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CHARACTERISTICS OF THE SUBMARINE LINE OFFICER:

II. Patterns of Motivation for Volunteering for the Submarine Service

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Bureau of Medicine and Surgery, Navy Department
Research Work Unit MF12.524.002-9004D.06

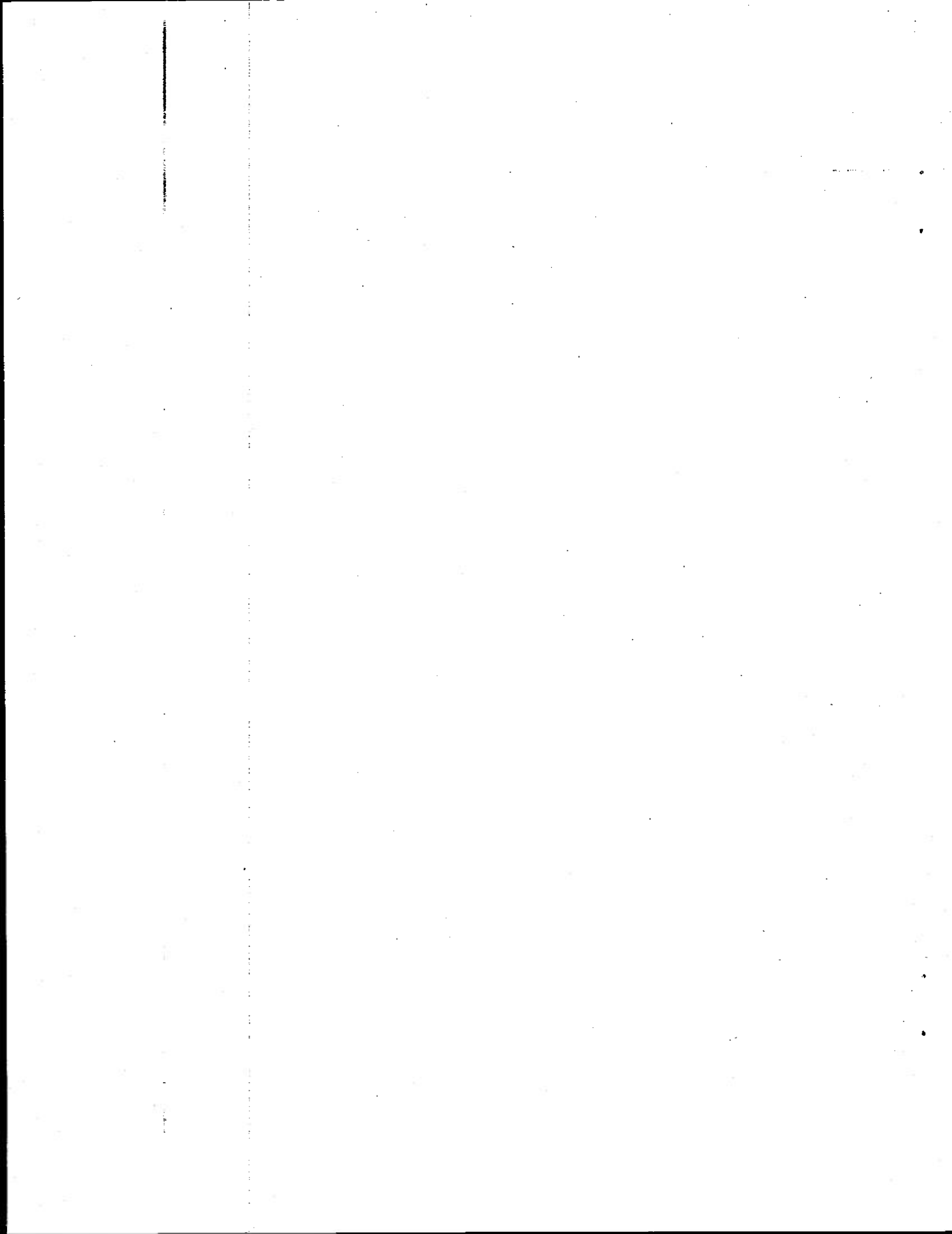
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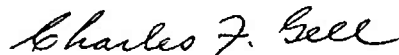
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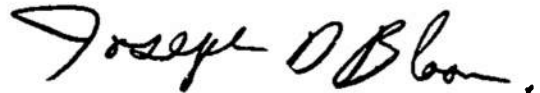
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SUMMARY PAGE

THE PROBLEM

To identify and weigh the major classes of motives underpinning an officer's decision to volunteer for the Submarine Service.

FINDINGS

The responses from two sample groups of officers to the question, "Why are you interested in subs " were subsumed by nine classes of motives varying from "pay and educational opportunities: through "desire for adventure" to abstract motives such as "service to country and pride in job", and "accrued status from being a submariner". Differences in motivational patterns were found: (1) between a 1968 and 1970 sample; (2) between Supply Corps and line officers; (3) between NESEP (Navy Enlisted Science and Engineering Program) and other officers; (4) between married and single officers; and (5) between various officers in various grade groupings for Basic Officer School. The high frequency of the item, "Characteristics of the Crew" was the most significant finding, with 70% of both samples giving this type of response.

APPLICATIONS

The findings suggest the classes of incentives which, if applied to the officer recruitment problem, would have the greatest likelihood of resulting in favorable outcomes for the career officer retention situation within the Submarine Service.

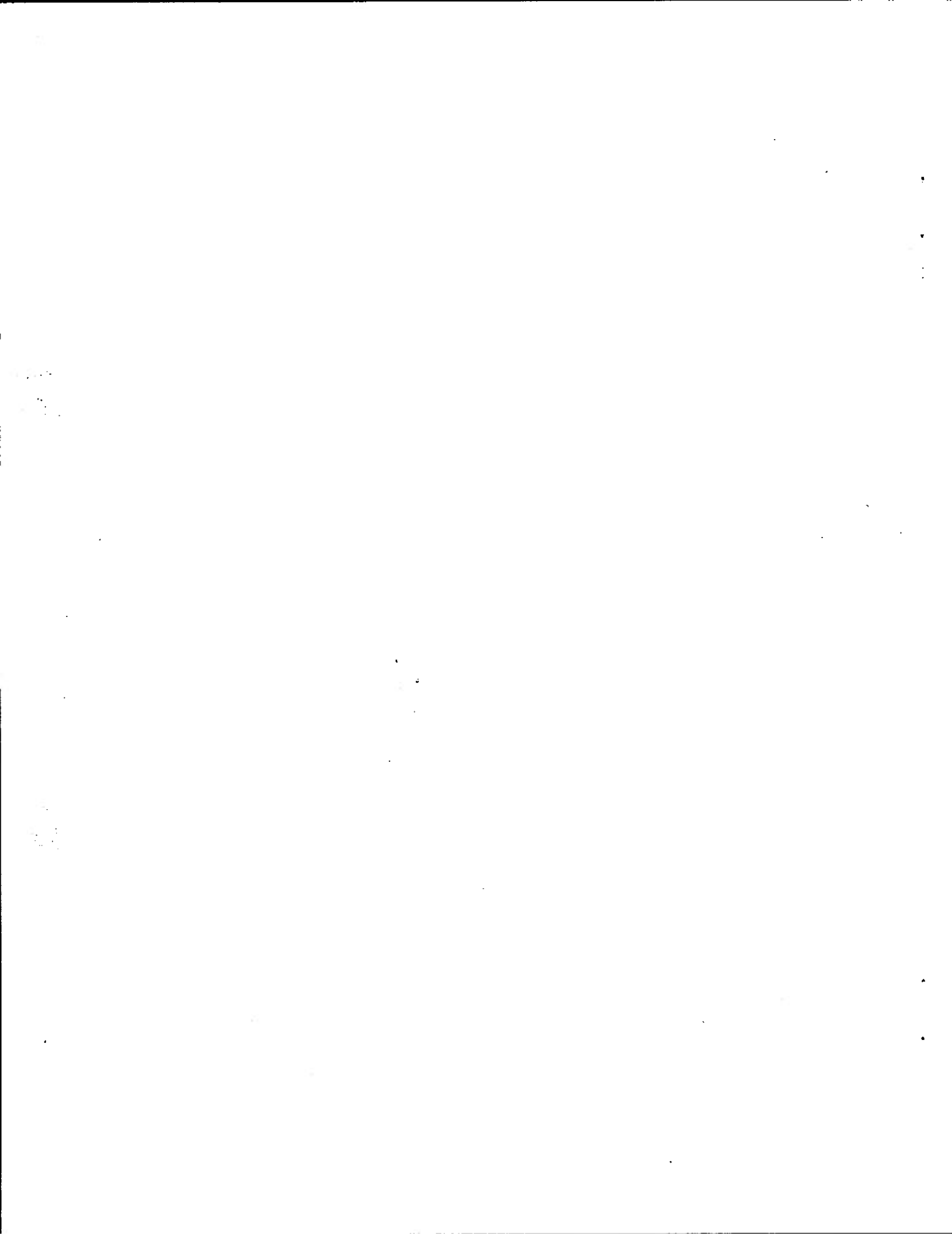
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ABSTRACT

The objectives of this study were to identify the major motives underlying an officer's decision to volunteer for the Submarine Service. Responses to the open-ended question "Why are you interested in submarines?" were obtained from two samples of officer candidates for Basic Submarine School (Ns were 59 and 60). Categorization and Q-sorting of this array of responses produced 9 motivation categories: A - Concrete Positive Benefits; B - Adventure, Challenge, and Excitement; C - Characteristics of Crew; D - Service to Country; E - Career and Educational Opportunities; F - Prior Experience with Submarines and Submariners; G - Best Duty in the Navy; H - Pride in a Responsible Job; and I - Oceanographic Interests. Some of the major trends in the data were: (1) Characteristics of the men making up the submarine crew were most significant (indicated by 70%), while B, D and E (above) were equally indicated (45%) and the remainder of the categories given less frequently; (2) Married officers as compared to single gave "concrete benefits, pay, etc." more often as a reason for volunteering, but at the same time indicated "educational opportunities" less frequently than their single peers; and (3) Those officers making the highest grades in Submarine School had volunteered because of the "kind of crew" (C above), and because of the "adventure" (B) involved more often than did the poorer performers. The results, while tentative since the officer samples were small, nevertheless suggest that any incentive measures which serve to enhance the status and prestige of the submariner will in turn result in greater quantities and higher quality of officer volunteers for the Submarine Service.



CHARACTERISTICS OF THE SUBMARINE LINE OFFICER:

II. Patterns of Motivation for Volunteering for the Submarine Service

INTRODUCTION

There is evidence that the retention rate of all Naval officers including submarine line officers has become increasingly unfavorable in the past five years, (Fields, 1969; New Haven Times, 1970). Historically, the Submarine Service of the U. S. Navy has been described as a wholly volunteer service. It is probably self-evident that there are a wide range of needs and motives underpinning the decision to volunteer for this branch of the Navy. Further, it is assumed that individual differences in these motives to volunteer are related to performance in the Submarine School and later on during underway periods. This study is designed, first to describe the pattern of motives underpinning the decision to volunteer for this duty and second, to delineate the interrelationship of these motivational patterns to training criteria and other selected variables describing the officer population.

In spite of the fact that one expert assigned to the FBM (Fleet Ballistic Missile) program at its inception predicted that problems related to motivation would be most crucial for the success of the Polaris program (Levine, 1958), relatively sparse literature dealing with this subject matter area has been generated. While there are two published studies focused upon the motivational patterns of enlisted submariner volunteers (Youniss, 1956; Rubin & Parker, 1961), there is

only one known study dealing with the motivational problem as it applies specifically to the submarine officer population (Weybrew and Molish, 1959). In this study an attempt was made to develop a psychometric method for gauging individual differences in officer motivation for the submarine service. Of these fifty experimental items, twelve were designed to "tap" various aspects of the dynamics of volunteering. Of these 12 items, two, (items 30 and 49, Appendix B op. cit.) were designed to indicate how indeliberate was the officer's decision to volunteer. That the decision was premeditated is indicated by the fact that 96% denied that "they volunteered on the spur of the moment." Furthermore, the reliability of this attitude is suggested by the additional fact that 85% of the group responded toward the "exactly like me" end of the scale* to the item "I volunteered for submarines after thinking it over a very long time." Other reasons given by a majority of a representative sample of officers for volunteering for the submarine service were: (1) to be with friends who also had volunteered; (2) to learn nuclear engineering; (3) because of hearsay from submariners; (4) because of popularized literature; (5) to be a member of a high "esprit" crew; (6) for the additional hazardous duty pay; (7) for the "excitement of

*The response format consisted of a nine-point vertical scale extending from "Not at all like me" through "Somewhat like me" to "Exactly like me": N=185 in all cases.

submarines"; and (8) for the publicity appeal of the submarine service (op. cit., Appendix B).

While not primarily focused upon the officer motivation problem, a recent study (Weybrew, 1970) nevertheless incidentally contained two measures of officer motivation, one a psychometric test score and the other a Basic Officer School section leader's rating of individual differences with respect to motivation for the submarine service. Briefly, a rotational factor analytic solution of a 35 x 35 matrix demonstrated that motivational ratings correlated significantly with academic simulator-performance and underway criteria. On the other hand, the motivational test score, presumably because of low reliability, failed to correlate significantly with any of these criteria.

The present study extends the first study discussed above in three directions: First, it provides an updating of the patterns of motives underlying officers volunteering more than a decade since the above study was published. Secondly, it employs data collected by means of open-ended questionnaire rather than a structured one. And, finally, the data analysis goes beyond a simple description of the patterns of motives for volunteering to include an examination of the motivational arrays associated with individual differences in performance in Basic Officer Submarine School.

METHODS AND PROCEDURES

Subjects

Two population samples of officers were obtained from those entering

Basic Submarine School, first in April 1968 (Group I, N=59) and second in April 1970 (Group II, N=69).

The information pertaining to motivation for volunteering for the submarine service was obtained rather simply and directly from the responses to the open-ended question, "Why are you interested in submarines?" In addition to these motivational data, several other items of biographical information such as marital status, source of commission and the like were also included for the purpose of examining possible variable interrelationships.

Method of Data Analysis

Three staff members (the two senior authors and one staff psychologist) independently read the responses to the motivational question obtained from both officer samples assigning tentative content labels to each response. Thirty-three experimental response categories resulted from this preliminary procedure. Examples of these labels were: educational opportunities, prestige, favorable esprit de corps, to list a few. The same three judges, again independently and in the manner of a Q-sort*, distributed these thirty-three hypothetical classes of motives (actually responses to the open-ended item typed on 3" x 5" cards) into "piles" according to presumed content similarity. The final groupings were re-sorted until the three judges were unanimous with regard to the final major categories. Nine clusters of responses eventuated. The

*Q-sort is a descriptive method by which arrays of qualitative data are assigned rank order position according to some prearranged rule or principle. (Stephenson, 1953)

content of these will be discussed in the results section of this paper, together with an examination of the interrelationships among these motivational categories and selected items of biographical data and criterion information.

RESULTS

The results of the content analysis emanating from the Q-sorts of the responses of 128 officers to the questionnaire item, "Why are you interested in submarines?", are summarized in Table I.

As described earlier, the study involved two samples from the submarine officer volunteer population, sample I (N=59) collected in April of 1968 and a similarly-collected sample II obtained two years later. The fact that a sequence of momentous, internationally-significant events occurred in this two-year time span, for example, change in the political party of top level government, president, cabinet, etc., minority group and campus disturbances, domestic and economic instability, and the seemingly interminable Southeast Asian involvement, suggests the plausible hypothesis that the motivational patterns underpinning an officer's decision to volunteer for the submarine service may have changed remarkably in the interim. The relevance of this research question stems from the possibility that correlated with variability in motives for volunteering are suggestions for measures by which submariner officer motivation may be maintained and hopefully therefrom enhance the likelihood of a full-term submariner career. The percentage distributions

bearing on these group interrelationships are contained in Table II.

The reliability of the group differences in motivational patterns was checked by means of a nonparametric Wilcoxin test for unpaired replicates (Wilcoxin, 1949). Accordingly, no significant differences were found in the total motivational patterns of the two officer samples, (5% confidence level). In spite of the fact that the total motivational patterns were not statistically different, it may be informative to focus upon specific motivational categories and ask the question statistically, "Are any of the group proportions indicating responses in a particular category significantly different for the 1968 sample as compared to the 1970 group?"¹ While there are trends in the data in Table II, for example, proportionately less of the 1970 officer sample volunteered for subs because of motives in categories A (Concrete benefits, pay, etc.), in B (Adventure, etc.), in D (Service to country), in E (Educational, etc. benefits), in H (Pride in responsible job), and in I (Oceanographic interests). However, only two of the group differences reached significance at an acceptable confidence level. Thus, fewer of the 1970 sample volunteered because "subs" represented "the best duty in the Navy (category G)" (5% level) while more (1% level) indicated they were in the submarine service because of prior experience with submarines and

¹The significance levels for these differences between group proportions were estimated from a Table compiled for this purpose (Tate & Clelland, 1957, pp. 135). All significance tests for differences between group proportions found in the remainder of this paper involve this statistical technique.

TABLE I
Results of the Q-sort Content Analysis Phase
of the Study

Major Category Heading	Examples of Officers' Responses Used in Q-sort
A. Concrete Positive Benefits	More pay; Better food; More desirable deployment schedules; Liberty, leave good; Favorable location of home ports.
B. Adventure, Challenge and Excitement	Chance to travel; To visit foreign ports; Career is personally challenging; Sub duty new and different; Interesting duty; Long-standing ambition to be a Naval (Submarine) Officer.
C. Characteristics of Crew	High "esprit de corps"; Close knit, small crews; Teamwork; High "caliber" of crew; Submariners have high status; Sub-service has top priorities.
D. Service to Country	Opportunity to participate in the Defense of USA; Subs best way to fulfill obligated duty; Submarine Service "gets job done."
E. Career and Educational Opportunities	Allows for Personal Fulfillment; Opportunities for training in Nuclear Engineering Tactics and Administration; Chance to demonstrate leadership and to assume responsibilities; "Future of USN is Sub Service;" Shortest route to Command; Opportunity for career enhancement; Rapidly developing technology in subs.
F. Prior Experience with Submarines and/or Submariners	Have earned Enlisted Dolphins or have had Submarine Duty (non-submariner); Liked Submarine experience as Midshipman.
G. Best duty in the Navy	Absence of Undesirable Duty in Subs; Personal satisfaction from operating sub machinery; Valuable experience.
H. Pride in a Responsible Job	Subs provide interesting work; Subs technically interesting; Subs relatively safe.
I. Oceanographic Interests	Interest in Marine biology; Interest in meteorology and in navigational technology.

Table II. Comparison of Motivational Patterns of
1968 and 1970 Samples of Officer Volunteers

Motivational Categories ^b	Officer Samples (%) ^a	
	Group I (1968 (N=59)	Group II (1970) (N=69)
A. Concrete Positive Benefits	44	30
B. Adventure, Challenge and Excitement	52	39
C. Characteristics of Crew	66	74
D. Service to Country	27	19
E. Career and Educational Opportunities	52	39
F. Prior Experience with Submarines and/or Submariners	10	32
G. Best Duty in the Navy	19	7
H. Pride in a Responsible Job	24	16
I. Oceanographic Interests	5	4

^aPercent of total group responses. Since multiple responses were given by most officers, the column percentages do not sum to 100%.

^bThe nature of the specific responses included in each category may be seen in Table I.

submariners, (F). While the latter difference is statistically significant it, nonetheless, appears to be an inadvertent artifact of the differences between the compositions of the two officers samples taken two years apart. Table III provides the relevant data supporting this statement.

Initiated in 1956, NESEP had by July 1965 resulted in the commissioning of 741 officers from the enlisted ranks. Characteristically, 30%-50% of the highly selected NESEP candidates are recruited from the submarine service with ET, FT, and MT ratings being most frequently represented in the

Table III. Comparison of Officer Motivational Patterns
by Source of Commission for the 1970 Sample
(N=69)

Motivational Categories	Source of Commission	
	NESEP ^a (% of N=32)	NROTC, OCS ^a NAVCAD ^b (% of N=37)
A. Concrete Positive Benefits	47	16
B. Adventure, Challenge and Excitement	34	43
C. Characteristics of Crew	78	70
D. Service to Country	16	22
E. Career and Educational Opportunities	31	46
F. Prior Experience with Submarines and/or Submariners	47	19
G. Best Duty in the Naby	16	0
H. Pride in Responsible Job	13	19
I. Oceanographic Interests	6	3

^aNESEP = Navy Enlisted Science and Engineering Program;

NROTC = Navy Reserve Officer Training Corps; Officer Candidate School.

program input (Weybrew, 1966). Accordingly, it is seen in Table III that approximately 50% of the Group II (1970) officer sample had been qualified submariners or had at least been assigned to a submarine prior to their acceptance for the NESEP program.

Since only two officers of the Group I sample (1968) has been associated with

NESEP and thus had had no direct contact with the submarine service, the greater number giving category F (volunteered because of prior experience in "subs") in Table II seems meaningful and, in fact, inevitable.

Turning now to the data in Table III, it is seen that the motivational patterns by and large are quite different for the

two officer groups, however, in terms of the overall array comparison this difference was not significant at the 5% level (Wilcoxin test). In terms of specific motivational categories, the NESEP group (again perhaps inevitably) demonstrated significantly higher incidence of volunteering because of higher pay, etc. (category A), because of previous knowledge of subs (category F) and as the result of more favorable attitudes toward submarine duty in general (category G), all individual category differences being significant at the 1% level.

The 1968 officer sample contained 30 Supply Corps officers and 20 Regular Line officers, the remaining 9 being OCS graduates. Table IV presents data bearing on the question of possible differences between the motivational patterns for these two groups of officers.

Although a considerably higher proportion of the Supply Corps officers volunteered because of favorable past experiences with the submarine service (category F), and because of favorable attitudes toward "sub" duty (Best duty in the Navy, Category G), none of these differences were significant at the 5% level. Similarly, the disproportionalities in the opposite direction for the Supply Corps group (Motivational categories, D, H, and I) that is, Service to Country, Pride in Job and Oceanographic Interests in that order, though sizeable, nonetheless failed to reach an acceptable confidence level.

There is a considerable amount of "folklore" and some fact concerning the relationship between the marital status of submarine enlisted men and the quality of their adjustment to the environ-

ment of the underway submarine. For example, one study (Weybrew, Molish and Minow, 1961) demonstrated that both married and single men's attitudes became less favorable with successive 60-day submerged cruises aboard an SSBN, but the magnitude of the change did not show significant differences between the married and single groups.

While there is no comparable study of the attitude changes of officers during prolonged submergence presently in the literature of submarine psychology, nonetheless it seemed plausible that there might be meaningful differences in the motivational patterns underpinning the married officer's decision to volunteer for the submarine service as compared to the patterns found for a comparable single group. Table V provides relevant data bearing on this relationship for both the 1968 and 1970 officer samples.

It is immediately noted that more of the 1970 officer sample were married (62% as compared to 50% for the 1968 sample). This is as expected since the later sample was composed of 50% NESEP officers who of course would consist of older men as a whole, and consequently, disproportionately more married officers.

The Wilcoxin test applied between the married and single motivational profiles for both samples failed however to reach significance though there were sizeable gross differences between the groups for specific categories. Similarly, the differences between the two samples taken two years apart both within the single officer sample and as well as within the married officer group did not

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