Secretary Shultz

Current Policy No. 749

The Peace Process and Arms Sales to Jordan

United States Department of State
Bureau of Public Affairs
Washington, D.C.

Following is a statement by Secretary Shultz before the Senate Foreign Relations Committee, Washington, D.C., October 10, 1985.

I welcome the opening statements that have been made and, in particular, the references to King Hussein's statements over the years and recently that are certainly moves in the direction of peace in the Middle East, which we all recogize is so essential. And I certainly welcome this opportunity to share with you some observations on developments in the Middle East, with particular reference to the peace process and the recent informal notification to Congress of an arms sale to Jordan.

Peace Process

Peace and stability in the Middle East remain a key national interest. By quirk of history and geography, events and trends which destabilize that region and bring it closer to armed conflict have profound implications for our own security and well-being.

Given the complexity of the historical, social, ethnic, and religious factors at play and the magnitude of the stakes as perceived by various actors, the threats to peace and stability in the region are manifold. Much as we would wish it, there's no one single underlying issue. There is no one central problem to resolve. The world—and certainly the Middle East—is simply not that neat a place.

However, some problems are especially dangerous. They pose a threat to peace in a way that is immediate, broad, and enduring. This Administration, like so many of its predecessors, has judged the troubled relationship between Israel and its Arab neighbors to be one such problem.

But that, of course, is not the only reason why the issue of Middle East peace has demanded our attention. We have also, over the years, come to view our relationship with Israel as symbolic of our commitment to shared democratic values. I need hardly belabor the point before this committee, but simply reaffirm and underscore the singular depth and enduring strength of our relationship with Israel.

Finally, we have been moved to action by the suffering on all sides, but particularly the pain and loss endured by innocent victims, Israelis and Palestinians alike and, also, so many Americans.

For all of these reasons, we have resolved to contribute, in whatever way we can, to achieving a just and lasting peace.

This Administration has been engaged in a dialogue with the parties about the kind of steps that need to be taken to move the process forward. In the past several months, and particularly during King Hussein's recent visit, we have been able to come closer than ever before to agreement on the kinds of steps that will be required.

It has been this Administration's consistent view that the parties must agree to resolve their differences through direct negotiations. The Israeli Government also favors this approach. Syria rejects it. Jordan, however, under the determined and courageous leadership of King Hussein, has risen to the occasion. He has welcomed the prospect of entering negotiations with Israel "promptly and directly," as he said at the White House on September 30, in an, as he said, "environment free of belligerent and hostile acts." I know he spoke to members of the Senate only a few days ago about his dedication to peace—a peace that he knows Israel must share. Arab governments, in the past, have been reluctant to enter negotiations with Israel without a guarantee of the final outcome. Now, King Hussein has taken a big psychological step forward: he is ready to engage in a negotiating *process*, knowing that the outcome will depend on a tough process of bargaining among the parties. That's a big development—that the emphasis is on the process and on getting it started.

I have been extremely heartened to hear King Hussein speak in these terms. I am sure you have been as well. Problems remain, however. They relate, for the most part, to the question of Palestinian representation. Jordan must be able to share the burden and challenge of peacemaking with credible representatives of those most directly concerned—the Palestinian people. The Administration's policy regarding recognition of and negotiation with the PLO [Palestine Liberation Organization] has been clear and consistent: the PLO must first accept Resolutions 242 and 338 and recognize Israel's right to exist. We have long said, however, that the Pales-

tinian people must be fully involved in this process: they should participate at every stage of the negotiating process. And, in fact, that is universally recognized and is explicitly stated in the Camp David accords. After all, it is their legitimate rights as a people as well as the security of all states in the region that these negotiations must address.

King Hussein has spoken of the need for an international conference to provide the broad support he seeks before he enters into negotiations with Israel. We have not supported this idea, nor have we seen any utility in engaging in a separate dialogue with Jordanians and Palestinians if such steps do not lead to direct negotiations with Israel. In other words, there are these various processes and suggestions of one kind or another that have been made, and, in our view, the name of the game is to get direct negotiations going. Things that lead to that, we regard as positive; things that don't are something else again.

Problems obviously remain, but they are not insurmountable. Neither Israel nor Jordan wishes to squander the historic opportunity of the moment. Neither Israel nor Jordan believes there is anything to be gained by sliding back into hopeless confrontation. With dedication, creativity, and simple hard work, we will continue to address these issues over the next few months, and I am convinced that our objective of beginning direct negotiations in the near future is within reach.

Tactical and procedural questions are negotiable. They are the stuff of what we call the peace process. Violence and terror are not. The mounting violence which has afflicted the region in recent weeks underlines the precariousness of the process. Organizations that seek legitimacy as partners in the peace process continue to commit and take credit for violent acts that threaten its very existence.

There are also forces—and I am referring to states, organizations, and so-called movements—which are unalterably opposed to the achievement of peace. They are dedicated to destroying its prospects just as they destroy lives—through intimidation and terror. They will not deter us, however, from the pursuit of peace.

We, for our part, have a clear moral commitment to help those whom we have encouraged along the path of peace to defend themselves from the enemies of peace. I am referring here, in the first instance, to the State of Israel and the Hashemite Kingdom of Jordan.

Jordan Arms

Successive administrations, with the full support of Congress, have, over the years, assured that Israel would have the military capability to defend itself against any realistic combination of hostile forces. The defense posture of Jordan has been and remains far more precarious.

The President has recently informed you of his intention to take steps to try to remedy that situation. And, in that regard, I would like to make three main points.

First, Jordan has legitimate defense needs—needs that have been exacerbated by King Hussein's courageous moves toward the negotiating table.

Second, it has been to the United States that Jordan has turned, for many years, to help it with its defense. To refuse to meet Jordan's needs at this juncture would not only be a real break in continuity but would also be a signal that the United States does not fully support the King's peace efforts. The United States remains committed to assuring Israel's qualitative military edge. The package of arms for Jordan that we have proposed does not threaten Israel's security.

Jordan has legitimate defense needs. The principal conventional threat to it comes from the vastly more powerful Syria—supplied, as we all know, by the Soviet Union—which opposes King Hussein's efforts to move to negotiations with Israel. In 1970, Syria invaded Jordan; in 1980, Syria massed its troops along the border with Jordan. Syria holds major quantitative advantages over Jordan in personnel (5 to 1), tanks (4 to 1), armored personnel carriers (2.5 to 1), artillery (4 to 1), and combat aircraft (5 to 1).

Further, since King Hussein announced his peace initiative last November, Jordan has been subjected to an escalating campaign of terror. A Jordanian diplomat in Turkey was assassinated and the Jordanian Embassy in Rome attacked by rocket; three Jordanian airliners have been either bombed or hijacked, and Jordanian airline offices were attacked in Athens and Madrid. Without any doubt, the enemies of peace are trying to stop King Hussein from reaching a settlement with Israel—and there is every reason to believe they will intensify their efforts. The U.S. arms sale to Jordan represents a powerful political signal of American support for Jordan that it will strengthen the King's ability to stand up to these attacks.

Jordan's most serious military deficiency is its inability to provide adequate air defense against an external attack and, thereby, to resist military intimidation by the adversaries of peace. Although Royal Jordanian Air Force interceptor pilots would resist aggression courageously, they could rather easily be overwhelmed by superior numbers of more advanced Soviet fighters, and Jordan's surface-to-air missile system would be unable to defend the country against a determined air campaign. The package of arms we propose to sell to Jordan, therefore, focuses on air defense: it contains advanced fighter aircraft and improved air-to-air and surface-to-air missiles to upgrade Jordan's increasingly obsolete equipment.

The United States' close defense relationship with Jordan has developed over 35 years and eight U.S. administrations. We have become Jordan's main arms supplier. On four previous occasions, however, when the United States either denied or placed too many preconditions on military sales to Jordan, Jordan went elsewhere. As a sovereign state, Jordan is impelled to provide for its security and has made clear it will do what is necessary to meet this need. A major Soviet role in Jordan, of course, would constitute a serious strategic setback for the United States and for Israel.

Finally, the arms that we propose to sell to Jordan pose no threat to Israel. Jordan has proven, over the past 15 years, that it is determined to ensure that terrorists do not attack Israel from Jordanian territory. The border that it shares with Israel—the longest Israel has with any of its neighbors—has been incident free for many years. Israel has been able to place confidence in Jordan to prevent infiltration along their common border. In fact, Prime Minister Peres, in commenting publicly last week on why Jordan was not attacked, said that Jordan worked actively to prevent terrorist acts from being launched from or through Jordan.

This Administration has an unswerving commitment to helping ensure Israel's security, survival, and well-being and to maintaining Israel's decisive advantage over any combination of potential adversaries. According to U.S. intelligence community assessments, Israel's edge over potential Arab adversaries will continue to widen even if

there are increases in Arab capabilities. Israel's long-term security, however, can only come through peace with its neighbors, not military superiority. A strong and stable Jordan, able to defend itself against radical pressures, is in Israel's interest as well as our own.

The President told King Hussein in May that he "could count on us for the economic and security assistance Jordan would need to address the risks that it is taking." The Congress has provided an important package of economic aid for Jordan. Now it is time to address Jordan's proven security needs as the King tries to move ahead in the peace process in the face of threats from those who oppose the process. This Administration firmly believes that such support from the United States for Jordan, as represented by our arms package, is an absolute necessity if we are to ultimately achieve the peace in the Middle East which we all so fervently desire. ■

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THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

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Jordanian arms

THE NEW YORK TIMES, MONDAY, OCTOBER 14, 1985

Don't Arm the Arabs

By David Bar-Illan

Despite overwhelming Congressional disapproval — 73 Senators have co-sponsored a resolution opposing the sale of arms to Jordan and 64 have co-signed a letter objecting to the sale of arms to Saudi Arabia — the Administration has proposed a $1.9 billion package of advanced weaponry for immediate sale to Jordan and is seriously considering a similar sale to Saudi Arabia.

Such sales would be politically counterproductive and militarily senseless. They would vitiate American credibility in the region and enhance the prospects of another war.

Two reasons are forwarded for such sales — that they are needed for the defense of "moderate" Arab regimes against radical antagonists, and that they will encourage these regimes to join the peace process.

The first argument, about Arab defense needs, disregards the realities of the region. Jordan may justifiably fear a Syrian move to annex it, but no amount of weaponry can appreciably change the balance of power between them. Only a strong Israel can serve as a deterrent to such an attack, as it did in 1970 and in 1980, when it prevented a Syrian invasion of Jordan.

Saudi Arabia needs such weapons even less. Iran, bogged down in war, is no longer menacing. There is no other external threat in sight, and the Saudi military cannot efficiently absorb equipment it already has. It is

David Bar-Illan, a pianist, writes frequently about the Middle East.

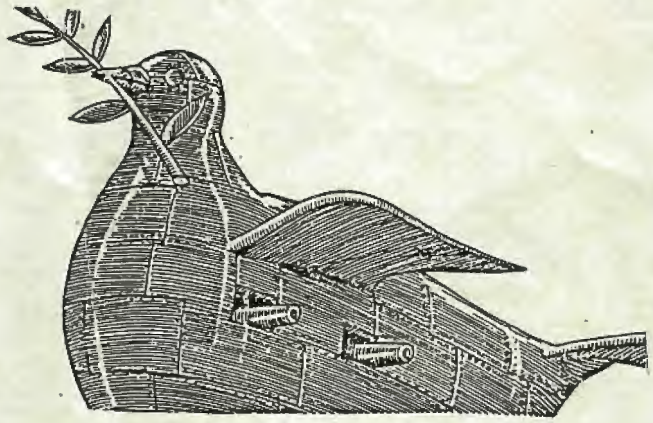
A political and military mistake

more likely that these arms are intended for use, directly or by proxy, against Israel. Though called moderate, both Jordan and Saudi Arabia have participated in every major war against Israel.

The second contention, that arms sales advance the peace process, is belied by the record. In 1981, President Reagan set specific conditions for selling AWACS planes to Saudi Arabia: Deliveries would take place only if peace initiatives were "successfully completed or significant progress toward that goal has been accomplished with the substantial assistance of Saudi Arabia." These conditions have not been met.

The Saudis are still in the state of war with Israel and refuse to recognize its legitimacy. They continue to wage economic war against it by boycotting companies dealing with Israel. They disseminate anti-Semitic propaganda of unmatched virulence and support rejectionist Syria and the Palestine Liberation Organization with handsome stipends. They have refused to join the peace process. In August, at the Pan-Arab Conference in Morocco, they failed to support talks between King Hussein, the Palestinians and Israel.

Unlike the Saudis, King Hussein speaks the language of moderation, but shows a discouraging disinclination to match word to deed. In return for American arms and support for his claim to Judea and Samaria, Jordan was expected to disavow violence and identify Palestinian leaders who would negotiate directly with Israel. Instead, Hussein has parroted Yasir Arafat's insistence on an international conference with Soviet participation and allowed Palestinian terrorists, banished from Jordan since 1970, to return to its soil. Under these circumstances, the sale of sophisticated arms can only be interpreted as a reward for intransigence.



True, if we do not sell arms to these countries, our European allies undoubtedly will, thus beating us to a tidy sum of petrodollars. But deplorable as such sales may be, they do not deal as severe a blow to Israel's security as American sales would. It is not only the superiority of American arms that makes them dangerous in the hands of Israel's enemies, but also that they are identical to Israeli arms. If Arab pilots, technicians and soldiers become familiar with the capabilities of the most sophisticated weapons in Israel's arsenal, Israel's qualitative edge — the only kind it can hope to maintain — will vanish. There is, too, the danger that in this totally unpredictable region of the world, the next upheaval will cause these advanced American weapons to fall into Soviet or P.L.O. hands.

Courting Arab regimes with arms sales in the hope that "just one more sale" will bring them to the conference table would be futile and would not serve American interests. The least we can do is demand that after 37 years of Arab wars against Israel those who wish to buy our deadliest conventional weapons first contribute to bringing peace and stability to the region by renouncing belligerency and negotiating directly with Israel.□

The Miami Herald

Sunday, October 6, 1985

Israel has the right to strike back

By JOSHUA MURAVCHIK

Terrorism in the Middle East has enraged and frustrated many nations whose citizens have been victims of it, including our own. When our diplomats have been murdered; when our Marines on a peacekeeping mission in Beirut were blown to bits as they slept; when a TWA flight was hijacked, its passengers abused and Navy diver Robert Stethem brutally murdered — each time we have wanted to retaliate. Even more, we have wished we had a way to put the terrorist groups out of business or at least to put a crimp in their grisly operations.

But each time we have been stayed from any reaction. We have felt that we haven't known for sure the identities of the groups that were responsible. Or where we have felt reasonably certain of their identities we haven't known where to find them. Or where we have known where to find them, it's been in large apartment buildings in dense population centers where any attack would necessarily take the lives of many more innocent bystanders than of perpetrators.

No nation has been more often the victim of terrorism than Israel. Indeed, the modern phenomenon of terrorism, which now seems to have taken on a life of its own, was to a large extent invented for the purpose of destroying Israel when the wars of 1948 and 1967 showed that the armies of the Arab states would not be able to accomplish this task. For Israel, terrorism is no mere affront or irritant. The threat is not limited to a small number of its people. All of its citizens are endangered; and the threat is to its very survival. The terrorists of course cannot overrun Israel, but they can — and this is their explicit aim — make life unlivable.

So the Israelis take their terrorism problem in deadly earnest. They spare no efforts in gathering intelligence about the terrorist groups, and they practice a policy of striking back hard in retaliation for terrorist acts. They also strike pre-emptively on occasion in the hope of crippling or disrupting groups engaged in repeated attacks against them.

Last week the terrorists struck Israel again. Three middle-aged Israelis, two men and a woman, were aboard a yacht moored off Cyprus. The terrorists seized the boat and murdered the woman immediately. After some hours they murdered the men before surrendering to local authorities. Spokesmen for the Palestine Liberation Organization denied that it was responsible for the attack. But a phone-caller in Israel claimed credit in the name of a group called "Force 17."

Force 17 is an elite group of PLO fighters directly under PLO chief Yasser Arafat. Indeed the group started out as Arafat's personal bodyguard, and apparently still plays that role for him and his chief lieutenants. But it has also grown into a kind of multipurpose special forces unit. It has claimed credit for several recent terrorist incidents in Israel, and in August two separate small boatloads of Force 17 members were intercepted on their way to Israel. Their assignment was simple: Go ashore and kill as many Israelis as possible.

These captured Force 17 members remain in Israeli custody, and when they were shown photographs of the terrorist who had perpetrated the Cyprus murders, they identified them as fellow members. One of the three Cyprus murderers was a Briton who had adopted Palestinian identity and has been identified in British news reports as a member of Force 17. In short, the Israelis had firm evidence identifying the organization responsible for the Cyprus killings. (U.S. intelligence was able to confirm this identification from its own sources, independent of the Israelis.)

The Israelis also knew the exact location of the headquarters where actions like the Cyprus murders were planned and organized. This was in a complex of buildings in Tunisia housing the main headquarters of the PLO. And they knew that these were not apartment buildings and not in an urban area. They were offices located by themselves in a resort area. So the Israelis struck back hard, demolishing the headquarters of Force 17 and the office of Force 17's boss, Yasser Arafat. So precise was the attack that, according to a report from Tunis y The Washington Posts's Jonathan Randal, no friend of Israel's, it "damaged or destroyed buildings used by Force 17, the PLO's elite security wing blamed by Israel for the Cyprus killings, while leaving others in the complex untouched." In short, the Israelis acted under precisely the conditions that the U.S. government has said would allow us to strike back at terrorists.

It is said that Israel violated Tunisia's territorial integrity. So it did. But no terrorist group is the legal sovereign of the territory on which it functions. If the government in question refuses to act against the terrorists, then what recourse do the victims have? In such circumstances, to uphold territorial inviolability as an absolute principle means to give terrorists absolute immunity. In this case, the Tunisian government not only refused to act against the terrorists, but it condoned their activity. It was aware of the nature if not the details of the activities at the PLO headquarters: It publicly explained that the status of the PLO men in Tunisia was that of "combatant[s]." Israel's strike was not aimed at Tunisia, and it hit only the PLO/Force 17 buildings. If the United States is able to locate the headquarters of those who killed our Marines, and if this is in isolation from civilian areas, we may well strike at them. This will violate Lebanese sovereignty (or perhaps Syrian or Iranian). But will it be wrong?

Others have said that Israel's attack lacked proportion. Only three Israelis died at Cyprus; some 50 or 60 died in Tunisia. But the Cyprus murders were not the sole provocation to which Israel was responding. It was only the most "successful" of a series of terror attacks by Force 17. Some of those that were foiled no doubt would have taken many more Israeli lives. Others have succeeded, but on a smaller scale, not killing but "merely" wounding and maiming Israeli civilians. These attacks — and indeed the very step of upgrading Force 17 from a bodyguard to terrorist strike force — are part of a pattern of increased terrorism against Israel that, according to Israeli and U.S. intelligence, has been ordered by Arafat himself. In a situation such as this, must each act of retaliation be calibrated to take only the same number of lives that the terrorists have taken? If we could locate the headquarters of the TWA hijackers, would it be wrong to strike it for fear of killing more than one of the terrorists in light of the fact that they murdered only one passenger? And in view of the fact that Force 17 is engaged in a permanent campaign of terror against Israel, is it wrong for Israel to attempt to cripple the organization — as the Tunisia strike was obviously meant to do — as opposed to merely retaliating?

Finally, it is said that the Israeli strike damages the peace process, that it embarrassed King Hussein and President Hosni Mubarak. It is hard for them to pursue peace with Israel while other Arabs are being killed by Israel. There may be some truth to this, but the fault is not Israel's. Arafat and the PLO initiated this round of violence. The larger problem is that the Arab world, which was once virtually unanimous in seeking Israel's destruction, is now divided, thanks in large part to the courage of the late President Anwar Sadat. Some within it are willing to accept Israel's existence and seek peace. Others still yearn to eradicate Israel, and they carry out or sponsor violent attacks against it. As long as this dichotomy persists, Israel has little choice but to pursue peace with those Arabs who want peace and to fight back against those who are attacking it. Accepting Israel's right to exist means accepting that like any other state it has a right to defend itself, which means the right to fight back.

Joshua Muravchik, who has a Ph.D. in international relations from Georgetown University, is a Fellow in Residence at the Washington Institute for Near East Policy. He wrote this article for The Herald.

JORDAN ARMS

BRIEFING BOOK

American Israel Public Affairs Committee
500 N. Capitol Street, N.W., Suite 300
Washington, D.C. 20001
(202)638–2256

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* **Remove the incentive for King Hussein** to enter into peace negotiation.

* **Focus attention on instruments of war** rather than on efforts to bring peace to the area.

* **Increase the threat of an Arab offensive** along Israel's long and vulnerable border with Israel.

* **Reduce Israel's ability to operate combat aircraft** even in defense of its own territory.

* **Increase Jordan's war-making ability,** and therefore the likelihood of its participation in another war.

* **Increase Israel's defense burden** by forcing Israel to implement costly countermeasures.

Advanced weapons **will not** protect Jordan against the most likely security threats. Such weapons can do nothing to stop terrorism--or foster the peace process.

In the 1970s, the United States waited until after Egypt entered direct peace negotiations with Israel before supplying arms to the Egyptians. This is a basic principle that also must be applied to Jordan. Providing arms now would reward Jordan for not moving in the peace process and discourage other Arab states from participating.

THE JORDAN ARMS PACKAGE

On September 27, 1985, the State Department sent to Congress a preliminary notification of his plan to provide Jordan with advanced arms, including:

40 Advanced fighter aircraft, either F-20As or F-16Cs in an air defense variant, to provide Jordan with 2 squadrons of fighters (18 aircraft each) plus 4 replacement/attrition aircraft ($700 million for F-20As, or $1.2 billion if F-16Cs)

12 Mobile Improved Hawk surface-to-air missile firing units, each consisting of three triple launchers and associated fire control radars

14 Mobile Improved Hawk surface-to-air missile fire command posts and conversion equipment to make Jordan's existing 14 batteries mobile (entire Improved Hawk package: $700 million)

108 Stinger hand-held antiaircraft missiles, including 72 launchers and 36 reloads ($8 million)

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1. Legal restrictions on arms sales to Jordan
2. Letter from Secretary of State George Schultz on Jordan Arms
3. Text of Spring 1985 Heinz-Kennedy Resolution
4. "Senate Majority Opposes Jordan Arms"
5. Senate "Dear Colleague" letter on the Jordanian Arms Sale
6. House "Dear Colleague" letter on the Jordanian Arms Sale
7. Text of Joint Resolution on Jordanian Arms

FY1986 Foreign Aid Authorization Bill

(Conference Report, p. 19)

SEC. 130. FOREIGN MILITARY SALES FOR JORDAN.

(a) MIDDLE EAST PEACE.—The foreign military sales financing authorized by this Act for Jordan is provided and increased in the recognition of progress Jordan has made in the search for a just and lasting peace in the Middle East, to encourage further progress, in recognition of the continuing defense needs of Jordan, and in the expectation that Jordan will enter into direct negotiations with Israel based on United Nations Security Council Resolutions 242 and 338 in order to resolve the state of war between those two countries.

(b) SENSE OF CONGRESS.—It is the sense of the Congress that no foreign military sales financing authorized by this Act may be used to finance the procurement by Jordan of United States advanced aircraft, new air defense weapons systems, or other new advanced military weapons systems, and no notification may be made pursuant to section 36(b) of the Arms Export Control Act with respect to a proposed sale to Jordan of United States advanced aircraft, new air defense systems, or other new advanced military weapons systems, unless Jordan is publicly committed to the recognition of Israel and to negotiate promptly and directly with Israel under the basic tenets of United Nations Security Council Resolutions 242 and 338.

(c) CERTIFICATION.—Any notification made pursuant to section 36(b) of the Arms Export Control Act with respect to a proposed sale to Jordan of United States advanced aircraft, new air defense systems, or other new advanced military weapons, shall be accompanied by a Presidential certification of Jordan's public commitment to the recognition of Israel and to negotiate promptly and directly with Israel under the basic tenets of United Nations Security Council Resolutions 242 and 338.

CONGRESSIONAL RECORD, June 20, 1985, p. S8566.

SECRETARY OF STATE,
Washington, DC, June 20, 1985.

Hon. BOB KASTEN,
U.S. Senate,
Washington, DC.

DEAR SENATOR KASTEN: I wish to thank you for agreeing to the relaxation of the Subcommittee's customary procedure and for giving extraordinary consideration to the Administration's request for assistance to Jordan.

As you know, the Administration is requesting a total of $250 million in economic assistance to Jordan as a result of our favorable assessment of King Hussein's contribution to the ongoing peace process in the Middle East. The recent visit between King Hussein and President Reagan resulted in an understanding of both Jordan's need for urgent assistance and U.S. interests in fostering stability and renewed economic growth in Jordan.

The Administration agrees the issue of security assistance is of great significance and must be very carefully considered in order to avoid any setbacks. Accordingly, I wish to assure you that prior to the submission of any request relating to the provison of arms to Jordan, the Administration will engage in broadbased and constructive consultations with the Senate, seeking the development of a true consensus that such transfers are appropriate.

I hope that this expression of the administration's position with respect to future arms transfers to Jordan clarifies this issue for you and your colleagues. I look to early and favorable action on the Administration's request for economic assistance.

With warm personal regards.

Sincerely yours,

GEORGE P. SHULTZ.

The Spring 1985 Heinz-Kennedy Resolution

RESOLUTION

TO ASSURE ISRAEL'S SECURITY, TO OPPOSE ADVANCED ARMS SALES TO JORDAN, AND TO FURTHER PEACE IN THE MIDDLE EAST

(Insert title of resolution here)

Resolved,

Whereas Israel is a stable, democratic and reliable ally of the United States;

Whereas the security of Israel is in the national interest of the United States;

Whereas Jordan continues to oppose the Camp David peace process;

Whereas Jordan has aligned with Iraq, whose government is committed to the destruction of Israel;

Whereas Jordan is purchasing advanced weapons from the Soviet Union;

Whereas the sale of advanced arms to Jordan would jeopardize the security of Israel and increase the overall instability of the region;

Whereas promises to sell advanced US arms to Jordan set the stage for an unnecessary and divisive confrontation with Congress; and

Whereas an escalation of the arms race in the Middle East is contrary to the interests of the United States, Israel and Jordan.

It is the sense of the Senate of the United States of America that:

1. The United States should not sell advanced fighter aircraft, mobile anti-aircraft missiles, or any other advanced arms to Jordan under present conditions, in which Jordan continues to oppose the Camp David peace process and purchases arms from the Soviet Union, and in which such sales jeopardize both the security of Israel and progress towards peace in the Middle East.

2. The United States should ensure that Israel retains its qualitative military edge over any combination of Mideast confrontation states.

3. The United States should focus its efforts on bringing Jordan into direct peace negotiations with Israel.

HEARD ON CAPITOL HILL

Senate Majority Opposes Jordan Arms

Seventy-two Senators—46 Democrats and 26 Republicans—are sponsors of a legislation opposing a major new arms sale to Jordan "under present conditions in which Jordan continues to oppose the Camp David peace process." The sense of the Senate resolution, S. Res. 177, offered by Sens. JOHN HEINZ (R-Pa.) and EDWARD KENNEDY (D-Mass.), stipulates that the United States "should not sell advanced fighter aircraft, mobile and anti-aircraft missiles, or any other advanced arms to Jordan."

The complete list of Senate signers:

JAMES ABDNOR (R-S.D.)
MARK ANDREWS (R-N.D.)
WILLIAM ARMSTRONG (R-Colo.)
MAX BAUCUS (D-Mont.)
LLOYD BENTSEN (D-Tex.)
JOSEPH BIDEN (D-Del.)
JEFF BINGAMAN (D-N.M.)
DAVID BOREN (D-Okla.)
RUDY BOSCHWITZ (R-Minn.)
BILL BRADLEY (D-N.J.)
DALE BUMPERS (D-Ark.)
QUENTIN BURDICK (D-N.D.)
ROBERT BYRD (D-W.Va.)
LAWTON CHILES (D-Fla.)
WILLIAM COHEN (R-Maine)
ALAN CRANSTON (D-Calif.)
ALFONSE D'AMATO (R-N.Y.)
JOHN DANFORTH (R-Mo.)
DENNIS DECONCINI (D-Ariz.)
ALAN DIXON (D-Ill.)
CHRIS DODD (D-Conn.)
DAVID DURENBERGER (R-Minn.)
THOMAS EAGLETON (D-Mo.)
JAMES EXON (D-Neb.)
WENDELL FORD (D-Ky.)
JOHN GLENN (D-Ohio)
ALBERT GORE (D-Tenn.)
SLADE GORTON (R-Wash.)
PHIL GRAMM (R-Tex.)
CHARLES GRASSLEY (R-Iowa)
TOM HARKIN (D-Iowa)
GARY HART (D-Colo.)
PAULA HAWKINS (R-Fla.)
CHIC HECHT (R-Nev.)
HOWELL HEFLIN (D-Ala.)
JOHN HEINZ (R-Pa.)
ERNEST HOLLINGS (D-S.C.)
GORDON HUMPHREY (R-N.H.)
DANIEL INOUYE (D-Hawaii)
J. BENNETT JOHNSTON (D-La.)
ROBERT KASTEN (R-Wis.)
EDWARD KENNEDY (D-Mass.)
JOHN KERRY (D-Mass.)
FRANK LAUTENBERG (D-N.J.)
PATRICK LEAHY (D-Vt.)
CARL LEVIN (D-Mich.)
Sam Nunn (D-Ga.)
RUSSELL LONG (D-La.)
MITCH MCCONNELL (R-Ky.)
SPARK MATSUNAGA (D-Hawaii)
MACK MATTINGLY (R-Ga.)
JOHN MELCHER (D-Mont.)
HOWARD METZENBAUM (D-Ohio)
GEORGE MITCHELL (D-Maine)
DANIEL MOYNIHAN (D-N.Y.)
FRANK MURKOWSKI (R-Alaska)
DON NICKLES (R-Okla.)
BOB PACKWOOD (R-Ore.)
CLAIBORNE PELL (D-R.I.)
LARRY PRESSLER (R-S.D.)
WILLIAM PROXMIRE (D-Wis.)
DAVID PRYOR (D-Ark.)
DAN QUAYLE (R-Ind.)
DONALD RIEGLE (D-Mich.)
JOHN ROCKEFELLER (D-W.Va.)
PAUL SARBANES (D-Md.)
JAMES SASSER (D-Tenn.)
PAUL SIMON (D-Ill.)
ARLEN SPECTER (R-Pa.)
JOHN STENNIS (D-Miss.)
LOWELL WEICKER (R-Conn.)
PETE WILSON (R-Calif.)
EDWARD ZORINSKY (D-Neb.)

United States Senate

WASHINGTON, D.C. 20510

October 5, 1985

Dear Colleague:

We are writing to ask your support for a Resolution of Disapproval of the Administration's upcoming request for the sale of advanced weapons to Jordan.

We all welcome King Hussein's statements last week at the United Nations and during his visit to Washington that Jordan is now prepared to negotiate with the Government of Israel, promptly and directly, under the terms of United Nations Security Council Resolutions 242 and 338. We applaud King Hussein's efforts to advance the peace process, and we hope that his efforts can bring a lasting peace to the Middle East. Our approval last June of $250 million in new economic aid to Jordan should be viewed as our strong encouragement for King Hussein's efforts.

However, we are deeply concerned about the King's continued insistence for an international conference under auspices which would include the Soviets, Syrians and the PLO, a proposal that the U.S. and Israel have repeatedly rejected.

In addition, we cannot accept the King's public statements of intent, as welcome as they are, as being sufficient concrete progress towards peace with Israel to warrant a transfer of advanced weapons to Jordan. For that reason, we think the timing of the Administration's request for such an arms sale is unfortunate. By introducing the controversial issue of weapons sales to Jordan at this time, when concrete progress in the peace process may finally be possible, the Administration is raising unnecessary and potentially insurmountable obstacles to continued progress towards negotiations between Jordan and Israel.

We appreciate King Hussein's concern about Jordan's ability to defend itself from radical Arab forces bent on destroying the peace process. We also understand Israel's concern that her security should not be put in jeopardy as a result of the transfer of highly sophisticated weaponry to a neighbor that has not yet in concrete and irreversible ways committed itself to the peace process.

We join President Reagan in his hope that negotiations can begin before the end of the year. When negotiations between Israel and Jordan actually go forward, that would be the time to consider Jordan's request for sophisticated weapons.

But until such time as Jordan actually sits down in direct peace negotiations with Israel, we believe that a sale of advanced weaponry to Jordan would be a mistake.

We urge you to join us as co-sponsors. If you have any questions, or if you wish to co-sponsor this legislation, please call Nancy Soderberg at 4-2635 or Jeff DeLaurentis at 4-6324.

Sincerely,

Edward M. Kennedy

John Heinz

Daniel K. Inouye

Robert W. Kasten

Alan Cranston

Rudy Boschwitz

Congress of the United States
House of Representatives
Washington, D.C. 20515

JORDANIAN ARMS SALE

October 2, 1985

Dear Colleague:

On September 27th, the President sent to Congress pre-notification of his intention to sell some of our most advanced aircraft and air defense systems to Jordan. The President is expected to send the formal notification to Congress within 20 days.

Arms sales have never advanced the peace process. The Camp David Accords were achieved without a major arms sale to Egypt. For 35 years, the selling of sophisticated weapons has failed to bring peace to the Middle East. After the signing of the Egyptian-Israeli Peace Treaty, Egypt received the most advanced American arms and became a large recipient of U.S. foreign assistance. If we were to sell Jordan our most advanced weapons now, what incentive would Jordan have to further the peace process?

We would like to see Jordan take a more active role in the peace process. We are also deeply concerned by King Hussein's continued call for an international conference, which would include the Soviets, Syrians, and the PLO--a proposal that the U.S. and Israel have rejected repeatedly. Our support for Jordan is indicated by the recent approval of $250 million in supplemental economic assistance.

Direct bilateral negotiations are the best method to reach a peace settlement. When direct negotiations between Jordan and Israel actually go forward, then Congress should consider Jordan's request for sophisticated weapons.

In the next few days, we will introduce a joint resolution to express our disapproval of this arms sale to Jordan. A similar resolution will be introduced in the Senate by Senators Kennedy, Heinz, Kasten, and Inouye. A draft of this resolution is on the reverse side of this letter. If you would like to join us as a cosponsor, please call Jonathan Slade in Rep. Larry Smith's office at X 57931 or Amy Wolak in Congressman Vin Weber's office at at X52331..

Sincerely,

Chairman, Foreign Affairs

Rep. Mark Siljander

Rep. Larry Smith

Rep. Norman Lent

Rep. Bob Torricelli

Rep. Bill Gray

Rep. Vin Weber

Rep. Jim Florio

Rep. John McCain

Rep. Mel Levine

Rep. Tom Daschle

Rep. Chris Smith

H.J. Res.

JOINT RESOLUTION

To prohibit the sales of certain advanced weapons to Jordan,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. DISAPPROVAL OF PROPOSED SALES.

Prior to the commencement of direct bilateral negotiations between Jordan and Israel, the President may not issue a letter of offer with respect to any of the proposed sales to Jordan of advanced weapons systems, including advanced aircraft and advanced air defense systems, that are described in the advance notifications of possible certifications pursuant to section 36(b) of the Arms Export Control Act submitted to the Congress on September 27, 1985 (Transmittal Nos. 85-CP1, 85-CP2, and 85-CQ).

SECTION 2. PROHIBITION ON DELIVERIES

If a letter of offer has been issued for any sale described in Section 1 of this Act before the enactment of this Act and that letter of offer is accepted, the President shall make no deliveries to Jordan pursuant to that sale without specific authorization by the Congress.

..... CONGRESS

..... SESSION

S. J. RES. .....

(NOTE.—Fill in all blank lines except those provided for the date, number, and reference of resolution.)

IN THE SENATE OF THE UNITED STATES

Mr. KENNEDY, HEINZ, INOUYE, KASTEN, CRANSTON, BOSCHWITZ

introduced the following joint resolution; which was read twice and referred to the Committee on _____

JOINT RESOLUTION

(Insert title of joint resolution here)

To prohibit the sales of certain advanced weapons to Jordan.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,

Section 1. DISAPPROVAL OF PROPOSED SALES.

Prior to the commencement of direct bilateral negotiations between Jordan and Israel, the President may not issue a letter of offer with respect to any of the proposed sales to Jordan of advanced weapons systems, including advanced aircraft and advanced air defense systems, that are described in the advanced notifications of possible certifications pursuant to section 36(b) of the Arms Export Control Act submitted to the Congress on (date), (Transmittal Nos. _____).

Section 2. PROHIBITION ON DELIVERIES

If a letter of offer has been issued for any sale described in Section 1 of this Act before the enactment of this Act and that letter of offer is accepted, the President shall make no deliveries to Jordan pursuant to that sale without specific authorization by the Congress.

II. THE CASE AGAINST THE SALE

1. "Arms for Peace?," June 17, 1985 NER article
2. "The Arms Sale," October 7, 1985 NER article
3. "Jordan Arms: The Threat to Israel," October 7, 1985 NER article
4. Maps: Jordanian Flight Times and Improved Hawk Range
5. AIPAC Memoranda

ANALYSIS

Arms For Peace?

For over a decade subsequent Presidents and Secretaries of State have maintained that Arab states at war with Israel could be enticed into the peace process through the sale of sophisticated weaponry. Nevertheless, recent history has told a different story. In every instance in which U.S. arms were offered prior to negotiations between an Arab state and Israel, the peace process has either stalled or been set back.

In contrast, there has been one instance where the United States agreed to supply arms after direct negotiations had commenced. This was the case with Egypt. It was only after President Anwar Sadat went to Israel—and Egypt agreed to negotiate directly with it—that the United States agreed to supply 50 F-5E aircraft to Cairo. The Egyptians had requested the planes two years before Sadat's trip, but Secretary of State Henry Kissinger told Congress that no lethal weapons would be sold to Egypt until there was peace between it and Israel.

In the years since the Camp David treaty, the United States has sold a full range of weapons and military assistance to Egypt. Total sales approach $7 billion. Among the weapons provided have been 35 F-4E fighter planes, 80 F-16 fighter planes, 12 Improved HAWK antiaircraft missile batteries and 650 M-60 tanks.

The Saudi Case

The story of the Saudi arms sales is radically different. In 1978, the Carter Administration proposed the sale of 60 F-15 fighter aircraft to Riyadh. Secretary of State Cyrus Vance declared that "Saudi Arabia stands for peace and moderation in the Middle East." Other Administration officials said that the F-15 sale was the "litmus test" of U.S. friendship for the oil-rich Saudis. They promised that once the Saudis had the F-15's they would have the confidence to enter into the peace process.

The Carter Administration prevailed over strong Congressional opposition and the Saudi arms package was approved. Nevertheless, the Saudis continued to reject peace talks with the Israelis. They opposed Camp David, ended economic aid to Egypt, and finally broke diplomatic relations with Cairo. They also continued to bankroll the PLO.

The Reagan Administration followed the Carter model. In 1981, it proposed selling AWACS, F-15 enhancements (components which would make the planes more dangerous), and other advanced equipment. Once again, a Secretary of State—this time, Alexander Haig—argued that it was necessary to provide the arms because "a secure Saudi Arabia, confident of U.S. support, will be better able to proceed with its policy of encouraging all parties to move toward peace."

As in 1978, the President prevailed over Congressional opponents and, as in 1978, the Saudis did not live up to the commitments the Administration made for them. The Saudis have continued to oppose negotiations with Israel. They have pressured King Hussein not to join negotiations and they have tried to block every U.S. peace initiative in the region. They were also instrumental in encouraging Lebanon to renege on the May 17, 1983 Lebanon-Israel Accord. The supply of arms by the United States has not changed.

Now Jordan

The Reagan Administration is now considering the sale of new weaponry to Jordan—including, possibly, F-16 fighter-bombers—as a reward for King Hussein's ambiguous endorsement of *indirect* negotiations with Israel. If such a sale takes place, it will not be the first made to Amman.

During President Reagan's first term, the United States provided Jordan with close to three-quarters of a billion dollars in weaponry. In 1975, the Ford Administration sold HAWK missiles to Jordan on the grounds that Amman "has been a force for peace and moderation." The HAWKS are the key component in Jordan's anti-aircraft system but are only a part of a Jordanian arsenal which includes 115 combat aircraft (U.S. and French supplied), 700 tanks, 900 armored personnel carriers, 250 artillery pieces, and 500 anti-tank missile launchers. The Jordanians also have Soviet-supplied SAM-8 missile launchers.

In 1984, the Reagan Administration informed Congress that it intended to sell Jordan 1,613 portable Stinger anti-aircraft missiles. The Stingers (known as the ideal terrorist weapon because of their small size and power) were not delivered only because Congressional majorities told the Administration that there should be no arms sale to Jordan unless Jordan negotiated a peace treaty with Israel.

Jordan's actions, however, have never come close to meeting Congressional requirements. It opposed Camp David, even though its participation in that process was considered vital by President Carter. Jordan went so far as to break all diplomatic and trade relations with Egypt in protest of the peace treaty. It is closely allied with the PLO, which appears to have veto power over Jordan's foreign policy moves.

It is for these reasons that 72 Senators have co-sponsored the Kennedy-Heinz resolution which opposes arms to Jordan unless Jordan enters into the peace process. A majority of Congress has been convinced by history that supplying arms to Arab states still in a self-proclaimed state of war with Israel does not advance the peace process. As one long-time observer of the Washington scene put it: "Even if King Hussein is ready to start talking to Israel, why should we reward him with weaponry? Why is it that every time an Arab leader breathes 'peace' we feel compelled to reward him with weapons of war? There will be plenty of time for that once peace is a reality, and not merely the subject of speculation." □

—M.J.R.

with Seth Carus and Stephen Glick. Carus and Glick are military analysts with the American Israel Public Affairs Committee.

NEAR EAST REPORT

WASHINGTON WEEKLY ON AMERICAN POLICY IN THE MIDDLE EAST VOL XXIX NO. 40 OCTOBER 7, 1985

EDITORIALS

The Arms Sale

"If, one day, American planes and American missiles are used to rain destruction on the people of Israel, Americans and surviving Israelis will be asking with great bitterness: Whose acquiescence made it possible? Who failed to fight it with voice and vote? Whose misplaced trust led to tragedy?"—William Safire, 1981

William Safire's words of four years ago are as appropriate today as they were when they were made at the time of the Saudi AWACS sale. However, the proposed Jordan sale is more dangerous than the Saudi sale of 1981. Israel shares its longest border with Jordan and its population centers are, on average, only 5–10 minutes flying time from Jordan's air bases. It is obvious that Jordan—particularly a Jordan possessing America's finest fighter aircraft—has the potential to inflict heavy damage on Israel's people.

The Administration's seeming response is that Jordan has no intention of ever going to war with Israel again and that King Hussein, in his Sept. 27 United Nations speech, renounced the war option permanently. That is simply not the case. In his speech the King ruled out direct negotiations with Israel. In their place, he agreed to negotiate under "the appropriate auspices" of the United Nations Security Council, including the Soviet Union. Throughout his speech he repeatedly stated his belief that "peace efforts require" the "participation of the PLO in the peace process."

This is no new Jordanian formula for peace but the old formula for stalemate. Both Israel and the United States have rejected negotiations with the PLO and both have rejected Soviet involvement in the peace process. That this did not deter the King is proof that the point of his Sept. 27 speech was not to advance the peace process but to trade rhetoric for U.S. arms. It is worth noting that the King's supposed endorsement of peace with Israel (which came in an insert tucked into the original text) uses the exact formulation of the Smith amendment which bans U.S. arms to Jordan until Jordan accepts direct negotiations with Israel. The King in a word-for-word recapitulation of the amendment accepts Smith's formulation but then backs away by adding language which would bring the PLO and the Soviets into the process. His goal is clear. He wants those arms and he'll say *almost* anything to get them. Almost, but not quite.

The King has advanced considerably from his 1967 position when he publicly urged his soldiers to "kill the Jews wherever you find them" and he should be encouraged to continue moving in this direction. But encouragement should come not in weapons of war but in Administration restatement of U.S. policy. There must be no new arms for Jordan until that country recognizes Israel and agrees to direct negotiations, without the PLO and without the Soviets. There is no other way to peace.

ANALYSIS

Jordan Arms: The Threat to Israel

On Sept. 27, President Reagan officially notified Congress that he intends to sell Jordan $1.5 billion to $1.9 billion in arms. The arms package has six major components.

The first—and most significant—are 40 advanced fighter aircraft. Jordan would receive either the F-16 or the F-20. Either plane would pose significant security problems for Israel.

Both the F-16 and the F-20 are bombers and fighters (interceptors). As bombers, they can attack targets on the ground with laser-guided bombs or with air-to-surface missiles. As interceptors, they can search out other aircraft and shoot them out of the air.

The danger posed to Israel by Jordanian F-16's or F-20's are obvious. Israel's longest border is with Jordan. This 180-mile border is relatively impenetrable by enemy ground forces. However, an air force is not deterred by ground considerations.

Jordan's air bases are close to Israel's population centers. It would take a Jordanian F-16 or F-20 less than 10 minutes to fly from Jordan's King Hussein Air Base in Mafraq to Jerusalem or Tel Aviv. From Jordanian air space, F-16 or F-20 interceptors could even make it impossible for Israeli pilots to operate their own aircraft in defense of their own territory. It is this proximity to Israel that makes Jordan the Arab state best positioned to spearhead a combined Arab attack against Israel.

Jordan's arsenal cannot be viewed in isolation from those of other Arab states. Nor should the 40 additional American-made aircraft be considered alone. Jordan already has 115 combat aircraft while the combined Arab air forces (excluding Egypt) have more than 2,000.

It is not hard to imagine how all this air power could be put to work against Israel. As in 1973, the various Arab states could coordinate a surprise ground and air attack. The Israeli air force—which must protect the country while the army is being mobilized—could be blown out of the air by Arab fighter planes and by Jordan's air defense system (which would also be enhanced by the proposed arms sale). Stripped of its air defense, the existence of Israel itself would be imperiled as Arab air strikes, artillery, and surface-to-surface missiles provided the cover to enable combat troops to advance toward Jerusalem and Tel Aviv.

This is not far-fetched. In 1973, Jordan limited its involvement in the Yom Kippur War (unlike the 1948 and 1967 wars) primarily because it did not have the air power and air defense system to allow it to join the attack except in a minor way. Even without Jordan, Egypt and Syria were able to virtually eliminate Israel's front-line forces in the Sinai and on the Golan and make major advances toward the Negev and the Galilee. The new Jordanian air force—upgraded with U.S. arms—would be capable of not only joining an attack but of leading it.

Hawks and Stingers

Combat aircraft, in themselves, do not constitute the full threat to Israel's security posed by the Administration's Jordan arms sale. President Reagan also wants to sell Jordan 12 improved HAWK surface-to-air missile firing units, 14 missile fire and command posts, and conversion equipment to make Jordan's existing HAWKs mobile. The improved HAWK is a radar-guided surface-to-air missile with a range of 25 miles which can hit targets flying as high as 60,000 feet. The HAWK missile has proved to be extremely effective. During the 1973 war, Israel fired 75 HAWK missiles and destroyed 25 enemy aircraft.

Jordan already has 14 improved HAWK batteries but—because of U.S.-imposed restrictions at the time of their sale—these are mounted on concrete pads and cannot be moved to areas close to Israel. In contrast, the new units could be moved and would threaten Israeli aircraft flying over Jordan or Israel. In the event of war, the HAWK batteries could be used to cover the advance of attacking Arab ground forces.

The Administration also wants to sell Jordan 72 Stinger surface-to-air missiles. The Stinger is called the "ideal terrorist weapon" because it is portable and potent. Stingers are fired from a soldier's shoulder and are not much larger than—and even resemble—a video camera. The missiles are guided to their target by a heat-seeking infrared device which can sniff out any airplane flying at under 15,000 feet. The most impressive aspect of the Stinger (in addition to its compactness) is its ability to "lock" on a target. Once the missile has traveled a safe distance from the gunner, its main engine ignites and sends it directly to its target. It can destroy a low-flying aircraft from any angle.

Sale of the Stingers to Jordan raises the possibility that these missiles could fall into the hands of the PLO, which has a strong and growing presence in Jordan. If they did, the U.S.-supplied weapon could threaten civilian aircraft flying to Israel or Jordan. Israel has not yet developed a countermeasure which could neutralize the Stinger. No one else has either.

The proposed sale also includes 32 M-3 Bradley fighting vehicles and 300 AIM-9P Sidewinders. The Sidewinder is an upgraded air-to-air heat-seeking missile. It can be used to shoot down opposing planes from the air—and is compatible with any of Jordan's existing aircraft including U.S.-supplied F-5E's, or the French-supplied Mirage. Either the F-16 or F-20 can be equipped with the AIM-9P Sidewinder.

Eroding Israel's Edge

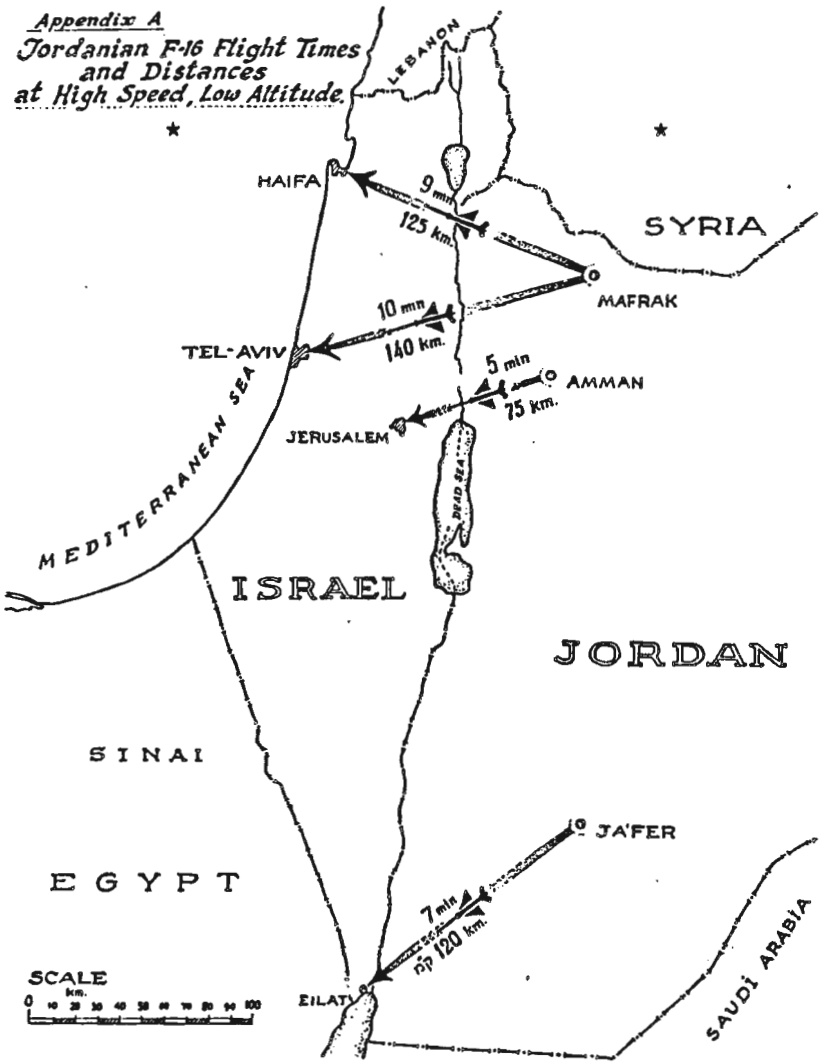
In short, the Administration's proposed arms sale to Jordan would—if approved—erode Israel's air superiority over its neighbors, which is the centerpiece of its defense. Military analyst Seth Carus puts it this way, "Israel depends on its air force for the very survival of the state. Air superiority is the shield that protects Israel's concentrated and vulnerable interior from attack by Arab forces. Clearly, a successful effort to neutralize the Israeli Air Force would jeopardize the crucial element of Israel's defense."

Unfortunately, and surely unintentionally, the Reagan Administration is proposing an arms transfer which would jeopardize Israel's air force and ultimately the security of the state itself. That is why it is being opposed by those dedicated to both peace and the survival of Israel. ||

—M.J.R.

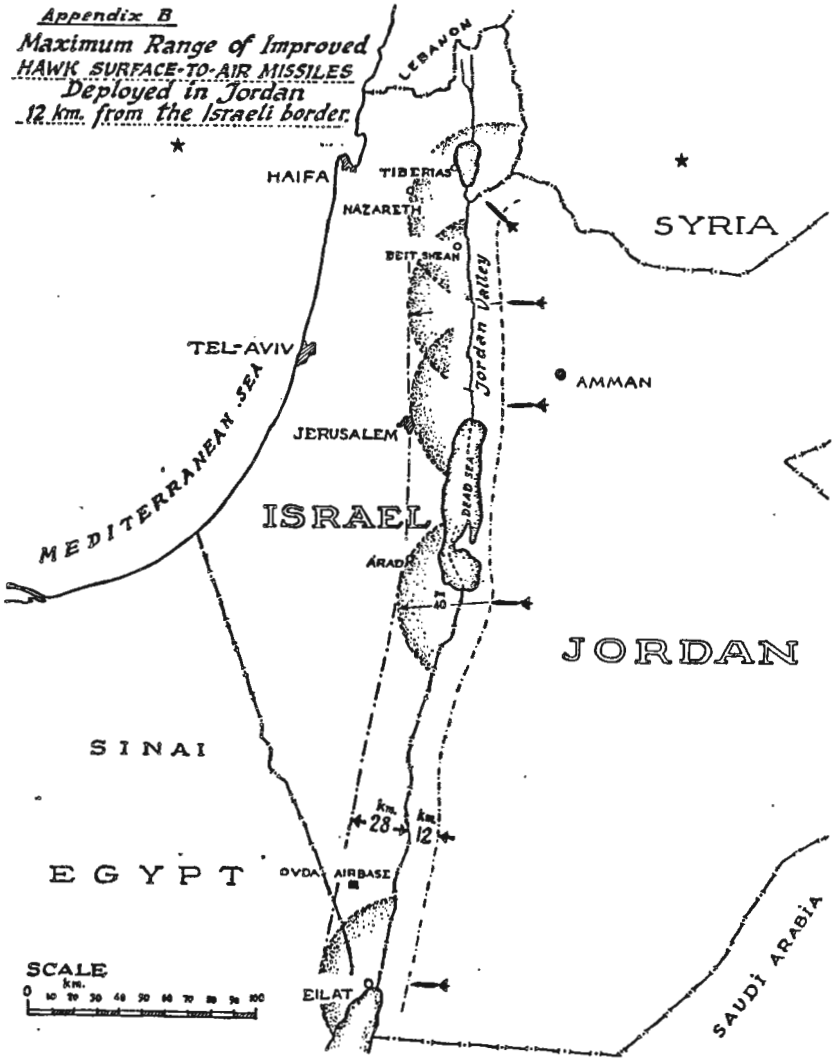
Appendix A

Jordanian F-16 Flight Times and Distances at High Speed, Low Altitude



Appendix B

Maximum Range of Improved HAWK SURFACE-TO-AIR MISSILES Deployed in Jordan 12 km. from the Israeli border.



THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

500 NORTH CAPITOL STREET, N.W. • SUITE 300 • WASHINGTON, D.C. 20001 • (202) 638-2256

October 3, 1985

ARMS VS. PEACE

The Administration is describing the Jordan arms package as "an integral part" of the peace process, and putting out the line that a Congressional vote against it would "almost certainly spell failure" for the effort to produce direct negotiations between Jordan and Israel.

But the truth is the very opposite. The arms sale is not part of the peace process, but the antithesis of it. Rejection of it by Congress will not impede the peace process, but may indeed be a necessity if the peace process is to have any prospect of success.

Congressional rejection of the arms package is essential to the peace process for two reasons: First, a military buildup in Jordan--Israel's closest neighbor--will further erode Israel's margin of security and increase the importance of vital strategic depth on the West Bank. As Hirsh Goodman, a leading Israeli journalist, put it, "If the Reagan Administration goes ahead with its intention to supply Hussein with weapons as a prize for obduracy...even the most determined Israeli dove will have a hard time countering the skepticism and cynicism that such a decision must generate... The U.S. must recognize that weapons supplied independent of any movement toward peace are essentially the means of war." **Going ahead with the Jordan arms sale under today's conditions will weaken the Government of Israel led by Shimon Peres and its ability to accept risks in the peace process.**

Second, the arms sale will have an adverse impact on Jordan's position in the peace process. For this process to have any prospect of success, King Hussein must go much further than he has in breaking with the radicals and agreeing to sit down with Israel. But, at the present time, he is taking refuge behind positions that will be acceptable to the radicals. If, under these circumstances, the United States nonetheless goes ahead with an arms sale, the message will go out that Jordanian obduracy pays off, and that when the Arabs dig in the U.S. will eventually come around to their positions. This is the opposite of the situation that is required for the peace process to succeed.

American firmness--saying no to arms until Hussein sits down to real peace negotiations with Israel--is the one thing that can break this stalemate. It will say to Hussein, "The ball is in your court, and the choice is yours." It will keep the pressure on the Arab confrontation states to move toward real peace with Israel.

Giving in to Hussein, on the other hand--going ahead with the arms sale in spite of his failure to deliver in the peace process--will defeat any hope of getting the Jordanians on the peace train. This is the choice before the U.S. Congress.

THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

500 NORTH CAPITOL STREET, N.W. • SUITE 300 • WASHINGTON, D.C. 20001 • (202) 638-2256

October 2, 1985

THE THREAT OF JORDANIAN ARMS

The Administration has indicated that it intends to sell Jordan sophisticated weapons costing as much as $1.9 billion, including 40 advanced fighters (either F-20s or F-16s), 108 Stinger surface-to-air missiles, 12 Improved Hawk surface-to-air missile units, other upgrades to enhance the lethality of Jordan's existing Improved Hawks, 300 Sidewinder air-to-air missiles, and 32 M-3 Bradley cavalry fighting vehicles.

According to the State Department, the primary purpose of the proposed sale is to enhance Jordan's antiaircraft capabilities.

Undermining Israeli Security

This so-called "defensive" air defense package threatens the very basis of Israel's security by providing Jordan with offensive weapons that undermine the cornerstone of Israel's security, its air superiority.

Israel does not have enough soldiers to guard its long and vulnerable borders, so it relies on a small standing army supported by a large number of reservists. Israel's air force has the critical and difficult task of protecting the country while the reservists are being mobilized.

The proposed arms package gives to Jordan weapons that can weaken Israel's air force and its ability to defend Israel's borders. Without adequate air support, Israel's front-line ground forces could be overwhelmed by the numerically superior Arab armies.

In addition, delivery of this package will increase the chance that Jordan will participate in a future war. In 1973, when Jordan had no sophisticated air defenses, King Hussein was unable to attack Israel directly, and so he was forced to limit his participation in the fighting to the transfer of only a single division to Syria, where it could fight on the Golan Heights under the protection of Syrian air defenses.

In contrast, it was Egyptian and Syrian acquisition of "defensive" air defense systems that made it possible for them to launch their surprise attack against Israel in October 1973.

Once Jordan has acquired a sophisticated air defense system, the Jordanian military would have the capabilities required to participate in a combined surprise attack on Israel. At the same time, Jordan would be able to provide a secure base for expeditionary forces from other Arab countries.

The Threat from Jordan

Jordan has attacked Israel in three wars: in 1948, in 1967, and in 1973. In addition, Jordan allowed a unit of the Palestine Liberation Army, a PLO offshoot ostensibly a part of the Jordanian armed forces and now armed with Jordanian–supplied American weapons, to fight in Lebanon against Israel in 1982.

Israel is especially vulnerable to attacks from Jordan because Israel shares its longest border with Jordan (nearly four times the length of the Syria–Israel border) and because the Jordanian border is in such close proximity to targets in Israel (it is only 45 miles from Jordan to Tel Aviv).

Eroding Israel's Military Edge

The supply of advanced aircraft would erode Israel's qualitative superiority by providing Jordan, for the very first time, with a modern fighter as sophisticated as the best Israeli plane.

Israel's margin of air superiority has been maintained for more than twenty years through its employment of aircraft superior to those available to the opposing Arab forces. Indeed, this proposed sale would provide for the first time a bordering Arab country at war with Israel an aircraft equal in quality to the best Israeli fighter.

A Massive Influx of New Weapons

Jordan has no desperate need for new weapons. In fact, in recent years Jordan has been importing massive quantities of new weaponry. According to the U.S. Arms Control and Disarmament Agency, total Jordanian arms imports from 1981 to 1983 (the most recent figures available) amounted to over $3 billion, including $1.1 billion in 1983 alone. Indeed, Jordan was the world's seventh largest importer of arms in 1983. (Iraq and Saudi Arabia were first and second, and Israel ranked only 26th.) By contrast, Israel's purchases were only $2.5 billion from 1981 to 1983, and only $370 million in 1983.

These imports have included new French–built Mirage F–1 fighters, British Khalid battle tanks, Austrian artillery, and Spanish aircraft. Only a few weeks ago Jordan ordered arms worth $300 million from Britain. American weapons sold to Jordan in recent years have included AH–1 Cobra helicopter gunships, Maverick air–to–ground missiles, tank modernization kits, and a variety of other weapons.

Conclusion

This package erodes Israel's margin of security which is essential to its survival and in order for a viable peace process to progress.

THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

500 NORTH CAPITOL STREET, N.W. • SUITE 300 • WASHINGTON, D.C. 20001 • (202) 638-2256

October 1, 1985

TIME FOR PEACE--Not Maneuvers

At the very time that America is looking to King Hussein to take the courageous step that is necessary for peace, the King is retreating behind positions designed to win support from Arab radicals, not peace with Israel.

In fact, the position the King is now taking is actually a step backward from the position he took before this year. Consider the record:

- In August 1982, the King privately assured the Administration that he was approaching a decision to enter negotiations with Israel.

- In January 1983, the King told the United States that he had taken a decision to meet with Israel--provided he could get a Green Light from Arafat.

- In April of 1985, the King told the Administration that a Green Light would not be enough--Arafat would have to approve individual Palestinians who would participate in the negotiations.

- In September 1985, Hussein told the United Nations that Arafat-designees would not be enough. The PLO itself would have to be a party at the table.

- In September 1985, Hussein told the President that the Soviet Union would have to be a full party to the process as well, via an "international conference."

What has happened is that, instead of making the hard decision to sit down with Israel, bucking rejectionist opposition, Hussein has progressively moved back to take refuge behind positions that will be acceptable to the rejectionists. No one has been more enthusiastic about the "international conference" formula, which Hussein now calls his own idea, than the PLO, Syria, and the U.S.S.R., who have been pushing it for years.

All this evasion has been deeply disappointing to people who sincerely care about peace. Shimon Peres said of Hussein's approach, "Let's start talking sense. Why all these maneuvers?" The international conference formula would be a "beautiful trap" for Israel to "fall into," Peres added, but it will not.

Peres observed, "The Jordanians are saying that time is running out and this is the last chance. But if we follow the process they propose, it may take years and years before a meeting will take place." On Sunday, Peres added that these "additional frameworks...only add more problems and result in everlasting delays."

Why does Hussein propose to give the Russians what Ronald Reagan called "a stranglehold on negotiations" and "a calling card for inserting themselves more deeply into the Middle East?" This is not in Jordan's interest, not in Israel's interest, and very definitely not in the interest of the United States.

And why does Hussein promote the PLO? As Ronald Reagan said, "They are terrorists, and should be identified as such. If others wish to deal with them, establish diplomatic relations with them, let it be on their heads. And let them be willing to pay the price of appeasement." Shimon Peres said this week, "The objection to the PLO has intensified further in recent days due to terrorist activities."

George Shultz said, "The only way to achieve a genuine, lasting peace is through direct negotiations between the Arab states and Israel. No other procedures can substitute. No other approach will get anywhere. No further plans or preliminaries are needed. There is one and only one place to negotiate--at the table, face to face."

This is the heart of the matter, and the reason that friends of peace are insisting that the King stop the maneuvers and start the negotiations.

THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

500 NORTH CAPITOL STREET, N.W. • SUITE 300 • WASHINGTON, D.C. 20001 • (202) 638-2256

Jerusalem Post International Edition - September 28, 1985

Royal double-talk

How serious are King Hussein's 'peace moves'? HIRSH GOODMAN argues that the Jordanian monarch is less concerned with a Middle East settlement than with paving the way for the supply of advanced American fighter planes to his air force. Such planes would be an added threat to Israel's security and would strengthen the voice of those who say that it would be dangerous strategically to give up any part of the West Bank, writes Goodman.

IT IS GENUINELY difficult to understand Richard Murphy's staunch defence of Jordan's King Hussein on Capital Hill last week. The king had moved courageously and consequently faces overt threats to his regime and associates, the U.S. assistant secretary of state told a hearing of the House Foreign Affairs Subcommittee on Europe and the Middle East.

Even to Murphy's attuned diplomatic ear, the phrase must have sounded hollow indeed. For the truth of the matter is that the king has done anything but move courageously; indeed, he has ensured that this latest American-inspired peace initiative is doomed to oblivion, as were its predecessors.

When Murphy visited this region in August, King Hussein's position was that movement towards peace must be staggered. As learned from high-level sources, Hussein envisaged four stages: First, Murphy would meet four to six of the Palestinians on the list of seven submitted jointly by the PLO and Hussein; second, the PLO would then recognize Security Council resolutions 242 and 338; third, this would then lead to an American-PLO dialogue aimed at "legitimizing" the PLO, and fourth, in the final stage, there would be an international peace conference that would include *all* the Arab states, the PLO and the Soviets.

Murphy's counter-proposal was simple: he was prepared to meet with up to four members of the Palestinian list on condition that this was a prelude to a meeting between Israel, Jordan the U.S., the Palestinians and possibly Egypt to discuss tangible moves towards peace.

Hussein turned him down flatly and unequivocally. The king refused to budge on any of the four conditions he had stipulated – not even the demand for an international peace conference that the king knows is anathema to both Israel and the U.S., who have made it clear that a peace process that would include the Soviets and Syrians can only fail.

WHEN Prime Minister Shimon Peres visited the U.S. in late 1984, he used two powerful arguments against an international conference – arguments that were adopted and supported by the administration at the time. "If the Syrians sit at the table," Peres told Secretary of State George Shultz at a meeting at the State Department, "all the Arabs will dance according to the Syrian tune. If the Soviets are at the table," Peres continued, "the U.S. will be forced by circumstance to adopt a totally pro-Israel position, thus negating America's role as 'honest broker.'"

Murphy knows as well as the king that the last of the king's four inviolate conditions was introduced in order to preclude peace, not facilitate it.

Murphy left Amman further from achieving movement towards peace than before he embarked on his mission. To all intents and purposes the American peace initiative in its current form is dead; and Hussein, by the artful employment of double-talk diplomacy, has buried it.

The assistant secretary's interpretation of Hussein's recent actions as "courageous" steps toward Israel is perhaps better understood if one recognizes that Murphy, in addition to reporting on the pursuance of peace, is representing the administration that later this month is expected to place before Congress notification of its intention to sell Jordan sophisticated military equipment worth billions.

Given that Congress has emphatically linked the sale of any weapons to Jordan to tangible movement by Jordan toward peace, Murphy could hardly have been expected to report to Congress, when the administration hopes to "sell" it an arms package, that the king is as obdurate as ever. Once again, it seems, American diplomatic goals in the Middle East have been made subservient to economic ones; again long-term interests have lost out to short-term considerations based on the warped logic that pumping more TNT into the Middle East will bring about peace and stability.

Assistant Secretary Murphy ... when diplomatic goals become subservient to economic ones. (Andre Brutmann)

The Reagan Administration is determined to go through with its arms package. That much has been made clear by administration officials who rationalize the inconsistency in policy goals with the now glib explanation that Hussein, with all his faults, remains pro-Western and moderate.

"And anyway," these officials continue, "if we don't sell him arms, the Europeans will" – an argument that gained considerable credibility last week when Britain announced over $4 billion in sales to Saudi Arabia and Jordan.

THE BRITISH decision, however, is not enough to get Murphy off the hook. Unlike the U.S., Britain has no pretension about spearheading a peace effort in the Middle East. Britain has no goal, no responsibility other than to provide employment for its troubled factories and foreign exchange to bolster its limp economy.

King Hussein neither requested nor received from Britain the high-grade sophisticated fighters requested from the Americans that would cut flying times from Amman to Jerusalem from four minutes to under three; and that are capable of delivering tons of ordnance on high density population targets with greater penetrability and survivability than ever before.

And even if the British do supply Tornadoes (that the king would have had to pay for – albeit under generous terms of credit), these would in no way be comparable to the F-16s the Americans are intending to supply, to be paid for, in the main part, by American aid. Israel would obviously prefer that there be no upgrading of the Jordanian air force, but if planes are to be supplied, better they be Tornadoes with the technology of the '70s than F-16s or F-20s, with the technology of the '90s.

In essence, if the Reagan Administration goes ahead with its intention to supply Hussein with weapons as a prize for obduracy, no matter what the rationale, even the most determined Israeli dove will have a hard time countering the scepticism and cynicism that such a decision must generate.

How can any responsible Israeli leader speak of territorial compromise – the giving up of vital strategic depth on the West Bank – when a Jordan that has submitted its foreign policy to PLO sanction receives weapons that would necessitate better early warning capabilities for Israel. Under these circumstances no Israeli prime minister could counsel compromise and survive politically. If anything, a U.S. Administration decision to go ahead with a sophisticated weapons package to Jordan would add to the arguments of the right-wing of the national unity government (both in the Likud and Labour) who propound the non-negotiability of Eretz Yisrael, and who adamantly oppose any movement on the peace front beyond the narrow interpretation of the Camp David accords.

HUSSEIN, by standing by the four conditions laid down by the PLO, has done more than disappoint Murphy and play into the hands of the Israeli right. He has effectively eroded the support he enjoyed on the West Bank.

"If there is no difference between Hussein's position and that of the PLO, why should a Palestinian on the West bank support a 'Beduin King,' when he can identify with his own leaders," a senior Israeli defence official asked rhetorically last week.

The same official said that those charged with monitoring the situation on the West Bank were "amazed" at how quickly Hussein's power base, which gained considerably after Yasser Arafat's expulsion from Tripoli, has dissipated.

On Wednesday night last week, at a banquet in Amman in honour of British Prime Minister Margaret Thatcher, the Jordanian monarch used current events in the West Bank and Gaza to illustrate his point. Hussein again embarked on his well-worn litany of how time is running out; how fanaticism and radicalism are replacing reason; and how the suffering of his conquered brethren must be ended.

Indeed it must. But radicalizing West Bank moderates, strengthening Israeli hard-liners and ensuring the perennial stalemate of American peace initiatives is not the way to go about it. Neither is the unbridled supply of weapons to Jordan by the Americans. In the final analysis, the U.S. must recognize that weapons supplied independent of any movement toward peace are essentially the means of war.

The writer is the defence correspondent of The Jerusalem Post.

THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

500 NORTH CAPITOL STREET, N.W. • SUITE 300 • WASHINGTON, D.C. 20001 • (202) 638-2256

September 27, 1985

HUSSEIN AVOIDS DIRECT NEGOTIATIONS

The United States has been waiting years for Jordan to sit down face-to-face with Israel to make peace. But each time we have called on the King to deliver on his promise, he has slipped away to take refuge behind another complicated maneuver.

Now, in his speech before the United Nations General Assembly on September 27, 1985, the King has said and done nothing new.

The course the King is advocating is the very opposite of that followed by Anwar Sadat. Sadat said, "I will go to Jerusalem," and so he did. In one great step, cutting through all the rhetoric and hatred, the President of Egypt sat down with the Prime Minister of Israel, to negotiate the differences between the two countries.

Jordan, by contrast, says that "direct negotiations between Jordan and Israel are out of the question," in the words of a top Jordanian official, and proposes instead to lure the U.S. into the trap of an international conference under the control of the Soviet Union, Syria, and the PLO. "It is Jordan's position that the appropriate auspice is an international conference hosted by the Secretary-General of the United Nations, to which are invited the five permanent members of the Security Council and all the parties of the conflict."

Sadat explained in his memoirs that it was exactly to get <u>away</u> from the dangerous concept of an international conference, that he decided to go to Jerusalem.

An international conference would be yet another forum for the usual gang-up-on-Israel propaganda show, not a serious venue for peace negotiations. It would be a setting in which radical Arab and Communist forces would control events and exercise a veto over actions that the moderates might otherwise take. It would be a vehicle to advance the goals of the Soviet Union, Syria and the PLO, rather than peace between Israel and Jordan.

This is why the concept of the international conference originated in Moscow, and has been most ardently sponsored by radical allies of the Soviet Union like Syria and the PLO.

It is also the reason that the forces of moderation in the Middle East--like Anwar Sadat, the government of Israel, and the Reagan Administration--have recognized the trap and declined to be lured into it.

So when King Hussein insists on an "international conference" instead of direct negotiations, what he is in fact doing is moving away from peace and toward the position of the U.S.S.R. Indeed, the Hussein Plan of 1985 has less similarity to Camp David or the Reagan Plan, than it does to the Brezhnev Plan of 1982. The King has still failed to take an irrevocable step toward peace.

The time is now for Hussein to stop all these maneuvers and sit down with Israel face-to-face. Until he does, it is certainly not the time to give him lethal military equipment.

III. RESPONDING TO THE ADMINISTRATION

THE AMERICAN ISRAEL PUBLIC AFFAIRS COMMITTEE

AIPAC MEMORANDUM

500 NORTH CAPITOL STREET, N.W. • SUITE 300 • WASHINGTON, D.C. 20001 • (202) 638-2256

October 8, 1985

THE JORDAN ARMS PACKAGE

RESPONSES TO ADMINISTRATION CLAIMS

ADMINISTRATION CLAIM

"Jordan has taken significant and courageous initiatives to advance the cause of peace."

RESPONSE

In fact, the position the king is now taking is actually a step backward from the position he took before this year. Consider the record:

* In August 1982, the King privately assured the Administration that he was approaching a decision to enter negotiations with Israel.

* In January 1983, the King told the United States that he had taken a decision to meet with Israel--provided he could get a green light from Arafat.

* In April of 1985, the King told the Administration that a green light would not be enough--Arafat would have to approve the individual Palestinians who would participate in the negotiations as part of a joint Jordanian/PLO delegation.

* In September 1985, King Hussein told the President that the Soviet Union would have to be a full party to the process as well, via an "international conference."

What has happened is that, instead of making the hard decision to sit down with Israel and buck the rejectionist opposition, King Hussein has progressively moved to take refuge behind positions that will be acceptable to the rejectionists. No one has been more enthusiastic about the "international conference" formula, which Hussein now calls his own idea, than the PLO, Syria, and the Soviet Union, who have been pushing it for years.

ADMINISTRATION CLAIM

"Approving the package will not guarantee the success of the peace process; but denying it almost certainly spells failure."

RESPONSE

This argument concedes that the Administration seeks and expects nothing from Jordan in terms of the peace process in exchange for this arms package. Denying these weapons will in fact help the peace process. The arms sale is not a part of the peace process, but the antithesis of it. It focuses the discussion on instruments of war, rather than on peace.

The arms sale should not proceed for several reasons. First, a military buildup in Jordan will have an adverse affect on Jordan's willingness to move forward in the peace process. For peace talks to begin, King Hussein must break with the radicals and agree to sit down with Israel. Instead, he is insisting upon positions that will be acceptable to the radicals. If, under these circumstances, Jordan is provided with these deadly weapons, the United States will have made it clear that Jordan can stand still in the peace process and still get the arms it wants.

Second, supplying these weapons will erode Israel's margin of security, thus increasing the importance of the strategic depth offered Israel by the West Bank. It will also weaken the Government of Israel and its ability to accept risks in the peace process. This air defense package will increase Jordan's offensive capabilities by providing them with a means of countering the cornerstone of Israel's defense, its air superiority.

ADMINISTRATION CLAIM

"Arms for Jordan and their implicit political and security support can improve the conditions and the atmosphere for the process but cannot determine the results. We learned this during the Camp David negotiations. Despite the impetus provided by President Sadat's dramatic, and politically risky, visit to Jerusalem and the strong U.S. backing for the overall peace effort, the road to peace proved long and hard, and at times appeared destined to failure. This situation did not prevent the United States from agreeing to supply necessary defense weapons to Egypt, including 50 F-5E air defense aircraft, prior to the convening of peace negotiations between Egypt and Israel at Camp David."

RESPONSE

Jordan's most pressing need is for increased anti-terrorist capabilities. As the State Department notes, "modern aircraft and air defense missiles do not stop infiltrators and terrorists." Yet, instead of providing King Hussein with an ability to counter Syrian-inspired terrorism, the U.S. provides sophisticated weapons to fight a conventional war instead.

ADMINISTRATION CLAIM

"If King Hussein goes elsewhere for arms, Israel loses the reassurance of indirect U.S. control."

RESPONSE

King Hussein has knowingly violated past agreements with the U.S. intended to prevent Jordan from attacking Israel with American arms.

In 1964 the United States sold Jordan a large number of M-48 Patton tanks on the condition that these weapons would never be deployed on the West Bank. Yet, just before the start of the 1967 war, Jordan violated this agreement and sent these M-48 tanks to the West Bank, where many of them were used against Israel. In 1973, Jordanian army forces used American weapons to attack Israel in the Golan Heights.

As these episodes demonstrated, the United States cannot stop Jordan from using its American-supplied equipment against Israel.

ADMINISTRATION CLAIM

If we refuse to supply King Hussein with advanced weapons, "Jordan would be forced to turn to Europe or the Soviet Union."

RESPONSE

King Hussein wants American arms because they are qualitatively superior to alternative weapons available elsewhere, because he wants the arms as a symbol of U.S. support for Jordan, and because he expects the United States to pay for them.

RESPONSE

In fact, at the time the U.S. offered to sell Egypt those aircraft, Israel and Egypt were already involved in direct and public negotiations. President Sadat had travelled to Jerusalem, and the two countries were engaged in direct peace talks. The Camp David talks concluded a process that was well under way.

In contrast, today King Hussein continues to decline direct and public negotiations and he appears determined to insist upon positions that will make such talks impossible.

To provide Jordan with arms today would be like having offered the fighter aircraft to Egypt before President Sadat had gone to Jerusalem. The United States offered to provide Egypt arms only after the Egyptians were negotiating substance, not merely discussing process. We should defer sales of advanced arms to Jordan until after King Hussein enters into direct and public bilateral negotiations with Israel.

ADMINISTRATION CLAIM

King Hussein needs these weapons to "provide Jordan with a credible deterrent against aggression, and, most importantly, to sustain Jordan's vital role in the peace process."

RESPONSE

Since the State Department says that the weapons will not be delivered for three to five years, it cannot be argued that they have any direct relation to today's peace process. Efforts to get peace negotiations underway should be taking place today, so how will the weapons protect Jordan from Syrian threats?

ADMINISTRATION CLAIM

"Jordan's most pressing need is increased air defense capability."

Although it is possible that Jordan will buy additional Soviet weaponry, it is highly unlikely that King Hussein will come to rely on the Soviet Union as a major source of arms.

The State Department admits that "Jordanian leadership has little confidence in the quality of Soviet support or the value of pursuing closer ties with the Soviet Union." Quite simply, King Hussein realizes that he cannot afford to rely on the Soviet Union as his main source of arms. The Soviet Union opposes Jordan's political and economic orientation, and has a long record of supporting radical revolutionaries and of hostility towards monarchies like that in Jordan.

Further, the Jordanians must recognize that the Soviet Union will always value Syria more than Jordan. In the event of a conflict between the two, King Hussein knows that the Soviet Union will inevitably back Syria. As long as he remains an American client, he also knows that the United States will support him against the Syrians. In addition, King Hussein knows that Israel will be inclined to come to his assistance in the event of a Syrian threat, as it did in 1970 and 1980. From the record, a strong Israel may be more important to Jordan's security than the Soviet Union or the provision of large quantities of U.S. arms.

Finally, Jordan has learned through experience that American weapons are generally more capable than comparable Soviet systems. And, the Soviets have nothing to offer that is even comparable to the advanced aircraft that the United States wants to give him. The U.S. provides more than just equipment when it sells weapons. Accompanying American weapons is highly effective training, something which the Soviet Union has been unable to provide. For example, Jordan has found Soviet training and support for the SA-8 surface-to-air missiles to be highly unsatisfactory, in contrast to the excellent training provided by the U.S.

Many of the same factors also apply to European substitutes. As the State Department points out, the Europeans cannot provide Jordan with the political backing that King Hussein wants. Finally, the United States is offering to provide a substantial amount of grant aid to pay for the Jordanian arms. In contrast, European countries (and the Soviet Union) demand repayment. Jordan's precarious financial situation and the failure of Saudi Arabia and other Arab states to provide expected levels of financial assistance make it unlikely that Jordan could find a replacement for the American assistance.

ADMINISTRATION CLAIM

"A Jordanian political decision to undertake offensive operations against Israel is extraordinarily remote."

RESPONSE

In fact, Jordan has already attacked Israel on three occasions during the past thirty-seven years: in 1948, in 1967, and again in 1973. There is no assurance that the Jordanians might not do so a fourth time.

One factor reducing the likelihood of a Jordanian attack today is that Jordan lacks the air defenses needed to participate in an effective offensive against Israel. This package would reduce this disincentive.

ADMINISTRATION CLAIM

"The addition of this weaponry to the Jordanian inventory will not provide Jordan with a credible offensive capability against Israel."

RESPONSE

In each instance when Jordan fought against Israel in the past, it was as part of a larger coalition of Arab countries. Israel must consider the possible danger to its security of a potential alliance combining Jordan, Saudi Arabia, Syria, Libya, Kuwait, and even Iraq and Iran once their own war ends.

In such a coalition, the Syrians could provide the quantity while Jordan, using its sophisticated American aircraft and air defenses, provides the quality. Jordan could, for example, pose a particular threat by providing aircraft capable of penetrating Israel's defenses to hit selected high valued targets.

ADMINISTRATION CLAIM

The Improved HAWK is a "defensive" weapon "of limited use in the offensive mode."

RESPONSE

Contrary to the assertions by the State Department, the Improved HAWK is also an offensive weapon.

First, an Arab attack on Israel is most likely to occur if it is supported by effective antiaircraft weapons to protect the advance of the ground forces. Israel's aircraft are its first line of defense, and any system that reduces their effectiveness increases the chances for an attack.

The mobile Improved HAWK can give Jordan the air defenses it needs in order to participate in an attack against Israel. In 1973, the Jordanians lacked air defenses, and so deliberately limited their participation to an expeditionary force that fought in Syria under the cover of Syrian air defenses.

In contrast, the acquisition of sophisticated air defense systems made possible the Egyptian and Syrian attacks against Israel in 1973. These air defenses destroyed a significant number of Israeli aircraft, made it possible for Egypt to successfully attack across the Suez Canal and almost allowed Syrian ground forces to seize the Golan Heights. Thus, antiaircraft defenses can play a vital role in an offensive against Israel.

Second, Israel's small size means that mobile Improved HAWK missile batteries located on Jordan's border can hit aircraft flying over nearly half of the country. Jerusalem is less than 20 miles from Jordan, while the Improved HAWK has a range of 25 miles. Thus, even if Improved HAWK batteries are deployed at a distance from the Israeli border, they can threaten aircraft over much of Israel. Even the potential presence of such batteries would force Israeli aircraft flying over much of Israel to operate as if they were in enemy-controlled territory.

ADMINISTRATION CLAIM

If the U.S. refuses to supply Jordan with these arms, "King Hussein will need to move quickly to provide his armed forces with substitutes for the American weapons he much prefers."

RESPONSE

Jordan has no desperate need for new weapons. In fact, in recent years Jordan has accumulated massive quantities of new weaponry. According to the U.S. Arms Control and Disarmament Agency, total Jordanian arms imports in 1981 to 1983 (the most recent figures available) amounted to over $3 billion, including $1.1 billion in 1983 alone. Indeed, in 1983 Jordan was the world's seventh largest importer of arms.

These imports have included new French-built Mirage F-1 fighters, British Khalid battle tanks, Austrian artillery, and Spanish aircraft. American weapons sold to Jordan in recent years have included AH-1 Cobra helicopters, Maverick air-to-surface missiles, tank conversion kits, and a variety of other weapons systems.

In addition, much of Jordan's older weaponry has been upgraded and remains highly effective. For example, Jordan has converted its older Centurion into new and improved Tariks. The American-supplied F-5E is superior to two-thirds of the aircraft in the Syrian air force, and they are supported by Jordan's new Mirage F-1s, which have sophisticated electronics giving them capabilities superior to those on Syria's MiG-23 fighter-bombers.

ADMINISTRATION CLAIM

Jordan has been a "bulwark of stability and moderation in the Middle East."

RESPONSE

Only in comparison to other Arab states. In fact, Jordan has attacked Israel three times in the last 37 years, barely survived a radical challenge that culminated in a civil war in 1970, and continues to refuse to sit down to negotiate with Israel.

IV. THE WEAPONS

Advanced Aircraft: F-20A/F-16C
The Stinger Shoulder-launched Antiaircraft Missile
The Mobile Improved Hawk Surface-to-Air Missile
The M-3 Bradley Cavalry Fighting Vehicle
The AIM-9P Sidewinder Air-to-Air Missile

ADVANCED AIRCRAFT: F-20A/F-16C

1. Advanced Aircraft: The Threat to Israel
2. Advanced Aircraft Cannot Stop the Syrians
3. The F-20A Tigershark: A First Rate Fighter
4. Chief of Staff of the U.S. Air Force on the F-20A
5. Chicago Tribune article on F-20
6. Northrop data sheet on F-20 Tigershark
7. The F-16C: A Formidable Fighter
8. Flight International article on F-16 Air Defense Variant
9. Data on the F-16
10. Jordan's Modernizing Air Force
11. Growing Payload of Jordan's Air Force
12. Jordan's Growing Air Force

Advanced Aircraft: The Threat to Israel

The delivery of advanced aircraft to Jordan, like the F-20A or the F-16C, raises disturbing implications for the regional balance of power. Providing such aircraft will give Jordan for the first time aircraft comparable in quality to Israel's best.

Jordanian Threat Unique

Geography has made Israel especially vulnerable to attacks from Jordan--

* Israel's longest border is with Jordan. This 300 kilometer border is more than double the length of the border with Lebanon and nearly four times as long as the border with Syria. Although portions of the terrain along the Jordanian border are relatively inaccessible to ground forces, aircraft are unaffected by such limitations.

* Jordanian air bases are in close proximity to targets in Israel. Amman is barely 50 miles from Jerusalem, and Mafraq is less than 100 miles from Tel Aviv. As a result, ground attack aircraft based at Amman are only fives minutes away from Jerusalem, those at King Faisal air base in South Jordan are only 7 minutes away from Elat and the new air base at Ovda. It is less than 10 minutes flying time from King Hussein air base in Mafraq to Haifa or Tel Aviv.

These conditions make Jordan the state best positioned to spearhead a combined Arab attack against Israel, especially a surprise attack.

Arab Priority on Air Power

Arab air forces are now giving priority to strengthening their air forces, since they know that Israel must maintain air superiority in order to survive. Even limited penetrations of Israeli air space could significantly hurt Israel and alter the overall military balance. Targets of attack could include Israeli air bases, command posts, early warning radars, mobilization centers for ground units, naval facilities, or other high priority targets, the loss of which would seriously affect Israeli combat capabilities.

The Combined Arab Air Threat

Jordanian advanced aircraft should not be taken in isolation, since they will be qualitatively important additions to the overall Arab air threat array in a "reasonable worst case." Jordan's 100+ combat aircraft, must be viewed in the context of the total Arab air forces, which, excluding Egypt, exceed 2100 planes.

The combined potential of the Arab coalition is significant because, unlike ground forces which move slowly, aircraft can be redeployed relatively quickly over long distances. Even in a short war, Arab countries not bordering on Israel could swiftly transfer aircraft to front-line states, thus providing reinforcements and replacements.

Advanced Aircraft Cannot Stop the Syrians

The Administration is proposing that the U.S. supply Jordan with sophisticated fighter-bombers, because it claims that King Hussein needs the aircraft to stop a potential Syrian attack. In reality, such aircraft will not significantly strengthen Jordan's defenses against a Syrian attack.

Syria now has the largest and most sophisticated ground-based air defense system in the Middle East. The Soviets have provided the Syrians with a full panoply of weapons, including 150 batteries of SA-2, SA-3, SA-5, SA-6, SA-7, SA-8, and SA-9 surface-to-air missiles, possibly the SA-11, SA-13, and SA-14 systems as well, and more than 1,000 antiaircraft guns. Most of the weapons are mobile: according to one estimate about two-thirds of the missile batteries are equipped with one of two mobile systems, either the SA-6 or the SA-8 missile; a majority of the antiaircraft guns are also self-propelled, including at least 300 ZSU-23-4s and 250 ZSU-57-2s.

Syria's air defenses have nearly as many men as the Jordanian army: 50,000 men, while the entire Jordanian army has only 68,000 men.

To be effective, Jordanian F-16s or F-20s would have to fly through these air defenses, surviving attacks from sone of the best Soviet antiaircraft weapons. In 1973, the Syrians destroyed over 50 Israeli aircraft, most of them in the first few days of the war.

Only air forces equipped with air defense suppression capabilities can hope to operate effectively in such an environment. Jordan's air force does not have these capabilities and would have difficulties providing air cover in the areas threatened by Syrian air defenses.

* Operating as Interceptors: The F-16C and F-20A are both excellent interceptors, but would have difficuties providing air cover for Jordanian ground forces in the battle areas. Syria's air defense missiles have a range to extend more than 35 kilometers into Jordanian air space. Jordan's fighters would almost certainly suffer heavy losses while flying inside in the zone covered by Syrian missiles, making it difficult or even impossible for them to intercept enemy aircraft.

* Providing Ground Support: The F-20A and the F-16C are capable ground attack aircraft, and could be used to interdict advancing Syrian ground units, or to provide close air support for Jordanian army units. But, in order to perform either mission, they would have to fly hundreds

of sorties into areas protected by Syrian air defenses. It is all too likely that these planes would be shot down long before they seriously hurt Syrian ground forces.

In addition, Jordan's air bases are vulnerable to attack from Syria. During such attacks, the aircraft based at the air bases could be destroyed on the ground, or sufficient damage could be done to the air bases to make flight operations impossible.

Four of Jordan's five main air bases are within 40 miles of the Syrian border. This makes them potentially vulnerable to being overrun by Syrian ground forces, neutralized by artillery bombardment, knocked out by Syrian missile attack, or disrupted by Syrian commando attack. Finally, some of the air bases are now in range of Surian surface-to-air missiles, which would make it difficult for aircraft to operate from those bases during hostilities. If the Syrians make only modest advances on the ground, four of the air bases could be within range of Syrian air defenses.

Syrian Air Defense Command

Syria's air defenses have 50,000 men. (By comparison, the entire Jordanian army has only 68,000 men.)

3 long-range surface-to-air missile batteries
- SA-5 (300 kilometer range)

150 medium-range surface-to-air missile batteries
- SA-2 (43 kilometer range)
- SA-3 (18 kilometer range)
- SA-6 (35 kilometer range)
- SA-8 (12 kilometer range)
- SA-11? (28 kilometer range)

short-range surface-to-air missiles
- SA-7 (4 kilometer range)
- SA-9 (7 kilometer range)
- SA-13 (5-8 kilometer range)
- SA-14? (? kilometer range)

1,000 antiaircraft guns
- ZSU-23-4 23mm (radar-controlled)
- ZSU-57-2 57mm
- ZU-23-2 23mm
- S-60 57mm (radar-controlled)

The F-20A Tigershark: A First Rate Fighter

Although originally developed as an "export" fighter with lesser capabilities than the F-16 used by the U.S. Air Force, Northrop has transformed the F-20A into a fighter-bomber with capabilities equal to those of the latest F-16C.

Certain characteristics make the F-20A particularly well suited for use in surprise attacks.

* The Tigershark has an extremely fast reaction time, because of a quick-starting engine and a laser-gyro inertial navigation system that is warms up in less than half the time of older systems. It takes less than a minute for an F-20A to be in the air after a "cold" start.

* The Tigershark has excellent ground attack capabilities. It can carry five laser-guided bombs or four Maverick air-to-surface missiles. High accuracy using conventional weapons is made possible by an advanced design weapons delivery system.

* The Tigershark's advanced radar has a "freeze" mode that allows the pilot to turn off the radar, yet still keep a radar-generated map for navigation to the target. This is particularly useful in during surprise attack, since the F-20s cannot be detected by tracking of the signals from their radars.

* The Tigershark's radar is so precise that it can show individual aircraft on the ground at distances of 10 miles.

* The Tigershark can fly fifty percent more combat sorties than any other fighter in the world: 6.2 combat sorties per day, compared with only 4.2 per day for the F-16C. Northrop has shown that the F-20 can fly as many as 12 sorties per day.

The F-20A is considered the equal of the F-16C in air-to-air combat.

* The Tigershark is as agile as the F-16, and has a slightly higher thrust-to-weight ratio.

* The Tigershark's radar can detect an F-16 at 48 nautical miles, while the F-16 can detect the F-20 at only 35 to 43 nautical miles.

* The Tigershark's radar can track up to 10 aircraft at a time, the same as for the F-16C.

* The Tigershark can carry the AIM-9L, and can be easily modified to fire the U.S. AIM-7 Sparrow or the French Magic.

The Chief of Staff of the U.S. Air Force on the F-20A

(AIR FORCE Magazine, August 1985, p. 85)

The F-20 Tigershark, the Air Force believes, has about "two-thirds of the range/payload [capability] of the F-16. Inside of its range, the F-20 is a very competent airplane. In some situations, it is ideal," according to General Gabriel. In this context, he singled out the air defense mission. "The F-20 is very fast—probably the fastest in the world today from start to intercept"—due in part to "such things as its rapid ring laser gyro INS [inertial navigation system]."

$15 million fighter jet has everything—but a buyer

By James O'Shea
Chicago Tribune

EDWARDS AIR FORCE BASE, Calif.—Poised in the shadows of a cavernous hangar here, the F-20 Tigershark fighter jet looks as sleek and deadly as its namesake.

Billed as the fastest-reacting interceptor aircraft in the world, the Tigershark can fire up its powerful engine and be at 32,000 feet stalking faraway enemy planes a mere 2.5 minutes after its pilot hops into the cockpit.

With its 21 on-board computers constantly monitoring its sophisticated electronic controls, the F-20 appears to be the plane that has everything. It has missiles; it has rockets; it has cannons; it has laser-guided bombs.

Indeed, the F-20 Tigershark has just about everything except the one thing that counts: customers.

Since the late 1970s, the Northrop Corp. headquartered near here has pumped more than $800 million into development of the plane that Air Force Association magazine called "a versatile little brute . . . competitive with any other fighter flying today." Nevertheless, the company has been unable to sell a single F-20.

It is not for lack of trying. Northrop has done everything from taking the plane on a 'round-the-world demonstration trip to making a recent unprecedented offer to the Pentagon: company Chairman Thomas Jones offered to sell 396 F-20s to the Air Force for a fixed price of $15 million each plus $2.85 million for all the spare parts the plane would need over 20 years.

That is less than the $18 million to $20 million per plane—and with no set figure for spare parts—that the Air Force budgeted this year to buy 180 of its first-line fighters, the F-16, made by General Dynamics Corp.

But so far no one has actually committed to buying Northrop's plane. The Wall Street Journal recently reported that the Air Force, in a classified planning document, has recommended buying some F-20s in fiscal 1987. But the plan faces several Pentagon reviews and still could be altered.

There are many reasons that the F-20 seems to fly under a cloud of bad luck. Even its most ardent supporters agree that Northrop's loss of two of its three-plane Tigershark fleet in the last nine months hasn't helped.

One plane went down in Korea last October at the tail end of its world tour during a flight demonstration. Then, just as congressional interest in the plane surged in May, a second F-20 en route to the Paris Air Show crashed during a practice demonstration at a stopover in Newfoundland.

The pilots in both the crashes were killed. The first accident was attributed to pilot error and the second is under investigation.

But as tragic as the crashes have been, they are not the main reason for the dearth of F-20 sales. The Tigershark's biggest problem is that it is trapped in a Catch-22 involving the United States' far-flung allies and the Pentagon's vast weapons bureaucracy.

The F-20 was originally made to be exported to U.S. allies and not for use by U.S. forces. But America's allies have balked at buying the Tigershark because they view any plane not in the U.S. Air Force inventory as inferior.

Meanwhile, the F-20's unique status as a plane developed totally without taxpayers' funds is hurting it. Because it was developed outside of the Pentagon's weapons bureaucracy, it lacks the military constituency that normally develops as a weapon moves through the system.

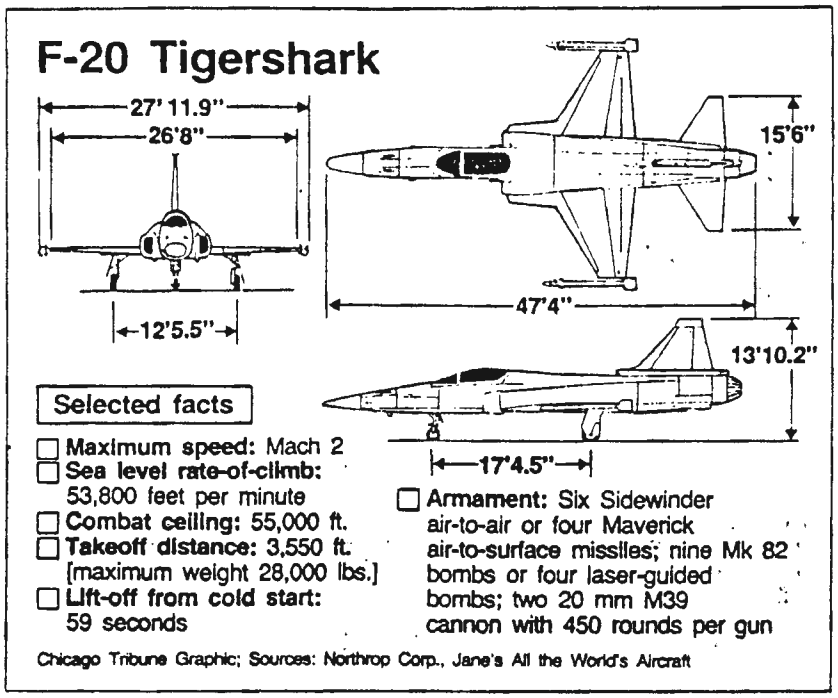
It was in the late 1970s that President Jimmy Carter's administration called for a new fighter to be developed and built without government assistance for the export market. The original announcement—which still haunts the F-20—sought an "intermediate fighter" for U.S. allies, a plane whose "cost and performance characteristics would generally lie between our current export fighter, the F-5E, and fighter aircraft now in production for U.S. forces, such as the F-16."

Northrop, which also makes the F-5, responded with a proposal for an updated version of the F-5 called the F-5G. But before that plane could be sold, two things happened: President Reagan was elected and his administration, reacting to the Soviet Union's presence in Afghanistan, agreed to sell a U.S. first-line fighter—the F-16—to neighboring Pakistan.

As Air Force Association magazine noted, the sale to Pakistan marked the first time the U.S. had sold one of its prime fighter planes to a country outside of the North Atlantic Treaty Organization or Israel before deploying it domestically.

Soon the Reagan administration sold the F-16 to Venezuela too, and other potential foreign purchasers started asking for the prime fighters rather than an "export" brand viewed as not good enough for American fliers.

So Northrop went back to the drawing boards and developed the



F-20 Tigershark, a fighter that has structural similarities to the F-5 but is a totally new plane with significantly higher engine thrust and performance improvements, according to the authoritative "Jane's All the World Aircraft."

The trouble is that Northrop has had a hard time shaking the "export fighter" image, particularly because the F-20 is not in the Air Force official inventory.

When the world tour failed to produce any orders, Northrop decided to try for the Air Force stamp of approval by proposing that the Air Force split its purchases between F-16s and F-20s. The Air Force is committed to buy 792 F-16s.

Jones said the two planes are comparable, but the F-20 requires less fuel, fewer spare parts and less than half the manpower of any current fighter aircraft. He said it would save the Pentagon millions on each plane—savings that could be used to buy more airplanes in the Pentagon's drive to add three tactical fighter wings.

"An F-20/F-16 complementary force," Jones said in a speech, "acquired and apportioned with the benefit of competition, would reduce procurement and operating costs."

The Pentagon and the defense industry were stunned by the offer, and it has had some interesting effects. General Dynamics issued a statement attacking the Jones argument as "simplistic, outdated, irrelevant, unsupportable, highly conditional or based on unequal ground rules." The F-16's costs reflect a plane ready to operate in a sustained combat environment, General Dynamics said, while the F-20's reflect the minimum for a plane that can operate in a limited peacetime environment.

Nevertheless, the offer has struck a chord inside and outside the Pentagon. Air Force Secretary Verne Orr said the Jones offer would not change his plans to buy the F-16s next year, but he did indicate he would like to see some competition between the F-16 and the F-20.

Meanwhile, Brig. Gen. David Hoff, commander of the Wisconsin Air National Guard, analyzed the Jones offer and advocated that the Air Force buy some F-20s in fiscal 1986.

"By reducing the [purchase of] F-16s by 19," he said, "[the Air Force] could purchase 32 F-20s. The Air Force would have more aircraft and more combat capability with no increase in the budget."

The House Armed Services Committee also weighed in by including a provision in its fiscal 1986 military authorization bill requiring a competition between the F-16 and F-20 in 1987.

But most insiders still are taking a wait-and-see attitude. The Air Force, they note, was impressed when the Navy used competing bids to force down the price of some F-16s it bought, though General Dynamics says the planes sold to the Navy were stripped-down versions.

F-20 TIGERSHARK

Public Relations Northrop Corporation 1800 Century Park East, Century City, Los Angeles, California 90067 (213) 553-6262

F-20 TIGERSHARK PERFORMANCE HIGHLIGHTS (with two AIM-9 missiles)

Maximum Speed	Mach 2	
Sea level rate-of-climb	53,800 feet/minute	(16,100 meters/min.)
Combat ceiling	55,000 feet	(16,500 meters)
Takeoff distance	1,475 feet	(450 meters)
Takeoff distance (maximum weight)	3,550 feet	(1,050 meters)
Scramble order to lift-off from a cold start	59 seconds	
Scramble order to 32,000 feet	2.5 minutes	
Time to 40,000 feet from brake release	2.3 minutes	
Acceleration time, 0.3M to 0.9M, at 10,000 feet	28 seconds	
Sustained turn rate, 0.8M, at 15,000 feet	13.1 degrees/second	
Maximum load factor	9g	

SPECIFICATIONS

Length	47 ft. 3 in.	(14.2 meters)
Height	13 ft. 9 in.	(4.1 meters)
Wing Span, with two AIM-9 missiles	27 ft. 10 in.	(8.4 meters)
Takeoff weight, with two AIM-9 missiles	18,540 lbs.	(8,350 kilograms)
Combat thrust/weight ratio	1.12	
Combat weight, 50% fuel, 2 AIM-9 missiles	16,015 lbs.	(7,200 kilograms)
Maximum weight	28,000 lbs.	(12,600 kilograms)
General Electric F404-GE-100 engine	18,000 lbs. thrust	(8,100 kilograms)

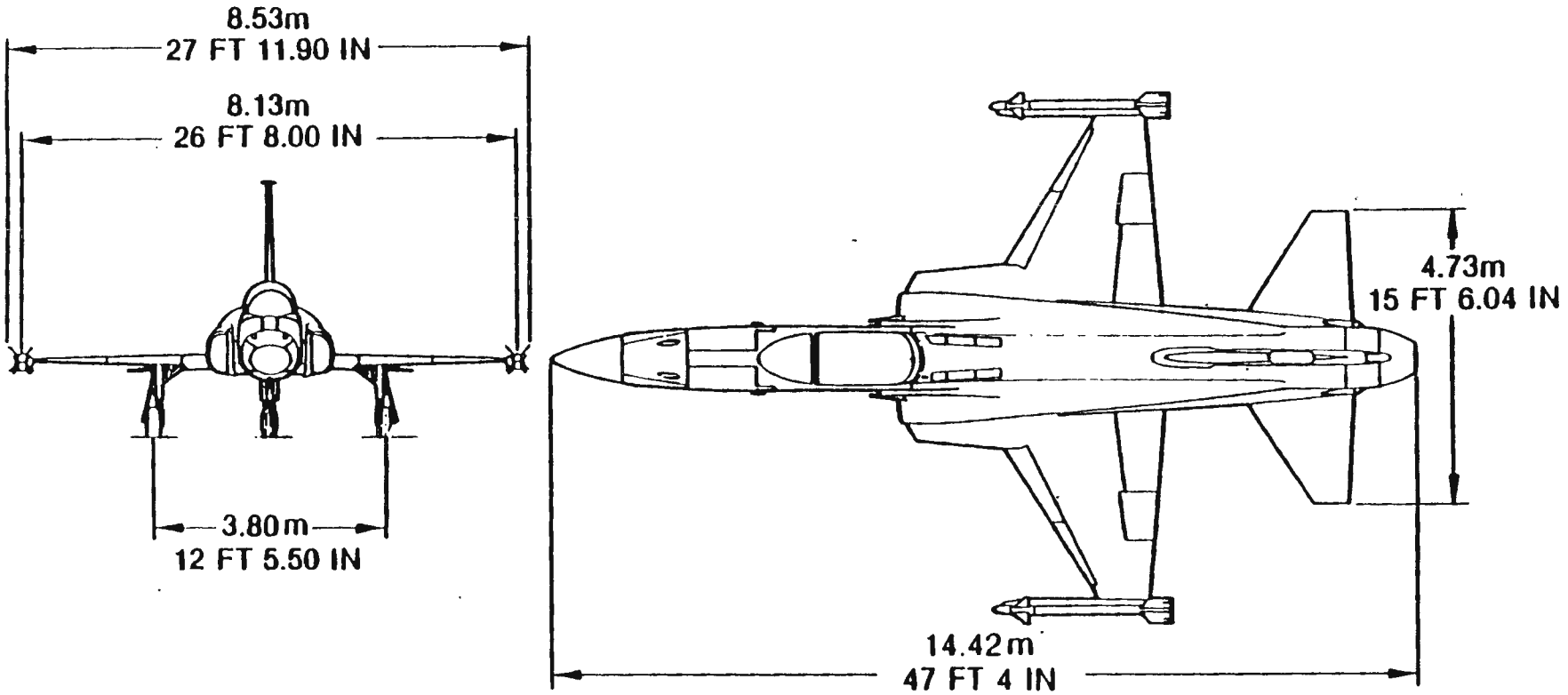
MAMENT

Advanced weapons for air-to-air, air-to-ground and air-to-sea operations

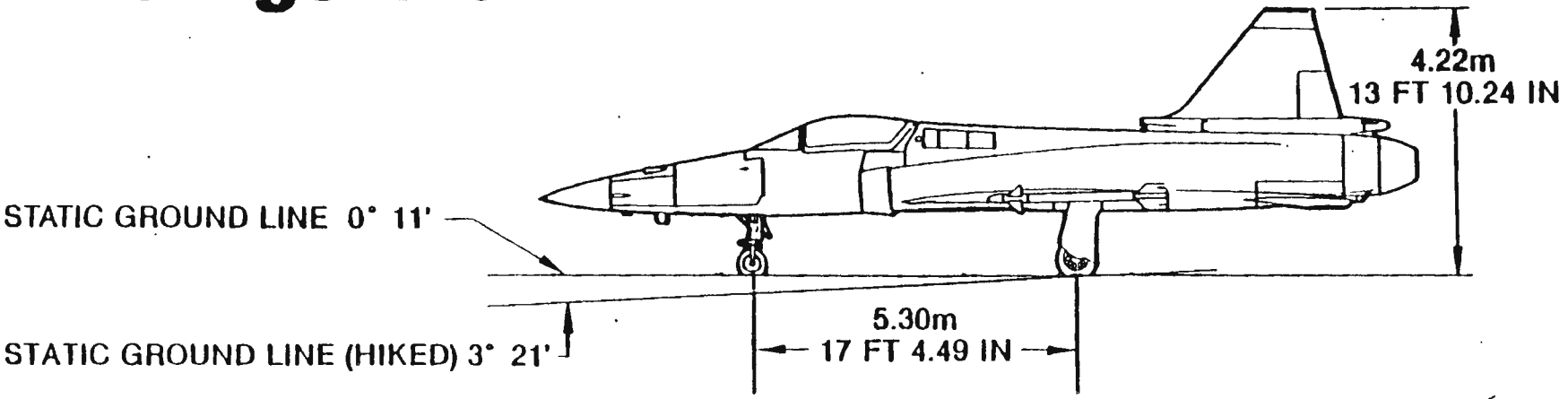
Five pylons, more than 9,000 lbs. (4,050 kg.) external armaments and fuel

Two 20mm M-39 cannons, 450 rounds

PAS 85



F-20 Tigershark



The F-16C: A Formidable Fighter

The F-16C is one of the most capable fighter aircraft now in service. It is possibly the best single-seat ground attack aircraft in the world.

The version of the F-16C that might be supplied to Jordan is apparently a lower cost model being developed for the U.S. Air Force known as the F-16C air defense variant. Since this variant has never flown, and is still being developed by General Dynamics, it is not possible to fully describe its capabilities. Based on what is now known, and despite the name, however, the F-16C air defense variant will be an excellent ground attack aircraft.

* The F-16C air defense variant will be able to carry an impressive weapons payload. It can carry ordnance weighing as much as 7.5 tons, including Maverick air-to-surface missiles and laser-guided bombs.

* The F-16C air defense variant would have a long range. It can carry 4 tons of ordnance, and still carry enough fuel to fly 250 nautical miles at low altitude. This would allow Jordan to operate the aircraft from air bases in Iraq and still be able to strike targets anywhere in Israel.

* The F-16C air defense variant will have sophisticated weapons delivery capabilities. Even model F-16As have demonstrated an impressive ability to deliver weapons to within a few feet of the intended target.

In addition, the F-16C would be a superior all-weather interceptor.

* The F-16C air defense variant is an improved version of one of the world's most successful fighters. F-16s are credited with destruction of 40 enemy aircraft, and F-16s are believed to have been destroyed by an enemy plane.

* The F-16C air defense variant would have superior maneuverability and acceleration. The F-16 is unsurpassed as a dog-fighting aircraft.

* The F-16C air defense variant would have a fast reaction time due to a laser inertial navigation system, like the one in the F-20A, that would reduce scramble time from two and a half minutes to less than one minute.

* The F-16C air defense variant reportedly will have an all environment capability, resulting from adoption of an improved version of the AN/APG-66 radar used on the F-16A.

GD I

WASHINGTO

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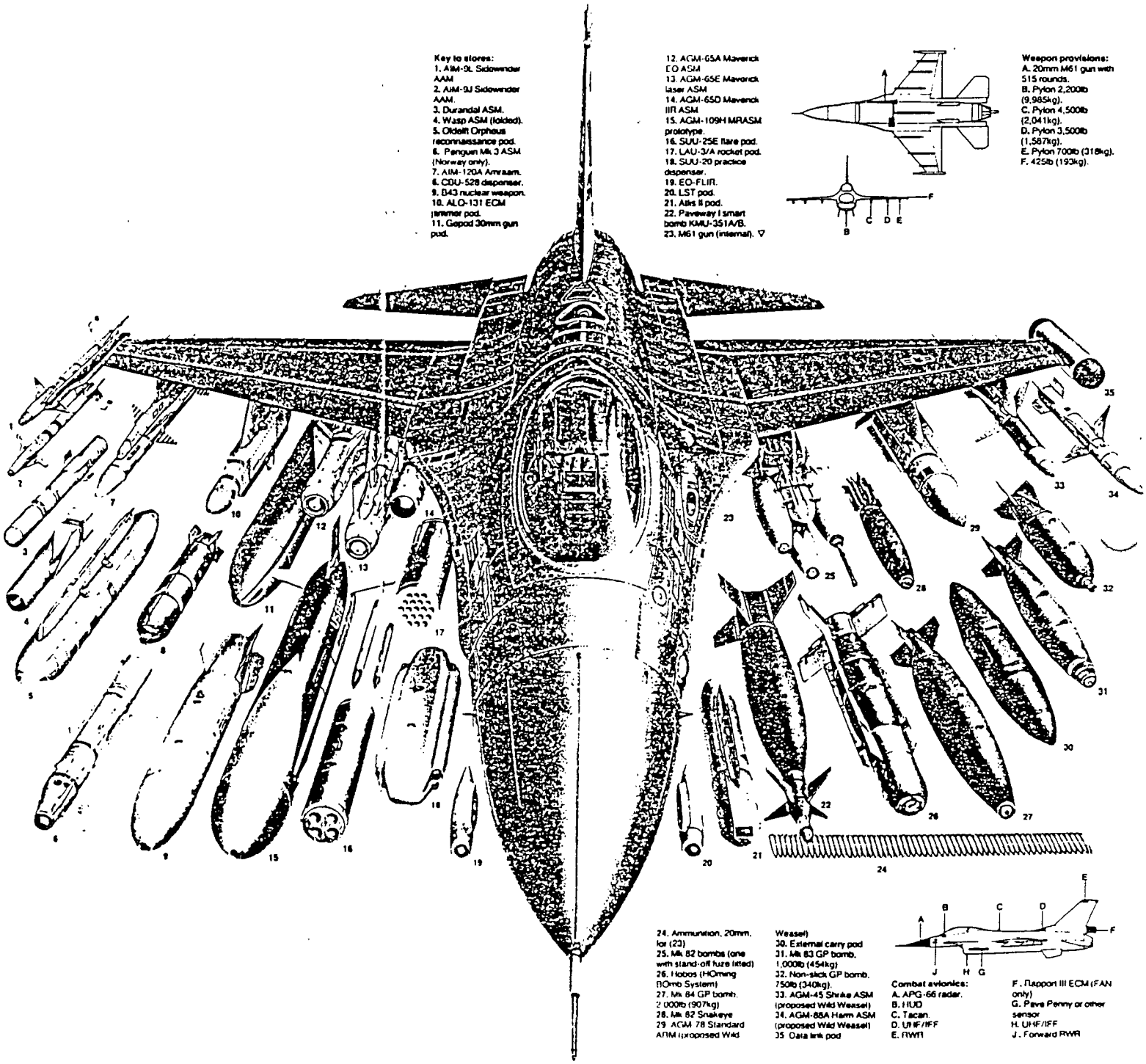
F-16A APG-66

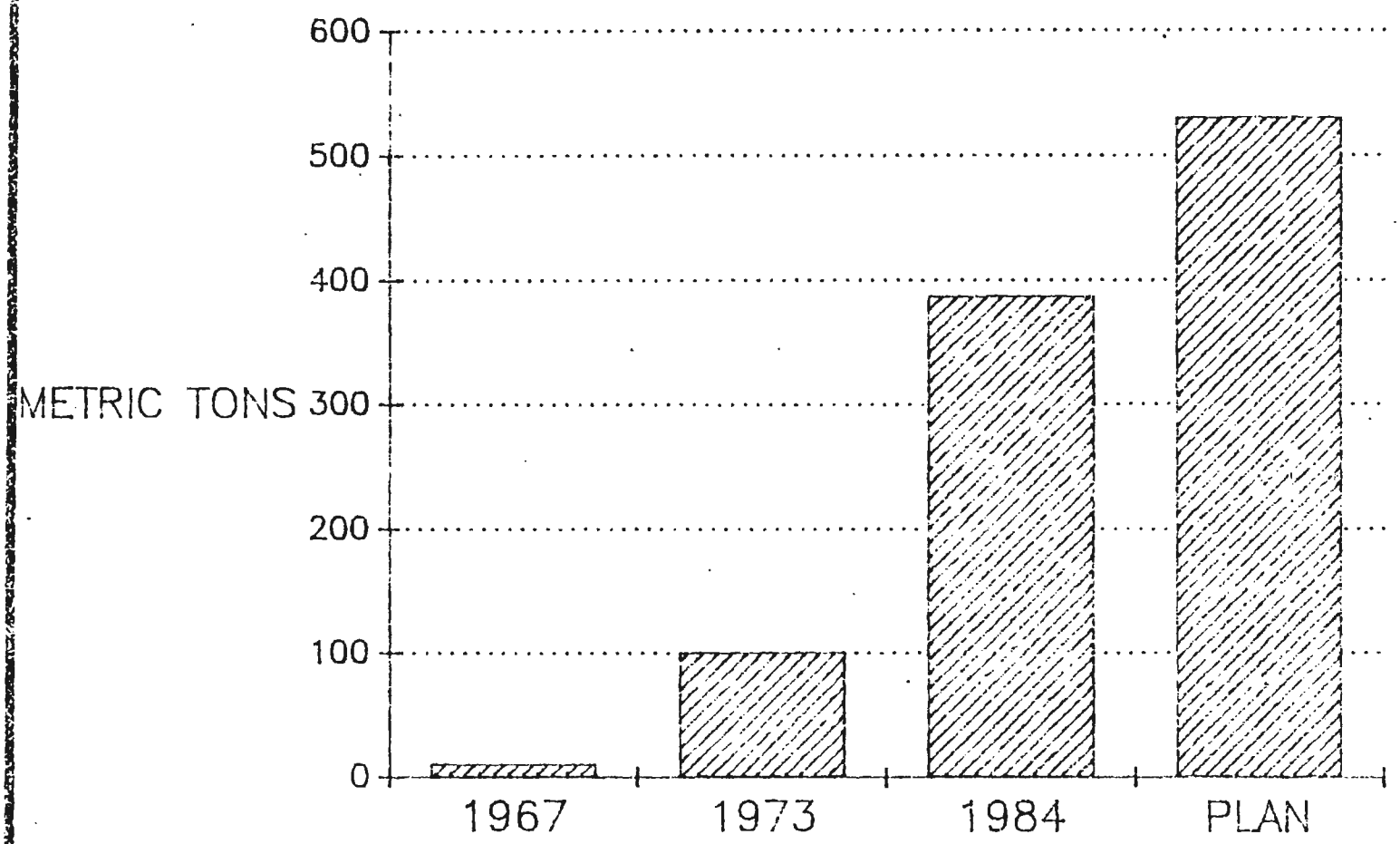
General Dynamic

General Dynamics F-16 Fighting Falcon

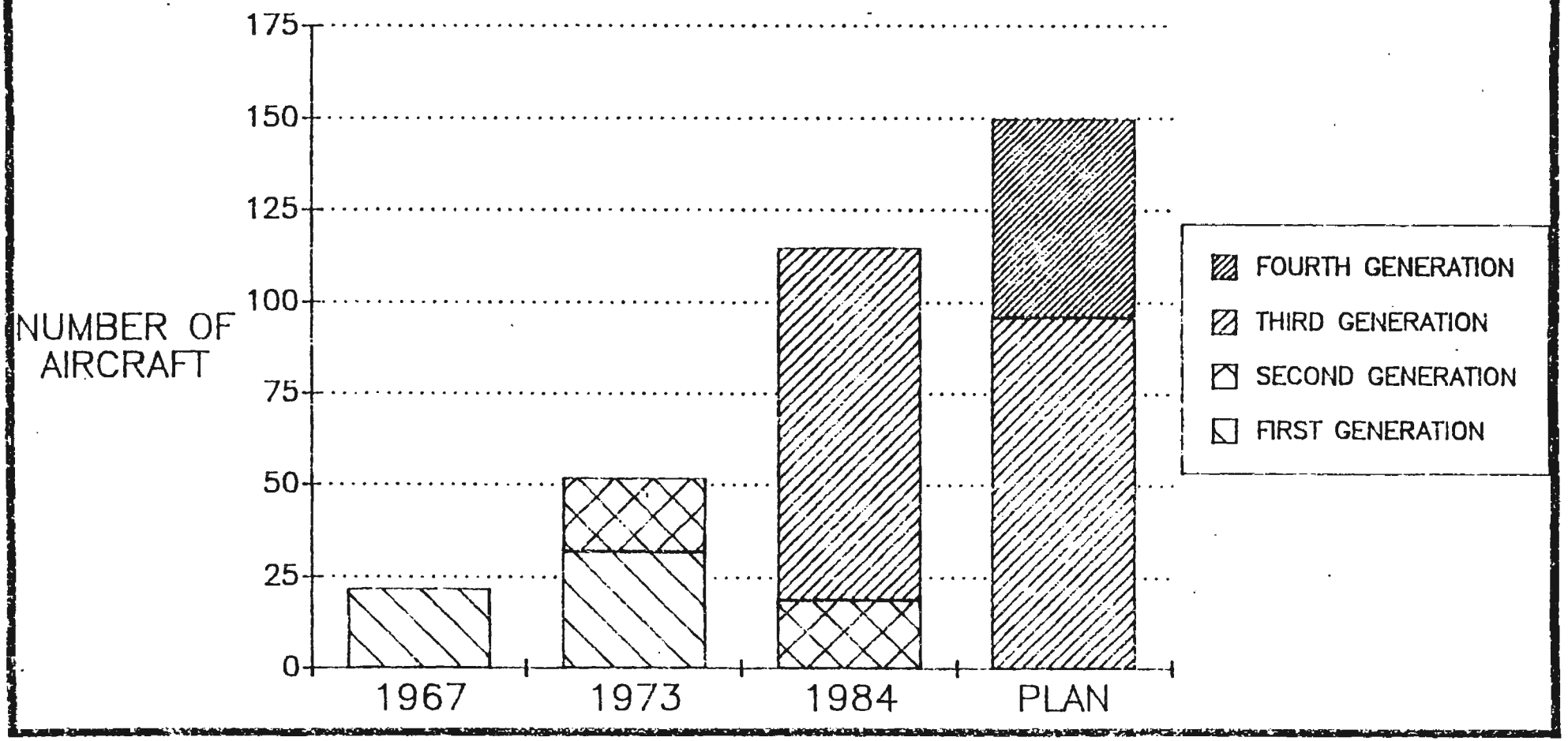
Origin: USA, first flight (Model 401) 2 February 1974, (F-16A) 8 December 1976.
Type: Multirole air-combat fighter with advanced ground attack capability.
Engine: One Pratt & Whitney F100-PW-200 augmented turbofan rated at 14,670lb (6,654kg) dry and 23,830lb (10,810kg) with max augmentation.
Dimensions: Span 31ft 0in (9.448m) 32ft 10in (102m) over missile fins); length (both versions, excl probe) 47ft 7.7in (14.52m); wing area 300.0sq ft (27.88m²).
Weights: Empty (A) 15,137lb (6,866kg), (B) 15,778lb (7,157kg); loaded (AAMs only) (A) 23,357lb (10,594kg), (B) 22,814lb (10,348kg), (max external load) (both) 35,400lb (16,057kg). (Block 25 on) 37,500lb (17,010kg).
Performance: Maximum speed (both, AAMs only) 1,350mph (2,172km/h, Mach 2.05) at 40,000ft (12,191m); maximum at SL, 915mph (1,472km/h, Mach 1.2); initial climb (AAMs only) 50,000ft (15.239m)/min; service ceiling, over 50,000ft (15,239m); tactical radius (A, six Mk 82, internal fuel, hi-lo-hi) 340 miles (547km); ferry range, 2,415 miles (3,890km).
Background: An LWF (lightweight fighter), competition was won in January 1975 by the YF-16 (previously the GD Model 401). The LWF had been launched as a technology demonstrator, but by 1975 it had been recast as a slightly larger and much more capable, multirole aircraft bought for TAC, and soon afterwards sold to four European nations. Subsequent development has today led to important new versions.
Design: From the start the emphasis was on CCV technology, with FBW controls without manual reversion. The configuration chosen had a single vertical tail, mid-mounted tailerons and a mid-mounted wing, with 40° taper on the leading edge, fitted with auto-scheduled variable camber provided by leading-edge flaps and trailing-edge flaperons. Features include forebody strakes to generate strong vortices and improve handling at high AOA, an ARI (auto aileron/rudder interconnect) and YRI (yaw-rate limiter) and, in normal service aircraft, an overall limitation to within 9g and 26° AOA. Thus the pilot can fly by Hotas techniques while ignoring the possibility of losing control or damaging the aircraft (but, so quiet is the ride, he must always have broad idea of AOA, airspeed and other parameters to avoid, for example, letting speed bleed right off at low level). The cockpit has an exceptional all-round view, the only canopy frame being behind the pilot (in the single-seat models) and the only obstruction ahead being pencil-thin AOA nosewheel steering indicators. Control inputs are by a force-sensing sidestick controller on the right console and force-sensing pedals, all ideally positioned for maximum application of force up to a point at which each control input comes up against a mechanical stop.
Avionics: The radar is the Westinghouse APG-66, an I/J-band pulse-doppler set, which was the most powerful that could be designed in 1975 without resorting to liquid cooling. Range scales are 10, 20, 40 and 80 nautical miles. The primary air-to-air mode is Downlook which gives end-on detection of fighter targets at over 30 nautical miles (56km) and shows them on a clutter-free display even when the target is at treetop height. There are 13 further modes, those vital in air combat all being controlled by thumb buttons on the throttle or stick; these include Dogfight, Radar Cursor, Designate, and Return to Search. Primary navigation system is the Singer-Kearfott SKN-2400 INS. Equipment includes UHF, VHF and Magnavox KY-58 secure voice, IFF, Tacan, ILS and Sperry air-data computer. EW includes the Dalmo Victor ALR-69 radar warning system with AEL aerials (antennae). Standard ECM pod is the ALQ-131 in various forms but other pods are used and Belgian F-16s have Loral Rapport III internal ECM housed in the extended tail compartment used to contain a drag chute in Norwegian F-16s.
Armament: One 20mm M61A-1 gun with 500 (tight pack, 515) rounds; ratings of pylons in 3-view are for 5.5g, giving theoretical weapon load with reduced internal fuel of 20,450lb (9,276kg). For 9g manoeuvres total load is reduced to 11,950lb (5,420kg).
Future: On 29 October 1980 the second F-16B two-seater was flown with the General Electric J79-119 engine rated at 18,730lb (8,496kg) max thrust, as the first F-16/79. This family was planned for export. On 19 December 1980 the first F-16A was flown after conversion to F-16/101 standard with the General Electric F101-DFE (F110) rated at over 28,000lb (12,700kg) max thrust. The basic F-16 is being enhanced over the next six years into the F-16C/D by the MSIP (multinational staged improvement programme) which initially cleared 37,500lb (17,009kg) MTOW with an enlarged tailplane, introduces structural changes for uprated pylon loads and two extra pylons on the sides of the engine inlet duct, a drag chute and increased internal avionic loads, and in later phases will introduce a new cockpit, fire-control avionics and sensors/weapons. The cockpit will replace many instruments by large electronic MFDs, and Marconi Avionics will provide a new holographic HUD with enhanced fov. For night and all-weather ground attack Lantirn pods will be carried on each side of the inlet, and new weapons will include Advanced Mavericks, Amraam radar AAMs, Wasp pods, LADs and 30mm Gepod guns. The fire-control computer will have double the memory and double the processing speed, the ASPJ will be carried as standard, and Seek Talk secure voice will be fitted. The USAF is also studying a Wild Weasel defence-suppression version. More radical advances include the AFTI-16 (Advanced Fighter Technology Integration), first flown on 10 July 1982, and the F-16XL, which flew just a week earlier. The AFTI has twin inclined canard controls driven by a digital flight control system which among other things allows the fighter to move up, down or to either side instantly, without needing to bank or to alter the attitude of the aircraft. The XL, prototype of a planned F-16E, has a cranked-arrow wing of more than double the original area. It offers "substantially greater radius on internal fuel with twice the weapon load or more than double the radius with equal load"


Key to stores:
1. AIM-9L Sidewinder AAM.
2. AIM-9J Sidewinder AAM.
3. Durandal ASM.
4. Wasp ASM (folded).
5. Oldelft Orpheus reconnaissance pod.
6. Penguin Mk 3 ASM (Norway only).
7. AIM-120A Amraam.
8. CDU-528 dispenser.
9. B43 nuclear weapon.
10. ALQ-131 ECM jammer pod.
11. Gepod 30mm gun pod.
12. AGM-65A Maverick EO ASM
13. AGM-65E Maverick laser ASM
14. AGM-65D Maverick IIR ASM
15. AGM-109H MRASM prototype.
16. SUU-25E flare pod.
17. LAU-3/A rocket pod.
18. SUU-20 practice dispenser.
19. EO-FLIR.
20. LST pod.
21. Atlis II pod.
22. Paveway I smart bomb KMU-351A/B.
23. M61 gun (internal).
Weapon provisions:
A. 20mm M61 gun with 515 rounds.
B. Pylon 2,200lb (9,985kg).
C. Pylon 4,500lb (2,041kg).
D. Pylon 3,500lb (1,587kg).
E. Pylon 700lb (318kg).
F. 425lb (193kg).
24. Ammunition, 20mm, for (23)
25. Mk 82 bombs (one with stand-off fuze fitted)
26. Hobos (HOming BOmb System)
27. Mk 84 GP bomb, 2,000lb (907kg)
28. Mk 82 Snakeye
29. AGM-78 Standard ARM (proposed Wild Weasel)
30. External carry pod
31. Mk 83 GP bomb, 1,000lb (454kg)
32. Non-slick GP bomb, 750lb (340kg)
33. AGM-45 Shrike ASM (proposed Wild Weasel)
34. AGM-88A Harm ASM (proposed Wild Weasel)
35. Data link pod
Combat avionics:
A. APG-66 radar.
B. HUD
C. Tacan.
D. UHF/IFF
E. RWR
F. Dapport III ECM (FAN only)
G. Pave Penny or other sensor
H. UHF/IFF
J. Forward RWR

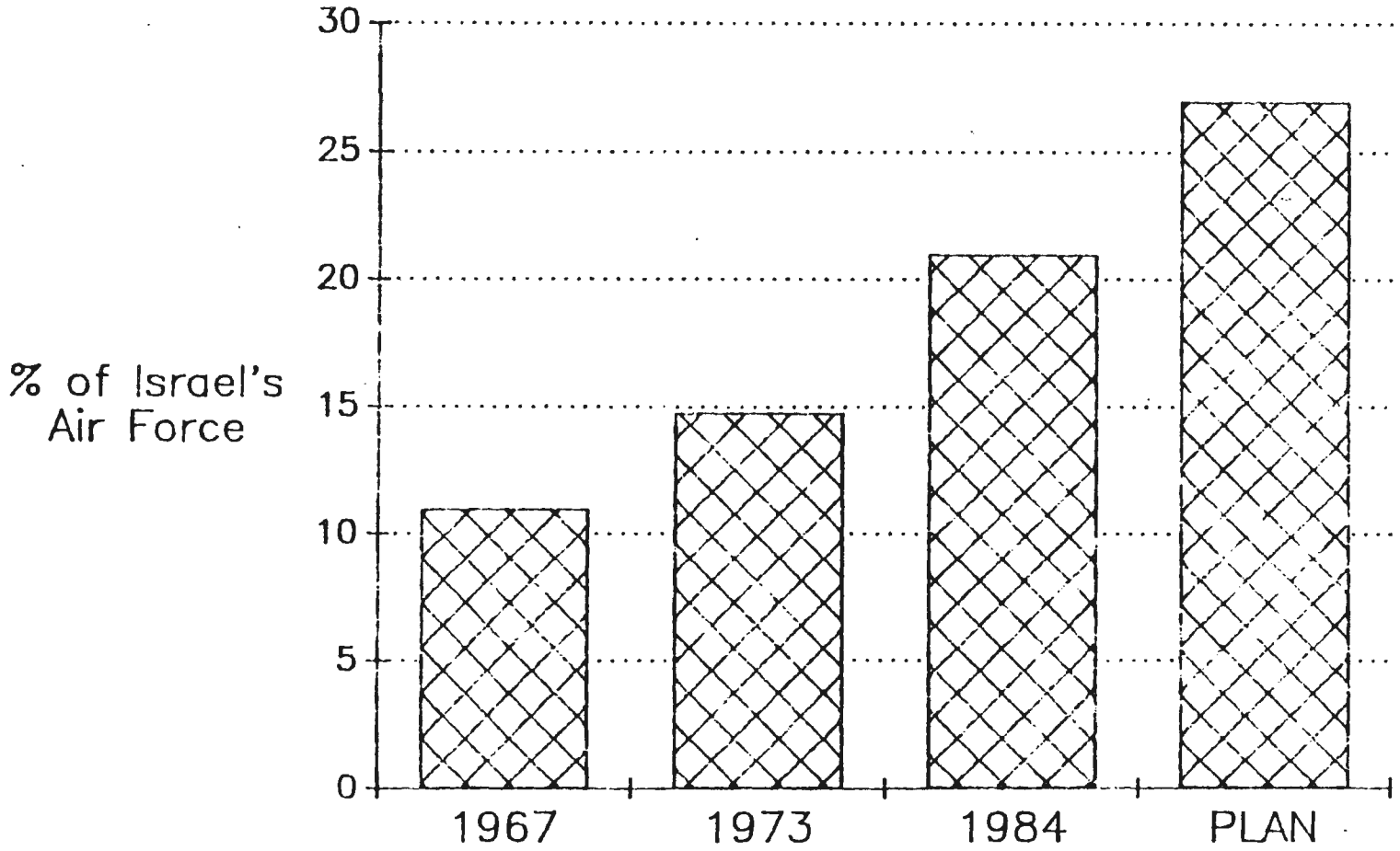
GROWING PAYLOAD OF JORDAN'S AIR FORCE



JORDAN'S MODERNIZING AIR FORCE



JORDAN'S GROWING AIR FORCE



STINGER

1. The Threat of Stinger Missiles for Israel
2. Description: The Stinger Antiaircraft Missile
3. U.S. Army Description of Stinger
4. International Defense Review Article on Stingers
5. Characteristics of Hand-held Antiaircraft Missiles

The Threat of Stinger Missiles for Israel

The Stinger is an ideal terrorist weapon. It can be easily carried by one man, and has a warhead sufficiently powerful to destroy civilian aircraft. It is also far more effective than the old SA-7 missiles now used by PLO terrorists. Civilian aircraft from most countries have no defenses at all against anti-aircraft missiles. Israeli commercial aircraft do have countermeasures against the less sophisticated SA-7, but existing equipment may well be ineffective against the Stinger.

Because the Jordanian military includes many Palestinians, including some potentially sympathetic to the PLO, it is all too likely that Stingers could be stolen and used as a terrorist weapon. While safeguards can reduce the likelihood of terrorists obtaining the missiles, there is no way to guarantee that the Stingers will stay out of the hands of terrorists.

Jordanian assurances to the United States on the use and security of Stingers are not worth very much. In 1964, King Hussein agreed, as part of deal to obtain American M-48 Patton tanks, that they would not be deployed to the West Bank of the Jordan River. However, in May 1967 Jordan joined in an alliance with Egypt against Israel and moved those tanks across the Jordan. Two weeks later those tanks were attacking Israeli troops.

Supplying the Stinger to Jordan also will have an adverse effect on the Arab-Israeli military balance. Each new advanced weapon supplied to Arab countries hostile to Israel adds to the burden of Israel's defense. Although Jordan already possesses the older American Redeye shoulder-fired antiaircraft missile and the similar but less capable Soviet SA-14, neither of these missiles pose the same threat as the Stinger.

Israel will be forced to develop new countermeasures devices to foil the Stinger, will then have to build and install the equipment on all of Israel's aircraft. This will be a costly process, and reductions in Israel's defense budget will make it difficult to implement such a program. Until the new countermeasures are fielded (a process that could take some time), Israeli aircraft will remain highly vulnerable to the Stinger.

Supplying Stingers to Jordan could also endanger the secrets of this important air defense weapon. The Jordanians buy antiaircraft weapons from the Soviet Union, and it is possible that Soviet intelligence officers posted to Jordan as military advisors could gain access to Stinger secrets.

Description: The Stinger Antiaircraft Missile

The Stinger is a man-portable, fire-and-forget antiaircraft missile system. It has a range of 5,000 meters and can hit planes at altitudes of up to 3,000 meters.

The Stinger only entered service with the U.S. military in 1981. It replaces the Redeye, a less capable weapon currently used by Israel, Jordan, and Saudi Arabia.

According to the U.S. Army, "Stinger overcomes many of Redeye's shortcomings with improved range and maneuverability, the ability to attack much faster targets, and, most importantly, the ability to attack aircraft from any angle." In contrast, older missiles of this type, like the Redeye or the SA-7, can only attack enemy aircraft from behind. In addition, counter-measures used to confuse the older missiles are ineffective against the Stinger.

The Stinger has been sold to Italy, Japan, Netherlands, Saudi Arabia, and South Korea.

The Stinger is manufactured by General Dynamics at Pomona, California.

STINGER

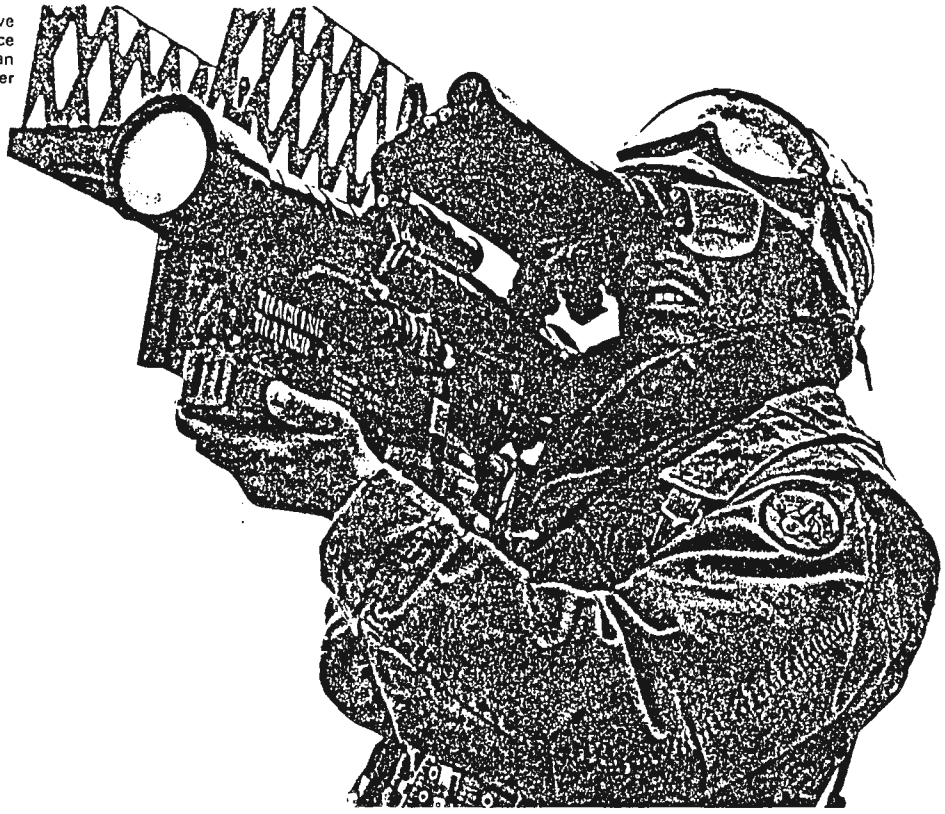
MISSION: Stinger is a shoulder-fired, infrared homing missile system whose mission is to provide air defense coverage to even the smallest of combat units. The missile homes on the heat emitted by either jet or propeller-driven fixed-wing aircraft or helicopters, and employs a proportional navigation system that allows it to fly an intercept course to the target. A Stinger crew visually acquires its target and electronically interrogates it to determine if it is a friend. The missile notifies the gunner when it has a "lock" on the target. It is then fired from the tube by a small launch motor. Once the missile has traveled a safe distance from the gunner, its main engine ignites and propels it to the target. Stinger is stored in a sealed tube, requires no maintenance in the field, and is designed to withstand the rigors of the battlefield. It is replacing the Redeye system. It can attack much faster targets than Redeye, and most importantly, can destroy aircraft from any angle.

SOVIET COUNTERPART: There is no direct Soviet counterpart to the Stinger system. The SA-7, the Soviet manportable air defense system, is comparable to the US Redeye, the predecessor to Stinger. With a range and altitude capability of approximately 3 km, and only a tail chase capability, the SA-7 was used extensively in Vietnam and the Middle East. The SA-7 is deployed with the maneuver units throughout the Warsaw Pact.

PROGRAM STATUS: Stinger is in production and was operationally deployed to Germany in February 1981 and to the 82nd Airborne Division in April 1982. A follow-on seeker of advanced design (Stinger-POST) completed full-scale engineering development in 1982.

CONTRACTORS: General Dynamics (Pomona, CA)
Teledyne Electronics (Newbury Park, CA)

► "Fire and Forget". *Stinger* has an all-aspect, passive infrared homing seeker. There is no command guidance to intercept. Once the gunner fires the missile, he can disregard the engaged target. He is then free to shoulder another weapon and engage another target.



Stinger — One Man Air Defense*

In order to counter the present and the next generation advanced ground attack aircraft in the modern battlefield environment, a new man-portable air defense system is being developed for the US Army and Marine Corps by General Dynamics' Pomona Division. This system, designated *Stinger*, [initially known as *Redeye II*], is designed to replace *Redeye*, General Dynamics' original man-portable, shoulder-fired, infrared-homing anti-aircraft missile.

The mission of the *Stinger* weapon system is to provide air defense to battalions and selected combat support units operating near the forward edge of a battle area (FEBA), and to those units that would otherwise be vulnerable to high-speed, low-level, attacking or penetrating aircraft. Additionally, *Stinger* can be used to defend small vital areas and to support early phases of air mobile and airborne operations. Infrared passive guidance truly permits a "fire and forget" weapon; the ground soldier thus has no guidance function under stress of battle.

Stinger was evolved from, and resembles *Redeye*, but uses more modern technology. Like *Redeye*, it is also shoulder-fired, and travels at supersonic speeds. It incorporates improved infrared devices and an advanced guidance technique. Thus, with its all-aspect infrared seeker, *Stinger* should considerably out-perform *Redeye*, whose infrared seeker limited it to effectively attacking jets from behind. Also used in *Stinger* are an improved fuze, and a high performance propulsion system, which should give the weapon a greater range and velocity. Provision has also been made for re-using the gripstock, and, unlike *Redeye*, an Identification Friend or Foe (IFF) interrogator is incorporated.

Compared to *Redeye*, *Stinger* is a slightly larger weapon; its overall length of 60 in (1.52 m) is about 20% greater, while its weight of 33.4 lb (15.1 kg) is about 16% heavier. A separate belt pack powers the IFF interrogator.

Weapon details

The *Stinger* weapon is made up of a missile round (i.e. the missile and launch motor located in a launch tube assembly) mated to a separable gripstock. The guided missile is of a passive infrared homing type with several subsystems integrated for effective delivery of a hit-to-kill warhead. It consists of a guidance section, warhead section, and launch and flight motors. In addition to the launch tube, the launch tube assembly includes the sight, gyro activator, umbilical, window-retainer, aft cover, and a sling. The gripstock structure contains the receptacle for a battery coolant unit, impulse generator, fire trigger, IFF interrogate switch and antenna, and control electronics for gyro drive and acquisition enhancement.

Missile and launch motor — The missile is solid rocket propelled, with passive infrared guidance. It consists of a guidance section (seeker, guidance electronics, control surface assembly, and missile battery), warhead section, launch and dual-thrust rocket motors, and tail assembly.

The seeker section contains the seeker head and electronics assembly. This section optically tracks infrared energy from a target and supplies an acquisition signal to the weapon operator in the prelaunch phase and steering signals to the control section during missile flight. Before launch, the gyro is driven to the boresight position in which the seeker field-of-view is aligned with the boresight position of the launcher sight. Infrared radiation from the target is collected and focused by gyro-optics onto a cooled detector. This seeker provides all-aspect target engagement. Target tracking is accomplished through a precessible, space-stabilized gyro. The gyro-optics assembly is initially spun-up at weapon activation. A seeker head coil assembly provides missile roll information to sense gyro direction, provides precession torques to re-position the gyro-optics in response to error commands in the tracking loop, and senses look-angle of the gyro-optics relative to the missile axis. The seeker is equally effective in causing hits on jet aircraft targets and point targets, characterized by helicopters and reciprocating engines.

The guidance electronics uses an error signal from the seeker to develop control-wing movements that cause the missile to fly a proportional navigation (collision course) flight path. *Stinger* utilizes a rolling airframe for minimum size and lowest cost. Guidance signals are converted to steering

Stinger and Alternate Stinger

In 1974, the US Army contracted with Aeronutronic Ford to demonstrate the feasibility of a laser command guided missile. This feasibility demonstration project was identified as *Alternate Stinger*. This weapon, like the British *Blowpipe*, has a command guidance system wherein the gunner must continue to provide guidance commands to the missile from the time of launch through target intercept. Its semi-active laser guidance system uses the reflected energy of a laser beam trained on the target by the gunner. In contrast, *Stinger* is a "fire and forget" weapon using a passive infrared homing seeker.

In 1975, the US Army contracted with General Dynamics to develop the necessary production tooling and test equipment for manufacture of the *Stinger* weapon. In 1976, funding authorization is to be sought by the US Secretary of Defense James Schlesinger, for continuing the *Stinger* program low rate production phase.

Both *Stinger* and *Alternate Stinger* are being developed as part of the US Army's Man portable Air Defense System (MANPADS). According to the Secretary of Defense, *Alternate Stinger* is to be considered as a back-up system which could then be accelerated if major technical problems should be encountered in developing the *Stinger* weapon.

* This article has been contributed by General Dynamics' Pomona Division.

commands to produce the desired manoeuver.

The control surface assembly is composed of an electronics module and a motor-driven wing assembly. Two pairs of wings, folded when the missile is in the launch tube, unfold and lock in place after the missile is fired. One pair is fixed and the other pair is movable to steer the missile in flight. The wings are moved by a set of gears and an electronic motor in response to guidance signals derived from the seeker. The steering control signals are properly phased with missile roll to effect the desired manoeuvre in space.

An umbilical assembly is located in the control section between the fins and the electronics package. At launch, the umbilical plug is retracted after the missile one-shot thermal battery is activated. This battery provides in-flight power for missile electronics and the steering motor. The missile battery is located in the aft end of the guidance section. The electric squib in the battery is activated when the fire trigger is pulled.

The warhead section consists of an explosive charge and a fuze assembly, and its case forms a portion of the outer skin of the missile. The fuze provides for safety during handling and the arming/warhead detonation functions. It also fires squibs which initiate the flight motor. After safe separation distance from the operator, the fuze arms. To assure very high lethality, three modes of warhead detonation are provided to assure the explosion inside the aircraft structure.

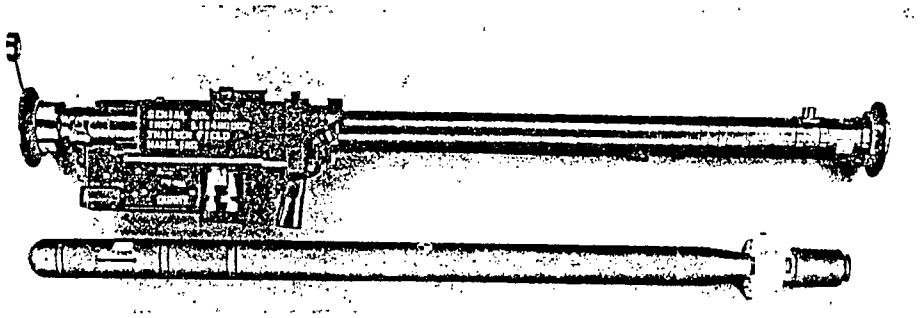
The separable launch motor provides initial velocity and roll rate to the missile to allow the missile to coast a safe distance from the operator prior to ignition of the flight motor. Canting of the launches motor nozzles provides initial spin to the missile at launch. The launch motor burns out and separates from the missile while in the launch tube. The dual-thrust flight motor [made by Atlantic Research] is an integral part of the missile airframe and provides propulsion for the missile during flight. The thrust characteristics of this high performance flight motor were selected for minimum inner burning (or dead zone) and maximum outer boundaries for very high speed targets.

The tail assembly provides missile roll rate and stability in flight. Four flat slab folding tails are attached to a common ring which is attached to the flight motor on the boattail. The tails are hinged near the base to permit folding in the launch tube. The tails erect by the action of spring force plus centrifugal force generated by missile spin, and lock into place.

► Sequence showing *Stinger* hit against a QI-33 jet drone target. The drone attempts to escape *Stinger* by using tactical counter-measures, but without success. *Stinger* continues to guide to the target until intercept. The target was destroyed with this non-warhead test missile.

Launch tube assembly — The launch tube assembly consists of a launch tube, and a sight assembly used to aim the weapon and estimate range. After firing the weapon, the gunner can discard the launch tube. The tube, made of fiberglass, is the main support for all other parts of the launcher. The front end of the launch tube is sealed with a breakable infrared-transparent window (providing acquisition capability without breaking the sealed environment), and the rear end is sealed with another breakable disk. The sling and plastic bumpers on the side of the launch tube are used for carrying the launcher and protecting the weapon when placed on the ground. The missile is sealed in the launch tube and is not removed in the field except by firing. This sealed-from-the factory technique obviates need for field maintenance and is an important factor in the high reliability of *Stinger*.

The sight assembly provides the means for the operator to aim the weapon, track a target, perform range estimation, and insert superelevation and lead. The sight assembly and acquisition indicator are mounted on a sight cover that can be folded out of the way when not in use.

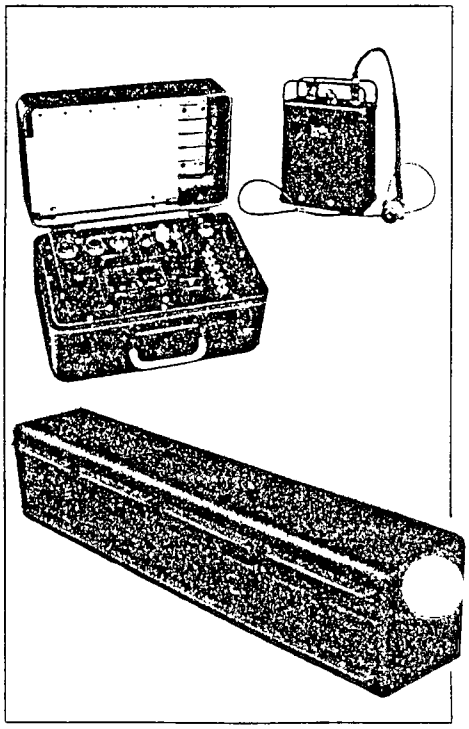


Audio and bone conduction transducers provide air-transmitted, as well as bone-conducted audio indications of target acquisition and IFF cueing signals. These cues are passed to the gunner through two paths: (1) an audio speaker via an air path through the right ear canal into the inner ear; and (2) the cues are passed by a transponder to the skull via the gunner's cheekbone, and then into the inner ear. The air-bone transducer is located at the aft end of the weapon sight. At the time the gunner shoulders the weapon, and places his eye to the sight, the air-bone transducer comes in contact with the gunners's right cheekbone. The impact of high noise environments such as noise of battle, or restrictions imparted by the gunner's clothing such as gas mask, etc., may reduce the efficiency of the air path transmission to a marginal condition. The bone transducer then provides the effective means of transmission.

Gripstock — the gripstock is attached to the front end of the launch tube, and contains electronic circuits and switches for launching the missile, and includes the IFF antenna. The pistol grip, near the centre of balance, is the natural righthand hold point of the weapon. The gunner operates the activation switch, using his right thumb, and the firing trigger, using his index finger. Forward of the pistol grip is a battery/coolant unit receptacle, that has a receptacle cap installed when the weapon is not in use. The left hand operates an uncage switch, which allows the missile seeker to track the target. Inside the gripstock are the electronics package that performs the prelaunch missile functions, the tubing to supply cooling gas to the missile, and the umbilical assembly that completes electrical connections between the launcher and the missile. A battery/coolant unit (BCU) is inserted in the battery gas receptacle when the weapon is to be ready to fire. If the weapon is activated and not fired, the BCU is removed and another inserted.

The IFF system is lightweight, easy to use, reliable and extremely rugged. The IFF antenna serves both for transmission of an interrogation signal and for reception of a coded reply. Components of the IFF system utilized by a gunner are the interrogator (belt pack) and belt pack-to-gripstock cable. A programmer, battery charger, and a

▼ ◄ Mockups of the missile round and launcher display details of the complete system. The weapon container, IFF interrogator (belt-pack unit), and IFF support unit comprising a programmer, battery charger and a code input computer are shown below. No field maintenance or testing is required for the *Stinger* weapon. The weapon is required to be safe and effective for operation, storage, and transit for 10 years.



input computer are used to support the IFF system. The IFF is powered from the belt pack and can be used before or after weapon activation. On-weapon components for the IFF weigh less than 2 lb (0.9 kg). The belt pack weighs 6 lb (2.7 kg).

Target engagement, tracking, and firing

Engagement of a target may be preceeded by early warning, transmitted by voice radio or electronic equipment designed for this purpose. Upon early warning or visual target detection, the front cover on the launcher is removed as the gunner shoulders the weapon. The weapon is activated by operation of a safety switch and electrical power is instantly supplied to both missile and launcher by the BCU. In addition, pressurized argon gas from the BCU is applied to the missile infrared detector to reduce temperature of the detector to a required level. Electrical power to the missile activates the seeker and control electronics, spins up the gyro in the seeker, and ages the gyro to align the missile field-of-view with the open sight on the launcher. Power to the launcher activates electronic circuitry that enhances the target acquisition signal from the missile, and presents it to the gunner via an acoustic air/bone-conduction transducer. Next, the gunner aims the weapon at the target aircraft using the launcher open sight, and hears an acquisition tone indicating that the seeker is on target. He then depresses and holds the uncage switch located on the side of the launcher gripstock, allowing the seeker to track the target independent of weapon motion. A continuous acquisition tone indicates that the target is being tracked. Before firing the missile, the weapon is re-positioned to provide appropriate missile lead to improve capability against a crossing target, and super-elevated to compensate for tipoff at launch, and for gravity action during the early part of missile flight. The proper angle is achieved by locating the target in the sight at one af three indicated positions, depending upon target aspect.

Depression of the firing trigger initiates a series of events resulting in missile launch within a fraction of a second. The firing trigger activates the missile internal battery directly, provided that the uncage switch is also depressed. The missile battery in turn energizes a pressure cartridge which retracts the umbilical connector. Finally, umbilical retraction causes the launch motor to ignite; the launch motor burns completely ly before exiting the launche tube, so that there is no danger of blast to the gunner. The missile travels approximately 25 ft (7.6 m), a safe distance from the gunner, and the flight motor is then ignited. The dual-thrust rocket motor propels the missile to target intercept.

Maintenance and reliability

The weapon system is designed for low life-cycle cost by eliminating field maintenance. Organizational maintenance is limited to the correction of visually detected faults on the exterior of the equipment, and replacement of some external components. The only tool needed is a combination pocket knife-screwdriver. The weapon requires no field support equipment. *Stinger* is designed for a 10 year shelf-life. Verification of weapon readiness is accomplished through a surveillance program involving periodic sampling of a stockpile.

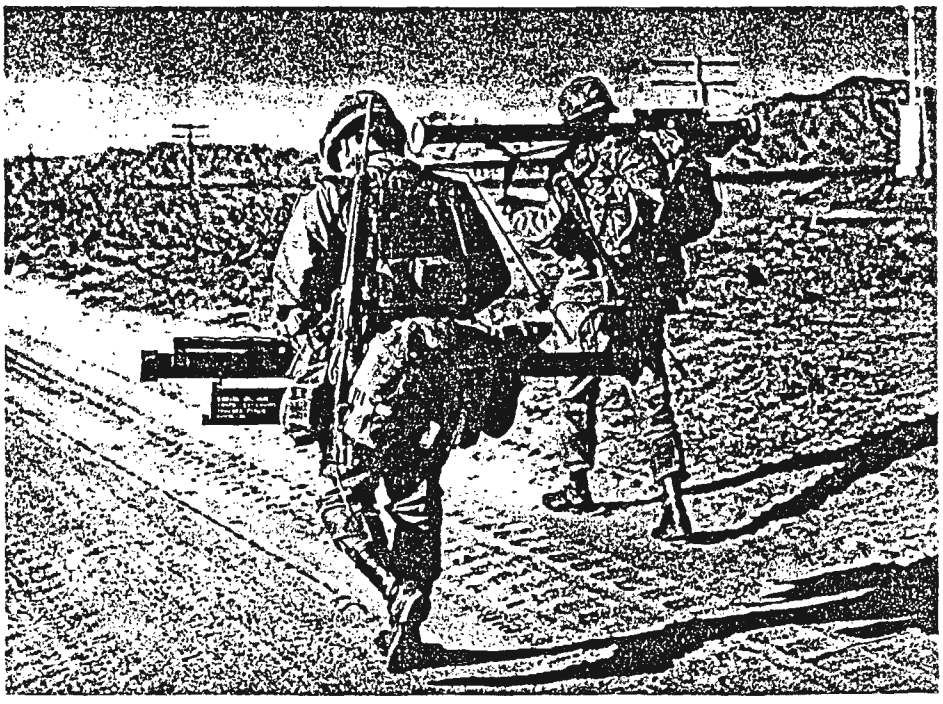
Weapon effectiveness

The high lethality of the *Stinger* missile has been demonstrated by sophisticated computer simulations, missile flights, and laboratory and field tests. For both design and evaluation, an extremely detailed analog-digital simulation of the missile in flight was developed. The validity of the simulation was demonstrated by comparing both controlled and guided missile flights. In the case of the guided test flights, computer predictions of missile trajectories and intercept points were made before the flights and were confirmed by flight observations. Further correlation of the simulation with precise intercept point locations was done as a final part of a simulation verification program.

The effectiveness of the fuze and warhead section has been demonstrated in tests using a gas gun facility and a high speed rocket sled. Warhead lethality has been determined by US Government laboratories. Such predictions of lethality have been shown to be conservative by the destruction of target aircraft in guided test flights in which no warhead was used.

The weapon reliability was shown to be high, and was improved through the technique of step-stress testing in the laboratory. By this technique, the missile was subjected to increasing levels of environmental stresses. When missile failures occurred either due to long periods with many cycles of operation, or due to extreme environmental conditions, the failures were analyzed, and design changes were made to improve the design margin commensurate with reliability requirements.

Field tests with weapon simulators have demonstrated that the inexperienced soldier can quickly be trained to become an effective gunner. The operator can visually detect targets and rapidly perform the prelaunch operations in a tactical environment. *Stinger* has been shown to provide the high effectiveness and mobility necessary for the forward area air defense mission. ++



► The weapon and container are rugged enough to withstand adverse field handling conditions. The weapon is designed to withstand all normal field environments, including the electromagnetic radiation environment. *Stinger* is one-man portable, with a weight of only 33.4 lb (15.1 kg), and a length of 60 in (1.52 m).

CHARACTERISTICS OF HAND-HELD ANTIAIRCRAFT MISSILES

	Blowpipe	Javelin	RBS-70	Redeye	SA-7b	SATCP	STINGER
Country	Britain	Britain	Sweden	U.S.	U.S.S.R.	France	U.S.
Year in Service	1975	1985	1975?	1964	1972	1986	1981
Maximum Range (m)	3000	4000	5000	3500	5600	6000	5000
Minimum Range (m)	700	300	"very short"	?	45	under 500	?
Maximum Altitude (m)	1700	?	3000	2000	4300	?	3000
Speed (Mach)	1.6	1.6+	?	1.6	1.95	2.5	?
Target Acquisition	Optical	Optical	Radar	Optical	Optical	Radar	Optical
Tracking Guidance	Manual Radio Command	Semi-Automatic Radio Command	Laser Beam Riding	Infrared	Infrared	Infrared	Infrared
Middle East Users	Oman	-----	Bahrain U.A.E.	Israel Jordan Saudi Arabia	Egypt Iraq Kuwait Libya Syria	-----	Saudi Arabia

The Threat of Stinger Missiles for Israel

The Stinger is an ideal terrorist weapon. It can be easily carried by one man, and has a warhead sufficiently powerful to destroy civilian aircraft. It is also far more effective than the old SA-7 missiles now used by PLO terrorists. Civilian aircraft from most countries have no defenses at all against anti-aircraft missiles. Israeli commercial aircraft do have countermeasures against the less sophisticated SA-7, but existing equipment may well be ineffective against the Stinger.

Because the Jordanian military includes many Palestinians, including some potentially sympathetic to the PLO, it is all too likely that Stingers could be stolen and used as a terrorist weapon. While safeguards can reduce the likelihood of terrorists obtaining the missiles, there is no way to guarantee that the Stingers will stay out of the hands of terrorists.

Jordanian assurances to the United States on the use and security of Stingers are not worth very much. In 1964, King Hussein agreed, as part of deal to obtain American M-48 Patton tanks, that they would not be deployed to the West Bank of the Jordan River. However, in May 1967 Jordan joined in an alliance with Egypt against Israel and moved those tanks across the Jordan. Two weeks later those tanks were attacking Israeli troops.

Supplying the Stinger to Jordan also will have an adverse effect on the Arab-Israeli military balance. Each new advanced weapon supplied to Arab countries hostile to Israel adds to the burden of Israel's defense. Although Jordan already possesses the older American Redeye shoulder-fired antiaircraft missile and the similar but less capable Soviet SA-14, neither of these missiles pose the same threat as the Stinger.

Israel will be forced to develop new countermeasures devices to foil the Stinger, will then have to build and install the equipment on all of Israel's aircraft. This will be a costly process, and reductions in Israel's defense budget will make it difficult to implement such a program. Until the new countermeasures are fielded (a process that could take some time), Israeli aircraft will remain highly vulnerable to the Stinger.

Supplying Stingers to Jordan could also endanger the secrets of this important air defense weapon. The Jordanians buy antiaircraft weapons from the Soviet Union, and it is possible that Soviet intelligence officers posted to Jordan as military advisors could gain access to Stinger secrets.

MOBILE IMPROVED HAWK

1. The Improved Hawk Upgrade Package
2. The Danger to Israel from Jordanian Mobile Hawks
3. Jordanian Acquisitions of Improved Hawk Missiles
4. Description: Improved Hawk Surface-to-Air Missiles
5. Aviation Week Article on Jordan Hawks
6. Jordan's Existing Air Defenses
7. Jordan's Growing Air Defenses

The Improved Hawk Upgrade Package

The proposed arm sale will include the following upgrades to Jordan's existing Improved Hawks:

12 Improved Hawk surface-to-air missile firing units, each consisting of three triple launchers and associated fire control radars

14 Improved Hawk surface-to-air missile fire command posts

2 TSQ-73 Missile Minder air defense command and control systems

Convert existing static Improved Hawks into mobile batteries

Upgrade electronics of existing Improved Hawk batteries

entire Improved Hawk package: $700 million

The Danger to Israel from Jordanian Mobile Hawks

Upgrading the capabilities of Jordan's Improved Hawks would significantly enhance Jordanian offensive capabilities.

First, an Arab attack on Israel is most likely to occur if it is supported by effective antiaircraft weapons to protect the advance of the ground forces. Israel's aircraft are its first line of defense, and any system that reduces their effectiveness increases the chances for an attack.

The mobile Improved Hawk can give Jordan the air defenses it needs in order to participate in an attack against Israel. In 1973, the Jordanians lacked air defenses, and so they limited their participation to an expeditionary force that fought in Syria under the cover of Syrian air defenses.

In contrast, the acquisition of sophisticated air defense systems made possible the Egyptian and Syrian attacks against Israel in 1973. These air defenses destroyed a significant number of Israeli aircraft, made it possible for Egypt to successfully attack across the Suez Canal, and almost allowed Syrian ground forces to seize the Golan Heights. This demonstrates how antiaircraft defenses can play a vital role in making possible an offensive against Israel.

Second, Israel's small size means that Improved Hawk missile batteries located on Jordan's border can hit aircraft flying over nearly half of the country. Jerusalem is less than 20 miles from Jordan, while the Improved Hawk has a range of 25 miles. Thus, even if Improved Hawk batteries are deployed at a distance from the Israeli border, they can threaten aircraft over much of Israel. Even the potential presence of such batteries would force Israeli aircraft flying over much of Israel to operate as if they were in enemy-controlled territory.

Third, the upgrades to the Hawk would increase the lethality of the Hawk, and make it harder for Israel to locate and attack the firing units. For example, the upgrades could include the new agile continuous wave acquisition radar (ACWAR) that employs sophisticated phased array technologies. Such a system could not be jammed by Israel's existing countermeasures equipment.

Finally, Jordan's current Improved Hawk missiles are emplaced in concrete, and cannot be moved. In contrast, the new equipment would be <u>mobile</u>. Such an acquisition would strengthen Jordan in three ways:

1- **Increased survivability**: Because the existing launchers are emplaced in concrete, their precise location can be identified, facilitating attacks against them. In contrast, the new units can be moved, so that Israel would have to constantly monitor their activity in order to locate them. Since the difficulty in locating air defense equipment is its biggest defense against attack, the mobile missiles would be harder to locate and destroy than those in static emplacements.

2- **Support for offensive operations**: Mobile Improved Hawks can provide protection to ground formations attacking anywhere along Israel's long and vulnerable border, while the existing missiles are deployed in such a way that they would provide only minimal support for offensive operations. It is impossible to concentrate static missiles in forward battle areas, and the existing missile units cannot be advanced to protect attacking units.

3- **Increased effectiveness**: The mobile missiles can fill gaps between existing missiles, or be rapidly moved to new areas in order to ambush attacking aircraft. Israel knows where the existing Hawk batteries are located, making it possible to minimize the danger posed by the Hawk missiles to Israeli aircraft. In addition, the mobile Hawk is designed to use leap-frogging tactics: a fire section can be moved forward under the cover of the rest of the battery; once the advanced fire section is in place, it can protect other fire sections as they are sent forward.

Jordanian Acquisitions of Improved Hawk Missiles

In 1975 the United States sold Jordan 14 Improved Hawk surface-to-air missile batteries (with 84 launchers) for $260 million. As a result of Congressional initiatives, the Jordanian missile launchers were mounted in concrete and cannot be moved.

In 1979 a product improvement package worth $33.4 million was provided to the Jordanians. This was a standard upgrade involving modifications to existing equipment in order to enhance system reliability and effectiveness.

In 1984, the U.S. gave permission for Westinghouse to send an automated air defense operations center with associated equipment to Jordan. This will allow Jordan to take information from radars and other sources to provide centralized control of interceptors and ground antiaircraft weapons.

Description: Mobile Improved Hawk Surface-to-Air Missiles

The mobile Improved Hawk is a radar-guided surface-to-air missile. It has a range of 25 miles, and can hit targets at altitudes of up to 60,000 feet.

Jordan's existing Improved Hawk battery normally consists of two firing sections, each with three triple launchers. The launchers are mounted in concrete emplacements. The U.S. Army has also developed a TRIAD organization with three firing units, and it appears that Jordan's batteries would be converted to this configuration by the arms sale.

A standard Improved Hawk battery consists of the following elements:

Acquisition and Fire Control Unit -- equipped with several radars and battery control equipment.

Two Firing Sections -- each with three triple launchers and a radar illuminator.

One of the firing sections of the battery can be converted into a semi-independent Improved Assault Fire Unit, consisting of an Improved Continuous Wave Acquisition Radar, an Improved Platoon Command Post, an Illuminator, and three triple missile launchers. This unit can deploy independently of the main battery. Jordan's existing Improved Hawks lack this capability.

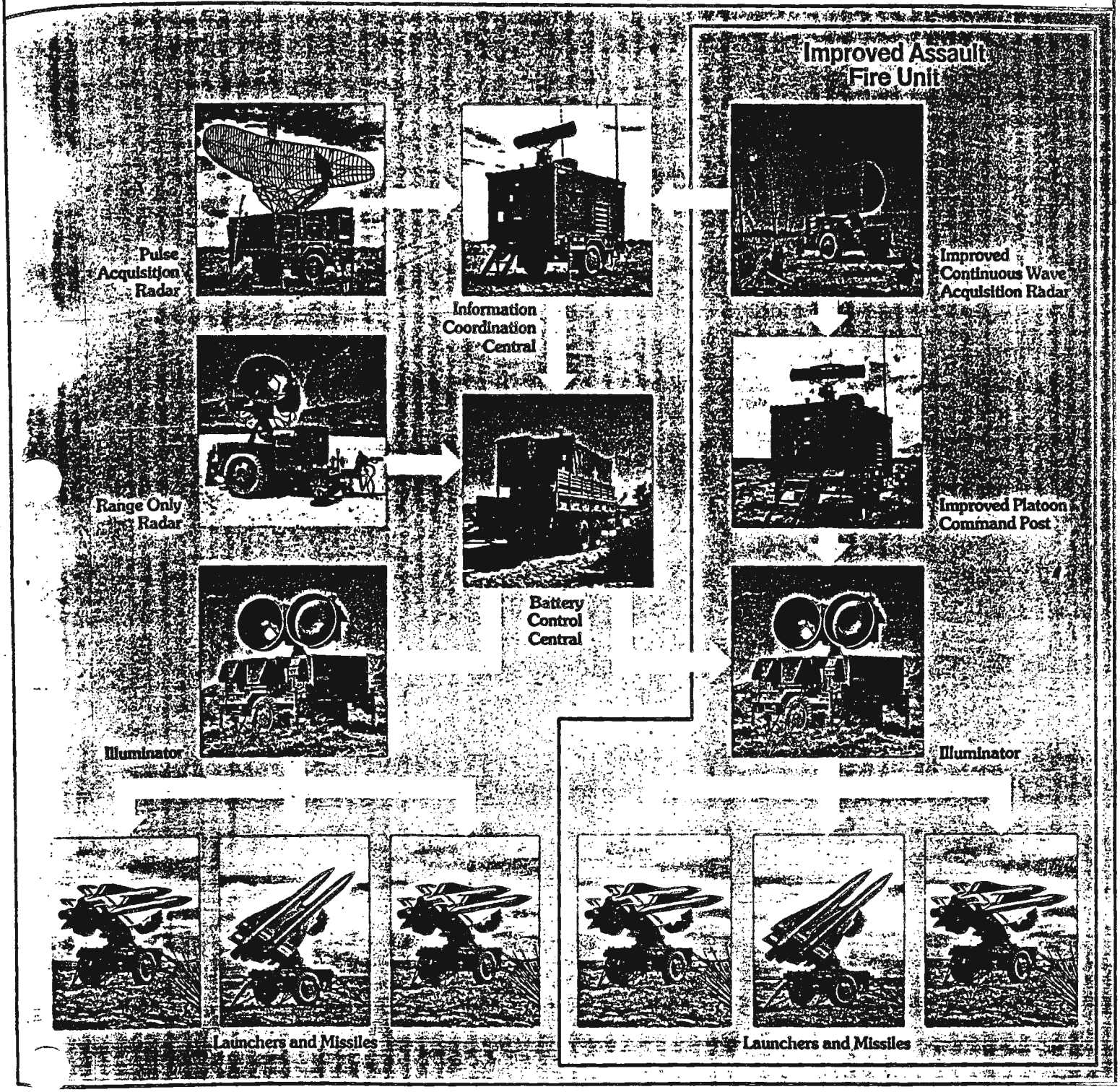
A TRIAD Improved Hawk battery is identical to the standard battery, except that it has one firing section and two Improved Hawk Assault Platoons. These platoons are identical to the Improved Assault Fire Unit.

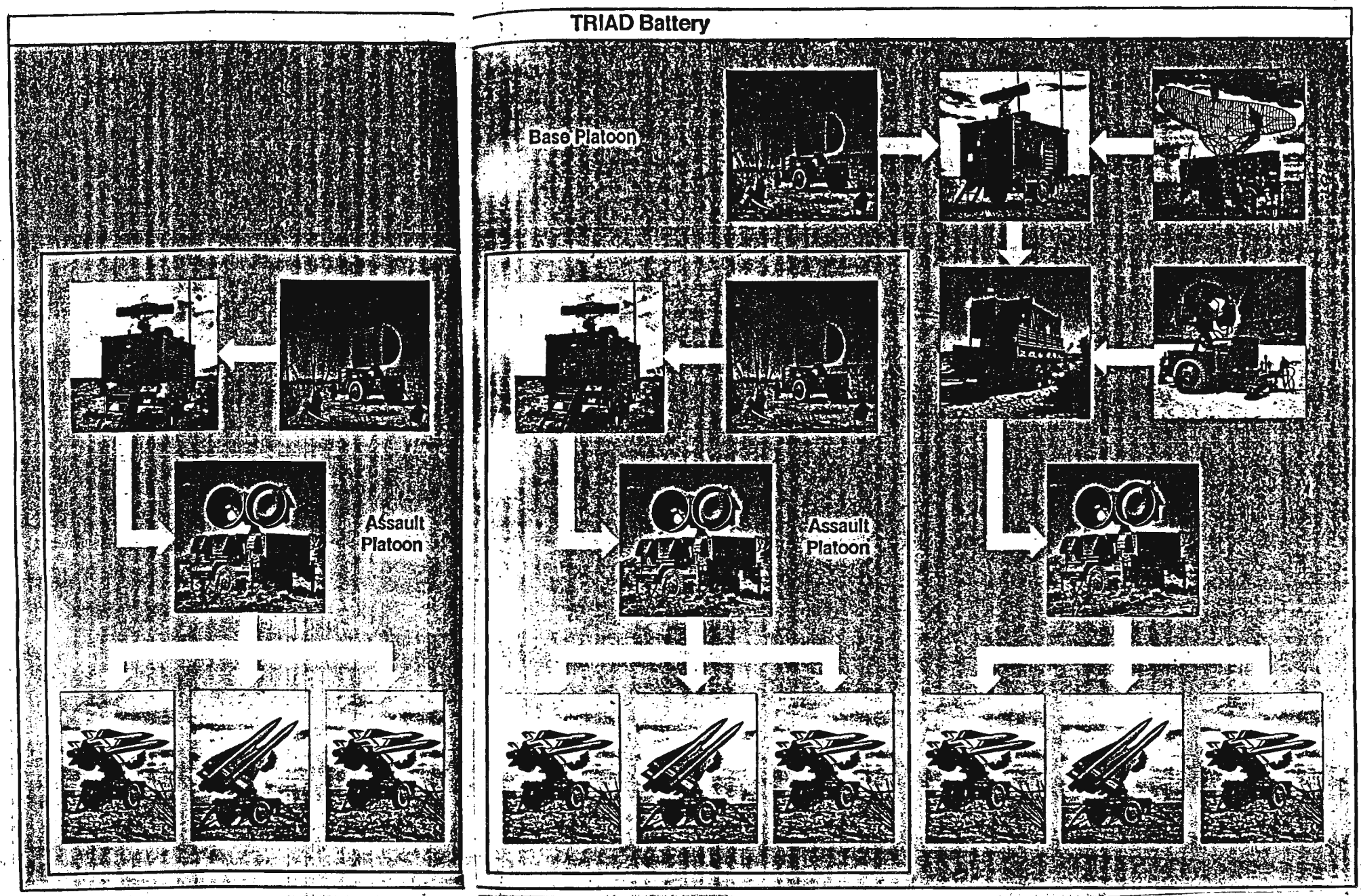
The Improved Hawk is widely used. Middle East countries that use it include Egypt (12 batteries), Israel (15 batteries), Jordan (14 batteries), Kuwait (4 batteries), and Saudi Arabia (12 batteries).

The Hawk missile has proven to be highly effective when used in battle. During the 1973 October War, Israel fired 75 Hawk missiles and destroyed 25 Arab aircraft. By comparison, Arab forces fired 42 SA-6 missiles for each aircraft downed by that system.

The Improved Hawk is manufactured by the Missile Systems Division of the Raytheon Company, located in Andover, Massachusetts.

Standard Battery




TRIAD Battery
Base Platoon
Assault Platoon
Assault Platoon

SPECIAL REPORT

Hawk Training, Readiness Geared to Fixed Positions

Zarqa, Jordan—Jordanian Improved Hawk surface-to-air missile crews rely heavily on realistic training against low-altitude Royal Air Force fighter aircraft trying to penetrate the missile's area of coverage and on readiness rates to compensate for the vulnerability of fixed air defense positions.

A U.S. condition for the sale of 14 batteries of Raytheon Hawk missiles was that the weapons would be tied to fixed locations to avoid presenting a possible threat to Israel.

The procurement for Jordan was backed financially by Saudi Arabia.

New Guns

Improved Hawk batteries in Jordan are surrounded by mobile air defense guns. But these guns, while they provide some protection for missile crews against low-level aircraft, are generally obsolete and need to be replaced.

During a recent visit to a Royal Jordanian Air Force Hawk battery located in the hills between this industrial city and Mafraq to the north, this AVIATION WEEK & SPACE TECHNOLOGY editor had an opportunity to observe training and battery operations at a fixed site.

The position is a blacktop surfaced area atop a hill 760 meters (2,432 ft.) high surrounded by a series of hills that run north and west toward the Syrian border. Major components of the missile system are mounted with large bolts in concrete so that they cannot be repositioned, even within the fixed battery site.

The Air Force provided a Sikorsky S-76 helicopter from No. 7 Squadron for the flight from King Abdullah air base near Amman to the Hawk battery and to Jordanian air bases.

The flight crew for the mission to the battery was Maj. Nazih Said in the right seat, and Lt. Bashir Khasawneh as copilot. At takeoff the visibility was approximately 100 ft. horizontally and 150 ft. vertically as a heavy fog surrounded the Amman international airfield. Using instrument flight rules, we took off in the S-76 from Runway 24, climbed through the fog at an altitude of 5,000 ft. and picked up a heading of 60 deg. toward our destination approximately 35 km. (21.7 mi.) northeast.

The fog thinned but not until we had already flown over the Hawk battery's position, which was still engulfed. At the end of the fog bank, we descended to an altitude of approximately 200 ft., turned and flew back into the fog at the low altitude to try and pick out reference points to guide the helicopter to the Hawk position. Once inside the fog, visibility was sufficient so that we could pick up landmarks and navigate.

A Royal Army training area in the hills below the battery could be observed, and the main road leading from Zarqa and Mafraq to Iraq was sighted with a convoy of trucks headed for the Iraqi border. The training area runs north from the battery to within 10 mi. of the Syrian border. The Mach 2.7 Hawk has a 40-naut.-mi. range.

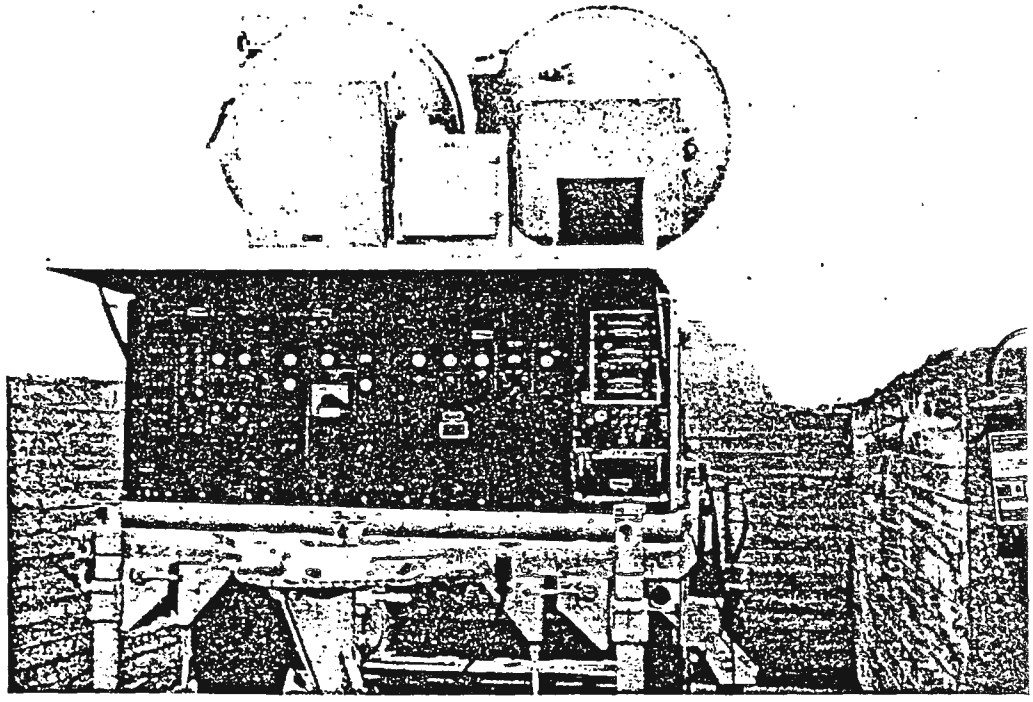
We landed on a pad near the battery headquarters. The Hawk unit is commanded by Maj. Mohammad Gwesmeh. He explained the operations and training of the unit, adding that until the past year, test firing with the Hawk missile was accomplished in the U.S. Now, however, firing is conducted in Saudi Arabia for selected members of Jordanian Hawk units.

Air Defense

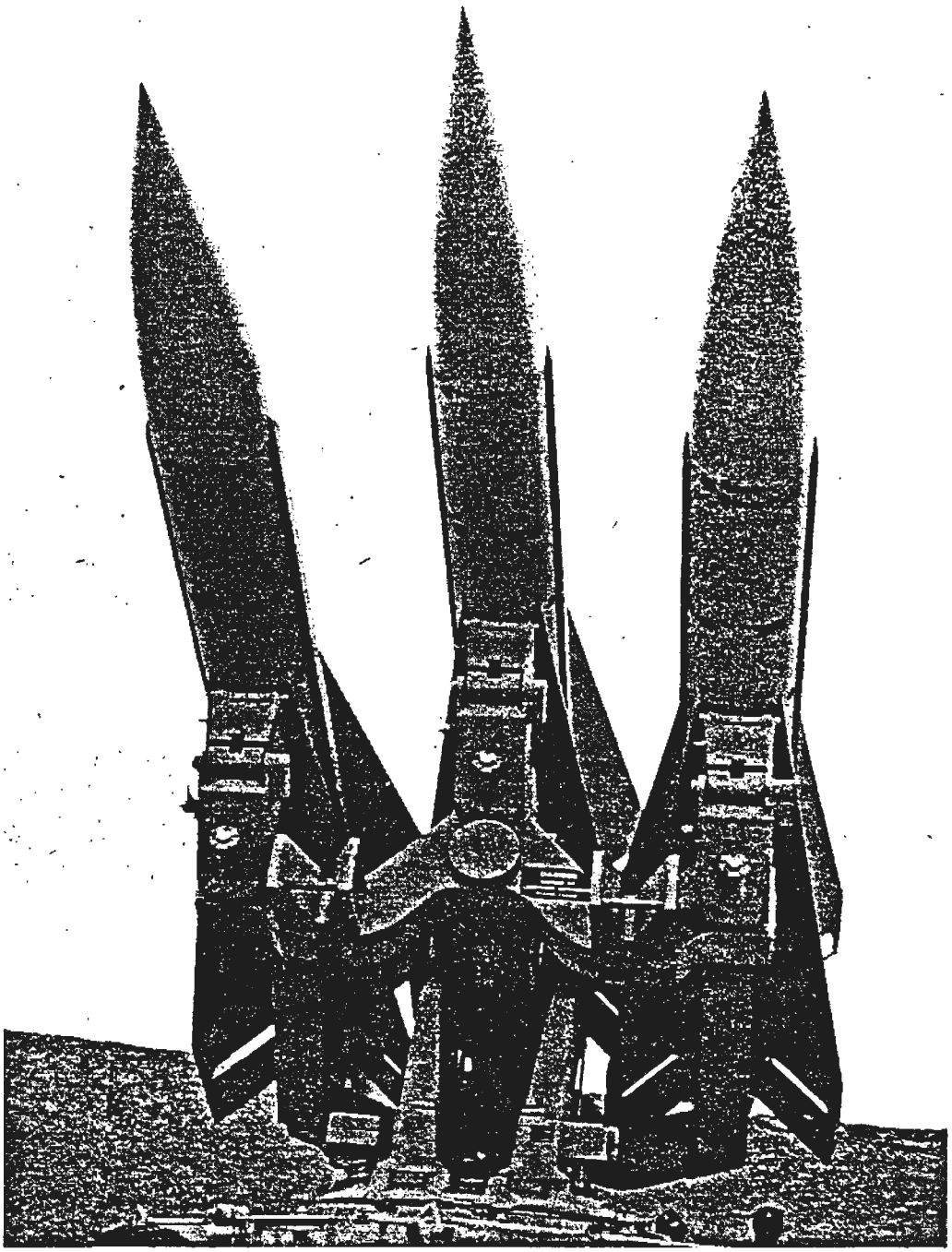
This battery is a standard Hawk unit, one of a number in the central group for air defense. It is positioned to protect not only the high value industrial complex in Zarqa, but Royal air bases north and east against Syria, and to the west against Israeli aircraft.

The Hawk site is close enough to Israel's northern border so that Israeli aircraft can reach the position at low altitude within 1.5 min., the major said. Approximately the same warning time exists for Syrian fighters, but lack of advanced avionics forces them to operate at medium- to high-altitudes, not the low flight levels of the Israeli Air Force/General Dynamics F-16s that constitute the basic threat to the Hawk missile sites.

The battery headquarters at the position is in the saddle of a ridgeline and the missile launchers are located on fingers of



Raytheon Improved Hawk high-power illuminator radar of the Royal Jordanian Air Force missile battery near Zarqa provides radio frequency energy to illuminate the target. It also provides a reference signal to the Hawk missile, searching designated elevation sectors for targets, locking on reflected energy and tracking the target in radial speed and angular position. Each of Jordan's Hawk batteries has two illuminators.



Raytheon's Improved Hawk missiles are positioned on a launcher at a fixed Royal Jordanian Air Force battery site near Zarqa. The Mach 2.7 missile with a 40-naut.-mi. range capability is a semi-active all-the-way homing dart cruciform weapon. It uses a phased-array antenna and all-solid-state electronic components. The Improved Hawk system also is equipped with advanced electronic counter-countermeasures.

the hill, leading off in several directions. They are positioned to provide overlapping coverage.

M-42 Duster air defense guns are located on the outer perimeter of the site to provide limited protection for the missile crews.

Jordan needs at least 25 Hawk batteries in a mobile configuration and could absorb and operate effectively 28 batteries composed in assault firing platoons, air defense officers here said. "The mobility is more important than additional numbers of launchers," according to Maj. Gwesmeh.

Under the U. S. Army's Improved Hawk concept, an assault fire unit can be split off from a standard battery as an independent element to enhance mobility and area coverage. But this is not possible here when the batteries are fixed in position.

The assault fire unit is especially suited for gap filler missions requiring minimum numbers of personnel and configured for autonomous low-altitude air defense.

The assault unit can be employed to extend air defense closer to the forward edge of the battle area. An improved assault fire unit split off from a battery includes:

- A continuous wave acquisition radar.
- An improved platoon command post.
- An illuminator.
- Three launchers, each armed with three Hawk missiles.

Target Tracking

Battery training here is constant, with a high volume of aerial targets to track with the radar systems of the battery. Aircraft taking off from and approaching the international airport in Amman pass this way often, and nearby fighter bases provide targets of opportunity for radar acquisition and tracking.

The Hawk missile batteries operated by Jordan came both from the U. S. Army inventory and off the Raytheon production line. The first three batteries came directly from Army units.

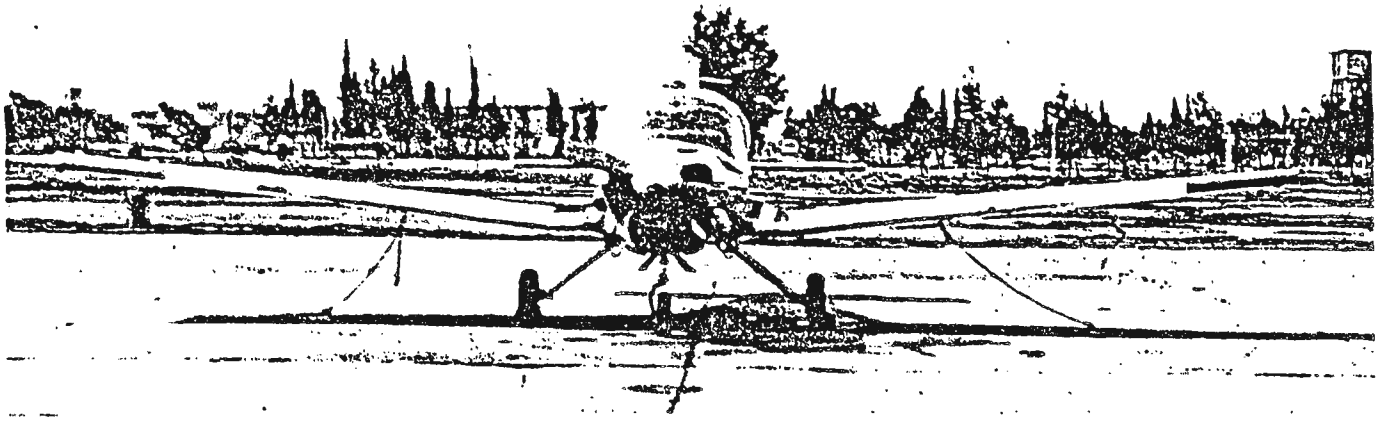
Battery Equipment

The major items of equipment associated with an Improved Hawk battery are:

- Pulse acquisition for detection of medium-to-high altitude targets.
- Continuous wave radar for low-altitude target detection.
- Manual and electronic target processing within control central centers.
- Range-only radar, a J-band pulse radar.
- Illuminator designed to illuminate the target with radio frequency energy and to provide a reference signal to the missile.
- Hawk (homing all the way killer) missile, a semiactive homing weapon with proportional guidance for navigation.

Detection of a target occurs when the parameters from the acquisition radar meet criteria from the automatic data processor selection. The target is then eligible for automatic threat ordering.

The automatic data processor identifies the target by correlating with identifica-



British Aerospace Corp. Series 120 Bulldog primary trainer aircraft at King Hussein air base, near Mafraq, Jordan, is used to train student pilots. There are approximately 200 student pilots in the course that runs 27-30 months. There are 20 Bulldog trainers in the program.

tion friend or foe returns. The automatic data processor designates a firing section to engage a target. The high-power illuminator locks on and tracks the designated target throughout the air defense engagement.

The high-power illuminator provides data to the selected launcher to aim and fire the missile. The target intercept evaluation function of the battery begins after the missile warhead detonates. The fire control officer, using the high-power illuminator Doppler data, determines whether or not the missile has destroyed the target, or if other missile launches are required.

Clutter Rejection

The pulse-acquisition radar of the system operates in L-band frequency. It uses moving target-indication circuits to provide high clutter rejection and staggered pulse repetition rate to minimize moving-target-created blind speeds within the unambiguous range coverage.

The sensor includes several advanced electronic counter-countermeasures receivers designed to overcome specific types of jammers.

Off-the-air tuning permits frequency changes to avoid enemy jamming.

Low-altitude target detection is provided by the improved continuous wave radar operating in X-band in alternating continuous wave and frequency modulated/continuous wave modes to provide range rate and range data.

The X-band frequency allows the well-defined antenna lobe to be positioned very low in altitude to provide coverage of low-flying aircraft down to the horizon.

The improved acquisition radar and the pulse acquisition radar are synchronized at a scan rate of 20 rpm. The frequency modulation is applied at a rate asynchronous to the scan rate to prevent dead coverage during frequency-modulated sawtooth flyback at the same azimuth on successive scans.

With a new single-sideband unit that separates the approach and recede sidebands, the improved continuous-wave acquisition radar can handle high-speed targets. The receiver is split into main and side receiver to blank strong sidelobe signal responses as well as electronic countermeasures.

Analog output of the receivers is converted for a digital signal processor using a time compression technique to process the complete Doppler spectrum in 29 filters. This signal processor detects approaching targets and processes the digital output into the automatic data processor.

An analog output also is available for display on the azimuth speed indicator and planned speed indication displays in the battery control central.

Gwesmeh explained that range-only radar operates in J-band to establish range on an aircraft target when an illuminator is unable to obtain this information because of countermeasures.

The range-only radar can generally remain free from jamming by staying in a receive only mode and scanning its tunable radio frequency bandwidth for the presence of jamming. During a tactical engagement, the radar may be called automatically by an illuminator or it can be operated manually.

Target Search

The illuminator searches a designated elevation sector for targets, locks on reflected energy and tracks the target in radial speed and angular position. It can acquire high-speed targets, track small cross-section targets and perform with short acquisition and data processing time. It also has an electronic counter-countermeasures capability.

The illuminator operates in J-band with continuous wave low altitude and sector search capabilities and feed through nulling.

The Hawk missile seeker is solid state, including the microwave local oscillator. The design provides high gain and good sidelobe control for a limited aperture size, as well as being capable of a monopulse tracking scheme.

The receiver is an inverse monopulse design where the bandwidth is narrowed to its ultimate very near the front end. The inverse technique eliminates large signals and some electronic countermeasures that restrict dynamic range of conventional receivers.

Warhead Design

The Improved Hawk missile uses a fragment pattern warhead design tailored to provide a high kill probability at large miss distances to increase the single-shot kill probability against multiple targets.

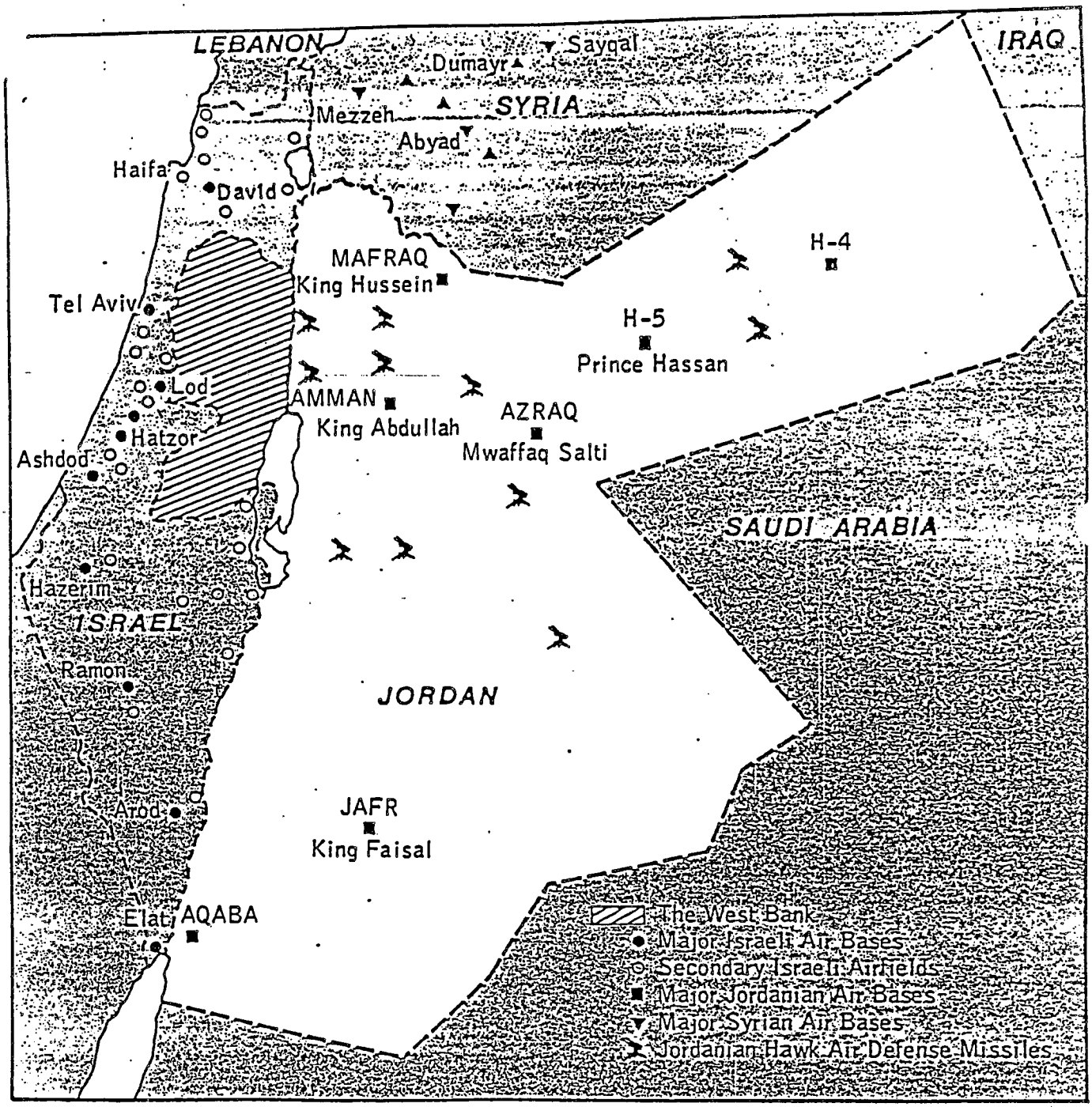
The launcher slews to azimuth and elevation angles of the illuminator, and provides power to activate missile gyros, electric and hydraulic power supplies. After the launcher aims the missile at a target and the gyros are up to speed, a lead angle command is sent from the automatic data processor to the launcher through the illuminator.

The seeker head is space stabilized and the missile body is pointed at the lead angle. The launcher activates the missile motor for launch.

The launcher is equipped with electronic cutouts and sensing circuits to allow a shoot-around capability for obstructions in the field of fire.

This permits missile shots in all emplacement situations.

The commander here explained that most of the air defense personnel in the Royal Air Force are professional military and remain in the field 10-15 years, moving from one Hawk battery to another. □



Major air bases of Israel, Jordan and Syria are depicted on a map of the area showing the close proximity of potentially hostile neighbors to the Hashemite Kingdom. Note the location of secondary or expeditionary airfields in Israel, especially those near the Dead Sea bordering Jordan. The location of Jordanian Royal Air Force/Raytheon Improved Hawk air defense missile batteries also is depicted in relative terms. Eleven of 14 batteries are deployed as fixed installations, and another three batteries will soon be at fixed sites.

Jordan's Existing Air Defenses

Virtually all of Jordan's existing air defense equipment comes from the United States. The non-American components are of Soviet origin, some paid for by Iraq. Among the weapons in service:

14 Improved Hawk missile batteries (with 84 launchers)
20 Roland surface-to-air missile launch vehicles
20 Soviet-supplied SA-8 surface-to-air missile launch vehicles
1000 SA-14 Soviet-supplied shoulder-launched surface-to-air missiles
300 Redeye shoulder-launched surface-to-air missiles
16 Soviet-supplied ZSU-23-4 self-propelled radar-guided 23mm antiaircraft guns
80 to 100 Vulcan 20mm M-163 self-propelled antiaircraft guns
200 Duster 40mm M-42 self-propelled antiaircraft guns.

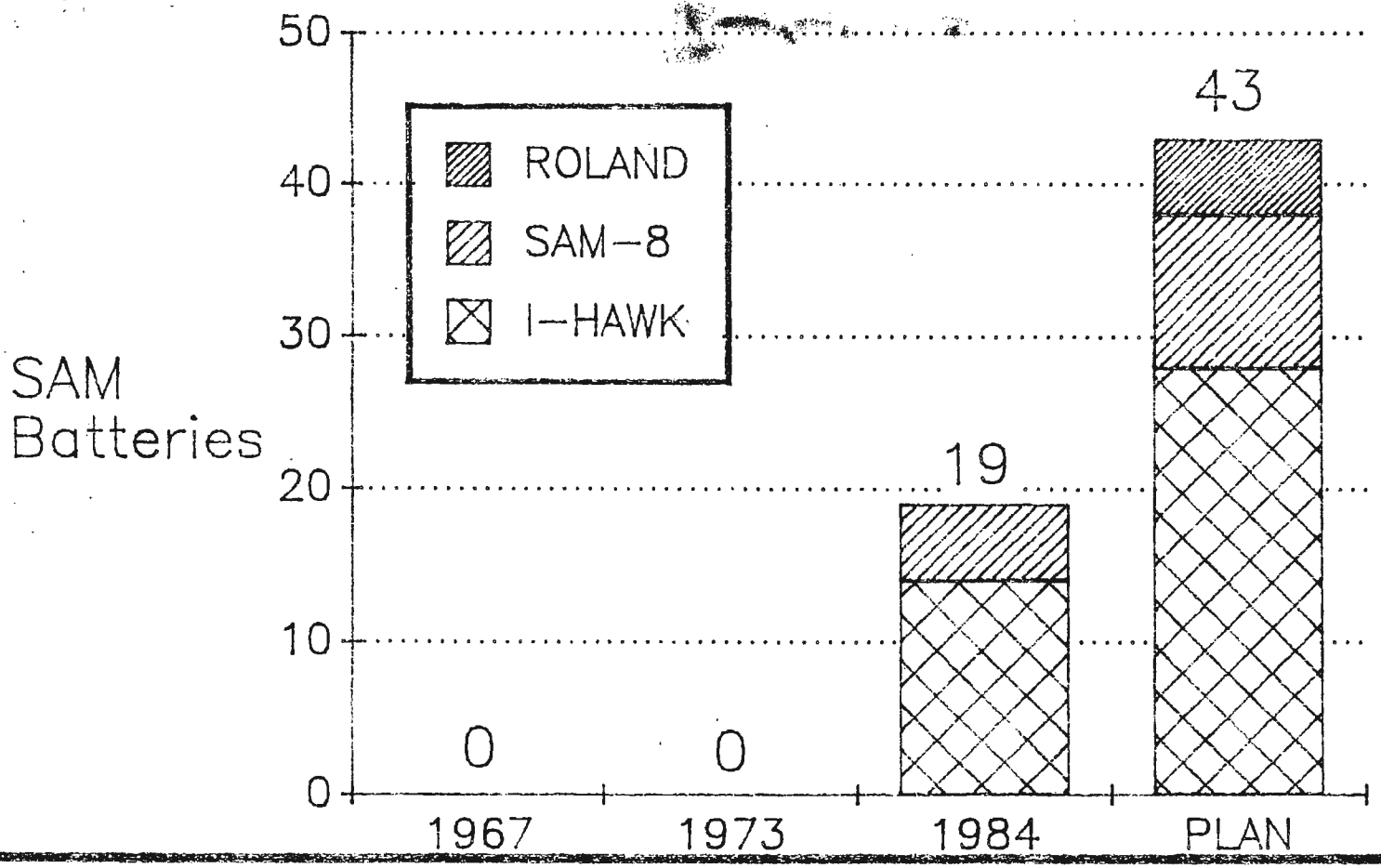
The U.S. has also supplied supporting air defense equipment:

3 TPS-43 early warning radars (1 provided by Saudi Arabia)
5 TPS-63 gap-filling radars
Marconi radars
Plessey radars

All this is integrated by a Westinghouse air defense system. It is possible that the Jordanians have been provided with the equipment needed to receive data from the AWACS.

Jordan purchased additional air defense equipment from the Soviet Union in early 1985. According to press reports, the transaction may have involved arms worth $300 million. It included SA-14 missiles, and possibly additional SA-8 antiaircraft missiles and SA-9 or SA-13 missile launchers.

JORDAN'S GROWING AIR DEFENSES



M-3 BRADLEY CAVALRY FIGHTING VEHICLE

1. Fact Sheet: the M-3
2. Description of the M-2/3 Bradley Fighting Vehicle

FACT SHEET: M-3 Bradley Cavalry Fighting Vehicle

The M-3 cavalry fighting vehicle is a reconnaissance vehicle with a powerful anti-tank armament. The Bradley is armed with a stabilized 25mm gun that can fire while the tank is moving. In addition, the vehicle has a twin-launcher for TOW antitank missiles, allowing the missiles to be loaded from inside the vehicle, and it carries 12 TOW missiles. It is virtually identical to the M-2 infantry fighting vehicle, except that it carries more ammunition and has a smaller crew.

The Bradley is used only by the U.S. Army.

The M-3 is built by the Ordnance Division of the FMC Corporation in San Jose, California.

NOTE: THE M-3 IS A VARIENT OF THE M-2.

UNITED STATES OF AMERICA

M2 Infantry Fighting Vehicle

Development

The United States Army has had a requirement for a Mechanised Infantry Combat Vehicle since the early 1960s. The first vehicle designed to meet this requirement was the XM701 (also known as the MICV-65), of which five prototypes were completed by Pacific Car and Foundry in 1965. These vehicles used automotive and suspension components of the M107/M110 series of self-propelled guns which were developed by Pacific Car and Foundry in the late 1950s. The XM701 carried twelve men including a three-man crew, had a maximum road speed of 59 km/h and was fully amphibious with a water speed of 6·4 km/h. The two-man turret was armed with a 20 mm cannon and a coaxial 7·62 mm machine gun. Firing ports, each with a vision device above, allowed some of the infantrymen to aim and fire their weapons from inside the hull. The XM701 was not developed past the prototype stage as it was considered that the chassis was too large for use as an MICV.

In 1967, under contract to the United States Army, the Ordnance Division of FMC Corporation built two MICVs under the designation XM765. This was not adopted by the Army but further development by the company, as a private venture several years later, resulted in the Armoured Infantry Fighting Vehicle which is currently in service with the Netherlands, Philippines and Belgium. There is a separate entry in this section for the Armoured Infantry Fighting Vehicle.

In April 1972 the United States Army issued a Request For Proposals for a new MICV. A number of companies submitted proposals to meet this requirement and three companies were short-listed: Chrysler Corporation, FMC Corporation and Pacific Car and Foundry.

In November 1972 an Engineering Development and Advanced Production Engineering contract was awarded to Ordnance Division of FMC Corporation. The total value of this contract was $29·3 million which covered the cost of the design, development and fabrication of three prototype vehicles, a ballistic vehicle, 12 pilot vehicles and associated systems engineering, product assurance and test support.

The prototypes, called the XM723, had a crew of three (commander, gunner and driver) and carried eight fully-equipped infantrymen. The driver was seated at the front on the left, with the commander to his rear and the gunner in the turret on the right side of the hull. The turret was armed with a 20 mm cannon and a coaxial 7·62 mm machine gun. The troop compartment was at the rear of the hull and the infantrymen could aim and fire their weapons from inside the vehicle. All prototypes were completed by the summer of 1975.

In August 1976 an MICV Task Force was formed by the United States Army to make an independent examination of the whole XM723 programme to determine whether the vehicle would meet the future requirements of the Army. The Task Force made a number of recommendations, of which the following were accepted by the Army in October 1976:

A common vehicle would be developed for both the infantry and scout roles as the Armored Reconnaissance Scout Vehicle (prototypes of which were built by the FMC Corporation and Lockheed Missile and Space) had been cancelled.

The vehicle would be fitted with TOW ATGW system and 25 mm cannon in a two-man TOW/Bushmaster Armored Turret (TBAT-II).

A two-tube TOW ATGW launcher would be mounted on the left side of the turret to give the vehicle an anti-tank capability.

The firing ports would be retained.

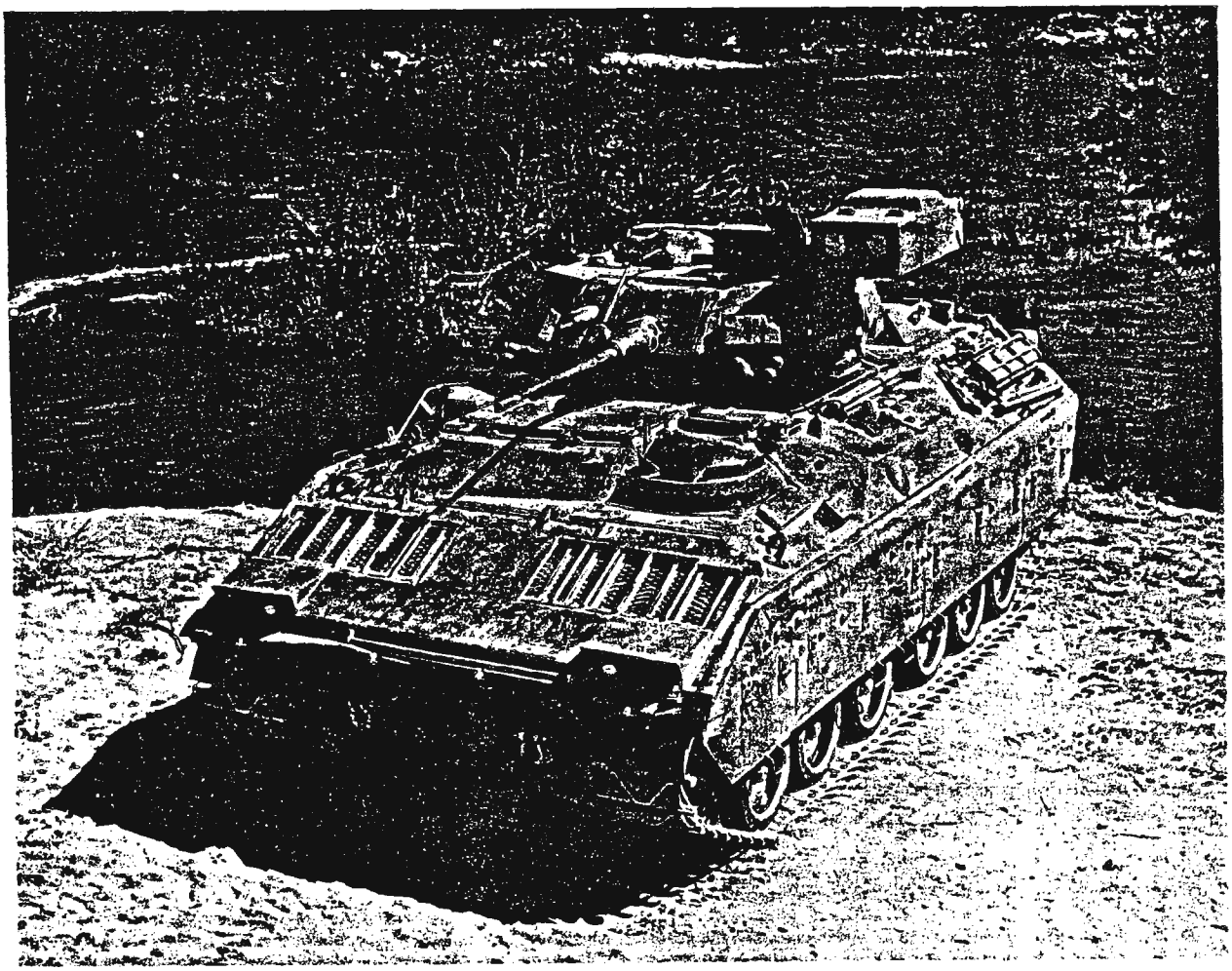
The vehicle would be amphibious.

The vehicle would have the same level of armour protection as the XM723.

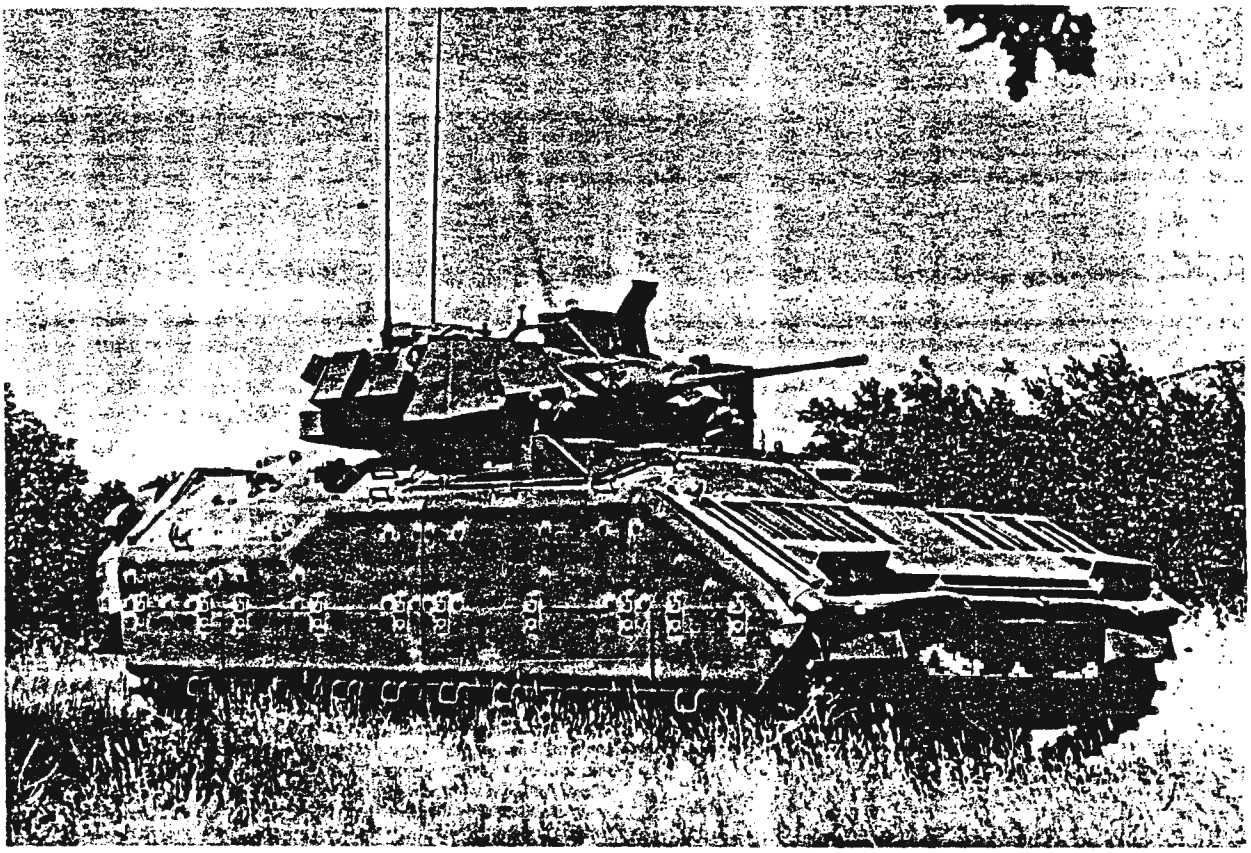
The vehicle would be issued on the scale of four per platoon, 13 per company and 41 per battalion.

The complete programme was then renamed the Fighting Vehicle System (FVS) which consisted of two vehicles, the XM2 Infantry Fighting Vehicle and the XM3 Cavalry Fighting Vehicle. The responsibility of the Fighting Vehicle Systems Manager was expanded in June 1977 to include a carrier for the General Support Rocket System (now known as the Multiple Launch Rocket System).

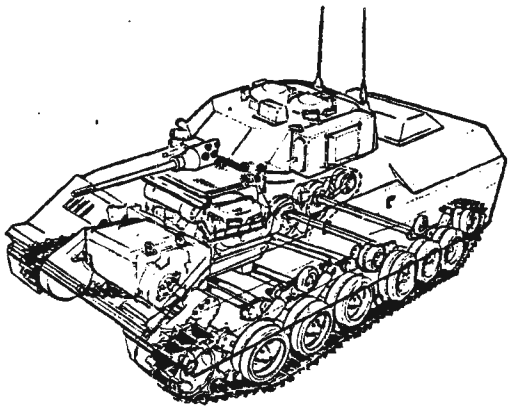
Early in 1978 the General Accounting Office issued a report that criticised the XM2 Infantry Fighting Vehicle on five main grounds: a slower acceleration and cross-country speed than the XM1; its greater height, making it easier to see and hit; inferior armour to the XM1's; the vulnerability of its main sight, and its diesel engine being noisier and smokier than the gas turbine installed in the XM1. Some of these concerns were redressed in the subsequent design and development of the XM2.



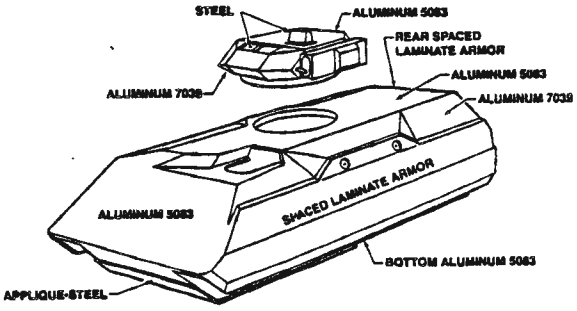
M2 Bradley Infantry Fighting Vehicle showing trim vane on glacis plate, side skirting and twin TOW ATGW launcher raised (US Army)



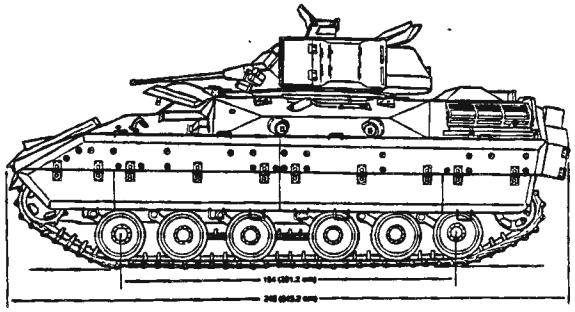
M2 Bradley Infantry Fighting Vehicle with additional boxes of 7·62 mm MG ammunition stowed externally on turret sides and rear



Outline drawing showing position of main automotive components of M2/M3 family



Armour layout of M2/M3 family



M2 Bradley Infantry Fighting Vehicle with TOW launcher retracted and hatches propped

The first two prototypes of the XM2 Infantry Fighting Vehicle were handed over to the United States Army at San Jose, California in December 1978, and the remaining six were completed by March 1979. In December 1979 the XM2 was type classified as the M2 and the XM3 as the M3. In February 1980 the US Army announced that it planned to produce 100 M2/M3s with fiscal year 1980 funds. The first production vehicles were handed over in May 1981, despite an 11-week strike at FMC Corporation. Further, the first production contract deliveries of 100 vehicles were completed on schedule in July 1982. Two subsequent awards for the production of 400 and 600 vehicles were made in fiscal years 1981 and 1982 respectively. The fiscal year 1983 request was for 600 vehicles at a cost of $842.5 million, plus $29.9 million for spares and $50.5 million for RDT & E. The fiscal year 1984 request for the IFV/CFV is to be for 600 vehicles, the 1985 request for 830 vehicles.

The first battalion was equipped with the M2 at Fort Hood, Texas in March 1983, with deliveries to the 7th Army training centre in Vilseck, West Germany, in September 1983. The United States Army has a total requirement for 6882 M2s and M3s at a unit cost, in 1978 dollars, of about $500 000. The M2 will not replace the M113 one-for-one, but will replace them for specific roles such as the APC in the mechanised infantry battalions.

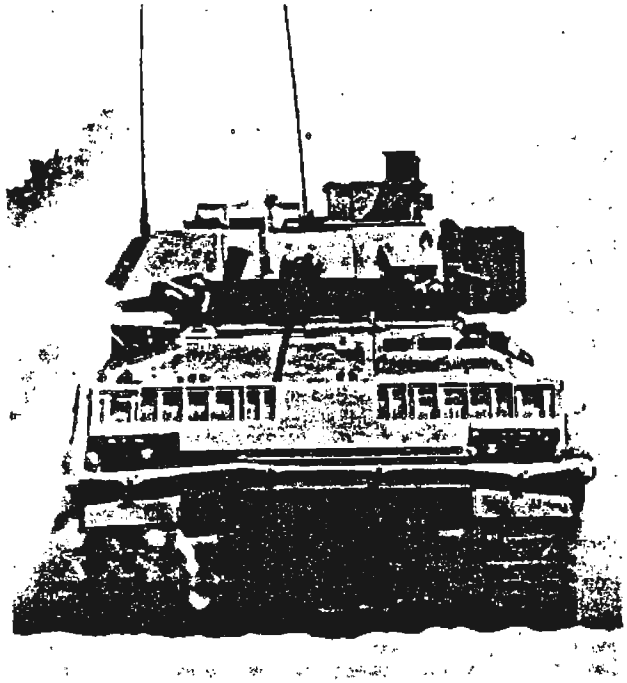
On 20 October 1981, the M2 IFV/M3 CFV was dedicated the Bradley Fighting Vehicle after the late General of the Army, Omar N Bradley.

When being airlifted in the C-141 Starlifter the head of the gunner's integral sight and the skirt plates are removed and the front two roadwheels have to be lowered by jacking up the suspension trailing arms.

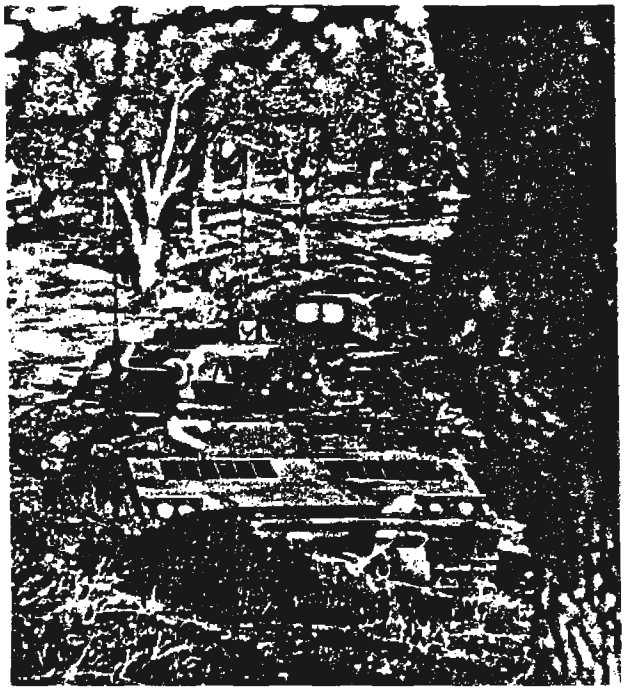
Description

The hull of the M2 Infantry Fighting Vehicle is made of all-welded aluminium armour with spaced laminate armour fitted to hull front, sides and rear. According to FMC the armour of the M2 can defeat 95 per cent of all of the types of ballistic attack encountered on the battlefield under IFV/CFV doctrine.

The driver is seated at the front of the vehicle on the left and has a single-piece hatch cover that opens to the rear and has four periscopes, three to the front and one to the left side. The centre front periscope can be replaced by an AN/VVS-2 passive night periscope.



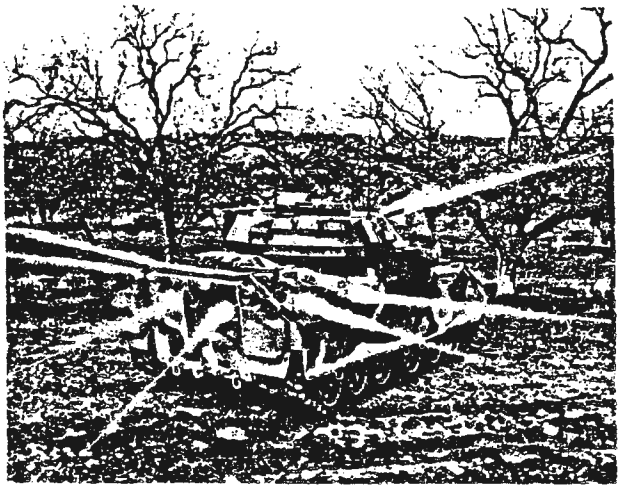
M2 Bradley Infantry Fighting Vehicle with twin TOW ATGW launcher retracted along side of turret



M2 IFV with turret traversed to right and TOW launcher elevated

The engine compartment is to the right of the driver. The engine is coupled to a General Electric HMPT-500 hydromechanical transmission. The transmission design incorporates two hydraulic pump/motor assemblies that utilise radial ball pistons and a unique gearing arrangement to provide both steer and propulsion ratios. There are three speed ranges with overall transmission ratios infinitely variable in all ranges. There is a 3·2 kg Halon fixed fire extinguisher in the engine compartment and two 2·3 kg ones in the personnel compartment. In addition there is also a 1·2 kg portable Halon fire extinguisher.

The turret, which is of welded steel and aluminium armour construction, is mounted in the centre of the vehicle on the right side with the gunner seated on the left and the commander on the right. Each crew member is provided with a single-piece hatch cover that opens to the rear. The gunner has a combined day/thermal sight with an optical relay for the commander with a magnification of ×4 and ×12, and both crew members have periscopes for front and side observation. In addition, production vehicles will be fitted with a fixed power, daylight back-up sight which will allow the gunner or commander secondary sighting capability in the event of primary sight failure.

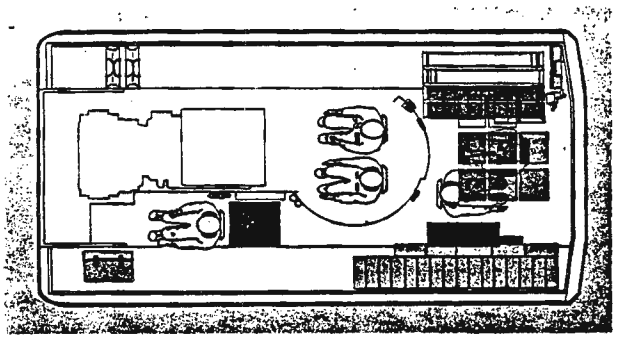


Retouched photograph of M2 Bradley Infantry Fighting Vehicle showing 5·56 mm and 25 mm weapons firing

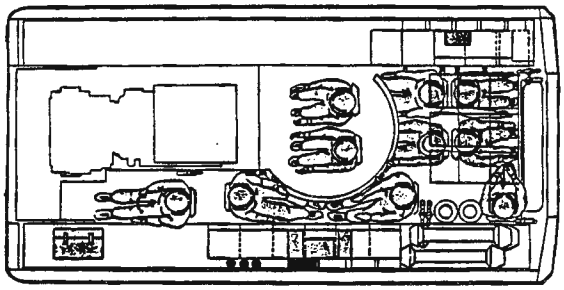
Hughes TOW ATGW being launched from M2 Bradley Infantry Fighting Vehicle

Main armament consists of a Hughes M242 25 mm Chain Gun with a 7·62 mm M240C machine gun mounted coaxially to the right of the main armament. The Hughes weapon was chosen after an extensive evaluation between the M242 Chain Gun and a self-powered XM241 which was similar to the Oerlikon KBA-B02 entered by Ford Aerospace and Communications Corporation. The Ordnance Division of Hughes Helicopters was awarded an initial $5·4 million contract in January 1979 to proceed with production engineering work. The 25 mm cannon has dual feed and the gunner can select single shots, 100 or 200 rpm rates of fire. The cannon will fire both Oerlikon 25 mm and American M790 series of ammunition including M791 APDS-T, M792 HEI-T and M793 TP-T. The empty cartridge cases are automatically ejected outside the turret. It was reported in 1982 that the US Army intended to develop an APFSDS round for the M242 Hughes Helicopters Chain gun.

The turret has 360-degree electric traverse and the weapons can be elevated from −10 to +60 degrees. The General Electric turret drive and stabilisation system allows the armament to be laid and fired while moving across rough country. The system consists of a traverse drive assembly for positioning and holding the turret, gun elevation drive assembly for positioning and holding the weapon, TOW elevation drive assembly for positioning and holding the TOW missile launcher, a TOW lift mechanism for raising and lowering the TOW launcher, electronic control assembly, three gyro blocks, gunner's handstation, commander's handstation and cabling.



Interior arrangement of M3 Bradley Cavalry Fighting Vehicle



Interior arrangement of M2 Bradley Infantry Fighting Vehicle

The TOW weapon subsystem has been developed by the Hughes Aircraft Corporation under a contract worth $16·5 million. When travelling the twin tube TOW launcher is retracted and lies along the left side of the turret. The TOW system enables the M2/M3 vehicles to engage enemy armour out to a maximum range of 3750 metres. The TOW missile launcher has an elevation of +30 degrees and a depression of −20 degrees. Additional details of the TOW ATGW are given in the entry for the Emerson Improved TOW Launcher in the *Turrets and cupolas* section.

Two electrically-operated smoke dischargers, with four smoke grenades in each, are mounted on the forward part of the turret, one on either side of the main armament. In addition production vehicles will be fitted with an engine smoke-generating system similar to that on most Soviet vehicles.

The M2 carries seven infantrymen: one man sits forward of the turret on the left side facing the rear, one to the left of the turret facing the front, one at the left rear of the vehicle facing inwards, two men sit at the right rear facing the back and two men sit to the back of the turret facing the front.

The infantrymen enter and leave the vehicle via a large hydraulically-operated ramp at the rear of the hull, which has an integral door in the left side in case the ramp fails to open. A single-piece hatch cover that opens to the rear is provided over the top of the troop compartment. Six firing ports, two in each side of the hull and two at the rear, each with a periscope over it, enable the infantrymen to fire their M231 5·56 mm weapons from inside the vehicle.

The suspension system includes torsion bars, and on each side there are six dual rubber-tyred road wheels with the drive sprocket at the front and the idler at the rear. There are three track return rollers that support the inside of the track only. Hydraulic shock absorbers are fitted to the first, second, third and sixth road wheel stations. The tracks are of the single-pin type with replaceable rubber pads.

In production vehicles a central M13A1 gas particulate filter system will be provided for the commander, gunner and driver but the infantrymen have to wear individual masks.

The M2 is fully amphibious being propelled in the water by its tracks. Before entering the water a crew of five will erect a special water barrier in approximately five minutes.

During the development of the M2/M3 a considerable amount of effort was placed on maintenance and logistical support; diagnostic equipment falls into two main categories, organisational and direct support. The former is built on the Army's standard Simplified Test Equipment/Internal Combustion Engine (STE/ICE) concept to provide a common system for both the M1 MBT and the M2/M3. This equipment can isolate faults in the engine, transmission, electrical or fire-control sub-systems to the responsible line replaceable unit (LRU). The faulty part can be replaced from stock so the vehicle can be returned to service, the faulty LRU will be repaired elsewhere.

The Direct Support Electrical System Test Set (DSESTS) provides an automatic test set for both the M1 and M2/M3 and can check the LRU that was removed by organisational level maintenance and identify the specific printed circuit board (PCB) or module causing the malfunction. Once identified, the PCB or module can be replaced into the LRU which is then returned to stock for future use.

Variants

Improvements

It is likely that the following improvements will be incorporated by 1985: Hughes TOW 2 ATGW, commander's back-up sight, ventilated facepiece and an improved 25 mm round (APFSDS).

In the longer term the following may also be incorporated: driver's thermal viewer, heading reference unit, low profile antenna, biological/chemical protection, nuclear hardening, improved maintenance/diagnostic capabilities and 25 mm cannon ammunition improvements.

The AiResearch was awarded a $150,000 contract by MERADCOM to design and build a prototype microclimate cooling system for the M2/M3 crews. This will be a freon air-conditioning unit that cools water which is pumped through vests worn by the crew members under protective clothing and will protect soldiers from internal temperatures as high as 140 degrees Fahrenheit.

M3 Cavalry Fighting Vehicle

This is almost identical to the M2 except that it has a five-man crew. It has no firing ports and has greater ammunition capacity than the M2; however from the exterior, the M2 and M3 appear identical.

Multiple Launch Rocket System

Details of this are given in the *Multiple rocket launchers* section. Full details of the Fighting Vehicle Systems Carrier, M987, on which the MLRS is carried (M933), are given in *Jane's Military Vehicles and Ground Support Equipment 1983*, page 501 as are other members of this family including the Armored, Forward-Area, Rearm Vehicle (AFARV) which has been designed to rearm MBTs and other AFVs in forward battlefield areas.

Status: In production. In service with the US Army.

Manufacturer: FMC Corporation, Ordnance Division, 1105 Coleman Avenue, San Jose, California 95108, USA.

US Army forecasts show total procurement costs of the IFV/CFV to be more than $11 000 million.

SPECIFICATIONS (M2, data in square brackets relates to M3 where different)

CREW	3 + 7 [3 + 2]
COMBAT WEIGHT	22 666 [22 362] kg
UNLOADED WEIGHT	19 822 [19 550] kg
AIRPORTABLE WEIGHT	18 375 kg
POWER-TO-WEIGHT RATIO	22·32 [22·63] hp/tonne
GROUND PRESSURE	0·54 kg/cm²
LENGTH	6·453 m
WIDTH	3·2 m
(over tracks)	2·972 m
HEIGHT	
(to gunner's sight)	2·972 m
(to turret roof)	2·565 m
(reduced)	2·634 m
GROUND CLEARANCE	0·432 m
TRACK WIDTH	533 mm
LENGTH OF TRACK ON GROUND	3·912 m
MAX SPEED	
(road)	66 km/h
(water)	7·2 km/h
FUEL CAPACITY	662 litres
CRUISING RANGE	483 km
FORDING	amphibious
GRADIENT	60%
SIDE SLOPE	40%
VERTICAL OBSTACLE	0·914 m
TRENCH	2·54 m
ENGINE	Cummins VTA-903T turbo-charged 8-cylinder diesel developing 500 hp at 2600 rpm
TRANSMISSION	General Electric HMPT-500 hydro-mechanical
STEERING	hydrostatic
SUSPENSION	torsion bar
ELECTRICAL SYSTEM	28 V
BATTERIES	4 × 12 V 6TN
ARMAMENT	
(main)	1 × 25 mm
(coaxial)	1 × 7·62 mm MG
(other)	2-tube TOW launcher
SMOKE-LAYING EQUIPMENT	2 × 4 smoke dischargers plus exhaust generator
AMMUNITION	
(main)	300 ready, 600 reserve [300/1200]
(coaxial)	800 ready, 1540 reserve [800/3740]
(5·56 mm firing port)	4200 reserve [n/app]
(TOW missiles)	2 in launcher, 5 in reserve [10]
LAW (M72A2)	3 stowed

FIRE-CONTROL SYSTEM	
Turret power control	electric
By commander	yes
By gunner	yes
Max rate power traverse	60°/s
Max rate power elevation	60°/s
Gun elevation/depression	+60°/−10°
Turret traverse	360°
TOW launcher elevation/depression	+30°/−20°
Gun stabiliser	yes
ARMOUR	
Top and front slopes	5083 aluminium spaced laminate
Vertical sides and rear	5083 aluminium with anti-mine applique (IFV only)
Bottom	7039 and 5083 aluminium
Side slopes	

AIM-9P SIDEWINDER

1. Description: AIM-9P Sidewinder
2. Sidewinder Data

Description: AIM-9P Sidewinder

The AIM-9P is an upgraded version of the Sidewinder air-to-air heat-seeking missile. It can only be fired at rear of a target plane, where the heat of the engine is the most intense.

The AIM-9 can be used by any of Jordan's existing aircraft, including the U.S.-supplied F-5Es or the French-supplied Mirage F-1s. Either the F-16C or F-20A can carry the AIM-9P.

Middle East countries that have the AIM-9 include Egypt, Israel, Jordan, Kuwait, Saudi Arabia, and North Yemen.

The AIM-9 is manufactured by Ford Aerospace in Newport Beach, California.

Sidewinder, AIM-9

Origin: Original design by US Naval Weapons Center, China Lake; commercial production by Philco (now Ford Aerospace) and later GE, today shared by Ford Aerospace (most versions, currently 9L and 9P) and Raytheon (9L and 9M).
Propulsion: Solid motor (various, by Rockwell, Aerojet or Thiokol, with Aerojet Mk 17 qualified on 9B/E/J/N/P and Thiokol Mk 36 or reduced-smoke TX-683 qualified on 9L/M).
Dimensions: See variants table.
Weight: See variants table.
Performance: See variants table.
Warhead: (B/E/J/N/P) 10lb (4.5kg) blast/fragmentation with passive IR proximity fuze (from 1982 being refitted with Hughes DSU-21/B active laser fuze), (D/G/H) 22.4lb (10.2kg) continuous rod with IR or HF proximity fuze, (L/M) 25lb (11.4kg) advanced annular blast/fragmentation with active laser IR proximity fuze.
Users: (all versions) Argentina, Australia, Belgium, Brazil, Canada, Chile, Denmark, West Germany, Greece, Iran, Israel, Italy, Japan, South Korea, Kuwait, Malaysia, Morocco, Netherlands, Norway, Pakistan, Philippines, Portugal, Saudi Arabia, Singapore, Spain, Sweden, Taiwan, Tunisia, Turkey, UK (RAF, RN), USA (all services).

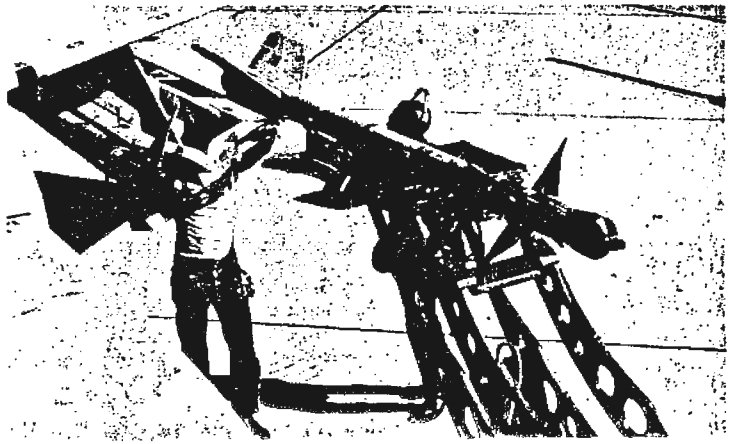
One of the most influential missiles in history, this slim AAM was almost un-American in development for it was created out of nothing by a very small team at NOTS China Lake, operating on the proverbial shoe-string budget. Led by Doctor McLean, this team was the first in the world to attack the problem of passive IR homing guidance, in 1949, and the often intractable difficulties were compounded by the choice of an airframe of only 5in (127mm) diameter, which in the days of vacuum-tube electronics was a major challenge. In 1951 Philco was awarded a contract for a homing head based on the NOTS research and today, 28 years later, the guidance team at Newport Beach, now called Ford Aerospace and Communications, is still in production with homing heads for later Sidewinders. The first XAAM-N-7 guided round was successfully fired on 11 September 1953. The first production missiles, called N-7 by the Navy, GAR-8 by the USAF and SW-1 by the development team, reached IOC in May 1956.

These early Sidewinders were made of sections of aluminium tube, with the seeker head and control fins at the front and four fixed tail fins containing patented rollerons at the back. The rolleron is similar to an air-driven gyro wheel, and one is mounted in the tip of each fin so that it is spun at high speed by the slipstream. The original solid motor was made by Hunter-Douglas, Hercules and Norris-Thermador, to Naval Propellant Plant design, and it accelerated the missile to Mach 2.5 in 2.2 sec.

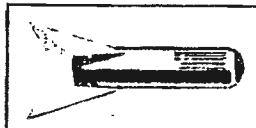
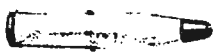
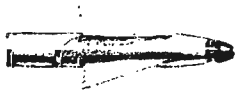
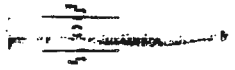
The beauty of this missile was its simplicity, which meant low cost, easy compatibility with many aircraft and, in theory, high reliability in harsh environments. It was said to have "less than 24 moving parts" and "fewer electronic components than the average radio". At the same time, though the guidance method meant that Sidewinder could be carried by any fighter, with or without radar, it was erratic in use and restricted to close stern engagements at high altitude in good visibility. The uncooled PbS seeker gave an SSKP of about 70 per cent in ideal conditions, but extremely poor results in bad visibility, cloud or rain, or at low levels, and showed a tendency to lock-on to the Sun, or bright sky, or reflections from lakes or rivers.

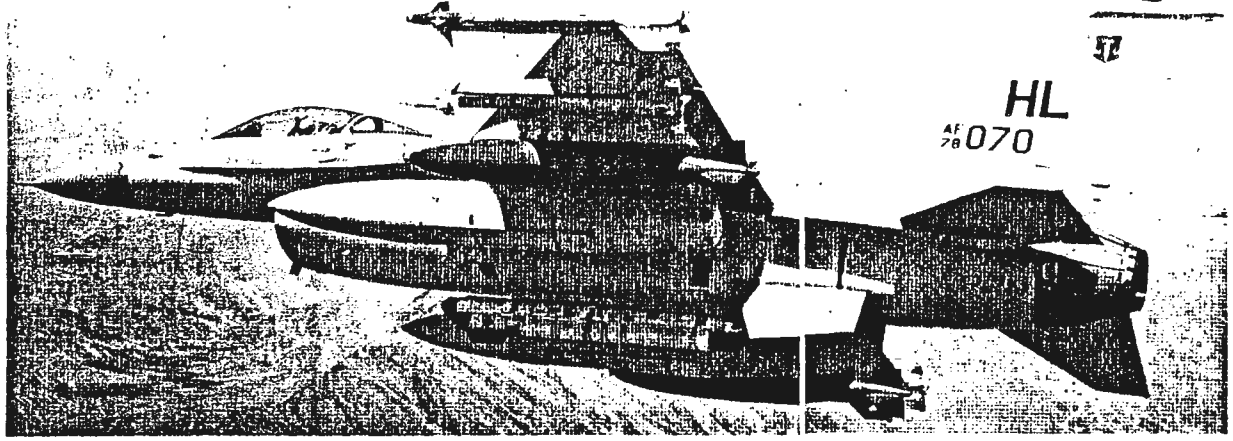
The pilot energised his missile homing head and listened for its ▶

Below: Live AIM-9M (improved 9L) Sidewinders need careful handling and a powered loader is being used here.



Sidewinder Guidance Sections

	**AIM-9B: 80,900 produced by Philco and GE and c15,000 by European consortium; 10,000+ updated by Ford.**
	**AIM-9C/D: 9C SARH model by Motorola (1,000+), 9D with better IR/speed/manoeuvre, 950+ by Ford for US Navy.**
	**AIM-9E: 9B rebuilt with new cooled wide-angle seeker, about 5,000 for USAF by Ford (Aeronutronic).**
	**AIM-9G/H: 9G improved 9D with off-boresight lock-on (2,120 Raytheon, USN); 9H solid-state (3,000 Ford AF).**
	**AIM-9L/M: 9L 3rd generation all-aspect (Ford and Raytheon, also Europe); 9M improved ECCM/motor (Raytheon).**
	**AIM-9J/N: J rebuilt B/E with new front end (Ford c14,000 for AF); N (formerly J1) further improved (c,7,000).**
	**AIM-9P Improved B/E/J or new production, new motor/fuze and better reliability, c13,000 by Ford for USAF.**



▶ signals in his headset. It would give a growl when it acquired a target, and if it was nicely positioned astern of a hot jetpipe the growl would become a fierce strident singing that would rise in intensity until the pilot let the missile go. There were plenty of QF-80, Firebee and other targets that had early Sidewinders up their jetpipe in the 1950s, but unfortunately real-life engagements tended to have the wrong target, or the wrong aspect, or the wrong IR-emitting background. In October 1958, however, large numbers of Sidewinders were fired by Nationalist Chinese F-86s against Chinese MiG-17s and 14 of the latter were claimed in one day. This was the first wartime use of AAMs.

The staggering total of nearly 81,000 of the original missile were built in three almost identical versions which in the new 1962 scheme were designated AIM-9, 9A and 9B. Nearly all were of the 9B form, roughly half produced by Philco (Ford) and half by Raytheon. A further 15,000 were delivered by a European consortium headed by BGT, which in the late 1960s gave each European missile a new seeker head of BGT design known as FGW Mod 2. This has a nose dome of silicon instead of glass, a cooled seeker and semi-conductor electronics, and transformed the missile's reliability and ability to lock-on in adverse conditions.

By 1962 SW-1C was in use in two versions, AIM-9C by Motorola and -9D by Ford. This series introduced the Rocketdyne Mk 36 solid motor giving much greater range, a new airframe with tapered nose, long-chord controls and more swept leading edges on the tail fins, and completely new guidance. Motorola produced the 9C for the F-8 Crusader, giving it SARH guidance matched to the Magnavox APQ-94 radar, but for various reasons this odd man out was unreliable in performance and was withdrawn. In contrast, 9D was so successful it formed the basis of many subsequent versions, as well as MIM-72C Chaparral. The new guidance section introduced a dome of magnesium fluoride, a nitrogen-cooled seeker, smaller field of view, and increased reticle speed and tracking speed. The control section introduced larger fins, which

Above: Early production F-16A with two 9L (tips), two 9J, two Mk 84 (2,000lb) bombs, two tanks and an ALQ-119 ECM pod.

were detachable, and high-power actuators fed by a longer-burning gas generator. The old 10lb (4.54kg) warhead with passive-IR fuze was replaced by a 22.4lb (10.2kg) annular blast fragmentation head of the continuous-rod type, fired by either an IR or HF proximity fuze.

AIM-9E was fitted with a greatly improved Ford seeker head with Peltier (thermoelectric) cooling, further-increased tracking speed and new electronics and wiring harnesses, giving increased engagement boundaries especially at low level. AIM-9G has so-called SEAM. (Sidewinder Expanded Acquisition Mode), an improved 9D seeker head, but was overtaken by 9H. The latter introduced solid-state electronics, even faster tracking speed, and double-delta controls with increased actuator power, giving greater manoeuvrability than any previous Sidewinder as well as limited all-weather capability. AIM-9J is a rebuilt 9B or 9E with part solid-state electronics, detachable double-delta controls with greater power, and long-burning gas generator. Range is sacrificed for high acceleration to catch fast targets.

There are J-1 and J-3 improved or "all-new" variants. A major advance came with Sidewinder 9L, with which NWC (as NOTS now is) at last responded to the prolonged demands of customers and the proven accomplishments of BGT. The latter's outstanding seeker head developed for Viper was first fitted to AIM-9L to give Alasca (All-Aspect Capability), a great missile that was merely used by Germany as a possible fall-back in case 9L failed to mature. AIM-9L itself, in full production from 1977, has long-span pointed delta fins, a totally new guidance system (see table), and an annular blast fragmentation warhead sheathed in a skin of preformed rods, triggered by a new proximity fuze in which a ring of eight GaAs laser diodes emit and a ring of silicon photodiodes receive.

About 16,000 of the 9L series were expected to be made by 1983, and at least a further 9,000 are likely to be made by a new BGT-led European consortium which this time includes BAe Dynamics and companies in Norway and Italy. Pilot production deliveries began in 1981, and BAe received its first production contract (for £40 million) in February 1982. No European missiles had reached British squadrons in April 1982 and 100 AIM-9L were supplied for use by Harriers and Sea Harriers in the South Atlantic from US stocks, gaining 25 known victories.

AIM-9M is a revised L. 9N is the new designation of J-1 (all are 9B or 9E rebuilds). 9P are rebuilds of 9B/E/J, and additional 9P missiles are being made from new.

The Sidewinder Family

Model	Guidance	Length	Control fin span	Launch wt	Mission time	Range	Production
AIM-9B	Uncooled PbS.25° look. 70 Hz reticle. 11°/sec tracking	111.4in (2830mm)	22.0in (559mm)	155lb (70.4kg)	20 sec	2 miles (3.2 km)	80,900
9B FGW.2	CO_2 cooling, solar dead zone reduced to 5°	114.5in (2908mm)	22.0in (559mm)	167lb (75.8kg)	20 sec	2.3 miles (3.7 km)	15,000
AIM-9C	Motorola SARH	113.0in (2870mm)	24.8in (630mm)	185lb (84.0kg)	60 sec	11 miles (17.7 km)	1,000
AIM-9D	N_2 cooled PbS, 40° look, 125 Hz reticle, 12°/sec tracking	113.0in (2870mm)	24.8in (630mm)	195lb (88.5kg)	60 sec	11 miles (17.7 km)	1,000
AIM-9E	Peltier-cooled PbS, 40° look, 100 Hz reticle, 16.5°/sec tracking	118.1in (3000mm)	22.0in (559mm)	164lb (74.5kg)	20 sec	2.6 miles (4.2 km)	5,000 (ex-9B)
AIM-9G	As -9D plus SEAM	113.0in (2870mm)	24.8in (630mm)	191lb (86.6kg)	60 sec	11 miles (17.7 km)	2,120
AIM-9H	As -9G plus solid-state, 20°/sec tracking	113.0in (2870mm)	24.8in (630mm)	186lb (84.5kg)	60 sec	11 miles (17.7 km)	7,720
AIM-9J	As -9E plus part-solid-state	120.9in (3070mm)	22.0in (559mm)	172lb (78.0kg)	40 sec	9 miles (14.5 km)	10,000 (ex-9B)
AIM-9L	Argon-cooled InSb. fixed reticle, tilted mirror system	112.2in (2850mm)	24.8in (630mm)	188lb (85.3kg)	60 sec	11 miles (17.7 km)	11,700+
AIM-9M	As -9L, better motor and ECCM	112.2in (2850mm)	24.8in (630mm)	190lb (86.0kg)	60 sec	11 miles (17.7 km)	3,500+
AIM-9N	As -9E plus part-solid-state	120.9in (3070mm)	22.0in (559mm)	172lb (78.0kg)	40 sec	9 miles (14.5 km)	7,000
AIM-9P	As -9N plus reliability improvements	120.9in (3070mm)	22.0in (559mm)	172lb (78.0kg)	60 sec	11 miles (17.7 km)	13,000

V. JORDAN'S SECURITY

1. Jordan's Military Posture
2. Jordan's Real Security Needs
3. Jordan's Growing Arsenal

Jordan's Military Posture

The Jordanian Army is a small but highly capable force. It is organized into five armored brigades, six mechanized brigades, a Royal Guards armored brigade, two infantry brigades, and 3 airborne battalions. These units form 2 armored and 2 mechanized divisions.

Equipment includes approximately 700 tanks, 900 armored personnel carriers, 250 artillery pieces, and 500 anti-tank missile launchers. Another 290 tanks, 80 personnel carriers, and 200 artillery pieces are now on order, but some of the new equipment will undoubtedly replace older weapons.

Jordan has extensively fortified the Jordan River Valley. Crossing points near the Jordan River are fortified, as are the roads that climb from the valley to the hills above. These fortifications would be occupied by the mechanized divisions during a crisis.

In contrast, Jordan has constructed only a light defense line along its border with Syria, consisting of an anti-tank ditch and some fortifications.

The Jordanian Air Force has just about 115 combat aircraft, consisting of 36 French-built Mirage F-1C/E fighter-bombers, 60 F-5E/F fighters, and 19 F-5A/B. The Jordanian French Mirage F-1s were acquired between 1982 and 1984.

Current plans call for an eventual expansion to 160 combat aircraft, as well as the replacement of many existing aircraft with newer and more capable types. Desired acquisitions include 72 advanced U.S. aircraft, French Mirage 2000, and additional French Mirage F-1 fighters.

Currently, Jordanian air defenses are based on 14 Improved Hawk missile batteries. These batteries cannot be moved, because the launchers are mounted on concrete pads. The Hawk missiles are supplemented by American air defense equipment that includes 100 self-propelled radar-directed Vulcan 20mm guns, 200 self-propelled 40mm guns, and 300 Redeye shoulder-launched antiaircraft missiles.

Soviet air defense equipment used by Jordan includes 20 SA-8 antiaircraft missile launchers, 16 radar-directed ZSU-23-4 self-propelled antiaircraft guns, and nearly 1,000 SA-14 handheld surface-to-air missiles. The SA-14s were obtained in early 1985. Other Soviet-made antiaircraft weapons might have been acquired at the same time. A small Soviet training force in Jordan teaches use of these weapons.

Jordan has obtained 20 French-built medium range Roland self-propelled anti-aircraft missile launchers. After close comparison, additional purchases of either the Roland or the SA-8 are planned. Jordan also wants a weapon additional self-propelled antiaircraft guns.