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SCREENING FOR ENTRY INTO THE SECURITY POLICE CAREER FIELD

By

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December 1977
Final Report for Period January 1974 – December 1977

AIR FORCE SYSTEMS COMMAND
BROOKS AIR FORCE BASE, TEXAS 78235

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A sample of 4,502 airmen assigned to the security police career field were administered a test battery consisting of biographical, attitudinal, and interest measures. Using a criterion of in/out of service after a minimum period of 1 year on the job, regression analyses were accomplished to determine the effectiveness of the predictor composites. Efforts were made to decrease the magnitude of the selection composite by eliminating one or more of the experimental test measures or minimizing the overall number of test items. Three selection composites containing different numbers of test items were developed and evaluated for practical utility in identifying individuals most likely to separate from service. The multiple correlations ranged from .46 to .37. Cross-application analyses resulted in multiple correlations of .20 to .19. Recent changes and improvements in this career field were reviewed, and the advisability of implementing a new screening methodology discussed.

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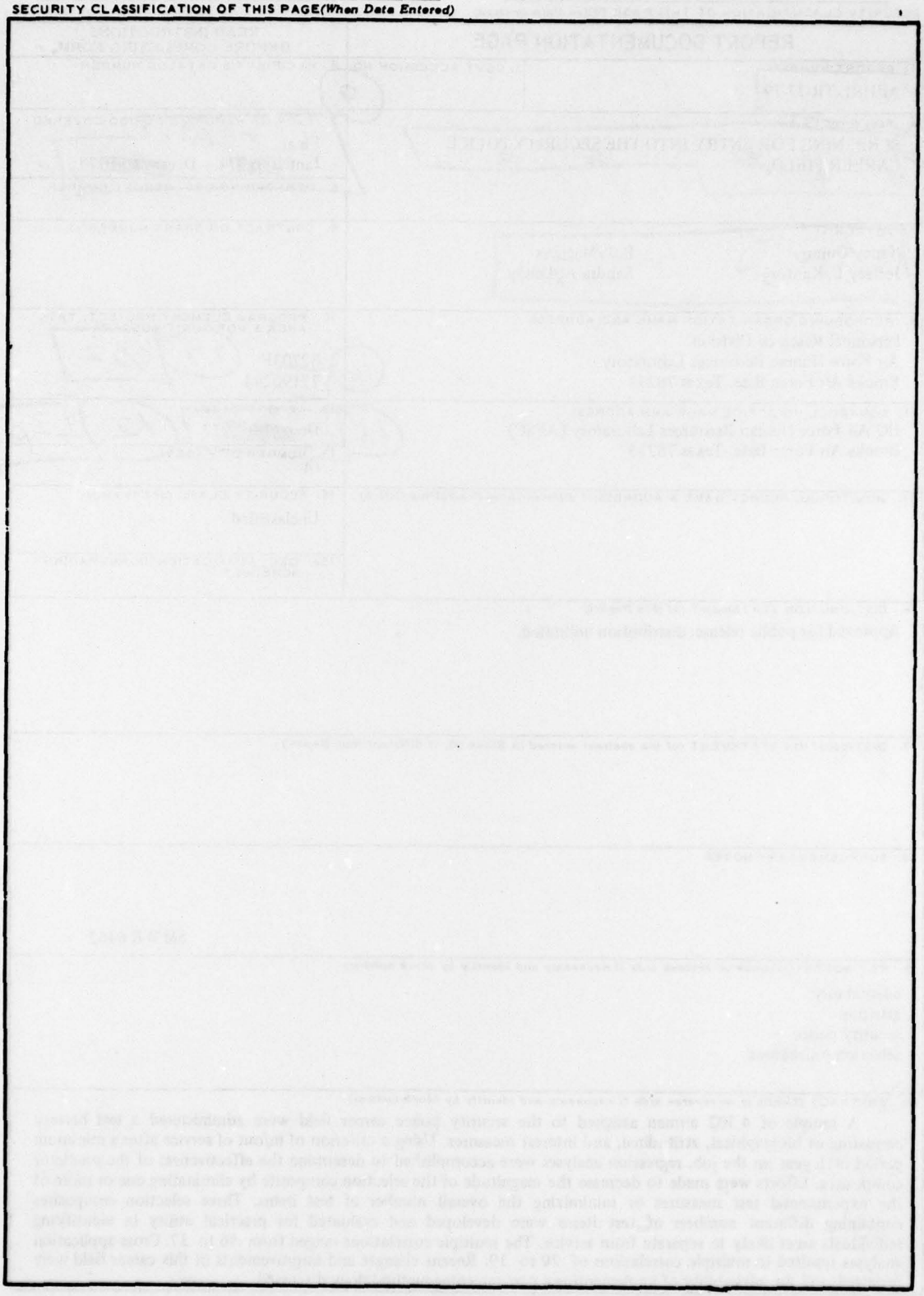
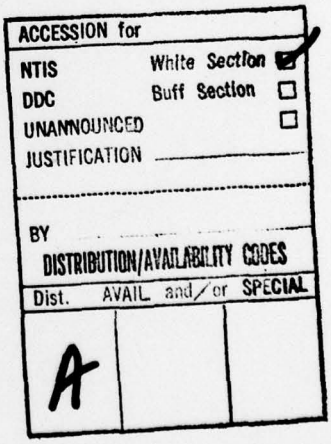


PREFACE

This research was conducted under project 7719, Selection and Classification Technology; task 771902, Methods for Increasing the Effectiveness of Personnel Programs.

Appreciation is expressed to MSgt Fred Brown and his programming staff (Computational Sciences Division, AFHRL) for their technical expertise in accomplishing the desired analyses.



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I. INTRODUCTION

Since personnel and training costs represent over half of the annual Department of Defense budget, personnel managers in all the services have become concerned over rising attrition rates which account for sizeable losses in procurement, selection, and training dollars. Ways to prevent premature separation from service become even more important at a time when stringent budgetary constraints are being imposed by Congress.

In 1974, the Air Force Inspector General (Security Police) noted that an unacceptable number of security police were leaving that career field prior to the completion of their obligated tour. In an effort to alleviate this untimely loss of first-term personnel, a request for research to develop a screening methodology for entry into the security police (SP) career field was initiated.

A review of research indicates that selection and retention of qualified security and law enforcement personnel has been a problem in the civilian sector also. Studies accomplished in civilian police departments have investigated the usefulness of various measures in identifying individuals who will be successful in a law enforcement career. Both academic and job performance criteria have been used to evaluate a wide range of aptitude, interest, personality, and situational tests (Abbatiello, 1969; Baehr, 1968; Baehr, Furcon, & Froemel, 1968; Blum, Goggin, & Whitmore, 1961; DuBois & Watson, 1950; Gottesman, 1969; Kent & Eisenberg, 1972; LaCouture, 1960; McAllister, 1970; Morman, Heinkey, Heywood, & Leddle, 1966; Nowicki, 1966; Rhead, Abrams, Trosman, & Margolis, 1968; Spencer & Nichols, 1971).

A recent Air Force study, using separation from service after assignment to the security career field through completion of technical training as the criterion, revealed that a screening procedure comprised of aptitudinal, interest, and personal history data demonstrated some practical value in the selection of a quality security police force (Guinn, Wilbourn, & Kantor, 1977). While results of these studies have not been conclusive in demonstrating the utility of the test measures, a majority of the findings have indicated that certain paper-and-pencil tests can achieve an acceptable level of predictive validity against training and actual on-the-job performance. As a follow-on to the preliminary Air Force study on the development of a screening procedure for security police personnel, the primary objective of this study is to evaluate the effectiveness of the selection methodology designed to identify those individuals who separate from service during their first year on active duty.

A procedure which could be used to identify high risk personnel who are most likely to separate from service prematurely should reduce the costs associated with attrition and improve the overall quality of security and law enforcement services at Air Force installations.

II. METHODS

A sample of 4,502 basic airmen with assignments to the security police career field (AFSCs 81130/81230) was administered experimental tests consisting of biographical, attitudinal, and interest items during basic training. Specific measures in the battery included:

1. History Opinion Inventory (HOI)–a 100-item self-report inventory designed to tap dimensions of school adjustment, family stability, social orientation, emotional stability, bodily complaints, motivation and expectations for achievement, and response toward authority (LaChar, Sparks, & Larsen, 1974).

2. Airmen Assessment Inventory (AAI)–a 152-item inventory containing items on personal and family background, educational attainment, attitudinal data, employment history, personal problems, previous criminal involvement or experimentation with drugs/alcohol prior to entry into service, and expressed satisfaction with the individual's career field.

3. Vocational Interest Career Examination (VOICE)–a 400-item vocational interest inventory specifically designed for assignment of enlisted personnel to occupational specialties (Echternacht, Reilly, & McCaffrey, 1973; Alley, Wilbourn, & Berberich, 1976).

Aptitudinal and criterion data were retrieved from the airman record files maintained by the Computational Sciences Division of the Air Force Human Resources Laboratory, Brooks AFB, Texas. The criterion used for this study was in/out-of-service. The out-of-service classification was assigned to those losses which occurred anytime during the period after assignment to the security police career field. Service status of the

sample population is presented in Table 1. Discharge status was determined by a standard designation number (i.e., loss code) which identified all personnel who had been discharged from service. Loss codes indicating a similar reason for separation or discharge from service were grouped together as shown in Table 2. A total of 77 cases in the original sample population failed to match the airman record files and were excluded from further analysis (Group 3). It is not believed that the loss of these cases represents any bias in the remaining sample which would materially affect the results obtained. The out-of-service group included all individuals in loss groups 2a through 2g. Those individuals who left the security police career field for reasons included under normal separation were also excluded from the analyses. It is recognized that the heterogeneity of reasons for attrition makes development of a prediction system for untimely separation more difficult; however, grouping of all types of losses was considered necessary to achieve a sample of sufficient size for validation and cross-application purposes. It is also recognized that the official designation of loss code may reflect administrative procedures by which separation from service may be more easily effected rather than the actual cause of discharge.

Table 1. **Disposition in Service from Entry to 9–12 Months on the Job**

Disposition	811—Male		812—Male		812—Female		Total	
	N	%	N	%	N	%	N	%
In-Service	2,059	73	1,169	84	220	79	3,448	77
Discharged	717	25	209	15	51	18	977	22
Status Unknown	54	2	15	1	8	3	77	1
Total	2,830	100	1,393	100	279	100	4,502	100

Table 2. **Criterion Groups**

Criterion Group No.	Description	Personnel Group	No. in Criterion Group
1	In Service	Active duty	3,448
2	Out of Service	Discharged or separated from service	977
	a. Loss, Unfitness		27
		Misconduct, civil court disposition	
		Preservation of order and discipline	
		Court martial	
		Discharge in lieu of court martial	
		Dropped from rolls, prisoner	
		Misconduct, discreditable nature	
	b. Loss, Unsuitability		60
		Personality disorder	
		Drug abuse	
		Inadaptability	
		Abberrant tendencies	
		Failure in rehab program	
		Sexual deviation	
	c. Loss, Marginal productivity		485
		Defective attitude	
		Limited potential	
		Marginal/non-productive	

Table 2 (*Continued*)

Criterion Group No.	Description	Personnel Group	No. in Criterion Group
	d. Loss, Misc undesirable		11
		Fradulent enlistment	
		Financial irresponsibility	
		Conscientious objector	
	e. Loss, disqualified for retention		21
		Failure to meet minimum standards	
	f. Loss, physical disability		45
	g. Loss, desirability indeterminate		183
		Education release	
		Hardship	
		Pregnancy	
		Non-fullfillment of enlistment guarantee	
		Erroneous enlistment	
		Personal reasons	
		Death	
		Convenience of the Government	
	h. Loss, normal separation		145
		Officer program	
		Early separation to ANG, AF Reserve	
3	Status Unknown	No record on official data files	77
Total			4,502

Multiple linear regression analyses (Bottenberg & Ward, 1963) were accomplished to determine the usefulness of the aptitudinal and inventory response data in predicting adaptability to the security police career field. The criterion group was randomly divided for validation and cross-validation analyses.

Based on the results of the regression analyses, an effort was made to select an optimal set of predictors to be used in an operational setting. Attention was directed toward maximizing predictive accuracy and minimizing additional testing time which would be required to implement the selection methodology.

III. RESULTS AND DISCUSSION

Development and Selection of an Optimal Test Composite

Biographical, interest, and aptitudinal variables were combined into a preliminary selector composite and tested for statistical significance. Results of these analyses indicated that the composite (Model 1) containing all the predictor variables reached a level of statistical significance at or beyond the .01 level.

In an effort to develop the most economical selection technique considering the costs of test administration, another series of regression analyses were accomplished to determine whether one or more of the test measures could be eliminated from the composite without a significant reduction in the predictive accuracy of the overall screening technique. Results of these analyses for both criterion groups are contained in Table 3. Models 2 through 4 delete one test measure at a time, and comparisons between these models and Model 1 containing all measures were made to determine the possibility of deleting one or more of the measures from the composite.

For the total attrition criterion, comparison of Models 1 and 2 indicates that the HOI cannot be

Table 3. **Summary of Regression Comparisons**

Full Model[a]	R^2	Restricted Model[a]	R^2	df1	df2	f
Model 1	.2153	Model 2	.1554	100	1,870	1.43*
Model 1	.2153	Model 3	.2003	18	1,870	1.98*
Model 1	.2153	Model 4	.1228	142	1,870	1.55*

[a]Predictor Variables contained in regression models:
Model 1 – HOI, AAI, VOICE, ASVAB, AFQT (265)
Model 2 – AAI, VOICE, ASVAB, AFQT (165)
Model 3 – HOI, AAI, ASVAB, AFQT (247)
Model 4 – HOI, VOICE, ASVAB, AFQT (123)

*$p \leq .01$.

deleted without a significant reduction in predictive accuracy. Comparison between Models 2 and 3 indicates a significant contribution of the VOICE over and above the other two measures. The final comparison between Models 2 and 4 revealed that the AAI also made a significant contribution to the prediction equation.

Based on these results, it appears that a combination of all three experimental selection tests should be considered in identifying potential failures among security police applicants.

Selection of a Minimum Number of Test Items

In developing a selection composite for operational use, various aspects of the proposed system must be considered prior to recommending the selection technique for possible implementation. An evaluation must be made of the potential savings which might be accrued by the identification and rejection of eliminees against the additional cost in time and money required to implement the proposed screening system. In addition, with the downward trend in numbers of 18-year-olds available from the potential applicant pool in the 1980's, the number of individuals identified as eliminees who, in fact, would be successful becomes a matter of important concern. Therefore, attention must be directed toward these realistic constraints in assessing the practical utility of the proposed screening composite. For these reasons, various configurations of the best selector composite model were studied in an effort to minimize the length of the test, as well as the number of personnel who might be incorrectly identified by the screening system.

In accomplishing these analyses, additional constraints were imposed on the computational process to derive these three composites. Since all potential recruits are required to complete the Armed Services Vocational Aptitude Battery (ASVAB), the ASVAB aptitude indexes along with the ASVAB derived Armed Forces Qualification Test (AFQT) percentile score were entered into the composite selection process as the first components. At the present time, the VOICE is also being considered for operational use in the Air Force classification and assignment process. Based on this assumption, the VOICE scales were also included along with the aptitudinal variables as basic components of the prediction system. Three composites were derived from Model 1. Composite A included the minimum number of variables which would not significantly lower the predictive accuracy from the original model containing 265 variables. This composite included 130 items in addition to the aptitude scores and interest scales. Composite B, with a view toward decreasing the costs associated with an additional screening test, comprised a shortened version of Model 1 which would necessitate only a 50-item screening device in addition to the basic aptitude and interest components. The last composite (Composite C) included only a 25-item inventory plus aptitude and interest data. The multiple correlation of these composites in the validation and cross-application analyses are included in Table 4. The obtained correlations in these analyses were statistically signficant at or beyond the .01 level. Test-retest reliabilities for the three composites were as follows: Composite A, .83; Composite B, .83; and Composite C, .87.

Although the magnitude of the multiple correlations decreased in the cross-application phase, all three composites did retain statistical significance. In comparing the three composites, it appears that Composite B has acceptable validity and stability while shortening the overall length of the screening measure.

It should be noted that the correlations are somewhat lower than if they had been computed on a population not restricted by initial enlistment screening.

Based on these results, it appears that any one of the three composites developed from Model 1 could be useful as a screening technique to identify security police personnel who might be potential failures at a later date. However, the overall statistical significance of a predictor composite often fails to reflect its practical utility. Table 5 shows data on the three composites by indicating the percentage of losses (total and by discharge group) correctly identified as high risk and those who were incorrectly identified as potential losses (false positives). From these data, Composite B again appears to be the most effective screening device. Composite C, while not identifying any personnel as high-risk who would be successful, demonstrates minimal success in identifying potential losses.

Table 4. **Multiple Correlations for Model 1 Composites – Validation and Cross-Application Samples**

Composite[a]	Validation R	Cross-Validation R
Model 1 – Composite A	.4560*	.1978*
Model 1 – Composite B	.4094*	.2047*
Model 1 – Composite C	.3664*	.1922*

[a]Composite A includes 153 variables (ASVAB, AFQT, VOICE scales, 130 items from HOI, and AAI).
Composite B includes 73 variables (ASVAB, AFQT, VOICE scales, 50 items from HOI, and AAI).
Composite C includes 48 variables (ASVAB, AFQT, VOICE scales, 25 items from HOI, and AAI).
*$p < .01$.

Table 5. **Effectiveness of Screening Composite**

	Percent Identified by Composite																	
					Specific Loss Group													
	% False Positives[a]		Total Losses[b]		Unfit		Unsuit		Prod		Undes		Retn		Disab		Indeterminate	
Composite	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A	51	1	96	12	4	15	9	7	63	13	1	9	3	14	3	7	13	7
B	76	2	110	13	3	11	10	17	74	15	2	18	3	14	4	9	14	8
C	11	0	29	3	0	0	1	2	22	5	0	0	1	5	1	2	4	2

[a]Number and percent of individuals actually successful in the 81XXX career field who were incorrectly identified as potential failures.

[b]Number and percent of the individuals who had separated from the 81XXX career field who were correctly identified as failures.

Changes Affecting Attrition in 81XXX Career Field

This research was initiated after a review of attrition in the 81XXX career field indicated that it had reached an unacceptable level. As of December 1973, it was reported that only 67% of all 81XXX personnel met requirements for certification under the Human Reliability Program (HRP). In addition to losses under HRP, the security police career field was disproportionately involved in Office of Special Investigations (OSI) crimination investigations and drug abuse cases with a substantial number of these personnel subsequently separated from the Air Force.

In the current sample, a total loss rate of 22% was experienced. As shown in Table 6, a portion of these losses was due to physical disability and/or normal separation. This decrease in overall attrition from previous years can be attributed to several policy decisions and corrective actions taken to improve the conditions in the security police career field.

New enlistment standards were implemented in January 1975. Formerly, entry qualifications to the security specialist area required an enlistee to achieve a General aptitude index score of 40. The 1975 enlistment standards raised this entry aptitude level by requiring all enlistees to have a percentile score of G-45 for entry into service. In addition, each enlistee must have a composite score of 170 from the four aptitude indexes and, if classified as Category III or IV on the AFQT, must be a high school graduate. Although the exact result of these standards on the 81XXX career force cannot be ascertained, it is obvious that the

Table 6. **Type Discharge by AFSC/Sex**

Type Loss	811-Male		812-Male		812-Female		Total	
	%	N	%	N	%	N	N	%
Unfitness	3	19	3	7	2	1	27	3
Unsuitability	6	42	6	13	10	5	60	6
Marginally Productive	49	353	56	117	29	15	485	49
Disqualified for Retention	2	16	2	3	4	2	21	2
Physical Disability	4	26	8	17	4	2	45	5
Misc Undesirable	1	6	2	4	2	1	11	1
Loss–								
Desirability Indeterminate	16	118	20	42	45	23	183	19
Normal Separation	19	137	3	6	4	2	145	15
Total	100	717	100	209	100	51	977	100

overall quality of Air Force accessions was improved by implementation of these standards which would most likely also have a favorable impact on the security police career field.

Although there is no definitive research in the area, motivation and morale of security specialists have been areas of concern which obviously influenced attrition from this career field. To help in this area, the Security Police Quality Improvement Committee focussed on discovering innovative methods to manage the security police force more effectively and improve various aspects of the SP career field as well as the quality, effectiveness, professionalism, and morale of assigned personnel. Action and/or recommended action by this Committee to improve the SP career field has been thorough and comprehensive. They have investigated and/or initiated programs which would affect the security policeman during his entire military career. At the point of initial enlistment, a recruiting film depicting portrayal of security specialist duties in less than ideal weather conditions was developed to ensure that a prospective security specialist will not have unrealistic expectations of his duty assignment which might lead to lowered motivation and poor morale on the job. Efforts to shorten the excessively long work week and job enrichment plans have been studied to improve on-the-job working conditions and eliminate reasons for job dissatisfaction. The emphasis on obtaining electronic surveillance and detection equipment and improved facilities should improve working conditions and decrease occupational hazards. The continuing emphasis on leadership and good managerial techniques coupled with an authorized increase in supervisory positions should improve productivity and supervisory guidance. All of these actions may have had and should continue to have an effect in lowering attrition levels.

As a corollary to this research, groups of security police personnel were surveyed at different time periods to determine their satisfaction with their assigned career field. Table 7 indicates the degree of satisfaction expressed by the various sample populations. In 1975, 36% of the sample indicated they were moderately or very satisfied with the 81XXX assignment; 48% indicated moderate or extreme dissatisfaction. By December 1976, 42% indicated satisfaction (an increase of 6%) with a decrease of 9% indicating moderate or extreme dissatisfaction. The decrease in dissatisfaction may be related to improvements introduced into the 81XXX career field as a result of

Table 7. **Expressed Degree of Satisfaction with Security Police Career Field**

Time of Survey	Valid N	Degree of Satisfaction (%)				
		Very Satisfied	Moderately Satisfied	Somewhat Satisfied	Moderately Dissatisfied	Very Dissatisfied
December 1975	1,143	13	23	16	19	29
March 1976	505	18	24	19	17	22
August 1976	810	17	24	19	18	22
December 1976	1,099	18	24	19	15	24

recommendations and actions taken by the Quality Improvement Committee. A likely concomitant of decreased dissatisfaction in the career field might well be the experienced decrease in attrition.

These improvements are discussed since such actions might be as effective in lowering undesirable attrition as the implementation of an additional screening device. Time and costs associated with a new screening program might be more effectively applied to continuing improvements in managerial and job oriented activities in the security police career area.

IV. CONCLUSIONS AND RECOMMENDATIONS

The results of this research indicate that a screening procedure comprised of aptitudinal, interest, and personal history data has some practical utility in the screening of entrants into the security police career field. While the selection system would identify a certain proportion of eliminees, the number of potentially successful applicants who would be identified as failures limits its usefulness in a recruiting climate of decreasing manpower availability.

Due to the experienced decrease in attrition for the security police career field in the past year, recommend that continued command and staff action to improve leadership techniques and personnel-oriented counseling programs to achieve a higher level of motivation and professionalism be used in lieu of the implementation of a new screening technique.[1] However, if an increase in attrition is experienced, recommend reconsideration of possible implementation of selection Composite B.

[1] Methods/Programs, such as those recommended by the Security Police Quality Control Committee.

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