attached annex.

B. The details concerning the new lines, the redeployment of the forces and its timing, the limitation on armaments and forces, aerial reconnaissance, the operation of the early warning and surveillance installations and the use of the roads, the United Nations functions and other arrangements will all be in accordance with the provisions of the annex and map which are an integral part of this Agreement and of the protocol which is to result from negotiations pursuant to the annex and which, when concluded, shall become an integral part of this Agreement.



#### **Article V**

The United Nations Emergency Force is essential and shall continue its functions and its mandate shall be extended annually.

#### **Article VI**

The parties hereby establish a joint commission for the duration of this Agreement. It will function under the aegis of the chief co-ordinator of the United Nations peace-keeping missions in the Middle East in order to consider any problem arising from this Agreement and to assist the United Nations Emergency Force in the execution of its mandate. The joint commission shall function in accordance with procedures established in the Protocol.

#### **Article VII**

Non-military cargoes destined for or coming from Israel shall be permitted through the Suez Canal.

#### **Article VIII**

This Agreement is regarded by the parties as a significant step toward a just and lasting peace. It is not a final peace agreement.

The parties shall continue their efforts to negotiate a final peace agreement within the framework of the Geneva peace conference in accordance with Security Council Resolution 338.

#### **Article IX**

This Agreement shall enter into force upon signature of the Protocol and remain in force until superseded by a new agreement.

### **ANNEX TO THE EGYPT-ISRAEL AGREEMENT**

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Within five days after the signature of the Egypt-Israel Agreement, representatives of the two parties shall meet in the military working group of the Middle East peace conference at Geneva to begin preparation of a detailed Protocol for the implementation of the Agreement. The working group will complete the Protocol within two weeks. In order to facilitate preparation of the Protocol and implementation of the agreement, and to assist in maintaining the scrupulous observance of the cease-fire and other elements of the Agreement, the two parties have agreed on the following principles, which are integral part of the Agreement, as guidelines for the working group.

#### **1. DEFINITIONS OF LINES AND AREA**

The deployment lines, areas of limited forces and armaments, buffer zones, the area south from line E and west from line M, other designated areas, road sections for common use and other features referred to in article IV of the Agreement shall be indicated on the attached map (1:100,000 - United States edition).

#### **2. BUFFER ZONES**

(A) Access to the buffer zones will be controlled by the United Nations Emergency Force, according to procedures to be worked out by the working group and the United Nations Emergency Force.

(B) Aircraft of either party will be permitted to fly freely up to the forward line of the party. Reconnaissance aircraft of either party may fly up to the middle line of the buffer zone between E and J on an agreed schedule.

(C) In the buffer zone, between lines E and J, there will be established under article IV of the Agreement an early warning system entrusted to United States civilian personnel as detailed in a separate proposal, which is a part of this Agreement.



(D) Authorized personnel shall have access to the buffer zone for transit to and from the early warning system; the manner in which this is carried out shall be worked out by the working group and the United Nations Emergency Force.

### **3. AREA SOUTH OF LINE E AND WEST OF LINE M**

(A) In this area, the United Nations Emergency Force will assure that there are no military or para-military forces of any kind, military fortifications and military installations; it will establish checkpoints and have the freedom of movement necessary to perform this function.

(B) Egyptian civilians and third country civilian oil field personnel shall have the right to enter, exit from, work and live in the above indicated area, except for buffer zones 2A, 2B and the United Nations posts. Egyptian civilian police shall be allowed in the area to perform normal civil police functions among the civilian population in such number and with such weapons and equipment as shall be provided for in the Protocol.

(C) Entry to and exit from the area, by land, by air or by sea, shall be only through United Nations Emergency Force checkpoints. The United Nations Emergency Force shall also establish checkpoints along the road, the dividing line and at either points, with the precise locations and number to be included in the Protocol.

(D) Access to the airspace and the coastal area shall be limited to unarmed Egyptian civilian vessels and unarmed civilian helicopters and transport planes involved in the civilian activities of the areas agreed by the working group.

(E) Israel undertakes to leave intact all currently existing civilian installations and infrastructures.

(F) Procedures for use of the common sections of the coastal road along the Gulf of Suez shall be determined by the working group and detailed in the Protocol.

### **4. AERIAL SURVEILLANCE**

There shall be a continuation of aerial reconnaissance missions by the United States over the areas covered by the Agreement (the area between lines F and K), following the same procedures already in practice. The missions will ordinarily be carried out at a frequency of one mission every 7 - 10 days, with either party or the United Nations Emergency Force empowered to request an earlier mission. The United States Government will make the mission results available expeditiously to Israel, Egypt and the chief coordinator of the United Nations peace-keeping missions in the Middle East.

### **5. LIMITATION OF FORCES AND ARMAMENTS**

(A) Within the areas of limited forces and armaments (the areas between lines J and K and lines E and F) the major limitation shall be as follows:

(1) Eight (8) standard infantry battalions.

(2) Seventy-five (75) tanks.

(3) Seventy-two (72) artillery pieces, including heavy mortars (i.e. with caliber larger than 120 mm.), whose range shall not exceed twelve (12) km.

(4) The total number of personnel shall not exceed eight thousand (8,000).

(5) Both parties agree not to station or locate in the area weapons which can reach the line of the other side.

(6) Both parties agree that in the areas between line A (of the disengagement agreement of 18 January 1974) and line E they will construct no new fortifications or installations for forces of a size greater than that agreed herein.

(B) The major limitations beyond the areas of limited forces and armament will be:

(1) Neither side will station nor locate any weapon in areas from which they can reach the other line.



(2) The parties will not place any anti-aircraft missiles within an area of ten (10) kilometers east of line K and west of line F, respectively.

(C) The United Nations Emergency Force will conduct inspections in order to ensure the maintenance of the agreed limitations within these areas.

## **6. PROCESS OF IMPLEMENTATION**

The detailed implementation and timing of the redeployment of forces, turnover of oil fields, and other arrangements called for by the Agreement, annex and Protocol shall be determined by the working group, which will agree on the stages of this process, including the phased movement of Egyptian troops to line E and Israeli troops to line J. The first phase will be the transfer of the oil fields and installations to Egypt. This process will begin within two weeks from the signature of the Protocol with the introduction of the necessary technicians, and it will be completed no later than eight weeks after it begins. The detail of the phasing will be worked out in the military working group.

### **PROPOSAL**

In connection with the early warning system referred to in article IV of the Agreement between Egypt and Israel concluded on this date and as an integral part of that Agreement (hereafter referred to as the basic Agreement), the United States proposes the following:

1. The early warning system to be established in accordance with article IV in the area shown on the map attached to the basic agreement will be entrusted to the United States. It shall have the following elements:

A. There shall be two surveillance stations to provide strategic early warning, one operated by Egyptian and one operated by Israeli personnel. Their locations are shown on map attached to the basic Agreement. Each station shall be manned by not more than 250 technical and administrative personnel. They shall perform the functions of visual and electronic surveillance only within their stations.

B. In support of these stations, to provide tactical early warning and to verify access to them, three watch stations shall be established by the United States in the Mitla and Giddi Passes as will be shown on the map attached to the basic Agreement. These stations shall be operated by United States civilian personnel. In support of these stations, there shall be established three unmanned electronic sensor fields at both ends of each Pass and in the general vicinity of each station and the roads leading to and from those stations.

2. The United States civilian personnel shall perform the following duties in connection with the operation and maintenance of these stations:

A. At the two surveillance stations described in paragraph 1A above, United States civilian personnel will verify that nature of the operations of the stations and all movement into and out of each station and will immediately report any detected divergency from its authorized role of visual and electronic surveillance to the parties to the basic Agreement and to the United Nations Emergency Force.

B. At each watch station described in paragraph B above, the United States civilian personnel will immediately report to the parties of the basic Agreement and to the United Nations Emergency Force any movement of armed forces, other than the United Nations Emergency Force, into either Pass and any observed preparations for such movement.

C. The total number of United States civilian personnel assigned to functions under this proposal shall not exceed 200. Only civilian personnel shall be assigned to functions under this proposal.

3. No arms shall be maintained at the stations and other facilities covered by this proposal, except for small arms required for their protection.



4. The United States personnel serving the early warning system shall be allowed to move freely within the area of the system.
5. The United States and its personnel shall be entitled to have such support facilities as are reasonably necessary to perform their functions.
6. The United States personnel shall be immune from local criminal, civil, tax and customs jurisdiction and may be accorded any other specific privileges and immunities provided for in the United Nations Emergency Force Agreement of 13 February 1957.
7. The United States affirms that it will continue to perform the functions described above for the duration of the basic Agreement.
8. Notwithstanding any other provision of this proposal, the United States may withdraw its personnel only if it concludes that their safety is jeopardized or that continuation of their role is no longer necessary. In the latter case the parties to the basic Agreement will be informed in advance in order to give them the opportunity to make alternative arrangements. If both parties to the basic Agreement request the United States to conclude its role under this proposal, the United States will consider such requests conclusive.
9. Technical problems including the location of the watch stations will be worked out through consultation with the United States.

Signed, Henry A. Kissinger Secretary of State



# **Protocol to the Agreement between Israel and Egypt, 22 September 1975.**

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The Parties to the present Protocol,

Having met in the Military Working Group of the Middle East Peace Conference at Geneva under the Chairmanship of Lieutenant-General Ensio Sfilasvuo, Chief Coordinator of the United Nations Peace-keeping Mission in the Middle East,

Taking into account that the preparation of a detailed Protocol is essential for the implementation of the Agreement between Egypt and Israel in all its part which constitutes a significant step towards a just and durable peace according to the provisions of Security Council Resolution 338 of 22nd October 1973,

Conscious of the fact that the Agreement enters into force upon the signature of this Protocol,  
Having been guided by principles contained in the Annex to the Agreement,

Have agreed as follows:

## **Article I**

### **REDEPLOYMENT OF FORCES**

See Maps: 'R' (1/500,000) and 'Q' (1/100,000)

#### **1. Area South of Line E and West of Line M (see Map 'Q')**

##### **a. 15th November 1975, 1200 hours**

- (i) The transfer to UNEF of the Area R1C (marked on Map 'Q').
- (ii) The transfer to UNEF of the Ras Sudar area (marked on Map 'Q' as Area R2).

##### **b. 16th November 1975, 1200 hours**

- (i) The transfer by UNEF to Egypt of the Areas R1C and R1D. In these areas there will be no Egyptian military forces and military infrastructures until:

- in area R1D: 15th December 1975.

- in area R1C: 16th January 1976.

- (ii) The transfer by UNEF to Egypt of the area of Ras Sudar (Area R2). From 5th October 1975, Egypt may introduce technicians to the Ras Sudar oil installations.

##### **c. 24th - 30th November 1975**

- (i) UNEF entering to the rest of the area South of Line E and West of Line M. Egypt may introduce technicians to the Abu Rodeis oil installations.

- (ii) Israel forces leaving this area at 1200 hours, 30th November 1975

##### **d. 1st December 1975**

At 1200 hours the transfer by UNEF to Egypt of the rest of the area South of Line E and West of Line M.



## 2. Northern Area (See Map 'Q') - 1/100,000)

### Basic Timetable

- a. 12th-13th January 1976 (Sector S-1)
  - (i) At 0900, 12th January 1976, UNEF entering area S1D.
  - (ii) At 1400, 13th January 1976, Israel forces leaving area S1D.
- b. 16th January 1976  
At 0900 the transfer by UNEF to Egypt of the Area S1C.
- c. 26th January-2nd February 1976
  - (i) At 0900, 26th January 1976, the transfer by UNEF to Egypt of the Area S4D.
  - (ii) At 1200, 2nd February 1976, the transfer by UNEF to Egypt of the Area S3D.
- d. 14th-19th February 1976 (Sector S-1 and S-4)
  - (i) At 0900, 14th February 1976, UNEF entering Area S1B.
  - (ii) At 0900, 15th February 1976, UNEF entering Area S4B.
  - (iii) At 1200, 17th February 1976, Israel forces leaving Area S1B.
  - (iv) At 1200, 18th February 1976, Israel forces leaving Area S4B.
  - (v) At 1200, 19th February 1976, the transfer by UNEF to Egypt of Area S4C.
- e. 16th-20th February 1976 (Sector S-3)
  - (i) At 0900, 16th February 1976, UNEF entering Area S3B.
  - (ii) At 1200, 19th February 1976, Israel forces leaving Area S3B.
  - (iii) At 1200, 20th February 1976, the transfer by UNEF to Egypt of Area S3C.
- f. 18th-22nd February 1976 (Sector S-2)
  - (i) At 0900, 18th February 1976, UNEF entering Area S2B.
  - (ii) At 1200, 21st February 1976, Israel forces leaving Area S2B.
  - (iii) At 1200, 22nd February 1976, the transfer by UNEF to Egypt of Area S2C.

### 3. Demarcation of the Lines

- a. The demarcation of Line J on the ground will be carried out between 1st October 1975 and 31st October 1975 by UN and Israeli teams.
- b. The demarcation of Line M on the ground will be carried out between 25th October 1975 and 21st November 1975 by UN teams. (Line M in Area R-2 will be demarcated by 10th November 1975).



- c. Egyptian and Israeli checking of demarcation of Line M on the ground will be carried out after 1st December 1975. The time schedule for checking of Line M will be coordinated between Egypt and Israel with UNEF.
- d. The redemarcation of Line E on the ground will be carried out between 1st January 1976 and 15th January 1976 by UN. The demarcation of Line E in Area RIC will be carried out between 1 November 1975 and 14th November 1975.
- e. Egyptian and UN teams will check Line E according to the basic timetable of the Egyptian deployment in each sector (see paragraph 2).

## **Article II**

### **SOUTHERN AREA (AREA SOUTH OF LINE E AND WEST OF LINE M)**

#### **1. General**

- a. The armed forces or any other armed personnel of either Party or of any other third party other than Egyptian policemen and the UNEF may neither enter, stay nor pass through the area or the airspace above the area.
- b. Egyptian civilians and third country civilian oilfield personnel shall have the right to enter, exit, work and live in the area.
- c. Entry to and exit from the area by land, sea and air shall be only through UNEF checkpoints.
- d. Access to the airspace and the coastal area shall be limited to unarmed Egyptian civilian vessels and unarmed civilian helicopters and transport planes involved in the civilian activities of the area. A limited number of Egyptian civilian helicopters and civilian transport planes may be stationed within the area for emergency cases and for the operation of the oilfields.

#### **2. The Functions of UNEF in the Area**

- a. UNEF will perform its responsibilities in accordance with the relevant Security Council resolutions, the provisions of the Agreement, the Annex and Protocol. The Force shall enjoy the freedom of movement and communication and other facilities that are necessary for the performance of its tasks.
- b. UNEF will assure that no military or para-military forces of any kind, military fortifications and military installations are in the area. The UNEF shall allow entry to and exit from the area by land, by air or by sea, through UNEF checkpoints to authorized persons and cargoes only. c. In order to perform its functions, UNEF -
  - (i) will establish checkpoints and observation posts (see Map 'C')
  - (ii) will patrol throughout the area by land, coastal and air patrols.
- d. UNEF will carry out verification at the checkpoints through the Egyptian civilian police in the presence and under the supervision of UNEF personnel.
- e. UNEF will report its findings to both Parties to the Agreement.

#### **3. Buffer Zones 2A, 2B and UNEF posts in the Hammam Faroun Area**

- a. The zones designated on the Map attached to the Agreement as Zones 2A and 2B will be Buffer Zones. In these zones UNEF shall be stationed and shall perform the same functions as determined in Buffer Zone 1.



b. The UNEF posts in Hammam Faroun area are as indicated on the Map attached to the Agreement. Egyptian personnel and civilians will not enter UNEF posts in this area.

c. UNEF shall maintain permanent checkpoints on the routes leading into the Buffer Zones and on the Buffer Zone lines.

#### 4. Egyptian Civilian Police

a. Egyptian civilian police shall be allowed in the area, to perform normal police functions among the civilian population.

b. This police unit will be equipped with revolvers, sub-machine guns, rifles and light unarmed vehicles marked with the distinctive marking of civilian police,

c. The police unit will be composed of 700 policemen: 500 of them armed and 200 are Police Administrative personnel.

#### 5. Road Sections for Common Use

a. The sections for common use on the coastal road along the Gulf of Suez are as indicated on the Map attached to the Agreement and will be opened to traffic as detailed in the Statement of the Chairman.

b. The maintenance of the common sections of the road within Buffer Zones 2A and 2B and West of Line M shall be maintained by UNEF. Other sections of the common road East of Line M shall be maintained by Israel.

c. Egypt and Israel will have access to these road sections within Buffer Zones 2A and 2B from all directions, i.e. also from the side roads West and East of these sections as indicated on Map 'C' attached to the Protocol and this in accordance with an established time schedule - to and from their respective areas. Vehicles entering the side roads will be accompanied by UNEF.

d. UNEF will assure, through checkpoints on the road sections for common use (as indicated on Map 'C' attached to the Protocol) and through patrols along these sections, that the traffic on these sections will be conducted in accordance with paragraph (c) above and as detailed in the Statement by the Chairman.

#### 6. Transfer of Oilfields, Installations and Infrastructures

a. Israel undertakes to leave intact all currently existing oilfields, installations and infrastructures.

b. Egypt will be represented in the transfer:

(i) with respect to the Ras Sudar area by Mobil.

(ii) with respect to the Abu Rodeis area by IEOC.

c. The technicians introduced to the area will have the necessary vehicles for their movements and have the necessary means of communications with Egyptian authorities.

d. The transfer will be carried out by a procès verbal to be signed by Israel and the above-mentioned representative of Egypt and to be witnessed by the Chief Co-ordinator or his representative.

e. The third party technicians will be responsible for whatever oilfield installations and infrastructures they receive.

### Article III



## THE NORTHERN AREA

### 1. Buffer Zone 1

- a. The zone between the lines designated on the Map attached to the Agreement as Lines E and J will be a Buffer Zone. In this zone the UNEF shall be stationed and continue to perform its functions as under the Egyptian-Israeli Agreement of 18th January 1974, and carry out other activities as detailed in the Agreement, Annex and Protocol.
- b. UNEF will maintain checkpoints, observation posts and reconnaissance patrols along the lines of the Buffer Zone and within the area, in order to prevent any unauthorized entry into the area of any person. Access will be only through the checkpoints controlled by UNEF.
- c. In Buffer Zone 1 there will be established an Early Warning System entrusted to United States civilian personnel.
- d. UNEF shall have complete freedom of movement within Buffer Zone 1, except that UNEF personnel shall not enter the perimeter of the Surveillance Stations.

### 2. Limitation of Forces and Armaments

- a. The major limitations on Forces and Armaments are as provided for in article IV B of the Agreement and paragraph 5 of the Annex.
- b. UNEF supervision
  - (i) UNEF will conduct inspections as follows:
    - (a) In areas between Lines E and F and Lines K and J as regards limitations of forces and armaments.
    - (b) In the area between Line E up to ten (10) kilometres West of Line F and in the area between Line J up to ten (10) kilometres East of Line K to assure that anti-aircraft missiles are not placed in the areas.
  - (ii) UNEF shall conduct bi-weekly inspections in the areas referred to in b. (i)(a) and b. (i)(b) above an order to ensure the maintenance of the agreed limitations within these areas.
  - (iii) UNEF shall inform both Parties of the results of such inspections.
  - (iv) UNEF inspection teams shall be accompanied by liaison officers of the, respective parties.
  - (v) UNEF shall carry out additional inspections within twenty-four (24) hours after the receipt of such a request from either Party, and will promptly furnish both Parties with the results of each inspection.

### 3. Early Warning System

- a. The Early Warning System, based on the Agreement, the Annex and the accepted Proposal which constitutes an integral part of the Agreement, will include:
  - (i) Two (2) Surveillance Stations operated by each Party respectively.
  - (ii) Three (3) U.S. Watch Stations and four (4) unmanned electronic sensor fields.



b. The location of the system and the approach roads are indicated on Map 'A' attached to the Protocol.

c. Surveillance Stations

(i) General

(a) Each Party shall maintain a Surveillance Station in Buffer Zone 1, to provide strategic early warning.

(b) UNEF personnel will not enter the Surveillance Stations of each Party.

(c) Each Party may visit its respective Surveillance Station and may freely supply and replace personnel and equipment situated therein, in accordance with the following procedures:

- UNEF will escort from its checkpoints to the perimeter of the Station and back.

- From that point escort and verification will be as described in paragraph 3.d.(ii).

(d) Each Party will be permitted to introduce into its Station items required for the proper functioning of the Station and personnel.

(ii) The Stations

(a) Each Surveillance Station shall be manned by not more than two hundred and fifty (250) technical and administrative personnel, equipped with small arms (revolvers, rifles, sub-machine guns, light machine guns, hand grenades and ammunition) required for their protection.

(b) Each Party will be permitted to maintain in its respective Surveillance Station, fifteen (15) administrative vehicles, two to three (2-3) mobile engineering equipment for the maintenance of the site and the road and fire-fighting and general maintenance equipment. All vehicles shall be unarmed.

(iii) Access to and exit from the Stations

(a) Access to and exit from the Surveillance Stations shall be as follows (as indicated on Map 'A' attached to the Protocol):

- To E-1: From West of Line E to the Giddi Route, through the UN Alpha checkpoint, to the junction leading to the Um Hashiba, and thereafter South-Eastwards on the route to E-1.

- To J-1: From East of Line J to the Um Hashiba Route to J-1.

(b) Each Party will inform UNEF at least one hour in advance of each intended movement to and from the respective Surveillance Station. UNEF will co-ordinate with the appropriate Watch Station.

(c) As to escort arrangement of personnel to the Surveillance stations, see paragraph 3.d.(ii).

(d) Such movement to and from the respective Surveillance Stations shall take place only during daylight.



(e) Each Party shall be entitled even during the night to evacuate sick and wounded and summon medical experts and medical teams after giving immediate notice to the nearest Watch Station and UNEF.

(iv) Maintenance of Communication Cables and Water Lines

Communication cables and water lines passing through Buffer Zone 1, to the respective Surveillance Stations, shall be inviolable. Both Parties will be permitted to carry out maintenance and repairs along the routes of the communication cable and water lines. Notification of such maintenance team shall be given four (4) hours in advance, through the UN Alpha and Bravo checkpoints respectively, to the nearest Watch Station. UNEF personnel will accompany each team in the same manner as detailed in paragraph 3.d.(ii).

(v) Communication and Co-ordination between UNEF and the Parties

Technical arrangements, including the laying of telephone lines, will be arranged in order to facilitate communication and co-ordination between the UN checkpoints, the Watch Stations and each of the Parties.

d. U.S. role in Early Warning System

(i) The U.S. role in the Early Warning System will be as provided for in the U.S. proposal attached to the Agreement.

(ii) The UNEF will escort Egyptian and Israeli personnel to the perimeter of each Surveillance site where U.S. civilian personnel will verify that access by the Parties is in accordance with the provisions regarding access to the Surveillance sites.

(iii) If experience suggests changes in locations or procedures, the U.S. shall be able to work out such changes in consultation with the Parties.

e. The establishment of an Egyptian Surveillance Station at E-1.

(i) As of 28th December 1975, Egypt may introduce a Working team into the Buffer Zone for the construction of a Surveillance Station at E-1, as detailed in the Statement of the Chairman.

(ii) The building site at E-1 will be guarded at all times by UNEF whilst construction work is in process.

## Article IV

### JOINT COMMISSION

1. The Joint Commission, referred to in Article VI of the Agreement between Egypt and Israel signed on the 4th September 1975, shall function in accordance with the following rules:

a. The Commission shall meet under the Chairmanship of the Chief Co-ordinator of the United Nations Peace-keeping Missions in the Middle East or his representative and shall be composed of representatives of each Party to the Agreement.

b. For the duration of the Agreement, the task of the Commission is to consider any problem arising from the Agreement and to assist the United Nations Emergency Forces in the execution of its mandate.



- c. Ordinary meetings of the Commission shall be held at agreed dates. Invitations for the meetings shall be issued by the Chief Co-ordinator or his representative. In the event that either Party, or the Chief Co-ordinator, requests a special meeting, it will be convened within 24 hours.
- d. The Commission shall hold its meetings in the Buffer Zone under the Chairmanship of the Chief Co-ordinator or his representative where liaison officers of the Parties will be available.
- e. The Parties to the Agreement shall consider problems before the Commission in order to reach agreement.
- f. The Commission may supplement these rules as it deems necessary.
- g. It will hold its first meeting not later than one month after the signing of the Protocol.

## **Article V**

### **FLIGHTS AND AERIAL RECONNAISSANCE**

1. Aircraft of either Party will be permitted to fly freely up to the forward line of that Party (Lines E and J respectively).
2. Reconnaissance aircraft of either Party may fly up to the Median Line of Buffer Zone 1 (designated on Map 'D', 1/500,000, US edition, attached to the Protocol) in accordance with the following principles:
  - a) Reconnaissance flights will be carried out by planes at a height of not less than 15,000 feet and on a straight course (along the median line of Buffer Zone 1). No manoeuvre should occur in the Buffer Zone that may involve the crossing of lines of the other Party.
  - b) Each reconnaissance flight shall not be made by more than two (2) planes.
  - c) There shall be seven (7) reconnaissance flights every week for each Party.
  - d) For these flights each Party will have at its exclusive disposal periods of 24 hours beginning at 1215 until 1145 the following day. The Parties will alternate in the use of the allocated periods. No flights will be carried out between 1145 and 1215 daily.
  - e) Egypt will be the first to exercise the right of carrying out flights on 22nd February 1976, starting from 1215. Israel will carry out its first flight on 23rd February 1976, starting from 1215, etc.
  - f) Notice shall be given to a representative of the Chief Co-ordinator not less than six (6) hours before each reconnaissance flight.
  - g) For reasons of weather limitations or other technical reasons, notice of a reconnaissance flight will specify a span of four (4) hours, during which time the reconnaissance flight will take place. (For example: a reconnaissance flight will take place on... date, between 1000 and 1400).

## **Article VI**

### **GENERAL**

This Protocol and the Maps attached thereto are an integral part of the Agreement. The Statement of the Chairman is equally binding on the Parties.

The present Protocol shall enter into force upon signature by both Parties.



Done at Geneva on the 22nd of September 1975, in four original copies.

For the Government of the Arab Republic of Egypt

Taha El-Magdoub  
Major-General

For the Government of Israel

Avraham Kidron  
Herzl Shafir  
Major-General

WITNESS  
General Ensio Siilasvuo



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