CHAPTER IV

Development of the CVS Concept

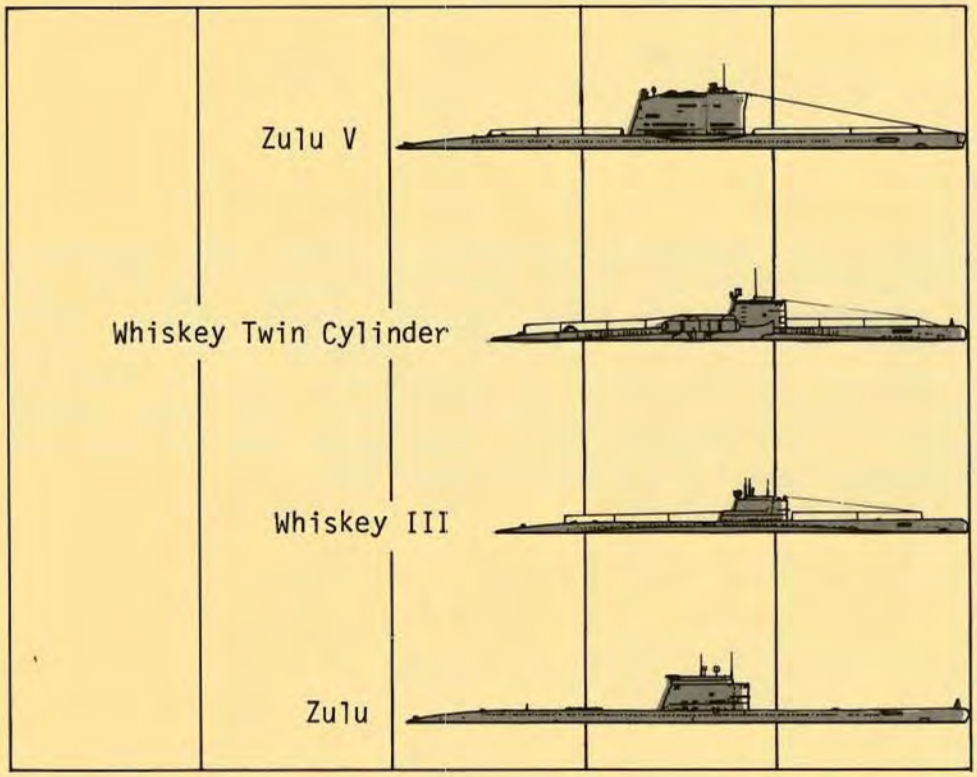
1955-1960

(U) The last half of the fifties saw the creation of the most ambitious and effective Hunter-Killer groups yet, built around the Essex *class CVS, the S2F, and the HSS-1, supplemented by the AD-5W with its APS-20 radar. SOSUS became operational during this period and the Soviets brought forth the first series of postwar submarine classes. Some of these were missile carriers capable of attacking the continental United States itself. The Navy slowly continued to strengthen its ASW organization in Washington and in the two Fleets, as outside pressure grew to do something about ASW.*

THE THREAT 1955-1960

Tu-20
BEAR

Cruise Speed	500 mph
Gross Weight	340,000 lbs
Range	7,800 mi

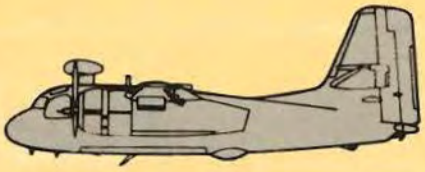


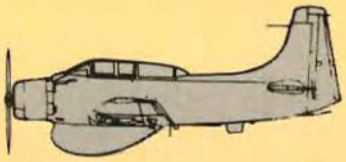
	Displ.	Speed
Zulu V	2,600	18
	2,900	15
Whiskey Twin Cylinder	1,350	17
	1,650	15
Whiskey III	1,350	17
	1,600	15
Zulu	2,500	18
	2,900	15

S-B|A
ASW

Development of the CVS Concept

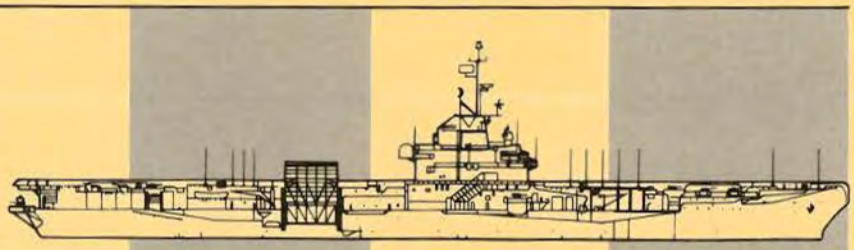
SEA-BASED AIRBORNE ANTISUBMARINE AIR 1955-1960

S2F-1/S2F-2 
Gross Wt 26,867 lbs
Vmax 253 mph

AD-5W 
Gross Wt 18,263 lbs
Vmax 321 mph

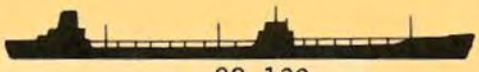
HSS-1 
Gross Wt 14,000 lbs
Vmax 123 mph

DASH 
Gross Wt 2,296 lbs
Vmax 90 mph



TYPICAL MERCHANT SHIPS - 1957

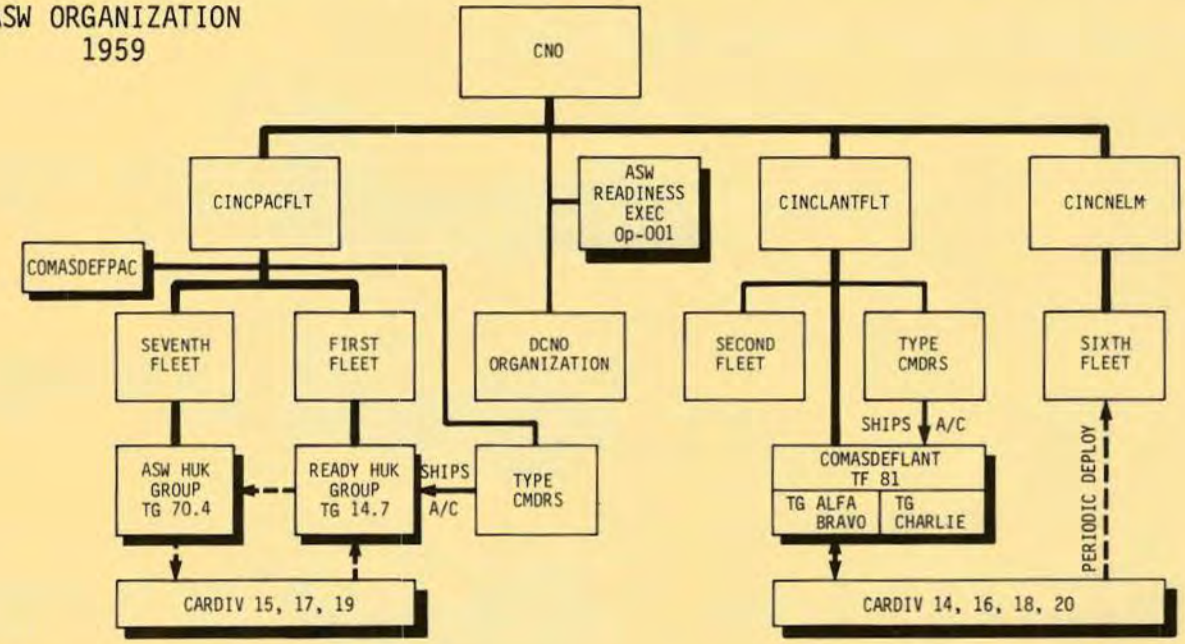
Freighter 
565 ft
9,266

Tanker 
745 ft
28,139

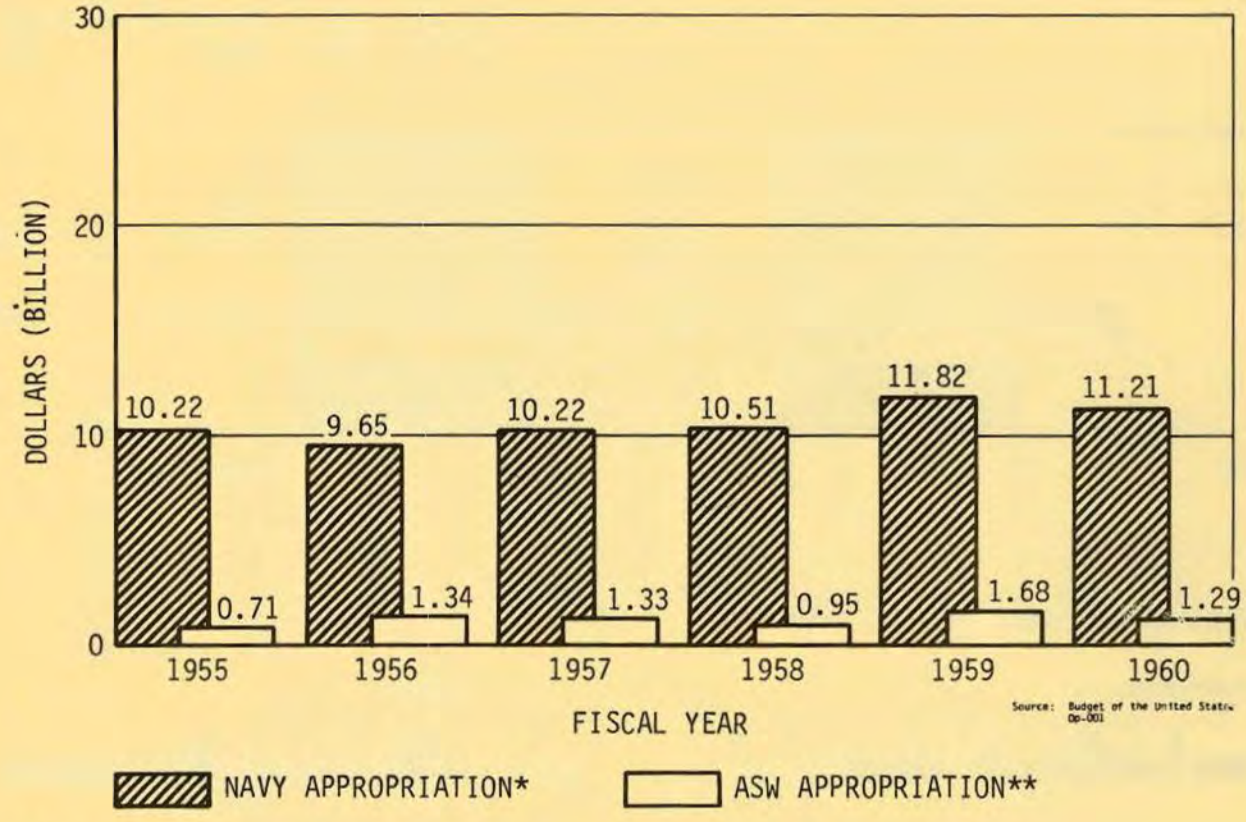
Average of New Construction - DWT Tons

Development of the CVS Concept

ASW ORGANIZATION
1959



FINANCIAL SUMMARY



* Includes total Navy appropriation.

** Includes only aircraft, weapons, shipbuilding and conversion, and other procurement.

Chapter IV

Development of the CVS Concept

The Submarine Threat Takes on Shape and Dimension

(U) Up through 1954, the Soviet Navy's progress in submarine development was still largely conjectural, based on logic and projected technical capabilities, as well as the Soviet government's assessed intent. The specifics of the new postwar submarine construction programs were largely unknown. A 1954 staff study conducted by Op-05W (Air Weapons Systems Analysis) demonstrated this lack of detailed information by providing an assessment of the Soviet submarine threat in the Atlantic. The study noted that while the Russian Navy was estimated to have 345 submarines, this was a misleading grand total. Actually, there were only forty-seven submarines which corresponded to the U.S. Guppy type, and it was this type only which posed a threat to the North Atlantic sea lines of communication. In addition, there were eighty-three older fleet boats, but of these only nine were equipped with snorkel.[1]

A 1954 Op-05W Threat Analysis

(U) By 1956, however, the earlier optimism of the 1954 assessment had vanished as hard details of the Soviets' postwar submarine construction program became apparent. In a staff study released 13 August 1956 Op-05W declared the Soviets had been building long range submarines "at a rate far in excess of previous estimates." In January 1956 the Soviets were believed to have a total of 421, and by January 1958 this figure was expected to rise to 646, mostly long range types.[2] The two new classes of submarines which caused this concern were the long range 1,350-ton Whiskeys and the 2,500-ton Zulus. These were modern snorkel-equipped boats capable of operating around the periphery of the U.S. A more ominous concern, however, was "that the Soviets will have nuclear powered submarines" in the next few years.[3] Op-05W concluded, however, that the immediate concern was primarily with the new snorkel

A 1956 Pessimistic Assessment

The WHISKEYS and ZULUS Arrive

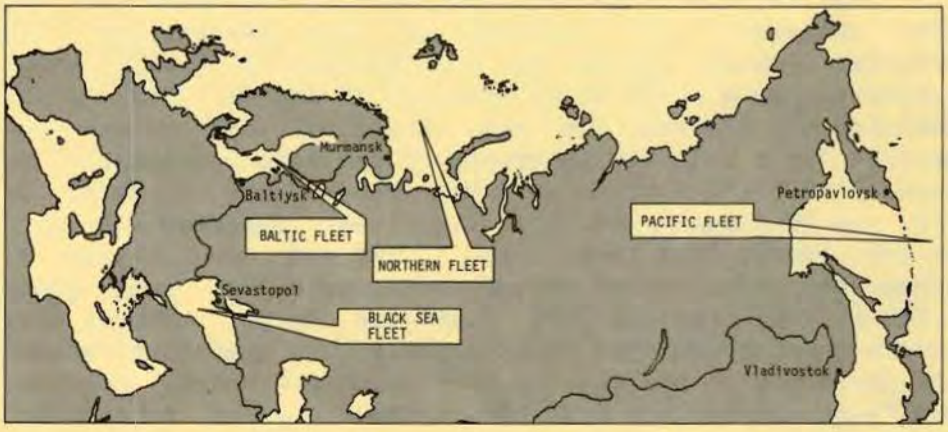
Threat Priorities

boats. These presented a threat in Op-05W's estimation which was, in descending order of priority, submarine launched guided missiles; submarine laid nuclear or conventional mines; and torpedo attack on merchant or naval vessels. The most difficult to counter of these three was the submarine launched guided missile. A missile with Regulus I characteristics (subsonic, 250-mile range) fired from 150 miles off New York could hit every major northern city along the eastern seaboard.[4]

(U) By 1958 Op-312 was predicting a Soviet submarine fleet of between 445 and 450 boats with an annual construction capacity of 160. In their estimate, the Russians had

An early Whiskey II submarine in the North Atlantic. At some 235 units, this was the Soviets' most numerous postwar class.

A Zulu III, a 2,500-ton design believed strongly influenced by the German Type XXI. Some thirty-two were built during the fifties.



The Soviet Navy's four major fleet areas.

launched almost 300 first-line, snorkel-equipped submarines, and of these 260 were "long range, offensive types." Construction rates were low for the years 1950 and 1951 when the prototype Whiskeys and Zulus were being developed. However, once these had been built and adequately tested the Soviets adopted assembly line production methods using prefabricated sections similar to the Germans during World War II. From an estimated seventeen submarines produced in 1952, twenty-eight in 1953, sixty in 1954, and seventy in 1955, Op-312 maintained the Soviets reached a peak of eighty-six submarines constructed during 1956. The Soviet submarine construction program was then sharply curtailed in 1957, which Op-312 concluded was an interim period for changeover and development of new prototypes.* Construction of the Whiskey class, a long-range snorkel-equipped boat with a maximum underwater speed of sixteen knots, was terminated in 1957 after 235 units had been completed. Production was also halted on the medium range Quebec class submarine, capable of 15 knots submerged speed, after thirty had been built. Finally, the Soviets stopped work on the Zulu class in 1955 after completing twenty-five. Obviously, new and improved submarine classes were in the offing.[5]

A 1958 Op-312 Threat Assessment

(U) Op-312 further noted that "the huge Soviet submarine fleet" was deployed in all four major fleet areas: the Black Sea; the Baltic; the North Sea (out of Murmansk); and the Pacific Ocean. It was observed that "in recent years a marked increase in the deployment of long-range submarines in the Northern and Pacific Fleets" had occurred. In 1957, for example, the Soviets transferred twenty-four Whiskey class submarines to the Far East via the Northern Sea Route. According to Op-312, "Such a redisposition of long-range submarines (was) a direct challenge to our control of the seas" since these two Soviet fleet areas were the only ones with direct access to the open sea.[6] While admitting that the Russians historically considered the submarine a defensive weapon, Op-312 nevertheless concluded that the Soviets now realized the offensive potential of the submarine.

The Four Soviet Fleets

(U) What was of greatest concern at this point was the development of a Soviet submarine missile capability.

* These proved to be the 2,300-ton Foxtrot and 1,000-ton Romeo conventional boats, the conventially-powered Golf ballistic missile class, the first designed for that purpose, and the November class, the Soviets' first nuclear powered submarine class.

RFCAL

A Zulu V missile conversion, the Soviets' first ballistic missile boats, modified in the late fifties. Two vertical SS-N-4 ballistic missiles are in the sail.

RFCAL

A 1959 Whiskey Twin Cylinder conversion. She carries two SS-N-3A cruise missiles.

RFCAL

A Golf-I, the Soviets' first designed-for-the-purpose missile sub. She carries three SS-N-4 ballistic missiles which must be fired from the surface.

Khrushchev Wants Missile Submarines

Khrushchev had stated that what he really wanted was guided missile-carrying submarines equipped with atomic warheads instead of surface ships. According to intelligence reports, numerous sightings had been made in the Northern Fleet Area, the Baltic, and the Pacific of submarines "with large hangar tanks on deck, ramp-like structures for launching, and even airplane-like objects on deck," which indicated that the Soviets were well into the experimental stage with such a weapons system.[7] Intelligence estimates indicated that the Soviets probably had a supersonic turbo-jet missile with a range of 500 miles in 1957, and that by 1962 this range could be extended to 1,000 miles. Although there was no evidence that the Soviets were working on a ballistic missile for use from submarines, such as the Polaris type, Op-312 asserted this could be "an intelligence deficiency rather than a lack of Soviet effort in the field." Nevertheless, the ASW Summary concluded that even the cruise type missile represented a serious threat to the United States. Op-312 concluded their 1958 summary of the threat by predicting that the Soviets would have a new design submarine incorporating nuclear propulsion and guided missiles by 1962. The forthcoming Hotel and Echo I classes were to meet this prediction.

Cruise Missile Experiments

Soviet Ballistic Missile Submarine Developments

(U) Initial submarine ballistic missile installations were tried by the Soviet Navy in 1958 first on a series of Zulu class conversions, each carrying two SS-N-4 Sark missiles vertically in the after end of an enlarged conning tower. In 1959, ONI reported ". . . that at least three "Z" class submarines have been coverted to probably ballistic missile-launching boats. We estimate they will probably convert as many as six of these." The Zulu conversions were followed by the 3,200-ton, conventionally powered Golf class built for the purpose, each of which carried three vertical SS-N-4 Sark ballistic missiles. Begun in 1957, the Golfs were first observed at sea in 1960, the same year the first U.S. Polaris submarine, *George Washington* (SSBN 598), became operational. One significant difference between the U.S. and Soviet ballistic missile boats at this point, apart from the markedly fewer numbers of missiles the Soviet Golfs carried, was the requirement for the latter to surface in order to fire.

A Navy View of Future Conflict, 1959

Soviet Intent, 1959

(U) By 1959 there had been a shift in U.S. Navy thinking regarding the intent of the Soviet submarine threat. ONI now believed that the Soviet attack submarines would remain in the eastern Atlantic and western Pacific because of:

1. Concern over the U.S. fast carrier task forces.

2. Large numbers of targets in nearby focal shipping areas.

3. Increased ability to work with co-ordinated long range air based in the Soviet homeland.[9]

(U) Although the Soviets were not expected to deliberately provoke a general war during this period, ONI pointed to the increasing likelihood of limited wars where the Soviet submarine force would play an important role. There was general concurrence at the time with this assessment.

(U) It should be noted however, that in the unlikely event that there was a major conflict, the U.S. planning objective of offense-in-depth, first promulgated in 1947, continued to dominate Navy thinking. This approach was again summarized in a secret restricted memorandum dated 16 July 1956. It outlined air strikes against submarines at

Naval Institute

(A) Regulus I fired from the Randolph *(CVA 15), June 1956.*

(B) Regulus I launched from the missile submarine Growler *(SSG-577), April 1959.*

B

their home bases; air and submarine mining of Soviet ports and training and transit areas; antisubmarine submarines deployed to ambush transiting and training submarines; and finally HUK groups against Soviet submarines at sea. Refinements in the plan included not only the use of SSKs but the installation of SOSUS in the approaches to the submarine missile launching areas the Soviets were expected to employ.

"Point of Origin" Strike Strategy

(U) U.S. naval air and missile strike capability was viewed by the Navy as the most effective way of reducing the enemy submarine force before it left port. The high subsonic guided missile Regulus I and the supersonic Regulus II, under development, both could be launched by carrier, cruiser, or submarine in supporting the Navy's offensive strike capability.*[10] Thus, the offensive strategy of hitting enemy submarines at their point of origin as a primary means of defeating the submarine threat remained a goal of the U.S. Navy for over ten years.

(U) In summary, during the latter fifties as the U.S. CVS forces continued to develop, the threat they were designed to counter refused to remain static. The Soviets had now developed a series of modern submarine classes which had the ability to carry and launch both cruise and ballistic missiles. Furthermore, the first Soviet nuclear powered boats--the dreaded true submersible--were under construction.

The Development of SOSUS

Growth of the SOSUS Stations

(U) Fortunately, as the Soviet Navy moved to develop its postwar submarine fleet, the U.S. Navy was making significant progress in submarine detection systems. One of the most pressing problems was initial detection, and its most promising solution was the Sound Surveillance System, SOSUS. It was possible by means of these coordinated bottom mounted passive arrays to locate operating Soviet submarines which might be on station, including those carrying missiles. By 1956 twelve SOSUS stations were planned or in the process of construction in the Atlantic with seven in the Pacific.** Obviously any contacts

b(1)

** The listening arrays were set in 1,000 fathoms of water. By 1956 a shallow water system was under development to protect the SOSUS ends where it returned to land. A deep water system was being investigated as well.

developed by these nets would have to be investigated and the Hunter-Killer groups with their range and staying power were prime candidates for this mission. This of course worked well in justifying the HUK mission. As Captain D.E. MacIntosh, Op-312, observed in December 1954:

SOSUS and the HUK Groups

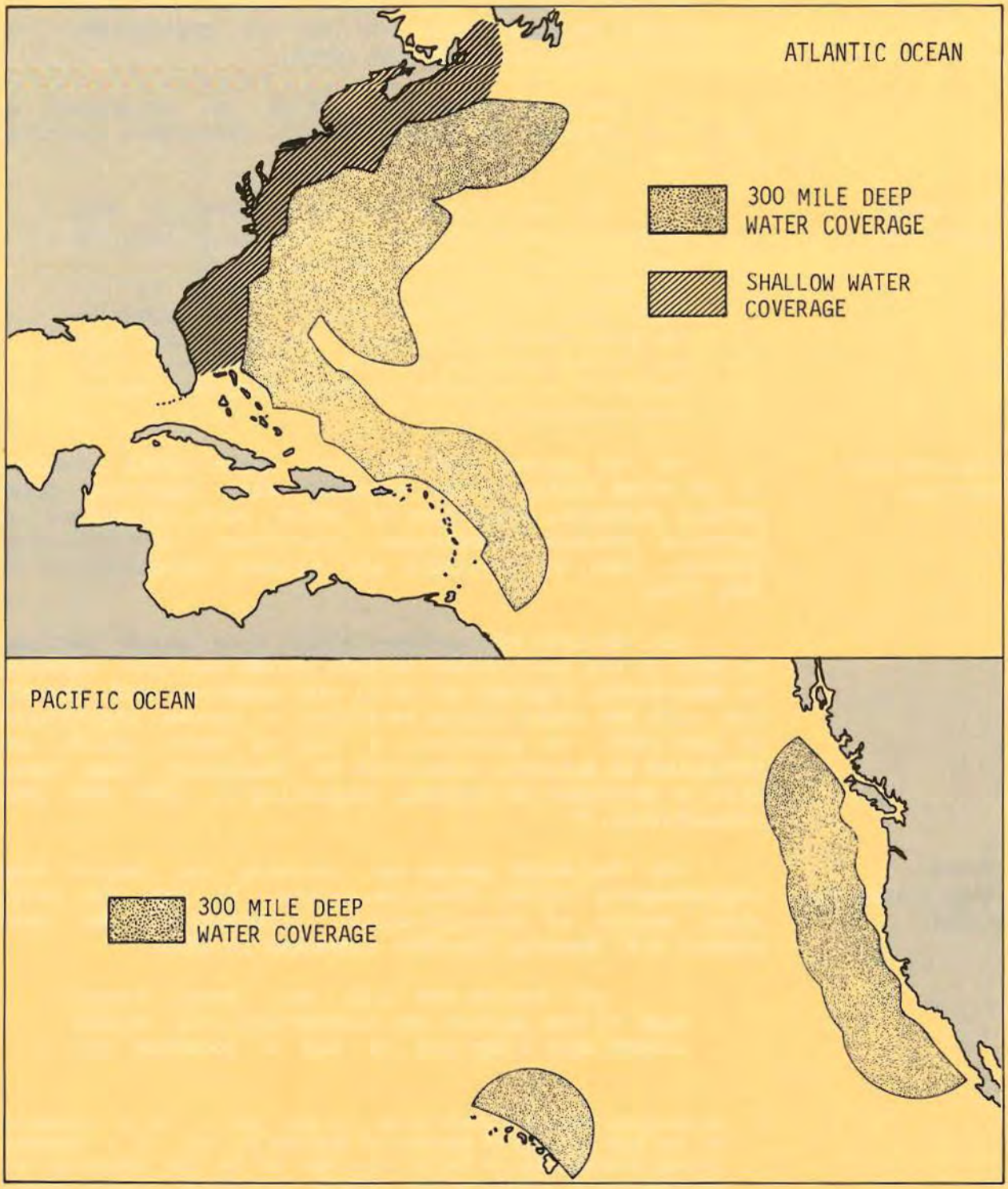
> (U) As you know, we have three Hunter-Killer groups in the Atlantic and two in the Pacific. One of the basic facts about the operations of Hunter-Killer groups is the fact that they must be furnished operational intelligence in order to function efficiently. They were not created to search wide areas of ocean in the hopes of discovering an enemy submarine. . . . However, with operational information of the suspected presence of submarines or their approximate location, the Hunter-Killer group can search them out and destroy them.
>
> (U) It is our earnest hope that the LOFAR stations which form our Sound Surveillance System in the Atlantic and Pacific will furnish us with the necessary operational intelligence and will give us the advance warning that we need to meet the threat of a mass nuclear guided missile attack launched from submarines.[11]

Bermuda and Eleuthera Successes

(U) According to CAPT MacIntosh, performance of the experimental LOFAR stations at Bermuda and Eleuthera in the Bahamas was excellent:

> (U) Ranges out to 600 miles were obtained. However, this was not the average. The average was about three to four hundred miles--reliable. As you can see from this limited test we have determined that our patrol planes and destroyers, the VP/DD concept, will work, and they can do the same job that our carrier Hunter-Killer forces can do when operating within the ranges of detection of the SOSUS system. This means that we can now plan to use our carrier Hunter-Killer forces in areas beyond the reach of shore-based aircraft and the SOSUS net when we have operational intelligence which would indicate that it would

Development of the CVS Concept



Sound Surveillance System, 1958

> be profitable to employ them there. In other words, we gain flexibility in the operational use of our forces through LOFAR.[12]

(U) The Navy was keenly aware of the importance of underwater sensors. As Captain Norval Richardson observed in August 1954:

Submarine Detection

> (U) While radar is going downhill with respect to effectiveness and eventually must be out of the picture with the true submarine, we are just really beginning with respect to the capability of LOFAR and Sonar. The submarine has gone under the water; obviously the only way we are going to be able to detect the submarine is to go under the water with our detection equipment.[13]

The Workload Goes Up

(U) By January 1956 the first eight LOFAR stations of the SOSUS system in the Atlantic were reporting 3,400 monthly contacts, sixty-four of which were classified as probable non-U.S. submarines justifying investigation. However, lack of available air allowed investigation of only five.

(U) By 1959 the nineteen LOFAR deep water stations as part of the continental defense system had been expanded to twenty-one, eighteen of which were complete and operating, with the whole system scheduled to become operational by late 1960. In addition, a shallow water system was scheduled at Argentia along with an additional deep water station northwest of Bermuda, completing in 1960 and 1962 respectively.[14]

SOSUS Substitutes for ULTRA

(U) The SOSUS system was becoming the Navy's most comprehensive initial detection system. It was the principal source of classification information.* As Rear Admiral C.E. Weakley (Op-001) commented in 1959:

> (U) During the last war, every U-boat came to the surface and transmitted very nicely almost once a day and we had a location for

* According to Captain Richard Holden (of DCNO, Dev.): "It is effective for the vast majority of targets but degraded by lack of a complete library of signatures of Soviet submarines and by the similarity of the signature of certain surface vessels, principally fishing boats, to submarine signatures."[15]

> them. In some respects the ocean surveillance system substitutes for what promises to be a very difficult intelligence area the next time.[16]

SOSUS is Expensive

(U) SOSUS was effective but it was also expensive, and the Navy was hoping for additional money to cover the cost. Said RADM Weakley in May 1959: "We do not feel we can get into the expensive fixed systems unless we get . . . reorientation of . . . fiscal policy. . . . If you can take part of the money that now goes into continental defense and do this job, all well and good, but if it has to come out of the rest of the Navy, where do we stand? That is the crying question."[17]

Other Intelligence Means

Other Surveillance

(U) Beyond SOSUS the Navy was interested in other intelligence sources in order to keep track of Soviet naval activity. By 1959 some of these included:

> 1. Electronic coverage by submarine patrol in the Northern Atlantic and Pacific Fleet areas.
>
> 2. Coverage of the Soviet Northern Fleet operations by electronic intercept bases in Norway.
>
> 3. Coverage of the Soviet Pacific Fleet operations by coordinated surveillance efforts at key sites in Japan and the Aleutians.
>
> 4. Submarine patrols in sensitive geographical areas in times of stress.
>
> 5. Establishment of fixed barriers and surveillances of key choke points.
>
> 6. Provision of HF/DF capability for intercept of time-compressed signals from Soviet submarines.[18]

(U) All of this was designed to assess just where the threat was and what it was doing. While impressive, there was still much to be done. Said Captain C.H. Andrews in May 1959: "Considering the number of Soviet submarines--to express it lightly, we have real problems."[19]

Organizational Developments Within OPNAV

Op-31 is Downgraded

(U) Going back a few years, on 28 May 1954 the office of the DCNO (Operations, Op-03) was reorganized as the DCNO (Fleet Operations and Readiness) and a new office, the DCNO (Plans and Policy) was established as Op-06. In the process Op-31 was reduced in size and in the fall of 1954 was downgraded to division level with the establishment of Op-03C (ACNO Readiness).* During this period Op-37, the Development and Operational Readiness Division, was created as well, thereby strengthening Op-03's new responsibilities in the readiness area.

Admiral Arleigh Burke, Chief of Naval Operations 1956-1962.

(U) By 1956 this weakening of the CNO ASW organization, combined with the obvious developments in undersea warfare by both the U.S. and the Soviet navies, led to concern over the strength of the Navy's internal ASW leadership. Rear Admiral Hall, in a series of "Notes on ASW" to Admiral Arleigh Burke, then CNO, recommended increasing the emphasis on antisubmarine warfare by establishing a high level centralized ASW organization directly responsive to the CNO. Rear Admiral F.B. Warder (Op-31) was opposed to this since it would "superimpose on the present ASW organization a high level group (which) would only add to the present extremely heavy work load of (Op-31)." He felt "the answer to increased emphasis on ASW is to allow those who are charged with operating to operate and to require those who plan to plan."[20] In his view, the title of ACNO (Undersea Warfare) should be reinstated.

(U) Captain T.F. Caldwell* (Op-05W) felt the problem could be resolved by centralizing the existing ASW elements within the Office of the CNO. Concurring with RADM Hall, he stated: "It is felt that such a reorganization is urgently required to afford a more positive, centralized control of our growing ASW requirements."[21]

1958 Op-001 Created

(U) Despite RADM Warder's misgivings, in December 1957 Admiral Burke had decided to reestablish a highly visible central organization for ASW activities. He did so by creating the Office of the Chief of Anti-Submarine Warfare Readiness (Op-001) effective 14 January 1958. This

* Later Op-095, 1968-1971.

new office reported directly to him. In his memorandum establishing Op-001 Admiral Felt,* then Vice Chief of Naval Operations, said:

> (U) The basic philosophy underlining this action is that underseas warfare and anti-submarine warfare are not synonymous. It recognizes that many of the Divisions in OPNAV have ASW responsibilities, with particular reference to Intelligence, Long Range Planning, Research and Development, Current Operations, Surface Warfare, Air Warfare, Communications, Logistics, and Undersea Warfare.[22]

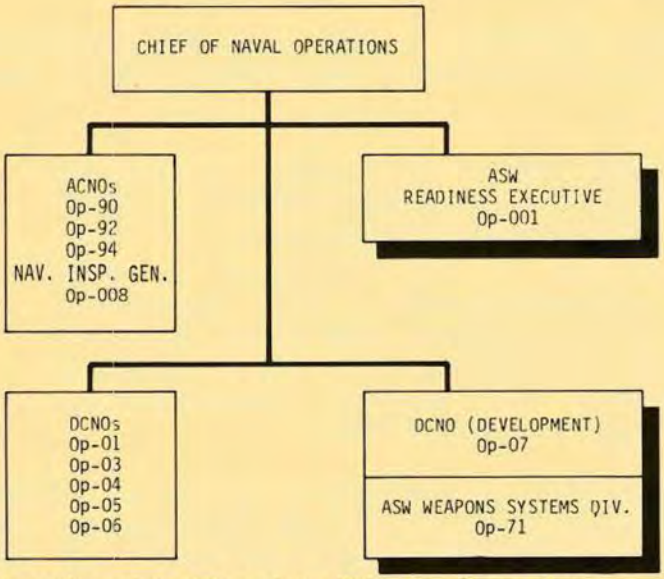
(U) Concurrently, the ASW role of Op-31 was further reduced by elimination of all of its ASW coordinating functions. RADM Weakley, who had relieved RADM Warder as Op-31 four months previously, now became the first Antisubmarine Warfare Readiness Executive (Op-001) on 14 January 1958. His mission was "to provide the CNO special assistance with respect to the planning and direction of all matters pertaining to antisubmarine warfare readiness."[23] Specifically, Op-001 was to review the policies, efforts and progress of the bureaus, offices and other agencies concerned, and study and analyze problem areas to insure that superior ASW readiness was maintained. Concurrently, he was to coordinate the efforts of OPNAV offices with regard to ASW readiness, including the determination of necessary force levels and appropriate organization, and the development of plans for the use of operating ASW forces.**

Naval Institute

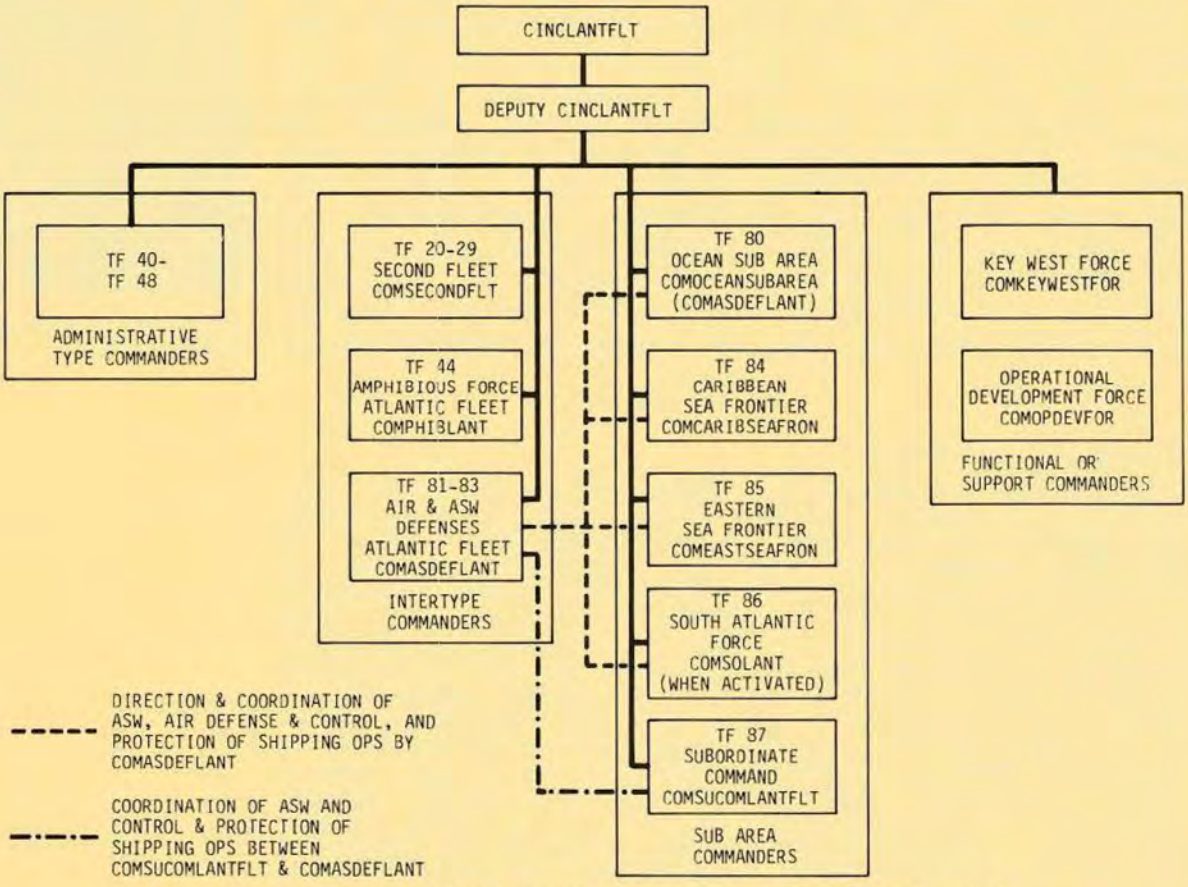
Rear Admiral Charles E. Weakley, USN.

* Rear Admiral Harry D. Felt.

** Sixteen months later, RADM Weakley, inspired by the successful anti-submarine conferences of the late forties, held the first formal Anti-Submarine Conference in ten years. Convened from 4 to 7 May 1959, it was designed to review the Navy's antisubmarine programs; to obtain the operating fleet viewpoint, and to make combined recommendations, modifications, and improvements in those programs. These recommendations, assembled by Rear Admiral H.A. Yeager, the new Op-001 Executive, after Admiral Burke's review, were designed to influence the FY 1961 budget. At the Conference, RADM Weakley emphasized the difficulties in meeting ASW objectives due to the imposition of severe new budgetary guidelines. In spite of the emphasis on antisubmarine warfare, the budget for FY 1960 was less than the FY 1959 budget, which had been amended to provide greater funding to ASW.[24] Congress, in RADM Weakley's view, was putting the Navy in "a fiscal straight jacket," and a reorientation of the fiscal policy of the government could not be accomplished by the Navy alone. He felt that this could only come from outside pressure, as had been the case in the creation of the Strategic Air Command.



The Creation of Op-001 and Op-07/Op-71, 1958, 1959.



COMASDEFLANT Organization and Atlantic Fleet Relationships, 1958.

Finally, Op-001, acting through existing agencies, was charged with implementing the decisions of the CNO concerning ASW readiness.

1959 Creation of DCNO (Development) Op-07

(U) Another major change in the CNO organization, just before the Conference, which had an effect on ASW took place on 28 April 1959 with the establishment of the Office of the DCNO (Development),* Op-07. The primary intent here was to centralize the growing research, development, test, and evaluation responsibilities within the Office of the Chief of Naval Operations. Both the Op-001 and the Op-07 changes not only were timely for the Navy from an internal point of view but also helpful politically. Congress had been pressuring the Navy to provide more obvious ASW organizational focus. Admiral Burke could now claim that this was exactly what the new Op-001 and Op-07 organizations were intended to do.

Fleet ASW Organizational Changes

The TENTH Fleet in the Pacific

(U) At the fleet level the Atlantic and Pacific Commanders in Chief were moving to centralize and strengthen their respective ASW organizations. In the Pacific this was the THIRD Fleet version of the old TENTH Fleet concept, while in the Atlantic Admiral Jerauld Wright proposed to Admiral Burke a less ambitious "centralized control of ASW and other defensive operations under one subordinate commander with provision for decentralized execution at lower echelons."[25] The net result in the Atlantic was the establishment of a new command on 1 July 1957, entitled Commander Air and Antisubmarine Defenses, U.S. Atlantic Fleet (COMASDEFLANT). Filling this slot was Vice Admiral F.T. Watkins. The principal tasks of COMASDEFLANT were:

COMASDEFLANT Formed 1 July 1957

(U) To coordinate planning for, and to exercise overall direction of, all Atlantic

* The first Deputy was Vice Admiral J.T. Hayward. His ACNO (Op-07B) was Rear Admiral C.B. Martell.

> Fleet ASW and defensive operations, including AEW, SOSUS, and control and protection of shipping, except in the SUCOMLANTFLT area.[26]

CNO's Strong Endorsement

(U) Admiral Burke in a personal letter to Admiral Wright at the time of his endorsement of COMASDEFLANT* emphasized the overall responsibilities he felt the new commander had in the areas of planning, tactics and early utilization of equipment available: He should become "Mr. ASW" with a broad knowledge of R&D projects, ASW ships and aircraft, public relations and Pacific Fleet ASW operations. He should be the goad to OPNAV in getting modern ASW equipment to the fleet. In summary, "He must know everything about ASW that's going on or is being thought about and should advise where action taken is insufficient or late."[27]

(U) For the first time final ASW responsibilities no longer rested directly with CINCLANTFLT but were instead delegated to the new command, still TF 80, which drew on the three task force organizations, TF 81, 82, and 83, for its operational strength. TF 83 was designated as the Hunter-KIller force, the only one with specialized ASW forces permanently assigned. Five modernized CVS carriers of the ESSEX class would be available by 1958, the most powerful grouping of ASW carriers since World War II. TF 81 would exist only in time of tension; TF 82, the Submarine Killer Force, would be assigned all submarines conducting ASW operations.

Creation of Task Group ALFA, 1958

RADM Thach, First Task Group ALFA Commander

(U) On 1 April 1958 CINCLANTFLT at the recommendation of the Chief of Naval Operations established Defense Group ALFA with Rear Admiral John S. Thach as its commander (CTF 81.8). Its mission was "to accelerate the development of ASW tactics, doctrine and equipment in order to improve the ASW readiness of the Atlantic Fleet."[28] Task Group ALFA initially consisted of the CVS *Valley Forge* (CVS 45) and Destroyer Squadron 28, two Guppy submarines, *Cubera* (SS 347) and *Sea Leopard* (SS 483), VS 36 equipped with S2F fixed wing aircraft, and HS 7 flying HSS-1 helicopters. Finally, a six plane element of VP 8, flying P2V5 Neptunes, was assigned. Some months later in July, a detachment of five AD-5W aircraft with APS-20E radar joined Task Group ALFA as well. In addition to developing combined team

* 11 March 1957.

The initial Task Force ALFA built around Valley Forge *(CVS 45).*

tactics in which the submarines often played the part of the threat, the intent was to maintain as much stability in forces assigned as possible. This, Admiral Thach complained at the six month point, had not been possible; the destroyer divisions, for example, would rotate three times in a little over one year.[29]

Initial Results

(U) Initial results were mixed. As reported by RADM Thach for the first six months of working up, ALFA showed that "detection by all units is pitifully inadequate and classification of contacts was poor and slow".[30] Reflecting the CTF 81.8 conclusions, CINCLANTFLT in its annual report to the CNO for FY 58 commented, "A radical development in the antisubmarine detection and classification field is needed to meet the threat of the high speed, deep diving submarine."[31] On the plus side, ALFA

proved once again "that greatly improved team performance was the single factor in improving ASW capability. . . . No one unit can solve the problems of detection, classification, and holding with present equipment."[32] Task Group ALFA during its first six months of operations had, in Admiral Thach's opinion, made significant if uneven improvement: "There is not a shadow of a doubt that singleness of mission and permanency of forces have been of supreme importance, and that these, coupled with high intensity of training, caused the units of the Group to learn more ASW in six months than they had previously known."[33]

A Good Way to Learn ASW

Task Force ALFA Public Relations

(U) Along with Task Group ALFA's operational success* RADM Thach launched an intensive publicity campaign "to gain budgetary support for the Navy and for ASW (and) to stimulate interest in industry . . . to encourage companies to invest their own funds" as well, having them become sufficiently interested to develop new ASW methods and techniques. The premise made publicly was that the nuclear powered missile launching submarine had imposed an immense new mission on the Navy, but there was still time before that threat became a reality and that the most certain deterrent "to the Soviet use of missile launching submarines is a demonstrated capability on our part to know the location of a majority of their submarines within missile range of our own or our allies' coasts."[35]

(U) As desired, articles on ASW and Task Group ALFA appeared in all of the major national magazines, and representatives from some twenty aerospace companies, as well as personnel of over thirty-one concerned government activities including several laboratories, observed ALFA in operation. Representatives of the Office of the Scientific Advisor to the President even found time to go to sea on ALFA exercises. Not only technology and teamwork but publicity (and its resultant funding and ideas) were being used to solve the sea-based airborne ASW problem.

The Word Gets Out

* It was also the Atlantic Fleet's first ASW task group intended to remain continuously at sea in order to investigate unidentified submarine contacts. To accomplish this COMASDEFLANT was to provide from TG 83.1-83.4, a duty task group which would operate in the vicinity of Nantucket conducting training exercises, but would always be immediately available. In March 1958 with the creation of the new Task Group, 83.2 was redesignated TG 81.2, Task Group ALFA. It rotated as the ready ASW task group when at sea with TG 83.1, 83.3 and 83.4.34.

ASW Public Relations

Admiral Russell, VCNO, on ASW Public Relations

(U) Publicity at all levels was extremely important to senior Navy management during the late fifties. In May 1959 Vice Admiral J.S. Russell, Vice Chief of Naval Operations, summed it up for the Navy ASW community:

> (U) The matter of ASW, I would like to assure you, is receiving first priority and optimum attention here. This is in the face of the perversity of Congress, the newspapers, etc. . . . You and I know the importance of ASW but does the J.Q. Public in the streets know the importance? . . . I would council you to make sure that in all your contacts with the public, with distinguished citizens, that you stress the need to keep going with this most important business. This is a democracy and what we get is a direct result of our personal efforts in letting the public, and through them the Congress, know of the importance of this game.[44]

Task Groups BRAVO and CHARLIE

1958

BRAVO and CHARLIE

(U) In October 1958 two additional semipermanent task groups with development responsibilities were added to the Atlantic Fleet. These were BRAVO (TG 81.9) and CHARLIE (TG 81.0). Task Group BRAVO was charged with modernizing HUK group area search procedures as well as developing new hold down and regain contact techniques. Task Group CHARLIE received the mandate to improve the Fleet's convoy escort capabilities. Convoy exercises during this period explored advanced techniques such as using the drone helicopter and variable depth sonar in convoy operations.

(U) As a result of all of this activity, CINCLANTFLT was able to report that:

> (U) COMASDEFLANT has increasingly brought together LANTFLT defensive forces into a cohesive and more effective force. . . .
>
> (U) Task Group ALFA has achieved substantial improvements in tactical coordination of surface-air-subsurface-SOSUS forces at sea. More specifically, ALFA has developed and refined a new Contact Area Doctrine for intertype

forces. Pacemaking progress has been made in area surveillance and area contact conversion with emphasis on direct use of SOSUS information. . . . Perhaps (the) paramount ALFA achievements lie in the areas of exercise of command and decision making at sea. By means of streamlined data reporting, vastly improved status board displays and new time-source-credibility correlation in filtered tactical plots, CTG ALFA exercises command with new dimension and confidence.[36]

The two missile tubes of a Zulu V.

(U) It is noteworthy that during May 1959 the Navy identified its first Soviet Zulu class submarine with ominous characteristics: "close examination of the pictures taken indicate that an object covered with a canvas tarpaulin may have been a missile launcher."[37]

Developments in the Pacific Fleet ASW Organization

1958 PACFLT ASW Organizational Developments

(U) Admiral H.G. Hopwood, CINCPACFLT, noting the Atlantic Fleet's strengthened ASW organization, continued during 1959 to push for creation of the Pacific Fleet's long-desired ASW-oriented THIRD Fleet, which now became a modified three fleet concept (FIRST, SEVENTH and THIRD). CINCLANTFLT also was pushing for elevating ASW responsibilities to the Fleet level but in both cases Admiral Burke

resisted, disapproving the Atlantic Fleet three fleet proposal in early 1959. Admiral Hopwood in the Pacific, however, reaffirmed in late December 1958, "that a primary requirement in this ocean is the provision of strong centralized control of ASW tasks and ASW forces by a single commander whose sole mission is antisubmarine warfare. . . . we must set up a modification of the Atlantic Fleet's ASDEFOR command."[38] A vice admiral as Commander THIRD Fleet was desired, who would control submarines on ASW missions, patrol squadrons, and SOSUS, the last through COMWESTSEAFRON.

1959

Admiral Burke Balks

(U) These proposals were again rejected in principal by Admiral Burke in January 1959 when they were presented to him in Washington by Captain Draper Kauffman. Burke stated that no vice admiral billet was available and had a number of questions concerning training, location, and ultimate responsibility. CINCPACFLT, however, moved to resolve these questions with a target date for implementation of 1 July 1959. A conference of Pacific Fleet commanders was held in February to obtain their reaction to the THIRD Fleet concept. It was basically negative. Vice Admiral M.E. Curts, COMWESTSEAFRON, with TENTH Fleet experience, felt the THIRD Fleet should not be a separate command but rather an integral part of CINCPACFLT staff: "I think your THIRD Fleet thing will get into an awful can of worms command relationship-wise. The HUK group has been over-emphasized. They are valuable but they didn't win the war by themselves. Actually a couple of decoders won most of it."[39]

(U) As a result, Admiral Hopwood became convinced that the THIRD Fleet concept was not necessary: "We have got to learn to walk before we can run. We have been lacking a coordinator of ASW" in tactics, doctrine, and the development of improved weapons and weapons systems. What would come out of this "is something else again. . . . At the kickoff he (the ASW coordinator) can have a place right here in Pearl, right next to me, and we will work this out together."[40] The Third Fleet Command responsibilities were to remain with CINCPACFLT.

(U) In April 1959, as reported by Capt. Kauffman, Admiral Hopwood in a letter to Admiral Burke presented his latest approach to the proposed PACFLT ASW organization. It called for the provision of a single senior officer directly responsible to CINCPACFLT throughout the Pacific ocean area, provision of a single commander responsible for

close-in continental defense, and greater permanancy of the Hunter-Killer forces assigned. At this point, CAPT Kauffman summarized three differences between the Atlantic and Pacific Fleet ASW requirements:

The Two Fleets ASW Differences

> (U) First, is the paucity of (ASW) forces in the Pacific Fleet. For example, in normal times we have just barely three destroyers total for every one deployed. In troubled times we deploy considerably more than one-third of these ships.
>
> (U) Second, our geography is quite different from the Atlantic. In particular, CINCPACFLT headquarters is more than 2,000 miles from the coastline which he must defend and from the SOSUS system which provides much of the tactical intelligence for close-in defense of the United States.
>
> (U) Third, in these days of austerity, it was necessary that we be able to carry out any organization within our own PACFLT resources. Amongst other things this precluded assigning any new three-star command.[41]

May 1959 ASDEFORPAC Approved

(U) However, in May 1959 the CNO indicated that a vice admiral billet would be available and in July approved the new organization of Deputy CINCPACFLT for ASW. Some of Admiral Hopwood's considerations in formulating his April 1959 version of COMASDEFORPAC were, as stated by CAPT Kauffman:

> (U) First, our ASW forces already serve many masters, including the commanders of the FIRST and SEVENTH Fleets, the Type Commanders and Area Commanders. Only CINCPACFLT himself or a deputy acting in his name can cut across all of these lines of command.
>
> (U) Second, the deputy idea is evolutionary in nature as opposed to the revolutionary aspects involved in setting up a completely new antisubmarine fleet. If such a fleet command proves preferable in the future, we can then easily advance to that next stage.

(U) Third, the staff requirements for a deputy are considerably less in rank and numbers of officers and men than would have to be furnished to a Fleet Commander. . . .

Western Sea Frontier Gains Added ASW Authority

(U) The next proposal made to CNO by CINCPACFLT is the assignment to Commander Western Sea Frontier of additional authority and responsibility for the conduct of ASW in the Pacific approaches to the continental U.S. and the Panama Canal. In accordance with this change, Admiral Curts would be assigned the additional title of Commander Naval Defense Forces Eastern Pacific. Of course, in part, this new title is merely a recognition of duties already assigned to our Sea Frontier Commander.[42]

29 February 1960 ASDEFORPAC Commissioned

(U) By January 1960 most of the details of the new ASW organization had been formulated, RADM Thach participating in the final structuring of the new COMASDEFORPAC organization at meetings in Washington, D.C. On 29 February 1960 Admiral Thach, now a vice admiral, arrived and the following day became Commander Antisubmarine Defense Force Pacific when that organization was commissioned at Ford Island.

ASDEFORPAC Has Problems

(U) In May 1960 procedures were established which would have the westward-bound HUK groups conduct their Operational Readiness Exercises (ORE) under COMASDEFORPAC in the Hawaiian area. In mid-June, however, the CNO for political reasons ("trouble with Congress") suggested strengthening the FIRST Fleet, including the assignment of permanent forces. The resulting reorganization placed all HUK groups under the operational control of that fleet up to the time of their deployment to the SEVENTH Fleet. "This left COMASDEFORPAC out in the cold" with little command responsibility other than that temporarily assigned during fleet exercises and training.[43] This setback occurred just as Admiral Hopwood, who had struggled with this organizational problem for so long, was relieved by Admiral J.H. Sides as CINCPACFLT. Thus the COMASDEFORPAC command responsibilities were in contrast to those of COMASDEFLANT, a difference which remained for the rest of this period.

ASW in the Pacific

1959 PACFLT HUK Group Developments

(U) In 1959 now that Admiral Burke's approval had been given, during the May through August period CINCPACFLT moved to establish the HUK groups on a semipermanent basis, "disbanding (them) only as necessary for overhauls." The first EASTPAC HUK group consisted of *Yorktown* (CVS 10) and DESRON 23, activated on 22 July 1959. It operated under COMFIRSTFLT with COMCARDIV 17 in command. Ultimately all four CVS carriers plus seven "goldplated" destroyer divisions would be involved, providing a nuclei of four destroyers with each CVS.

(U) TG 70.4, generally with COMCARDIV 15 on board, continued training operations with the SEVENTH Fleet in much the same manner as TG 96.8 had done during the Korean conflict. Destroyers were rotated through TG 70.4 for ASW training with the CVS and its attached aircraft and submarines. CARDIV 17 was responsible for corresponding HUK group training activities off the Pacific coast.

(U) By 1960 all of the Hunter-Killer groups were assigned to either the FIRST Fleet (TG 14.7) or SEVENTH Fleet (TG 70.4). Each HUK group, after working up for several months, was ready to deploy, thus being thoroughly trained in combined ASW tactics by the time it became part of the SEVENTH Fleet.

Exercise SKYNET

(U) Finally, SOSUS became operational in the Pacific during 1958, improving PACFLT's initial detection capabilities, but highlighting deficiencies as well. During February 1959 the Pacific Fleet's Exercise SKYNET conducted extensive operations with the SOSUS system in conjunction with two HUK groups (COMCARDIVs 15 and 19) among others. For the first time eight Guppy submarines were used to simulate missile launches against four SAC bases in a test of West Coast defenses. Seven ultimately did make successful launches. However, SOSUS:

The Promise of SOSUS in the Pacific

> (U) . . . was very effective in the warning role. It reported 46 2-station fixes and 8 fixes from the arrays of a single station. We now believe that the two station fixes are our best warning indicators. Moreover, two station fixes on surface ships resembling submarines have been extremely rare in West Coast SOSUS experience.

Development of the CVS Concept

RFCAL

A

RFCAL

B

(A) Boxer *(CVS 21) as a CVS. Note the early TACAN, the HSS-1 helicopters and S2F aircraft. May 1956.*

(B) USS Yorktown *(CVS 10) with HSS-1 helicopters, S2Fs and AD-5W AEW aircraft. Note the angled deck, enclosed bow and reduced armament typical of the 27A-125 conversions.*

(U) There is no question that the SOSUS information by itself gave unmistakable warning of the approach of a sizable submarine force.

(U) Fix accuracy is the pertinent characteristic. Of the 2-station fixes, eight were misinterpreted and were grossly in error. Of the 38 good two station fixes, half were in error by 12 miles or less. Eighty percent were in error by less than 30 miles. The largest error was 65 miles. Thus you see a so-called fix is really a rather large probability area, rather than a point datum.[45]

Contact Load

(U) By 1960 the Pacific Fleet was averaging between 125 and 159 submarine contacts annually--those candidates for serious consideration--while the Atlantic Fleet was experiencing a little over twice that figure. In each case less than ten of these were classified as "positive."

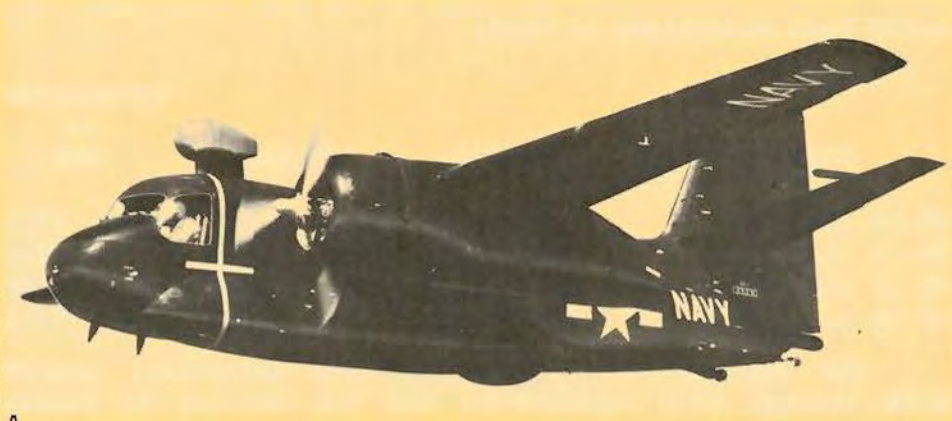
The Development of the Essex *Class CVS*

The Rise of the CVS

(U) During the late fifties the *Essex* class carriers available to the CVS force underwent a considerable metamorphosis. The unconverted carriers initially assigned in 1953-1954 such as *Boxer* (CVS 21), *Leyte* (CVS 32), and *Princeton* (CVS 37) gave way to the partially modified ASW ships such as *Valley Forge* (CVS 45) and *Philippine Sea* (CVS 47). These in turn were followed by the 27A conversions which had become surplus to the strike forces as new *Forrestal* class carriers, commissioning at the rate of one each year, along with the more advanced 27C *Essex* class conversions, began to reach the fleet. This shift in carrier types was accelerated by progress in carrier-based jet aircraft and carrier technology which left the 27As, even with their 125A angled decks, unable to handle the latest carrier aircraft such as the A3D, AJ and F4H. Thus by 1960 the Atlantic Fleet CVS force consisted of:

Carrier		SCN-27A	SCN-125	Conversion to CVS
CV 45	*Valley Forge*	Never Converted		Jan. 1954
CV 18	*Wasp*	Sept. 1951	Dec. 1955	Nov. 1956
CV 39	*Lake Champlain*	Sept. 1952	Not Conv.	Aug. 1957
CV 15	*Randolph*	July 1953	Feb. 1956	Mar. 1959
CV 9	*Essex*	Feb. 1953	Mar. 1956	Mar. 1960

Development of the CVS Concept



Naval Institute

A

RFCAL

B

(A) The S2F-2. It featured an enlarged bomb bay and tail surfaces. Only sixty were built during the mid-fifties.

(B) An S2F-1 with everything: radar and MAD extended, searchlight, four Mk 43 torpedoes, two high velocity rockets and Lulu hidden in the bomb bay.

While in the Pacific all carriers in the ASW role had recently been modernized as well:

Carrier	SCN-27A	SCN-125	Conversion to CVS
CVS 10 *Yorktown*	Jan. 1953	Oct. 1955	Sept. 1957
CVS 12 *Hornet*	Oct. 1953	Aug. 1956	June 1958
CVS 33 *Kearsarge*	Mar. 1952	Jan. 1957	Oct. 1958
CVS 20 *Bennington*	Nov. 1952	Apr. 1955	June 1959

Sonar for the CVS

(U) All of these ships had H-8 catapults, angled decks (except *Lake Champlain*), and the ability to handle and deliver the Mk 101 (Lulu) depth bomb. Sonars were recommended for the CVS carriers and ultimately a number had SQS-23 systems mounted in a bow installation as a result of the May 1959 conference recommendations. There was considerable controversy over this, however. Several senior officers stated that the cost and personnel were not justified by the sonar's operational advantage. RADM Weakley, however, remembered his experience on the WRIGHT (CVL 49) in 1948: "We could avoid almost anything that was shot at us from over a thousand yards away. It (her sonar installation) did give her an evasion capability, no question about it. . . . We have CNO approval for trial installations on the CVSs, not the attack carriers, but the CVSs." [46]

(U) By moving the 27A conversions into the Hunter-Killer forces, not only was the capability of the CVS improved but the Navy was able to retain all seven of the more capable 27C conversions as attack carriers until March 1962, when they too began to revert to the CVS classification.

CVS Air Group

(U) The air component of each CVS at this time as described by RADM Weakley was composed "of two individual squadrons and components of other squadrons. The components . . . change on almost every deployment and there is no coordinated shore basing. This is because your CVS group is made up of a squadron of S2Fs, a squadron of helicopters, and a part squadron of maybe fighters, depending on the area of deployment." [47] During this time the typical VS squadron consisted of twenty S2F-1/S2F-2 while the HS squadrons totalled ten HSS-1 helicopters.

(U) In general, with the mechanization of command and control, during the late fifties this advance was examined for ASW application. The diverse numbers of aircraft,

ships and submarines--and their resulting command organizations--which could be involved in ASW operations made any automated informational system particularly attractive. The digital Naval Tactical Data System (NTDS) was under development at this time but was intended primarily to solve the fleet air defense problem. Senior officers resisted the ASW application of NTDS since it was felt that an unfavorable air defense picture could develop much more rapidly (two to three hours, where automation was important) than the ASW threat (two to three days, where it was less so). Thus, considering the tremendous cost of NTDS, its application for purely ASW reasons did not appear cost effective. Nevertheless, there were recommendations for NTDS for DDG, DLG, CG, CLG and CVS class ships as well as the requirement for a small ship ASW combat direction system for DD/DE applications "compatible for service test with an NTDS-equipped DLG."[48]

NTDS for ASW

Development of the DASH Concept

(U) Having airborne ASW vehicles aboard ships smaller than carriers had long been a matter of considerable interest to the fleet, particularly as desired stand-off ranges increased with torpedoes, nuclear underwater weapons, and more powerful sonars. In one approach to this problem, starting in 1956 the Atlantic Fleet began evaluation of the helicopter-on-destroyer concept. As reported by CINCLANTFLT:

1956

> (U) These tests have demonstrated that it is feasible to operate manned helicopters from destroyers. Extensive ship modifications are necessary to the ship which carries the helicopter. This fact, plus the scarcity of HOL helicopters, have caused CINCLANTFLT to recommend cessation of the evaluation of the manned helicopter concept. The drone helicopter, smaller in size, cheaper and expendable, offers greater promise and its early development has been urged--particularly in view of the fact that destroyers still have no stand-off weapon delivery capability.[49]

Initial DASH Oriented Tests

(U) During 1958 the DASH (Drone Anti-Submarine Helicopter) program was initiated in conjunction with the projected modernization of 163 World War II destroyers. The FRAM I and II (Fleet Rehabilitation And Modernization) programs would update the DD 692 and 710 classes by, among

1958

The FRAM Programs

(A) An early DSN-1 DASH vehicle with a single homing torpedo hovering over Hazelwood's *stern.*

(B) USS Hazelwood *(DD 531) off Patuxent, November 1960. She is shown with the prototype DASH hangar, landing area and refueling system.*

(C) USS Thomason *(DD 760), the Navy's first FRAM II. Shown before her stacks were raised. December 1959.*

Naval Institute

A

RFCAL

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RFCAL

C

other improvements, reducing self noise, upgrading hull-borne sonars, and installing improved ASW weapons. This included ASROC on the FRAM I's which also would have the SQS-23 sonar. Most importantly, both conversions provided a helicopter facility for the unmanned DASH weapon delivery vehicle developed by Gyrodyne, the DSN-1. Programmed ship life would be extended eight years for the FRAM I and five years for the FRAM II destroyers, the Navy's only escorts available in adequate numbers without a major new construction program.

HAZELWOOD Modified February 1959

(U) While initial feasibility tests of the helicopter-destroyer concept were successfully conducted aboard *Manley* (DD 940) with a drone version of the HTK-1 helicopter in February 1959, *Hazelwood* (DD 531) was the first destroyer to be completed with the installation of a drone helicopter facility (hangar, flight deck, and aviation fuel system). Initially COMOPDEVFOR was scheduled to begin evaluation of the *Hazelwood* installation in July 1959.* Delays in development of the final drone helicopter, however, meant that initial tests of the DSN-1** would not begin before March 1960. This program, one of the Navy's largest commitments, certainly in terms of numbers of ships, to an unproven concept was eventually to prove less than completely successful and, in fact, delayed the introduction of the manned helicopter into the Navy's destroyer-sized vessels for nearly ten years. Nevertheless, it represented the beginning of the destroyer-helicopter team concept which was to receive growing emphasis throughout the sixties and seventies.

The Promise of DASH

(U) In the late fifties, however, the promise of DASH was unblemished. Now that long range destroyer sonars, such as the SQS-23 and SQS-26, were becoming a reality, its potential, especially if it could be kept small, was impressive. As Captain W.L. Savidge commented in May 1959:

> (U) One of the important aspects in ASW weapons--especially since we are concerned about our ability to classify and to carry enough weapons in the light of expected numbers of false contacts--is control. This can best

* In the Pacific one prototype FRAM started conversion at the same time, *Thomason* (DD 760).

** Single Boeing jet engine, gross weight 2,200 pounds, rotor diameter twenty feet.

> be illustrated by comparing DASH to ASROC. At one end of the scale we have ASROC which we fire through the air, it hits the water, and searches and--we hope--detects and kills the target. But once fired, it's gone. We can't stop it if somebody suddenly says, "Classification Whale". And we have the whole time of flight and search time as escape time. On the other hand, with DASH, we can launch a helo and send it out to hover over the target--all the time refining our classification estimate--and when we are convinced, drop the torpedo. The degree of control is an important factor.[50]

(U) Furthermore, DASH was to be just a weapon delivery vehicle. Said RADM Weakley in 1959:

RADM Weakley's Comment on DASH

> (U) I am also responsible, to a degree, for refusing to consider the helicopter for anything but weapons carrying, until we have it in our hands. I can see a million uses for it, if it is successful, but let's get that weapon capability in first, and not foul ourselves up with demanding a multitude of things simultaneously. For once, let's shoot straight for something and get it, and get it quickly.[51]

Manned Sea-Based Aircraft Developments

JULIE and JEZEBEL

(U) During May of 1958 Atlantic Fleet S2F-1/S2F-2 aircraft commenced receiving the interim JULIE* localization system retrofit. Aproximately 56 of that fleet's 130 S2Fs were to be so equipped by October 1958. At the same time the long range passive "LOFAR" detection system JEZEBEL was also reaching operational status and showing impressive promise out to twenty to forty miles range. While the early S2F-1/S2F-2 aircraft could carry the SSQ-28 JEZEBEL buoy, there was no room for the processing equipment on board. According to Captain G.D. Ghesquiere (Op-05W):

> (U) A large S2F modernization program is underway with a total of 300 conversions, which include the JULIE equipment. Unfortunately, the present S2Fs cannot be fitted with the JEZEBEL equipment--but a relay system to permit

* Semiactive explosive ranging sonobuoy system.

JEZEBEL Relay

> an S2F to relay JEZEBEL information to its carrier for processing is being evaluated. This scheme will permit the carrier to exercise close control of its ASW aircraft in the detection, classification, and initial localization of a submarine. . . . The fixed wing carrier aircraft of the near future will be the S2F-3, a redesigned S2F, capable of carrying both JULIE and JEZEBEL. These are expected to be started into the Fleet in 1960.[52]

JULIE/S2F Introduction

(U) Not until 1961 when the improved and enlarged S2F-3 (S2D/E) was introduced in operational quantities were both JULIE and JEZEBEL carried by the fixed wing S2F aircraft.

(U) By 1960 75 of 131 Atlantic Fleet S2F aircraft had received interim JULIE equipment with the final JULIE-configured aircraft scheduled to reach the fleet between June 1960 and December 1961. In addition, the early S-2 aircraft were limited to carrying the newer and smaller Mk 101 (Lulu) nuclear depth bomb, which was delayed in reaching both fleets. Land-based air, under retrofit at the same time, was able, when modified, to handle both JULIE-JEZEBEL and the larger and earlier Betty (Mk 90) nuclear weapon.

1959

The All-Weather HSS-1N Arrives

(U) The introduction of twenty HSS-1N helicopters in the Atlantic Fleet in January 1959 finally provided carrier-based ASW with "a limited capability of performing ASW missions at night and in marginal weather conditions."[53] A total of 159 were delivered to the fleet by July 1960. Reliability, however, was less than desired. Both the HSS-1 and the HSS-1N were able to carry and deliver the Mk 101 depth bomb. The HSS-1 was equipped with the marginal AQS-4 dipping sonar system which was to be replaced by the AQS-10* in both the HSS-1 and HSS-2 (SH-3A). The latter sonar was scheduled for fleet evaluation in December 1959. It was expected to have a range of between 2,000 and 12,000 yards.

(U) The primary airborne ASW weapons during this period, aside from the Mk 101 (Lulu) nuclear depth bomb, was the Mk 43 torpedo which by FY 1960 was in the process

* The AQS-10 was a 10-kHz scanning type, dipped sonar weighing approximately 750 pounds. Area search rate was expected to be two to six times that of the AQS-4.

Naval Institute

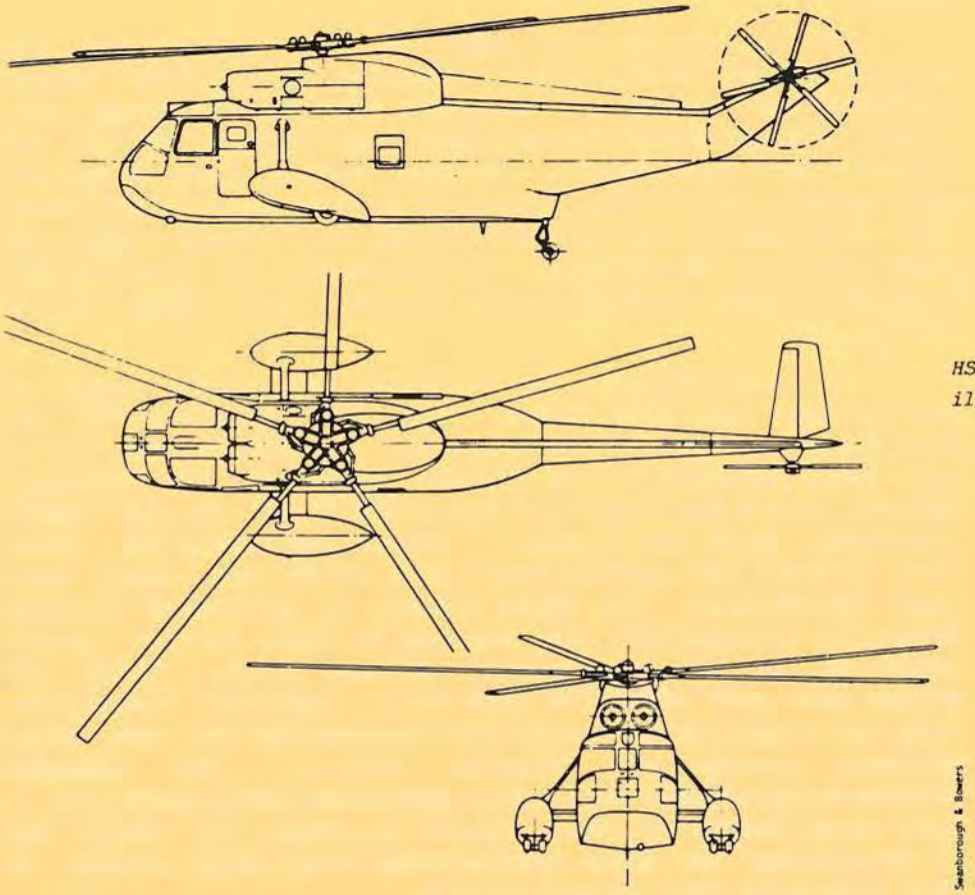
An HSS-1 Seabat lifts its AQS-4 sonar ball.

Naval Air Historian

The HSS-1N, the Navy's first all-weather ASW helicopter.

RFCAL

The HSS-2 (SH-3A) Sea King. First flight for this ASW helicopter of the sixties was 11 March 1959. It carried the much improved AQS-10 sonar.



HSS-1 (SH-3A) three-view illustration

of replacement by the Mk 44. This plus the Mk 37 for destroyer and submarine use were the main buys during FY 1960. With the Mk 37, according to CAPT Savidge, "only a dribble (were appearing) in the fleet, (with) close to 1,500 programmed through the FY 1960 budget. This is about 40% of our initial ship fill requirement. The Mk 44 is in a worse position. Less than a thousand are programmed through FY 1960 and this is less than 20 percent of the initial requirement."[54]

The MK 44 Torpedo

(U) One concern with these increasingly expensive weapons was the need to improve classification. Said RADM Weakley, "In the last two years of World War II, of every fourteen attacks made, only one was a real submarine. . . . In exercise SKYNET I out of ten nuclears only two were real targets. That is one out of five in that particular case with the big boom. These things cost $330,000 apiece. We can't distribute them around as we did the depth charge in the last war."[55] Classification was of major importance.

The Classification Problem

Summary

(U) In summary, the 1954 to 1960 period saw the materialization of the Soviet submarine threat, that threat including both cruise and ballistic submarine-launched missiles. Nuclear powered submarines were certain to be the Soviets' next development. The Navy took a long step toward solving its initial detection problem by putting SOSUS into operation, first in the Atlantic in 1956 and then two years later in the Pacific, unfortunately at considerable cost which left the Navy sorely pressed for funds during this period.

(U) Nevertheless, the Hunter-Killer concept based on the CVS came into full flower with four carriers on the West Coast and five in the Atlantic. One ASW carrier group was always deployed to the SEVENTH Fleet in the Pacific, and one during the summer to the SIXTH Fleet in the Mediterranean. Each was capable of supporting twenty S2F fixed wing aircraft and sixteen HSS-1 plus AD-5W and other aircraft detachments. The SOSUS system, by providing initial detection information, gave meaning to these carrier groups operating in the continental defense role. Their air groups were more effective with their improved classification and localization capability provided by the new JULIE sonobuoy systems and dipping sonars. The unmanned destroyer-based DASH helicopter commenced development as a long range weapon delivery vehicle to match the World War II destroyers' new sonar capabilities they would receive as they underwent FRAM reconstruction.

(U) The Navy strengthened its ASW organization in Washington with the creation of Op-001, partially to satisfy Congress. The ASW command structure in the fleets was also improved to meet the requests of the Fleet Commanders in Chief, who were operationally responsible for antisubmarine and convoy operations. This in turn strengthened the ASW carrier groups in both oceans, the Atlantic Fleet forming Task Group ALFA on a semipermanent basis to develop ASW skills and techniques. Not surprisingly, this new organization discovered that continued ASW practice employing the same fleet units was a decisive factor in effective ASW operation.

(U) The Navy also turned to publicity to explain the threat and ASW, hoping it would be reflected back in a more favorable Congressional attitude. In sum, this was a period of major change which saw the final dismantling of World War II technology and the creation of the most sophisticated version of the HUK task group yet.

Development of the CVS Concept

What It All Means

(U) Sea-based airborne ASW during this period "grew like Topsy", fueled by the momentum and money created by the Korean War. The unwanted CVEs were replaced by the larger CVS, the much more capable S2F aircraft overtook the disappointing AF series, and an effective ASW helicopter was finally developed in the HSS-1. All of this occurred within a very few years just as SOSUS came into being, greatly increasing the many contacts which needed investigation, just as the Soviet threat became very real.

(U) While land-based air was increasing its range and speed, with development of the P3V, the CVS forces still provided the Navy with mobile ASW forces at sea, often where no other aircraft could reach. It also offered a home for the expensive Essex *class conversions as they were replaced by more modern and effective carriers. The Navy was under considerable pressure to demonstrate that it was working on the solution to the new submarine threat and Task Force ALFA, headed by RADM Thach, as well as the other ASW Task Groups, made an excellent, impressive showpiece, both for the American public and, hopefully, the Soviets. Unfortunately, exercises off the West Coast in the late fifties demonstrated that an effective tactical counter to the submarine-launched missile had yet to be developed.*

(U) The Navy's war plans remain unchanged. The attack carriers with their aircraft and missions would strike the submarine threat at its source in the event of a major war. Limited wars, however, appeared much more likely. There was major emphasis on ASW, particularly carrier-based ASW, and the Navy with its new aircraft, modernized carriers, and FRAMed destroyers had a major commitment to sea-based airborne ASW.

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Acronyms - Glossary

ACNO	Assistant Chief of Naval Operations
AEW	Airborne Early Warning
AIRASDEVLANT	Aircraft Antisubmarine Development Detachment, Atlantic Fleet
AIRLANT	Naval Air Force Atlantic
AIRPAC	Naval Air Force Pacific
A/S	Antisubmarine
ASDEFLANT	Antisubmarine Defenses, Atlantic Fleet
ASDEFORPAC	Antisubmarine Defense Force Pacific Fleet
ASDEVLANT	Antisubmarine Development Detachment, Atlantic
ASP	Antisubmarine Patrol
ASROC	Antisubmarine Rocket
ASW	Antisubmarine Warfare
ASWORG	Antisbumarine Warfare Operational Research Group
AVG	Escort Aircraft Carrier (Early Nomenclature)
BUAER	Bureau of Aeronautics
BUORD	Bureau of Ordnance
BUSHIPS	Bureau of Ships
CAM	Catapult Aircraft Merchant Ship
CARDIV	Carrier Division
CINCLANT	Commander in Chief Atlantic
CINCLANTFLT	Commander in Chief Atlantic Fleet
CINCNELM	Commander in Chief North Eastern Atlantic & Mediterranean
CINCPAC	Commander in Chief Pacific
CINCPACFLT	Commander in Chief Pacific Fleet
COM	Commander
COMINCH	Commander in Chief United States Navy
COMNAVFE	Commander Naval Forces Far East
CNO	Chief of Naval Operations
CV	Aircraft Carrier
CVA	Attack Aircraft Carrier
CVB	Battle Aircraft Carrier
CVE	Escort Aircraft Carrier
CVL	Light Aircraft Carrier
CVS	Antisubmarine Carrier
DASH	Drone Antisubmarine Helicopter

DCNO	Deputy Chief of Naval Operations
DD	Destroyer
DE	Destroyer Escort
ECM	Electronic Countermeasures
FADM	Fleet Admiral
FAIRWING	Fleet Air Wing
FRAM	Fleet Rehabilitation & Modernization
FTC	Fast Time Constant Circuit
HF/DF	High Frequency Direction Finder
HUK	Hunter-Killer Force
HVAR	High Velocity Aircraft Rocket
LOFAR	Low Frequency Analysing Recorder
LORAN	Long Range Electronic Navigation
LR	Long Range Patrol Aircraft
MAC	Merchant Aircraft Carrier
MAD	Magnetic Anomoly Detector (WWII) Magnetic Airborne Detector (Post WWII)
NAVEUR	Naval Forces Europe
NDRC	National Defense Research Committee
NTDS	Naval Tactical Data System
OEG	Operations Evaluation Group
ONI	Office of Naval Intelligence
ONR	Office of Naval Research
OPDEVFOR	Operational Development Forces
RADM	Rear Admiral
RAF	Royal Air Force
RAP	Rocket Assisted Projectile
RDF	Radio Direction Finder
SAU	Surface Attack Unit
SOSUS	Sound Surveillance System
TE	Task Element
TF	Task Force
TG	Task Group
ULTRA	Special Intelligence
VADM	Vice Admiral
VCNO	Vice Chief of Naval Operations
VLR	Very Long Range Aircraft
WESTSEAFRON	Western Sea Frontier