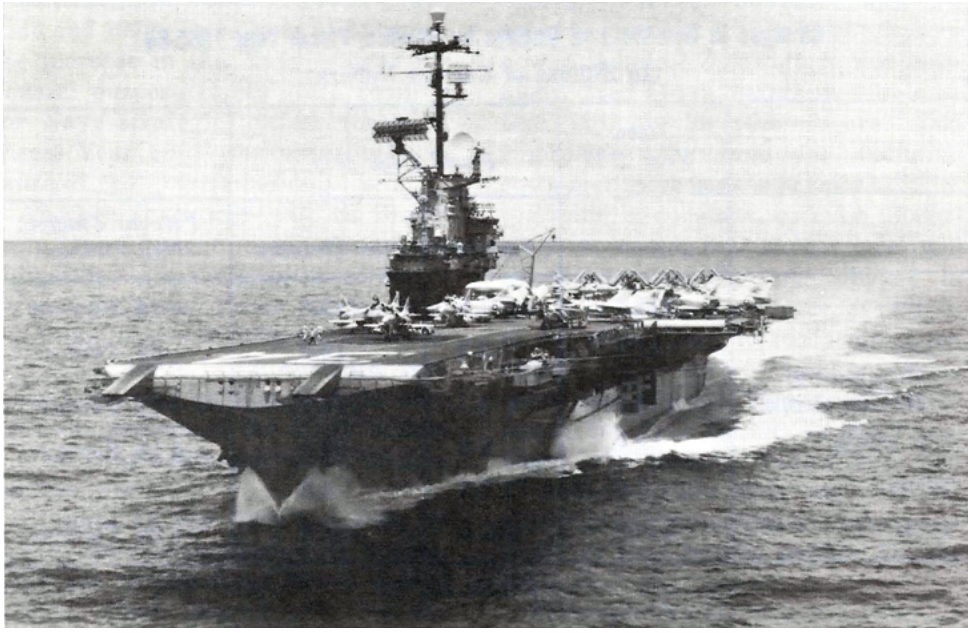


Where Does the Navy Go From Here?

Arnold M. Kuzmak

IT IS not generally realized, least of all by the Navy itself, but the Navy has been doing fantastically well in the annual competition for budget dollars. At a time when the total defense budget has been going down, particularly after allowing for inflation and pay raises, the Navy budget has been increasing.

Let us look at the figures. Consider, first, the period when the Vietnam war was building up to its peak, say, from Fiscal Year 1965 through Fiscal Year 1969. During this period, of course, the defense budget and the budgets of all the services rose substantially. However, when we remove those costs that would not have been incurred without the war (the "incremental cost" of the war) and consider only the non-Vietnam portions of the service budgets, an interesting pattern develops.

Figure 1 shows these calculations, based on official Defense Department estimates

Changes in Non-Vietnam Outlays by Service, Fiscal Year 1965-69 (In Billions of Current Dollars)				
	Fiscal Year 1965	*Fiscal Year 1969*		
		Vietnam	*Non-Vietnam*	*Percent Change, Non-Vietnam*
Army	$11.6	$11.3	$13.8	+19 Percent
Navy	13.4	4.5	18.0	+34 Percent
(Excluding Marine Corps)	(12.3)	(3.1)	(16.7)	(+36 Percent)
Air Force	18.2	5.6	20.3	+12 Percent
Other	3.0	0.1	4.4	
Total	$46.2	$21.5	$56.5	+22 Percent

Figure 1.

of the incremental cost of the war in Vietnam. The figure shows that the Navy's outlays, excluding the Marine Corps, for its non-Vietnam forces increased 36 percent from Fiscal Year 1965 to Fiscal Year 1969, substantially more than the other services and substantially more than inflation and pay raises would account for (which would be about 19 percent). Thus, it is not true that spending for the Navy's non-Vietnam programs was reduced below prewar levels during the Vietnam buildup. In fact, in real terms, it increased about 13 percent.

Looking at the period of "winding down" the war in Vietnam, we find an equally striking pattern. Figure 2 compares the total service budgets for Fiscal Years 1969 and 1972. Since we do not have official estimates of the cost of the war in Fiscal Year 1972, we cannot determine the non-Vietnam portion of the budget as we did for the earlier period. We do know, however, that the Navy has been ahead of the other services in Vietnamizing its operations in Vietnam, so the remaining incremental war costs in the Navy's Fiscal Year 1972 budget are quite small, probably less than one billion dollars.

Figure 2 shows that, as the Navy's involvement in the Vietnam war has decreased, its total budget, excluding the Marine Corps, has increased 13 percent, while the budgets of the other services have decreased by substantial amounts. In his March 1971 testimony before the Senate Armed Services Committee, the Chief of Naval Operations, Admiral Elmo R. Zumwalt, Jr., stated that the Navy total obligational authority, not counting the Marine Corps, has increased 16 percent in real terms, after allowing for pay and price increases, between Fiscal Years 1964 and 1972. This figure understates the increase in the Navy budget for general purpose forces since funding for Navy strategic nuclear forces in Fiscal Year 1964 was very high because of the *Polaris* buildup.

Another conclusion can be drawn from this budget data. Since the budget for non-Vietnam naval forces increased, in real terms, during both the Vietnam war buildup and its winding down, there is

no evidence, contrary to popular opinion, that the non-Vietnam portion of the Navy budget was reduced below prewar levels during the war.

In spite of the Navy's success in recent years in increasing its budget, there are several large clouds on the horizon. First, chances are that the Navy budget will not continue to increase, in real terms, ·as it has in the past. Continuing demands for new domestic programs make it likely that future defense budgets will be roughly constant in actual purchasing power. Admiral Zumwalt, in the testimony cited above, refers to "the austere outlook for the future" and emphasizes the need for reducing costs and increasing efficiency.

Second, a constant, or even moderately increased, real budget level will exacerbate the Navy's problems in trying to maintain its force levels and, at the same time to modernize with highly sophisticated and expensive ships and aircraft. Consider, for example, the *F-14* fighter. In the Fiscal Year 1972 budget, *F-14's* will cost 17 million dollars each, not counting research and development costs, compared to four million dollars for the *F-4's*.

Although the Navy is counting on a reduced unit price as production proceeds, when the *F-111* was at the stage of development that the *F-14* is at now, it appeared to be the greatest aircraft ever. One need not pr.edict a comparable disaster to believe that the Navy will be lucky if it can, in fact, achieve the 17-million-dollar unit price for the production run. At this price, the 722 aircraft planned for procurement will cost over 12 billion dollars, and operating costs will also be correspondingly higher.

Moreover, much the same story could be told about carriers, destroyers, submarines, antisubmarine warfare aircraft, and even support ships. Something will have to give—force levels, the rate of

Changes in Total Obligational Authority by Service, Fiscal Year 1969-72 (In Millions of Current Dollars)

	Fiscal Year 1969	*Fiscal Year 1972**	*Percent Change*
Army	$26,180	$21,468	−18 Percent
Navy	21,795	23,347	+7 Percent
(Excluding Marine Corps)	(19,120)	(21,534)	(+13 Percent)
Air Force	26,126	22,827	−13 Percent
Other	4,642	6,586	
Total	$78,743	$74,228	−6 Percent

* Excludes January 1971 and January 1972 pay raises.

Figure 2 presents the budget in terms of total obligational authority (TOA) rather than actual outlays. TOA represents, roughly speaking, the rate at which the Government commits itself to additional expenditures even though the money may not actually be paid out for several years, and is, therefore, a better measure of the size of our effort. Figure 1 shows outlays because the data on incremental war costs are presented in those terms.

Figure 2.

modernization, or the level of sophistication of new weapons systems. An omen for the future may be seen in the fact that the Fiscal Year 1972 buy of *F-14's* is only 48 aircraft, half the "baseline" number in the contract and the lowest number allowed without renegotiation of the contract.

Force Levels Down

Third, although the budget for general purpose naval forces has been going up, force levels have been going down. Between Fiscal Years 1964 and 1972, the number of active ships in the Navy has dropped from 917 to 658. During the same period, the number of aircraft carriers (*CVA* and *CVS*) decreased from 24 to 16, and the number of tactical air wings from 15 to 11.

Fourth it is almost certain that carrier force levels will be reduced further over the next decade. By 1978, the force of 16 total carriers will include three nuclear-powered carriers, eight conventionally powered carriers of post-World War II design, and five overage World War II carriers.

Since it takes about six years from the decision to start a carrier before it is completed, maintaining the Fiscal Year 1972 force level of 16 past 1980 would require starting five new carriers in Fiscal Years 1972-74, at a probable cost of more than four billion dollars. There is every indication that the administration is not willing to make a commitment of this magnitude. In fact, the 1972 budget, as submitted to Congress, does not provide for starting a fourth nuclear-powered carrier, the *CVAN 70*, which has been rejected twice by Congress. The Secretary of Defense has stated that US responsibilities:

...will require construction of an additional nuclear powered carrier for the Navy to insure adequate attack carrier capabilities for the 1980s and beyond.[1]

This will provide 12 post-World War II aircraft carriers by 1980.

Navy Policy Problems

Since the Navy will be facing many hard choices over the next several years, a review of some of the basic assumptions of naval force planning seems to be in order. The discussion which follows will center around the role of the aircraft carrier since so much of the Navy's operations and its budget revolves around the carriers, their aircraft, and the forces and activities needed to defend and supply them.

Some historical perspective may be helpful. During World War II, we discovered that the aircraft carrier, rather than the battleship, was the key to defeating the enemy's surface fleet. In the aftermath of the war, the Navy found itself in the position where no potential enemy had a surface fleet close to ours in size or capability. The Navy, and particularly the aircraft carriers, had lost their principal mission. What was left was attack of land targets, and it required great effort for the Navy to establish this as one of its roles and missions. This change has substantial implications for our present subject. Most important, it makes carrier-based aircraft much more directly competitive with land-based tactical aircraft.

Aircraft Carrier Vulnerability

In the period since World War II, carriers have seen extensive combat in Korea and Vietnam. They have also been used on numerous occasions to "show the flag,"

1 *Statement of Secretary of Defense Melvin R. Laird Before the House Armed Services Committee on the Fiscal Year 1972-1976 Program and the 1972 Defense Budget*, 9 March 1971, "Toward a National Security Strategy of Realistic Deterrence," Superintendent of Documents, US Government Printing Office, Washington, D. C., 1971, PP 95-96.

provide air cover for evacuation of US civilians, and the like. In none of these situations have the carriers been attacked by enemy submarines, aircraft, or surface ships. Although our experience has been in more limited wars, US defense planning continues to be dominated, and rightfully so, by large-scale conventional wars in which the Soviet Union is heavily involved. It is therefore, crucial that we evaluate the vulnerability of aircraft carriers in such wars, both in absolute terms and relative to land-based tactical aircraft which perform many of the same missions. Perhaps the most important disadvantage of the aircraft carrier is its greater vulnerability to air and submarine attack than the land-based air wing. On the one hand, we have learned, in recent years, how to build aircraft shelters, how to protect fuel and maintenance facilities, and how to repair runways rapidly so that losses of aircraft on the ground to air attack using conventional weapons can be reduced to very low levels and disruption of operations can be minimized.

On the other hand, technology and other developments have made the aircraft carriers more, rather than less, vulnerable. First, the development by the Soviet Union of large air-to-surface missiles with conventional warheads and terminal guidance has made it possible to launch the equivalent of World War II kamikaze attacks without sacrificing pilots and aircraft.

Reconnaissance Development

Second, the development of satellite and long-range aircraft reconnaissance has radically reduced the ability of naval task forces to hide in the broad expanses of the oceans. Further, because the carriers will generally be involved in strikes against land targets, they will have to remain in the same general area for long periods of time to have much effect.

Third, these developments, as well as more sensitive submarine sonars and higher speed submarines, make it much easier for submarines to find and attack the carriers. Finally, both anti-air and antisubmarine defense, while they can exact high attrition over a long period of time, remain so unreliable in any particular engagement that they cannot guarantee that no more than a few attackers will penetrate. As a result of these developments, a strong case can be made that the carriers could not remain on station in any situation where the Soviets could concentrate their land-based aircraft or their submarines against them.

Although it is difficult to sink an aircraft carrier—and no modern carrier (*Essex* class or later) was sunk in World War II—it is much easier to damage it enough that flight operations are impossible and to force it to return to port for an extended period of time for repairs. Particularly in the context of current planning for, a ·conventional war with the Soviets lasting not much longer than 90 days, forcing the carrier out of action for three months or more is almost as good, from the enemy's point of view, as sinking it.

Figure 3 summarizes the results of *kamikaze* attacks on US carriers (*CV's*) in World War II. We can see that 60 percent of those taking one hit by a *kamikaze*, and all those taking more than one hit, were forced to return to port for repair; and that the improved damage control features of the *Essex* class and later carriers did not improve these figures.

Based on this evidence and making ample allowance for improvements in damage control since World War II, it appears that four or five hits by Soviet air-to-surface missiles would be enough to force a carrier to retire. Similarly, four or five hits on the carrier's screws by submarine-launched acoustic homing torpedoes can reasonably be

Results of World War II Kamikaze Attacks on Aircraft Carriers		
Number of Hits	***Number of Cases***	***Number Forced to Return to Port***
All Aircraft Carriers		
1	10	6
2 or More	4	4
Essex Class or Later		
1	8	5
2 or More	3	3

Source: Samuel E. Morison, *History of the United States Naval Operations in World War Two*, Little, Brown & Co., Boston, Mass., 1968-62, Volumes 12 to 16, passim.

Figure 3.

expected to cause enough loss of propulsion power to make normal flight operations impossible and to reduce greatly the carrier's ability to avoid further damage.

Because there would only be a small number of carriers deployed, perhaps 10 or 12, and because only a few hits on each, whether by air-to-surface missiles or torpedoes, are needed to force it to retire, it seems unlikely that the carriers could be successfully defended against a concentrated attack by sophisticated land-based aircraft or submarines, regardless of foreseeable technological advances and regardless of the funds, within reasonable limits, devoted to defenses.

No feasible defense will be able to prevent four or five air-to-surface missiles or torpedoes from getting through and hitting the carrier In fact, both air defenses and antisubmarine defenses typically have a low probability of success on any given engagement, so that, if the enemy needs only a few successful penetrations to accomplish his objective, he will be able to do so. Some purely illustrative calculations using a simplified model will elucidate the structure of the problem. Suppose the Soviets are willing to Jose 25 bombers, each capable of carrying one air-to-surface missile, and perhaps their fighter escorts, to disable a carrier. This is not unreasonable since the Soviets have some 300 air-to-surface missile-capable bombers in their naval aviation force. We assume the air-to-surface missiles have 80-percent reliability and, optimistically, that our fighter defense would have a 40-percent chance of shooting down a given bomber in a single engagement, that all of the bomber losses occur prior to air-to-surface missile launch, and that our surface-to-air missile systems have an 80-percent probability of shooting down an incoming air-to-surface missile.

Electronic Devices

With these assumptions, the bombers would get six hits on the carrier, more than enough to force it to retire. If we are less optimistic and assume that the fighters have a 20-percent kill probability and the missile defenses a 60-percent kill probability, then the expected number of hits would be 32, and a much smaller bomber force would be enough. Thus, even with optimistic

assumptions, the carrier cannot be successfully defended against air attack. If the performance of defensive systems does not reach these high expectations, then the level of damage increases rapidly. Of course, it is possible that some kind of electronic countermeasure—jamming, decoys, or others—will make the enemy air-to-surface missiles largely ineffective. While it appears sensible to devote substantial resources to developing and testing such devices, there is no way of knowing in advance of their use in actual combat whether the enemy has a successful counter-countermeasure. Electronic countermeasure devices, therefore, do not significantly increase our level of confidence that we could defend the carrier. Similar arguments to the above apply to defense of the carrier against concentrated submarine attack.

Land Targets

The conclusion of the above arguments is that we should not plan to use our aircraft carriers for strikes against land targets in situations where the Soviets can concentrate their land-based aircraft or their submarines against them. Thus, any use of the aircraft carriers for strikes against land targets, where they would be constrained by aircraft range to operate in a restricted area, seems unsustainable in any war in which the Soviets are fully involved.

On the other hand, the Soviets are the only potential enemy with the large and sophisticated air and submarine forces needed to mount an intensive attack on the aircraft carriers. China does not have such forces, nor do the smaller powers against whom we might intervene. Against such smaller forces, it should be possible to defend adequately the carriers although the possibility of substantial damage even here cannot be ruled out. Of course, there are many contingencies in which the carriers would be able to operate from sanctuaries.

There is also a spectrum of other issues which have implications for carrier force levels. These deal with the particular advantages and disadvantages of putting larger or smaller portions of our tactical air forces on sea bases (carriers) rather than land bases and with the unique characteristics of each. The particular advantages of sea basing "include the ability to provide a US presence without commitment, to operate where land bases are no available, and to attack surface ships at sea beyond the range of land-based aircraft. Its disadvantages include greater cost and greater vulnerability than a comparable land-based air wing.

Unique Capabilities

Aircraft carriers, and naval forces more generally, have the unique and the useful property that they can be deployed to a crisis area and held offshore in international waters, thus signaling our ability and perhaps intention to intervene, without actually committing us and without the need for political clearances to land troops or even for overflight rights. Neither Army nor Air Force units can do this. Similarly, continuous deployment of naval forces in potential crisis areas provides continuous evidence of our ability to intervene.

The second unique capability of aircraft carriers is their ability to operate without the use of nearby land bases. Of course, this does not have much significance in areas like central Europe where we have numerous prepared bases, but, in other areas, it could be extremely important.

During a crisis, or the resulting fighting, we cannot count on being able to use existing nearby airbases if the host country is not directly involved and if it wishes to remain neutral. For example, existing land bases

Comparison of Annual Cost of Average Navy and Air Force Air Wings, Fiscal Year 1964 (Total Obligational Authority in Millions of Current Dollars)			
Number of Hits	*Fiscal Year 1963*	*Fiscal Year 1964*	*Fiscal Year 1965*
Navy			
Carriers and Aircraft[1]	$3,070	$2,620	$3,030
Antiair Warfare Escort Ships	790	890	610
60 Percent of Antisubmarine Warfare Escort Ships[2]	900	1,050	1,180
70 Percent of Logistic and Support Ships[2]	630	670	850
Total	$5,390	$5,230	$5,670
Number of Air Wings	15	15	15
Average Cost Per Air Wing	$360	$350	$380
Air Force			
Tactical Air Costs	$4,400	$4,200	$5,000
Additional Overhead Allocation[3]	1,470	1,600	1,980
Total	$5,870	$5,800	$6,980
Number of Air Wings	20	21	22
Average Cost Per Air Wing	$290	$280	$317

1 Excludes Marine Corps costs.
2 Percentaires are those associated with carriers in Admiral Thomas H. Moorer's statement.
3 Air Force mission breakout did not allocate all overhead.
Sources: "Abstract, Analysis of the Relative Cost of Sea-Based and Land-Based Tactical Air" in *CVAN-70 Aircraft Carrier*, Joint Hearings Before the Joint Senate-House Armed Services Subcommittee of the Senate and House Armed Services Committees on *CVAN-70* Aircraft Carrier, 91st Congress, Second Session, 1970, pp 41-46; Statement of Admiral Thomas H. Moorer in *Authorization for Military Procurement, Research and Development, Fiscal Year 1970, and Reserve Strength*, Hearings Before the Senate Armed Services Committee, 91st Congress, First Session, 1969, p 667.

Figure 4.

in Greece and Turkey would probably be available in case of a war in NATO Europe, but probably not in case of US involvement in an Arab-Israeli conflict. Similarly, if we decided to intervene in an area where we had not previously made plans for it, the carriers would be able to begin flight operations as soon as they reach the area.

The Air Force has developed a "bare-base kit" which is designed to enable land-

based aircraft to deploy to an unprepared airport—of which there appears to be an ample number—and begin operations in a short time. However, this is as yet an unapproved capability and adds considerably to required airlift forces. In addition, in some situations, the necessary airfields might have been overrun by enemy ground troops. Thus, deployability without prepared land bases remains a substantial advantage of the sea-based tactical air forces.

Aircraft carriers can also attack enemy surface ships that are farther from shore than the range of land-based tactical aircraft—for instance, 600 nautical miles or more. This was, in fact, the major use of attack aircraft carriers during World War II. A further discussion of this mission is deferred until the threat of the Soviet surface fleet is considered.

Disadvantages

Among the disadvantages aircraft carriers, we consider, in addition to vulnerability, greater cost than a comparable land-based air wing. A valid cost comparison is difficult to construct since it is not obvious just what costs should be charged against the two alternatives, which costs are fixed and which are variable, and how to define comparable air wings. No such cost comparison is available in detail on the public record. Nevertheless, it would be surprising if the sea-based air wing did not pay a premium for its mobility and relative freedom from land bases, for its expensive movable airbase, for its sea-based logistic support, and for its need for protection against submarines.

A rough attempt to judge the size of the premium is shown in Figure 4 which compares the average cost per air wing for the Navy and Air Force in Fiscal Year 1963-65 as derived by the author from published analyses of their budgets by mission. It is necessary to go back that far in time to eliminate the distorting effect of the war in Vietnam. The figure indicates that the average sea-based wing, which is about the same size as the land-based wing, costs about 20 to 25 percent more.

We also know that classified studies by analysts in the Office of the Secretary of Defense derived a premium of 40 percent for the sea-based wing.[2] This premium might be well worth paying, but it is substantial, so that we should tend to emphasize land-based tactical aircraft except in cases where the particular advantages of the carriers, as discussed above, seem to be controlling.

Until recently, the Soviet Fleet of surface warships did not play a large role in US defense planning. Their surface fleet was much smaller than ours and did not have any aircraft carriers, so it was assumed that it could easily be destroyed by carrier-based aircraft. However, after the sinking of an Israeli destroyer in 1967 by an Egyptian Soviet-built patrol boat with surface-to-surface cruise missiles, the realization has spread that these ships with their surface-to-surface cruise missiles could pose a substantial offensive threat to the US Fleet.

The Soviets have some 18 cruisers and destroyers, 150 patrol boats, and 47 submarines which can fire surface-to-surface cruise missiles, and have given substantial numbers of the surface-to-surface cruise missile patrol boats to their allies. When we consider ways in which the Soviet surface fleet might be used

2 *CVAN-70 Aircraft Carrier*, Joint Hearings Before the Joint Senate-House Armed Services Subcommittee of the Senate and House Armed Services Committees on CV AN-70 Aircraft Carrier, 91st Congress, Second Session, 1970, p 630.

Much of the Navy's operations and budget revolves around the carriers, their aircraft, and the forces and activities needed to defend and supply them

against the US Fleet, and particularly the aircraft carrier task forces, one of the first that comes to mind is a situation in which the United States and Soviet Fleets are in continuous contact during a crisis leading to war, as they would be in the Mediterranean, for example. If the Soviets struck first, they could launch a coordinated volley of surface-to-surface cruise missiles with no tactical warning. By assumption, we would not be able to take any action against the enemy launching platforms—the ships—until their missiles had already been launched. The Navy is working on several programs and tactics to improve its ability to deal with this situation, including development of its own surface-to-surface cruise missile (*Harpoon*), helicopters to improve warning, and increased emphasis on jamming and other electronic countermeasures to deflect the incoming missiles.[3] However, none of these can prevent the initial volley of missiles from being launched, and only a handful of missiles for a large, coordinated attack need penetrate the defenses to do a great deal of damage. Therefore, the threat of a Soviet first strike against the US Fleet is not likely to be eliminated in the foreseeable future.

If the US carrier task forces survive the initial attack, or if the war develops in such a way that such an attack does not occur, then the outcome depends strongly on whether the Soviet surface ships have land-based air cover. If the Soviets do not have air cover, then the US aircraft carriers could remain

3 "CNO Zumwalt Presses to Retain 15 Carrier s, Plans to Reorder Navy Mission Priorities," *Armed Forces Journal*, 7 December 1970, pp 26-27; Brooke Nihart, "Harpoon: Navy's Answer to Soviet Missile Boats/' *Armed Forces Journal*, 16 November 1970, PP 22-23.

outside missile range of the Soviet surface fleet and still attack it with carrier-based aircraft. Although some US aircraft would be lost, there is little doubt that most of the Soviet surface ships would be sunk.

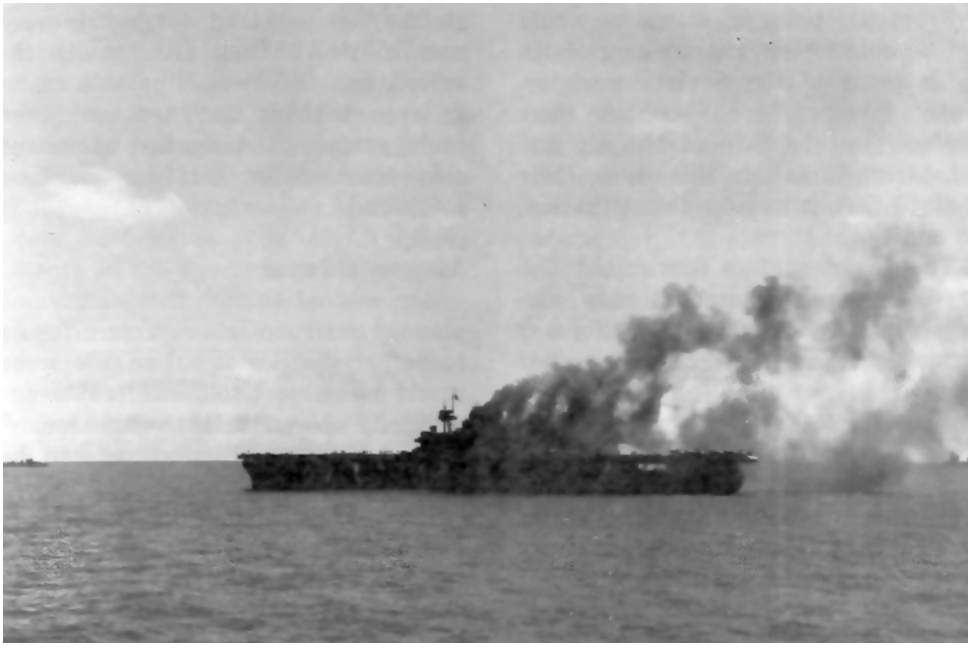
Different Situation

On the other hand, if the battle occurs in an area where the Soviet surface fleet does have air cover then the situation is quite different. The Soviet land-based aircraft could be used in two ways: to provide an area, defense for their ships or to attack the carriers directly. As we have seen above, if they attack the aircraft carriers directly, they can probably force them to retire from the battle area although they might have to expend a substantial number of aircraft to do so.

From our point of view, we would not be able to operate our carriers in these areas if the Soviets were directly involved, even without their surface fleet because of the air and submarine threat. In this sense, their surface fleet is not, in this situation, an additional threat.

The Soviet surface fleet might also be used against merchant ship convoys carrying logistic support for our armies overseas and economic goods required by our allies' economies. The surface ships involved would be their cruisers and destroyers since their surface-to-surface cruise missile patrol boats would not have the range, endurance, and sea-keeping ability to engage in these operations.

In such operations, the Soviet surface ships would be operating outside land-based



US Navy Photos

In World War II, all US carriers taking more than one hit, and 60 percent of those taking one hit, by a *kamikaze* were forced to return to port for repairs; improved damage control features did not improve the figures

air cover and would, therefore, be vulnerable to strikes by carrier-based aircraft, while the carriers themselves remained outside missile range. The carriers would face Soviet submarine opposition, but would be less vulnerable than when launching , strikes against land targets—the situation described earlier—since they would not be constrained to operate in a restricted area. They could, therefore, use their speed and mobility to limit the ability of enemy submarines to get close enough to attack.

The carriers would have a reasonable chance of being able to carry out this mission. If not, we could stop shipping, while antisubmarine warfare aircraft wear down the deployed enemy submarine force or use our own attack submarines against the Soviet surface ships. The implications of this mission for aircraft carrier force levels will be discussed later.

In summary, the Soviet surface fleet reinforces their ability to deny us the use of our aircraft carriers for strikes against land targets in any war in which they are heavily involved, but they would be able to do so even without it. They could use their surface fleet against merchant ship convoys, but this use could be countered.

Adequacy of Forces

An evaluation of the ability of planned antisubmarine warfare forces to defeat the Soviet submarine force would be subject to considerable uncertainty. Nevertheless, some important qualitative observations can be made.

First, if we accept the arguments above that aircraft carriers used against land targets cannot be adequately protected against concentrations of Soviet submarines at reasonable cost, then the need for antisubmarine warfare forces is greatly reduced. It is inherently harder to protect a small number of high-value targets than a large number of low-value targets, as in the protection of merchant shipping.

If one or two submarines penetrate a carrier's defenses and get, say, five hits on the carrier's screws, they will disable the task force. The same submarines penetrating a convoy would damage perhaps five to 10 merchant ships. In order to have an effect on the land war by sinking merchant ships, the Soviet submarines must sink a large number of them which is easier to prevent than the small number of successful attacks necessary to force aircraft carriers to withdraw.

Substantial Investment

Second, we have a substantial investment in antisubmarine warfare platforms—ships, aircraft, and submarines—which are expensive to procure and operate. Their would appear to be a much greater payoff for measures which would improve the performance of existing forces than for increases in force levels. Such measures would include not only development of new and more effective sensors—such as sonars and sonobuoys—and weapons—such as torpedoes and mines—but also improvements in the operator proficiency and maintenance provided in the operating forces. Similarly, at a time when budgets are being reduced, these measures should be protected at the expense, if need be, of force levels.

In considering the implications of these arguments for force levels, we take, as a starting point, the validity of the argument are useful for providing a presence during peacetime or during a crisis. The requirements for this function set a minimum for carrier force levels. This minimum level is taken here as nine carriers.

Using the rule of thumb that three carriers are needed in the force to maintain one carrier continuously deployed in a forward area, the force level of nine would make possible one carrier continuously on station in the Mediterranean and two in the western Pacific or vice versa, depending on one's political judgment. Each of the deployed carriers could be reinforced during a crisis by one or two more, making possible a display of willingness to commit ourselves.

Rotation Policies

In addition, Secretary of Defense Melvin R. Laird has stated that, if we again become involved in a war as large as Vietnam, we would have to rely on mobilization and a callup of the Reserves which suggests that wartime rotation policies should be assumed. A force of nine carriers could then provide four or five on station for the war-particularly during the early period when land-based aircraft might not be fully operational-and also one or two on station elsewhere for presence and crisis control, with six carriers on station and with two out of three deployed forward instead of one out of three in peacetime.

The question is, then, how many additional carriers, over and above these nine, we should have. Here, three alternative answers are outlined.

The first alternative takes, at face value, the arguments that the carriers would be vulnerable in any war with the Soviets if used for strikes against land targets. Therefore, no earners are bought for this purpose, and land-based aircraft are relied on for our tactical air needs in such wars.

In a major war in Asia with the Chinese, but not the Soviets involved carriers would be used in addition to land-based aircraft, but the nine provided should be adequate for this purpose. Since these nine would not be used against ·land targets in a war with the Soviets, they would be available for use against the Soviet surface fleet in the event the latter were used against merchant ship convoys in the open ocean. Considering the small number of surface-to-surface missile cruisers and destroyers that the Soviets have, the nine carriers should be enough to handle them although several might be severely damaged by Soviet submarines.

Substantial antisubmarine warfare forces would have to be maintained under this alternative, but sizable reductions could be made because we no longer attempt to use the aircraft carriers under the conditions where they would be most vulnerable.

Improve Performance

Efforts to improve the performance of existing antisubmarine warfare forces would be maintained with high priority. The new *F-14* fighter is designed to protect the carriers from an advanced Soviet air threat and would lose its *raison d'être*. A replacement for the existing *F-4* fighter, probably a much less expensive design than the *F-14*, might still be needed. The air and cruise missile defenses we provide the carriers should be designed for high reliability against a threat of low or medium sophistication which would be presented by potential enemies other than the Soviets.

A variation of this approach may be attractive over the long term. An aircraft carrier task force designed for more limited wars would probably have a much lighter escort ship screen. The carrier itself might be smaller and less expensive, and its aircraft might be designed against a less sophisticated threat and more 50 with a close air-support mission in mind.

If these changes are made, the cost advantage of land-based aircraft would be greatly reduced, if not eliminated, and additional carriers might be attractive to meet our needs for tactical air in situations where the Soviets are not involved, including a Chinese and North Korean attack on the Republic of Korea.

Partial Acceptance

The second alternative approach might be characterized as a partial acceptance of the argument on carrier vulnerability. It neither counts on the carriers for airstrikes in a major war with the Soviets nor writes them off in this situation. It recognizes that it may well be impossible to maintain carriers in the eastern Mediterranean during such a war, but it argues that some combination of improved defenses, successful electronic countermeasures, enemy mistakes, and luck may make the survival of the carriers sufficiently likely that it is worth gambling on. We would, therefore, be willing to operate a greater number of aircraft carriers than the minimum of nine.

At the same time, they would be less attractive than we had previously thought, so a reduction, perhaps to about 12, from the force level of 15 maintained in recent years' would seem to be in order. Because of the need to defend the aircraft carriers against enemy submarines, any reduction in antisubmarine warfare forces would be small at most. Measures for defense against cruise missiles would be emphasized, including electronic countermeasures, the new *Harpoon* anti-ship missile, and helicopter-borne early warning sensors.

According to this view, the Soviet surface fleet is a disturbing threat to our carriers and might make a crucial difference in our ability to maintain them on station, in contrast to the first approach which saw the Soviet surface fleet as simply reinforcing the Soviets' ability to deny us such use of our carriers. Actions to counter it are particularly important in the second approach.

The third approach described here rejects the arguments concerning carrier vulnerability and cost. With respect to vulnerability, this view was expressed by Admiral Thomas H. Moorer, then Chief of Naval Operations and now Chairman of the Joint Chiefs of Staff, as follows:

I certainly don't accept the allegations that the carrier is vulnerable to the degree that often has been mentioned ... I don't believe surface ships are vulnerable. I believe in the next war we will perhaps suffer greater losses than we have in the past, but I am confident that we can stay out there and operate.[4]

This approach would essentially continue the force levels maintained in Fiscal Year 1971. The current relative priorities in and among tactical air, antisubmarine warfare and other forces would also be maintained. In particular, defense against the Soviet surface fleet would be considered important, but it would not have the same degree of urgency as under the second approach.

The Navy would do well to confront the issues raised here and to sort them out collectively and come to some tentative conclusions about them. There is a bureaucratic incentive to do so since the issues have been and will continue to be raised by many outside the Navy. Congressional opposition to construction of new aircraft carriers has been successful,

4 *Authorization for Military Procurement Research and Development, Fiscal Year 1971, and Reserve Strength*, Hearings Before the Senate Armed Services Committee, 91st Congress, Second Session, Part 2, 1970, p 1,308.

for example. More important, however, national security is best served by realistic estimates of our military capabilities. If the arguments presented here are anywhere near the mark, our reliance on aircraft carriers must be reevaluated in the light of the changed conditions we now face.

Writing of such changes, and of our reluctance to recognize them, Admiral Alfred T. Mahan observed:

It can be remedied only by a candid recognition of each change, by careful study of the powers and limitations of the new ship or weapon, and by a consequent adaptation of the method of using it to the qualities it possesses, which will constitute its tactics. History shows that it is vain to hope that military men generally will be at pains to do this, but that the one who does will go into battle with a great advantage….[5]

Efforts to overcome this tendency now seem to be required.

5 Admiral Alfred T. Mahan, *The Influence of Seapower Upon History*, Hill & Wang, N. Y., 1957, p 8.