

Israel and the U.S. Navy

W. Seth Carus

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AIPAC Papers On U.S.-Israel Relations

This paper continues research initiated by Guilford Glazer

The AIPAC Papers on U.S.-Israel Relations

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Subscription price for ten issues:
\$25 for members
\$30 for nonmembers

Not available on a single issue basis

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Third Printing

Cover design by Jill Indyk

PREFACE

This is the third part of a thematic series of AIPAC Papers on the specific issue of the potential for enhanced strategic cooperation between the United States and Israel. The first volume on this theme, *The Strategic Value of Israel*, was devoted largely to the advantages of prepositioning U.S. Army material at Israeli facilities for possible use in a Middle Eastern crisis. The second volume dealt with various forms of cooperation between Israel and the U.S. Air Force. The current study examines the value of Israeli assistance to the U.S. Navy. The fourth volume will deal with the potential use of Israeli hospital facilities to treat U.S. casualties in the event that it is necessary to involve the Rapid Deployment Force in a Persian Gulf conflict. The fifth will deal with the potential of Israeli defense and aerospace contractors to provide *overhaul and maintenance services* for U.S. armed forces equipment.

AIPAC's series of studies range beyond the theme of strategic cooperation. Other papers soon to be published include topics such as the way in which aid to Israel serves the U.S. national interest, anti-Israel activity on the college campuses and the impact of territorial issues on Israeli security. But we believe that the strategic importance of Israel to the United States is not well understood, and the series of which this paper is part is intended to build the foundation for a clearer appreciation of this central issue in U.S. Middle East policy.

Publications in this series draw upon the expertise of scholars and professional analysts. W. Seth Carus is AIPAC's advisor on military affairs.

Thomas A. Dine
Executive Director
June 1983

EXECUTIVE SUMMARY

The strength of the Israeli Air Force and Navy is an important but often neglected element of the balance of power in the eastern Mediterranean. At a time when Soviet capabilities in the region have grown while the ability of the United States to commit resources to the Mediterranean has declined, Israel has emerged as the most capable power in the basin. Moreover, Israel has an inherent interest in ensuring that the eastern Mediterranean does not fall under the control of Soviet-allied forces.

Israeli air and naval forces have impressive capabilities to challenge Soviet and Soviet-allied ships and aircraft operating in the zone east of the Turkish Straits. The Israeli Air Force can generate twelve times as many combat sorties as a U.S. carrier air wing, and twenty times as many attack sorties. Even if only 20% of its resources were dedicated to missions against Soviet targets in a Mediterranean crisis, the Israeli Air Force would still be able to fly more sorties than a two-carrier U.S. task force (twice what we have there now) operating at a maximum surge rate, enough to sink the entire Soviet surface fleet in the Mediterranean in less than four days. The Israeli Navy, although comprised mainly of small missile boats, has impressive capabilities against surface combatants, carrying almost three times as many anti-ship missiles as the Soviet fleet typically operating in the Mediterranean. Acting in combination, these Israeli forces are, surprisingly, capable of dominating the eastern Mediterranean and defeating any likely fleet of Soviet surface combatants deployed in those waters.

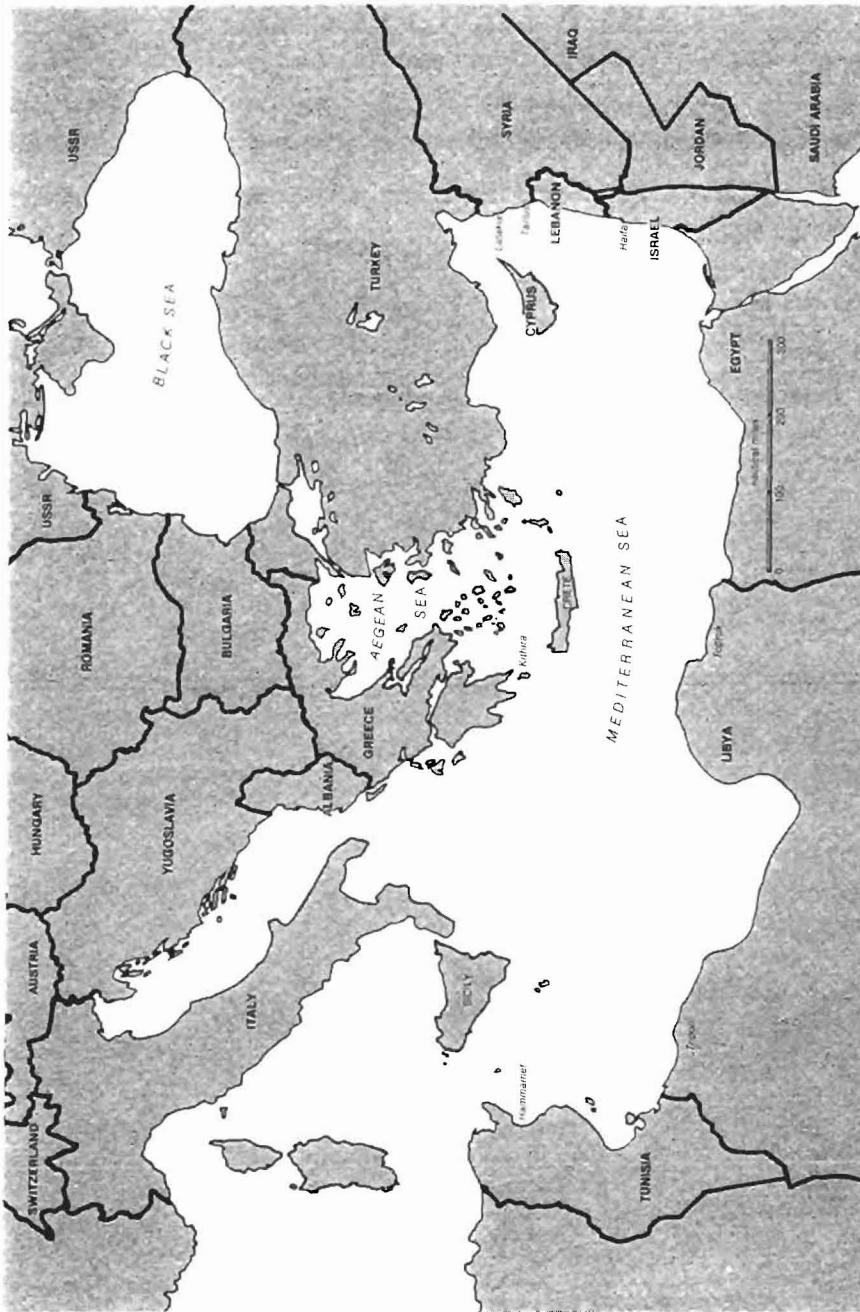
Even in the absence of a formal strategic cooperation agreement between the U.S. and Israel, Israeli air and naval forces are an important element in the balance of power in the eastern Mediterranean. The Soviet Union, aware of Israel's strength, cannot act in the region without taking into account possible Israeli counter-action. Accordingly, Israel has become an important deterrent to Soviet aggression and contributes daily to the security of the United States and NATO.

There are, however, steps that could be taken that would further enhance Israel's strategic value to the United States, many of which would have little cost to the U.S. And the benefits would accrue, not just to Israel and the U.S., but to all countries which would be adversely affected by Soviet domination of the Mediterranean—even including some hostile to Israel. As we look for allies to carry a greater share of the burden of the common defense, Israel stands out as a country able and willing to do more.

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Israel and the U.S. Navy



Israeli air and naval forces are an important but often neglected element of the balance of power in the eastern Mediterranean. It is the purpose of this study to look at Israel as a Mediterranean power, and to examine ways in which enhanced cooperation between Israel and the United States could benefit the United States.

The eastern Mediterranean is an area of particular historic, current and future concern for American naval strategists. It is a strategically important body of water, more so today than in the past. Yet, the ability of the U.S. Navy to operate in the eastern Mediterranean under wartime conditions is under greater challenge today than it has been in many years. Threats to American naval forces have proliferated, including both the expanding Soviet naval and air forces and the growing capability of Soviet allies, including Syria and Libya, to act as a threat themselves, or to provide needed bases and support to Soviet forces. At the same time, the United States has accepted a greater role in maintaining the security of the Persian Gulf and the Indian Ocean, compelling the U.S. Navy repeatedly to divert naval resources from the Mediterranean. Even with planned additions, past reductions in the overall number of American naval ships will make it difficult for the U.S. Navy to return to past levels of strength. There has also been a decline in the political reliability and/or naval combat capability of our NATO allies in the eastern Mediterranean—Greece and Turkey. In combination, these factors have produced a situation in the Mediterranean more favorable to the Soviet Union and more challenging for the West than has ever been the case.

Because the United States needs additional support in the eastern Mediterranean, this is a particularly appropriate time to consider the potential contribution that could be made by Israel. Israel shares the basic strategic objectives of the United States in the eastern Mediterranean, and has become a more important potential contributor to the common defense. Israel has a vital interest in making sure that the Soviet Navy does not dominate the eastern Mediterranean, and in ensuring that the United States, not the Soviet Union, is the dominant power in the region. Indeed, Israel might be able and willing to support American efforts under conditions where other American allies in the region might not.

The purpose of this study, then, is to examine the problems facing the United States in the eastern Mediterranean, and to consider ways in which cooperation with Israel could contribute to solving those problems, thus furthering American interests.

Soviet Naval Strength

The primary military threat to American interests in the Mediterranean is the combined forces of the Soviet Navy (surface, submarine and air). This threat has grown in the past decade. Soviet aircraft, surface ships, and submarines are more capable today than in the past, and the weapons and electronics carried by these platforms have grown in sophistication. Compared to the types previously used, newer Soviet anti-ship and anti-submarine missiles are more accurate, longer ranged, and harder to defend against.

The Soviet Mediterranean squadron is usually 'their' most powerful fleet deployed outside their peripheral waters. About a third of all Soviet ships at distant stations are assigned to the Mediterranean. The fighting power of this force can vary considerably, depending on the exact classes of the ships stationed there at any given time, but the U.S. Navy must anticipate that in time of crisis the Soviets would quickly reinforce their Mediterranean fleet to levels far above the normal peacetime strength.¹

The ability of the Soviets to reinforce their Mediterranean squadron was demonstrated during the confrontation between the United States and the Soviet Union during the 1973 Arab-Israeli War. On October 4, just before the start of the conflict, the Soviets had 52 naval vessels in the Mediterranean, including 25 combatants. Ten days later, reinforcements had increased the total number of vessels to 69. By October 24, there were 80 Soviet warships present, including 38 combatants. One week later, on October 31, there were 95 ships, of which 51 were combatants. Equally impressive was the increase in weaponry. According to U.S. Navy estimates, on October 24 the Soviets had a "first-launch" capability of 250 torpedoes, 28 surface-to-air missiles, and 40 anti-ship missiles. A week later they had 348 torpedoes, 46 surface-to-air missiles, and 88 anti-ship missiles.²

The Soviets can reinforce their Mediterranean forces so quickly because they have a large fleet in the Black Sea. Soviet actions in 1973 indicate the ease with which these ships can be moved into the Mediterranean in time of crisis. To prevent such reinforcements, the U.S. Navy anticipates closing the Turkish Straits linking the Black Sea to the Mediterranean. As the 1973 crisis indicated, however, the Soviets may have sufficient warning of an impending crisis to reinforce their Mediterranean fleet before hostilities erupt. In addition, should Turkey not be directly involved in hostilities, the U.S. may be unable to deny the Soviets passage through the Turkish Straits.

The U.S. Navy also has to anticipate that it will be attacked by Soviet naval aircraft during a conflict in the Mediterranean. Attached to the Soviet Black Sea Fleet is a considerable air force, including about 100 Tu-16 *Badger*, Tu-22 *Blinder*, and Tu-26 *Backfire* bombers.³ Equipped with long-range anti-ship missiles, all these bombers have sufficient range to attack American vessels in the eastern Mediterranean, even when operating from air bases in

Soviet Naval Strength in the Mediterranean

8-10	torpedo attack submarines
2-3	cruise missile submarines
2-4	cruisers and carriers
9-12	destroyers and patrol ships
1-3	minesweepers
1-3	amphibious ships
15-20	auxiliary ships
5-6	survey ships

Source: *Understanding Soviet Naval Developments*, Fourth Edition, pp. 16-17.

Soviet Naval Strength in the Black Sea

1	aircraft carrier
2	helicopter carriers
7	guided missile cruisers
15	guided missile destroyers
7	guided missile frigates
3	light cruisers
9	destroyers
40	frigates
30	missile boats and missile corvettes

Source: *Jane's Fighting Ships, 1982-83*, p. 460. Submarines are excluded from the table, since they are prohibited by treaty from transiting the Turkish Straits.

the Soviet Union.⁴

In time of crisis the Soviets might operate bombers from Mediterranean air bases as well. Since 1981 both Syria and Libya have allowed the Soviets to fly naval reconnaissance aircraft from their countries,⁵ and the U.S. Navy must assume that bombers may be rapidly transferred to the Mediterranean in a time of crisis. Of less danger is the threat currently posed by Soviet carrier aviation. Even when a *Kiev*-class carrier is stationed in the Mediterranean, it can only contribute its dozen *Forger* attack aircraft. However, the capabilities posed by Soviet carrier aircraft are certain to increase as time passes, adding further to the threat posed by Soviet naval aviation to the U.S. Sixth Fleet, which operates in the Mediterranean. By 1990, the USSR is expected to have acquired at least one attack carrier like those employed by the U.S. Navy.

The Soviet naval threat is particularly acute in the eastern half of the Mediterranean. For strategic and operational reasons, the Soviet Mediterranean fleet usually operates in this sector. Soviet forces in the eastern Mediterranean can be used in time of war to interdict Western shipping transiting the Suez Canal, isolate Greece and Turkey from the rest of NATO, and destroy American carriers and submarines using the eastern Mediterranean as a base of operations to support NATO's southern flank.

In time of peace, Soviet forces in the eastern Mediterranean are a visible reminder of Moscow's growing military might, putting pressure on Greece and Turkey to adopt conciliatory policies towards the Soviet Union and demonstrating support for countries aligned with the Eastern bloc (Syria and Libya).

The importance of the eastern Mediterranean is reflected in the distribution of Soviet naval anchorages, which are conveniently located sites in international waters at which Soviet ships congregate when not on patrol. Of the six most important Soviet naval anchorages in the Mediterranean, five are in the eastern Mediterranean and four are in the eastern half of the eastern Mediterranean. In addition, there are Soviet naval facilities located in ports of the eastern Mediterranean. At present, the Syrian port of Tartus is the single

most important Soviet naval base in the region, in large part because of the strength of the defenses protecting that facility (and especially recently installed air defenses, including Soviet-manned SA-5 anti-aircraft missiles). The importance of Tartus has been increased by its transformation into a base to support Soviet submarines.⁶

In addition, Soviet naval aviation poses a more dangerous threat in the eastern Mediterranean than in the western Mediterranean, for three main reasons. First, the eastern sector is relatively close to naval air bases on Soviet territory. Second, Soviet naval aircraft may be able to operate from air bases located in Syria and Libya. Third, NATO land-based air forces in this area are comparatively weak.

These factors combine to make the eastern Mediterranean an especially dangerous theater of operations for the U.S. Navy. According to one assessment, it is one of three zones (along with the northern Atlantic and the northwest Pacific) that

are considered by the Navy to be high-threat areas because of the capability of the USSR to coordinate air-, surface-, and subsurface-launched weapons attack.⁷

These capabilities could enable the Soviets to deny the West use of the eastern Mediterranean in time of conflict. While not having the resources to actually control those waters, Soviet naval and air forces are sufficiently strong to make Western efforts to control that region excessively expensive.

Soviet Anchorages in the Eastern Mediterranean



Problems Facing the U.S. Navy

The principal mission of the U.S. Sixth Fleet is to protect Western interests threatened by the presence of Soviet and Soviet-allied forces in the Mediterranean, and to support the southern flank of NATO in time of war. This requires that the fleet support NATO's land and naval operations in the Mediterranean, protect lines of communication, deter attacks on friendly countries (not necessarily belonging to NATO), and aid American diplomatic endeavors. To accomplish its missions, the Sixth Fleet must have a credible warfighting capability. This requires that it simultaneously defend itself, project power ashore in support of NATO ground forces and protect vital NATO lines of communications and facilities, while also launching attacks against enemy ships, aircraft, and support facilities. In practical terms, the U.S. Navy has to be able to defend itself from anti-ship missiles, prevent Soviet anti-submarine attacks, deny Soviet and Soviet-allied forces use of air bases and ports in the region, and interdict their lines of communications.

In short, the United States must control the Mediterranean. Unlike the Soviet Navy, which can achieve most of its objectives merely by denying the West use of the Mediterranean, the U.S. Navy has to be able to operate on, above and below the sea, as well as against the shore. Given the strength of Soviet naval and naval air forces, the Sixth Fleet could have considerable difficulty achieving its objectives.

Even when the Soviets were much less powerful, the U.S. Navy considered that at least two aircraft carriers were needed to control the Mediterranean. Often, one or two additional carriers reinforced the Sixth Fleet in times of crisis. The decision to deploy carriers in the Indian Ocean has made it virtually impossible to routinely deploy two carriers in the Mediterranean on a continuing basis. Since the U.S. Navy has only enough carriers to operate four at forward stations continuously in peacetime, those sent to the Indian Ocean had to come from the Mediterranean and the Western Pacific. Accordingly, today there is usually only one aircraft carrier present with the Sixth Fleet. The Sixth Fleet has thus become weaker at a time when its tasks have become more difficult.⁸

The Sixth Fleet relies heavily on carrier-based aircraft. The planes assigned to carrier air wings provide the diverse capabilities needed to deal with a variety of tasks. For example, fighters protect merchant ships and surface combatants from air attack, escort attack aircraft, and defend the aircraft carrier battle group itself. Attack aircraft strike naval vessels or targets on land. In addition, the aircraft carrier has anti-submarine planes and airborne early warning aircraft which complement the Navy's land-based anti-submarine warfare aircraft stationed in the region. A carrier air wing is in fact a powerful force armed with modern stand-off precision guided weapons, supported by sophisticated electronic warfare equipment, and manned by superbly trained personnel.

Most carriers have a single carrier air wing with about 85 aircraft, including 24 F-14 fighters for air superiority missions and 38 attack planes for strike

missions.⁹ It is the attack aircraft that constitute the U.S. Navy's main strike capability against surface ships, though the introduction of the Harpoon anti-ship missile gives many surface combatants a surface warfare capability as well. Under normal circumstances, a carrier air wing can probably generate about 45 air superiority and 70 attack sorties per day. Calculated optimistically, it might be possible to achieve a surge rate of double those figures. It would be possible to sustain the surge rate for only a few days, after which the carrier air wing would be able to maintain only normal sortie rates.¹⁰

These small numbers mean that a single carrier air wing can accomplish only so much. In comparison to the tasks assigned to the Sixth Fleet a single carrier is insufficient. Even two carriers may not be enough. According to an assessment made in the late 1970s when there were still two carriers stationed in the Mediterranean, the ability of the U.S. Navy to gain superiority in the eastern Mediterranean was minimal without the presence of one or two additional carriers.¹¹ Today the situation is probably even more precarious, since the United States cannot be assured that the lone American carrier in the Mediterranean will be free to move into the eastern Mediterranean. Nor can the U.S. anticipate easy reinforcement of the Sixth Fleet, because in the event of a conflict there it is quite likely that available carriers would also be needed elsewhere.

Nor can our two NATO allies in the eastern Mediterranean, Greece and Turkey, be counted on to provide significant levels of support for the Sixth Fleet. Neither country has particularly powerful naval or air forces, relying as they do on often obsolescent equipment, and in the event of a conflict involving all of NATO it is likely that they would be fully occupied by attacks from the north. Political problems may limit the ability of these nations to fulfill their NATO commitments, especially in Greece where the current government has adopted policies that fall just short of a withdrawal from NATO.¹²

There are also diplomatic problems making reliance on Greece and Turkey uncertain in a non-NATO/Warsaw Pact conflict. Not only are the two countries intensely hostile towards each other, so that close cooperation between them is unlikely, but both have some regional interests that diverge from those of the United States. In the past each has indicated an unwillingness to allow use of American bases in support of actions taken outside the European theater. There is reason to believe that restrictions will remain as strict in the future. Given the variety of circumstances in which conflict can emerge in the eastern Mediterranean, prudent defense planning cannot anticipate automatic access to U.S. bases in the area.¹³

Overall, the United States is faced on an increasingly difficult situation in the Mediterranean, and especially in its eastern half. The strength of the potential opposition has grown in the recent years, and the forces of the U.S.

U.S. Naval Strength in the Mediterranean

1-2	aircraft carriers (with about 85 aircraft each)
18-19*	surface combatants (cruisers/destroyers/frigates)
4-7	amphibious ships
5-7	replenishment ships
—	nuclear attack submarines

*The number of surface combatants is reduced when there is only one carrier.

Source: Based on Desmond P. Wilson, "The U.S. Sixth Fleet and The Conventional Defense of Europe," Professional Paper No. 160, Center for Naval Analyses, September 1976, p. 4.

have declined. Yet, the Sixth Fleet still has important military and political missions, making it necessary to find practical solutions to the problems that hamper its effectiveness.

Israel as a Mediterranean Power

It is unusual to think of Israel in a Mediterranean rather than a Middle Eastern context, because focus on the Arab-Israeli conflict has so thoroughly molded our perceptions of Israel's place in the world. Israel is in fact, however, a Mediterranean country, just like Greece, Turkey, and Italy, and can be substantially influenced by what happens in those waters. In particular, the East/West balance of naval power in the Mediterranean has a direct impact on Israel's security, since it would face a severe security threat if the Soviet Union came to dominate that sea. Conversely, Israeli actions can significantly influence the strategic situation in the eastern Mediterranean, and its large air force and small but potent navy must be taken into account by assessments of the East/West balance in that region.

Israel's Mediterranean role could be important for the United States. It is widely agreed in the American national security community that U.S. cannot do it all alone. We must look to our allies to do more, with regard to their own forces and with regard to providing host nation support to the United States' forces. Israel, as a long-term ally of the United States, as a recipient of substantial amounts of U.S. aid, and as a country with a strong commitment to enhance the strategic position of the West, is a logical place to look. Israel is also one of the few countries of the world which has stepped forward and said, in effect, "We are willing and able to do more."

How, then, do the Israeli air force and navy impact on the balance of forces in the Eastern Mediterranean? And what, if anything, can and should be done to enhance cooperation between U.S. and Israeli forces in this area?

Israeli Air Power

Because Israel is opposed by adversaries with more than 1900 combat aircraft and because it relies heavily on its air force to compensate for weaknesses in other areas, the Israeli Air Force has acquired an inventory of about 600 modern combat aircraft. While intended primarily to protect Israel from air attack and to support its ground forces, these aircraft are also an important factor in the naval balance of power in the eastern Mediterranean. The flexibility of air power is such that a plane used to defend against Syrian air attacks over the Golan Heights in the morning could that same afternoon fly a

mission over the Mediterranean.

The Israeli Air Force has an impressive array of combat aircraft. It has 240 fighters which can be employed in either air superiority or attack missions (40 F-15, 70 F-16, and 130 F-4E). In addition, there are another 350 attack aircraft (170 *Kfir* and 180 A-4), though the *Kfirs* also have air combat capabilities.¹⁴ Among these aircraft are some originally developed for the U.S. Navy, including the F-4s (which are still in front-line service with the U.S. Navy and Marine Corps), the A-4s (which are still used by the Marine Corps), and the very impressive E-2Cs. In comparison, a U.S. Navy aircraft carrier usually operates only about 60 combat aircraft.

Israel has a deserved reputation for making good use of its combat aircraft. On a sustained basis, Israeli aircraft can generate an average of about 2.5 sorties per day.¹⁵ For brief periods, the Israeli Air Force has doubled this rate, but for analytic purposes the more conservative figure is used here. This means that the Israeli Air Force can generate on a sustained basis an average of either up to 600 air superiority and 875 attack sorties or 1475 attack sorties per day. The U.S. Navy can generate nearly the same number of sorties per airplane, but because of the smaller number of available aircraft it is estimated that a U.S. carrier air wing can generate only about 115 combat sorties per day, or up to 230 sorties for a few days running.

Thus, on a sustained basis, Israel can generate twelve times the number of combat sorties as a carrier air wing. Significantly, it can produce more than twenty times as many attack sorties. Even under ideal circumstances with two U.S. carriers in the eastern Mediterranean, the Israeli Air Force can generate five times as many air superiority missions and up to ten times as many attack missions. Thus, while Israeli air power is no direct substitute for American naval air power, it is quite evident that Israel could significantly supplement

Combat Sorties

	Israeli Air Force		Sixth Fleet (1 Carrier)		Sixth Fleet (2 Carriers)	
	Aircraft	Sorties	Aircraft	Sorties	Aircraft	Sorties
Air superiority	—	—	24	45-90*	48	90-180*
Air superiority or attack	240	600	—	—	—	—
Attack	350	875	34	70-140*	68	140-280*
Total	590	1475	58	115-230*	116	230-460*

*The first figure is sustained, the second surge. Surge effort can be maintained for only about three days.

U.S. aircraft carriers.

These figures assume that Israel is able to devote its entire air effort to operations in the eastern Mediterranean. This is not likely, since Israel could not devote all its resources to this mission under any but the most extreme circumstances. Yet, even if only 1 of every 5 sorties were dedicated to Mediterranean operations, the Israeli Air Force would still be able to fly more sorties than a two carrier American force operating at maximum surge rate.

In actuality, however, it is doubtful that Israel would have to devote such a large percentage of its resources to naval operations over an extended period of time. Tactics vary according to circumstances, but typically the U.S. Navy might allocate six strike aircraft to attack a single naval vessel. Thus, assuming that the Soviets had 50 surface vessels to be attacked in the eastern Mediterranean, that the Israelis used six-plane strike groups to attack each ship, and that only one-quarter of the groups successfully locate and sink their targets, Israel would still require no more than 1200 combat sorties to destroy the entire Soviet surface fleet in the region. Realistically, however, it is likely that far fewer sorties would be needed. If Israel had no other concerns, this could be accomplished in a single day. If Israel were also at war with an Arab foe or foes, this would probably require three or four days (depending on how much effort was initially devoted to attacking Soviet vessels.) In short, the Israeli Air Force could have an enormous impact on the naval balance of power in the Mediterranean basin.

In the event of an American-Soviet conflict, it is probable that certain Arab facilities would be used by the Soviets. The Syrians provide the Soviets with port facilities protected by air defenses at Latakia and especially at Tartus, and with air bases from which Soviet naval aircraft operate. In the event of a confrontation involving Israel, Syria, the United States and the Soviet Union, the Israelis would undoubtedly attack such facilities to keep the Syrians from using them. This would have the added benefit of also reducing their availability for the Soviets. In fact, Israel could deter the Soviets from exposing their forces at these locations.

The significance of the Israeli Air Force is not merely a function of its quantitative strength or of the quality of its aircraft. There are other factors which contribute to making Israeli air power a potent anti-naval strike force. The Israeli Air Force has considerable ability to conduct operations against distant targets. It has numerous aircraft with extremely long ranges, and the radius of action of these aircraft can be extended by in-flight refueling using some of Israel's tanker aircraft (KC-130 and converted Boeing 707). Israel also can provide command and control for distant operations using E-2C airborne early warning aircraft or possibly Boeing 707 aircraft converted into flying command posts. Israel also has aircraft specifically configured to target ships at sea.¹⁶

The Israeli Air Force has demonstrated an ability to attack targets as much as 550 nautical miles (nm) from Israel. F-15 fighters carrying a substantial payload and equipped with conformal fuel tanks have a combat radius of over 700 nm.¹⁷ While as a practical matter it is doubtful that Israeli strike aircraft could locate and attack ships at such distances, they could rely upon possible support from E-2Cs and other aircraft in locating targets at considerable distances. The E-2C can track on radar small naval vessels at distances of over 100 nm. Larger vessels can be detected at longer ranges. In addition, the E-2C has sophisticated passive detection equipment that can track targets at much greater ranges, provided that they are emitting electronic signals. Since a typical E-2C mission involves the aircraft flying about 200 nm from its base, and remaining at that point for up to 4 hours, it is reasonable to believe that the E-2C could support strike missions at distances of at least 300 nm from an Israeli air base. This would be sufficient to cover a zone of the Mediterranean extending to the west of Cyprus.¹⁸

Israel also has three 1124N *Sea Scan* maritime reconnaissance aircraft. Equipped with a search radar, passive electronic detection gear, and (probably) forward looking infra-red sensors, the *Sea Scan* has considerable detection capabilities. As currently configured, however, the *Sea Scan* cannot carry weaponry, though there is some talk of fitting it with the new air-launched version of the *Gabriel III* (with a 37.5-60 nm range). On a typical low altitude mission (flying at 3000 feet), the *Sea Scan* has a 60 nm wide search path and a range of 1300 nm. At higher altitudes, range increases to 2500 nm. It is thus plausible that the *Sea Scan* could be used to support strike missions at distances well in excess of 650 nm from Israeli air bases, or to the west of Crete.¹⁹

In addition to its long reach, the effectiveness of the Israeli Air Forces is greatly enhanced by a large inventory of air-launched guided munitions. Most were procured from the United States, so Israel employs many of the same weapons used by the U.S. Navy. Like the Sixth Fleet, Israel has *Maverick* television-guided missiles, *Shrike* and *Standard ARM* anti-radiation missiles, laser-guided bombs, and television-guided bombs. Included in the Israeli inventory are two advanced design television-guided weapons, the Extended Range/Data Link *Walleye II* and the GBU-15.²⁰ As a consequence, Israeli aircraft have available a range of sophisticated weapons that can be employed against Soviet surface ships with potent air defense capabilities.

Using advanced weapons, the Israelis should be able to attack warships while avoiding or suppressing most anti-aircraft defenses. For example, the GBU-15 can be released at altitudes of under 100 meters, yet still attack targets 5-6 nm away. At that altitude and distance, the launching aircraft cannot be attacked by most Soviet air defense weapons. Similarly, the Extended Range/Data Link *Walleye II* has an estimated range of about 25 nm.²¹

This allows weapons release outside the maximum range of most Soviet air defense weapons. Such attacks would undoubtedly be coordinated with simultaneous use of anti-radiation missiles and possibly even bombs delivered using conventional means.

The Israeli Air Force also has extensive electronic warfare capabilities, which could be of decisive importance when fighting the Soviet Navy. While the Israelis have never faced the Soviet Navy, they have on many occasions fought Soviet-built land-based air defenses. At times those defenses were manned by Soviet air defense troops. This has given Israel considerable expertise in the techniques of electronic warfare, and has forced the Israeli Air Force to procure and develop a formidable array of electronic warfare equipment. The effectiveness of this arsenal was decisively demonstrated in the summer of 1982 when Israeli aircraft destroyed Syria's Soviet-supplied air defenses in Lebanon without taking any losses.²²

Much of Israel's experience against Soviet land-based air defenses will be directly applicable to use against the Soviet Navy, which often uses air defense missiles similar to those employed by the Soviet Army. Israeli experience against the SA-2, SA-3, SA-7, and SA-8 missiles should be applicable to the roughly similar SA-N-2, SA-N-1, SA-N-5, and SA-N-4 naval air defense systems. Only two new naval missiles, the SA-N-6 based on the SA-10 and the SA-N-7 based on the SA-11 now appearing on new Soviet naval combatants, should pose unfamiliar problems in the near term. Against the SA-10 and SA-11 the Israelis have no experience, so it is probable that the SA-N-6 and SA-N-7, now deployed on only a few ships (with others under construction), would be entirely new challenges. Obviously, the same would also be true for the U.S. Navy.²³

The Israelis are believed to have modified some of their F-4E fighters into specialized electronic warfare planes similar to the American F-4G "Wild

Weasels."²⁴ If true, these aircraft would be armed with *Shrike* and *Standard ARM* missiles designed to attack radars. They would also be equipped with an array of jamming and electronic deception systems to support air strikes by other aircraft. While certainly not in the same class as the EA-6 electronic warfare aircraft available to the U.S. Navy, the Israeli-modified F-4s are potent machines giving the Israelis a capability not matched by most of our other allies.

Furthermore, unlike most air forces, the Israeli Air Force has extensive experience in operating over water. Air missions at sea are different from those conducted over land and acclimatization is necessary. The Israeli Air Force, however, lacking extensive land areas, has been forced to conduct much of its training over the Mediterranean. The Israelis also have some experience in air combat over water, though admittedly little by the standards of the U.S. Navy. They have used their air force on several occasions to attack Arab naval vessels. The best-known incident took place on May 1970, when Israeli aircraft sank an Egyptian destroyer and a missile boat at Ras Banas, some 200 nm from the nearest Israeli air base.²⁵ In all, it is believed that from 1967 through 1973, Israeli aircraft destroyed seven Arab warships, mostly small combatants. The Israelis have also done considerable aerial fighting over water. To cite but one example, albeit a spectacular one, in September 1973 Israeli aircraft fought Syrian aircraft over the Mediterranean off the coast of Syria between Latakia and Tartus. In this battle, more than 150 nm from the nearest Israeli air base, some thirteen Syrian MiG-21s were shot down against the loss of a single Israeli aircraft.²⁶

Admittedly, the Israelis cannot do everything that American naval aircraft operating from aircraft carriers can do. Aircraft carriers are mobile and can concentrate air power at a particular point, providing a flexibility that cannot be equalled when operating from land bases. Equally important, the Israeli Air Force lacks expertise in attacking heavily defended surface ships, while the U.S. Navy is without equal in this area.

At the same time, however, the Israeli Air Force possesses advantages of its own. Its air bases are considerably less vulnerable than aircraft carriers, however well-defended those carriers may be. The Israelis have extensive aircraft repair facilities readily accessible, unlike the Sixth Fleet, which has no depot-level maintenance facilities closer than the United States. As a result, heavily damaged Israeli aircraft can be put back into service relatively quickly, while heavily damaged American aircraft may remain out of service for the duration of the fighting. Finally, the operational readiness rates of Israeli aircraft are higher than those for U.S. Navy aircraft, in part because of the intrinsic difficulties of keeping highly sophisticated weaponry operational when remote from extensive repair facilities and spare-parts depots.²⁷

Israeli Experience Against Soviet Antiaircraft Missiles

Naval Missile	Land Equivalent	Israeli Experience Against Land Equivalent
SA-N-1	SA-3	Considerable since 1970
SA-N-2	SA-2	Considerable since 1967
SA-N-3	None	—
SA-N-4	SA-8	Some since 1982
SA-N-5	SA-7	Considerable since 1970
SA-N-6	SA-10	None
SA-N-7	SA-11	None

Source: Derived from *Combat Fleets of the World 1982/1983*, pp. 584-585.

The Israeli Navy

Israel has a powerful surface fleet in the eastern Mediterranean, a simple fact that has gone largely unnoticed. The Navy is the least important branch of the Israeli Defense Forces. It receives the smallest portion of the Israeli defense budget, and is allocated relatively little manpower. It is insignificant in size by American standards. In fact, the total tonnage of all Israeli warships is only slightly greater than the tonnage of one new American guided-missile destroyer. Even when compared with the navies of America's two NATO allies in the eastern Mediterranean, Greece and Turkey, the Israeli Navy seems insignificant in tonnage and personnel.²⁸

Such comparisons, however, are misleading. Though it operates no surface ships of more than 500 tons, the Israeli Navy (acting in coordination with its associated support aircraft) has the resources to successfully combat any fleet of Soviet surface combatants likely to be deployed in the eastern Mediterranean. This effectiveness has resulted from Israel's ability to develop a navy tailored to meet the particular problems of naval warfare in the region. Certain conditions have enabled Israel to develop such a specialized naval force.

First, the Israeli Navy is intended primarily to fight surface combatants. Because the Israeli Air Force can provide air cover, Israeli warships need only limited air defense capabilities. Because Israel's traditional opponents in the past have had only limited submarine warfare capabilities, it was never necessary to develop extensive anti-submarine capabilities. Thus, the Israeli Navy has been able to concentrate largely on the problem of fighting hostile surface ships.

Second, the Israeli Navy is optimized to fight relatively near its bases. This means that large ships with great endurance are unnecessary. It also means that Israel does not require the logistics ships needed to support naval operations in distant waters. In addition, because the Israeli Navy now operates almost exclusively in the eastern Mediterranean, it does not require large ships able to survive the rigors of the Atlantic and Pacific Oceans. This favorable situation is accentuated by the way in which the Israelis use their fleet. In a sense, they operate their missile boats almost as if they were aircraft, generally keeping them at sea for only a few days at a time and rarely operating more than a day's cruising time from Israel.

Third, the Israeli Navy relies almost exclusively on anti-ship missiles for fighting surface combatants, and probably has as much experience in the use of such weapons as any other navy in the world. Israel was one of the first countries in the Western world to consider adoption of anti-ship missiles, and was one of the very first to introduce an operational anti-ship missile into service. In the early 1960s Israel began development of the *Gabriel* anti-ship missile, which entered service in 1968. Improved versions of that weapon

remain in service with the Israeli Navy to this day. The Israelis also have the American *Harpoon* anti-ship missile, a weapon with a considerably longer range than the *Gabriel*.

The *Gabriel* and *Harpoon* anti-ship missiles are the main batteries on Israel's fleet of missile boats. Relying on these weapons, an Israeli missile boat can effectively challenge ships of much greater size. Typically, an Israeli missile boat carries more anti-ship missiles than the destroyers and cruisers of other navies. For example, an Israeli *Reshef*-class missile boat carries nine anti-ship missiles. By contrast, many Soviet destroyers and cruisers carry no dedicated anti-ship missiles, and those that do usually have only four or eight launching tubes.

Fourth, the Israeli Navy is one of the few naval forces in the world to develop working defenses against anti-ship missiles. Israeli awareness of the dangers posed by anti-ship missiles was accentuated by the destruction of the *Eilat* by Egyptian-fired *Styx* missiles. After the *Gabriel* entered service, the Israeli Navy discovered that it had a range about 15 nm less than that of the Soviet-built *Styx* missiles used by the Egyptian and Syrian navies. This meant that in order to be able to fire *Gabriel* missiles at Arab missile boats, Israeli vessels first had to survive attacks from *Styx* anti-ship missiles. As a consequence, the Israeli Navy proceeded to develop defenses against anti-ship missiles. The effectiveness of these defenses was demonstrated in 1973, when some 52 *Styx* missiles were fired at Israeli missile boats without achieving a single hit.

The emphasis on anti-ship missile defenses continues to this day. Unlike other navies, which invest only reluctantly in defenses against anti-ship missiles, the Israeli Navy devotes considerable resources to this matter. They have detection equipment (both radars and radar-detecting devices), electronic countermeasures equipment (passive measures, including chaff launchers, and active measures, including jamming and deception gear), and guns able to shoot down anti-ship missiles (soon to include the *Phalanx* gun system developed for the U.S. Navy).

As a result of this equipment, a typical Israel missile boat currently has better defenses against anti-ship missiles than do warships ten to twenty times that size operated by NATO navies. Israeli missile boats are, for example, better protected than many of the larger and more expensive frigates and destroyers that the Royal Navy used to fight in the Falklands in the spring of 1982. In fact, in some respects the Israeli Navy is even better prepared to fight missile wars than the U.S. Navy. Unlike the Americans, who until recently concentrated on defenses against just Soviet anti-ship missiles, Israel has had to devise defenses against anti-ship missiles made in France, Italy, and the Soviet Union.

In these efforts, the small size of their vessels makes the Israeli missile

Israeli Surface Combatants

CLASS	Aliyah	Reshef	Sa'ar III	Sa'ar II	Shimrit	Dvora	Dabur
TYPE	Missile Boat	Missile Boat	Missile Boat	Patrol Boat	Hydrofoil Missile Boat	Missile Boat	Patrol Boat
NUMBER IN SERVICE	4	8	6	6	2	2	37
TONS (FULL LOAD)	500	450	250	250	100	47	35
SPEED (KNOTS)	31	32	40	40	52	32	25
RANGE (NAUTICAL MILES)/ SPEED (KNOTS)	1500/30 4000/17	1500/30 4000/17	1000/30 2500/15	1000/30 2500/15	1056/44	700/27	1200/17
MISSILES							
<i>Harpoon</i>	4	4	2	0	4	0	0
<i>Gabriel</i>	4	4	3	0	2	2	0
GUNS							
76mm	---	2	1	0	0	0	0
40mm	---	0	0*	2	0	0	0
30mm	---	0	0	0	1 twin	0	0
20mm	---	2	0	0	0	2	2
TORPEDO TUBES	0	0	0	2	0	0	0
HELICOPTERS	1	0	0	0	0	0	0
CREW	53	45	40	40	15	10	6

*Armament varies.

boats hard to hit. A small warship is harder to detect, having a proportionally smaller radar profile, and is also harder to hit once detected. It is also easier and less expensive to provide electronic defenses for a small ship than a larger one. Since an Israeli missile boat often carries the same anti-ship missile defenses as ships many times larger, it should be evident that the Israelis have managed to achieve a level of defense unrivaled by any other navy. While a missile boat cannot survive once hit by an anti-ship missile, the same is often true for larger vessels as well, as the British recently discovered against Argentina.

In addition, the Israeli Navy has three small submarines to supplement its missile boats. These *Gal*-class submarines were built in England to West German specifications and are similar to boats currently operated by several NATO navies. Acting in conjunction with Israel's surface fleet, these submarines can further complicate the tactical situation for the Soviet Navy. Reportedly, Israel has purchased submarine-launched versions of the American *Harpoon* anti-ship missile, which can be fired when the submarines are submerged. Given the known limitations of Soviet anti-submarine warfare capabilities, *Harpoon*-armed submarines might be able to launch attacks before being detected.

The Israeli navy possesses a sophisticated battle management system necessary to effectively fight modern naval wars. This command, control, communications and intelligence (C³I) system integrates all the information obtained from a variety of sensors. Especially important are search aircraft, including the *Sea Scan* and (on occasion) E-2C *Hawkeye* patrol aircraft as well as helicopters mounted on the new *Aliyah*-class missile boats. Supplementing these planes is a chain of surveillance radars along Israel's Mediterranean coast. In addition, land-based passive sensors monitor electronic traffic at sea. Combat vessels are equipped with surveillance radars, but unlike most other small navies, the Israeli navy does not rely heavily upon such active detection methods. Instead, considerable use is made of passive detection devices that can detect radars far beyond the range at which the radar itself can detect objects. All this information is combined at a central, computerized command and control center to provide Israel's senior naval commanders with an integrated picture of the naval arena.

This system makes it possible for Israeli missile boats to attack targets too distant to be detected by search radars mounted on the combatants themselves. The impact of this on the potential effectiveness of Israeli naval warships is demonstrated by examining the distances at which targets can be attacked. In 1973, Israeli missile boats could engage targets no more than about 12 nm away using the version of the *Gabriel* then in service. Today, those same ships can attack targets at distances of up to 60 nm using over-the-horizon targeting techniques and American-supplied *Harpoon* missiles, or out

Anti-Ship Missiles on Israeli Naval Vessels

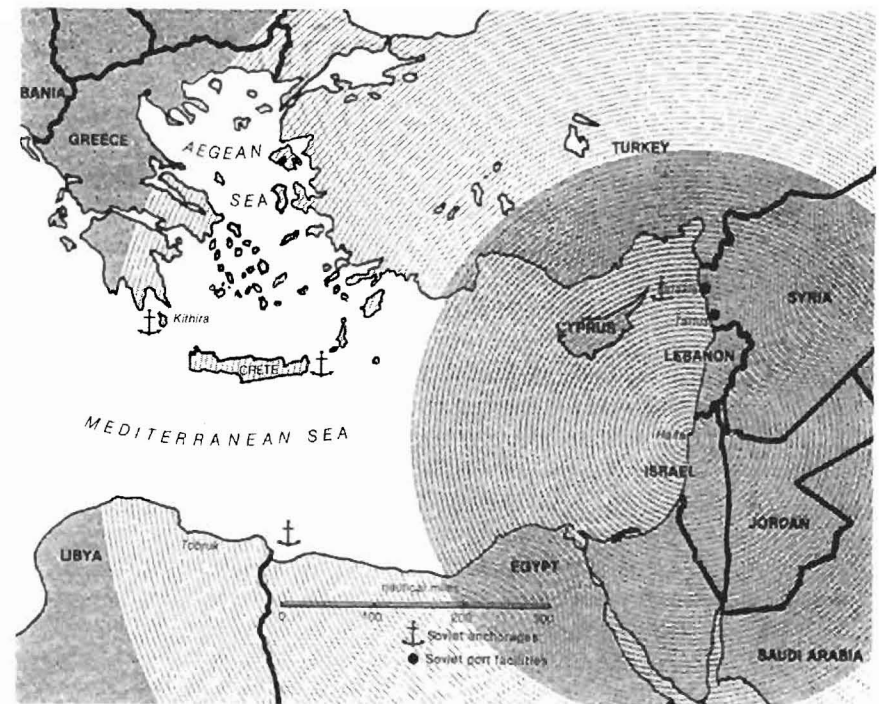
CLASS	SHIPS	TOTAL MISSILES		
		<i>Harpoon</i>	<i>Gabriel</i>	Total
<i>Aliyah</i>	4	16	16	32
<i>Reshef</i>	8	32	32	64
<i>Sa'ar III</i>	6	12	18	30
<i>Shimrit</i>	2	8	4	12
<i>Dvora</i>	2	0	4	4
TOTAL	22	68	74	142

to 25 nm using the latest version of the *Gabriel*. Similarly, this system should make it possible for Israeli submarines to fire submarine-launched *Harpoons* against targets too distant to be detected by sensors on those submarines.

A comparison of the Israeli Navy with the Soviet Mediterranean squadron vividly illustrates the striking power of the Israeli missile boats. Israel's 22 missile boats carry a total of 142 anti-ship missiles. In contrast, the Soviet Mediterranean squadron's peak strength during the 1973 crisis was only 28 surface combatants carrying (it was thought at the time) 88 anti-ship missile launchers. Today, the Soviet Mediterranean squadron usually has no more than 16 surface combatants, rarely with more than about 50 anti-ship missiles.

Many Soviet naval combatants are in fact poorly configured to fight warships like Israel's missile boats. Soviet ships often rely on weapons primarily intended for use against targets other than ships. For example, it is believed that the Soviets plan to use surface-to-air missiles against surface ships. Such weapons, however, lose accuracy when fired at small targets like Israel's missile boats. Equally important, anti-aircraft missiles have shorter ranges against surface targets than the anti-ship missiles now employed by the Israeli Navy. It is also believed that the Soviets intend to use their SS-N-14 anti-submarine missile against surface ships. This missile, which is widely used by the Soviets, carries a torpedo that is released when near the target. While this weapon might be useful against large surface ships, it is doubtful that this will enable the SS-N-14 to attack small, shallow draft, high speed missile boats.

Even many of the anti-ship missiles that the Soviets do have may be unsuitable for use against Israeli missile boats. Some Soviet anti-ship missiles, like the SS-N-3 or its replacement SS-N-12, are intended for attacks on large surface combatants, like 95,000-ton aircraft carriers and 10,000-ton cruisers, not 450-ton missile boats. They lack the agility to hit small, maneuvering missile boats, and their guidance systems are designed to concentrate on large targets and in some cases may even have been designed to ignore small targets.



Effective Combat Radius of Israeli Air and Naval Forces

Despite these weaknesses, the Soviet Navy does possess ships that can effectively fight the Israel Navy. Specifically, there are three main combatant types that the Soviet Navy might choose to employ against Israel. First, there are the 900-ton *Nanuchka*-class missile corvettes armed with the highly capable SS-N-9 anti-ship missile. While only occasionally deployed in the Mediterranean, these warships would probably be a match for Israeli missile boats. It is less clear, however, that these missile corvettes could survive against the combined effort of Israeli naval and air forces. Thus, while useful, the *Nanuchkas* cannot successfully operate by themselves.

Second, the Soviet Navy could divert against Israel some of their newest surface combatants, like the *Kirov*-class battle cruisers, the *Krasina*-class cruisers, or the *Sovremenny*-class destroyers. All these warships are armed with new generation anti-ship and anti-aircraft missiles that could cause the Israelis great difficulty. However, that the Soviets would in fact be willing to send these warships against Israel is unlikely. At present the Soviet Navy has only a handful of these new ships, and it is probable that they would be needed elsewhere against higher priority targets, like the U.S. Navy. Even if the Soviets did send a small number of these warships to oppose the Israelis, it is doubtful that such a force could dramatically change the naval balance in

the Mediterranean. Israeli air and naval forces are sufficiently capable that eventually they could sink even these new warships, albeit with higher losses than would be expected from engagements with older Soviet combatants. To the extent that the Soviets decide to send such combatants into the Mediterranean to strengthen their forces, however, Israeli naval and air power will be aiding the U.S. by diverting these highly capable warships from other areas of the world.

Third, the Soviets could send submarines to attack the Israeli surface fleet. Israel has very limited anti-submarine warfare capabilities. While it now operates four ships equipped with the EDO 780 variable depth sonar, an excellent system of modern design, the Israeli Navy has no effective capability against a fleet with as many submarines as the Soviets operate in the Mediterranean. In essence, the only damage that Israel could do to the Soviet submarine force probably would be destruction of submarine tenders.

There is, however, a reverse side to this, in that Soviet submarines could do little directly against Israeli naval combatants. Most are equipped with torpedoes, and missile boats are less than ideal targets for torpedoes. The only submarines likely to be effective against Israeli missile boats are those armed with anti-ship missiles, and especially *Charlie*-class nuclear-powered cruise missile submarines.

But these are also the most serious threat to American surface ships, and the Soviets might not be able to attack both sets of targets. Should the Soviets be forced to use their *Charlie*-class submarines against the Israelis, the strategic benefit to the United States would be considerable since it would mean that the Soviets would be using these high value assets to attack 450-ton missile boats instead of 10,000-ton cruisers or 95,000-ton aircraft carriers.

The Israeli Navy is thus in the surprising position of being able to contribute to Western efforts to secure the Mediterranean. The quality and quantity of surface combatants, the sophistication of the weapons and electronics used by those warships, and the advanced state of command and control systems have made the Israeli Navy an effective fighting force, one capable of influencing the East/West naval balance of power in the eastern Mediterranean.

Of greatest importance, however, is the combined effect of Israel's Navy and Air Force. When operating together, these two forces are sufficiently powerful to defeat any likely fleet of Soviet surface combatants deployed in the eastern Mediterranean. It is this capability that makes Israel important to the U.S. Navy, and that has made possible U.S.-Israel naval cooperation of great potential benefit to America. Working together, primarily by linking their respective command, control, and communications systems, and by exploiting their comparative advantages, these forces should be able to totally dominate any possible Soviet Mediterranean naval force.

U.S.-Israel Cooperation in the Mediterranean

Israeli naval and air forces are permanent factors in the Mediterranean balance of power. There is no possibility that these ships and aircraft will be redeployed to some other part of the world. Thus, both the United States and the Soviet Union know that even in the absence of an American presence in the region, there will exist a potential anti-Soviet force of considerable strength. At a time when the U.S. Navy is stretched thinly across the globe, and may be unable to maintain a large fleet in the eastern Mediterranean in times of crisis, the presence of the Israelis becomes a strategic asset for the United States, and thus for NATO, of no small importance.

Israel has a vital stake in the success of the U.S. Navy. Should the shipping lanes to Israel be interdicted for any reason, the very lifeline of the state which is already denied normal overland commerce with most of its neighbors, would be jeopardized. Virtually all of Israel's imports and exports are shipped by sea, generally across the Mediterranean, and this foreign trade is crucial to the Israeli economy. The shipping lanes are also important for military reasons. Israel's imported weaponry is normally transported by ship. If free access to sea routes was denied Israel, its basic security would be seriously impaired.

For Israel, the situation is further complicated in that the main American adversary, the Soviet Union, is also hostile to Israel. The Israelis know that they cannot afford to permit a situation where their security and economy are subject to Soviet decisions. Israel has a great inherent interest in the outcome of any struggle between the United States and the Soviet Union.

Even in the absence of formal strategic cooperation agreements between the United States and Israel, Israeli naval power is of value to the American navy. The Soviet Union recognizes the potential threat posed to them by the Israelis. For this reason, Soviet naval planners cannot afford to consider plans of operation for the eastern Mediterranean without taking into account the potential threat from the Israelis. This considerably complicates the naval situation for the Soviets, since they will still have to worry about a serious Israeli air and naval threat even if the Sixth Fleet has no carriers in the eastern Mediterranean. Equally important, the Soviets also know that even if they successfully put out of action any American aircraft carriers there will still remain a potent pro-U.S. air force in the region.

Accordingly, any net assessment of the current U.S.-Soviet balance of power in the eastern Mediterranean should include Israel's air and naval forces as a potential source of assistance to the Sixth Fleet. To ignore the impact of the Israeli military would be like doing a study of the balance of naval power in the northern Atlantic without including a consideration of Britain's naval and air forces as a NATO asset.

The potential value of naval cooperation with Israel has not gone un-

noticed. For example, it is reported that a U.S. Navy study conducted in the late 1970s concluded that Israel's Air Force could destroy the entire Soviet Mediterranean fleet.²⁹ It is thus not surprising that Secretary of Defense Caspar Weinberger recently indicated that "Israel's military strength and enormous national ingenuity help to deter Soviet aggression in the Eastern Mediterranean and throughout the region."³⁰ Similarly, Senator John Glenn (D. Ohio), has declared that Israel

is an ally on whom we can count in the Eastern Mediterranean, where we face formidable problems of maintaining a military balance with the growing Soviet Navy which in wartime could be supported by Syria and Libya. In this regard, the strength of the Israeli Air Force and Navy is a factor that the Soviet Union must take into account should it contemplate aggressive action in this region.³¹

Increasingly, Israel is becoming recognized as an important deterrent to Soviet aggression, and as an important strategic asset to both the United States and NATO.

According to press accounts, the U.S. Navy has already taken some steps to promote naval cooperation with Israel. In May 1982, during a visit to Israel by the then American Chief of Naval Operations, Admiral Thomas B. Hayward, it was indicated that American and Israeli naval personnel were being trained together, and that steps were being taken to ensure that in the event of hostilities in the eastern Mediterranean the Israelis would be able to distinguish between American and Soviet naval vessels. The Commander of the Israeli Navy told reporters at that time that cooperation between the two navies included "visits, exchanges of views, discussions of battle experience, and development and purchase of various systems." In more mundane areas, the Sixth Fleet now uses Haifa as a resupply point for fresh food supplies and as a port of call to give crews shore leave.³²

At present, however, U.S.-Israel naval cooperation does not extend to precisely those areas of greatest potential benefit to the United States. There are measures that could be taken that would enhance the value to the United States of Israeli air and naval forces that often involve little or no cost to the U.S. In other cases the costs might be larger, but the benefits of cooperation are sufficiently great that implementation of such programs would provide immediate advantages. Initially, a formal naval cooperation program could concentrate on measures involving little visibility that would cause few political or diplomatic problems. As the relationship matured, measures with greater visibility could be implemented. Such an incremental approach would minimize the risk of potential problems and still ensure that the United States received the benefits of naval cooperation with Israel.

First, steps need to be taken to ensure that Israeli air and naval operations against Soviet naval forces can be effectively coordinated with the activities of the Sixth Fleet. Unless basic procedures are developed in peacetime, the United States may sacrifice many of the advantages of naval cooperation in the event a conflict does occur. Proper coordination requires that Israeli forces and the Sixth Fleet conduct joint naval exercises in time of peace. Such exercises would familiarize the two navies with the radically different characteristics of their respective warships, and would permit creation of standard procedures needed to permit properly coordinated joint operations in time of war. They should also make possible the development of means to communicate between the different data link systems used by the two countries. A basis for joint exercises was provided by the Memorandum of Understanding between Israel and the United States signed in November 1981 but suspended one month later. Had that agreement been implemented, it is likely that naval cooperation between the two countries would be much greater today than is actually the case. The Memorandum of Understanding twice mentioned the need for joint American-Israeli training exercises in the eastern Mediterranean, a clear indication of the importance of such activities.

Second, there are certain types of equipment that the United States could supply to Israel that would enhance the capabilities of the Israeli Navy against Soviet submarines. Given Israel's relatively sparse resources, it is doubtful that it could ever acquire anti-submarine capabilities equal to its surface and air warfare capabilities. On the other hand, through careful provision of modern anti-submarine warfare equipment, it should be possible to significantly upgrade the quality of Israeli anti-submarine equipment, thus allowing Israel to contribute to Western anti-submarine efforts in the Mediterranean. Equipment that might be appropriate could include some kind of modern towed array sonar system and possibly some kinds of modern airborne anti-submarine warfare gear. In particular, it would be sensible for the U.S. to provide Israel with P-3C maritime patrol aircraft. This would increase the number of such aircraft in the Mediterranean, and would create support facilities needed to operate U.S. Navy P-3Cs from Israeli airbases.

Third, the U.S. Navy could probably help improve the quality of Israeli tactics through a joint training program. Unlike the U.S. Navy, the Israeli Navy and Air Force do not routinely plan and train to fight the Soviet Navy, and are not familiar with the nuances of conducting operations against Soviet naval forces. At the same time, the U.S. Navy could provide Israel with other equipment not already possessed by Israel needed to fight the Soviets, such as countermeasures to Soviet naval electronics. Alternately, the U.S. Navy could provide technical assistance to the Israelis to develop such equipment should security considerations make it impossible to transfer American devices.

Fourth, the United States should develop plans to resupply Israel in the event of a conflict against the Soviets. To the extent that Israeli weapons destroy targets that the United States would otherwise have to attack, resupply of Israel need not be a net loss to America. To the extent that such a guarantee encourages vigorous Israeli activity, the United States would be a net beneficiary.

Fifth, Israel could provide the U.S. Navy facilities to support operations of the Sixth Fleet. Besides the use of Israeli air bases for American P-3C anti-submarine aircraft to patrol the eastern Mediterranean, Israel's aircraft maintenance facilities could be used to repair and support other naval aircraft. Israel's largest port, Haifa, could be used as a base for American vessels operating in the eastern Mediterranean. Such facilities would offer important advantages. They would be protected from attack by Israeli air and naval forces. They could provide a secure alternative to other American bases in the eastern Mediterranean should circumstances make those other bases unavailable. In addition, Israeli facilities would be ideally located to provide logistics support, especially for operation of C-2 *Greyhound* carrier on-board delivery aircraft, for American carrier task forces operating in the eastern Mediterranean.

Conclusion

The United States faces a formidable strategic challenge in the eastern Mediterranean, where Soviet capabilities have grown while the U.S. Navy has been forced to draw down its fleet. Israel has the capability to make a significant contribution to maintaining the strategic balance in the region, and it has a clear interest to prevent the region from becoming an area of Soviet predominance. But to realize the full potential of this congruence of interests between the United States and its long-term ally, measures to enhance strategic cooperation will be required. The required measures, however, are not dramatic, but rather are simple and discreet actions that can measurably enhance the potential effectiveness of both sides in the event of a conflict with the U.S.S.R.

Some people are bound to object to enhanced strategic cooperation on the grounds that it would impair our relations with Arab countries. But the Mediterranean is not in itself part of the principal Arab zone of interest. The kinds of enhancements of Israeli naval capability that would be desirable to increase its effectiveness against the Soviet Navy would have little impact on the Arab-Israeli balance of power. And Arab countries friendly to the U.S. in the Mediterranean, such as Morocco, Egypt, and Lebanon, would find their own security enhanced if closer cooperation between the U.S. Navy and Israeli forces came into effect.

Strengthening the Western position in the eastern Mediterranean, and reducing the Soviet advantage, is a common interest of all members of the Western alliance and countries strategically linked to the United States in the region. Enhanced cooperation between the United States and Israel in this zone would therefore be advantageous, not only to Israel and the United States, but to the common interest of all countries that would be affected if the Soviet Union became the dominant power in the eastern Mediterranean.

FOOTNOTES

1. The strength of the Soviet Mediterranean squadron is discussed in some detail in Bruce W. Watson, *Red Navy at Sea: Soviet Naval Operations on the High Seas, 1956-1980* (Boulder, Colorado: Westview Press, 1982), pp. 73-130. See also Office of the Chief of Naval Operations, *Understanding Soviet Naval Developments*, Fourth Edition (Washington: Government Printing Office for the Department of Navy, January 1981), pp. 16-19. More recent data is provided by Donald C. Daniel, and Theodore A. Neely, Jr., "Their Navy in 1981," U.S. Naval Institute *Proceedings*, 108 (October 1982), p. 112.
2. Watson, *Red Navy at Sea*, pp. 101-119, outlines the growth in strength of the Soviets in the Mediterranean during the 1973 crisis. Note that in 1973 the U.S. Navy incorrectly identified the SS-N-14 anti-submarine missile as the SS-N-10 anti-ship missile. Accordingly, the actual number of anti-ship missiles was considerably lower than the contemporary estimates given here.
3. Captain John Moore, editor, *Jane's Fighting Ships, 1982-83*, Eighty-fifth edition (London: Jane's Publishing Co., 1982), p. 460, estimates 110, but includes short-range attack aircraft in its total. Jean Labayle Couhat, editor, *Combat Fleets of the World, 1982/83*, translated by A.D. Baker III (Annapolis, Maryland: U.S. Navy Institute Press, 1982), p. 596, estimates 100 bombers and 15 attack aircraft.
4. The Tu-22 has a high altitude unrefueled radius of 1500 nm. The comparable figure for the Tu-16 is 1200 nm, and for the *Backfire* is about 3000 nm. Even the Tu-16s can easily reach the eastern Mediterranean from bases in the Soviet Union. See Figure 43 in Paul J. Murphy, editor, *Naval Power in Soviet Policy*, Studies in Communist Affairs, Volume 2, published under the auspices of the United States Air Force, 1978, p. 195.
5. Hearings before the Committee on Armed Services, United States Senate, *Department of Defense Authorization for Appropriations for Fiscal Year 1983*, part 1, p. 737. According to this report, in mid-1981 the Soviets temporarily deployed in Syria *Budger* reconnaissance and *May* anti-submarine aircraft, and two additional *May* aircraft were sent to Libya. This was the first deployment of Soviet land-based naval aircraft to the Mediterranean since 1972.
6. Soviet operating patterns in the Mediterranean are examined by Watson, *Red Navy at Sea*. Especially useful are the tables on pp. 183, 200-209. On recent developments, see *New York Times*, April 29, 1983, pp. A1, A4.
7. Clarence A. Robinson, "USSR Submarines Pose Heavy Threat," *Aviation Week and Space Technology*, 106 (January 24, 1977), p. 76.
8. The deployment of aircraft carriers in 1982 was given in the Annual Report of the Secretary of Defense reproduced in Hearings before the Committee on Armed Services, United States Senate, *Department of Defense Authorization for Appropriations for Fiscal Year 1983*, part 1, p. 230. There is a fuller discussion of carrier deployment by then Chief of Naval Operations, Admiral Thomas B. Hayward, in the same hearings, part 2, pp. 1073-1074, 1078. During most of 1982 there were two carriers in the Mediterranean, according to Daniel and Neely, "Their Navy in 1981," p. 112, but in early 1983 there was again only one. See the AP Wire Report, February 3, 1983, by Fred S. Hofman.

9. A typical carrier air wing consists of the following:

Aircraft Type	Function	Squadrons	Aircraft
F-4/F-14	Fighter (Reconnaissance)	2	24
A-7	Light Attack	2	24
A-6/KA-6	Medium Attack, Tanker	1	14
S-3A	Anti-submarine	1	10
SH-3D	Anti-submarine	1	6
EA-6B	Electronic Warfare	1	4
E-2C	Airborne Early Warning	1	4
		9	86

Report of the Secretary of Defense Caspar W. Weinberger to the Congress on the FY1984 Budget, FY 1985 Authorization Request and FY 1984-88 Defense Programs, February 1, 1983, p. 162. The 4 KA-6 tanker aircraft can be used in strike missions, but normally are needed to refuel other aircraft.

10. Actual sortie rates are classified, and these are estimates based on open sources. Particularly useful in this regard was the data provided in Congressional Budget Office, Congress of the United States, *Costs of Expanding and Modernizing the Navy's Carrier-Based Air Forces*, May 1982, pp. 20-23, 43-46. By combining the statistics in the text with the graph on p. 23, it is possible to calculate that the Congressional Budget Office estimates that a wing could generate about 23 A-6 and about 55 A-7 sorties a day. This assumes full strength air squadrons. According to Clarence A. Robinson, "U.S. Retains Edge in Mediterranean Sea," *Aviation Week and Space Technology*, 106 (January 17, 1977), p. 48, the aircraft of one air wing were normally in the air for 100-150 hours a day. This could be increased to 300 hours, but for only three days. Usually each A-7 squadron had available only 9-10 of 12 aircraft, and the A-6 squadron had only 8 of 12 aircraft. In Clarence A. Robinson, "F-14 Demonstrates Agile Aerial Combat," *Aviation Week and Space Technology*, 107 (November 29, 1976), p. 55, it is reported that one F-14 squadron averaged 16 daily two hour sorties, but had flown up to 22. Generally, only 8 of 12 aircraft were operational.
11. Clarence A. Robinson, "U.S. Retains Edge in Mediterranean Sea," *Aviation Week and Space Technology*, 106 (January 17, 1977), p. 48.
12. For discussions of Greece's increasingly independent line under Prime Minister Andreas Papandreu see Van Coufoudakis, "Ideology and Pragmatism in Greek Foreign Policy," *Current History*, December 1982, pp. 426-431. Many of these issues can be followed in the press coverage of Greek negotiations with the U.S. over base rights and aid. For typical articles, see John Rigos, *Christian Science Monitor*, March 1, 1983, p. 7, and Andiriana Ierodiconou, *Washington Post*, May 21, 1983, p. 1.
13. While cooperating fully with the United States within a NATO context, Turkey has been more reluctant to support actions that do not involve NATO. For example, during the 1970 Jordan Crisis the Turkish government indicated that they would not allow American transport aircraft to stage from American air bases in Turkey, according to Sam Cohen, *Washington Post*, September 22, 1970, p. A16. Similarly, during the 1973 Arab-Israeli conflict, Turkey (and Greece) refused transit to American transport aircraft involved in the airlift to Israel, but allowed Soviet transport aircraft to overfly without protest. On this episode, see Leslie Gelb, *New York Times*, October 25, 1973, p. 1. There is no reason to believe that Turkey has changed its attitudes. See for example the comments in Martin Indyk, Charles Kupchan and Steven J. Rosen, *Israel and the U.S. Air Force*, AIPAC Papers on U.S.-Israel Relations #2, p. 14. On the other hand, Turkey cooperates fully with American efforts to strengthen NATO, and is one of our stronger NATO allies. These issues are discussed in Sam Cohen, *Christian Science Monitor*, April 5, 1983, p. 12; *New York Times*, October 16, 1982, p. 5; and Metin Demirsar, *Wall Street Journal*, January 12, 1983, p. 32.
14. Aircraft inventory adapted from figures given by *Aviation Week and Space Technology*, 118 (February 14, 1983), p. 17.

15. This is an average sortie rate used solely for analytic purposes. Actual sortie rates differ greatly depending on circumstances, and can be much higher for short periods but would be lower over an extended stretch of time. If the Israelis were to fly long-range missions, the sortie rate would decline.
16. *Military Balance 1982-1983* (London: International Institute for Strategic Studies, 1982), p. 57.
17. Exact range of the F-15 remains classified, and this figure is an estimate based on data given in State of Israel, Ministry of Defense, *National Security Issues*, pp. 29-31.
18. J. Phillip Geddes, "Airborne Early Warning for the U.S. Navy," *International Defense Review*, 8 (No. 5, 1975), pp. 679-682; "Hawkeye," *Aviation and Marine International*, (June 1980), pp. 53-62; Grumman literature.
19. Irvine Cohen, "Nautical Westwind," *Flight International*, 109 (3 April 1976), p. 824; John W.R. Taylor, *Jane's All the World's Aircraft, 1981-82*, New York: Jane's Publishing Co., 1981), p. 116. According to *Jane's*, when armed with the *Gabriel III* anti-ship missile, the *Sea Scan* can conduct attack missions at ranges of greater than 1000 nm, which is the distance from Israel to Italy. On the air-launched *Gabriel III*, see *Aviation Week and Space Technology*, 118 (February 14, 1983), p. 103, and *Aviation Week and Space Technology*, 117 (December 20, 1982), pp. 21-22.
20. *Military Balance 1982-1983*, p. 57, and Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, *Department of Defense Appropriations for 1983*, part 7, p. 495.
21. *Aviation Week and Space Technology*, 111 (October 13, 1980), p. 68, and *Aviation Week and Space Technology*, 105 (November 15, 1976), p. 23.
22. Israeli tactics are discussed in Carus, "The Bekaa Valley Campaign," *The Washington Quarterly*, 5 (Autumn 1982), pp. 37-41, but this should be supplemented by Clarence A. Robinson, "Surveillance Integration Pivotal in Israeli Successes," *Aviation Week and Space Technology*, 117 (July 5, 1982), pp. 16-17, and John V. Cignatta, "A U.S. Pilot Looks at the Order of Battle, Bekaa Valley Operations," *Military Electronics/Countermeasures*, (February 1983), pp. 107-110.
23. Couhat, *Combat Fleets of the World, 1982-83*, pp. 584-585; *Jane's Weapons Systems, 1981-82*, pp. 106-108.
24. "Lebanon Proved Effectiveness of Israeli EW Innovations," *Defense Electronics*, 14 (October 1982), p. 42.
25. Edgar O'Ballance, *The Electronic War in the Middle East, 1968-70* (Hamden, Conn.: Archon Book, 1974), p. 119.
26. Chaim Herzog, *The Arab Israeli Wars* (New York: Random House, 1982), p. 308.
27. Aircraft readiness rates for the Israeli Air Force typically exceed 90%. All of Israel's 72 F-16s were mission capable at the time of the Lebanon fighting in June 1982, according to General W.L. Creech, commander of the U.S. Tactical Air Command, as quoted in Richard Halloran, *New York Times*, October 25, 1982, p. 1.
28. Sources used in the following account of the Israeli Navy include *Jane's Fighting Ships 1982-83*; Couhat, *Combat Fleets of the World*; W. Gerhard Albrecht, *Weyers Flottentaschenbuch 1982/83* (Munich, Bernard and Graefe Verlag, 1982); *Military Balance 1982-1983*; Edward H. Kolcum, "Arabs Seen Challenging Israel at Sea," *Aviation Week and Space Technology*, 105 (August 30, 1976), pp. 20-21; Reuben Porath, "The Israeli Navy," U.S. Naval Institute *Proceedings*, 97 (September 1971), pp. 34-39; Martin J. Miller, "The Israeli Navy: 26 Years of Non-Peace," U.S. Naval Institute *Proceedings*, 101 (February 1975), pp. 49-54; Norman Friedman, "Protecting the Coast Requires Revamping Israel's Navy," *Military Electronics/Countermeasures*, (February 1983), pp. 88, 90-92 (this article is particularly good on command and control); Shlomo Ereil, "Israeli Saar FPBs Pass Combat Test in Yom Kippur War," U.S. Naval Institute *Proceedings*, 100 (September 1974), pp. 115-118. The relatively comprehensive article by Clyde Owan, "The Arab-Israel Naval Imbalance," U.S. Naval Institute *Proceedings*, 109 (March 1983), pp. 101-109, was received after this section was completed.
29. *Near East Report*, XXII (March 14, 1979), p. p. 50, based on a news item reported by Ted Koppel on ABC News.

30. Quoted from a letter sent by Secretary of Defense Caspar Weinberger to a private citizen. March 19, 1983.
31. *Near East Report*. XXVII (May 20, 1983), p. 82.
32. William L. Dowty III, "Middle Eastern, North African, and South Asian Navies," U.S. Naval Institute *Proceedings*, 109 (March 1983), p. 51; Hearings before the Committee on Armed Services, U.S. Senate, *Department of Defense Appropriations for Fiscal Year 1983*, part 2, pp. 1143-1144, in which Admiral Hayward briefly discusses port calls to Haifa; Joshua Brilliant, *Jerusalem Post*, May 12, 1982; Ya'acov Friedler, *Jerusalem Post*, January 28, 1983, p. 3; *Jerusalem Post*, February 2, 1983, p. 2.

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