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DIMENSIONS OF LEADERSHIP IN A SIMULATED COMBAT SITUATION

William H. Helme, Louis P. Willemin,
and Frances C. Grafton

BEHAVIORAL EVALUATION RESEARCH DIVISION

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13. ABSTRACT

The present Technical Research Report is one of a series of major publications marking the culmination of the OFFICER PREDICTION research program and the impact of the findings on BESRL's ongoing and newly formulated programs on officer evaluation and career development. TRR 1172 presents the important dimensions of officer leadership behavior derived from analyses of more than 2000 single observations and judgments by trained military staff on each officer participant during a three-day OEC simulation. A second publication in this series (TRR 1173) presents the major psychological factors derived from officer responses to tests of the experimental Differential Officer Battery (DOB) and describes the refinement of the measures obtained to a manageable number of experimental predictor scores. Subsequent publications will present the basis on which psychological instruments have been selected for operational introduction in officer training programs and evaluation at early career points.

In the present study, Over 300 scales and evaluations were assembled from analysis of the evaluations recorded on 900 officers performing 15 tasks during the three-day OEC exercise. The series of factor analyses by which the dimensions of leadership performance both specific to type of command and generalized across tasks were obtained from these data are given in detail in the Technical Supplement to the report. In the analysis of the data, two broad domains of officer activity were clearly differentiated -- combat leadership and technical/managerial leadership. In addition to factors reflecting the behavioral pattern in these two domains, six other major factors were identified: Team leadership vs personal resourcefulness, Command of men vs individual technical effectiveness, Mission persistence, Executive direction, Tactical staff skills,

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and Technical staff skills. Both cognitive and noncognitive aspects of combat leadership behavior are delineated. The analysis also yielded striking evidence of behavior common to successful leaders in both combat and noncombat areas.

Products from the long-term research and experience with the evaluation methodology employed have immediate applicability to the Army's officer personnel management in the improved precision and scope of performance evaluations in training situations and in identifying differentiable behaviors for field performance rating. Measures of the DOB type and OEC evaluation procedures can be applied in summer camp cadet programs and OCS leadership training exercises, and can be used in performance assessments needed for career decisions in cadet training, branch basic school, and specific or promotion assignment points in active duty tours. In sum, the integrated simulation and evaluation techniques demonstrated appear to have utility for unique contribution to the assessment of leadership potential, particularly in junior officers.

**DIMENSIONS OF LEADERSHIP IN A
SIMULATED COMBAT SITUATION**

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IV

BESRL Technical Research Reports and Technical Research Notes are intended for sponsors of R&D tasks and other research and military agencies. Any findings ready for implementation at the time of publication are presented in the latter part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

Early identification of officer leaders and development of officer leadership from cadet training through company and field grade assignments are of major concern in the management of the Army's manpower resources. The Behavior and Systems Research Laboratory (BESRL) conducts research to provide scientific means of identifying individuals with good leadership potential for officer training, selecting officers for commissioning, and evaluating their performance. The present series of publications records the conduct of a long-term experimental program to improve the basis for selecting and developing officer leaders in accordance with their capability to meet differing leadership requirements. Differential prediction and evaluation have become dominant objectives in the effort to channel officers into appropriate assignments and develop their potential so as to make best use of their abilities.

OFFICER PREDICTION research was undertaken by BESRL to meet the need for improving the selection and assignment of personnel for differential officer leadership positions. The program evolved responsive to requirements and recommendations of the Army Scientific Advisory Panel and the Deputy Chief of Staff for Personnel. Objectives of the research are 1) clearer definition of the behavioral demands of officers in different types of assignment and of the behavior which makes for success in those assignments, and 2) improved methods of identifying officers who can be expected to perform well in each of several broad domains of leadership. Analysis of duties performed by officers pointed initially to three groups of officer assignments--combat, technical, and administrative--which appeared to call for different patterns of leader behavior.

The basic research design was longitudinal. Experimental measures were obtained on officers immediately after their entry on active duty, and performance evaluations were obtained at subsequent points in the officers' careers. The Differential Officer Battery (DOB), an extensive set of experimental tests developed and refined for differential prediction of broad domains of leadership, was administered to two samples of officers entering on active duty, the first sample of 6500 in 1958 and 1959, the second of about 4000 in 1961 and 1962. From the sample of 4000, 900 officers were selected as representative of various branches of service to take part in an experimentally controlled three-day exercise at the Officer Evaluation Center (OEC) established for the purpose at Fort McClellan, Alabama. The scenario for the exercise presented the officer with 15 problems, 5 each in combat, technical, and administrative settings. The problem situations were designed to yield objective recorded data on specific details of each officer's performance, as well as judgmental evaluations of his style of behavior and effectiveness in aspects of each task and in each situation-task.

In addition to the evaluations of officer performance obtained at the OEC, ratings of all officers who had taken the DOB at entry on active duty were obtained. The first field rating was made by superiors and associates after the officers had been in their duty assignments for 12-18 months. In 1967 and 1968, evaluations of performance were obtained for officers of the original sample on duty in Vietnam (combat) and in combat-ready situations (Europe, Korea, CONUS).

Criterion data have been analyzed to yield information about the officers--the requirements of their jobs, the various ways in which they carry out their responsibilities as leaders, what general modes of behavior characterize good and poor accomplishment of various missions. Analysis of test and criterion data reveals characteristics of officers who are likely to succeed or to perform less well as officers.

The present Technical Research Report is one of a series of major publications marking the culmination of the OFFICER PREDICTION research program--and, in fact, the impact of the findings on BESRL's ongoing and newly formulated program on officer evaluation and career development. Technical Research Report 1172 presents the important dimensions of officer leadership behavior derived from analysis of the specific actions recorded and observed or evaluated during the three-day OEC simulation.

The second publication, Technical Research Report 1173, presents the major psychological factors derived from officer responses to tests of the experimental Differential Officer Battery and describes the reduction of the measures obtained to a manageable number of experimental predictor scores.

Subsequent publications will examine the initial hypothesis of differential prediction, as tested by the extent to which DOB scores are associated with differential performance in the OEC exercise and success in combat and technical/administrative assignments. These publications will present the basis on which psychological instruments have been selected for operational introduction in officer training programs and evaluation at early career points. These analyses are expected to provide assessment not only of the usefulness of the DOB measures but also of the effectiveness of the various methods of performance evaluation by which criterion data were obtained.

The integrated research program just described evolved from BESRL research in two major areas: selection of cadets for officer training and operational evaluation of officer performance on active duty. Leadership selection research developed from the early World War II measures of cognitive abilities, designed to differentiate within the upper levels of general mental ability to determine whether individuals could learn the essentials of more demanding jobs. Personal attributes related to leadership ability were evaluated through standardized board interviews, self-report "personality" measures, and a few performance measures. Considerable experimentation was conducted on the self-report measures, utilizing the grouping of responses into relatively homogeneous clusters and the application of forced-choice technique to preclude social desirability response sets.

The selection research program enhanced the value of interview procedures and provided useful measures of general verbal and quantitative ability at higher levels. Measurement of personal attributes yielded but modest predictive validity. The major contribution from the research findings was the realization that leadership behavior was highly complex and that the situation in which it was evaluated had to be fully taken into account.

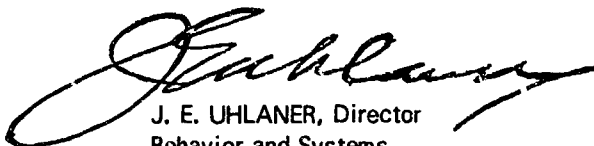
BESRL research on operational evaluation of officers had its inception at the close of World War II when the problem arose of selecting career peacetime officers from the vast number commissioned during the war. The series of efficiency report forms from Form 67-1 in 1947 to Form 67-3 in 1953 were research-based instruments designed to yield a full range of Army standard scores. But the spread of scores on such instruments tended to narrow seriously with continued use, indicating that management rather than research questions had to be addressed. As with the selection problem, a major contribution of operational evaluation research was in defining more clearly the requirement for new evaluation approaches, particularly those emphasizing the situation in which leadership behavior was to be evaluated.

Meantime, changes in Army structure and technology raised the question of whether the traditional "generalist" principle of career development should be modified to recognize differing requirements of leadership in different areas of command. This concern, along with the finding that different individuals could meet leadership requirements in different domains through various leadership styles, led to establishment of the comprehensive Differential Officer Prediction program outlined above, with the comprehensive selection battery of the DOB and the comprehensive situational performance evaluations of the OEC.

As the longitudinal research has progressed to its conclusion with performance evaluations in the Vietnam conflict and concurrent evaluations worldwide, changes in the expected utilization of products and findings have come to pass. The Army is experiencing a period of transition with attendant shifts in the demands on officer leadership, unaccustomed concepts of the role of the Army, changed input of officer and enlisted personnel accompanying cultural changes in the society and the trend toward an all-volunteer military service. BESRL's current program in this area is a many faceted attack on major officer personnel problems—improved methods for selection, assignment, and promotion actions, continuing reevaluation of each officer's potential in terms of available career assignments, development of a new research-based system of performance evaluation responsive to particular Army needs for given personnel decisions. In place of concentrating on reducing the subjectivity and bias, inconsistency, and inflation apparent in official ratings, more diversified means of evaluating performance are under development. Brought to bear is BESRL's research experience with simulation of leadership problem situations at the OEC with its implication for adaptation of officer training exercises to individual measurement, the application of models for design and test of officer evaluation system and subsystems, and computer-assisted simulation and feedback.

Research on officer prediction has not only provided measures for precommissioning use. The dimensions of officer behavior delineated are shaping the constructs entering into the current research effort to develop an officer selection and evaluation system which can effectively serve the changing pattern of officer career development. Research methodology has been developed to support the measurement of performance by means which do not omit from consideration the elusive noncognitive and situational elements influencing performance.

The Officer Evaluation Center was the setting in which varying factors of environment, type of mission (combat or technical/administrative), interpersonal relationships, situational problem, stresses of various kinds, were all brought together. Add the officers with their differing capabilities and individual ways of dealing with problems interacting with these environmental and situational factors to influence the officer's performance and the observer's evaluation of that performance. Subject the results to searching analysis to distill the factorial composition of officer behavior. The product is not only reliable measures of well-defined aspects of performance but measures which generalize beyond the specific situations to major dimensions of leadership and officer performance behavior.



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Behavior and Systems
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DIMENSIONS OF LEADERSHIP IN A SIMULATED COMBAT SITUATION

BRIEF

Requirement:

As a major phase in RESRL's research on officer leaders, to identify and delineate dimensions of performance differentially important in broad domains of leadership as well as factors generally important to success as an officer.

Procedure:

A sample of 900 officers went through an intensive three-day exercise in a simulated combat situation, performing fifteen missions--five combat, five technical, and five administrative. Over 2000 single observations and evaluations by a trained military staff were analyzed and assembled into over 300 scales and evaluations, including total scores on each mission.

Factor analysis yielded 30 orthogonal factors of which 28 were unique to a particular mission. Marker variables were selected for each factor; with addition of some independent variables with no substantial factor loading, 39 scales were analyzed to yield factors across missions. The eight factors resulting were interpreted and extended to the variables not included in the set of 39. Hypotheses were well supported by results of the extension.

Findings:

Two broad domains of officer activity were clearly differentiated--combat leadership and technical/managerial leadership. In addition to factors reflecting the behavioral pattern in these two domains, six other major factors were identified: Team leadership as opposed to personal resourcefulness, Command of men as opposed to individual technical effectiveness, Mission persistence, Executive direction, Tactical staff skills, Technical staff skills.

In the combat leader, the cognitive aspect of behavior is shown in the use he makes of his tactical skills, in the technical/managerial leader, by his use of technical skills. The heavy noncognitive element in combat leadership rests primarily on forcefulness in command of men, on team leadership or personal resourcefulness, and on persistence in accomplishing the mission. In technical/managerial leadership, the noncognitive element is evidenced in executive direction, plus--as in combat leadership--persistence in mission accomplishment.

Utilization of Findings:

The reliable measures of well-defined aspects of officer performance serve as criterion data for officer prediction instruments developed for the selection of officers for differentiated training and duty assignments.

Evaluation methodology patterned after the OEC exercise has potential application in improved precision and scope of evaluations of performance in training situations and exercises, and in identifying differentiable behaviors for rating of field performance.

Factors in officer leadership identified in the present analysis formed the basis for recommending to the ODCSPER committee preparing OER Form 67-7 twelve interest and eight kinds of leadership performance as items for evaluation.

Based on the applicability of different leadership styles in handling given leadership situations, BESRL is providing the Army with selection techniques for use in cadet and early active duty stages.

DIMENSIONS OF LEADERSHIP IN A SIMULATED COMBAT SITUATION

CONTENTS

	Page
OBJECTIVES	1
PLANNING CONSIDERATIONS	1
PHASES OF THE RESEARCH PROGRAM	2
THE OFFICER EVALUATION CENTER SIMULATION EXERCISE	3
OEC Objectives	3
OEC Officer Sample	3
OEC Simulated Tasks	5
Observations and Evaluations Recorded	6
FINDINGS	8
MAJOR FACTORS IN OFFICER LEADERSHIP	8
IMPACT OF OEC FINDINGS ON OFFICER CAREER DEVELOPMENT PROGRAM	11
<i>TECHNICAL SUPPLEMENT</i>	15
ANALYSIS OF OEC EXERCISE DATA	17
Reduction of Data	17
Factor Analyses	17
RESULTS	18
Dimensions of Leadership Defined by Single Situations	18
Dimensions of Leadership Across Different Situations	27
HYPOTHESES DERIVED	31
DIMENSIONS OF LEADERSHIP BEHAVIOR: FINAL CONSTRUCTS	33
Directions of Application	45
LITERATURE CITED	46
APPENDIX	47
DISTRIBUTION	61
DD Form 1473 (Document Control - R&D)	63

TABLES

	Page
Table 1. OEC performance variable loading highest on thirty situation factors	19
2. Categories of OEC performance factors	26
3. Loadings of marker and independent variables on eight basic factors of OEC officer performance	28
4. Factor I -- Technical/managerial leadership	34
5. Factor II -- Combat leadership	35
6. Factor III -- Team leadership vs personal resourcefulness	36
7. Factor IV -- Command of men vs technical specialization	37
8. Factor V -- Mission persistence	38
9. Factor VI -- Executive direction vs individual effectiveness (technical/managerial)	39
10. Factor VII -- Tactical skills	40
11. Factor VIII -- Technical skills	41

FIGURES

Figure 1. Composition of OEC sample by source of commission, grade, and basic branch	4
2. Performance "qualities" rated in descriptive report or rating supplement	7
3. General factors of officer performance evaluated in simulated combat situation	9

DIMENSIONS OF LEADERSHIP IN A SIMULATED COMBAT SITUATION

OBJECTIVES

Military leadership of the 70s faces new challenges. Accelerated progress in military technology, changes in the skills and motivation present in enlisted and officer manpower resources, dynamic concepts of the mission of the armed forces--all these have brought about increasing diversity and complexity in command responsibilities. Increasingly effective personnel management tools are required to enable the officer corps to keep pace with these changes.

A broadly conceived research program has been conducted by the Behavior and Systems Research Laboratory (BESRL) to provide the Army with scientific means of identifying officers who have aptitudes and other characteristics to meet the differing demands for success in different kinds of leadership positions. The program, longitudinal in design, spanned the 60s in order to deal with the performance of the same officers at successive career stages. Results are being applied to meet four major research objectives formulated to improve effectiveness of the officer personnel system:

1. To provide military personnel management with scientific measurement procedures for identification of young men with high potential for military leadership.
2. To develop means of identifying cadets or young officers with potential for different military leadership careers, particularly in combat command as contrasted with technical/managerial direction.
3. To devise and validate methods for evaluating officer performance in first-tour assignments and also for estimating potential for performance in higher and more demanding assignments.
4. To develop techniques for assessing motivation toward a military leadership career, and to enhance career motivation through appropriate early assignments.

PLANNING CONSIDERATIONS

While ratings provide a substantial segment of the performance data built into the present research design, no ratings of officer performance on the job could supply the kinds of data needed for the differential analysis essential to the present question--whether instruments could be developed to provide useful prediction of how well an officer would perform in different jobs. Ratings could yield measures of performance only for the assignment in which the rated officer was serving. What was needed were measures of each man's performance in each of at least three different assignments.

Research considerations indicated that situational performance tests would be the most objective, reliable, and valid means of assessing the differential leadership of officers in the follow-up phase of the research. Situational performance tests provided requirements for performance on tasks which are, in effect, samples of the job. This type of performance criterion (as contrasted to retrospective evaluations and work products) reproduces critical elements of the job, usually in miniature. Since field observation and logical analysis of officer MOS schedules had led to the hypothesis that psychological demands differ among administrative, technical, and combat jobs, situational tests corresponding to these three types of officer assignment were decided upon as the principal technique for follow-up evaluation. In addition to the differential aspect of performance, the situational criterion offered the possibility of simulating some of the stresses of wartime operations.

PHASES OF THE RESEARCH PROGRAM

Following exploratory investigation and planning, the research program was conducted in several phases. Officers were followed from entry on active duty through first tour assignment and service in an active combat (Vietnam) or combat-ready (Europe, Korea, Alaska) theater or in CONUS some five years after entry.

1. Psychological measures designed to be differentially predictive of performance in technical, administrative, and combat assignments were developed. The result was the Differential Officer Battery (DOB), which included measures of information ranging from military tactics and technology to physical sciences, social sciences, arts, sports, and other activities. The DOB also included biographical reports and self-description materials dealing with background, interests, and attitudes. One test presented military situations in motion-picture form in which leadership decisions were the required response. Three physical performance measures were included: grenade-type throw, endurance crawl, and two-hand coordination. The DOB was administered to large samples of lieutenants on entry on active duty.

2. Officers in the samples were rated on their performance in their first-tour duty assignment by both superiors and associates, who also gave their estimates of the officer's potential for different and more demanding assignments.

3. A sample of officers who had taken the DOB participated as examinees in a set of situational criterion tasks designed to reflect activities performed by officers in technical, administrative, and combat jobs. Records and evaluations of the behavior exhibited by each officer in the test situation were obtained. The Officer Evaluation Center (OEC) was established at Fort McClellan as headquarters for an integrated test exercise administered in a simulated MAAG setting. Over two thousand items of data resulting from the exercise have been analyzed and reduced to reliable and fairly homogeneous scales. The present publication deals in detail with the results of the analysis in terms of well-defined dimensions of leadership behavior.

4. Officers in the sample on duty in Vietnam and in other locations outside CONUS in 1967-1968 were rated on performance.

5. Correlation between the several predictor and criterion measures identified predictor measures which the Army can adapt for operational use to assess the leadership potential of newly commissioned officers.

THE OFFICER EVALUATION CENTER SIMULATION EXERCISE

OEC Objectives

Within the major goals of providing scientific instruments and techniques to evaluate officer leadership potential and point to avenues for the effective development of that potential, the conduct and analysis of the OEC situational tests were designed to serve the following purposes:

The first objective, from a research point of view, was to define the major dimensions of behavior characteristic of effective military leadership. A concomitant objective was to determine whether these behaviors are essentially the same in situations typical of the major domains of military leadership (the "generalist" concept in officer career development) or whether effective leadership in the different domains was characterized by types of behavior particular to each domain.

The OEC also served as testing ground for simulation in a field setting as a means of evaluating the potential of an officer for different and more demanding jobs. What techniques of simulation, observation, and measurement can be usefully applied to measure such potential? What actions or behaviors can be accurately observed and what leadership characteristics can be inferred by observers? What new information on performance as a leader can each technique or instrument supply? Answers to these and other questions were sought in the analysis reported here.

The OEC Officer Sample

The sample from which the OEC subsample was selected consisted of approximately 4000 lieutenants entering on active duty between late 1961 and early 1964. The 4000 officers included graduates of the class of 1962 of the U. S. Military Academy and their contemporary ROTC graduates, both Regular Army and Reserve. About 900 of the 4000 attended the OEC after one to two years of active duty. Results in the present analysis are based generally on the last 735 of the 900 officers, since some changes in the administration of the tasks of the exercise and some additions to the instruments for recording and evaluating performance were made after the first thirty-odd contingents of six officers each had gone through the Center. Composition of the OEC sample by source of commission, component, grade, and branch is shown in Figure 1.

Source of Commission Grade	USMA		ROTC-RA		ROTC-Res		TOTAL
	1LT	2LT	1LT	2LT	1LT	2LT	
Branch							
Infantry	25	1	30	2	13	28	99
Armor	5	0	7	2	35	41	90
Artillery	13	1	15	0	31	26	86
Air Defense	22	0	5	1	0	25	53
Engineer	8	0	4	0	30	28	70
Ordnance	0	0	0	0	111	13	124
Quartermaster	0	0	1	0	48	22	71
Signal	0	0	0	0	42	26	68
Adjutant General	0	0	0	0	30	4	34
Finance	0	0	1	0	31	8	40
TOTAL	73	2	63	5	371	221	735

Figure 1. Composition of OEC sample by source of commission, grade, and basic branch (N = 735).

OEC Simulated Tasks

At the OEC, officers went through an intensive three-day exercise in a simulated combat environment. In this exercise, each officer faced a wide range of leadership problems--five administrative, five technical, and five combat. To present these requirements in the setting of a full combat situation involving plausible contingencies, emergency stresses, and an unfamiliar but realistic context, all the tasks were integrated into a sequence in which the officer was assigned to a Military Assistance Advisory Group (MAAG) in a friendly foreign country. Each officer went through the exercise as an individual, though officers arrived at the Center in groups of six. A highly trained staff of 17 officers and 41 enlisted men played the roles of United States, allied, and enemy personnel, at the same time making precise notes and checks of many selected aspects of the officers' behavior and actions.

The first day's assignments included two technical and three administrative tasks in staggered sequence, under time pressure but not emergency conditions. The country in which the MAAG was located was still at peace. In addition to time pressure, stresses were introduced in the form of interaction with more senior allied officers who were programmed to be difficult to deal with and occasionally antagonistic toward the young officer. Interaction with the MAAG commander and his officers and men was also part of the action. The day began with a three-hour inspection of two jeeps and a 3/4-ton truck. The requirement was to locate and diagnose defects and malfunctions and correct them or indicate to the enlisted assistants assigned to the officer how the corrections should be made. Next, the officer had three hours to correct the poorly kept supply records of a host nation unit and to brief the unit's antagonistic and resistant commander about the U. S. Army's system of maintaining supply records. The next task was to identify and correct deficiencies in a display network of wire communications equipment. Then, after supper, the officer had five hours of administrative work, first evaluating and revising the organization and work flow of a host nation personnel office and then studying production records and work procedures of an ordnance repair platoon, with the requirement to rearrange and reschedule work assignments of the men so as to improve production.

After four hours' sleep, the officer was awakened at 2:30 and told to report immediately to MAAG headquarters. The host nation had been invaded with nuclear strikes. His task for the next eight hours was to direct, by radio, four jeep-mounted teams in a reconnaissance of war damage and radiation levels, continually receiving and recording information, transmitting orders to meet emergencies, and making a report of results of the survey to his superior. Of all the technical and administrative tasks, this one was carried out under the most sustained pressure and fatigue.

Following this ordeal, the officer spent 1½ hours examining and evaluating an enemy weapon captured by one of his survey teams. The next task was to select new depot sites to replace those destroyed by enemy action (three hours). This site selection task involved an emergency change of orders and interaction with a host nation officer explaining and justifying the change. There followed the task of working out a new highway traffic plan for delivering supplies to forward areas. An additional task of the second day was to evaluate sites for construction of an emergency airfield.

The officer retired after almost 18 hours of work, only to be awakened after four hours to face a deteriorating situation. The MAAG headquarters had to be evacuated. The officer was issued field equipment and ordered to make a two-hour forced march to the Field Command Post where the entire MAAG organization entered into simulated guerrilla action. In the shelter of a bunker, the officer spent three hours composing a march order to link up two friendly guerrilla units. After a dawn briefing in which hostile guerrillas were reported in the area, the officer had four more missions. On the first of these, setting up a roadblock, he encountered an enemy sniper. He then had one hour to plan the deployment of a platoon in defense of a helicopter landing zone. A difficult and incompetent NCO of the platoon added to the stress of the deployment task. The third mission was to direct artillery action from an observation post. The final task was to conduct a three-hour jeep-mounted reconnaissance patrol. A series of emergencies on this mission culminated in the capture of the officer and his interrogation by the enemy. He was finally released, at which point he learned that a cease fire was in effect and that he was to report to his commander.

A post-exercise interview with the BESRL research scientist at the OEC and completion of a questionnaire by the officer followed. The officer was given an explanation of the research program and instructed to keep the content of the exercise confidential.

Observations and Evaluations Recorded

During the three-day exercise, the OEC staff recorded more than 2000 observations and judgments on each officer participant. For each of the 15 tasks, checklists of specific behaviors had been constructed. These checklists generally referred to overt actions of the officer. In addition, there were written products prepared by the officer--organization charts, military orders, requisitions, plans, etc. These were evaluated either by use of predetermined standards of adequacy or by some quantitative summation--for example, by the quantity of supplies that would have been delivered had the highway plan devised by the officer been put into effect. Finally, scale ratings and other qualitative evaluations were recorded. For some tasks there was a Descriptive Report on which the observer rated the officer on nine specified qualities (Figure 2) as displayed in performance of the task, with occasional added qualities considered to have pertinence in the task. For other tasks, instead of this Report, a Rating Supplement was used in which the rater indicated which of 12 qualities (Figure 2 again) had entered into his overall evaluation in either a positive or negative direction.

(Selection of at Least 3)

"9 Qualities" (Descriptive Report)

1. Bearing and assurance
2. Effective expression
3. Keeping cool and level-headed
4. Endurance and stamina
5. Familiarity with equipment used
6. Following instructions and orders
7. Extent to which mission was accomplished
8. Effective command and control of his men
9. General impression

"12 Qualities" (Rating Supplement)

1. Understanding the mission
2. Bearing and assurance
3. Attitude (cooperation)
4. Motivation (effort)
5. Endurance and stamina
6. General ability
7. Effective command
8. Consideration for men
9. Effective expression
10. Extent mission completed
11. Keeping cool
12. General impression

Figure 2. Performance "qualities" rated in descriptive report or rating supplement

FINDINGS

The series of factor analyses by which the dimensions of leadership performance, both generalized across tasks and specific to type of command, were derived from these data are detailed in the Technical Supplement. End results and interpretation are presented here.

In the final analysis, behaviors which proved to be general across several different situations belonged to two major domains--combat leadership on the one hand, technical/managerial leadership on the other. For both kinds of leader, patterns of action and behavior show both cognitive content (represented in the combat leader by his knowledge of tactical skills, in the technical/managerial leader by technical skills) and personality-motivational content. In the combat domain, forcefulness in the command of men, personal resourcefulness, and persistence in accomplishment of the mission proved to be particular elements of overall combat leadership. Technical/managerial leadership was exhibited in an executive direction capability, plus--as in combat leadership--persistence in mission accomplishment.

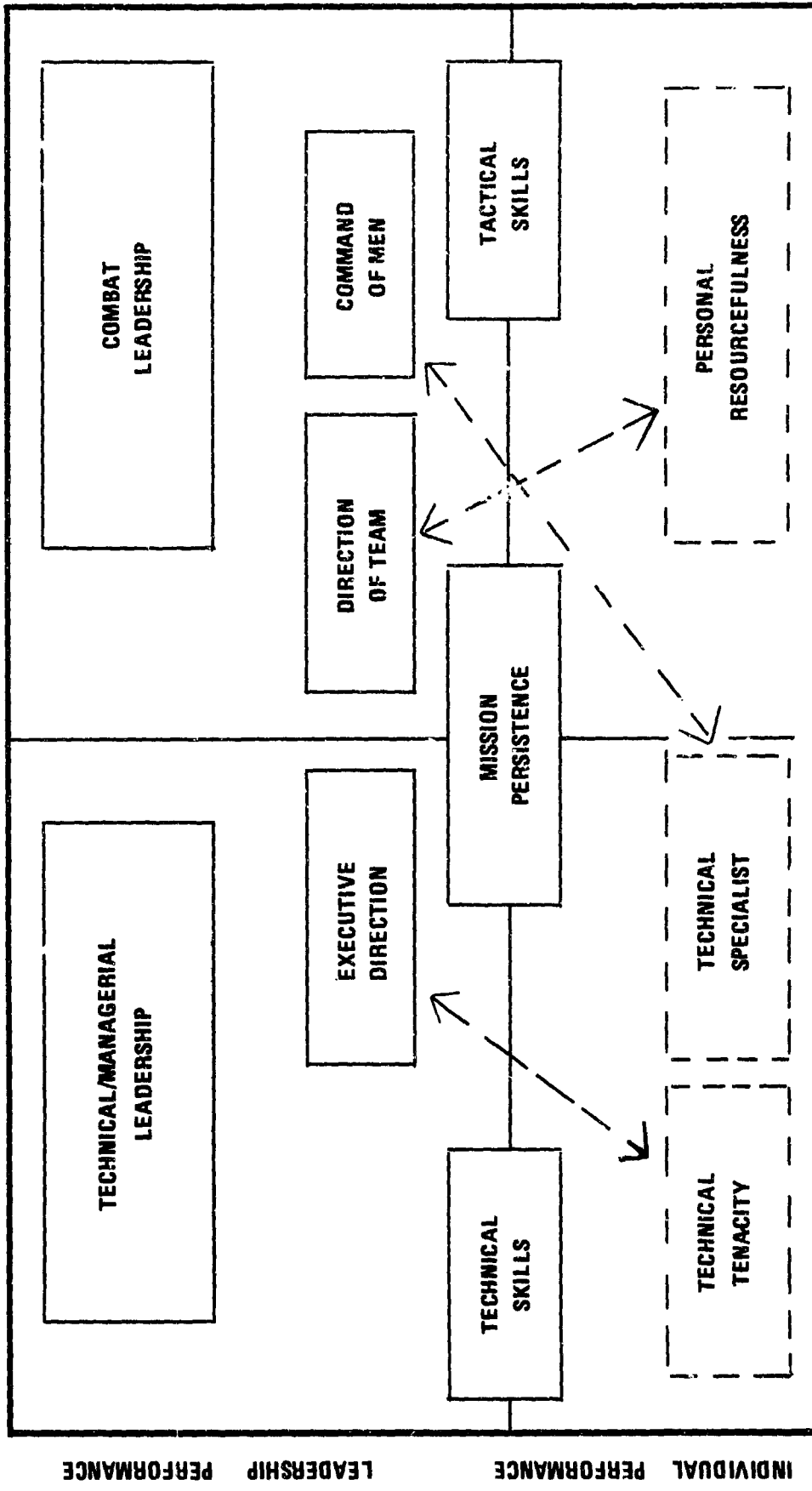
The general factor structure of officer behavior in the simulated exercise is shown in Figure 3. Together with the 28 factors each deriving from a single task, these factors describe a comprehensive set of behaviors observed and reliably assessed in the variety of officer leadership requirements represented in the OEC exercise.

MAJOR FACTORS IN OFFICER LEADERSHIP

Eight general factors were clearly delineated. Their structure reveals differentiation of the combat and technical/managerial domains of officer leadership.

Factor I--Technical/Managerial Leadership. The first factor is definitely one of technical/managerial leadership, emphasizing effective problem solving in support of combat operations. Behavior is characterized by well-organized planning, reporting and follow-through under varying degrees of stress. There also appears a generally competent manner which transcends the technical/managerial versus combat differentiation.

Factor II--Combat Leadership. The second factor clearly reflects effective conduct of combat missions with the utilization of men and material appropriate to a given situation. Key behaviors are decisive response to emergencies, clear direction, and active example. The central combat effectiveness aspect of this factor is associated with forcefulness and assurance of manner coupled with consideration for men. The successful combat officer also relies on his knowledge of tactical matters and his skill in performing specific activities.



TECHNICAL/MANAGERIAL PERFORMANCE COMBAT PERFORMANCE

Figure 3. General factors of officer performance evaluated in simulated combat situation

Factor III--Team Leadership as opposed to Personal Resourcefulness. The third factor has a two-fold aspect. Teamwork-oriented behavior implies accepting personal responsibility for carrying out command missions, training and utilizing men, providing on-site security, understanding the mission, keeping cool, and effective reporting to superiors. The other end of this bipolar factor is marked by self-reliance; the individual displays courage, endurance, and personal commitment--willingness to drive on alone in difficult and even dangerous situations. In other words, this factor represents a continuum from reliance on oneself to reliance on the team to accomplish the objective. At best, reliance on oneself is leadership by example only; reliance on the team involves effective deployment and utilization of men.

Factor IV--Command of Men. This aspect of combat leadership suggests a commander effectively employing men as contrasted to one who functions as a technical specialist, as in individual staff work. Components of the command aspect are direct command and control in a field operation, timely decision making, face-to-face leadership of men in combat and motivating men to accomplish the mission. Technical jobs in several different areas--automotive inspection, assessing a captured weapon, computing radiation levels, selecting depot sites--are components of the technical specialist end of the factor.

Factor V--Mission Persistence. Behaviors represented in this factor are dogged persistence in carrying out orders, willingness to devote effort and to risk personal safety to the goal. The officer accepts his role as an instrument in pursuing mission goals, and this attitude runs through diverse behaviors in different situations--establishing a road-block, keeping combat reconnaissance teams going, resisting enemy interrogation. This leadership style is also characterized by bearing and assurance and consideration of men, including discipline as required to protect the health and safety of the unit. Effective assignment of men in an automotive inspection task also underscored commitment to mission goals through careful preparation for action.

This factor did not belong predominantly in either the technical/managerial domain or the combat domain but generalized across tasks in both domains.

Factor VI--Executive Direction. On the one hand, this factor gives a picture of the military leader operating in a variety of situations--combat security mission, selection of depot sites, assessing damage from enemy action, and the like--all tasks requiring decisive and timely action as well as organizing ability, endurance, and maintenance of technical competence under stress. Where face-to-face contact is of prime importance, effectiveness seems to depend on perseverance and oral communication in a generally favorable impression on subordinates, peers, and superiors. At the other end of this continuum is individual technical tenacity in which the officer applies decisiveness, organizing ability, and special knowledge in solving technical/managerial problems on his own rather than through the organizational structure.

On the basis of previous research, it had been hypothesized--and the hypothesis was borne out--that the performance of the combat leader would be influenced in large part by the noncognitive aspects of his behavior--forcefulness, risk-taking, decisiveness, and the like. What has come to the fore in the present analysis is the extent of cognitive ability also entering into officer performance in both combat and non-combat situations. The combat officer relies on his knowledge of tactical matters and his skill in performing specific activities in carrying out his mission. How he applies his knowledge and skills is influenced by his general mode of action, his system of values, his attitude toward subordinates and peers and toward mission objectives--all this as brought to bear in a particular environment. To the officer in a technical/managerial activity, his technical skills--the cognitive element--are basic to performance. Beyond these abilities, his success in his assignment is a function of his skill and perseverance in directing the work of his command, his poise under emergency demands, and--in common with the combat leader--his persistence in completing his mission.

Thus, the seventh and eighth factors emerging from the analysis both demonstrate the differential requirements of combat and technical/managerial duties and at the same time point to the common requirement for cognitive abilities--different in knowledge content though these may be.

Factor VII--Tactical Staff Skills. This factor in the effectiveness of the combat leader depends on the application of specialized knowledge and skills in combat operations--deployment of troops, using or setting up networks of facilities, combat zone communications, and how to accomplish these and other combat operations effectively.

Factor VIII--Technical Staff Skills. A major aspect of technical/managerial performance involves use of specific knowledge and skills in logistics and technical services in support of combat activities. This factor is characterized by practical application of knowledge of material in a setting requiring effective staff relations.

IMPACT OF OEC FINDINGS ON OFFICER CAREER DEVELOPMENT PROGRAM

BESRL's longitudinal research on officer leadership has provided valuable insights into the differential aspects of command responsibility in combat and technical/managerial assignments. Differences in styles of leadership and use made of skills and capabilities have been defined through analysis of officer performance in situational context simulating combat and managerial problems.

Analysis of the OEC exercise data indicates that the behaviors observed and evaluated can be accounted for by two major dimensions: combat leadership and technical/managerial leadership. The total simulation of leadership activities in a combat environment resulted in clear differentiation of these two domains.

While the analysis has pointed to leadership behavior which is differentially important, there has also emerged striking evidence of behavior common to successful leaders in varied domains. Officers in both combat and noncombat areas rely heavily on specialized knowledge and skills, tactical or technical as the case may be. Both have strong drive to accomplish their mission. The combat leader is successful primarily by virtue of his forcefulness in command of men and his direction of his team. The technical/managerial leader relies more on his executive ability, his ability to organize, to plan, to allocate resources, manpower, and responsibility.

The research has widespread significance both for the identification and development of leadership potential of junior officers and for the continuing development and evaluation of that potential throughout the officer's career. The varied methods used in the evaluation of officers--key element in the research program--offer a fruitful approach to the development of a comprehensive research-based system of officer career management in which individual performance is considered in relation to increasing responsibility at higher grades, in different job areas, and under long-term commitment to the Army.

The present analysis has shown that behavioral characteristics such as combat aptitude can be reliably assessed in specific simulated situations and the assessments related to major behavioral factor domains across situations. Products from the long-term research and experience with the research methodology employed have immediate applicability to Army officer personnel management. The resulting personnel management tools, along with insights gained into the differing--and also the generalized--requirements of officer jobs will permit military management to assign officers so as to make better use of their capabilities and by the same token to avoid misuse or waste of officer talent.

Psychological tests adapted from the Differential Officer Battery can be used in USMA, ROTC, and OCS cadet selection and commissioning, including branch choice. OEC type techniques can be used in performance evaluations needed for career decisions in cadet training, branch basic school, and specific assignment or promotion points in active duty tours. Measures of the DOB type and OEC evaluation procedures can be applied in summer camp cadet programs and OCS leadership training exercises, contributing substantially to cadet selection, selection for advanced ROTC, identification of distinguished military graduates for direct commissioning, and branch choice.

For early leadership development and career orientation, the OEC-type evaluation in a simulated combat situation can contribute to such decisions as change from Reserve to Regular Army, early branch change, direction to special training or educational programs, and to evaluation of potential for command and staff functions at field grade level. A variety of action demands in a novel setting could be incorporated in ongoing officer training and experience programs. OEC type simulation would require more highly concentrated activities and problems, with intensification of stress, a greater representation of tasks and decision making to afford differential measurement, as well as provision for

obtaining a large number of records of actions and behavior evaluations under standardized conditions. Reliable measures based on such data could be related to broad domains of behavior identified in the officer prediction research and therefore generalized to future performance to a greater extent, by indication, than can scores on current training tests. In short, the integrated simulation and evaluation techniques demonstrated in the OEC appear to offer a differentiated combination of factors in military leadership which could contribute uniquely to the assessment of leadership potential, particularly in junior officers.

DIMENSIONS OF LEADERSHIP IN A SIMULATED COMBAT SITUATION

TECHNICAL SUPPLEMENT

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DETAILS OF ANALYSIS AND RESULTS

ANALYSIS OF OEC EXERCISE DATA

Reduction of Data

The number of variables recorded from observations and evaluations of the officer's performance exceeded 2000. The first step in analysis was to organize the variables into meaningful and reliable scales. This was done separately for each task, primarily by using factor analysis of the intercorrelations among the variables to derive relatively homogeneous scales. Single variables on which 90% or more of the officers performed alike were discarded. Other variables were either included in scales for which they had appreciable factor loadings, or, if they did not show any such loadings, were assembled in "residual content" scales based on overt content. The same separate analyses were used to determine total scores for each task. These total scores and total scores for given instruments, e.g. a checklist total, were added to the factorial and residual content scales. The 342 scores thus derived are listed in the Appendix.

Factor Analyses

Using the 735 cases who went through the OEC exercise after it was completely standardized, tetrachoric correlations were obtained for the matrix of 342 scores. Factor analytic procedures were now again applied to these variables, in the following sequence:

1. The matrix was reduced to 329 variables by eliminating scales which could not be dichotomized at a less extreme point than 90-10% division. Total scores and other variables which were linear functions of less complex ones were also deleted, leaving a matrix of 256 scales for intercorrelation (tetrachoric), factor analysis by principal axes method (estimated communalities in the diagonals), and rotation to simple structure by the varimax procedure.

2. A set of 30 factors were identified. All but two of these, however, were virtually specific to a single task. In order to discover what factors could be found across different tasks, a single variable was chosen as a "marker" for each factor. The highest-loaded variable was chosen unless--in the case of those tasks which determined more than one factor--it correlated over .25 with another variable from the same task being used as marker for an earlier factor. To the 28 markers¹ 11 more scales were added which had not loaded substantially on any factor. The 39 variables were then factored and rotated, and a set of 8 factors were identified.

¹ No markers meeting the two criteria could be found for two factors.

3. Tentative interpretations were made of the 8 cross-situational factors. To test and verify these conceptualizations, the 8 factors were extended to the 290 variables not included in the 39-variable factor analysis. The resulting factor matrix, 8 x 290, clearly delineated the major behavioral factors entering into several different situations. Together with the situation-unique factors originally derived, they provided a comprehensive set of behaviors observed and reliably assessed in the whole OEC exercise of officer leadership, in a variety of functions in a simulated combat situation.

RESULTS

Dimensions of Leadership Defined by Single Situations

Separate analyses conducted within each task-situation are reported elsewhere (Helme, W. H., 1970, 1, 2, 3; Sait, E. M., 1970, 1971; Smith, K. H., (1, 2). As noted above, these analyses yielded a total of 342 variables: factored scales, content scales, instrument total scores, subscores, and separate evaluations, as well as task total scores.

The 256 variables selected for factor analysis (Appendix) yielded a set of 43 orthogonal factors--the 44th had a negative root. These 43 accounted for 63% of the total variance. When results of rotation of sets of factors from the first two to the first 37 were compared, however, the rotated set of the first 30 factors was selected as giving the most meaningful differentiation. These 30 factors accounted for 56% of the total variance and 88% of the common variance defined in the first 43 factors.

Table 1 shows the highest-loading variables for each factor. As mentioned earlier, 28 of the 30 factors are entirely or very largely defined by variables from a single situational task, a result that led to further analysis. Even though these factors are orthogonal, there are interesting parallels among them. They can be judgmentally characterized by content into six categories as shown in Table 2.

The four Combat Mission Effectiveness factors are all defined by combat aptitude, decisiveness, motivation, bearing and assurance, mission completion and related variables. The ten Technical/Administrative Mission Effectiveness factors are characterized by overall effectiveness, motivation, mission accomplishment, following instructions, and variables of technical-managerial expertise. March Order, although a combat task, appears to belong more to the technical group in this regard. Command and Interaction factors are characterized by command, utilization, control and care of one's men, or by interaction with an allied officer. Communication and Staff factors involve variables of instructing, reporting and drafting of plans and procedures. Personal Resourcefulness factors are defined by fortitude in combat emergencies: endurance and stamina in the field and maintaining security under enemy interrogation.

Specialist factors involve recording and computing of radiation levels under time and endurance pressures. It is also worth noting that the two factors which extend across different situations--IX and XVIII--are bipolar. Factor IX belongs in the Command and Interaction category on the positive end, but in Personal Resourcefulness on the negative; Factor XVIII belongs clearly in Personal Resourcefulness on the positive end, but in Communication and Staff on the negative.

Table 1
OEC PERFORMANCE VARIABLES LOADING HIGHEST
ON THIRTY SITUATIONAL FACTORS

Code	Performance Variable	Loading
<u>Factor I: Security Mission</u>		
KCAR	Rated overall combat aptitude	.91
KTTC	Effectiveness of total mission behavior	.91
KDHR	Rated decisive without haste	.87
KBAR	Rated bearing and assurance	.86
KGAF	General ability	.84
KMCF	Extent mission completed	.82
KEDP	Effectiveness of defense plan (CL)	.77
KCSR	Rated considerate within mission requirements	.76
KUMF	Understanding mission	.75
KBAF	Bearing and assurance	.75
KFHP	Firm handling of personnel	.72
<u>Factor II: Communications Exhibit</u>		
FMAF	Extent mission accomplished	.88
FURR	Rated use of reference manuals	.82
FCCD	Handling circuit defects	.79
FEQF	Familiarity with equipment	.78
FMOR	Rated motivation (effort)	.78
FAPR	Rated trouble-shooting approach	.77
FFIF	Following instructions	.75
FEQD	Handling equipment defects	.72
<u>Factor III: Roadblock</u>		
LCAR	Rated overall combat aptitude	.86
LBAR	Rated bearing and assurance	.84
LMOR	Rated motivation (effort)	.77
LDHR	Rated decisive without haste	.76
LOBR	Rated organization of mission briefing	.73
LFBR	Rated forcefulness of mission briefing	.71
LMOF	Motivation (effort)	.69
LDBR	Rated amount of detail in mission briefing	.66
LUMF	Understanding mission	.66

Table 1 continued

Code	Performance Variable	Loading
<u>Factor IV: Reconnaissance Patrol</u>		
MCAR	Rated overall combat aptitude	.89
MMOR	Rated motivation (effort)	.80
MDHR	Rated decisive without haste	.79
MMCF	Extent mission completed	.76
MCMF	Effective command	.71
MBAR	Rated bearing and assurance	.68
MMOF	Motivation (effort)	.67
MGAF	General ability	.66
<u>Factor V: Production Analysis</u>		
BRLR	Rated relevance of written report	.80
BADR	Rated overall administrative effectiveness	.73
BMCR	Rated language of written report	.63
BPUC	Written report: statement of purpose (CL)	.57
<u>Factor VI: Road Damage and Radiation Survey</u>		
JOER	Rated overall effectiveness in mission	.86
JMOR	Rated motivation (effort)	.80
JBAR	Rated bearing and assurance	.74
JMOF	Motivation (effort)	.72
JORR	Rated organization of mission briefing	.70
JATF	Attitude (cooperation)	.69
JDHR	Rated decisive without haste	.68
JLDR	Rated amount of detail in mission briefing	.66
JGAF	General ability	.66
JMCF	Extent mission completed	.66
<u>Factor VII: Road Damage and Radiation Survey</u>		
JFRY	Computing past radiation levels (II)	.82
JFEH	Computing past radiation levels (IV)	.80
JFRX	Computing past radiation levels (I)	.77
JFRZ	Computing past radiation levels (III)	.77
JFLH	Computing past radiation levels (V)	.74

Table 1 continued

Code	Performance Variable	Loading	
<u>Factor VIII: Automotive Inspection</u>			
GMAF	Extent mission accomplished	.75	
GURR	Rated use of reference manuals	.75	
GMOR	Rated motivation (effort)	.71	
GTRP	Defects appropriately treated	.71	
GTDG	Defects accurately diagnosed	.68	
GBAF	Bearing and assurance	.67	
GAPR	Rated trouble-shooting approach	.66	
GEQF	Familiarity with equipment	.66	
<u>Factor IX (Cross-Task): Direction of Men vs. Self-Reliance</u>			
	<u>Task</u>	<u>Variable</u>	
LSUT	Roadblock	Training and supervision of subordinates (CL)	.55
JKCF	Rd Dmg & Radn	Keeping cool	.54
LOSS	Roadblock	Controlling on-site security (CL)	.47
HMOR	Weap Assess	Rated motivation (effort)	.40
OESF	March Order	Endurance and stamina	-.63
<u>Factor X: Observation Post</u>			
NCAR	Rated overall combat aptitude	.75	
NBAF	Bearing and assurance	.73	
NMOR	Rated motivation (effort)	.68	
NMCF	Extent mission completed	.62	
NTTC	Effective mission behaviors (CL)	.60	
NECF	Effective command	.53	
NADS	Complete and accurate reporting target locations	.50	
<u>Factor XI: Site Selection</u>			
DMOR	Rated motivation (effort)	.73	
DBAF	Bearing and assurance	.68	
DBAR	Rated bearing and assurance	.65	
DMAF	Extent mission accomplished	.58	
DEEF	Effective expression	.58	
DUMR	Rated understanding mission	.57	
EKCF	Keeping cool	.52	

Table 1 continued

Code	Performance Variable	Loading
<u>Factor XII: Improper Supply Records</u>		
CSBR	Rated bearing and poise in stress briefing	.75
CSOR	Rated organization of stress briefing	.71
CSMR	Rated motivation in stress briefing	.70
CSFR	Rated fluency in stress briefing	.68
CSAR	Rated appropriate aggressiveness in stress briefing	.58
CSPR	Rated adherence to principles in stress briefing	.55
<u>Factor XIII: March Order</u>		
OMCF	Extent mission completed	.81
OMOR	Rated motivation (effort)	.77
OFIF	Following instructions	.68
OMOB	March order: basic unit (CL)	.58
OPLM	Planning later march units (CL)	.44
<u>Factor XIV: Highway Traffic Plan</u>		
EMAF	Extent mission accomplished	.76
FFIF	Following instructions	.70
ETTT	Tonnage delivered	.63
EMOR	Rated motivation (effort)	.61
EBAF	Bearing and assurance	.47
<u>Factor XV: Weapons Assessment</u>		
HMID	Supplementary reporting of identification clues	.71
HNUL	Basic reporting of identification clues	.68
HMED	Reporting mech details & other intelligence	.63
HMOR	Rated motivation (effort)	.46
<u>Factor XVI: Reconnaissance Patrol</u>		
MMAS	Maintaining security in PW interrogation	.78
MSCR	Rated self-control in PW interrogation	.71
MEAP	Avoiding pitfalls in PW interrogation	.62
<u>Factor XVII: Automotive Inspection</u>		
GCMF	Effective command	.81
GUPR	Rated utilization of personnel	.61
GBAF	Bearing and assurance	.41

Table 1 continued

Code	Performance Variable		Loading
<u>Factor XVIII: (Cross-Task) Combat vs. Technical Persistence</u>			
	<u>Task</u>	<u>Variable</u>	
KESF	Secur Mission	Endurance and stamina	.64
JJOG	RD Dmg & Radn	Handling tactical emergency by radio	.42
JESF	Rd Dmg & Radn	Endurance and stamina	.35
IUMR	Airfield Layout	Rated understanding mission	-.48
ERST	Hwy Traffic	Concentration under stress	-.51
<u>Factor XIX: Improper Supply Records</u>			
CSCR	Rated tact and control in stress briefing		.83
CSXR	Rated appropriate flexibility in stress briefing		.80
CSAR	Rated appropriate aggressiveness in stress briefing		.43
<u>Factor XX: Road Damage and Radiation Survey</u>			
JCSR	Rated consideration within mission requirements		.49
JCOF	Consideration for men		.45
DKCF	(Site Select Task) Keeping cool		.43
JHAG	Terminating mission to save team		-.44
JTDC	Briefing team on road damage mission		-.46
<u>Factor XXI: March Order</u>			
ONEP	Noting enemy position (CL)		.63
OPES	Providing equipment and supplies (CL)		.61
OMCS	Maintaining contact and security (CL)		.50
OOME	Outlining mission and execution (CL)		.36
<u>Factor XXII: Production Analysis</u>			
BAVR	Rated conciseness of written report		.79
BSAR	Rated sentence adequacy in written report		-.78

Table 1 continued

Code	Performance Variable	Loading
<u>Factor XXIII: Airfield Layout</u>		
IUTT	Considering terrain features in site eval (CL)	.60
IRRT	Thoroughness of runway report (CL)	.59
ICOA	Accuracy of runway length computation (CL)	.56
INSE	Number of sites evaluated	.52
IOPH	Considering opnl hazards in site eval (CL)	.39
<u>Factor XXIV: Reconnaissance Patrol</u>		
MDER	Rated amount of detail in mission briefing	.66
MOER	Rated organization of mission briefing	.61
MFIB	Initial briefing on radio frequencies for mission (CL)	.56
MFER	Rated forcefulness of mission briefing	.52
MEEF	Effective expression	.42
<u>Factor XXV: Roadblock</u>		
LCOF	Consideration for men	.46
LGAF	General ability	.42
LBAF	Bearing and assurance	.39
LEEF	Effective expression	.39
LCTA	Tactical control (CL)	.37
MCCE	(Recon Patrol) Effectiveness in face of enemy (CL)	.37
<u>Factor XXVI: Reconnaissance Patrol</u>		
MCOF	Consideration for men	.54
MDWM	Disposition of wounded team members (CL)	.54
MCSR	Rated consideration within mission rqmts	.47
<u>Factor XXVII: Reconnaissance Patrol</u>		
MDCR	Rated amount of detail in debrief CO after IPW	.55
MEND	Debriefing CO on main aspects of IPW exp (CL)	.49
MOCR	Rated organization of debriefing CO after IPW	.47
MFCR	Rated forcefulness of debriefing CO after IPW	.47
MKCF	Keeping cool	.36

Table 1 continued

Code	Performance Variable	Loading
<u>Factor XXVIII: Road Damage and Radiation Survey</u>		
JTRX	Recording reported radiation levels (I)	.54
JTRY	Recording reported radiation levels (II)	.39
<u>Factor XXIX: Site Selection</u>		
DFIF	Following instructions	.48
DMAF	Extent mission accomplished	.42
DCOM	Thoroughness in assigned task	.37
JTEH	(Rd Dmg & Radn) Recording reptd radn levels (IV)	-.35
<u>Factor XXX: Office Management</u>		
ASQO	Sequencing work flow	.52
ARTP	Retaining effective work flow steps	.46

Table 2

CATEGORIES OF OEC PERFORMANCE FACTORS

Combat Mission Effectiveness

- I. Security Mission
- III. Roadblock
- IV. Reconnaissance Patrol
- X. Observation Post

Technical-Administrative Mission Effectiveness

- II. Communications Exhibit
- V. Production Analysis
- VI. Road Damage and Radiation Survey
- VIII. Automotive Inspection
- XI. Site Selection
- XII. Improper Supply Records
- XIII. March Order
- XIV. Highway Traffic Plan
- XV. Weapons Assessment
- XXIII. Airfield Layout

Command and Interaction

- IX. Direction of Men (Roadblock, RD & Radn, Weap Assess)^a
- XVII. Utilization of Men (Auto Insp)
- XIX. Effective Interaction (Impr Sup Rec)
- XX. Response to Tactical Incidents (RD & Radn)
- XXV. Tactical Direction of Men (Roadblock)
- XXVI. Tactical Care of Men (Recon Patrol)

Communication and Staff

- XVIII. Persistence in Staff Mission (Highway Traf, Airfield Layout)^b
- XXI. Completeness of Tactical Directive (March Order)
- XXII. Effectiveness of Report (Prod Analysis)
- XXIV. Effectiveness of Instruction (Recon Patrol)
- XXVII. Effectiveness of Debriefing (Recon Patrol)
- XXIX. Completeness of Logistical Plan (Site Sel)
- XXX. Adequacy of Personnel Operations (Office Mgt)

Personal Resourcefulness

- IX. Endurance in Night March (March Order)^b
- XVI. Maintaining Security in IFW (Recon Patrol)
- XVIII. Persistence in Combat Mission (Secur Mission, RD & Radn)^a

Specialist

- VII. Computing Radiation Levels (RD & Radn)
- XXVIII. Recording Radiation Readings (RD & Radn)

^a Positive end of factor only

^b Negative end of factor only

Dimensions of Leadership Across Different Situations

The next step was designed to reveal what dimensions of leadership, if any, extended across different tasks. This extension was accomplished in two stages. First, marker variables were chosen for each of the 30 factors (2 factors failed to yield variables meeting the criteria of high loading and low correlation with other markers from the same situation). With 11 independent variables, these constituted a matrix of 39 variables for factor analysis. After the factor structure was determined, the selected factors were extended to all the original variables in the second stage of analysis. This procedure was necessary to permit the cross-situational factors to emerge. But it also offered the opportunity to formulate hypotheses as to the meaning of each factor from the 39-variable analysis, and to test these against the results of the factor extension-- a type of construct validation.

When the 39 x 39 matrix was analyzed, 20 factors were extracted. After comparing the factor sets, the rotation of the first 8 factors was chosen as yielding adequate factor definition. These 8 factors are shown in Table 3.

The first factor is clearly one of Technical/Managerial Leadership. Marker variables from the technical-administrative mission effectiveness factors of the 256-variable analysis predominate. Likewise, the second factor is clearly Combat Leadership, with the four markers from combat mission effectiveness leading the list. The third factor is bipolar and the lead variable is the marker from the Self-Reliance end of Factor IX in the 30-factor analysis. The other variables include a marker reflecting endurance on the longest task, Road Damage and Radiation Survey, and an independent variable concerned with conduct in the hands of the enemy. The opposite pole, however, was difficult to interpret, since it had but one appreciable loading, that of accomplishing the roadblock mission. The factor was termed Personal Resourcefulness, with the implication of a lone-wolf self-reliance contrasted to a teamwork-oriented leader.

The fourth factor, also bipolar, suggested a commander effectively employing his men--Command of Men contrasted to a technical specialist. The fifth factor appeared to combine technical and combat steadfastness in pursuing mission goals, whether they involved directing automotive repairs, establishing a roadblock, keeping combat survey teams going, or resisting enemy interrogation. Mission Persistence was the characterization chosen.

The sixth factor had as lead variable endurance on a combat task. The other variables were all concerned with technical and administrative tasks, all of which required, however, poise and executive command presence. The picture emerging was that of the military executive operating in a wide variety of situations. Executive Direction was the suggested interpretation.

The seventh and eighth factors showed rather clear consistency. The former emphasizes Tactical Staff Skills (G-3 operations). The latter comprises Technical Staff Skills (G-4 logistics and technical services).

Table 3

LOADINGS OF MARKER AND INDEPENDENT VARIABLES ON EIGHT BASIC FACTORS OF OEC OFFICER PERFORMANCE

Code	Specific Variable	OEC Task	Loading	Factor Marked	Type of Marker
<u>Factor I: Technical/Managerial Leadership</u>					
CTRS	Correction of detailed supply records	Supply Rec (A)	.61		Indep variable
OMCF	Extent mission completed	March Order (C)	.54	XIII	Mission Accomp
BPRA	Prodn achieved by work reasgt	Prod Analysis (A)	.48		Indep variable
AALM	Charting allocation of manpower	Office Mgt (A)	.48		Indep variable
BRLR	Relevance of written report	Prod Analysis (A)	.48	V	Mission Accomp
JOER	Overall effectiveness of mission	Rd Dmg & Radn (T)	.40	VI	Mission Accomp
EMAF	Extent mission accomplished	Hwy Traffic (A)	.34	XIV	Mission Accomp
JFEH	Computing past radn levels	Rd Dmg & Radn (T)	.31	VII	Specialist
AFND	Correcting misc opn deficiencies	Office Mgt (A)	.29		Indep variable
IUTT	Consid terrain features in site eval (CL)	Airfld Layout (T)	.29	XXIII	Mission Accomp
ASQO	Sequencing work flow	Office Mgt (A)	.28	XXX	Commo and Staff
IENG	Engr considerations in site eval (CL)	Airfld Layout (T)	.28		Indep variable
DBAF	Bearing and assurance	Site Select (A)	.27	XI	Mission Accomp
CSBR	Bearing and poise in stress briefing	Supply Rec (A)	.26	XII	Mission Accomp
<u>Factor II: Combat Leadership</u>					
NCAR	Overall combat aptitude	Obsn Post (C)	.62	X	Mission Accomp
KCAR	Overall combat aptitude	Secur Mission (C)	.55	I	Mission Accomp
LCAR	Overall combat aptitude	Roadblock (C)	.47	III	Mission Accomp
MCAR	Overall combat aptitude	Recon Patrol (C)	.47	IV	Mission Accomp
JOER	Overall effectiveness of mission	Rd Dmg & Radn (T)	.46	VI	Mission Accomp
GMAF	Extent mission accomplished	Auto Inspect (T)	.41	VIII	Mission Accomp
FMAF	Extent mission accomplished	Commo E-hibit (T)	.39	II	Mission Accomp
HMID	Suppl reporting identification clues	Weap Assess (T)	.31	XV	Mission Accomp
CSBR	Bearing and poise in stress briefing	Supply Rec (A)	.29	XII	Mission Accomp
DBAF	Bearing and assurance	Site Select (A)	.27	XI	Mission Accomp
EMAF	Extent mission accomplished	Hwy Traffic (A)	.25	XIV	Mission Accomp

Table 3 continued

Code	Specific Variable	OEC Task	Loading	Factor Marked	Type of Marker
<u>Factor III: Personal Resourcefulness</u>					
OESP	Endurance and stamina	March Order (C)	.64	IX	Pers resource
MPFE	Aggress conduct in hands of enemy (CL)	Recon Patrol (C)	.43		Indep variable
JTRX	Recording reported radiation levels	Rd Dmg & Radn (T)	.35	XXVIII	Specialist
BAVR	Conciseness of written report	Prod Analysis (A)	-.25	XXII	Commo and Staff
LCAR	Overall combat aptitude	Roadblock (C)	-.38	III	Mission Accomp
<u>Factor IV: Command of Men</u>					
GCMF	Effective command	Auto Inspect (T)	.47	XVII	Comd and Interaction
MIEB	Init brief on mission purpose (CL)	Recon Patrol (C)	.37	XXIV	Commo and Staff
MCAR	Overall combat aptitude	Recon Patrol (C)	.30	IV	Mission Accomp
GMAF	Extent mission accomplished	Auto Inspect (T)	-.25	VIII	Mission Accomp
HDCA	Thorough tech descript of cartridge	Weap Assess (T)	-.30		Indep variable
<u>Factor V: Mission Persistence</u>					
GTII	Completeness of vehicle identif info	Auto Inspect (T)	.40		Indep variable
MMAS	Maintain security in PW interrogation	Recon Patrol (C)	.38	XVI	Pers Resource
JHAG	Cont mission in face of enemy threat*	Rd Dmg & Radn (T)	.33	XX	Comd and Interaction
LCOP	Consideration for men	Roadblock (C)	.32	XXV	Comd and Interaction

*Factor loading and variable description have been reflected.

Table 3 continued

Code	Specific Variable	OEC Task	Loading	Factor Marked	Type of Marker
	<u>Factor VI: Executive Direction</u>				
KESP	Endurance and stamina	Secur Mission (C)	.53	XVII	Comd and Interaction
DBAF	Bearing and assurance	Site Select (A)	.49	XI	Mission Accomp
JOER	Overall effectiveness of mission	Rd Dmg & Radn (T)	.32	VI	Mission Accomp
CMC	Form and content of written memo	Supply Rec (A)	.27		Indep variable
	<u>Factor VII: Tactical Skills</u>				
OMCS	Maintaining contact and security (CI)	March Order (C)	.45	XXI	Commo and Staff
OMCF	Extent mission completed	March Order (C)	.41	XIII	Mission Accomp
IENG	Engr consideration in site eval (CL)	Airfld Layout (T)	.31		Indep variable
MCAR	Overall combat aptitude	Recon Patrol (C)	.26	IV	Mission Accomp
	<u>Factor VIII: Technical Skills</u>				
FMAF	Extent mission accomplished	Commo Exhibit (T)	.37	II	Mission Accomp
GDIA	Avg importance of defects detected	Auto Inspect (T)	.36		Indep variable
CSCR	Tact and control in stress briefing	Supply Rec (A)	.33	XIX	Comd and Interaction
CMAF	Extent mission accomplished	Auto Inspect (T)	.32	VIII	Mission Accomp
EMAF	Extent mission accomplished	Hwy Traffic (A)	.28	XIV	Mission Accomp

The foregoing interpretations constituted broad hypotheses which could be tested to a certain extent by the process of extending the eight factors to the 290 variables not included in the eight-factor analysis. Before proceeding to the results of the factor extension, however, it may be appropriate to define the hypothesized structure of leadership behavior more precisely.

HYPOTHESES DERIVED

Although 28 of the original 30 factors were unique to single task-situations, several different factors showed parallel behavior components, one set in the combat mission effectiveness category, another in the technical-managerial mission effectiveness category. The eight factors derived in the second stage of analysis confirmed that these parallel behaviors did indeed correlate across situations, though at a lower level than that found between variables in the same situation. From this finding a major hypothesis was derived:

HYPOTHESIS I. Military leadership in a simulated combat environment² can be differentiated into two principal domains: technical/managerial and combat.

A. Technical/Managerial leadership emphasizes action to solve problems in which the requirement is organized support of combat operations, ranging from tactical directives and combat intelligence to logistics and personnel utilization. Organized planning and reporting under varying degrees of stress is the principal behavior required (Factor I).

B. Combat leadership emphasizes conducting actual combat missions, utilizing men and materiel in the given situation. Decisive response to emergencies by clear direction and active example are the key behaviors involved (Factor II).

Interpretation of the remaining six factors was made in the context of the division of behaviors into the two broad domains of Hypothesis I. The seventh and eighth factors provided an extension of the domains into the realm of specific staff skills, leading to a second hypothesis.

HYPOTHESIS II. Military leadership behaviors include as a major component the applying of particular skills. These skills can be differentiated into the domains of technical/managerial and combat.

A. Technical/managerial leadership skills include applying specialized knowledge to solving particular problems of combat support, with emphasis on completed staff work and effective staff relations (Factor VIII).

² All hypotheses derived from the OEC analysis necessarily apply to a simulated combat environment so this phrase will be understood as applying to each.

B. Tactical leadership skills include applying specialized knowledge to solving problems of deployment of troops and providing for the forward network of facilities for immediate use in combat operations. Emphasis is on thoroughness of operations directives to implement tactical decisions (Factor VII).

The fourth and sixth factors also tended to follow the differentiation of technical/managerial and combat. In contrast to the factors emphasizing particular skills, these two were focussed on direction and command of men, leading to the third hypothesis.

HYPOTHESIS III. An important component of military leadership consists of the direction and utilization of men. These directing functions can be differentiated into face-to-face contact which is of primary importance in combat leadership, and the directing of men through use of military organizational structure and procedures, more frequently applicable to technical/managerial tasks.

A. Technical/managerial direction is concerned primarily with accomplishment of support missions through clear-cut decisions implemented by appropriate echelons of organization. Where direct personal contact is involved, perseverance, bearing and poise, and clear communication characterize the effective behavior patterns (Factor VI).

B. Combat direction is primarily a matter of effective command and motivation of men. The behavior is characterized by timely but not hasty decisions which are clearly communicated not only as to factual content e.g. instructions, but also communicated as a spirit of competence, confidence, and drive to the goal (Factor IV).

The third factor appeared to be clearly more concerned with the combat domain. The Personal Resourcefulness end did not seem to imply leadership behavior of any sort, however, but rather a personal endurance and fortitude. The teamwork-oriented behavior of the opposite pole implied accepting leadership responsibilities. Thus the bipolarity of this factor led to an hypothesis of contrasting two kinds of behavior in a combat situation.

HYPOTHESIS IV. Behavior in a combat situation can be measured on a dimension of reliance on one's self vs. reliance on the team to accomplish the objective.

A. Self-reliant behavior is characterized by personal action, displaying risk-taking and willingness to drive on alone to the objective.

B. Team-reliant behavior is characterized by taking responsibility to train and instruct subordinates and to provide information to superiors so that the team can accomplish its mission.

The fifth factor did not seem to belong predominantly to the technical/managerial or to the combat domain. Acceptance of one's role as an instrument to accomplish the objective appeared to be the focus of these diverse behaviors across different situations. Maintaining security under enemy interrogation, making the jeep team continue the survey despite enemy threats, deploying the men for protection of the unit in the roadblock operation, and devoting conscientious personal effort and utilizing subordinates to accomplish the vehicle inspection and repair task--all these evidenced a commitment to the goal despite all difficulties. The hypothesis derived follows.

HYPOTHESIS V. Military leadership behavior includes acceptance and dogged commitment to the goal prescribed. The behaviors involved are persistence, willingness to devote one's effort and risk personal safety, and readiness to commit one's unit to the larger goal. (A parallel to the "Charge of the Light Brigade" might be suggested here--not to the commander who ordered it but to the officers who led it).

The above factor interpretations were formulated before the factor extension results were obtained. A diagrammatic representation of the structure of leadership behavior as conceived at that point appears in Figure 3 of the report, less the opposite pole of "Executive Direction."

DIMENSIONS OF LEADERSHIP BEHAVIOR: FINAL CONSTRUCTS

Results of extending the eight factors discussed in the previous section are presented in Tables 4 to 11. All variables loading above a designated minimum--.40 on Factor I, .50 on Factor II, .30 on all other factors--are listed, except that any variable correlating .80 or higher with one above it in the list was deleted. The purpose was to avoid including essentially the same variable twice. Higher minimum loadings were used on Factors I and II because of the wealth of variables on these two main factors.

The general hypothesis of the two broad leadership domains and the categorization of Factors I, IV (lower end), VI, and VIII as technical-managerial, and II, III, IV (upper end), and VII as combat was confirmed. The percent of variables from technical and administrative tasks in the former set of factors ranged from 84 to 100; the percent from combat tasks in the latter set ranged from 67 to 83. Factor V, Mission Persistence, had 64% of its listed variables from combat tasks.

Table 4

FACTOR I: Technical/Managerial Leadership

Code	Task	Variable	Loading
BTTT	Prod Analysis	Total task performance	.85
CTTT	Supply Rec	Total task performance	.78
CSOR	Supply Rec	Rated organization of stress briefing	.63
BTCC	Prod Analysis	Written report: adequacy of content (CL)	.62
OTTF	March Order	Performance quality	.60
BTSR	Prod Analysis	Sum of ratings on written report	.59
OMOB	March Order	March order: basic unit (CL)	.54
AALM	Office Mgt	Charting allocation of manpower	.48
BPRA	Prod Analysis	Production achieved by work reassignments	.48
OPLM	March Order	Planning later march units (CL)	.48
ITRL	Airfld Layout	Determining runway length (CL subtotal)	.47
BSCC	Prod Analysis	Written report: solution and closure (CL)	.45
LTTF	Roadblock	Performance quality	.44
EATD	Hwy Traffic	Attention to data requirements	.44
JLRZ	Rd Dmg & Radn	Computing future radiation levels (III)	.43
CSPR	Supply Rec	Rated adherence to principles in stress briefing	.42
OATR	March Order	Rated attitude (cooperation)	.41
JTPC	Rd Dmg & Radn	Debriefing on road damage and intelligence (CL)	.40
JOER	Rd Dmg & Radn	Rated overall effectiveness of mission	.40
JMCF	Rd Dmg & Radn	Extent mission completed	.40

Table 5

FACTOR II: Combat Leadership

Code	Task	Variable	Loading
NISR	Obsn Post	Sum of rating judgments	.77
KITT	Secur Mission	Total task performance	.75
KUMF	Secur Mission	Understanding of mission	.73
MTTT	Recon Patrol	Total task performance	.65
MBAR	Recon Patrol	Rated bearing and assurance	.65
KCSR	Secur Mission	Rated considerate within mission rqmts	.64
KBAF	Secur Mission	Bearing and assurance	.63
NITT	Obsn Post	Total task performance	.61
LCFO	Roadblock	Confidence and forcefulness	.60
HITT	Weapons Assess	Total task performance	.59
JBAR	Rd Dmg & Radn	Rated bearing and assurance	.59
NITC	Obsn Post	Effective mission behaviors (CL)	.57
MFCR	Recon Patrol	Rated forcefulness of debriefing to CO after IPW	.57
NMOR	Recon Patrol	Rated motivation (effort)	.55
LGAF	Roadblock	General ability	.55
GTDG	Auto Inspect	Defects accurately diagnosed	.53
MDHR	Recon Patrol	Rated decisive without haste	.53
LTTT	Roadblock	Total task performance	.53
MOER	Recon Patrol	Rated organization of mission briefing	.52
JMOR	Rd Dmg & Radn	Rated motivation (effort)	.51
FTTB	Commo Exhibit	Handling defects in circuitry, labeling, & eqpt	.51
JTLC	Rd Dmg & Radn	Maintaining control of teams on mission (CL)	.50
KMOF	Secur Mission	Motivation (effort)	.50
JORR	Rd Dmg & Radn	Rated organization of mission briefing	.50
MAIA	Recon Patrol	Alertness & initiative in necessary actions (CL)	.50

Table 6

FACTOR III: Team Leadership vs Personal Resourcefulness

Code	Task	Variable	Loading
<u>Team Leadership</u>			
LSUT	Roadblock	Training and supervision of subordinates (CL)	.62
LOSS	Roadblock	Controlling on-site security (CL)	.51
LTTT	Roadblock	Total task performance	.45
LUMR	Roadblock	Rated understanding of mission	.44
DEEF	Site Select	Effective expression	.43
LMOR	Roadblock	Rated motivation (effort)	.43
DUMR	Site Select	Rated understanding of mission	.43
HMOR	Weap Assess	Rated motivation (effort)	.40
KKCF	Secur Mission	Keeping cool	.38
LCMF	Roadblock	Effective command	.38
LINM	Roadblock	Rated orgn and detail of mission briefing	.35
LCHT	Roadblock	Correctness of tree selection and charges	.35
LTTF	Roadblock	Performance quality	.34
JKCF	Rd Dmg & Radn	Keeping cool	.34
LEEA	Roadblock	Effectiveness of abatis	.33
LDBR	Roadblock	Rated amount of detail in mission briefing	.33
DMOR	Site Select	Rated motivation (effort)	.32
LDHR	Roadblock	Rated decisive without haste	.31
LMCF	Roadblock	Extent mission completed	.31
<u>Personal Resourcefulness</u>			
OESF	March Order	Endurance and stamina	.64
OCMB	March Order	Effective military behavior	.63
MFFE	Recon Patrol	Aggressive conduct in hands of enemy (CL)	.43
BEER	Prod Analysis	Rated completeness of written report	.39
EBAF	Hwy Traffic	Bearing and assurance	.37
KGIF	Secur Mission	General impression	.36
OTTF	March Order	Performance quality	.35
JTRX	Rd Dmg & Radn	Recording reported radiation levels (I)	.35
MCCE	Recon Patrol	Effectiveness in face of enemy (CL)	.33
NTTC	Obsn Post	Effective mission behavior (CL)	.32
KHDR	Secur Mission	Rated quickly decisive	.31

Table 7

FACTOR IV: Command of Men vs Technical Specialization

Code	Task	Variable	Loading
<u>Command of Men</u>			
GCMF	Auto Inspect	Effective command	.47
MCMF	Recon Patrol	Effective command	.40
MDHR	Recon Patrol	Rated decisive without haste	.40
MATR	Recon Patrol	Rated attitude (cooperation)	.39
MIBM	Recon Patrol	Initial briefing on purpose of mission (CL)	.37
MITT	Recon Patrol	Total task performance	.35
KCMF	Secur Mission	Effective command	.34
MGAF	Recon Patrol	General ability	.33
MCSR	Recon Patrol	Rated considerate within mission rqmts	.32
MMCF	Recon Patrol	Extent mission completed	.31
MEAN	Recon Patrol	Motivating NCO anxious over radn (CL)	.31
FATR	Commo Exhibit	Rated attitude (cooperation)	.30
<u>Technical Specialization</u>			
GEEF	Auto Inspect	Effective expression	.49
JFLH	Rd Dmg & Radn	Computing past radn levels	.42
GEQF	Auto Inspect	Familiarity with equipment	.39
HTTT	Weapon Assess	Total task performance	.37
DCOM	Site Select	Thoroughness in assigned task	.33
HDCA	Weapon Assess	Thorough tech descr of cartridge (CL)	.30

Table 8

FACTOR V: Mission Persistence

Code	Task	Variable	Loading
MTIP	Recon Patrol	Security performance in PW interrogation	.57
MRTR	Recon Patrol	Rated reticence in PW interrogation	.52
MEAP	Recon Patrol	Avoiding pitfalls in PW interrogation	.44
GTHI	Auto Inspect	Completeness of vehicle identifying info	.40
JHAG ^a	Rd Dmg & Radn	Continuing mission in face of enemy threat	.33
GBAF	Auto Inspect	Bearing and assurance	.33
GUPR	Auto Inspect	Rated utilization of personnel	.32
LCOF	Roadblock	Consideration for men	.32
OFIF	March Order	Following instructions	.31
LBAF	Roadblock	Bearing and assurance	.30
KLDT	Secur Mission	Tactical direction of subordinates (CL)	.30

^a Concept and loading reflected

Table 9

FACTOR VI: Executive Direction vs Individual Effectiveness
(Technical/Managerial)

Code	Task	Variable	Loading
<u>Executive Direction</u>			
KESF	Secur Mission	Endurance and stamina	.53
DIFR	Site Select	Sum of rating judgments	.53
JESF	Rd Dmg & Radn	Endurance and stamina	.49
ITRL	Airfld Layout	Determining runway length (CL Subtot)	.38
FTTT	Commo Exhibit	Total task performance	.36
JJOG	RD Dmg & Radn	Handling tactical emergency by radio (CL)	.36
JATF	RD Dmg & Radn	Attitude (cooperation)	.36
KHDR	Secur Mission	Rated quickly decisive	.36
JFLH	Rd Dmg & Radn	Computing past radn levels (V)	.35
JTTF	Rd Dmg & Radn	Performance quality	.34
GTDG	Auto Inspect	Defects accurately diagnosed	.34
JGIF	Rd Dmg & Radn	General impression	.34
JLDR	Rd Dmg & Radn	Rated amt of detail in mission briefing	.34
DUMR	Site Select	Rated understanding of mission	.34
JMOF	RD Dmg & Radn	Motivation (effort)	.32
JEEF	Rd Dmg & Radn	Effective expression	.32
<u>Individual Effectiveness</u>			
ERST	Hwy Traffic	Concentration under stress	.56
BEER	Prod Analysis	Rated completeness of written report	.31

Table 10

FACTOR VII: Tactical Skills

Code	Task	Variables	Loading
OTTT	March Order	Total task performance	.63
ONEP	March Order	Noting enemy positions (CL)	.59
ITTT	Airfld Layout	Total task performance	.54
OMOR	March Order	Rated motivation (effort)	.51
OMCS	March Order	Maintaining contact and security (CL)	.45
MTTF	Recon Patrol	Performance quality	.43
OPES	March Order	Providing equipment and supplies (CL)	.41
JLLH	Rd Dmg & Radn	Computing future radiation levels (V)	.41
MMCF	Recon Patrol	Extent mission completed	.41
INSE	Airfld Layout	Number of sites evaluated	.37
MUMF	Recon Patrol	Understanding mission	.36
MATF	Recon Patrol	Attitude (cooperation)	.36
MOER	Recon Patrol	Rated organization of mission briefing	.36
OCMB	March Order	Effective military behavior	.35
MEEF	Recon Patrol	Effective expression	.34
MAIA	Recon Patrol	Alertness and initiative in necessary actions (CL)	.33
IENG	Airfield Layout	Engineering considerations in site evaluation (CL)	.31
LKCF	Roadblock	Keeping cool	.30

Table 11

FACTOR VIII: Technical Skills

Code	Task	Variables	Loading
FCCD	Commo Exhibit	Handling circuit defects	.65
GTTF	Auto Inspect	Performance quality	.56
FURR	Commo Exhibit	Rated use of reference manuals	.55
ETTF	Hwy Traffic	Performance quality	.54
CSXR	Supply Rec	Rated approp flexibility in stress briefing	.54
GUPR	Auto Inspect	Rated utilization of personnel	.52
GURR	Auto Inspect	Rated use of reference manuals	.52
FEQF	Commo Exhibit	Familiarity with equipment	.51
FBAF	Commo Exhibit	Bearing and assurance	.49
FEQD	Commo Exhibit	Handling equipment defects	.46
FFIF	Commo Exhibit	Following instructions	.43
FPKQ	Commo Exhibit	Estimated prior knowledge of eqpt	.42
GATR	Auto Inspect	Rated attitude (cooperation)	.42
FTQU	Commo Exhibit	Correctness of briefing on eqpt & circuits	.41
GTDG	Auto Inspect	Defects accurately diagnosed	.41
FMOR	Commo Exhibit	Rated motivation (effort)	.41
ETTT	Hwy Traffic	Tonnage delivered	.40
G ^o LS	Auto Inspect	Proportion of detected defects diagnosed	.36
GDIA	Auto Inspect	Avg importance of defects detected	.36
GRCO	Auto Inspect	Prop of treated defects personally repaired	.36
EMOR	Hwy Traffic	Rated motivation (effort)	.35
GEQF	Auto Inspect	Familiarity with equipment	.34
ERST	Hwy Traffic	Concentration under stress	.30

Factors I and II clearly confirm the first hypothesis. The highest loaded variables on Factor I also support the interpretation offered in Hypothesis IA: overall problem solving is reflected in variables from the Production Analysis, Improper Supply Records, March Order, Office Management, Airfield Layout, and Road Damage and Radiation tasks. Organized planning and reporting, sometimes under stress, account for most of the other higher-loaded variables. Possibly the only aspects of behavior that were not hypothesized are the overall behavior style and effectiveness scale scores from March Order and Roadblock. These may reflect an overall competent manner of performance which transcends the technical/managerial vs combat differentiation. On Factor II, the central combat mission effectiveness aspect is enriched by style of performance: bearing and assurance, forcefulness, etc. coupled with consideration for men and decisiveness without haste. On the technical tasks represented on this factor, Road Damage and Radiation Survey is most frequently represented, with the variables bearing and assurance, motivation and response to team leader incidents as the highest loadings--all of these related more to tactical direction of the teams than to recording the intelligence received. Lastly, there is a component of technical skill with equipment reflected in the loadings for assessing captured enemy weapon, diagnosing automotive malfunctions, and identifying problems in communications equipment. This aspect is consonant with "utilization of materiel in the given situation" mentioned in Hypothesis IB. Likewise the range of behaviors from consideration for men, decisiveness, briefing of patrol, response to team leaders, firm handling of NCO, utilization of men, and effective command reflect the "utilizing of men."

Hypothesis II is also clearly confirmed. More than half of the variables with loadings on Factor VIII directly concern technical equipment skills. It is of interest to note that the "administrative" logistics task, Highway Traffic Plan, is represented on this factor, reflecting the importance of the combat support aspect in Hypothesis IIA. But again, as was the case with the Combat Leadership factor, variables relating to overall style and effectiveness and bearing and assurance have high loadings, suggesting that a common thread of military leadership behavior runs through each particular situation. In this instance it would likely be manifested in effective staff relations. Hypothesis IIB is also supported in the specific aspects of tactical staff skills of Factor VII, reflected in variables from March Order and Recon Patrol and the tactical and engineering aspects of Airfield Layout. Thoroughness of directives is evidenced by the specific aspects of March Order and Airfield Layout and by the particular aspects of Recon Patrol included: understanding mission, organization of briefing, effective expression.

While Hypothesis III is generally supported as to differentiation of combat command (Factor IV) from technical-managerial direction (Factor VI), the characterization of the latter behavior pattern in Hypothesis IIIA is only partially confirmed. Endurance and stamina, responsiveness under time pressure, handling tactical emergency, quick combat decision-making are major components, despite the fact that 88% of the variables are from the technical-managerial domain. Emphasis seems to be on the personal contact aspects of perseverance and oral

communication in the context of a generally positive behavioral impression on superiors, peers, and subordinates. To this certain aspects of technical competence are added. Extension of the factor also yielded some evidence of bipolarity, with the lower end reflecting ability to accomplish an individual staff assignment under time pressure. Hypothesis IIIB is more definitely supported than IIIA. Every component variable on the upper end of Factor IV reflects direct effective command and motivation of men to achieve the mission objectives. The lower end of the factor suggests the technical specialist with no leadership aspects involved.

Extension of Factor III yielded a richer characterization of the dimension of self-reliant vs team-reliant combat behavior. Table 6 places the team aspect on top because that is the leadership end as contrasted to the "lone-wolf" personal resourcefulness end (bottom). In accordance with Hypothesis IVA, personal conduct and action are emphasized. The team leadership end of this dimension focusses, as hypothesized, on carrying out command responsibilities: training men, providing for on-site security, understanding the mission, keeping cool, and effective reporting to superiors. It may be worth noting that decisiveness without haste is found on the team leadership end, whereas quickness of decision is found on the personal resourcefulness end.

Results of extension of Factor V are compatible with Hypothesis V. Maintaining security under enemy interrogation is the core aspect of the behavior, and there is more emphasis on the combat aspects than on the technical-managerial. Leadership style is characterized by bearing and assurance and consideration for men, which in the Roadblock task involved discipline required to protect the health and safety of the unit. Utilization of men in the Automotive Inspection task also underscores, in a technical task, the same commitment of unit to mission goals that, in a tactical situation, is evidenced by persistence in face of enemy threat.

In regard to the principal objectives, the OEC leadership research has resulted in the following general findings:

Officer behaviors observed and evaluated during OEC activities are accounted for by two major dimensions: combat leadership and technical/managerial leadership. The parallel structure of factors in the analysis yielding 28 single-task factors, and the structure of the eight factors derived from the cross-task analysis both reveal clear differentiation of these two domains.

Eight major aspects of military leadership were revealed:

1. Technical/managerial leadership: a basic dimension of effective problem-solving behavior in combat support operations characterized by well-organized planning, communication, and follow-through to accomplish the mission under varying degrees of stress.

2. Combat leadership: a basic dimension of effective conduct of combat missions, utilizing men and materiel appropriately to situational requirements, characterized by decisive response to emergencies and execution of mission through forceful command, control, and care of men and utilization of materiel.

3. Technical staff skills: a major aspect of technical/managerial performance involving use of specific knowledge and skills in carrying out a staff assignment in logistics or technical services, characterized by practical application of knowledge of materiel in a setting requiring interactions with other personnel.

4. Tactical staff skills: a major aspect of performance involving use of specific knowledge and skills in carrying out a staff assignment in combat operations, characterized by practical application of knowledge of such operations under combat emergency conditions involving interactions with other personnel.

5. Executive direction: a major aspect of technical/managerial performance in which decisive and timely actions must be taken to accomplish combat support missions, characterized by endurance, decisiveness, and maintenance of technical competence under stress.

5a. Individual technical tenacity: an aspect of technical officer behavior opposite to executive direction, in which the individual works to solve technical/managerial problems on his own.

6. Command of men: an aspect of combat leadership involving direct command and control of men in a field operation, characterized by timely decision-making, face-to-face leadership of men in a combat situation and motivation of men to attain the objective.

6a. Technical specialization: an aspect of officer behavior opposite to command of men in which the individual applies expertise to meet technical/managerial requirements on his own.

7. Team leadership: an aspect of leadership behavior in a combat situation, characterized by taking responsibility for training and utilizing men and reporting information to superiors--subordinating his own interests to team requirements and maintaining coolness under emergency stresses.

7a. Personal resourcefulness: an aspect of combat behavior opposite to team leadership, in which the individual displays courage, endurance, and personal commitment in difficult and dangerous situations.

8. Mission persistence: an aspect of leadership behavior in a variety of situations characterized by dogged persistence in carrying out the orders of superiors and the principles of military behavior under varying conditions of pressure and stress.

To find what behaviors can be accurately observed and evaluated in a simulation such as the OEC, it seems reasonable to conclude that information can be provided on an officer's potential for leadership in different and more demanding situations. All the instruments used--objective "products," checklists of specific actions taken, evaluations relating to behavioral style, motivation, attitude, combat aptitude--demonstrated some value in yielding quantitative measures of effective behavior in given situations. The specific variables listed under each factor in the 30-factor and the 8-factor sets indicate the behaviors observed and evaluated, while the cross-task factors themselves constitute leadership characteristics inferred from the specific behaviors.

There is, however, a more general inference that can be drawn from the OEC analysis. The findings strongly suggest that the total simulation technique can yield not only reasonably objective performance measures taken under some degree of stress, but can also contribute to better evaluations of more enduring leadership qualities. If the OEC exercise were considered a kind of leadership readiness test, its value would reside not only in the specific actions evaluated but even more in the inferences as to leadership potential that might fairly be drawn.

Directions of Application

The principal findings of this analysis indicate that behavioral characteristics such as combat aptitude, persistence in mission accomplishment, and decisiveness without haste can 1) be reliably assessed in specific simulated tasks and 2) be related to major behavioral domains or factors across different situations. The significance of these findings for evaluation of leadership potential seems clear: the response of junior officers to a wide variety of demands in an unfamiliar setting provides reliable measures of behavior which generalize beyond single specific situations, and therefore may be expected to generalize to other situations belonging to the same factorial domains. It follows that the practical application of the findings to leadership development of Army officers would be to arrange for such variety of demands in a novel setting to be incorporated into the ongoing training and experience program. Opportunities for this exist in cadet training, e.g. ROTC advanced summer camp, in branch basic and special courses, e.g. ranger training, and in unit training programs. Many aspects of simulation are fundamental to operational training. The main differences between the OEC and these training programs reside in 1) the highly-concentrated and integrated nature of the OEC, which intensified the stress, 2) the variety of tasks and demands of the OEC situations, which afforded differential behavior measurement, and 3) the variety and standardization of the evaluations made, which yielded reliable measures of behavior that could be related to broad domains and therefore generalized to future performance to a greater extent, possibly, than could current training tests. In short, the integrated simulation-evaluation techniques demonstrated in the OEC appear to offer a differentiated combination of military leadership performance factors that promise a unique contribution to assessment of leadership potential in junior officers.

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APPENDIX

SCALES OF AINED FROM INTERNAL ANALYSIS OF OEC SITUATION TASKS

OFFICE MANAGEMENT TASK

Organization Chart Checklist

AIDD Charting Organization Functions
AALM Charting Allocation of Manpower

Flow Process Chart Checklist

ARCW Revising Work Flow
ASQO Sequencing Work Flow
ARTP Retaining Effective Work Flow Steps

Deficiency Checklist

AFND Correcting Miscellaneous Operating Deficiencies

Total Task Performance

ATTT Sum of All 6 Scores Above

PRODUCTION ANALYSIS TASK

Summary Scoring Sheet

BADR Rated Overall Administrative Effectiveness

Style Rating Scale (Written report)

BRLR Relevance
BEMR Emphasis
BMCR Language
BSAR Sentence Adequacy
BAVR Conciseness
BOSR Style
BEER Completeness of Written Report:
BSAR - BAVR
BSTR Sum of Ratings on Written Report Style:
BRLR + BEMR + BMCR + BSAR + BAVR + BOSR

Written Report Content Checklist

BIBC Introduction and Background
BPUC Statement of Purpose
BBAC Situational Constraints
BPAC Critique of Assignments
BJRC Use of Job Records
BCAC Computational Approach
BSCC Solution and Closure
BTCC Adequacy of Content of Written Report:
Sum of 7 preceding scores

Proposed Utilization of Repairmen

BPRA Production Achieved by Work Reassignments

Total Task Performance

BTTT Sum of Weighted Standard Scores: (Base 10)
2 (BADR + BOSR) + 11 (BPRA) + 5 (BTCC)

IMPROPER SUPPLY RECORDS TASK

Stress Rating Scale (Briefing Allied Officer)

CSFR Fluency
CSOR Organization
CSMR Motivation
CSBR Bearing and Poise
CSAR Appropriate Aggressiveness
CSCR Tact and Control
CSXR Appropriate Flexibility
CSPR Adherence to Principles
CTSR Effectiveness in Stress Briefing:
Sum of above except CSCR and CSXR
CTCR Restraint in Stress Briefing:
Sum of CSCR and CSXR

Stock Accounting Record

CTRS Correction of Detailed Supply Record

Briefing Checklist

CBRC Correctness of Content of Stress Briefing

Memorandum Checklist

CMMC Form and Content of Written Memo

Total Task Performance

CRTT Sum of Weighted Standard Scores:
15 (CTSR) + 40 (CTRS) + 35 (CBRC) + 10 (CMMC)

SITE SELECTION TASK

Descriptive Report and Rating Supplement (Ratings)

DMOR Motivation (Effort)
DATR Attitude (Cooperation)
DUMR Understanding Mission
DBAR Bearing and Assurance

Rated Performance Qualities

DBAF Bearing and Assurance
DEEF Effective Expression
DKCF Keeping Cool
DESF Endurance and Stamina
DEQF Familiarity with Equipment
DFIF Following Instructions
DMAF Extent Mission Accomplished
DCMF Effective Command
DGIF General Impression
DTTF Performance Quality:
Sum of 9 preceding scores
DTFR Sum of rating judgments:
DMOR + DATR + DUMR + DBAR + DBAF + DEEF + DKCF

Selection Justification Score Sheet

DSLJ Adequacy of Site Selection Justifications
DSIQ Merit of Sites Chosen (Sector I)
DIIQ Merit of Sites Chosen (Sector II)

Problem Approach Checklist

DPAC Asking clarifying questions

Summary Evaluations

DCOM Thoroughness in Assigned Task:
DFIF + DMAF + Report Evaluation (Prob Approach CL) and two
items of rejected site justifications (Sel Just Score Sheet)

Briefing Checklist

DBRS Effectiveness in Stress Briefing

Total Task Performance

DTT Sum of Weighted Standard Scores:
9 (DSIQ + DIIQ + DSLJ + DCOM - DFIF - DMAF) +
7 (DPAC + DBRS, 1) + 10 (DBRS, 2)

HIGHWAY TRAFFIC TASK

Descriptive Report and Rating Supplement^a

EMOR, EATR, EUMR

Rated Performance Qualities^a

EBAF, EEEF, EKCF, EESF, EFIF, EMAF
ERST Concentration Under Stress:
EKCF + EESF
ESTP Style of Performance:
Sum of EUMR, EBAF, EEEF, EMOR, EATR
ETTF Performance Quality:
Sum of EBAF, EEEF, EKCF, EESF, EFIF, EMAF

Highway Traffic Plan Checklist

EPRS Procedural Skills
EATD Attention to Data Requirements:
Note restrictions, identify depots + EFIF + EMAF

Total Task Performance: Highway Traffic Plan Worksheets

ETTT Tonnage Delivered

^a See same variables with initial code letter D

COMMUNICATIONS EXHIBIT TASK

Descriptive Report (Ratings)^a

FMOR, FATR
FTMR Sum of FMOR + FATR

Rated Performance Qualities^a

FBAF, FKCF, FEQF, FFIF, FMAF, FCMF, FGIF
FTTF Performance quality:
Sum of 7 preceding scores

Problem Approach Checklist (Ratings)

FAPR Trouble-shooting Approach
FUPR Utilization of Personnel
FURR Use of Reference Manuals

Summary Evaluations

FFAQ Knowledge of Equipment:
Sum of FEQF, FAPR, FURR
FUPS Use of Personnel:
Weighted Sum - 2 (FUPR + FCMF) + FFIF
FBER Manner and Bearing:
Sum of FBAF, FKCF, FGIF
FPKQ Estimated Prior Knowledge of Equipment

Question Scoring Sheet

FEQQ Correctness of Briefing on Equipment Functions
FCCQ Correctness of Briefing on Circuits
FTQU Correctness of Whole Briefing:
Sum of FEQQ, FCCQ, and Minor Wiring Questions.

Trouble Scoring Sheet

FCCD Handling Circuit Defects
FLBD Handling Labeling Deficiencies
FEQD Handling Equipment Defects
FTTB Handling of all Defects:
Sum of FCCD, FLBD, FEQD, and Minor Defects

Total Task Performance

FTTT Sum of Weighted Standard Scores:
3 (FTTB) + FTQU

^a See same variables with initial code letter D

AUTOMOTIVE INSPECTION TASK

Descriptive Report (Ratings)^a

GMOR, GATR

Rated Performance Qualities

GBAF, GEEF, GEQF, GFIF, GMAF, GCMF, GGIF
GTF Performance Quality:
Sum of 7 Preceding Scores

Problem Approach Checklist^b

GAPR, GUPR, GURR

Automotive Inspection Scoring Forms

GTII Completeness of Vehicle Identifying Information
GTDG Defects Accurately Diagnosed
GTRP Defects Appropriately Treated
GRCD Failure to Spread Effort over all Vehicles
GDIA Average Importance of Defects Detected
GRLS Proportion of Detected Defects Diagnosed
GRCO Proportion of Treated Defects Personally Repaired

Total Task Performance

GTTT Weighted Sum:
 $2(\text{GTDG} + \text{GTRP} + \text{GTII}) + \text{Number of Defects Personally Repaired}$

WEAPONS ASSESSMENT TASK

Descriptive Report (Ratings)^a

HMOR, HATR

Performance and Tactical Data Score Sheet

HNUL Basic Reporting of Identification Clues
HDTE Describing Technical Characteristics of Weapon
HDCA Thorough Technical Description of Cartridge
HADD Reporting Situation in Which Obtained
HMED Reporting Mechanical Details and Other Intelligence
HMID Supplementary Reporting of Identification Clues
HADI Including Additional Descriptive Details

Total Task Performance

HITT Sum of 7 Preceding Scores

^a See same variables with initial code letter D.

^b See same variables with initial code letter F.

AIRFIELD LAYOUT TASK

Rating Supplement

IUMR Understanding Mission

Airfield Layout Checklist

IRRT Thoroughness of Runway Report
ICOA Accuracy of Runway Length Computation
ITRL Determination of Runway Length:
Sum of IRRT, ICOA, and Minor Items of Behavior
IOPH Considering Operational Hazards in Site Evaluation
IENG Engineering Considerations in Site Evaluation
IUTT Considering Terrain Features in Site Evaluation
IGEO Geographical Considerations in Site Evaluation
ITSE Adequacy of Site Evaluations:
Sum of IOPH, IENG, IUTT, IGEO, and Minor Items
INSE Number of Sites Evaluated
ITWS Adequacy of Evaluations Weighted by Number of Sites:
ITSE (INSE + 5)

Total Task Performance

ITTT Weighted Sum:
5 (ITRL) + ITWS

ROAD DAMAGE AND RADIATION SURVEY TASK

Rating Supplement

JMOR Motivation (effort)
JATR Attitude (cooperation)

Bringing Men for Mission

JORR Organization
JFDR Forcefulness
JLDR Amount of Detail

Conduct of Mission

JBAR Bearing and Assurance
JOER Overall Effectiveness
JCSR Consideration for Men within Mission Requirements
JDHR Decisiveness without Haste

Performance Qualities

JBAF, JEEF, JKCF, JESF, JCMF, JGIF^a
JUMF Understanding Mission
JMOF Motivation (effort)
JATF Attitude (cooperation)
JCOF Consideration for Men
JGAF General Ability
JMCF Extent Mission Completed
JTTF Performance Quality:
Sum of 12 Preceding Scores

Team Leader Checklists

JJOG Appropriate Orders to Team out of Gas
JHAG Terminating Mission to Save Team
JTLC Maintaining Control of Teams on Mission
JTIC Obtaining Intelligence from Teams on Mission

Conduct of Survey Checklist

JTSC Keeping Superior Informed during Survey

End-of- Problem Briefing Checklist

JTPC Debriefing to Superior on Road Damage and Intelligence

Road Damage Briefing Checklist

JTDC Briefing Team on Road Damage Mission

Radia on Survey Briefing Checklist

JTRC Briefing Team on Radiation Survey
JTRX, JTRY, JTRZ, JTEH, JTLH Recording Reported Radiation Levels
JFRX, JFRY, JFRZ, JFEH, JFLH Computing Past Radiation Levels
JLRX, JLRY, JLRZ, JLEH, JLLH Computing Future Radiation Levels

^a See same variables with initial code letter D

SECURITY MISSION TASK

Rating Supplement

KBAR, KCSR, KDHR^b
KHDR Quick Decisions

Performance Qualities

KBAF, KKCF, KESF, KCMF, KGIF^a
KUMF, KMOF, KATF, KGAF, KMCF^b
KTF Performance Quality:
Sum of 10 Preceding Scores

Behavior Checklist

KOSS Controlling On-Site Security
KUTM Effective use of Personnel
KLDT Tactical Direction of Subordinates
KEMM Evaluation of Men for Mission
KEDP Effectiveness of Defense Plan
KFHP Firm Handling of Personnel:
KCMF - "Softhearted" Score + Handling Inefficient NCO
K TTC Effectiveness of Total Mission Behavior:
KOSS+KUM+KLDT+KEMM+KEDP+Handling of NCO
KCAR Rated Overall Combat Aptitude

Total Task Performance

KTTT Sum of Weighted Standard Scores:
71 (K TTC)+20(KCAR)+4(KCSR)+3(KDHR)+2(KBAR)

ROADBLOCK TASK

Descriptive Report and Rating Supplement (Ratings)

LMOR Motivation (effort)
LATR Attitude (cooperation)
LUMR Understanding Mission
LBAR Bearing and Assurance
LDHR Decisive without Haste

Briefing Men for Mission

LOBR Organization
LFBR Forcefulness
LD BR Amount of Detail
LTSR Sum of Performance Ratings:
LOBR + LFBR + LD BR + LBAR + LDHR

^a See same variables with initial code letter D

^b See same variables with initial code letter J

Performance Qualities

LBAF, LEEF, LKCF, LESF, LCMF, LGIF^a
LUMF, LMOF, LATF, LCOF, LGAF, LMCF^b
LTTF Performance Quality:
Sum of 12 preceding scores

Summary Scores

LTMR Attitude and Motivation:
Sum of LMOR, LATR, LMOF, LATF
LCFO Confidence and Forcefulness:
Sum of LBAR, LFBR, LBAF, LEEF, LKCF, LGIF, LGAF
LINM Content of Mission Briefing:
Sum of LOBR, LDBR

Behavior Checklist

LCHT Correct Charges and Number of Trees
LEEA Effectiveness of Abatis:
Sum of LMCF, LCHT, and Two CL Scores on Abatis
LSUT Training and Supervision of Subordinates
LOSS Controlling on-site Security
LHAS Capture, Handling, Search of Enemy Sniper
LCTA Tactical Control
LTTC Effectiveness of Mission Behavior:
LSUT + LOSS + LHAS + LCTA + Two CL Scores on Abatis
LCAR Rated Overall Combat Aptitude

Total Task Performance

LTTT Sum of Weighted Standard Scores:
40 (LTTC) + 20 (LTSR) + 20 (LCHT) + 20 (LCAR)

^a See same variables with initial code letter D

^b See same variables with initial code letter J

ROUTE RECONNAISSANCE PATROL TASK

Descriptive Report and Rating Supplement (Ratings)

MMOR, MATR, MBAR, MCSR, MDHR^b

Briefing Men for Mission

MOER Organization
MFER Forcefulness
MDER Amount of Detail

Performance Qualities

MBAF, MEEF, MKCF, MCMF, MGIF^a
MUMF, MMOF, MATF, MCOF, MGAF, MMCF^b
MTTF Performance Quality:
Sum of 11 Preceding Scores

Final Debriefing after Prisoner-of-War Experience

MOCR Organization
MFCR Forcefulness
MDCR Amount of Detail

Behavior Checklist

MIBM Initial Briefing on Purpose of Mission
MRIB Initial Briefing on Radiation Reporting
MFIB Initial Briefing on Radio Frequency
MAMT Timing of Mission Phases
MSCN Supervision and Control of NCO's
MBCM Aspects of Mission Control
MEAN Motivating NCO Anxious over Radiation
MORN Obtaining Radiation Readings from NCO's
MRRR Reporting Radiation Readings to CO as Received
MSES Spontaneous Effectiveness Under Stress
MRPI Noting and Reporting Passive Intelligence
MAPS Noting Passive Intelligence Under Stress
MARI Reporting Active Intelligence During Mission
MAIA Alertness and Initiative in Necessary Actions
MDWM Disposition of Wounded Team Members
MDMS Reporting Mission Status while in Progress
MCCE Detailed Behaviors in Enemy Contact
MFFE Aggressive Conduct in Hands of Enemy
MEND Debriefing CO on POW Experience
MDIO Debriefing CO on Details at IPW Site
MTTC Effectiveness of Total Mission Behavior:
Sum of 20 Preceding Scores
MCAR Rated Combat Aptitude

^a See same variables with initial code letter D

^b See same variables with initial code letter J

Equipment Status Report

MTSP Judicious Choice of Supplies for Mission

IFW Checklist

MTWI Withholding Specific Info in PW Interrogation
MEAP Avoiding Pitfalls in PW Interrogation

IFW Rating Scale

MBLR Belligerence in PW Interrogation
MUCR Uncongeniality in PW Interrogation
MSCR Self-Control in PW Interrogation
MRTR Reticence in PW Interrogation

IFW Scoring Sheet

MMAS Maintaining Security in PW Interrogation
MTIP Security Performance in PW Interrogation:
Composite of MMAS and MTWI

Total Task Performance

MTT Weighted Sum of Standard Scores:
65 (MTC) + 8 (MCAR) + 8 (MEAP + MTIP)
+ 7 (MBAR + MCSR + MDHR) + 4 (MOER + MFER + MDER)
+ 3 (MTSP) + 3 (MOCR + MFCR + MDGR)
+ 2 (MSCR + MRTR + MUCR)

OBSERVATION POST TASK

Descriptive Report (Ratings)

NMOR, NATR^b

Performance Qualities

NBAF, NKCF, NESF, NEQF, NFIF, NGIF^a
NMCF Extent Mission Completed
NECF Effective Command
NTTF Performance Quality:
Sum of 8 Preceding Scores

Behavior Checklist and Target Report Sheet

NADS Completeness and Accuracy of Reporting Target Location
NARS Reporting Observed Enemy Action
NFMS Detecting and Firing on Hostile Missile
NCAR Rated Overall Combat Aptitude
NTTC Other Effective Mission Behavior

Summary Score

NTSK Sum of Rating Judgments:
NMOR + NATR + NTTF + NCAR

Total Task Performance

NTTT Sum of Weighted Standard Scores
60 (NADS + NARS + NFMS) + 35 (NTTC) + 5 (NCAR)

^a See same variables with initial code letter D

^b See same variables with initial code letter J

MARCH ORDER TASK

Descriptive Report (Ratings)

OMOR, OATR^b

Performance Qualities

OBAF, OESF, OFIF, OGIF^a
OMCF Extent Mission Completed
OTTF Performance Quality:
Sum of 5 Preceding Scores

Performance Checklist

ONEP Noting Enemy Positions
OMOB March Order: Basic Unit
OPLM Planning Later March Units
OMCS Maintaining Contact and Security
OOME Outlining Mission and Execution
OPES Providing Equipment and Supplies
OGRH Giving Leadings and References
OINO Brief but Responsive to Interrupting Superior
OINE Judicious Disposition of Complaining EM

Summary Scores

OCMB Effective Military Behavior:
Sum of OESF, OGIF, OINO
ODAM Drive to Accomplish Mission:
Sum of OBAF, OFIF, OMOR, OATR, OMCF

Total Task Performance

OTTT Sum of Unweighted Scores:
ONEP + OMOB + OPLM + OMCS + OOME + OPES + OGRH

^a See same variables with initial codd letter D

^b See same variables with initial code letter J