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THE U.S. NAVY: DIRECTIONS FOR THE FUTURE

The Navy underwent a major funding surge during the first term of the Reagan administration, and submitted plans for shipbuilding that would propel the US into a 600-ship Navy for the 1990s and beyond. Even during this period of plenty, the Navy had hard choices to make. But now that the lean years have come, the Navy will have to make major changes in the ambitious building plans set out by Navy Secretary John Lehman. (A summary of the Navy's justification for a 100-ship fleet begins on page 8.) The Navy's 5 year shipbuilding plan calls for an average of 20 ships per year in new construction, starting at well below 20 and increasing over the five years. But a retired Navy budget official says, "The only year that means anything is the present year. The rest is a programmatic pipe dream."

The Terms of the Debate

The focus of the current Navy budget debate has been whether this is a good time to make a down payment on two new aircraft carriers, or whether the request should be delayed for a few years. But this approach begs the question.

The question is not whether carriers are affordable: they are, if some other areas of funding are trimmed to accommodate them. The main question is the shape of the US Navy over the next 30 years, in particular, how many carrier battle groups (carriers plus associated defense and support ships) are enough? If we decide that 15 carriers are needed, then there is no other choice but to buy and build a new carrier every 3 years, and there would be little need for debate on the subject of timing the appropriations.

A preliminary view suggests that the Navy should probably include twelve carrier battle groups rather than the fifteen groups currently planned. This conclusion is driven by three considerations. First, the Navy's budget is not likely to grow fast enough to support a larger number of battle groups in addition to the other ships it needs. Second, the most significant technological trend in Soviet naval developments is in submarine technology, particularly quieting. It is becoming apparent that the Navy will have to shift resources into defense against quiet Soviet submarines. The money saved on reducing the number of battle groups, if allocated to anti-submarine warfare (ASW) defense, might well increase the US Navy's capability against the Soviet Navy and increase the survivability of the remaining battle groups more than enough to compensate for the lower numbers. In his report on the Navy's Research, Development, Test and Evaluation Program, Asst. Secretary Melvyn R. Paisley, declared that part of "the ASW Solution" was to "live up to our stated priorities with real increases in ASW TOA and fund and protect longer term solutions in priority order." He then went on to utter what amounts to a bureaucratic battle cry in asserting that these increases would require "significant increases in funding *at the expense of other warfare areas*" [emphasis added]. This could have broad ramifications for the structure of the Navy's research and development.

The third reason why twelve carrier battle groups are enough has to do with circumstances short of all-out war. While the Navy is used frequently to respond to international crises that do not involve actual shooting on the part of the US, rarely is a large fraction of the Navy involved at a given time in this so-called coercive or gunboat diplomacy. Plans for the size of the Navy should take into account how many ships need to be used in crisis responses. A preliminary analysis suggests that an increase in the number of carrier battle groups from twelve to fifteen is not needed to allow the US to respond to international crises short of war.

The Size and Composition of the Navy

The Navy can be thought of as several hundred individual ships, aircraft, and submarines or as several dozen functional groups of ships. The decision over whether to buy a group of ships and aircraft is much more far-reaching

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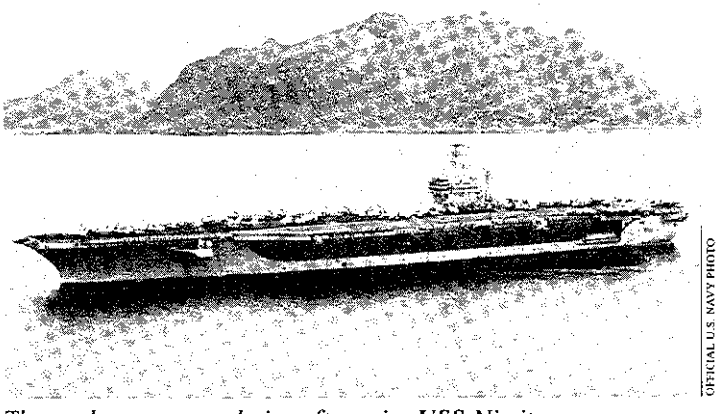

OFFICIAL U.S. NAVY PHOTO

The nuclear—powered aircraft carrier USS Nimitz.

Navy's Justification, p.8; US-Soviet Disarmament Project Conf., p. 10; Argentinean-Chilean Meeting, p. 12

than the decision over whether to buy a single ship. Aircraft carriers are uniquely confusing in that they are individual ships at the same time as being the core of a battle group. A navy can have fifteen aircraft carriers without having fifteen independent, fully supported carrier battle groups, but the reverse is not true. For example, by using more than one aircraft carrier in a single group, the Navy can trade the geographic flexibility of several independent battle groups for the increased firepower of the augmented battle group.

Measuring the relative strengths of navies by the number of ships is common but not very productive. As David Kassing, former president of the Center for Naval Analyses, put it, "Most of the easy ways of comparing or contrasting the two navies—for example, counting the gross number of ships and planes and missiles and overseas bases—are more or less misleading." With the development of long range missiles, sophisticated mines, space-based and undersea surveillance systems, sensors and weapons have expanded the capabilities of individual ships and aircraft.

Numbers are a little more useful in charting the changes in the navy of a single country, though even here, advances in technology can make a smaller navy much more capable than a large one in terms of air, surface and subsurface warfare.

The decline in carrier numbers over the last 25 years serves as an example. The table shows the number of carriers in the US Navy.

TRENDS IN US NAVY FORCE LEVELS

	1964	1971	1976	1990s (Projected)
Total Carriers	24	18	13	15
Antisubmarine Carriers	9	4	0	0
Attack Carriers	15	14	13	(15)
Total number of Ships	894	656	430	(600)

The US currently has 15 carriers, 5 Nimitz class nuclear powered carriers, 1 Enterprise nuclear carrier, and 9 oil-burning carriers of the Kitty Hawk and Forrestal classes.

During the 1960s and 1970s the number of ships in the Navy declined, largely due to the retirement of World War II vintage ships. The total number of aircraft carriers has fallen to half of what it was in 1964, but this is due to the elimination of the ASW carrier from the US fleet. The number of attack carriers, armed mostly with fighter and bomber aircraft, has remained fairly constant. The Soviet Union currently operates a half-dozen small carriers primarily designed for ASW, and one full-sized attack carrier.

Since ship retirements help determine the size of the Navy, it is important to look at the historical pattern of building in the US. It was a large building program in the 1960s that fueled much of the rise in the number of ships in

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the Navy over the last few years. Ship retirement rates over the next few years will be about 11 per year.

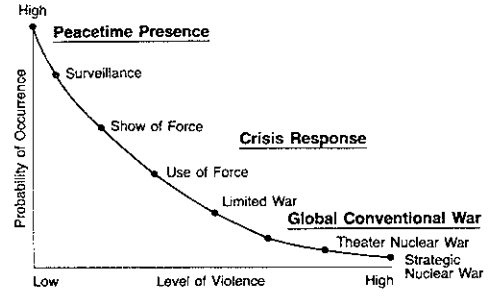
However, between 1968 and 1982, the average annual appropriation for shipbuilding was only 50 percent of what was needed to keep 600 ships based around 15 carrier battle groups. The average annual buy was less than 12 units, whereas a 600 ship navy requires 20 units per year. Meanwhile, the retirement rate during most of the 1990s will exceed 20 ships per year.

Should the US attempt to counteract this future shortfall completely with huge shipbuilding programs in the current years? A modernized "600-ship Navy" would require real annual increases in the Navy budget of at least 5 percent, according the the Congressional Budget Office, and would fundamentally change the balance of resources between the armed services. Is such a reallocation justified? The answer depends on what the Navy is supposed to do.

What Is The Navy For?

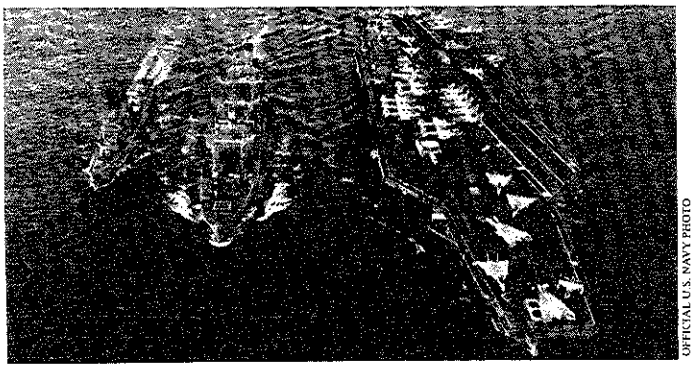
The Navy's own view of the roles of military force in the world is summarized in the following diagram, which comes from its recently published *Maritime Strategy*.

THE NAVY'S VIEW OF THE SPECTRUM OF VIOLENCE



The Navy tends to be used more than other forces in crises short of war—coercive diplomacy—because the commitment of naval forces need not cross national boundaries, and it can be moved in and withdrawn relatively quickly and easily. In fact the utility of carriers in peacetime is somewhat less controversial (if one accepts the use of coercive diplomacy in international relations) than their wartime usefulness. Carrier based aircraft teamed up with land-based FB-111s for the bombing of Libya, and A-6s bombed Lebanon. Naval forces have been involved in some 80 percent of the 250 crisis responses involving US military forces between 1946 and 1982.

Long conventional limited wars, such as Vietnam and Korea, create a military case for a large Navy with many aircraft carriers, but they also create a case for other military forces. Through most of the decade of the 1960s, the Navy accounted for about 32 percent of the outlays associated with the three services. In 1968, however, when the service outlays peaked due to the Vietnam War, the Navy received its lowest portion of the decade, 30 percent, while the Army received its highest, 34 percent. If anything, the Vietnam scenario provides an argument for allocation of resources to ground forces.



OFFICIAL U.S. NAVY PHOTO

The nuclear-powered aircraft carrier USS Dwight D. Eisenhower being fueled by the oiler USS Caloosahatchee (center). The destroyer USS Manley is on the left.

However, the worst-case, and most demanding use of the Navy is all-out fighting with the Soviet Union. The first question that must be answered is whether navies are relevant in the nuclear age.

Short War Versus Long War

Through most of the 1960s, there was some evidence that the Soviet Union was expecting a general conflict between the US and the Soviet Union to be a very rapidly escalating exchange of nuclear weapons. The likelihood of a prolonged conventional war was considered very low. Many analyses of US force structure rightly questioned whether a Navy would play *any* role in a superpower war.

Over the past fifteen years, however, the common western analysis of Soviet military thinking apparently has been shifting toward the view that a prolonged conventional war is more likely. Prolonged conventional war is a major assumption in the currently accepted view of maritime strategy, and is presumably the basis of force planning.

Prolonged Conventional War

The Navy's role in a prolonged war must be viewed in light of the role of other forces, particularly ground forces in Europe. If the preservation of the status quo in Central Europe is the overriding strategic imperative, then we must weigh the contribution of naval forces versus ground forces and tactical air forces to the deterrence of war on the Central Front. In the Fall 1986 issue of *International Security*, John Mearsheimer of the University of Chicago laid out the many reasons why at the margin, dollars spent on the Central Front forces are more likely to deter war than dollars spent on naval forces, and concluded:

> The Navy is necessary to protect NATO's sea lines of communication in a war of attrition and, moreover, that mission might be important for deterrence. Nevertheless, the key to deterrence is not the Navy, but the forces that will be fighting on the central front. Those forces should be given first priority when deciding how to allocate defense budgets.

Assuming the US Navy should be planned for the more likely catastrophe of a prolonged conventional war, it is useful to distinguish between Soviet capabilities and inten-

tions, although there is room only for the barest sketch.

With regard to the surface navy, John Lehmen has said that in the event of a conflict, it would lead "a brief but exciting life." Soviet surface ships need the protection of tactical fighter aircraft to defend them from aircraft carrying bombs and missiles. Beyond a few hundred miles from their shores, Soviet surface ships would lack defense from their tactical aircraft. Simultaneously, NATO attack submarines would threaten Soviet surface ships in all areas.

Submarines constitute the backbone of the Soviet Navy, and are generally regarded as the major threat to the US Navy. Although these submarines outnumber the US submarine fleet over two to one, the NATO versus Warsaw Pact is about even, and the number of antisubmarine capable ships, submarines, and aircraft in the NATO inventory is large.

In addition, the Soviet nuclear powered submarine fleet is on the average considerably louder than the US submarine fleet, and therefore more vulnerable. This gives the US an ASW advantage that is currently significant, but that will decline over the next 15-20 years as large numbers of newer, quieter submarines enter the Soviet fleet.

Soviet naval air strike forces are centered around the 130 Backfire and 240 Blinder and Badger bombers. These aircraft, particularly the Backfire, constitute a threat to Western surface ships in the Atlantic and Pacific.

In terms of intentions, it is generally agreed in the West that primary missions of the Soviet Navy include protecting their own ballistic missile submarines, attacking US ballistic missile submarines, defending against direct assaults on the Soviet homeland, and possibly threatening the sea lines of communication in the Atlantic and Pacific. Of these, the threat to the sea lines is the critical concern.

What of the other threats? Several analysts, including this author, have argued that attacking Soviet SSBNs is infeasible, and in such a case, there should probably not be a heavy emphasis on doing so. Defending US SSBNs using general purpose naval forces seems unnecessary, given the great stealth of the US SSBN fleet. Defending against the Backfire threat to ocean shipping is much more effective from land-based aircraft with AWACS than it is with carrier based aircraft. It is doubtful that amphibious operations would have a major impact on Soviet distributions of forces, since Chinese and the European threats to the Soviet Union are orders of magnitude greater than any threats the US Marines can make from the east or the west.

Are 12 Carrier Battle Groups Useful Short of War?

Although the arguments for fifteen full-sized battle groups at the expense of forces for the Central Front are not well supported in the conventional war scenario, the analysis should not stop there. Because naval forces are inherently flexible, it is improper to judge their cost effectiveness solely on the basis of a single mission. For example, although it has been repeatedly demonstrated that defense of the sea lanes is performed more cost-effectively with land-based aircraft than with sea-based aircraft, this alone is not a sufficient argument for reducing carrier forces. Battle groups are often used in operations short of full scale war with the Soviet Union.

One way to gauge the use of aircraft carriers in responses to crises is by dividing the total number of carriers involved in all crisis responses by the total number of responses. This is indeed crude, and hides some important cases in which a large number of aircraft carriers were used, such as the Cuban Missile crisis.

The table indicates several trends. First, between the 1961-1965 period and the 1966-1975 period, although the total number of aircraft carriers fell by about a third, the average number of carriers used in all naval crises actually *rose* by about 80 percent.

This is an important observation because it says that the usability of carriers is not always constrained by numbers. It is apparent that for a long period, the use of carriers was constrained by policy.

The influence of policy on the use of carriers can be seen in more recent statistics. Carrier battle groups were involved in 35 of 51 "international incidents" to which the Navy responded between January 1976 and July 1985. Of

THE USE OF AIRCRAFT CARRIERS IN US RESPONSES TO CRISES

	A	B	C	D
PERIOD	**Avg. No. of CV Operations in period**	**Percent of CV ops. (CV/total)**	**Avg. No. of Attack carriers in response**	**Avg. No. of All carriers in response**
1955-1960	3.3	74%	2.1 (1.6)	2.6 (1.9)
1961-1965	4.4	44%	1.5 (0.7)	1.9 (0.8)
1966-1975	1.7	77%	1.7 (1.3)	1.8 (1.4)
1955-1975	2.8	59%	1.7 (1.0)	2.1 (1.2)

In columns C and D, the number to the left, outside parentheses, is the total number of carriers participating in all responses in the period, divided by the number of responses in which at least one carrier was present. The number to the right, in parentheses, is the total number of carriers participating in all responses in the period, divided by the total number of responses, whether they included a carrier or not.

SOURCE: Robert B. Mahoney, Jr., U.S. Navy Responses to International Incidents and Crises, 1955-75, *Center for Naval Analyses, July, 1977.*

these uses of carriers, 13 occurred during the Carter Administration and 22 during the Reagan Administration.

The table also shows that, on the average, only one carrier is actually used in the "typical" crisis response. This is a little misleading in that not all crises have the same weight. For example in the crises involving the Soviet Union between 1955 and 1975, an average of 2.4 carriers were involved, and 8 carriers were involved in the Cuban missile crisis. However, is it more effective to send a larger number of carriers against the Soviet Union? Of all the nations in the world, the Soviet Union is probably the most capable at defending itself against US carriers.

What Does the Navy Cost?

Costs are relatively easy to identify at the very broadest and narrowest levels of aggregation. The Navy costs about $100 billion per year and a major surface ship costs about $1 billion to buy.

The Navy budget can be divided into two parts: investment in material goods, and support services. These two parts are roughly equal, although they are only partially related to each other. Support costs are a function of the size of the existing Navy, so even if investment rises rapidly, one should not expect support costs to rise as rapidly since changes in investment do not quickly change the size of the existing fleet. Support costs comprise operations and maintenance, and military personnel costs.

The investment accounts are aircraft, ship, and weapon procurement, research and development, and several other smaller accounts. Shipbuilding is about 13 percent of the Navy budget, and this has remained very stable.

But the problem of relating military capability to foreign policy requires some ability to determine the cost of basic military options. The appropriate level of aggregation is somewhere between the level of the individual ship and the entire Navy budget. The appropriate measure depends on one's point of view. Commanders-in-Chief have the task of fighting the war with the tools they are given, the Secretary of Defense has the job of balancing the overall defense needs of the country, and Congress has the job of balancing the needs of defense and foreign commitments with domestic programs.

The armed services use a set of four catagories to aggregate budget resources. These catagories, often called pillars, are: 1) Force Structure—the acquisition of ships and aircraft to replace or increase Navy force levels; 2) Modernization—improvements upon the military capability and effectiveness of existing forces; 3) Sustainability—support of Naval reserve forces and mobilization material requirements to sustain wartime operations; 4) Readiness—operations of current active forces and support of initial wartime requirements.

The four pillars give the military planner an overall view of how the defense budget is being allocated in terms of the ability to fight. But it gives no information about the number of independent regions in which the US can operate at once, or about the number of tactical groupings the Navy can put together, or about the division of resources between major naval missions such as protection of the sea lanes or strategic ASW.

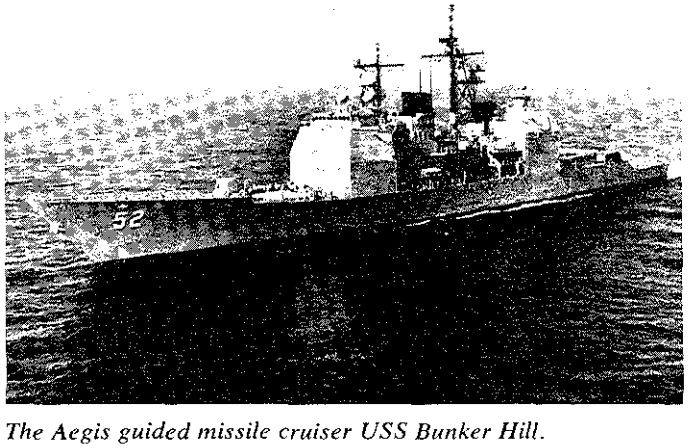
From the point of view of a policy planner in Congress or the Office of the Secretary of Defense, a more relevant aggregation would show how the Navy budget is divided into functional units of force. The Navy dictates the appropriate tactical grouping of ships. These groupings are shown in the following table.

WARTIME DEPLOYMENT

	Carrier battle group	Surface action group	Underway replenishment group
6th Fleet Mediterranean	4	1	2
2nd Fleet Atlantic	4	1	3
7th Fleet Western Pacific	5	2	4
3rd Fleet Eastern Pacific	2	—	1
Total	**15**	**4**	**10**

The major unit is the carrier battle group (CVBG), which might have two carriers surrounded by 15 other combat ships, or only one carrier surrounded by 7 or 8 ships. The surface action group (SAG) has a battleship at the centerpiece, and is accompanied by about four other surface combatants. The underway replenishment group provides arms and supplies to the CVBGs and SAGs at sea, and must be protected by about four surface combatants themselves.

Assigning a cost to these groups can be done in a number of ways, and there is a wide variation in the estimate of costs largely because of the difference in method. The costs include the cost of buying the ships and aircraft that make up the group, the direct costs of operating these ships and aircraft, and the cost of the infrastructure that provides the indirect support for the Navy. It is the latter category that is often the most controversial.



OFFICIAL U.S. NAVY PHOTO

The Aegis guided missile cruiser USS Bunker Hill.

Several estimates of cost can be given to identify the areas of difference. The carrier battle group will be used as an example.

The Navy Estimate

The following table shows the Navy estimate of a carrier battle group cost. The procurement and 30 year life cycle cost were given by the Navy in FY 1983 dollars. The 45 year life cycle cost of the carrier was given as $10.68 billion in FY 1983.

BATTLE GROUP COSTS

	Procurement FY 1983 dollars	30 Year Life cycle FY 1983 dollars	45 Year Life cycle FY 1988 dollars
Carrier	3.6	7.65	13
2 CG-47 Cruiser	2.2	4.45	9
2 DDG-51 Destroyer	1.46	3.34	7
2 DD 963 Destroyer	1.24	2.5	5
Carrier Air Wing	2.59	5.62	11.5
6 SH-60B ASW helos	0.12	0.263	0.5
			$46 billion

A Navy estimate of carrier battle group costs.

SOURCE: Hearings before the House Appropriations Committee, FY1983, part 2, p. 197.

At $46 billion in life cycle costs for a carrier battle group, the average annual cost over the 45 year lifetime of the carrier is $1 billion per year per CVBG.

This figure includes no fraction of the underway replenishment ship costs, and no fraction of the Navy infrastructure. This form of costing accounts for only 15 percent of the Navy's annual budget. Some attempt might be reasonably made to allocate part of the remaining 85 percent of the budget to the carrier battle group.

A More Complete Estimate

A large study completed by the Institute for Defense Analyses, the OSD's main think tank, attempted to identify a wide range of costs for carrier battle groups. The Navy budget was broken down into procurement and direct operating costs, as above, but in addition, an attempt was made to allocate other parts of the Navy budget to the support of carrier battle groups. The additional support costs included costs of intelligence and communications, research and development, administration, and support of other nations. These categories are broken out by the DoD in its five year defense plan. By taking the ratio of the cost of these support accounts to the direct operating costs of the Navy, a support-to-operating cost ratio is derived. For ships the factor is about 1.8 and for aircraft the support-to-operating cost factor is about 2.6.

With these support-to-operating cost factors, three levels of cost can be identified: procurement, direct operating cost, and support. The following table summarizes these estimates.

This more complete estimate of cost reveals the large increase in apparent cost when other parts of the Navy budget are allocated to the cost of maintaining carrier battle groups. The low battle group defense estimate, without the annual support costs included, is about the same as the Navy estimate of a billion dollars per year per carrier. Using a higher carrier defense force, and including the support costs, reveals the annual cost of a battle group to be over three times as high. Annual support costs account for almost half of the cost of the battle group. The variation due to the assumption about carrier defenses is almost $700 million.

ANOTHER COST ESTIMATE

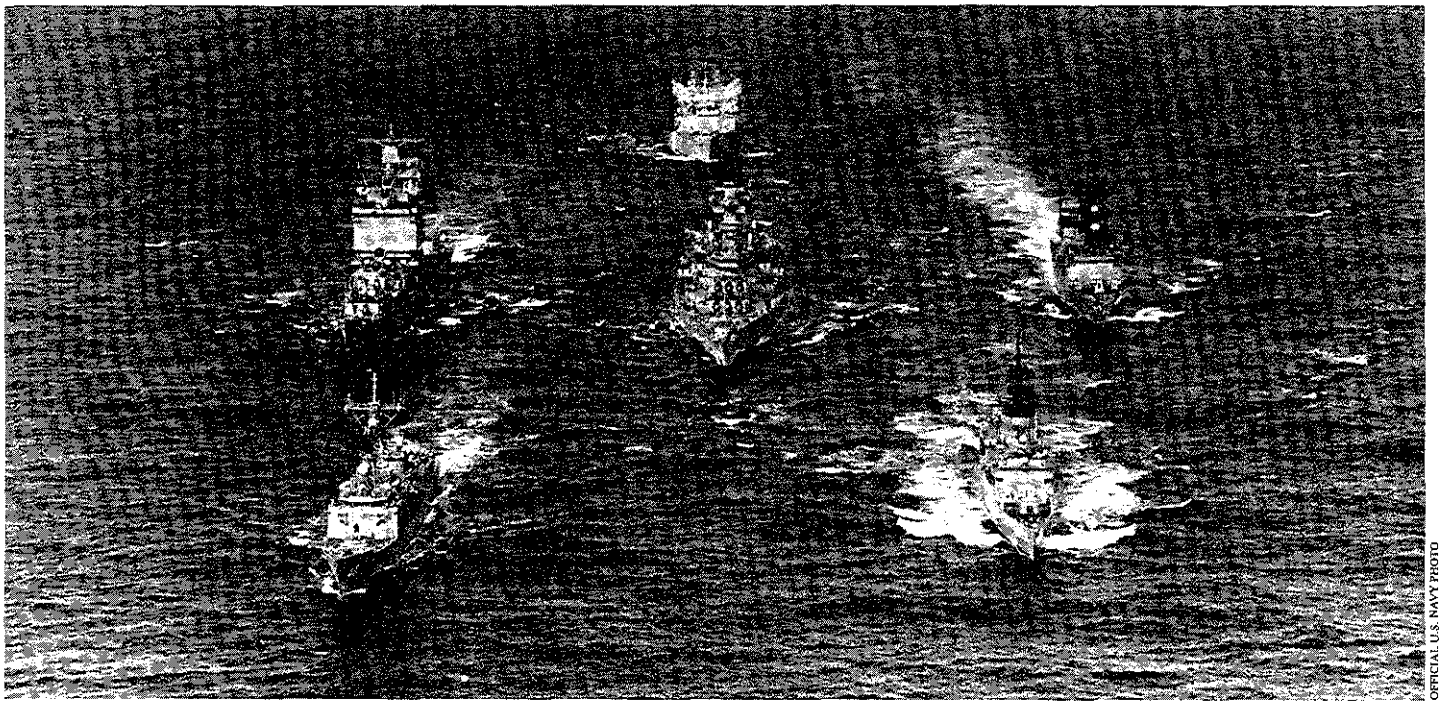
Component	Direct Operating Cost	Procurement (incl. 2% real growth)	Support	45 Year Investment Costs
Carrier	.15	4.5	.27	4.5
CV defense				
Low	.29	7.5	.53	11.3
High	.45	13.0	.82	19.6
CVBG				
Low	.44	12.1	.80	15.8
High	.62	17.6	1.12	24.1
Carrier air wing	.13	5.7	.33	17.0
CVBG + CAG				
Low	.57	17.7	1.13	32.8
High	.74	23.2	1.45	41.1

Summary:

	Annual direct operating cost	+	Annual support cost	+	Average investment	=	Total annual cost
Low	.57 (23%)	+	1.13 (47%)	+	.73 (30%)	=	2.43
High	.74 (24%)	+	1.45 (47%)	+	.91 (29%)	=	3.10

An alternative estimate of carrier battle group costs, including support (in billions of FY 1988 dollars.)

SOURCE: Inst. for Defense Analyses, Report IDA-230. Note: Procurement costs are for one lifecycle (45 years for carriers, 30 years for ships, 15 years for aircraft), updated from original data using inflation plus 2% real growth.



OFFICIAL U.S. NAVY PHOTO

Battleship USS New Jersey surrounded by (clockwise from top), replenishment oiler, destroyer, two frigates, and a cruiser.

Another attempt to allocate the total Navy budget to carrier task forces and other tactical groups was made by Prof. Earl C. Ravenal. His estimate of the average annual cost of buying and operating a carrier battle group was $1.7 billion, though this does not include the annual support cost. Allocating support costs ("overheads") to the battle groups raised their annual cost to $5 billion. The reason that this is higher than the IDA figure is that more overhead costs are included in Ravenal's estimate.

General Options for the Navy: The Domestic Constraints

Over the short run the Navy budget is not likely to grow very much in real terms, and some have predicted zero real growth. Over the long term, the defense budget has grown at a rate of about 2 % per year, although there have been major fluctuations around this trend in the past 25 years.

Another important constraint is bureaucratic. Within the Navy there are levels of independent power and authority. The most important lines of division are between the surface, air, and submarine organizations within the Navy. The various Naval missions are dealt with somewhat independently within each mini-service. There are organizational mechanisms, such as the Office of Naval Warfare, set up to integrate Navy programs and capabilities across the air, surface , and subsurface branches, but the Office of Naval warfare has virtually no power over the purse and therefore no authority.

It is therefore difficult to force a significant reallocation of resources with in the Navy. Each branch, fearing loss of budget share in what is a zero-sum game, shys away from ranking its programs in terms of priority. Without some ranking of effectiveness and priority, however, the resource allocation problems cannot be solved.

This has led, over the years, to the phenomenon of "resource allocation by equal budget shares." In order to keep the groupings of bureaucratic power in rough equilibrium, the impact of a budget cut must be spread equally among the powerful budget holders. Constant budget shares are perhaps the most important domestic constraint to reshaping the Navy in a new budget era.

But the role of the public on shaping forces should not be underestimated. The dramatic uses of seapower during the 1980s had important symbolic value to those who wanted to see a more active US military role in foreign affairs. This will create some pressure within Congress not to cut Naval support costs, and lower the readiness of existing forces. Because the outlay rate of support funding is rapid, the effects of decreases in this funding are felt quickly in the Navy's ability to operate ships at sea.

On the other hand, domestic support for large increases in defense spending has eroded. Large shipbuilding appropriations will create greater pressure on support costs as the size of the fleet increases. This pressure will revive calls for restructuring the Navy, both in terms of numbers and in terms of individual ship design.

The Navy has been very effective in its effort to parry suggestions for a mix of ships with lower capabilities. The technological trends in warship design have led to larger ships with more expensive weapon systems. In fact since 1962, the expected real growth in the size of ships has been 2.8 percent and the real rate of growth of cost per ton has been 2.7 percent, for an average real growth rate of 5.6 percent per ship. In other words, the Navy budget would have to increase at a real rate of almost 6 percent per year in order to continue to buy the same number of ships, while keeping up with the latest improvements and modernization.

In short, the Navy program for a 600-ship Navy begins to face severe financial constraints in the early 1990s. There is an infinite variety of ways in which these realities can be met. Two basic directions can be offered.

OPTION I : Fifteen aircraft carrier fleet

The US could attempt to maintain fifteen aircraft carriers, but it would not be able to reach the force goals of the 600-ship Navy that is based on fifteen carrier battle groups. If the carrier defense and support groups were decreased sufficiently, the carriers could be afforded. The 45 year cost of a carrier and its air wing is about the same as the cost of the entire group of ships that defends it. Carriers could be bought and used in existing carrier groups by simply doubling up on the number of carriers. This does not add to the number of independent carrier battle groups; however, it would fortify existing ones.

Other measures to bring the Navy in line with its budget constraints would be to cut funding in the submarine program, and the P-3 ASW aircraft program. This gives the US more flexibility for use of power projection, particularly aircraft strikes and sea based air superiority in condition of a relatively low submarine threat.

The problem with this option is that it funds very high value carriers, at the expense of the forces that could defend carriers and other surface ships from the more sophisticated Soviet submarines in the event of a war. This option does give the US more carriers to use in crisis response short of war, but the marginal utility of those extra carriers is small, since typically only one or two are actually used, and the use would already have them.

OPTION II: Twelve aircraft carrier fleet

A basic alternative to trying to keep 15 carriers, and cutting back in other areas, is to cut force structure in a broad sense. This has several advantages. It is bureaucratically easier to handle because all areas share the cuts. It also maintains the logic of the carrier battle group as a functional unit. It might also permit some shift of emphasis toward, rather than away from, greater ASW capability in a period when that is the Navy's number one concern.

Planning around a Navy with 12 carriers and 12 carrier battlegroups would allow more room for adjustment to the naval force structure over the next 15 years. It is precisely during this period that the Navy, faced with a steadily increasing subsurface threat and increasing ship retirement, will need the resources to protect the sea lines of communication. This option hedges more against the threat of war against the Soviet Union, in which defense of the sea lines against subs and bombers takes on a greater emphasis.

There is wide agreement on the nature of Soviet Naval developments, and the challenge that the Navy must face. There is widespread agreement on the fiscal constraints faced by the Navy. These budgets cannot support 15 carriers and all the other parts of the balanced Navy. The debate must eventually come around to the large scale shape of the Navy over the next 20 years. From a resolution of that debate will emerge the answer to how many carriers to build in a given five year plan.

—Tom A. Stefanick

Tom Stefanick is Research Associate for Naval Policy at FAS. In November he will become a AAAS Fellow in the Science, Arms Control and National Security Program.

THE NAVY'S CALL FOR 600 SHIPS

Former Navy Secretary Robert Lehman, Jr., presented the following justification for a 600 ship Navy in *The Maritime Strategy*, a special 1986 publication of the Naval Institute.

Since World War II, maritime force planners have found themselves at the mercy of three enduring elements. First is geography. Water covers three quarters of the world; and the United States is an "island continent' washed by the Atlantic and Pacific oceans.

Second are the vital interests of the United States, expressed in the web of more than 40 treaty relationships that bind us to mutual defense coalitions around the world. These relationships shape our national security requirements—together with the energy and commercial dependencies that support our economy in peace and in war.

The third element is the Soviet threat. Whatever its original rationale, the Soviet Navy's postwar expansion has created an offense-oriented blue water force, a major element in the Soviet Union's global military reach that supports expanding Soviet influence from Nicaragua to Vietnam to Ethiopia. From the Baltic to the Caribbean to the South China Sea, our ships and men pass within yards of Soviet naval forces every day. But familiarity, in this case, is breeding a well-deserved respect.

With these observations as background, let us review our forces in the main geographic areas: the Atlantic, the Mediterranean, the Pacific, the Indian Ocean-Persian Gulf. The numbers used are "notional." They illustrate force packages constructed for peacetime tasks now assigned to our naval forces. But they are capable of expansion or contraction, should war break out—a flexibility characteristic of naval power.

The Atlantic: The large Atlantic theater encompasses the North Atlantic, the Norwegian Sea, the Northern Flank of NATO including the Baltic throat, the South Atlantic, the Caribbean, and the Gulf of Mexico. It includes the coasts of South America and the west coast of Africa, all vital sea-lanes of communications. And it involves the Mediterranean and the Middle East.

The U.S. Navy operates in the Atlantic theater with two fleets, the Sixth and the Second. The Sixth Fleet in the Mediterranean is the principal fighting force of the NATO Southern Europe Command and provides strike, antiair superiority, antisubmarine, and close air support for the entire Southern Flank of NATO—a principal makeweight in the balance in the Central Front.

In addition, the Sixth Fleet is the principal naval force

that supports our friends and allies in the Middle East. The threat there is significant. The Soviets maintain a fleet in the Black Sea and a deployed squadron in the Mediterranean. In wartime, we expect to see also Soviet naval strike aircraft, aircraft carriers, a formidable number of diesel and nuclear submarines, and a full range of strike cruisers, destroyers, and other smaller combatants.

To deal with this threat, as we do in all our planning, we start with a base of allied forces in the areas under consideration. The navies of our allies are good. For example, we count on them to provide about 140 diesel submarines, which are effective for coastal and area defense, for establishing and maintaining barriers, and for certain other useful missions.

In wartime, purely U.S. forces in the Sixth Fleet would have to include three or four carrier battle groups, operating to meet NATO commitments. We would also need to deploy a battleship surface action group and two underway replenishment groups. In peacetime, we average over the year one and one-third carrier battle groups deployed in the Mediterranean.

The Second Fleet is the heart of the Atlantic strike fleet for NATO. It is responsible for naval operations in the North Atlantic, the Eastern Atlantic, Iceland, the Norwegian Sea, the Defense of Norway, and the entire northern Flank including the North Sea and Baltic throat. It must simultaneously accomplish any naval missions required in the Caribbean, where we now face a very large Soviet and Cuban naval presence; in the South Atlantic, where we have vital sea-lanes; and along the West African sea-lanes, where the Soviets now deploy naval forces continuously.

For the Second fleet, in wartime, we must plan to have four or five carrier battle groups, one battleship surface action group, and three underway replenishment groups. This is the equivalent firepower of 40 World War II carriers and can deliver accurate strike ordnance on target equal to 800 B-17s every day. In Peacetime, we generally run higher than this, because most of our principal training occurs in the Second Fleet's operating areas.

Today, we have six carrier battle groups cycling in the Second Fleet at one time or another. We have exercises underway with our NATO allies, with our South American and Central American allies, and with other nations, on an ad hoc basis, in every season of the year.

The Pacific: Clearly, our increasing commercial interests and historic security ties in the Pacific impact on our naval planning for the area. If we are to protect our vital interests, we must have forces available to deploy—not only to the Atlantic theaters and the Sixth and the Second fleets—but also to the Pacific simultaneously, to the Seventh and the Third fleets and the Middle East Force of the Central Command. We cannot abandon one theater in order to deal with the other. The great paradox of the 1970s was the reduction of the fleet's size so that it could only be employed in a swing strategy—just as that strategy was being rendered obsolete by trade, geopolitics, and the growth of the Soviet Navy.

The Seventh Fleet is our forward Western Pacific fleet, which meets our commitments to Japan, Korea, the Philippines, Australia, New Zealand, and Thailand, and in the critical straits of Southeast Asia, as well as the Indian Ocean. In wartime, we would need to deploy five carrier battle groups to the Seventh Fleet, two battleship surface action groups, and four underway replenishment groups. In peacetime, we average over the year the equivalent of one and one-third carrier battle groups in the Western Pacific. That, of course, helps us maintain a peacetime fleetwide operational tempo that provides for at least 50% time in home port for our people and their families.

We do not have a separate fleet in the critical area of Southwest Asia, the Indian Ocean, and the Persian Gulf, although some have proposed the re-creation of the Fifth Fleet for that purpose. In peacetime, we have the Middle East Force of the Central Command and elements of the Seventh Fleet, normally a carrier battle group.

In wartime, we plan for two of the Seventh Fleet carrier battle groups to meet our commitments in the Indian Ocean, Southwest Asia, East Africa, the Persian Gulf area, and Southeast Asia. Notionally, a Seventh Fleet battleship surface action group and one underway replenishment group would also be assigned to operate in these areas.

The Third Fleet has responsibility for operations off Alaska, the Bering Sea, the Aleutians, the Eastern Pacific, and the Mid- Pacific region. In wartime, there would be considerable overlapping and trading back and forth between the Seventh and Third fleets. This happened in the Pacific during World War II. To cover that vast area, we must assign two carrier battle groups and one underway replenishment group.

These requirements compel us to deploy a 600-ship Navy as outlined in the table on page five. In peacetime, we deploy in the same way to the same places we must control in war, but at one-third the tempo of operations. This allows a bearable peacetime burden of six-month deployment lengths and 50% time in home ports. Looked at either way, we require the same size fleet to meet peacetime deployments as we do to fight a war. Taken together the add up to the following:

- Fifteen carrier battle groups
- Four battleship surface action groups
- One-hundred attack submarines
- An adequate number of ballistic missile submarines
- Lift for the assault echelons of a Marine amphibious force and a Marine amphibious brigade

When escort, mine warfare, auxiliary, and replenishment units are considered, about 600 ships emerge from this accounting—a force that can be described as prudent, reflecting geographic realities, alliance commitments and dependencies, and the Soviet fleet that threatens them. Unless congress reduces our commitments or the Soviet threat weakens, there is no way to reduce the required size of the U.S. fleet and still carry out the missions assigned to the Navy.

U.S.-SOVIET JOINT DISARMAMENT PROJECT

On April 24-26 the FAS Fund arranged a weekend conference at Airlie House, near Warrenton, Virginia, to begin work on the five year Joint Disarmament Project initiated by the FAS-Velikhov Committee agreement published in the April *FAS Public Interest Report*.

As a consequence of visa problems, the main part of the Soviet delegation did not arrive for the conference, but 25 American scientists and four members of the Velikhov Committee had a fruitful discussion of cooperative means for verifying far-reaching disarmament agreements. William Colby, former Director of the Central Intelligence Agency, provided opening remarks which are here excerpted and edited. Soviet participants included: Elena Loshchenkova, secretary of the Velikhov Committee; Sergei Kapitza, physicist and TV impresario for Soviet scientists; Alexsi Vasiliev, director of military politico affairs in the Institute on the U.S.A.; Anatoli Gromyko, head of the Soviet Africa Institute. A good start was made in describing the particular verification issues and disarmament scenarios to be considered.

Later, on May 11, the remaining part of the Soviet delegation, led by Academician Osipyan, visited FAS.

COLBY: GLASNOST IS A FACT OF LIFE

William Colby: [Ed note: Responding to introductory compliments] In deference to scientific accuracy, I must say that I parachuted into France [Ed. note: behind German lines] in August of 1944, not prior to June of 1944, so I can't claim to have been the "second front."

I think it's a splendid exercise that you're launched on. We have too many experts in this field who are studying how a treaty can be evaded. And there is a high degree of attention put to these most refined scenarios for cheating whether they are realistic or not. What you're engaged in is an effort to explore how to monitor treaties. In other words, you are finally putting attention where it should be.

This process of monitoring treaties is one that we in the intelligence business have been in for many years. The United States is going to verify Soviet weaponry whatever happens. We have developed a vast set of systems to enable us to do this. And I contend, in the modern world, this process really does warn us of major developments long before they become threatening.

The last surprise we had in the strategic area was the launch of Sputnik. We treated this in the Western world as a shock. But today we are well-prepared for the arrival of the first Soviet full-scale aircraft carrier. We've been watching it being built, we've been watching it be fitted out, and we'll watch it on sea trials. I think the elimination of the "shock effect" of the final "at sea" sighting of this kind of new development is a net contribution.

I congratulate our Soviet participants on the very important development of *glasnost* by General Secretary Gorbachev. I think it's a good Soviet policy. However, in the past few decades, the technology has improved so much so that *glasnost* has become a fact. Developments in technology in these last years have been truly astounding. Both the Soviet Union and the United States have all sorts of devices flying around the world which contribute to opening up the other nation's activities. This has created a really remarkable change in our knowledge of each other.

Americans are inclined to think that we are a totally open society and that the Soviet Union really only needs a subscription to *Aviation Week* to learn what it wants about American life. But there are presumed secret activities here also. (We don't publish the routes of our aircraft carriers around the world. Yet the Soviet Union can tell you at any single day, where our carriers are because they have developed the machinery to let them know that.)

We, of course, have developed the kind of machinery that enables us to know exactly what is not in any Moscow edition of *Aviation Week*—in terms of the locations of various weapons, and the characteristics of various weapons. This has occurred through the development, not only of space technology, photography, physics, chemistry, and film systems but also through electronics, acoustics—all of the devices and all of the sciences and technologies that now contribute to this process. We have, as a result, come to a new appreciation of the impossibility of a totally closed society. Peter the Great agreed. He determined to open Russia to the West to bring forward the various advances in technology into the Soviet Union. The same step was taken in the Japanese restoration, when they decided that the attempt to keep their country totally out of the world resulted only in their remaining at about the 1600 level, when the rest of the world was rushing on into the 1800's.

In the number of Japanese automobiles, TV sets, and video recorders that you see in this country today, you see how well the Japanese have profited by that decision. They

William Colby, opening speaker at conference

have opened up. The walls didn't work.

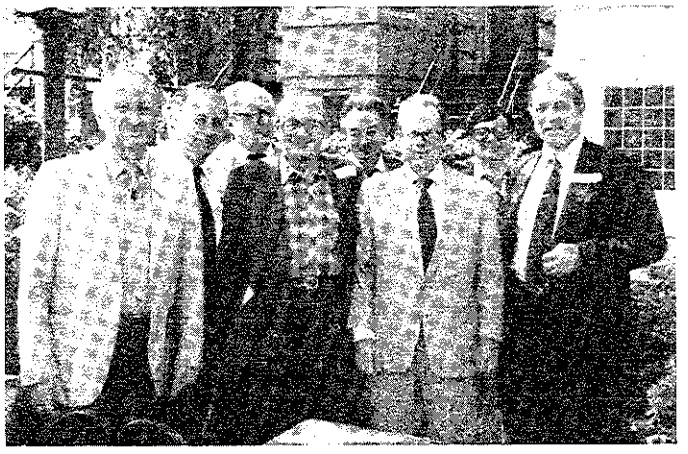
There are, of course, barriers to the problems of *glasnost* on both sides. There's the fear of loss of control. There is a fear that too much openness means the other side will have access to one's private affairs, and be able to someway frustrate that government's own authority and control. There's also the fear that a hostile power will exploit that information to the detriment of the country in question. And we also have another barrier, and that's a reversion to primitivism. We see the most telling example of this now in Khomeini's Iran— the attempt to march resolutely back to the thirteenth century, and reestablish society on that basis.

We have a lot more technological *glasnost* ahead. The proliferation of the personal computer is part of it. In another example, the Soviet Union set up a direct dialing system in Moscow, only to discover that enterprising western journalists were direct dialing dissidents for interviews. And so they put controls on the Moscow telephone exchange. But can you really run a modern society without direct dialing? You can for a while. But isn't there a cost? We now see in America the proliferation of the xerox and the facsimile transmission. We are also proliferating tape recorders and the small, tiny little tapes can be passed around. (Khomeini's revolution was run on those little tapes that were smuggled into Iran and passed around.) We're also looking ahead to direct satellite transmission to individual receivers in various places. And the receivers can get smaller and smaller.

Where does this all fit in? In the past, we all thought the intelligence process was a way in which we could steal another country's secrets and give it to our generals. Today, intelligence is a much more important—and a much broader—kind of discipline. It is really a search for knowledge and a search for common understanding. The intelligence process today is not looking for a single ultimate secret. Instead, we live in the information age. The intelligence business today is like a jigsaw puzzle. You put the little pieces on the frame and gradually hope to build up the picture.

When Mr. Andropov was the head of the KGB, I used to compare our jobs. I sat in front of a frame with my jigsaw pieces, and tried to make out the picture. I didn't have all the pieces, so I had to project over the blank spaces, to see what the picture meant. But, ironically, he may have had a much tougher job than I did because he was sitting there with the same frame, but a great many more pieces. And he had no idea which pieces were most relevant—what with the cacophony of voices in this country.

Glasnost is a positive step because intelligence today is designed to provide a common knowledge base for our relationship. Rivals get into the most trouble when they have had dissimilar understandings about their situations. The most terrifying example of a lack of understanding was the initiation of World War I. The different foreign ministries, and the different defense ministries, had an appreciation of what the other nations were doing. And that appreciation was that the other nations were beginning their



May 11 visit to FAS by Soviet delegation: left to right; Delegation leader Academician Y.A. Ospyan; Corresponding Member N.A. Plate; Dr. A. A. Vasiliev; Academician V.I. Goldansky; Professor S. N. Rodionov; J. J. Stone (FAS); Y. Shiyan; Academician Y. V. Gulyeav.

mobilization to prepare for military activity. And each side began to prepare against the other, and sooner or later the process of mobilization took over. The nations of Europe got into a four year war although no historian can really tell you what the war was all about.

Now, the U.S.-Soviet Joint Disarmament Project offers an opportunity to do this job on a joint basis. That's what your project is all about. What could the two sides do jointly to help the process? The noteworthy fact is that treaties can make the process easier with the provisions for the exchange of data, for certain accounting rules, for certain rules against concealment, etc. All these provisions have reflected conscious steps by the two countries, to help a process of *glasnost*. This process of mutual understanding also is improved by the communication under the treaties, viz, the Standing Consultative Committee.

Just before I became CIA Director, I went out to get a briefing on some of our major weapons systems. I remember, particularly vividly, going to one of our missile silos up in North Dakota. You take a little elevator down to the bottom. There were a couple of young, fresh lieutenants from the Air Force sitting on opposite sides of the room so they can't touch each other, with their different keys that they have to turn at exactly the right moment, according to instructions, in order to arm the missile. In the other corridor you see this huge monster sitting there. You realize that it's pointed at some place in the Soviet Union, eight thousand miles away. And you realize that there are two young Soviet officers sitting in a very similar silo somewhere in the Soviet Union with a missile pointing at the United States.

This is why I believe that it's terribly important that this process of discussing how we can limit these weapons continue.

People ask me when I talk about this: "Do you trust the Russians?" And I say "no." I don't trust the Russians, I don't have to. I watch them. They can watch us too. The foundation is *glasnost*. And that's what I think this project is all about. ■

FAS SPONSORS ARGENTINEAN-CHILEAN ACADEMIC DISCUSSION

As part of its on-going effort to explore ways and means of limiting defense expenditures in the South American countries most prone to high defense expenditures, FAS sponsored a meeting in Santiago between academics based at the Center for Strategic Studies of the Belgrano University and the Institute of Politics of the University of Chile; the subject was "regional security and the limitation of defense expenditures."

However, none of the Chilean delegation or hosts, for a variety of reasons, had put aside sufficient time to participate fully in the talks and, as a consequence, the Argentinean delegation was not properly received. Despite these and other difficulties, a few actionable ideas were developed, mainly from the Argentinean delegation, which FAS is now considering.

Meanwhile, experts on the human rights situation in Santiago suggested that the major abuses were gradually being shifted to a clandestine secret service that operated with the connivance of the police. Probably because of the forthcoming plebescite on the presidency, in which General Pinochet is almost certain to be the candidate, efforts are being made to give the situation a better appearance. The list of persons exiled, i.e. persons who may not return, has been reduced from 3,000 to 900. And the right of the secret police to arrest persons that are not going to be tried by military courts has been limited.

Argentinian Delegation relaxing: (l to r) Admiral Horacio A. Mayorga (Ret.); Silvia Bardessono (Soviet Specialist); M. Freire (Central American Expert); Julio Cirino (Director of the Center); Rodolfo Patricio Florido (Drug Traffic).

FAS SEEKS CONGRESSIONAL EXCHANGE COORDINATORS

FAS is launching a new effort to increase US-USSR leadership exchanges and congressional travel to the USSR, and is looking for 50 interested and committed individuals willing to lead the nationwide campaign on the state level.

A new FAS publication entitled "Congressional Travel to the Soviet Union: Raising the Rate of Exchange" will spearhead the effort to make travel to the USSR an expected activity for every American lawmaker. The colorful 32-page booklet addresses almost every issue and objection associated with the 17-year project, and is intended to provide FAS members who support this commonsense issue with the tools to convince Members of Congress to make the effort and go.

The booklet is available for $2.00 to cover publishing and postage. Individuals interested in the booklet or wishing to find out more about becoming state coordinators for the Congressional Exchange project should write FAS staffers Edward Hodgman or Cely Arndt at 307 Massachusetts Ave., N.E., Washington, D.C. 20002, or call (202) 546-3300.

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