

# Ronald Reagan Presidential Library

## Digital Library Collections

---

This is a PDF of a folder from our textual collections.

---

**Collection:** Baker, James A. III: Files  
**Folder Title:** [AWACS Background Material]  
**(2)**  
**Box:** 15

---

To see more digitized collections  
visit: <https://reaganlibrary.gov/archives/digital-library>

To see all Ronald Reagan Presidential Library inventories visit:  
<https://reaganlibrary.gov/document-collection>

Contact a reference archivist at: [reagan.library@nara.gov](mailto:reagan.library@nara.gov)

Citation Guidelines: <https://reaganlibrary.gov/citing>

National Archives Catalogue: <https://catalog.archives.gov/>

C

## Qs & As on Saudi Air Defense Enhancement Package

Question. What impact would the sale of AWACS to Saudi Arabia have on the military stability in the region? In particular, what capability would AWACS give Saudi, Syrian and possible Jordanian air forces individually as a potential adversary of Israel in another Middle East war? Would this require significant purchases of counter-measures on the part of Israel to neutralize the potential offensive capability associated with AWACS?

Response. As the deployment of USAF AWACS to Saudi Arabia has demonstrated, the added warning of a potential air attack which these aircraft provide is a stabilizing influence during periods of increased tension. During the Iran-Iraq war, AWACS has helped to deter the belligerents from attacking Saudi Arabia's oil facilities and other installations.

The sale of AWACS to Saudi Arabia will not have a significant adverse impact on the military stability in the region. Similar technology already exists in the region; the Saudis will acquire only 5 AWACS, allowing them to continuously patrol only the border area at a time for limited periods of time.

In the event of another Middle East war involving Israel, the Saudis would be very unlikely to employ AWACS opposite Israel. Such an employment would expose their AWACS to the very real threat of being shot down by Israeli fighters. It would also leave largely unprotected the most important Saudi economic and population centers in the northeast and southwest. Moreover, in the Arab-Israeli conflicts of 1967 and 1973, the Saudis were not actively involved.

Extensive joint training exercises would be required for the Saudi AWACS to be effectively used in support of a combined Saudi, Syrian, and Jordanian offensive threat against Israel. Saudi Arabia could not conduct such joint training without our knowledge, since much AWACS aircraft maintenance support will be provided by US contractors for the foreseeable future. Additionally, for such combined operations to be effective, Syria and Jordan would need unique communications and encipherment equipment compatible with the AWACS, which could only be provided by the United States.

No significant counter-measures on the part of Israel would be required to neutralize the potential offensive capability associated with AWACS. Israeli radars and sensors would be capable of detecting Saudi AWACS aircraft operating near enough to participate in offensive operations against Israel. Israeli F-15 aircraft equipped with the AIM-9L and AIM-7F would be a significant threat to the Saudi if it attempted to remain on station near Israel.

The most effective use of the Saudi AWACS will be its deep look surveillance capability over the Persian Gulf for early warning, and its ability to retreat within the Kingdom's boundaries and assist in directing Saudi fighters against attacking aircraft attempting to penetrate Saudi airspace. It is in this air defense role that we expect the Saudis to employ the AWACS. The Iran/Iraq conflict proved that the potential threat to Saudi oil facilities is real and urgent. Without AWACS, the Saudi's air defenses are virtually blind, unable to detect attacking aircraft, particularly low-flying ones, and unable to provide warning in sufficient time to respond effectively. With AWACS, the Saudis will have the capability to effectively use both the F-15 and F-5 aircraft to intercept hostile aircraft prior to reaching their designated targets and maximize the early warning to surface-to-air missile (SAM) defenses near the target areas.

Question. Is it correct that the F-15s can be effectively used against targets in Israel?

Response. Saudi F-15s would be, in theory, capable of striking targets without any improvements to the present F-15 configuration. In practice, however, how effective such an attack would be is highly questionable since Israel has a highly effective air defense system and Saudi F-15 main operating bases are not near Israel. In the unlikely event Saudi Arabia decided to attack Israel, Saudi F-15s could expect to encounter a superior, highly trained and experienced Israeli Air Force consisting of several hundred F-15, F-16, F-4, and KFIR aircraft before crossing Israel's border. In addition, the Israeli ground-to-air defense (surface-to-air missiles and air defense artillery) is substantial and would take a heavy toll on any strike aircraft.

Another deterrent against an RSAF aggression towards Israel would be the almost certain reprisal from the Israeli Air Force against very vulnerable targets within Saudi Arabia. The relatively small RSAF could not hope to succeed against an Israeli Air Force that is superior in numbers, training, and equipment.

Question. What have the Saudis said to us which bears on Israeli concerns as to the enhancement package? Have we sought and have the Saudis given any assurances, beyond those already given in regard to the F-15s themselves?

Response. The Saudis have consistently assured us that they have no offensive intentions against any state in the area. The Saudis have also emphasized that their need for the enhancement package is for defensive purposes. They have also agreed not to base their F-15s at Tabuk. Further, the Saudi Arabian Government has agreed not to transfer any of the equipment or information of the enhancements to other countries in the region, to use AWACS aircraft only within Saudi borders, and to share security information with the US.

Question. Have they been asked to give written assurances or only verbal assurances? In either event, what is the precise language of any assurances which you consider firm? How binding do you consider these assurances to be?

Response. The Saudi Arabian Government (SAG) has provided both written and verbal assurances.

The Letter of Offer and Acceptance (DD Form 1513) for the F-15 aircraft, signed by the SAG, contains several conditions of sale, including restrictions on use of the equipment and upon retransfer of the equipment or data to a Third Country without prior approval of the US Government (USG). In all our conversations with the Saudis, they have consistently indicated that they will abide by the provisions under which the USG supplies military equipment.

In addition to the specific security clauses of the contract between the US and Saudi Governments (the DD Form 1513), there is a General Security of Military Information Agreement being developed which provides specific procedures for access to classified information, periodic inspections, and physical security, as well as assurance that the Saudi Arabian Government will provide a degree of protection to any classified information equivalent to the protection afforded it by the US Government.

In May 1978, King Khalid of Saudi Arabia stated in a letter to President Carter concerning the F-15 sale that he "would like to emphasize the planes are being acquired for defense."

During a meeting with Secretary of Defense Brown in May 1978, Saudi Foreign Minister, Prince Saud, affirmed that the SAG accepted the assurances made to Congress by Secretary Brown (letter to Senator Sparkman, 9 May 1978), as the intentions and requirements of Saudi Arabia were strictly defensive.

Since 1978, the Saudis have consistently reassured us that they have no aggressive intentions against any state in the area, that their F-15s will be used only in furtherance of their legitimate self-defense needs, and that they will not employ the aircraft offensively.

Question. How do you assess Israel's current and projected capabilities to defend itself against a coordinated Arab attack?

Response. It is our judgment that with a sustained effort and US assistance, Israel will be able to maintain its margin of military superiority over the Arab states during the remainder of this decade, and will remain capable of defeating any combination of Arab forces.

Question. What steps can be taken to help maintain Israel's faith in US commitments if the 1978 assurances to Congress are broken?

Response. We believe it is important that our friends be able to count on our reliability. We are consulting extensively with Congress and with Israel on the changed circumstances of the situation in the Middle East. We have asked the Congress to consider with us whether the 1978 undertaking continues to serve US interests given the radically worsened strategic situation in the region and our new strategy for dealing with it. We have explained our views in detail in our discussions with Israel.

We do not believe that it is proper to characterize the transfer of these items as breaking the 1978 assurances. In fact, we believe consultations and discussions such as these are the most effective way to ensure that Israel recognizes that our commitment to its continued security is firm and unshakable. In our consultations, we are emphasizing the dramatically changed circumstances in the region, illustrated by the instability in Iran, the Iran-Iraq war, Soviet invasion of Afghanistan, and enhanced Soviet power projection capabilities. In the light of these circumstances, the sale contributes to overall stability in the region and to US cooperation with states there. Consequently, it contributes to Israeli security as well as our own.

Question. Aren't we just formenting a new state in the arms race in the Middle East?

Response. Saudi Arabia possesses the smallest military forces of any major state in Southwest Asia. Because the size of its military is constrained by the relatively small size of its population, Saudi Arabia has concentrated its efforts to acquire higher technology arms systems that multiply the effectiveness of its smaller armed forces.

-- The F-15 enhancement items and AWACS we propose to sell to the Saudis will significantly improve Saudi Arabia's ability to defend its vital natural resources.

-- There is no reason why the sale of this equipment to improve Saudi air defenses should lead to an arms race in the region. We believe that Israel continues to have a significant qualitative edge over its Arab neighbors. The US has repeatedly stated that we will ensure that Israel maintains this advantage.

Question. Could you detail for us the specific circumstances that have changed since May 1978 which warrant changing the F-15 assurances contained in Secretary of Defense Brown's letter?

Response. As Under Secretary Buckley described for the Committee on February 26, the profoundly worsened security situation in the Middle East/Persian Gulf region requires that we reassess and vigorously respond to the security needs of our friends. In describing this new approach, Under Secretary Buckley highlighted the events that have occurred in the region since 1978:

-- The Soviet invasion of Afghanistan. There are currently 85,000 Soviet troops in Afghanistan with an additional 35,000 troops actively engaged in support roles just over the Soviet border. As a result, Soviet tactical aircraft are now within range of the Hormuz Straits, through which 2/3 of the world's oil exports must pass."

-- The Iranian revolution which has turned a nation which once was an important factor in regional security into a major element of instability in the area. We are of course concerned about the potential for Soviet exploitation of the situation in Iran."

-- The Iran/Iraq war has demonstrated again the volatility of the region and the propensity of two major states there to resort to military force and to attacks on critical oil facilities."

Add to these dramatic events the Soviet Union's position in Ethiopia and South Yemen: both of these Marxist states are tied to the Soviet Union and to each other by treaties of friendship and cooperation in which military cooperation is stated explicitly and prominently.

In sum, the Soviets have achieved a position which states in the region have long feared: an encirclement of the major Middle East oil fields, which threatens both the peoples of that area and the well-being of the industrial democracies.

Question. If these sales are made, what quid pro quo will be obtained by the US?

Response. The sales of this equipment will contribute to an important and longstanding US objective -- the security of Saudi Arabia.

By helping to assure the Saudis' ability to defend themselves, the sales will strengthen their confidence in us and help to build a sense of common interests. As we seek to develop those interests in support of specific issues, we must continue to recognize that preserving Saudi Arabia's own stability requires the Saudi Government to maintain a posture of independence from US policy.

Saudi Arabia supported the US Middle East peace effort up to Sadat's Jerusalem trip and continued to do so, though with misgivings, through the Camp David Summit.

Although Saudi Arabia has not supported the Camp David process, it has consistently reaffirmed its support for a just and comprehensive Middle East peace settlement. The Saudi desire for peace reflects in part deep concern that continued Arab-Israeli tension promotes Soviet and radical influences in the area. As we continue to seek to bring the Saudis into a more constructive posture in the peace process, it is important to sustain their confidence in other aspects of US policy, including our willingness to meet Saudi defense requirements.

Saudi Arabia has not publicly supported the concept of a permanent US force presence in the area. It has, however:

- indicated appreciation of a strong US "over-the-horizon" naval presence;
- sought an extensive US military supply and training program;
- requested deployment of AWACS at the outbreak of the Iraq/Iran war; and
- been strongly supportive, politically and financially, of Oman and Bahrain, which provide our forces access.

The Saudis have long opposed the spread of Soviet influence generally and in the Middle East in particular. They helped get the Soviets out of Egypt, Sudan, and Somalia. They took the lead in organizing regional opposition to the Soviet invasion of Afghanistan. In Yemen, the Saudis have worked with us to support the economic and defense needs of North Yemen, threatened

by Marxist, Soviet-supported South Yemen. The Saudis have taken the initiative in bolstering Pakistan in welcoming our cooperation in this effort. The close US-Saudi relationship has encouraged the smaller Gulf states from Kuwait to Oman to cooperate with the United States.

Saudi Arabia is critical to our economic objectives. While neither we nor they see benefit in direct trade-offs, we have long urged their cooperation in energy and financial matters and have received it to a remarkable degree.

Over the past years, Saudi Arabia has consistently maintained significantly higher oil production than its preferred level, most recently in response to supply shortages resulting from the Iraq/Iran war.

Saudi Arabia has been a price moderater within OPEC. For extended periods -- as at present -- it has priced its crude well below the general OPEC level.

These production and pricing policies are increasingly criticized in Saudi Arabia. It is obvious that the Saudis will be more responsive when we demonstrate sustained concern for their national defense.

The Saudis currently devote a high percentage (almost 10%) of their GNP to foreign assistance. (The US percentage is 0.2%.) This policy supports many of our own security and development objectives in the immediate region and globally. Saudi assistance has been particularly important to Morocco, the Sudan, Jordan, and North Yemen. In the coming months, we will need to urge even greater Saudi lending, particularly toward key nations such as Turkey and Pakistan.

The Saudis have consistently supported the dollar. Currently, a large proportion of their more than \$100 billion in foreign official assets is in dollar instruments.

We need a strong overall relationship to sustain a general Saudi attitude of cooperation in these areas.

Question. Isn't the Saudi request for AWACS being approved because they have us over the oil barrel and they seek the latest equipment whatever their real need?

Response. Both we and the Saudis are convinced that there is a sound military justification for the sale of AWACS to the Kingdom. The outbreak of war between Iran and Iraq, and the belligerents' use of airpower to destroy each other's oil facilities, highlighted to the Saudis the potential vulnerability of their oil facilities and other installations to air attack. The AWACS will provide a major boost for Saudi air defense capabilities in this vital area that cannot be achieved by any other means.

-- Neither we nor the Saudis have ever established a direct linkage between arms sales and oil pricing or production. However, we believe that the US and Saudi Arabia share a common interest in a continuing arms supply relationship, as well as cooperation in oil pricing and production policies.

Question. If the Saudis do not get this equipment, will we see another oil embargo? What do you believe the Saudis would do if these sales were not approved?

Response. There would be substantial negative consequences in refusing to provide the F-15 enhancement items. It would be out of character, however, for Saudi Arabia to retaliate in some direct overt fashion against the US, should these sales be turned down. We believe the Saudi reaction, however, would be one of deep disappointment and disillusionment. Without confidence in the reliability of our commitment to their security, the Saudis may well lack the political will to take difficult decisions regarding regional security, oil production and pricing policy, international financial cooperation, and Middle East peace.

Failure to supply this equipment would be seen as a rebuff of the Saudi regime not only in Saudi Arabia itself, but in the wider Arab world. This could damage the position of the royal family and Saudi Arabia's ability to pursue policies in consonance with our own. It would diminish the expectations other Arab states might hold out for themselves as a consequence of closer relations with us.

If the sales of enhancement items are not approved, the Saudis could go elsewhere to procure the capabilities. The French appear to be willing to sell F-15s, Mirage 2000s and, later, the Mirage 4000 with air-ground capability. There have been indications that the Saudis may also be considering the European Tornado as an alternative. The UK has refueling aircraft and AWACS-type capabilities in their Nimrod. The Saudis could cancel the F-15 program (total cost: over \$5 billion), although a February 1981 signature on an F-15 logistics support package indicates their strong desire to maintain close ties to the US Government. Clearly, a Saudi move to non-US military equipment would reduce US influence with the Saudis and could, therefore, constitute a threat to Israeli interests as well as those of the US.

Question. How many US military personnel are required for the support of current and anticipated FMS contracts with Saudi Arabia? How many current and anticipated contract personnel have military specialties in which US Armed Forces are in short supply? What are the salaries and compensation for contract personnel compared with the salaries and compensation for US military personnel performing similar work?

Response. Approximately 950 US military personnel, assigned to locations in the US and Saudi Arabia, are/will be required to support current and anticipated FMS contracts with Saudi Arabia.

There are no records maintained by the Department of Defense or the Military Departments which identify the military experience or military specialties possessed by contractor personnel supporting FMS contracts with Saudi Arabia.

The compensation package of contractor personnel supporting FMS contracts with Saudi Arabia is considered proprietary information by the companies holding the contracts, and is not available to the Department of Defense or the Military Departments.

Question. If Saudi Arabia becomes involved in armed conflicts and it is determined that US personnel necessary for support or operation of US-provided equipment are not to be involved, how will US personnel and sensitive technologies and components be protected?

Response. The Saudi Arabian Government (SAG) has agreed to afford US-provided equipment with sensitive technologies and components the same level of protection as provided by the US Government. The SAG has fulfilled its responsibilities during a conflict.

Physical protection of US personnel would be dependent on the scenario and keyed to such variables as the warning time required to remove personnel, the nature of the conflict, the vulnerability to actual danger, the identity of the opponent force(s), etc. However, in all but minor contingencies, continued US support of a non-combatant nature would be needed by the Saudis if they were to continue military operations for an extended period of time. In such cases, we feel confident of our ability, and that of the Saudis, to protect US personnel and technologies.

Question. If sensitive technologies in AWACS fell into hostile hands, would US security be adversely affected?

Response. Concerns over loss or compromise of sensitive technology fall into two categories: possible Soviet exploitation of US AWACS technology to counter AWACS operations through jamming, and application of US technology to advance Soviet airborne early warning systems. Neither concern is well founded.

The AWACS pulse doppler radar is based upon mid-sixties textbook technology. An equivalent of the AWACS computer is available commercially. The only sensitive portion of the technology is the computer software that integrates the entire system. If compromised, the job of reverse engineering that software would be comparable to unscrambling eggs. Should such compromise occur, however, exploitation of the system to enhance Soviet jamming of AWACS could be easily avoided by changing the logic key to the software, which would take only about one week.

Additionally, delivery of the Saudi AWACS will not begin until late 1985. Prior to that delivery, an extensive security protection program will be implemented to include procedures, devices, and facilities needed to protect AWACS equipment in Saudi Arabia.

Finally, application of AWACS technology to Soviet airborne early warning systems is not of great concern. The Soviets are currently developing a new airborne early warning aircraft with capabilities estimated to be quite similar to those of the US AWACS. By late 1985, when the first AWACS will be delivered to Saudi Arabia, it is safe to assume that the Soviets will have an airborne surveillance platform deployed that is equal to the 20-year old technology of the AWACS.

Question. Why won't ground-based radars provide the necessary coverage and do it on a full-time basis?

Response. Ground-based radars are being provided to the Saudis and they, along with AWACS, would provide a complementary system for full-time coverage adequate to protect the oil assets of Saudi Arabia. However, ground-based radars in the Persian Gulf region do not provide adequate coverage or warning time. The low altitude range of ground-based radars is limited by the curvature of the earth to about 20-30 miles over flat terrain (as found along the Persian Gulf coast); this does not provide adequate warning time to detect, identify, and intercept hostile aircraft transiting the Gulf. Hence, a combination of AWACS and ground radars is needed to provide the most cost-effective solution to the overall air defense problem.

Question. Could you review the specific Saudi military justification for the AIM-9L Sidewinder missile they have requested? Do you believe their justification is credible?

Response. The AIM-9L missile is much more capable than current Saudi missiles. It can be fired effectively from any angle, including head-on, maneuvers. Such a capability could be crucial in intercepting attacking aircraft before they reached Saudi oil facilities.

The US agrees with this assessment. Without AIM-9L Sidewinder missiles, Saudi interceptors would have to use valuable minutes to maneuver around behind attacking aircraft to obtain lock-on with less capable AIM-9P missiles before they could fire and destroy the attackers. With AIM-9L missiles, lock-on can be obtained head-on the attacker, enabling the Saudi fighter to fire and destroy the attackers more quickly and with greater success.

D

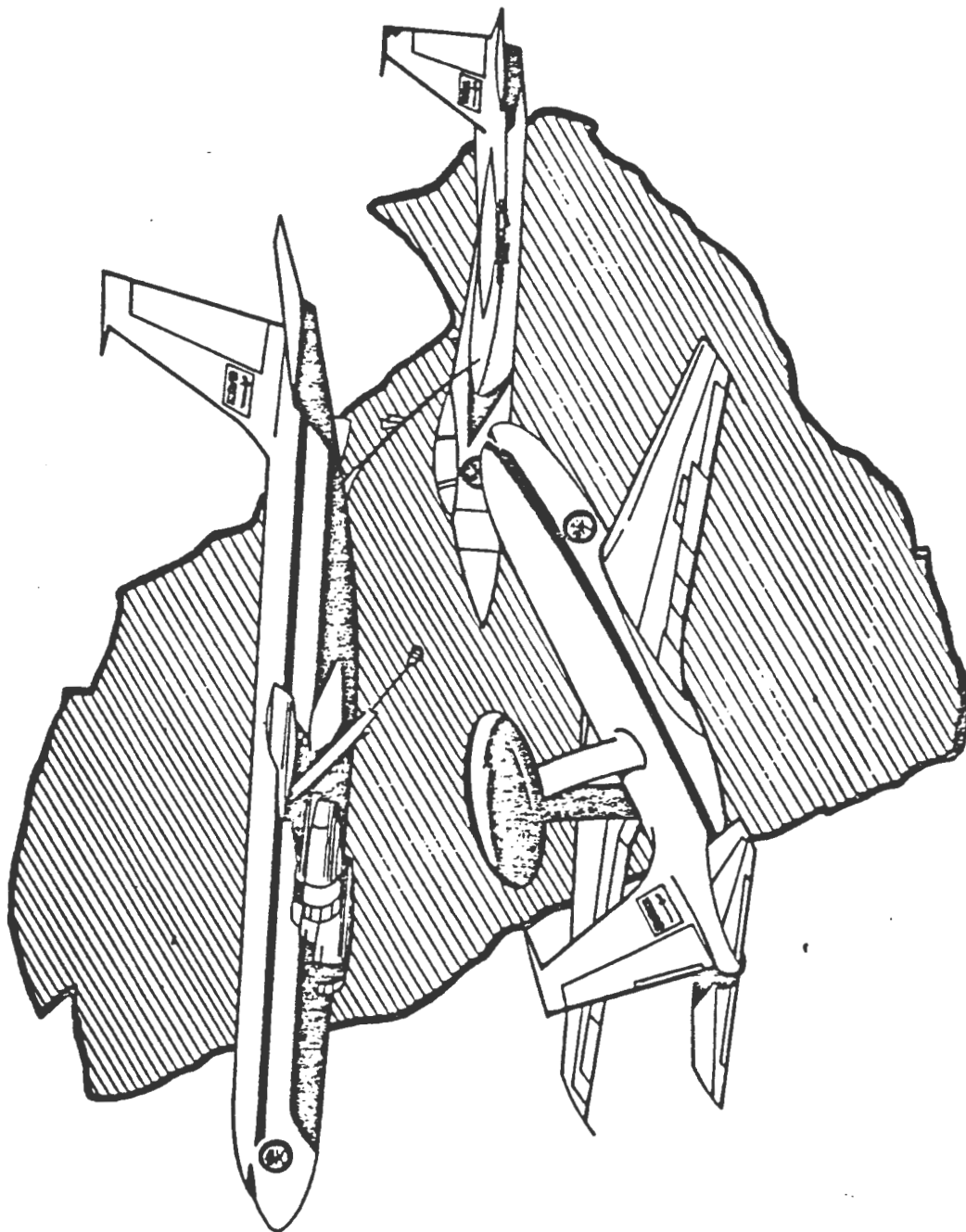
SLIDE #1  
"TITLE"

THIS BRIEFING IS A TECHNICAL DESCRIPTION OF THE SAUDI "ENHANCEMENT PACKAGE." THESE ENHANCEMENTS ARE NEEDED TO STRENGTHEN SAUDI AIR DEFENSES AGAINST A MUTUALLY PERCEIVED, INCREASING THREAT.

ONCE FORMAL NOTIFICATION HAS BEEN GIVEN TO THE CONGRESS, SENIOR ADMINISTRATION OFFICIALS WILL PROVIDE TESTIMONY TO BOTH HOUSE AND SENATE COMMITTEES ON THE POLITICAL AND GEO-STRATEGIC ASPECTS OF THE PROPOSED SALE.

15 Aug 5

# SAUDI ARABIAN ENHANCEMENTS



SLIDE #2  
PACKAG

IN ORDER TO PROVIDE FOR THE ADEQUATE DEFENSE OF THE KINGDOM OF SAUDI ARABIA, THE ADMINISTRATION WILL PROPOSE THE SALE OF THESE ITEMS - THE E-3A AWACS, THE KC-707 TYPE INFLIGHT REFUELING TANKER AIRCRAFT, CONFORMAL FUEL TANKS FOR THE F-15S, AND THE IMPROVED AIM-9L SIDEWINDER MISSILE.

# **ROYAL SAUDI AIR FORCE ENHANCEMENT PACKAGE**

- **E-3A AWACS**
- **KC-707 TANKER AIRCRAFT**
- **CONFORMAL FUEL TANKS**
- **AIM-9L SIDEWINDER MISSILES**

SLIDE #3  
EUROPE/  
SAUDI

A LITTLE UNDERSTOOD FACT, IS THAT SAUDI ARABIA IS A BIG COUNTRY. IN, COMPARISON TO EUROPE, THE SAUDI PENINSULA COVERS THE ENTIRE CONTINENT. IN BRITAIN AND GERMANY, THE U.S. HAS OVER TEN MAIN OPERATING AIRBASES AND SEVERAL FORWARD OPERATING BASES. ADDITIONALLY, NATO HAS TWICE AGAIN AS MANY BASES. BY CONTRAST, SAUDI ARABIA WILL BE DEFENDED BY F-15S FROM ONLY THREE MAIN OPERATING BASES...AT DHAHRAN, TAIF, AND KHAMIS MUSHAYT.



FURTHER ILLUSTRATION OF THE SIZE OF SAUDI ARABIA CAN BE SEEN WITH THIS OVERLAY ON THE CONTINENTAL U.S. SAUDI ARABIA COVERS AN AREA EQUAL TO THE U.S. EAST OF THE MISSISSIPPI.

AT THE SAME TIME, THE KINGDOM HAS A POPULATION OF JUST OVER 8 MILLION, ONLY SLIGHTLY LARGER THAN THE POPULATION OF NEW YORK.

SAUDI ARABIA FACES POTENTIAL ENEMIES ARE IN ALL DIRECTIONS...AND, LOOMING OVER THE ENTIRE AREA, RUSSIAN FORCES ARE POISED BUT 700 MILES AWAY.

DEFENDING THIS VAST AREA AGAINST WIDELY SEPARATED THREATS, WITH LIMITED MILITARY MANPOWER IS THE PECULIAR PROBLEM WHICH SAUDI MILITARY PLANNERS MUST FACE. DEFENDING A COUNTRY OF THIS SIZE, WITH 60 F-15S AND 80 F-5S, STATIONED AT THREE REMOTE BASES, REQUIRES EXTRAORDINARY MEASURES, ESPECIALLY IN THE FACE OF A GROWING THREAT. FOR EXAMPLE, IF DHAHRAN WERE KNOCKED OUT -

-- A LIKELY SITUATION IN THE EVENT OF AN ATTACK ON THE OIL COMPLEXES

-- DEFENDING THE OIL FACILITIES FROM TAIF OR KHAMIS WOULD BE LIKE DEFENDING CHICAGO FROM WICHITA OR DALLAS.

-- DURING PERIODS OF INCREASED TENSION SORTIES FROM THE NEAREST BASE WOULD STRETCH THE LIMITED FORCES THIN AND THOSE RESOURCES WOULD RAPIDLY BE DEPLETED.

-- IF FLOWN FROM CROSS COUNTRY BASES (1 1/2 HOURS AWAY) THREE HOURS OF FLYING IS REQUIRED JUST TO GET TO AND FROM THE CONTESTED AREA. CONSEQUENTLY, MEASURES MUST BE TAKEN TO INCREASE EFFECTIVE TIME ON STATION BY INCREASING THE FUEL AVAILABLE.

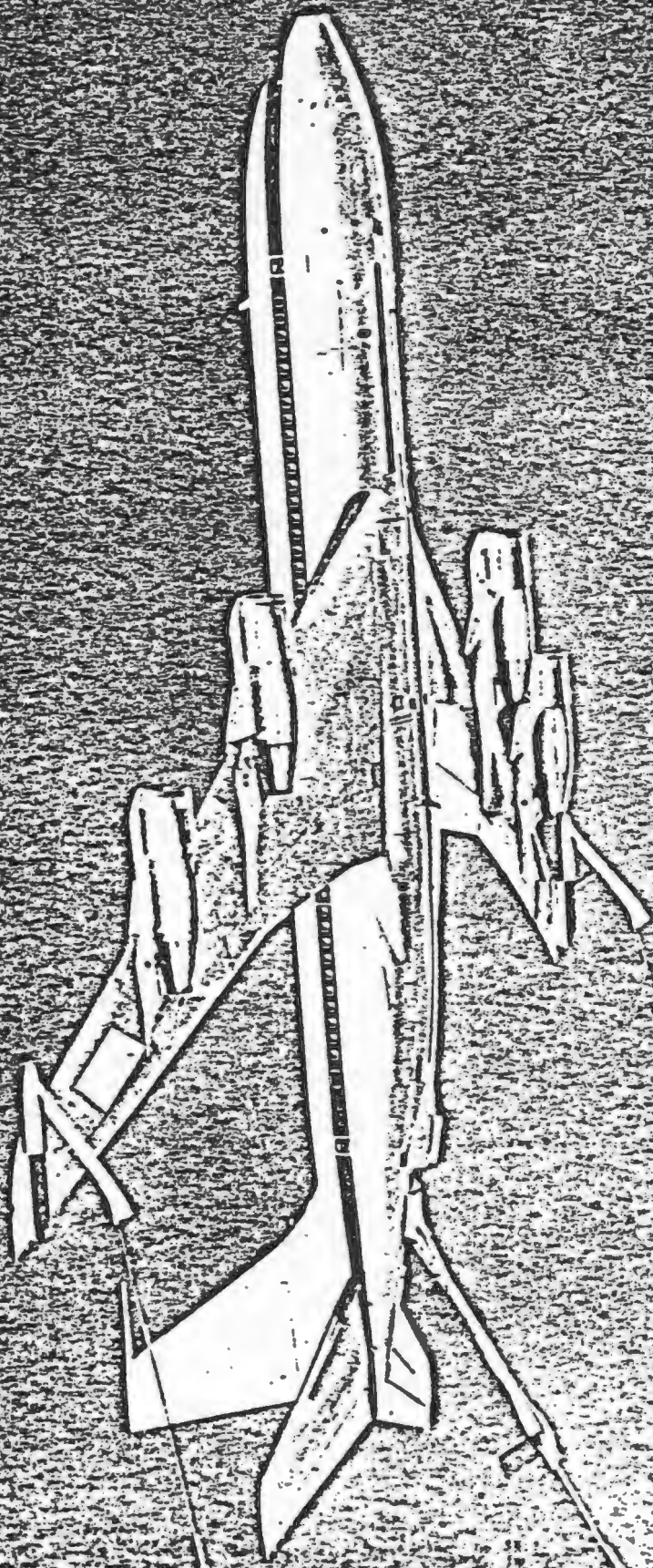
SLIDE #4  
U.S./  
SAUDI



SLIDE #5  
"KC-707"

WE PROPOSE TO PROVIDE AN AIRBORNE REFUELING CAPABILITY WITH KC-707 TANKERS. THE KC-707 PERMITS THE F-15 TO ONLOAD THE FUEL NEEDED TO STAY AIRBORNE LONGER. WITH THIS ABILITY, THE ONLY LIMITATION ON FLYING TIME IS THE ENDURANCE OF THE PILOT. THE KC-707 IS ALSO OUTFITTED WITH DROGUES FOR REFUELING THE SAUDI F-5S. THIS IS SIGNIFICANT IN THAT IT MAKES THE SYSTEM COMPATIBLE WITH OUR NAVY WHICH ALSO USES THE PROBE AND DROGUE TECHNIQUE FOR AERIAL REFUELING.

THIS IS ONLY HALF OF THE SOLUTION, HOWEVER. SHOULD THE SAUDIS BE THREATENED, IT IS PROBABLE THAT THE THREAT WOULD BE SUSTAINED....OR EXTENDED, AND SUPPORT WILL BE REQUIRED FROM ALL THREE BASES. AERIAL REFUELING RESOURCES, IF AVAILABLE, WILL BE STRETCHED THIN. CONSEQUENTLY, IT IS NECESSARY TO INCREASE THE AIRCRAFT'S BASIC RANGE/ENDURANCE THROUGH INCREASED ON BOARD FUEL CAPACITY.



**KC-707**

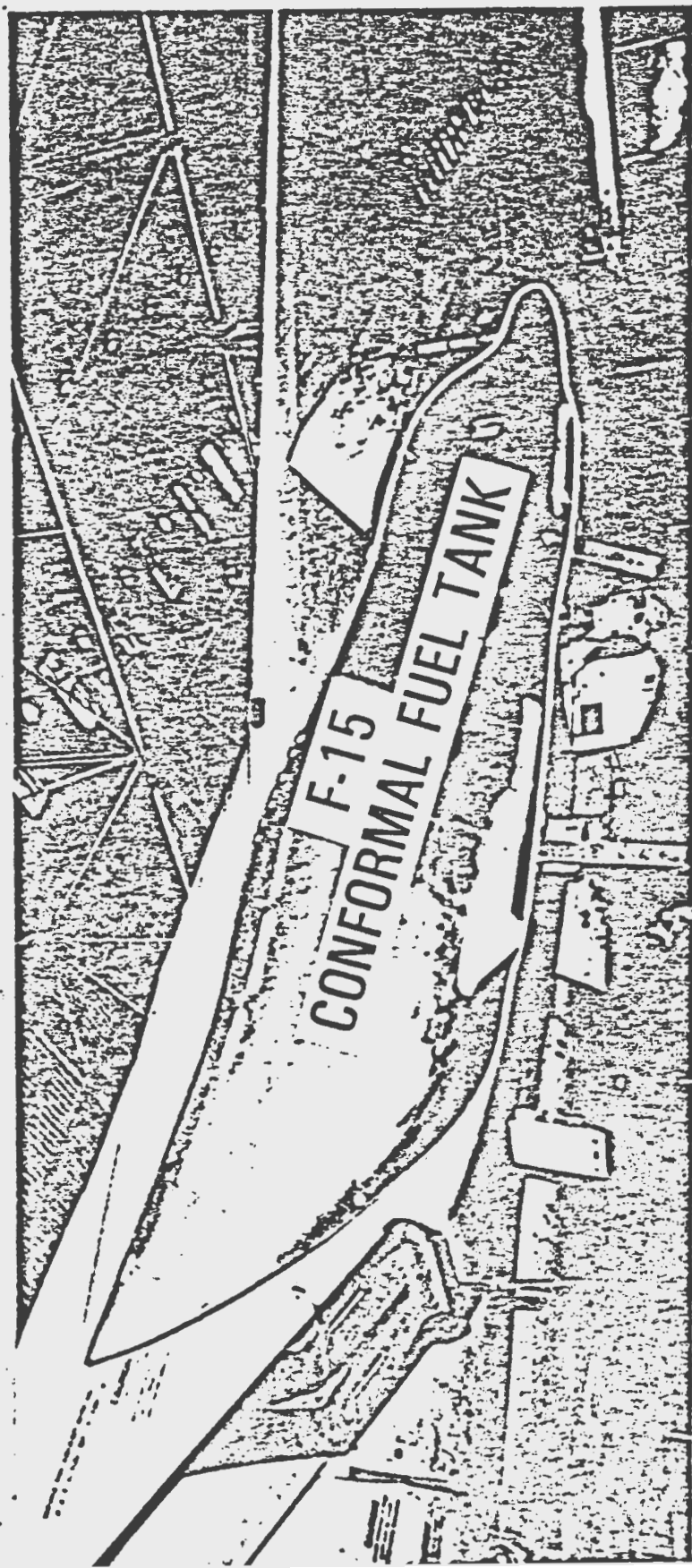
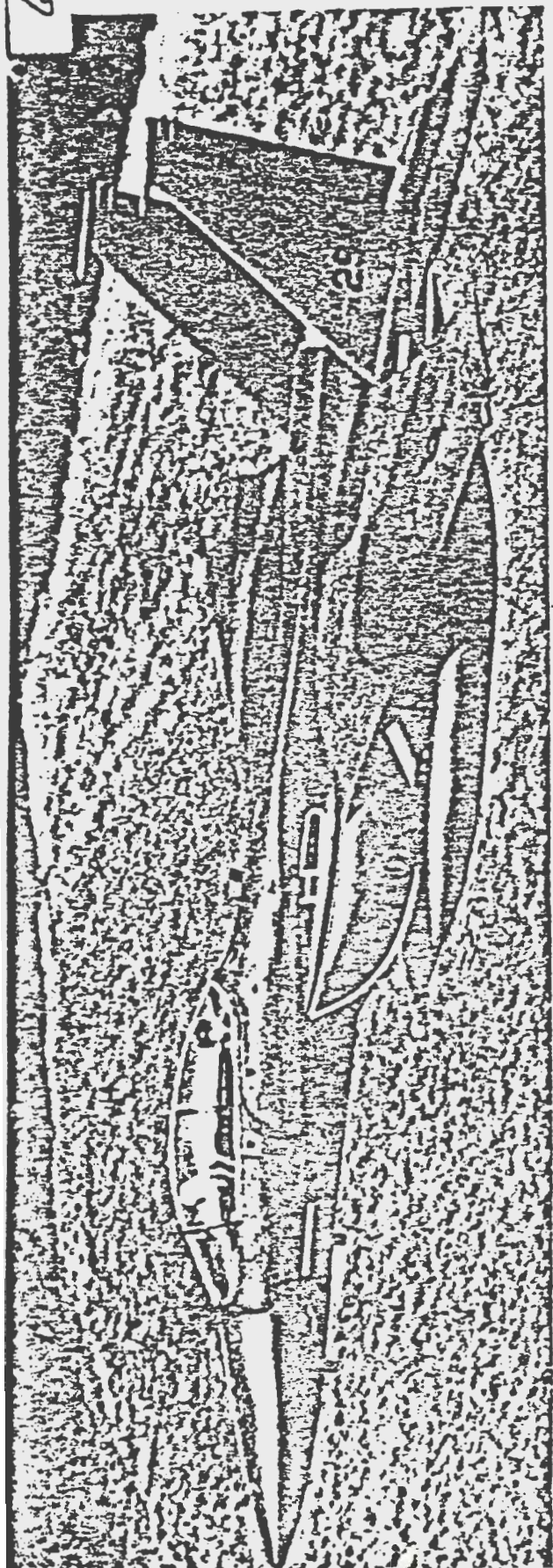
**AERIAL REFUELER**

**BOOM FOR F-15s DROGUES FOR F-5s**

SLIDE #6  
"CFT"

THEREFORE, WE HAVE PROPOSED PROVIDING THE SAUDIS WITH CONFORMAL FUEL TANKS, WHICH PROVIDE AN ADDITIONAL 9,750 POUNDS OF FUEL. DEPENDING ON THE MISSION PROFILE, THEY INCREASE RANGE AND ENDURANCE BY 40-70 PERCENT.

ANOTHER VITAL ELEMENT OF THE PROPOSED ENHANCEMENT PROGRAM, IS THE AIM-9L SIDEWINDER MISSILE.



F-15  
CONFORMAL FUEL TANK

F-15  
CONFORMAL FUEL TANK

SLIDE #7  
"AIM-9L"

WHAT THE SIDEWINDER DOES, VERY SIMPLY, IS PERMIT DEFENDING FORCES TO CONFRONT A THREAT HEAD-ON. CONSEQUENTLY, MORE TARGETS CAN BE ENGAGED AND VULNERABILITY OF THE F-15 IS ALSO GREATLY REDUCED SINCE THEY DON'T HAVE TO PERFORM MANEUVERS WHICH INCREASE THEIR EXPOSURE TO THE INBOUND THREAT. THE INCREASED ABILITY TO ENGAGE AND DESTROY SUPERIOR NUMBERS OF ATTACKING AIRCRAFT QUICKLY, IS ESSENTIAL IF A THREAT IS TO BE STOPPED BEFORE IT HAS SUCCEEDED IN ITS MISSION, RATHER THAN AFTERWARD.

THE SAUDIS MUST BE ABLE TO DEFEAT AN ATTACK RATHER THAN MERELY AVENGE IT.

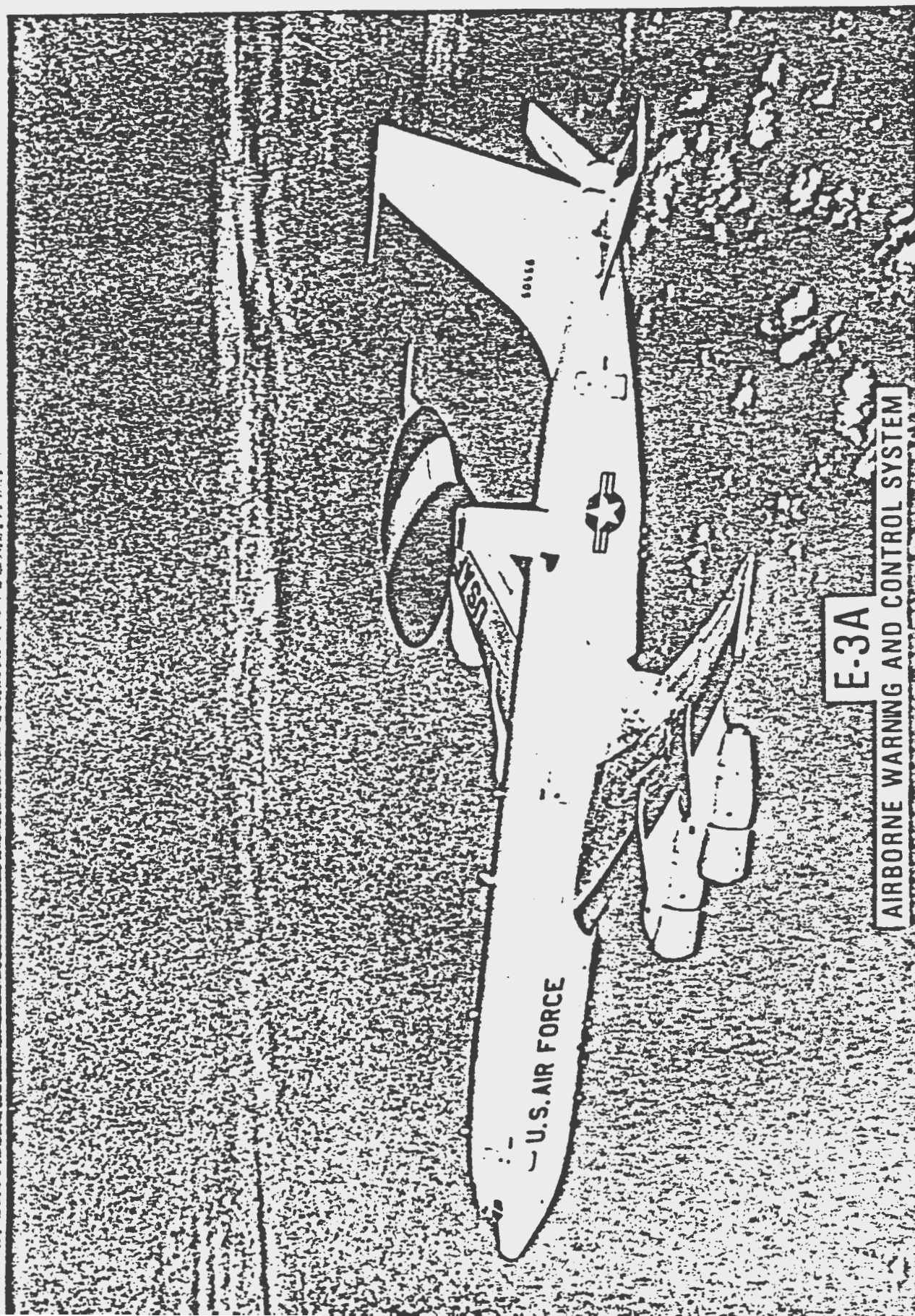


AIM-9L  
SIDEWINDER MISSILE

BUT FIRST, THE SAUDI DEFENSE FORCES MUST BE ABLE TO SEE A THREAT THE INSTANT IT PRESENTS ITSELF, IN ORDER TO DETER OR, IF NECESSARY, TO DESTROY THAT THREAT.

SLIDE #8  
"AWACS"

AFTER THOROUGH STUDY, THE USG DETERMINED THAT THE ENTIRE EARLY WARNING SYSTEM NEEDED IMPROVEMENT. THE MOST EFFECTIVE MEANS OF DOING THAT IS THROUGH A COMBINATION OF THE E-3A AWACS AND AN IMPROVED GROUND RADAR SYSTEM.



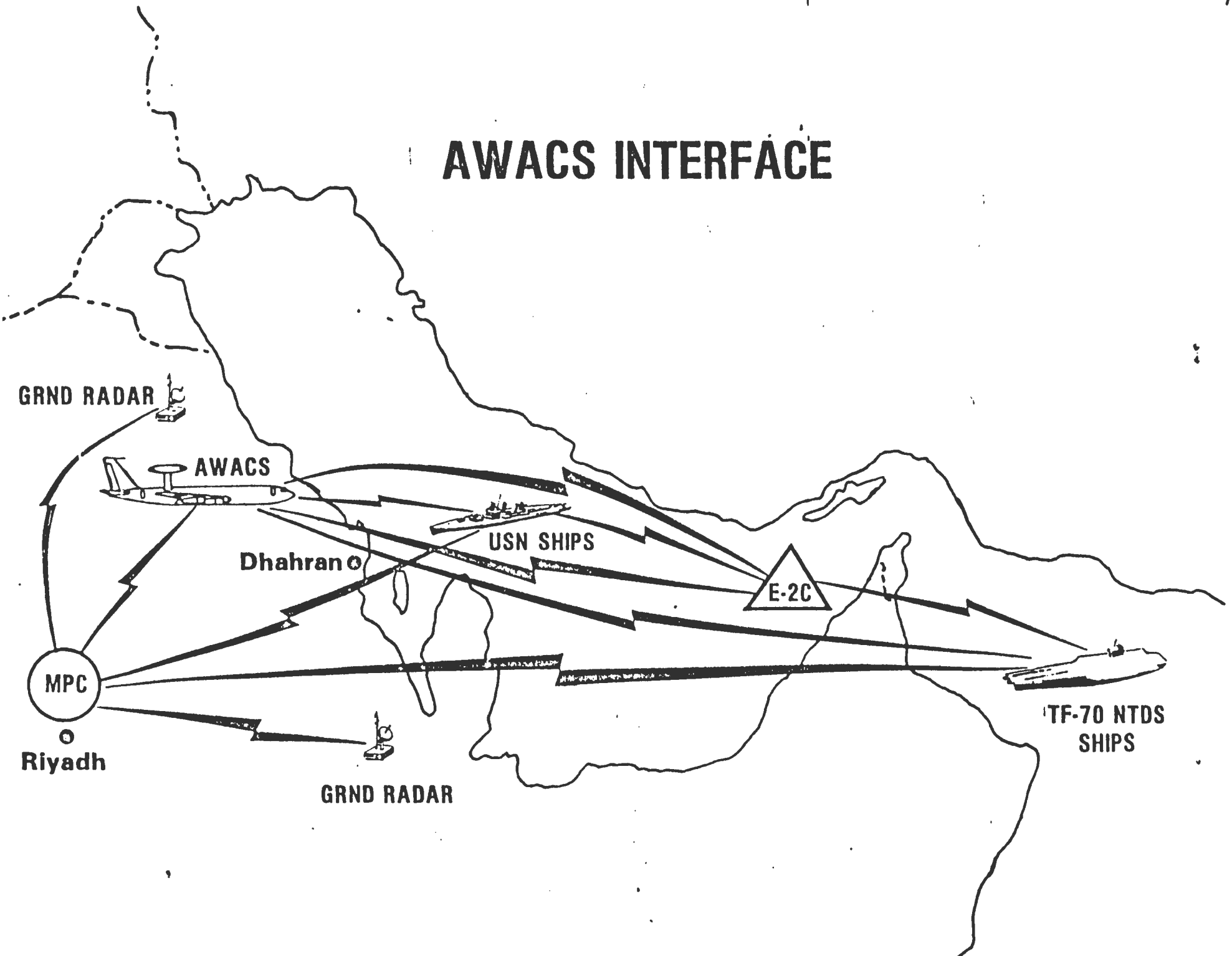
AN IMPROVED RADAR GROUND SYSTEM IS NECESSARY TO PROVIDE COVERAGE NOT AVAILABLE WITH THE FIVE ANTIQUATED BRITISH MARCONI RADARS NOW IN SAUDI ARABIA. THE PROPOSED GROUND RADAR NETWORK WILL BE USED BOTH BY CIVIL AND MILITARY AVIATION AND WILL PROVIDE SOME IMPROVEMENT IN LOW LEVEL COVERAGE.

SLIDE #9  
INTERFACE

HOWEVER, DUE TO THE PROXIMITY OF THE THREAT THIS LOW LEVEL COVERAGE IS STILL INSUFFICIENT TO PROVIDE THE NECESSARY WARNING. THE AWACS IS NEEDED TO AUGMENT THE LOW LEVEL COVERAGE OF THE PROPOSED GROUND SYSTEM IN CONTESTED AREAS. THIS ENTIRE SYSTEM WILL BE LINKED THROUGH A MESSAGE PROCESSING CENTER.

AN ADDED BENEFIT OF THIS ARRANGEMENT FOR THE U.S. WILL BE THE ABILITY OF THE SYSTEM TO INTEROPERATE WITH USN SHIPS IN THE ARABIAN GULF, U.S. TASK FORCE 70, AND U.S. NAVY E-2CS WHEN THEY ARE WITHIN RANGE.

# AWACS INTERFACE



SLIDE #10  
"AWACS"

THE E-3A SENTRY OR AWACS PROVIDES A MOBILE AND RESPONSIVE RADAR PLATFORM FOR AIR SURVEILLANCE. THE AIRCRAFT DESIGN IS BASED ON THE BOEING 707-320B AIRFRAME. MAJOR EXTERNAL DIFFERENCES INCLUDE THE 30 FOOT DIAMETER ROTODOME, AND PRATT AND WHITNEY TURBOFAN ENGINES WHICH ARE THE SAME AS THOSE ON THE C-141, AND A RECEPTACLE FOR INFLIGHT REFUELING.

THE E-3A NORMALLY OPERATES AN ALTITUDE OF 29,000 FEET AND A CRUISE SPEED OF 0.72 MACH. IT CAN FLY FOR APPROXIMATELY 9-11 HOURS WITHOUT INFLIGHT REFUELING, AND UP TO 22 HOURS WITH AWACS INFLIGHT REFUELING. THE NORMAL CREW OF 17 CONSISTS OF 4 FLIGHT CREWMEMBERS AND 13 MISSION CREWMEMBERS. THE MISSION CREW HAS 9 MULTIPURPOSE CONSOLES WHICH CAN BE USED FOR SURVEILLANCE AND CONTROL OF THE AIR DEFENSE SITUATION WHILE ON BOARD RADIOS PROVIDE VOICE AND DATA LINK CAPABILITY. HOWEVER, THE AWACS DOES NOT POSSESS ANY SPECIAL CAPABILITY FOR GATHERING ELECTRONIC OR SIGNAL INTELLIGENCE.

# E-3A AWACS

10

- **ENDURANCE**

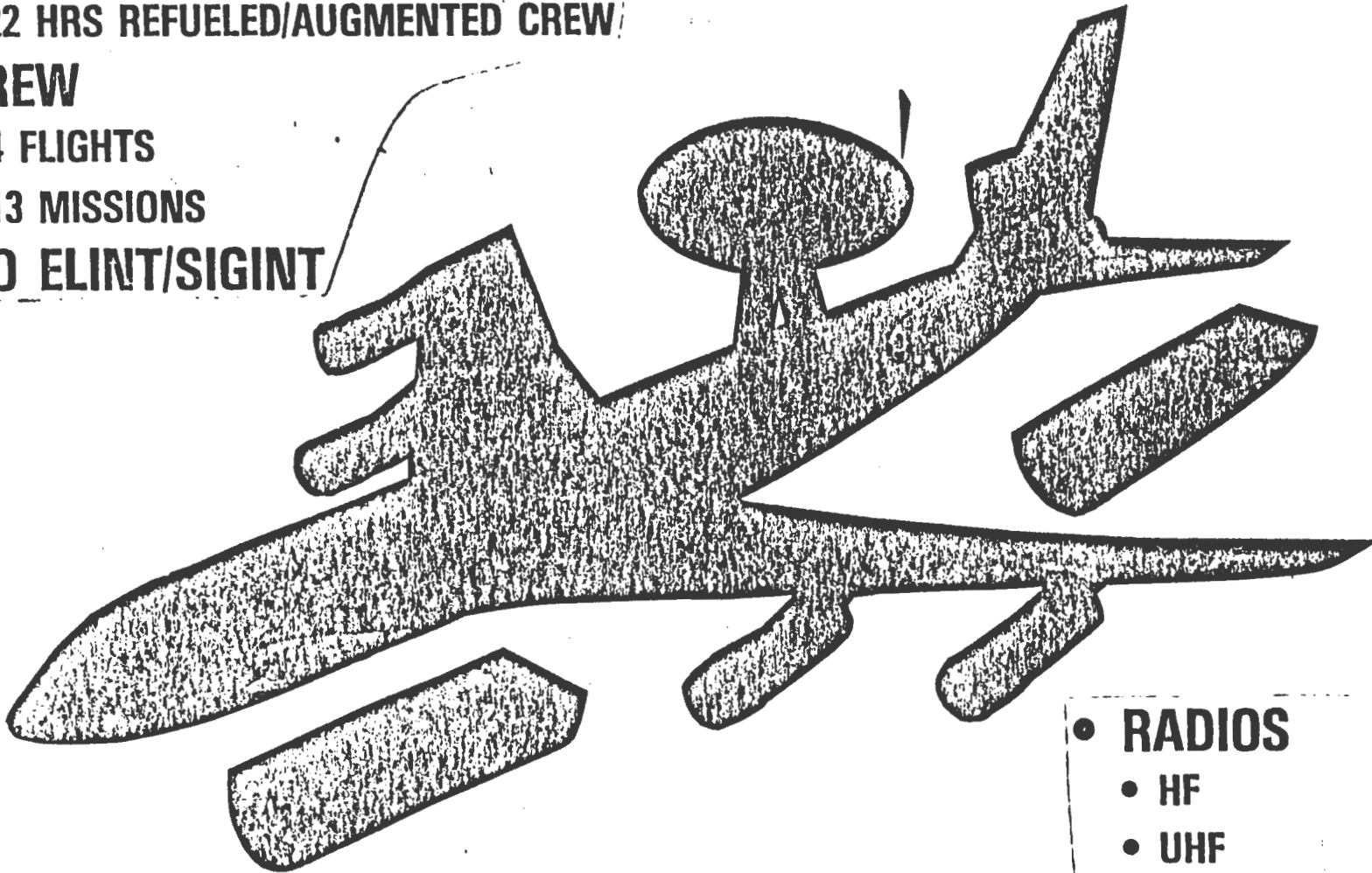
- 11 HRS UNREFUELED
- 22 HRS REFUELED/AUGMENTED CREW

- **CREW**

- 4 FLIGHTS
- 13 MISSIONS
- **NO ELINT/SIGINT**

- **OPERATING ALTITUDE**

- 29,000 FEET



- **SPEED**

- 0.72 MACH

- **CONSOLES**

- 9 MULTIPURPOSE

- **RADIOS**

- HF
- UHF
- VHF
- TADIL-A/C
- SECURE

SLIDE #11  
RADAR  
CAPABILITY

THE E-3A IS SIMPLY A RADAR THAT HAS BEEN ELEVATED TO INCREASE ITS LINE OF SIGHT. THIS EXTENDS LOW LEVEL COVERAGE OUT TO THE NEW RADAR HORIZON OF APPROXIMATELY 208 NM. SINCE THE E-3A RADAR LOOKS DOWN, IT MUST SEPARATE OUT THE TARGET RETURNS FROM CLUTTER SIGNALS REFLECTED FROM THE EARTH'S LAND OR SEA SURFACE. THE PULSE DOPPLER MODE IS USED FOR DETECTING AIRBORNE TARGETS OUT TO THE HORIZON. IT DEPENDS ON THE FACT THAT THE RETURN SIGNALS FROM HIGH-SPEED AIRCRAFT TARGETS ARE SHIFTED IN FREQUENCY FROM THE REFLECTIONS FROM THE STATIONARY GROUND. TARGETS MUST BE HIGH SPEED TO BE DETECTED IN THIS MODE.

THE MARITIME MODE OF THE RADAR IS A MODIFICATION OF THE PULSE MODE USED TO DETECT SHIPS WITHIN THE HORIZON, AGAINST A BACKGROUND OF RADAR REFLECTIONS FROM THE SEA SURFACE. THIS IS POSSIBLE BECAUSE WATER ABSORBS MUCH OF THE RADAR ENERGY WHILE LAND REFLECTS THE ENERGY, CAUSING EXCESSIVE GROUND CLUTTER. THE RADAR USES PROCESSING LOGIC TO SEPARATE TARGET SIGNALS FROM REFLECTED SEA CLUTTER AND DISPLAYS ONLY THE SHIPS. DUE TO THE EXCESSIVE GROUND RETURN OVER LAND, IT IS IMPOSSIBLE TO DISTINGUISH GROUND TARGETS.

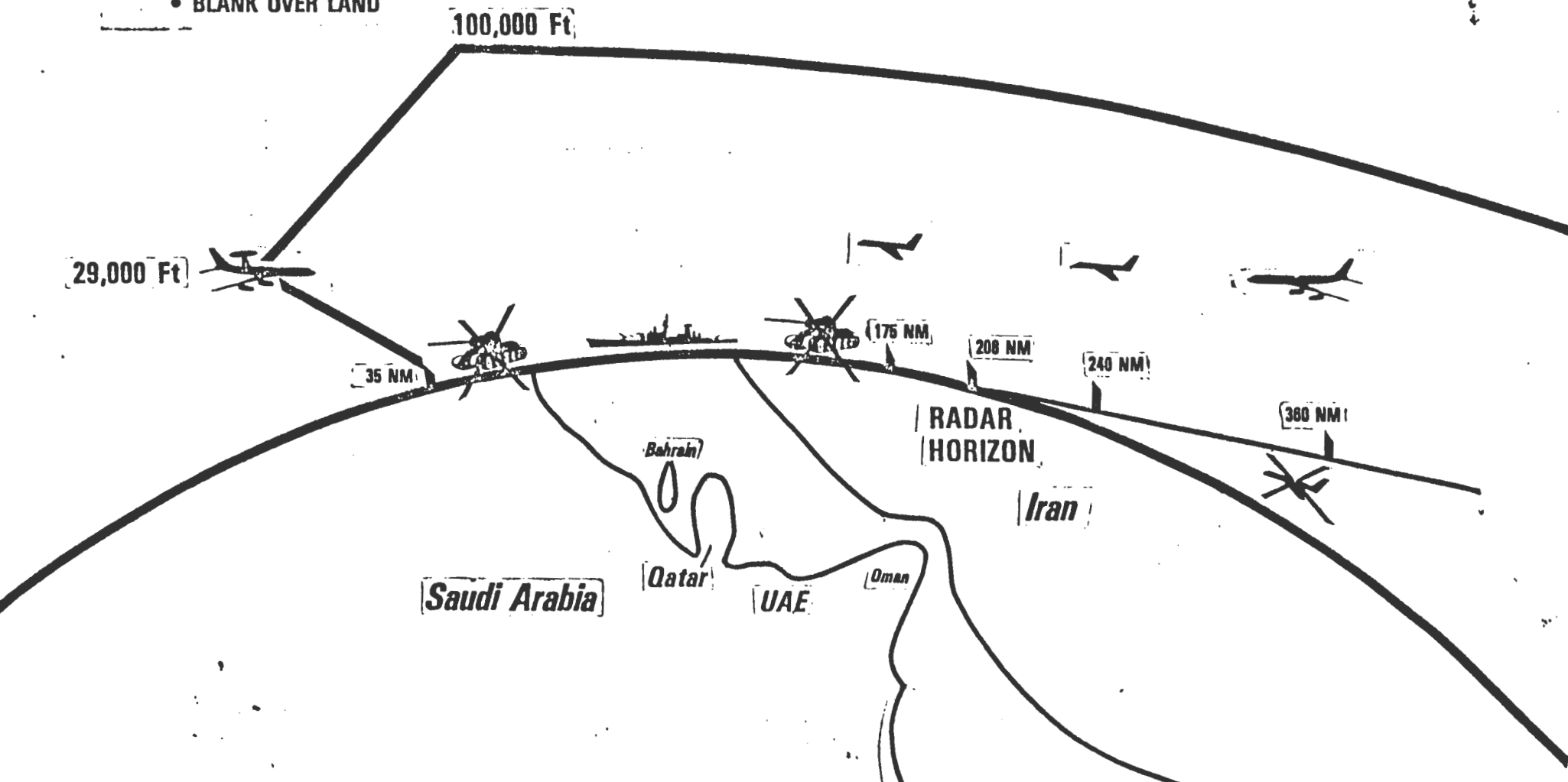
THE AWACS RADAR PROVIDES A DETECTION CAPABILITY OF SMALL SIZE TARGETS OUT TO 175 NAUTICAL MILES; MEDIUM SIZE TARGETS OUT TO 240 NAUTICAL MILES; AND LARGER TARGETS OUT TO 360 NAUTICAL MILES. OF COURSE, ANY TARGET BELOW THE LINE-OF-SIGHT (BEYOND THE RADAR HORIZON) WILL NOT BE DETECTED.

## RADAR MODES

- **PULSE (BTH)**
  - USED INSIDE RADAR HORIZON (25-208NM)
  - DETECTS ONLY AIRCRAFT
- **PULSE (BTH)**
  - USED BEYOND RADAR HORIZON (208NM)
  - DETECTS ONLY AIRCRAFT
- **MARITIME (PULSE)**
  - USED 35-208NM
  - DETECTS SHIPS AND AIRCRAFT
  - BLANK OVER LAND

## • CANNOT DETECT GROUND TARGETS

- BTH ONLY USED BEYOND THE HORIZON (WOULD DISPLAY EXCESSIVE CLUTTER IF USED INSIDE THE HORIZON)
- MARITIME NOT USED OVERLAND DUE TO EXCESSIVE CLUTTER (LAND REFLECTS MORE RADAR ENERGY THAN WATER AND DISPLAYS EXCESSIVE CLUTTER)



SLIDE #12  
AWACS  
CAPABILITY

THIS SLIDE SIMPLY SUMMARIZES WHAT THE AWACS CAN AND CANNOT DO

- IT CAN SEE LOW LEVEL AIRCRAFT, BUT NOT BEYOND 200 MILES
- IT CAN SEE HIGH SPEED TARGETS, BUT NOT TANKS, TROOPS OR GROUND TARGETS
- IT CAN SEE SHIPS AT SEA, BUT NOT TANKS ON THE DESERT
- IT DIPLAYS A STROBE ON THE SCOPE WHEN IT IS BEING JAMMED, BUT IT CANNOT PERFORM ANY JAMMING
- IT CAN PERFORM COMMAND AND CONTROL FUNCTIONS AND CONTROL FIGHTER INTERCEPTS
- IT DOES NOT, HOWEVER, HAVE ANY INTELLIGENCE EQUIPMENT

#12

## AWACS CAPABILITIES

### CAN

- SEE LOW LEVEL AIRCRAFT
- SEE HIGH SPEED TARGETS
- SEE SHIPS AT SEA (MARITIME MODE)
- SEE RADAR JAMMING
- CONTROL FIGHTER AIRCRAFT INTERCEPTS

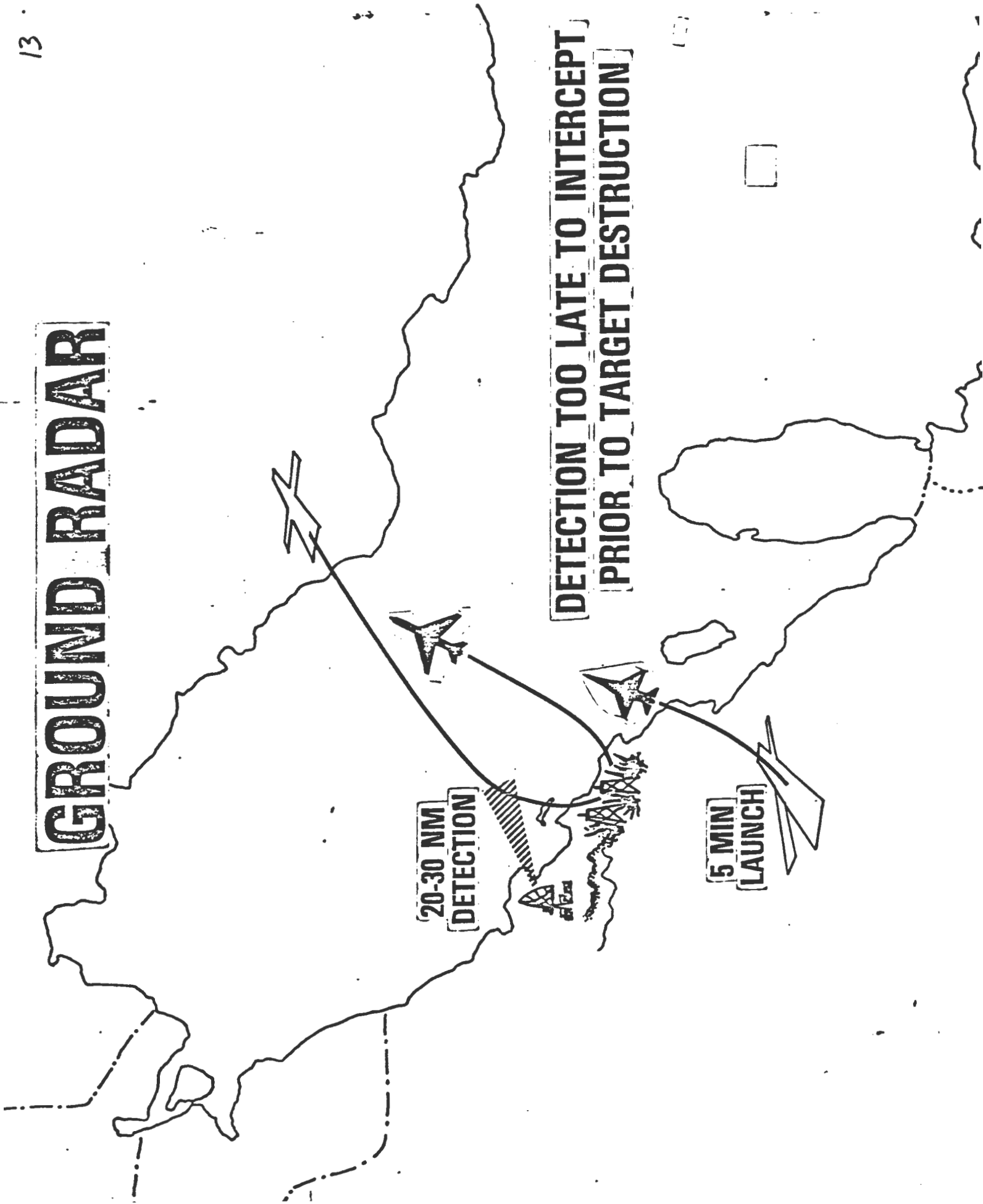
### CAN'T

- SEE BEYOND 200 MILES (LOW ALT)
- SEE TANKS, TROOPS, GROUND TARGETS
- SEE TANKS ON THE DESERT
- PERFORM JAMMING
- COLLECT SIGNAL/ELECTRICAL INTELLIGENCE DATA
- TAKE PHOTO'S

SLIDE #13  
GRND RADAR

THE ABSOLUTE NEED FOR AN AWACS TO PROVIDE A CREDIBLE AIR DEFENSE FOR SAUDI ARABIA IS EASILY SHOWN THROUGH A GRAPHIC DEPICTION OF REACTION TIMES AVAILABLE WITH AND WITHOUT THE AWACS. THE SAUDI GROUND-BASED RADARS ARE LIMITED BY LINE-OF-SIGHT AND PROVIDE A LOW-LEVEL DETECTION RANGE OF 20-30 MILES (EARTH CURVATURE LIMITS LINE-OF-SIGHT HORIZON). THIS DOES NOT PROVIDE ADEQUATE TIME FOR SAUDI DEFENSES TO REACT AND INTERCEPT A THREAT BEFORE IT REACHES ITS TARGET. ON A LOW LEVEL ATTACK AGAINST THE OILFIELDS THE GROUND RADAR WOULD PROVIDE 2-4 MINUTES WARNING OF A TARGET APPROACHING AT 4-600 KNOTS. ASSUMING IT TOOK TWO MINUTES TO IDENTIFY THE TARGET AND FIVE MINUTES FOR THE INTERCEPTORS TO BECOME AIRBORNE (BEST CAPABILITY), THE BEST THEY COULD DO WOULD BE TO INTERCEPT THE STRIKE AIRCRAFT AFTER THEY HAVE DESTROYED THE TARGET AND WERE ON THEIR WAY HOME.

# GROUND RADAR

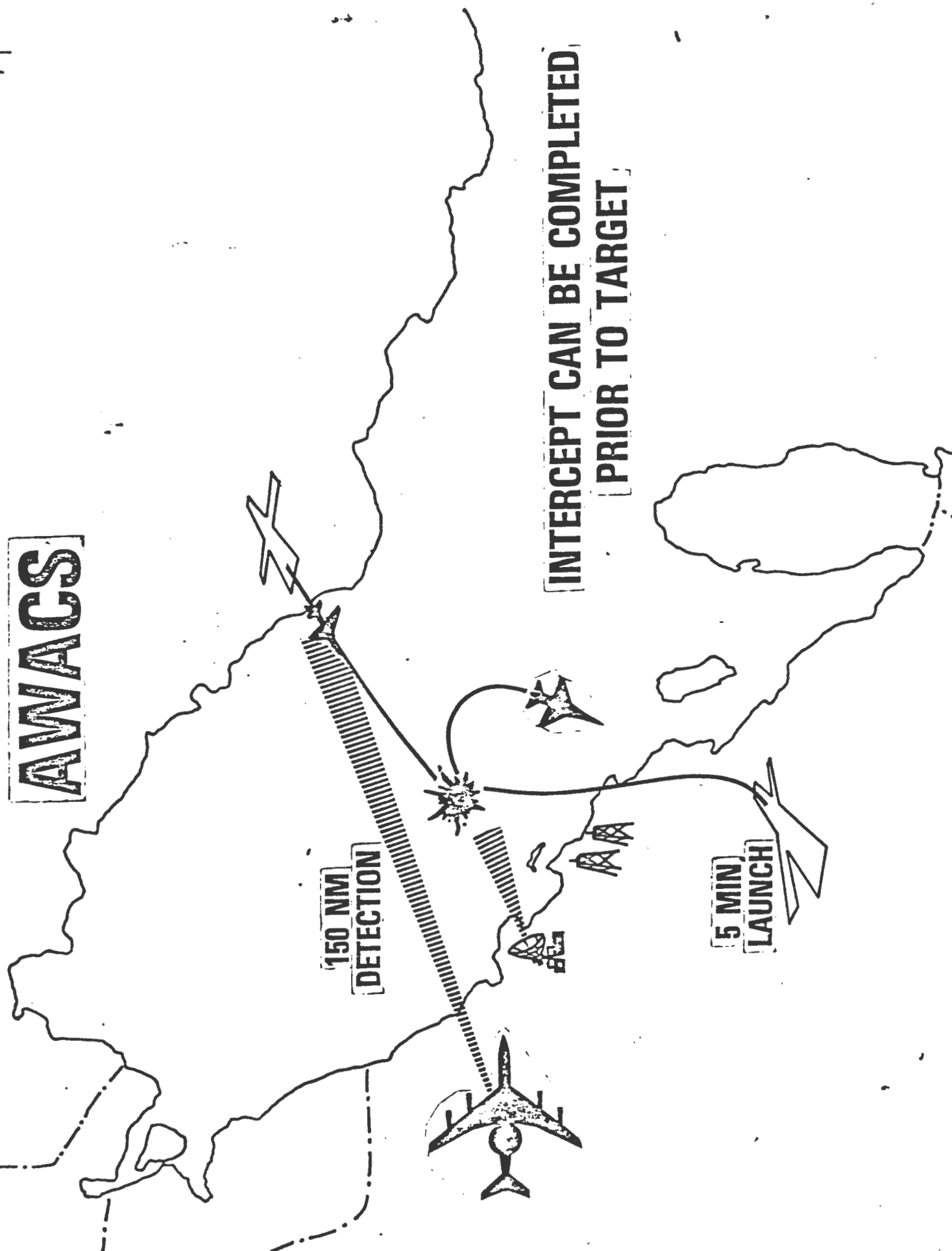


SLIDE #14  
AWACS  
COVER

IF THE AWACS IS ON-STATION IN THE AREA, THE SITUATION WOULD BE GREATLY IMPROVED. WITH THE AWACS' INCREASED DETECTION CAPABILITY, IT COULD ORBIT 50 MILES INSIDE THE BORDER AND STILL DETECT THE INTRUDER 150 NAUTICAL MILES FROM ITS TARGET. USING THE SAME TWO MINUTE REACTION TIME AND FIVE MINUTES SCRAMBLE TIME, THE INTRUDER WOULD STILL BE 80-90 MILES FROM ITS TARGET WHEN THE INTERCEPTORS BECOME AIRBORNE. INTERCEPT IN THIS SITUATION WOULD OCCUR 40-50 MILES BEFORE THE INTRUDER REACHES ITS TARGET.

ANOTHER SIGNIFICANT POINT IS THAT SURFACE-TO-AIR MISSILES ALSO REQUIRE SOME ADVANCE WARNING OF AN ATTACK TO BRING THEIR SYSTEMS UP. THE GROUND RADARS DO NOT PROVIDE THIS NEEDED TIME.

# AWACS



INTERCEPT CAN BE COMPLETED  
PRIOR TO TARGET