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# Naval Aviation in Soviet Antiship Attack Planning

**An Intelligence Assessment**

~~Top Secret~~

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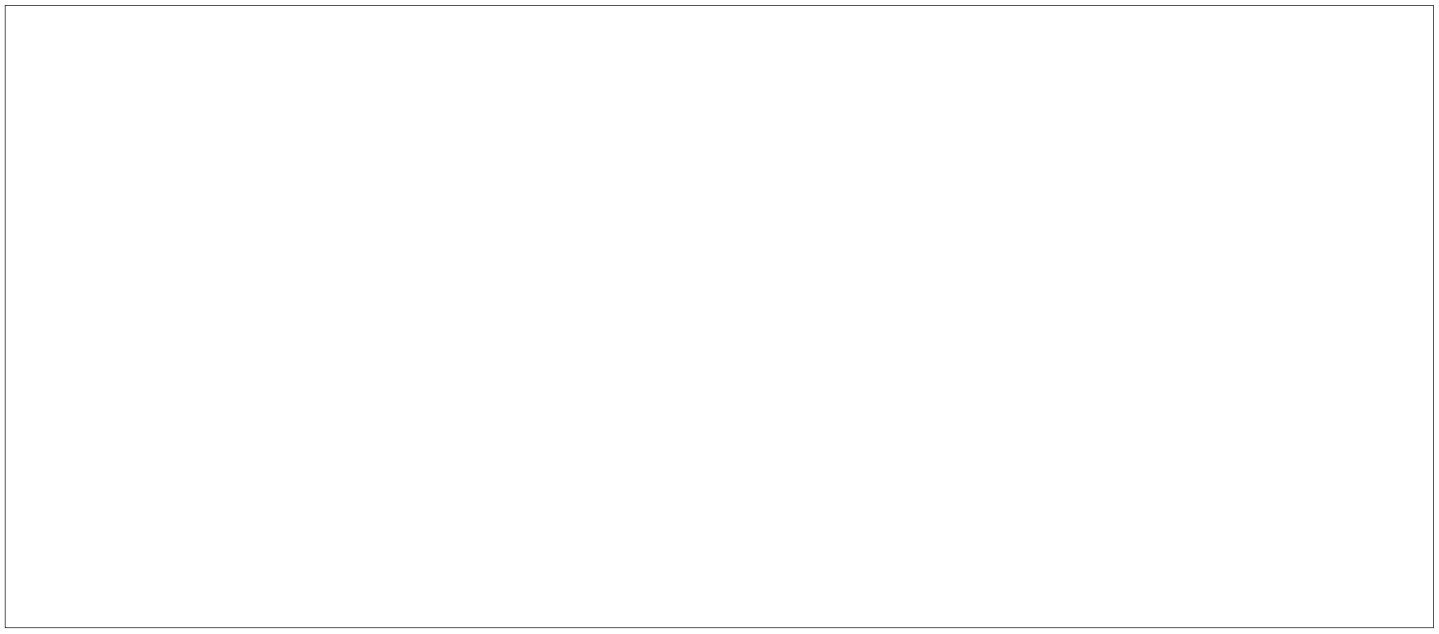

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# Naval Aviation in Soviet Antiship Attack Planning

**An Intelligence Assessment**

*Information available as of 1 July 1979 has been used in the preparation of this report.*

The author of this assessment is Soviet Strategic Forces Division, Office of Strategic Research. Comments and queries are welcome and may be directed to

This paper has been coordinated with the Office of Weapons Intelligence, the Office of Scientific Intelligence, and the National Intelligence Officer for Conventional Forces.



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## Preface

Soviet wartime naval strategy places heavy emphasis on attacking Western aircraft carriers and other important surface ships. This report focuses on the naval air forces for antiship attack. It describes those forces, discusses the concepts which guide Soviet planning for antiship attacks by them, and examines the capability of Naval Aviation to carry out such attacks in various operational situations. Special emphasis is placed on antiship attacks during a theater war with NATO because Soviet antiship strategy is keyed to such a war.

The evidence for the judgments in this paper comes primarily from classified Soviet military writings





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# Naval Aviation in Soviet Antiship Attack Planning

## Key Judgments

Naval Aviation is one of the two principal Soviet forces for attacking enemy surface ships; the other consists of attack submarines. Naval Aviation has aircraft for antiship attacks medium bombers—including Backfires—armed with air-to-surface missiles, medium bombers, fighter-bombers, and vertical takeoff and landing fighters, which carry only bombs or short-range tactical missiles, and reconnaissance, electronic countermeasures, and tanker aircraft which normally do not carry offensive weapons. The VTOL fighters, which operate from Kiev-class antisubmarine aircraft carriers, probably do not figure prominently in Soviet antiship attack planning because of the range limitation of these aircraft and their inability to carry large standoff missiles.

Soviet antiship strategy singles out the aircraft carrier as the highest priority target for attack because it would be the backbone of Western naval sea control and power-projection forces in conventional or theater nuclear war. Western amphibious ships probably rank close behind carriers in attack priority

Naval strike aircraft—especially the Backfire—have sufficient range to conduct antiship attacks in those areas where Warsaw Pact naval strategy calls for establishing initial sea control in a war with NATO and in some areas where Pact planning calls for denying NATO free use of the sea. Sea denial operations beyond the operational range of naval strike aircraft would be limited primarily to submarines.

In the Atlantic theater, antiship attacks by naval aircraft would be a major part of the Pact sea control mission in the Norwegian Sea. Naval aircraft might also perform some attacks in support of Pact sea denial operations in the Greenland–Iceland–United Kingdom gap, the North Sea, and possibly the English Channel

The Soviets plan to use naval aircraft for antiship attacks in the Mediterranean Sea to augment sea denial operations there by submarines and surface ships. From bases in the USSR, the Backfire can cover most of the Mediterranean. Badger attacks probably would be limited to the eastern Mediterranean.





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Antiship attacks by naval aircraft in the Pacific theater probably would be keyed to Soviet sea control operations in the Sea of Japan, Sea of Okhotsk, and in an area east of the Kamchatka Peninsula. Backfire and some Badger strikes might also be part of Soviet sea denial operations in the Philippine Sea, in an area east of the Kuril Islands, and in other selected areas within the operational range limits of the aircraft.

Antiship attacks by naval aircraft beyond these areas would depend on the nature of the conflict, and—except for the Arabian Sea—would require use of airfields outside the Warsaw Pact, which apparently are not currently available to Soviet strike aircraft

Soviet doctrine for antiship attacks by naval aircraft is flexible because each attack situation could present different operational requirements. Certain operational concepts, however, appear repeatedly in Soviet military writings

- Whenever possible, antiship attacks by Naval Aviation would be coordinated with attacks by other antiship forces, especially submarines and surface ships. It is unlikely, however, that all the various forces would strike simultaneously.

- Soviet planners would organize massive attacks by large numbers of aircraft against important targets such as aircraft carriers. During conventional war they probably would hold in reserve up to one-third of their strike aircraft for escalation to nuclear war.

Large-scale antiship attacks by Naval Aviation alone or in conjunction with other antiship forces would be highly complex operations. The degree of success the Soviets might expect against well-defended Western task groups is uncertain. It would depend on various factors, the most critical of which are how well the Soviet surveillance system located intended targets, the ability of strike crews to identify at long ranges the highest priority targets among a group of targets, and the extent to which strike aircraft survived encounters with Western air defenses prior to launching their weapons.



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Once enemy surface forces were detected, the Soviets still would be faced with the difficult task of identifying the various ships so that attacks could be directed at the highest priority targets. Such identification would be hard to obtain in wartime. The lack of accurate identification could result in attacks that are indecisive, particularly in a conventional war.

Western land-based and fleet air defenses are the primary obstacle to antiship attacks by Naval Aviation. Obsolescent Badger bombers probably would suffer heavy losses in attacks against well-defended Western task groups. The Backfire bombers—of which probably will be in Naval Aviation by the mid-1980s—are less vulnerable to air defenses because of their supersonic speed and low-altitude flight capabilities. Nevertheless, in a NATO–Warsaw Pact war Backfires also would probably suffer significant losses, depending on how well NATO air defenses were coordinated.

Soviet planners probably expect heavy aircraft losses in a war with NATO. The emphasis the Soviets place on seizing the initiative through massive strikes at the outset of a war probably reflects their concern that the overall capabilities for antiship attack by Naval Aviation would be reduced quickly through aircraft attrition.





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# Naval Aviation in Soviet Antiship Attack Planning (U)

## Soviet Antiship Strategy

Soviet antiship strategy is shaped by wartime requirements to deny enemy surface naval forces the use of certain seas and to assert Soviet use of other selected maritime areas. It is designed primarily to forestall attacks by Western surface forces on Warsaw Pact territory and Pact air, ground, and naval forces. Soviet

The primary Soviet forces for conducting antiship attacks are land-based naval aircraft and attack submarines. Aircraft of Long Range Aviation (LRA) and surface warships play a lesser antiship role in Soviet naval strategy, but these forces would participate in some antiship attacks. Soviet Frontal Aviation, the Coastal Defense Missile Forces of the Soviet Navy, the Rocket and Artillery Troops of the Soviet Ground Forces, and non-Soviet Warsaw Pact forces also would conduct antiship attacks under some conditions. Antiship forces other than Naval Aviation are described in the appendix.

### *Evolution*

The development of modern Soviet antiship strategy began in the early 1950s, largely in response to a perceived threat to the USSR from Western aircraft carriers. Carrier aircraft armed with nuclear weapons could attack the Soviet mainland from distances up to 1,000 nautical miles (nm). Having little capability at that time to deny aircraft carriers the use of the sea at such ranges, the Soviets embarked on a program to develop forces for attacking carriers well out to sea, before they could launch their aircraft. The program hinged on the development of antiship cruise missiles and the aircraft, submarines, and surface ships for launching them.

The Soviets realized that antiship forces would have to include aircraft because of their flexibility and capability for rapid reaction. Several Soviet military authors have written that, in some cases, the Soviets might have to rely primarily on aircraft for antiship attacks early in a war because of the time required to mass submarines in the combat areas. Soviet writings also indicate that the Soviets believed that submarines—and to a lesser degree surface ships—would be needed to expand their strike capability and to compensate for the range, endurance, and weather limitations of aircraft.

Through the early 1960s Soviet naval strategy assumed that a war with NATO would be brief and decided quickly by the early, massive use of nuclear weapons. By the mid-1960s, however, Soviet naval strategy began to adjust to shifts in Western strategy, especially the shift to the principle of "flexible response."

Soviet naval strategists still expect a theater war with NATO to be brief, but one which could develop progressively through periods of rising tensions, conventional warfare, limited nuclear warfare, and theaterwide nuclear warfare. Accordingly, Soviet antiship forces today are prepared to conduct both conventional and nuclear antiship attacks in a NATO–Warsaw Pact war.

### *Attack Priorities*

**Aircraft Carriers.** The Soviets accord the aircraft carrier the highest priority in antiship attacks because they view it as the cornerstone of Western naval sea control and power-projection forces in conventional or theater nuclear war. NATO naval forces currently include 13 US and two French carriers that operate fighter, attack, and antisubmarine aircraft, and a British carrier that operates only antisubmarine helicopters.





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The Soviets see the aircraft carrier as capable of influencing greatly the conduct of war in both continental and ocean theaters:

- Carrier aircraft can attack Warsaw Pact ground and air forces both in coastal areas and deep in the interior of continental theaters with conventional or nuclear weapons. The Soviets believe they must neutralize aircraft carriers to destroy NATO's nuclear delivery systems.

- In ocean theaters carrier task groups can disrupt Soviet sea control or sea denial operations. They can search for and attack Soviet ballistic missile and attack submarines and impede their movements to patrol areas. They can attack Soviet antisubmarine forces that are attempting to counter Western submarines. Carrier task groups also can destroy Warsaw Pact warships, amphibious forces, merchant shipping, and logistics forces.

**Other Ship Targets.** After aircraft carriers, other potential targets assume varying degrees of importance in Soviet antiship strategy. Western amphibious forces probably rank close behind aircraft carriers.[2]

Western warships in antisubmarine barriers in choke points such as the Greenland–Iceland–United Kingdom (G-I-UK) gap would be important targets, as would warships providing naval gunfire support to Western ground forces. Aircraft carriers in company with these ships would be attacked first. Selected noncombatant ships in a theater of military operations, such as troop transports or fleet replenishment ships, also would be candidates for attack.

The large-scale interdiction of merchant shipping evidently does not assume high priority in Soviet antiship strategy—at least not in the early stages of a conflict. In a protracted war, the attack priority assigned to Western merchant shipping could increase as a major seaborne reinforcement of NATO forces became effective. Naval strike aircraft have limited ranges, however, which would rule out their use—if operating from Soviet bases—over most of the sea lanes to Great Britain and France.

***Competing Missions***

In addition to their primary task of antiship attack, Naval Aviation strike and reconnaissance forces have a lesser role in operations against land objectives. We do not know the full extent of this role, but such operations most likely would be against naval-related targets. They probably would include air attacks and reconnaissance in support of Soviet amphibious operations, and air attacks against enemy naval bases and ports as well as ocean surveillance and air defense installations. Such attacks would be coordinated with those of LRA and Frontal Aviation. Naval strike aircraft also have a minelaying role.

## The Antiship Posture of Naval Aviation

***Force Composition***

Soviet Naval Aviation has aircraft available for the antiship task, including:

- missile-carrying medium bombers comprising the main antiship strike arm.

- conventional bombers, VTOL (vertical takeoff and landing) fighters, and fighter-bombers that also could perform some antiship attacks, although their effectiveness would be limited by a lack of long-range missiles.

- aircraft of various types that perform reconnaissance or strike support functions such as electronic countermeasures and aerial refueling.



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The size of the Naval Aviation antiship force has remained virtually constant over the last 10 years. Qualitative improvements have been made, however, with the introduction of new air-to-surface missiles and the TU-22M Backfire bomber.

Naval aircraft normally operate from bases in the coastal regions of the USSR. They are organized into divisions, regiments, and squadrons which are incorporated into the four Soviet fleets

**Strike Aircraft.** The strike aircraft of Naval Aviation and LRA Since the late 1950s, the mainstay of the Naval Aviation strike arm has been the subsonic medium-range TU-16 Badger carrying air-to-surface missiles. The badger was produced in the 1950s and is obsolescent. It is a relatively large, slow-moving target by current standards, and it is highly vulnerable to modern air defenses

The TU-22M Backfire bomber was first introduced into Naval Aviation in late 1974, and of these aircraft now are operational with the Baltic and Black Sea Fleets. The Backfire eventually will replace the Badger as the primary aircraft for antiship attacks; we estimate that Backfires will be in service with Naval Aviation by the mid-1980s. The Backfire has greater range than the Badger, and it is less vulnerable to air defenses because of its high speed and low-altitude flight capabilities.





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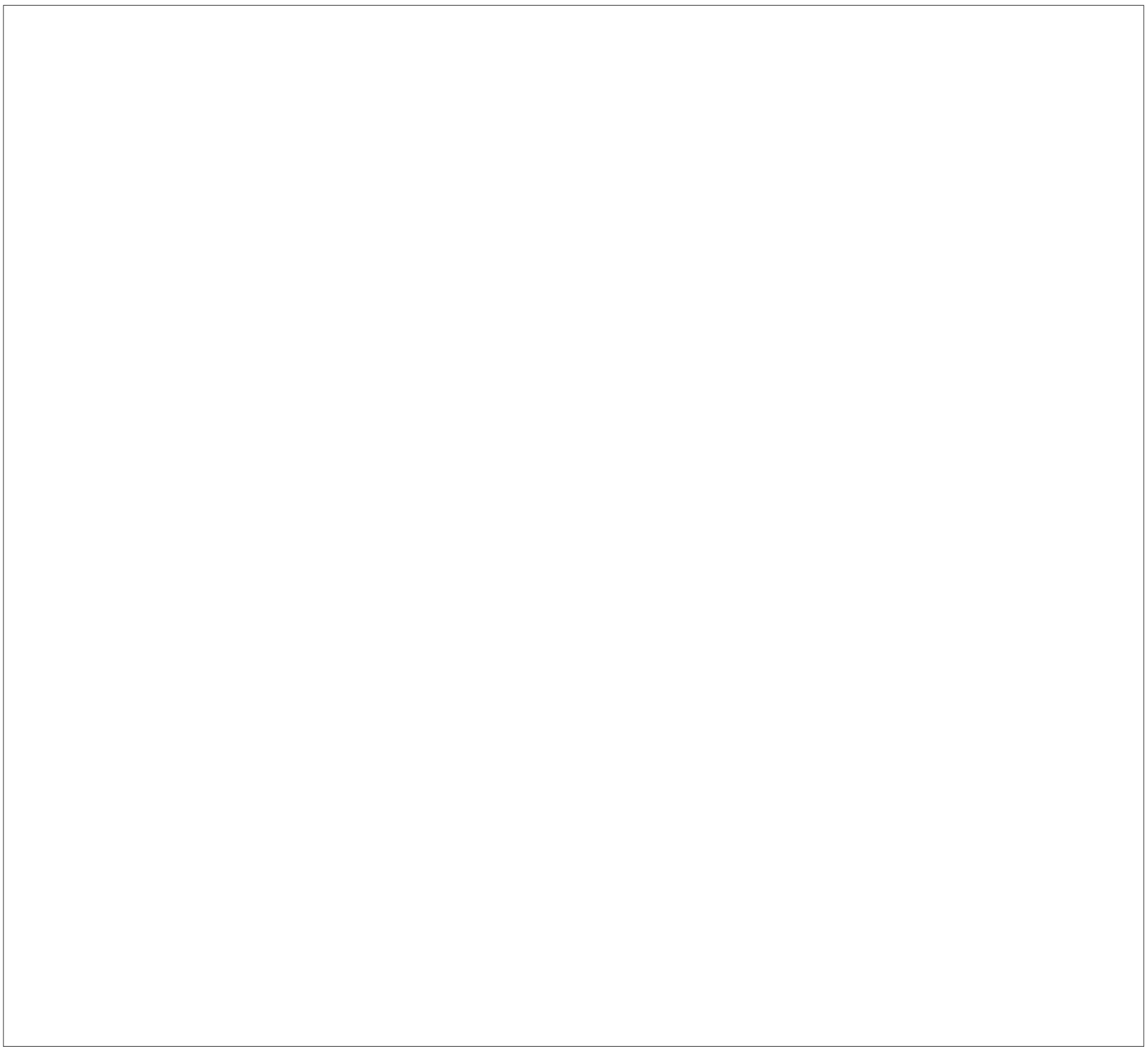



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The capability of the free-fall bombers to attack ships at sea with conventional bombs would be poor because of the difficulty of hitting a moving target without guided weapons. Therefore, these aircraft probably would be used primarily to bomb naval-related land targets and ships in port. Free-fall bombers also could be used for reconnaissance in support of antiship attacks.

The Fitter C/D, which is probably intended for a variety of missions, would be well suited for antiship attacks in the Baltic Sea where distances are short and where potential targets include small, fast patrol boats of the West German and Danish Navies. The Fitter C/D has inherent advantages of speed and maneuverability over the Badger that give it a better capability for attacking such targets. Use of the Fitter C/D for antiship attacks in the Baltic also would free the Backfires and Badgers for missions outside the Baltic area. Fitters evidently would not have sufficient range for such missions.

The YAK-38 Forger VTOL fighters that operate from Kiev antisubmarine aircraft carriers have some capability for strikes against surface ships. They also have capabilities for air defense and reconnaissance. Forger strikes against surface ships would be constrained by their inherent range limitations and their inability to carry large standoff missiles. Thus, Forgers by themselves would have little capability to successfully counter well-defended Western naval task groups. The Soviets probably plan to use Forgers on a contingency basis for small-scale attacks on weakly defended ships, as well as for air defense and reconnaissance.

**Reconnaissance and Strike Support Aircraft.** Reconnaissance and strike support aircraft of Naval Aviation perform various tasks which are essential to the conduct of antiship attacks. These tasks include:

- Locating and identifying potential targets.
- Providing electronic countermeasures support to aircraft conducting antiship attacks.
- Providing targeting information to cruise missile firing submarines and surface ships.
- Providing aerial refueling services.
- Assessing the results of antiship attacks.

Naval reconnaissance and strike aircraft are described in figure 4. Some support missions also could be





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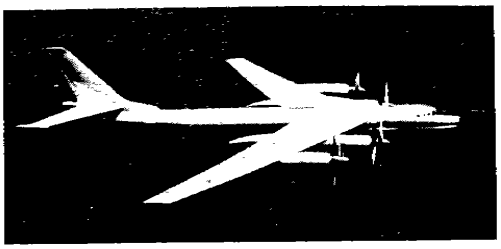
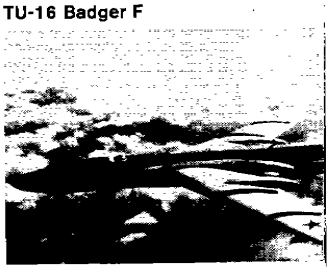
## Characteristics of Naval Aviation Reconnaissance and Strike Support Aircraft

TU-95 Bear D



TU-16 Badger A Tanker

TU-16 Badger F



| | Bear D | Badger A Tanker | Badger D/K | Badger E/F |
|---|---|---|---|---|
| Primary missions | Long-range reconnaissance and cruise missile targeting | Aerial refueling | Electronic intelligence collection | Photo-reconnaissance |
| Gross weight (kilograms) | 161,930 | 75,750 | 75,750 | 75,750 |
| Average cruise speed at high altitude (knots) | 440 | 445 | 445 | 445 |
| Combat radius[1] (nautical miles) | | | | |
| Unrefueled | 4,050 | See footnote 2 | 1,650 | 1,650 |
| With refueling | 5,200 | N/A | 2,300 | 2,300 |

[1] These radii are for maximum-distance missions. They allow for only a minimum fuel reserve, and they do not allow for such variables as loitering, indirect routing, low-altitude flight, or combat maneuvering. Allowances for such variables would reduce combat radius. For many missions, these aircraft would be required to loiter while conducting their operations.

[2] The radius of the Badger tanker is limited by the fuel transfer requirements. For example, at 1,000 nm from base, it would be able to transfer less than one half of a full fuel load to a Badger strike aircraft. At 1,600 nm from base, it would have no fuel available for transfer.

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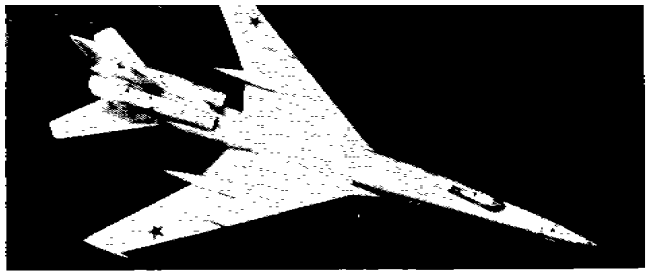

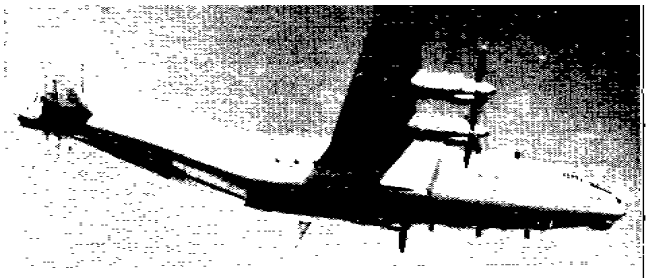

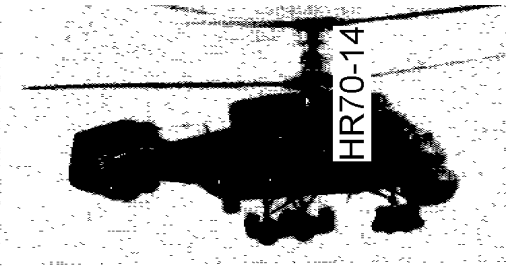


| Badger H/J | Blinder C | Cub B | Hormone B |
|---|---|---|---|
| Electronic countermeasures | Photoreconnaissance | Communications and electronic intelligence collection | General reconnaissance and cruise missile targeting |
| 75,750 | 82,460 | 56,000 | 5,960 |
| 4[illegible]5 | 520 | 320 | 70 |
| 1,150<br>2,200 | 1,740<br>2,350 | 1,300<br>N/A | 110<br>N/A |

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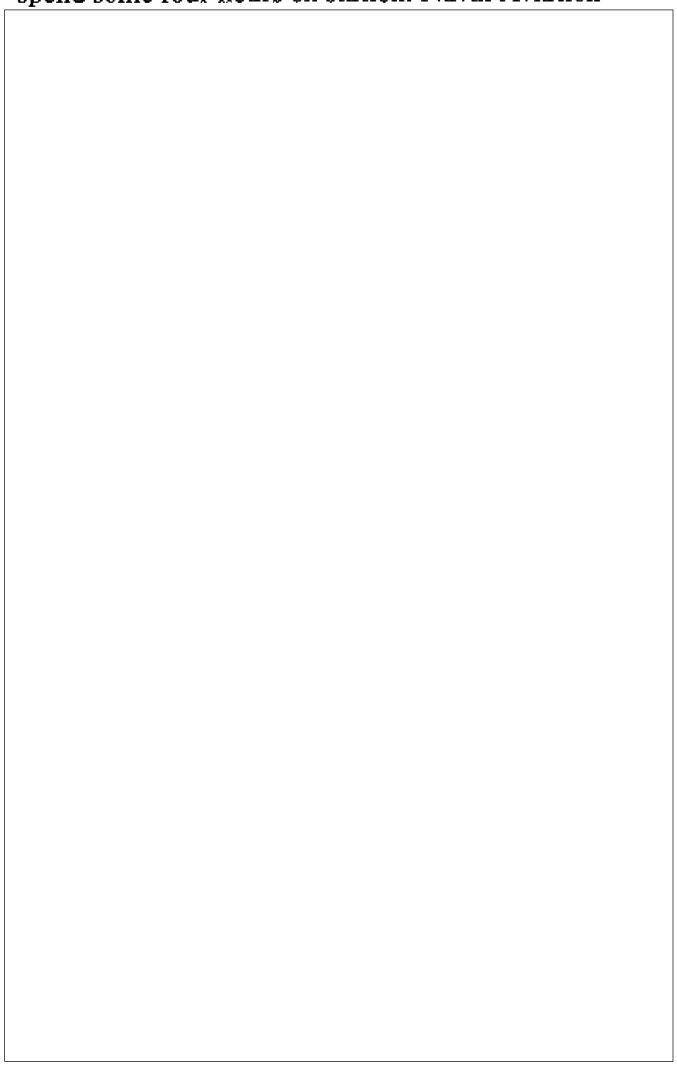
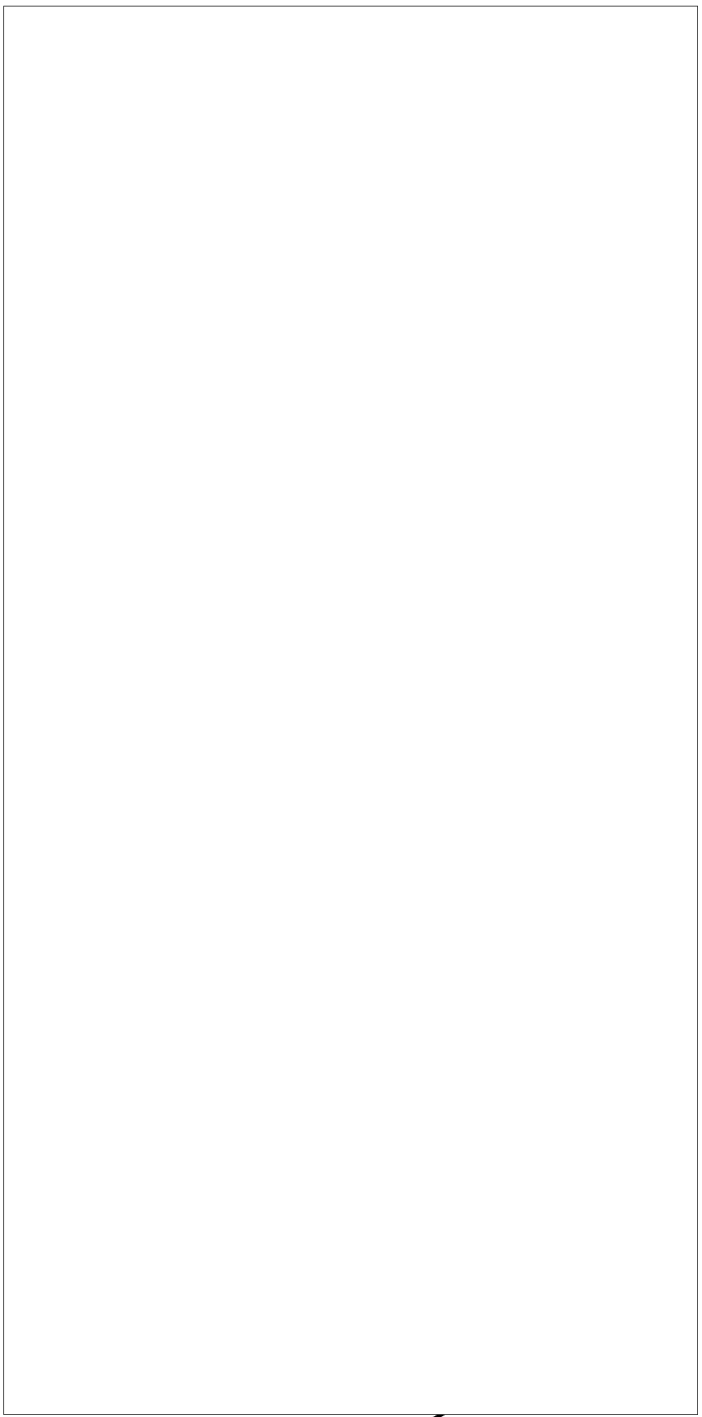
performed by strike and antisubmarine aircraft of Naval Aviation, bombers and reconnaissance aircraft of LRA, and aircraft of Frontal Aviation. In most cases, however, these aircraft would be reserved for their primary tasks.

The TU-95 Bear D—a reconnaissance version of the TU-95 bomber—is the mainstay of the Naval Aviation open-ocean reconnaissance force. From bases in the USSR, Bear Ds can monitor surface ship movements and provide target information over most likely areas of hostile naval operations in the North Atlantic and North Pacific Oceans. The Bear D has an operating radius of more than 4,000 nm, but it normally operates at shorter ranges to increase time on station. At a distance of 3,000 nm from base, for example, it can spend some four hours on station. Naval Aviation

The Soviets have developed a version of the KA-25 Hormone helicopter for shipborne maritime reconnaissance and for targeting shipborne and coastal defense cruise missiles. Helicopters of this type are assigned to some ships and bases in each fleet to provide radar coverage of surface targets beyond the coverage of shipborne or land-based radars.









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## Theaters of Operation

Soviet planners evidently have defined specific maritime and continental theaters for the command and control of wartime military operations. We do not know exactly how these theaters are delimited, but apparently maritime theaters include the coastal areas of some continents, and continental theaters include some seas adjacent to continents

### *Aircraft Range Constraints*

The distance at which aircraft can perform combat missions is highly variable. It depends not only on the technical characteristics of the aircraft, but also on essential mission-planning trade-offs between range and factors affecting aircraft survivability. Such factors typically include fuel allowances for combat maneuvering, indirect routing, and low-altitude flight to avoid or penetrate air defenses. Allowances for these factors reduce—usually significantly—the combat range of strike aircraft. For example, under optimum conditions a Backfire bomber armed with a single AS-4 missile can fly 1,750 to 2,075 nm before returning to its base. If, however, the aircraft were to approach its target at a



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low altitude for 200 nm, climb to a high altitude to launch its missile, and escape at a low altitude for 200 nm, the maximum range at which it could conduct an attack and return to its base would be reduced to 1,250 to 1,550 nm. Furthermore, if the Backfire were to use supersonic speeds during portions of its mission, or an indirect flight route, the distance at which it could conduct attacks would be reduced even more.

Figures 5, 6, and 7 show representative operational ranges for antiship attacks by Backfire bombers—the most capable naval strike aircraft. These ranges are based on the technical characteristics of the Backfire and on reasonable mission-planning trade-offs between range and aircraft survivability. Some attacks by Badgers would be possible near these limits, but only if the Badgers were refueled, or were subject to fewer range-limiting trade-offs.

We believe these ranges represent prudent planning norms beyond which antiship attacks by naval aircraft would not be practical, at least in the initial phase of a NATO–Warsaw Pact war. In fact, the Soviets probably plan for most antiship attacks by both Backfires and Badgers to occur well within the range approximations shown on the maps as they do in exercises. The ranges on the maps are keyed to the fairly rigid flight profiles Missions at shorter distances would allow Soviet planners more flexibility in programing attacks. They also would allow strike aircraft a margin of freedom to deal with contingencies that could occur during their flight; for example, Backfires could use their supersonic capability to evade unexpected enemy air defenses.

The operational ranges shown on the maps cover all likely places from which Western aircraft carriers and amphibious forces could project power ashore in a NATO–Warsaw Pact war, with the possible exception of the Bay of Biscay. They also include those areas where Pact naval strategy calls for establishing initial sea control in a war with NATO. Furthermore, they include virtually all geographic choke points where Western surface forces might operate to prevent Soviet surface ships and submarines from reaching the open ocean.

One of the factors that limit the combat radius of the Badger force is the relative dearth of tanker aircraft and their small fuel transfer capacity.

The range advantage gained by refueling depends not only on the fuel transfer capacity of the tanker aircraft, but also on where and how many times refueling takes place.

The Backfire can conduct strikes beyond the range of Badgers, even when the Badgers are refueled. The Backfire strike range could be improved further with aerial refueling, but Naval Aviation currently does not have an adequate tanker force to support Backfire





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## Operational Ranges for Backfire Bombers Conducting Antiship Attacks[1]

### Assumptions

- Ranges are based on the performance of the Backfire armed with a single radar- or antiradar-homing AS-4. The Backfire possibly can carry as many as three AS-4s, but only with substantial range penalties.
- Aircraft fly from forward naval airfields in the USSR, and they return to these airfields along reciprocal routes.[2]
- Flight routes are selected to avoid or minimize overflying Western land-based air defenses.
- Missions are based on the following flight profile, except in the Baltic and Mediterranean areas, where the aircraft might encounter more extensive air defenses:
  - The aircraft initially flies at its most efficient cruise altitude and speed.
  - As the aircraft approaches the intended target, it descends to a low altitude for 200 nm to avoid detection.
  - When the aircraft is about 250 nm from the target, it climbs to a high altitude for missile launch. The AS-4 is launched at its maximum range of about 200 nm.
  - After missile launch the aircraft reverses course, descends to a low altitude, and returns to its base.
- In the Baltic and Mediterranean areas, the aircraft flies longer distances at a low altitude.
- The Backfire does not fly at supersonic speed, which would further reduce operational range.
- The Backfire does not refuel in flight.
- The Backfire aerodynamic design is assumed to be optimized for subsonic flight. A design compromised for both subsonic and supersonic performance would reduce range by some 15 percent.
- The ranges include the 200-nm antiship range of the AS-4 missile.
- The Backfire lands with 5 percent of its fuel remaining.

[1] Intelligence assessments of the Backfire's performance differ. The performance characteristics used here are based on CIA's appraisal of the Backfire. If the DIA and Air Force estimate of Backfire performance were used, the range limits would be extended in all areas. In the Pacific and Indian Oceans, it could be increased by as much as 850 nm. In the Atlantic the range could be extended only about 450 nm, since the aircraft would have to fly a greater distance at a low altitude because of the concentration of NATO air defenses in the Greenland-Iceland-United Kingdom gap. In the Baltic the range could be extended by some 200 nm, and in the Mediterranean by about 300 nm.

[2] The range in the Mediterranean could be increased by some 300 nm if the aircraft used airfields in Hungary or Romania. The range in the Baltic could be increased by about 100 nm if the aircraft staged from airfields in Poland or East Germany.



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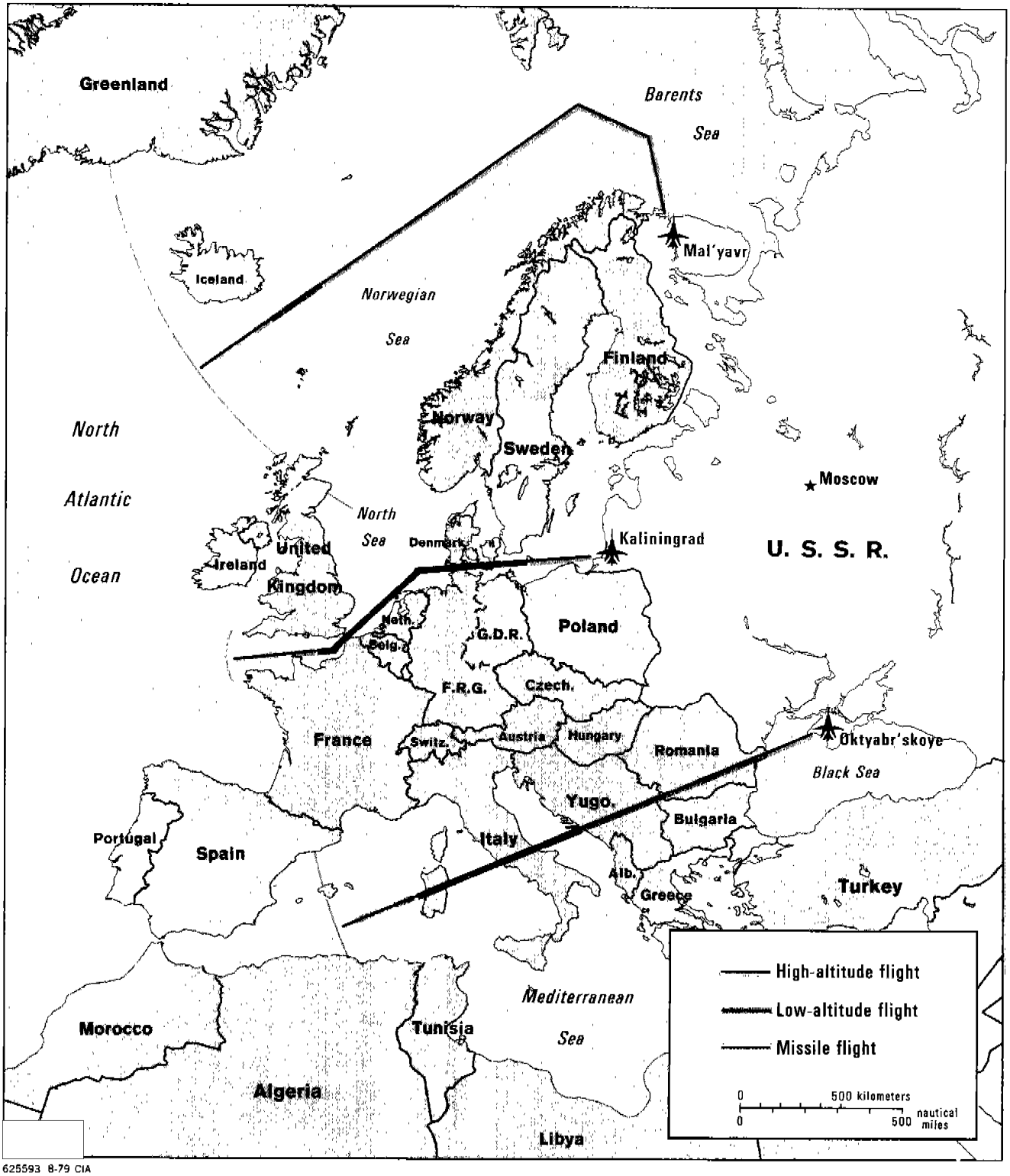
**Western Theaters:**
**Estimated Operational Ranges of Backfire Bomber in Antiship Attacks**

Figure 5

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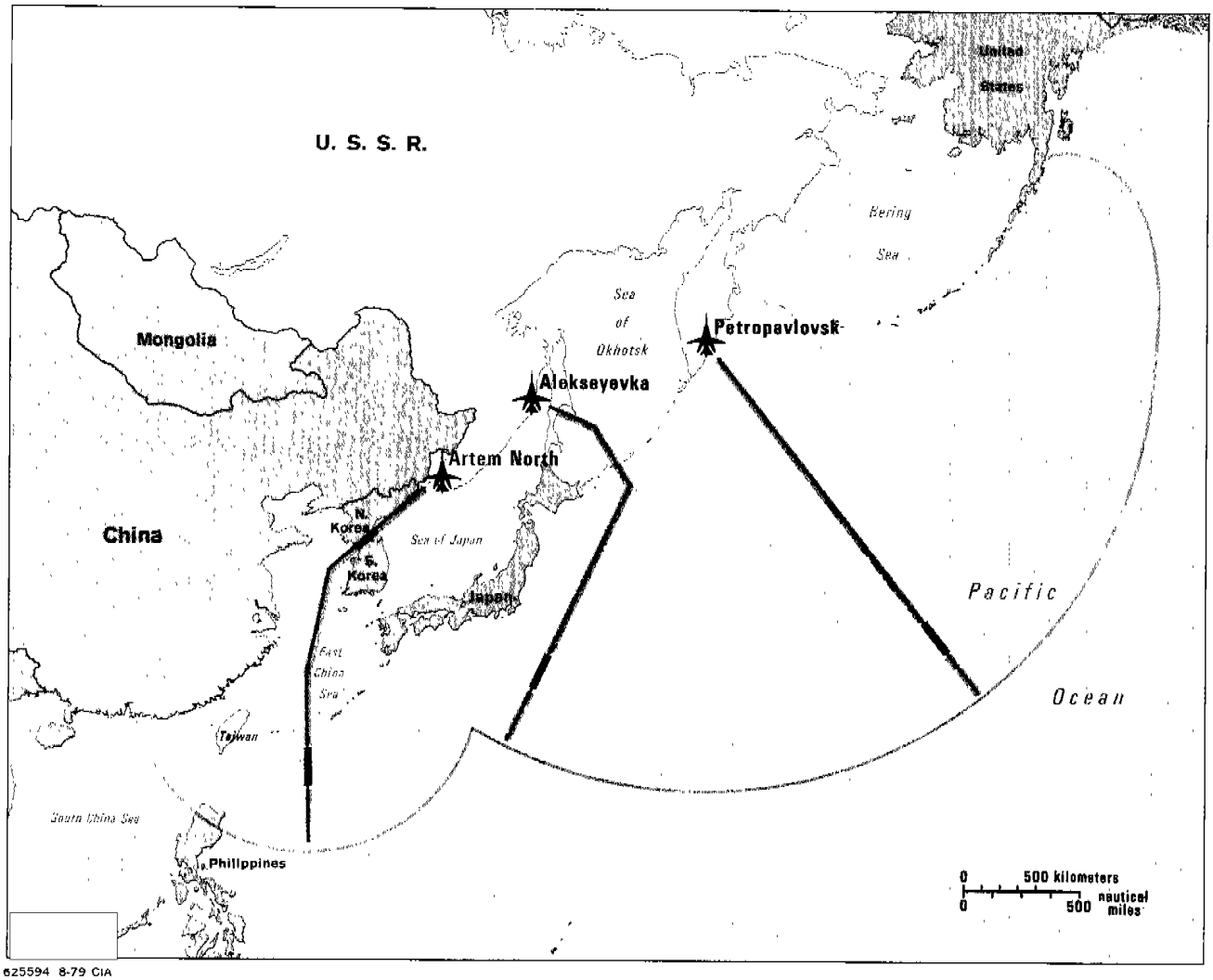
**Pacific Ocean:**
**Estimated Operational Ranges of Backfire Bomber in Antiship Attacks**

Figure 6




High-altitude flight
Low-altitude flight
Missile flight



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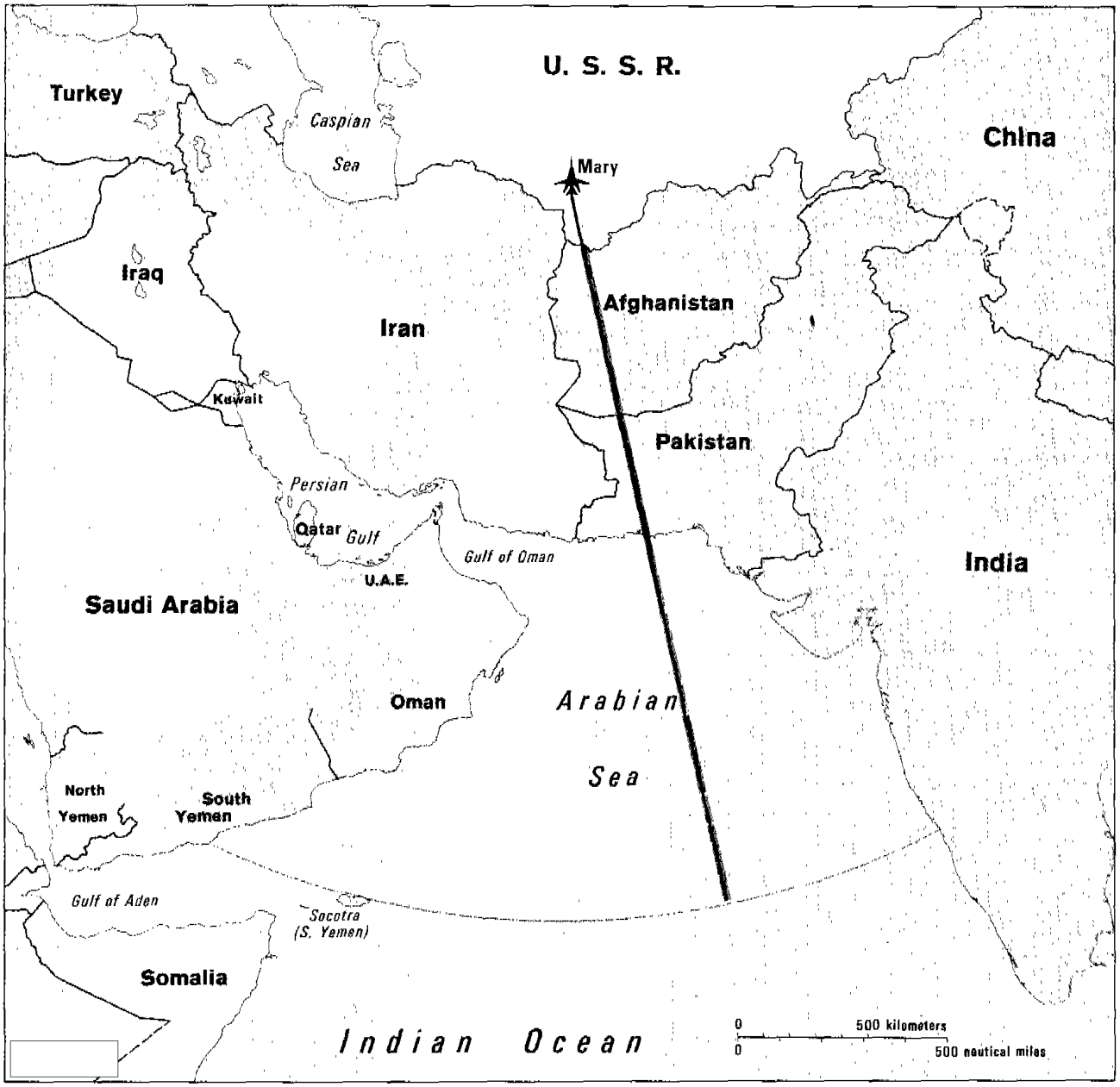
**Indian Ocean:**
**Estimated Operational Range of Backfire Bomber in Antiship Attacks**

Figure 7




High-altitude flight

Low-altitude flight

Missile flight





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***Atlantic***

that the Soviets have defined a wartime theater of military operations north of the G-I-UK gap, which possibly includes part of the Barents Sea.

Antiship attacks by Naval Aviation in the Norwegian Sea and G-I-UK gap would be conducted from airfields in the Northern Fleet, and to a lesser extent from airfields in the Baltic Sea Fleet. Attacks in the North Sea might originate from airfields in either the Northern or Baltic Sea Fleets, or both. Attacks in the English Channel would have to originate from Baltic bases.

If the Soviets deploy a tanker force to support Backfire operations, the Backfire range limits could be extended several hundred miles into the North Atlantic.

Attacks by naval aircraft in the Bay of Biscay theoretically could be conducted from Baltic Fleet or non-Soviet Warsaw Pact airfields. As a rule such attacks would be unrealistic, however, because the aircraft would have to fly through the bulk of NATO air defenses in West Germany and France. Some Backfire strikes in the Bay of Biscay might be possible during a Pact bombing offensive in Europe if the aircraft staged from an airfield in East Germany and if safe flight corridors were established across West Germany. Most likely, antiship attacks in this area, if necessary, would be left to submarines or in some cases to heavy bombers of LRA.

***Mediterranean***

Warsaw Pact naval strategy in the Mediterranean calls for wartime sea denial operations there, primarily to prevent NATO naval forces from projecting power ashore. Although Soviet aircraft do not have direct access to the Mediterranean without confronting land-based air defenses in the NATO littoral countries, the Soviets plan for antiship air attacks there to augment those of surface ships and submarines.

The Backfire bomber has improved significantly Naval Aviation's strike capability in the Mediterranean because of its ability to penetrate air defenses. Effective Badger strikes in the Mediterranean in the face of strong land-based air defenses probably would require local air superiority along the flight route. Naval Aviation's antiship strike capability in the Mediterranean would be enhanced to the extent that Pact plans to establish at least partial air superiority over Greece and Turkey early in a war with NATO were successful.

To simplify their antiship attack problem in the Mediterranean, the Soviets almost certainly would desire basing rights for naval aircraft in a friendly littoral country, such as Libya. They appear to have little prospect, however, of obtaining such rights in the near term. In 1968 the Soviets established a naval air contingent of about 30 aircraft in Egypt for reconnaissance and antisubmarine support to the Mediterra-



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nean Squadron. They apparently planned to develop a strike capability there also. The air contingent was withdrawn in 1972 when Soviet military units were expelled from Egypt.

Soviet submarines and surface ships routinely operate in the Mediterranean, and they would be available for antiship attacks at the outset of hostilities.

Antiship attacks by naval aircraft in the Mediterranean would be the responsibility primarily of the Black Sea Fleet Air Force. Strikes by Black Sea Fleet Badgers would be limited to the eastern Mediterranean, unless the aircraft staged from a Warsaw Pact country such as Hungary or Bulgaria. Backfire bombers could reach most of the western Mediterranean from Black Sea airfields. For attacks in the extreme western Mediterranean, however, the Backfires would have to stage from or recover in a forward Warsaw Pact country.

***European Continental Theaters***

The maritime areas that the Soviets consider to be in the European continental theaters are the Baltic and Black Seas, and probably much of the Barents Sea. In wartime the Soviets would attempt to establish total control over these seas. Antiship attacks in these seas could be more intense than in more distant areas because the Soviets could bring to bear all Warsaw Pact antiship forces, including coastal patrol craft, short-range tactical aircraft, and coastal defense missiles.

Antiship attacks by Naval Aviation in the Barents, Baltic, and Black Seas would be the responsibility of the Northern, Baltic, and Black Sea Fleets, respectively. Initially, these areas would not be likely operating areas for Western aircraft carriers and other high-value ships. The targets for antiship attacks would include primarily destroyers and smaller ships. Most naval strike aircraft, therefore, probably would be reserved initially for attacks against the more important targets at greater distances.

***Pacific***

Initial Soviet wartime aims in the Pacific probably would be similar to those in the Atlantic—sea control in areas near the USSR and sea denial in more distant areas. In a NATO–Warsaw Pact war, Soviet naval operations in the Pacific would depend on the nature of the conflict in Europe and the actions taken by Western forces in the Pacific. It is unlikely that antiship attacks would be a significant part of a conflict between the Soviets and Chinese

Nevertheless, they almost certainly would want to control the Sea of Japan, the Sea of Okhotsk, and an area east of the Kamchatka Peninsula. They probably would seek to disrupt Western naval operations in an area east of the Kuril Islands, in the Philippine Sea, and in various other areas throughout the Pacific.

Intensive antiship attacks by naval aircraft would be fundamental to the Soviet sea control mission in the Pacific. In addition, Naval Aviation forces for antiship attack almost certainly would participate in sea denial operations out to aircraft operational limits.





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As in the Atlantic and Mediterranean, naval strike and reconnaissance aircraft in the Pacific Fleet would have to contend with formidable air defenses. Aircraft staging from airfields near Vladivostok would have to skirt or overfly the air defense network centered in Japan in order to reach the open ocean. Only the airfields at Petropavlovsk and Alekseyevka have direct access to the northwest Pacific.

The Pacific Fleet It is also the most remote fleet—more than 3,000 nm from the nearest naval airfield in the western USSR. Whereas naval aircraft can deploy rapidly among the western fleets, deployments to and from the Pacific Fleet would be more difficult.

***Other Theaters***

Antiship attacks by naval aircraft in other theaters would depend on the nature of the conflict, and—except for the northern Arabian Sea—would be predicated on the use of airfields outside the USSR. No Soviet naval strike aircraft are stationed outside the USSR, although some strike aircraft occasionally make temporary deployments to other Warsaw Pact countries. Deployment bases for strike aircraft are potentially available in such countries as Cuba, Angola, and South Yemen, where the Soviets regularly send reconnaissance or antisubmarine aircraft

In a NATO–Warsaw Pact war, the Soviets almost certainly would keep most of their naval strike and reconnaissance aircraft in the USSR to engage the immediate threats to the homeland. Some reconnaissance aircraft—and possibly some strike aircraft—probably would be deployed to overseas bases, if available, to support Soviet surface ships and submarines, and to monitor the movements of Western naval forces

If the Soviets were engaged in a local war involving a maritime area distant from the USSR, and if bases were available, they might deploy some naval aircraft to take part in the conflict. The bulk of the naval strike and reconnaissance aircraft, however, almost certainly would be kept in the USSR as a hedge against a possible NATO–Warsaw Pact war.

**Strikes in the Indian Ocean.** From bases in the USSR, naval aircraft could conduct antiship attacks over much of the Arabian Sea. Nonnaval airfields such as Mary in the southern USSR would have to be used for staging the attacks. The range of such attacks could be extended to the entire Arabian Sea and some areas beyond if the aircraft landed in one of the littoral countries instead of returning to the USSR

The Soviets recently began using the airfield in Aden, South Yemen, If this airfield were available in wartime, they might use it for staging or recovering strike and reconnaissance aircraft. Prior to their ouster from Somalia in 1977, the Soviets built a large airfield and missile-handling and storage facility near Berbera.

**Reconnaissance.** Naval Aviation Bear D reconnaissance aircraft deploy regularly to Cuba and Angola for IL-38 May antisubmarine aircraft deploy periodically to South Yemen.[6] The purposes of such deployments are diverse:

- As an important element of Soviet ocean surveillance, naval aircraft deployed in peacetime can monitor the disposition of Western naval surface forces in distant areas. Such information would be important to Soviet planners in the early stages of a crisis or conflict.

[6] The Soviets until recently also were using the Conakry airfield in



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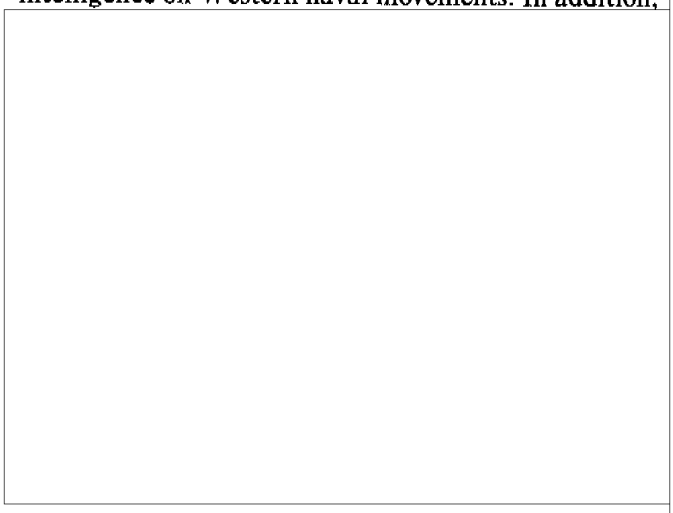
• In wartime, deployed naval aircraft could provide intelligence on Western naval movements. In addition,

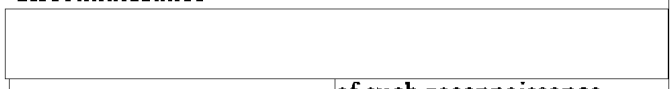


As shown in figure 8, Bear Ds flying from Cuba and Angola could, if unopposed, cover much of the Atlantic Ocean, and Mays flying from South Yemen could cover an important portion of the Indian Ocean.

**Antiship Attack**[7]

Antiship attack has two phases: reconnaissance and the attack itself.

***Reconnaissance***



of such reconnaissance include not only the detection of potential targets, but also the determination of their identity, precise location, and direction of movement—information that would be critical for cruise missile targeting. Furthermore, antiship reconnaissance must provide assessments of the results of attacks.

[7] This section deals primarily with antiship attacks by land-based aircraft in maritime theaters. Most of the basic concepts discussed here would apply to attacks by these aircraft in both maritime and continental theaters. Attacks in continental theaters, however, would not necessarily follow the pattern of ocean attacks because of different tactical requirements





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## Representative Surveillance Coverage of the Atlantic and Indian Oceans by Naval Aircraft From Overseas Airfields

Figure 8


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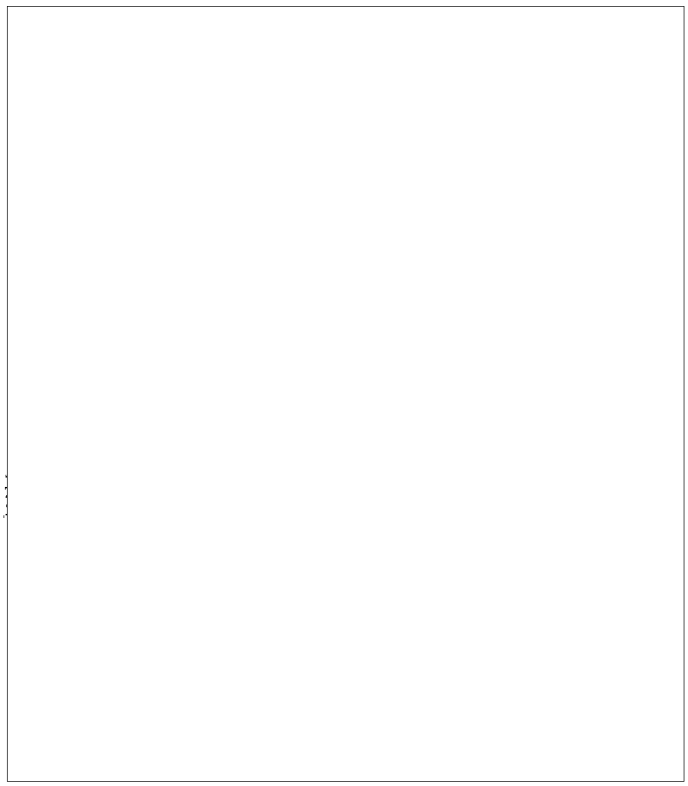
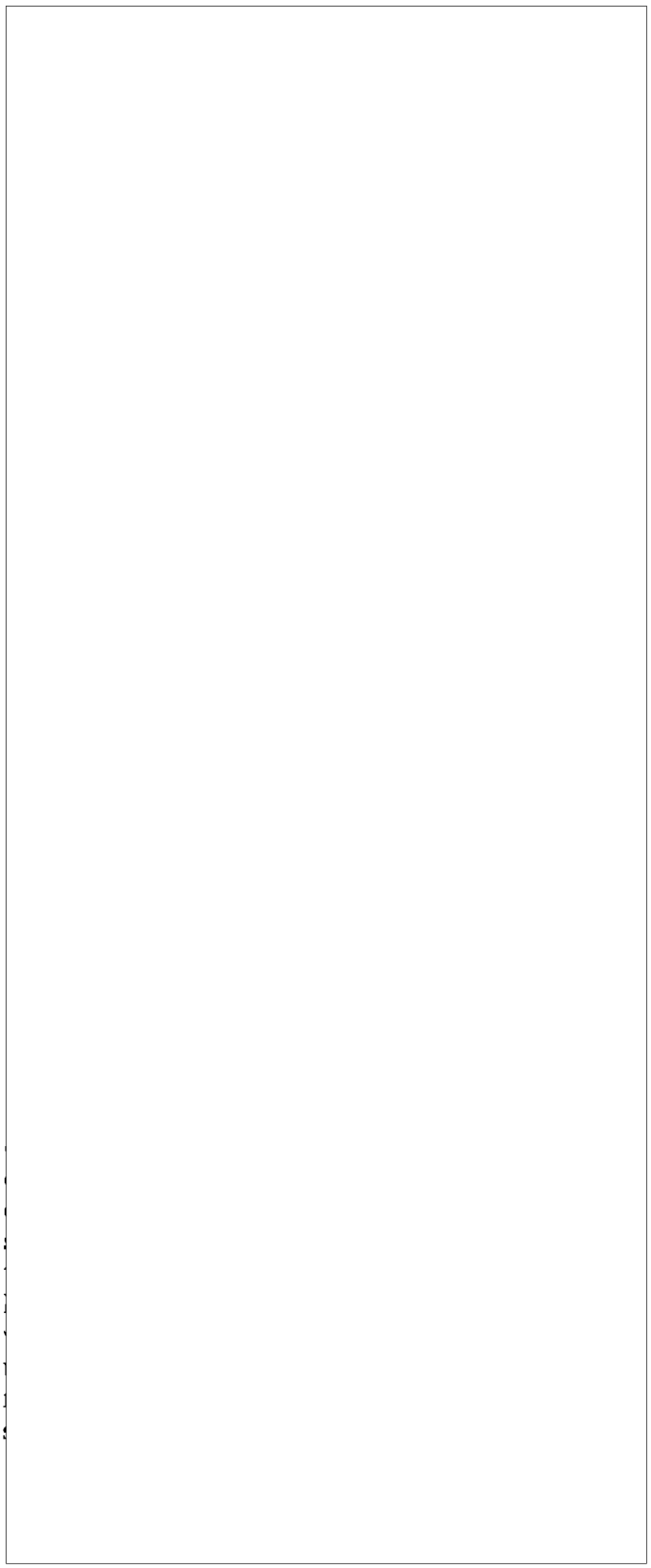
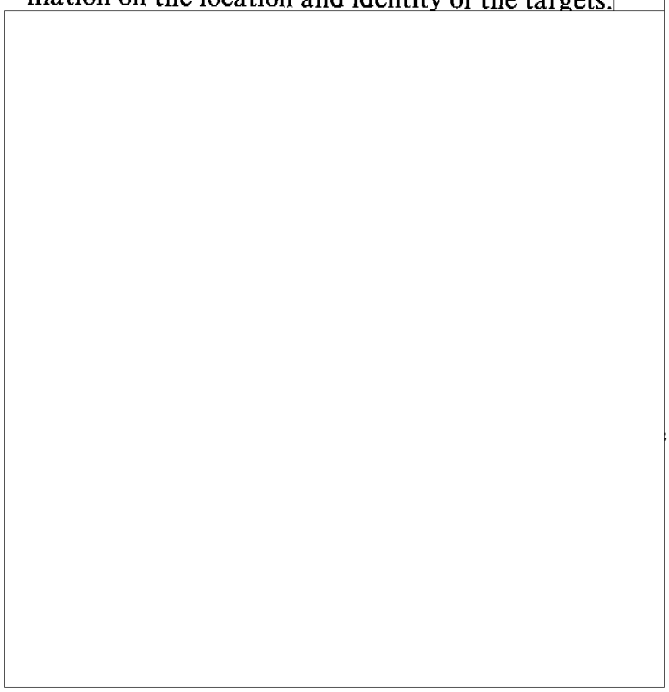




**The Role of Reconnaissance Aircraft.** The primary role of reconnaissance aircraft in antiship attacks is to provide strike platforms with precise, up-to-date information on the location and identity of the targets.







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**Post-Strike Reconnaissance.** Reconnaissance of the combat area after antiship attacks would be necessary for assessing the results of the attacks. Battle damage assessments would be required for Soviet planners to determine whether the intended targets were hit, the degree to which the damage was controlled, and whether subsequent strikes would be necessary. Attacks on aircraft carriers in World War II and major aircraft carrier accidents during the Vietnam war have demonstrated that carriers can sustain considerable damage without sinking. Soviet planners would want to know if a damaged aircraft carrier could still conduct flight operations.

Because of the long ranges at which air-to-surface missiles are launched and the requirements for combat maneuvering, strike aircraft in most cases would be unable to assess comprehensively the battle damage to the target. Naval reconnaissance aircraft could be used for this purpose, although they would be highly vulnerable to surviving fleet air defenses.

Despite the general plans and guidelines available to them, Soviet planners could be faced with many hard decisions in organizing antiship attacks. Each operational situation would present different problems. Decisions would have to be made in each case on which forces would be allocated to the attacks, which targets would be attacked and by whom, where the attacks would take place, and the time and sequence of the attacks.

**Force Coordination.** Soviet antiship doctrine calls for attacks by Naval Aviation against important targets to be conducted in conjunction with attacks by other antiship forces when the operational situation permits. Such coordinated attacks reflect the Soviet desire to seize the initiative by decisive strikes in which the maximum amount of force can be brought to bear.

### *The Attack*

planning and execution of specific antiship attacks by naval aircraft would depend on the nature and course of the conflict, the forces available, the intended target and its location, and the perception of the situation by Soviet commanders.

**Organizing the Attack.** Antiship attacks by Naval Aviation would be organized by operational planners who would tailor general antiship attack plans and models to specific situations.



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**Western Air Defenses.** The Soviets perceive Western air defenses as the major obstacle to antiship attacks by Naval Aviation. In general, Soviet strike aircraft would have to penetrate a series of Western air defenses—which some Soviet writers call "breakthrough"—including land-based interceptors and surface-to-air missile systems as well as shipborne defenses: interceptors, long-range surface-to-air missile systems, and point defense surface-to-air missile and gun systems.

*Land-Based Air Defenses.* The approaches to most potential areas for antiship attacks by naval aircraft are guarded by Western land-based air defense systems:

- NATO radars and land-based interceptors or surface-to-air missile systems can cover virtually all approaches to the Norwegian and North Seas, the G-I-UK gap, and the Bay of Biscay, except possibly for flights around the North Cape of Norway to the northern and central Norwegian Sea. The deployment of E-3A early warning aircraft to Iceland has greatly complicated the Soviet antiship attack problem. Depending on how these aircraft are used, they could substantially reduce the Soviet capability to operate aircraft undetected in the northern and central Norwegian Sea.
- Similarly, NATO air defenses can cover virtually all approaches from airfields in the USSR to the Mediterranean.
- Western air defenses based in Korea and Japan can cover the Sea of Japan and the approaches to the northern Pacific near or across Japan.

*Fleet Air Defense.* The capabilities of Western fleet air defenses depend on the types and numbers of ships that are tied together in common air defense networks. Major ship groupings usually include aircraft carriers and are well defended. Western fleet air defenses are based on a multizone concept and are designed to progressively weaken and defeat an air attack:

- The first line of defense is an outer zone defended by carrier-based early warning aircraft and interceptors. It could extend out to 500 nm. The number of interceptors that could be mustered for combat in this zone would depend on the range at which the incoming attack is detected, the time it takes to respond to the detection, the speed of the attacking aircraft, the speed of the interceptors, and the rate at which the carrier can launch the interceptors.
- A middle zone is defended by area defense surface-to-air missile systems. The extent of this zone depends on the positioning of the ships and the range of the missile systems. A few US ships have surface-to-air missile systems with ranges of about 100 nm.
- The final line of defense is an inner zone protected by shipborne point defense surface-to-air missile systems and antiaircraft guns.

The weapon systems in each of these zones are complemented by electronic countermeasures systems for confusing, decoying, or disrupting the sensors of attacking aircraft and cruise missiles.

*Composition of Attack Force.* Whenever possible, Soviet planners would opt for massive air attacks against important targets—allowing for a nuclear reserve of perhaps as many as one-third of all available strike aircraft during a conventional war.

Attacks by a large number of aircraft could overwhelm air defenses, ensuring that at least some antiship missiles would find their intended targets

Soviet strategists evidently have concluded that a large number of missile hits would be necessary to put out of action or destroy ships such as aircraft carriers. One writer, for example, in a 1968 classified article stated that six to 10 hits by air-to-surface missiles with conventional warheads would be necessary to put a carrier out of action. He further stated that at least two strike regiments—some 48 strike aircraft—would be





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necessary to ensure six to 10 hits. Two other classified articles written in 1960 and 1966 state that a salvo of six air-to-surface missiles with nuclear warheads would be required to ensure destruction of an aircraft carrier and several of its escorts. The author of the 1966 article also stated that two aircraft regiments would be necessary for the strike. The 1960 article implied that 12 aircraft could do the job if none were destroyed en route to the strike. He also implied that 30 to 36 missiles with conventional warheads could achieve the same results. The three authors evidently were writing about the Badger C aircraft and the AS-2 missile.

Not all aircraft in large attacks necessarily would launch their missiles at the same time. Soviet antiship doctrine evidently calls for a large attack force as a rule to be a loose assemblage of smaller groups which fly to the target separately and attack in sequential waves. A simultaneous missile launch by all aircraft in a large attack force would create the greatest problem for the defenses, and the Soviets would prefer to use this tactic if the circumstances allowed it. The Soviets apparently feel, however, that such an operation would be too difficult to coordinate effectively in most situations involving large numbers of aircraft. They probably consider that an attack force composed of waves of smaller groups striking sequentially is a more flexible and manageable scheme. Such a scheme is similar to that recommended by authoritative naval writers for coordinating the antiship strikes of different types of forces—one based on the principle of "no one waits for anybody." With such a scheme the first several waves might occupy and exhaust enemy air defenses, thus facilitating strikes by subsequent waves. Also, subsequent waves could adjust their strikes according to updated targeting information from the first waves. Furthermore, the use of this tactic would reduce the likelihood of electromagnetic interference among Soviet missile seekers, acquisition radars, and ECM equipment.

*The Approach.* The tactics used in the flight from staging airfields to the target area would be designed primarily to enhance surprise and to avoid or break through air defenses. Where possible, operational planners would select flight routes to minimize aircraft exposure to Western air defenses. In a NATO–

Naval aircraft—especially the Backfire—probably would fly at low altitudes during at least a portion of their flight to the target to avoid detection by air defense radars. The Soviets are well aware of the potential of low-altitude flight to reduce aircraft vulnerability.



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The Backfire has the capability to fly at supersonic speeds at high altitudes, but at the expense of range. This tactic probably would be used by Backfires during portions of their flight—as an alternative to low-altitude flight—especially to penetrate air defenses which include interceptors

*Electronic Countermeasures*. The use of ECM in penetrating Western air defenses is fundamental to Soviet planning





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A mixture of active radar and antiradiation homing missiles might be launched in most antiship attacks to complicate the defensive problem.

A critical problem which faces Soviet strike aircraft is identifying the highest priority targets among a group of targets prior to missile launch. Soviet doctrine calls for concentrating firepower on highest priority targets such as aircraft carriers.

he Soviet strike leader would be faced with a dilemma:

- If he chose to direct all missiles at a single ship identified solely by radar or other electronic information, the missiles might impact on a decoy or a target of lesser importance.
- If he chose to apportion some missiles to all or several targets, the total firepower of the strike would be divided, and the attack might not be decisive.

One Soviet military writer has recommended the second of the above options in those cases in which target identity has not been firmly established. Other writers, however, do not address the problem specifically, except to emphasize the crucial importance of accurate reconnaissance for antiship attacks. One reason the Soviets plan for large-scale strikes against important targets may be to ensure that sufficient antiship missiles would be available to apportion some to each ship in a group of ships.



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***Followup Attacks***

Followup antiship attacks by Naval Aviation would be conducted on a basis of battle damage assessments or as dictated by the course of the war. The Soviets hope that initial antiship attacks would be decisive, and that followup attacks would be necessary only to maintain the advantage gained in the first strikes.

The Soviets probably expect heavy losses in aircraft in the initial antiship attacks in a NATO–Warsaw Pact war. The emphasis Soviet writers place on seizing the initiative at the outset of war probably reflects, among other things, their concern that the overall capabilities for antiship attacks by Naval Aviation would be reduced quickly through aircraft attrition. Continuous combat operations could strain the Naval Aviation logistics and maintenance system and further reduce aircraft availability

Followup antiship attacks would be similar to initial attacks, except that a progressive reduction in available aircraft probably would dictate attacks by smaller numbers of aircraft.





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## Representative Surveillance Coverage of the Atlantic and Indian Oceans by Naval Aircraft From Overseas Airfields

Figure 8


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# Appendix

## Other Forces for Antiship Attack

### Attack Submarines

The Soviet Navy has operational attack submarines with varying capabilities for antiship attack:

- The main antiship force consists of nuclear-powered and diesel-powered submarines equipped with a total of antiship missiles.
- obsolescent diesel-powered submarines are equipped with an older, inertially guided cruise missile for attacking large-area targets. These submarines technically could be used for nuclear antiship attacks.
- nuclear-powered attack submarines have a primary mission of antisubmarine warfare but also could conduct torpedo attacks on ships.
- diesel-powered attack submarines could conduct torpedo attacks on ships; however, only about 5 of these are newer long-range submarines. The remainder are obsolete by today's standards, have low endurance, and are exceptionally noisy.

Over the last 10 years, the number of attack submarines in the Soviet inventory has declined with the retirement of obsolescent units.

### Surface Ships

All Soviet surface combatant ships have some capability for antiship attacks, but relatively few are equipped with antiship cruise missiles:

- major surface combatants carry antiship cruise missiles.

- coastal patrol vessels are equipped with short- and medium-range antiship missiles.

The current overall emphasis in the construction of Soviet surface ships is on antisubmarine and air defense weapon systems. Most major and some minor surface combatant ships are equipped with surface-to-air missiles which have some capability against surface ships at short ranges. In addition, cruisers and frigates carry an antisubmarine missile which might be used against surface ships under some conditions.

### Long Range Aviation

Antiship attack always has been a secondary mission of the LRA.

heavy bombers could perform antiship attacks with air-to-surface missiles. Missile attacks would be limited to nuclear strikes, since the missiles on these aircraft were designed for use against large-area targets and are not sufficiently accurate for conventional attacks on ships. LRA heavy bombers could be used to strike targets beyond the range of Naval Aviation medium bombers.

medium bombers in the LRA are equipped with air-to-surface missiles that could be used in conventional or nuclear attacks on ships.





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The availability of LRA aircraft for antiship attacks would depend on whether they could be spared from their primary missions. In a theater war with NATO, only some heavy bombers might be available for antiship attacks and attacks against land targets in Europe. The remaining heavy bombers probably would be held in reserve for intercontinental war. Virtually all medium bombers—except for a nuclear reserve—probably would be committed initially to the Pact bombing offensive in Central Europe, aimed at securing air superiority and destroying NATO nuclear delivery systems.

**Frontal Aviation**

Soviet Frontal Aviation would have some antiship attack role, but only to the extent that it would directly support Warsaw Pact ground operations. During the early stages of a NATO–Warsaw Pact theater war, practically all of Frontal Aviation—except for a nuclear reserve—would be involved in the bombing offensive in Central Europe. After the bombing offensive, tactical air units would be tasked to support ground force operations and amphibious landings. In this role they could be assigned antiship attack missions near the coast, especially missions involving attacks on amphibious ships or warships providing naval gunfire support to enemy forces.

**Land-Based Missile Forces**

In some instances Soviet land-based cruise and ballistic missiles could be used for antiship attacks:

- The Coastal Missile and Artillery Force's cruise missiles provide an antiship capability out to some 200 nm from launch sites in the USSR. Coastal defense cruise missiles defend the major naval bases in each fleet area and the approaches to the Sea of Japan through the La Perouse Strait.
- The Rocket and Artillery Troops of the Soviet Ground Forces could conduct antiship attacks with tactical nuclear missiles in support of ground force operations in coastal areas. Such attacks would be limited to large-area targets such as an amphibious task group in a landing area.
- There has been some discussion in Soviet writings of the use of land-based ballistic missiles of the Strategic Rocket Forces against ships at sea.

**Non-Soviet Warsaw Pact Forces**

The role of non-Soviet Warsaw Pact Forces in antiship attacks would be similar to that of Soviet forces but on a smaller scale. Operations would be limited to the Baltic and Black Seas and would be conducted in concert with Soviet antiship operations in these areas.



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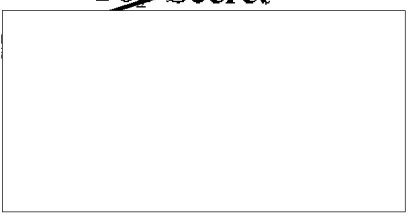



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