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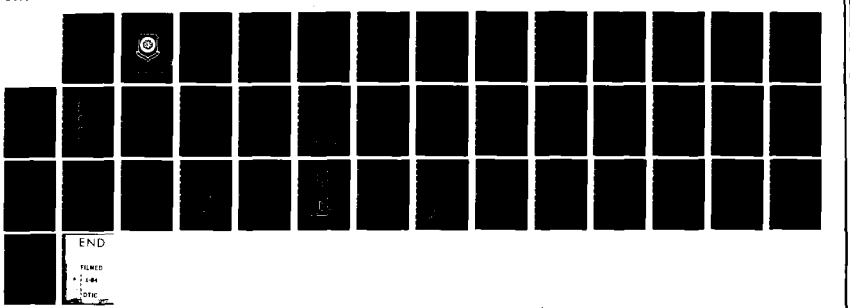

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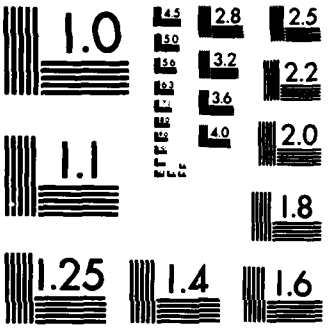

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JTF 83-1

AD-A135 886

DEPARTMENT OF DEFENSE

July 1983

C³CM JOINT TEST FORCE PROGRAM APPROACH DOCUMENT

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COMMAND, CONTROL, COMMUNICATIONS COUNTERMEASURES (C3CM) JOINT TEST FORCE (JTF) PROGRAM APPROACH DOCUMENT

1. This document was compiled to describe the Program Approach proposed to fulfill the requirements of the C3CM JTF mission. The contents reflect current JTF planning activities and will continue to be maintained/updated, as required, during the course of the C3CM JTF program.

2. This C3CM JTF Program Approach document presents the reader with relevant historical information, program scope and objectives, details of the program approach, management structure, and planned activities.

3. David S. Tracy, Lt. Col., USA, is the action officer for the JTF 83-1. Requests for additional copies or other assistance concerning this document should be addressed to: C3CM JTF/RP, Kirtland Air Force Base, New Mexico 87117, Autovon: 246-7166.

John M. Reeves
Colonel, USAF
Joint Test Director

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No change per Sgt. Winckel, C3CM Joint Test Force, Kirtland AFB, NM

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1.0 INTRODUCTION

1.1 Purpose. The Command, Control, Communications Countermeasures (C3CM) Joint Test Force (JTF) was established to plan for, conduct, and report the results of Joint Test and Evaluation (JT&E) activities directed toward the following mission:

> . . . to provide information which can be applied by combat commanders in the field so that they may improve the effectiveness of their forces by disrupting the enemy's command, control and communication system . . . (Ref. 1)

This document describes the Program Approach proposed to fulfill the requirements of the C3CM JTF mission. This document represents the current JTF view on a feasible test program approach and serves as the framework within which changes can be accommodated and from which a Program Design Plan can be developed.

The genesis of the C3CM JTF Program is described in this section. The following sections describe the scope of the program, the objectives to be achieved, and details of the program approach, management structure, and planned activities.

1.2 Genesis. The potential importance of C3CM in military engagements was identified in a Defense Science Board study (Ref. 2) performed in 1977 and later supported by a U.S. Air Force Counter Mission Analysis (Ref. 3) in 1978. Based on the Defense Science Board findings, the Secretary of Defense issued a memorandum (Ref. 4) directing the inclusion of C3CM objectives in Joint Training Exercises and the development of a C3CM testing program. The C3CM JTF was established in July 1982 by direction of the Deputy Secretary of Defense (Ref. 5), with the U.S. Air Force designated as the Executive Service and the U.S. Army as a participating Service. The C3CM JTF is under the control of the Office of the Under Secretary of Defense Research and Engineering, Director Defense Test and Evaluation (OUSDRE/DDTE).

The Joint Test Director (JTD) and Army and Air Force Deputy Test Directors (DTDs) were nominated and approved shortly after formation of the JTF. The JTF headquarters site was established at Kirtland Air Force Base, New Mexico.

2.0 SCOPE AND OBJECTIVES

2.1 Scope. The original task, to paraphrase the Defense Science Board, was to determine the military worth of counter-C3 (now termed C3CM). This task was deemed too broad, and a less ambitious but still formidable version of the original tasking was adopted. The revised task is embodied in the present C3CM mission statement. The development of C3CM information, as defined in the JTF mission, will be pursued within the following scope. Program emphasis will be on offensive C3CM. The JTF has developed a working definition of offensive C3CM as:

> A body of techniques which may be applied to degrade the effectiveness of the enemy's control over his tactical warfighting resources: troops, weapon systems, and materiel. The body of techniques includes both disruptive and destructive applications: destruction, jamming, and deception.

This definition focuses the JT&E efforts on determining the effects of Blue C3CM upon important Red battlefield functions in a tactical environment. The JT&E effort will be limited to tactical warfare.

In order to identify battlefield effects, both friendly and opposing forces (air and ground) will be represented in test and analysis activities. The opposing force will be representative of a mid- to late-80s Warsaw Pact-type threat; the capabilities of the U.S. force will be those expected to be operational in the same time frame. The effectiveness of the selected C3CM techniques will be assessed in the context of specific combat situations, e.g., a meeting engagement, river crossing, breakthrough, etc., and will be related to combat outcome. Analysis and test activities will concentrate on the identification of individual C3 networks that support important battlefield functions and on seeking ways to disrupt those functions that pose a significant threat.

2.2 Objectives. Five primary JT&E objectives have been identified:

(1) Assess the relative value of Red C3 components in a variety of combat situations.

The first objective is to assess the importance of Red C3 components in the context of typical air and ground combat situations. These assessments will be based upon the assumption that the importance of Red C3 is situation dependent, but that within a given situation, Red C3 components can be rank ordered in terms of the degree of threat posed.

(2) Assess Blue C3CM capabilities against selected Red C3 components.

The second objective addresses the Blue capability to achieve the desired effects on selected Red C3 components. Appropriate destructive and disruptive capabilities of Blue air and ground forces are assessed against the significant components of Red C3 defined in the first objective.

(3) Assess the effects of Blue C3CM employment on Blue combat performance.

The third objective examines the impact that Blue force C3CM activities have on Blue combat performance. The potential electronic fratricide problem and the impact of allocating combat resources to C3CM targets, rather than using those resources on more traditional targets, will be examined.

(4) Provide information pertinent to tactics development, employment concepts, etc., for C3CM.

The fourth objective is to produce test-result information that can be used by the Joint Chiefs of Staff (JCS), the Services, and their operational commands to aid in the development of tactics, procedures, employment concepts, etc.

(5) Provide a series of C3CM application handbooks for use by the Services.

It is one objective of the JTF to provide information to tactical air and ground commanders on C3CM techniques found to be effective under particular circumstances. This information will be articulated through a series of applications guidelines documented in C3CM handbooks.

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3.0 PROGRAM APPROACH

The task of the JTF is to plan for, conduct, and report the results of JT&E efforts to determine the capability of U.S. forces to disrupt enemy C3 at critical times in a modern air-land battle. The body of techniques available for such disruption includes the applications of C3CM: destruction, jamming, and deception. The C3CM techniques that will be emphasized in this program are jamming and destruction. The use of deception, while also important, will not be examined since the methods for applying deception are not well defined at this time. Exploitation, which is not included in our definition of C3CM techniques, is a critically important supporting tool for the sensible execution of C3CM activities.

3.1 General Description. A building-block approach has been selected to address the program objectives. This approach allows the program to evolve, while at the same time producing intermediate products of value to the Services. It makes maximum use of existing data and conventional wisdom in the C3CM community. This foundation of information will be augmented through JTF testing and analysis to provide data critical to the development or modification of C3CM application principles and procedures. The resulting products will be organized to support tactical air and ground commanders in developing specific joint concepts, strategies, and tactics for C3CM employment.

3.2 Approach Description. The JTF program approach combines analytical studies, supported by modeling and simulation, and field test activities. Both the analysis and field test activities will be conducted in the context of combat situations that permit the use of measures of effectiveness (MOEs) related to combat outcome. The approach has been organized as a four-step process (see Figure 1):

1. First-Order Analysis -- Describe the Red fighting force, its important C3 functions, and its apparent weaknesses.

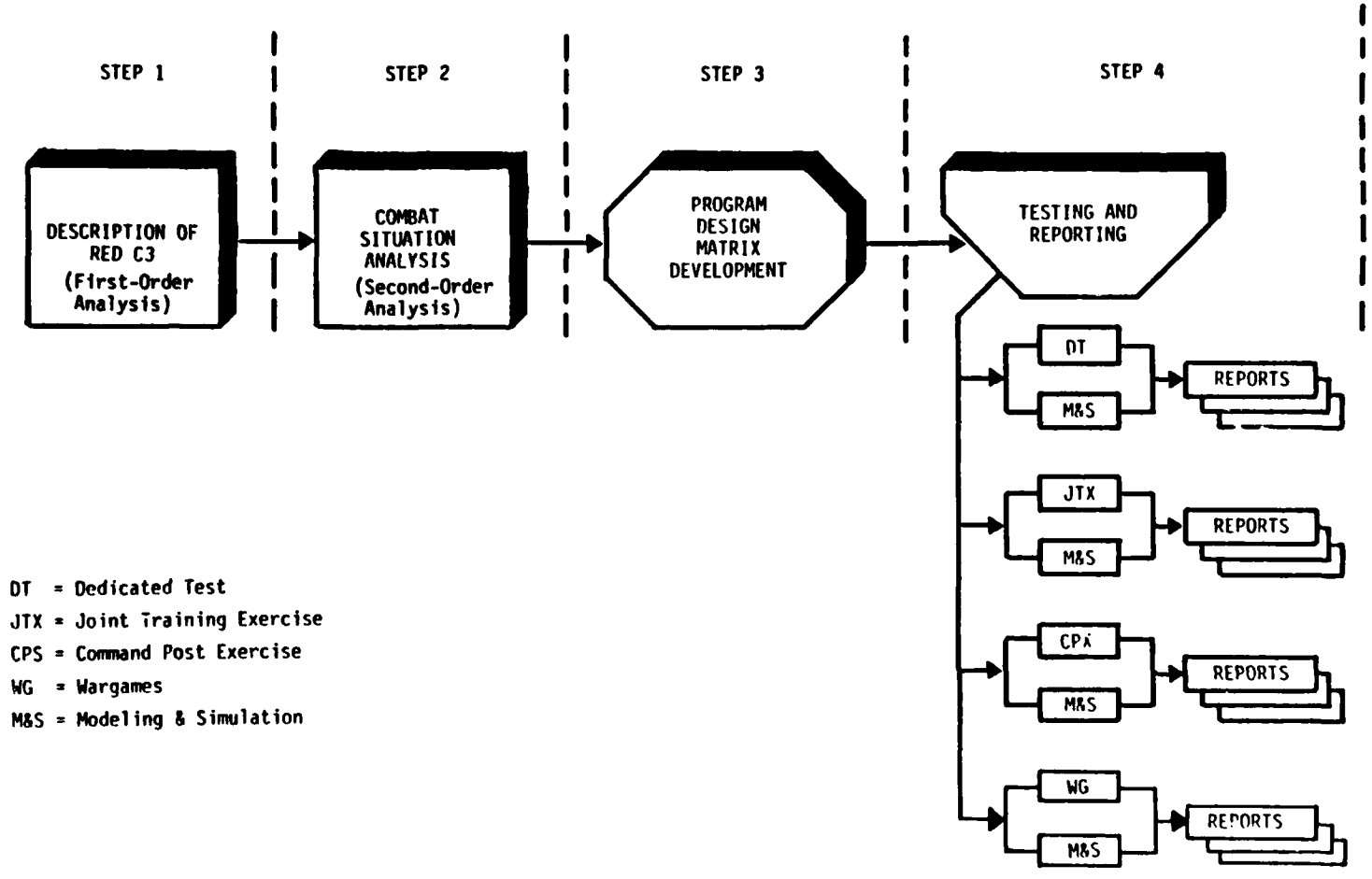

Figure 1. Four-Step Approach

2. Second-Order Analysis -- Analyze specific combat situations to identify the potential combat benefit of Blue C3CM application against identified Red C3 functions.

3. Program Design Matrix Development -- Organize the results of combat situation analyses into a program design matrix that indicates potential test options.

4. Testing and Reporting -- Conduct C3CM field tests and report the results.

Although the four-step process is shown in Figure 1 as a sequential process, there will be continual feedback between steps 2, 3, and 4.

3.2.1 First-Order Analysis -- In the first-order analysis, information on critical Red C3 will be gathered from existing intelligence sources. Red ground and air fighting forces and their important C3 functions will be defined, and the potential susceptibility of the Red C3 functions will be identified. The principal goal will be to screen the number of C3 functions that must be examined in subsequent analyses. Generic Warsaw Pact regiments will be the focus of the initial analysis. As a part of this analysis, the basic Red unit will be defined, and the appropriate C3 assets will be identified. Also, the C3 links and nodes associated with various supporting units that may augment the primary unit, such as artillery support, armor, air support, etc., will be identified. As the program progresses, similar analyses will be conducted at higher echelons, such as division or perhaps even Army. For the division, the first-order analysis will include consideration of division C3 for its regiments, as well as for any support units provided by Army or higher echelon.

3.2.2 Second-Order Analysis -- The second-order analysis will evaluate the results of applying Blue C3CM against those Red C3 functions identified in the first-order analysis as potentially susceptible. The second-order analysis will address specific combat situations in given

geographic locations. The primary objective will be to identify battlefield functions that, if impacted by the application of C3CM, could significantly change the battle outcome. Consider the combat situation of a Red regiment conducting a river crossing. In such a situation, the second-order analysis might indicate that artillery suppression of Blue forces would be critical to the overall Red operational timetable and that artillery effectiveness would be dependent upon information transmitted via radio link from a forward targeting unit. Blue C3CM options, in this case, would include jamming the radio link or destroying the forward targeting unit. The application of either C3CM option would result in a less effective barrage mode of fire, which could result in failure of the Red force to meet its timetable.

The second-order analysis can begin as soon as a situation of interest has been identified and the first-order analyses required to support that situation have been completed. Consequently, after an initial period, both levels of analysis can be carried on in parallel and it is not necessary to view the two steps as sequential.

The results from each combat situation analysis can be depicted in matrix form, as shown in Figure 2; the matrix would identify the candidate battlefield functions that require continued analysis and modeling and eventual field testing. Field testing, in turn, may indicate a need for further analysis.

COMBAT SITUATION: RIVER CROSSING

	IMPORTANT BATTLEFIELD FUNCTIONS					
C3CM OPTIONS	F_1 ATY SPT	F_2 RCCP	F_3 CAS	F_4 LOG SPT	•••	F_N
DESTRUCTION	•	•		•		•
JAMMING	•		•			
DECEPTION						
EXPLOITATION						
DEGRADATION			•			•

Figure 2. Results of Combat Situation Analysis (Example)

The second-order analysis will also be applied to echelons above regiment. For example, at the division level, the combat analysis would focus on specific combat situations and locations, and the results from the regimental-level analysis could provide a major data base for higher-echelon combat analyses.

3.2.3 Program Design Matrix Development -- The first task in developing the program design matrix is to identify combat situations in which important battlefield functions can be represented in a test environment complete with associated C3. The resulting list of combat situations within which C3CM techniques can be measured and evaluated form the basis for the program design matrix. This initial program matrix will be carefully reviewed to select the most appropriate test option(s) available to the JTF.

Combat situations that were identified in the second-order analysis as candidates for C3CM application will be carefully reviewed, and a survey of available test vehicles will be conducted. The results of this activity will be displayed as a program design matrix, as shown in Figure 3. Each row of the matrix is a selected combat situation and location that has a potentially high payoff for Blue C3CM application. The columns indicate options available for testing the findings of combat situation analyses. The surveys necessary to define the test options will be conducted as part of the basic program support activities discussed in Section 5.

Development of the program design matrix is of special importance because it is during this process that the requirements of C3CM testing are matched against JTF capabilities. The JTF may not be able to accommodate all the identified potential test candidates. Therefore, a list of test priorities will be established based upon a comparison of the cost of implementation versus the potential data return for each identified test candidate. Test option selections will be based upon assessment of the importance of the findings, the cost of the test, and the availability of the necessary resources. The result of this effort is the program design matrix, which becomes the JTF road map for testing.

TEST OPTIONS / EXAMPLE COMBAT SITUATIONS	TESTS							
	FTX	JTX	CPX	OT	DT	Ded. FT	WG	OTHER
MEETING ENGAGEMENT (EUROPE)	*	*						
HASTY DEFENSE (EUROPE)				*		*		
HASTY DEFENSE (KOREA)							*	
DIVISION COUNTERATTACK (KOREA)	*		*					
MEETING ENGAGEMENT (SW ASIA)							*	
RIVER CROSSING (SW ASIA)		*			*	*		
OFFENSE (EUROPE)			*					
	ANALYSIS							
	MODELING AND SIMULATION SUPPORT							

Figure 3. Example Program Design Matrix

As the program progresses to the evaluation of higher-echelon Red forces, similar analyses will be required to select the combat situation and test option matches. These selections will be added to the matrix to complete the test road map. One of the major differences at the higher echelons is that the field test options will, in most cases, be limited because of cost and size of forces required for dedicated field tests.

3.2.4 Testing and Reporting -- During this step, the potentially high-payoff C3CM will be evaluated using the test options indicated in the program design matrix. The actual field test options are to participate in field training exercises (FTXs), joint training exercises (JTXs), command post exercises (CPXs), developmental tests (DTs), operational tests (OTs), or wargames (WGs), or to conduct dedicated field experiments/tests.

Specific test objectives, as coordinated with the participating Services, will be defined for each combat situation designated as testable in the program design matrix. The combat situation is the context in which the test objectives are addressed. These specific test objectives for field activities will be directly related to the program objectives discussed in Section 2.

As in the previous approach steps, the initial tests will address the Red combat regiment. These test efforts, as currently planned, will primarily be field activities supported by regimental-level modeling with inputs from theater-level air models. The results of these activities will serve as inputs supporting the evaluation of C3CM in combat situations at higher echelons.

3.3 Test Options. The principal thrust of any test program is the generation of data pertinent to areas of interest. The C3CM program will rely upon a variety of test vehicles to develop data for C3CM analysis and evaluation. These test vehicles include FTXs, JTXs, CPXs, DTs, OTs, WGs, and dedicated experiments/tests. Five test options have been identified for possible C3CM use: (I) "piggyback" exercise/test, (II) extended exercise/test, (III) dedicated experiment, (IV) dedicated test, and (V) wargames.

Option I involves participation in a "piggyback" fashion on planned JTXs, CPXs, DTs, and OTs. In the "piggyback" mode, the JTF would participate in the initial planning of the exercise/test in order to incorporate JTF objectives and data requirements into the original plan. The goal would be simply to collect data on the original planned exercise/test, but could involve developing special exercise scenarios that have training value and address a specific JTF need. This option is probably the least productive from a data generation standpoint but provides the best conservation of resources.

Option II would be to extend an existing field exercise/test time window to accommodate JTF requirements that are not compatible with the planned field exercise/test. In this case, the JTF would be responsible for the planning and execution of the additional testing phase and for a share of the additional costs. The additional time needed for C3CM objectives could occur immediately before or after the originally scheduled test. This option has the advantage that the resources needed and the ability to control those resources would already be in place.

Option III is to conduct a limited field experiment where force requirements are scaled down to the minimum necessary for collection of the required data. This would be a specific slice of the battlefield that could be used to address some specific issue(s) that does not require an entire Red unit. For example, such an experiment might assess the ability of a specific Blue force to locate, identify, and employ a C3CM technique against a Red C3 link. This capability can be addressed without the entire regiment in place.

Option IV is to conduct a large-scale, dedicated field test. This is the least desirable option because it would involved providing all the planning, execution, and logistical support with its attendant drain on the personnel and budget of the JTF and the Services.

Option V, dedicated wargaming, is another vehicle for developing data pertinent to C3CM, although it is probably useful for examining only a narrow range of issues. Wargaming is relatively inexpensive, even if computer supported, and it may prove valuable in assessing particular test issues such as decision-process timelines, sensitivity of combat activities to decisions, and the criticality of time delays in information flow.

The JTF will make every effort to conserve resources but, at the same time, to address as many C3CM applications and to collect as much pertinent data as possible. Figure 4 compares our subjective estimates of the relative resource cost versus usable data provided, where 1 represents the most desirable condition.

	OPTIONS	RESOURCE COST	DATA
I	PIGGYBACK EXERCISE/TEST	1	4
II	EXTEND EXERCISE/TEST	2	2
III	DEDICATED EXPERIMENT	3	1
IV	DEDICATED TEST	4	1
V	WARGAMES	1	4

Figure 4. Test Options

Based on this comparison, options II and III are the two best compromise options for the JTF to pursue in fulfilling program objectives. However, this conclusion does not preclude the use of one or even all of the other options.

3.4 Analysis. Throughout the program, the C3CM approach makes extensive use of analyses supported by modeling and simulation. These analyses include combat situation analyses to define the candidate scenarios, test design analyses to aid detailed test planning and test analyses that support test reporting, and C3CM application development. There is also a program summary analysis that will tie together individual results to address the program objectives.

3.4.1 Combat Situation Analyses -- Combat situation analyses (first and second order) describe the Red C3 at regimental and higher echelons and then assess the potential influence of Blue C3CM equipment and tactics on Red combat performance.

The initial series of analyses will be directed at describing the C3 of a Red motorized rifle regiment and the various combat support functions that can augment or reinforce that regiment. Subsequent analyses will use the results of the regimental-level analyses to describe the higher-echelon Red C3 and its potential vulnerabilities.

The combat situation analyses are designed to integrate the results of two or more initial analyses in a specific combat scenario and to analyze the effects of applying Blue C3CM equipment and tactics against the Red C3 network. (A Blue-on-Blue analysis will also be conducted for each testable combat situation.)

3.4.2 Test Design Analyses -- Test design analyses are conducted in support of test design and test planning to further define the combat vignettes that will be examined in field testing.

3.4.3 Test Analyses -- Test analyses will be an integral part of each test. These analyses will be performed on test-generated data for two principal purposes: satisfaction of specific test objects and satisfaction of selected program objectives.

3.4.4 Program Summary Analysis -- The program summary analysis is directed at answering the overall program objectives of the JTF. This analysis will be a substantial effort that will combine the results of

all individual test activities. The requirements for this analysis will be carefully considered during the design and planning of individual test efforts to ensure that the overall program objectives are served.

3.5 Modeling and Simulation. Computer models and simulations will be used to estimate the value of selected C3CM applications as an aid to identifying appropriate test vehicles, as a tool to refine test design, and as an aid to posttest analysis to include extension/extrapolation of field test results. The JTF modeling approach is based on extensive use of existing models, which will be loosely integrated through analytical links. Maximum use of existing models, the Army Model Improvement Program, and models proven and accepted in the Air Force community is planned.

3.5.1 Regimental-Level Modeling -- Regimental force-on-force models will be used primarily for exercise planning and to extend the results observed in field exercises. A single, small-unit model will be selected as a baseline. Air inputs to the baseline model will be provided by any of several models currently under review. The small-unit model will be modified, as necessary, to meet the basic C3CM requirements and tailored to support testing of selected C3CM applications for various combat situations and locations. Figure 5 depicts the approach to regimental-level modeling.

3.5.2 Division/Army-Level Modeling -- The upper-echelon models may be used in conjunction with large JTX and CPX activities. Probable issues pertinent to these levels involve the results of alternate unit deployments, theater air power apportionments, and timelines associated with battle management decisions. A large interactive model that can support air and ground players on both sides may be well suited to meet these needs. Specific air and ground models appropriate to upper-level modeling are still being reviewed. This approach to the use of specific models for upper-echelon modeling is shown in Figure 6.

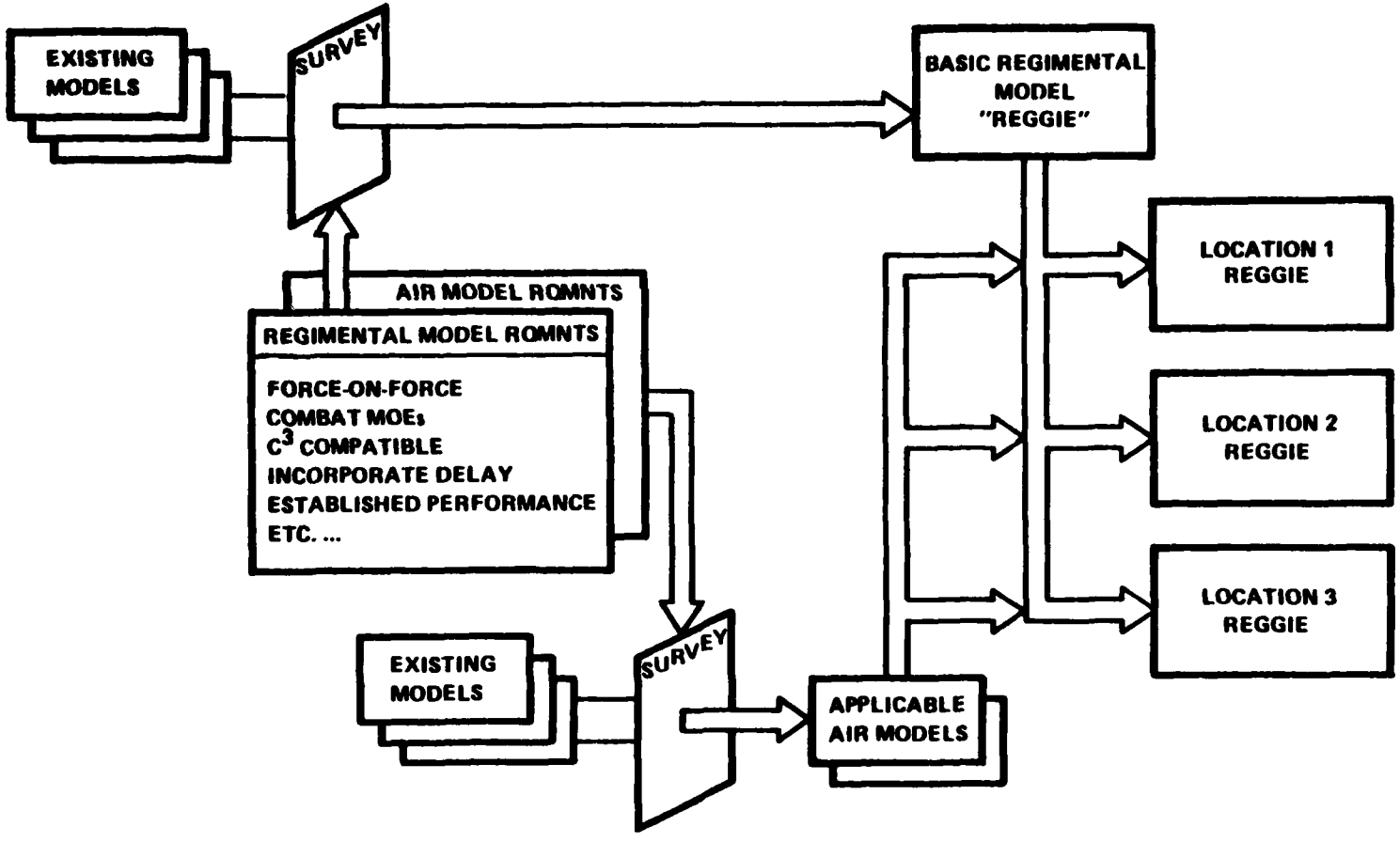

Figure 5. Regimental-Level Modeling

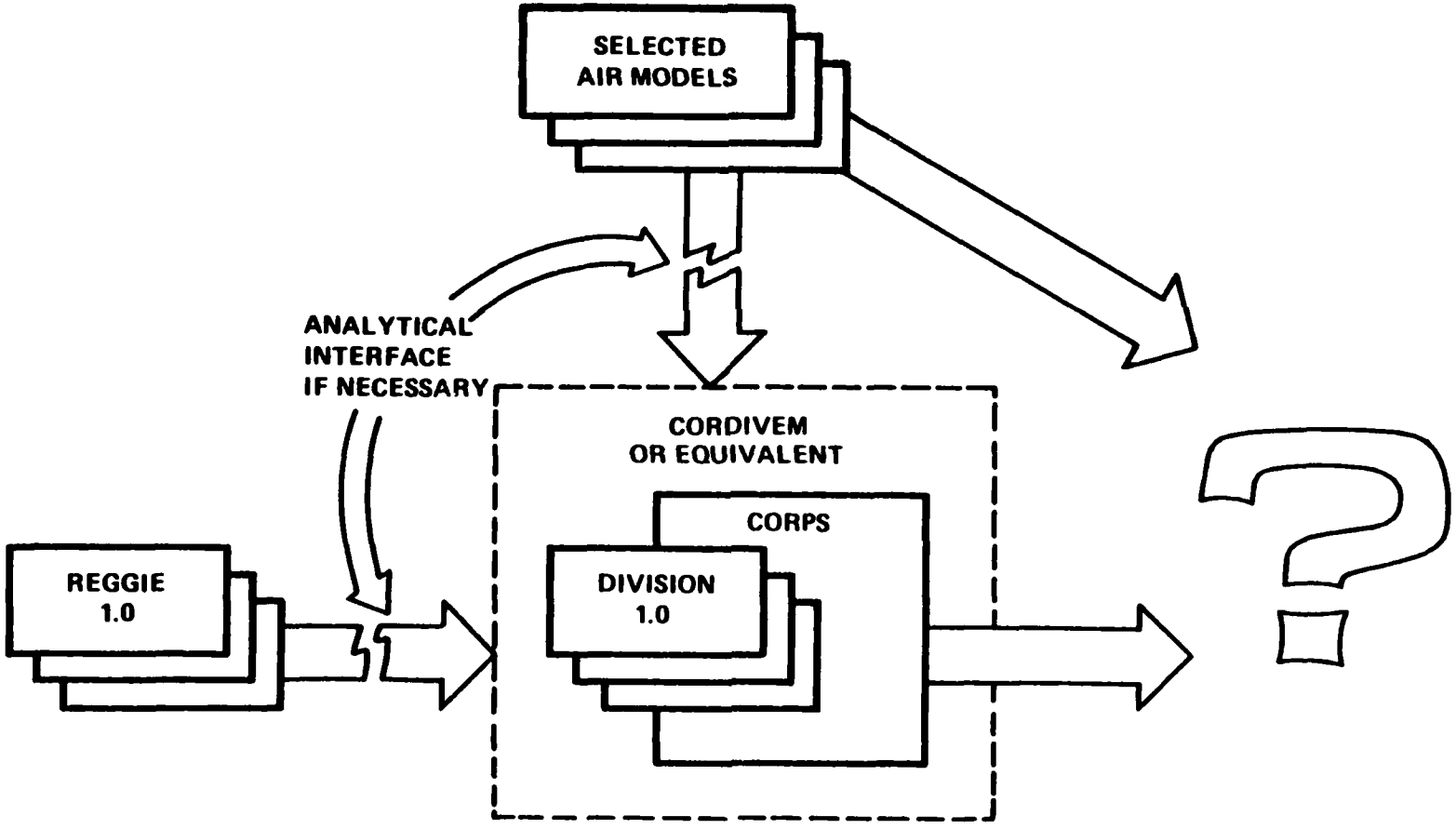

Figure 6. Upper-Echelon Models

3.6 Summary. Analysis and testing, both supported by modeling and simulation, will be used in an iterative and mutually reinforcing way to evaluate and develop C3CM application principles. This process is depicted in Figure 7.

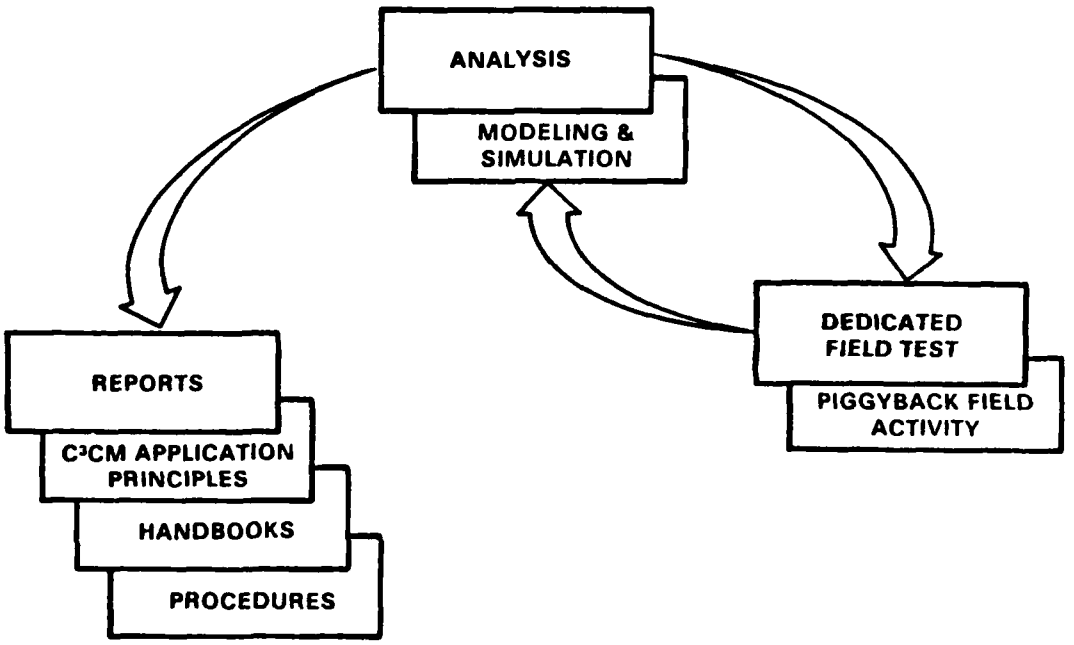

Figure 7. Program Interrelationships

4.0 MANAGEMENT

The JTF organizational structure, relationship to other organizations, and overall management approach are delineated in this section.

4.1 JTF Organizational Relationships. The top-level organizational relationship of the JTD and JTF program to the Department of Defense is depicted in Figure 8. The JTD reports to OUSDRE/DDTE. Since this is a joint Air Force and Army test with the Air Force as the lead service, the JTD was selected from the Air Force with a DTD from each participating service. The DTDs report to their respective Service staff through the Air Force Operational Test and Evaluation Center (AFOTEC) and the U.S. Army Operational Test and Evaluation Agency (USAOTEA).

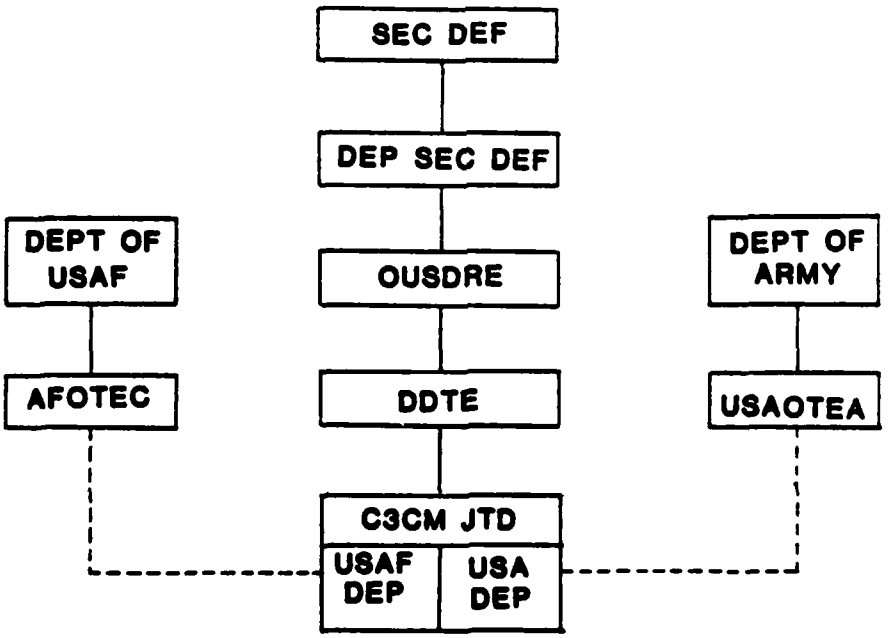

Figure 8. Organizational Relationships

4.2 C3CM JTF Organization. The JTF organization is illustrated in Figure 9. The Air Force and Army DTDs also serve as Deputy Chiefs of Staff (DCS) for Operations and Analysis and Resources/Intelligence, respectively. The DCS for Operations and Analysis has a Director for Operations and a Director for Analysis, and the DCS for Resources/Intelligence has a Director for Intelligence/Threat and a Director for Resources/Long-Range Planning.

4.3 JTF Management Approach. The JTF will use a two-level management approach to the C3CM program and its many test activities. Program management will focus on defining the overall test requirements; test management will address short-term planning, execution, and reporting of specific test segments.

4.3.1 Program Management -- The program management structure addresses overall top-level program design. Under program management, program design decisions are made, tests required to meet the program objectives are identified, the resources to support test activities are defined and coordinated, and the schedules are established. The JTD, the deputies, and the directors, with support from the system engineer (MITRE), provide program guidance and continuity.

4.3.2 Test Management -- The management approach for testing, analysis, and supporting modeling and simulation is formed around the three phases of the testing process. These phases are (1) test design, (2) test planning, and (3) test conduct and reporting. These phases, their relationship in time, the subordinate activities, and the resultant products are illustrated in Figure 10. In the design phase, individual test designs are developed based upon the program requirements identified in the program design matrix. Each test design will be coordinated with OUSDRE/DDTE, JCS, and the appropriate Services. In the test planning phase, the test design is taken one step further in terms of detail. The requirements are refined, and the resources and schedules are established. The product of this phase is the Test Plan, which will also be coordinated with OUSDRE/DDTE, JCS, and the

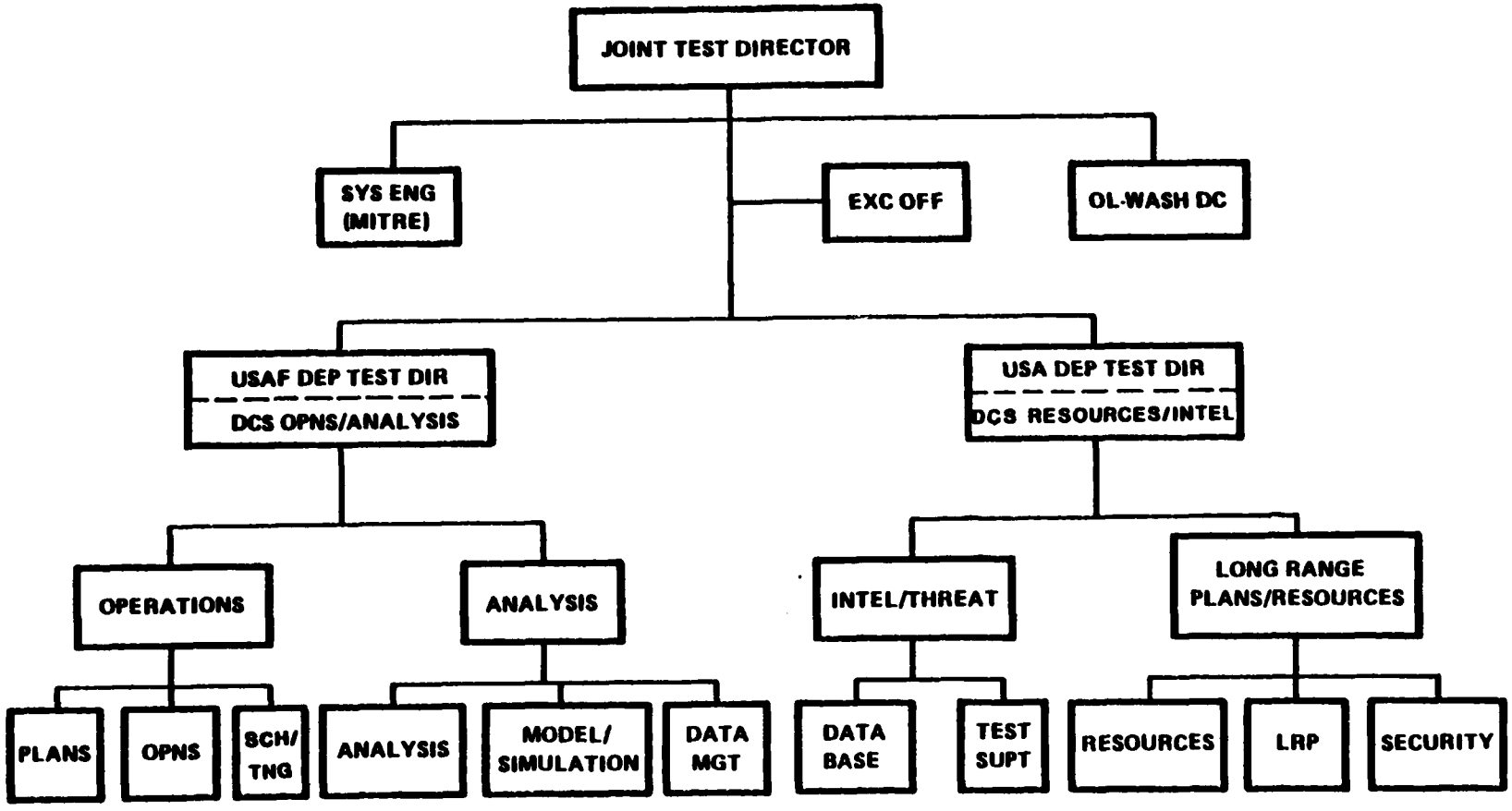

Figure 9. C3CM JTF Organization

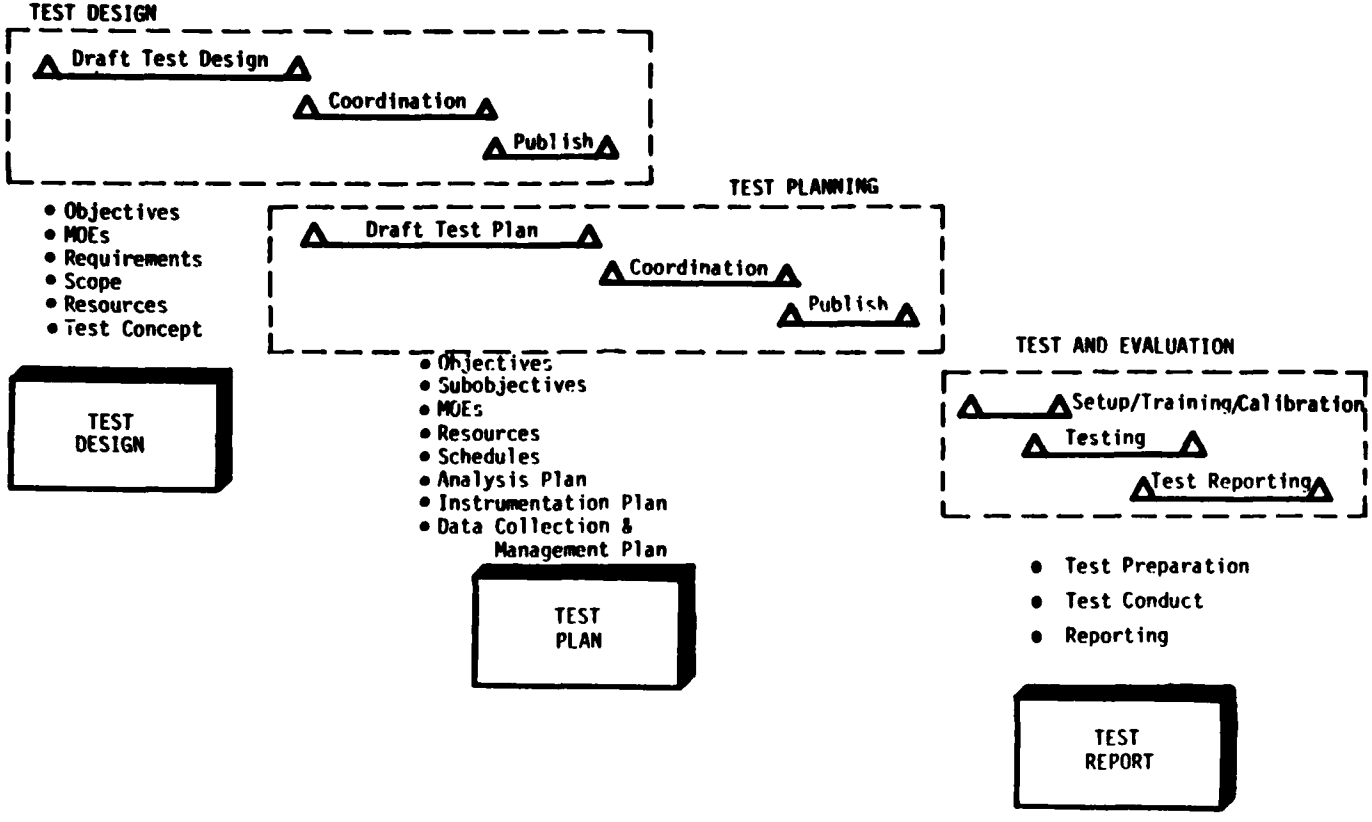

Figure 10. Test Phases

appropriate Services. The final phase is Test Conduct, where the actual testing is accomplished, and the results are analyzed and documented in the test report.

Management of the field test activities will require test team representation from all the directorates. Responsibility for each test phase (design, planning, and execution) will be assigned to the directorate that is staffed with the appropriate skills and experience. The field test team will be composed of members from across the JTF directorates, the system engineer, support contractors, and TDY augmentation as required.

Figure 11 depicts a JTX test management process. The location of the circled activity on the chart indicates where the responsibility for that activity resides. Also indicated on the chart is the relationship between the JTF and the JTX process. The Resources/Long-Range Plans directorate will be assigned responsibility for the test design phase. The responsibility transitions to the Field Test Director in the test planning phase and continues through the test execution and reporting phases. At the completion of these test reporting efforts, Long-Range Plans has the responsibility for handbook revisions based upon the results of the field tests. Final publication and coordination of a new handbook is the responsibility of the JTD.

Management of the analysis activity, including modeling and simulation support, is the responsibility of the Director of Analysis.

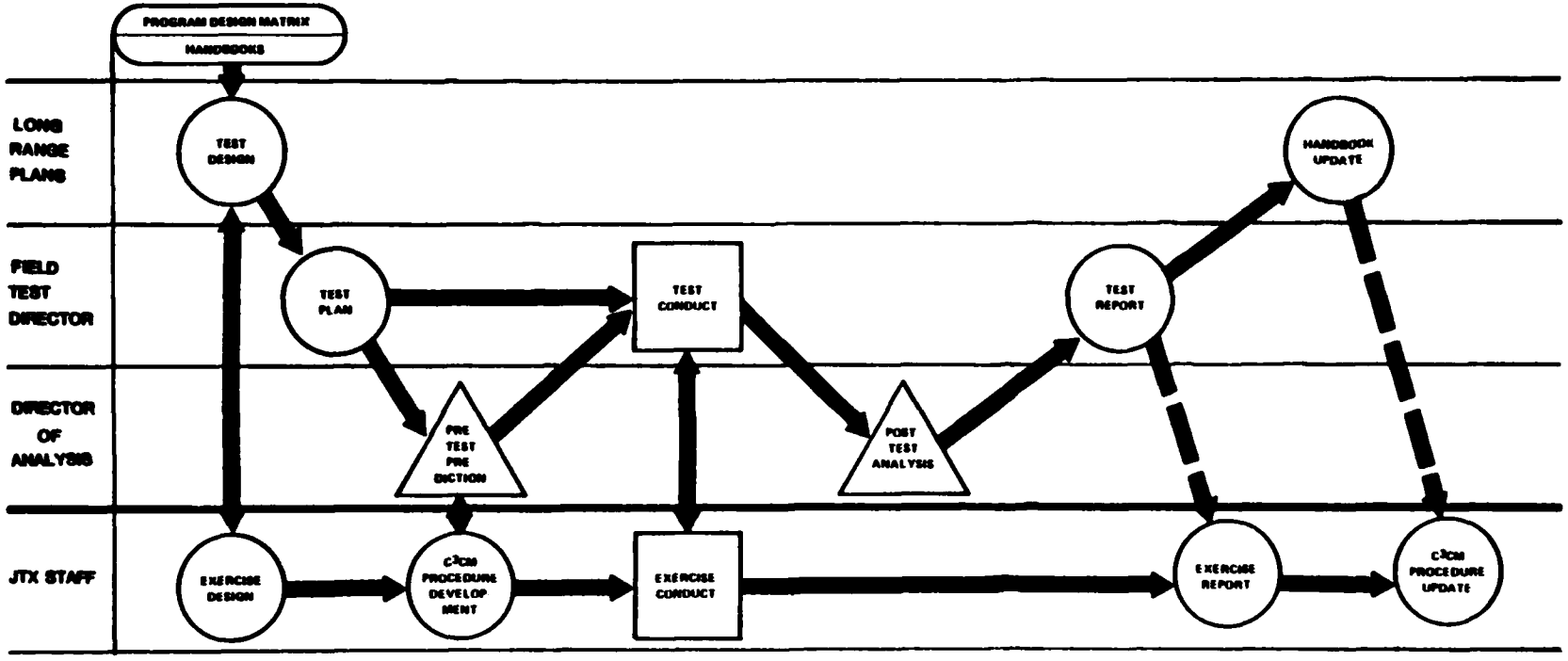

Figure 11. JTX Test Management Process (EXAMPLE)

5.0 OVERVIEW OF PROGRAM ACTIVITIES

The C3CM JTF, which was established in July 1982, is scheduled to complete its activities not later than May 1989. The overall program is divided into time phases by two intermediate review points (IRPs), which were established to provide program review by OUSDRE/DDTE and the Services. The first IRP is scheduled at the end of the third quarter, FY 1984. Although a firm date for the second IRP has not been set, it will probably be scheduled near the end of the third quarter, FY 1986. The first IRP is established early enough to allow program redirection before commitment to full funding. The second IRP should occur late enough in the program to examine issues of diminishing returns and of the cost of gaining additional information.

Program activities can be classified into three broad categories: program support, analysis and evaluation, and test conduct. Figure 12 shows the JTF program schedule for these three categories of activities. The timelines for some of the major early activities, as well as a notional test conduct schedule, are indicated on the figure. The focus of these activities is guided by overall program objectives and the first IRP requirements. The specific products identified for completion in Phase I are (1) a Program Approach, (2) a Program Design Plan, and (3) a Prototype Handbook(s).

5.1 Program Support. A wide variety of activities is included under program support. Early phase activities will be directed at test force formation and administration, program planning, and data base development. Later, the level of activity will be reduced, and activities will be directed toward general support functions.

General program support includes data base development activities such as surveys of Blue C3CM capabilities; Red simulator capabilities; test range capabilities; JTX, OT, and DT schedules and objectives; and ground and air combat models. In addition, there are activities directed at developing combat situations for regimental as well as higher levels of combat, data management architectures, analysis techniques, and priorities for selecting test options. Finally, the

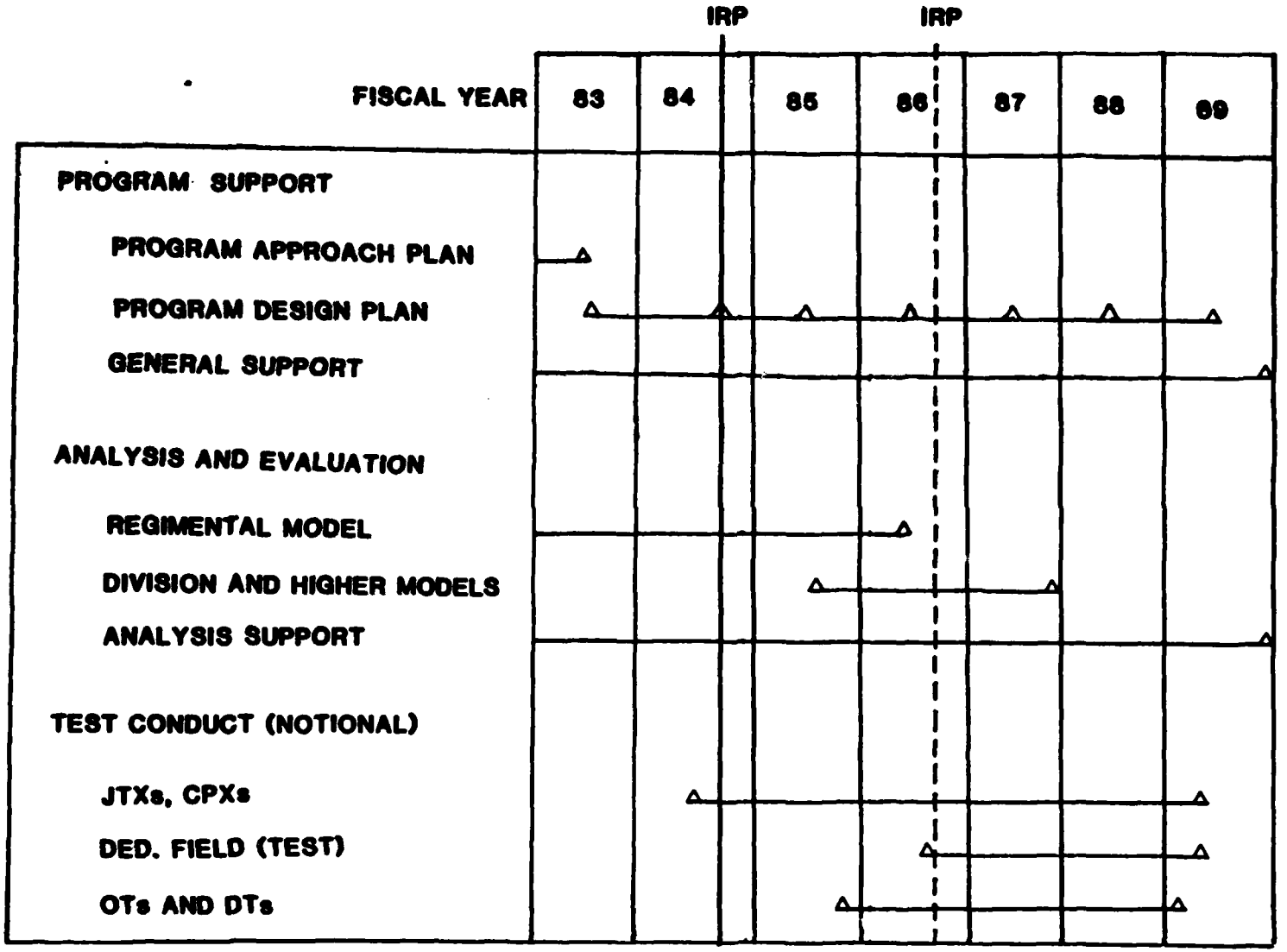

Figure 12. Program Schedule (July 1983)

management functions that span the whole program, such as budgeting, scheduling, contracting, and program control, also fall under general support. Current activities are directed at developing the Program Design Plan, which will establish the architecture for the program.

5.2 Analysis and Evaluation. Analysis activities span the entire program time frame. These activities will focus on combat situation analysis at various combat levels, on test design analysis, on analysis of test results, and on summary program analysis. Currently, the JTF is (1) conducting Red C3 description studies, (2) conducting a sample combat situation analysis, and (3) investigating combat scenario development techniques. The JTF has developed general model requirements for the regimental, force-on-force, and air-land battle model(s) and is reviewing the capabilities of existing models. The initial emphasis is on regimental level of combat with air inputs as appropriate. As the program evolves, this emphasis will shift to divisional or a higher level of combat with theater-level air representation.

The Electronic Warfare during Close Air Support (EW/CAS) Joint Test Force has developed considerable data on the performance of Blue close-air-support aircraft in an integrated-threat air defense environment. Due to EW/CAS test-related artificialities, the impact of SAM/SHORAD battery reload times and logistics factors and saturation of the air defense was not investigated. A follow-on analysis of the EW/CAS JTF results will be performed. The C3CM JTF, utilizing a modified version of TAC DISRUPTER, will investigate the effect on the test results of injecting realistic reload and logistics factors and the impact of SAM/SHORAD saturation on the effectiveness of air defense.

5.3 Test Conduct. Field testing activities will be directed at issues identified by the Services, the JCS, and the operating commands and will be included in the program design matrix. A strawman Field Activity Schedule that reflects actual joint exercises and possible OT/DT "piggyback" and dedicated field tests is shown in Figure 13. The joint

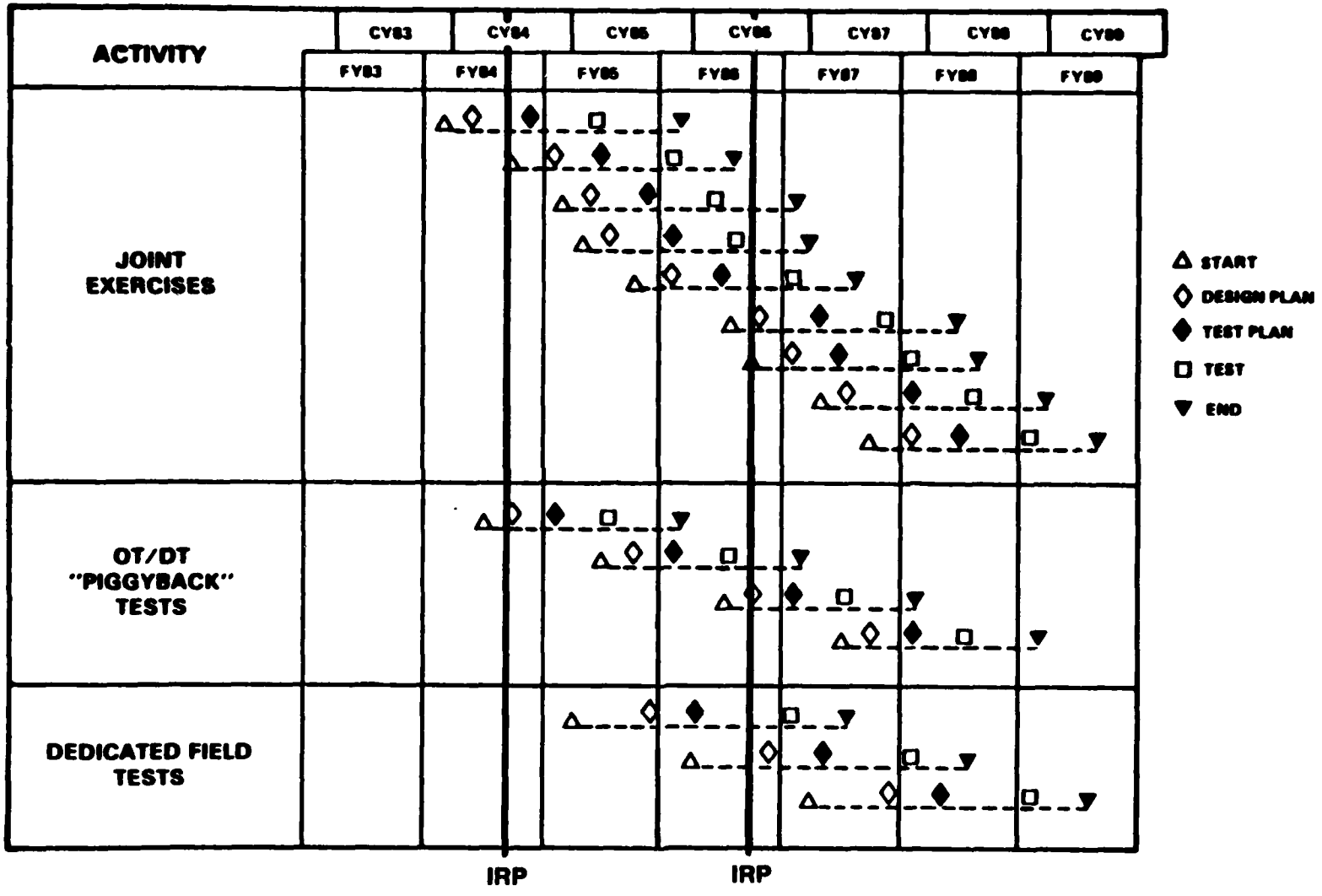

Figure 13. Field Activity Schedule

exercises indicated are actual scheduled JTXs through 1989 that have C3CM as an objective or that hold a potential for realistic C3CM scenario development. As depicted in the Field Activity Schedule, dedicated field tests are currently planned to begin in 1985; however, the JTF could go to the field in late 1984 should tentative Service C3CM plans mature.

Currently, the JTF plans to use JCS exercise BOLD EAGLE 84 (15-19 October 1983) as a dry run to gain experience in the planning of future exercises in which the JTF will be a full participant. The JTF has established a Field Test Planning Team that is involved in attending all planning phases of the REDCOM-directed BOLD EAGLE 84. Although the JTF will not be an active participant in that exercise, the JTF will observe with two primary goals: (1) to observe how an exercise of this scope is planned and (2) to determine how offensive C3CM testing can be accomplished in a major field training exercise.

To support the development of a detailed Field Activities Schedule, a series of planning timelines required for conducting field tests has been prepared for each option, i.e., JTX, OT/DT, and dedicated field test (see Figure 14). The major factors in establishing the individual test schedule timelines are the lead times necessary to schedule and coordinate the Services' resources and the use of ranges and the procurement of special instrumentation. Another factor that impacts the total time is the reporting cycle. It is estimated that it will take 6 months to prepare and publish the test reports and the inputs to the handbooks. This estimate results in an average time from start of planning to handbook inputs of 19 months for OT or DT involvement, 23 months for JTXs, and 33 months for dedicated field tests. The long lead time required for dedicated field tests is predicated on the need to have the preliminary plan accomplished early enough to ensure that the long-lead-time items, such as special instrumentation or simulations, can be identified, scheduled, and procured. Also, the range scheduling requests normally must be completed no later than 12 months before the test period. Note that all of the time estimates are averages and may be reduced considerably depending upon program priorities, range availability, and the degree to which "piggyback" testing is possible.

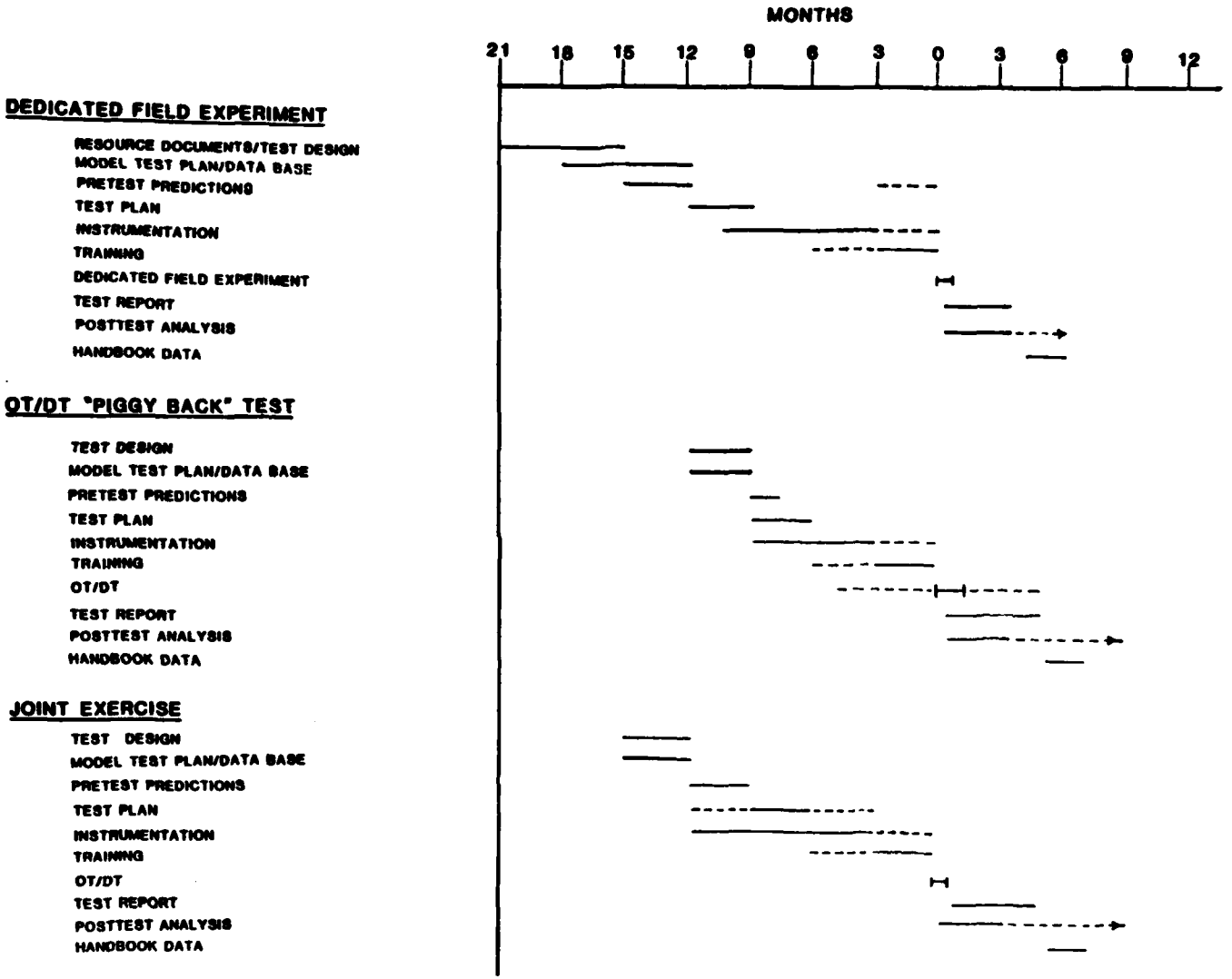

Figure 14. Planning Timelines

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2. Defense Science Board 1977 Summer Study.

3. Countermission Analysis of Warsaw Pact C3 (U) Volume I - Summary Report, CMA Final Report, ESD/DV-2610-1-78, June 1978 (SECRET, A83:S-0120).

4. Secretary of Defense Memorandum, "Counter-C3," 5 May 1976.

5. Deputy Secretary of Defense Memorandum, "C3 Countermeasures Joint Test," 2 July 1982.

LIST OF ABBREVIATIONS

AFOTEC	Air Force Operational Test and Evaluation Center
C3	Command Control Communications
C3CM	Command Control Communications Countermeasures
CPX	Command Post Exercise
DCS	Deputy Chief of Staff
DT	Developmental Test
DTD	Deputy Test Director
EW/CAS	Electronic Warfare During Close Air Support
FT	Field Test
FTX	Field Training Exercise
IRP	Intermediate Review Point
JCS	Joint Chiefs of Staff
JTD	Joint Test Director
JT&E	Joint Test and Evaluation
JTF	Joint Test Force
JTX	Joint Training Exercise
MOE	Measure of Effectiveness
M&S	Modeling and Simulation
OT	Operational Test
OUSDRE/DDTE	Office of the Under Secretary of Defense for Research and Engineering (Director Defense Test and Evaluation)
USAOTEA	U.S. Army Operational Test and Evaluation Agency
WG	Wargame

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