

Naval War College Review

Volume 38
Number 3 *Summer*

Article 1

1985

The Evolution of Soviet Views on Fleet Air Defense

Floyd D. Kennedy Jr

Follow this and additional works at: <https://digital-commons.usnwc.edu/nwc-review>

Recommended Citation

Kennedy, Floyd D. Jr (1985) "The Evolution of Soviet Views on Fleet Air Defense," *Naval War College Review*: Vol. 38 : No. 3 , Article 1.

Available at: <https://digital-commons.usnwc.edu/nwc-review/vol38/iss3/1>

This Article is brought to you for free and open access by the Journals at U.S. Naval War College Digital Commons. It has been accepted for inclusion in Naval War College Review by an authorized editor of U.S. Naval War College Digital Commons. For more information, please contact repository.inquiries@usnwc.edu.

The Evolution of Soviet Views on Fleet Air Defense

Commander Floyd D. Kennedy, Jr., US Naval Reserve

Air Defense of Naval Forces: a set of organizational measures and combat operations to repel the attack of an airborne enemy and protect groupings of naval forces at sea and in bases, and also to protect shore installations against air strikes. Naval air defense helps gain and keep air supremacy in certain regions of a theater of operations. Air defense is used in all types of combat and operations, during a sea crossing (of formations or independent ships), and in the daily combat activity of naval forces

Rear Admiral S.P. Teglev, Chief of Naval Air Defense,
Soviet Military Encyclopedia, 1978.

The Soviet Navy is constantly changing, evolving from a coastal defense force to a blue water fleet able to show the red flag in the far reaches of the globe. This evolution is evident in Soviet shipbuilding programs and peacetime operations. But nowhere is it more evident than in Soviet naval literature. This literature, more than any other indicator, reflects the attitudes and concerns of high-ranking Soviet naval officers.

In the 1980s one of the prime concerns of the Soviet Navy's leadership appears to be the air defense (*protivovozdushnaya oborona*, or PVO) of naval forces. This phenomenon is a relatively recent one in the literature. The change portends a new Soviet intention to operate naval forces outside the protective umbrella of shore-based air defense forces and, perhaps, to use those forces more aggressively in areas distant from Russian shores outside the context of a Nato/Warsaw Pact war.

Air defense issues of particular importance to Soviet authors appear to center on the threat posed by antiship missiles (ASMs) and the best method of countering that threat. Among the leading ASM defensive measures discussed are electronic warfare (EW) systems, missiles, guns, directed energy

Commander Kennedy is a professional staff member of the Center for Naval Analyses and maritime editor for *National Defense*. He publishes widely on US and Soviet naval and aeronautical affairs.

weapons, and, the most controversial of all, carrier-based airborne early warning (AEW) aircraft and long-range interceptors. These Soviet views on fleet air defense require close examination if the West is to gain insight into the Soviet Navy of the late 1990s.

Early Views on Fleet PVO

One indicator of the attention a particular issue is receiving, or has recently received, at the higher levels of the Soviet naval command structure is the frequency with which it is discussed in the military literature. In the 1960s PVO at sea was a prime subject in only four articles from the available literature, and only two of those articles were devoted exclusively to fleet air defense.¹ All four articles generally agreed that air defense could be broken down into two elements: combat against missiles and combat against missile-launch platforms. Action against missiles was the responsibility of the anti-aircraft guns, missiles, and electronic countermeasures on board surface ships. Action against launch platforms appeared to be the responsibility of the land-based interceptor aircraft of PVO Strany, the Soviets' air defense force. The Soviet authors considered this division necessary because missiles could be fired from beyond the range of shipboard defenses. An unspoken but obvious corollary to this argument was that the Soviets did not then plan to employ their surface warships beyond the protective umbrella of land-based interceptors in wartime.

The literature of the early 1970s contained virtually no mention of fleet air defense. In an otherwise extremely comprehensive article entitled "Some Trends in the Development of Naval Tactics" Captain First Rank N. V'yunenko did not once mention PVO at sea, although he touched on almost every other naval subject imaginable.² Because V'yunenko enjoyed then (1975)—as he does now—a close relationship with the Soviet Navy's highest decision makers, his omission of PVO from his otherwise comprehensive article appears significant, reflecting either a lack of high-level concern about the subject or, more likely, a division of official opinion on the matter.

The ASM Threat

In the early 1970s the Soviet press began to discuss a significant new airborne threat, the ASM. The first article on this subject in their navy's professional journal, *Morskoy sbornik*, was entitled "The First Combat Use of Ship-to-Ship Missiles and Their Development." The author, a civilian named Shaskol'skiy, discussed the sinking of the Israeli destroyer *Eilat* in October 1967 and the Western reaction to that event in the form of ASM development and countermeasures. The magazine gave no prominence to the article—it was buried in the back pages, the author was a virtual unknown, and the

events he was discussing were almost three years old.³ Yet the difficulties Shaskol'skiy described as bedeviling Western engineers in the development of ASM defense (ASMD) systems presaged similar Soviet problems.

In the mid-1970s *Morskoy sbornik* followed Western ASM developments fairly closely and reported their developmental milestones in the magazine's section on "Foreign Navies: Reports and Facts," a compilation of brief, newsworthy vignettes on foreign naval developments. The first complete article devoted exclusively to a single ASM appeared in the July 1977 *Morskoy sbornik* and inaugurated a spate of writing on the ASM and the problems of defending against it that has continued to the present day. This initial article was written by Captain First Rank B. Rodionov and Engineer N. Novichkov, who have become most prolific writers on the problems of fleet air defense. Entitled simply "The Tomahawk Cruise Missile," it contained a basic description of the land attack and antiship variants of the missile along with a mild polemic on their arms control implications.⁴

The following year Rodionov and Novichkov published a more analytical article entitled "Is the Missile Defense Problem Solvable?" Crediting "foreign military specialists" with most of the analysis, the two authors recommended recruiting helicopters into the ASMD role to improve a ship's detection range against missiles and their launch platforms. In addition, the helicopters were to be equipped with electronic countermeasures (ECM) to foil the missiles' seekers and air-to-air missiles to knock down the ASMs. The authors suggested other improvements, including the automation of information collection, processing, and weapons control on board ship to compensate for the short warning time afforded by sea-skimming antiship missiles. With regard to the question posed by the title of their article the authors concluded that there "is no unequivocal answer . . . at present," adding "Many foreign specialists are far from optimistic when evaluating the capabilities of combating antiship cruise missiles." The two Soviet writers reached this conclusion despite the fact that they had just finished describing the unqualified success of Israeli ASMD against Soviet-made antiship missiles in the 1973 Yom Kippur war.⁵ It would appear that their pessimism over ASMD capabilities was their own and not of Western origin.

I. Kuz'min also had described the 1973 Israeli successes in the previous edition of *Morskoy sbornik*, as out of 50 ASMs fired by the Egyptians not a single one hit an Israeli target. Kuz'min had a more important point to make, however, "Reconnaissance support of the combat employment of antiship cruise missiles is linked directly with reconnaissance directed at combating cruise missiles. This fact has caused foreign military specialists to express grave concern about the difficulties of detecting missiles . . . It might turn out that the warning about incoming missiles will be their detection on radar screens, which could already be too late for the employment of air defense missiles for their destruction." Like Rodionov and Novichkov, Kuz'min

recommended, through his “foreign military specialist” surrogates, the employment of helicopters for detecting incoming ASMs and the automation of intelligence processing and distribution.⁶

The sixth volume of the authoritative Soviet military encyclopedia *Sovetskaya Voyennaya Entsiklopediya* was published at approximately the same time as the above two articles. This volume contained an entry by Rear Admiral S. P. Teglev, Chief of Naval Air Defense, on “Air Defense of Naval Forces,” the first two sentences of which are quoted at the head of this article. Teglev continued his entry by describing the forces committed to naval air defense. “This [defense] is accomplished with the antiaircraft weapons of ships and naval bases and naval fighter aviation in coordination with the National Air Defense Forces and the ground forces. Outside the reach of the weapons of the National Air Defense and the air defense forces of the ground forces, only a ship’s own antiaircraft missile complexes, small and medium-caliber antiaircraft guns, ship-based fighter aircraft, and equipment for naval reconnaissance and electronic warfare are used.”⁷

Later, Teglev specifically described how capitalist countries conducted naval air defense, implying that the above quotation described the Soviet method of PVO. This point is curious, because the entry was sent to press almost five years before the only Soviet ship-based fighter, the vertical takeoff and landing (VTOL) Forger, demonstrated an anti-air warfare capability. This encyclopedia entry probably reflected Soviet naval planning, or even desire, rather than capabilities.

ASM Defense

The Soviets published no major Soviet articles in 1979 on either fleet air defense or ASMs, although the “Foreign Navies: Reports and Facts” section of *Morskoy sbornik* continued reporting on Western programs in both these fields. But the following year more than compensated for the lapse in 1979 with five major articles, four in *Morskoy sbornik* and one in *Voyenno-istoricheskiy zhurnal*.

In February 1980 Captain First Rank Vasil’yev examined PVO at sea from the historical perspective. Vasil’yev asserted that in World War II fighter aircraft were “the most effective force in repelling an air attack,” but by the 1960s surface-to-air missiles had assumed “the first place among other air defense weapons.” At present and in the near future “aircraft and . . . winged missiles, which fly at very low altitudes, will effectively overcome the air defenses of ship formations.” The way to counter these systems, according to Vasil’yev, was with a deeply echeloned defense in four zones: “self-defense (up to 20 km), close-in (20-70 km), medium-range (70-180 km), and distant (more than 180 km).”⁸ Probably not coincidentally, new Soviet SAM systems neatly fall into three of these zones: the SAM carried by DDG *Udaloy* for

self-defense, the SA-N-7 for close-in, and the SA-N-6 for medium range.⁹ All that remains is the distant zone, for which Vasil'yev implied—but never directly stated—ship-based fighter aviation would be the most suitable.

In the April 1980 *Morskoy sbornik* Captain First Rank-Engineer V. Grisenko published a detailed description of the American AN/ALQ-32 ECM system that was designed, according to the author, after a careful analysis of more than 50 variants of naval combat. The system “embodies completely the basic views of the US Navy’s leadership with respect to the role of ECM equipment in the defense of surface ships against missiles, especially antiship missiles with radar homing systems.”¹⁰

In a general discussion of air supremacy in the July 1980 issue of the journal of military history, *Voyenno-istoricheskii zhurnal*, Major General of Aviation I. Tomokhovich included two paragraphs on air supremacy in sea and ocean theaters of operations. He made two points, the first being that carrier-based aircraft had played the chief role in World War II naval battles. This first point was tempered by his second, “The great importance of carriers as floating airfields and, on the other hand, their vulnerability from the air, forced the command elements of the warring sides continuously to reinforce the air defense of carrier forces with fighter aircraft and air defense weapons. This fact is why the operations of carrier forces usually were accompanied by fierce air battles and engagements.”¹¹

Thus, according to Tomokhovich, although carrier aircraft were essential to victory at sea in World War II, the ships on which they were based were extremely vulnerable to enemy action and needed enormous resources devoted to their protection. By inference the same logic could be applied to proposed Soviet carriers.

Rodionov and Novichkov appeared again in the August 1980 issue of *Morskoy sbornik* with a treatise on the employment of airships (dirigibles) as airborne early warning (AEW) platforms for naval formations. Ascribing support for such a concept to “US Navy specialists,” the authors presented a convincing argument for developing airships to provide non-carrier naval groupings’ early detection of antiship missiles and their launch platforms. They cited the tremendous endurance of airships, their ability to handle all the functions of E-2C Hawkeye aircraft, including control of interceptors, and their ability to provide over-the-horizon targeting support to ship-based ASMs. Again paraphrasing their unspecified American source, the authors provided the following scenario. “Dirigibles perform surveillance and issue target designations; surface combatants serve as platforms for helicopters and as means of support, including fuel for the dirigibles; and coastal patrol aircraft and ship-based helicopters deliver attacks against targets detected by the dirigibles and lay sonobuoy fields over a large area.”¹² This scenario seems more attuned to Soviet naval equipment and operational concepts than to American ones.

The final 1980 article on the subject of antiship missiles and antiship missile defense seemed to be an attempt to put the ASM threat in perspective and allay what may have been growing fears about those missiles within the Soviet Navy. Subtitled "Antiship Missiles: Strengths and Weaknesses," the article by Captain First Rank A. Strokin described the warheads, performance, flight profiles, and platforms of Western ASMs. It then outlined their weaknesses, concentrating on their subsonic speed, vulnerability to shipboard fire, inadequate target selectivity, and susceptibility to ECM. He concluded with steps suggested by "NATO naval specialists" for improving ASMD. "Increase the range of detection of the missiles; reduce time required to convert all means of fire to full combat readiness; improve the performance characteristics of means of observation and destruction to the point of complete automation of all processes from detection to opening fire."¹³ Automation seems to be a key concept espoused by many Soviet authors for solving the ASMD problem.

In 1981 Soviet authors produced one article in *Zarubezhnoye voyennoye obozreniye* (Foreign Military Review) on Nato ASMD capabilities,¹⁴ one in *Morskoy sbornik* on the operation of attack aircraft and fighters from carrier decks,¹⁵ and another in the same periodical on the general theory of the navy. This last is significant for the subject of this paper because of one comment by its author, Rear Admiral G. Kostev, "The winning of sea supremacy practically is not conceived without the winning of air superiority."¹⁶ Although obvious to most Western naval analysts, this concept of sea supremacy and the attendant necessity for air superiority had not previously been mentioned in the available Soviet literature and its articulation by Kostev implied a Soviet recognition of the requirement for deck-based interceptors and fighter aviation.

In the May 1982 issue of *Voyenno-istoricheskiy zhurnal* Chief of Naval Air Defense Rear Admiral S. Teglev traced the history of fleet PVO in the Great Patriotic War (1941-1945). While Teglev did not attempt to relate the specific PVO lessons of that war directly to the present day, he did keep returning to the theme that fighter aviation was an invaluable component of fleet air defense. He concluded the article by saying, "The experience of the Great Patriotic War showed that fleet air defense is an important factor that exerts considerable influence on the success of combat operations of warships and units."¹⁷

Colonel I. Inozemtsev expanded on Teglev's theme in the August issue of the same journal. In his article, subtitled "Airborne Defense for the Northern Naval Lines of Communication," Inozemtsev was less reticent than Teglev about advocating the use of naval fighter aviation for future conflicts. His basic point was that air defense of the SLOCs would be a naval responsibility in any future war just as it had been in World War II, and that naval fighter aviation, with assistance from other services, was necessary to fulfill that

responsibility.¹⁸ Because Soviet Naval Aviation (SNA) in 1982 had in its inventory only a few obsolescent Su-17 Fitter attack aircraft and the Forger, considerable additions of fighter aircraft to the SNA would be necessary to implement Inozemtsev's recommendations. Inozemtsev carried the argument still further by repeating Fleet Admiral Gorshkov's claim that all other services operating in maritime theaters should be subordinated to naval control for better coordination.¹⁹

Rear Admiral N. V'yunenko, supposedly one of Fleet Admiral Gorshkov's ghost writers, turned to an entirely new topic in the August 1982 *Morskoy sbornik* and examined American development of directed energy weapons. After describing the technical characteristics of such weaponry, V'yunenko discussed its possible application to naval warfare, especially against antiship missiles. Key to the potential of directed energy weapons against ASMs was the speed at which they could strike the target: "While a conventional missile closes with the target at a speed commensurate with a Mach number, the destructive energy of a particle beam moves at the speed of light." V'yunenko stopped short of recommending—or having foreign military surrogates recommend—general adoption of directed energy weapons for antiship missile defense, but his generally positive treatment of the subject suggested that such a course was being taken by the Soviet Navy.²⁰

Impact of the Falklands/Malvinas War

The Anglo-Argentine war in the South Atlantic initiated a barrage of Soviet articles. After an initial spate of polemics on British imperialism, the naval literature assumed a much more analytic tone, and a parade of distinguished Soviet authors addressed a variety of technical and operational issues, primarily in the pages of *Morskoy sbornik*. Most of these articles focused on electronic warfare and air defense.

As is the case of so many important issues elaborated in the pages of *Morskoy sbornik*, the first major article was a tutorial. In the November 1982 issue, Rear Admiral-Engineer G. Popov discussed the role of electronic systems in the activities of naval forces, the basic principles of electronic warfare, and their importance to air defense.²¹ He was followed in the same issue by Rear Admiral I. Uskov, who discussed the importance of surface ships to the operational success of the British effort. Uskov's conclusions, however, focused not on the importance of surface ships but on the necessity to provide ship formations with reliable and effective air defense: "The Anglo-Argentine conflict showed with full clarity . . . that under modern conditions no ship is capable of effectively carrying out assigned missions without reliable air cover. The lack of aircraft carriers with long-range radar detection and control aircraft in the English formations was the reason for large losses of ships and vessels."²²

Citing “foreign specialists,” Uskov continued, “. . . low-flying antiship missiles may be successfully combatted if ships are armed with short-range SAM systems with minimal reaction times and automated anti-aircraft gun systems.” On his own authority, he asserted that electronic warfare was extremely successful in ASMD: “In all cases when English ship captains promptly used passive jamming, the attacks of Argentine antiship missiles were unsuccessful, as a rule.”²³

Rodionov and Novichkov reappeared as authors in the December 1982 *Morskoy sbornik*, where they provided a detailed, though not totally accurate, account of Argentine air attacks and British air defense dispositions during the war.²⁴ They were joined in the January 1983 issue by Captain Second Rank Ye. Nikitin in an extensive evaluation of the electronic warfare lessons learned from the conflict. The three authors contended that because the British had no AEW organic to their naval groupings, they were forced to make exceptionally wide—and, in the case of chaff, often wasteful—use of electronic warfare to combat the Argentine antiship missile threat. This experience pointed up specific improvements that should be made to existing systems. The two most important being the adoption of automatic systems that can rapidly switch from one form of ASMD (against radar seekers) to another (against infrared or laser seekers), and the installation of completely automated anti-aircraft missiles and guns with a high rate of fire.

Rodionov et al. concluded the article with their version of the Royal Navy’s own recommendations for improving British ASMD. These recommendations were as follows:

- Equipping naval groups with AWACS [*sic*] aircraft;
- Creating an AEW remotely piloted vehicle or tethered aerostat to perform the AWACS mission;
- Improving active and passive ECM systems for countering ASMs;
- Equipping carrier groups with long-range, highly maneuverable interceptors to keep the enemy at great distances from their targets (the British Sea Harrier was effective only in close-in air battles);
- Improving the ability of VTOL aircraft to intercept low-flying targets by modifying their air-intercept radars and equipping them with advanced air-to-air missiles (AAMs);
- Developing more effective long-range, surface-to-air missiles (SAMs);
- Deploying more anti-aircraft gatling guns on ships; and
- Improving shipboard damage control capabilities.²⁵

Inasmuch as the Soviet fleet has systems similar to those in the Royal Navy, the above recommendations could apply equally to the Soviet development efforts. Particularly appropriate was the suggestion that VTOL aircraft be armed with AAMs—Forgers with AA-8 Aphid missiles on wing hard points were observed for the first time on board the VTOL carrier *Minsk* in the Indian Ocean in December 1982.

In an article authored independently for the Soviet military newspaper *Krasnaya zvezda* (Red Star), Nikitin reemphasized the difficulties that confronted the British because they lacked AEW aircraft.²⁶ The Baltic Fleet Commander in Chief Admiral I. Kapitanets echoed this theme in the February 1983 *Morskoy sbornik*, writing that Nato naval specialists had concluded that early warning about the air threat is basic to a successful defense against it. Using Western military surrogates Kapitanets also asserted that “the mission of anti-aircraft and antimissile defense can be accomplished successfully only through the comprehensive employment of various means of electronic warfare and fully automated air defense, missile, and gun systems with a short ‘reaction time’ and high fire density.” He qualified this last statement with the observation that EW did not seem to deter “old” aviation tactics such as low altitude bomb and rocket attacks.²⁷

As if to provide historical underpinnings for Kapitanets’ assertions, Vice Admiral K. Stalbo, supposedly another ghost writer for the Soviet Navy’s commander in chief, reviewed in the same issue of *Morskoy sbornik* the performance of World War II fighter aviation in support of Soviet fleet operations. At one point Stalbo was critical about Soviet World War II resource allocations that could have a modern corollary, “The air forces of the fleets did not possess special long-range fighters that to some degree would have compensated for the lack of carrier-launched fighter cover. Because of the absence of long-range fighters, the fleets were provided only with frontal aviation (tactical) fighters, and this fact greatly narrowed the opportunities for the combat employment of surface vessels.”²⁸

He concluded that the experience of World War II correctly defined the role and place of Soviet Naval Aviation in general and by implication tactical fighter aviation within SNA, causing it to develop after the war as one of the main branches of the navy.

In a continuing equivalent of a Western “media blitz” N. Novichkov, like his coauthor Nikitin, reiterated his *Morskoy sbornik* article’s main points in another publication, this time a two-part series in the February and March 1983 issues of *Aviatsiya i kosmonavtika*, the journal of the Soviet Air Forces. Novichkov again emphasized the British shortcoming in airborne early warning and paraphrased the prescriptions with which he, Rodionov, and Nikitin had concluded their January 1983 article. Novichkov also repeated the recommendation he and Rodionov had made in their May 1978 article for increased employment of helicopters in the ASMD role. He noted that the British had adapted some Sea King helicopters to the AEW mission, deploying them immediately after the Falklands crisis, and were discussing improvements to helicopter self-defense capabilities.²⁹ Another naval author repeated these points in a March 1983 article in *Zarubezhnoye voyennoye obozreniye* (Foreign Military Review) in an apparent effort to reach a different segment of the military audience.³⁰ The same issue carried an article on the American

LAMPS helicopter system, emphasizing its ASMD role.³¹

In 1983, additional articles on ASMs or ASMD appeared in the April issue of *Zarubezhnoye voyennoye obozreniye* and the April and November issues of *Morskoy sbornik*. None provided additional insight into Soviet thinking on the subject, but the repetitious nature of the articles illustrated Soviet concern.³²

The January 1984 *Morskoy sbornik* carried three articles on antiship missiles and fleet air defense. The first described the Israeli Gabriel air-launched ASM and noted that because the missile is compatible with the A-4 Skyhawk attack aircraft used by a number of nations, the Gabriel probably will “find wide distribution and markets.”³³ Another article looked at the operational utility of employing helicopters as AEW platforms for ASMD, using the Falklands/Malvinas war as an illustration of what can happen without such a system.³⁴

The most significant of the three January articles was the only one with a byline, that of Captain First Rank-Engineer A. Partala and Senior Lieutenant-Engineer N. Partala. Returning to the topic covered the previous January by Rodionov, Nikitin, and Novichkov, the Partalas justified this repetition by explaining that the information available to the earlier authors was often erroneous. In essence, the Partalas claimed that the South Atlantic war demonstrated that air defense weapons have very low effectiveness against ASMs, especially “with the mass missile strikes typical of modern warfare,” a situation that did not exist off the Falklands. “The possibility of providing reliable protection to combatants against strikes by a large number of missiles by the use of air defense weapons appears more and more doubtful to foreign authors in light of the Falklands experience.”

The solution to this dilemma, according to the authors, was the expanded employment of electronic warfare, because EW did not suffer from limitations such as rate of fire and missile saturation. They quoted foreign specialists as believing “that ECM capabilities can provide for the diversion of more than 80 percent of the attacking antiship missiles” no matter what the number. The Partalas then recommended, through their foreign surrogates, “an acceleration in practical implementation of a number of measures that EW specialists pointed out long ago. They include in particular the equipping of ships of all types with active jamming capabilities, an improvement in means of passive jamming, increased speed of EW capabilities, and use of deck-based helicopters and aircraft equipped with radar and active and passive jamming warning gear for the protection of combatants.”³⁵

The Partalas’ article, therefore, took issue with the earlier Rodionov et al. article that advocated a number of expensive weapon system improvements as well as improvements in shipboard EW. The Partalas asserted that weapons may be fine for limited engagements, but only electronic warfare can be effective against massive missile attacks. The key to ASMD, according to the authors, was EW and AEW, not weaponry.

Only one more *Morskoy sbornik* article addressed ASMs or air defense

through the middle of 1984, and it simply described Norwegian tactics for the airborne launch of the Penguin antiship missile.³⁶ An article on trends in air defense in local wars in the February *Voyenno-istoricheskiy zhurnal* was directed to continental rather than maritime PVO. Nevertheless, some of its conclusions coincided with recommendations of naval authors for improving maritime air defense. According to the authors, the speed of warning about air attacks had acquired such importance that automation of the collection, processing, and distribution of intelligence was vital. Also, combat experience in local wars had confirmed the need for echeloned PVO in depth with antiaircraft artillery and EW for close-in and low-level defenses, surface-to-air missiles (SAMs) and artillery for medium altitudes, SAMs for high altitudes, and fighter aviation beyond and in the spaces between SAM complexes.³⁷ This preferred configuration for land-based PVO could well provide a model for naval officers like Rodionov, Nikitin, and Novichkov who advocate long-range ship-based interceptors and improved missile and gun defenses.

Two distinct developments have influenced Soviet views on fleet air defense. The first is the steadily expanding operations of Soviet surface forces outside the air defense umbrella of land-based interceptors. The second is Western development of a qualitatively new class of weapons—small, sea-skimming cruise missiles.

The Falklands/Malvinas war demonstrated to the Soviets what could happen to their own navy if exposed to ASM attack while deployed. British deficiencies were remarkably similar to Soviet deficiencies in AEW and ASMD weaponry. But the British demonstrated an expertise in ECM that the Soviets do not have and successfully defended ships that would likely have been lost had they been Soviet. The war in the South Atlantic brought to life a threat that some Soviets had been concerned about since the late 1970s. As indicated by Soviet literature, the ASM threat received intensive high-level attention after 1982 as the primary fleet air defense problem.

Soviet authors agree unanimously on some methods of improving antiship missile defense, but not on others. Electronic warfare had no detractors. Automation of the collection, processing, and dissemination of information and self-defense weaponry was similarly popular. Most authors cited airborne early warning, preferably on a helicopter, as a prerequisite for any kind of ASM defense.

Disagreement appears to center on the requirement for long-range interceptors and AEW airplanes for fleet air defense. Stalbo's allusion to an unfulfilled World War II need for long-range naval fighters as compensation for the absence of carriers in the Soviet Navy probably was a thinly veiled criticism of those who would deny the Soviet Navy modern carriers and accompanying air wings for fleet air defense. The earlier article by Tomokhovich seemed to argue that carriers were too vulnerable to provide

effective bases for fleet air defense because they required enormous resources for their own self-protection. The two Partalas later implicitly supported this line of reasoning by arguing for increased ECM capabilities and against new weaponry for antiship missile defense. The argument over the existence of carriers in the Soviet fleet appears moot with the confirmed construction of a large-deck carrier in the Nikolayev shipyard near the Black Sea, but it may simply have shifted focus to the number of such carriers required.

V'yunenکو's 1982 article on directed energy weapons in the fleet system of ASMD is intriguing in that the concept has not been discussed elsewhere in Soviet naval literature, even in passing. The same is true of Rodionov and Novichkov's article on airships as AEW platforms for fleet air defense. Both of these concepts are viable and may be in development. The likelihood of the latter concept reaching production probably is considerably less than the former, because several competitors to airships (AEW helicopters and AEW airplanes operating from aircraft carriers) appear more popular among the authors reviewed. Directed energy weaponry, on the other hand, has little competition in its class of destruction potential.

Judging by the literature, the 1990s' fleet air defense system of the Soviet Navy will include a multitude of new systems: a big-deck carrier with long-range fighters and AEW airplanes embarked, AEW and ASMD helicopters dispersed throughout the surface combatant fleet, enhanced and automatic ECM, and, perhaps, a rudimentary directed energy ASMD system. The Soviets are very much concerned about the Western antiship missile threat, and if they are to continue to employ their navy as an instrument of national power, such defensive systems are an absolute necessity. Countering them is no less a requirement for Western air and naval forces.

Notes

1. V.S. Sysoyev and V.D. Smirnov, "Antiaircraft Defense for a Force of Surface Combatant Ships," *Morskoy sbornik*, March 1966, pp. 32-38; I. Lyubimov, "Coordination of National Air Defense Troops with the Navy," *Voyennaya mysl*, March 1969.

2. N. V'yunenکو, "Some Trends in the Development of Naval Tactics," *Morskoy sbornik*, October 1975, pp. 21-26.

3. N.V. Shaskol'skiy, "The First Combat Use of Ship-to-Ship Missiles and Their Development," *Morskoy sbornik*, May 1970, pp. 94-99.

4. B. Rodionov and N. Novichkov, "The Tomahawk Cruise Missile," *Morskoy sbornik*, July 1977, pp. 86-91.

5. B. Rodionov and N. Novichkov, "Is the Missile Defense Problem Solvable?" *Morskoy sbornik*, May 1978, pp. 96-103.

6. I. Kuz'min, "Reconnaissance in Support of Cruise Missile Firings," *Morskoy sbornik*, April 1978, pp. 96-101.

7. S.P. Teglev, "Air Defense of Naval Forces," *Sovetskaya Voyennaya Entsiklopediya* (Moscow: Voenizdat, 1978), vol. 6, pp. 587-588.

8. V. Vasil'yev, "Developing the Antiaircraft Defense of Large Formations of Surface Ships," *Morskoy sbornik*, February 1980, pp. 26-31.

9. See Jean Labayle-Couhat, ed., *Combat Fleets of the World, 1984/85* (Annapolis, Md.: Naval Institute Press, 1984), p. 675 for unclassified descriptions of these systems.

10. V. Grisenko, "Shipboard ECM Equipment in the U.S. Navy," *Morskoy sbornik*, April 1980, pp. 78-82.
11. I. Tomokhovich, "World War II and the Postwar Period: The Character and Methods of the Struggle for Air Supremacy," *Voyenno-istoricheskiy zhurnal*, July 1980, pp. 26-34, trans. in Joint Publications Research Service (JPRS) 76824 (Washington: 14 November 1980).
12. B. Rodionov and N. Novichkov, "Dirigibles in the Defensive System of Task Forces," *Morskoy sbornik*, August 1980, pp. 82-87.
13. A. Strokin, "Antiship Missiles: Strengths and Weaknesses," *Morskoy sbornik*, November 1980, pp. 84-87.
14. V. Vostrov, "NATO Capabilities Against Antiship Missiles," *Zarubezhnoye voyennoye obozreniye*, January 1981, pp. 72-74, trans. in JPRS 78054 (Washington: 12 May 1981).
15. I. Beriyeve and N. Naskanov, "Operating Tactics of Deck-Based Attack Aircraft and Fighters," *Morskoy sbornik*, August 1981, pp. 80-89.
16. G. Kostev, "On Fundamentals of the Theory of the Navy," *Morskoy sbornik*, November 1981, p. 25.
17. S. Teglev, "Soviet Art of Warfare in the Great Patriotic War: Operational Art: Covering Fleets from Air Attacks," *Voyenno-istoricheskiy zhurnal*, May 1982, pp. 27-33, trans. in JPRS 82628 (Washington: 12 January 1983).
18. I. Inozentsev, "Soviet Art of Warfare in the Great Patriotic War: Airborne Defense for the Northern Naval Lines of Communication," *Voyenno-istoricheskiy zhurnal*, August 1982, pp. 13-19, trans. in JPRS 82549 (Washington: 28 December 1982).
19. See Floyd D. Kennedy, Jr., "Soviet Doctrine for Mutual Cooperation: The Naval/Air Force Context," *Naval Intelligence Quarterly*, December 1981.
20. N. V'yunenko, "The U.S. Beam Weapon," *Morskoy sbornik*, August 1982, pp. 81-85.
21. G. Popov, "The Role of Electronic Systems in the Activities of Navy Forces," *Morskoy sbornik*, November 1982, pp. 75-77.
22. *Ibid.*
23. I. Uskov, "Lessons of the Anglo-Argentine Conflict and the Role of Surface Ships in Conflict at Sea," *Morskoy sbornik*, November 1982, pp. 87-92.
24. B. Rodionov and N. Novichkov, "The Tactics of Air Operations Against Ships," *Morskoy sbornik*, December 1982, pp. 80-87.
25. B. Rodionov, Ye. Nikitin, and N. Novichkov, "Electronic Warfare in the South Atlantic," *Morskoy sbornik*, January 1983, pp. 77-85.
26. Ye. Nikitin, "Colonial Adventure in the South Atlantic," *Krasnaya zvezda*, 14 January 1983, p. 3.
27. I. Kapitanets, "The Navy's Role in the Anglo-Argentine Conflict," *Morskoy sbornik*, February 1983, pp. 14-20.
28. K. Stalbo, "Experience in the Use of Naval Aviation in the Great Patriotic War," *Voyenno-istoricheskiy zhurnal*, February 1983, pp. 25-30, trans. in JPRS 83387 (Washington: 3 May 1983).
29. N. Novichkov, "Combat Aviation in the Anglo-Argentine Conflict," *Aviatsiya i kosmonavtika*, February 1983, pp. 46-47 and March 1983, trans. in JPRS 84165 (Washington: 22 August 1983), and JPRS 84063 (Washington 8 August 1983), respectively.
30. Yu. Galkin, "Air Defense of British Expeditionary Forces (During the Anglo-Argentine Conflict)," *Zarubezhnoye voyennoye obozreniye*, March 1983, pp. 64-67, trans. in JPRS 83591 (Washington: 2 June 1983).
31. M. Panin, "LAMPS System," *Zarubezhnoye voyennoye obozreniye*, March 1983, pp. 67-72, trans. in JPRS 83591 (Washington: 2 June 1983).
32. B. Semenov, "Anti-Ship Missiles," *Zarubezhnoye voyennoye obozreniye*, April 1983, pp. 64-69, trans. in JPRS 83735 (Washington: 22 June 1983); A. Partala and N. Partala, "Electronic Warfare Capabilities of Guided Missile Patrol Boats," *Morskoy sbornik*, April 1983, pp. 81-84; N. Partala, "U.K. Shipboard Missile-Attack Warning Station," *Morskoy sbornik*, November 1983, pp. 75-76; N. Kabalin, "Using the Land-Based Tomahawk Against Ships," *Morskoy sbornik*, November 1983, pp. 81-83.
33. "Gabriel Antiship Missiles (Naval Officer Reference Data)," *Morskoy sbornik*, January 1984, pp. 29-31.
34. "Long-Range Radar Detection Helicopters in the Ship Antimissile Defense System," *Morskoy sbornik*, January 1984, pp. 86-87.
35. A. Partala and N. Partala, "Electronic Warfare Against Antiship Missiles," *Morskoy sbornik*, January 1984, pp. 82-85.
36. "The Tactics of Aerial Use of Penguin Antiship Missiles," *Morskoy sbornik*, March 1984, pp. 87-91.
37. A. Kozhevnikov and T. Mikitenko, "On Certain Trends in the Development of Air Defense in Local Wars," *Voyenno-istoricheskiy zhurnal*, February 1984, pp. 59-64, trans. in JPRS-UMA-84-036 (Washington: 7 May 1984).