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Opportunities For Savings In Personnel Cost In The Fleet Ballistic Submarine Program

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UNITED STATES
GENERAL ACCOUNTING OFFICE

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JAN. 27, 1971



UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

DEFENSE DIVISION

B-171681

Dear Mr. Secretary:

The General Accounting Office has made a review of the effectiveness of manning the Department of the Navy's Fleet Ballistic Missile submarines with two crews, referred to as the Blue and Gold program. This review, identified by our Code 74423, was made at the following Naval activities:

- U.S. Naval Submarine School, New London, Connecticut
- Fleet Ballistic Missile Training Center, Charleston, South Carolina
- Headquarters, Submarine Force, Atlantic Fleet, Norfolk, Virginia
- Naval Guided Missiles School, Dam Neck, Virginia
- Fleet Submarine Training Facility, Pearl Harbor, Hawaii
- Headquarters, Submarine Force, Pacific Fleet, Pearl Harbor, Hawaii

Our review included an examination and analysis of the submarine refit and patrol cycle and the readiness ratings associated with the submarines. Specifically, we reviewed the patrol-refit cycles to determine whether the 60 day patrol-30 day refit was maintained by submarine and for groups of submarines assigned to the fleets. We also reviewed readiness ratings to determine whether deficiencies had been reported as a result of personnel or training problems.

Data furnished by crews on shore at the three training sites for rehabilitation, leave, and training (off crews) were evaluated to determine the amount of time utilized for training and other activities during the off-crew cycle. In addition, we obtained information about the types of training offered and the participation of off crews in training at these activities.

Copies of this report are being sent to the Secretary of the Navy and to the Commanders in Chief, United States Atlantic and Pacific Fleets, for their information.

We would appreciate receiving your comments within 60 days.

Sincerely yours,

E. H. Bailey

Director

The Honorable
The Secretary of Defense

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REPORT ON REVIEW OF THE EFFECTIVENESS OF MANNING
FLEET BALLISTIC MISSILE SUBMARINES
WITH TWO CREWS

The manning of each Fleet Ballistic Missile submarine with two complete, well-trained crews is achieving the Navy's objective of maintaining each submarine at sea on patrol at a high level of readiness for 8 months of each year, excluding the time required for overhaul or modification. By having an alternate crew take over each submarine as it returns from patrol, the Navy has been able to conduct more patrols with fewer submarines than would be possible if only one crew was available for each submarine.

The present Navy policy of providing two crews for each Fleet Ballistic Missile submarine assigned to the Fleets permits each crew to rotate between the same submarine and a shore installation within a 180-day period:

On shore at the crew's home port		90 days
For rehabilitation and leave	30 days	
For off-crew training	60 days	
At the submarine's home port for		
refit prior to patrol		30 days
On patrol at sea		60 days

Readiness data and reports prepared by submarine commanding officers upon completion of patrols indicate that their crews are capable of performing their assigned duties. The favorable readiness posture of the crews appears to be attributable to the initial and advanced training programs conducted at Bureau of Naval Personnel training facilities rather than the off-crew training program. This view is supported by information obtained relating to training of new personnel assigned to the crews and the overall experience of the crews. To illustrate:

- After each patrol at sea approximately one-fifth of the crew is replaced, with most of the new personnel being received from Bureau of Naval Personnel training schools.
- The new personnel do not join the crew as a group, but arrive one-by-one throughout the off-crew period. Training of these members with their new crew before going on patrol varies significantly.

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--Although the Navy is not always able to provide each submarine crew with personnel trained in the specific skills authorized for operating equipment and systems, the personnel provided have been trained in related skills and have been effectively utilized.

--Although the Navy does not consider that personnel received directly from training schools or from other submarines are "qualified" until they have been on two or three patrols, Navy reports do not indicate any adverse effects on readiness.

As shown above, during each 180-day cycle each Blue and Gold crew spends 90 days at a submarine's home port for refit operations or at sea on patrol, and 90 days at the crew's home port which is also the location of one of three off-crew training centers. In testimony before Congressional committees the Navy has stressed the need for the Blue and Gold crews to spend 60 of the 90 days at the training facilities after each patrol to obtain training. Thirty days of this period is used for rehabilitation and leave.

For the crews included in our review we found that, on the average, only about 30 days of the 60 day period designated for training could be accounted for in formal and informal training. Although some crew members were used for military or administrative duties, the Navy's records--or lack of records--indicated that Blue and Gold off-crew personnel actually are not used an average of about 60 days each 180-day cycle, or about four months of each 12 months.

Even though the Navy is achieving its objective of maintaining the Fleet Ballistic Missile submarines on patrol at sea through the use of two crews for each submarine, we believe improvements can be made in the utilization of personnel and training resources with substantial savings to the Government. This could be accomplished by

--improving the organization and management of off-crew training,
and

--developing and implementing specific plans for the effective utilization of off-crew personnel not engaged in training actually needed to maintain proficiency in their skills.

The bases for our observations on opportunities for improvement are discussed below.

Opportunities for improvements in the
organization and management of training

Because the Navy has not established uniform requirements and standards for off-crew training, the nature and extent of training varies significantly among crews and among personnel assigned to like functional areas of the same crews. Fleet Ballistic Missile training facilities as now established, equipped, and staffed for off-crew training are not being effectively utilized. Classroom space, equipment, and instructors are not being used to capacity.

Definition of realistic requirements and standards for off-crew training actually needed to maintain an acceptable readiness posture and use of a centrally managed program of off-crew training for all Fleet Ballistic Missile submarine crews should enable the Navy to substantially reduce training costs. Training facilities could be consolidated, and more effective utilization could be made of equipment and personnel.

Optimum requirements and minimum standards for off-crew training for Atlantic Fleet Ballistic Missile submarine personnel have been prescribed by the Commander, Submarine Force, Atlantic. Optimum requirements and minimum standards for Pacific Fleet Ballistic Missile submarine personnel have been prescribed by the Commander, Submarine Force, Pacific. The requirements and standards are not coordinated and applied on a Navy-wide basis. There are no requirements within the two Fleet commands that crews and individual crew members participate in the same off-crew training programs.

At present, the commanding officer of each submarine determines, within the framework of courses offered by the training centers, the type and amount of training needed during the 60-day off-crew training period by those crew members--about four out of five--who will return to the submarine for the next patrol. New personnel joining the crew one-by-one during the off-crew period have had training in Navy schools of some type--some have had experience in a special skill--and may receive some refresher training. This results in significant differences in the extent to which various crews and departments participate in refresher training even though personnel with comparable previous training and experience are assigned to the crews.

We attempted to determine how the 60-day period designated for training actually is used by off-crews. The time that could be accounted for was used for a variety of activities, including:

- Formal training, i.e., courses conducted by the Fleet Submarine Training Facilities or other Navy schools.
- Informal training, i.e., training conducted by ship personnel, including lectures, seminars, discussions, qualification training, cross-crew training, and self-study correspondence courses.
- Military and administrative duties, i.e., standing watch, musters, personal and departmental administrative activities, dental and medical treatment, and barracks cleaning details.

We analyzed the time used for both formal and informal training by two crews at each Fleet Ballistic Missile training facility. As shown below, the crew average total time accounted for was only 30 days of the 60 days available:

	<u>Average days per man</u>						<u>Average</u>
	<u>New London</u>		<u>Charleston</u>		<u>Pearl Harbor</u>		
	<u>600GL^{1/}</u>	<u>611G</u>	<u>619B</u>	<u>641G</u>	<u>640G</u>	<u>642G</u>	
Formal training	9	11	13	19	11	12	12
Informal training	<u>26</u>	<u>10</u>	<u>15</u>	<u>14</u>	<u>23</u>	<u>17</u>	<u>18</u>
Total Days	<u>35</u>	<u>21</u>	<u>28</u>	<u>33</u>	<u>34</u>	<u>29</u>	<u>30</u>

^{1/} Submarine is identified by hull number. G=Gold Crew;
B=Blue Crew

As shown above, the time used for training and the type of training varied among the crews. Also, certain activities considered to be informal training did not directly or indirectly relate to matters that would assist the individual in improving or maintaining competence in his assigned skill. These are discussed in the next paragraphs.

Formal training

Formal training includes classroom instruction as well as team and individual training in the actual use and maintenance of shipboard equipment and systems.

There were significant variances among individual crews and functional groups participating in the formal training. Attachment I shows the number of enlisted men aboard four submarines who engaged in formal training.

There were significant differences in the average number of days used for training among individual crews and functional area teams of individual crews also. Attachment II shows the number of personnel available and the number participating in formal training for the two crews included in our review at the Charleston off-crew training facility.

Informal training

Informal training includes time used by crews attending lectures and engaging in self-study. As in formal training, we found significant differences among crews and crew members in both the number participating and the days used for informal training. Officers and key enlisted personnel scheduled lectures which included subject matters such as military courtesy and customs, personal insurance and benefits, and subjects which related to the specific systems aboard the submarines, such as diesel engine controls and ventilation systems. The lectures usually took from 1 to 4 hours on a given day.

Crew members are permitted to use their free time for completing correspondence courses, which vary in subject matter. For example, course subjects identified for us in our review included basic statistics, international relations, basic electricity, geography, naval orientation, and leadership. Crew members participate in such courses on their own initiative and there are no organized study times. Often the study is accomplished in their barracks or at their homes.

The members of two crews included in our review at Charleston estimated the average number of days they used for informal training during an off-crew period, as shown in attachment II.

Military and Administrative Duties

Crew members reported a variety of military and administrative duties performed during their off-crew training period, including watch, cleaning, clerical, mail, and telephone detail. When not attending classes, crew members sometimes were required to report for muster (roll call). These varied from once a day for some crews or departments to once a week for others. During this training period some crew members took care of personal matters, such as medical or dental appointments.

One crew included in our review reported military and administrative duties during one off-crew period as shown below.

<u>Department</u>	<u>Number of personnel</u>	<u>Estimated number of days per individual</u>	<u>Major duties</u>
Executive	2	33	Office work
Engineering	53	6	Watch and cleaning details
Medical	1	18	Administrative work
Supply	9	13	Cleaning details and work at base galley
Navigation	15	5	Watch, working party, and cleaning details
Weapons	21	7	Watch, guard, mail, and cleaning details
Operations	20	9	Watch, working party, and cleaning details
Total	<u>121</u>		

Facilities for refresher training for the Fleet Ballistic Missile submarine off crews are provided at the U.S. Naval Submarine School, New London, Connecticut; the Fleet Ballistic Missile Training Center, Charleston, South Carolina; and the Fleet Submarine Training Facility, Pearl Harbor, Hawaii. At New London and Pearl Harbor, the Fleet Ballistic Missile Departments are part of Navy training facilities used to train both Fleet Ballistic Missile submarine, off-crews and crews from other types of submarines. The Training Center at Charleston is intended for use primarily by Fleet Ballistic Missile submarine off-crews for refresher training.

Each of these training centers has been furnished equipment and systems that are identical with those contained in the submarines, including complete missiles and the related systems. In many instances equipment at these installations duplicates equipment installed at the Navy Guided Missiles School at Dam Neck, Virginia. Data obtained from the Navy showed that through June 30, 1971, missile systems and related equipment costing more than \$156 million will have been installed at the three training centers. Like missile systems and related equipment costing almost \$198 million will have been installed at Dam Neck. The Navy has a large investment in other equipment at these locations which is used for training for both the Fleet Ballistic Missile submarine program and other submarine programs.

In our review we were not able to determine the cost of Fleet Ballistic Missile off-crew training. No central office in the Navy is responsible for funding of or accounting for training costs. Navy training centers generally conduct more than one type of training program, which may be funded by more than one organization from more than one appropriation. Complete training costs are not segregated by training program.

One major organization did furnish us a cost figure. The Navy Strategic Systems Project Office in Washington--which has responsibility for the missile systems and related equipment--informed us that the current cost of Polaris and Poseidon equipment alteration and repair, hardware installation, and development of training curricula is about \$10.5 million a year. Also, at the Charleston Training Center, which is engaged primarily in off-crew training, records and reports showed that personnel and other operating costs are more than \$5 million a year, exclusive of the pay and allowances of trainees.

At the time of our review, enrollment of off-crew members at the New London center in formal training courses was about 76 percent of capacity. At the Pearl Harbor center, the enrollment was about 65 percent of capacity, and at the Charleston center about 40 percent of capacity. This indicates that more training facilities have been established than are needed.

The New London training center offered 51 courses related exclusively to the Fleet Ballistic Missile submarine and 135 courses common to both the Fleet Ballistic Missile submarine and other vessels. For the 3 months ended March 31, 1970, the center graduated 105 classes exclusive to the Fleet Ballistic Missile submarine. The average enrollment was 6.4 individuals per class. Of the 678 personnel enrolled in these classes, 643 were from Fleet Ballistic Missile submarine crews. We examined the records relating to 12 of the 135 other courses for which Fleet Ballistic Missile submarine personnel were eligible. The average enrollment for the 29 classes conducted during the 3 month period was 9.8 individuals per class. Of 283 personnel enrolled in these classes, 211 were from Fleet Ballistic Missile submarine crews.

At the Charleston center, of 212 classes scheduled for January and February 1970, 81 classes had an enrollment of three or less students and 33 classes had no enrollees. Navy officials attributed the low enrollment to the fact that Charleston was, at the time of our review, the home port for the crews of only three submarines. They predicted that utilization of the Charleston training center will increase when it becomes the home port for crews of submarines converted to carry the Poseidon missile.

At the Pearl Harbor center, 1,154 classes were scheduled during calendar year 1969 in which the majority of the enrollees for the year were Fleet Ballistic Missile submarine personnel; 385 classes had 3 or less enrollees and 117 had no enrollees. In February 1970 the Commander, Submarine Force, Pacific Fleet, issued instructions that selected courses with low utilization would be scheduled on a request basis. These courses were subject to cancellation when the enrollment was less than 50 percent of capacity.

The average ratio of enrolled off-crew members to instructors at the training centers as of April 30, 1970, was as follows:

	<u>Officers</u>	<u>Enlisted Personnel</u>
New London	2.40 to 1	4.80 to 1
Pearl Harbor	5.35 to 1	4.25 to 1
Charleston	5.75 to 1	0.89 to 1

Since the Fleet Ballistic Missile submarines are standardized to a large extent, it would be expected that the same refresher training courses would be provided at the three training centers. Apparently this is not the case. At the time of our review the New London center offered 186 courses and the Charleston center offered 152 courses; we could identify only 48 courses that were the same even though the Charleston center serves Fleet Ballistic Missile submarine personnel almost exclusively. We noted also that in some cases the time required for the same course offered by New London and Charleston differed.

We were not able to compare the courses offered at the Pearl Harbor center with those offered by the New London and Charleston centers because course titles and descriptions were different.

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It seems apparent that more extensive training facilities for Fleet Ballistic Missile submarine off-crew refresher training have been established than are needed as the program is now conducted. Definition of actual training needs and organization of a uniform, centrally managed program to satisfy those needs should permit the Navy to plan the effective use of both the off-crew personnel and the costly training facilities.

Once an effective program is established, it might be possible to utilize Fleet Ballistic Missile training centers for some advanced training of missile personnel as well as off-crew refresher training. This should enable the Navy to use some facilities now engaged in specialized training--e.g., the Dam Neck facility--for other purposes.

Opportunities for improvement in the utilization of personnel

Definition of realistic requirements and standards for off-crew training, and improvements in the organization and management of off-crew training, should make available a substantial amount of personnel resources to the Navy. Development and implementation of specific plans for effective utilization of off-crew personnel not engaged in training actually needed to maintain proficiency in their skills should make possible significant savings in personnel costs.

The information obtained in our review indicated that the full 60-day off-crew training period is not needed--and is not used--to maintain the readiness posture of the Fleet Ballistic Missile crews. If effective utilization were made of the 30 days of the 60 day period designated for off-crew training that, on the average, is not actually being used, we estimate that approximately 1,500 man-years (1,500 men) would be available to fill other needs of the Navy. This estimate is based on the assumption that 33 of the 41 Fleet Ballistic Missile submarines are either being refit for patrol or on patrol at any given time.

We suggest that the Navy develop a program for effective utilization of these off-crew personnel.

SUMMARY OF OFF-CREW FORMAL TRAINING BY ENLISTED MEN FROM FOUR SUBMARINES

DEPT.	SUB. NO. & CREW	MEN IN FORMAL TRAINING										TOTAL MEN
		DAYS 0	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	OVER 40	
ENGINEERING 1/	600 G	25	7	2	4	1	0	0	0	0	0	39
	611 G	0	12	10	12	6	6	0	0	0	1	47
	619 B	15	5	10	4	4	4	1	3	0	0	46
	641 G	0	5	6	11	6	7	5	1	2	1	44
	TOTAL	40	29	28	31	17	17	6	4	2	2	176
OPERATIONS 2/	600 G	9	3	1	1	0	0	0	0	0	0	14
	611 G	0	2	1	1	3	0	0	1	1	0	9
	619 B	1	1	1	2	2	2	4	0	0	0	13
	641 G	1	0	2	1	2	0	2	2	0	0	10
	TOTAL	11	6	5	5	7	2	6	3	1	0	46
WEAPONS	600 G	1	3	4	3	10	1	1	0	0	0	23
	611 G	3	2	8	9	4	1	1	0	0	0	28
	619 B	0	0	4	5	8	2	0	0	0	0	19
	641 G	1	2	0	1	2	1	6	2	3	3	21
	TOTAL	5	7	16	18	24	5	8	2	3	3	91
NAVIGATION 3/	600 G	2	2	1	0	1	4	2	1	0	0	13
	611 G	0	2	3	4	0	1	1	3	1	0	15
	619 B	0	2	1	2	1	5	2	1	0	0	14
	641 G	0	1	0	2	3	2	5	1	0	0	14
	TOTAL	2	7	5	8	5	12	10	6	1	0	56
SUPPLY 4/	600 G	5	2	0	0	0	0	0	0	0	0	7
	611 G	0	5	1	0	2	0	0	0	0	0	8
	619 B	4	3	2	0	0	0	0	0	0	0	9
	641 G	0	1	2	3	0	2	0	0	0	0	8
	TOTAL	9	11	5	3	2	2	0	0	0	0	32
EXECUTIVE	600 G	0	0	0	0	0	0	0	0	0	0	0
	611 G	3	0	0	0	0	0	0	0	0	0	3
	619 B	2	2	0	0	1	0	0	0	0	0	5
	641 G	2	0	0	0	0	0	0	0	0	0	2
	TOTAL	7	2	0	0	1	0	0	0	0	0	10
MEDICAL	600 G	1	0	0	0	0	0	0	0	0	0	1
	611 G	1	0	0	0	0	0	0	0	0	0	1
	619 B	0	1	0	0	0	0	0	0	0	0	1
	641 G	0	1	0	0	0	0	0	0	0	0	1
	TOTAL	2	2	0	0	0	0	0	0	0	0	4
GRAND TOTAL	600 G	43	17	8	8	12	5	3	1	0	0	97
	611 G	7	23	23	26	15	8	2	4	2	1	111
	619 B	22	14	18	13	16	13	7	4	0	0	107
	641 G	4	10	10	18	13	12	18	6	5	4	100
	TOTAL	76	64	59	65	56	38	30	15	7	5	415

1/ Engineering Dept. consists of five divisions: Reactor Control Div., Auxiliary Div., Communications Div., Machinery Div., and Electrical Div.

2/ Operations Dept. consists of two divisions: Sonar Div., and Radio Div.

3/ Navigation Dept. consists of two divisions: Quartermaster Div., and Navigation Electronics Div.

4/ Supply Dept. consists of two divisions: Supply Steward Div., and Commissary Div.

COMPARISON OF DAYS REPORTED FOR
TRAINING AND SELF-STUDY

Department or Division	Number Available to Participate In Training		Number Participating in Training						Average Days Formal Training Per Available Man		Average Days Informal Training Per Available Man		Average Days Self-Study Per Available Man		Average Total Days Training and Self-Study Per Available Man	
	641 Gold	619 Blue	641 Gold			619 Blue			641 Gold	619 Blue	641 Gold	619 Blue	641 Gold	619 Blue	641 Gold	619 Blue
			Formal	Informal	Self-Study	Formal	Informal	Self-Study								
Machinery Division	14	15	14	14	14	10	15	15	15	10	12	8	6	25	34	43
Reactor Control Division	5	6	5	5	5	4	6	6	9	14	17	5	12	5	39	24
Auxiliary Support Division	12	12	12	12	12	8	12	12	19	13	11	6	6	8	36	27
Electrical Division	9	7	9	9	9	6	7	7	16	8	11	14	13	8	38	31
Communication Division	4	6	4	4	3	3	6	6	37	7	2	12	2	7	41	26
Radio Division	4	6	3	4	4	5	4	6	12	17	2	1	5	4	18	22
Sonar Division	6	7	6	6	6	7	7	7	26	22	3	4	4	6	33	22
Navigation Electronics Division	8	8	8	8	8	8	7	8	23	24	3	1	8	4	34	30
Supply Department	8	9	8	8	8	5	9	9	14	4	7	3	14	9	34	15
Weapons Department	21	19	20	21	16	19	19	19	26	14	6	8	2	5	34	28
Quartermaster Division	6	6	6	6	6	6	6	6	20	15	6	6	5	3	32	24
Medical Department	1	1	1	1	1	1	1	1	5	2	3	2	6	3	14	7
Administrative Department	2	2	0	2	2	0	2	1	0	0	6	7	4	0	10	7
Deck Crew	0	3	0	0	0	3	3	3	0	7	0	4	0	2	0	13
Total	<u>100</u>	<u>107</u>	<u>96</u>	<u>100</u>	<u>94</u>	<u>85</u>	<u>104</u>	<u>106</u>								
Average per man									19	13	8	6	6	8	34	27

^{1/}The averages were computed on the basis of the hours of training reported for individuals assigned to the crew during the last patrol and also assigned to the crew for the next patrol.

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COMPARISON OF DAYS REPORTED FOR TRAINING AND SELF-STUDY

Department or Division	Number Available to Participate In Training		641 Gold		619 Blue		Average Days Formal Training Per Available Man		Average Days Informal Training Per Available Man		Average Days Self-Study Per Available Man		Average Total Days Training and Self-Study Per Available Man	
	Gold	Blue	Formal	Informal	Formal	Informal	641 Gold	619 Blue	641 Gold	619 Blue	641 Gold	619 Blue	641 Gold	619 Blue
Machinery Division	14	15	14	14	10	15	15	10	12	8	6	25	34	43
Reactor Control Division	5	6	5	5	4	6	9	14	17	5	12	5	39	24
Auxiliary Support Division	12	12	12	12	8	12	19	13	11	6	6	8	36	27
Electrical Division	9	7	9	9	6	7	16	8	11	14	11	8	38	31
Communication Division	4	6	4	4	3	6	37	7	2	12	2	7	41	26
Radio Division	4	6	3	4	5	4	12	17	2	1	5	4	18	22
Sonar Division	4	7	6	4	7	7	26	22	3	4	8	6	33	30
Navigation Electronics Division	6	8	8	8	8	7	23	24	3	1	4	4	34	32
Supply Department	8	9	8	8	5	9	14	4	7	3	14	9	34	15
Weapons Department	21	19	20	8	19	19	26	14	6	8	2	5	34	28
Quartermaster Division	6	6	6	21	6	19	20	14	3	6	5	3	32	24
Medical Department	1	1	1	6	1	6	5	15	3	2	6	3	14	7
Administrative Department	1	2	0	1	0	1	0	2	0	7	4	0	10	7
Deck Crew	0	3	0	0	3	3	0	7	0	4	0	2	0	13
Total	<u>100</u>	<u>107</u>	<u>96</u>	<u>100</u>	<u>94</u>	<u>104</u>	<u>106</u>	19	13	8	6	6	8	34
Average per man														27

1/ The averages were computed on the basis of the hours of training reported for individuals assigned to the crew during the last patrol and also assigned to the crew for the next patrol.

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