

# Joint Fires and Targeting Handbook



**Joint Warfighting Center  
Joint Doctrine  
Suffolk, Virginia**

**Joint Capability Development  
Joint Integrated Fires  
Norfolk, Virginia**

**19 October 2007**



**US Joint Forces Command**  
Joint Warfighting Center  
116 Lake View Parkway  
Suffolk VA 23435-2697

## **MESSAGE TO THE JOINT WARFIGHTERS**

The fires function and targeting process continues to mature at an accelerated pace as joint, coalition, and supporting forces remain engaged in on-going, high-tempo operations. These continuing operations reinforce the need for knowledgeable and efficient planners, targeteers, and weaponeers.

Emerging technologies and joint warfighter experiences combine to turn lessons learned into improved and new joint fires and targeting planning, execution, and assessment best practices. Many of these innovative procedures are recognized by the joint community, but they are not yet approved joint doctrine.

This handbook was developed to ensure commonly accepted best practices for planning, executing, and assessing joint fires and targeting are documented. While this handbook does contain extracts from many doctrinal publications, it is not approved joint doctrine, but serves as an important pre-doctrinal product that will aid its refinement.

United States Joint Forces Command developed this handbook for combatant commanders, subordinate joint force commanders, joint force staff members, and first tactical echelon personnel. Suggestions for improving this handbook are encouraged and can be forwarded to the Commander, Joint Warfighting Center, and the Director, Joint Capability Development. Respective POCs are Mr. Dave Spangler, (757) 203-6028, david.spangler@jfc.com.mil; and Mr. Tom Jucks, (757) 836-6082, thomas.jucks.ctr@jfc.com.mil.

  
GILMARY M. HOSTAGE, III  
Major General, U.S. Air Force  
Director, Joint Capability Development

  
JASON K. KAMIYA  
Major General, U.S. Army  
Commander, Joint Warfighting Center  
Director, Joint Training, J-7

## PREFACE

### 1. Scope

The *Joint Fires and Targeting Handbook* provides established and evolving tactics, techniques, and procedures used by personnel involved in day-to-day joint fires and targeting processes.

### 2. Purpose

This handbook serves as a bridge between current operational-level doctrine and tactical-level employment at the joint force level. It is intended to inform doctrine writers, educators, and trainers about the joint targeting process. It supplements, not replaces, existing joint or Service doctrine. The handbook is designed for use by personnel assigned to (or participating in) a joint targeting effort. It also presents well developed definitions that have been harmonized with joint doctrine and discusses those “best practices” that have proven of value during on-going military operations, exercises, and experimentation.

### 3. Application

The handbook is meant to educate the joint community about the joint fires and targeting processes and to offer some useful techniques and procedures that can be used in the combatant commands and subordinate units by commanders and their staffs.

### 4. Command

The recommendations in this handbook are based on best practices observed during current operations, exercises, experimentation, and prototyping, as well as existing joint doctrine. Commanders may tailor specific elements to conform to their individual staff requirements.

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# TABLE OF CONTENTS

	PAGE
Preface.....	i
CHAPTER I	
FUNDAMENTAL CONSTRUCTS	
SECTION A. FIRES AND TARGETING .....	I-1
• Fires — A Joint Function.....	I-1
• Targeting — A Fires Task and Process .....	I-2
• Targets — Characteristics, Types, and Time Sensitivity.....	I-5
SECTION B. JOINT OPERATION PLANNING, DESIGN, AND ASSESSMENT ...	I-12
• Joint Operation Planning.....	I-12
• Operational Design .....	I-18
• Planning and Targeting During Execution .....	I-30
• Assessment.....	I-31
CHAPTER II	
COMMAND AND STAFF RESPONSIBILITIES AND FUNCTIONS	
SECTION A. JOINT TASK FORCE HEADQUARTERS .....	II-1
• Commander, Joint Task Force .....	II-1
• Joint Targeting Coordination Board .....	II-2
• Joint Task Force Staff.....	II-6
• Battle Rhythm .....	II-12
SECTION B. JOINT TASK FORCE COMPONENTS AND FORCES.....	II-15
• Common Responsibilities .....	II-15
• Functional and Service Component Commanders.....	II-16
CHAPTER III	
JOINT FIRES PLANNING AND TARGETING	
SECTION A. JOINT FIRES PLANNING .....	III-1
• Inputs .....	III-1
• Coordination and Synchronization .....	III-2
• Planning Considerations .....	III-15
• Information Operations Planning Outline.....	III-21
SECTION B. JOINT TARGETING CYCLE.....	III-25
• Introduction.....	III-25
• The Joint Fires and Targeting Process .....	III-26

## Table of Contents

---

- Phase 1 – The End State and Commander’s Objectives ..... III-28
- Phase 2 – Target Development and Prioritization ..... III-43
- Phase 3 – Capabilities Analysis ..... III-69
- Phase 4 – Commander’s Decision and Force Assignment ..... III-79
- Phase 5 – Mission Planning and Force Execution ..... III-89
- Phase 6 – Assessment ..... III-108

### CHAPTER IV

#### PRODUCTS AND ORDERS

##### SECTION A. TOOLS AND PRODUCTS ..... IV-1

- General..... IV-1
- Target Value Analysis..... IV-3
- Sensor/Attack Systems Matrix..... IV-8
- High-Payoff Target List..... IV-10
- Target Selection Standards Matrix..... IV-11
- Collection Plan..... IV-13
- Attack Guidance Matrix..... IV-14
- Target Synchronization Matrix ..... IV-16
- Delivery Standards Matrix ..... IV-17
- Time-Sensitive Targeting Decision Matrix ..... IV-18
- Target Report ..... IV-21

##### SECTION B: ORDERS PRODUCTION ..... IV-22

- Joint Air Tasking Cycle ..... IV-22
- Air Tasking Order Production ..... IV-23
- Joint Fire Support Planning ..... IV-29
- Information Operations Appendix ..... IV-34

### APPENDIX

- A Intelligence Organizations Supporting Targeting ..... A-1
- B Joint and Service Fires Control Systems ..... B-1
- C Joint Fires Networked Systems..... C-1
- D Datum and Coordinates Systems ..... D-1
- E Regional Joint Air Operations ..... E-1
- F References..... F-1

### GLOSSARY

- Part I Abbreviations and Acronyms..... GL-1
- Part II Terms and Definitions ..... GL-9

### FIGURE

- I-1 Interdiscipline Participation in Targeting..... I-4

## Table of Contents

---

I-2	Targeting Categories.....	I-5
I-3	Joint Operation Planning Process Steps.....	I-14
I-4	Sample Desired & Undesired Effects .....	I-21
I-5	Systems Perspective of the Operational Environment.....	I-25
I-6	Critical Factors.....	I-27
I-7	Sample Logical Lines of Operations.....	I-29
II-1	Joint Targeting Coordination Board Organization .....	II-2
II-2	Typical Joint Targeting Coordination Board Meeting Agenda .....	II-4
II-3	Typical Joint Fires Element .....	II-9
II-4	Planning Process and Battle Rhythm.....	II-14
II-5	Sample Maritime Headquarters with Maritime Operations Center Targeting Process.....	II-26
II-6	JFACC Staff and JAOC Organization .....	II-34
III-1	Joint Air Estimate Process .....	III-1
III-2	Methods of Airspace Control.....	III-19
III-3	Planning Information-Operations-Related Targets.....	III-21
III-4	Joint Targeting Cycle.....	III-25
III-5	Joint Fires and Targeting Process .....	III-27
III-6	Mission Analysis.....	III-28
III-7	Phase 1 – End State and Commander’s Objectives .....	III-30
III-8	Quantitative Measurement .....	III-42
III-9	Phase 2 – Target Development and Prioritization .....	III-45
III-10	Example Target System Components and Elements .....	III-51
III-11	Refining Components of the Petroleum, Oils, and Lubricants Target Set. ....	III-52
III-12	Target Development, Nomination, and Prioritization.....	III-63
III-13	Phase 3 – Capabilities Analysis .....	III-71
III-14	Phase 4 – Commander’s Decision and Force Assignment .....	III-80
III-15	Phase 5 – Mission Planning and Force Execution .....	III-91
III-16	Phase 6 – Find-Fix-Track-Target-Engage Activities.....	III-93
III-17	Dynamic Targeting Steps.....	III-95
III-18	Find Step Determinations and Follow-on Actions.....	III-99
III-19	Find .....	III-100
III-20	Fix .....	III-103
III-21	Track .....	III-105
III-22	Target .....	III-107
III-23	Engage.....	III-109
III-24	Assessment Levels and Measures.....	III-110
III-25	Assessment.....	III-112
IV-1	Target Spreadsheet – Front .....	IV-5
IV-2	Target Spreadsheet – Back.....	IV-6
IV-3	Joint Air Tasking Cycle .....	IV-23
IV-4	Air Tasking Order Cycle Timeline (Notional).....	IV-25
IV-5	Multiple Air Tasking Order Production Rhythm (Notional) .....	IV-25
B-1	Theater Air Ground System.....	B-2
C-1	Joint Automated Deep Operations Coordination System Digital Interfaces.....	C-4

C-2	Joint Automated Deep Operations Coordination System .....	C-5
C-3	Theater Battle Management Core System .....	C-9
C-4	Notional Theater Communications Systems.....	C-10
C-5	Theater Battle Management Core Systems Interfaces .....	C-13
C-6	Remote Operations Video Enhanced Receiver.....	C-14
D-1	Global Area Reference System.....	D-2
E-1	Theater Joint Force Air Component Commander Relationship .....	E-2
E-2	Theater Liaison Elements .....	E-4

TABLE

II-1	Recommended Joint Targeting Coordination Board Meeting Agenda Items .....	II-5
III-1	Risk Table .....	III-33
III-2	Targeting Effects Definitions.....	III-38
III-3	Notional Example of Qualitative Assessment Measures .....	III-43
III-4	Target System Analysis Responsibilities.....	III-47
III-5	Target Sets .....	III-48
III-6	Factors in Target Selection .....	III-53
III-7	Targeting Criticality Categories.....	III-64
III-8	Example Target Nomination List.....	III-66
III-9	Notional Joint Integrated Prioritized Target List.....	III-68
IV-1	Targeting Products Used in the Planning Process .....	IV-2
IV-2	Target Sheet Example .....	IV-7
IV-3	Sensor/Attack System Matrix .....	IV-9
IV-4	High-Payoff Target List.....	IV-11
IV-5	Target Selection Standards .....	IV-12
IV-6	Target Selection Standards Worksheet .....	IV-13
IV-7	Example of Collection Plan .....	IV-14
IV-8	Example of Attack Guidance Matrix .....	IV-16
IV-9	Target Synchronization Matrix .....	IV-16
IV-10	Delivery Standards Matrix.....	IV-17
IV-11	Notional Time-Sensitive Target Decision Matrix.....	IV-19
IV-12	Notional Component Time-Sensitive Target and Priority Target Decision Matrix .....	IV-19
IV-13	Target Report .....	IV-21

**CHAPTER I**  
**FUNDAMENTAL CONSTRUCTS**  
**SECTION A. FIRES AND TARGETING**

**1. Fires — A Joint Function**

a. **Joint functions** are related capabilities and activities grouped together to help joint force commanders (JFCs) integrate, synchronize, and direct joint operations. Functions that are common to joint operations at all levels of war fall into six basic groups — **command and control (C2), intelligence, fires, movement and maneuver, protection, and sustainment**. Some functions, such as C2 and intelligence, apply to all operations. Others, such as fires, apply as required by the JFC's mission. A number of subordinate tasks and related capabilities help define each function.

b. **Fires** are defined as the use of weapon systems to create a specific lethal or nonlethal effect on a target. Examples of nonlethal fires are electronic attack (EA), certain psychological operations (PSYOP), smoke operations, and some computer network operations (CNO) which deceive the enemy, disable the enemy's C2 systems, and disrupt operations. The employment of nonlethal fires is especially important in stability operations when restraint and limitations on the use of deadly force are necessary. Nonlethal weapons include but are not limited to non-penetrating blunt impact munitions, acoustic systems, entangling devices, and sticky and slick foams.

c. To **employ fires** is to use available capabilities to create a specific lethal or nonlethal effect on a target. Policy, guidance, and planning for the employment of operational and strategic fires are primarily a joint function. **Joint fires** are delivered during the employment of forces from two or more components in coordinated action to create desired effects in support of a common objective. Fires typically produce destructive effects, but some ways and means (such as EA) can be employed with little or no associated physical destruction. The fires function encompasses a number of tasks (or missions, actions, and processes) including:

(1) **Conduct joint targeting.** This is the process of selecting and prioritizing targets and matching the appropriate response to them, taking into account operational requirements and capabilities.

(2) **Provide joint fire support.** This task includes joint fires that assist air, land, maritime, and special operations forces to move, maneuver, and control territory, populations, airspace, and key waters.

(3) **Countering air and missile threats.** This task integrates offensive and defensive operations and capabilities to attain and maintain a desired degree of air superiority and force protection. These operations are designed to destroy or negate enemy aircraft and missiles, both before and after launch.

(4) **Interdict enemy capabilities.** Interdiction diverts, disrupts, delays, or destroys the enemy’s military surface capability before it can be used effectively against friendly forces, or to otherwise achieve objectives.

(5) **Conduct strategic attack.** This task includes offensive action against targets — whether military, political, economic, or other — which are selected specifically to achieve strategic objectives.

(6) **Employ information operations (IO) capabilities.** This task focuses on military actions involving the use of electromagnetic and directed energy and computer networks to attack the enemy.

(7) **Assess the results of employing fires.** This task includes assessing the effectiveness and performance of fires as well as their contribution to the larger operation or objective.

## 2. Targeting — A Fires Task and Process

a. **Joint targeting is a fundamental task of the fires function** that encompasses many disciplines and requires participation from many joint force staff elements and components along with numerous nonmilitary agencies.

### KEY TERM

**Targeting is the process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities.**

b. The **purpose of targeting** is to integrate and synchronize fires into joint operations. The joint targeting cycle provides an iterative, logical methodology for the development, planning, execution, and assessment of the effectiveness of targeting and weapons employment. Principles of joint targeting can apply in multinational operations, and may involve participation from other agencies, governments, and organizations. Joint targeting supports unity of effort by providing:

(1) Compliance with commander, joint task force (CJTF) objectives, guidance, and intent.

(2) Focus on adversary’s centers of gravity (COGs) and decisive points.

(3) Coordination, integration, synchronization, and deconfliction of actions.

(4) A common perspective on all targeting efforts performed in support of the commander.

(5) Minimal duplication of effort.

- (6) Expeditious assessment of executed operations.
- (7) Full integration of all available capabilities.
- (8) Reduced chance of fratricide and collateral damage.

c. Targeting integrates fires to accomplish specific tasks which help achieve the CJTF's objectives, guidance, and intent. Targeting proceeds from the commander's objectives to an assessment of the results achieved by the executed course of action (COA). With the advice of subordinate component commanders, CJTFs set priorities, provide clear targeting guidance, and determine the weight of effort to be provided to various operations conducted by Service and functional component commanders. Target analysis considers all possible means to accomplish targeting tasks and create desired effects, drawing from available capabilities. The art of targeting seeks to create desired, targeting-related effects with the least risk, time, and expenditure of resources. Subordinate component commanders identify high-value targets (HVTs), high-payoff targets (HPTs), and high-value individuals (HVIs) for acquisition and attack, employing their forces in accordance with the CJTF's guidance to achieve assigned missions and objectives.

d. **Principles of Targeting.** The joint targeting cycle is designed to help achieve the CJTF's objectives through the use of joint fires by selecting and prioritizing targets and matching the appropriate response to them. Adherence to four targeting principles throughout the targeting cycle should increase the probability of creating desired effects while diminishing undesired or adverse collateral effects.

(1) **Focused.** The targeting process is focused on achieving the CJTF's objectives. It is the function of targeting to efficiently achieve those objectives within the parameters set by the concept of operations (CONOPS), directed limitations, the rules of engagement (ROE) or rules for the use of force, the law of armed conflict (LOAC), and agreements concerning the sovereignty of national territories. Every target nominated should in some way contribute to attaining the CJTF's objectives.

(2) **Effects-based.** To contribute to the achievement of the CJTF's objectives, targeting is concerned with the creation of specific desired effects through target engagement. Target analysis considers all possible means to create desired effects, drawing from all available capabilities. The art of targeting seeks to create desired effects with the least risk and expenditure of time and resources.

(3) **Interdisciplinary.** Joint targeting is a command function that requires the participation of many disciplines. This entails participation from all elements of the CJTF's staff, component commanders' staffs, other agencies and organizations, and multinational partners as illustrated in Figure I-1.

(4) **Systematic.** In supporting the CJTF's objectives, the joint targeting cycle seeks to create effects through target engagement in a systematic manner. The targeting

cycle is a rational and iterative process that methodically analyzes, prioritizes, and assigns assets against targets systematically to create those effects that will contribute to the achievement of the CJTF’s objectives. If the desired effects are not created, targets are recycled through the process.

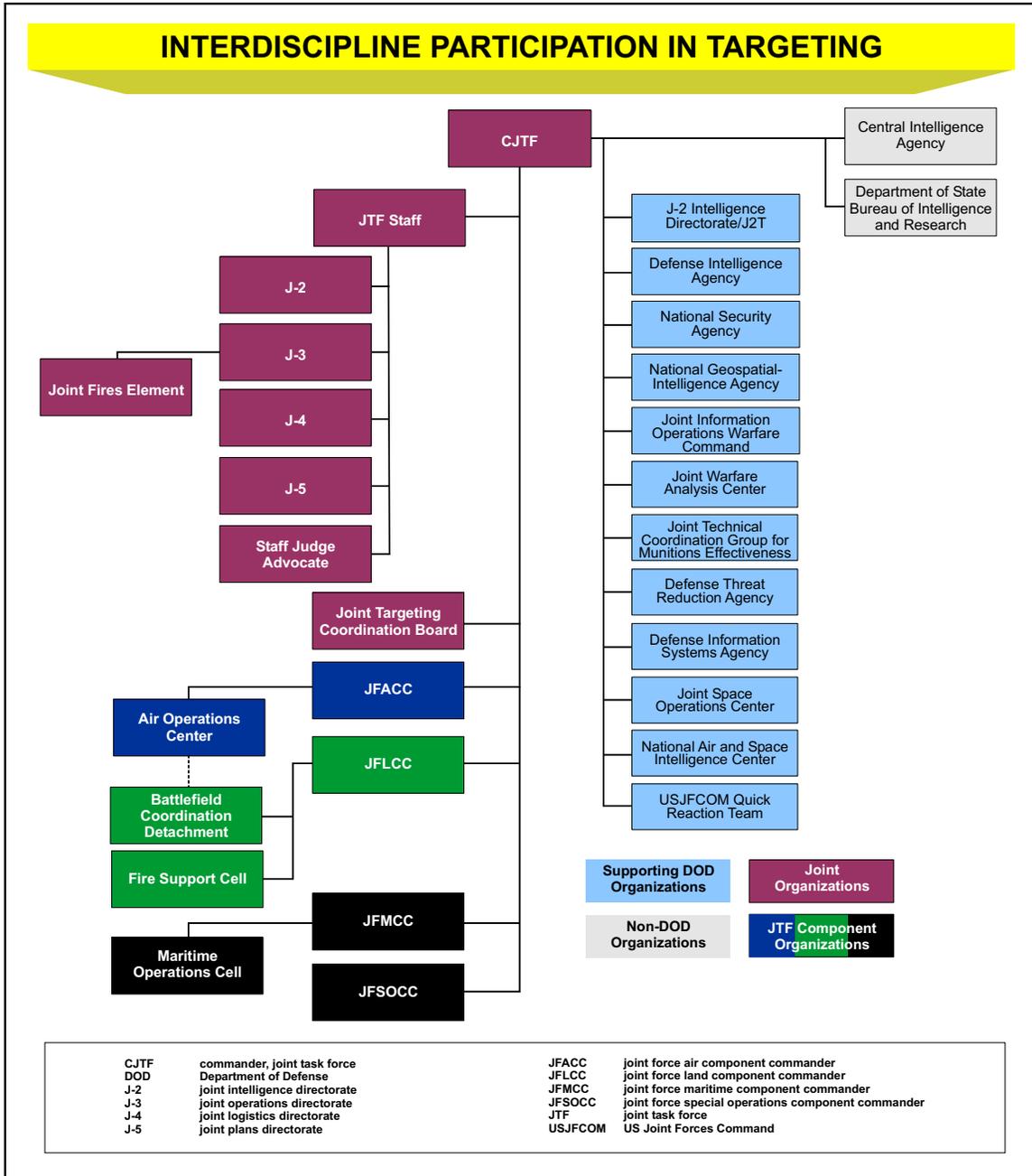


Figure I-1. Interdiscipline Participation in Targeting

e. **Targeting Categories.** There are two targeting categories: *deliberate* and *dynamic* (see Figure I-2).

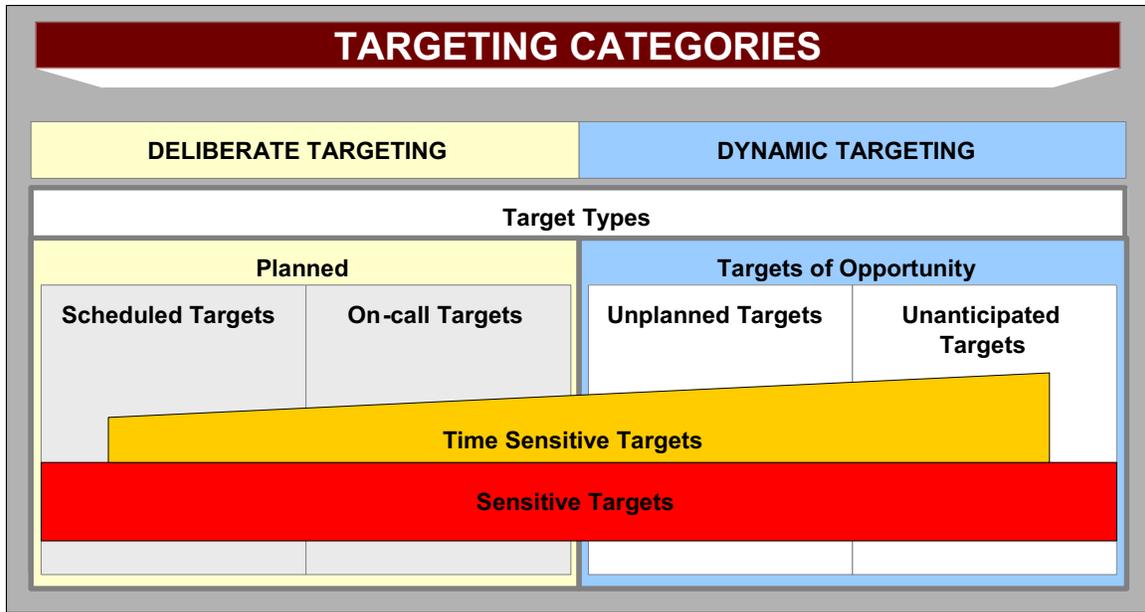


Figure I-2. Targeting Categories

(1) **Deliberate targeting** prosecutes planned targets. These are targets that are known to exist in an operational area with actions scheduled against them. Examples range from targets on joint target lists (JTLs) in the applicable plan or order, to targets detected in sufficient time to list in an air tasking order (ATO), mission-type orders, or fire support plans.

(2) **Dynamic targeting** prosecutes targets identified too late, or not selected for action in time, to be included in deliberate targeting. Targets prosecuted as part of dynamic targeting are previously unanticipated, unplanned, or newly detected and are generally of such importance to a component, the CJTF, or higher authority that they warrant prosecution within the current execution period. If the target is not critical or time-sensitive enough to warrant prosecution during the current execution period, the target may be developed for prosecution during a later execution period. Analysis of the target may also determine that no action is needed. Dynamic targeting prosecutes changes to planned targets or objectives and targets of opportunity.

### 3. Targets — Characteristics, Types, and Time Sensitivity

a. **General.** A target may be an area, complex, installation, force, equipment, capability, function, individual, group, system, entity, or behavior identified for possible action to support the commander's objectives, guidance, and intent. A target's importance is derived from its potential contribution to achieving a commander's objective(s) or otherwise accomplishing assigned tasks. A subordinate CFTF establishes these objectives, consistent with national strategic direction, to accomplish tasks assigned by the supported combatant commander (CCDR), which are necessary to accomplish the mission of the joint task force (JTF).

**KEY TERM**

**A target is an entity or object considered for possible engagement or action.**

b. **Target Characteristics.** Every target has distinct intrinsic or acquired characteristics, the most important of which affect how the entity or behavior is targeted. Intrinsic characteristics are the initial, original, or designed characteristics of a target. Acquired characteristics are changes that modify, enhance, or augment the intrinsic characteristics of the target. Target characteristics form the basis for target detection, location, identification, and classification for future surveillance, analysis, strike, and assessment. In general, there are five categories of characteristics by which targets can be defined: *physical, functional, cognitive, environmental, and time sensitivity*. These categories are briefly described below. The lists of example characteristics are not intended to be exhaustive, and some characteristics may belong in more than one category.

(1) **Physical Characteristics.** These are features that describe a target. They are discernable to the five senses or through sensor-derived signatures. Furthermore, they may greatly affect the type and number of weapons, the weapon systems, and the methods or tactics employed against the target.

- (a) Location.
- (b) Shape.
- (c) Size or area covered.
- (d) Appearance (outward form and features, including color).
- (e) Number and nature of elements.
- (f) Dispersion or concentration of elements.
- (g) Reflectivity (to heat, light, sound, radar energy, etc).
- (h) Structural composition.
- (i) Degree of hardening.
- (j) Electromagnetic radiation (e.g., radar and radio transmissions).
- (k) Target's mobility characteristics.
- (l) Fixed (unable to move).

(m) Transportable (operate from fixed locations, but can be broken down and moved).

(n) Mobile (operates on the move or with very limited setup time).

(2) **Functional Characteristics.** These are features that describe what the target does and how it does it. They describe the target's function within the enemy system; how the target or system operates; its level of activity; the status of its functionality; and, in some cases, its importance to the enemy. Functional characteristics are difficult to discern, because they most often cannot be directly observed. Reaching plausible conclusions can often entail careful assessment of known facts. Sample functional characteristics of targets include:

(a) Normal or reported activity.

(b) Status (state or condition at a given point in time [e.g., "operational," "inoperative"]).

(c) Degree, proportion, or percentage of functionality (e.g., "function 50% degraded").

(d) Materials the target requires to perform its function(s).

(e) Functional redundancy (can the target's function be performed elsewhere or by something else?).

(f) Ability to reconstitute itself or its function.

(g) Ability to defend itself.

(h) Importance within the enemy's strategic structure (such as its role in the geopolitical system or its cultural importance).

(i) Necessary relationships (see the discussion of the *systems perspective of the operational environment* later in this section).

1. If the target is a person or group, what other people or groups are necessary to enable it to function?

2. What is the nature of the connectivity between this person or group and others?

(j) Target Vulnerabilities. Verbal identification of potential aim points above ground, natural ventilation, exposure of critical infrastructure, dependence on above ground functions/facilities, etc.

(3) **Cognitive Characteristics.** These are features that describe how some targets think, exercise control functions, or otherwise process information. These characteristics can be critical to targeting a system, since nearly every system possesses some central controlling function. Neutralizing this function may be crucial to bringing about desired changes in behavior. As with functional characteristics, these can be difficult to discern or deduce.

- (a) How the target processes information.
- (b) How the target's decision cycle works (if applicable).
- (c) Process inputs the target requires performing its function(s).
- (d) Outputs to the processes the target performs.
- (e) How much information the target can handle.
- (f) How the target or system stores information.
- (g) Whether the target is a person or group of people.
- (h) How the target thinks.
- (i) The target's motivations.
- (j) The target's behavior.

(4) **Environmental Factors.** These are features that describe the effect of the environment on the target and its surroundings. These factors may also affect the types and numbers of weapons, weapon systems, and the methods used to attack them.

- (a) Atmospheric conditions affecting the target (such as temperature, visibility).
- (b) Terrain features (such as land form, vegetation, soil, elevation).
- (c) Degree of denial and deception.
- (d) Physical relationships (such as proximity to noncombatants or friendly forces).
- (e) Dependencies (such as raw materials, personnel, energy, water, C2).

(5) **Time Sensitivity.** The factor of time, as a characteristic of a target, describes the target's vulnerability to detection, attack, or other engagement in terms of time available. Many targets may be fleeting and some may be critical to friendly

operations. Those that are both fleeting and critical present one of the biggest targeting challenges faced by the joint force. This factor can help planners determine when and how to find or engage a target. By comparing this factor to information latency and knowledge of friendly capabilities, the staff can make better recommendations to the commander regarding possible actions. Many factors may contribute to this:

(a) **Time of appearance.** The expected time the target will appear in the operational environment or arrive in the designated operational area.

(b) **Dwell time.** The length of time a target is expected to remain in one location (this can be directly related to the physical characteristic of target mobility). Generally, a target is more difficult to find or engage on the move.

(c) **Time to target functionality.** The length of time required for the target to become operational, to conduct its mission, or to repair or reconstitute.

(d) **Identifiable time.** The length of time a target is identifiable as a threat before it then becomes indistinguishable from other objects in the operational environment.

c. A target is not critical in and of itself; rather, its importance is derived from its potential contribution to accomplishing assigned targeting tasks and achieving the commander's objective(s). A **target of opportunity** is a target visible to a surface or air sensor or observer, which is within range of available weapons and against which fire has not been scheduled or requested. Targets of opportunity are targets encountered that were not previously known or planned. When an emergent target is of high value or high payoff or is an immediate threat, the fires system must be able to respond expeditiously. This may involve prearranged procedures designed to send targeting data directly from a sensor to the firing unit. Targets of opportunity will continue to represent a large portion of the targets engaged at the tactical level.

### Target of Opportunity

-- A target identified too late, or not selected for action in time, to be included in deliberate targeting that, when detected or located, meets criteria specific to achieving objectives and is processed using dynamic targeting. There are two types of targets of opportunity: unplanned and unanticipated.

-- A target visible to a surface or air sensor or observer, which is within range of available weapons and against which fire has not been scheduled or requested.

d. **Types.** Targets are divided into **four types** according to planned actions or opportunities (Figure I-2) as follows:

(1) **Scheduled targets** are those which are known to exist in the operational environment and are located in sufficient time for prosecuting at a specific time.

(2) **On-call targets** have actions planned, but not for a specific delivery time. The commander expects to locate these targets in sufficient time to execute planned actions. These targets are unique in that actions are planned against them using deliberate targeting but execution will normally be conducted using dynamic targeting.

(3) **Unplanned targets** are those which are known to exist in an operational area but are not detected or located in sufficient time to meet specific campaign objectives.

(4) **Unanticipated targets** are those which are unknown or unexpected to exist in an operational area, but when detected or located, meet emerging situations specific to assigned tasks or the CJTF's effects and objectives.

e. **Sensitive targets** are those targets where the commander has estimated the physical damage and collateral effects on noncombatants, property, and environments occurring incidental to military operations exceed established national-level notification thresholds. They may also include those targets which exceed national-level ROE independent of collateral damage, or where the CDR determines the target may have adverse political ramifications.

*See Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3122.06B, Sensitive Target Approval and Review (STAR) Process (classified publication), for more information on sensitive targets.*

f. **Certain targets require special care or caution** in treatment because failure to attack them or to attack them improperly can lead to major adverse consequences. Examples include leadership targets (HVIs) that must be handled sensitively due to potential political repercussions; targets located in areas with a high risk of collateral damage; and weapons of mass destruction (WMD) facilities, where an improper attack can lead to major long-term environmental damage. Such targets are often characterized as "sensitive" in one respect or another, without having the intrinsic characteristics, by definition, of a sensitive target. Nonetheless, the manner in which they are attacked is sensitive and may require coordination with and approval from the CJTF or higher authorities. In most cases, it is best to establish criteria for engaging such targets in as much detail as possible during planning, before combat commences.

g. **Many targets may be fleeting; many may be critical to operations.** Those that are both fleeting and critical present one of the biggest targeting challenges faced by the joint force. Advances in surveillance technology and weaponry make it possible in some instances to detect, track, and engage high-priority targets in real time, or to thwart emerging enemy actions before they become dangerous to the joint force. Joint doctrine calls a target prosecuted in this manner a **time-sensitive target (TST)**. A TST is a target of such high priority to friendly forces that the CJTF designates it as requiring immediate response because it poses (or will soon pose) a danger to friendly forces. A TST also is a highly lucrative, fleeting target of opportunity. TSTs may be prosecuted using deliberate or dynamic processes, but if they are truly "time sensitive," they generally tend to be

targeted via the dynamic targeting process. A TST can belong to any of the four target types.

h. The CJTF provides specific guidance and priorities for TSTs within the operational area. Examples might be a WMD-capable combat vessel that was just detected approaching the joint force; a sought-after enemy national leader whose location was just identified; an enemy aircraft detected approaching friendly high-value assets; or launch of an intermediate-range ballistic missile. The CJTF designates TSTs. However, there may be other targets requiring “time-sensitive” treatment, which are of concern primarily to the CJTF’s component commanders (vital to their schemes of maneuver or immediately threatening their forces, for instance) that the CJTF may not deem to be TSTs. These targets are prosecuted using the same dynamic targeting methodology as TSTs, even though they may not be designated as such.

i. Component commanders may nominate targets to the CJTF for consideration as TSTs. These component high-priority targets, if not approved as TSTs by the CJTF, may require both dynamic prosecution and cross-component coordination and assistance in a time-compressed fashion. The CJTF and component commanders should identify these targets within the joint targeting cycle; provide clear guidance to ensure the appropriate priority of asset allocation (intelligence collection, exploitation, and attack assets); and provide ROE to facilitate rapid cross-component coordination in order to minimize confusion and facilitate prosecution. Although there is no doctrinally approved term and definition for these targets, they are component-level, high-priority targets, and they should receive the highest engagement priority possible, just below targets identified on the CJTFs TST list.

*For more information, refer to Appendix A, “Time-Sensitive Target Considerations,” of Joint Publication (JP) 3-60, Joint Targeting, for details on TSTs, and Field Manual (FM) 3-60.1 / Marine Corps Reference Publication (MCRP) 3-16D / Navy Tactics, Techniques and Procedures (NTTP) 3-60.1 / Air Force Tactics, Techniques, and Procedures (Instruction) (AFTTP[I]) 3-2.3, Multi-Service Tactics, Techniques, and Procedures Targeting Time-Sensitive Targets.*

j. **High-payoff and High-value Targets.** A HPT is one whose loss to the enemy will significantly contribute to the success of the friendly COA. Time-sensitive and component-critical targets are usually special types of HPTs. Component and CJTF target development and priorities will focus on these targets to ensure success of the mission. HPTs are derived from the list of HVTs: a target the enemy commander requires for the successful completion of the mission. The loss of HVTs would be expected to seriously degrade important enemy functions throughout or beyond the CJTF’s operational area.

## SECTION B. JOINT OPERATION PLANNING, DESIGN, AND ASSESSMENT

### 4. Joint Operation Planning

a. The targeting process occurs in the context of joint operation planning, both before and during execution. The focus of targeting is to create fires-related effects to accomplish targeting tasks. This contributes to creating the CJTF's desired effects and achieving objectives. During execution, commanders and planners continue to consider elements of operational design and adjust both current operations and future plans to capitalize on tactical and operational successes as the joint operation unfolds.

b. Planning for joint operations is continuous across the range of military operations using the closely related, integrated, collaborative, and adaptive Joint Operation Planning and Execution System (JOPES) and joint operation planning process (JOPP). JOPES and JOPP share the same basic approach and problem-solving elements, such as mission analysis and COA development. The combination of JOPES and JOPP promotes coherent planning across all levels of war and command echelons, whether the requirement is for a limited, single-phase operation such as noncombatant evacuation or for a multiphase campaign involving high-intensity combat operations.

c. JOPES formally integrates the planning activities of the entire joint planning and execution community during the initial planning and plan refinement that occurs both in peacetime and crisis. While JOPES activities span many organizational levels, the focus is on the interaction which ultimately helps the President and Secretary of Defense (SecDef) decide when, where, and how to commit US military capabilities in response to a foreseen contingency or an unforeseen crisis.

d. JOPES provides for orderly and coordinated problem solving and decision-making in two related but distinct categories — contingency planning and crisis action planning (CAP). These categories differ primarily in level of uncertainty, amount of available planning time, and products. First, the process is highly structured to support iterative, concurrent, and parallel contingency planning throughout the planning community to produce thorough and fully coordinated operation plans (OPLANs) when time permits. Second, the process is shortened in CAP, as necessary, to support the dynamic requirements of changing events. During actual military operations, the process adapts to accommodate greater decentralization of joint operation planning activities. Contingency planning and CAP share common planning activities and are interrelated.

e. JOPP is a less formal but proven analytical process, described in detail in JP 5-0, *Joint Operation Planning*, which provides a methodical approach to planning at any organizational level and at any point before and during joint operations. The focus of JOPP is on the interaction between an organization's commander, staff, the commanders and staffs of the next higher and lower commands, and supporting commanders and their staffs. Although the ultimate product is an OPLAN or operation order (OPORD) for a specific mission, the process is continuous throughout an operation. Even during

execution, it produces plans and orders for future operations as well as fragmentary orders (FRAGORDs) that drive immediate adjustments to the current operation. JOPP provides an orderly framework for planning in general, particularly for organizations that have no formal JOPES requirements.

f. JOPP is an orderly, analytical process that consists of a logical set of steps to analyze a mission; develop, analyze, and compare alternative COAs against criteria of success and each other; select the best COA; and produce a joint operation plan or order. JOPP underpins planning at all levels and for missions across the full range of military operations. It applies to both CJTF and to joint force component commands when the components participate in joint planning. This process is designed to facilitate interaction between the commander, staff, and subordinate headquarters (HQ) throughout planning. JOPP helps commanders and their staffs organize their planning activities, share a common understanding of the mission and commander's intent, and develop effective plans and orders. The targeting process occurs in the context of JOPP. During execution, commanders and planners continue to consider design elements and adjust both current operations and future plans to capitalize on tactical and operational successes as the joint operation unfolds. Figure I-3 lists the JOPP steps, and the paragraphs that follow discuss each step.

**g. Joint Operation Planning Process Steps**

(1) Joint targeting is integral to joint operation planning and assessment. Some targeting activities occur concurrently with the steps of JOPP during planning. It begins with the planning initiation and mission analysis steps of JOPP and continues through publication of the OPLAN, OPORD, or FRAGORD. Detailed joint intelligence preparation of the operational environment (JIPOE), country assessments, and target systems analysis (TSA) set the stage for detailed targeting within the joint targeting cycle. Many products used to support joint operations are developed, maintained, and continuously updated as foundational information for targeting.

(2) Integrating and synchronizing planning, execution, and assessment is pivotal to the success of targeting. Understanding the objectives, intentions, capabilities, and limitations of all actors within the operational environment enables the use of joint, interagency, and multinational means to accomplish tasks and create effects. Target development and selection are based on what the CJTF wants to achieve and the relevant measures and indicators, rather than on the ways and means used to affect the target. In other words, the focus should be on creating the desired target effects that accomplish targeting-related tasks and objectives in support of the CJTF's effects and objectives, rather than simply servicing a list of targets or basing targeting decisions on the availability of particular weapons, platforms, or systems.

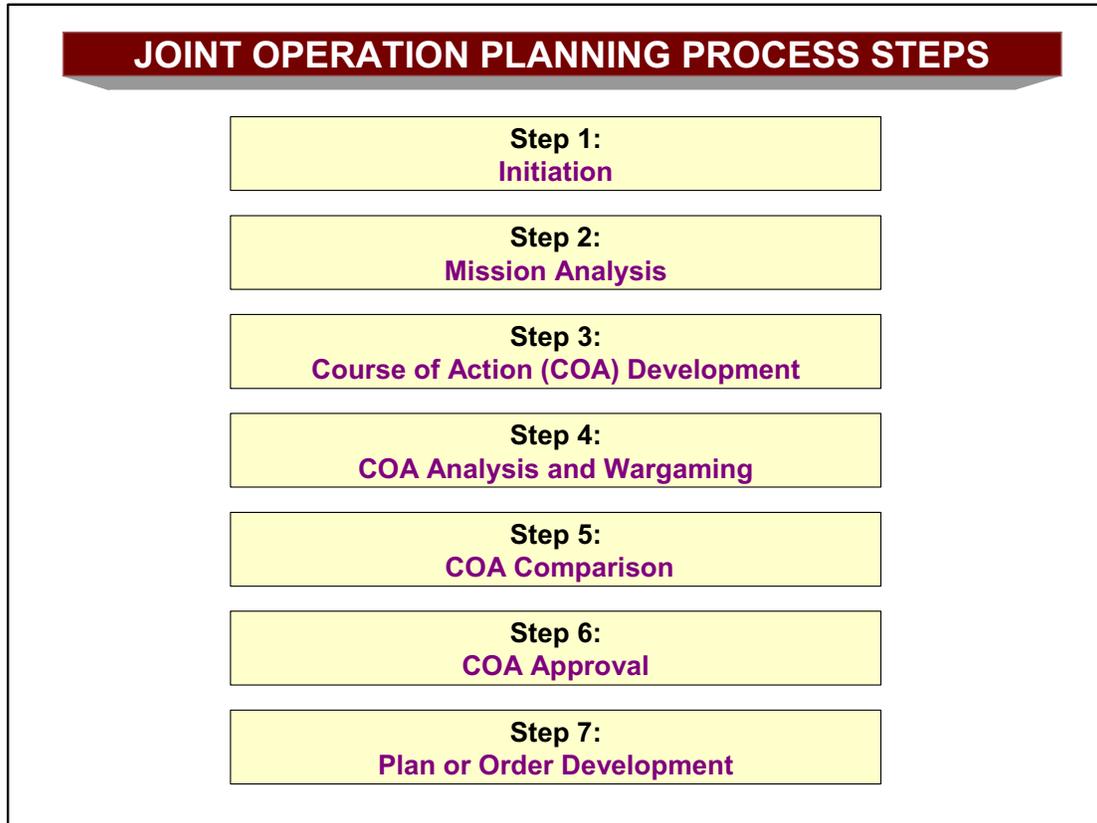


Figure I-3. Joint Operation Planning Process Steps

(3) The CJTF and staff should reconsider (and revise if necessary) the desired effects whenever an objective changes or other circumstances dictate a change. For example, the assessment process might determine that unintended effects of joint force actions require adjustment that could result in new or revised tasks to joint force components. Regardless of the cause, targeting and other joint force planning processes must be responsive to these changes. A thorough understanding of the end state and the CJTF's mission, objectives, and effects will help component commanders and their staffs anticipate and respond to such changes.

#### (4) Planning Initiation and Mission Analysis

(a) Planning **initiation** is the first step of the JOPP. JOPP begins when an appropriate authority recognizes a potential for military capability to be employed in response to a potential or actual crisis. At the strategic level, that authority — the President, SecDef, or Chairman of the Joint Chiefs of Staff (CJCS) — initiates planning by deciding to develop military options. Planning is continuous once execution begins. However, planning initiation during execution is still relevant when there are significant changes to the current mission or planning assumptions or the commander receives a mission for follow-on operations.

(b) The following step is **mission analysis**. During this step, JIPOE provides input to help frame the operational environment. JIPOE subsequently provides a comprehensive framework for intelligence, surveillance, and reconnaissance (ISR) support to planning and COA selection. Consequently, JIPOE must assist commanders in anticipating enemy intent and enable them in pre-empting enemy actions.

(c) The JIPOE process continues throughout planning by examining adversary and friendly capabilities, adversary intent, and the operational environment. Enemy and friendly COGs are also identified during this initial stage of the estimation process. As mission analysis is refined through later stages of the estimation process, enemy COGs are analyzed, yielding critical vulnerabilities or other key system nodes. These are further examined through target system or nodal analysis to yield target sets, targets, critical elements, and aimpoints. Such analysis carries a considerable information-flow cost. In order to properly identify collection and exploitation requirements for targeting, TSA must begin well in advance of operations and must continue throughout them. It must begin during the initial stages of JIPOE and draw upon as much ongoing peacetime targeting material as is available for the operational area.

*Refer to JP 2-01.3, Joint Intelligence Preparation of the Operational Environment, for more information on JIPOE.*

## (5) COA Development

(a) A COA consists of the following information: what type of military action will occur; why the action is required (purpose); who will take the action; when the action will begin; where the action will occur; and how the action will occur (method of employment of forces). The staff converts the approved COA into a CONOPS. COA determination consists of four primary activities: COA development, analysis and wargaming, comparison, and approval.

(b) To develop COAs, the staff must focus on key information necessary to make decisions and assimilate the data in mission analysis. Usually, the staff develops no more than three COAs to focus their efforts and concentrate valuable resources on the most likely scenarios. Embedded within COA development is the application of operational art. Planners can develop different COAs for using joint force capabilities (operational fires and maneuver, deception, joint force organization, etc.) by varying the elements of operational design (such as phasing, line of operations [LOO], and so forth). During COA development, the commander and staff continue risk assessment, focusing on identifying and assessing hazards to mission accomplishment. Targeteers should provide their assessment of each COA's feasibility during the development process. The staff also continues to revise intelligence products. Thus, JIPOE is refined during this stage and includes detailed analysis of COGs identified during mission analysis. As a part of analysis of adversary capabilities and intentions, one shall consider the potential impact on friendly desired effects and the likelihood that the adversary's actions will cause specific undesired effects.

**(6) Course of Action Analysis and Wargaming**

(a) The commander and staff analyze each tentative COA separately according to the commander's guidance. COA analysis identifies advantages and disadvantages of each proposed friendly COA. Analysis of the proposed COAs should reveal a number of factors including:

1. Potential decision points.
2. Task organization adjustment.
3. Data for use in a synchronization matrix or other decision-making tool.
4. Identification of plan branches and sequels.
5. Identification of HVTs.
6. A risk assessment.
7. COA advantages and disadvantages.
8. Recommended commander's critical information requirements (CCIRs).

(b) Wargaming provides a means for the commander and participants to analyze a tentative COA, improve their understanding of the operational environment, and obtain insights that otherwise might not have occurred. An objective, comprehensive analysis of tentative COAs is difficult even without time constraints. Based upon time available, the commander should wargame each tentative COA against the most probable and the most dangerous adversary COAs (or most difficult objectives in noncombat operations) identified through the JIPOE process.

**(7) Course of Action Comparison.** COA comparison is an objective process whereby COAs are considered independently of each other and evaluated/compared against a set of criteria that are established by the staff and commander. The goal is to identify the strengths and weaknesses of COAs so that a COA with the highest probability of success can be selected or developed. The commander and staff develop and evaluate a list of important criteria, or governing factors, consider each COA's advantages and disadvantages, identify actions to overcome disadvantages, make final tests for feasibility and acceptability and weigh the relative merits of each.

**(8) Course of Action Approval.** The staff determines the best COA to recommend to the commander. The staff briefs the commander on the COA comparison

and the analysis and wargaming results, including a review of important supporting information. This briefing often takes the form of a commander's estimate.

### (9) Concept of Operations Development

(a) Contingency planning will result in plan development, while CAP typically will lead directly to OPORD development. During plan or order development, the commander and staff, in collaboration with subordinate and supporting components and organizations, expand the approved COA into a detailed joint OPLAN or OPORD by first developing an executable **CONOPS — the eventual centerpiece of the operation plan or order**.

(b) The CONOPS clearly and concisely expresses what the CJTF intends to accomplish and how it will be done using available resources. It describes how the actions of the joint force components and supporting organizations will be integrated, synchronized, and phased to accomplish the mission, including potential branches and sequels. The commander defines responsibilities by providing guidance to the staff and subordinate commanders. The concept of fires is integral to the CONOPS.

(c) The concept of fires describes how tactical, operational, and strategic joint fires, as well as nonlethal capabilities, will be synchronized to accomplish specific tasks that support the CJTF's desired effects and objectives. Planners determine the enemy's COGs, critical factors, and decisive points and how the joint force can apply fires to assist in creating desired effects. The CJTF can also highlight the anticipated critical actions, times, and places during combat that would serve as triggers for friendly action. The CJTF determines the sequencing of key events and emphasizes the desired end state. Not all fires will directly support maneuver forces, but all fires should support the CJTF's CONOPS and specified tasks to joint force components.

(d) The CJTF provides fires and targeting guidance, operational objectives, desired effects, tasks to subordinates, and targeting/fires priorities. The CONOPS provides more detail on what/where fires effects are desired by phase (e.g., deny, disrupt, delay, suppress, neutralize, destroy, or influence). In addition, the CJTF provides guidance on munitions usage and restrictions, **restricted targets, and a no-strike list (NSL)**. Restricted targets are targets that have specific restrictions imposed upon them. Actions that exceed specified restrictions are prohibited until coordinated and approved by the establishing HQ. This list also includes restricted targets directed by higher authorities. Items on a NSL are those objects or entities characterized as protected from the effects of military operations under the LOAC, international law, or ROE. Additional considerations for an NSL could include conventions, or agreements, or damaging relations with the indigenous population. The CJTF may also make specific assets available for operational area-wide employment, such as Army Tactical Missile System (ATACMS), sensor-fused weapons, or Tomahawk land attack missiles (TLAMs).

(e) Targeting is integral to the concept of fires and OPLAN development, and deliberate targeting is used to help determine and develop target sets and strategic

targets included in the OPLAN and its attachments. The joint air operations plan (JAOP) provides the joint component-level planning detail and guidance for joint targeting/fires. Even if targeting information developed during planning is not included in the OPLAN or its attachments, OPLAN development requires considerable targeting effort to validate selected COAs, CONOPS, and other elements of the plan. Commanders and planners must be able to estimate how much effort and what resources are required to accomplish the mission. One way to determine this is to conduct some (at least notional) deliberate targeting well before the operation begins.

(f) The OPLAN should provide broad guidelines for prioritizing targets, making clear which sets or systems are most important to the operation. The OPLAN should also provide guidance on the sequencing of targeting actions or effects, which is not the same thing as priority. Although creating parallel effects is generally best, some targets must be attacked sequentially to enable effects against other targets.

### 5. Operational Design

a. **Operational art** is the application of creative imagination by commanders and staffs — supported by their skill, knowledge, and experience — to design strategies, campaigns, and major operations and organize and employ military forces. **Operational design** is the use of various design elements in the conception and construction of the framework that underpins a joint OPLAN and its subsequent execution — it is intrinsic to JOPP. Operational art and design are the creative processes in planning that integrate military ends, ways, and means across the levels of war. They also promote unified action by helping CJTF and staff understand how to facilitate the integration of other agencies and multinational partners within the operational environment in time, space, and purpose to achieve strategic and operational objectives.

b. The key to operational design essentially involves: (1) understanding the strategic guidance (determining the end state and objectives); (2) identifying the adversary's principal strengths and weaknesses, and; (3) developing an operational concept that will achieve strategic and operational objectives.

c. The elements of operational design — such as termination, end state and objectives, effects, COGs, and decisive points — are tools to help the CJTF and the staff visualize the arrangement of joint capabilities in time, space, and purpose to accomplish the mission. For example, the CJTF and staff consider the elements termination, end state, objectives, and effects as early as possible during mission analysis. **Targeteers must understand how joint force planners use these and other design elements during both planning and execution.** Following are a number of operational design elements that are particularly relevant to targeting and the targeteer's understanding of planning.

#### (1) Termination, End State, and Objectives

(a) Strategic guidance should provide a clear understanding of purpose, but could require interpretation and clarification as planning progresses. This guidance helps relate key elements of operational design, such as termination, end state, objectives, and effects. Once the military end state is understood and termination criteria are established, operational design continues with development of strategic and operational military objectives. Operational- and tactical-level HQ also use objectives during planning.

(b) Tactical objectives often are associated with the specific “target” of an action. In this context, an objective could be a terrain feature, the seizing or defending of which is essential to the commander’s plan; or it could be an enemy force or capability, the destruction of which creates a vulnerability for the adversary. But tactical commanders also can designate objectives in the larger sense — that is, clearly defined goals associated with some aspect of the commander’s mission. The specific use of objective at the tactical level varies by Service.

## (2) Effects

(a) Joint operation planning integrates military actions and capabilities with those of other instruments of national power in time, space, and purpose in unified action to achieve the CJTF’s objectives. This approach includes identifying desired effects, (the conditions necessary to achieve objectives) and undesired effects, those that can hinder or complicate mission accomplishment. The use of effects during planning is reflected in the steps of JOPP as a way to clarify the relationship between objectives and tasks. Combined with a systems perspective, commanders and staffs can use an understanding of desired and undesired effects to promote unified action with multinational and other agency partners.

### KEY TERMS

**An *effect* is the physical or behavioral state of a system that results from an action, a set of actions, or another effect; the result, outcome, or consequence of an action; or a change to a condition, behavior, or degree of freedom.**

**An *objective* is the clearly defined, decisive, and attainable goal toward which every operation is directed or the specific target of the action taken (for example, a definite terrain feature, the seizure or holding of which is essential to the commander’s plan, or, an enemy force or capability without regard to terrain features).**

(b) The use of effects relates both to the systems perspective of the operational environment and the application of other elements of operational design. At the operational and strategic levels, it generally is more useful for planners to understand the direct and indirect relationships between and within the systems of the operational environment when considering whether a direct or indirect approach is the best way to attain a desired effect. Thinking in terms of a direct or indirect approach and desired or undesired effects helps amplify the meaning of strategic and operational objectives, determine appropriate tasks and the best sequence of actions to accomplish them, develop more precise assessment measures, and use other elements of operational design more

effectively. The CJTF helps guide initial systems analysis by describing strategic and operational objectives and both desired and undesired effects as part of the commander's planning guidance. The CJTF and staff will refine these effects and devise other effects as required after a comprehensive systems analysis identifies one or more COGs.

(c) A desired effect represents a condition for achieving an associated objective, while an undesired effect could inhibit progress toward the same objective. Effects and their accompanying causal linkages join tasks to objectives. The tasks and effects in any causal chain can derive from any element of national power — diplomatic, informational, military, or economic — and may occur at any point across the full range of military operations. A single objective may require creating more than one effect. Many of the ways and means associated with targeting and employing fires result in tactical-level effects relative to the selected targets. However, the cumulative results of these target engagements can contribute to the CJTF's desired operational-level and theater-strategic effects. Commander's who are responsible for planning fires and targeting must understand not only the specific target effects desired, but also the purpose and impact of the fires with regard to creating the CJTF's higher-order desired effects and avoiding the CJTF's undesired effects. The CJTF and staff must consider undesired effects in COA and CONOPS development. The CJTF's and components' operational constraints and restraints can be adjusted to prevent undesired effects. It is important that desired and undesired effects be clearly communicated as far down as necessary to ensure these effects are created or avoided respectively. Figure I-4 provides examples of a CJTF's higher-order desired and undesired effects. Properly understanding the relationship among effects at all levels is important to planning and conducting any joint operation.

(d) Effects can be categorized in many ways. One important distinction is between direct and indirect effects.

1. **Direct effects** are the immediate, first order consequence of a military action (weapons employment results, etc.), unaltered by intervening events or mechanisms. They are usually immediate and easily recognizable. Every soldier, sailor, airman, and marine is familiar with the direct effects of their weapons. The tanker knows that a round fired by the main gun of his M1 tank generates an easily recognizable direct physical effect when it burrows through a protective berm, penetrates the armor of an enemy tank, and visibly pops its turret far into the air. Similarly, the direct effects of leaflet drops may be the surrender of enemy soldiers or an increased participation by the local populace in elections, but more assessment will need to occur before reaching this conclusion because other factors could cause this behavior. Likewise, the direct effect of jamming may be that targeted cell phones or other communications devices are unusable by insurgents, but this effect will not be immediately observable and should not be assumed to occur without evidence.

<b>SAMPLE DESIRED &amp; UNDESIRED EFFECTS</b>	
<b>Desired Effects</b>	<b>Undesired Effects</b>
<p><b>Military</b></p> <ul style="list-style-type: none"> <li>▪ Degrade Adversary's Capability and/or Will</li> <li>▪ Take Advantage of Adversary's Weakness</li> <li>▪ Enable Our Course of Action (COAs)</li> <li>▪ Hinder Adversary's COA</li> </ul> <p><b>Diplomatic</b></p> <ul style="list-style-type: none"> <li>▪ Improve World Standing/Balance of Power</li> <li>▪ Weaken Adversary's Status/Power in World/Region</li> </ul> <p><b>Informational</b></p> <ul style="list-style-type: none"> <li>▪ Generate Favorable Press</li> <li>▪ Enable Information Superiority</li> </ul> <p><b>Economic</b></p> <ul style="list-style-type: none"> <li>▪ Undercut Adversary's Capability to Sustain Operation</li> </ul>	<p><b>Military</b></p> <ul style="list-style-type: none"> <li>▪ Preserve for Follow-on Forces Foreign Material Exploitation</li> <li>▪ Chemical/Biological/Radiation Hazard</li> </ul> <p><b>Diplomatic</b></p> <ul style="list-style-type: none"> <li>▪ Law of armed conflict, Treaties, Agreements</li> <li>▪ Domestic/International Elections</li> <li>▪ Collateral Damage</li> </ul> <p><b>Informational</b></p> <ul style="list-style-type: none"> <li>▪ Intelligence Loss Outweighs Target Value</li> <li>▪ Generate Bad Press</li> <li>▪ Risk of Blowback</li> </ul> <p><b>Economic</b></p> <ul style="list-style-type: none"> <li>▪ Cost of Rebuilding</li> <li>▪ Adverse Impact on United States and Allies</li> </ul>

**Figure I-4. Sample Desired & Undesired Effects**

2. **Indirect effects** are the delayed or displaced second-, third-, and higher order consequences of action, created through intermediate events or mechanisms. These outcomes may be physical or behavioral in nature. Indirect effects may be difficult to recognize, due to subtle changes in system behavior that may make them difficult to observe. For example, an indirect effect of destroying a communications node or capturing a courier may be that doing so prevents C2 of fielded enemy forces or distant terrorist cell leaders and degrades their effectiveness against friendly forces; an effect with real benefits, which are nonetheless hard to measure.

3. The relationship between direct and indirect effects can also be seen in the example of an attack on an enemy's C2 system. Destroying a single communications node by electronic attack or physical destruction creates a direct effect — that specific communications node is degraded or ceases to function. The cumulative result (indirect effect) of multiple strikes against a number of similar and related targets could result in achieving a planners' true objective — that of undermining the enemy's ability to command military forces effectively. During the Gulf War, attacks against Saddam Hussein's C2 facilities forced his military into autonomous operations, something they were neither trained nor equipped to handle. As noted earlier, indirect effects usually occur over time, and it may take an indeterminate period of time before the overall lack of communications has a deleterious effect on the enemy. Overall, the combination of direct and indirect effects can achieve the ultimate objective of any action—to compel or shape a desired result.

(e) Direct and indirect effects possess many characteristics that can qualitatively shape the operational environment. Several of these are discussed in following paragraphs.

### 1. Cumulative, Cascading, and Collateral Effects

a. Cumulative Effects. Effects tend to compound, such that the ultimate result of a number of direct effects is most often greater than the sum of their immediate consequences. Likewise, indirect effects often combine to produce greater effects than the sum of their individual consequences. This may occur at all levels as the contributing lower-order effects are achieved.

b. Cascading Effects. Indirect effects can ripple through a targeted system, often influencing other systems as well; most typically through nodes and links that are common and critical to related systems. Cascading effects may also result from direct engagements. The cascading of direct and indirect effects, as the name implies, usually flows from higher to lower levels. As an example, destruction of a HQ element or capture of a terrorist senior leader will result in the loss of C2 and thus degrade the effectiveness of subordinate organizations.

c. Collateral Effects. Target effects often spill over to create associated effects commonly known as collateral damage, the unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. Such damage is not unlawful so long as it is not excessive in light of the overall military advantage anticipated from the attack. Such damage can occur to friendly, neutral, and even enemy forces. In the case of the CJTF's operational and theater-strategic effects, the related collateral effects typically will not be reflected as damage, but as other types of results that planners might or might not anticipate. Collateral effects often spill over to create unintended consequences, usually in the form of injury or damage to persons or objects unrelated to the objectives. In a broad sense collateral effects are any effects achieved beyond those for which the action was undertaken and may be either positive or negative to the planners' intent. In a negative sense, collateral effects may be incidental direct or indirect effects that cause unintended and unwanted injury or damage to persons or objects. On the positive side collateral effects may generate outcomes that prove beneficial to ongoing military actions. The net result is that planned first order effects will invariably generate subsequent effects that were unintended or unanticipated. It is important to distinguish between collateral damage and collateral effects. Sound planning should allow for consideration of the risks of unintended second- and third-order consequences. Collateral effects should be a major, deliberate consideration in planning, executing, and assessing military actions on any scale.

### 2. Lethal and Nonlethal Effects

a. Weapon systems deliver fires that are capable of producing both lethal and nonlethal effects on a target. Lethal effects are produced through some combination of blast, fragmentation, and kinetic penetration of the selected target. Though highly effective for their intended purpose, lethal effects may not always be suitable across the range of military operations.

b. For example, during military engagement, security cooperation and deterrence operations, the application of lethal fires is normally greatly restricted, and the CJTF may be limited to employing only defensive fires. Use of lethal ways and means during joint operations may be curtailed by constraints and restraints dictated by the LOAC and ROE. The CJTF may also need to address concerns about inflicting unintended casualties among noncombatants and producing collateral damage to infrastructure and facilities that will be required to function during Phases V (Stabilize) and VI (Enable Civil Authority) of a major operation. These concerns may be addressed through the employment of nonlethal effects.

c. Nonlethal effects, such as those produced through IO (electronic warfare [EW], computer network attack [CNA], PSYOP) and certain directed energy weapons are employed and may achieve objectives across the range of military operations and at all levels of war. They result in incapacitation of personnel or materiel, while minimizing fatalities, permanent injury to personnel and undesired damage to property and the environment. The ability to produce nonlethal effects provides the CJTF a range of flexible targeting solutions. The scalability, selectability, and responsiveness of nonlethal capabilities provide the CJTF the means to target selected individuals; neutralize or deny the enemy use of targeted facilities without destruction; clear facilities prior to destruction; control group movements through area denial. Nonlethal effects may also be employed to complement lethal effects by sorting or canalizing hostile forces into pre-selected kill zones or engagement areas. They may also complement or offer an alternative to the employment of precision guided munitions when collateral damage effects are a concern.

### **(3) Center of Gravity**

(a) One of the most important tasks confronting the CJTF's staff in the operational design process is the identification of friendly and adversary COGs. A COG is a source of moral or physical strength, power, and resistance — what Clausewitz called “the hub of all power and movement, on which everything depends . . . the point at which all our energies should be directed.” A COG can be viewed as the set of characteristics, capabilities, and sources of power from which a system derives its moral or physical strength, freedom of action, and will to act. The COG is always linked to the objective. If the objective changes, the center of gravity also could change. At the strategic level, a COG could be a military force, an alliance, political or military leaders, a set of critical capabilities or functions, or national will. At the operational level a COG often is associated with the adversary's military capabilities — such as a powerful element of the armed forces — but could include other capabilities in the operational environment. Since the adversary will protect the COG, it invariably is found among strengths rather

than among weaknesses or vulnerabilities. Commanders consider not only the enemy COGs, but also identify and protect their own COGs.

(b) A systems perspective of the operational environment (see Figure I-5) assists identification of adversary COGs and their critical capabilities, requirements, and vulnerabilities. In combat operations, this involves knowing an adversary's physical and psychological strengths and weaknesses and how the adversary organizes, fights, and makes decisions. Moreover, the CJTF and staff (including targeteers) must understand strengths and weaknesses in other operational environment systems (political, social, economic, infrastructure, informational, etc.) and their interaction with the military system. The staff, under the intelligence directorate's (J-2) lead, analyzes the relevant systems in the operational environment based on understanding strategic objectives, desired effects, and the joint force's mission. This analysis identifies a number of nodes — the people, facilities, individual systems, forces, information, and other components of the system. The analysis also attempts to identify links — the behavioral, physical, or functional relationship between nodes. Identifying nodes and their links helps the staff assess the systems' important capabilities and vulnerabilities. This analysis identifies the interrelationship of systems and capabilities within or in support of a given COG. A clear understanding of these relationships will help the CJTF and staff in the identification of effective options to defeat the COG.

### KEY TERMS

A **system** is a functionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole. Systems associated with national security include political, military, economic, social, infrastructure, information, and others.

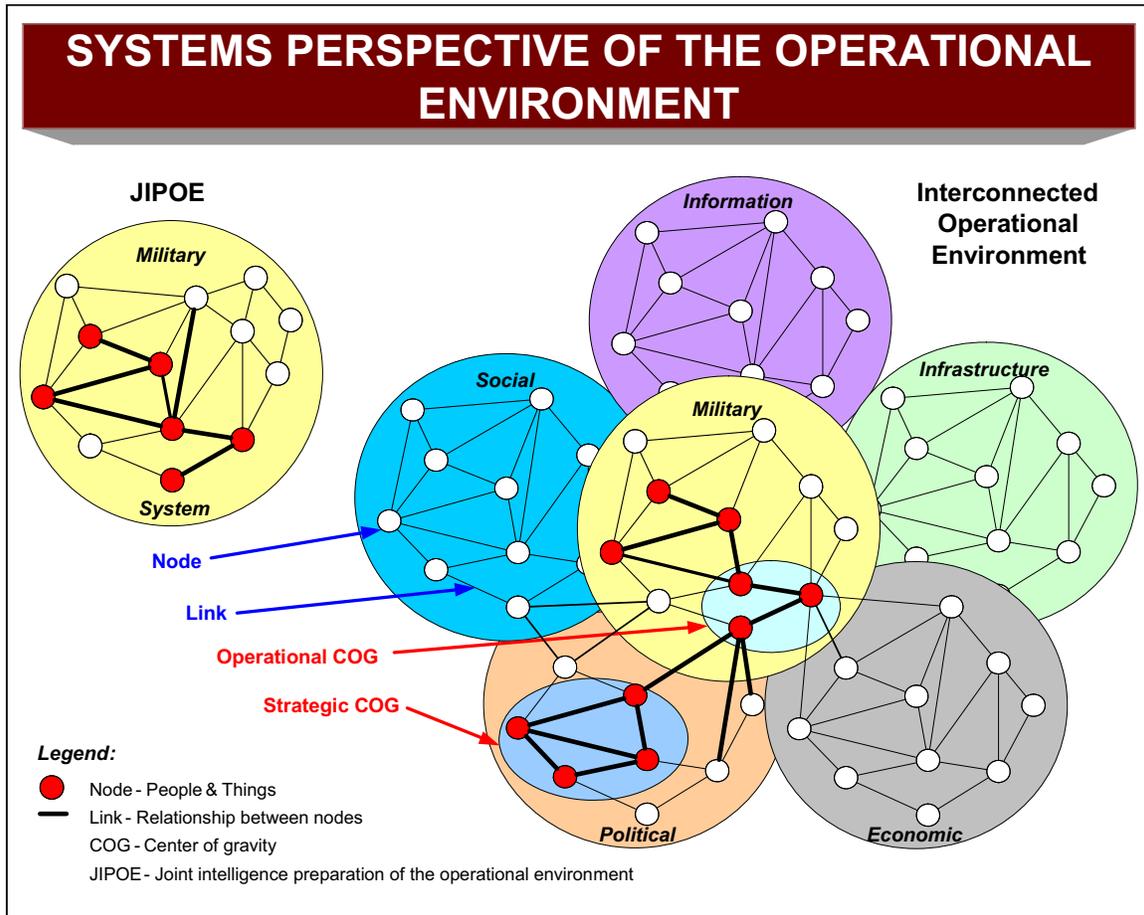
A **node** is an element of a system that represents a person, place or physical thing.

A **key node** is a node that is critical to the functioning of a system.

A **link** is a behavioral, physical, or functional relationship between nodes.

(c) A COG typically will not be a single node in the system, but will consist of a set of nodes and their respective links (relationships). For example, Figure I-5 shows a notional adversary's strategic and operational COGs, each consisting of a set of nodes and links. The operational COG in this example resides in the military system, while the strategic COG focuses in the political system but overlaps with the operational COG. However, a COG that appears entirely military on the surface often will have underlying links to key nodes in other systems. A single node might be considered a COG as an exception, such as when the adversary senior military leader is also the political leader and the nature of the adversary's political and military systems is such that the leader's demise would cause support for the conflict by other leaders in these systems to collapse. Also, systems are viewed differently at different levels. For example, the CDR might consider an adversary's key military capability to be a single node in the adversary's military system, while a commander, joint task force (CJTF) who

must attack this capability would analyze it as a system of nodes and links in an effort to determine its critical capabilities and vulnerabilities.



**Figure I-5. Systems Perspective of the Operational Environment**

(d) System nodes are the tangible elements within a system that can be "targeted" for action, such as people, materiel, and facilities. Links are the behavioral or functional relationships between nodes, such as the command or supervisory arrangement that connects a superior to a subordinate; the relationship of a vehicle to a fuel source; and the ideology that connects a propagandist to a group of terrorists. Links establish the interconnectivity between nodes that allows them to function as a system—to behave in a specific way (accomplish a task or perform a function). Thus, the purpose in targeting specific nodes is often to destroy, interrupt, or otherwise affect the relationship between them and other nodes, which ultimately influences the system as a whole.

(e) Analysts link nodes to each other with sufficient detail to inform the CJTF of potential key nodes. These are nodes related to a strategic or operational effect or a COG. Some may become decisive points for military operations since, when acted upon, they could allow the CJTF to gain a marked advantage over the adversary or contribute materially to attaining a desired effect. Key nodes are likely to be linked to, or resident in, multiple systems. Since each adversary system (infrastructure, social, etc.) is

composed of nodes and links, the capabilities of US instruments of national power can be employed against selected key nodes to attain operational and strategic effects.

(f) COG analysis is important to targeting efforts because it identifies the enemy’s sources of power and will to fight and tries to discover how and where those sources of power are vulnerable, where critical nodes within them are, and how they can be exploited. Two of the most common techniques for COG analysis usually yield insight on enemy systems that can be exploited to derive target sets and individual targets.

1. The first is the *strategic ring* model, which divides the enemy “organism” into systems along functional lines (like leadership, organic essentials (resources), infrastructure, population, and defense or fighting mechanisms). This technique often yields useful target sets in each of the categories, but contains another important insight: leadership and control mechanisms (usually depicted as the central ring) are always a COG and almost always yield useful targets as analysis expands into target development. The two most common variations on this technique are the five-ring model (using the rings specified above) and similar seven-ring “national elements of value” model.

2. Another common technique, described in JP 5-0, *Joint Operation Planning*, begins with the COG as a source of power, identifies the inherent abilities that allow it to act as such (**critical capabilities**), identifies the essential conditions, resources, or means (**critical requirements**) that allow them to operate, and then determines where those critical requirements are vulnerable (**critical vulnerabilities [CVs]**). Collectively, these are called **critical factors**. While it can sometimes be difficult to pick CVs from critical requirements or translate the former into explicit target sets, target system and nodal analysis performed during target development can help “operationalize” this technique’s insights.

#### CRITICAL FACTORS

**Critical capability** — a means that is considered a crucial enabler for a center of gravity to function as such, and is essential to the accomplishment of the specified or assumed objective(s).

**Critical requirement** — an essential condition, resource, and means for a critical capability to be fully operational.

**Critical vulnerability** — an aspect of a critical requirement, which is deficient or vulnerable to direct or indirect attack that will create decisive or significant effects.

3. Figure I-6 shows notional critical capabilities and vulnerabilities associated with the strategic and operational-level COGs depicted in Figure I-5. For example, the J-2 determines that the air defense system is the **critical capability** for the operational-level COG—the armored corps—and that the radar network is the **critical vulnerability** for the air defense system due to the overmatching capabilities of the joint

force's anti-radiation missiles. This assessment likely will result in fires and targeting tasks to the joint force air component commander (JFACC) relative to neutralizing the air defense system so that the maneuver divisions become vulnerable.

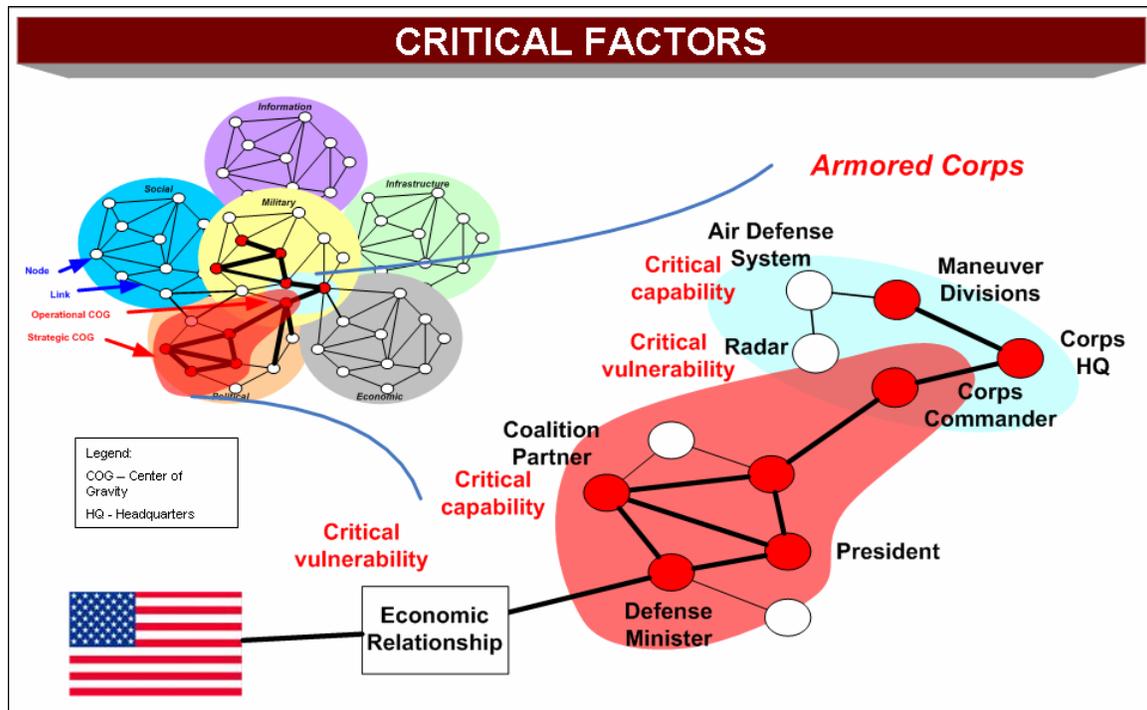


Figure I-6. Critical Factors

(g) Once the systems analysis is mature, the planners should then try to identify the critical factors within that system. Those elements or functions that enable the COG are its critical capabilities. Once these are identified, planners should determine the critical requirements and critical vulnerabilities. When identifying friendly and adversary critical vulnerabilities, the CJTF and staff will understandably want to focus their efforts against the critical vulnerabilities that will do the most decisive damage to an adversary's COG. However, in selecting those critical vulnerabilities, planners must also compare their criticality with their accessibility, vulnerability, redundancy, ability to recuperate, and impact on the civilian populace, then balance those factors against friendly capabilities to affect those vulnerabilities. The CJTF's goal is to seek opportunities aggressively to apply force against an adversary in as vulnerable an aspect as possible, and in as many dimensions as possible. In other words, the CJTF seeks to undermine the adversary's strength by exploiting adversary vulnerabilities, while protecting friendly vulnerabilities from adversaries attempting to do the same.

#### (4) Decisive Points

(a) Commanders and their staffs identify decisive points to help them determine where and how to apply friendly capabilities to exploit adversary vulnerabilities. A decisive point is a geographic place, specific key event, critical factor, or function that, when acted upon, allows a commander to gain a marked advantage over an adversary or contributes materially to achieving success (e.g., creating a desired effect,

achieving an objective). The most important decisive points can be determined from analysis of critical factors. As part of the node-link analysis associated with a systems perspective, understanding the relationship between a COG's critical capabilities, requirements, and vulnerabilities can illuminate direct and indirect approaches to the COG. It is likely that most of these critical factors will be decisive points, which should then be further addressed in the planning process.

(b) The commander designates the most important decisive points for further planning and allocates sufficient resources to produce the desired effects against them. Just as a combined arms approach is often the best way to attack an enemy field force in the military system, attacking several vulnerable points in other systems may offer an effective method to influence an enemy COG.

### (5) Direct versus Indirect Approach

(a) The essence of operational art lies in determining how to allocate available friendly resources against an adversary's COGs to achieve friendly strategic and operational objectives. There are three approaches to accomplish this, so CJTF's and their staffs will have to decide between them, given the specific circumstances. The decision facing the commander is whether to attack the COG *directly*, *indirectly*, or through *combination* of direct and indirect approach.

(b) In theory, direct attacks against adversary COGs resulting in their neutralization or destruction provide the most direct path to victory — if this can be done in a prudent manner. In the event that a direct attack is not a reasonable solution, CJTFs should seek an indirect approach until conditions are established that permit successful direct attacks. In this manner, the adversary's derived vulnerabilities can offer indirect pathways to gain leverage over its COGs.

### (6) Line of Operations

(a) Generally, a LOO describes the linkage of various actions on nodes or decisive points with an operational or strategic objective. In operational planning, LOO can help convey effects or the associated major tasks required to achieve CJTF's objectives or military end state. Linking LOOs to specific effects and objectives helps the commander keep the overall focus and purpose of individual actions in context and provides the framework to identify the timing of decision points and assessment actions.

(b) Commanders may describe the operation along LOOs that are *physical* or *logical*. A physical LOO defines the interior or exterior orientation of the force in relation to the enemy or connects actions on nodes or decisive points related in time and space to an objective(s). A logical LOO connects actions on nodes or decisive points related in time and purpose with an objective(s). Normally, joint operations require commanders to synchronize activities along multiple and complementary physical and logical LOOs working through a series of military strategic and operational objectives to attain the military end state. See Figure I-7 for an example of logical lines of operations.

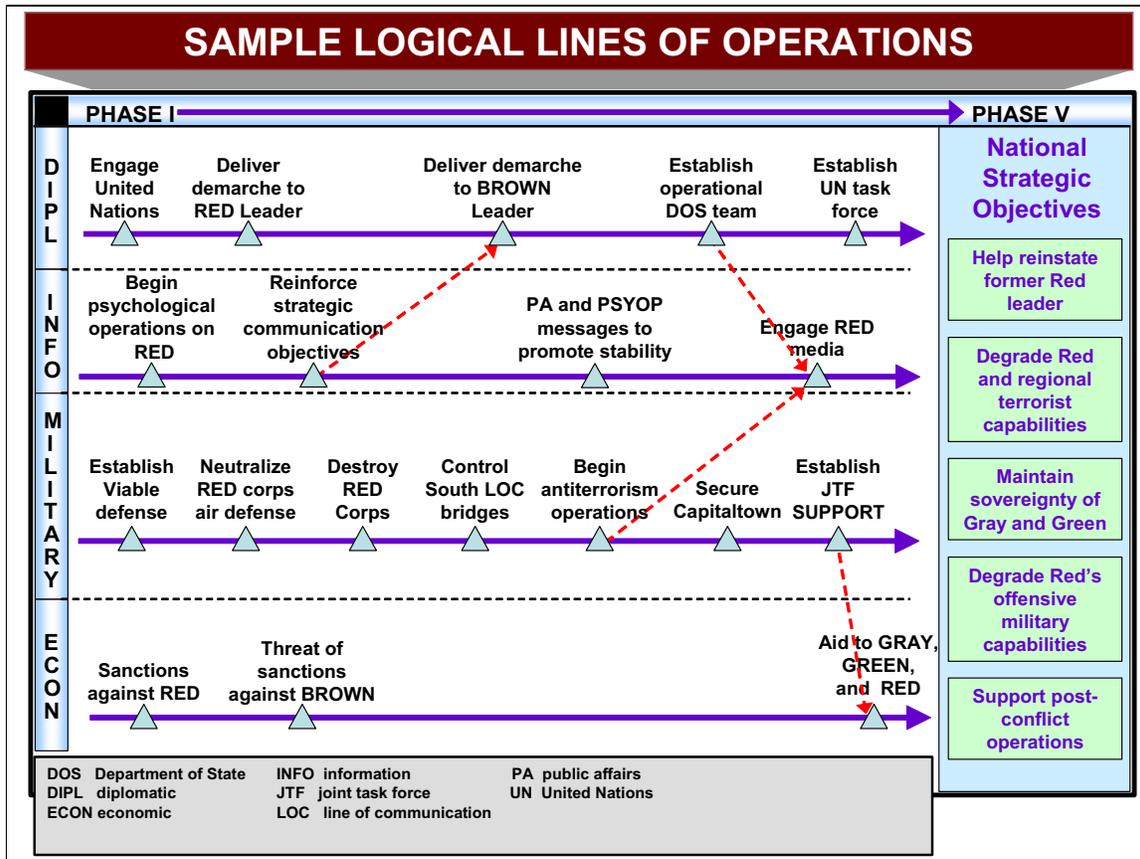


Figure I-7. Sample Logical Lines of Operations

(c) Commanders use physical LOOs to connect the force with its base of operations and objectives when positional reference to the enemy is a factor. Physical LOOs may be either interior or exterior. A force operates on interior lines when its operations diverge from a central point and when it is therefore closer to separate enemy forces than the latter are to one another. Interior lines benefit a weaker force by allowing it to shift the main effort laterally more rapidly than the enemy. A force operates on exterior lines when its operations converge on the enemy. Successful operations on exterior lines require a stronger or more mobile force, but offer the opportunity to encircle and annihilate a weaker or less mobile opponent. Assuring strategic mobility enhances exterior LOOs by providing the CJTF greater freedom of maneuver.

(d) CJTFs use logical LOOs to visualize and describe the operation when positional reference to an enemy has little relevance. In a linkage between military objectives and forces, only the logical linkage of LOOs may be evident. This situation is common in many joint force operations. CJTFs link multiple actions on nodes or decisive points with military objectives using the logic of purpose — cause and effect. Logical LOOs also help commanders visualize how military means can support nonmilitary instruments of national power.

(e) A holistic understanding of other operational environment systems and their interaction with the military system helps commanders and their staffs identify COGs, critical factors, and decisive points to formulate LOOs and visualize the CONOPS.

## 6. Planning and Targeting During Execution

a. Targeting begins during pre-hostilities contingency planning or CAP and continues throughout execution. As the operation progresses, joint operation planning generally occurs in three distinct but overlapping timeframes: **future plans**, **future operations**, and **current operations**. The joint force battle rhythm and the CJTF's decision cycle are two factors that affect planning in these timeframes, with the greatest potential impact on current operations planning. The joint targeting cycle and supporting component processes (such as the JFACC's six-stage air tasking cycle) must adapt to the joint force battle rhythm and decision cycle.

(1) The joint force planning directorate's (J-5) effort focuses on **future plans**. The time frame of focus for this effort varies according to the level of command; type of operation; desires of the CJTF; and other factors. Typically, the emphasis of the future plans effort is on planning the next phase of operations (sequels to the current operation). In a campaign, this could be planning the next major operation (the next phase of the campaign).

(2) Planning also occurs for branches to current operations (**future operations** planning). The time frame of focus for future operations planning varies according to the factors listed for future plans, but the period typically is more near-term than the future plans time frame. Future planning could occur in the J-5 or joint planning group (JPG) while future operations planning could occur in the joint operations center (JOC) or operations directorate (J-3).

(3) Finally, **current operations** planning addresses the immediate or very near-term planning issues associated with ongoing operations. This occurs in the JOC or J-3.

b. Deliberate targeting typically supports the joint force's **future plans** effort, while the nature and time frame associated with current operations planning (usually the current 24-hour period) typically requires the immediate responsiveness of dynamic targeting (discussed in the next section). The time frame for future operations planning can vary from a day to several days. The time frame involved is the primary factor that determines whether deliberate or dynamic targeting will support the CJTF's future operations targeting requirements.

*Refer to JP 5-0, Joint Operation Planning, for more information on planning during execution. Refer to JP 3-33, Joint Task Force Headquarters, for information on JTF battle rhythm, the commander's decision cycle, and other factors that can affect joint targeting and the synchronization of plans and operations.*

## 7. Assessment

a. Assessment is a continuous process that measures progress of the joint force toward mission accomplishment. The CJTF and component commanders continuously assess the operational environment and the progress of operations, and compare them to their initial vision and intent. Commanders adjust operations based on their assessment to ensure objectives are met and the military end state is achieved.

b. The assessment process begins during mission analysis when the commander and staff consider what to measure and how to measure it to determine progress toward accomplishing a task, creating an effect, or achieving an objective. The process continues throughout execution.

c. As a general rule, the level at which a specific operation, task, or action is directed should be the level at which such activity is assessed. Since the direct effects of target engagement typically reside at the tactical level, the joint targeting cycle focuses on combat assessment (CA) to determine qualitative and quantitative results of fire efforts.

d. **CA** is the primary process to determine the performance of target engagement relative to desired target effects. **Battle damage assessment (BDA)** and **munitions effectiveness assessment (MEA)** use **measures of performance (MOP)** to determine whether or not targets must be reengaged. Higher-order assessment uses **measures of effectiveness (MOEs)** to determine progress toward creating the CJTF's desired effects and achieving objectives. The staff consolidates and integrates CA results with other assessment results to provide a complete picture of progress during the joint operation.

*Refer to Chapter III, "Joint Fires Planning and Targeting" for details on assessment.*

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## CHAPTER II

### COMMAND AND STAFF RESPONSIBILITIES AND FUNCTIONS

#### SECTION A. JOINT TASK FORCE HEADQUARTERS

##### 1. Commander, Joint Task Force

a. **The CJTF is responsible for all aspects of joint fires strategy, planning, execution, and assessment.** This responsibility includes establishing military objectives and command relationships, integration, coordination, and deconfliction between component commanders. The employment of fires is complicated by the requirement to identify duplicative efforts, prevent fratricide, and synchronize and integrate targeting with other JTF activities. **The CJTF's primary targeting responsibility lies in establishing the objectives, effects, and tasks that component commanders will achieve through application of air, land, maritime, space, and special operations forces (SOF) capabilities.**

b. **The CJTF should delegate joint targeting planning, coordination, and deconfliction authority to a subordinate component** that possesses or has access to a sufficient C2 infrastructure, adequate facilities, and ready availability of joint planning expertise. To ensure the widest flexibility and greatest reaction to the adversary and changing conditions in the operational environment, joint targeting also should be closely linked to the component commander with the preponderance of assets to strike or otherwise affect joint targets and the staff to adequately plan, control, and coordinate these missions. **All components normally are involved in joint targeting and should establish procedures and mechanisms to manage their responsibilities in the joint targeting process.**

c. **The CJTF establishes a joint targeting process;** which normally features the six-phase targeting cycle. It begins with the end state and the commander's objectives and continues with target development and prioritization, capabilities analysis, commander's decision and force assignment, mission planning and force execution, and assessment. Following assessment, the CJTF provides guidance on future employment of fires. For more details on the joint targeting cycle, refer to Chapter III, "Joint Fires Planning and Targeting," Section B, "Joint Targeting Cycle."

##### d. Targeting Oversight

(1) Typically, JFCs organize a forum to provide broad oversight of overall strategy and component schemes of maneuver; and to conduct planning, coordination, and deconfliction associated with joint targeting. This forum may be a joint targeting coordination board (JTCCB) or other body, depending upon the CJTF's preferences. Such a body, if formed, should assist in developing targeting guidance and reconciling competing requests for capabilities from multiple joint components or other organizations. This body should focus on the tactical aspects of targeting only to ensure that the joint force's broad targeting scheme is consistent with component schemes of

maneuver and overall strategy. On occasion, such a body may consider specific targeting issues for targets that are particularly crucial or sensitive, such as TSTs, but this will be the exception, not the rule. **Normally, the JTCB, if formed, will ensure that more detailed aspects of the targeting scheme are consistent with the overall operational design and strategy.** The CJTF normally appoints the deputy commander, joint task force (DCJTF) or a component commander to chair the JTCB.

(2) The CJTF may approve the formation of a joint fires element (JFE). The JFE is an optional staff element comprised of representatives from the CJTF’s J-3, the components, and other elements of the JTF staff, to include the J-2 targeting staff, the J-5, and others. The JFE is an integrating staff element that synchronizes and coordinates fires planning and coordination on behalf of the CJTF. The JFE assists the J-3 in accomplishing responsibilities and tasks as a staff advisor to the J-3 and may include any and all of the J-3’s tasks with the CJTF’s approval.

## 2. Joint Targeting Coordination Board

a. A JTCB may be either an integrating center for this effort or a JTF-level review mechanism. In either case, the JTCB should be comprised of representatives from the staff, all components, and, if required, their subordinate units (see Figure II-1).

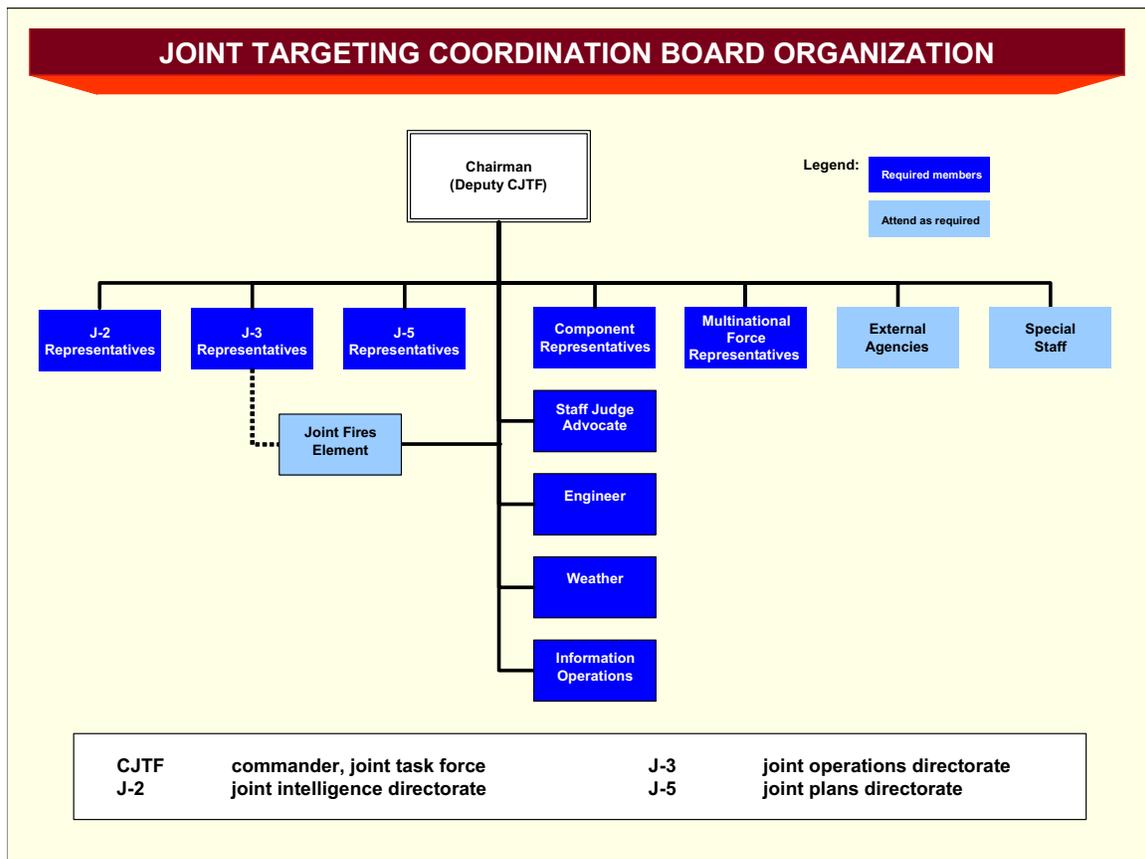


Figure II-1. Joint Targeting Coordination Board Organization

(2) The JTCB provides a forum in which all components can articulate strategies and priorities for future operations to ensure that they are synchronized and integrated. The JTCB normally facilitates and coordinates joint force targeting activities with the components' schemes of maneuver to ensure that the CJTF's priorities are met. **Normally, specific targeting issues are resolved by direct coordination between elements of the joint force below the level of the JTCB, but the JTCB or CJTF may address specific target issues not previously resolved.**

(3) In multinational operations, the JTCB may be subordinate to a multinational targeting coordination board, with CJTFs or their agents representing the joint force on the multinational board.

(4) The JTCB is typically responsible for the following:

(a) Review of operational-level assessment to guide the CJTF's decision-making.

(b) Maintaining a macro-level anticipatory view of the operational environment.

(c) Review of components' schemes of maneuver and broad targeting guidance to ensure compliance with the CJTF's intent.

(d) Ensuring integration of component plans and targeting in properly mutually supporting and supported roles according to the CJTF's CONOPS.

(e) Developing and refining broad targeting guidance and priorities.

(f) Reviewing and refining joint ISR collection and assessment guidance based on CJTF priorities and intent, to include refinement of MOPs and MOEs, as appropriate.

(g) Submitting the coordinated joint integrated prioritized target list (JIPTL) for CJTF approval.

(h) Ensuring the JTL, NSL, restricted target list (RTL), and other relevant target lists are maintained and updated based on CJTF guidance.

(5) The JTCB's focus is to develop broad targeting priorities and other targeting guidance in accordance with the CJTF's objectives as they relate operationally. **The JTCB must be flexible to address targeting issues, but should not become overly involved in tactical-level decision-making.** Briefings conducted at the JTCB should focus on ensuring that intelligence, operations (by all components and applicable staff elements), fires, and maneuver are on track, coordinated, and synchronized. In order to function as effectively and efficiently as possible, the JTCB requires a focused agenda to guide the daily conduct of business. Participants at JTCB briefings are DCJTF, J-2, J-3,

component liaisons, and others, as required. By organizing the meeting into four sessions (see Figure II-2), the JTCB may address at least four planning horizons.

(a) **Assessment.** The first session is a review of completed operations (for example, the last 24 hours), focusing on the operational level and progress toward the CJTF’s objectives. It should include an intelligence forecast of anticipated adversary action for future operations planning considerations.

(b) **CJTF Intent.** The second session of the board should consist of broad guidance for future plans and be presented by the JTCB’s chairman.

(c) **Component Schemes of Maneuver.** The third session should review components’ detailed operational-level schemes of maneuver for future operations. Broad targeting guidance and priorities should be refined as appropriate in this portion of the meeting.

(d) **Joint Maneuver and Fires.** The final session of the board should review the next 24 hour’s plan for maneuver, fires, and targeting. More specific targeting issues may be addressed here if not previously resolved as part of deliberate targeting. Such issues may include TSTs, target restrictions, dynamic targeting priorities, priorities for certain weapons (e.g., cruise missiles), and collection and assessment issues. **This is the final review of the next day’s plan to ensure it is still valid. This is the JTCB’s final chance to recommend modification to targeting priorities before mission planning and execution.**

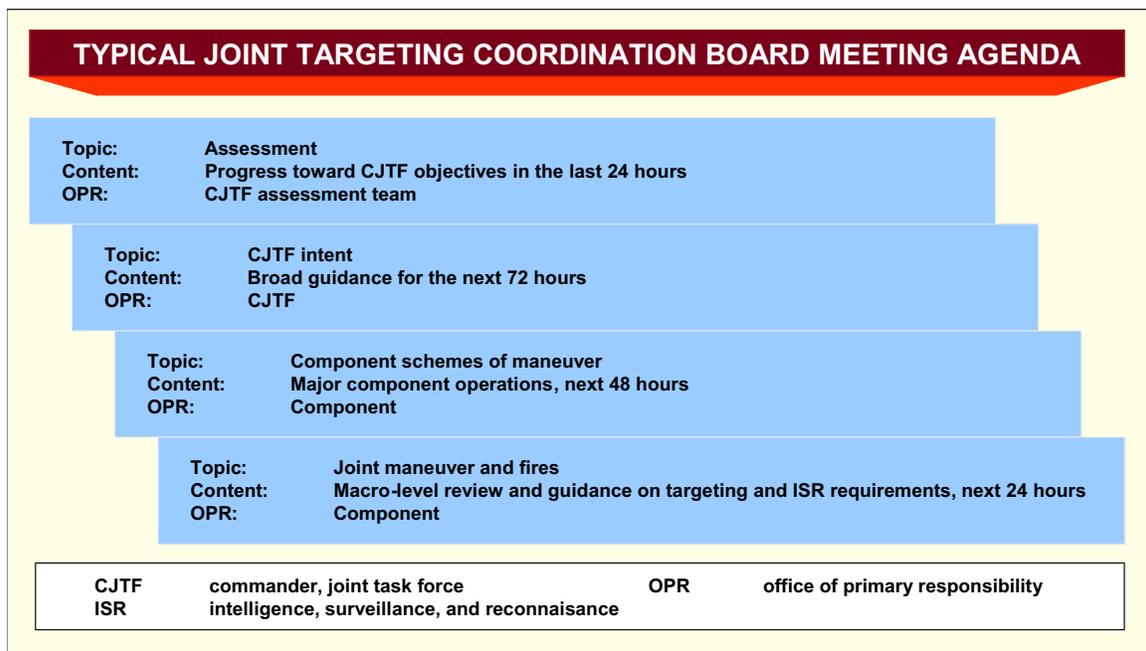


Figure II-2. Typical Joint Targeting Coordination Board Meeting Agenda

(6) The planned duration of the JTCB meeting should be approximately one hour. In such limited time, it normally is an inappropriate forum for developing,

preparing, or maintaining products. The JTCB meeting materials should be prepared by an informal staff element that processes all the necessary targeting information for the JTCB briefings to the CJTF, or designated representative, for approval of the next day's targets. Products normally developed include the following: JTL, RTL, NSL, targeting assessment, JIPTL, objectives and guidance, reviewed intelligence collection priorities, air apportionment, draft joint coordination order, CA, future plans, media issues, and component plans. Required and optional items of a recommended JTCB meeting agenda are provided in Table III-1 below:

<b>RECOMMENDED JOINT TARGETING COORDINATION BOARD MEETING AGENDA ITEMS</b>			
<b>Required Agenda Items</b>			
<b>Agenda Item</b>		<b>Agenda Item OPR</b>	
Introduction		Chief of Staff	
Press/Media Issues		Public Affairs Office	
Political Situation		Political Advisor	
Theater Threat Assessment		J-2 Representative	
<b>Friendly Forces Situation:</b>			
Joint Operations View		J-3 Representative	
Current Maritime Situation		JFMCC Representative*	
Current Air Situation		JFACC Representative*	
Current Land Situation		JFLCC Representative*	
Current Special Operations Situation		JFSOCC Representative*	
Current Psychological Operations Situation		PSYOP Representative	
Current Area Situation		Joint Security Coordinator	
Current Logistics Situation		J-4 Representative	
<b>Optional Agenda Items</b>			
<b>Agenda Item</b>		<b>Agenda Item OPR</b>	
Electronic Warfare Situation		J-3 Representative	
Information Operations Situation		J-3 Representative	
CBRNE Situation		J-3 Representative	
Communications Update		J-6 Representative	
Host-Nation Support/CMOC Update		J-9 Representative	
Plans and Orders Development Update		J-3/J-5 Representatives	
CJTF Directions and Guidance Update		CJTF	
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives	J-9	joint civil-military operations directorate
CJTF	commander, joint task force	JFACC	joint force air component commander
CMOC	civil-military operations center	JFLCC	joint force land component commander
J-2	joint intelligence directorate	JFMCC	joint force maritime component commander
J-3	joint operations directorate	JFSOCC	joint force special operations component commander
J-4	joint logistics directorate	OPR	office of primary responsibility
J-5	joint plans directorate	PSYOP	psychological operations
J-6	joint communications system directorate		

\*or appropriate Service representative

**Table II-1. Recommended Joint Targeting Coordination Board Meeting Agenda Items**

(7) CJTF (or designated representative) approval for the next day's JIPTL and related products is usually sought immediately prior to adjournment of the JTCB. The JTCB's decisions are then promulgated in message format throughout the joint force.

(8) Normally the JTCB is concerned with future operations, not the “current battle.” Operators already have the current day’s targeting plan(s) in hand and are preparing to execute. Changing priorities on the day of execution is possible, but normally will be handled through the J-3 (or their equivalents at the component level) rather than the JTCB. **Moreover, component commanders normally are authorized to make execution day changes compelled by current conditions, consistent with the CJTF’s guidance and intent.**

### 3. Joint Task Force Staff

#### a. Intelligence Directorate

(1) Develops and maintains the JTL. The combatant command joint intelligence operations center (JIOC) normally provides the initial database of targets the JTF J-2 manages and maintains during a crisis. The JTL is the master target list for all targets within the joint operations area (JOA).

(2) Assists the JTF J-3 in development of the RTL and NSL. The RTL is a list of targets derived from the JTL that cannot be attacked without prior coordination. An example of this is a C2 node that the J-2 is exploiting. The NSL is a list of areas, complexes, or installations that the CJTF determines should not be attacked due to the possibility of unacceptable collateral damage, a potential violation of the LOAC, or operational requirements, among others.

(3) Receives inputs from the component commanders that form the basis for JTF J-2 target development.

(4) Takes responsibility for all aspects of target development. The JTF J-2 relies heavily on the combatant command JIOC and interagency partners to assist in developing targets to meet the CJTF's guidance and intent. See Appendix A, “Intelligence Organizations Supporting Targeting,” for information on intelligence organizations supporting targeting.

(5) Recommends targets for inclusion in the JIPTL in coordination with the JFE.

(6) In conjunction with the J-3, participates in the CA process. The JTF J-2 normally collects BDA reports and provides reattack recommendations (RRs) to the JTF J-3 for final decision.

#### b. Operations Directorate

(1) Integrates and synchronizes fires, both lethal and nonlethal, with other major elements of the operation such as maneuver, IO, special operations, and logistics.

(2) In coordination with JTF J-2, J-5, and staff judge advocate (SJA), develops the RTL and NSL for CJTF approval. Once approved, forwards them to the JTCCB and components for use in the joint targeting planning process.

(3) Recommends, coordinates, reviews, designates, and disseminates fire support coordination measures (FSCMs), maneuver control measures, and airspace coordinating measures (ACMs) as part of overall concept of the operations for joint fires and joint fire support.

(4) Reviews, approves, and promulgates, as appropriate, other measures submitted by components or subordinate commanders.

(5) Recommends future fires guidance to the CJTF, provides updates on CA, and advises on ROE and the LOAC.

(6) Ensures IO is integrated and synchronized with all other aspects of the operation. Typically, the CJTF will form a JTF IO cell to integrate and synchronize IO.

(7) Coordinates the assessment effort for the JTF.

(8) Disseminates approved targeting guidance and priorities to subordinate commands and staff.

(9) Coordinates with the J-2/joint intelligence support element (JISE) to ensure the CJTF's priority intelligence requirements (PIRs) to support targeting are fully integrated into the intelligence collection plan.

(10) Develops the roles, functions and agenda of the JTCCB for CJTF approval.

(11) Reviews targeting information as it pertains to the CJTF's targeting guidance, objectives, and priorities.

(12) Compiles and deconflicts target nominations and forwards them to the appropriate components for targeting.

(13) Recommends joint HPTs to the JPC for future planning.

(14) Recommends procedures for attacking TSTs.

(15) Determines the need for a JFE based on the scope of the operation and makes a recommendation to form a JFE to the CJTF based on the following considerations:

(a) Type of operation.

(b) Complexity of the operation.

- (c) JTF staffing limitations.
- (d) Anticipated length and scale of the operation.

(16) When approved and directed by the CJTF, forms a JFE.

**c. Joint Fires Element**

(1) The CJTF, component commanders, interagency partners, and staffs synchronize and integrate fires to support national and strategic objectives. To accomplish this task, a CJTF normally establishes a JFE that operates under the J-3. The JFE is an optional staff element comprised of representatives from the JTF J-3, the components, and other JTF staff elements, to include the J-2 targeting staff and the J-5 plans directorate, among others. **The JFE is an integrating staff element that synchronizes and coordinates fires and effects planning and coordination on behalf of the CJTF.** The JFE also assists the J-3 in accomplishing responsibilities and tasks as a staff advisor to the J-3 and may include any and all of the J-3 tasks with the CJTF's approval.

(2) The composition and organization of a JFE are situationally dependent, but should include a Director and Plans, Operations, and Targeting sections (see Figure II-3). The recommended supporting staff structure includes component command liaison officers (LNOs) and representatives from the JTF J-2, J-3, logistics directorate (J-4), J-5, force structure, resource, and assessment directorate (J-8), JTCB, IO working group, the national intelligence community, and others as required. The JFE should be physically located near the JTF JOC and collocated with the IO cell if possible.

(3) JFE key functions and tasks may include all or some of the following:

(a) Develops JOA-wide joint targeting guidance, objectives, and priorities for CJTF approval. This normally is done in conjunction with component planners as part of the JPG.

(b) Coordinates, deconflicts, and validates target nominations at the CJTF level and higher.

(c) Coordinates JTF component input to the JTF JIPTL.

(d) Prioritizes and forwards the JTF JIPTL to the JTCB for review and CJTF for approval.

(e) Manages the CJTF-approved JIPTL.

(f) Coordinates, maintains, and disseminates a complete list of theater and JTF FSCMs within the JOA (such as where SOF or other components and organizations

are operating) to avoid fratricide and deconflicts with other current or future operations, to include managing the RTL and NSL.

(g) Develops the roles, functions, and agenda of the JTCB for CJTF approval, to include identifying potential conflicts in preparation for the JTCB or similar forum.

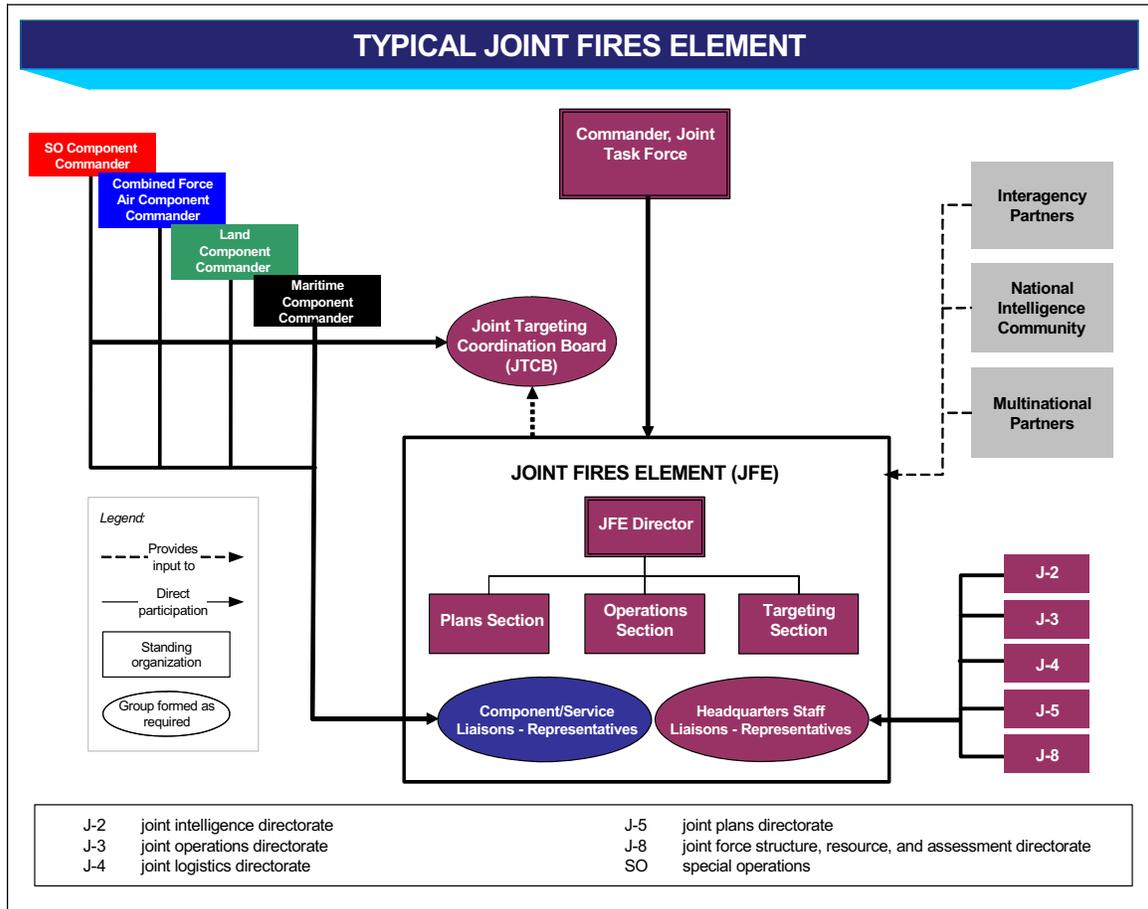


Figure II-3. Typical Joint Fires Element

(h) Organizes a strategy team to address intermediate targeting efforts to bridge the gap between operational level current operations and future plans being developed.

(i) Reviews/recommends intelligence collection requirements, to include assisting the JISE in developing targets.

(j) Develops the joint fires estimate and COAs, to include compiling and deconflicting candidate target nominations and reviewing component fires activities.

(k) Monitors JTF TST operations for the JTF J-3.

(l) Recommends procedures for engaging TSTs and component critical targets, to include making recommendations for deconfliction.

(m) Recommends JTF HPTs to the JPG.

(j) Coordinates JTF joint fires and targeting ROE issues.

(k) Develops JTF collateral damage prevention procedures based on CJTF, combatant command, and CJCS guidance and directives.

(l) Conducts assessments of JTF joint fires and targeting in cooperation and coordination with higher joint force and JTF components.

(4) JFE director responsibilities include the following:

(a) Organizes, trains, and supervises the JFE.

(b) Advises the CJTF and JTF staff on joint fires matters.

(c) Plans, coordinates, and facilitates the daily JTCB meetings, to include providing required administrative support.

(5) JTF JFE plans section responsibilities normally include the following:

(a) Provides the principal JFE representative to the JPG.

(b) Prepares the fires portion of all JTF plans, orders, branches, and sequels.

(c) Drafts JOA-wide joint targeting guidance, objectives, and priorities for JFC approval.

(6) JTF JFE operations section responsibilities normally include the following:

(a) Provides the principal representative to the JTF JOC for all matters pertaining to ongoing joint fires operations.

(b) Produces and disseminates updates to the JTF fires and targeting situation and guidance (including JTCB updates) as required.

(c) Recommends the JTF employment of joint FSCMs.

(d) Monitors joint fires and fire support in the JOA, to include contact with the JTF components as necessary.

(e) Develops JTF processes and procedures for identifying, authorizing and attacking TSTs.

(7) JTF JFE targeting section responsibilities normally include the following:

- (a) Assists the JISE in maintaining and refining the JTL.
- (b) Maintains the RTL and NSL and publishes changes to these lists as needed.
- (c) Provides the JTF J-3 representative to collection management.
- (d) Provides the JISE with J-3 targeting priorities and other inputs as required.
- (e) Compiles and deconflicts target nominations from the JTF staff and higher HQ.
- (f) Maintains liaison with the JTF IO cell.
- (g) Coordinates the JTF CA effort with the JTF staff and components.

**e. Information Operations Staff**

(1) The JTF IO staff coordinates and synchronizes capabilities to accomplish CJTF objectives. Uncoordinated IO can compromise, complicate, negate, or harm other JTF military operations, as well as other United States Government (USG) information activities. **JFCs must ensure IO planners are fully integrated into the planning and targeting process, assigning them to the JTCB to ensure full integration with all other planning and execution efforts.** Successful execution of an information strategy also requires early detailed JTF IO staff planning, coordination, and deconfliction with USG interagency efforts to effectively synergize and integrate IO capabilities.

(2) The J-3 normally designates an IO cell chief to assist in executing joint IO responsibilities. The primary function of the IO cell chief is to ensure that IO are integrated and synchronized in all planning processes of the JTF staff and IO aspects of such processes are coordinated with higher, adjacent, subordinate, and multinational staffs. The IO cell chief is normally responsible for functions depicted in JP 3-13, *Information Operations*. **During the execution of an operation, IO planners shall be available to the JOC or its equivalent and the JTCB to assist in integration, deconfliction, support, or adjustment of IO activities as necessary.**

*For further details concerning IO, refer to CJCSI 3210.01A, Joint Information Operations Policy (classified document) and JP 3-13, Information Operations.*

**f. Logistics Directorate**

(1) Identifies critical or key logistic issues unique to joint fires. An example of this includes tracking status of precision-guided munitions.

(2) Reviews target selection for unnecessary harmful environmental impacts (e.g., dams, oil fields).

(3) Compares the operational logistic plans to developing target lists to ensure protection of infrastructure and/or supplies required to support current and future operations.

**g. Plans Directorate**

(1) Publishes the CJTF's planning guidance and planning directives.

(2) Identifies possible branches and sequels to the theater campaign plan.

(3) Develops, analyzes, compares, and recommends COAs for CJTF approval.

**h. Force Structure, Resource, and Assessment Directorate**

(1) Identifies requirements and recommends sourcing for JFE personnel.

(2) Identifies and recommends sourcing for JFE support equipment and working spaces,

(3) Identifies and recommends participation in JTF assessments of organic joint fires and targeting results.

**i. Staff Judge Advocate.** The JTF SJA responsibility is to advise the CJTF on applicable international and domestic laws, multilateral and bilateral agreements, LOAC issues, compliance with published ROE, and other pertinent issues involved in target recommendations and decision procedures.

#### **4. Battle Rhythm**

**a. Battle rhythm is the sequencing and execution of actions and events within the JTF HQ that are regulated by the flow and sharing of information that support all decision cycles and is an important aspect of C2.** As a practical matter, a JTF HQ's battle rhythm typically consists of a series of meetings, report requirements, and other activities to synchronize current and future operations. These activities may be daily, weekly, monthly, or quarterly requirements.

**b. The CJTF must ensure that the planning, decision, and operating cycles of the JTF are nested or linked to that of higher HQ and that subordinate commanders synchronize their battle rhythms with the JTF HQ. Some of the pertinent processes and activities that influence the JTF HQ battle rhythm include the targeting cycle, ATO**

**cycle, fire support planning, intelligence collection, and BDA collection.** Figure II-4 illustrates how these processes and activities interact vertically between the levels of command and horizontally during one 96-hour cycle.

**KEY TERMS**

**battle rhythm.** A deliberate daily cycle of command, staff, and unit activities intended to synchronize current and future operations.

**SOURCE:** JP 3-33, *Joint Task Force Headquarters*

**synchronization.** 1. The arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. 2. In the intelligence context, application of intelligence sources and methods in concert with the operation plan.

**SOURCE:** JP 2-0, *Joint Intelligence*

**c. Functions and Factors Impacting Battle Rhythm**

(1) Battle rhythm is the chief of staff's tool to integrate the meetings and products in such a manner to provide the CJTF and staff with the products, information, and decisions that are required for decision-making. **To ensure information is available when and where required, the JTF daily operations cycle is essential.** All JTF staff, components, and supporting agencies should participate in the development of the daily operations cycle and the JTF chief of staff must be the approval authority for changes.

(2) A battle rhythm should be designed to minimize the time the CJTF and key staff members spend attending meetings and listening to briefings and must allow the staff and subordinate commanders time to plan, communicate with the CJTF, and direct the activities of their subordinates. **The battle rhythms of the joint and component HQ should be synchronized and take into account multiple time zones and other factors.** Typically, the JTF HQ battle rhythm is managed for the JFC by the JTF chief of staff. There are several critical functions for a battle rhythm which includes (but are not limited to) the following:

- (a) Making staff interaction and coordination within the HQ routine.
- (b) Making CJTF and staff interaction routine (in so much as it can be).
- (c) Synchronizing centers, groups, bureaus, cells, offices, elements, boards, working group, and planning teams activities.
- (d) Facilitating planning by the staff and decision-making by the CJTF.

# PLANNING PROCESS AND BATTLE RHYTHM

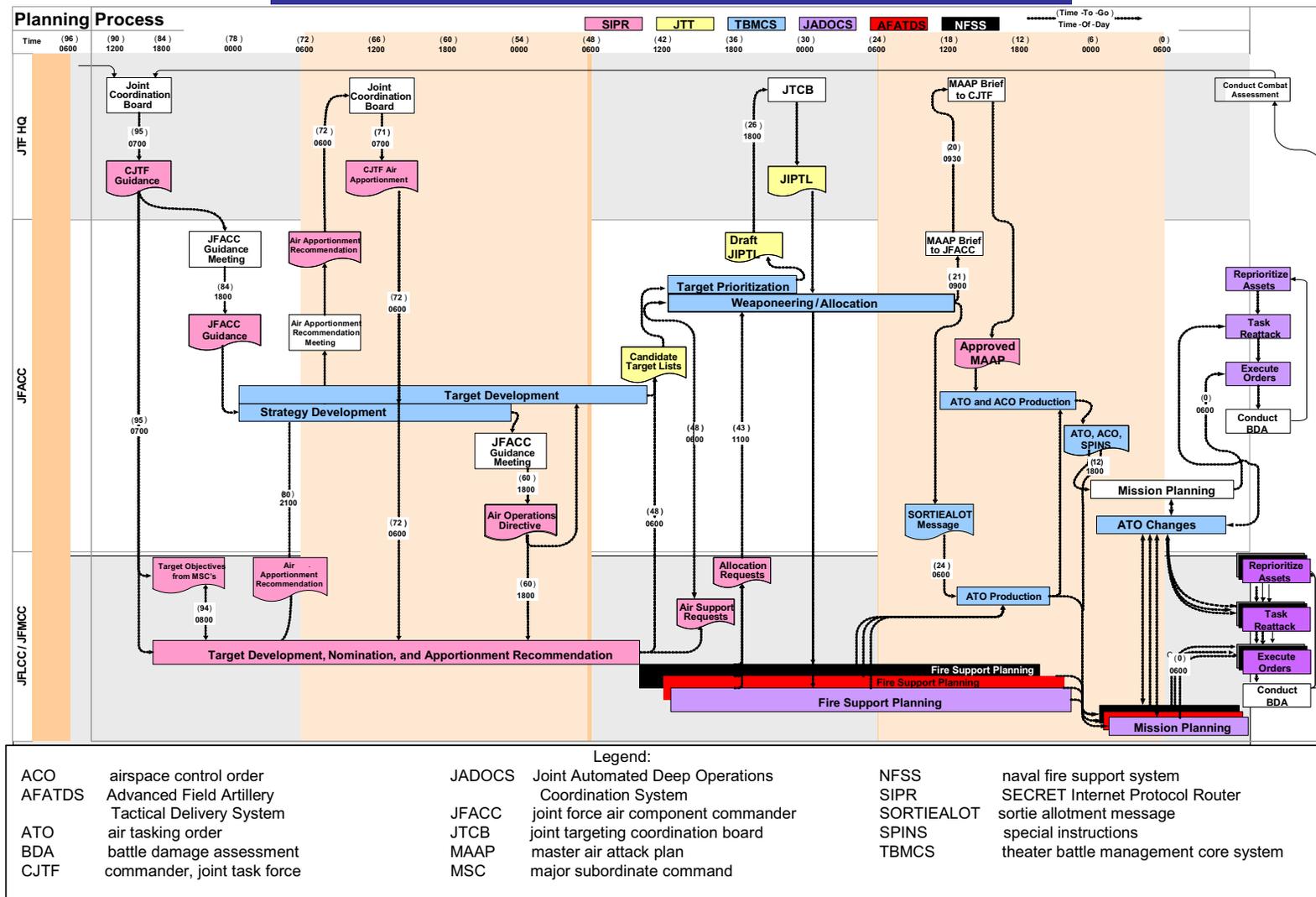


Figure II-4. Planning Process and Battle Rhythm

(3) In addition to critical functions, many factors influence the establishment of a battle rhythm. These include (but are limited to) the following:

- (a) The higher HQ battle rhythm and reporting requirements.
- (b) The subordinate HQ battle rhythm requirements.
- (c) The duration of the operation.
- (d) The intensity of the operation.
- (e) The planning requirements within the HQ (e.g., future plans, future operations, and current operations).
- (f) Other factors (e.g., battlefield circulation).

*For more information on how centers, groups, bureaus, cells, offices, elements, boards, working groups, and planning teams are integrated into HQ battle rhythms, see JPs 3-09, Joint Fire Support; 3-33, Joint Task Force Headquarters, and 3-60, Joint Targeting.*

## **SECTION B. JOINT TASK FORCE COMPONENTS AND FORCES**

### **5. Common Responsibilities**

a. The JTF Service and functional component commanders have common fires and targeting responsibilities:

- (1) Develop a basic understanding of each JTF component's mission and scheme of maneuver to support the CJTF's campaign plan.
- (2) Provide a senior officer to attend the JTCCB, if established.
- (3) Consolidate, deconflict, prioritize component targets, and nominate targets to the JTF joint interdiction lead (normally the JFACC) to minimize duplication of effort and avoid fratricide.
- (4) Ensure component targeting cycles are integrated, synchronized, and deconflicted with the joint targeting cycle.
- (5) Ensure compliance with the LOAC and ROE.
- (6) Provide rapid response to TSTs.

b. Three collaboration structures within the CJTF organization improve coordination and control of fires. The first is the establishment of coordination centers, boards, and

cells; the second is the establishment of a liaison network; and the third is the establishment of direct cross-component watch station-to-watch station communication. Each structure provides specific, independent value. For example; dynamic cross-component targeting is most quickly coordinated by direct communication between watch stations versus third person liaisons or coordination boards. Regardless of the collaboration structure, the need for effective collaboration is vital in any force executing fires. The use of collaboration is an invaluable confidence-building tool between the components and subordinate Service commands. Collaboration fosters a better understanding of missions and tactics, facilitates the transfer of vital information, enhances mutual trust, and develops an increased level of teamwork. Each method of collaboration can provide information about subordinate force readiness, training, and other factors. Each of these structures provides means of enhancing stability, synchronization, deconfliction, interaction, and control within the joint force.

c. JTF component decisions to modify missions or direct attacks that deviate from the planned activity must be based on the CJTF's guidance. These decisions are made with the understanding of the perspective and target priorities of other JTF component targeting effects throughout the campaign.

### **6. Functional and Service Component Commanders**

#### **a. Joint Force Land Component Commander (JFLCC)**

(1) Army and Marine forces are typically under the operational control (OPCON) of the JFLCC. The JFLCC is responsible for making recommendations on the proper employment of assigned, attached, or made-available-for-tasking land forces and assets; planning and coordinating land operations; and accomplishing such operational missions as assigned.

(2) Normally, the JFLCC also will be a Service component commander. In such case, the JFLCC may have a separate Army force (ARFOR) or Marine Corps forces (MARFOR) commander and HQ responsible for the administrative control of the respective Services in the land component. The JFLCC continues to be responsible for Service component functions. This arrangement has the potential to over task the JFLCC's staff during the performance of its dual role. It may be advantageous for the JFLCC to delegate as many of the Service component related duties as practical to a subordinate Service force HQ.

(3) The JFLCC plans, coordinates, synchronizes, and executes fires and their effects to set the conditions for success in their area of operations (AO). The JFLCC's primary agency for fires and their effects is a fire support coordination center (FSCC). A FSCC reviews the CJTF's guidance and intent, and makes recommendations for the JFLCC to achieve them. The FSCC applies this guidance as it shapes the operational environment for the land component's current and future fights. The JFLCC's focus is on shaping those adversary formations, functions, facilities and operations that could impact on the JFLCC area of operations. The JFLCC has the following four primary goals associated with these operations:

(a) Facilitating both operational and tactical maneuver by suppressing the adversary's deep-strike systems, disrupting the adversary's operational maneuver and tempo, and creating exploitable gaps in adversary positions.

(b) Isolating the operational area by interdicting adversary military potential before it can be used effectively against friendly forces.

(c) Destroying or disrupting critical adversary C2 capabilities.

(d) Limiting the destruction of adversary formations, functions, and facilities to the minimum required to achieve both the JFLCC's and the CJTF's guidance and intent, enabling potential exploitation or use in continuing or future operations.

(4) The JFLCC's primary means to attack targets are operational fires and interdiction. Potential resources available include maneuver forces (i.e., regiments, brigades, divisions), assigned and supporting air, tactical missile systems, IO, SOF (when assigned), engineer assets, and naval surface fire support.

(5) The JFLCC conducts targeting within the JTF joint targeting process. A primary consideration in organizing this framework is the JTF's ability to coordinate, integrate, and synchronize joint targeting efforts. The structure established by the JFLCC must facilitate the JTF joint process and is based on mission, enemy, terrain and weather, troops and support available—time available. In addition, the JTF must react to rapidly changing events. Likewise, the JFLCC should execute all phases of the joint targeting process efficiently and continuously. The joint targeting process cuts across traditional functional and organizational boundaries. Operations, plans, and intelligence are the primary staff functions involved with the targeting process, but considerations, such as logistics, weather, legal, and communications also may affect JTF joint targeting decisions. Close coordination, cooperation, and communication are essential. The JFLCC develops guidance that directs and focuses operation planning and targeting to support the CJTF CONOPS and comply with applicable ROE. In the event of unresolved conflict with targeting priorities or ROE, changes may be requested from the CJTF.

(6) The JFLCC uses the J-3 to synchronize and coordinate fires. These functions and responsibilities include the following:

(a) Advise on the application of operational fires.

(b) Identify needs for fires support from other components (air interdiction [AI]/close air support [CAS]/naval surface fire support).

(c) Review and comment on the JFACC's air apportionment recommendation.

(d) Identify assets for CJTF allocation (e.g., ATACMS/attack helicopters), when available.

(e) Advise on fires asset distribution (priority) to land forces.

(f) Develop JFLCC targeting guidance and priorities.

(g) Develop target lists and FSCMs.

(h) Plan, coordinate, and supervise the execution of JFLCC deep attacks and strikes.

(i) Integrate and synchronize lethal and nonlethal fires.

(j) Coordinate for all planned airspace requirements within JFLCC's assigned AO.

(7) The JFLCC may organize a JFLCC targeting coordination board to function as an integrating center to accomplish targeting oversight functions or as a JFLCC-level review mechanism for fires, from lethal and nonlethal weapons. In either case, it must be a joint activity with appropriate representatives from the other JTF components, JFLCC subordinate units, and the JFLCC's staff.

(8) JFLCC targeting responsibilities include the following:

(a) To retain authority and responsibility to direct target priorities for land operations and coordinate subordinate units' effort.

(b) To provide clear guidance and objectives for JFLCC operational planning and targeting.

(c) To update JFLCC mission planning guidance, intent, and PIRs.

(d) To direct the formation, composition, and specific responsibilities of a JFLCC targeting coordination board to support land operations.

(e) To review target selection for unnecessary adverse impacts, such as collateral or environmental damage and potential intelligence gains or losses.

(9) JFLCC subordinate unit targeting responsibilities include the following:

(a) To identify requirements and nominate targets to the JFLCC.

(b) To provide representation to the JFLCC targeting coordination board.

(c) To recommend priorities for BDA collection requirements to the JFLCC.

(10) The JFLCC provides a description of the support plan through the liaison elements to the Service and functional components. This basic understanding promotes unity of effort through the coordination and deconfliction of targeting efforts between components, multinational forces, and other agencies.

(11) The air component coordination element (ACCE) located with the JFLCC provides valuable assistance and liaison from the JFACC and assists the JFLCC in planning and synchronizing operational fires.

**b. Army Forces**

(1) The Army operational fires directorate (OFD) is responsible through the JFLCC to the CJTF for the planning, coordination, synchronization, and execution employment of operational army fire support, to include US and multinational/coalition fire support, CAS and AI aircraft, and organic Army and multinational/coalition fire support. The OFD is responsible for all aspects of Army operational fire support, to include shaping operations planning, coordination, and execution (to include synchronization) with the JFLCC, multinational/coalition functional component command, and other major JTF subordinate commands. The OFD plans and deconflicts fire support with other government agencies as well as with other Service components. It develops the JTF Army operational fire support (lethal/nonlethal) objectives, enabling effects, supporting target nominations, nodal analysis, and lethal/nonlethal attack guidance.

(a) The OFD will work with the battlefield coordination detachment (BCD), to include direct coordination with the joint air operations center (JAOC) and participation in the JTF JTCB and other JTF joint boards. If the force does not have a BCD, the fires element or OFD that has Army Service component commander (ASCC) responsibilities will assume the BCD function of integrating joint air into the JFLCC's operations by articulating land force requirements to the JFACC.

(b) Likewise, the OFD will coordinate with the JTF joint force maritime component commander (JFMCC) and joint force special operations component commander (JFSOCC) for operations involving these forces as either a provider or a receiver of fire support capabilities in support of the CJTF. Part of this process involves the development of the JFLCC ARFOR consolidated target lists for submission and approval of the CJTF's JIPTL.

*See FM 3-09, Fire Support, for additional information on the OFD.*

(2) The ASCC establishes a BCD to act as the liaison to the JFACC. The BCD is collocated with the JFACC's staff in the JAOC. The BCD processes land force requests for air support, monitors and interprets the land battle situation in the JAOC, and

provides necessary interface for the exchange of current operational and intelligence data. The BCD expedites the exchange of information through face-to-face coordination with elements in the JAOC and coordinates air defense and airspace control matters. The BCD is organized into sections that are incorporated throughout the JAOC (e.g., plans, intelligence, operations, airspace management, and airlift).

(a) The BCD basis of allocation is one per geographic combatant commander (GCC) based on requirements approved by Department of the Army. The BCD may support the ASCC or be tailored to support a corps or division commander's operations. Normally, the BCD is assigned to the ASCC and further attached to the senior operational ARFOR HQ.

(b) The controlling HQ instructs the BCD to collocate with the JFACC'S operations center, called the JAOC. The JAOC will be hosted by one of the following: AOC when the JFACC is provided by the United States Air Force (USAF), tactical air control center (Navy TACC) when the JFACC is provided by the United States Navy (USN), and tactical air command center (Marine Corps TACC) when the JFACC is provided by the Marine Corps.

(c) The BCD singly represents the ARFOR interests of the JFLCC. Other Services or functional components normally provide their own liaisons to the JFACC and to the JFLCC as appropriate. For example, all of the following might provide liaison: special operations liaison element (SOLE), Marine liaison officer, or naval and amphibious liaison element .

(d) As the commander, Army forces' (COMARFOR's) representative in the JAOC, the BCD ensures the JFACC is aware of the COMARFOR's intent, scheme of maneuver, and concept for application of ground, naval, and air assets in the ARFOR AO.

(e) The BCD monitors and interprets the land battle for the JFACC staff. It passes ARFOR operational data and operational support requirements from the COMARFOR to the JFACC and participating multinational forces, to include CAS, AI, manned and unmanned reconnaissance and surveillance, and joint suppression of enemy air defenses (SEAD).

(f) The BCD does not participate directly in the ARFOR command estimate or decision-making process, but the BCD does supply information regarding all the battlefield operating systems and functions to ARFOR staff elements during the process. The COMARFOR may delegate decision-making authority for specific events or situations to the BCD commander. This authority speeds action on various functions supporting the commander's plan and must be clearly defined by the COMARFOR. The BCD eases planning, coordination, and execution of the following functions:

1. Battle command.

2. Intelligence.

3. Firepower means.

4. Airspace management.

5. Air defense.

6. Theater missile defense (TMD) when the US Army Air and Missile Defense Command (AAMDC) is not at the JAOC.

7. IO.

8. Airlift support.

(g) The BCD articulates the COMARFOR's CCIRs and PIRs to the JFACC. The BCD speeds relevant intelligence to satisfy CCIRs and PIRs from JFACC intelligence sources to the COMARFOR intelligence staff analysis and control element. Likewise, the BCD provides the JFACC intelligence staff information on the enemy order of battle; time sensitive Army intelligence reports; requirements for manned and unmanned reconnaissance, surveillance, and collection; and positive identification of chemical, biological, radiological, and nuclear capable weapons.

(h) The BCD assists the JFACC staff in target development and integration of COMARFOR target nominations into the ATO. The BCD gets the most current information from ARFOR intelligence to help refine and validate targets for attack during execution of the ATO.

(i) The BCD also exchanges information to support CA. The BCD intelligence function supports ARFOR assessment of the effectiveness of current operations, modification of current plans, and planning of future operations.

(j) The BCD presents the COMARFOR's targeting requirements for preplanned CAS and AI to the JFACC. The BCD also passes JFACC requests for all ARFOR supporting fires to the ARFOR tactical operations center (TOC) or firing unit as directed in the ARFOR fire support plan. The BCD ensures that the JFACC staff is aware of current and planned ARFOR fire support operations, including confirmation of associated coordination and control measures.

(k) The BCD eases synchronization of the JFACC's AI operations with ARFOR deep operations plans. The JFACC and COMARFOR discuss requirements for AI support to ARFOR operations, typically during the JTCB meeting. After the discussion, the BCD helps the JFACC staff identify targets when the COMARFOR gives "mission type" objectives for AI.

(l) The BCD monitors execution of the ATO and passes information about the current air situation to the COMARFOR. The BCD passes information through the COMARFOR staff to commanders affected by JFACC attack of targets beyond the fire support coordination line (FSCL). This lets air and ground forces take positive actions to avoid fratricide and duplication of effort. The BCD works closely with the JAOC to synchronize AI missions with Army deep strike assets on the most lucrative targets. The BCD performs supporting tasks assigned by the COMARFOR to plan, coordinate, and execute lethal and nonlethal joint firepower. When the JFC directs the integration of planned ARFOR airspace operations into the ATO, the BCD eases the integration of the airspace utilizing missions into the ATO and helps track their execution.

(m) The BCD coordinates ARFOR airspace management needs with the JAOC. These needs reflect requirements for use of airspace throughout the ARFOR AO by ARFOR fixed- and rotary- winged aircraft, reconnaissance and surveillance platforms such as unmanned aircraft systems (UASs), and indirect fire trajectories, including Multiple Launch Rocket System (MLRS) and High Mobility Artillery Rocket System, PATRIOT, and Theater High-Altitude Area Defense systems.

(n) The BCD coordinates ARFOR requests for airspace control measures with the airspace control authority (ACA). When the CJTF designates the JFACC as ACA, the coordination occurs at the JAOC. When the JFACC is not the ACA, the COMARFOR must provide other liaison and communications means to the designated ACA.

(o) The BCD passes information to the ARFOR regarding JFACC air operations within the ARFOR AO. On the basis of information from the SOLE, the BCD monitors the location of SOF. The monitoring includes long-range surveillance units operating in the ARFOR AO to help reduce fratricide or interference with their special operations missions.

(p) The COMARFOR is responsible for establishing airspace control measures and FSCMs, both to facilitate fires and to protect other airspace users. The BCD coordinates these measures with the JFACC staff to ensure they are included in the air control order (ACO).

(q) Although the BCD has an air defense section, responsibility to integrate the ARFOR air and missile defense resides with the deputy area air defense commander (AADC), normally the commander, AAMDC. The COMARFOR specifies the role of the AAMDC and the BCD to help in coordination of air and missile defense, and attack operations with the JAOC. The BCD may be the first ARFOR agency aware of the presence of a TMD target through sources at the JAOC. In this case, the BCD helps coordinate the rapid attack of TMD targets by the most efficient means available. With regard to TMD, the BCD speeds target confirmation, deconflicts airspace, provides early warning to friendly air defense artillery (ADA) HQ, searches for theater missile launching sites and transporter-erector-launchers, and directs ATACMS and MLRS missions against TMD targets (when authorized).

(r) The BCD helps the ARFOR coordinate and synchronize actions taken to accomplish established objectives that prevent the effective IO of adversary forces. These actions include denying information to and influencing, degrading, or destroying the adversary C2 system. In addition, the BCD helps the ARFOR coordinate and synchronize actions taken and support requested from the JFACC to maintain effective C2 of friendly forces. The ARFOR TOC IO cell identifies specific IO supporting requests from various agencies, including the JFACC.

### **c. Marine Corps Forces**

(1) The Marine air-ground task force (MAGTF) is the Marine Corps' principal organization for all missions across the full spectrum of military operations. MAGTFs consist of a command element (CE), a ground combat element (GCE), an aviation combat element (ACE), and a combat service support element. The MAGTF principally employs fire support provided by the GCE and the ACE, but may also receive external fire support from other joint, combined, and coalition forces. The MAGTF and GCE are combined arms teams by the nature of their organization. The GCE's ability to create decisive effects is most efficient and effective when it synchronizes combined arms fires.

(2) The GCE has a FSCC to coordinate fires within the ground force. The GCE FSCC interacts with the CE through the MAGTF force fires coordination center (FFCC). The FFCC coordinates those matters that cannot be coordinated by the FSCC and those matters that affect the MAGTF as a whole. The MAGTF landing force FFCC coordinates fires with higher, adjacent, and external commands. The FFCC maintains close coordination with the GCE for integrating fire support plans of the deep and close battle.

### **d. Joint Force Maritime Component Commander**

(1) When a JTF is established that includes naval forces, the CJTF designates the Service component commander best suited to accomplish the mission as the JFMCC. Though most times this will be the Navy component commander, there may be occasions when maritime operations are focused on the littorals and the Marine Corps component has the preponderance of the mission, forces, or capabilities. In such instances, the CJTF may elect to designate the Marine Corps component commander as the JFMCC. The CJTF may choose to appoint a JFMCC as a functional component commander responsible for preparing naval operations plans and directing the actions of subordinate commanders. Subordinate naval commanders would then develop plans based on their superior's objectives. Familiarity with standing operational plans is essential to unit readiness, enabling deployed naval forces to transition quickly from a ready force to a combatant force.

(2) The JFMCC conducts operational level planning, targeting, and directs the execution of tactical fires. JFMCC targeting tasks include setting maritime asset allocations and maneuver priorities, identifying HVTs and HPTs for acquisition and

attack, and employing forces. JFMCC intelligence, operations and planning personnel translate operational objectives and tasking into orders directing tactical actions by subordinate maritime commands.

(3) The JFMCC organization is scalable, and will be tailored in size and specific capability depending on mission requirements. Likewise, the JFMCC targeting and fires functionality and organization will be designed and scaled according to mission requirements (e.g., a large fires cell may be required for missions against opposing forces, whereas a humanitarian crisis may require little or no targeting capability). The staffing levels to support JFMCC targeting will include both operations and intelligence personnel, and their close coordination is vital to the successful execution of JFMCC targeting.

(4) While it is acknowledged that targeting requirements will to some extent be JOA-specific, many of the core targeting processes will remain the same or be similar. For joint forces to achieve unity of effort there will always be a need to synchronize JFMCC targeting efforts with those of other components and the CJTF. The following operational assumptions frame the discussions for the remainder of JFMC fires and targeting.

(a) The JFMCC targeting capability will complement and integrate into the larger joint targeting process as defined by CJTF guidance. While it is conceivable the JFMCC could be the CJTF's executive agent responsible for all JTF targeting coordination (similar to the functions typically done on a JFACC staff), a more likely scenario is one where the JFMCC supports an established joint targeting process.

(b) The JFMCC will retain OPCON over organic maritime targeting and fires assets in direct support strike missions for JFMCC specified and implied tasks. These assets include organic ISR capabilities that provide actionable targeting information to organic and joint weapon systems, including carrier-based Navy tactical aviation, land-based MAGTF ACE tactical aviation (through the MAGTF commander), TLAMs, naval surface fires, and maritime IO capabilities.

(c) The JFMCC will also actively participate in joint, preplanned targeting operations via nomination of potential targets to the CJTF targeting authority (e.g., JTF JTCCB). The JFMCC will actively participate in dynamic targeting to address emerging targets in the operational environment. This may include targets within the JFMCC's AO or targets that impact the JFMCC's ability to achieve objectives as defined by the CJTF.

(d) The JFMCC targeting organization will be federated and will utilize operations and intelligence capabilities that are part of subordinate maritime commands. This may include the functions typically found in carrier and expeditionary strike groups, and maritime patrol and reconnaissance wings. The composite warfare commander (CWC) structure may be used for tactical coordination and synchronization of targeting functions.

(5) Fires and targeting resources and capabilities normally organic to a JFMCC include the following:

(a) Aviation fires resources from the carrier airwings and MAGTF ACE units are capable of employing weapons such as air-to-ground guided and unguided unitary and cluster munitions, guided missiles, unguided rockets, as well as offensive EW systems to deceive and disrupt information flow. In support of the planning and execution of naval fires, some manned and unmanned aviation resources can provide real-time targeting location and identification for fires assets.

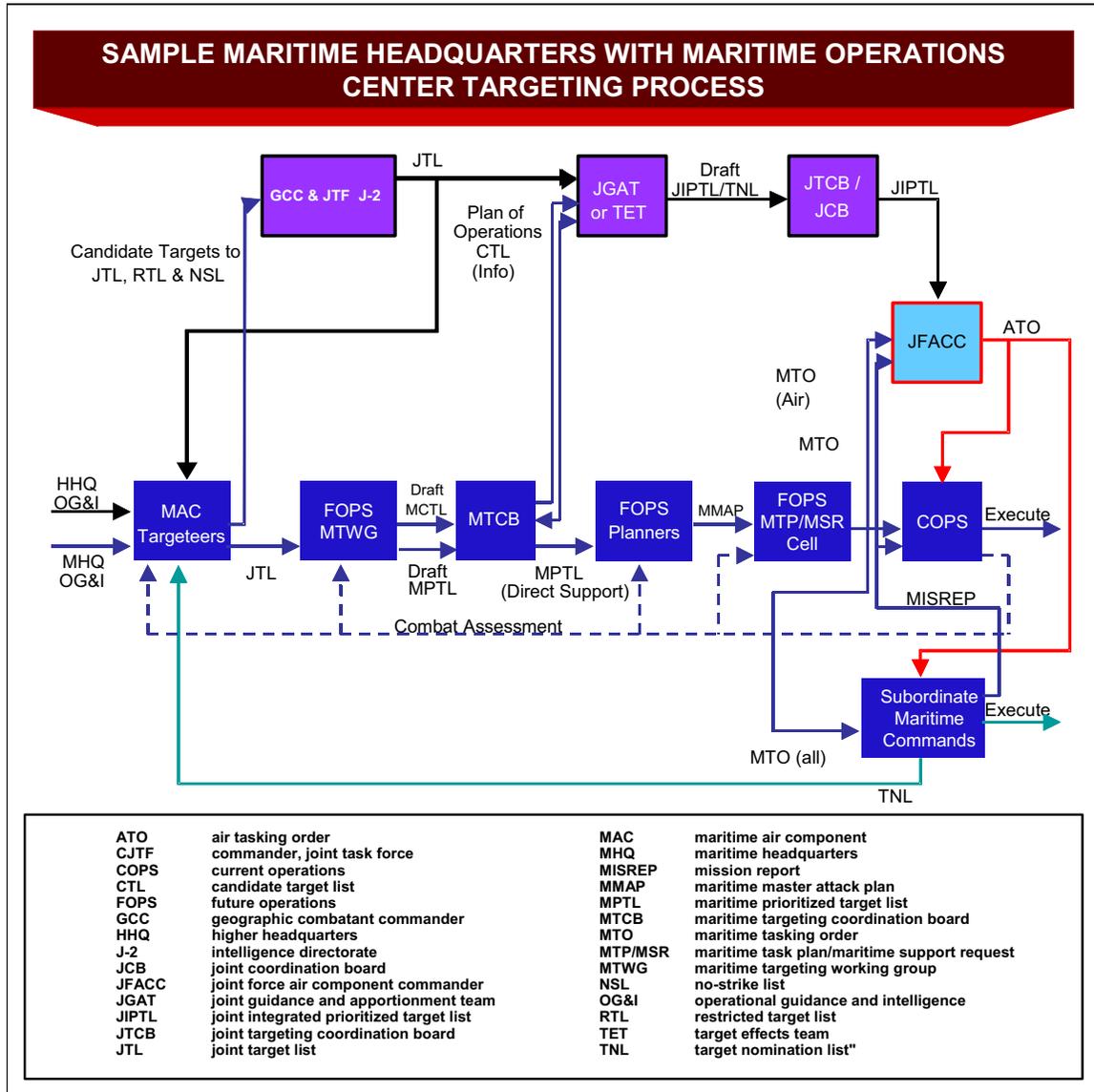
(b) Surface gunfire resources from guided missile cruisers and guided missile destroyers are incorporating new capabilities, to include the ability to deliver precision gunfire over long ranges. New mission planning and data download technology streamlines TLAM targeting (including third party targeting), mission planning, and C2 execution processes so that this naval fires resource may be employed in a fire-support role in addition to the traditional strike warfare role. Attack submarines and nuclear-powered cruise missile submarines are capable of employing the same capability, but with the added benefit of covert execution.

(6) The maritime challenge is complex due to the multidimensional nature of the maritime operational environment and the various mission areas for which the JFMCC is responsible. These include strike warfare, IO, antisubmarine warfare, antisurface unit warfare, anti-air warfare, mine warfare, and amphibious warfare. Because maritime assets routinely and simultaneously conduct operations in two or more of these mission areas, there typically is an overlap in the mission objectives for maritime tactical commanders. This overlap often results in competing warfare commander requirements for force allocation or asset positioning and requires the commander to balance, synchronize, and adjudicate requests to produce the best overall asset allocation or positioning/maneuver solution. As a result of this complexity, maritime force allocation occurs within the JFMCC and staff, where the highest concentration of operational level maritime expertise resides.

(7) JFMCC targeting functions and tasks will be conducted by elements of the maritime headquarters with maritime operations center (MHQ w/MOC) structure as depicted in the MHQ w/MOC CONOPS and JFMCC tactical memorandum (TACMEMO) targeting annex. Additionally, the JFMCC will incorporate tactical targeting capabilities via the adoption of a federated targeting operational architecture. These federated capabilities will include intelligence and operations functions that are part of the existing CWC/task force structure and that are associated with expeditionary strike forces. See Figure II-5.

(a) The future plans center (FPC) is focused on long-range planning and participates in the CJTF long-range planning processes. This may include participation in the development of CJTF OPLANs and OPORDs. From a targeting perspective, the FPC coordinates development of the JFMCC objectives, guidance, and intent and helps to frame apportionment recommendations for future targeting efforts. The FPC conducts an

ongoing mission analysis of current targeting operations, and develops a targeting strategy for future operations that reflect JFMCC targeting priorities. Close coordination between the FPC and the JTF future planning cell as well as with counterparts on other component staffs is critical to developing targeting strategies and apportionment decisions that are aligned with CJTF objectives and guidance.



**Figure II-5. Sample Maritime Headquarters with Maritime Operations Center Targeting Process**

(b) The future operations cell (FOC) is the central near-term planning coordinator for the JFMCC. The FOPS cell synchronizes and coordinates targeting tasks that are assigned to subordinates and translates operational level objectives into the tactical level missions for subordinate commanders. The FOC also provides coordination between maritime forces and other components. The FOC is responsible for developing

targeting engagement options, target-weapon pairing recommendations, force allocation, maritime master attack plan, and tasking orders. Mission timing and synchronization between subordinate tactical forces and forces from other components are critical to ensure unity of effort and prevent fratricide.

(c) The current operations (COPS) cell is focused on short-term operations and execution of the JFMCC's daily intentions. The COPS cell monitors the current situation and receives the results of ongoing operations. The battle watch captain and staff provide situational awareness (SA) during execution and dynamically respond to changes in the operational environment to ensure the JFMCC's objectives are achieved.

1. Within the COPS cell organization, the fires cell is populated with subject matter experts (SMEs) that monitor ongoing operations for all fires efforts. This includes operations involving IO, TLAM, tactical air, maritime patrol aircraft, and surface fires. The COPS cell also has the option of standing up a TST cell that has the responsibility for responding to dynamic targeting requirements and opportunities. This cell is responsible for not only CJTF-designated TSTs, but any legitimate JFMCC or other component dynamic HPT.

2. The COPS cell monitors ongoing ISR operations for target acquisition and assessment. SMEs in the COPS cell are responsible for ISR execution, including dynamic re-tasking in response to changing operational requirements.

3. The COPS cell maintains close liaison with the operations staffs of the JTF and other components to ensure that operations are synchronized and, where necessary, deconflicted. These tasks are critical to maintaining unity of effort and to reduce the risk of fratricide.

(8) While the JFMCC AO will be defined by the CJTF, JFMCC targets can and should include all enemy capability that have the potential to interfere with the accomplishment of CJTF assigned tasks to the JFMCC. These may include inland targets, targets in the littorals, and targets on, under, or over the sea. Potential examples include an enemy naval operations center located deep inland, a coastal defense cruise missile site, mine storage facility, ships and submarines either pierside or at sea, or maritime aviation units.

(9) To enable successful mission planning and execution, JFMCC intelligence personnel must coordinate with the JTF JISE, the combatant command JIOC, national agencies, and other components. This federated and collaborative intelligence support effort is described in Chapter III, "Joint Fires Planning and Targeting," and Appendix A, "Intelligence Organizations Supporting Targeting." To enable this effort, the JFMCC will be required to be compatible and align with CJTF C2 and intelligence systems and processes. These information exchange requirements include the systems and processes designed to develop the ATO, JIPTL, targeting imagery, and other targeting intelligence. Where systems are not interoperable, a suitable work-around solution is needed.

(10) The maritime intelligence and analysis center (MIAC) plays a key role in maritime target analysis, planning, and execution. The targeting team in the MIAC coordinates the federated targeting functions of subordinate commands, target development submissions and production requirements as required. The MIAC is responsible for target nominations to the JTL, RTL, candidate target list (CTL), maritime prioritized target list, and the NSL. For more detail on these target lists, see Chapter III, “Joint Fires Planning and Targeting,” Section B, “Joint Targeting Cycle.”

(a) The maritime targeting working group and maritime targeting coordination board is supported and led by members of the MIAC. Responsibilities include target development and prioritization functions in support of overall campaign objectives. MIAC members also prioritize requirements for ISR collections and submit collection plan inputs for collection activities conducted by the JFMCC and other components.

(b) The MIAC also supplies SMEs to current and future operations cells to facilitate information exchange between intelligence and operations functions.

### **e. Naval Forces**

(1) The officer in tactical command (OTC) is responsible for successfully accomplishing missions assigned to the naval force. The OTC may delegate planning and execution of warfare areas to a CWC. The CWC may, in turn, delegate some or all warfare functions to subordinate warfare commanders. In most cases, the OTC and the CWC is the same individual. However, in large forces where overall C2 demand the total attention of the OTC, tactical command may be delegated to a separate CWC, who will conduct combat operations including fires to counter threats against the force. OTC responsibilities include the following:

(a) Promulgation of plans, policies, orders degrees of readiness, and directs and monitors task force operations to accomplish the objectives.

(b) Promulgation of force disposition, position, and movement and establishes a force surveillance area.

(c) Designation of warfare commanders, coordinators, alternates, sector authorities, and maintains the force command and coordination structure.

1. When assigning warfare commanders and coordinators, the CWC takes into consideration the nature, severity, and relative priorities for dealing with the expected threat; the size, composition, and distribution of the force; and the suitability of C2 equipment, living and working space available.

2. Under certain circumstances, the OTC may assign functional warfare commanders, such as a maritime interception operations commander, mine warfare commander, screen commander, operational deception group commander, and

underway replenishment group commander. These commanders perform duties that are generally limited in scope and duration.

3. The specific duties and authority of all commanders and coordinators will be defined in the operation general matters—formatted messages by which the OTC/CWC promulgates the duties and responsibilities of subordinate commanders and coordinators.

(d) Promulgation of chain of command between OTC, the forces under their tactical control (TACON), the principal warfare commanders, functional warfare commanders, and the supporting coordinators.

(e) Provide air, surface, and subsurface units, as available, to the appropriate warfare commanders; coordinate their respective efforts; and, when necessary, prioritize their requirements in light of limited assets, force mission, and current threat.

(f) Arrange for coordination of air, surface, and subsurface operations with other friendly forces operating within or adjacent to the CWC's forces.

(g) Designate sector CWCs, as required, for widely dispersed groups operating together for mutual support.

(2) The Navy employs the CWC concept as the doctrinal cornerstone of its task force operational and tactical C2 system. The CWC concept enables the OTC of a naval force to wage combat operations aggressively against air, surface, and subsurface threats simultaneously while supporting the CJTF CONOPS. The concept is designed to prevent an enemy from saturating a single command node with a large number of rapidly closing air, surface, and submarine threats by assigning warfare areas to separate commanders. Principal warfare commanders are responsible to the CWC for the conduct of the tactical battle. The five principal warfare commanders are the air defense commander (ADC), surface warfare commander (SUWC), antisubmarine warfare commander (ASWC), strike warfare commander (STWC), and IO warfare commander.

(a) Dependent on the situation, the ASWC and SUWC can be combined and put under a sea combat commander. Warfare commanders normally operate from the combat direction centers of the ships they actually command or in spaces specially equipped to accomplish their respective missions. All warfare commanders collect, evaluate, and disseminate tactical information; plan and coordinate with other warfare commanders; and, when authorized by the CWC, operate autonomously in tactical control of assigned resources.

(b) The CWC may assign functional warfare commanders, subordinate to the CWC, to perform duties that are generally more limited in scope and duration than those acted upon by principal warfare commanders. Functional warfare commanders in

certain situations are delegated authority to conduct fires to respond to threats with assigned assets.

(c) Coordinators assist the CWC and the subordinate warfare commanders. They differ from warfare commanders in that coordinators execute policy but do not control forces and do not initiate autonomous actions. Typical coordinators include the following:

1. The air resource element coordinator is responsible for managing and coordinating the allocation and distribution of carrier aircraft.

2. Naval force ACA is responsible for coordinating and managing use of airspace by the naval force.

3. The helicopter element coordinator is responsible for managing naval helicopter assets.

4. TLAM strike coordinator (TSC) is responsible for all TLAM strike planning, coordination, and reporting.

5. TLAM launch area coordinator is the TSC's principal deputy in the execution of TLAM strike operations.

(3) When a JTF is formed, if the Navy forces (NAVFOR) contributes the most substantial portion of air support, the CJTF may designate a naval commander as JFACC. The organization and processes associated with a sea-based JFACC do not differ significantly from a land-based JFACC. The functions accomplished by the sea-based JAOC are the same as a land-based JAOC; however, they are normally conducted on a significantly reduced scale because of staff capacity restraints.

### **f. Joint Force Special Operations Component Commander**

(1) SOF assigned to a JTF normally are organized as a joint special operations task force (JSOTF). The JSOTF is composed of special operations units from more than one Service. The JSOTF may have conventional non-special operations units assigned or attached to support the conduct of specific missions.

(2) The JSOTF commander serves as the JFSOCC when subordinate to a CJTF. Normally, the JFSOCC exercises day-to-day C2 of assigned or attached SOF. The JFSOCC allocates forces against strategic or operational tasks and supports other JTF component commanders based on CJTF guidance. Additionally, other responsibilities of the JFSOCC include the following:

(a) Make recommendations on the proper employment of SOF and its assets.

(b) Plan and coordinate special operations.

(c) Synchronize the conduct of special operations with the other component commanders.

(3) Deconfliction, coordination, and transfer of forces are always critical concerns for special operations commanders, regardless of organizational status. Deconfliction and coordination activities routinely include target deconfliction, communications frequency allocation, surface and airspace deconfliction, fire support coordination, and coordination for logistics support.

(4) SOF can facilitate JTF joint fires and targeting with the following capabilities and enhanced capabilities:

(a) Special reconnaissance.

(b) Positive identification of specific targets.

(c) Target marking and terminal guidance.

(d) BDA.

(e) Recommendations to NSL and RTL.

(f) AC-130 gunship support or other direct action support.

(g) Information on other coalition or indigenous force status and positions.

(h) Combat meteorologic and oceanographic support.

(i) Nonlethal fires.

(j) Information from SOF ISR, and human assets.

(k) Experience with indigenous or surrogate forces.

(l) Assistance with joint terminal attack controllers (controllers in a tactical air control party or air naval gunfire liaison company).

(5) Joint fires assist SOF and attached forces to move, maneuver, control territory, populations, and key waters. Joint fire support is the synergistic product of three subsystems: target acquisition, C2, and attack resources. The JSOTF HQ is most concerned with the C2 subsystem. The JSOTF must consider incorporating the complementary capabilities of conventional forces under control of the CJTF.

(6) SOF must be compatible with conventional forces that either host or support their activities. This is especially true during time-critical contingency planning operations. For example, if SOF is operating from naval surface vessels during forced-entry operations, they must be prepared to function with the host vessel. Weapons and communications must be deconflicted with ship systems, and SOF helicopters must be compatible with shipboard fuel systems. Likewise, conventional force commanders must be sensitive to their own operations, which may require modification so as not to inhibit the SOF operation.

(7) Conventional forces integrated with SOF create unique capabilities for the CJTF to achieve objectives that might otherwise be unattainable. Flexible C2, specific mission generation processes, clear mission approval levels, and tactical interdependence can improve SOF and conventional forces integration.

(8) SOF target acquisition, C2, and attack resources must be properly planned, coordinated, and executed to prevent fratricide and duplication while supporting operational momentum, maintaining the initiative, and conducting maneuver. Both conventional forces and SOF must be integrated fully into this system. In some cases, a JFE is embedded within a JSOTF to coordinate, synchronize, and deconflict fires within the joint special operations area (JSOA). The JSOTF J-3 performs this function (without a JFE) and coordinates and deconflicts air operations in its assigned airspace. Airspace coordination and deconfliction may require a joint air coordination element to assist the JSOTF J-3 in the C2 of these related functions.

### **g. Joint Force Air Component Commander**

(1) The CJTF normally designates a JFACC based on the mission, CONOPS, tasks to subordinates, forces available, duration and nature of joint air operations desired, and the degree of control of joint air operations required. The CJTF will normally assign JFACC responsibilities to the component commander having the preponderance of air assets and the ability to effectively plan, task, and control joint air operations.

(2) The JFACC is given the authority necessary to accomplish missions and assigned tasks in support of the CJTF's intent and CONOPS. The JFACC typically exercises TACON over air capabilities/forces made available for tasking. The CJTF also may establish supporting and supported relationships between the JFACC and other components to facilitate operations.

(3) The JFACC normally assumes the AADC and ACA responsibilities, because air defense and airspace control are an integral part of joint air operations. As the designated commander for joint air operations, the responsibility for planning, coordinating, and developing airspace control procedures and operating an airspace control system also rests with the JFACC. When the situation dictates, the JFC may designate a separate AADC or ACA. In those joint operations where separate commanders are required and designated, close coordination is essential for unity of effort, prevention of fratricide and deconfliction of joint air operations.

(4) The responsibilities of the JFACC normally include the following:

(a) Plan, coordinate, integrate, task, and direct the joint air effort in accordance with the JFC's guidance, objectives, and end state.

(b) Develop a JAOP to best support the CJTF's objectives.

(c) Recommend apportionment of the joint air effort to the CJTF after consulting with other component commanders. This recommendation can be by either percentage or priority that should be devoted to the various air operations for a given period of time.

(d) Allocate and task air capabilities/forces made available, based on the CJTF's air apportionment decision.

(e) Translate air apportionment into allocation and develop targeting guidance into the ATO, which may include specific aim points/desired points of impact.

(f) Compile component target requirements and prioritize targets based on CJTF guidance.

(g) Promulgate ROE and special instructions (SPINS) that clearly specify combat identification (CID) requirements (for example, which CID systems will be used, who can declare a track "hostile," etc.).

(h) Provide oversight and guidance during execution of joint air operations, to include making timely adjustments to taskings of available joint air capabilities/forces. The JFACC will coordinate with the CJTF and affected component commanders, as appropriate, when the situation requires changes to planned joint air operations.

(i) Coordinating joint air operations with operations of other component commanders and forces assigned to or supporting the CJTF. For example, coordination may be required with the joint personnel recovery center (JPRC) for recovery operations and with the JFSOCC, JFMCC, and JFLCC for integration, synchronization, and deconfliction of joint air operations.

(j) Evaluate the results of joint air operations and forward assessments to the CJTF to support the overall CA effort.

(k) Perform the duties of the ACA, unless a separate ACA is designated.

(l) Perform the duties of the AADC, unless a separate AADC is designated.

(m) Conduct tactical and operational assessment and support accomplishment of JTF assessment.

(5) In concert with the above responsibilities, the JFACC typically accomplishes various mission areas that include the following:

- (a) Counterair.
- (b) Strategic air attack.
- (c) Airborne ISR.
- (d) AI.
- (e) Intratheater and intertheater air mobility.
- (f) CAS.

(6) The JFACC will normally operate from a JAOC. The JFACC's staff should be manned with SMEs who reflect the capabilities/forces available to the JFACC for tasking and include appropriate component representation. The JFACC's staff is organized to support the planning, coordinating, and execution of aviation fires and typically includes the following (see Figure II-6):

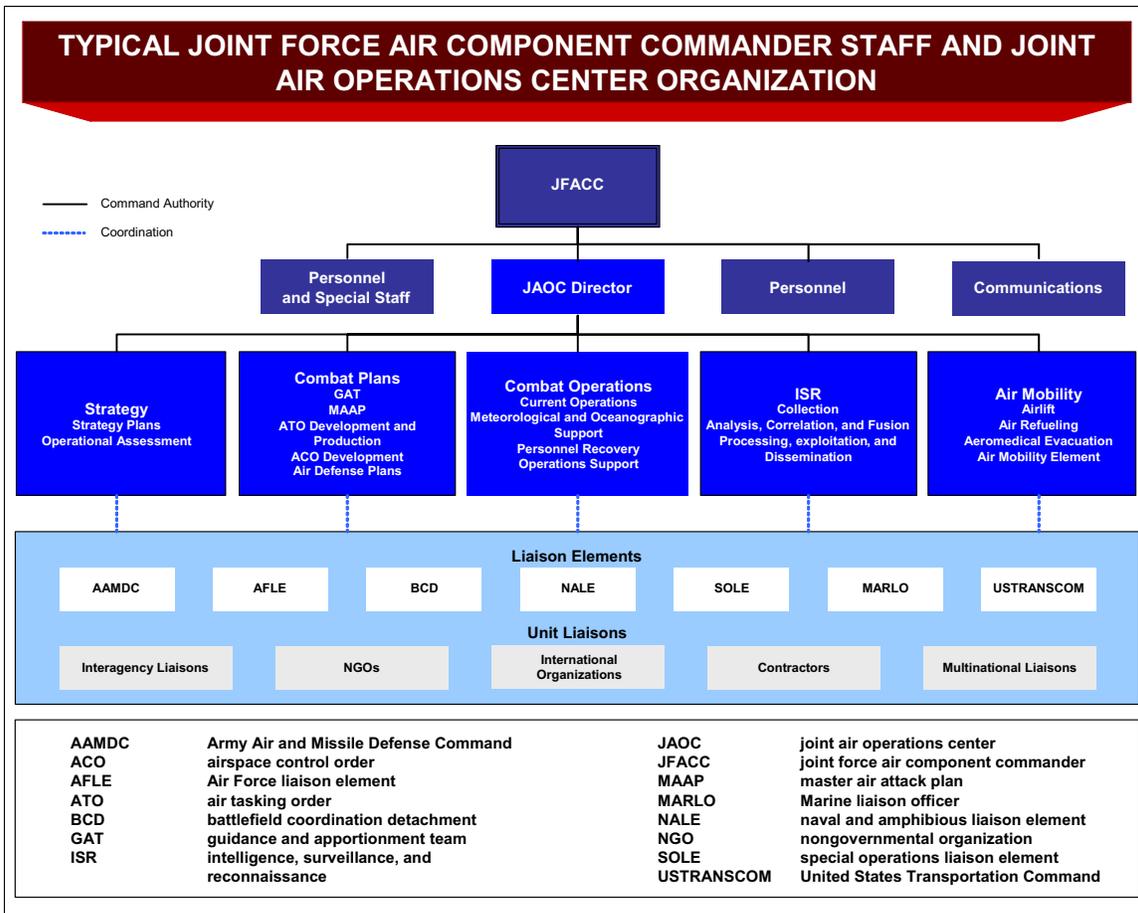


Figure II-6. Joint Force Air Component Commander Staff and Joint Air Operations Center Organization

(a) **Strategy Division.** The strategy division (SD) conducts the overall joint air operations strategy and operational assessment. This division develops future JAOPs based on the guidance, apportionment, and targeting requirements directed by the JFC and coordinated with the JTF component commanders. Targets and priorities are derived from the requirements from the components commanders in conjunction with their proposed operations supporting the CJTF objectives and guidance.

(b) **Combat Plans Division**

1. The combat plans division (CPD) develops the master air attack plan (MAAP) from the JIPTL to support the JAOP. The MAAP contains key information that forms the foundation of the ATO. The MAAP may include CJTF guidance, JFACC guidance, support plans, component requests, target update requests, availability of capabilities and forces, target information from target lists, aircraft allocation, and other data.

2. The ATO is the method used to task and disseminate to component commanders, subordinate units, and C2 agencies the projected matching of sorties/capabilities to forces and specific mission requirements for a specified period. To coordinate airspace, the CPD also builds the ACO from the airspace usage requirements of the component commanders. The ACO implements the airspace control plan (ACP) that provides the details of the approved requests for ACMs. The ACO may be published as part of the ATO.

(c) **Combat Operations Division.** The combat operations division (COD) executes joint airspace control and the ATOs developed by the CPD. The COD is divided into offensive and defensive sections. These sections manage real-time coordination and change requirements to the orders in execution.

(d) **Intelligence, Surveillance, and Reconnaissance Division (ISRD).** The ISRD develops the air portion of the intelligence collection plan, and the processing, exploitation, and dissemination of aviation-gathered intelligence. Personnel are assigned throughout the other JAOC divisions to provide intelligence support and reachback to ISRD functional specialists. ISRD targeteers also accomplish the primary target development analysis outside of their involvement in CPD or target effects team (TET) activities.

(e) **Air Mobility Division.** The air mobility division (AMD) plans, coordinates, tasks, and executes the air mobility mission. The AMD integrates and directs the execution of intratheater and intertheater air mobility forces that operate in the JOA in support of the CJTF's requirements and objectives.

h. **Air Force Forces (AFFOR)**

(1) The air support operations center (ASOC) is the principal air control agency of the theater air control system responsible for the direction and control of air operations directly supporting the ground combat element. It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with other supporting arms and ground forces. It normally collocates with the Army tactical HQ senior FSCC within the ground combat element. The ASOC can be configured for rapid deployment. The ASOC director, normally the corps air liaison officer (ALO), exercises OPCON of all subordinate tactical air control parties (TACPs). The ASOC also provides some logistic and administrative support to the TACPs under its OPCON.

(2) The TACP is the principal Air Force liaison element collocated with Army maneuver units from battalion through corps. The primary TACP mission is to advise ground commanders on the capabilities and limitations of airpower and assist integrating airpower into the Army's scheme of maneuver. The TACP provides the primary terminal attack control of CAS in support of ground forces. TACPs deconflict the aircraft with Army fire support to prevent fratricide. TACPs are directly subordinate to the ASOC. TACPs may employ joint tactical air controllers at company/team level.

**CHAPTER III**  
**JOINT FIRES PLANNING AND TARGETING**  
**SECTION A. JOINT FIRES PLANNING**

**1. Inputs**

a. **Joint Operation Planning Process Products.** Although components are intimately involved in the JOPP and planning at various levels can often be near parallel, planning at each level still needs input from the higher level commander's planning efforts. At the operational level, this typically comes in the form of an OPORD or CONOPS which includes the mission, end state, objectives, effects, and tasks to subordinates. For specific planning areas such as fires and targeting, additional information is provided, such as targeting guidance, apportionment, and general targeting priorities (Figure III-1). The JTF-level end state, objectives, effects, tasks, targeting guidance, apportionment, and priorities are translated (utilizing the joint air and space estimate process [JAEP]) into the JAOP by the SD at the JAOC.

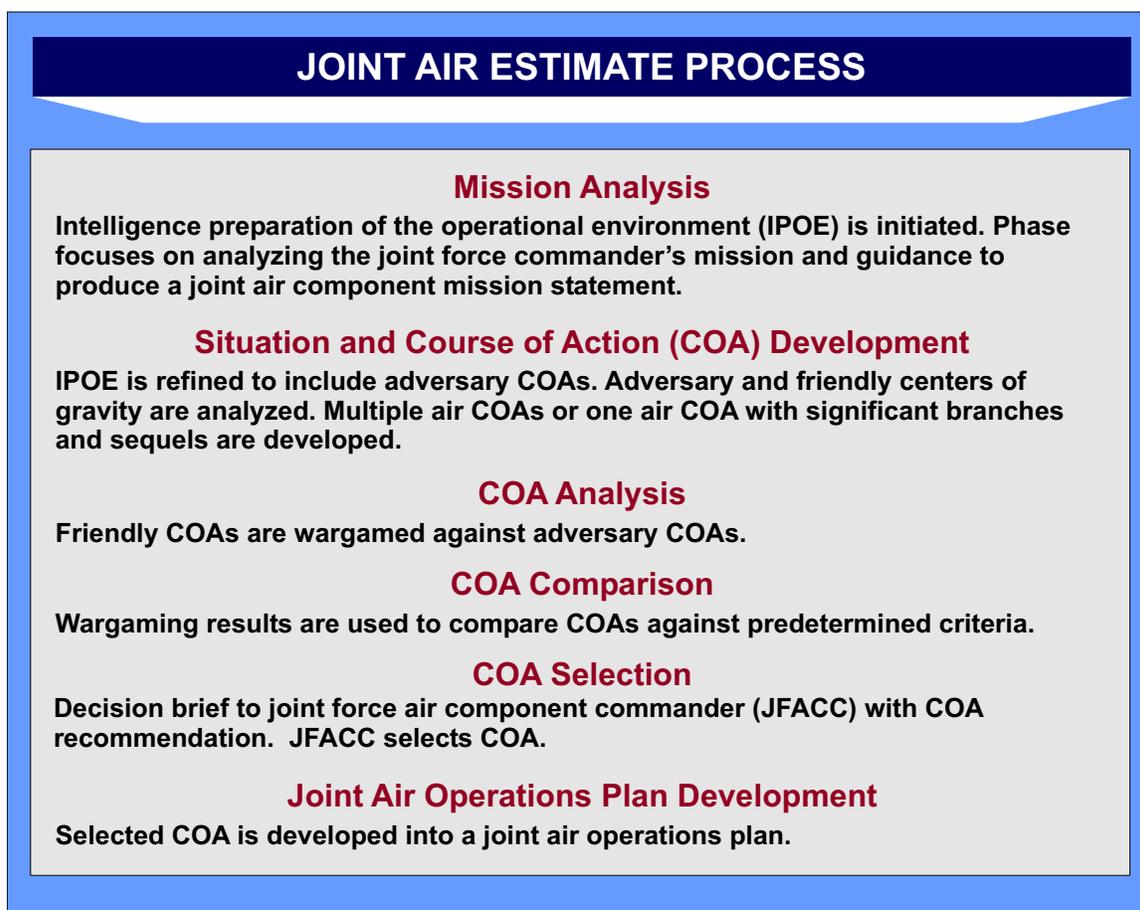


Figure III-1. Joint Air Estimate Process

b. **Joint Air and Space Estimate Process.** Almost all targeting support to pre-conflict planning is accomplished through the JAEP. The JAEP is very similar to JOPP and consists of six stages: mission analysis, situation and COA development, COA analysis, COA comparison, COA selection, and JAOP development. If JTF and component planning occurs near-parallel, such as during CAP, the JAEP can be utilized to develop the air component part of JOPP. Targeting and fires planning support is vital during three of the six JAEP stages: mission analysis, situation and COA development, and JAOP development.

c. **Joint Air Operations Plan.** The JAOP should provide broad guidelines for prioritizing targets, making clear which sets or systems are most important to the operation. The JAOP should also provide guidance on the sequencing of targeting actions or effects, which is not the same thing as priority. Although parallel effects are generally best, sometimes some targets must be attacked first to enable effects against other targets. The JAOP and ROE are the key inputs to the first phase of the joint targeting cycle, **End State and Commander's Objectives**.

## 2. Coordination and Synchronization

a. During sustained combat operations, the CJTF simultaneously employs conventional and SOF capabilities throughout the breadth and depth of the JOA in linear and nonlinear orientations. Direct and indirect attacks on enemy COGs should be designed to achieve the required military operational objectives per the CONOPS, while limiting the potential undesired effects on operations in follow-on phases. Integrating and synchronizing interdiction and maneuver assists commanders in maximizing leverage at the operational level. Within their AOs, land and maritime component commanders are designated the supported commander for the integration and synchronization of maneuver, fires, and interdiction. Accordingly, land and maritime commanders designate the target priority, effects, and timing of interdiction operations within their AOs. Further, the component commander designated as the supported commander for JOA-wide interdiction (typically the JFACC) has the latitude to plan and execute CJTF prioritized interdiction missions within both the land and maritime AOs. These interdiction activities must be coordinated with the appropriate component commander. If those operations would have an adverse impact within a land or maritime AO, the JFACC must resolve the issue with the appropriate component commander, adjust the plan, or consult with the CJTF for resolution. Most CJTF and component requirements for joint fire support are planned and executed using the joint targeting process. Joint fires must be coordinated and synchronized across geographic boundaries, functional areas, and prioritized for optimum utilization of limited resources. Various control and coordination measures can be utilized to deconflict fires and targeting activities, however, for synchronization to be achieved, the effort must be collaborative and integrated from the earliest stages of planning.

### b. Joint Fire Support

(1) Joint fire support coordination is a continuous process of planning, synchronizing, and executing joint fires. Joint fire support coordination involves operational, tactical, and technical considerations and the exercise of joint fire support command, control, and communications. Joint fire support coordination includes efforts to deconflict attacks, avoid fratricide, reduce duplication of effort, and assist in shaping the operational environment. Coordination procedures must be flexible and responsive to the ever changing dynamics of warfighting. Streamlined arrangements for approval or concurrence should be established. Coordination arrangements are reflected in the CONOPS and support the sequencing and timing of actions to achieve objectives. Coordination is enhanced when joint fire support personnel clearly understand the commander's intent. A very important part of the planning process is the identification of potential fratricide situations, risk mitigation measures, and coordination measures to positively manage and control the attack of targets.

(2) The CJTF and component commander staffs synchronize joint fire support operations to optimize effects in time, space, and purpose to produce maximum relative combat power at a decisive place and time. To facilitate synchronization efforts, commanders and staffs must have a thorough knowledge of joint and Service doctrine, major system capabilities and limitations (See Appendices B, "Joint and Service Fires Control Systems" and C, "Joint Fires Networked Systems"), and often their tactics, techniques, and procedures. Typical coordinating instructions include:

- (a) List the targeting products (target selection standards [TSS] matrix, HPT list, and attack guidance matrix [AGM]).
- (b) List FSCMs.
- (c) Refer to time of execution of program of fires.
- (d) Include ROE.
- (e) List fire support rehearsal times and requirements.
- (f) List target allocations.
- (g) Specify the datum or coordinate system to be used (Appendix D, "Datum and Coordinate Systems").

(3) Joint fires and fire support are coordinated and synchronized through the joint targeting cycle. The purpose of targeting is to integrate and synchronize fires into joint operations. Targeting also supports the process of linking the desired effects of fires to actions and tasks at the joint force component level. The joint targeting process allows the component commanders to independently plan, coordinate, and utilize organic fires and fire support in their AOs to support the JTF CONOPS, while synchronizing joint fires across the JOA. The JTCB, in particular, requires each of the components to brief their scheme of maneuver and show how it supports the CJTF CONOPS, prior to the

JITPL review. This effort ensures that both component and joint fires are deconflicted, coordinated, and synchronized. The joint targeting cycle is discussed in detail in Section B, “Joint Targeting Cycle.”

*For additional information, see JP 3-09, Joint Fire Support, JP 3-31, Command and Control for Joint Land Operations, and FM 3-31/Marine Corps Warfighting Publication (MCWP) 3-40.7, Joint Force Land Component Commander Handbook (JFLCC).*

### c. Information Operations

(1) The **JTF IO cell** coordinates and synchronizes capabilities to accomplish CJTF objectives. Uncoordinated IO can compromise, complicate, negate, or harm other JTF military operations, as well as other USG information activities. CJTFs must ensure that IO planners are fully integrated into the planning and targeting process, including the JTCB. Successful integration, synchronization, and execution of an information strategy require early detailed JTF IO planning, coordination, and deconfliction with USG interagency efforts.

(2) **Physical Attack as a Supporting Capability for IO.** The integration and synchronization of fires with IO, through the targeting process, is fundamental to maximizing the effects of both the IO and more traditional maneuver/strike operations. In order to achieve this integration, commanders must be able to clearly define the objectives they desire to achieve so that staffs can develop supporting effects and incorporate them into the commander’s plan. Some advantages of combining IO and fires include:

(a) Physical attack can be used to create or alter adversary perceptions or drive an adversary to use certain exploitable information systems.

(b) Physical attack can be employed in support of IO as a means of attacking C2 nodes to affect enemy ability to exercise C2.

(c) IO capabilities, such as PSYOP, can be employed in support of physical attack to maximize the effect of the attack on the will of an adversary.

(3) **EW** can stand alone or enable, support, and enhance the other IO, support, or related capabilities. Integration of EW with the other IO capabilities and joint fires is necessary if planners are to realize potential synergies between these capabilities and the effects they can generate to increase joint force effectiveness.

(a) One of the primary functions of the IO cell is to deconflict and coordinate the various capabilities that are associated with IO. Most of these capabilities depend on, use, or exploit the electromagnetic (EM) spectrum for at least some of their functions. The deconfliction and coordination of EW in an operation is a continuous process for the IO cell, the joint force commander's electronic warfare staff, and the electronic warfare coordination cell.

1. EA is a division of EW involving the use of EM energy, directed energy (DE), or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires (see JP 3-09, *Joint Fire Support*). EA includes:

a. Actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, such as jamming and EM.

b. Employment of weapons that use either EM or directed energy as their primary destructive mechanism (lasers, radio frequency weapons, particle beams).

2. EA includes both offensive and defensive activities. Offensive EA examples include using DE weapons to disable an adversary's equipment or capability, or using antiradiation missiles to suppress an adversary's air defenses. Defensive EA examples include using electronic deception techniques to confuse an adversary's ISR systems, or jamming an adversary's radar or C2 systems.

(b) EW supports joint fires by providing target acquisition through electronic warfare support (ES) and by destroying or degrading susceptible assets with EA.

(c) Physical destruction supports EW by destroying adversary C2 targets and by destroying adversary electronic systems.

(d) Frequency management and deconfliction must account for frequencies used by various types of precision strike weapons. ES assets are an important part of efforts to dynamically map the electromagnetic environment (EME) of the operational area for targeting and threat avoidance planning.

(e) Standoff and antiradiation capabilities are major advantages in any operation and may, for example, be used to selectively destroy adversary emitters in support of military deception (MILDEC), SEAD, operations security (OPSEC), and PSYOP efforts. The employment of antiradiation weapons must be carefully planned and deconflicted to prevent the engagement of unintended targets.

(f) EA assets perform vital screening functions (including the use of standoff weapons) for friendly air strikes and other combat units on the ground and at sea. EA also plays an important role in defeating hostile air strikes and countering precision strike weapons.

(g) Disciplined emissions control (EMCON) and other electronic protection (EP) measures are also an important part of protecting friendly air strikes and front line tactical units on the ground and at sea. EMCON and other EP measures also protect friendly forces handling or operating around live ordnance during combat operations by preventing inadvertent detonations due to hazards of electromagnetic radiation to ordnance.

(h) **Feedback and Assessment.** ES assets provide timely warning of adversary reaction to friendly air strikes and other physical destruction actions that take friendly forces into hostile territory or contact with adversary combat forces. ES also performs an important combat assessment role by providing feedback about the results of friendly physical destruction actions that can be obtained through signals intelligence (SIGINT) or changes in the EME. ES can also be used to evaluate the effectiveness of friendly force EMCON measures and recommend modifications or improvements. All of these factors require that joint EW staff personnel actively work with air planners, fire support personnel, and other staff personnel involved in coordinating the physical destruction actions during combat operations. See JP 3-09, *Joint Fire Support*, and JP 3-13.1, *Electronic Warfare*, for further details.

(4) **PSYOP**

(a) The overall function of PSYOP is to cause selected foreign audiences to take actions favorable to the objectives of the United States and its allies or coalition partners. PSYOP staff officers assist in integrating and coordinating psychological activities to ensure unity of effort and thematic consistency within the operational area. PSYOP officers often can provide input most effectively by participating in the targeting process through the TET or JTCB. At the TET and JTCB, members discuss target priorities, recommend engagement methods and timings, discuss consequences and collateral damage issues, and recommend approval or disapproval for decision.

(b) PSYOP planning and targeting is performed concurrently with the development of the higher HQ plans and orders. As a member of a joint psychological operations task force within a JTF, or as a member of a battle staff, the PSYOP planner contributes to each phase of the joint targeting cycle (or step of the JOPP) and gains needed information to make decisions while formulating and refining the PSYOP plan. If targeting is successfully integrated into the higher HQ plan or order, the subordinate PSYOP plan should be able to answer the following questions:

1. **Phase 1 — End State and Commander’s Objectives.** How has the CONOPS been translated into discrete tasks to subordinates, each logically and directly related to the end state? What MOEs have been developed to assist in the assessment of progress toward creation of effects or achievement of objectives?

2. **Phase 2 — Target Development and Prioritization.** What specific target audiences (TAs), nodes, or links must be attacked/influenced (or targeting/PSYOP effects created) with specific PSYOP forces to support the commander’s targeting objectives, intent and CONOPS?

3. **Phase 3 — Capabilities Analysis.** What resources are required to determine the vulnerabilities, susceptibilities, and accessibility to reach the desired targets and audiences? How are the TA attitudes and impressions to be assessed, and what capabilities are available to overcome censorship, illiteracy, or interrupted communications?

**4. Phase 4 — Commander’s Decision and Force Assignment.** What are the PSYOP target priorities, what assets will be utilized, and what effects are to be created on these adversary targets?

**5. Phase 5 — Mission Planning and Force Execution.** What is the detailed information on the targets to support detailed execution planning? How are timing, deconfliction, and synchronization of assets and effects provided? As the adversary responds and deviates from friendly force assumptions, what changes are needed in order to allow commanders to maintain the initiative through flexibility?

**6. Phase 6 — Assessment.** What processes and capabilities are in place to measure performance or creation of effects to support the PSYOP objectives? Are there effective and timely ways and means to establish a direct link between a message and a specific attitude?

*For additional information, see JP 3-53, Joint Doctrine for Joint Psychological Operations.*

(5) In like manner, CNO should be integrated into the planning process for joint fires, in order to optimize desired effects from both an offensive and defensive perspective. Likewise, MILDEC and OPSEC should be considered and integrated into all planning efforts.

#### **d. Combat Identification**

(1) CID is the process of attaining an accurate characterization of detected objects in the operational environment sufficient to support an engagement decision. Depending on the situation and the operational decisions that must be made, this characterization may be limited to, “friend,” “enemy,” or “neutral.” In other situations, other characterizations may be required — including, but not limited to class, type, nationality, and mission configuration. CID characterizations, when applied with ROE, enable engagement decisions and the subsequent use (or prohibition of use) of lethal and nonlethal weapons to create targeting effects in support of targeting objectives. CID is used for force posturing, C2, SA, and strike/no-strike employment decisions.

(2) The CJTF’s CID procedures should be developed early during planning and ROE development. Important considerations include the missions, capabilities, and limitations of all participants including multinational forces, other government agencies (OGAs), intergovernmental organizations (IGOs), and nongovernmental organizations (NGOs). There are many different CID procedures and systems currently in use by US and multinational forces. Experience has proven that early identification of common CID procedures significantly increases CID effectiveness.

(3) CID-related information exchange is driven by the need for friendly and neutral force SA, location/identification of restricted sites and structures, and identification of threat objects. CID information requires constant coordination and

should be conveyed to decision makers in an understandable manner. Effective CID not only reduces the likelihood of fratricide — it also enhances joint fire support by instilling confidence that a designated target is, in fact, as described.

### **e. Control and Coordination Measures**

(1) A critical function of the CJTF and staff is to organize the JOA to assist in the integration, coordination, and deconfliction of joint actions. The CJTF can designate AOs, JSOAs, amphibious objective areas (AOAs), and joint security areas to support the organization of the operational area within the assigned JOA.

(2) The CJTF can also establish additional control and coordination measures, in consultation with subordinate commanders, to further integrate joint actions within the JOA and subordinate operational areas. Control and coordination measures are directives to subordinate commanders to assign responsibilities, coordinate joint actions, and control operations. Commanders tailor their use of control and coordination measures to conform to the higher commander's intent, their own mission, and amount of authority delegated to subordinates. The CJTF employs control measures to control designated air, land, or maritime areas; to control movements; and to provide or coordinate fires.

### **(3) Fire Support Coordination Measures**

(a) Within their operational areas, land and maritime commanders employ permissive and restrictive FSCMs to expedite attack of targets; protect forces, populations, critical infrastructure, and sites of religious or cultural significance; clear joint fires; deconflict joint fire support operations; and establish conditions for future operations. Along with other control and coordination measures, FSCMs and their associated procedures help ensure that joint fire support does not jeopardize troop safety, interfere with other attack means, or disrupt operations of adjacent subordinate units. Maneuver commanders position and adjust control and coordination measures consistent with the location of friendly forces, the concept of the operation, anticipated enemy actions, and in consultation with superior, subordinate, supporting, and affected commanders.

(b) Locations and implementing instructions for FSCMs are disseminated electronically by message, database update, or overlay through both command and joint fire support channels to higher, lower, and adjacent maneuver and supporting units. Typically, they are further disseminated to each level of command, to include the establishing command and all concerned joint fire support agencies. Not all measures may apply to a joint operation. However, knowledge of the various FSCMs used by each component is necessary for the effective use of joint fire support.

### **(c) Planning and Coordination Considerations**

1. The establishment or change of an FSCM is typically initiated through the J-3 operations cell and ultimately approved by the CJTF. FSCMs enhance

the expeditious engagement of targets, protect forces, populations, critical infrastructure, sites of religious, or cultural significance, and set the stage for future operations. Commanders position and adjust FSCMs consistent with the operational situation and in consultation with superior, subordinate, supporting, and affected commanders. The operations cell informs coordination elements of the change and effective time. Conditions which dictate the change of FSCMs are also coordinated with the other agencies and components as appropriate. Once the conditions are agreed, the time that the new FSCM is expected to become effective can be projected. As conditions are met, FSCM change is directed. The operations cell should confirm with all liaison elements that the FSCM changes have been disseminated. This ensures that affected units are aware of new FSCM locations and associated positive control measures are being followed, thus reducing the risk of fratricide.

2. Standardization agreement (STANAG) 2245, *Field Artillery and Fire Support Data Interoperability*, and STANAG 5620, *Standards for the Interoperability of Fire Support Automated Data Processing Systems*, are examples of international (North Atlantic Treaty organization [NATO]) joint fire support agreements. Before commencing operations, both joint force and component staff members must verify the status of FSCMs in a multinational operation.

(d) **Permissive Measures.** The primary purpose of permissive measures is to facilitate the attack of targets. Permissive measures facilitate reducing or eliminating coordination requirements for the engagement of targets with conventional means.

1. **Coordinated fire line (CFL)** is a line beyond which conventional and indirect surface joint fire support means may fire at any time within the boundaries of the establishing HQ without additional coordination. The purpose of the CFL is to expedite the surface-to-surface engagement of targets beyond the CFL without coordination with the land commander in whose area of operation the targets are located. The CFL is usually established by a brigade or division commander equivalent, but it can also be established, especially in amphibious operations, by a maneuver battalion.

2. **Fire Support Coordination Line**

a. **FSCLs** facilitate the expeditious engagement of targets of opportunity beyond the coordinating measure. An FSCL does not divide an AO by defining a boundary between close and deep operations or a zone for CAS. The FSCL applies to all fires of air, land, and sea-based weapon systems using any type of munition against surface targets.

b. An FSCL is established and adjusted by the appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders.

c. Use of an FSCL is not mandatory. Forces engaging targets beyond an FSCL must inform all affected commanders in sufficient time to allow

necessary reaction to avoid fratricide, both in the air and on the land. In exceptional circumstances, the inability to conduct this coordination will not preclude the engagement of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and waste resources. Short of an FSCL, all air-to-ground and surface-to-surface engagement operations are controlled by the appropriate land or amphibious force commander. This control is exercised through the operations staff or with pre-designated procedures. The FSCL is not a boundary — the synchronization of operations on either side of the FSCL is the responsibility of the establishing commander out to the limits of the land or amphibious force boundary. **The establishment of an FSCL does not create a free-fire area (FFA) beyond the FSCL.** When targets are engaged beyond an FSCL, supporting element's engagements must not produce adverse effects on, or to the rear of, the line. Engagements beyond the FSCL must be consistent with the establishing commander's priorities, timing, desired effects, and deconflicted whenever possible with the supported HQ.

d. The decision on where to place or even whether to use an FSCL requires careful consideration. If used, its location is based on estimates of the situation and CONOPS. Location of enemy forces, anticipated rates of movement, concept and tempo of the operation, organic weapon capabilities, well-defined terrain features, and other factors are all considered by the commander. The FSCL is normally positioned closer to the forward line of own troops in the defense than in the offense; however, the exact positioning depends on the situation. Placing the FSCL at greater depths will typically require support from higher organic HQ and other supporting commanders. Also, when the FSCL is positioned at greater depth, there is greater requirement for detailed coordination with the establishing commander.

3. **Free-Fire Area.** A FFA is a specifically designated area into which any weapon system may fire without additional coordination with the establishing HQ. It is used to expedite joint fires and to facilitate emergency jettison of aircraft munitions. A FFA may be established only by the military commander with jurisdiction over the area (usually, a division or higher commander). Preferably, the FFA should be located on identifiable terrain; however, it may be designated by grid coordinates or Global Area Reference System (GARS).

#### 4. **Kill Boxes**

a. A kill box is a three-dimensional area used to facilitate the integration of joint fires. When established, the primary purpose of a kill box is to allow lethal attack against surface targets without further coordination with the establishing commander and without terminal attack control. When used to integrate air-to-surface and surface-to-surface indirect fires, the kill box will have appropriate restrictions. The goal is to reduce the coordination required to fulfill support requirements while providing maximum flexibility and preventing fratricide.

b. A kill box is established and adjusted by supported component commanders in consultation with superior, subordinate, supporting, and affected

commanders, and is an extension of an existing support relationship established by the CJTF. For more information on kill boxes, see JP 3-09, *Joint Fire Support*, JP 3-03, *Joint Interdiction*, and FM 3-09.34/MCRP 3-25H/NTTP 3-09.2.1/AFTTP(I) 3-2.59, *Multi-Service Tactics, Techniques, and Procedures for Kill Box Employment*.

- c. The kill box is to be replaced by the joint fires area (JFA).

## **5. Joint Fires Area**

a. A JFA is a three dimensional FSCM used to facilitate the expeditious attack of targets with both air-to-surface and surface-to-surface indirect fires. The CJTF is responsible for setting the conditions in the theater that enable effective employment of the JFA within the JOA. By directing the use of a reference system (e.g., GARS) and delegating authority to establish the JFA to the supported commander, the CJTF will provide the component commanders with an efficient and effective means of coordinating, integrating, and deconflicting joint fires while reducing the risk of fratricide.

b. JFAs enable integration of the fire support plan with the scheme of maneuver. As an FSCM, JFAs share characteristics of both permissive and restrictive measures. The JFA is **permissive** in that it permits the delivery of air-to-surface weapons and surface-to-surface indirect fires without further coordination with the establishing commander. The JFA is **restrictive**, however, with regard to air-to-surface and surface-to-surface fires passing through the area. The trajectories of both types of fires that are not in support of target effects within the JFA are not permitted to pass through the JFA without coordination with the establishing commander.

c. Likewise, aircraft not assigned to a JFA are not permitted to enter without coordination with the establishing commander.

d. The JFLCC, JFMCC, and JFSOCC tailor the size and position of the JFA, on the surface, commensurate with the desired effects, terrain, situation, and risk that they are willing to accept to focus joint fires and effects in the JFA while protecting friendly forces.

e. The JFACC tailors airspace to support the JFA commensurate with available airborne platforms, required maneuver airspace, weapons systems, weapons capabilities, desired effects, and the risk that the JFACC is willing to accept to protect friendly forces in the air while protecting friendly forces on the ground or sea as required by the JFLCC, JFMCC, and JFSOCC.

f. The JFA is "additive" in that it may contain other FSCMs within its boundaries. For example, a no-fire area (NFA) may be located within a JFA to protect a SOF team. JFAs do not supersede any restrictive FSCM located within its boundaries. No fires, or effects of fires, are permitted into a restrictive FSCM within, or adjacent to, a JFA without coordination.

(e) **Restrictive Measures.** Restrictive measures impose requirements for specific coordination before engagement of targets.

**1. Restrictive Fire Line (RFL)**

**a.** The RFL is a line established between converging friendly forces — one or both may be moving — that prohibits joint fires or the effects of joint fires across the line without coordination with the affected force. The purpose of the line is to prevent fratricide and duplication of engagements by converging friendly forces.

**b.** The commander common to the converging forces establishes the RFL. It is located on identifiable terrain when possible. In link-up operations, it is usually closer to the stationary force to allow maximum freedom of action for the maneuver and joint fire support of the linkup force.

**2. No-Fire Area**

**a.** The purpose of the NFA is to prohibit joint fires or their effects into an area. There are two exceptions: **first**, when the establishing HQ approves joint fires within the NFA on a mission-by-mission basis; **second**, when an enemy force within the NFA engages a friendly force and the engaged commander determines there is a requirement for immediate protection and responds with the minimal force needed to defend the force.

**b.** Any size unit may establish NFAs. If possible, the NFA is established on identifiable terrain. It may also be located by a series of grids or by a radius from a center point.

**3. Restrictive Fire Area (RFA)**

**a.** A RFA is an area in which specific restrictions are imposed and into which fires, or the effects of joint fires, that exceed those restrictions will not be delivered without coordination with the establishing HQ. The purpose of the RFA is to regulate joint fires into an area according to the stated restrictions.

**b.** A maneuver battalion or higher echelon normally establishes an RFA. Usually, the RFA is located on identifiable terrain, by grid, or by a radius from a center point. To facilitate rapidly changing operations, on-call RFAs may be used. The dimensions, locations, and restrictions of the on-call RFA are prearranged.

**4. Zone of Fire (ZF)**

**a.** A ZF is an FSCM that includes the area within which a designated ground unit or fire support ship delivers, or is prepared to deliver, joint fire support. Joint fires may or may not be observed. The land AO is divided into ZFs which are assigned to gunfire support ships and units as a means to coordinate their efforts with

each other and with the scheme of maneuver of the supported ground unit. Units and ships assigned ZFs are responsible for engaging known targets and targets of opportunity according to their mission and the guidance of the supported commander.

b. The commander of the maritime force providing naval surface fire support (NSFS) establishes and assigns ZFs for the forces. The ZF for an artillery battalion or a ship assigned the mission of direct support (DS) normally corresponds to the AO of the supported unit. The ZF for an artillery battalion or a ship assigned the mission of general support (GS) should be within the boundaries of the supported unit.

c. ZFs are also assigned to field artillery (FA) units by their higher HQ. The ZF for FA units assigned to a maneuver unit or assigned the mission of DS corresponds to the AO of the parent or supported maneuver unit. The ZF for an artillery unit assigned the mission of reinforcing corresponds to the ZF of the reinforced artillery unit. The ZF for an artillery unit assigned the mission of general support-reinforcing corresponds to the ZF of the reinforced artillery unit and is within the AO of the supported maneuver unit. The ZF for an artillery unit assigned the mission of GS corresponds to the AO of the supported maneuver unit.

#### (f) **Maneuver Control Measures**

##### 1. **Boundaries**

a. A boundary is a maneuver control measure. In land warfare, it is a line by which surface AOs between adjacent units or formations are defined. Boundaries designate the geographical limits of the AO of a unit. Within their boundaries, units may execute joint fires and maneuver without close coordination with neighboring units unless otherwise restricted. Normally, units do not fire across boundaries unless the fires are coordinated with the adjacent unit or the fires are beyond an FSCM, such as a CFL. These restrictions apply to conventional and special munitions and their effects. When fires such as smoke and illumination affect an adjacent unit, coordination with that unit is normally required. A commander can, in certain situations, decide to fire across boundaries at positively identified enemy elements without coordination. However, direct and observed joint fires should be used when firing across boundaries at positively identified enemy forces when there is no time to coordinate with adjacent friendly units.

b. Any commander given an AO can establish boundaries for subordinate units. These boundaries will be respected by all Service and functional components.

2. **Phase Lines.** A phase line (PL) is a maneuver control measure used by land forces for control and coordination of military operations. It is usually a recognizable terrain feature extending across the zone of action. Units normally report crossing PLs, but do not halt unless specifically directed. PLs can be used to identify limits of advance, control joint fires, or define an AO. The purpose of each PL and any

actions required by forces affected by the PL will be specified in the OPORD of the establishing HQ. Any commander given an AO can establish PLs.

### **3. Maritime Fire Support Area or Fire Support Station**

**a.** A **fire support area (FSA)** is an appropriate maneuver area assigned to fire support ships by the maritime commander from which they deliver surface joint fire support to an operation ashore. An FSA is normally associated with amphibious operations but can be used whenever it is desirable to have a fire support ship occupy a certain geographic position. A fire support station (FSS) is an exact location at sea within an FSA from which a fire support ship delivers joint fire. This designation is used to station ships within boat lanes of the assaulting force, or in areas where maneuvering room is restricted by other considerations.

**b.** The **OTC**, typically the commander, amphibious task force (CATF) establishes FSAs and FSSs. In amphibious operations when engagement groups are formed and separate landing areas are designated, the CATF may assign each engagement group commander the responsibility for control of naval gunfire support within the area.

### **(g) Airspace Coordinating Measures**

**1.** ACMs are critical to the successful employment of joint fires. A key to effectively coordinating joint fires is to constantly view the operational environment as a three dimensional area. ACMs are nominated from subordinate HQ, submitted through component command HQ, and forwarded to the ACA in accordance with the ACP. Most ACMs impact direct and indirect joint fires trajectories and UASs because of their airspace use. Some ACMs may be established to permit surface joint fires or UAS operations. The component commanders ensure that ACM nominations support joint operations prior to forwarding to the ACA at the JAOC. The ACA approves formal ACM nominations and includes them in the ACO. The ACA consolidates, coordinates, and deconflicts the airspace requirements of the components and publishes the ACMs in the ACO. The ACO is normally published at least daily and is often distributed both separately and as a section of the ATO.

**2.** Normally, ACMs such as low level transit routes will terminate in the vicinity of the FSCL. However, the situation may require establishing active and planned ACMs beyond the FSCL to facilitate rapid change of both the FSCL and ACM. ACMs may be established to facilitate operations between the FSCL and the land force commander's forward boundary. Ground infiltration and aerial insertion or extraction of SOF or long-range surveillance teams as well as attack helicopter maneuver are operational examples where ACMs may be needed beyond the FSCL.

**3.** Changes to ACMs within a land force AO are initiated by the component's air control element, with ACA approval. One common procedural ACM that impacts on the delivery of aerial fire support is a coordinating altitude. A

coordinating altitude separates fixed- and rotary-wing aircraft. The CJTF approves the coordinating altitude, which is normally specified in the ACP. The ACA is the final approving authority for changes, which are requested through airspace coordination channels. Fixed or rotary-wing aircraft planning extended operations penetrating this altitude should, whenever possible, notify the appropriate airspace control facility. The ACA establishes formal airspace coordination areas at the request of the appropriate component commander.

4. The ACM is the primary means of coordinating airspace for use by air support and indirect joint fires. Airspace coordination areas are used to ensure aircrew safety and the effective use of indirect supporting surface joint fires by deconfliction through time and space. The airspace coordination area is a block or corridor of airspace in which friendly aircraft are reasonably safe from friendly surface joint fires. A formal airspace coordination area (a three dimensional box of airspace) requires detailed planning. More often an informal airspace coordination area is established using time, lateral separation, or altitude to provide separation between surface-to-surface and air-delivered weapon effects.

*See JP 3-52, Joint Airspace Control in the Combat Zone, and JP 3-30, Command and Control for Joint Air Operations, for further information on C2 of air operations.*

*For additional information on the ACA see JP 3-09.3, Joint Close Air Support, and JP 3-52, Joint Airspace Control in the Combat Zone.*

### 3. Planning Considerations

#### a. Joint Fire Support

(1) Effectiveness of the joint fire support effort is measured by creating desired effects on the enemy, setting conditions for decisive operations, and supporting joint force operations. Effective joint fire support depends on planning for the successful performance of the four basic fire support tasks as follows:

(a) **Support Forces in Contact.** The commander must provide responsive joint fire support that protects and ensures freedom of maneuver to forces in contact with the enemy throughout the operational area.

(b) **Support the CONOPS.** Commanders set the conditions for decisive operations by successfully attacking prioritized targets.

(c) **Synchronize Joint Fire Support.** Joint fire support is synchronized through fire support coordination, beginning with the commander's estimate and CONOPS. Joint fire support must be planned both continuously and concurrently with the development of the scheme of maneuver. Further, operations providing joint fire support must be synchronized with other joint force operations (e.g., air operations,

intelligence functions, special operations, and IO) to optimize the application of limited resources, achieve synergy, and avoid fratricide.

(d) **Sustain Joint Fire Support Operations.** Joint fire support planners must formulate joint fire support plans to reflect logistic limitations and to exploit logistic capabilities. Ammunition, fuel, food, water, maintenance, transportation, and medical support are all critical to sustaining joint fire support operations.

(2) Joint fire support is defined as joint fires that assist air, land, maritime, and SOF to move, maneuver, and control territory, populations, airspace, and key waters. Synchronization of joint fire support with the supported force is essential. Prerequisites for effective joint fire support are interoperable systems, broad understanding of the differing strengths and limitations of each Service's capabilities and how they are applied, and clear agreement about how those capabilities will be integrated in any given operational setting. JP 3-09, *Joint Fire Support*, provides guidance for planning, coordinating, and executing joint fire support.

### b. Close Air Support

(1) CAS is normally considered direct support to surface components by the air component. CAS missions can function under an overall offense or defense theater posture and are typically coordinated with a ground scheme of maneuver to maximize the effect on the enemy.

(2) CAS is air action by fixed- and rotary-winged aircraft against hostile targets that are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces (see JP 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support*). CAS provides supporting firepower in offensive and defensive operations to destroy, disrupt, suppress, fix, harass, neutralize, or delay enemy targets as an element of joint fire support. The speed, range, and maneuverability of airpower allow CAS assets to attack targets that other supporting arms may not be able to engage effectively. CAS can be conducted at any place and time friendly forces are in close proximity to enemy forces and, at times, may be the best means to exploit tactical opportunities. Although in isolation it rarely achieves operational-level objectives, at times it may be the more critical mission due to its contribution to them. CAS should be planned to set the conditions for success or reinforce successful attacks of surface forces.

(3) CAS can halt attacks, help create breakthroughs, destroy targets of opportunity, cover retreats, and guard flanks. In a fluid, large-scale combat situation; the need for terminal control, unpredictability of the tactical situation, risk of fratricide, and proliferation of lethal ground-based air defenses makes CAS especially challenging. For maximum effectiveness, CAS should be preplanned and then massed at decisive points to apply concentrated combat power and saturate defenses. CAS requires a significant level of preplanning and coordination between air and surface forces to produce the desired effects. CAS employment must be safe, accurate, and timely to create effects that

support the ground scheme of maneuver. The fluidity of the ground situation usually requires real-time direction from a terminal controller to ensure that the ground commander's highest priority targets are struck. The appropriate C2, with release authority at the lowest possible level, must be in place to facilitate the expeditious application of airpower in these rapidly changing scenarios. Additionally, when friendly forces are within close proximity, more restrictive control measures may be required to integrate CAS with surface maneuver and other joint fires. Integrating airpower and surface maneuver is an important factor for mitigating fratricide from both air-delivered weapons and surface fires.

**c. Countering Air and Missile Threats**

(1) The purpose of counterair is to attain the desired degree of air superiority required by the CJTF to accomplish the assigned mission. The degree of control of the air domain may vary from local air superiority to theater air supremacy, depending on the situation and the CJTF's CONOPS. In recent history, air superiority has proven to be a key factor for success for an operation/campaign because it minimized enemy air and missile threats that could interfere with friendly air, land, maritime, space, and SOF operations. To execute this mission, CJTFs integrate the capabilities of each component to conduct offensive and defensive operations.

(2) The counterair mission integrates both offensive and defensive operations. Offensive counterair (OCA) operations seek to dominate the enemy's airspace and prevent the launch of threats, while defensive counterair (DCA) operations defeat enemy air and missile threats attempting to attack or penetrate through friendly airspace. Joint counterair operations may employ aircraft with weapons or sensors, surface-to-surface missiles, surface-to-air missiles, ADA, air-to-surface missiles, SOF, or IO to destroy or negate enemy aircraft and missiles, both before and after launch.

(3) OCA operations are conducted to destroy, disrupt, or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, but as close to their sources as possible. Through centralized planning and direction, the JFACC synchronizes/deconflicts OCA operations with DCA and other joint operations and relies on robust C2 systems for decentralized execution. Decentralized execution allows components and units to exercise initiative, responsiveness, and flexibility within their command authorities to accomplish their tasks.

(4) OCA planning begins with JIPOE and considers the CJTF's assessment of the overall air and missile threat, target data base, ROE, objectives, priorities, missions, available friendly forces, and the weight of effort or force apportionment decision. The preponderance of OCA operations are conducted with joint air forces/capabilities that are integrated in action through the JAOP. The JAOP is the result of a sequential six-phase air estimate process that closely resembles the JOPP and may be a concurrent planning activity within the staff or a parallel planning effort at different levels of war. The air

estimate process phases are: mission analysis; situation and COA development; COA analysis; COA comparison; COA selection; and JAOP development.

(5) Counterair operations can be preemptive or reactive, but sustained efforts may be required to reduce or neutralize hostile air and missile capabilities until the desired degree of air superiority is attained for the CJTF. OCA operations include attack operations, SEAD, fighter escort, and fighter sweep. OCA missions may be planned using either deliberate or dynamic targeting, depending on the target type. Missions against planned targets are included in the ATO and rely on continuous and accurate intelligence to identify them at particular locations and times. Targets of opportunity are those unanticipated/unplanned targets that are identified too late, or not selected for action in time, to be included in the ATO cycle. When plans change and planned targets must be adjusted, dynamic targeting can also manage these changes. These targets cannot be effectively attacked unless responsiveness and flexibility is built into the targeting process and the ATO.

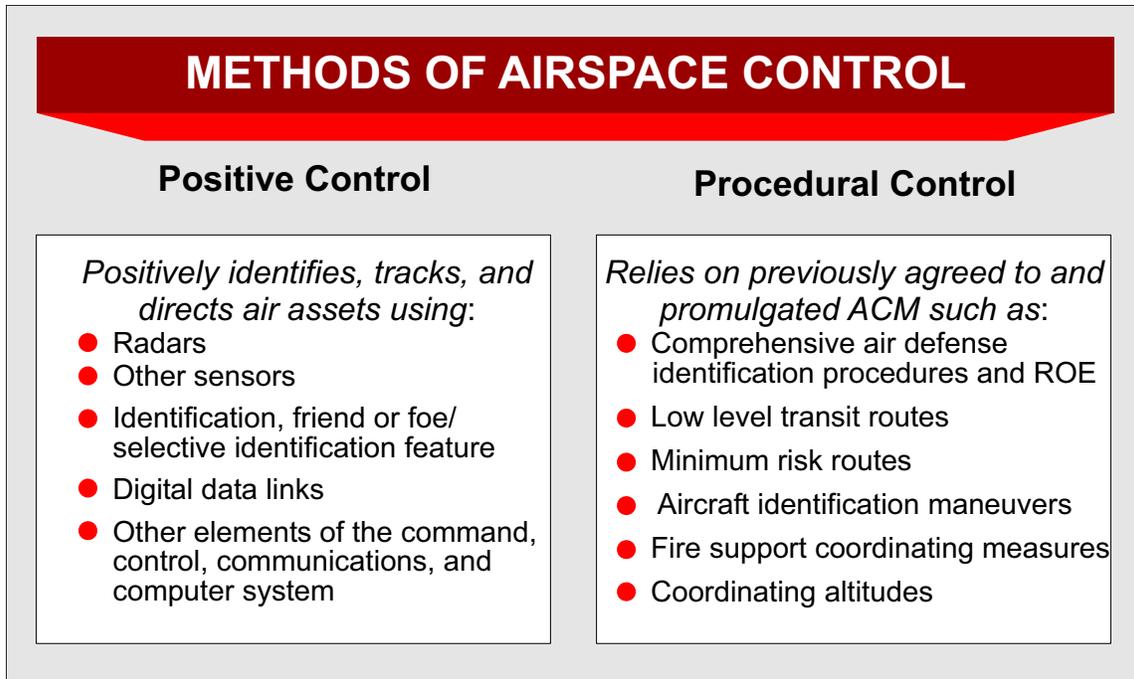
(6) All missions involving the use of airspace are subject to the ACO. It provides centralized direction to deconflict, coordinate, and integrate the use of airspace within the operational area. Airspace control procedures objectives are:

- (a) Prevent mutual interference.
- (b) Facilitate air defense identification.
- (c) Safely accommodate and expedite the flow of all air traffic in the JOA.
- (d) Enhance effectiveness in accomplishing the CJTF's objectives.
- (e) Prevent friendly fire incidents.

(7) The methods of airspace control vary throughout the range of military operations. They range from positive control of all air assets in an airspace control area to procedural control of all such assets, or any effective combination of the two (Figure III-2).

(8) Air defense operations must be integrated with other tactical air operations within the operational area through the air defense plan. Weapons control procedures and airspace control measures for all air defense weapon systems and forces must be established. These procedures must facilitate defensive air operations while minimizing the risk of fratricide.

*For more information, see JP 3-52, Joint Doctrine for Airspace Control in the Combat Zone, JP 3-30, Command and Control for Joint Air Operations, and JP 3-01, Countering Air and Missile Threats.*



**Figure III-2. Methods of Airspace Control**

#### d. Interdiction

(1) JP 3-03, *Joint Interdiction*, defines interdiction as an action to divert, disrupt, delay, or destroy the enemy's military surface capability before it can be used effectively against friendly forces, or to otherwise achieve objectives. Joint interdiction operations are those interdiction operations conducted in support of theater/JOA wide priorities or interdiction operations conducted between supported and supporting components.

(2) Interdiction-capable forces include all of the following:

- (a) Land- and sea-based fighter and attack aircraft and bombers.
- (b) Ships and submarines.
- (c) Conventional airborne, air assault, or other ground maneuver forces.
- (d) SOF.
- (e) Amphibious raid forces.
- (f) Surface-to-surface, subsurface-to-surface, and air-to-surface missiles, rockets, munitions, and mines.
- (g) Artillery and naval gunfire.
- (h) Attack helicopters.
- (i) EW systems.

- (j) Anti-satellite weapons.
- (k) Space-based satellite systems or sensors.

(3) CJTFs employ forces to accomplish their objectives; the principal challenge is to combine force capabilities and operations to create effects that support achievement of those objectives. The planning, coordination, and integration of joint interdiction with other operations, such as maneuver, can yield unique advantages. This integration of effort begins with the CJTF's JOA-level objectives, guidance, intent, and CONOPS.

(4) **Air Interdiction**

(a) AI is generally conducted at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not normally required. AI may operate as a supported part of the overall JTF strategy or it may indirectly support the land component. When conducted as part of a joint operation, interdiction needs the direction of a single commander who can exploit and coordinate all the forces involved, whether air, space, surface, or information-based. The JFACC normally is designated the supported commander for the CJTF's overall AI effort and will conduct JOA-wide AI in direct support of the CJTF's overall objectives. The JFACC, in coordination with other component commanders, recommends JOA-wide targeting and apportionment priorities and submits them to the CJTF for approval.

(b) The JFACC, using the priorities and apportionment established by the CJTF's targeting guidance and intent, then plans and executes the JOA-wide interdiction effort.

(5) **Maritime Interdiction**

(a) Interdiction in the maritime domain can isolate an enemy from outside sea-borne support, halt undesired maritime activity and enforce legal sanctions. It can also enhance free use of the sea lines of communications (LOCs) for such friendly operations as deployment of forces and can provide security for other naval operations. Interdiction in the maritime domain can be significantly different from operations in other domains due to the complexities of international law of the high seas.

(b) Maritime capability, such as the TLAM can be effective land interdiction assets and provide a potent employment option to the joint force. Utilization of the TLAM weapon system may require coordination between strike planners in-theater and supporting mission planners out of theater (i.e., cruise missile support activities). Planning timelines will need to take this requirement into consideration.

*For additional information on interdiction, see JP 3-03, Joint Interdiction.*

e. **Strategic Attack.** A strategic attack is a CJTF-directed offensive action against a target — whether military, political, economic, or other — that is specifically selected to achieve national or military strategic objectives. These attacks seek to weaken the adversary's ability or will to engage in conflict or continue an action and could be part of a campaign, major operation, or conducted independently as directed by the President or

SecDef. Additionally, these attacks may achieve strategic objectives without necessarily having to achieve operational objectives as a precondition. Suitable targets may include, but are not limited to, enemy strategic COGs. All components of a joint force may have capabilities to conduct strategic attacks.

**4. Information Operations Planning Outline**

a. IO are planned as a part of the JOPP, JAOP, and products development (Figure III-3). The CJTF must ensure IO planners are fully integrated into the planning and targeting process at all levels and assign them to the TET/JTCB to ensure full integration with all other planning and execution efforts.

b. **Planning Initiation.** Key IO staff actions at the initiation of planning are:

(1) Monitor the situation and receive initial planning guidance. Review staff estimates from applicable OPLANs or OPLANs in concept format, if available.

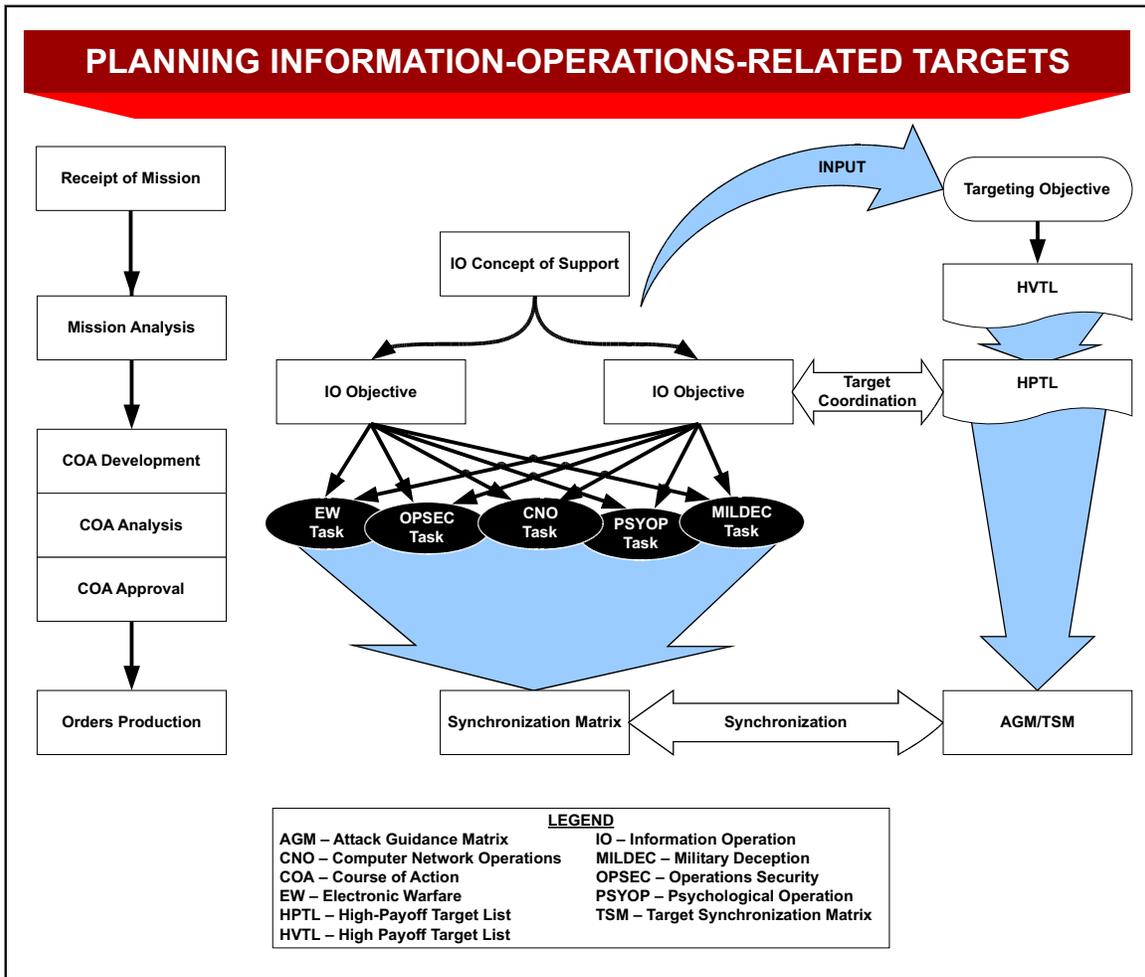


Figure III-3. Planning Information Operations-Related Targets

(2) **Convene the IO cell.** The cell should use this opportunity to alert subordinate commands/units of potential tasking with regard to IO planning support. For CAP, regularly convene to review the situation and determine what preliminary planning actions should be accomplished. For contingency planning, convene a meeting of the full IO cell or consult informally with other members as needed.

(3) Gauge the initial scope of the IO role in the joint operation.

(4) IO may involve complex legal and policy issues requiring careful review and national-level coordination and approval. IO planning at all levels should consider the following broad areas and consult the appropriate personnel for input:

(a) Whether a particular use of IO may be considered a hostile act by other countries.

(b) Domestic, international, criminal, and civil law, affecting national security, privacy, and information exchange.

(c) International treaties, agreements, and customary international law, as applied to IO.

(d) Structure and relationships among US intelligence organizations and the overall interagency environment, including NGOs.

(5) Identify location, standing operating procedure (SOP), and routine of other staff organizations that require IO interaction and divide coordination responsibilities among IO staff.

(6) Begin identifying information needed for mission analysis and COA development and availability of required information. (This continues through plan development.)

(7) Identify IO planning support requirements (including staff augmentation, support products and services) and issue requests for support according to procedures established locally and by various supporting organizations.

(8) Validate, initiate, and revise PIRs and requests for information (RFIs), keeping in mind the long lead times associated with satisfying IO requirements. (This continues throughout planning process.)

(9) Provide input and recommendations on IO strategies, and resolutions to conflicts with other plans.

(10) Submit IO target nominations to joint targeting process for intelligence community (IC) review of intelligence gain/loss, deconfliction, vetting and J-3 validation.

(11) Ensure IO planners participate in all CJTF or component planning and targeting sessions and TET/JTCBs.

c. **IO Mission Analysis.** The primary purpose of mission analysis is to understand the problem and purpose of the operation and issue appropriate guidance to drive the rest of the planning process. Key IO staff actions during this phase are:

(1) Identify specified, implied, and essential IO tasks.

(2) Identify assumptions, constraints, and restraints relevant to IO.

(3) Initiate development of IO-related MOEs and MOPs.

(4) Analyze IO capabilities available for the mission and identify level of approval authority for deployment and employment.

(5) Identify relevant physical, informational, and cognitive properties (whether friendly, adversarial or neutral/third party) of the information environment that may impact the operation.

(6) Commanders and their staffs must avoid projecting US value sets on opponents (mirror imaging). Therefore, incorporating specific cultural, regional, and country experts into the IO planning process can help prevent developing plans based on inaccurate cultural assumptions.

(7) Refine proposed IO-related PIRs and RFIs.

(8) Provide IO perspective in development of restated mission for the commander's approval.

(9) Tailor augmentation requests to ensure the quantity and skill sets support the specifics of mission and tasks, as they are developed.

(10) Based on intelligence and mission analysis, identify potential IO targets, compile an IO target development list, and nominate developed IO targets to the CJTF's standing JTL.

(11) Compile and maintain a target folder for each IO target nomination incorporating at least the minimum data fields. Target folders will facilitate IC review and deconfliction and CJTF approval for action.

d. **Information Operations Courses of Action Development.** The staff takes the output from mission analysis as key inputs to COA development: initial staff estimates, mission and tasks, and CJTF planning guidance. Key IO staff actions during this phase are:

(1) Select IO core capabilities that may be used individually or integrated with other options to accomplish IO supporting tasks for each COA.

(2) Revise the IO portion of COAs as required to develop the staff estimate.

(3) Brief portions of each COA and include the results of risk analysis for each COA.

e. **Information Operations Courses of Action Analysis and Wargaming.** Based upon time available, the commander should wargame each tentative COA against adversary COAs identified through the JIPOE process. Key IO staff actions during this phase are:

(1) Analyze each COA from an IO functional perspective.

(2) Reveal key IO decision points.

(3) Recommend IO task organization adjustments.

(4) Provide IO data for use in a synchronization matrix or other decision-making tool.

(5) Identify IO portions of branches and sequels.

(6) Identify possible HVTs related to IO.

(7) Recommend IO CCIRs.

f. **Information Operations Courses of Action Comparison.** COA comparison starts with all staff members analyzing and evaluating the advantages and disadvantages of each COA from their perspectives. Key IO staff actions during this phase are:

(1) Compare each COA independently of each other against a set of criteria established by the staff and commander. These criteria should be based on the mission and include IO tasks, as appropriate.

(2) Compare each COA in relation to IO requirements versus available IO resources.

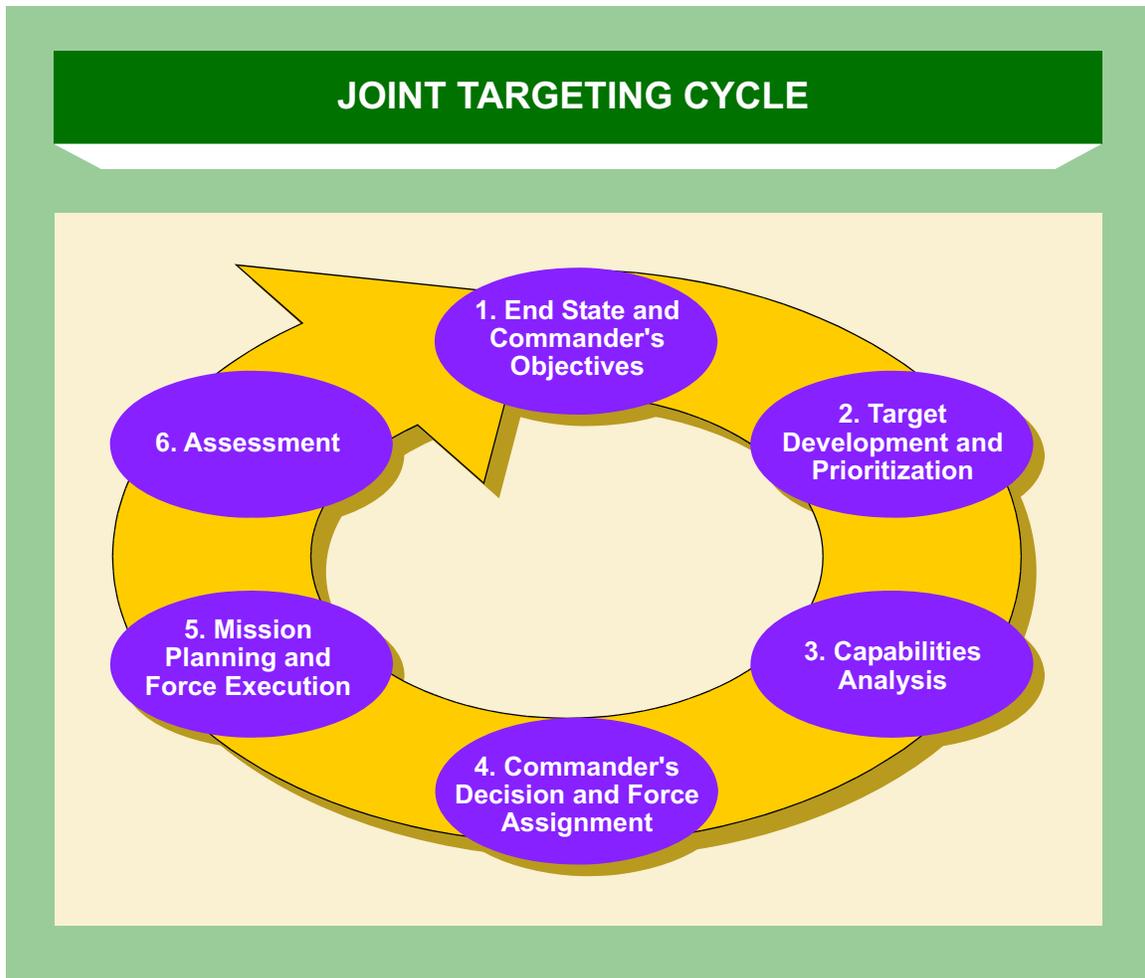
(3) Prioritize COAs from an IO perspective.

g. **Information Operations Courses of Action Approval.** There are no specific IO staff actions during COA approval.

**SECTION B. JOINT TARGETING CYCLE**

**5. Introduction**

a. The joint targeting cycle is an iterative process that provides a helpful framework to describe the steps that must be satisfied to successfully conduct joint targeting (Figure III-4). This cycle is not time-dependent and steps may occur concurrently. The purpose of joint targeting is to integrate and synchronize fires into joint operations. It can be conducted in multinational operations and may involve participation from other agencies, governments, and organizations. An effective, disciplined joint targeting process helps minimize undesired effects, potential for collateral damage, and reduces inefficient actions during military operations. It supports the successful application of several principles of war: mass, maneuver, and economy of force.



**Figure III-4. Joint Targeting Cycle**

b. The joint targeting process integrates military capability to create effects in support of CJTF objectives and end state. In consultation with component commanders, the CJTF sets priorities, provides clear targeting guidance, and determines the weight of effort to be provided to various operations. Component commanders ensure their

schemes of maneuver comply with the CJTF guidance and priorities. If they do not have the capability to prosecute priority targets in a timely fashion, they may submit HVTs and HPTs for incorporation into the joint targeting process.

c. The joint targeting cycle timeline is synchronized with the ATO cycle timeline. Typically, the JFE, in consultation with the JFACC, will assist the J-3 in developing a joint targeting cycle for CJTF approval.

### 6. The Joint Fires and Targeting Process

a. **Joint targeting is a commander-driven process** that can be conducted across the range of military operations. All joint force echelons, including Services, components, and combat support agencies, must understand the joint fires and targeting process if they are to effectively participate in the creation of effects necessary to accomplish the commander's objectives. The joint fires and targeting process supports unity of effort by facilitating:

- (1) Compliance with CJTF objectives, guidance, and intent.
- (2) Focus on adversary COGs and decisive points.
- (3) Coordination, integration, synchronization, and deconfliction of actions.
- (4) A common perspective on all fires and targeting efforts performed in support of the commander.
- (5) Rapid response to dynamic targeting situations (including TSTs and other high-priority component targets) that present limited opportunities for action.
- (6) Reduced duplication of effort.
- (7) Expedient assessment of executed targeting operations.
- (8) Full integration of all available capabilities.
- (9) Reduced risk of fratricide and collateral damage.

b. During planning, the JTF targeting process starts with existing target information. Collection activities, target processing, mission planning, fires execution, and assessment form a flexible and iterative process which adjusts and matures target information as the operation proceeds (Figure III-5).

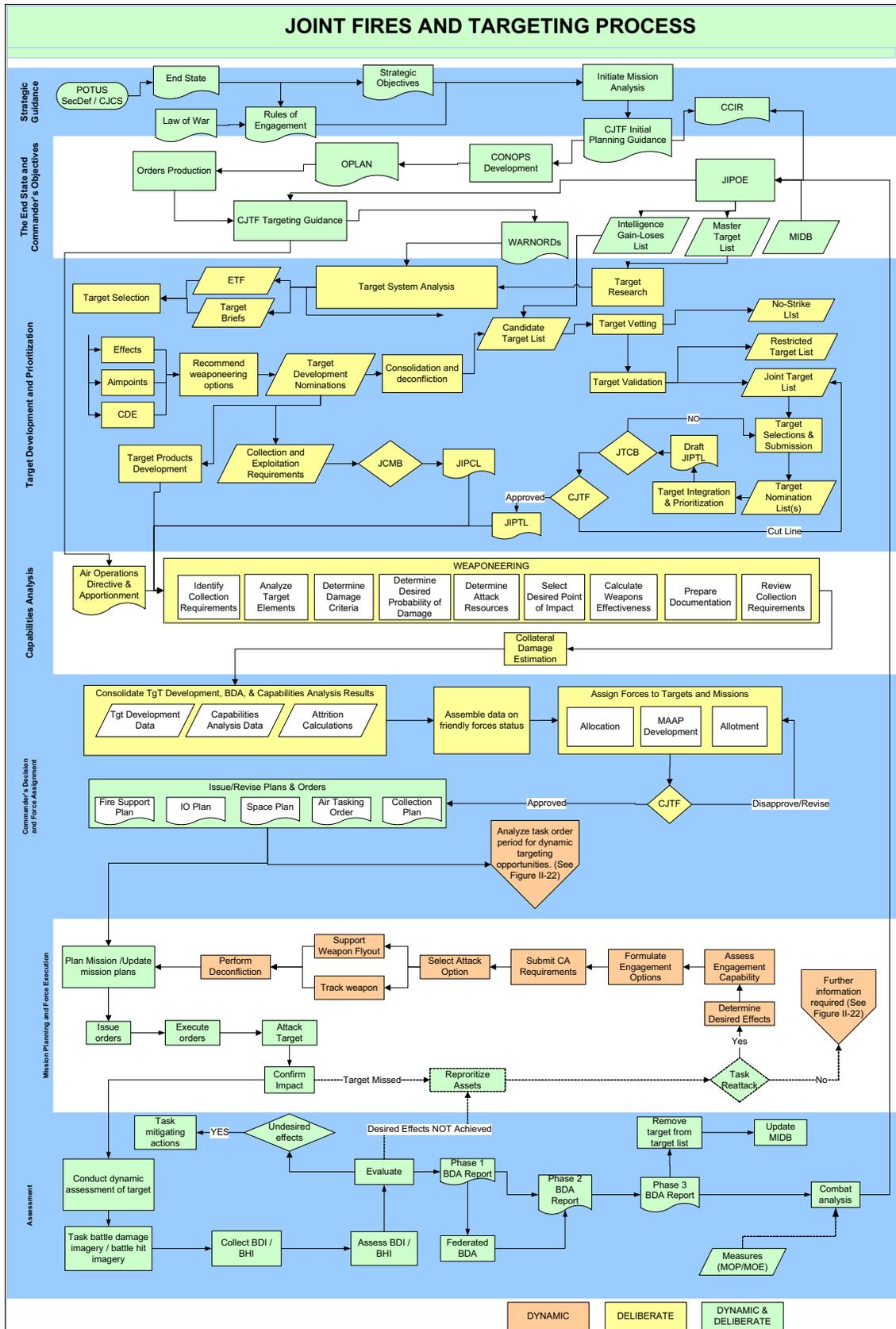


Figure III-5. Joint Fires and Targeting Process

## 7. Phase 1 – The End State and Commander’s Objectives

### a. General

(1) Understanding the military end state, CJTF’s intent, objectives, desired effects, and required tasks (developed during operational planning) provides the operational level initial framework for the targeting process. The military end state is the set of required conditions that defines achievement of the commander’s operational objectives. The commander’s operational objectives are developed during the mission analysis step of JOPP, typically derived from theater-strategic or national-level guidance. An important result of mission analysis is the commander’s intent statement and initial planning guidance (Figure III-6). Commander’s intent is a clear and concise expression of the purpose of the operation and the military end state. Commander’s initial planning guidance focuses the planning effort and should include: the mission statement; assumptions; operational limitations; a discussion of the national strategic end state; termination criteria; military objectives; the CJTF’s initial thoughts on desired and undesired effects; and address the role of agencies and multinational partners in the pending operation and any related special considerations.

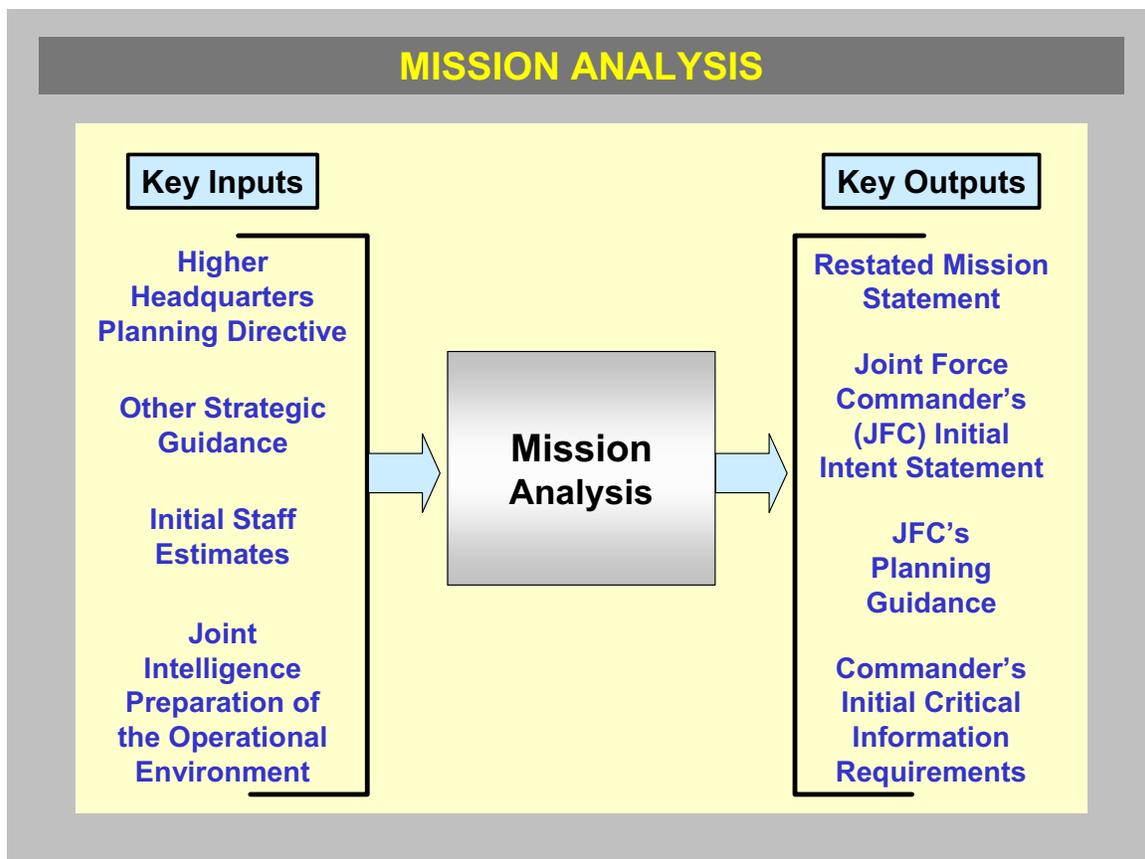


Figure III-6. Mission Analysis

(2) Understanding the CONOPS is the most important and first activity of joint targeting, because they encapsulate all the operational level guidance into a set of

outcomes relevant to the present situation and set the course for all that follows (see Figure III-7). Objectives are the basis for developing the desired effects and scope of target development, and are coordinated among strategists, planners and intelligence analysts for approval by the commander. Objectives must be clear, measurable, and achievable. Effective targeting is distinguished by the ability to generate the type and extent of effects necessary to achieve the commander's objectives. The commander provides targeting planning and execution guidance on the types of targets, priorities, restrictions, and desired effects, both lethal and nonlethal. Commander's objectives, guidance, and intent drive the subsequent phases of the targeting cycle.

(3) The second activity of this phase is the development of observable, achievable, and reasonable measures and indicators (such as MOEs and MOPs) to assess whether the effects and objectives are being or have been attained. Measures and indicators help focus target development within the joint targeting process, and are critical to enable assessment. Measures and indicators are coordinated between operations, plans, and intelligence for approval by the commander.

#### KEY TERMS

**Measure of effectiveness – A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. (JP 1-02)**

**Measure of performance – A criterion used to assess friendly actions that are tied to measuring task accomplishment. (JP 1-02)**

**Indicator – In intelligence usage, an item of information which reflects the intention or capability of an adversary to adopt or reject a course of action. (JP 1-02)**

(4) The commander must provide the direction and prioritization necessary for the effective conduct of intelligence activities, because intelligence assets are rarely sufficient to satisfy every requirement. The commander provides this focus through the articulation of the CCIRs. CCIRs are clearly spelled out in the CONOPS and detailed in the intelligence annex, which drives collection, exploitation, production, and dissemination efforts. Integrating timely and relevant intelligence into the targeting effort assists the JTCCB in developing recommended CJTF targeting guidance. The pivotal role played by this guidance in the targeting process requires operations and staff members to continually monitor current intelligence for changes and adjust accordingly.

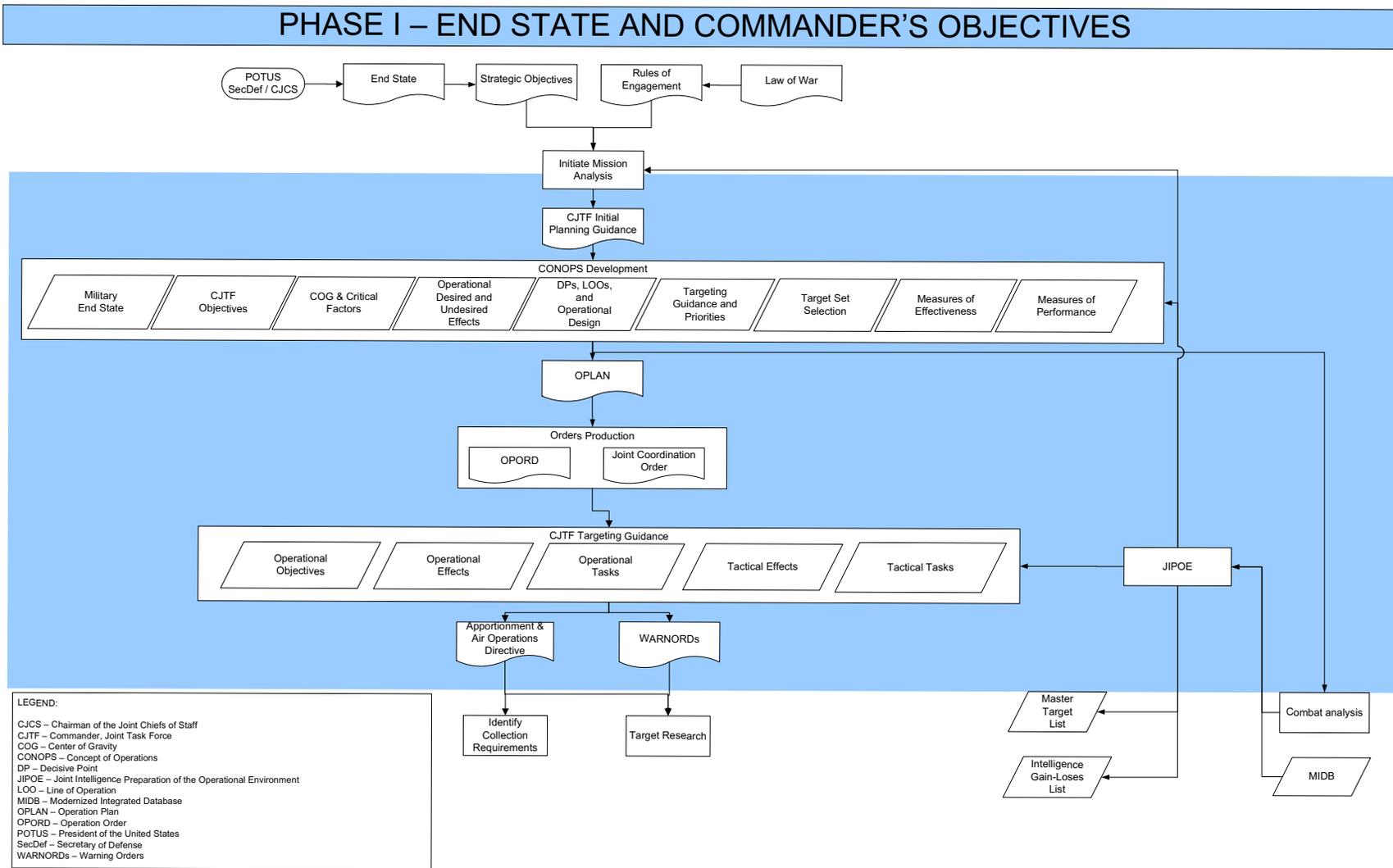


Figure III-7. Phase 1 – End State and Commander’s Objectives

**b. Joint Intelligence Preparation of the Operational Environment**

(1) JIPOE is a systematic approach used by intelligence personnel to analyze the adversary and other relevant aspects of the operational environment. The JIPOE process is used to define the operational environment, describe the impact of the operational environment on adversary and friendly COAs, evaluate the capabilities of adversary forces operating in the operational environment, and determine and describe potential adversary COAs and civilian activities that might impact military operations.

(2) Analysts use the JIPOE process to analyze, correlate, and fuse information pertaining to all relevant aspects of the operational environment, to include the air, land, maritime and space domains, the information environment, and the adversary political, military, economic, social, information, infrastructure (PMESII) and other systems. The process can be applied to the full range of joint military operations (to include civil considerations) and to each level of war.

(3) As part of the JIPOE process, the joint task force J-2 manages the analysis and development of products that provide a systems understanding of the adversary, and other relevant aspects of the operational environment. This analysis identifies a number of nodes — specific physical, functional, or behavioral entities within each system. Nodes can include people, facilities, individual systems, forces, information, and other components of the system. JIPOE analysts also identify links — the behavioral, physical, or functional relationship between nodes. The identification of links and nodes and subsequent analysis provide the foundation for developing a systems perspective of the operational environment.

(4) JIPOE analysts should assess the importance and vulnerabilities of all operationally relevant nodes and all primary and alternative links to those nodes. This is accomplished by combining an analysis of the constraints imposed by the operational environment with an evaluation of the adversary's preferred method or means of conducting a specific type of operation or activity (e.g., attack, defense, proliferation, WMD production, financing terrorist cells). The resulting product may take the form of a three dimensional situation template or model that identifies all the nodes and links associated with individual COAs or options available to the adversary within a specific category of activity. This analysis includes the identification of adversary COGs and decisive points for action to influence or change adversary system behavior and also provides the means by which intelligence personnel develop specific indicators of future adversary activity and COAs.

(5) The JIPOE is an iterative process that is particularly valuable in monitoring and identifying changes in adversary systems, capabilities, and other aspects of the operational environment. JIPOE also supports the assessment process by providing a systems perspective that encompasses adversary and neutral systems (PMESII and others). The combination of JIPOE and assessment helps to create a holistic perspective that the CJTF and staff can use to formulate multiple LOO and develop the CONOPS crucial to initiating the targeting cycle. JIPOE is facilitated by a networked, collaborative

environment that leverages the expertise resident in the interagency, multinational partners, and other appropriate centers of excellence.

### **c. Risk Management**

(1) Risk is the probability and severity of loss linked to hazards. Risk management is used to mitigate threats to the forces. Risk management is a process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits.

(2) The commander's intent may include the commander's assessment of the adversary commander's intent and an assessment of where and how much risk is acceptable during the operation. During COA development, the commander and staff continue risk assessment, focusing on identifying and assessing hazards to mission accomplishment. The selected COA should reduce risk to the force and mission to an acceptable level.

(3) When planning the application of forces and capabilities, the CJTF should not be completely constrained by the strategic plan's force apportionment if additional resources are justifiable and no other COA within the allocation reasonably exists. The commander identifies and resolves shortfalls with a risk assessment as a part of the force planning. This includes a list of the specific hazards that the joint force may encounter during the mission and a list of risk mitigation measures. The additional capability requirements will be coordinated with the joint staff through the development process. Risk assessments will include results using both allocated capabilities and additional capabilities.

(4) Where direct attacks against adversary COGs mean attacking an opponent's strength, CJTFs must weigh the risk appropriately to determine if friendly forces possess the power to attack with acceptable risk. In the event that a direct attack is not a reasonable solution, CJTFs should seek an indirect approach until conditions are established that permit successful direct attacks. The effect of properly planned IO is to provide the commander with a force multiplier that can potentially reduce risk and enhance success.

(5) Acceptable risk level can be presented in a risk table (Table III-1). This table may also include guidance on who can approve tasking missions with high to extreme risks. The contents of this table should come from discussions between the CJTF and the JFACC, by signing the air operations directive (AOD) the JFACC is approving the level of acceptable risks as described in this table.

### **d. Centers of Gravity Identification**

(1) Using the systems perspective of the operational environment aids COG identification and analysis by mapping the nodes and links in each adversary system. A COG is defined as the source of power that provides moral or physical strength, freedom

of action, or will to act. The COG will typically be well defended; therefore, the indirect approach will need to focus on the critical capabilities, critical requirements, and critical vulnerabilities of that COG.

RISK TABLE		
Risk Level	Definition	Clarification
LOW	Losses only at expected training or peacetime attrition rates.	Force survival high priority.
MEDIUM	Losses expected at historical combat rates. Accept neutral or disadvantageous engagements; can withdraw to prevent heavy losses.	Whenever possible, provide SEAD support to operations in known SAM envelopes and position recovery forces at FOBs.
HIGH	Accept losses to achieve objective; Preserve future capability, if able.	Operations in known SAM envelopes without SEAD support. PR missions and recovery forces at FOL/FARRP.
EXTREME	Losses may result in complete force annihilation. Accept any losses necessary to accomplish mission.	Defense against WMD; where consequences of failure unacceptable.
<b>Legend</b>		
FARRP	forward area refueling and rearming point	SAM surface-to-air missile
FOB	forward operating base	SEAD suppression of enemy air defenses
FOL	forward operating location	WMD weapon of mass destruction
PR	personnel recovery	

**Table III-1. Risk Table**

(a) Critical capabilities are those that are considered crucial enablers for a COG to function as such, and are essential to the accomplishment of the adversary’s estimated objective(s).

(b) Critical requirements are the conditions, resources, and means that enable a critical capability to become fully operational.

(c) Critical vulnerabilities are those aspects or components of critical requirements that are deficient, or vulnerable to direct or indirect attack in a manner achieving decisive or significant results.

(d) Collectively, the terms above are referred to as critical factors.

(2) Political considerations, military risk, the LOAC, and ROE will influence the ways and means of attacks on the critical vulnerabilities. Further, the identification and use of decisive points, LOO, and other operational design elements allows the CJTF and staff to consider a broader set of fires options that focus limited resources to create the desired effects in support of the CJTF’s objectives.

**e. Operational and Targeting Objectives**

(1) An objective is the clearly defined, decisive, and attainable goal toward which every military operation should be directed. Because objectives are essential to unified action, the CJTF will identify one or more operational-level objective during the JOPP and operational design. These will not be physical objectives (e.g., a definite tactical feature, the destruction of an enemy force without regard to terrain features), although occasionally they may overlap. Targeting objectives, in contrast, are typically physical, unless dealing in the non-physical environments of cyberspace or IO. **Targeting objectives must have the following characteristics:**

(a) **Observable.** The targeting objective must strive for some visible change in an enemy's behavior. For example, "Destroy the (XXX Corps) if it moves out of its assembly area to eliminate its exploitation potential." From this objective it is clear that the CJTF intends to contain the enemy unit to a particular location for a period of time.

(b) **Quantifiable.** The change in enemy behavior must be related to some quantifiable end. Specific levels of expected results must be identified, i.e., the percentage of destruction (the effect) created by strikes on a target. For example, "Destroy coastal mine storage sites capable of being employed in the Gulf of Jacksonville." It is very easy to quantify the relative success of this targeting objective through various collection assets available once the strikes are completed.

(c) **Achievable.** The assets and time available must be sufficient to accomplish the targeting objective—there must be room for a solution. Further, a targeting objective should not be defined in such a way that it requires the attack of a specific target system or creation of a tactical effect that also prohibits fulfilling the objective. For example, "Reduce enemy capacity to refine crude petroleum by 50 percent, for a period of one year, without endangering civilian industrial facilities." Obviously, oil refineries are considered to be part of the civilian infrastructure, and it is not possible to significantly affect oil-refining capacity without attacking refineries, unless an indirect node and link can be identified.

(2) The CJTF's operational objectives, along with the military end state, provide foundation for developing the CJTF's targeting guidance and priorities, and establish the fundamental criteria for mission success. These operational-level objectives are used to determine operational-level effects, which are then used, along with other operational design elements, to develop the CJTF's targeting guidance and priorities, establish restrictions for the employment of forces, and develop operational-level tasks.

(3) The operational-level tasks are specified in the OPLAN as tasks to subordinates. These specified tasks are analyzed by the subordinate commander/staff as part of their mission analysis and begins their planning process. This planning process develops the tactical objectives, effects, tasks and provides criteria to link tactical-level tasks to the operational-level tasks and effects that support the operational-level objectives. Because of the fundamental role of the CJTF's objectives in the targeting process, targeting personnel must fully understand them.

(4) While a pre-developed extensive target list will often exist in the form of the modernized integrated database (MIDB), targeting (prioritizing targets and matching the appropriate response to them) can not be performed without an understanding of the CONOPS, targeting guidance, objectives, and effects. This is often the least understood aspect of the targeting process. Specific targeting objectives are derived from CJTF's operational-level objectives, effects and tasks, JOPP results, and operational design. An example of an operational task to subordinates might be, "Gain and maintain freedom of navigation east of the 76th parallel." A fires objective to support the operational task might be, "Neutralize coastal defense cruise missile sites vicinity Onslow beach." The targeting process then seeks to achieve the desired tactical effect (i.e., neutralize) through fires. Considering both lethal and nonlethal effects in targeting planning is required to develop a truly integrated and comprehensive range of targeting options that support the operational tasks, effects and objectives. **To readily measure progress and effectiveness, a targeting objective must be observable, quantifiable, and achievable.** In the example above, the MOE could be that coastal defense cruise missile sites are unable to engage friendly forces.

(5) Development of targeting objectives must consider the following questions:

(a) **Whose behavior do we want to modify?** Identify the specific people, groups, or organizations whose behavior we wish to alter. For example, do we wish to modify the behavior of the political leader, military forces, the civilian population, or a combination of these three?

(b) **What do we want make them do?** Identify the behavior to be affected, changed, or modified.

(c) **How much (to what degree) do we want to affect enemy activity?** State the criteria, using metrics which can be used to assess progress. Assessment metrics should be relevant, measurable, responsive, and resourced so there is no false impression of task or objective accomplishment. Both MOPs and MOEs can be quantitative or qualitative in nature, but meaningful quantitative measures are preferred because they may be less susceptible to subjective interpretation. For example, reduction in enemy activity rates is typically a nonlinear curve that flattens out as it progresses toward a high probability of affecting overall enemy capability. Therefore, simply measuring enemy activity becomes less useful over time, because it is almost impossible to eliminate all enemy activity. Utilizing consistent assessment metrics at all levels of planning can help assessment analysts more quickly and accurately determine progress.

(d) **What target effects do we want to create?** There is a wide variety of means at the disposal of the CJTF, both lethal and nonlethal. However, the systems available and the situation may limit the CJTF's options to create a desired targeting effect.

(e) **When do we want to create the target effect and how long do we want it to last?** Five principal timing factors must be considered as follows:

**1. Timing of the Effect.** Determining the optimum time to create the lethal or nonlethal effect is critical. Timing is particularly important in missions against certain categories of targets where activity and productivity vary significantly over time, such as barracks, supply depots, airfields, and ports. For example, an attack against an empty barracks or a supply depot, just after the supplies were moved out, would accomplish little. Likewise, operational, environmental, or survivability factors may dictate a time on target (TOT). For example, there may be a case where enemy defenses may be more easily penetrated during cover of darkness and a TOT of sunrise would aid in target identification.

**2. Synchronization of the Attack(s).**

**3. Critical Time” Parameters.** These parameters are time-sensitive tasks or activities that must be effectively and efficiently performed by the enemy for his plans to succeed. To target the enemy effectively, "critical time" periods must be determined.

**4. The time from creation of lethal or nonlethal effect until its impact is felt by the enemy.** Attacking enemy supplies stored near the battle lines will have a more immediate effect on the battle than striking or attacking supplies stored in rear area warehouses or striking enemy factories. If the effects of friendly attacks need to be felt immediately, different targets may have to be selected than those selected if an immediate impact on the enemy is not required. Attempts to have an immediate impact may delay the achievement of longer-range goals. Such a trade-off must be considered in establishing the timing criteria.

**5. Recuperation or Reconstitution Time.** The neutralization period will influence the type, amount and frequency of force to be used. Recuperation time should also be considered when formulating CA criteria.

**(f) Where do we need to create the effect to best impact the adversary activity?** The specific location (e.g., “nation-wide,” “the eastern sector,” “xxx city”) to be targeted should be stated in a targeting objective.

**(g) Why do we want to create a given effect on the target?** Unfortunately, the “why” frequently is not well thought out, is poorly stated, or may be misunderstood. Not understanding “why” may result in analysis and/or recommendations that, at best, does not create the desired effect or, at worst, creates an undesired effect with catastrophic consequences.

**(h) How much risk will be required to achieve the targeting objective and is it worth the risk?** Assuming a proposed targeting objective is achievable, an estimate of the associated risk (attrition of equipment and personnel, time, resources, manpower, etc.) and the potential benefit must be weighed carefully.

(6) The criteria against which progress and success will be measured must be clearly stated. Criteria must use quantifiable terms, be realistic and identifiable.

**f. Guidance**

(1) Guidance begins broadly at the national level and becomes more narrow and specific as successive subordinate commanders issue guidance to devise their plans to employ forces. Some sources of higher-level guidance for the CJTF and staff, pertinent to targeting, are the LOAC, ROE, executive orders/directives, existing OPLAN, OPORD, warning order, etc.

(2) Targeting guidance is developed by the JTCB for CJTF approval. This guidance will establish how air- and surface-delivered fires will be used to support the CONOPS. It likely will delineate target set priorities, target selection methods, TST guidance, munitions usage, and restrictions. Some considerations for developing the targeting guidance may include the need to protect key infrastructure, collateral damage IO implications, higher HQ guidance, ROE, host-nation restrictions.

**g. Key Targeting Planning Elements.** The mission statement, CJTF's intent, and the CONOPS are key plan elements that result from mission analysis, operational design, and the JOPP. Joint targeting ultimately must fully support these key JOPP elements.

(1) The mission statement should be a short sentence or paragraph that describes the organization's essential task (or tasks) and purpose — a clear statement of the action to be taken and the reason for doing so.

(2) The CJTF's intent is a concise expression of the purpose of the operation and the desired end state. It may also include the CJTF's assessment of the adversary commander's intent and an assessment of where and how much risk is acceptable during the operation.

(3) The CONOPS describes how the actions of the joint force components and supporting organizations will be integrated, synchronized, and phased to accomplish the mission, including potential branches and sequels.

**h. Strategy Identification.** The OPLAN communicates the CJTF's strategy. While designed to maximize the efficient use of joint force, the plan must balance efficiency against competing factors such as political restraints, ROE, and higher level guidance. A CJTF's plan is not developed in a vacuum, but each component's planning efforts are closely integrated to support the overall strategy.

**i. Targeting Based on Desired Effect**

(1) The desired effects to be created from joint fires are typically stated as descriptive action terms such as damage, disrupt, delay, divert, destroy, deny, influence, limit, neutralize, suppress, enhance or protect (Table III-2). For example, an operational

level objective could be to “render the enemy offensive counter-air capability ineffective for xxx days.” One of the desired operational level effects to support that objective could be to “limit key enemy airfield operations to rotary wing and light civil aviation only for xxx days.” The resulting tactical level targeting objective could be “limit airfield xxx operational capability to rotary wing light civil aviation only for xxx days.” One desired tactical level targeting effect could be to “degrade runway availability at airfield xxx to 3,000 foot sections with no concrete taxiway access.” During this process, planners determine what specific targets or target sets must be detected and attacked while specifying the desired effects for each. The desired effects, asset capability, and environment are some of the criteria used, among other considerations, to determine the targeting ways and means.

TARGETING EFFECTS DEFINITIONS	
EFFECT	DEFINITION
Attrit	To destroy or kill (troops, for example) by use of firepower
Compel	1) To force, drive or constrain 2) To make necessary
Convince	1) To overcome by argument 2) To bring to belief, consent, or a course of action (COA)
Damage	To reduce the soundness, effectiveness, or perfection of
Deceive	To cause to believe what is not true.
Degrade	1) Damage done to the function is permanent, but only portions of the function were affected; that is, the function still operates, but not fully. 2) A function's operation is permanently impaired, but the damage does not extend to all facets of the function's operation.
Deny	1) To hinder the enemy the use of space, personnel, or facilities. It may include destruction, removal, contamination, or erection of obstructions. 2) Damage done to the function is only temporary, but all aspects of the function were affected. 3) A function's operation is impaired over the short term, but the damage extends to all facets of the function's operation.
Delay (operation)	1) To slow down the arrival of a unit on the “battlefield.” 2) An operation in which a force under pressure trades space for time by slowing down the enemy's momentum and inflicting maximum damage on the enemy without, in principle, becoming decisively engaged.
Destroy	1) To damage the condition of the target so that it cannot function as intended nor be restored to a usable condition. 2) Damage done to the function is permanent, and all aspects of the function have been affected. 3) A function's operation is permanently impaired, and the damage extends to all facets of the function's operation.
Diminish	1) To make less or cause to appear less. 2) To reduce the effectiveness of an activity. This is similar to degrade without the kinetic overtones.
Disrupt	1) To break apart, disturb, or interrupt a function. 2) Damage done to the function is temporary, and only portions of the function were affected. 3) A function's operation is impaired over the short term and the damage does not extend to all facets of the function's operation.

**Table III-2. Targeting Effects Definitions**

TARGETING EFFECTS DEFINITIONS (CONT.)	
EFFECT	DEFINITION
Divert	To restrict the enemy's capabilities to pursue a particular COA.
Enhance	To increase or make greater the capabilities of a force or a people.
Exploit	To gather information that will enable opposition ability to conduct operations to induce other Effects.
Expose	1) To make known or cause to be visible to public view. 2) To make visible, to reveal something undesirable or injurious.
Harass	To disturb the rest of enemy troops, curtail their movement and lower morale by threat of loss.
Influence	1) Selected projection or distortion of the truth to persuade the opposition to act in a manner detrimental to mission accomplishment while benefiting accomplishment of friendly objectives. 2) To cause a change in the character, thought, or action of a particular entity.
Inform	To impart information or knowledge.
Limit	To reduce the options or COAs available to the enemy commander.
Mislead	To create a false perception that leads the opposition to act in a manner detrimental to mission accomplishment while benefiting accomplishment of friendly objectives.
(Negate/) Neutralize	1) To render an enemy weapon system and maneuver units ineffective or unusable for a specific period of time. 2) To render ineffective, invalid or unable to perform a particular task or function. 3) To counteract the activity or effect of.
Prevent	1) To deprive of hope or power of acting or succeeding. 2) To keep from happening, to avert.
Protect/ Safeguard	1) To cover or shield from exposure, damage, or destruction. 2) To keep from harm, attack, injury or exploitation. 3) To maintain the status or integrity of.
Shape	1) To determine or direct the course of events. 2) To modify behavior by rewarding changes those tend toward a desired response. 3) To cause to conform to a particular form or pattern.
Suppress (ion)	1) Involves temporary or transient degradation of an actual or suspected enemy weapons system for the purpose of degrading its performance below the level needed to fulfill its mission objectives at a specific time for a specified duration. 2) Temporary or transient degradation by an opposing force of the performance of a weapons system below the level needed to fulfill its mission objectives.
Usurp	1) To seize and hold, as the power, position, or rights of another, by force and without right or authority 2) To take over or occupy physically, as territory or possessions.

**Table III-2. Targeting Effects Definitions (Cont.)**

(2) Examples:

(a) **Disrupt.** JFLCC targeting objectives may include “disrupt the C2 capability of the X corps’ reserve from D+xx to D+yy, to degrade their ability to displace forward and reinforce success in the main attack.”

(b) **Delay.** The CJTF may want to slow down the arrival of enemy reinforcements or exploitation forces. A component commander's targeting objective might be to "delay southward movement and arrival of enemy division xx at the main battle area for 48 hours to permit coalition corps xxx to establish an area defense."

(c) **Divert.** The CJTF may want to divert the enemy from one possible avenue of approach or mobility corridor to a less favorable one. This interrupts the enemy commander's operational tempo, forcing him from his intended COA. For example, "divert enemy division xx eastward into location yy to prevent it from linking up with its parent corps until D+xx."

(d) **Destroy.** As a targeting objective, a component commander might want to destroy a target to deny an enemy commander specific capabilities on the battlefield. For example, "destroy integrated air defense systems (IADS) threatening JFACC high value airborne assets (HVAA) NLT [not later than] D+xx to allow forward deployment."

### j. **Limitations**

(1) **Operational limitations** are actions required or prohibited by higher authority and other restrictions that limit the commander's freedom of action, such as diplomatic agreements, political and economic conditions in affected countries, and host-nation issues. A **constraint** is a requirement placed on the command by a higher command that **dictates an action**, thus restricting freedom of action. For example, General Eisenhower was required to liberate Paris instead of bypassing it during the 1944 campaign in France. A **restraint** is a requirement placed on the command by a higher command that **prohibits an action**, thus restricting freedom of action. For example, General MacArthur was prohibited from striking Chinese targets north of the Yalu River during the Korean War. Many operational limitations are **commonly expressed as ROE**.

(2) Commanders must examine the operational limitations imposed on them, understand their impacts, and develop options that minimize these impacts to promote maximum freedom of action during execution. Intelligence personnel assist in developing the NSL and the RTL based on factors such as LOAC, ROE, and commander's guidance.

### k. **Assessment Metrics**

(1) The staff should develop metrics to determine if operations are properly linked to the CJTF's overall strategy and the larger hierarchy of operational and national objectives. These metrics evaluate the results achieved during joint operations. Metrics can either be objective (using sensors or personnel to directly observe damage inflicted) or subjective (using indirect means to ascertain results), depending on the metric applied to either the objective or task. Both qualitative and quantitative metrics should be used to avoid unsound or distorted results. Metrics can either be inductive (directly observing the operational environment and building situational awareness cumulatively) or deductive

(extrapolated from what was previously known of the adversary and operational environment). Success is measured by indications that the effects created are influencing enemy, friendly, or neutral activity in desired ways among various target systems.

(2) Targeting is an iterative process where the results of assessment feedback into the next planning phase. Although assessment is the final phase of the targeting cycle, assessment measures and indicators are selected early in planning.

(3) **A measure is a data point** that depicts the degree to which an entity possesses an attribute—expressed by a unit of measurement. In an assessment, commanders are most interested in patterns: the changes to attributes of a system, node, link, task or action. **A metric is two or more measures** and shows a trend (Figure III-8). It reveals whether an attribute is more prevalent or less prevalent at various times. Metrics are specifically designed to show change over time and are most applicable to assessing the effects on systems, nodes and links. **An indicator is a metric that can be compared to a standard or threshold.** It shows a trend relative to a predetermined standard. These thresholds can be minimums, maximums, or both. Unlike measures and metrics, indicators give commanders a sense of whether they are making progress. But determining relevant thresholds is often not knowable until sufficient measurement has taken place to show a pattern or trend, especially when assessing human behavior. Both MOEs and MOPs can be qualitative or quantitative measurements. Whenever possible, quantitative measurements are preferred, because they are less susceptible to staff interpretation—subjective judgment. They demand more rigor (or proof) and can be replicated over time even if the analysts and the users – the commanders – change. For these quantitative measures to have maximum utility, however, they should have three common characteristics: each indicator must consist of at least one measure, metric, and a standard (or threshold).

(4) The assessment process uses MOPs to evaluate task performance at all levels of war, and MOEs to determine progress of operations toward creating effects or achieving objectives. Many indicators are developed through the JIPOE process and are observable through geospatial intelligence (GEOINT), imagery intelligence (IMINT), SIGINT, human intelligence (HUMINT), measurement and signature intelligence (MASINT), open source intelligence (OSINT), friendly force mission reports (MISREPs), and other means. MISREPs are used in most aspects of CA, since they typically offer specific, quantitative data or a direct observation of an event to determine accomplishment of tactical tasks.

(5) When selecting assessment measures, planners must identify the essential elements of information requiring collection. If special ISR or other intelligence resources are needed, guidance must be provided in the collection plan and the requirement must be added to the joint integrated prioritized collection list (JIPCL). Measures and indicators will be determined during mission analysis and should be provided in the CJTF's initial planning guidance; however, they must be refined or amended during staff estimates, COA wargaming, and as the tactical situation or the status of the target changes. Selection and refinement of assessment measures is an iterative Process.

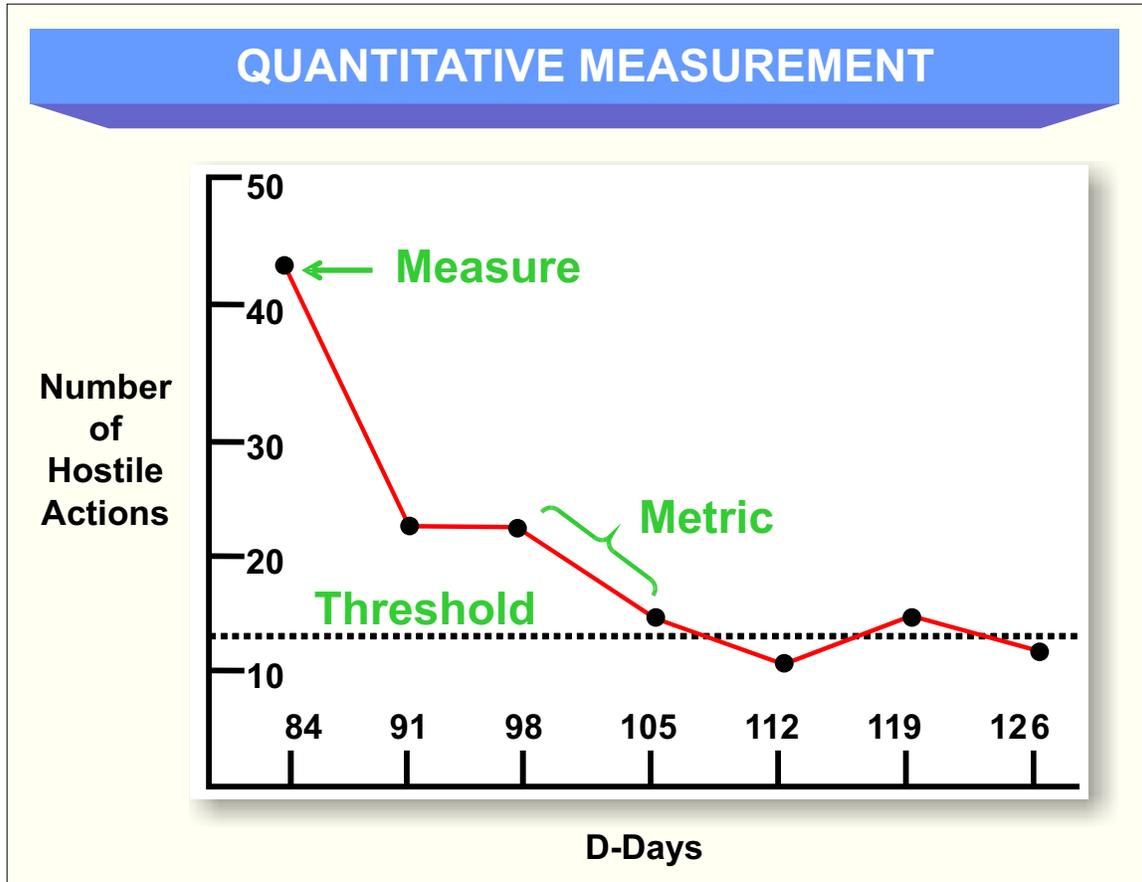


Figure III-8. Quantitative Measurement

(6) The amount of quantitative data available to assess achievement of objectives is occasionally limited, in which case the analysis must be conducted using qualitative, sometimes subjective measures. Qualitative means primarily that judgment must be made in the absence of meaningful quantitative measures (Table III-3).

(7) Military personnel tend to be less comfortable with qualitative than with more quantitative measures, because they are generally trained to regard their profession as more of a science than an art. Pure quantitative data, involved in quantitative measures, however, can deceive and can, through their very seeming certainty, take on a life of their own, leading to actions that do not contribute to accomplishing objectives or the end state. For example, during Operation DESERT STORM, strategic attack missions took down key nodes to deny power within the Iraqi electrical system. This effect was accomplished with little destruction of Iraqi civilian electrical power infrastructure. Nonetheless, many power generator plants were destroyed later in the operation, in part because traditional quantitative measurements of electrical capacity showed that the Iraqis still had substantial usable resources. This hampered civilian recovery following the operation. This example also points out the importance of integrating assessment early into employment planning and target development efforts.

NOTIONAL EXAMPLE OF QUALITATIVE ASSESSMENT MEASURES					
STABLE REGIME			REGIME COLLAPSE		
LEADERSHIP	Coherent Message	Increased Rhetoric	Calls for Sacrifice	Calling for Citizens to Die for the Cause	
	Presence	Few Leaders Visible	Reliant on Lies	Leadership Disappearing	New Leaders Emerging
	Governance				
	Command & Control	Some Degraded Command & Control			Regime Command, Control & Communication Destroyed
SECURITY AFFAIRS	Stable Control Over Population				
	Military Control	Influence and Control Degraded	More Visible Control Attempts	Increase of Security Measures and Retribution	Fear & Power Base Destroyed
	Security Apparatus Functioning				
MILITARY	Volunteer / Special Forces	Regular Army Capitulating	Regular Army Capitulating	Volunteer / Special Forces Collapsing	Armed Forces Not Resisting
	Conscript / Regular Army				
POPULATION	Capital City	Uncertain Support for US	Accept US Actions	Civil Disobedience	Active Support of US Actions
	Supportive Area				
	Ambivalent Area	No Interference with US Actions	Covert Support for US Actions	Overt Support for US Actions	

**Table III-3. Notional Example of Qualitative Assessment Measures**

(8) The assessment process is explained in greater detail in the Chapter II, “Command and Staff Responsibilities and Functions,” paragraph 12 “Phase 6 – Assessment.”

## 8. Phase 2 – Target Development and Prioritization

### a. Overview

(1) Target development entails the systematic examination of potential target systems (their components, individual targets, and target elements) to determine the necessary type and duration of action that must be exerted on each target to create the required effect(s) consistent with the commander’s objectives. IO target development also follows this same general methodology identifying target systems, components, and their critical elements; but uses a broader scope that accounts for information systems and psychological processes. Once potential target systems are matched with the commander’s desired effects and objectives, the next step is to conduct a TSA. The TSA identifies critical components or nodes of a target system, which are generally used as a baseline for target selection.

(2) Target vetting and validation determine whether a target remains a viable element of the target system, and whether it is a lawful target under the LOAC and ROE. In this process, the potential benefit of striking a target is weighed against the potential costs.

(3) Once potential targets are identified, vetted, and validated, they are nominated, through the proper channels, for approval. Targets are prioritized based on the CJTF's guidance and intent.

(4) The target development process (Figure III-9) will generate several products and lists as it progresses, but the end product directly supports the succeeding phases of the joint targeting cycle.

(5) **This phase includes four key steps: target research, development, nomination, and prioritization.** Target development generally results in four products: target development nominations (TDNs), target folders, collection and exploitation requirements, and target briefs. Detailed analysis should characterize the function, criticality, and vulnerabilities of each potential target, linking targets back to targeting effects and objectives. One of the keys to successful target development is to understand the relationships between and within target systems in order to uncover capabilities, requirements, and vulnerabilities. Analysts from across the joint force simultaneously conduct analysis of target systems and submit TDNs to the CJTF targeting staff for further development, vetting, and validation.

### b. Target Research

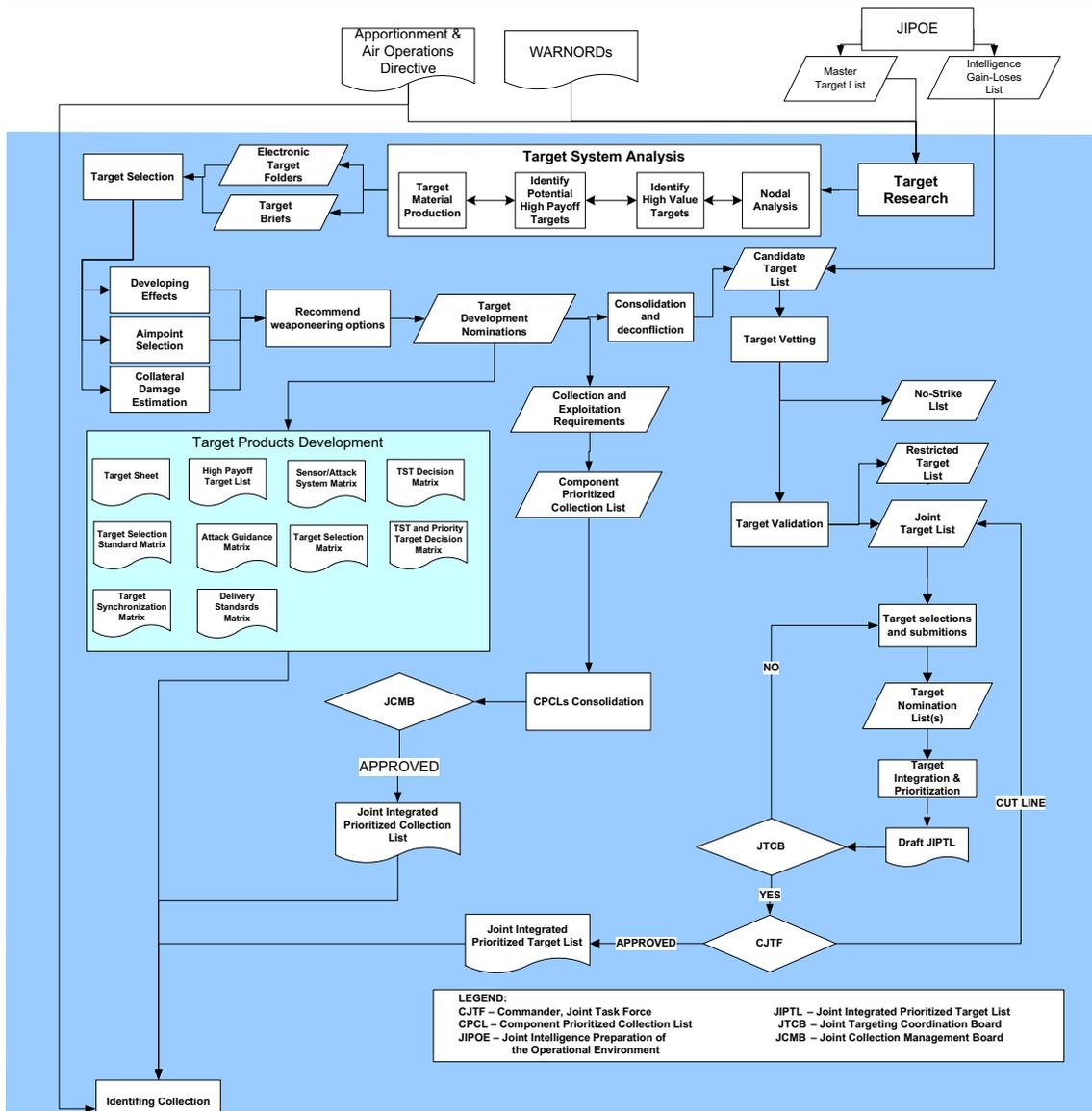
(1) Targets for consideration come from a variety of sources. Many are developed pre-crisis and confirmed during planning, such as those from the theater target baseline MIDB developed and maintained in peacetime by the responsible geographic combatant command J-2. The Defense Intelligence Agency (DIA) maintains a MIDB containing global targeting information. From this global MIDB a more localized MIDB is used for a specific theater of operations. The MIDB contains basic encyclopedia (BE) numbers and unit identifications (IDs) pertaining to known targets (location specific). At the theater level, multiple predefined effects-based solutions may be associated with these targets to include desired mean points of impact (DMPs) and weaponeering methods. This allows planners the flexibility to quickly choose from a range of desired effects with various weaponeering options.

(2) Target research within the tasking cycle often entails studying previously unidentified or un-located targets. The JAOC IO element may also be crucial to target research, especially in helping understand communications, intelligence systems, and human factors in the operational environment.

### c. Target Development

(1) Target development is time and resource intensive. The supported CCDR may choose to federate portions of the workload via reachback with experts outside the theater. This can provide combatant command staffs with access to specialized technical or analytical expertise, lighten the workload on theater planning staffs throughout all phases of the JOPES process, provide for an independent technical review of targeting options, reaffirm nomination rationales, and validate fundamental intelligence assessments.

## Phase 2 - Target Development and Prioritization



**Figure III-9. Phase 2 – Target Development and Prioritization**

(2) Under the Defense Intelligence Analysis Program, there are designated responsible analytic centers (RACs) that are the experts for production and maintenance of analysis relating to functional and topical capabilities and activities that typically concern planners, such as counterterrorism, WMD, infrastructure capabilities and orders of battle (Table III-4). RACs conducting target development should also be responsible for performing assessments on the same capabilities and targets.

(3) Federation and collaboration are excellent methods of leveraging target development expertise and planning support. Crisis intelligence federation provides valuable preplanned and prearranged intelligence support options which can be rapidly

initiated at the supported CCDR's discretion. Collaborative technologies can help facilitate federated target development, but an established process governing methods and timelines for tasking and deliverables must be established and utilized to ensure maximum efficiency

*For more information of intelligence federation, see Joint Staff J-2, Crisis Intelligence Federation Concept of Operations (CONOPS), and JP 2-01, Joint and National Intelligence Support to Military Operations.*

(4) The JIPOE process produces an extensive database that targeting specialists use to prepare detailed analyses describing how attacking individual targets affect target systems. The intelligence inputs required for this analysis may include: All-source intelligence collection (IMINT, SIGINT, MASINT); geospatial information and services (GI&S) maps, charts, and mensurated points; and target materials including TSA products and targeting graphics.

### (5) Target System Analysis

(a) TSA is an open-ended analytic process utilizing all-source fused intelligence to choose potential targets that, when engaged, are most likely to create desired effects that contribute to achieving the commander's objectives. It proceeds from the principle that all physical and virtual assets of an enemy function as components of systems, and that these systems mutually support one another to provide capabilities that enable enemy behaviors. The foundation of TSA is nodal analysis, focused on the physical and functional relationships within systems and among potential targets. The purpose of this analytical approach is to estimate the outcomes of given actions, which may support choosing a COA during planning, as well as choosing individual actions during execution. Typical products include nodal system analysis studies, generally used as a baseline for target selection. In IO planning, for example, TSA uses an expanded methodology to examine all aspects of information flow to expose the interrelationships between components and their criticality to the system's function.

(b) TSA is not confined to a particular period of planning, but is continuous throughout. The products of TSA are critically linked to both the capabilities analysis and assessment phases. Desired effects to be created through target engagement, as well as aimpoints, functioning locations, and collateral effects limitations, flow from deliberations performed in TSA. These aimpoints are identified in the MIDB and combatant command target materials as joint desired points of impact (JDPIs).

(c) Assessment is critically dependent on TSA to provide the logical framework against which observed behaviors must be evaluated. Conversely, TSA is critically dependent on assessment to update the status of systems within the operational environment. Assessment also helps improve understanding of the true functional relationships among an enemy's PMESII system-of-systems.

TARGET SYSTEM ANALYSIS RESPONSIBILITIES		
Target System	Responsible Analytic Center	Collaborating Analytic Center(s)
Command, Control, Communications, Computers, and Intelligence	DIA/CCO	NSA, CIA, NASIC, JWAC, NGA, JIOWC
Weapons of Mass Destruction	DIA/CPT	DTRA, NGA, CIA
Ground Forces and Facilities	DIA/MFA & NGA	NGIC, NGA
Air Forces and Airfields	DIA/MFA & NGA	NASIC, USTRANSCOM
Integrated Air Defense Forces	NASIC	DIA/MFA, NGA
Naval Forces and Ports	DIA/MFA & USTRANSCOM	NMIC, NGA
Space Forces	NASIC	DIA, NGA
Ballistic Missile Forces	DIA/MSIC	NGA, NGIC, NASIC
Electric Power	DIA/MIO	JWAC, NGA
Petroleum Industry	DIA/MIO	JWAC, NGA
Industry	DIA/MIO	JWAC, NGA
Transportation and Lines of Communications	DIA/MIO	JWAC, NGA
Counterterrorism	DIA/JITF-CT	CIA, NGA
Counterdrug	DIA/CNT	CIA, NGA
CCO - Command and Control office	JITF-CT - Joint Intelligence Task Force Combating Terrorism	NASIC - National Air and Space Intelligence Center
CIA - Central Intelligence Agency	JIOWC - Joint Information Operations Warfare Command	NGA - National Geospatial-Intelligence Agency
CNT - Counterdrug office	JWAC – Joint Warfare Analysis Center	NGIC - National Ground Intelligence Center
CPT - Counterproliferation and Technology Office	MFA - Military Forces Analysis Office	NMIC - National Maritime Intelligence Center
DIA - Defense Intelligence Agency	MIO - Military Infrastructure Office	USTRANSCOM - United States Transportation Command
DTRA - Defense Threat Reduction Agency	MSIC - Missile and Space Intelligence Center	

**Table III-4. Target System Analysis Responsibilities**

(d) Target development always approaches adversary capabilities from a systems perspective. While a single target may be significant because of its own characteristics, the target’s real importance lies in its relationship to other targets within an operational system. A target system is most often considered as a collection of target sets (Table III-5) structured to provide a specific capability, such as an integrated air defense system (Figure III-10), Department of Defense (DOD) logistics, or banking system. A target set can be described as a group of interrelated target components within the adversary’s system, such as electric power, adversary media, or petroleum, oil and lubricants industry (Figure III-11). While target sets are intra-dependent to perform a specific function, they are also interdependent in support of adversary capabilities (e.g.,

the electric power system may provide energy to run the adversary’s railroads that are a key component of their military logistic system). Target component can be described as a group of elements (targets) that serve the same function, such as airfields, bridges, roads, radio broadcast, newspapers etc. Target development links these multiple target systems, their sets, components, and elements to reflect both their intra- and interdependency that, in aggregate, contribute to adversary capabilities.

(e) Target sets are delineated by type and do not differentiate between military and civilian installations. Civilian installations may only be targeted if they are legitimate military targets in accordance with (IAW) the LOAC. Target sets that are to be approved only for nonlethal means of attack should be annotated as such; for example, “General Public” may be subject to PSYOP.

TARGET SETS		
Target Sets	Abbreviated Title	Examples of Target Components
Communications System and Intelligence	C4I	<ul style="list-style-type: none"> <li>• Offensive air command and control headquarters and communications schools</li> <li>• Air defense headquarters</li> <li>• Telecommunications</li> <li>• Electronic Warfare</li> <li>• Space systems</li> <li>• Missile headquarters, surface-to-surface</li> <li>• National, combined and joint commands</li> <li>• Naval headquarters and staff activities</li> </ul>
Weapons of Mass Destruction	WMD	<ul style="list-style-type: none"> <li>• Atomic energy feed and moderator materials production</li> <li>• Chemical and biological production and storage</li> <li>• Atomic energy-associated facilities production and storage</li> <li>• Basic and applied nuclear research and development, general</li> </ul>
Ground Forces and Facilities	GFF	<ul style="list-style-type: none"> <li>• Military troop installations</li> <li>• Ground force material and storage depots</li> <li>• Fortifications and defense systems</li> </ul>
Air Forces and Airfields	AFA	<ul style="list-style-type: none"> <li>• Airfields (air bases, reserve fields, helicopter bases)</li> <li>• Non-communications electronic installations (radar installations, radars collocated with surface-to-air Missile [SAM] sites, air traffic control/navigation aids, meteorological radars)</li> <li>• Air logistics, general (air depots)</li> <li>• Air ammo depots (maintenance and repair bases, aircraft and component production and assembly)</li> </ul>
Air Defense	ADF	<ul style="list-style-type: none"> <li>• Missile support facilities, defensive, general</li> <li>• SAM missile sites/complexes</li> <li>• Tactical SAM sites/installations</li> <li>• SAM support facilities</li> </ul>

Table III-5. Target Sets

TARGET SETS (CONT.)		
Target Sets	Abbreviated Title	Examples of Target Components
Naval Forces and Ports	NFP	<ul style="list-style-type: none"> <li>• Mine-vulnerable areas</li> <li>• Maritime port facilities</li> <li>• Cruise missile support facilities, defensive</li> <li>• Ship-borne missile support facilities</li> <li>• Cruise surface-to-surface missile launch positions</li> <li>• Naval bases, installations, and supply depots</li> </ul>
Space Forces	SPF	<ul style="list-style-type: none"> <li>• Satellite command and control Ground Stations, Space Launch Facilities, Ground-Based Space and Missile Surveillance Radars</li> </ul>
Ballistic Missiles	MSL	<ul style="list-style-type: none"> <li>• Guided missile and space system production and assembly</li> <li>• Fixed missile facility, general</li> <li>• Fixed, surface-to-surface missile sites</li> <li>• Offensive missile support facilities</li> <li>• Medium-range surface-to-surface launch control facilities</li> <li>• Fixed positions for mobile missile launchers</li> <li>• Tactical missile troops field position</li> </ul>
Electric Power	PWR	<ul style="list-style-type: none"> <li>• Electric power generating, transmission, and control facilities</li> </ul>
Petroleum, Oil, and Lubricants Industry	POL	<ul style="list-style-type: none"> <li>• POL and related products, pipelines, and storage facilities</li> </ul>
Industry	IND	<ul style="list-style-type: none"> <li>• Basic processing and equipment production</li> <li>• End products (chiefly civilian)</li> <li>• Technical research, development and testing, non-nuclear</li> <li>• Covered storage facilities, general</li> <li>• Material (chiefly military)</li> <li>• Industrial production centers</li> <li>• Defense logistics agencies</li> </ul>
Transportation/Lines of Communication	LOC	<ul style="list-style-type: none"> <li>• Highway and railway transportation</li> <li>• Inland water transportation</li> </ul>
Military Supply and Storage	MSS	
Special Category Special Operations Counterdrug Paramilitary Terrorism	SCT	
Military Leadership	MLS	
Political Leadership	PLS	<ul style="list-style-type: none"> <li>• Government control centers</li> <li>• Government bodies, general</li> <li>• Government ministries and administrative bodies, nonmilitary, general</li> <li>• Government detention facilities, general</li> <li>• Unidentified control facility</li> <li>• Trade, commerce, and government, general defense facilities (in military use)</li> </ul>
Economic Leadership	ELS	
General Public	GEP	
Adversary Media	AME	

Table III-5. Target Sets (Cont.)

(f) Establishing intelligence requirements (IRs) is critical to the success of the entire targeting process. Targeteers must work closely with collection managers (CMs), intelligence analysts, and planners to ensure that IRs for planning, execution, and assessment requirements, and any changes that occur throughout the targeting cycle are integrated into the collection plan. This intelligence support is vital for the analysis performed in target development, as well as to prepare for future targeting during the execution of operations (e.g., to pre-task real-time ISR assets) and to support assessment.

(g) Nodal analysis is conducted to determine nodes, links, criticality, and vulnerability. A node is a tangible element of a system that can be targeted for action. A link is an element of a system that represents a behavioral, physical, or functional relationship between nodes. A critical node is an element, position, or C2 entity whose disruption or destruction immediately degrades the ability of a force to command, control, or effectively conduct combat operations. JP 5-0, *Joint Operation Planning* uses the term “key node” for broader application in a systems perspective. A key node is a node that is critical to the functioning of a system. Critical nodes are identified and prioritized utilizing a series of value measurements, derived from target value analysis (TVA), that are based on criticality and vulnerability (Table III-6).

1. **Criticality** is derived from an element’s contribution to a target component’s larger function and is a measure of the relative importance of these components within a set/system. For this reason, target development focuses on identifying critical nodes within key target components, sets, and systems to satisfy targeting objectives. There are four factors that contribute to criticality:

a. **Value** measures the component’s importance: to the adversary’s ability to conduct operations; to the friendly force’s ability to accomplish a mission or achieve an objective; and as a measure of significance to the adversary. Significance is the degree of concern for an activity or resource in excess of the value assigned during its normal performance. The value measurement may reflect PMESII or geographic significance. Psychological significance assigned to a system reflects the thought processes of the adversary. For example, the birthplace of a political, religious, or cultural leader may increase the value assigned to a critical node.

b. **Depth** is a measure of the time required before disruption of a component’s activity affects the system output. Average depth is a time concept designed to measure the average interval between the time the production of an item begins and the time the finished product appears in use by a tactical unit. In general, computation of depth is important to measure the time available to the adversary to organize substitute consumption, alternate production, or procurement before the system suffers degradation.

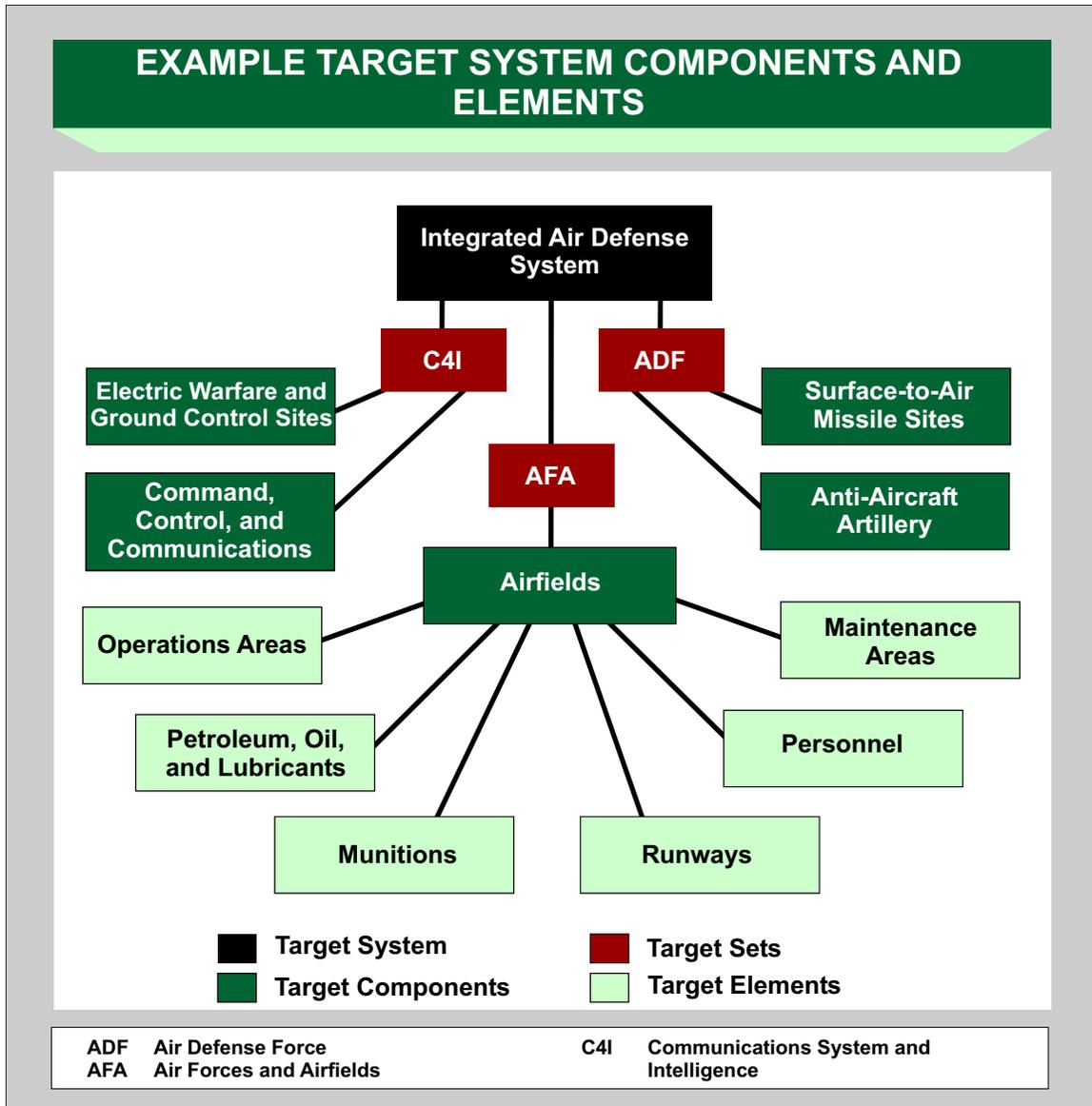


Figure III-10. Example Target System Components and Elements

c. **Recuperation** is a measurement of the time and cost required for a system to regain the ability to function after being disrupted. By assigning each type of target a reconstitution or recuperation time factor, such as days required to rebuild the facility or perform the original function again, the amount of target value restored each day can be estimated. The target analyst can then determine the optimum timing or necessity for a reattack.

d. **Capacity** (capabilities) is defined as either current or maximum output. Capabilities constitute an assessment of the function and capacity of a target. Current output may be represented by plant production based on the present labor force, economy of the country, current demand for the product, and demonstrated production over the past two or three years. Maximum output may be represented by full capacity production based upon existing equipment and continuous operation over a 24-hour day.



capacity, civilian production use, production of nonessential military items or services, and production or provision of substitute materials or services.

FACTORS IN TARGET SELECTION	
CRITICALITY	VULNERABILITY
Value Depth Recuperation Capacity	Cushion Reserves Dispersion Mobility Countermeasures Physical Characteristics

Table III-6. Factors in Target Selection

b. **Reserves** provide a quantity of stored resources the adversary may use when the normal supply of the resource is disrupted. Assessment of reserves depends upon the estimation of the system use or flow rate. The measure of reserves is the percentage of the products used versus the total products available.

c. **Dispersion** is the geographic distribution of either the components in a target set or target elements within a target complex. An installation with a large number of dispersed elements presents a more difficult targeting problem than does a tightly concentrated installation. Alternatively, dispersion may degrade the adversary’s capabilities by making his own operations more complex.

d. **Mobility** is a measure of the time required to shift a target component activity from one location to another. Mobility affects both location information perishability and friendly systems’ ability to detect, locate, identify, and strike the target element.

e. **Countermeasures** are a measure of an adversary’s ability to counter friendly systems attempt to disruptive activity of the target through active and passive means. Effective use of terrain, camouflage, emission controls, passive defenses (caves), and active defenses could negate the ability of the friendly system to exert an influence upon adversary element/component activity.

f. **Physical Characteristics** are analyzed to determine the target’s susceptibility to kinetic damage. They include such elements as weight, shape, volume, construction, and sturdiness.

3. At the target component level, different elements should be geospatially identified on the installation and documented in electronic target folders (ETFs). For example, an airfield has many elements that are required to operate effectively such as personnel, munitions, runways, operations areas, ramps/parking aprons, hangars and maintenance areas. It is also possible to assess the target’s vulnerability using this methodology. The identification of links between target elements within a component allows the targeteer to more accurately define and highlight critical elements of a target, which facilitates aimpoint selection. Target element/component/set linkages, desired effects, objectives and commander’s guidance should be taken into

account when highlighting critical aimpoints in the ETF. **ETFs built with clearly annotated critical elements will later allow for quicker JDPI prioritization and selection in the weaponeering phase since critical JDPIs are already highlighted.**

(h) **Modeling.** The next step in target development is to build an analysis model that explains the relationship between target elements and facilitates identification of HPTs. When preparing a model, the targeting analyst must estimate each target element's contribution to the overall activity to be affected or modified. After the model is developed, the analyst can then determine potential COAs for disrupting the desired component, set, or system.

(i) **Identifying High-Value and High-Payoff Targets**

1. JTF components generate HVTs and HPTs as part of their normal targeting and target nomination processes. A HVT is a target the enemy commander requires for the successful completion of the mission. The loss of HVTs would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. The high-value target list should describe the relative worth of each target, which will vary under specific situations and over the course of different COAs.

2. The list should then be forwarded for further target development or target nomination. An HPT is a target whose loss to the enemy will significantly contribute to the success of the friendly COA. HPTs are those HVTs that must be acquired and successfully attacked for the success of the friendly commander's mission. Component-critical targets are specific examples of HPTs.

3. Identification of HPTs continues throughout execution and provides focus for JTF target development and prioritization. Targets or target types identified as HPTs are included in operations directives and guidance on strike and assessment priorities. The high-payoff target list (HPTL) is a prioritized list of HPTs by phase of the joint operation. HPTs should be specifically identified in CA products. Targeteers supporting the selection of HPTs must effectively communicate their rationale to the targets/CA team. Likewise, due to the dynamic nature of today's operational environment and numerous changes this can bring to the JIPTL, targeteers need to work closely with planners to ensure all targeting priorities are continually clarified.

(j) **Mobile Targets.** Target development of mobile targets suspected to be in a particular area, such as mobile missiles or high value individuals, can identify the need for a geospatially defined target area of interest (TAI) to help concentrate intelligence collection within the suspect area. Named area of interest (NAI) with desired points of impact (DPIs) or DMPIs can be created within the TAI to speed target execution once positive identification of the target is completed.

(k) **Information Operations Considerations for Target Development**

1. IO target development fundamentals do not differ from those of traditional target development. The traditional methodology of identifying target systems, sets, components, and their critical elements remains valid. However, widening of the JIPOE scope is required to take in information processing systems. This expansion of the traditional concept of target systems will require an increase in the quantity and fidelity of intelligence collection. Likewise, there is an additional requirement for specific technical and analytical expertise.

2. Long lead times are usually required to fulfill IO-related collection requirements. Target analysts must work to associate CNA capabilities with potential target vulnerabilities, and determine information gaps for those targets as early as possible. Furthermore, because of intense competition for scarce intelligence collection resources, stove-piped intelligence operations must be minimized and full data sharing must be required among target analysts and planners.

3. Effective TSA will discern all the dimensions of an adversary's information systems and their inter-relations. System dimensions include human factors, communications architecture, network topology, information flow and functionality, among others. Target intelligence specialists must seek to include these interrelated elements when analyzing processes/systems to identify their critical elements.

#### **(I) Target Material Production**

1. TSA products include a list of potential targets and their associated target folders. These folders contain target information, which includes validation data and approval messages along with any identified potential collateral damage concerns or collateral effects associated with the target. Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3160.01A, *Joint Methodology for Estimating Collateral Damage For Conventional Weapons: Precision, Unguided, and Cluster* (classified publication) provides specific guidance for collateral damage analysis. Target folders should be continually updated as data is collected to reflect the most recent information regarding the target's status. An independent technical review of the compiled data helps to ensure mistakes do not proliferate through the rest of the targeting cycle. DIA Instruction 3000.002, *US/Allied Targeting Analysis Program*, contains detailed requirements for ETFs. These normally include:

a. At least six elements of target identification: BE number or unit ID, functional classification code/O suffix, name, country code, coordinates with reference datum, and a significance statement.

b. Images that reflect the physical components accurately (not necessarily the most current).

c. Target materials.

d. Amplifying text (all-source to include pertinent MASINT information).

e. GI&S related data.

**(6) Target Selection**

(a) A target element is the smallest identifiable activity at a target component. Just as components are essential parts of a target set, target elements are the essential parts of a target component.

(b) The first factor to consider when selecting a target component element is the desired effect (level of damage) and the length of time the effect needs to last. With the advent of more precise munitions, it is now possible to effectively engage a whole series of smaller, functionally discrete target elements with precision-guided munitions.

(c) The second factor to consider is the potential for collateral damage and collateral effects. Target planners must take into consideration the possibility of unintended damage that is a direct result of the damage mechanism of the selected weapon or an indirect result as the target contributes to its own damage. For example, contamination can occur many miles downwind if a chemical storage facility is struck with conventional munitions. Another example would be secondary explosions from munitions kept at the target site. It is important to note that this applies to both lethal and nonlethal effects. Both factors can affect aimpoint selection.

**(7) Identification of Collection and Exploitation Requirements**

(a) To support target development and other assessments, collection and exploitation requirements must be articulated as early in the targeting process as possible. Targeting personnel submit RFIs through CMs. RFIs must clearly articulate what information is needed to complete target development. This is an iterative process continuing throughout the entire joint targeting cycle.

(b) Other types of collection requirements may involve monitoring the activity level of various installations to confirm their viability as targets, identifying other facilities within the same target set, or identifying when alternate facilities should be nominated to the JTL. These are often standing requirements for higher priority target sets and are incorporated into the CJTF's PIRs.

(c) Exploitation of TSTs requires robust ISR support. Once identified and prioritized, a comprehensive ISR plan must be implemented to effectively detect, identify, precisely locate and monitor these targets. These requirements must also be incorporated into the CJTF's PIRs.

**(8) Target Development Nomination Process**

(a) The TDN process allows JTF components to nominate target development requirements that exceed the capabilities of organic/support assets within their boundaries or for targets outside their boundaries. Analysts from across the joint force simultaneously conduct analysis of target systems within their boundaries and submit individual targets to the CJTF targeting staff as TDNs for further development, vetting, and validation. Detailed analysis should characterize the function, criticality, and vulnerabilities of each nominated target, while directly linking targets back to targeting objectives and MOEs developed during Phase 1 of the joint targeting cycle.

(b) TDNs may be submitted by components, OGAs, or multinational partners to the CJTF targeting staff for inclusion in the CJTF's CTL. The CTL subsequently drives further target development, vetting, validation, and generation of the JTL, the RTL, and possible additions to the NSL if law of war issues emerge. Target nominations contain the nominator's analysis, supporting intelligence, objectives, and desired effects.

### (9) **Limitations**

(a) **Law of Armed Conflict.** Commanders at all levels ensure their forces operate IAW the law of armed conflict (also referred to as the law of war). LOAC is international law that regulates the conduct of armed hostilities, and is binding on the United States and its individual citizens. It includes treaties and international agreements to which the United States is a party, as well as customary law. The law of war governs proper treatment of combatants, prisoners of war, and noncombatants alike in any operation across the range of military operations.

### (b) **Rules of Engagement**

1. ROE are developed by the CCDRs and Joint Staff, reviewed by the SecDef and approved by the President for promulgation and dissemination. ROE are directives issued by competent military authority that delineate the circumstances and limitations under which US forces will initiate or continue combat engagement with other forces. ROE ensure actions, especially force employment, are consistent with military objectives, domestic and international law, and national policy.

2. Joint forces operate IAW applicable ROE, conduct warfare in compliance with international laws, and fight within restraints and constraints specified by their commanders. Military objectives are justified by military necessity and achieved through appropriate and disciplined use of force. Many factors influence ROE, including national command policy, mission, operational environment, commander's intent, and international agreements regulating conduct.

3. US military ROE always recognize the inherent right of unit and individual self-defense. Properly developed ROE must be clear, tailored to the situation, reviewed for legal sufficiency, and included in training. ROE typically will vary from operation to operation and may change during an operation.

(c) A single act could cause significant military and political consequences; therefore, judicious use of force is necessary. Appropriate restraint requires the careful and disciplined balancing of the need for security, the conduct of military operations, and the national strategic end state. Many operational limitations are commonly expressed as ROE. Operational limitations may restrict or compel COA selection or may even impede implementation of the chosen COA. Commanders must examine the operational limitations imposed on them, understand their impacts, and develop options that minimize these impacts to promote maximum freedom of action during execution.

(d) During stability operations, military capability must be applied even more prudently since the support of the local population is essential for success. The actions of military personnel and units are framed by the disciplined application of force, including specific ROE. These ROE often will be more restrictive and detailed when compared to those for sustained combat operations due to national policy concerns. Moreover, these rules may change frequently during operations. Restraints on weaponry, tactics, and levels of violence characterize the environment. The use of excessive force could adversely affect efforts to gain or maintain legitimacy and impede the attainment of both short- and long-term goals. The use of nonlethal weapons should be considered to fill the gap between verbal warnings and deadly force when dealing with unarmed hostile elements and to avoid raising the level of conflict unnecessarily. The CJTF must determine early in planning what nonlethal technology is available, how well the force is trained to use it, and how the established ROE authorize its employment. This concept does not preclude the application of overwhelming force, when appropriate, to display US resolve and commitment.

### **d. Target Vetting**

(1) Target vetting is a key component of the target development process to establish a reasonable level of confidence in a candidate target's functional characterization. In target vetting, Joint Staff J-2T coordinates an IC review of the target data for accuracy of the supporting intelligence. An assessment of the supporting intelligence will include a minimum of target identification, significance, collateral data estimation, geospatial or location issues, impact on the enemy or friendly forces, impact of not conducting operations against the target, environmental sensitivity and intelligence gain/loss concerns. Vetting does not include an assessment of compliance with the LOAC or ROE.

(2) Vetting provides reachback and engagement with the IC SMEs, who concur or non-concur with the accuracy of the supporting intelligence. Though unanimous concurrence is not required to complete the vetting process, the CCDR should view abstentions, non-concurrence, and concurrence as indications of evaluated operational and strategic risk. Once relevant IC members have voted, the target is considered vetted and ready for validation against the CCDR's objectives. As part of the vetting process, the IC may also advise the CCDR regarding the level of success expected in achieving his objectives.

**e. Target Validation**

(1) Target validation is a CJTF responsibility that ensures all vetted targets meet the criteria outlined in a commander's guidance and attacking the target would support the commander's objectives. In addition, target validation reviews whether attacking the target would be in compliance with LOAC and ROE. In bilateral or coalition environments, targets must also be validated against allied concerns. Target vetting and validation should be revisited as new intelligence becomes available or the situation changes. Target validation is done by targeteers, in consultation with the strategy planners and other experts/agencies, as required. The first part of validation asks such questions as:

(a) Does the desired target effect contribute to achieving one or more CJTF objectives, creating operational effects, or supporting sub-tasks?

(b) Does the desired target effect support the end state?

(c) Does the desired target effect comply with CJTF guidance and intent? Is attacking the target lawful? What are the LOAC and ROE considerations?

(d) Does the target contribute to the adversary's capability and will to wage war?

(e) Is the target (still) operational? Is it (still) a viable element of a target system? Where is the target located?

(f) Will striking the target arouse political or cultural "sensitivities?"

(g) How will striking the target affect public opinion (enemy, friendly, and neutral)?

(h) Are there any facilities or targets on the NSL or RTL collocated with the target being validated?

(i) What is the relative potential for collateral damage or collateral effects, to include casualties? Consider collateral damage concerns in relation to law of war, ROE, and commander's guidance.

(j) What psychological impact will operations against the target have on the adversary, friendly forces, or coalition partners?

(k) What would be the impact of not conducting operations against the target?

(l) Is it feasible to attack this target at this time? If not, could it be targeted at another time? What is the risk?

(m) Would attacking the target generate significant environmental impacts or arouse environmental sensitivities?

(n) Will attacking the target negatively affect friendly operations due to current or planned friendly exploitation of the target?

(o) How will actions taken against the target impact on other operations? What is the target's proximity to friendly elements?

(2) The final part of validation starts the coordination and integration of actions against the target with other operations. This continues during planning through ATO production. Part of coordination is deconfliction, which is largely a checklist function. The deconfliction checklist should be developed during JAOP development and be appropriate to the particular organization and conflict. Many offices and agencies must be coordinated with to prevent fratricide, collateral damage, or propaganda leverage for the enemy. Some examples of required coordination and integration include:

(a) **Special Operations Forces.** The JSOTF must deconflict joint special operations with the other joint force component commanders to avoid fratricide. This is best done at a JFACC targeting coordination meeting. The JAOC should work through the SOLE for deconfliction.

(b) **Army Forces.** JAOC personnel should work through the BCD within the JAOC and the ASOC to ensure that component targeting is coordinated and integrated with land component operations. Careful crafting and placement of FSCMswill facilitate this effort.

(c) **Personnel Recovery.** Coordinate with the JPRC and personnel recovery coordination cell on personnel recovery activities and missions.

(d) **IO**

(e) **OGAs**

(3) The CJTF's intelligence personnel, SJA, planners, and other personnel are included in the target development process and must be familiar with the JTFs target validation process.

(4) The first three steps of target development support "target prioritization"—working interactively with other elements in the joint force to determine which targets "make the cut" on the given day's ATO. This is not always an easy decision, especially when resources are limited or the target lists are lengthy. Still, it is a vital part of what the CPD does. The third step of target development produces a list of validated target nominations that will be submitted to higher authority in the form of a target nomination list (TNL).

#### f. Target List Development

(1) Various target lists are created for use by the CJTF. Responsive and verifiable procedures must be in place for additions or deletions to the lists. Commanders should be aware of the larger impact when individual targets are removed from the target list. The removal of one seemingly isolated target may cause an entire target set to be invalid and require a different grouping of target components to create the same effect.

(2) The CTL is a list of selected TDNs (Figure II-12) submitted to the CJTF for inclusion in the joint targeting process that are considered to have military significance in the CJTF's operational area. National agencies, the JTF staff, joint forces subordinate to the CJTF, supporting unified commands, and components all submit TDNs to the CJTF for inclusion on the CTL.

(3) The second step of Phase 2 (target development) ends with the creation of the JTL. The JTL is a consolidated list of targets (developed, vetted, and validated from the CTL) upon which there are no restrictions placed. The JTL is a dynamic database; the JTF J-2 modifies this database to include periodic TDN inputs from national agencies, combatant commands, and assigned component forces. In simpler terms, what the **JTL** means to target development is that it is **a list of all the valid targets available for nomination for some type of action**. The JTL is not a component specific list; these are targets available for any type of exploitation or attack, lethal or nonlethal, air, ground or other delivery methods.

(4) JTF components select targets from the JTL to compile their respective TNs and forward them to the CJTF. The TNs are then combined, validated, and prioritized to form a draft JIPTL that is submitted to the JTCCB for finalization. Targets are checked against the NSL and the RTL at each successive level. Component commanders must request the CJTF (or the CJTF's appointed representative) review and approve RTL targets nominated to the JIPTL before execution.

(5) The draft JIPTL is formed from consolidating and prioritizing the component TNs based on prioritized CJTF objectives. Those compiling the JIPTL consider the estimated available JTF capabilities and their ability to affect the targets on the list. The list usually contains more targets than can be serviced by the resources available. Thus, a draft JIPTL "cut line" is usually established. This "cut line" should reflect which targets will most likely have action taken against them (serviced) for that ATO cycle.

(a) It must be clearly understood that the "cut line" simply reflects an estimate of the line above which targets are expected to be serviced by available resources (in priority order) and does not guarantee that a specific target will be attacked. Other variables like TSTs, changes in CJTF priorities, emerging crisis, and changing resource availability will have an impact on target servicing.

(6) The CJTF may also prohibit or restrict joint force attacks on specific targets or objects based on military risk, LOAC, ROE, or other considerations. Targeting restrictions fall into two categories, no strike (sometimes called prohibited) and restricted.

(a) **The NSL is a list of objects or entities characterized as protected from the effects of military operations under international law or the ROE.** Attacking these targets may violate the LOAC (e.g., cultural and religious sites, embassies belonging to noncombatant countries, hospitals, schools) or interfere with friendly relations with other nations, indigenous populations, or governments. The NSL is compiled independently of, and in parallel to, the CTL. It is important to note, however, that entities from the CTL may be moved to the NSL if, as a result of additional target development (vetting), it is determined that attacking them may violate the LOAC. Conversely, targets placed on a NSL may be removed and become subject to military action if their status as a protected object or entity has changed. For example, a church that functions as a weapons storage facility or a barracks will lose its protected status and may be legally attacked.

(b) **A restricted target is a valid target that has specific restrictions placed on the actions authorized against it, due to operational considerations.** Actions that exceed specified restrictions are prohibited until coordinated and approved by the establishing HQ. Attacking restricted targets may interfere with projected friendly operations. This list also includes restrictions on targets directed by higher authorities. The targets on the RTL are nominated by elements of the joint force, approved by the CJTF, and include restricted targets directed by higher authorities. Targets may have certain specific restrictions associated with them that should be clearly documented in the RTL, such as do not strike during daytime or strike only with a certain weapon.

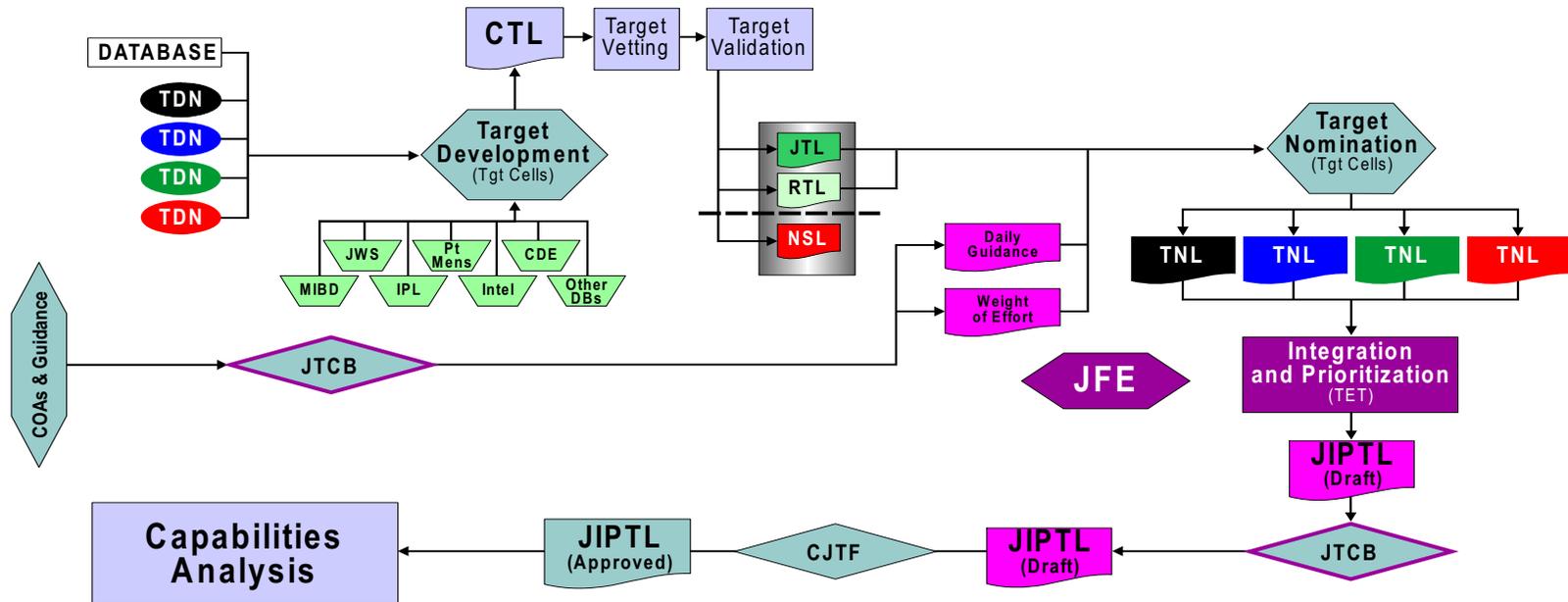
(7) Some targets may require special precautions, such as chemical, biological, or nuclear facilities, or targets in close proximity to no-strike targets. When targets are restricted from lethal attacks, targeteers should consider nonlethal capabilities as a means to achieve desired effects or support the objectives.

*For additional information, see JP 2-0, Joint Intelligence.*

### **g. Prioritization**

(1) JTF HQ and all joint force components provide their respective priorities during JIPTL development process. Component priorities are reflected in their respective prioritized target nominations. The DCJTF or JFACC approves target priorities at the JTCB. Component representatives who do not concur with the prioritization must go through their respective chain of command for resolution. CJTF-designated approval authority has final approval for target prioritization. The TET chief acts as the JFACC's representative and maintains a CJTF focus versus a more restricted air component focus when conducting TET duties if the JFACC has been delegated the CJTF targeting approval authority. Likewise, the JFE (if formed under the JTF J-3) coordinates and synchronized military fires for the CJTF, but the TET considers all aspects of the PMESII and takes the broader perspective.

# TARGET DEVELOPMENT, NOMINATION, AND PRIORITIZATION



Legend			
CDE	Collateral Damage Estimate	JFE	Joint Fires Element
CJTf	Commander, Joint Task Force	JIPTL	Joint Integrated Priority Target List
COA	course of action	JTCB	Joint Targeting Coordination Board
CTL	Candidate Target List	JTL	Joint Target List
DB	database	JWS	joint warfighting space
IPL	Integrated Priority List	MIBD	Modernized Integrated Database
		NSL	No-Strike List
		Pt Mens	Point Mensuration
		RTL	Restricted Target List
		TDN	Target development nomination
		TNL	Target Nomination List
		TET	Target Effects Team

Figure III-12. Target Development, Nomination, and Prioritization

(2) Target prioritization must reflect CJTF guidance and intent. The JAOC typically uses the strategy-to-task methodology to ensure that each target on the JIPTL can be traced directly back to a CJTF operational objective.

(3) Another level of prioritization could include coding each JDPI according to its criticality. JDPIs are placed in one of three targeting criticality categories: Alpha (A), Bravo (B), or Charlie (C). Categorization is a subjective measure of time sensitivity or of the target element’s contribution to a target component/set/system’s larger function and its relative importance among the other elements of the target component. The Alpha category is the highest priority and Charlie is the lowest. Within each tactical task, all supporting targets are prioritized according to their category. Within the JAOC, Alpha targets may also be designated as HPTs or TSTs and may be identified in the AOD. Targeting criticality categories (Table III-7) provide guidance to the CPD and combat operations division (COD) for prioritization efforts. Targets must meet a majority of the criteria to be designated.

TARGETING CRITICALITY CATEGORIES	
Category	Criteria
A	<p>Targets absolutely must be tasked for attack on the air tasking order (ATO) for which the JIPTL is being built because:</p> <ul style="list-style-type: none"> <li>• The target is essential for mission success in support of current objectives (or is a designated HPT [high-payoff target] or TST [time-sensitive target])</li> <li>• It is crucial to the overall success of the operation</li> <li>• It will have immediate and compelling effects</li> <li>• Its timeliness as an urgent target may not exist in the future</li> <li>• If not targeted, negative consequences may seriously jeopardize future JTF [joint task force] operations</li> </ul>
B	<p>Targets need to be tasked for attack on the ATO for which the joint integrated prioritized target list (JIPTL) is being built because:</p> <ul style="list-style-type: none"> <li>• Targets have substantial, but not immediate, impact on the battle</li> <li>• The cascading effects this target provides may not be realized in the future</li> <li>• If not targeted on this ATO, a significant level of effort may be required later</li> <li>• If not targeted, negative consequences may significantly hamper joint force commander (JFC) operations</li> </ul>
C	<p>Targets desired to be tasked for attack on the ATO for which the JIPTL is being built because:</p> <ul style="list-style-type: none"> <li>• It will contribute to the battle, but it is not critical to mission success</li> <li>• It will further the success of the operation</li> <li>• It will eventually require targeting due to the JFC’s future plans</li> <li>• If not targeted on this ATO, negative consequences will probably not impede future operations</li> </ul>

**Table III-7. Targeting Criticality Categories**

**h. Target Nomination**

(1) A TNL is a prioritized list of targets (Table III-8) drawn from the JTL and nominated by component commanders, appropriate agencies, or the JTF staff for inclusion on the JIPTL.

(2) The TNLs are combined, validated, and prioritized to form a draft JIPTL that is submitted to the JTCB for finalization. Targets are validated against the NSL and the RTL at each successive level. Component commanders must request the CJTF (or the CJTF's appointed representative) review and approve RTL targets nominated to the JIPTL before execution.

(3) The sequential functions that occur during the target nomination process include:

(a) Component commanders, national agencies, supporting commands or the CJTF staff submit prioritized target nominations (via TNLs) to the JFACC through their designated representatives in the JAOC. Service or functional components identify specific target nominations and submit them in United States message text format (USMTF), target information report format, or other means, such as, via theater battle management core system (TBMCS). The JAOC CPD then begins an early consideration of component nominations as candidates for ATO planning. This facilitates early identification of long lead collection requirements, conflicts, duplication, and prioritization issues.

1. Copies of Service or functional component TNLs are submitted to the CJTF's designated representative (usually within the JTF J-3 or JFE if formed) for review at the same time they are sent to the JFACC/JAOC.

2. Component representatives at the JTCB also receive copies of their TNLs. It is essential that the component representatives at the JTCB are fully attuned to the priorities, objectives, and supporting rationale behind their commanders targeting effort. Failure to receive timely targeting information will result in an inability of component representatives to properly represent their commander's interest in the JTCB.

3. The JTF J-3 staff representative (often the JFE) reviews all Service or functional component TNLs in preparation for each JTCB. The JFE is focused at the JTF level and deals with coordination and synchronization of military fires. The JFE then provides input to the TET for joint targeting and to the components for organic targeting.

4. The TET also reviews the TNLs, but is more broadly focused on the entire PMESII. The TET takes input from the JFE, then coordinates any remaining issues and develops the draft JIPTL for JTCB consideration. The intent is to compare nominations with CJTF target guidance and priorities to identify potential conflicts or problems before the JTCB meeting. This speeds up the targeting process and keeps the JTCB from becoming bogged down in working detailed coordination.

(b) Special targets are often developed by higher HQ/authority, such as the President of the United States, SecDef, or the CCDR, and forwarded to the CJTF. Mostly, these special targets are critical HPTs of strategic military or political importance. Special targeting and release authority for use of "national asset" weapons is normally controlled at the combatant command level.

(c) Components also submit high priority targets that require "time-sensitive" treatment or dynamic targeting, since they cannot wait for servicing through

the deliberate targeting process, such as targets that have become vital to their scheme of maneuver or immediately threaten to their forces

(d) The CJTF’s targeting representative also reviews a prioritized list of CJTF-level target nominations and transmits them to the JFACC/JAOC for inclusion by the TET in the recommended daily JIPTL.

EXAMPLE TARGET NOMINATION LIST									
Requested Air Interdiction (AI) Missions for ATO K									
ARFOR Priority	BE# UIC	Name	Latitude	Longitude	Request#	Desired TOT	Desired Effects	JFACC Priority	Remarks
1		HQ IV Corps SA-6 Bde	325000N	1040700W	3E2501N	251200Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0010
2		HQ IV Corps SA-8 Bde	325600N	1042100W	3E2502N	251215Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0011
3		HQ 42 MR Div SA-6 Bde	322500N	1054500W	3E2503N	251300Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0023
4		HQ 44 IN Div SA-6 Bde	321700N	1053300W	3E2504N	251245Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0037
5		HQ 64 IN Div SA-6 Bde	333600N	1050500W	3E2507N	251330Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0044
6		IV Corps SS-21 Bde	324800N	1040500W	3E2508N	251400Z	Attrit 30%		AY0006
7		IV Corps Helicopter Bde	325000N	1041900W	3E2509N	251500Z	Attrit 30%		AY0007
8		Rail Yard	325010N	1034501W	3E2510N		Neutralize for 72 Hrs		AY0085
9		Rail Bridge	324904N	1021603W	3E2512N		Neutralize for 72 Hrs		AY0087
<b>Requested Special Missions</b>									
		None for this ATO							
<b>Pre-Planned ATACMS Missions</b>									
1		SA-6 Battery	330100N	1035900W		250300Z	Neutralize for 24 Hrs		AY0088
2		HQ 64 IN Div	333100N	1050000W		250300Z	Attrit 30%		AY0039
3		HQ 43 IN Div	331100N	1045400W		250400Z	Attrit 30%		AY0025
<b>Pre-Planned Army Aviation Missions</b>									
1		41 AR Div SS-21 Bn	325000N	1045000W			Attrit 50%		AY0018
2		34 Tank Bde 42 MR Div	321700N	1043500W			Attrit 30%		AY0022
<b>Legend</b> AR = Armor ARFOR = Army Forces Bde = Brigade BE = Basic Encyclopedia Bn = Battalion Div = Division HQ = Headquarters IN = Infantry JFACC = Joint Force Air Component Commander MR = Motorized Rifle SA = Surface-to-Air SS = Surface-to-Surface TOT = Time on target UIC = Unit identification code									

Table III-8. Example Target Nomination List

**i. Draft JIPTL**

(1) The draft JIPTL is a consolidated list of all TNLs and then prioritized based on CJTF objectives. Normally, this is done by the TET in the JAOC. The strategy guidance team must identify priority of critical tasks and time/sequence factors related to critical tasks for inclusion in the AOD to provide initial prioritization of targets. Each tactical task, effect, and objective is linked and prioritized to support the CJTF's operational effects and objectives. Targets are initially prioritized by their associated tactical task. Targets must then be independently prioritized resulting in a draft JIPTL.

(2) Those compiling the draft JIPTL consider the estimated available capabilities and their ability to affect the targets on the list. The list usually contains more targets than there are resources available to take action. Thus, a draft JIPTL "cut line" is usually established. This "cut line" should reflect which targets will most likely have action taken against them for that ATO cycle. This prioritized listing of targets, with the projected "cut line," is essential feedback for Services, functional components, as well as the CJTF staff on how their specific target nominations do or do not fit into the creation of effects.

(3) It must be clearly understood that the "cut line" simply reflects an estimate of resources available to take action against targets in priority order and does not guarantee that a specific target will be attacked. Other variables like TSTs, evolving CJTF priorities, and changing resource availability will determine which targets are ultimately serviced

**j. Joint Integrated Prioritized Target List**

(1) After the draft JIPTL is consolidated, prioritized and deconflicted, it must be approved by the CJTF (or designated representative) before the component commanders can use it to prepare their plans and orders. Intelligence support to this process includes ensuring target information is complete and accurate, targets are clearly related to objectives, and the selection rationale is clear and detailed. This may include specifying which targets must be serviced as integrated targets (sets or individually), the sequence, and which pose potential collateral damage concerns (Table III-9).

(2) Not all targets on the JIPTL are fixed. Although any component can nominate any type target, the ground component typically nominates most mobile targets for attack during this process. Ground component personnel do this by assigning a unit identification code to fielded forces they wish to target. Using the BE number is not useful because that number is linked to a garrison location and the intent is to attack forces as they move in the operational environment. The nomination of mobile targets should include desired effects and a predicted location, usually in a GARS format. Mobile targets will require location updates as they are tracked throughout the ATO cycle, which include the most recent update time, source of airborne sensors, and further refinement of target location. Even when the location of a target is not known 48 hours in advance, the target development team can still nominate those targets for inclusion on the JIPTL. A definitive aimpoint-servicing capability can be assigned to that target (based on desired effects) allowing a more accurate estimate of whether the target will make the list above the cut line. If strategy development and TET processes are accurate and supported with timely intelligence information, the necessity to perform dynamic targeting in combat operations can be reduced.

NOTIONAL JOINT INTEGRATED PRIORITIZED TARGET LIST														
P R I O R I T Y	BE# or UIC#	Osf x	Cat	CC	Target	Location			Remarks	Nom by	JFACC task in priority	USER requested priority	Army track #	Previous target category nom
						Lat	Lon	Alt						
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
01					WEBB AFLD				A/C in shelters	ACC	01A3-1	01		A, B, C
02					REESE AFLD				Shut 24 Hrs	ACC	01A3-1	02		B,C
03					LUBBOCK AFLD				Shut 24 hrs	ACC	01A3-1	03		B,C
04					TERRY AFLD				Shut 24 hrs	ACC	01A3-1	04		C
05					NODONG STORAGE SITE				DESTROY	ARFOR	02W3-1	01	3E1501N	
06					SCUD CC STORAGE SITE				DESTROY	ARFOR	02W3-1	02	3E1502N	
07					SCUD B STORAGE FAC				DESTROY	ARFOR	02W3-1	03	3E1503N	
08					SAN ANGELO SA-2 SITE 4 RDR FAC					ACC	03A3-4	15		
09					AMARILLO ADEF IOC AND RADAR FAC					ACC	03A3-4	16		A
10					SAN ANGELO ADEF IOC AND RADAR FAC					ACC	03A3-4	17		A
11					SEMINOLE AW SITE					ACC	03A3-4	18		B
12					FARWELL AW SITE					ACC	03A3-4	19		B
Legend:														
(a)	JIPTL priority													
(b)	BE, a specific identification number or point location of a facility or installation. Facility BE Number and OSFX may only be used if no other Geospatial Coverage category elements are supplied.													
(c)	A specific identification number or point location, in conjunction with a Facility BE Number.													
(d)	Category code													
(e)	Country code													
(f)	Target Name													
(g)	Location: 3 D coordinates													
(h)	Location: 3 D coordinates													
(i)	Location: 3 D coordinates													
(j)	Desired effect													
(k)	Nominator													
(l)	Applicable tactical task													
(m)	Nominator's priority order													
(n)	Army track number													
(o)	Previous targeting criticality category nominations													

**Table III-9. Notional Joint Integrated Prioritized Target List**

#### **k. Joint Integrated Prioritized Collection List**

(1) Determining collection and exploitation requirements throughout the targeting cycle/steps is critical to creating efficiency and synergy in targeting efforts. This effort attempts to answer the question, “how will we know when we’ve created the desired effects or achieved the objectives?” Collection and exploitation requirements must be articulated as early as possible to support target development, execution, and assessment. Targeteers must work closely with CMs to ensure that target development, pre-strike, post-strike, and tasking change requirements are integrated into the collection plan. Properly identifying collection and exploitation requirements is one of the keys to effective JIPOE. The product of this step should be a JIPCL.

(2) The JIPCL is a prioritized list of intelligence collection and exploitation requirements needed to support indications and warning, analysis, future target development efforts, and to measure creation of desired effects and achievement of objectives. The ISR operations team uses the JIPTL and other collection requirements (CRs) to produce the JFACC's component prioritized collection list (CPCL). CJTF CMs consolidate all component CPCLs into the JIPCL which is approved at the joint collection management board. An approved JIPCL is a useful product for answering information gaps as well as the collection and exploitation requirements stage of target development. To ensure synchronization between the JIPCL and JIPTL, ISR operations personnel and targeteers coordinate the parallel processes.

1. If a theater JFACC is established with a Falconer JOAC, the same processes discussed above happen at the theater commander and JFACC level. The individual JTFs, within the theater commander’s area of responsibility (AOR), submit consolidated TNLs for their respective operational areas. The TNLs are consolidated and prioritized by the TET at the theater JFACC, turned into a draft JIPTL, reviewed by the theater JTCB and approved by the theater commander. Likewise, the theater commander provides theater guidance, end state, apportionment, and priorities to guide the targeting process. For more information on theater JFACC, see Appendix E, *Regional Joint Air Operations*.

### **9. Phase 3 – Capabilities Analysis**

#### **a. Overview**

(1) This phase of the joint targeting cycle involves evaluating available capabilities against desired effects to determine the appropriate options available to the commander (Figure III-13). Commanders also consider risks to the force and collateral concerns in evaluating available capabilities. Estimates of required weapons or capabilities shape other planning considerations within the joint force. For example, weapons requirements will drive significant portions of theater logistic planning efforts.

(2) Once appropriate options are developed, analysis focuses on target detail by evaluating specific capabilities against identified target vulnerabilities to estimate effects.

This process builds upon the analysis performed in target development, such as information that characterizes the physical, functional, behavioral vulnerability of the target, and for a connecting thread of logic to targeting effects, objectives and tasks that support the CJTF's effects, objectives and guidance. These estimates may be generated using mathematical models (e.g., Joint Munitions Effectiveness Manuals [JMEM]) that take into account the target's critical vulnerabilities, performance data on the weapons contemplated for application against the target, and means of delivery. Nonlethal capabilities should be considered as part of this analysis. Effects estimates should also take into account estimated repair and recuperation times when matching capabilities with vulnerabilities. Friendly reuse and reconstruction during later plan phases should also be accounted for to avoid negatively affecting the end state.

(3) All estimates generated during this phase are situation-specific, reflecting the pairing of forces against targets under particular conditions of employment. As such, users of this information are cautioned against assuming that the estimated effectiveness of a force capability under one set of circumstances is broadly applicable to other circumstances. Relatively minor targeting variations may have a significant unintended impact on effects estimates. It is equally important to stress that these estimates of performance are not designed to take into account considerations outside the realm of asset-target interaction (e.g., they do not address whether or not the delivery system will survive to reach the target). Estimates of consequences only consider the first order effects of asset-target interaction and do not model higher-order desired effects or unintended collateral effects.

*For more information on capabilities analysis, see Appendix F, "Capabilities Analysis and Force Assignment," of JP 3-60, Joint Targeting.*

(4) The capabilities analysis phase is also referred to in the air targeting cycle as the weaponeering phase. Although weaponeering is primarily an operational level function as performed during the joint targeting process, it may also be performed at the strategic and tactical levels of warfare.

(5) The IC, including federated partners, plays a role in capabilities assessment by ensuring the target materials they provide include the estimative analyses required to make valid assessments. The intelligence provided in this phase is also used to refine collection requirements.

# Phase 3 – Capabilities Analysis

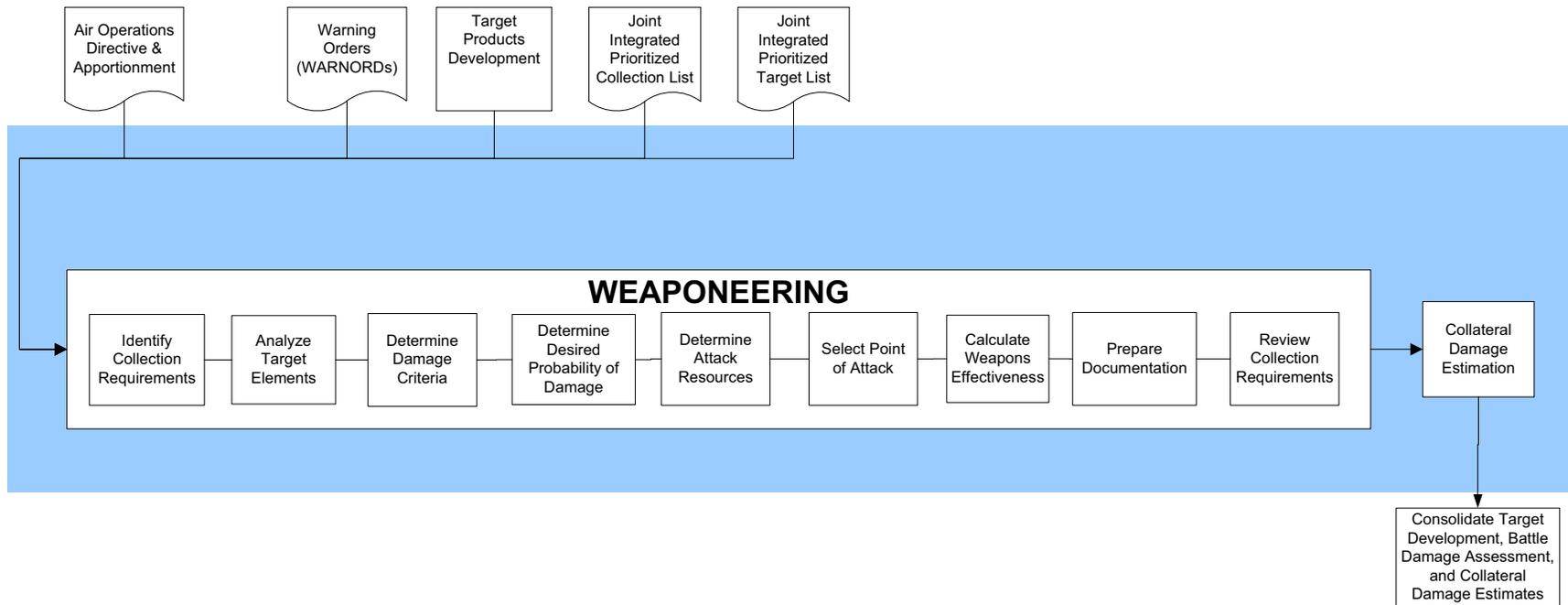


Figure III-13. Phase 3 – Capabilities Analysis

**b. Weaponeering**

(1) Weaponeering is the process of determining the quantity of a specific type of lethal or nonlethal weapon required to achieve a specific level of damage or create a specific effect on a given target. Weaponeering considers such things as target vulnerability, enemy actions (the effects of actions and countermeasures), weapon characteristics and effects, munition delivery errors and accuracy, damage mechanism and criteria, probability of kill, weapon reliability, and trajectory. While keeping the CJTF's objectives, desired effects, tasks, and guidance in mind; the JTL, JIPTL, targeting objectives, and targeting effects provide the basis for weaponeering assessment activities. Weaponeering is the third phase in the conceptual targeting process, but it is embedded into target development, force selection, and execution planning. It is a core competency of targeting, although many confuse targeting with weaponeering. Targeteers quantify the expected results of lethal and non-lethal weapons employment against prioritized targets to produce desired effects. Since time constraints may preclude calculations of potential effects against all targets, calculations should proceed in a prioritized fashion that mirrors the target list.

(2) The Services, Joint Technical Coordinating Group for Munitions Effectiveness (JTCEG/ME), DIA, Joint Warfare Analysis Center (JWAC), and the Defense Threat Reduction Agency (DTRA) developed a number of quantitative techniques used to estimate weapon effectiveness and collateral damage risk. The JTCEG/ME develops analytical methods for measuring and predicting weapons (munitions) effectiveness. Weapon effectiveness is a statistical estimate of the results expected from specific munitions effects, target environment, damage criteria, delivery accuracy, munitions reliability, and ballistics. This should be closely tied to MEA in CA. The JTCEG/ME also produces a large body of scientifically valid data related to specific weapons, munitions, and appropriate targets. It results in probable outcomes given many replications of an event. It does not predict the outcome of every munition delivery, but represents statistical averages based on modeling, weapons tests, and data collected from execution of real-world operations. With modern precision and near-precision weapons, however, the probabilities of accurate delivery and achieving intended direct effects are very high and are still improving. The JTCEG/ME devised mathematical models, which enable weaponeers to predict the effectiveness of weapons against most significant targets. Inputs to these methodologies include factors such as target characteristics (size, shape, and hardness) and delivery parameters (altitudes, speeds, dive angles). Model outputs include the amount of force required to achieve specified damage levels in terms of stated damage criteria, which provides weapons effectiveness comparisons.

(3) Weaponeering is normally done using methodologies prepared by the JTCEG/ME and data found in the JMEM-Joint Air-to-Surface Weaponeering System, the Special Operations Target Vulnerability and Weaponeering Manual, and the JMEM-Surface-to-Surface Weapons Effectiveness Systems. The final weaponeering is completed during the MAAP development. The output of weaponeering is a recommendation of the quantity, type, and mix of lethal and nonlethal weapons needed to achieve desired targeting effects while avoiding unacceptable collateral damage.

(4) Targeteers must know the capabilities and availability of platforms, weapons, and fuses for kinetic weapons. They must also be familiar with the standard conventional load for platforms operating in their operational area and their delivery tactics. Weaponeering results will only be useful if the employment parameters assumed in the weaponeering process match those used in execution. Targeteers should work closely with the operations, logistic staff, and LNOs to obtain required information. As a rule of thumb, theater component targeting branches should request a copy of the time-phased force and deployment data (TPFDD) to obtain units' expected input options selected from the JMEM's automated programs to provide realistic planning data. Weaponeering must also take into account the availability of the various weapons being considered. Certain high value weapons, such as those capable of deep penetration or other special effects, are normally limited in number and should only be used against those targets that both require the weapon for successful attack and are of sufficiently high priority to warrant the expenditure of the resource. Making these decisions is part of "target allocation." Finally, some weapons, particularly certain IO capabilities, must be thought about early and included in the estimate process due to the requirement for long lead time in planning, deployment, and approval.

(5) **The weaponeering process is broken down into several general steps and is not tied to a specific methodology or organization.** Because all of the steps are not rigid and may be accomplished in different order or combined, the weaponeer may use the following steps as a guide.

**(a) Step 1 – Identify Collection Requirements**

1. Once a distinct target component or element (such as a power plant or armored battalion) has been identified during the target development, nomination, and prioritization phase, all existing information on that target component or element must be made available to the weaponeer. Specific commander's guidance, objectives, effects, targeting tasks, targeting objectives, targeting effects, and TSA must be passed to the weaponeer. Any additional information requirements must be identified and requested. The additional information required by the weaponeer may be vastly different from that previously collected and could range from target element composition and structure to target component linkage within a target set. Information requirements may change during the weaponeering process, depending on weapon availability and target damage requirements.

2. The weaponeer must establish collection and exploitation requirements as soon as they are identified. Requirements for both target development and weaponeering should be coordinated and submitted as a single set.

**(b) Step 2 – Analyze Target Elements**

1. Now that all-necessary target information is gathered and the damage criteria are established, the weaponeer must analyze the target to determine the most suitable part (critical vulnerability) to attack. The end result of this step may be an

aimpoint, a small geographic area, or specific communication link. The guiding precepts during this step are thorough target study. If possible, the weaponeer selects the part that is most susceptible to attack which will achieve the required damage criteria for that target. There may be times when a target does not have a critical vulnerability.

2. This is an attempt to answer the question, “what type of damage or effect must be inflicted on the target to achieve the stated targeting objective?” This task of determining which target elements should be analyzed can be broken down into two activities: first, performing a functional analysis; and second, performing a structural analysis.

3. In preparing a functional analysis, targeting personnel identify the functions of all parts of a target, determine the relative importance of each part, and designate those parts that are vital to the target operations relative to the specific targeting objective. A structural analysis provides much of the information necessary for determining overall target vulnerability and includes considerations of construction types, dimensions of structures, equipment, or other vulnerable areas. The result of this analysis will normally determine the parts to be attacked.

(c) **Step 3 – Determine Damage Criteria.** Damage criteria refer to the critical levels of various effects, such as blast pressure and thermal radiation, required to achieve specified levels of damage. For example, suppose the target is an infantry brigade and the damage requirement is to degrade that unit’s effectiveness such that it cannot conduct offensive operations. This damage requirement needs to be translated into a measurable damage criteria, such as “25% of the unit destroyed,” “50% of the unit unable to move for a specific amount of time,” or “sever communications with higher HQ.” It is the job of the weaponeer to translating the commander’s intent into a measurable targeting objective is the weaponeer’s job.

(d) **Step 4 – Determine Desired Probability of Damage (PD).** In a few cases, specific PDs for individual targets may be directed by combatant or component command HQ. Despite this fact, PD is typically determined by the weaponeer and is based on the stated targeting objectives and guidance. Specific recommendations for PDs are provided in various JMEMs. For example, a .70 or .80 PD is recommended for most point targets, while a .30 to .50 PD is normally recommended to neutralize a unit.

(e) **Step 5 – Determine Attack Resources**

1. The purpose of weaponeering is to estimate the amount and types of weapons required to obtain a desired PD. The targeteer uses this information in recommending optimum force and ordnance combinations for each target. Some additional information helpful in making intelligent recommendations includes weather, training and readiness posture, target acquisition probability, collateral damage potential, and ROE.

2. The weaponeer must collect information on friendly weapons and weapons system availability. Logistic flow, new techniques, and emerging technology impact availability. The information required includes characteristics, capabilities, limitations, and preferred delivery techniques.

(f) **Step 6 – Select Point of Attack.** This step of weaponeering involves determining the proper aimpoint. Multiple aimpoints should be used whenever the effective damage area is considerably less than the area of the target. It is also usually best, time permitting, to select more than one target element and weapons combination. This allows planners who may be resource or weather constrained to have greater flexibility.

#### KEY TERMS

**Desired mean point of impact (DMPI) is a precise point, associated with a target, and assigned as the center for impact of multiple weapons or area munitions to create a desired effect.**

**Desired point of impact (DPI) is a precise point, associated with a target, and assigned as the impact point for a single unitary weapon to create a desired effect. Desired Point of Impact is becoming more and more prevalent with the increased reliance on J series weapons because of the accuracies involved.**

**Joint desired point of impact (JDPI) is a unique, alpha-numeric coded aimpoint identified by a three dimensional (latitude, longitude, elevation) mensurated point. It represents a weapon or capabilities desired point of impact or penetration and is used as the standard for identifying aimpoints**

#### (g) **Step 7 – Calculate Weapons Effectiveness**

1. Various aircraft, missiles, weapons, yields, heights of burst, fuses, and delivery tactics are evaluated to determine the best combination to use against each individual target to create the desired targeting effect. The weaponeer uses appropriate methodology to determine the solution to the problem. This solution is expressed as the PD. Although the weaponeer searches for the best combination of weapon and delivery system to recommend for use against a target, their first choice may not always be available due to logistical or operational considerations.

2. The weaponeer correlates and evaluates all information. The most efficient weapon(s) is selected to achieve the desired damage. It is important for the planner to keep in mind that the output of this step is not a guarantee of success, since it is only a statistical probability of achieving the damage criteria. There are other factors that must be taken into account during this phase such as:

- a. ROE/LOAC.
- b. Collateral damage.
- c. Mission time frame.

- d. Threat.
- e. Weather.
- f. Range to target.
- g. Defensive armament required.

3. These factors make this step more than a simple matter of matching weapons effects to target vulnerability. There may be occasions when a weapon that will achieve the desired damage criteria is not available or does not exist. This does not mean that the target is not valid. It does mean, however, that the damage criteria must be reevaluated or that the target must wait for new techniques or weapons.

**(h) Step 8 – Prepare Documentation**

1. The output of this step is different depending on the phase of planning. During deliberate planning, the rationale and assumptions need to be documented and included in the target folders. Conversely, during ongoing operations, weaponeering documentation is sent directly to the operators who will execute the mission against that target and includes desired damage criteria, JDPI, PD, and other pertinent weaponeering considerations.

2. The targeting analyst develops recommended options and supporting rationale for planners to use in force selection decisions. This information should include the description of the specific target element or point of attack and may be specified in a simple textual description by reference to areas annotated on standard target materials, the grid provided on a basic target graphic, similar product, or by other agreed upon techniques. Precise target coordinates for the point of attack should also be provided, to include the datum and method of deviations, to preclude any misunderstanding of the coordinates. Target analysts should also recommend fuses or fuse settings:

- a. When unit level expertise or available materials are limited.
- b. When specific effects are required (i.e., arming and self-destruction times for mines).
- c. To operational combat units preparing ordnance for a mission.

(i) **Step 9 – Review Collection Requirements.** After completing the weaponeering process, the targeting analyst needs to review the collection requirements to determine if they will fill the gaps or will need modification. New requirements or changes in priority must be submitted immediately. Keeping track of collection requirements, keeping requirements current, and synchronizing collection efforts are ongoing critical tasks.

**c. Collateral Damage Estimation (CDE)**

**(1) Introduction**

(a) CDE begins in the target development phase and continues through execution. CJCSM 3160.01A, *Joint Methodology for Estimating Collateral Damage For Conventional Weapons: Precision, Unguided, and Cluster* (classified publication) details a specific DOD-wide CDE process. Targets with associated collateral damage concerns that are expected to exceed theater (combatant command) thresholds are referred either to the SecDef or President using the sensitive target approval and review process detailed in CJCSI 3122.06B, *Sensitive Target Approval and Review (STAR) Process* (classified publication). See also JP 3-60, *Joint Targeting*, Appendix A, “Time-Sensitive Target Considerations” and Appendix G, “Collateral Damage Estimation,” for more detail.

(b) DOD policy requires the US military to comply with the principles and spirit of the LOAC during all operations, unless otherwise directed by competent authorities, the US military will comply with the principles and spirit of the LOAC during all operations. The LOAC requires combatants to refrain from intentionally targeting civilian or noncombatant populations or facilities. In accordance with the LOAC, the anticipated injury or loss of civilian or noncombatant life, damage to civilian or noncombatant property (or any combination thereof) incidental to attacks (collateral damage) must not be excessive in relation to the concrete and direct military advantage expected to be gained. Failure to observe these LOAC obligations could result in excessive impacts on civilians and noncombatants and be considered a LOAC violation. This situation could subject the US leadership and military to global criticism--potentially adversely impacting assigned military missions and national goals.

(2) CJCSM 3160.01A codifies the joint standards and methods for estimating collateral damage potential, provides mitigation techniques, assists commanders with weighing collateral risk against military necessity, and assessing proportionality within the framework of the military decision-making process. These joint standards and methods for conducting CDE apply across the range of military operations. In addition, the CDEs that result from CJCSM 3160.01A are meant to inform decision makers and commanders and are not decisions themselves. CDEs help senior leaders evaluate collateral risk against military necessity during the planning and execution of combat operations.

(a) CJCSM 3160.01A provides a logical and repeatable five-step process for estimating collateral damage. The technical basis for these CDE steps is a series of munitions effective miss distance (EMD) tables that were developed and accredited by the JTCG/ME. The EMD tables contain collateral damage distances for all air-to-surface and surface-to-surface conventional munitions.

(b) **CDE Levels 1 – 5.** As the methodology defined in CJCSM 3160.01A moves through the CDE levels, the level of analysis and risk the commander accepts increases.

1. CDE 1 determines whether the target can be positively identified and is a valid military target. CDE 1 also provides an initial collateral damage estimate for the employment of all conventional munitions.

2. CDE 2 provides an estimate of collateral damage for precision guided unitary and cluster munitions based on nominal weaponeering restrictions. CDE 2 also provides an assessment of whether a target meets the minimum requirements for employment of air-to-surface and surface-to-surface unguided munitions.

3. CDE 3 provides specific EMD values and weaponeering assessments for all precision and unguided munitions to ensure the desired munitions effect is achieved while mitigating collateral damage.

4. CDE 4 further refines the CDE 3 assessment by incorporating collateral structure type with the goal of achieving a low CDE while minimizing tactical restrictions.

5. CDE 5 casualty estimation is employed when some level of collateral damage is unavoidable.

*See CJCSM 3160.01A, Joint Methodology for Estimating Collateral Damage For Conventional Weapons: Precision, Unguided, and Cluster (classified publication) for further information on collateral damage estimation.*

### **(3) Sensitive Target Approval and Review (STAR) Process**

(a) Sensitive targets are targets where the commander has estimated the physical damage and collateral effects on civilian or noncombatant persons, property, and environments (occurring incidental to military operations) exceed established national-level notification thresholds. Sensitive targets may also include those targets that exceed national-level ROE thresholds, or where the CCDR determines the effects from striking the target may have adverse political ramifications.

(b) CJCSI 3122.06B, *Sensitive Target Approval and Review (STAR) Process* (classified publication) provides guidance for the combatant commands for designating sensitive targets and nominating them for national-level review. The STAR process supports contingency and crisis action planning. STAR products, which usually consist of a briefing slide or series of slides, are used to present sensitive targets for national-level review. CJCSI 3122.06B provides examples of STAR products, but does not require a certain format because STAR products may vary by combatant command and planning effort.

(c) The CDE methodology outlined in CJCSM 3160.01A supports the STAR process by assessing and identifying collateral damage related to sensitive targets. The material used to determine the CDE will form the basis of the STAR products dealing with collateral damage.

See CJCSI 3122.06B, Sensitive Target Approval and Review (STAR) Process (classified publication) for further information on the STAR process and CJCSM 3160.01A, Joint Methodology for Estimating Collateral Damage For Conventional Weapons: Precision, Unguided, and Cluster (classified publication) for information on how the collateral damage methodology contributes to the STAR process.

## **10. Phase 4 – Commander’s Decision and Force Assignment**

### **a. Introduction**

(1) Wargaming is used at the JTF and JFACC levels to support force selection and force application planning by determining force requirements impact on operations and specific warfighting options.

(2) Attrition analysis is conducted for possible friendly force losses.

(3) Target material production requirements are determined to enable target material production agencies to tailor products to support warfighter needs.

(4) At the component/JFACC level, weaponeering information is used to analyze force selection to determine likely impact on target element physical and functional capability. For lethal force, this is based on PDs and probabilities of arrival (PAs) for a weapon system. For nonlethal force, this is based on expected effects.

(5) Force application planning is the matching of target nominations with the optimum available lethal/nonlethal force that ensures support of the CONOPS and compliance with commander’s targeting guidance and intent. The output of this phase is an approved MAAP and production of plans/orders.

(6) The result of force selection is a strike package nomination (in MAAP development) or tasking with coordinated recommendations from operations, plans, and intelligence. Of note, when providing support to force applications, targeteers must be cognizant of the need to eliminate bias for a particular weapon, weapon system, or even component force. Likewise, recommendations should reflect an objective assessment of the most appropriate capability to create the targeting effect in support of the targeting objective.

b. General steps of the commander’s decision and force assignment phase (Figure III-14) are described in following paragraphs.

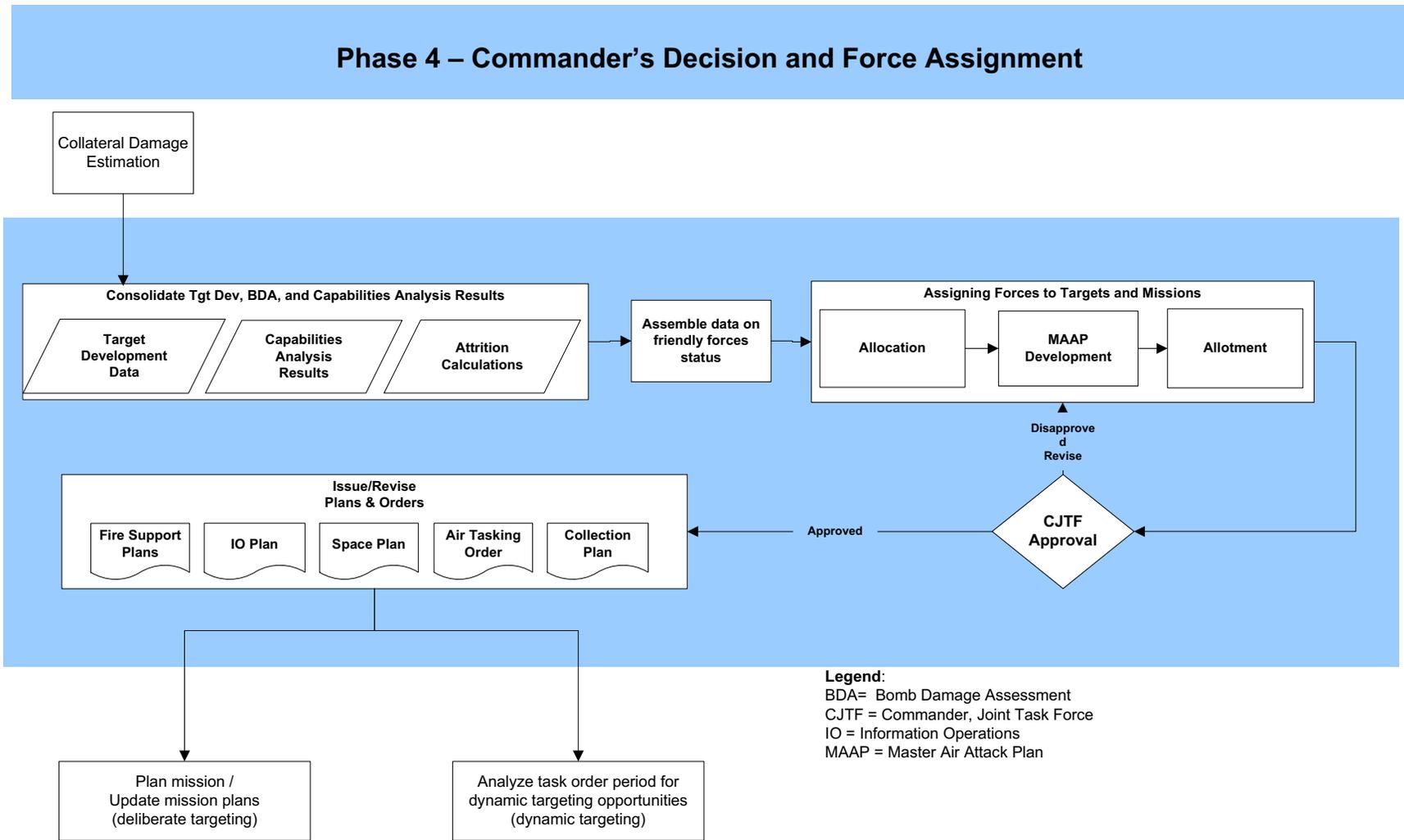


Figure III-14. Phase 4 – Commander’s Decision and Force Assignment

(1) **Consolidate Target Development, Battle Damage Assessment and Capabilities Analysis Results.** Targeting personnel assemble the necessary data from previous research. To make this complex data more useful to their operations counterparts, the targeting personnel must prepare summary files with worksheets on pertinent information collected on each potential target. Target files should contain four types of information: CDE results, target development data, capabilities analysis (PD), and attrition calculations.

(a) **Prepare Target Development Data.** The target development process produces detailed target data in quite extensive target folders and supporting products for each potential target on the JIPTL. While crucial for the overall joint targeting process, this volume of detail will very quickly overwhelm the force assignment team unless it is distilled down into a summary of the essential information needed to perform the force assignment function. Therefore, targeting personnel prepare target worksheets summarizing the contents of the target folder. This summary should include the latest BDA information on the target and include the following: specific aimpoints, BE number, name, category code, O-suffix, installation coordinates, country code, significance or contribution to the higher level target system, and how its destruction or degradation contributes to the targeting objectives. Additionally, the worksheets must contain a statement reflecting the target's JIPTL priority, current status (BDA results), desired point or points of impact, the associated precise coordinate, desired effect, and any potential collateral damage concerns.

(b) **Generate Capabilities Analysis Results.** During capabilities analysis, information on weapons effects estimates and damage criteria are typically arranged as an array using the following factors: forces, delivery systems, weapons fuzing and delivery tactics. The results from the capabilities analysis provide a series of PD calculations used to estimate levels of physical damage when dealing with lethal applications. Targeting personnel should also consider nonlethal targeting effects. The results of collateral damage analysis (IAW CJCS-approved collateral damage and casualty estimation methodologies) may be required for each DPI/weapon combination. The force assignment team will normally require several possible weaponeering solutions for each DPI on each target, arranged in order of effectiveness. Targeting guidance usually requires that collateral damage be minimized. Specific collateral damage results will need to be summarized for each DPI/weapon combination.

(c) **Produce Attrition Calculations.** Intelligence analysts provide data on the enemy defensive posture, capabilities, and probable intentions. Working with operational planners, attrition models are run to estimate the probability of the weapon system arriving at the target, and include probability of release or PA. Other factors include maintenance failure, adversary defenses, and weather. Weaponeers should factor any attrition analysis/PA data into their PD calculations.

(2) **Assemble Data on Friendly Force Status**

(a) Operations planners and their logistic counterparts assemble data on the current status and availability of friendly forces and munitions. The CJTF approves specific guidance on how the military effort will be divided between different missions (apportionment). **Apportionment is, in the general sense, the distribution for planning of limited resources among competing requirements.** Air apportionment is the determination and assignment of the total expected effort by percentage or by priority that should be devoted to the various air operations for a given period of time. The total resources made available to the JFACC are determined by the CJTF in consultation with component commanders on the basis of assigned operational objectives, effects, and tasks in the CONOPS. For example, the CJTF may determine that counterair is the first priority for phase one and should include 50 percent of the available air assets, based on his intent for operations on those specific days. His second and third priorities may be AI and CAS, comprising 30 percent and 20 percent of the available air assets, respectively.

(b) Apportionment helps the CJTF ensure the weight of the air effort is consistent with the operational objectives, effects, and tasks for each phase. The apportionment percentages will vary throughout the operation, depending on the enemy's air, ground, and sea capabilities, intentions, and phasing of the operation plan. In determining apportionment, the CJTF will normally use one or more of the following methods:

1. Priority or percentage of effort into geographic areas.
2. Against assigned mission-type orders.
3. Against target sets.
4. By the types of fires which may include the following:
  - a. Strategic attack.
  - b. Interdiction.
  - c. Counterair.
  - d. Maritime support.
  - e. CAS.

(c) Apportionment affects how the force assignments team tasks dual or multi-role platforms, sequences force activities, and directs force packages to operate in different parts of the operational environment. **Other issues affecting force assignment** include: maintenance status of combat and support assets, battle damage to equipment from previous missions, operator availability, munitions availability and location of weapon stockpiles relative to combat assets. However, simply knowing what forces are available to be tasked does not give the complete operational picture. Air operations

planners are also constrained by factors such as weather, adversary operations, force protection, operational environment management issues, law of war, and ROE. Packaging and time/distance concerns for strike aircraft or available operating areas for support assets (i.e., air-refueling aircraft, surveillance or intelligence assets) also affect when targets can be attacked in the most efficient manner.

(d) Apportionment considerations may be discussed at CJTF planning, JTCCB, or JFACC TET meetings. Component commanders or their designated representatives must be able to present the following at the meetings:

1. Component concept(s) of operational maneuver supporting the CJTF plan and intent. This would include the component commander's targeting objectives, requirements (including timing and coordinating instructions), and the targets requested for attack.

2. Associated general or specific HPTs that have been identified as critical to their scheme of maneuver. **Note: The component commander (or designated representative) must be the advocate for component nominated HPTs to ensure their inclusion in the JIPTL.**

3. Associated target priorities and timing of attack.

4. Rationale for target designation, priorities, and desired targeting effects.

(e) Targeting objectives are normally discussed after presentation of the enemy situation, capabilities, and associated HVTs. **Targeting objectives should be expressed in the form of mission type orders against general or specific targets.**

(f) The JFACC should determine how best to achieve targeting effects to meet the other component commander's targeting objectives and recommend the necessary apportionment of JFACC-assigned forces/capability to the CJTF.

### (3) Assigning Forces to Specific Targets and Supporting Missions

(a) The CJTF, in consultation with component commanders, determines air capabilities/forces made available for joint air operations.

(b) Component commanders make air capabilities/forces available to support the CJTF's mission and CONOPS. These air capabilities/forces are tasked by the JFACC based on the CJTF's air apportionment and prioritization decision.

1. **Only the CJTF has the authority to reassign, redirect, or reallocate a component's organic air capabilities/forces.**

2. When a component does not have enough organic air capabilities/forces to support their assigned mission, the component will nominate targets for joint tasking.

3. Component organic assets, not under joint tasking, should also appear on the ATO to enable coordination and minimize the risk of fratricide. The inclusion of component organic air assets in the ATO does not imply any command or tasking authority over them, nor does it restrict component commanders' flexibility to respond to operational environment dynamics. Component organic air capabilities/forces though not available for joint air tasking must still comply with the established ROE, ACP, ACO, area air defense plan, and SPINS.

(c) Air operations planners assign combat forces, ISR assets, munitions to specific targets/aimpoints, develop force packages, assign missions to supporting forces, resolve timing, sequencing and deconfliction issues. Targeting personnel support this process by providing prioritized recommendations for munitions and delivery systems for specific targets/aimpoints and may also specify delivery parameters, weapons fuzing, axis of attack, and assessment criteria.

(d) Operational constraints, however, may require modification to initial targeting recommendations. Timing, sequencing of events and interaction of combat forces with supporting assets often becomes crucial in the crafting of an effective plan or order. The operational characteristics of a particular weapons system when applied against a specific target may require adjustments to the overall plan or order. Sometimes targets are not attacked in a strict priority order approved on the JIPTL, because in some circumstances, it may be impossible to completely satisfy a targeting effect or objective issued by the CJTF.

(e) Targeting personnel must assist in evaluating the impact of these changes upon the entire targeting effort. As changes are made due to operational and special constraints (e.g., specific collateral damage restrictions) it is important to maintain a balance in supporting the JFACC targeting objectives without inadvertently violating existing special constraints.

**(f) Allocation**

1. After the CJTF promulgates the apportionment decision, the JFACC and staff conduct the allocation process. Allocation translates the apportionment percentages/priorities into numbers of sorties, broken out by available aircraft type, unit, and mission. Specific allocations (e.g., air sorties, nuclear weapons, forces, and transportation) are described as allocation of air sorties, nuclear weapons, etc.

2. Allocation of aircraft and weapons must fulfill the CJTF's original targeting guidance and intent. Aircraft or weapons should not be diverted to other targets unless unanticipated changes in the situation so dictate. If diversions occur, appropriate

modifications to the ATO may be required to support the CJTF's apportionment decision and intent for subsequent phases of the operation.

**(g) Master Air Attack Plan Development**

1. Prior to the TET target coordination meeting, the MAAP team determines how many aimpoints can be serviced on the given ATO day. The TET then goes over the lists of nominated targets and determines which “make the cut” on that day’s proposed JIPTL. The TET must work closely with the SD and the MAAP team to ensure the prioritized list supports the JAOP and AOD appropriately. The SD must ensure the TET understands how targeting effects and objectives are prioritized, how they are to be achieved over time, and that it has a macro-level idea of the number of targets associated with each objective. The TET then collects target nominations from other sources, works the daily allocation of targets that have been planned against the targeting effects and objectives, and builds the daily JIPTL. Approaching JIPTL construction in this way helps avoid an ad hoc target servicing approach.

2. Force allocation is the responsibility of the CPD MAAP team, which takes the final prioritized list of weaponeered targets and allocates airpower by melding available capabilities and resources with the TET’s weaponeering recommendations. Although not complete until the MAAP is produced, force allocation also starts early in the cycle.

3. On the basis of the CJTF’s apportionment decision, internal requirements, and air support request messages, each air capable component sends an allocation request (ALLOREQ) message to the JFACC (timed to coincide with the beginning of the MAAP part of the tasking process, usually not later than 36 hours prior to the start of a given ATO day). ALLOREQ messages contain the following information:

a. Number of sorties by assigned mission and type aircraft to be flown during the air tasking day.

b. Excess sorties not needed by the air capable component and available for tasking by the JFACC.

c. Request for additional air support beyond the capability of the air capable component making the request.

4. The JFACC reviews each ALLOREQ and sends a sortie allotment message (SORTIEALOT), with CJTF concurrence, back to the components. The SORTIEALOT message is a means by which the CJTF can allot sorties to meet requirements of subordinate commanders as expressed in their air employment or allocation plans. The SORTIEALOT message confirms the ALLOREQ and provides general guidance for planning operations. The SORTIEALOT contains three kinds of instructions:

a. Revisions, if any, to the components planned allocation of sorties. With CJTF concurrence, the SORTIEALOT message could convey revisions or redirection of missions outside of the apportionment guidance.

b. Approval or changes to the component requests and allotment of excess sorties.

c. Revisions to mission data in component requests, such as a changed mission priority or TOT. Component liaison elements (such as the BCD) and the JFACC usually coordinate such revisions in advance.

5. The MAAP team works with the TET to support JIPTL production. Once the JIPTL is approved, the MAAP team takes input from the TET, component liaisons, the JAOC AMD, and others to produce the MAAP. **The MAAP is a plan that contains key information that forms the foundation of the joint ATO**, sometimes referred to as the air employment plan or joint air tasking order shell. Information that may be found in the MAAP includes:

a. CJTF targeting guidance.

b. JFACC guidance.

c. Support plans,

d. Component requests.

e. Target update requests.

f. Availability of capabilities and forces.

g. Target information from target lists, aircraft allocation, etc.

6. The MAAP is usually presented in the form of a decision briefing for the JFACC. The MAAP team, with the support of liaison representatives, determines an overall sortie flow for the ATO period and determines how that flow should be divided into “packages.” Packages are discrete sets of missions and sorties designed to complement each other or provide required support (for example, tankers and EW assets “packaged” with the strike assets they are supporting). The MAAP team also determines required time on target or time on station. Packages are arranged in sequence and used to determine a timeline flow and resource requirements for the ATO period. Each package must be deconflicted in time, space, and effect.

7. Another part of the allocation and MAAP development portions of the tasking process is creation of an ISR and assessment plan. Theater ISR assets must be carefully orchestrated to ensure optimal coverage of the operational environment. ISR assets should be positioned to provide tactical assessment of targets planned for attack,

detect emerging targets, and be flexible enough to collect against them as well. At the same time, ISR assets must continue to monitor the “bigger picture,” to help discern whether desired effects are being created and whether the enemy is adapting his COAs to our actions. The assessment plan must be closely coordinated with all other planning efforts.

8. The force assignment process integrates products/outputs from previous phases of the targeting cycle and fuses capabilities analysis with available forces, sensors, and weapons systems. It is primarily an air operations function, but requires considerable intelligence support to ensure ISR assets are integrated into the plan. Matching the components’ available forces/systems and ISR assets to the approved targets (prioritized on the JIPTL) is at the heart of total force assignment. **Thus the force assignment process provides the vital link between analysis and planning for actual operations.**

9. Targeting personnel assist air operations planners in balancing expected effects with available employment options when supporting the force assignment process. Their recommendations should reflect an objective assessment of the most appropriate capability to achieve the effect required to meet the targeting objective. During this process, targeting personnel provide current target status, including BDA, effectiveness analysis, and collateral damage estimates.

10. The JAOC should establish procedures to ensure that organizations nominating targets receive continuous feedback on the status of their nominations throughout the tasking cycle. For example, not all nominated targets will be approved for inclusion in the JIPTL, nor will all targets on the JIPTL be included on the ATO. There must be a feedback mechanism to ensure that targets not attacked, for any reason, are reported to the nominating authority for consideration for future submissions.

11. Collection planning and target planning are consolidated in MAAP development to enable production of a comprehensive ATO, SPINS, ISR synchronization matrix, etc. Consolidation ensures the targets selected for inclusion in the ATO are matched with CRs for pre-strike verification as well as post-strike physical and functional assessment.

#### (4) Present Joint Targeting Recommendations to the CJTF for Approval

(a) The force assignment team also prepares a comprehensive briefing on the recommended plan, explaining the rationale behind the targeting decisions and target selection. The plan is briefed to the CJTF as part of the JTCCB process. Generally, operations and intelligence staffs work together to produce and brief the recommended plan.

(b) Planners must inform the submitting component commander if a component-submitted HPT cannot be attacked, targeting effect created, or targeting objective achieved. That component commander can modify the targeting effect or

objective or accept the fact that the targeting objective will not be achieved during this cycle. If necessary, the component commander can seek modifications to operational objectives, targeting guidance, or prioritization from the CJTF, via the JTCB process, to enable servicing of the submitted HPT.

#### (5) Issue Tasking Orders to Forces

(a) Once the plan developed by the force assignments team is approved, tasking orders to the assigned combat and support forces must be prepared and issued. It is important to include tasking for intelligence organizations supporting mission planning and CA during this phase.

(b) The JTF staff translates the CJTF's operational planning guidance and approved COA into tasks to subordinate units, contained in the CONOPS. The JFACC SD does the same process at the JAOC for the JFACC level to develop the JAOP. Tactical mission tasks describe the results or targeting objectives and targeting effects the commander wants to achieve/create – the what and why of a mission statement. Thus a mission statement is a short sentence paragraph describing the unit's task (or tasks) and purpose that clearly indicate the action(s) to be taken and the reason(s) for doing so. The mission statement normally contains the elements of who, what, where, why, and when, but seldom specifies how. The how is normally defined in the CONOPS.

1. The “who”, “where”, and “when” of the mission statement is straightforward. The “what” and “why”, however, are more challenging to write clearly and can be confusing to subordinates if not written well.

2. The “what” in the mission statement is the tactical mission task to be accomplished. “What” is typically expressed either in terms of an intended targeting effect (block, canalize, defeat, destroy) or in terms of an action by a friendly force (contain, destroy, isolate). The commander and staff should carefully choose the term that best describes either the action to be taken by the friendly force or the commander's intended targeting effect to be created.

3. The “why” (or purpose) of a task statement puts the task into context by describing the reason for performing the task. The purpose is normally described using a descriptive phrase and is often more important than the task. The following example includes a purpose in the mission statement: “NLT 031100Z JUL 03 (**When**) 1st Brigade Combat Team (BCT) (**Who**) secures (**What/task**) OBJ BRAVO (**Where**) to prevent enemy forces from crossing the BLUE RIVER (**Why/purpose**).”

4. Normally, the staff develops the task statement by adding the phrase “in order to” and then provides the task's purpose. “In order to” phrases might include “divert, deny, enable, deceive, prevent, open, envelop, surprise, cause, protect, allow, create, influence, support, etc.”

5. Task statements normally do not specify “how.” There may be occasions, however, where an activity (example.g., raid, ambush, infiltrate) provides a needed overarching doctrine of how to accomplish a task that will enhance clarity and provide context. Here is an example of a mission task statement that includes an activity: “At 211000Z Aug 2006 (When) 1st BCT (Who) infiltrates (How/activity) to seize (What/task) Objective BRAVO (Where) in order to prevent enemy forces from interfering with the rapid crossing of 3rd (US) Infantry Division over the Blue River (Why/purpose).”

6. There also is a need to differentiate between broader combined arms tasks (e.g., a mission-task for the BCT) and more focused supporting tasks (e.g., fire support task).

(c) After the MAAP development process is complete, the ATO production process merges the ATO data with any inputs to SPINS, communications notes, and the airspace control order. The consolidated orders are electronically transmitted to all users via TBMCS.

(d) The ATO is based on JFACC guidance, the AOD, the MAAP, and component requirements. During execution of the operation, detailed capabilities analysis at the tactical level is used to optimize weapons delivery parameters, validate ordnance loads, and support ongoing mission planning to support daily ATO cycles.

(e) Airspace control and air defense instructions must be provided in sufficient detail to allow subordinates to plan and execute all missions listed in the ATO. These are usually captured in the ACO and the day’s SPINS. These instructions must facilitate combat operations without undue restrictions, balancing combat effectiveness with the safe, orderly, and expeditious use of airspace. Instructions must also provide for quick coordination of task assignment/reassignment and must direct aircraft identification, engagement procedures and ROE appropriate to the nature of the threat. These instructions should also consider the volume of friendly air traffic, friendly air defense requirements, identification, friend or foe technology, weather, and adversary capabilities. Instructions contained in the SPINS and the ACO are updated as frequently as required.

(f) The ATO, ACO, and SPINS provide operational and tactical direction at appropriate levels of detail. The level of detail should be very explicit when forces operate from different bases and multi-component or composite missions are tasked. By contrast, less detail is required when missions are tasked to a single entity or base. Subordinates may submit critical changes to target requests and asset availability during this phase of the cycle.

## **11. Phase 5 – Mission Planning and Force Execution**

a. Upon receipt of tasking orders, detailed planning must be performed for the execution of operations (Figure III-15). The joint targeting process supports this

planning by providing tactical-level planners with direct access to detailed information on the targets, supported by the nominating component's analytical reasoning that linked the target with the desired operational effect or task (Phase 2). This will provide the background information necessary for the warfighter to focus on supporting the CJTF's objectives as the operation unfolds.

b. Combat operations are dynamic. During force execution, the operational environment changes as the adversary responds, deviates from friendly force assumptions and the environment is altered by the direct impact of combat operations. The joint targeting process monitors these changes in order to allow commanders to maintain the initiative through flexibility. Force execution is where targets are actually attacked (or otherwise affected) and direct effects are created. Mission results are reported and include physical damage assessments and MISREPs to facilitate the assessment process.

c. **Target validation is a critical function during this phase.** Validation during this phase includes analysis of the situation to determine if planned targets still contribute to achieving operational objectives (including changes to plans and objectives), if targets are accurately located, and how planned actions will impact on other friendly operations. Determining target support to operational objectives would involve verifying the linkage of targeting effects, targeting objectives, operational tasks (to subordinates), operational effects, to operational objectives.

#### d. **Deliberate Targeting**

(1) The tactical-level combat units confirm weaponeering details, plan, and execute tasks to create the desired targeting effects against each specific target developed and approved through the joint targeting cycle and deliberate targeting. JTF/JFACC targeting representatives support this process by providing tactical-level planners with direct access to detailed information on the targets, to include the analytical reasoning that linked the desired targeting effect with the CJTF's operational objectives, targeting guidance, and intent.

(2) Execution planning includes the preparation necessary for combat units to accomplish the decentralized execution of the ATO. It generally consists of the 12 hours immediately prior to the start of a given day's ATO execution period. Force execution refers to the 24-hour period in which a particular ATO is executed by combat units. The JAOC aids execution in preparing input for, supporting, and monitoring execution.

(3) During force execution, the JAOC is the center for revising the tasking of air forces. It is also responsible for coordinating and deconflicting any changes with appropriate agencies or components. It may or may not have authority to re-direct use of space and information capabilities supporting theater efforts, depending upon the asset. If the JAOC does not have the authority, it will coordinate with the controlling agency to accomplish the requirement.

## Phase 5 – Mission Planning and Force Execution

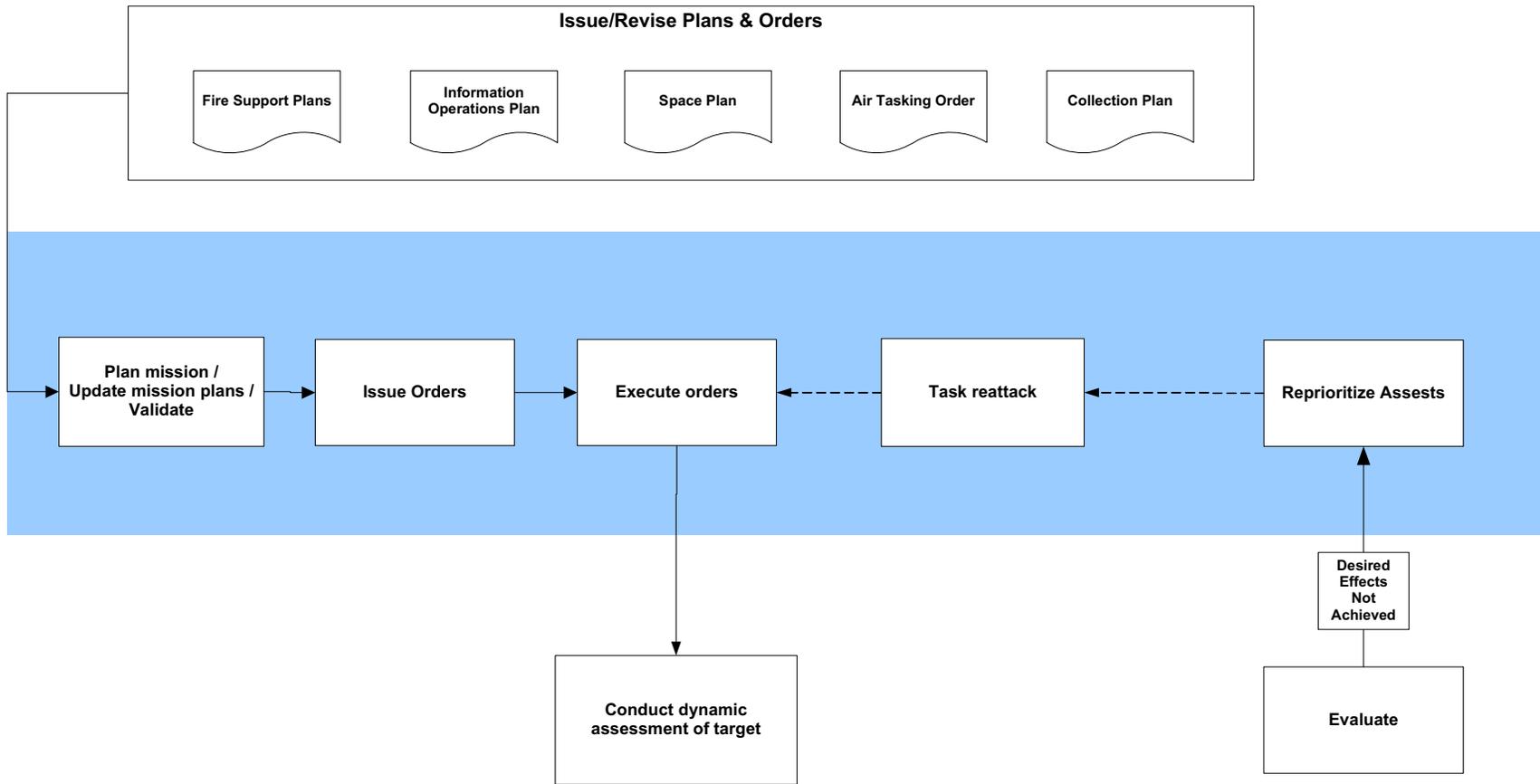


Figure III-15. Phase 5 – Mission Planning and Force Execution

(4) Due to operational environment dynamics, the JFACC may direct changes to planned operations during force execution. The JAOC must be flexible and responsive to changes required during execution of the ATO. Forces not apportioned for joint or combined operations, but included on the ATO for coordination purposes, can be redirected only with the approval of the respective component or allied commander. During force execution, the JFACC is also responsible for retasking air assets to respond to emerging targets or changing priorities. The JFACC may delegate the authority to redirect missions, made available for higher priority targets, to C2 mission commanders as necessary. The JAOC must be notified of all redirected missions.

(5) The JAOC COD supervises the detailed execution of the ATO. Targeteers are an integral part of combat operations, monitor ATO execution, and recommend alternate targets when necessary. Typically, targeting changes are needed due to adverse weather, assessment requirements, or modification of priorities. The ability to quickly recommend good alternate targets is a key enabler to the flexibility of air power. Combat operations targeteers should be aware of all significant information for targets on the current ATO, desired targeting effects and targeting objectives, all guidance, ROE, and weaponeering lookup tables as appropriate.

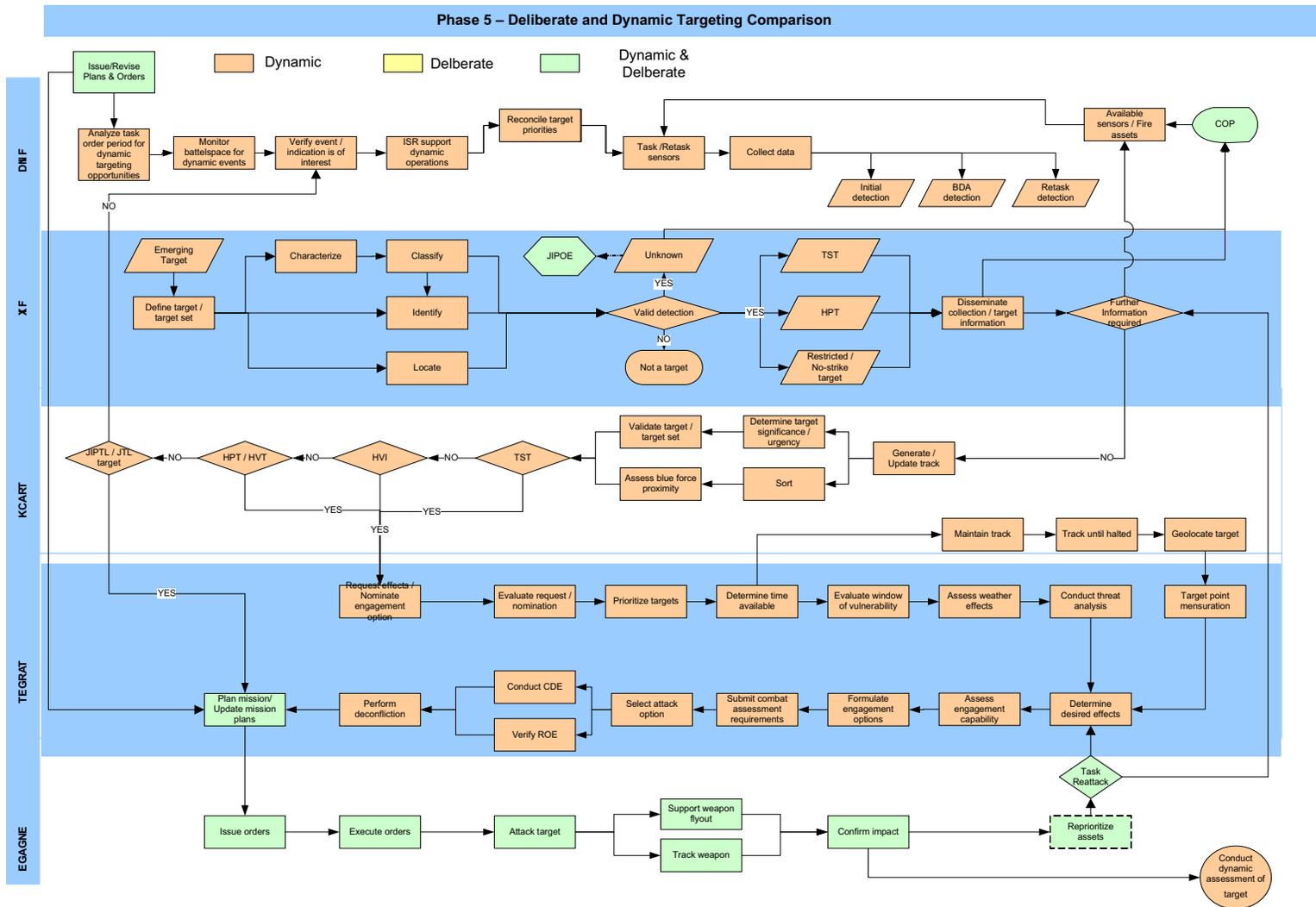
(6) The rational use of force relies on the capability to identify adversary entities as a precursor to taking action against them. CID is the process of attaining an accurate characterization of detected objects in the operational environment sufficient to support an engagement decision. As such, CID is a critical enabling capability in any use, or potential use, of military force. Conversely, to preclude using force against non-adversary entities, identifying friendly and neutral entities is important. Blue force tracking and SA are core functions of CID and are used to identify and track US, allied, and coalition forces for the purpose of providing commander's enhanced SA and reduce fratricide.

### **e. Dynamic Targeting**

(1) Lessons learned from recent operations illustrate the need for a distinct focus to enable dynamic targeting (especially the prosecution of TSTs) during Phase 5. Conversely, scheduled deliberate targets already have the find, fix and track steps in Phase 5 completed, due to being previously known fixed targets, and are scheduled to complete the final target step as part of the ATO (Figure III-16).

(2) The CJTF and staff, in coordination with joint components and other agencies, develop priorities and guidance to facilitate dynamic targeting. These priorities and guidance should include, as a minimum:

- (a) Rapid identification of requirements from components.
- (b) Prioritization of targets, to include TSTs.
- (c) Guidance for acquisition.



(d) Authorized action against targets and approval level.

(e) Articulate risk tolerance sufficiently to let on-scene commanders understand CJTF's intent when dynamic targeting requires accelerated coordination.

(3) Dynamic targeting in Phase 5 consists of five steps: find, fix, track, target, and engage (Figure III-17). Dynamic targeting has often been called "F2T2EA" or "the kill chain" and has also been used for specifically engaging TSTs. Dynamic targeting prosecutes targets of opportunity and changes to planned targets or objectives.

(a) Targets of opportunity have been the traditional focus of dynamic targeting because decisions must be made quickly on whether and how to engage them.

(b) Changes to planned targets are also covered during this phase because confirmation, verification, validation, and authorization decisions must be made rapidly.

(4) Some steps of dynamic targeting may be accomplished iteratively or in parallel. The find, fix, and track steps tend to be ISR-intensive, while the target and engage steps are typically labor-, force-, and decision-making intensive.

(5) Once the ATO is published, adjustments are made in the JAOC COD and targeting change decisions are handled through the dynamic targeting process. Some targets in the current execution cycle are fleeting and require near-immediate prosecution if they are to be targeted at all. Similarly, the dynamic targeting process can also provide a responsive use of on-call or dynamically re-tasked missions to exploit enemy vulnerability that may be of limited duration. However, dynamic targeting may lead to an overall reduction in the probability of success because of reduced time for mission preparation and target study.

(6) Dynamic is different from deliberate targeting in terms of time available, but not much different in the substance of the steps. The relationship and general content of these steps is illustrated in Figure III-17. When the importance of a target rises to such a level that it poses (or will soon pose) a danger to friendly forces, or it presents a highly lucrative, fleeting opportunity of tactical advantage, the CJTF may designate it as requiring immediate response. Such TSTs may be fully anticipated and planned in advance as deliberative actions in the joint targeting process for execution by designated forces. However, if their nature precludes detailed advanced execution planning (e.g., a mobile ballistic missile threat), they may be initially identified during the deliberative analytical and planning phases of the joint targeting cycle (with appropriate advance ISR tasking) and once detected they may be prosecuted using dynamic targeting.

(7) Although priorities may vary, the primary focus of dynamic targeting should be the prosecution of:



**Figure III-17. Dynamic Targeting Steps**

(a) CJTF designated and prioritized TSTs. The CJTF is ultimately responsible for TST prosecution and relies upon the component commanders for conducting TST operations.

(b) Component high priority targets that are not CJTF-approved TSTs, but are considered crucial for success to friendly component commanders' missions because of their fleeting nature or threat to friendly forces.

(c) Targets scheduled to be struck on the current ATO in execution, but which have changed status in some way (such as FSCM changes).

(d) Other targets including HPTs, HVTs, HVIs, and those emerging during execution that friendly commanders deem worthy of targeting.

(8) To avoid unnecessary diversion of assets from the overall plan, it is important to limit the total number of targets designated as TST to only those meeting the strict definition of JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*—“A joint force commander designated target requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces.” It is also important to provide to all levels of C2 (and force application) clear guidance on what constitutes a TST or component HPT.

(9) Most mobile TSTs have the ability to move rapidly and hide throughout the operational area, limiting their exposure time. The term “emerging target” will be used to describe a detection that meets sufficient criteria to be considered and developed as a potential TST. Emerging targets normally require further ISR to develop, confirm, and continue the dynamic targeting process.

(10) In addition to TST guidance, the CJTF establishes specific guidance on how coordination, deconfliction, and synchronization will occur among functional/Service components assigned in the operational area. The components use this guidance to establish planned and reactive procedures for attacking the prioritized TST and immediate targets. Some examples of CJTF guidance to facilitate TST prosecution include:

(a) Establish planned, deconflicted fire areas (with definable trigger events) against specific TST and immediate targets.

(b) Direct component commanders to task assets for standby or secondary missions as backup to primary sensors and weapons systems.

(c) Designate TST and immediate target engagement authority based on the component commander’s operational area, assigned mission, or a combination thereof. If necessary, specify those exceptional circumstances when component commanders have the authority for immediate engagement of TST regardless of assigned operational area or mission. In other words, the CJTF should determine those situations, if any, where the requirement for immediate destruction of the TST or immediate target outweighs the potential for fratricide or duplication of effort. This determination would allow a component to bypass the requirement for informing, coordinating, deconflicting, or synchronizing with other components. However, if time allows, these efforts should always be accomplished before engagement.

(d) Identify specific data links between component C2 elements to conduct rapid coordination. This includes authorizing direct liaison and coordination authority.

(e) Establish priority “quick fire” sensor-to-shooter communication links with defined conditions for circumventing or bypassing normal command/coordination channels (to improve timeliness of response).

(11) When using on-call or dynamically re-tasked assets, immediate attack often relies on an off-board sensor such as Joint Surveillance Target Attack Radar System (JSTARS) to provide initial target detection and targeting information. Passing real-time target information via data-link can shorten response time to a few minutes, depending on the distances and C2 arrangements involved.

(a) Immediate fire requests allow airborne assets to exploit enemy vulnerability that may be of limited duration. It can work particularly well against attacking enemy ground forces on the move in the enemy rear area by providing a responsive use of AI while supporting the friendly ground component. The ASOC normally coordinates and directs immediate AI requests flown short of the FSCL.

(b) The same quick-responsive nature of immediate AI which allows it to take advantage of fleeting opportunities can also have a negative impact on individual mission success. Scheduled missions allow aircrews more time to study the target imagery and to align attack axes to optimize weapons effects. Detailed study can reduce threat exposure and allow mission planners to optimize the weapon's fusing for maximum effect. Preplanning allows better packaging of strike and support assets when required.

(c) The bottom line for dynamic targeting of airborne assets is that it should only be used in those cases when the need for a short reaction time outweighs the reduced effectiveness that may result when compared with preplanned operations. Moreover, opportunity costs must be considered. Commanders should ensure the benefits of diverting air and space power away from a preplanned target outweigh the costs by pondering several variables, such as:

1. What is the opportunity cost in not striking a preplanned target?
2. What are the priorities?
3. Will diverting airpower to an unplanned target create greater effects or is it less efficient?

(12) Successful dynamic targeting, however, requires a great deal of prior planning and coordination within the JAOC and with other components. If dynamic targeting is to be done correctly, air planners must develop CONOPS that make capability available to the combat operation division prior to the start of execution. This can be done in a number of ways. Among the most common methods are:

- (a) Preplanned target reference methods and FSCM such as kill boxes/JFAs.
- (b) Pre-positioned or on-call ISR and strike packages for rapid response to emerging targets.

(c) Using JIPOE to determine the most probable areas where targets will emerge during execution.

(d) Coordination and synchronization of dynamic targeting operations by streamlining and developing procedures for rapid handover of the mission tasking to another component for mission execution if the primary component cannot attack a target that emerges.

(13) Error prevention and mitigation is an important consideration in planning for dynamic targeting. Primary issues for consideration are:

(a) Methods to ensure that aircrew have the most current information pertaining to the location of SOF, friendly ground forces, and no-strike target lists.

(b) Robust ROE and related legal considerations are understood by all participants.

(14) **Combat Identification.** For prospective targets, there are essentially three levels of CID that are relevant to those tasked to carry out actions against immediate and time sensitive targets. At the first level, the track or entity is identified as friendly, foe, or neutral. At the next level, the prospective target's type of platform is identified. This will aid in determining the nature of tactical action required against it and will assist in prioritizing the target. Finally, a third level entails determining the prospective target's intent (such as by its track relative to friendly forces) when possible. This will further aid in establishing the prospective target's priority, and may sometimes entail reclassifying a target as a TST based on its potential threat to friendly forces.

(15) **LNOs** from other functional components or Services may be very helpful during the dynamic targeting process. For example, the SOLE may be able to provide the JFACC with additional options for dealing with emerging targets, provide locations and activities of SOF and other friendly forces, assist with the prosecution of targets, or assist in deconfliction. However, with other components, direct cross component watch station-to-watch station coordination may provide the best means to rapidly coordinate dynamic targeting and avoid delays or possible miscommunication through liaison elements. Liaison elements may not have access to component asset availability needed to coordinate re-allocation decisions.

f. **Phase 5 Steps.** Both deliberate and dynamic target categories are prosecuted during this phase. Because scheduled deliberate targets have already completed the find, fix, and tracks steps of Phase 5, due to being previously known fixed targets, much of the following discussion will focus on dynamic target execution, where appropriate.

(1) **Find**

(a) Activities in this step involve ISR or nontraditional ISR detection of an emerging target, some aspect of which suggests that it is unplanned or unanticipated. This requires clear targeting guidance from commanders including target priorities,

focused ISR collection plan based on JIPOE, NAIs, and TAIs. The collection plan should facilitate detection of priority targets, emerging targets, and detections that meet sufficient criteria (established by the JAOC with commander's guidance) to be considered and developed as a potential TST using dynamic targeting. The time sensitivity and importance of an emerging target may be initially undetermined. Emerging targets usually require further ISR and analysis to develop, confirm, and continue dynamic targeting. This further analysis will result in one of four determinations which shape follow-on actions, as illustrated in Figure III-18.

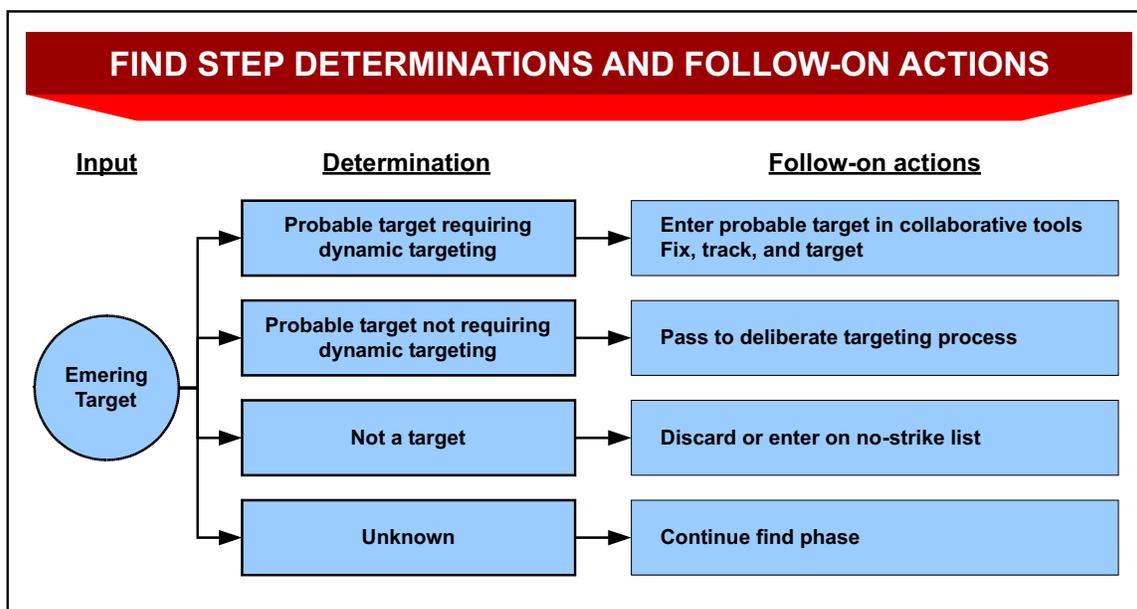


Figure III-18. Find Step Determinations and Follow-on Actions

(b) A good collection plan will not be passive. Commanders should not send out sensors without an idea of what they will collect. Instead, they should be anticipatory, which involves confirming anticipated results, not just blind detection. The result of the find step (Figure III-19) is a probable target nominated for further investigation and development in the fix step.

(c) Inputs to the find step:

1. Clearly delineated CJTF targeting guidance and priorities.
2. Focused JIPOE, to include identified NAIs, TAIs, and GEOINT analysis cross cueing of intelligence disciplines to identify potential target deployment sites or operational environments.
3. Collection plans based on the JIPOE.

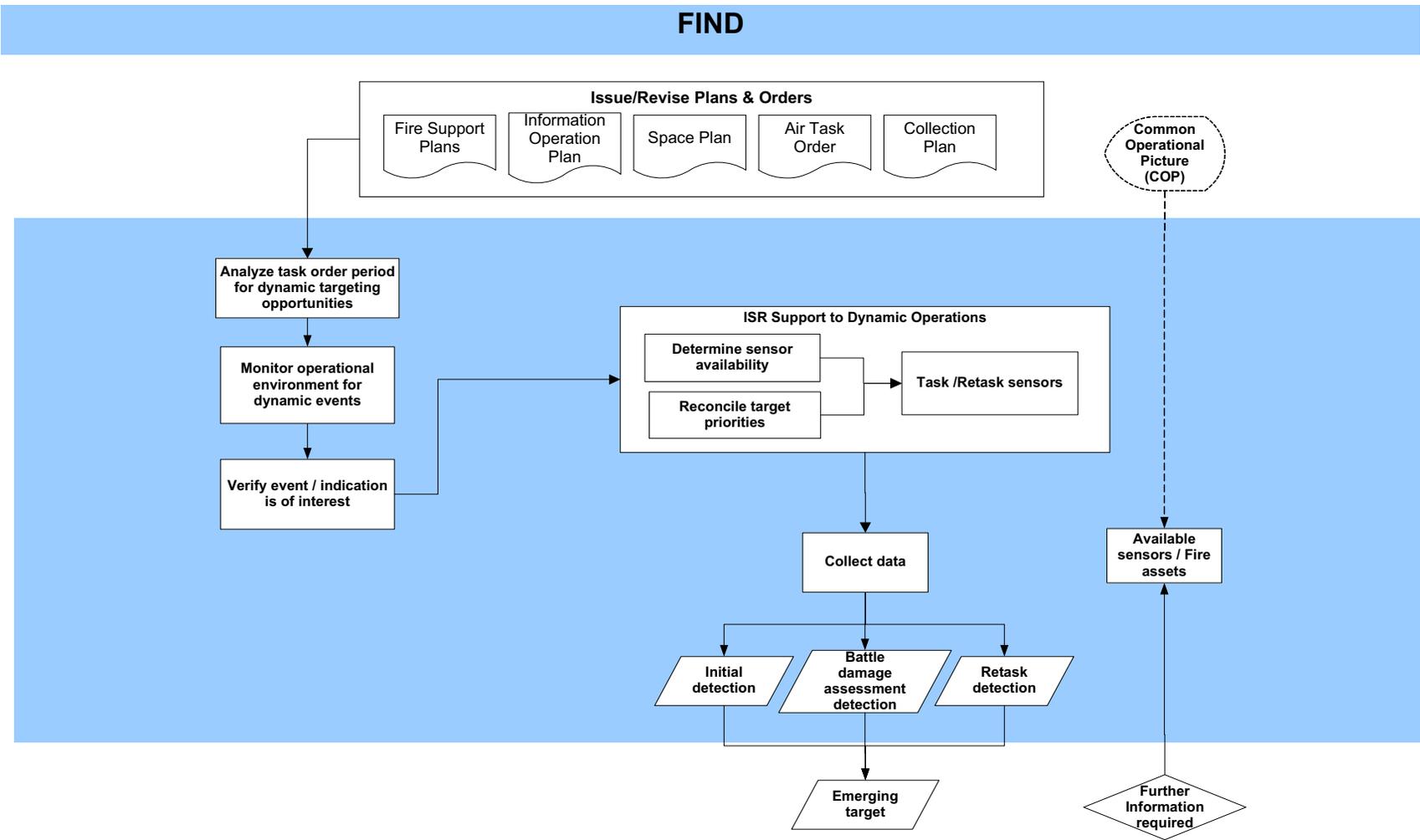


Figure III-19. Find

(d) During the find step, an emerging target will be:

1. Designated as a probable target or CJTF TST and continue dynamic targeting.

2. Designated as a target not requiring dynamic targeting and passed to deliberate targeting.

3. Continued to be examined or analyzed by sensors as a potential target (i.e., stay in the find step).

4. Discarded completely or entered on the NSL.

(e) If an emerging target is detected, identified, and determined to be a valid target by a system capable of engaging it, this may result in the find, fix, and track steps being completed nearly simultaneously without the need for traditional ISR. Likewise, the target and engage steps may be completed with a much abbreviated coordination and approval process.

(f) Output of the find step are probable targets detected and nominated for further development within dynamic targeting.

**g. Fix**

(1) A “fix” is a position determined from terrestrial, electronic, or astronomical data. This step results in positive identification of an emerging target as worthy of engagement and determines its position and other data with sufficient fidelity to permit engagement (Figure III-20). It may begin when the emerging target is detected or after. When the emerging target is detected, sensors are focused on it to confirm its identity and precise location. This may require diverting an ISR asset from other uses or implementing a sensor network. The CJTF may have to make the decision on whether diversion of ISR resources from the established collection plan is merited, but this decision can most often be made by the J-2 CM. Data correlation and fusion should then confirm, identify, and locate the target, facilitating classification as a TST or other target requiring dynamic targeting. Target location and other information must be refined enough to permit engagement. This requires ISR capabilities that can identify stationary and mobile targets, day or night, in all weather conditions, through all forms of terrain, camouflage, and concealment—all in a timely manner. Systems that can do this are a relatively recent development, and permit a degree of flexibility and timeliness that were not possible in the past. An estimation of the target’s window of vulnerability then frames the time available/required for prosecution may affect the prioritization of assets and impact the risk assessment.

(2) If a target is detected by a system that can engage it (such as a missile-armed Predator) or a battle management C2 platform (such as the Airborne Warning and Control System (AWACS) or the JSTARS), this may result in the find, fix, and track

steps being completed near-simultaneously, without the need for “traditional” ISR input. It may also result in the target and engage steps being completed without a lengthy coordination and approval process. Battle management C2 platforms can often fix target locations precisely enough to permit engagement without need for further ISR collection. Growth in sensor technology also permits “non-traditional” sources of ISR to supplement the find, fix, and track steps by integrating data from platforms other than those traditionally dedicated to intelligence collection. This can even include information gleaned from weapons/targeting systems or even munitions themselves, helping to build a common operational picture (COP) that commanders can use to shorten Phase 5.

(c) Inputs to the fix step:

1. Probable targets requiring dynamic targeting.
2. Sensor information on the target.

(d) Optimally, ISR assets should provide both operators and intelligence analysts with the capability to identify stationary and mobile targets, day or night, in a timely manner in any weather, any terrain, or any form of concealment, to the degree of accuracy required by the engaging weapon systems. Unanticipated or unplanned TSTs (i.e., highly lucrative, fleeting targets not previously identified by the CJTF as a TST) may be identified during the fix step, requiring CJTF confirmation and classification as a TST. These targets receive the highest priority in dynamic targeting.

(e) Output of the fix step:

1. Target identification, classification, and confirmation.
2. Target location accuracy refined to level required for target engagement.
3. Determination or estimation of TST window of vulnerability.

**h. Track**

(1) This step takes a confirmed target and its location, maintains a track on it, observes its activity, and confirms the desired effect (Figure III-21). Sensors may be coordinated to maintain SA or track continuity of a target. Windows of vulnerability should be updated when warranted. This step requires relative reprioritization of ISR assets, just as the fix step may, in order to maintain SA. If track continuity is lost, it will probably be necessary to repeat the fix step—and possibly the find step as well.

# FIX

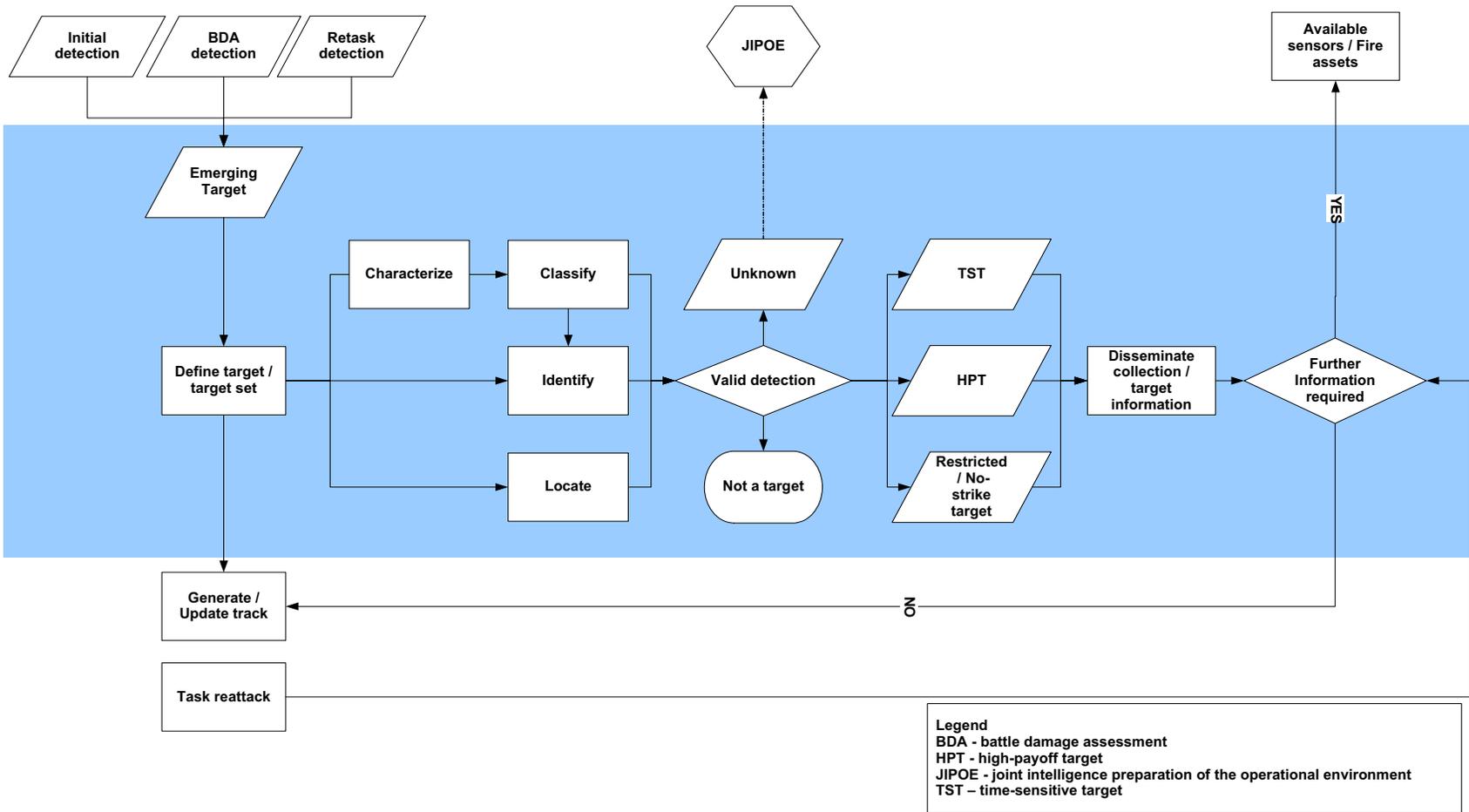


Figure III-20. Fix

(2) The process may also be run partially “in reverse” in cases where an emerging target is detected. Once it becomes clear that it is a valid target, the sensors detecting it can examine previously recorded data onboard and track the target back to its point of origin, such as a base camp. This “reverse tracking” provides the opportunity to potentially eliminate a wider threat or destroy more lucrative targets where only one target might have been engaged without the benefit of these newer tracking technologies. Such “point of origin hunting” has proven especially useful during stability and counterinsurgency operations such as those in Iraq.

(3) Inputs to the track step:

(a) Confirmed target.

(b) Target location and plot of movement (if applicable).

(4) Relative priorities for ISR requirements are based on CJTF targeting guidance and targeting objectives. TSTs generally receive the highest priority.

(5) Output of the track step:

(a) Track continuity maintained on a target by appropriate sensor or combination of sensors.

(b) Sensor prioritization scheme.

(c) Updates to target window of vulnerability.

### **i. Target**

(1) The target step (Figure III-22) takes an identified, classified, located, and prioritized target; finalizes the desired effect and targeting solution against it; and obtains required approval to engage. During this step, COD personnel must review target restrictions, including collateral damage, ROE, LOAC, the NSL, the RTL, and FSCM. This step accomplishes the equivalent of the “target validation” step in Phase 2 of the larger joint targeting cycle. It also confirms desired targeting effects and weaponizing. COD personnel match available strike and sensor assets against desired targeting effects, then formulate engagement options. They also submit assessment requirements.

(2) Force assignment for a specific target will be based on many factors, such as the location and operational status of ISR and strike assets, support asset availability, weather conditions, LOAC, ROE, target range, the number and type of missions in progress, available fuel and munitions, the adversary threat, and the accuracy of targeting acquisition data. This can be the lengthiest step in Phase 5, due to the large number of requirements that must be satisfied. In many cases, however, dynamic targeting can be accelerated if target step actions can be initiated or completed in parallel with other steps.

# TRACK

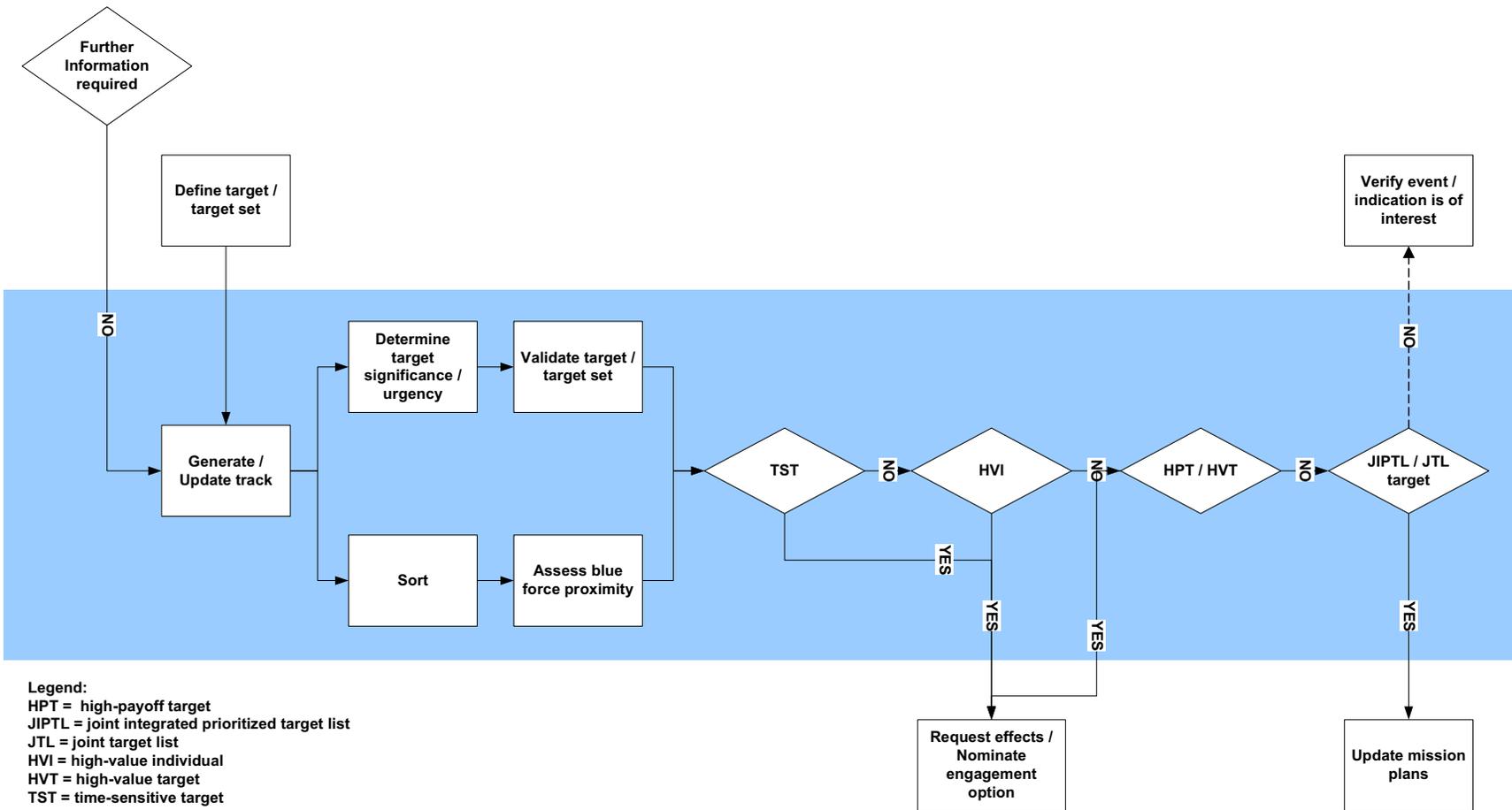


Figure III-21. Track

(3) Inputs to the target step:

(a) Identified, classified, located, and prioritized target.

(b) Restrictions for consideration: CDE guidance, WMD consequences of execution, LOAC, ROE, NSL, RTL, component boundaries, FSCMs, etc.

(c) SA on appropriate available assets from all components.

(4) Outputs of the target step:

(a) The desired effect is confirmed and target validated.

(b) Target data finalized in a format useable by the system that will engage.

(f) Consequence of execution prediction and assessment for WMD targets is performed.

**j. Engage**

(1) In this step, identification of the target as hostile is confirmed and engagement is ordered and transmitted to the pilot, aircrew, or operator of the selected weapon system. The engagement orders must be sent to, received by, and understood by the “shooter.” The engagement should be monitored and managed by the engaging component. The desired result of this step is successful action against the target (Figure III-23).

(2) Inputs to the engage step:

(a) Target approval decision

(b) Selected engagement option.

(3) Output of the engage step:

(a) Issuing and passing of the engagement order.

(b) Target engagement via lethal or nonlethal means.

(c) Engagement direction and control.

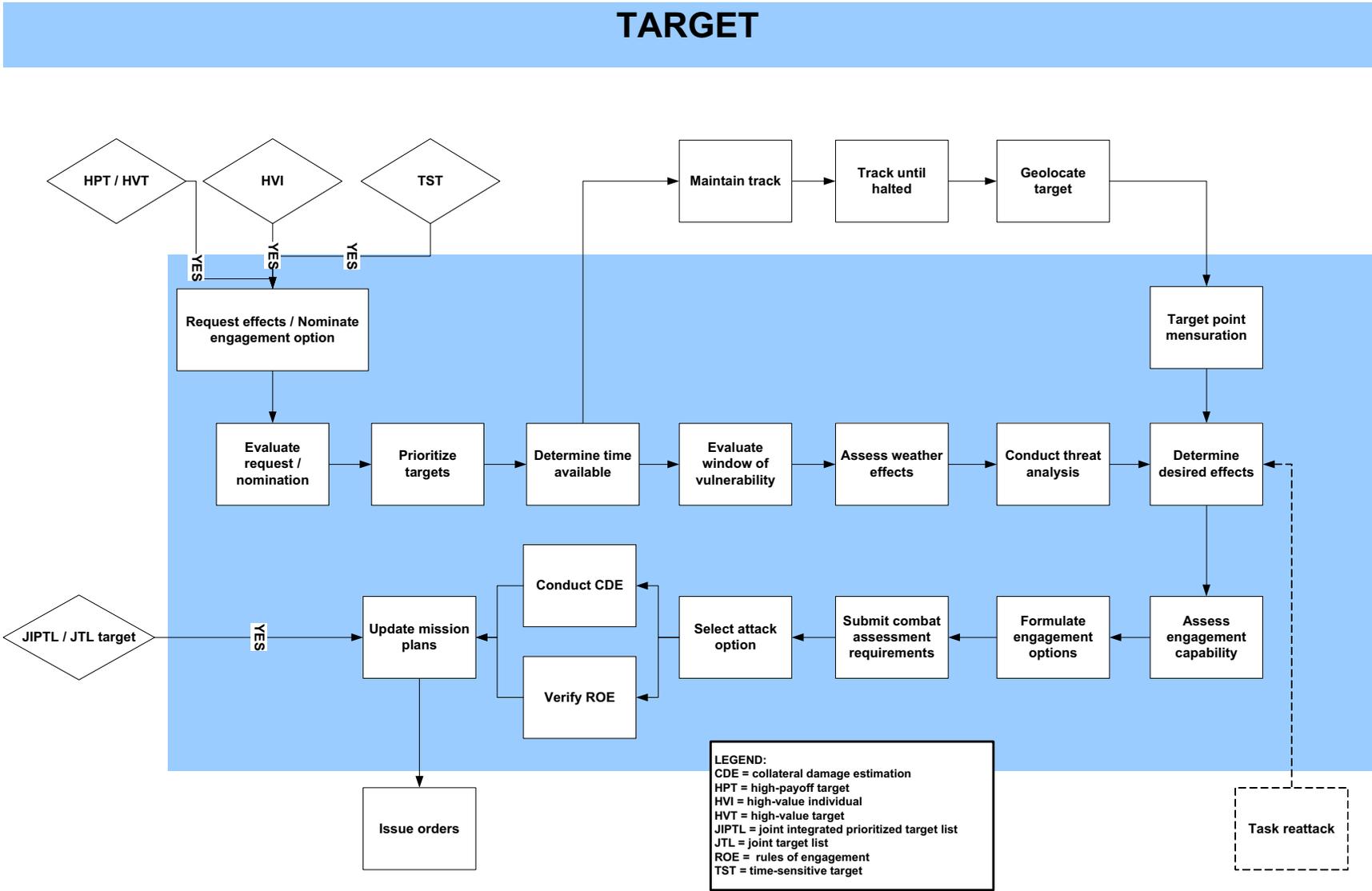


Figure III-22. Target

## 12. Phase 6 – Assessment

### a. Introduction

(1) Assessment is a process that measures progress of the joint force toward mission accomplishment. Commanders continuously assess the operational environment and the progress of operations, and compare them to their initial vision and intent. Commanders adjust operations based on their assessment to ensure objectives are met and the military end state is achieved.

(2) The assessment process is continuous and directly tied to the commander's decisions throughout planning, preparation, and execution of operations. Staffs help the commander by monitoring the numerous aspects that can influence the outcome of operations and provide the commander timely information needed for decisions. The CCIR process is linked to the assessment process by the commander's need for timely information and recommendations to make decisions. Planning for the assessment process helps staffs by identifying key aspects of the operation that the commander is interested in closely monitoring and where the commander wants to make decisions. Examples of commander's critical decisions include when to transition to another phase of an operation, what the priority of effort should be, or how to adjust command relationships between component commanders.

(3) Commanders and their staffs determine relevant assessment actions and measures during planning. They consider assessment measures as early as mission analysis, and include assessment measures and related guidance in commander and staff estimates. They use assessment considerations to help guide operational design because these considerations can affect the sequence and type of actions along multiple LOOs. During execution, they continually monitor progress toward accomplishing tasks, creating effects, and achieving objectives. Assessment actions and measures help commanders adjust operations and resources as required, determine when to execute branches and sequels, and make other critical decisions to ensure current and future operations remain aligned with the mission and end state. Normally, the joint force J-3, assisted by the J-2, is responsible for coordinating assessment activities. For subordinate commanders' staffs, this may be accomplished by equivalent elements within joint functional or Service components. The chief of staff normally facilitates the assessment process and determination of CCIRs by incorporating them into the HQ' battle rhythm. Various elements of the CJTF's staff use assessment results to adjust both current operations and future planning.

(4) Friendly, adversary, and neutral diplomatic, informational, and economic actions applied in the operational environment can significantly impact military actions and objectives. When relevant to the mission, the commander also must plan for using assessment to evaluate the results of these actions. This typically requires collaboration with other agencies and multinational partners — preferably within a common, accepted process — in the interest of unified action. For example, failure to coordinate over-flight and access agreements with foreign governments in advance, or to adhere to international law regarding sovereignty of foreign airspace, could result in mission delay, failure to

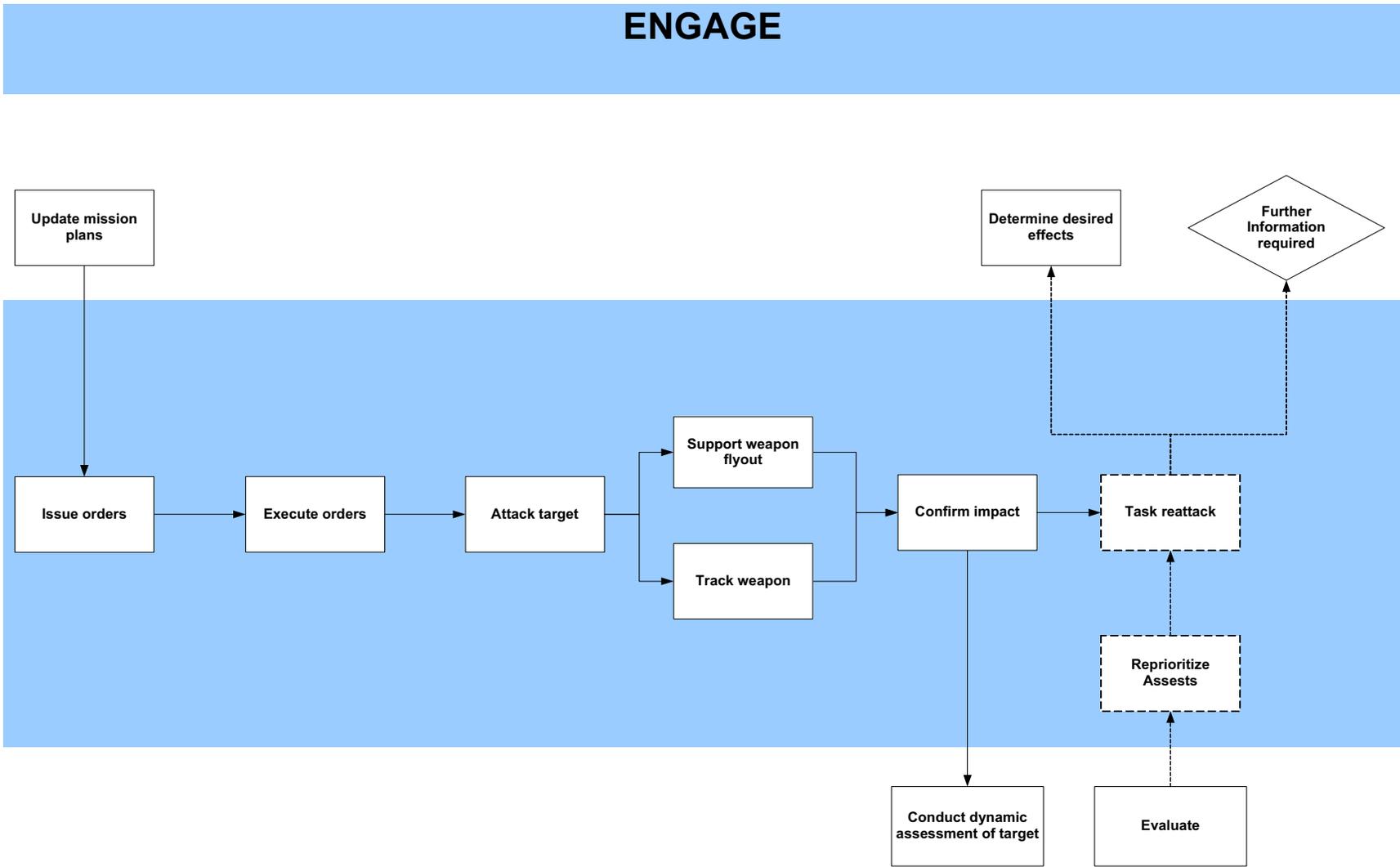


Figure III-23. Engage

meet US objectives, or an international incident. Many of these organizations may be outside the CJTF’s authority. Accordingly, the CJTF should grant authority to some joint force organizations for direct coordination with key outside organizations — such as USG interagency elements from Department of State (DOS), Department of Homeland Security, national intelligence agencies, intelligence sources in other nations, and other combatant commands — to the extent necessary to ensure timely and accurate assessment. An integrated data collection management plan is critical to the success of the assessment process, and should encompass all available tactical, theater, and national intelligence sources.

b. **Levels of War and Assessment.** Assessment occurs at all levels (Figure III-24) and across the range of military operations. Even in operations that do not include combat, assessment of progress is just as important and can be more complex than traditional combat assessment. As a general rule, the level at which a specific operation, task, or action is directed should be the level at which such activity is assessed. To do this, CJTFs and their staffs consider assessment ways, means, and measures during planning, preparation, and execution. This properly focuses assessment and collection at each level, reduces redundancy, and enhances the efficiency of the overall assessment process.

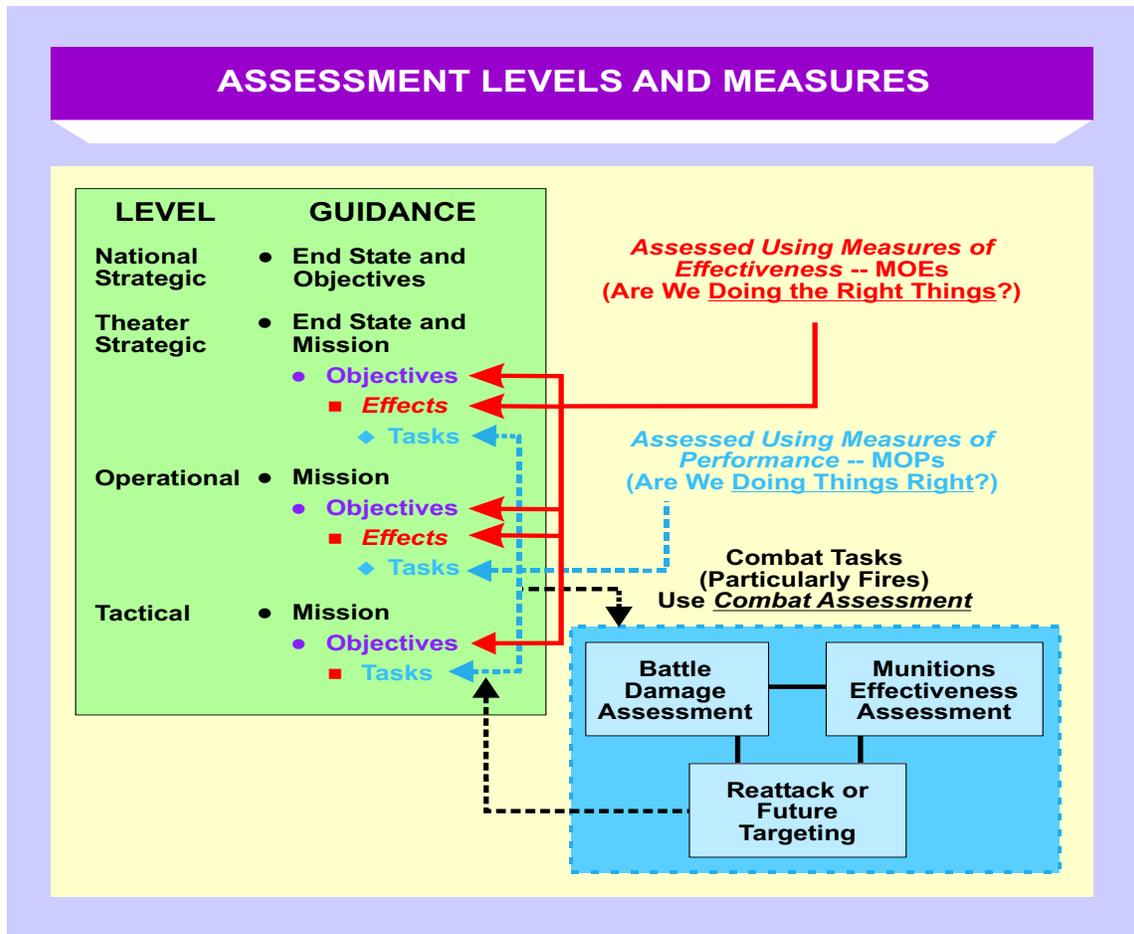


Figure III-24. Assessment Levels and Measures

c. **Operational and Theater Strategic-Level Assessment.** Assessment at the operational and theater strategic levels typically is broader than at the tactical level (e.g., CA) and uses MOEs that support theater strategic and operational mission accomplishment. Theater strategic- and operational-level assessment efforts concentrate on broader tasks, effects, objectives, and progress toward the end state. Continuous assessment helps the CJTF and joint force component commanders determine if the joint force is “doing the right things” to achieve objectives, not just “doing things right.” The CJTF also can use MOEs to determine progress toward success in those operations for which tactical-level combat assessment ways, means, and measures do not apply.

d. **Tactical-Level Assessment.** Tactical-level assessment typically uses MOPs to evaluate task accomplishment. The results of tactical tasks are often physical in nature, but also can reflect the impact on specific functions and systems. Tactical-level assessment may include assessing progress by phase lines; neutralization of enemy forces; control of key terrain or resources; and security, relief, or reconstruction tasks. Assessment of results at the tactical level helps higher-level commanders determine operational and strategic progress, so CJTFs must have a comprehensive, integrated assessment plan that links assessment activities and measures at all levels.

e. **Combat Assessment.** CA encompasses many tactical-level assessment actions and has implications at the operational level as well. CA typically focuses on determining the results of weapons engagement (with both lethal and nonlethal capabilities), and thus is an important component of joint fires and the joint targeting process. To conduct CA, it is important to fully understand the linkages between the targets and the CJTF’s objectives, targeting guidance, and desired effects. This linkage begins with targeting tasks, effects and objectives which support assigned operational tasks, effects and objectives. It is important to understand the difference between operational objectives/effects, targeting objectives/effects, and munitions effects. CA (Figure III-25) is composed of three related elements: BDA, MEA, and RR or future targeting.

f. **Battle Damage Assessment**

(1) The purpose of BDA is to compare post-execution results with the projected/expected results generated during target development. Comprehensive BDA requires a coordinated and integrated effort between joint force intelligence and operations functions. Traditionally, BDA is composed of physical damage assessment, functional damage assessment, and functional assessment of the next higher target system. BDA takes a three-phased approach to proceed from a micro-level examination of the damage or targeting effect inflicted on a specific target, to ultimately arriving at macro-level conclusions regarding the functional outcomes created in the higher-level target system. Phase 3 analysis suggests that BDA, and consequently CA, can have both tactical and operational impact.

(2) BDA requires more than post-strike imagery. Although in some situations a single data source may be adequate to perform BDA, in most cases, the use of “all-source” information is critical to providing accurate BDA. The following sources assist in conducting comprehensive BDA:

# Phase 6 – Assessment

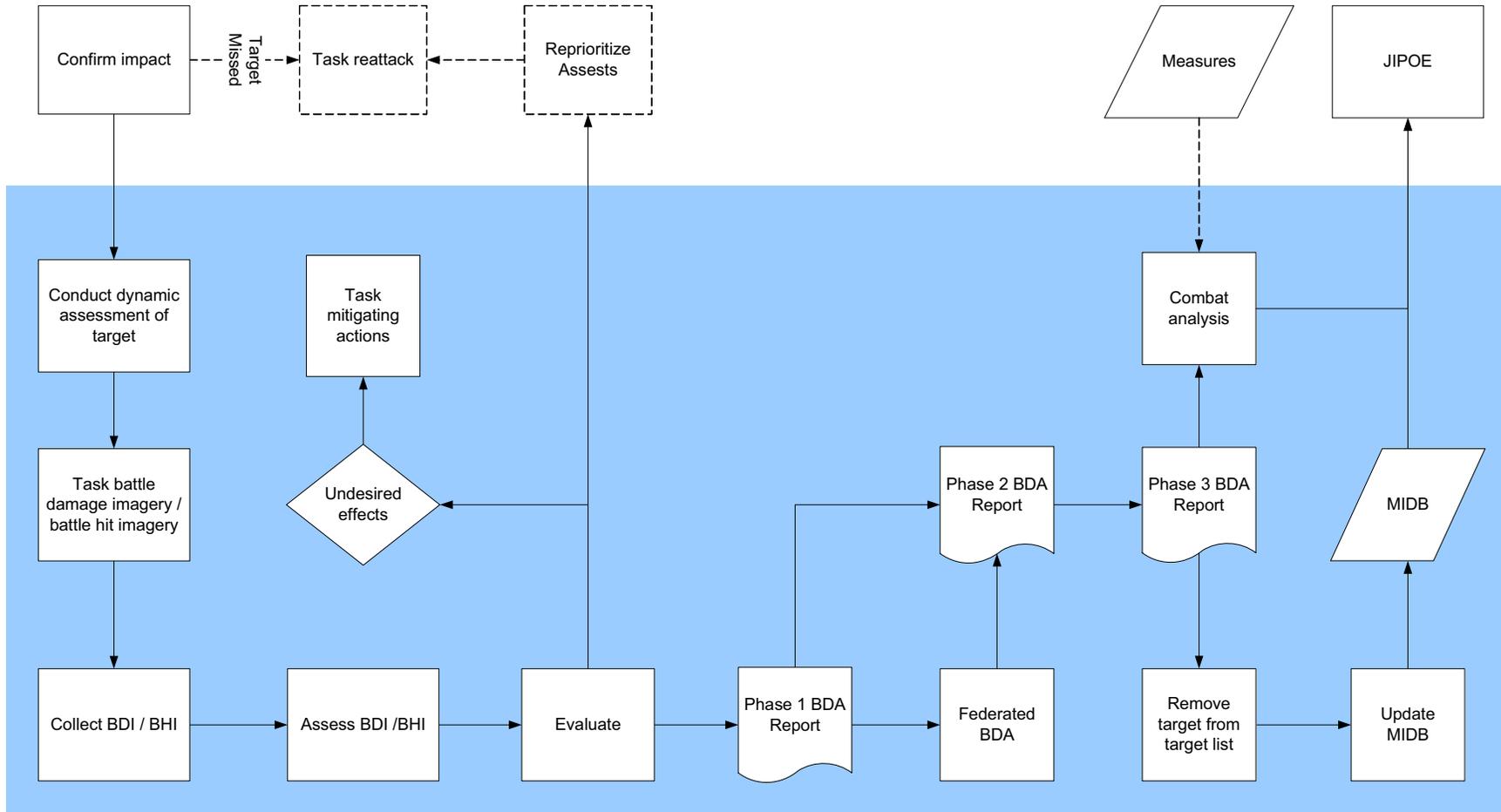


Figure III-25. Assessment

- (a) GEOINT including tactical or unmanned aerial vehicle platforms.
- (b) In-flight reports and MISREPs containing both executed ATO and pilot-reported BDA.
- (c) Aircraft cockpit video (ACV) and weapon system video (WSV).
- (d) SIGINT.
- (e) HUMINT to include direct reporting by forward air/ground observers, tactical air control parties, SOF, etc.
- (f) MASINT.
- (g) OSINT.
- (h) End of mission reports for surface-to-surface fires.
- (i) Indigo reports for cruise missiles.

g. **Munitions Effectiveness Assessment.** MEA studies how combat systems performed and the method in which they were applied. It examines the evidence after attacks to determine whether weapons and weapon systems performed as expected. The purpose of MEA is to compare the actual effectiveness of the means employed to their anticipated effectiveness calculated during the capability analysis phase of the joint targeting cycle. The results of MEA support both near term improvement in force employment and long-term improvements in lethal and nonlethal capabilities. Consequently, a critical ingredient for effective MEA is detailed familiarity with all inputs to the calculations performed in capability assessment that resulted in weapon system selection.

h. **Reattack Recommendations.** Future target nominations and RRs merge the picture of what was done (BDA) with how it was done (MEA) and compares the result with predetermined MOEs that were developed at the start of the joint targeting cycle. The purposes of this phase in the process are to determine degree of success in creating desired targeting effects, achieving targeting objectives, to formulate any required follow-up actions, or to indicate readiness to move on to new tasks in the path to supporting the overall CJTF objectives. For additional information on the BDA process, see DIA publications DI-2820-4-03, *Battle Damage Assessment (BDA) Quick Guide*, and DI 2800-2-YR, *Critical Elements of Selected Generic Installations (Critical Elements Handbook)*.

i. **Estimated Assessments**

(1) The current CA process relies on phased BDA analysis as a major part of assessing combat task completion. If no data is available for a target, the assessment is

usually left blank or unknown. Based on the BDA scenario and commander's targeting guidance, analysts may try to provide a prediction of the estimated damage for both individual target elements and higher-level target components/sets/systems based on the initial predictions as place holders for the probabilities of success. This process is facilitated by the precision and reliability of many modern weapon systems. As the operation is executed, the predictions for targeting effects on individual target elements are updated continually with the latest available information on the action taken. Such updates might be definitive BDA or it may be information, which, while not definitive, helps refine the estimate (e.g., confirmation that a joint direct attack munitions successfully dropped through the clouds on the programmed coordinates). Combining the latest information on individual target elements means an assessment cell can provide a more refined estimate of success. As more definitive data becomes available, the assessment becomes less of an estimate and more an actual assessment of what was or was not achieved.

(2) The overall goal of this approach is to provide the CJTF with the best estimated assessment of the progress of the joint operation at any given time, using all information available. For lethal strikes, this means using assessed effects where BDA is available. It then predicts the effects for strikes where BDA is not yet available. Such predictions should be based on historical data of previous strike performance and analyses of likely success given the specific planned weapon/target pairings (e.g., JMEM data). Finally, assessment agents (assessors) should continuously refine effects predictions based on the success of intermediate steps in the execution chain. This means, even where final/definitive BDA is not available for a given strike, assessors should update the prediction of likely strike success as soon as it is known whether the planned task was actually performed, update again as soon as it is known whether the weapon successfully released, and update again as soon as it is known whether the weapon successfully guided to target.

(3) A key aspect of this iterative predictive approach is that it suggests a need for a smooth transition between assessing a plan prior to execution, when only predictions are available, to assessing a plan in the midst of execution, when partial BDA information is available, through assessing success at the end of an operation approaching full BDA availability. Estimation can also facilitate undertaking higher level assessments of more complicated, interdependent systems.

(4) Estimating higher level effects based on estimates of what happens at specific target elements has advantages and limitations. A key advantage is that, by using the predictive approach discussed earlier, assessors will have a more specific basis for estimating what happens at specific target elements. This estimate will be based on a combination of prediction and, when available, execution data. These estimated targeting effects on specific target elements can then serve as the input to the model of the higher-level target component/set/system in estimating higher-level effects. A key limitation is that the fidelity of the estimate diminishes the further one gets from the initial, direct targeting effects of the action or task accomplishment.

j. **Assessment Metrics and Measurements**

(1) **Assessment Metrics:** The staff should develop metrics to determine if operations are properly linked to the CJTF's overall strategy and the larger hierarchy of operational and national objectives. These metrics evaluate the results achieved during joint operations. Metrics can either be objective (using sensors or personnel to directly observe damage inflicted) or subjective (using indirect means to ascertain results), depending on the metric applied to either the objective or task. Both qualitative and quantitative metrics should be used to avoid unsound or distorted results. Metrics can either be inductive (directly observing the operational environment and building situational awareness cumulatively) or deductive (extrapolated from what was previously known of the adversary and operational environment).

(a) **Characteristics of Metrics:** Assessment metrics should be relevant, measurable, responsive, and resourced so there is no false impression of task or objective accomplishment. Both MOPs and MOEs can be quantitative or qualitative in nature, but meaningful quantitative measures are preferred because they may be less susceptible to subjective interpretation.

1. **Relevant.** MOPs and MOEs should be relevant to the task, effect, operation, the operational environment, the desired end state, and the commander's CCIRs/decisions. This criterion helps avoid collecting and analyzing information that is of no value to a specific operation. It also helps ensure efficiency by eliminating redundant efforts.

2. **Measurable.** Assessment measures should have qualitative or quantitative standards they can be measured against. To effectively measure change, a baseline measurement should be established prior to execution to facilitate accurate assessment throughout the operation.

3. **Responsive.** Assessment processes should detect situation changes quickly enough to enable effective response by the staff and timely decisions by the commander. The staffs at all levels should consider the time required for an action or actions to produce desired results within the operational environment and develop indicators that can respond accordingly. Many actions require time to implement and may take even longer to produce a measurable result.

4. **Resourced.** To be effective, assessment must be adequately resourced. Staffs should ensure resource requirements for data collection efforts and analysis are built into plans and monitored. Effective assessment planning can help avoid duplication of tasks and unnecessary actions, thereby preserving combat power.

(b) **Measurement Types:** The assessment process uses MOPs and MOEs to evaluate progress toward task accomplishment, effects creation, and objective achievement. Well-devised measures can help the commanders and staffs understand the causal relationship between specific tasks and desired effects.

1. **MOPs measure task performance.** They are generally quantitative, but also can apply qualitative attributes to task accomplishment. MOPs are used in most aspects of combat assessment, since it typically seeks specific, quantitative data or a direct observation of an event to determine accomplishment of tactical tasks. But MOPs have relevance for non-combat operations as well (e.g., tons of relief supplies delivered or noncombatants evacuated). MOPs also can be used to measure operational and strategic tasks, but will typically be broader than at the tactical level.

2. MOPs help answer questions like, “was the action taken, were the tasks completed to standard, or how much effort was involved?” Regardless of whether there was or was not a tactical, immediate effect, did the assigned force execute the “fires,” “maneuver,” or “information” actions as required by the specified or implied task? MOPs could be used by the commander to assess whether his directives were executed by subordinate units as intended or if the units were capable of completing the specified action. Typical measures might include whether or not the designated unit delivered the correct ordnance on a target, occupied the town, or dropped the right PSYOP pamphlets, etc. A further example could be did the leaflet drop take more or less than the expected number of sorties, did the leaflets disperse in the appropriate pattern, or did they land in the proper location? Similarly how quickly/efficiently did we fill potholes in a particular neighborhood, or providing potable water to the village?

3. The MOP might ask “were the weapons employed as intended on the planned target or did the expected physical or functional damage occur.” For example a task statement might read: “4th BCT neutralize (target) during the period (time frame) in order to (purpose),” The MOP might include:

- a. Time to accomplish (TOT or NLT D+1).
- b. Physical damage required in quantifiable numbers (destroy x percent or specific number).
- c. Functional damage required on target.

4. Measurement of combat tasks use MOPs supported by "battle damage assessment" measurements—usually based on physical evidence (visual, infrared or electronic) of death, injury, disruption, diversion, delay, dislocation, denial, degradation, needs met, support provided etc. When selecting MOPs, planners should consider the indicators and means required to collect against them and provide guidance in the collection plan. These measures must be refined or amended during the tasking cycle, as the tactical situation or the status of the target changes and are normally approved by the next higher HQ in the chain of command.

5. It should be noted that there may be some tactical tasks that must be performed, such as establishing logistic and communications infrastructure, that are not directly linked to operational level tasks and effects. However, all operational level effects will have assigned tasks and related MOE and MOP to help assess their

attainment. Likewise, even though MOPs measure task accomplishment and will therefore fall within the realm of “Blue” activity, MOEs will not necessarily be restricted to “Red” activity. For example, an operational/strategic level objective of keeping the coalition together may have MOEs associated with it that are oriented on “Blue.” Likewise, operational and strategic effects and objectives may have supporting MOEs that are focused on neutral entities. Therefore, for simplicity, it can be generally stated that MOPs fall within the realm of “Blue” activities, but MOEs can exist in all areas. The relationship between the tasked action and the targeted node is a start point in assessing attainment of effects. More importantly, if the tactical actions were correctly executed, did they achieve the desired effects? If an effect does not occur, was it because the executed action did not happen or only partially happened, or was the action insufficient or was it the wrong action in the first place?

**6. MOEs assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect; they do not measure task performance.** These measures typically are more subjective than MOPs, and can be crafted as either qualitative or quantitative. As much as possible, MOEs should be based on quantitative measures to minimize the possibility for error in subjective interpretation. MOEs can be used to reflect a trend and show progress toward a measurable threshold.

**7.** MOEs indicate progress toward attainment of each desired effect indicate the avoidance of an undesired effect. Some MOEs may be direct forms of measurement, like an eyewitness account of a bridge span being down; some may be more circumstantial indicators, such as measurements of traffic backed up behind a downed bridge. MOEs are typically more subjective than MOPs but can be crafted as either qualitative or quantitative indicators to reflect a trend as well as show progress relative to a measurable threshold. For example, if the desired effect is that Brown government forces withdraw from the cities, the MOE could be stated as increase or decrease in level of forces in the cities. Progress toward this effect can be measured readily with ISR ways and means. However, if the desired effect is that the Brown government engages the terrorists to leave the country, an MOE such as increase or decrease in coercive content of diplomatic communiqués could be more difficult to track, measure, and interpret. While MOEs may be harder to measure than MOPs for a discrete task, they are nonetheless essential to the assessment construct.

#### k. **Combat Assessment Process**

(1) CA effectively “closes the loop” and feeds the other elements of the targeting process (Figure III-25). To determine the performance of an operation, three questions need to be answered. First, were the assigned tasks completed at the target and with respect to the larger target system (BDA)? Second, did the forces assigned perform as expected (MEA)? Finally, if the desired targeting outcomes were not achieved, or if the employed forces did not perform as expected, what should be done now (RR)? From the answers to these questions, an assessment can be made and future targeting options can be recommended.

(2) The combatant command and the subordinate JTF should establish a CA management system and combine the expertise of operations and intelligence staffs. A comprehensive CA program greatly assists the CJTF in determining future targeting requirements, facilitates planning and supports more efficient execution.

### 1. **Battle Damage Assessment**

(1) BDA is primarily an intelligence responsibility, requires inputs and coordination from operations, and can be federated throughout the intelligence community. BDA is composed of three phases:

- (a) Phase one involves physical damage assessment of the target.
- (b) Phase two involves functional damage assessment of the target.
- (c) Phase three involves functional assessment of the next higher target system.

(2) The most critical ingredient for effective BDA is a comprehensive understanding of the linkage between the specific targeting effect, objective and the operational level task, effect and objective it supports. For BDA to be most effective, a comprehensive plan must be developed which incorporates intelligence architecture, ISR resources and provides information support that ensures timeliness. Pre-conflict planning requires CMs with a thorough understanding of collection systems capabilities (both organic and national) as well as their availability. Targeting personnel should also have a basic understanding of the collection systems supporting the operation.

(3) During combat, BDA reporting should follow standardized formats and timelines, and be passed to command planners and force executors immediately. The DIA BDA Quick Guide serves as a summary reference on general BDA information, including physical and functional damage assessment definitions. Another useful guide, the DIA *BDA Reference Handbook*, contains detailed technical information to support BDA analysis during military operations and to assist in providing basic training for BDA team members. The three phases of BDA are described below.

#### (4) **BDA Phase I – Physical Damage Assessment**

(a) A physical damage assessment is an estimate of the quantitative extent of physical damage (through munitions blast, fragmentation, or fire damage) to a target element based on observed or interpreted damage. This post-attack target analysis should be a coordinated effort among combat units, component commands, the subordinate joint force, the combatant command, national agencies, supporting commands, the JIOC, and the primary theater BDA cell. Some representative sources for data necessary to make a physical damage assessment include the ATO or MAAP, MISREPs, ACV, WSV, visual/verbal reports from ground spotters or combat troops,

controllers or observers, artillery target surveillance reports, SIGINT, HUMINT, IMINT, MASINT, or OSINT.

(b) Key factors in determining the extent of physical damage are target type and size: Was the attacked target/element a piece of equipment or a building or bunker? How hard is the target? How big is the target?

(c) To quantify physical damage, the assessment is conducted against one or more specific aimpoints, usually containing a critical element. Destruction of an entire building may not be required if the stated objective is to destroy a specific portion of the building based on the function (critical element) conducted within that section of the building. Assessments of, “NO DAMAGE” or “DESTROYED” are easily defined and understandable. The difficulty comes in subjective judgment specifying the level of damage between these two extremes. Intermediate damage definitions are dependent on target type and the ease of assessing damage. For example, in buildings, “LIGHT,” “MODERATE,” and “SEVERE” damage is determined by the percent of the target area (building) damaged. In contrast, when assessing armored vehicles, only the “DAMAGED” category is used. Likewise, runways have more specific categories that include “CRATERED,” “CUT,” and “INTERDICTED.” In assessing physical damage, consider whether the enemy may have used camouflage, concealment, and deception techniques to either minimize or amplify the apparent extent of physical damage, obviously distorting the assessment.

(d) In determining the level of physical damage, we assign a confidence level to the assessment. The three terms used to identify confidence are CONFIRMED, PROBABLE, and POSSIBLE. Detailed information and definitions of these confidence levels, along with physical damage definitions for specific target elements, may be found in the DIA *Battle Damage Assessment (BDA) Quick Guide*, Feb 2003.

(e) Collateral damage is also assessed and reported during BDA. Collateral damage is defined as unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. Such damage is not unlawful so long as it is not excessive in light of the overall military advantage anticipated from the attack.

(f) Initial reports are often based primarily on visual observation of the target and usually derived from a single source. Further analysis continues with all-source reporting resulting in further supplemental reports. Inputs come from aircrew MISREPs and debriefs, WSV, imagery, and other sources. The unit controlling the weapons system, as well as intelligence collection units that can “see” the damage, develop Phase I BDA reports (BDAREPs). The command designated BDA cell is responsible for collating reports and making the final assessment.

(g) BDA Phase I is usually the first indicator of problems with weapons systems or tactics assessed during MEA.

**(5) BDA Phase II – Functional Damage Assessment**

(a) Functional damage assessment is an estimate of the degradation or destruction of the functional/operational capability of a target to perform its intended mission. Functional assessments are inferred from the assessed physical damage and all-source intelligence information. This assessment must include an estimation of the time required for recuperation or replacement of the target's function. BDA analysts need to compare the desired targeting effect or objective for the attack with the current status of the target to determine if the targeting objective was met.

(b) Functional damage assessment reviews all physical damage assessments and amplifies the initial analysis. A key step in functional damage assessment is identifying and establishing the installation or target's critical elements and their interconnectivity. A critical element is defined as one, which, if destroyed or not operating, will preclude the installation from functioning. Additionally, the target's "normal" level of operation must be quantified. If it is an industrial target, what does it produce? If it is a military installation, what basic purpose does it serve? Without these pre-attack assessments, wartime functional damage assessments may be inadequately stated. Ideally, BDA will be performed by, or with, the input of the targeteer who originally targeted the facility/equipment.

(c) An estimate of the recuperation time required for the enemy to repair or reconstitute should always be part of a Phase II report. This time (expressed in hours, days, etc.) is an estimate based upon type, degree, and location of the physical damage. Factors used to calculate recuperation times include the availability of spares, backup or alternate replacement functions, operational tempo, expected duration of hostilities, and the enemy's determination to repair or replace. This phase requires the integration of theater and national source information. The theater JIOC has access to these sources and provides significant support. SIGINT, IMINT, and MASINT sources are also useful during this phase.

(d) Although this is a qualitative assessment, the rules of scientific inference can still be applied to reduce the possible errors involved. The goal is to assess as accurately as possible with the limited information available (increase leverage). These scientific rules include: defining the variables (identifying critical elements and predicting weapons effects), improving data (using all-source information, recording and reporting the source of the information), and improving the use of the data (sharing, disseminating information, and identifying additional indicators from the current information). This method of inference facilitates identification of any bias associated with a particular source by using multiple sources. It increases the reliability of the assessment by applying the same procedure the same way to increase the likelihood of an independent assessment arriving at the same conclusion. It increases the validity of the assessment by increasing the likelihood of being "correct," i.e., that the implications and variables being analyzed are in fact true indicators of the function being analyzed. This method requires accurately documenting how the assessment was arrived at, as well as providing a level of certainty (or confidence level) of the assessment.

(e) Developing appropriate indicators and collection plans ahead of time is crucial to timely Phase II assessments, especially if the damage cannot be directly observed. These indicators allow analysts to rapidly identify: the critical elements, what sources are capable of collecting the required information, best collection time, what specific change in activity the sensor should collect, and how this change in activity determines the target's functional status. This facilitates BDA collection planning since optimal collection times are more easily determined well in advance. Examples of such indicators and collections plans may be found in various DOD agency products, such as the JWAC's "*Functional Damage Assessment (FDA) Guides for Electric Power Industry, Lines-of-communications, Petroleum-Oil-Lubricants Industry, and Telecom Networks*".

**(6) BDA Phase III –Functional Assessment of the Higher-Level Target System**

(a) Functional assessment of the higher-level target system is a broad assessment of the overall impact on an adversary target system relative to the targeting objectives established. These assessments may be conducted at the combatant command or national-level by fusing all Phases I and II BDA reporting on targets within a target system.

(b) Phase III produces a target system assessment for the theater of operations. SMEs compile the functional damage assessments of the individual targets within a system and apply it to the current system analysis or enemy order of battle. Although different weapons are involved, the process described above applies to BDA of targets attacked with nonlethal fires as well. SIGINT will often be the most capable collection asset of determining the actual functional damage to the target in these cases.

(7) **Federated Battle Damage Assessment.** Federated BDA allows the supported CCDR to establish pre-planned partnerships to share responsibilities and leverage appropriate expertise from outside the theater. The CCDR may request federated BDA support from multiple commands and agencies through the Joint Staff J-2. Upon approval, each agency in the partnership will be assigned specific targets, either by individual target sets/categories or by geographic region. The Joint Staff J-2T and J-2O will work with the requesting command to form the best federated partnership based on available resources and capabilities.

**(8) BDA Reports**

(a) The results of the BDA process are provided in three phases of BDAREPs:

1. Phase I reporting contains an initial physical damage assessment of hit or miss based usually upon single source data. Reporting timeline: 1-2 hours after receipt of information. Reporting format: structured free text, USMTF, or voice report during system connectivity problems.

2. Phase II reporting builds upon the Phase I initial report and is a fused, all-source product addressing a more detailed description of physical damage, an assessment of the functional damage, inputs to target system assessment (Phase III), and any applicable MEA comments. When appropriate, a RR is also included. Reporting timeline: 4-6 hours after receipt of information. Reporting format: USMTF.

3. Phase III reporting contains an in-depth assessment of the higher-level target system. When appropriate, a RR or targeting nomination is also included. This report combines the analyses from the Phases I and II reports, plus all-source information. Reporting timeline: daily. Reporting format: structured free text (if sent via USMTF, use the general free text narrative format).

(9) **Collateral Damage Assessment.** Collateral damage assessment leverages the information and analysis from Phases I and II BDA to identify and characterize the location, magnitude, and cause of collateral damage that occurred during target engagement. Collateral damage assessment evaluates direct and indirect targeting effects on nearby collateral objects and the noncombatant population addressing “the who, what, when, where, and why of collateral damage.” The outputs of collateral damage assessment feed the CJTF’s evaluation of current operations and provide the information and analysis to guide future development of collateral damage mitigation techniques.

(10) **Munitions Effectiveness Assessment.** MEA is an assessment of the military force applied in terms of the weapon system and munitions effectiveness. MEA is used to determine and recommend any required changes to the methodology, tactics, weapon systems, munitions, fuzing, or delivery parameters to increase force effectiveness. MEA is conducted concurrently and interactively with BDA assessments. MEA is primarily the responsibility of component/Service commanders, with inputs and coordination from the intelligence community. MEA evaluates weapons parameters such as delivery accuracy, fusing, and damage mechanisms (blast, fragmentation, and penetration). MEA targeting personnel seek to identify, through a systematic trend analysis, any deficiencies in specific weapons systems, tactics, munitions performance, or combat tactics by answering the question, “Did the employed forces perform as expected?” Once a deficiency is identified, the operators, targeteers, and analysts make recommendations for weaponeering or procedural changes, different tactics, or system modifications. Using a variety of intelligence and operations inputs, to include Phase II functional damage assessments, operators prepare a report assessing munitions performance and tactical applications. The report details weapon performance against specified target types. This information could have a crucial impact on future operations. MEA efforts can continue years after the conflict has ended, by using archived data and information collected later by on-site inspections of targets struck during the conflict.

(11) **Reattack Recommendations (or Future Targeting Development)**

(a) BDA and MEA processes provide combined operations and intelligence systematic advice on RR and future targeting, and thus guiding further target selection (or target development). This activity develops recommendations on which targets may

require reattack, based upon the enemy's remaining capability, capacity, and potential for recuperation. In doing so, it also attempts to solve deficiencies identified during the BDA and MEA processes. Reassessments of objectives, target selection, vulnerabilities, timing, tactics, weapons, and munitions all factor into the new recommendations.

(b) Future targeting recommendations range from attacking different targets to changing munitions or delivery tactics. The RR and future targeting is a joint operations and intelligence function and must be assessed against the relative importance of the target to the targeting effort/operation being run. At the tactical/component level this activity prompts decisions on immediate reattack. At the operational/strategic level, the daily operational assessment is incorporated into strategy development, future target selections based on updated targeting objectives, targeting guidance and intent, review of the ROE, and guidance to components for immediate reattack of operational critical targets.

#### **(12) Information Operations Considerations for Combat Assessment**

(a) IO employment methods can differ from traditional force application and may require different mechanisms to measure the weapons effect on a target in support of the targeting objective. Targeting analysts performing CA should work very closely with operations personnel and members of the IO cell to ensure all potential CA indicators are evaluated.

(b) The typical methodology for IO BDA uses a change assessment, functional damage assessment, and higher-level target system assessment to determine the effectiveness of the weapons and tactics employed to achieve the stated targeting objective. Change assessment is based upon observed or interpreted battle damage indicators at selected monitoring points. It uses a systematic understanding of complex target systems and leverages intelligence capabilities to identify and assess changes associated with the target. The quantitative change during assessment is used to assess the resulting functional damage. This assessment is not limited to the intended target system, and may even encompass several systems in order to ascertain and justify the assessment results. IO MEA and RR are similar to traditional CA processes described above.

(c) Unlike conventional collateral effects, it is possible that neither intended nor unintended effects of IO will be directly observable. Specialized sensors may be required to detect results. Therefore, a more detailed analysis of the entire target system is warranted.

#### **m. Post- Operation Activities**

(1) The joint targeting process does not end when hostilities cease. During the stabilize and enable civil authority phases of the joint operation, there is normally a critical need to collect all available information to feed both BDA and MEA analysis. This data collection effort is essential to:

- (a) Evaluate the full extent of target physical and functional damage.
- (b) Determine the true effectiveness of employed delivery systems and munitions.
- (c) Critique and improve the assessment analysis and reporting process.

(2) Although there are many different types of data to collect for follow-on analyses, generally they can be grouped into the areas of: operational data, intelligence, and MEA exploitation. Collection of operational or mission-specific data includes all executed mission type orders (to include all executed ATOs), all MISREPs, and copies of aircraft or weapon system recorded data at a minimum. This includes both national and tactical intelligence gathered during the operations, as well as continued post conflict damage assessment and analysis of reconstruction activities.

(3) Finally, the optimal method to analyze munitions effects is to deploy MEA exploitation teams (engineers, tacticians, and intelligence analysts) to conduct on-site analyses of the damage from the ground-level perspective. The goal of these “ground truth” operations is to bridge the gap of knowledge that exists between the level of damage the BDA collection assets have assessed during hostilities and what actual physical, functional, and cognitive effects were created in the adversary targets and systems. Due to the perishable nature of critical data at many targeted sites, planning for ground truth exploitation needs to be fully integrated into appropriate plans for immediate execution following combat operations. If feasible, initial exploitation could be accomplished during ongoing operations by ground forces.

**CHAPTER IV**  
**PRODUCTS AND ORDERS**  
**SECTION A. TOOLS AND PRODUCTS**

**1. General**

a. As described in earlier chapters, the targeting process uses and generates an enormous amount of information and data. To make that information and data usable, a number of tools and products exist to assist in the development and management of targeting products that support the targeting process. They are most often used by the CJTF staff, the targeting team, and supporting/supported units to control and synchronize targeting product development and execution. In the majority of cases, formats for tools and products are not rigidly prescribed; each unit may develop techniques and tools that work best for them. However, tools and products contributing to joint fires networked systems (see Appendix C, “Joint Fires Networked Systems”) must be interoperable. Additionally, tools and products must be continually updated to reflect changes in the operational environment. Some factors to consider in developing tool formats include:

- (1) Type and level of the command.
- (2) Operational environment.
- (3) Assets available.
- (4) Missions.
- (5) SOPs.
- (6) Existing C2 tools of record.

b. The tools and products described in this section are those typically used by the land component, the JFE, and those organizations involved in supporting the TST decision-making process.

**KEY TERMS**

**target development.** The systematic examination of potential target systems--and their components, individual targets, and even elements of targets--to determine the necessary type and duration of the action that must be exerted on each target to create an effect that is consistent with the commander's specific objectives.

**time-sensitive target.** A joint force commander designated target requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. Also called TST.

**SOURCE: JP 3-60, *Joint Targeting***

c. Some examples of targeting products include target lists, target folders, target materials, modeling and simulation products, collection and exploitation requirements to support targeting, and target briefs. Examples of targeting services include weaponeering, casualty and collateral damage estimation, point positioning/coordinate mensuration and verification, and tactical mission planning support (see Table IV-1).

TARGETING PRODUCTS USED IN THE PLANNING PROCESS					
Receipt of Mission	Mission Analysis	Commander's Intent	COA Development	COA Analysis	OPORD Production
Review target objectives	Develop High-Value Target List	Receive HPTL	Finish TSM w/ input from all warfighting functions (WFF)	Refine TSM with input from all WFF	Hardcopy of TSM
Blank	Develop named areas of interest	Refine target objectives	Refine AGM and TSS	Refine AGM and TSS	HPTL, AGM, TSS part of operations order
- Target Synch Matrix (TSM)	Develop TSS and AGM		Develop target list, fire support coordination measures (FSCM), essential effects tasks (EETs)	Refine target list, FSCMs, EETs	
- Asset Chart	Update decide, detect, deliver, & assess availability chart		Update and distribute guidance on Advanced Field Artillery Tactical Data System		
- Attack Guidance Matrix (AGM)	Air Tasking Order Request				
- High-Payoff Target List (HPTL)					
- Target Selection Standards (TSS)					
Determine assets available					

Table IV-1. Targeting Products Used in the Planning Process

d. Targeting tools and products are used to support decision-making regarding what targets should be acquired and attacked, where and when the targets likely will be found, who can locate them, how the targets should be attacked, and if BDA is required. Some of the more common tools and products include:

- (1) **Target Spreadsheets/Sheets** – Detailed description of the target to include expected actions, configuration, and relative worth.
- (2) **Sensor/Attack System Matrix** – A matrix identifying which platforms can detect or attack the target.
- (3) **Target Selection Standards** - Accuracy requirements or other specific criteria that must be met before targets can be attacked.

(4) **Collection Plan** - Where and when should targets be found and who can find them.

(5) **Attack Guidance Matrix** – Desired effects, when, and how targets should be attacked.

(6) **Targeting synchronization matrix** – Prioritized matrix of targets that should be acquired and attacked during the upcoming cycle or phase.

(7) **Delivery Standards Matrix** --Provides criteria for the attack of HPTs in each phase of the battle. It also facilitates objective decision-making for attacking targets at the lowest level possible.

#### KEY TERMS

**high-payoff target.** A target whose loss to the enemy will significantly contribute to the success of the friendly course of action. High-payoff targets are those high-value targets that must be acquired and successfully attacked for the success of the friendly commander's mission. Also called HPT.

**high-payoff target list.** A prioritized list of high-payoff targets by phase of the joint operation. Also called HPTL.

**high-value target.** A target the enemy commander requires for the successful completion of the mission. The loss of high-value targets would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. Also called HVT.

SOURCE: JP 3-09, *Joint Fire Support*, and JP 3-60, *Joint Targeting*

## 2. Target Value Analysis

a. TVA links the effects of attacking a target directly to the targeting function and involves a detailed analysis of enemy doctrine, tactics, equipment, organizations, and expected behavior for a selected COA. The TVA process identifies potential HVT sets associated with critical enemy functions that could interfere with the friendly COA or that are vital to enemy success.

b. If a HVT can be successfully acquired, is vulnerable to attack, and such an attack supports the CJTF's scheme of maneuver, the target may be nominated as a HPT. Once HPTs have been identified and nominated, they are grouped into a list identifying them for a specific point in the battle, in order of priority. The completed HPTL is submitted to the CJTF for approval. The approved HPTL becomes a formal part of the fire support plan.

c. Wargaming helps identify: which target acquisition assets will be tasked; how information will be processed; which means will be used to attack; and what requirements exist for CA. To select an attack means targeting officers must perform a

weaponeering assessment that considers force application issues. The products from these efforts that affect targeting for each COA are:

- (1) **HPTL** - HPTs identified in the order of priority whose loss to the enemy will contribute to the success of the friendly COA.
- (2) **AGM** - which targets will be attacked, how, when, and the desired effect.
- (3) **TSS** - accuracy requirements and other specific criteria that must be met before targets can be attacked.
- (4) **Targeting synchronization matrix (TSM).**
- (5) **Requirements for BDA.**

d. After wargaming all of the COAs, the staff compares them and recommends one to the CJTF for approval. **Upon approval of the COA, the targeting products for that COA become the basis for targeting for the operation.** The targeting team meets to finalize the HPTL, TSS, AGM, and input to the collection plan. The team also performs any additional coordination required. After accomplishing these tasks, targeting team members ensure that targeting factors that fall within their functional areas are placed in the appropriate part of the OPLAN/OPORD.

e. **JIPOE includes identification of enemy capabilities and a description of potential enemy COAs with respect to specific conditions of the operational environment.** TVA yields HVTs for a specific enemy COA. The initial TVA sources are target spreadsheets and target sheets. Target spreadsheets and target sheets, keyed to event templates, help the targeting team further identify critical enemy assets that may become HVTs.

(1) **Target Spreadsheets.** Target spreadsheets are an integral part of TVA, can contain many JIPOE products, and can help in developing other JIPOE products during wargaming. They are a means of describing and identifying targets for specific tactical situations with varying enemy capability configurations within systems. Target spreadsheets give a recommended priority and attack sequence. However, target spreadsheets do not take into account the factors of terrain and weather, nor do they take into consideration the friendly mission, CJTF's guidance, or specific friendly units. CMs and fire support personnel can use the information to plan target acquisition system coverage and likely target areas of interest. Target spreadsheets should be used cautiously because terrain can have a great effect on actual target acquisition system deployment

a. The front side of the target spreadsheet (Figure IV-1) typically contains information about enemy forces at regiment, division, army, and front levels with respect to operations the forces are expected to conduct.

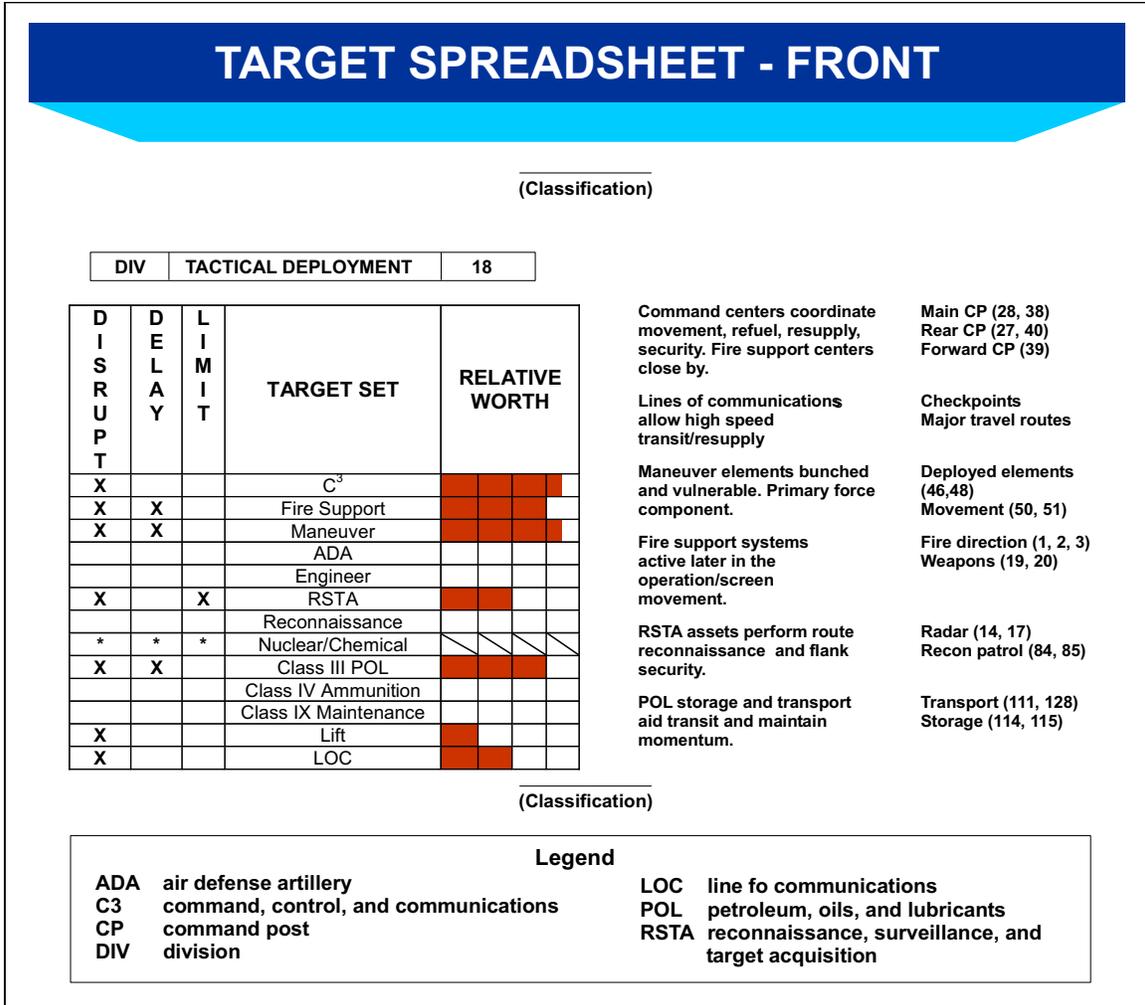


Figure IV-1. Target Spreadsheet - Front

KEY TERMS

**decision support template.** A graphic record of wargaming. The decision support template depicts decision points, timelines associated with movement of forces and the flow of the operation, and other key items of information required to execute a specific friendly course of action.

*SOURCE: JP 2-01.3, Joint Tactics, Techniques, and Procedures for Joint Intelligence Preparation of the Battlespace*

**wargaming.** Wargaming provides a means for the commander and participants to analyze a tentative COA, improve their understanding of the operational environment, and obtain insights that otherwise might not have occurred. An objective, comprehensive analysis of tentative COAs is difficult even without time constraints. Based upon time available, the commander should wargame each tentative COA against the most probable and the most dangerous adversary COAs(or most difficult objectives in noncombat operations) identified through the JIPOE process.

*SOURCE: JP 5-0, Joint Operation Planning*

b. The back side of the target spreadsheet (Figure IV-2) contains a summary of information about the enemy’s doctrine and tactics. It also contains a graphic representation of the target area but does not contain terrain features. Furthermore, it typically explains how the enemy is expected to fight; what they intend to accomplish; and what alternatives they have if they fail to accomplish their primary mission.

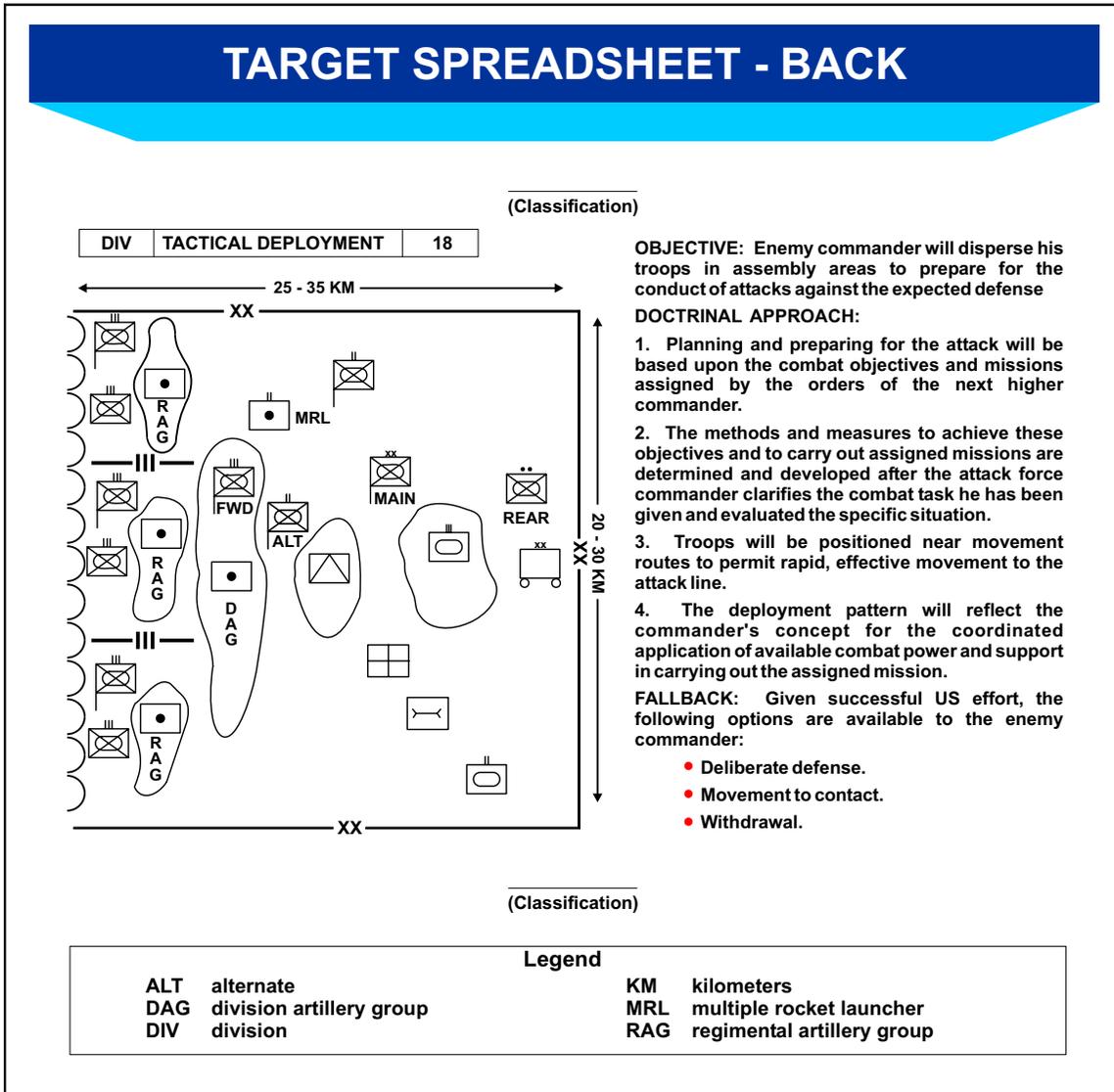


Figure IV-2. Target Spreadsheet - Back

(2) **Target Sheets.** Target sheets support the target spreadsheets by listing the critical elements of various target groups and contain the additional information required to engage a target. A target sheet states how attacking the target would affect the adversary operation.

a. **The decision to attack HVTs requires knowledge of target vulnerabilities, location, signature, and function.** When attacking a HVT, decision makers must consider the effect an attack will have on the parent enemy unit. To support these considerations, specific IRs must be requested and include:

1. Things that influence them.
2. Means of communication.
3. Entities with whom they communicate.
4. Strength, vulnerability, accessibility, and possible pressure points.

(b) Target sheets are a consolidation of information from various sources and their construction should be simple (see Table IV-2). Locally produced target sheets should contain at least the following major sections:

<b>TARGET SHEET EXAMPLE</b>	
<b>TARGET CATEGORY:</b>	Engineer
<b>TARGET SHEET NO/TITLE:</b>	Target 75/Ferry crossing site
<b>FUNCTION:</b>	Provide rapid crossing of water obstacles for tanks and other nonamphibious systems.
<b>DESCRIPTION:</b>	Target radius - point target Posture - exposed on water surface forward edge of the battle area distance Composition - vehicles, normally two ferries or rafts (If the river is over 300 meters wide, there may be as many as five). Personnel -
<b>SIGNATURE:</b>	Visual - see graphic Electronic - Other -
<b>DEGRADATION:</b>	Nonamphibious forces must find alternate means to cross. Force that secured bridgehead is not reinforced.
<b>GRAPHIC PRESENTATION:</b>	(Omitted)

Table IV-2. Target Sheet Example

1. **Target category.** The target category, taken from the front of the target spreadsheet, indicates in which of the 13 sets the target belongs.

2. **Target sheet number and title.** The sheet number can be used to cross reference the target sheet with the spreadsheet. The target title refers to the target type and function.

**3. Function.** The function section details the specific operations and tasks that the target is expected to perform. It includes the primary and secondary functions and indicates any relationship to the other target types.

**4. Description.** The description of the target details the number and type of vehicles and equipment in a position and specifies the approximate number of personnel associated with the position. The description is useful in considering what types of attack systems and munitions are to be used and helps to discriminate between targets of a similar function.

**5. Signature.** The signature section describes signatures ranging from visual and electronic to auditory and infrared.

**6. Degradation.** The degradation section describes what happens to the parent unit or an associated unit when the target function is removed. This information can be used by operations and fire support personnel to help determine the effects desired against the target.

**7. Graphic representation.** This shows, in a general overlay format, how the target would be arrayed doctrinally in the operational environment. It also aids in identifying the target and analyzing its vulnerabilities.

### 3. Sensor/Attack Systems Matrix

**a. The sensor/attack systems matrix is a targeting tool that can be used to determine whether the critical HVTs can be acquired and attacked (see Table IV-3).** This matrix allows wargame participants to record their assessment of the ability of sensor systems to acquire and attack systems to attack HVTs at a critical event or phase of the battle.

**b.** The targeting team determines if available collection assets can detect the HVTs and provide the target resolution (timeliness and accuracy) necessary for attack managers. The targeting team further identifies which available attack assets can successfully engage each HVT. Once the targeting team determines that a HVT can be acquired and attacked, they must then determine if the HVT is critical to the CJTF's current phase or scheme of maneuver. HVTs meeting this criteria are generally nominated to the commander for approval as HPTs.

SENSOR/ATTACK SYSTEM MATRIX								
EVENT: ATTACK THROUGH SECURITY ZONE								
HVT	COMBAT OUTPOSTS RISTA	M46	2S3	ADA	MAIN FWD CPs	AMMO	MNVR	HVT
SENSOR								ATK SYSTEM
EPW TEAM						S	A	MNVR BDE
CI TEAM			A	A		S		AHB
LRSD	S A							D/A 155-mm SP
TRQ-32	S	A	A		S			D/A MLRS
ALQ-151		A	A		S			C/A MLRS
PPS-5					A			EW: TLQ17
OH-58D	S A							OH-58D
AH-64	S			S			S A	AH-64
TLQ-17								
Q36CMR			S				A	
Q37CBR		S	S		A		A	
UAS				S	S		S	
CORPS/ECHELON ABOVE CORPS								
Q37CBR		A	S					
GRCS					S	A		
U2R		S A				S	S	
JSTARS			S				S	
				<b>S: SENSOR</b>		<b>A: ATTACK</b>		
<b>LEGEND</b>								
ADA	air defense artillery				FWD	forward		
AHB	attack helicopter battalion				HVT	high-value target		
AI	air interdiction				JSTAR	Joint Surveillance Target Attack Radar System		
AMMO	ammunition				S	System		
ATK	attack				LRSD	long-range surveillance radar		
BDE	brigade				M46	130mm towed gun		
C/A	corps artillery				MLRS	Multiple Launch Rocket System		
CBR	counterbattery radar				MNVR	maneuver		
CI	counterintelligence				OH	observation helicopter		
CP	command post				RISTA	reconnaissance, intelligence, surveillance, and target acquisition		
CMR	countermortar radar				SP	self-propelled		
COPs	combat outposts				UAS	unmanned aerial system		
D/A	division artillery				2S3	152mm howitzer SP		
EPW	enemy prisoners of war							
EW	electronic warfare							

Table IV-3. Sensor/Attack System Matrix (Notional)

#### 4. High-Payoff Target List

a. **The HPTL is a prioritized list of the HPTs by phase of the joint operation.** While target value is usually the greatest factor contributing to target payoff, other things to be considered include:

- (1) Order of occurrence in the operational environment.
- (2) Ability to locate and identify the target.
- (3) Degree of accuracy and identification available from the acquisition system.
- (4) Ability to engage the target.
- (5) Ability to defeat the target.
- (6) Resource requirements necessary to accomplish all of these.

b. The column headings on the HPTL include (see Table IV-4):

- (1) **Priority.** The priority of the targets is listed.
- (2) **Category.** Identifies the target category, including designation as a TST.
- (3) **Target.** The title or a brief description of the intended target is listed.

c. One way to organize the HPTL is to group all HPTs into target sets that reflect the capabilities and functions described in the targeting objectives. Target sets are identified and prioritized for each phase of the operation. Within the sets, individual targets are rank-ordered by target value, sequence of appearance, importance, or other criteria that satisfy the targeting objectives. In this way, the targeting team reduces, modifies, and reprioritizes HVTs while ensuring that HPTs support the CONOPS.

d. The CJTF's guidance may require changes, which should be annotated on the HPTL. The target name or number and description are placed on the list for specific HPTs in each category. Once the CJTF approves or amends the HPTL, it goes back to the targeting team to help them develop the attack guidance matrix and collection plan.

HIGH-PAYOFF TARGET LIST			
PRIORITY	CATEGORY	TARGET	
1	8 N/CH (TS)	PRTB, NUCLEAR DEPOT	
2	1 C3 (TS)	DIVISION, ARMY CP	
3	2 FIRE SUPPORT (TS)	DIVISION, ARTY CMD BTRY	
4	2 FIRE SUPPORT	ARTY BN FDC, COP, BTRY	
5	1 C3	REGIMENT MAIN CP, DIV FWD CP	
6	3 MANEUVER	BN ASSY AREAS, FORMATIONS	
arty	artillery	CP	command post
assy	assembly	div	division
bn	battalion	FDC	fire direction center
C3	command, control, and communications	n/ch	nuclear/chemical
cmd	command	prtb	mobile repair technical base (rocket and missile)
COP	common operational picture	TS	time-sensitive

Table IV-4. High-Payoff Target List

**5. Target Selection Standards Matrix**

a. **The TSS matrix combines HPTs with timeliness and accuracy requirements for engaging the target.** This tool is used to quickly identify targets for attack and is usually disseminated as a matrix.

b. Targeteers use the TSS to determine targets from combat information and pass them to fire support elements (FSEs) for attack.

c. Attack systems managers, such as fire control elements and fire direction centers, use the TSS to determine whether to attack a potential target.

d. TSS are based on the enemy activity under consideration and available attack systems by using the following:

- (1) Source.
- (2) Weather.
- (3) Terrain.
- (4) Attack system target location error (TLE).
- (5) Size of the enemy activity (point or area).

- (6) Status of the activity (moving or stationary).
- (7) Timeliness of the information.
- (8) Deception measures.

e. TSS are comprised of the essential elements listed below and are keyed to the designated HPTs which the CM is tasked to acquire (see Table IV-5):

(1) **Timeliness.** Valid targets are reported to attack systems within the designated timeliness criteria.

(2) **Accuracy.** Valid targets must be reported to the attack system meeting the required TLE criterion. The criterion is the least restrictive TLE considering the capabilities of available attack systems.

TARGET SELECTION STANDARDS		
HIGH-PAYOFF TARGET	TIMELINESS	ACCURACY
Common operational picture	3 hours	150 meters
Reconnaissance, intelligence, surveillance, and target acquisition	30 minutes	150 meters
M-19 152mm howitzer self-propelled	30 minutes	500 meters
M-46 130mm towed gun	30 minutes	500 meters
Air defense artillery	15 minutes	500 meters
Command posts	3 hours	500 meters
Ammunition	6 hours	1 kilometer
Maneuver	1 hour	150 meters

**Table IV-5. Target Selection Standards**

f. The target selection standards worksheet is provided in Table IV-6 and the column headings are described below:

- (1) **HPT.** Target set from the HPTL.
- (2) **Source.** Sensor agent.
- (3) **Target Location.** Location by grid coordinates.
- (4) **Accuracy (TLE).** Sensor reliability, normally stated in meters
- (5) **Time of Target.** Record the date-time group the sensor acquired the target.

(5) **Time Limit.** How old the acquisition can be and still be attacked.

(6) **(Validity) Confirmed.** Confirmation by a second source is recorded by using YES or NO. Confirmation by another sensor may not be necessary depending on the sensor.

(7) **Clearance Cleared.** Who or what agency cleared the target for attack, which is especially critical where the potential for fratricide exists.

TARGET SELECTION STANDARDS WORKSHEET							
HIGH-PAYOFF TARGET	SOURCE	TARGET LOCATION	ACCURACY (Target Location Error)	TIMELINESS		VALIDITY CONFIRMED	CLEARANCE CLEARED
				Time of Target	Time Limit		

Table IV-6. Target Selection Standards Worksheet

g. **For nonlethal attacks, the J-3 may have to develop descriptive criteria to supplement or replace criteria developed by the FSE.** For example, nonlethal TSS during a peace operation may describe what constitutes a hostile crowd (such as, a group larger than 25 people, armed with sticks or other weapons, and with leaders using radios or cellular telephones to direct it). To do this, the J-3 identifies specific pressure points, such as one’s credibility. The J-3 then attacks these pressure points with specific means/products, delivered to a specific communications node or system, to cause a specific effect.

**6. Collection Plan**

a. **The collection plan provides a framework that CMs can use to determine and evaluate intelligence needs and then use the plan to meet those needs.** Because of the diversity of missions, capabilities, and requirements, the collection plan has no prescribed doctrinal format. However, a dynamic collection plan should:

- (1) Use the CJTF's IRs (PIRs and CCIRs) as its baseline.
- (2) Help the CJTF see as deep in depth and time as possible.
- (3) Cover the JOA.
- (4) Have a four dimensional operational environment approach: width, length, height, and time. [Note: some components may add a fifth dimension: electromagnetic.]
- (5) Cover the collection capabilities of higher and adjacent units.

- (6) Be flexible enough to respond to changes as they occur.
- (7) Cover only priority requirements.
- (8) Be a working document.
- (9) Contain precise and concise language.

b. The selection of a format for the work sheet is based on the needs and resources available for collection management. However, regardless of the format selected, it must follow the logical sequence of collection management described in Chapter III, “Joint Fires Planning and Targeting.” In addition, the plan must be easily adjustable to changing requirements, situations, and missions.

c. The intelligence collection plan worksheet is a valuable aid in planning and directing the collection effort. **For many requirements, particularly those concerned with enemy capabilities and vulnerabilities, a written collection worksheet is advisable.** The detail in which it is prepared depends on the requirements the CM needs to satisfy and the overall coordination needed during the collection effort. At the tactical level, the collection plan worksheet is very informal and may only consist of a list of available collection means plus brief notes or reminders on current IRs and specific information to collect. At the JTF level and above, collection planning is generally more complex, requiring in-depth analysis. Coordination of the overall collection effort can be a a major undertaking. Table IV-7 provides an example of a completed collection plan using sample entries.

EXAMPLE OF COLLECTION PLAN																			
UNIT: _____		COLLECTION PLAN				PERIOD COVERED: FROM _____ TO _____													
PRIORITY INTELLIGENCE REQUIREMENTS AND INFORMATION REQUIREMENTS	INDICATORS (ANALYSIS OF INTELLIGENCE REQUIREMENTS)	AVENUE OF APPROACH COORDINATES: FROM TQ 5720 TO UQ 9273						AGENCIES TO BE EMPLOYED			HOUR AND DESTINATION OF REPORTS	REMARKS							
		MOBILITY CORRIDOR NO FROM _____ TO _____																	
PIR 1. Where and in what strength are threat forces?	a. Area of enemy activity. b. Discovery of weapons and new intell within the AO. c. Introduction of new tactics by insurgents.	NAI	DISTANCE	TIME		SPECIFIC INFORMATION OR REQUEST	OBSERVED TIME	SOC J-2				As obtained.	As needed.						
				NET	NLT														
		NAI1	30 km	N/A	D+5	Report increased border crossing								X					
		NAI2	10 km	N/A	D+5	Report discovery of weapons.								X					
		NAI3	10 km	N/A	D+5	Report insurgent ...								X					
		AVENUE OF APPROACH COORDINATES: FROM _____ TO _____												AGENCIES TO BE EMPLOYED					
		MOBILITY CORRIDOR NO FROM _____ TO _____																	
		NAI	DISTANCE	TIME		SPECIFIC INFORMATION OR REQUEST	OBSERVED TIME												Briefly state specific information to be sought that will substantiate each indication.  Specific information needs become the basis for orders and requests to collect information.  (List all available units that can be employed in the collection of required information.)  Place X under each unit that can acquire the specific information sought. Circle the X under the unit actually assigned collection action.
				NET	NLT														
NAI																			
NAI																			
NAI																			

Table IV-7. Example of Collection Plan

## 7. Attack Guidance Matrix

a. The CJTF provides the targeting team with initial attack guidance. **Knowing each target's vulnerabilities, the effect of an attack on the target, and the CJTF's guidance, allows the staff to recommend how and when to engage each target in terms of effects of fires and attack options.** The effects of fire can be to harass, suppress, neutralize, or destroy the target. The AGM is a compilation of attack criteria in a format that can be understood by fire support and targeting agencies.

b. The targeting team recommends attack guidance based on the results of the wargame and disseminates the AGM. **Only one AGM is produced for execution at any point in the operation; however, each phase of the operation may have its own matrix.** To synchronize lethal and nonlethal fires, all attack systems, including PSYOP and EA, are placed on the AGM. The AGM is a synchronization and integration tool and is normally included as part of the fire support annex. However, it is not a tasking document. Attack tasks for unit assets, including IO elements, are identified as taskings to subordinate units and agencies in the body or appropriate annexes or appendixes of the OPLAN/OPORD. The AGM consists of the following elements (see Table IV-8):

(1) **HPTL** - A prioritized list of HPTs by phase of the operation.

(2) **When** - Indicates when to attack each target set by entering the letter **I** for immediate, **A** for as required, and **P** for plan.

(3) **How** - Indicates the attack system that will engage the target (e.g., GS artillery for general support artillery).

(4) **Effect**- The desired effects on the target or target system are stated in this EFFECT column by inserting the appropriate letter. Enter **S** for suppress, **N** for neutralize, **D** for destroy, or **H** for harass.

(5) **Remarks** - Enter remarks, restrictions, and special instructions such as BDA requirements and additional coordination requirements in this column.

<b>EXAMPLE OF ATTACK GUIDANCE MATRIX</b>				
<b>PHASE/EVENT: Attack through the security zone</b>				
<b>HPTL</b>	<b>WHEN</b>	<b>HOW</b>	<b>EFFECT</b>	<b>REMARKS</b>
COP	I	GS artillery	N	Plan in initial preparation
RISTA/operations	P	GS artillery	N	Plan in initial preparation
Artillery	P	MLRS	N	Plan in initial preparation
Air defense artillery	P	GS artillery	S	SEAD for aviation operations
Regimental CP	A	MLRS	N	
Reserve battalion	P	Aviation brigade	D	Intent to attack reserve battalion in Engagement Area HOT

<b>WHEN:</b>	<b>EFFECT:</b>	<b>Legend</b>	
I – Immediate	N - Neutralize	COP	common operational picture
A – As Required	S - Suppress	CP	command post
P – Plan	D – Destroy	EW	electronic warfare
	H - Harrass	GS	general support
		HPTL	high-payoff target list
		MRLS	Multiple Launch Rocket System
		RISTA	reconnaissance, intelligence, surveillance, and target acquisition
		SEAD	suppression of enemy air defenses

Table IV-8. Example of Attack Guidance Matrix

### 8. Targeting Synchronization Matrix

The TSM lists HPTs by category and the agencies responsible for detection, attack, and assessment. It combines data from the HPTL, intelligence collection plan, and AGM. A completed TSM allows the targeting team to verify that assets have been assigned to each targeting process task, ensure all assets are used, and assets or agencies are not overtaxed. The targeting team may prepare a TSM for each COA, or may use the HPTL, TSS, and AGM for the wargame and prepare a TSM for only the approved COA (see Table IV-9).

<b>TARGETING SYNCHRONIZATION MATRIX</b>											
<b>UNIT: 3 BRIGADE</b>				<b>EFFECTIVE: 170600Z- 180559Z</b>			<b>PHASE: I &amp; II</b>		<b>AS OF: 171500Z AUG 01</b>		
<b>DECIDE</b>				<b>DETECT</b>			<b>DELIVER</b>			<b>ASSESS</b>	
<b>PRI</b>	<b>TARGET DESCRIPTION</b>	<b>LOCATION</b>	<b>NAI</b>	<b>ASSET</b>	<b>TIME PD</b>	<b>WHEN I,A,P</b>	<b>ASSET</b>	<b>TIME PD</b>	<b>EFFECTS (D,N,S)</b>	<b>ASSET</b>	<b>TIME PD</b>
1	SA-18	DR456511	12	BRC	0600 1300	A	105 BRC	0600 1300	S	BRC	0600 1300
2	81 MOTORIZED RIFLE REGIMENT	DR440520	11	Q36, LLVI, ATTACK AVIATION	0600 2200	A	105 TLQ17, ATTACK AVIATION	0600 2200	S	BRC	0600 2200
3	MAYOR POLICE CHIEF	CRAIG VILLAGE	14	TEAM VILLE CIVIL AFFAIRS TEAM	1500 1700	P	TEAM VILLE	1500 1700	INFLUENCE TO SUPPORT	TEAM VILLE	1500 1700
EVENTS COVERED: BRC LINK-UP OFF-SET BATTERY INSERTION 1-187 ASSAULT											
Legend: BRC – Brigade, Regiment, Corps NAI – named area of interest PRI - priority				A – as required I – immediate P – plan				D - destroy N - neutralize S - suppress			

Table IV-9. Targeting Synchronization Matrix

9. Delivery Standards Matrix

a. The delivery standards matrix provides criteria for the attack of HPTs in each phase of the operation. It also facilitates objective decision-making for attacking targets at the lowest level possible. When HPTs are identified, they are automatically engaged if they meet the criteria established by the matrix. (see Table IV-10)

DELIVERY STANDARDS MATRIX													
Category	HPTs	Target Location Error			Size of Unit			Stationary/Move			Time (of last verification)		
		Arty DS/R GS/GSR	CAS/AI	Atk Helo	Arty DS/R GS/GSR	CAS/AI	Atk Helo	Arty DS/R GS/GSR	CAS/AI	Atk Helo	Arty DS/R GS/GSR	CAS/AI	Atk Helo
RISTA	Ops	100 – 200 m	200 m	500 m	Sec	Sec	Sec	Stat	Stat	Stat	72 hrs	72 hrs	48 hrs
	Patrols	100 – 200 m	200 m	1 km	Sec	Sec	Sec	Stat	Stat	Stat/Move	2 hrs	1 hr	1 hr
	ARK-1	100 – 200 m	200 m	1 km	Sec	Sec	Sec	Stat	Stat	Stat/Move	12 hrs	6 hrs	6 hrs
ADA	SA-6/8/13	100 – 200 m	200 m		Sec	Sec		Stat	Stat		2 hrs	1 hr	
	S60	100 – 200 m	200 m		Sec	Sec		Stat	Stat		2 hrs	1 hr	
	ZSU-23-4 ZSU-23-2	100 – 200 m	200 m		Sec	Sec		Stat	Stat		2 hrs	1 hr	
Fire Support (Deep)	Astors, FROG	100 – 200 m	200 m	500 m	Btry	Bn	Bn	Stat	Stat	Stat	1 hr	2 hrs	2 hrs
	BM-21	100 – 200 m	200 m	1 km	Btry	Bn	Bn	Stat	Stat	Stat/Move	1 hr	2 hrs	2 hrs
	2S5, M46	100 – 200 m	200 m	1 km	Btry	Bn	Bn	Stat	Stat	Stat/Move	1 hr	2 hrs	2 hrs
Maneuver	T-62	100 – 200 m	500 m	1 km	Plt	Co	Bn	Stat	Stat/Move	Stat/Move	15 min	30 min	90 min
	BRDM, BMP	100 – 200 m	500 m	1 km	Plt	Bn	Bn	Stat	Stat/Move	Stat/Move	15 min	30 min	90 min
<b>Legend</b>													
ADA	air defense artillery							helo	helicopter				
arty	artillery							HPT	high-payoff target				
atk	attack							hrs	hours				
AI	air interdiction							km	kilometer				
BM	ballistic missile							m	meters				
bn	battalion							min	minutes				
btry	battery							ops	operations				
CAS	close air support							plt	platoon				
co	company							RISTA	reconnaissance, intelligence, surveillance, and target acquisition				
DS/R	direct support/reinforcing							sec	section				
FROG	free rocket over ground							stat	stationary				
GS/GSR	general support/general support reinforcing												

Table IV-10. Delivery Standards Matrix

b. The matrix provides instructions for each HPT for all phases of the operation related to the following:

- (1) TLE.
- (2) Size of the target.
- (3) Target activity.
- (4) Time of acquisition.

## 10. Time-Sensitive Targeting Decision Matrix

a. Nominating TSTs is not a static process. The CJTF and staff, in coordination with the components, must establish a process for validating TSTs to avoid assigning target categories to one specific organization and creating parallel, redundant processes (e.g., too many high-priority categories are confusing and cumbersome). The established TST nomination process should be as simple as possible and capable of adjusting to changing priorities.

### KEY TERM

**time-sensitive target.** A joint force commander designated target requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. Also called TST.

SOURCE: JP 3-60, *Joint Targeting*

b. The CJTF's objectives, intent, and guidance should be clear and concise, while being detailed enough to allow formulation of a TST decision matrix. **A decision matrix allows component and on-scene commanders to reference the CJTF's intent quickly for each TST type and take quick and appropriate action.** A TST decision matrix is a tool and NOT a substitute for personnel fully understanding the underlying TST guidance, ROE, collateral damage methodologies, and TST operating procedures that form the matrix. The TST decision matrix framework should include TST prioritization, approval authority, restrictions, and acceptable risk level. For acceptable risk level to stay meaningful, the CJTF must define risk level in terms of high, medium, and low (see Table IV-11).

c. Component commanders often add amplifying remarks or comments to the component TST and priority target decision matrix. In the notional component matrix (see Table IV-12), the JFACC includes amplifying remarks and guidance for forces under JFACC control (in the "Other Requirements or Notes" column). Component commanders may also add component priority target guidance (see priority targets # 5 and # 6 in Table IV-12). While these targets are not TSTs, this tool will facilitate expeditious engagement of targets inside the deliberate targeting cycle using the same processes established for TSTs. **A component commander's internal guidance will not supersede or be executed as a higher priority than the CJTF guidance. These component priority targets should be prioritized among all components to provide for prioritized cross-component support.**

NOTIONAL TIME-SENSITIVE TARGET DECISION MATRIX						
CJTF Priority	TST Target Type	Desired Effect	Approval Authority	Additional Restrictions (Note 1)	Acceptable Risk Level	Other Requirements or Notes
1	Critical weapon System A	Prevent launch	On-scene Commander (Note 2)	-	HIGH (Note 3)	Strike immediately with any asset
2	Personnel or groups meeting X criteria	Isolate, capture, or kill	Commander Joint Task Force or above (CJTF)	Higher level notification required prior to striking	HIGH	Notify CJTF immediately & maintain sensor track
3	Critical weapon system B	Prevent movement or use	CJTF	-	MED	Hazard analysis required
4	Critical weapon system C	Neutralize for campaign duration	Component (Note 4)	-	LOW	-

1) Law of war, rules of engagement and CD guidance applies to all targets.  
 2) Refer to component level guidance for further details.  
 3) CJTF will accept increased risk of fratricide and CD.  
 4) Component commander may delegate to lower level commands as needed.

**Table IV-11. Notional Time-Sensitive Target Decision Matrix**

NOTIONAL COMPONENT TIME-SENSITIVE TARGET AND PRIORITY TARGET DECISION MATRIX						
CJTF Priority	Time-sensitive Target Type	Desired Effect	Approval Authority	Additional Restrictions (Note 1)	Acceptable Risk Level	Other Requirements or Notes
CJTF-1	Critical weapon System A	Prevent launch	On scene Commander	-	HIGH (Note 2)	Strike immediately with any asset
CJTF-2	Personnel or groups meeting X criteria	Isolate, capture, or kill	CJTF or above	Higher level notification required prior to striking	HIGH	Notify CJTF immediately & maintain sensor track
CJTF-3	Critical weapon system B	Prevent movement or use	CJTF	-	MED	Hazard analysis required
CJTF-4	Critical weapon system C	Neutralize for campaign duration	Component	-	LOW	-
JFACC-5	Specific key ground force /equipment movement	Destroy	JFACC	-	LOW	Convoy of military vehicles approaching Phase Line Green
JFAAC-6	Important weapon system D	Neutralize for campaign duration	TST Cell Chief	-	LOW	SEAD required

NOTES:  
 (1) Law of armed conflict, rules of engagement & CD guidance applies to all targets.  
 (2) CJTF will accept increased risk of fratricide and CD.

Legend:  
 CJTF – Commander, Joint Task Force                      SEAD – suppression of enemy air defenses  
 JFACC – Joint Force Air Component Commander      TST – time-sensitive target

**Table IV-12. Notional Component Time-Sensitive Target and Priority Target Decision Matrix**

d. The CJTF objectives and guidance set a basic procedural framework for components to expedite operations against TSTs. Components do not need to consult the CJTF for every target determined to be a TST. **Once this guidance is stated, the components establish planned and reactive procedures for finding, fixing, tracking, targeting, and engaging the prioritized TSTs.** An assessment must be conducted to confirm TST engagement results. Component responsibilities may include the following:

(1) Identify and assign primary sensors and weapon systems to support TST attacks and CA.

(2) Establish planned and deconflicted FSCMs against specific TSTs.

(3) Define TST engagement authority based on the component commander's operational area, assigned functional mission, or a combination thereof.

(4) Identify specific communication data links between component C2 elements of the joint force to conduct rapid TST attacks. This normally includes authorizing direct liaison and coordinating authority.

e. CJTF guidance drives the TST section of the component commander's daily guidance and intentions message which will include a TST "hot list" or matrix, specifying to operators how a detected TST compares in priority with other targets. This guidance provides the framework for employing forces to achieve CJTF objectives. Based on the initial guidance and objectives handed down by higher HQs, each command begins to evaluate possible COAs and identifies emerging targets.

f. Commanders are given responsibility for synchronizing maneuver, fires, and interdiction inside their assigned area of operation. **CJTF TST guidance enables component commanders to designate their own target priorities (for non-TST targets), effects, and timing within their area of operation.**

g. Communication up and down the chain of command is vital to maintaining commanders' situational awareness and to allow guidance changes or negation of engagement decisions as required. **Engagement decisions must also be immediately reflected in the COP, tactical pictures, and collaborative C2 tools to help prevent dual engagements and to deconflict operations and engagements between friendly forces.**

h. User-friendly TST lists and databases can minimize confusion, ease coordination, and enhance TST cell effectiveness. TST lists and displays may include elements of TST identification, prioritization, sensor or weapon pairing, and database track nomenclature. Relevant TST information must be available to decision-makers, mission planners, and others supporting the targeting process. The following items should be available as a ready reference throughout the dynamic targeting process:

(1) CJTF TST decision matrix and component matrices.

(2) JIPTL and other target lists.

(3) Updated operational environment map with operational area overlaid.

- (4) ISR collection plan.
- (5) Contact lists, phone numbers, chat rooms, and frequencies of dynamic targeting players (all components and TST coordination element).
- (6) ATO and MAAP brief (JAOC TST cell).
- (7) AOD (JAOC TST cell).
- (8) SPINS, particularly sections relating to TST prosecution (notation for JAOC TST cell).
- (9) Asset management document (i.e., check-in/check-out sheet for C2 platforms, etc.) (notation for JAOC TST cell).
- (10) MISREP sheet.
- (11) Other information critical to component TST cell operations in event of power failures or a computer system malfunction.

**11. Target Report**

**When targeting information is passed from one agency to another, all essential information must be included to allow for proper analysis and attack.** Although no formal format for this information, simple, locally developed formats, such as the example below (see Table IV-13), provide the targeting team enough information to properly formulate the best attack response.

TARGET REPORT	
LINE NUMBER	
1. Reporting agency:	
2. Type of Sensor:	
3. Report Date-Time Group (DTG):	
4. Acquisition DTG:	
5. Description:	
6. Posture (Note 1):	
7. Activity (Note 2):	
8. Size (Note 3):	
9. Location (Note 4):	
10. Location error (Note 5):	
NOTES: (1) Is the target dug-in, in the open, in built-up areas? (2) Is the target moving (include direction) or stationary? (3) What size is the unit (company, platoon), and what size area is occupied (for example, diameter in meters)? (4) What are the grid coordinates of the target? (5) What is the error stated as a plus or minus in meters?	

**Table IV-13. Target Report**

## SECTION B. ORDERS PRODUCTION

### 12. Joint Air Tasking Cycle

a. A joint air tasking cycle is used to provide for the efficient and effective employment of the joint air capabilities/forces made available. It provides a process for the planning, coordination, allocation, and tasking of joint air missions/sorties within CJTF guidance (see Figure IV-3). The cycle accommodates changing tactical situations or CJTF guidance as well as requests for support from other component commanders. The joint air tasking cycle is an analytical, systematic approach that focuses targeting efforts on supporting operational requirements. **Much of the day-to-day joint air tasking cycle is conducted through an interrelated series of information exchanges and active involvement in plan development, target development, and air execution (through designated component LNOs or messages), which provide a means of requesting and scheduling joint air missions.**

b. The cycle begins with the CJTF's objectives, incorporates guidance during CJTF and component coordination, and culminates with combat assessment of previous actions. The ATO articulates the tasking for joint air operation for a specific time period, normally 24 hours. Detailed planning normally begins 48 hours in advance of the execution period to enable the integration of all component requirements. **The result of this planning effort is that there are usually three ATOs in various stages of progress at any time.**

- (1) ATO currently being executed.
- (2) ATO being developed and produced.
- (3) ATO in planning.

c. The full ATO cycle from CJTF guidance to the start of ATO execution is dependent on the command procedures. A 72-hour ATO cycle, starting from guidance and ending after a 24-hour execution period is fairly standard. **The precise time frames for the joint air tasking cycle must be specified in the OPLAN or the JFACC's JAOP.** Long-range combat air assets positioned outside the theater but operating in the JOA, may be airborne before ATO publication/execution. These assets require the most current (draft) ATO information and updates as required. Intertheater air mobility missions may not necessarily operate within an established ATO cycle. The JAOC's CPD should consider how these and intratheater air mobility missions are integrated into the ATO.

d. The ATO matches specific targets compiled by the JFACC with the capabilities/forces made available to the JFACC for the given ATO day. Other component air missions that appear on the ATO are not under the control of the JFACC, but their presence on the ATO provides visibility to assist overall coordination and deconfliction.

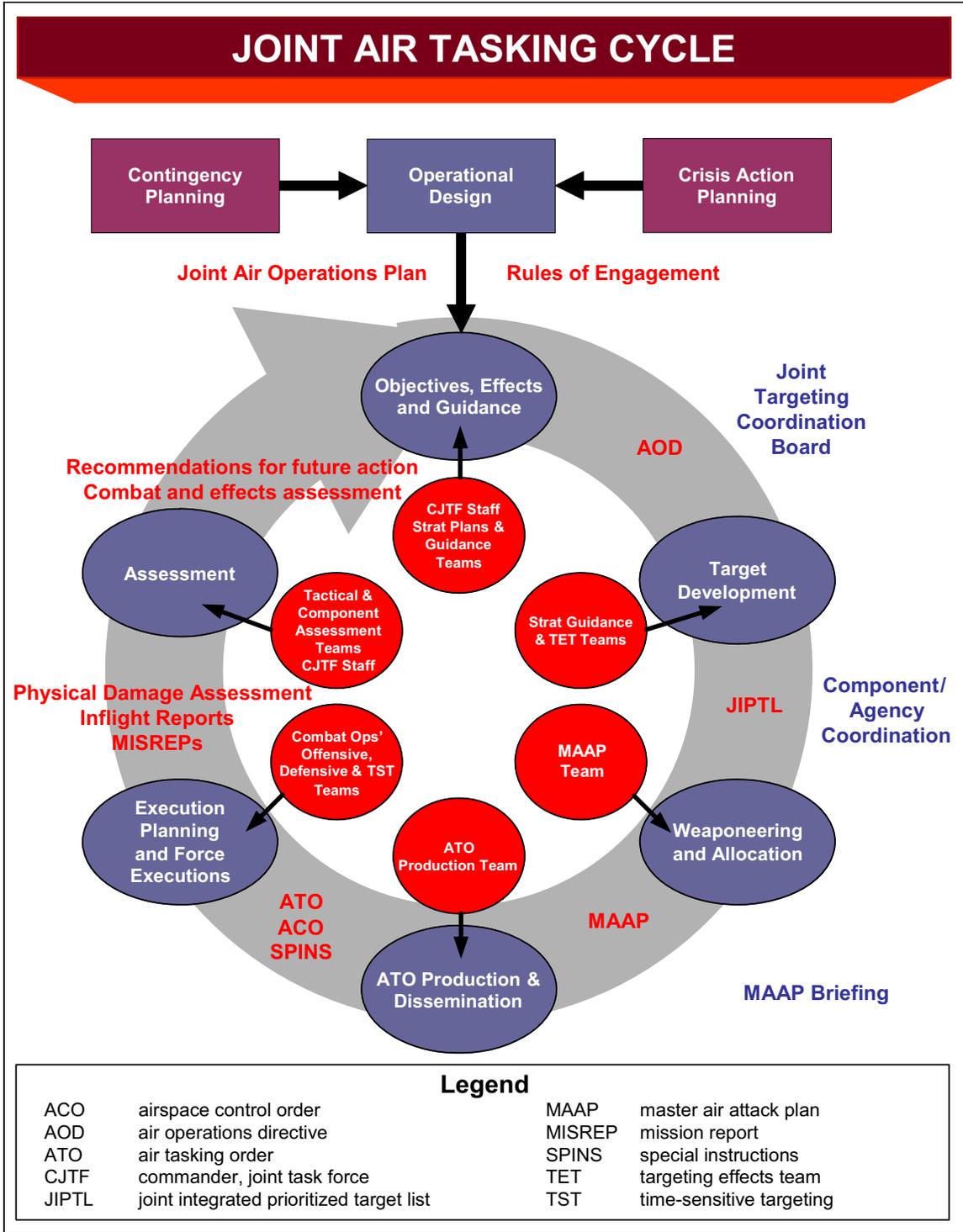


Figure IV-3. Joint Air Tasking Cycle

### 13. Air Tasking Order Production

a. **ATO Production.** ATO production consists of developing, publishing, and disseminating the daily ATO, which tasks air capabilities in accordance with the MAAP. Two primary tasks within production are technical production and distribution of the

ATO, ACO, and associated SPINS. **ATO production translates the MAAP into executable air missions that are assigned to subordinate and supporting commanders.** The ultimate goal is timely development and transmission of an accurate ATO so that those executing the missions have the time they need for detailed planning.

#### KEY TERMS

**airspace control order.** An order implementing the airspace control plan that provides the details of the approved requests for airspace control measures. It is published either as part of the air tasking order or as a separate document. Also called ACO.

**airspace control plan.** The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force area of responsibility and/or joint operations area. Also called ACP.

**air tasking order.** A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. Normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. Also called ATO.

**master air attack plan.** A plan that contains key information that forms the foundation of the joint air tasking order. Sometimes referred to as the air employment plan or joint air tasking order shell. Information that may be found in the plan includes joint force commander guidance, joint force air component commander guidance, support plans, component requests, target update requests, availability of capabilities and forces, target information from target lists, aircraft allocation, etc. Also called MAAP.

**SOURCE: JP 3-30, *Command and Control for Joint Air Operations***

b. **ATO Cycle Inputs.** A number of inputs are required prior to initiating the ATO cycle. Once these inputs are available, the ATO production workflow begins. Specific actions at predetermined times ensure ATO production remains on schedule within the established 72- or 96-hour cycle. **Figure IV-4 identifies the steps required to produce an ATO while Figure IV-5 depicts a notional multi-ATO rhythm.** ATO production team required inputs include the following:

- (1) JIPTL from the targeting cell (in TBMCS this is also known as the TNL).
- (2) ACMs from the airspace management cell.
- (3) Friendly order of battle data (time permitting, initially established during contingency planning, otherwise during crisis action planning).
- (4) MAAP developed daily air battle plan from mission planning worksheets or MAAP Toolkit.
- (5) SPINS inputs.



c. **Air Operations Directive.** The JAOC SD publishes a daily AOD that provides the JFACC's guidance for each ATO. Furthermore, it conveys the JFACC's guidance with respect to acceptable levels of risk, usually based on mission type orders. This gives the operational level planners the information they need to allocate sorties to meet the CJTF's objectives within imposed risk constraints. The JFACC uses the AOD to express the intent for a specific day and communicates the CJTF's apportionment decision. Apportionment guidance should reflect prioritized operational objectives and relevant tactical tasks with approximate weights of effort for each objective. Specific weights of effort should be avoided to allow maximum flexibility in planning the application of airpower. However, the CPD can use weights of effort, along with existing friendly force capabilities, to estimate the numbers of aimpoints by effect or objective to focus target development.

**KEY TERM**

**apportionment (air). The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations for a given period of time.**

**SOURCE: JP 3-0, *Joint Operations***

(1) The AOD should communicate desired effects to target developers and others involved in targeting. By outlining desired effects in the AOD, target developers within the JAOC's ISRD gain the flexibility to identify and nominate the most effective means to create the desired effects. Conversely, target-based AOD guidance can reduce target selection flexibility and resulting in the inefficient use of resources. Robust, logical desired effects with appropriate MOEs and ISR collection requirements are a necessary part of the AOD.

(2) The AOD should also be used to express the CJTF's and JFACC's guidance regarding TST target categories (target sets), what the priority is among them, and what conditions would cause preplanned missions to be retasked. Categories of TST, HVTs, and other objects of dynamic targeting should be presented in the context of the desired effects, and those desired effects prioritized against the desired effects for preplanned targets. This allows the COD to rapidly assess the value of preplanned targets against TST or emerging targets to determine whether or not to re-task assets. This guidance also reduces the possibility of all newly detected targets being struck. Just because a target can be engaged within the ATO execution period does not mean that effort should be diverted from preplanned targets to engage it.

(3) While daily guidance is critical to subsequent ATOs, the SD's strategy plans team also works on long-range planning, including the analysis of branches and sequels. Conclusions drawn from this analysis should be disseminated throughout the JAOC to assist in focusing future target development and intelligence collection efforts.

(4) Finally, the AOD should include the JFACC's guidance on which targets or target sets require immediate assessment feedback. ISR collection assets are usually limited in number and the collection requirements for target development, JIPOE,

indications and warnings, and other taskings may have a higher priority than combat assessment. A focus on a select few high-priority targets or sets for assessment aids joint air operations efficiency.

d. **Air Tasking Order.** The ATO is used to task and disseminate to components, subordinate units, and C2 agencies projected sorties, capabilities or forces to targets and specific missions. It normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. The ATO may subsume the ACO and SPINS, or these may be published as separate orders. The ATO production team relies primarily on TBMCS tools to produce and publish the joint ATO.

e. **Special Instructions.** SPINS are a separate instruction or section of the ATO that provides information that is not otherwise available in the ATO, but is necessary for its implementation. **It includes such information as CJTFs' guidance (often including the AOD itself), the C2 battle management plan, ROE, personnel recovery procedures, the communications plan, and general instructions for inter- and intra-theater airlift.** It may also include the ACO.

f. **Airspace Control Plan and Order.** The ACP establishes procedures for the airspace control system in the joint operational area. The CJTF approves the ACP. To provide effective operational procedures the ACP and air defense plan must be integrated with the CJTF's plans and orders. Both plans should complement available C2 systems and capabilities. The ACP must consider procedures and interfaces with the international or regional air traffic systems necessary to effectively support air operations. Because the airspace control area normally coincides with air defense boundaries, coordination between combat zone airspace control and area air defense operations is essential.

(1) The ACO implements specific control procedures for established time periods based on the general guidance contained in the ACP that provides the details of the approved requests for ACM. It defines and establishes airspace for military operations as deemed necessary by the appropriate military authority. It notifies all agencies of the effective airspace activation time, composite structure of the airspace to be used; and the altitudes, distances, and the controlling agency for all ACM. The ACO may include ACMs and FSCMs such as air routes, base defense zones, coordinating measures/lines, drop zones, pickup points, restricted areas, etc.; and any other pertinent airspace information deemed necessary by the ACA to limit fratricide and maximize combat effectiveness.

(2) The ACO will be published either as a part of the ATO or as a separate document. The ACO message is a jointly approved message developed by the airspace management control team in the JAOC and published by the ACA. A change to the ACO should be distributed whenever a new area is established or an existing area deleted.

(3) The ACO is executed during ATO execution and can be updated with additions, changes, or deletions as needed. All air missions are subject to the ACO. It provides direction to deconflict, coordinate, and integrate the use of airspace within the

operational area. This does not imply the level of command authority over air assets. The methods to accomplish deconfliction, coordination, and integration range from positive control of all air assets in an airspace control area to procedural control of all such assets, with any effective combination of positive and procedural control between the two extremes. The JFACC, through the ACP, will determine the appropriate method based on the CJTF's CONOPS. The following is an example of an ACO:

```
OPER/C2WAC//
MSGID/ACO/C2WS//
ACOID/E//
PERIOD/060600ZSEP/070559ZSEP//
NARR/TRAINING PURPOSES ONLY FOR C2WAC//

ACMID/AAR/BROWANCHOR/270358N0454545E/265904N0454306E
/265339N0454334E/264910N0454702E/264648N0455233E/264713N0455840E
/265017N0460343E/272117N0463343E/272201N0463422E/272706N0463631E
/273227N0463531E/273640N0463138E/273835N0462554E/273742N0461951E
/270358N0454545E//
EFFLEVEL/17000AMSL-FL250//
PERIOD/010600ZSEP/300559ZSEP//
AMPN/SHAPE: ORBIT/TIME: CONTINUOUS/PLOTTING INSTRUCTIONS:
ORBIT: START AT 265155N 0460135E, GO TO 272255N 0463135E,
TURN LEFT 180 DEGREES, WIDTH OF 16.00NM. COMPLETE PATTERN.
ACMID POINTS INCLUDE A 2.5NM BUFFER AROUND ORBIT.
/AMPN/ SECTOR II /CONTAUTH/CHARTER/B42/B15/VERTICAL SEPARATION
CELL
LEAD FL235 2ND FL240/RECEIVERS WILL CONTACT CELL LEAD FOR ALT
ASSIGN AND SEQUENCING 5NM PRIOR TO REACHING ARIP/FOR EXCEPTIONS
CONTACT CHARTER FOR CLRNC//

ACMID/AAR/EXXON/274848N0380544E/274330N0380707E/273931N0381117E
/273756N0381709E/273909N0382307E/274251N0382736E/274803N0382924E
/282749N0383100E/282844N0383100E/283354N0382906E/283732N0382433E
/283840N0381834E/283700N0381244E/283258N0380838E/274848N0380544E//
EFFLEVEL/17000AMSL-FL250//
PERIOD/060600ZSEP/070559ZSEP//
AMPN/SHAPE:ORBIT/TIME:CONTINUOUS/PLOTTING INSTRUCTIONS:
ORBIT: START AT 274808N 0382635E, GO TO 282754N 0382811E,
TURN LEFT 180 DEGREES, WIDTH OF 16.00NM. COMPLETE PATTERN.
ACMID POINTS INCLUDE A 2.5NM BUFFER AROUND ORBIT.
/AMPN/ SECTOR II /CONTAUTH/CHARTER/B42/B15/VERTICAL SEPARATION
CELL
LEAD FL235 2ND FL240/RECEIVERS WILL CONTACT CELL LEAD FOR ALT
ASSIGN AND SEQUENCING 5NM PRIOR TO REACHING ARIP/FOR EXCEPTIONS
CONTACT CHARTER FOR CLRNC//

ACMID/AAR/GREENANCHOR/270603N0492509E/270048N0492644E
/265657N0493104E/265533N0493659E/265657N0494254E/270048N0494714E
/270603N0494849E/274603N0494849E/274658N0494846E/275204N0494641E
/275534N0494159E/275631N0493557E/275439N0493011E/275029N0492615E
```

*For further implementation guidance and formats on ACOs, refer to Joint Interoperability Engineering Organization (JIEO) Circular 9152, Repository of United*

*States Message Text Format (USMTF) Program Items for US Implementation Guidance, and Military Standard (MILSTD)-6040, US Message Text Formatting Program.*

g. **Airspace Control Means Request (ACMREQ).** The ACMREQ message is a jointly approved message used to request a specific airspace control measure or to identify relevant information that should be included in the ACO. **The ACMREQ will allow the originator to request that a defined block of airspace be designated as having special significance for air operations.** Requested control measures are deconflicted from other users by airspace management control team personnel and published in the ACO. When procedural ACMs are established, they reserve airspace for specific airspace users, restrict the actions of airspace users, control the actions of airspace users, or require airspace users to accomplish specific actions. An airspace control request format is provided below.

**TO:**  
**FROM:**  
**SUBJECT: Request for Airspace**

**(A) Airspace Coordinating Measure Requested**

**(B) Location (Lat/Long)**

**(C) Altitude(s)**

**(D) Valid/Void Times (normally ZULU)**

**(E) Type Aircraft/Mission**

**(F) Controlling Agency**

**(G) Comments**

*NOTE: This format is representative of the appropriate US Message Text Format. Refer to CJCSI 6241.04, Policy and Procedures for Using United States Message Text Formatting, for detailed instructions.*

*For more detailed guidance on the C2 of joint air operations throughout the range of military operations, refer to JP 3-30, Command and Control for Joint Air Operations.*

## **14. Joint Fire Support Planning**

a. **Preparing the Joint Fire Support Estimate.** Component staffs typically use the joint fire support estimate to influence how available joint fire support resources are employed to support the possible COAs. The estimate also aids joint fire support planners or coordinators integrate and synchronize the employment of joint fire support resources. The estimate is a realistic appraisal of the effort required to support the operation. It serves as a basis for identifying joint fire support priority requirements that support the CJTF's intent. Any variable that could affect the mission is a factor.

Examples of factors that may be considered in the joint fire support estimate include the following:

- (1) Task organization of subordinate forces and their missions.
- (2) Availability of joint fire support resources, including FA, CAS (by both fixed- and rotary-wing aircraft), NSFS, SOF, EW, ISR assets.
- (3) Probable enemy fires plan.
- (4) Enemy fires capability.
- (5) Identification of HVTs and HPTs.
- (6) Consumption factors (type and quantity), positioning requirements, and priority of logistic support.
- (7) Joint fires-related decision points.

b. **Issuing the Commander's Estimate.** Based on information provided by the CJTF's staff (staff estimates), the CJTF issues an estimate. Joint fire support planners and/or coordinators information requirements include guidance regarding prioritization of targets, desired effects, and targets that require assessment after attack.

c. **Course of Action Analysis.** COA analysis is a systematic review process performed by a CJTF and staff to determine the best COA for a given operation. Each COA must be analyzed to consider the implications of both friendly and enemy options during an operation.

(1) Joint fire support planners or coordinators are key players in this analysis process. They advise the CJTFs on the joint fire support assets available and recommend the most effective use of these assets. **As the analysis progresses, joint fire support planners or coordinators continuously evaluate the integration of joint fire support into the CJTF's emerging CONOPS, to include branches and sequels.** As a result of this interaction, the CJTF's options are influenced by the availability and allocation of joint fire support assets.

(2) The finished product of analysis is a COA that integrates joint fire support with maneuver and synchronizes operations. Joint fire support planners use the results of COA development in the targeting process.

d. **Initiating Planning Actions.** Once the CJTF selects a COA, joint staff and fire support planners:

- (1) Refine NAIs, decision points, and HVTs/HPTs.

(2) Integrate and refine the collection, TA, and assessment plan. All collection assets are tasked and integrated to ensure there are no gaps in the coverage of the AO.

(3) Develop joint fire support tasks, responsibilities, and requirements.

(4) Develop the joint fires employment concept and joint fire support plan.

e. The result of joint fire support planning is a joint fire support plan. An example of a format for a joint fire support operation order is provided below:

**ANNEX XX (JOINT FIRE SUPPORT) TO OPERATION ORDER NO## [code name] - [issuing headquarters]**

**(Include heading if annex distributed separately from OPLAN/OPORD.)**

**1. SITUATION**

**a. Enemy Forces**

(1) Include a detailed description of enemy fire support and air defense assets.

(2) List enemy rocket, cannon, and missile units. Include those organic to maneuver units. List all fire support units that can be identified as being committed or reinforcing. Consider all identified fire support units within supporting range as being in support of the committed force. Include the number of possible enemy air sorties by day, if known. Estimate the number, type, yield, and delivery means of enemy chemical, biological, radiological, and nuclear weapons available to the committed force.

**b. Friendly Forces**

(1) State the concept of fires.

(2) Provide adjacent units' concept of fires, if applicable.

(3) Include supporting air, land, and maritime forces.

**c. Environment**

(1) Terrain. List terrain aspects that would impact operations.

(2) Weather. List weather aspects that would impact operations.

(3) Civil considerations. List civil considerations that would impact operations. Refer to civil-military operations annex as required.

**2. MISSION.** State the joint fire support mission for the operation.

**3. EXECUTION**

**a. Concept of Joint Fires.** Describe how joint fires will be used to support the CONOPS. State the priority of joint fire support. This must be consistent with what is in the concept of fires in the OPORD/OPLAN. Address the objectives for

using air, land, and maritime fires.

**b. Air Component**

(1) **General.** Briefly describe the air commander's concept for the use of air power.

(2) **Air interdiction (AI).**

(3) **Close air support (CAS).**

(4) **Electronic attack (EA).** Refer to information operations annex as required.

(5) **Reconnaissance and surveillance operations.** Refer to ISR annex as required.

(6) **Miscellaneous.** State the following:

(a) The ATO's effective time period.

(b) Deadlines for submission of AI, CAS, search and rescue, and EW requests.

(c) The mission request numbering system based on the target numbering system.

(d) Joint suppression of enemy air defense taskings from the land component commander.

(e) Essential ACA measures - such as coordinating altitude, target areas, low level transit route requirements - identified in the ACA annex.

**c. Land Component**

(1) **General.** Include the concept for use of cannon, rocket, and missile fires in support of shaping operations.

(2) **Organization for combat.**

(3) **Allocation of ammunition.**

(4) **Miscellaneous.** Include the following:

(a) Changes to the targeting numbering system.

(b) The use of pulse repetition frequency codes.

(c) Positioning restrictions.

**d. Maritime Component**

(1) **General.** Include the concept for use of NSFS and TLAMs.

(2) **NSFS Organization.**

- (3) Miscellaneous.**
  - (a) Trajectory limitations or minimum safe distances.**
  - (b) Frequency allocations.**
  - (c) Reference to a NSFS annex.**
- e. Nuclear Operations**
- f. Smoke Operations**
- g. Target Acquisition. Include information pertaining to the employment and allocation of TA systems and EW assets.**
- h. Coordinating Instructions**
  - (1) List the targeting products (target selection standards matrix, HPT list, and attack guidance matrix).**
  - (2) List FSCMs.**
  - (3) Refer to time of execution of program of fires.**
  - (4) Include ROE.**
  - (5) List fire support rehearsal times and requirements.**
  - (6) List target allocations.**
  - (7) Specify the datum or coordinate system to be used (Appendix D).**
- 4. SERVICE SUPPORT. Identify the location of munition transfer points and ammunition supply points, or refer to the logistics annex. List the controlled supply rate.**
- 5. COMMAND AND SIGNAL**
- APPENDIXES:**
  - 1. Air Component Support**
  - 2. Land Component Support**
  - 3. Maritime Component Support**
  - 4. Special Operations Component**
- DISTRIBUTION: (If distributed separately from OPLAN/OPORD)**

*For more guidance on the joint fire support planning and execution processes, refer to JP 3-09, Joint Fire Support.*

## 15. Information Operations Appendix

a. **Key Staff Actions.** During joint operation plan or order development, the JTF IO staff develops the IO portion of the plan or order. Key JTF IO staff actions during this phase are:

- (1) Refine IO tasks from the approved COA.
- (2) Identify IO capability shortfalls and recommend solutions.
- (3) Facilitate development of supporting plans by keeping organizations responsible for development of supporting plans informed of IO plan development details (as access restrictions allow) throughout the planning process.
- (4) Advise the supported CCDR on IO issues and concerns during the supporting plan review and approval process.
- (5) Participate in TPFDD refinement to ensure the IO force flow supports the OPLAN.

b. **Format.** The format and guidance for developing appendix 3, “Information Operations,” to annex C, “Operations,” is contained in CJCSM 3122.03B, *Joint Operation Planning and Execution System (JOPES) Volume II Planning Formats*. Generally, it follows the five-paragraph order format. The IO CONOPS summarizes how the CJTF visualizes executing IO to support the JTF’s mission. When the joint operation involves various phases, the IO CONOPS should be prepared in subparagraphs describing the role of IO in each phase. The IO appendix tabs provide specific plans and guidance regarding the core IO capabilities.

## APPENDIX A

### INTELLIGENCE ORGANIZATIONS SUPPORTING TARGETING

#### 1. Intelligence Support Architecture

a. At the JTF level, production focuses on the fusion of intelligence from all sources (including components, the supported CCDR's JIOC and Defense Joint Intelligence Operations Center [DJIOC]). Combatant command JIOCs possess organizational **processes to integrate and synchronize military, national, operational, and tactical** intelligence capabilities to increase intelligence fidelity and timeliness of dissemination to warfighters, and to decrease duplication of effort by intelligence centers.

b. The combatant command JIOC is the primary intelligence organization providing intelligence to joint forces at the operational and tactical levels. The JISE is the JTF J-2's focal point for multidisciplined, all-source collection, production, analysis, and dissemination. The JISE utilizes reach-back capabilities to the combatant command JIOC and DJIOC.

c. In a "federated approach," a JTF receives its principal intelligence support from the combatant command's JIOC, which receives information from all echelons and performs all-source analysis and production. The following paragraphs contain information on the organizations that may provide expertise for federated intelligence support to targeting and allow access to more actionable information than would otherwise be available to JTF.

#### 2. Joint Staff J-2, Deputy Director for Targeting (J2-T)

a. The Joint Staff J-2 is a unique organization since it is a major component of the DIA, which is a combat support agency, as well as a fully integrated element of the Joint Staff. The JS J-2 is the primary coordination element for national-level intelligence support to joint targeting.

b. The Joint Staff J-2, Deputy Director for Targeting (J-2T) functions as the lead agent for providing and coordinating national-level intelligence support to joint targeting. Specific J-2T responsibilities include:

(1) Providing CJCS and Joint Staff J-3 with targeting, assessment, and technical support during contingency and crisis action planning.

(2) Providing the combatant commands, if requested and validated, with IC target development through all phases of the targeting cycle.

(3) Assisting the combatant commands in establishing, coordinating, or supporting federated intelligence operations, to include target development and assessment.

(4) Assisting combatant commands with coordination of IC target vetting.

(5) Providing functional expertise on targeting and targeting-related issues undergoing Joint Staff, SecDef, and Presidential review. This includes, but is not limited to, command target lists, planning orders, warning orders, and STAR products.

*For additional details see JP 2-0, Joint Intelligence.*

### **3. Defense Intelligence Agency, Defense Joint Intelligence Operations Center**

a. The Director, DIA serves as the Chief, DJIOC and reports to the SecDef through the CJCS. It plans, prepares, integrates, directs, synchronizes, and manages continuous, full-spectrum DOD intelligence operations in support of the combatant commands. This includes targeting, IO, BDA, current intelligence, and systems analysis of the adversary. The DJIOC coordinates and prioritizes military intelligence requirements across the combatant commands, combat support agencies (CSAs), Reserve Components, and Service intelligence centers.

b. DJIOC is responsible for providing target intelligence to the President of the United States aor SecDef, CCDRs, and CJTFs in support of joint worldwide operations. The DJIOC directly supports Joint Staff J-2 targeting efforts by consolidating all-source target development and material production. The DJIOC and combatant command JIOCs leverage national intelligence assets and determine requirements through the Director of National Intelligence and IC representatives to combatant commands.

### **4. Joint Functional Component Command for Intelligence, Surveillance, and Reconnaissance**

In support of USSTRATCOM's Unified Command Plan assigned ISR mission, **Joint Functional Component Command for Intelligence, Surveillance, and Reconnaissance (JFCC-ISR)** plans, integrates and coordinates defense global ISR strategies in support of joint operation planning and combatant command planning/operations. JFCC-ISR formulates recommendations to integrate global ISR capabilities associated with the missions and requirements of DOD ISR assets in coordination with the DJIOC and Commander, USSTRATCOM. In coordination with the combatant commands, JFCC-ISR provides personnel and resources in direct support of the combatant command JIOCs.

### **5. National Security Agency**

National Security Agency (NSA) provides critical intelligence support to all phases of joint targeting. NSA's Information Warfare Support Center (IWSC) serves as the agency's primary point of contact for organizations seeking specific targeting or targeting-related analytical information. The IWSC directly assists with the preparation of IO strategies as well as all-source targeting studies for the DOD, Joint Staff, combatant commands, and JTFs. This support includes analysis of communications networks or other aspects of the information infrastructure, as well as operational SIGINT. NSA is

also responsible for providing the combatant command, Joint Staff J-2, and DJIOC with the intelligence gain or loss assessment, which is an evaluation of the quantity and quality of intelligence data lost if desired effects are created on a target. The NSA will keep the DJIOC, combatant command JIOCs and other interested command and agencies informed of agency activities that take place in each respective CCDR's AOR or subordinate JFC's operational area.

## **6. National Geospatial-Intelligence Agency**

National Geospatial-Intelligence Agency (NGA) is a DOD CSA, that provides tailored mapping products, services, and training support to the DOD, Joint Staff, combatant commands, and JTFs. Mapping products use geodetically-controlled source material and refined mensuration techniques and data. Major targeting assistance includes the digital point positioning database and the mensuration of precise points to support targeting. NGA is the central authority responsible for managing imagery intelligence. The DJIOC validates all national imagery nomination requests, deconflicts multiple requirements, and implements tasking of national imagery assets. For this reason NGA plays a critical role providing collection support to target intelligence efforts. NGA will, when requested, provide GEOINT support to the combatant command via an NGA support team (NST) or as part of a national intelligence support team. NSTs are established at each combatant command HQ and are in direct support to the combatant command JIOC. The NST provides the full spectrum of NGA's GEOINT capabilities and is composed of a core cadre that includes geospatial analysts, imagery analysts, and staff officers. The NST also has full connectivity with NGA to ensure reachback capability into NGA's total support effort. A NST would contribute to responsive imagery tasking, collection, processing, exploitation, and dissemination in support of joint targeting efforts.

*For more on NGA target support products and services, see JP 2-03, Geospatial Intelligence Support to Joint Operations, and JP 3-60, Joint Targeting.*

## **7. Joint Information Operations Warfare Command**

a. The Joint Information Operations Warfare Command (JIOWC) plans, integrates and synchronizes IO in support of JFCs and serves as the USSTRATCOM lead for enhancing IO across the DOD. It exists to provide the full range of IO options to the supported commander focusing on the operational level of war, but prepared to support tactical and strategic level requirements as well.

b. JIOWC supports the CJTF by conducting following tasks:

(1) Supports the integration of OPSEC, PSYOP, MILDEC, EW, and destruction throughout the planning and execution phases of an operation.

(2) Interfaces with the Joint Staff, Services, DOD, and non-DOD agencies to coordinate and integrate IO efforts for CJTF.

- (3) Participates in joint special technical operations (STO) support to CCDRs.
- (4) Provides all source derived planning consideration guides and precision influence target folders to supported combatant commands.
- (5) Provides assistance to CJTF's IO intelligence support efforts.
- (6) Coordinates and integrates the IO portion of the intelligence preparation of the operational environment.
- (7) Evaluates IO effectiveness in military operations.
- (8) Provides communications system and intelligence ) nodal analysis and IO targeting support by maintaining, updating, and de-conflicting communications system and intelligence and enemy order of battle (EOB) information and models.
- (9) Assists with strategic IO planning and theater engagement.

## **8. Joint Warfare Analysis Center**

JWAC assists in preparation and analysis of joint OPLANs and Service chiefs' analysis of weapons effectiveness. The JWAC provides planners with specialized LOCs analysis for use in developing targeting strategies that includes innovative and accurate engineering and modeling-based targeting options with an understanding of risks and consequences, including collateral damage estimates. JWAC normally provides this support to JTFs through the supported combatant command.

## **9. Defense Threat Reduction Agency**

a. DTRA is a CSA charged with developing methods to deal more effectively with threats by chemical, biological, radiological, nuclear and high-yield explosives WMD and preventing future threats.

b. The agency:

- (1) Maintains continuous global SA of WMD to support decisive action.
- (2) Provides hazard predictions and consequence management expertise.
- (3) Develops technologies and tactics, techniques, and procedures to hold at risk and defeat critical military targets protected in tunnels and other deeply buried, hardened facilities.
- (4) Provides DOD nuclear mission support.

- (5) Provides enhanced capabilities to assess enemy WMD operations.

## **10. Joint Space Operations Center**

a. The Joint Space Operations Center (JSpOC) is the primary United States Strategic Command (USSTRATCOM) interface for coordinating and delivering joint space effects to the supported commander, to include all aspects of joint operation planning and the air tasking cycle. The JSpOC is responsible for analyzing and targeting enemy space capabilities in support of theaters. JSpOC targeteers can evaluate theater AODs and nominate specific space-related targets to meet a theater commander's objectives.

b. The primary functions of the JSpOC are to:

- (1) Develop a global space operations strategy to meet Commander, USSTRATCOM (CDRUSSTRATCOM) objectives and guidance.

- (2) Assist development of theater space operations strategy to meet GCC objectives and guidance through robust interaction with theater JAOCs.

- (3) Produce and disseminate the joint space tasking order.

- (4) Task and execute day-to-day space operations for assigned and attached space forces.

- (5) Receive, assemble, analyze, filter and disseminate space-related all-source intelligence and weather information to support air and space operations planning, execution and assessment.

- (6) Conduct operational-level assessments to determine mission and overall space operations effectiveness as required by CDRUSSTRATCOM and other geographic unified CCDRs to support global and theater CAs.

## **11. Joint Technical Coordinating Group for Munitions Effectiveness**

JTCG/ME is a vital joint service activity that develops operational effectiveness estimates for all non nuclear munitions and munitions EMD tables that contain collateral damage distances for all air-to-surface and surface-to-surface conventional munitions, and continuously updates JMEMs used by the Services for training and tactics development, operational targeting, weapons selection, aircraft loadouts, and planning for ammunition procurement, survivability, and development of improved munitions. JTCG/ME directs the analytical effort of working groups necessary to determine degrading effects of various terrain environments on non-nuclear munitions effectiveness and improving the database for target vulnerability, delivery accuracy, and weapons characteristics.

## 12. National Air and Space Intelligence Center

a. National Air and Space Intelligence Center (NASIC) is the sole national center for integrated intelligence analysis on air and space systems, forces, and threats. It assesses current and projected foreign air and space capabilities and intentions, develops targeting and mission planning intelligence materials, and evaluates evolving technologies of potential adversaries. Such technical information is useful in determining how to create specific effects on specific targets and target systems. In addition to expertise on worldwide air assets, NASIC also has leading experts on long-range surface-to-surface missiles (such as medium-range and intercontinental ballistic missiles).

b. The NASIC can provide target systems analysis of:

- (a) Communications system and intelligence.
- (b) Air forces and airfields.
- (c) Integrated air defense forces.
- (d) Space forces.
- (e) Ballistic missile forces.

## 13. US Joint Forces Command Quick Reaction Team

US Joint Forces Command (USJFCOM) quick reaction team (QRT) is a rapidly deployable team of targeteers and collection managers designed to provide immediate crisis support to combatant commands. They can deploy from USJFCOM within 24-hours at the request of a CDR via Joint Staff J-2/DJIOC. They are trained analysts, but must be integrated into existing theater intelligence organizations as they deploy with no organic automated data processing or communications support. The supported CDR determines the team's in-theater location (HQ, JIOC, JTF, or component command) based on assessed needs. The QRT is not a permanent targeting or collection augmentation and should be returned to national control as mobilization or individual augmentation arrive to support the CDR's requirements.

## 14. Non-Department of Defense Supporting Intelligence Organizations

a. Non-DOD organizations provide significant intelligence and operational support to joint targeting. The principal non-DOD organizations supporting joint targeting are the Central Intelligence Agency (CIA) and DOS:

b. The CIA, through its target support group (TSG) within its Office of Military Affairs (OMA), works closely with the DOD on many issues relating to every phase of the targeting cycle. The TSG makes a variety of CIA resources available to military target planners. The CIA can provide target systems analysis of communications system

and intelligence, WMD, and counterterrorism. Additionally, in peacetime, applicable RFIs are routed to the CIA to be addressed by the agency's OMA. The TSG provides information and expertise in support of military target development and processes formal requests for target nominations (review and approval by the CIA's leadership) to add CIA selected targets to a DOD plan. TSG manages all military STO and Special Access Program compartments, and deconflicts military targeting with CIA operational assets. In a crisis or war, CIA personnel or teams can be attached to combatant commands, JTFs, or joint force components, as required.

b. **DOS, Bureau of Intelligence and Research (INR).** The central point of contact within the DOS for intelligence, analysis, and research is the INR. INR produces intelligence studies and analyses, which have provided valuable information in support to targeting. As the lead foreign affairs agency and the enabler of US diplomacy, the State Department has a unique perspective on the nations of the world. All-source reporting via Foreign Service channels at American embassies or consular posts have also proven useful, particularly during the objectives and guidance, target development, and CA phases of the targeting cycle. Intelligence concerning political and military leaders, cultural trends and thoughts, and economics—to name just a few areas—can provide intelligence that ties military strategy to the entire spectrum of national power. Even from a purely military standpoint, such intelligence can enhance understanding of adversary motivations, helping to influence or bend them to our will the ultimate goal in any operation.

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## APPENDIX B

### JOINT AND SERVICE FIRES CONTROL SYSTEMS

#### 1. Theater Air-Ground System

a. The theater air ground system (TAGS) is a system of systems, a synergy of the various component air-ground systems, orchestrating the planning and execution of air-ground operations (see Figure B-1).

b. Actions at the joint force level establish the requirements for the TAGS, including the GCC's guidance, perspective, and strategy for the AOR; CJTF's JOA strategy, command organization and relationships; the campaign plan; assignment of objectives; and apportionment of forces. It is important that personnel assigned to, or working with, the TAGS understand the decision processes and problems associated with the operational and tactical levels of command. Armed with this knowledge, commanders and staffs will better understand TAGS functions and how to work within the system to receive or give support.

c. Simultaneous joint operations with different end states can be conducted within a GCC's AOR. The effectiveness of the TAGS facilitates the CJTF's ability to integrate, synchronize, and direct joint operations.

d. From a TAGS perspective, targeting directly affects the preparation of the ATO. For TAGS to work effectively, the joint targeting process and the joint ATO cycle must be synchronized. Personnel working ATO development must understand the targeting process to fully realize its impact on TAGS.

e. TAGS is critical to Army operations because it provides the commander with a system that integrates the different Services' air-ground systems. TAGS functions cross the full range of military operations and provide ground commanders with an enhanced capability to fight the close, deep, and rear battles. TAGS facilitates success in current operations while allowing ground commanders to shape the operational environment to influence future operations. Army commanders expect the TAGS to provide the framework to synchronize supporting air operations with the ground effort. The ability of the commander's fire support coordinator, G-3 Air, and ALO to work closely together in all aspects of planning, synchronizing, and executing operations is critical to the ground battle's success.

f. The CJTF influences the structure and the direction of TAGS in several ways, to include designating a JFACC, ACA, and AADC; assigning missions; and apportioning forces. The basic duties and responsibilities of the JFACC, ACA, and AADC remain the same regardless of whether the commander of the MARFOR, NAVFOR, or AFFOR performs the function. However, as explained, the MARFOR and NAVFOR JAOC capacity is limited and this has a direct bearing on the size of liaison elements.

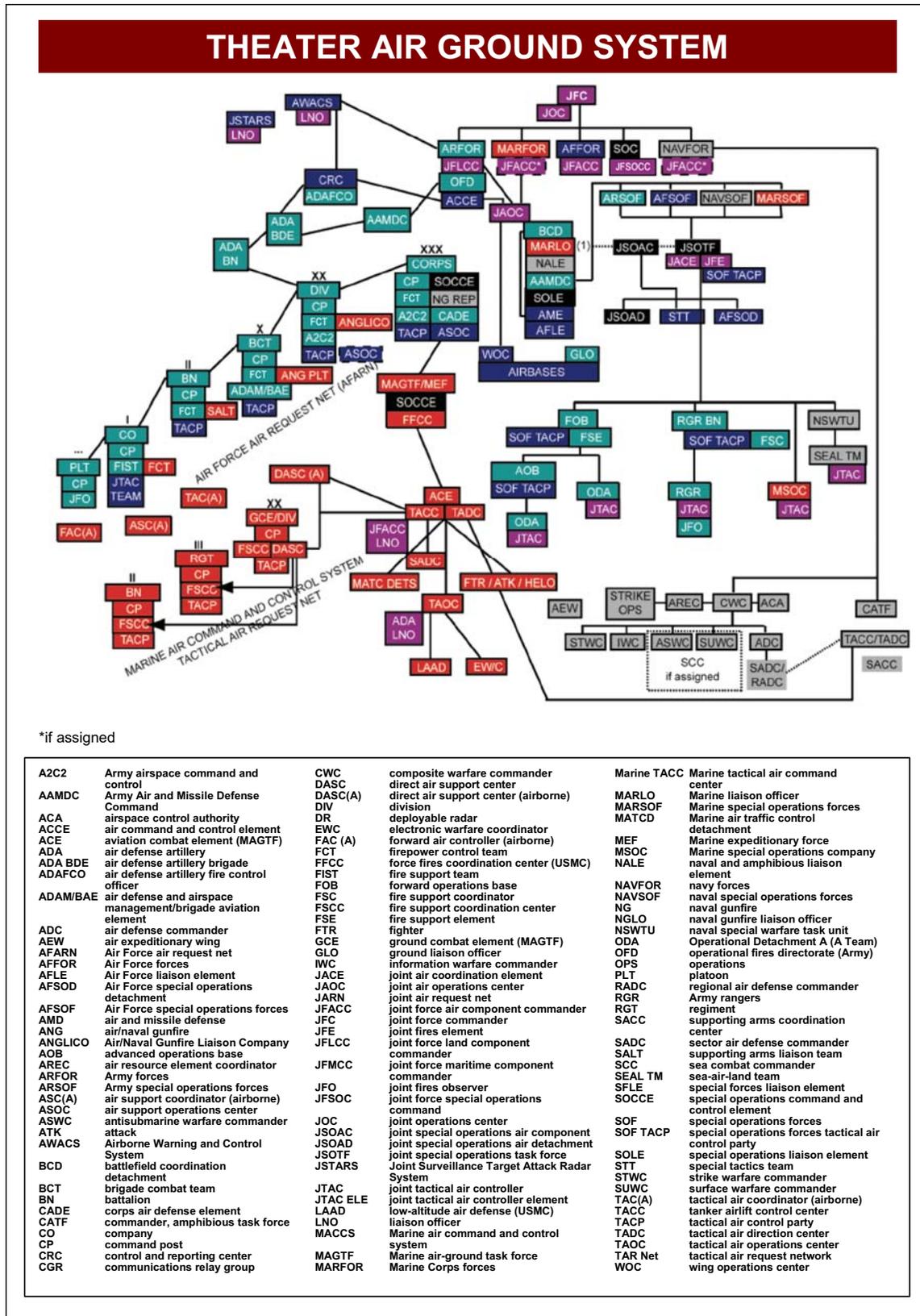


Figure B-1. Theater Air Ground System

g. In a foreign disaster relief or humanitarian assistance mission, it may be necessary to integrate TAGS with foreign military, foreign governments, or NGOs. In order to coordinate air and ground operations with these organizations, it may be necessary to modify TAGS to support the situation. Standard communications links may be replaced by something as simple as cell phones. While elements of TAGS will be absent, planners should examine the structure of the theater and the TAGS to identify what functions are missing.

*For additional information, see FM 3-52.2, MCRP 3-25F, NTTP 3-56.2, AFTTP(I) 3-2.17, Multi-Service Tactics, Techniques, and Procedures for the Theater Air Ground System.*

## **2. Army Air-Ground System**

The Army's control system for synchronizing, coordinating, and integrating air operations with the commander's scheme of maneuver is the Army air-ground system (AAGS). The AAGS initiates, receives, processes, and executes requests for air support and disseminates information and intelligence produced by aerial assets. Although some elements within AAGS, such as the TACP, belong to different Services or other nations, they function as a single entity in planning, coordinating, deconflicting, and integrating air support operations with ground operations. The Army elements of the AAGS consist of: operations, fire support, air defense, C2, and coordination/liaison elements.

## **3. Air Force Theater Air Control System**

a. The commander, Air Force forces (COMAFFOR) exercises command authority as defined by the CJTF. COMAFFOR may be assigned responsibilities as a JFACC, ACA, or AADC. The COMAFFOR plans, coordinates, and executes AFFOR air operations and other assigned responsibilities through the component tactical air control system (TACS), which allows the required centralized planning and control and decentralized execution previously discussed. The AFFOR staff normally functions within the Air Force component TACS. If another component has JFACC responsibility, the COMAFFOR retains Service component responsibilities, which also would be accomplished through the TACS. The TACS is the backbone of the AFFOR's contribution to the TAGS and consists of units specifically trained and equipped to support the C2 process. The TACS is designed to perform centralized planning and control and to facilitate decentralized execution. The elements that form the TACS are the Air Force AOC, other separate agencies, liaisons, and C2.

b. Air Force contributions to the TAGS are threefold. First, AFFOR participate in gaining control of the air environment and conduct other missions and support activities throughout the theater for the CJTF as a whole. Second, AFFOR plan, coordinate, and assist in control of air missions to achieve CJTF-assigned air operations objectives. Third, AFFOR produce a communications system that enables the control of assets. By exchanging liaison elements with other components, the COMAFFOR can contribute to a

comprehensive and unified air operation. Effective liaison is the key to planning and coordinating TAGS activities.

#### 4. Navy Tactical Air Control System

a. Naval forces provide strike aircraft and TLAM from surface and subsurface platforms to attack targets. These resources are provided to the TAGS, as directed by the CJTF. Naval carriers and land-based aircraft are equipped and manned with trained personnel to perform all types of air-to-ground missions, including CAS and AI. Ships and aircraft that are part of the naval force are an integral part of air defense and air space control of the JOA.

b. The principle warfare commanders involved in airspace control are the ADC, who is normally located on an AEGIS cruiser/destroyer, and the STWC. The STWC coordinates offensive power projection operations with respect to air and naval cruise missiles against land-based targets. The STWC, normally the air wing commander (carrier air group) located on the carrier, controls strike, C2, electronic combat, and support aircraft, and the integration of TLAMs in support of contingency operations or a theater campaign. The STWC and his staff have the greatest interface with other TAGS agencies and organizations during ATO execution.

c. The Navy utilizes airborne C2 nodes. Those nodes include the E-2C Hawkeye, which can provide similar services as AWACS, JSTARS, or USMC direct air support center (airborne). The P-3 Orion provides a mobile operations command center (MOCC). The MOCC provides command authorities, down to the air detachment level, with near real-time continuous information and SA via C2 situation links concerning friendly and opposing surface and subsurface forces and their movements, and performing supporting targeting functions.

d. The primary air control agency within the AOA is the Navy TACC afloat, until control is phased ashore. The TACC can develop and disseminate an ATO and ACO. Whenever two or more Navy TACCs function within the AOA, one is designated the TACC and the others are designated as tactical air direction centers (TADCs) operating in specific AOs. TADCs are established to control air operations during advance force operations when a fully operational TACC can not be justified. The Navy tactical air control system and the Marine air command and control system (MACCS) are parallel organizations, which accomplish the same functions at different times during amphibious operations.

e. The Marine TADC is established early on in the amphibious operation. During this time, while overall control of aviation assets remains afloat, the TADC is subordinate to the Navy TACC. Once the Navy passes control of aviation assets ashore to the commander, landing forces, the Marine Corps TADC becomes the Marine Corps TACC, and the Navy TACC reverts to a Navy TADC.

## 5. Marine Corps Air Command and Control System

a. The MACCS provides the ACE commander with the means to command, coordinate, and control air operations. It provides a robust air C2 capability and is capable of supporting air defense and airspace management functions within the framework of joint and multinational operations. The MACCS is tasked to meet the MAGTF's air C2 needs. It varies in size from small air support elements and Marine air traffic control detachment mobile teams typically deployed with a Marine expeditionary unit to a fully functional MACCS used in MEF-level operations.

b. The principal C2 agencies of the MACCS include the following:

- (1) TACC.
- (2) Tactical air operations center (TAOC).
- (3) Marine Corps direct air support center.
- (4) Maritime air traffic control detachment.
- (5) Low-altitude air defense battalion.
- (6) Terminal control agencies (for direct air support).

c. The TACC is the senior MACCS agency and the one MACCS agency that exercises command. It serves as the ACE commander's operational command post. The TACC provides the facility from which the ACE commander and the battle staff plan, supervise, coordinate, and execute all current and future MAGTF air operations. The TACC has the capability to plan, produce, and execute an ATO or ACO.

d. During amphibious operations, the TACC functions as a TADC, subordinate to the Navy Tactical Air Control Center before the transfer of control ashore. When the MAGTF assumes control of all air operations within an AOA, the TADC transitions to the TACC.

e. The TACC is equipped with TBMCS equipment and possesses the communications systems necessary to host JAOC functions and usually does so in an enabling or transitional role. The intention in such instances is to pass these functions to a more robust air C2 agency as the tempo of air operations increases. As is the case with all JAOCs, Service liaisons and SMEs that reflect the makeup of the joint force are necessary to staff a TACC-hosted JAOC.

f. The TAOC is the principal air defense agency that conducts airspace control and management. It provides real-time surveillance of assigned airspace, positive control, and navigational assistance for friendly aircraft. It performs real-time direction and control of air defense operations involving aircraft and surface-to-air weapons.

g. The DASC is the principle agency responsible for control and direction of air operations directly supporting ground forces. The DASC uses procedural control methods to control airspace users. It functions in a decentralized manner but is directly supervised by the TACC. During amphibious operations, it normally is the first major air control agency ashore, landing and co-locating with the GCE's senior FSCC.

h. TACP, tactical air coordinator-airborne, forward air controller-airborne), and assault support coordinator-airborne all provide procedural airspace control. The Maritime air traffic control detachment provides positive airspace control and air traffic control services.

### **5. Special Operations Airspace Control**

Special operations airspace integration and deconfliction issues are worked in the JAOC by members of the SOLE. There also are special operations airspace managers in the joint special operations air component, JSOTF, and joint special operations air detachment that coordinate airspace issues through the SOLE.

## APPENDIX C

### JOINT FIRES NETWORKED SYSTEMS

#### 1. Advanced Artillery Tactical Data System

##### a. Introduction

(1) Advanced Artillery Tactical Data System (AFATDS) is a fully automated C2 and communications system that prioritizes targets and pairs them with optimal fire support weapon systems. It gives commanders timely, accurate, and coordinated fire support to prioritize and engage targets. This is enhanced by color-coded mission status monitors, unit status reports, weapon platform monitors, and map symbol displays for ease of use. AFATDS can execute as a completely automated system, but allows for human intervention whenever necessary or at optional points. The system does not force current doctrine, but supports it. Configurable commanders' guidance is factored into each mission. Options and recommendations are given to the operator for each mission processed, based on rule sets input by the operator. Tailorable rule sets are available for target processing, weapon pairing, information distribution, and communications redundancy.

(2) Unit relationships are user configurable to adapt to changing needs and force structure. The system provides agility, allowing for the establishment of the sensor-to-shooter link while enforcing mission coordination requirements. AFATDS provides critical SA. Both friendly and enemy unit graphics are displayed, along with target information from multiple sources. Due to multi-level communications across the network; unit status and weapon platforms are monitored and updated continually on the map. Information may be directly accessed from the map symbols. Friendly and enemy units, targets, and operational areas can all be seen. Each AFATDS workstation may filter the information to be displayed; allowing the commander to monitor the dynamic current situation, missions processing through the system, and target updates from a unique perspective.

##### b. Fire Support Areas Supported by AFATDS

(1) **Fire Support Planning.** Fire support planning provides integration of field artillery, mortars, naval surface fire support, aviation (helicopters), and air support into the force commander's scheme of maneuver. AFATDS helps create a fire support annex to the commander's operation plan and a field artillery support plan.

(2) **Fire Support Execution.** Fire support execution is guided by fire support and field artillery support plans. It performs sensor employment, target processing, attack systems analysis, technical fire direction for cannon units, tactical fire control for multiple launch rocket system units, and target damage assessment.

(3) **Movement Control.** Movement control manages and coordinates the movement of field artillery units and sensors and coordinates the movement of fire support units and sensors.

(4) **Artillery Mission Support.** FA mission support includes logistic support to the FA system. It creates and maintains supply inventory files, supply requests, and supply reports.

(5) **Field Artillery Fire Direction Operations.** FA fire direction operations include the collection and maintenance of weapon, fire unit, and ammunition status data required for day-to-day operations. This information is provided in either detailed or aggregate form to appropriate operations centers in support of both planning and execution requirements.

(6) **Communications.** AFATDS is not limited to FA communications, but can communicate and exchange data with Army, Air Force, Marine Corps, Navy, and NATO systems. AFATDS is interoperable with all fires subsystems including gun display unit, artillery fire control systems, future combat systems, Firefinder Radar, Airborne Target Handover System, and forward observer system. It interoperates with the Army Battle Command Systems suite including All Source Analysis System, maneuver control system, Forward Area Air Defense Command and Control System, and Battle Command Sustainment Support System. The system also interoperates with joint level automated systems such as Tactical Airspace Integration System, TBMCS, Joint Surveillance and Target Attack Radar System (Ground Control Station), and Global Command and Control System (GCCS). AFATDS also operates with Allied field artillery C2 systems such as the United Kingdom's Battlefield Artillery Target Engagement System, the German ADLER, the French Automated field artillery fire support system, and the Italian SIR. AFATDS communications devices include the programmable Tactical Communication Interface Module (TCIM) or the Serial Personal Computer Memory Card Industry Association Tactical Communications Interface Modem. The TCIM enables communication over wire, combat net radio, mobile subscriber equipment, and satellite. The system also uses a network interfaced cards to communicate over local area network for Secret Internet Protocol Router Network/Non-Secure Internet Protocol Router Network and Enhanced Position Location and Reporting System operations.

(7) **AFATDS Planning.** The planning function within AFATDS allows for detailed planning and COA analysis by projecting friendly and enemy positions, guidance specific to the plan, and a task organization for the plan. In order to assist with the planning function, an enemy template tool is provided. A system tool supports multi-phase maneuver COAs and can compare and recommend the best COA considering commander's priorities. Plans can be easily disseminated. The planning activity does not affect the current situation until the operator implements the plan. Plans are implemented into current by phase - this immediately updates the unit task organization guidance, geometry, and target database to reflect changes.

#### **h. Target Analysis and Engagement**

(1) Target analysis and engagement is a robust aspect of AFATDS. Target list management functions allow for copy and merge, target duplication checks, sorting, searching, and target data reception and transmission. Fire plans and schedules of fires

may be generated from lists, groups, or series targets. There is an extensive set of guidance that can be applied (e.g., target selection standards, high-payoff targets, decay time, target prioritization). The fire support system task list alone can contain a 100-rule set of prioritized target to weapon system pairings and a prioritized list of commander's preferences. Pre-planned missions can be linked to sensor reports for dynamic targeting. The system can deal with many weapons and pair those weapons to targets, minimizing the sensor to shooter timeline. The system can filter sensor reports so that every report does not have to be engaged, and the system also selects the best weapon and munition based on target parameters (e.g., environment, countermeasures, target location error, age), the munitions required (e.g., effects capability, hazard area), and weapon status (e.g., response time, current mission load, ammunition inventory). AFATDS can determine quantities of munitions to achieve a desired target damage effect.

(2) AFATDS mission processing of sensor inputs considers mission value, not first in — first out. The system will filter targets and process missions based on a configurable mission value and precedence. The system analyzes cannon, mortar, rocket, Army Tactical Missile System, fixed- and rotary-wing air, naval cannon, standard missile, and tomahawk as possibilities for weapons. It coordinates ground and airspace violations (spatial coordination is four dimensional, including time analysis), is fully automatic, and keeps interested nodes apprised of targeting information. The system considers commanders' guidance, latest unit status, mission history, and effects algorithms; which determine munition quantity for both guided and unguided munitions. During mission processing, the operator may view and tailor the system recommendation. The intervention display shows all key data and analysis results.

## 2. Joint Automated Deep Operations Coordination System

a. **Introduction.** Joint Automated Deep Operations Coordination System (JADOCS) is a joint mission management software application. It provides a suite of tools and interfaces for horizontal and vertical integration across functional areas, see Figures C-1 and C-2. JADOCS has evolved into the "go to war" automated support system for deep operations, see Figure C-2. It is currently installed on over 900 systems worldwide. JADOCS is the baseline for the Naval Fires Control System. JADOCS also is a major segment of the intelligence application package for TBMCS functionality at wing and squadron levels. Key integration functions within JADOCS are discussed below.

b. **Counterfire Common Operational Picture (CF-COP).** The CF-COP function provides a near real-time picture of the artillery battle. It allocates tube and rocket counter-battery resources for more efficient counterfire operations through digital integration at multi-echelons; from the joint/combined level down to tactical firing units. CF-COP also includes munitions allocation and status. Weapon-target pairing provides improved use of available munitions to maximize lethality while conserving unit basic load stocks.

c. **Joint Operational Area Management Function.** The function provides the capability to assess the impact of surface fires on airspace activity, enabling improved coordination between air and land component commanders. Kill box management tools

provide more dynamic use of offensive resources through integration of ISR data, improving the timing of offensive strikes to coincide with enemy movements into and out of named areas of attack. Airspace deconfliction capabilities enable improved coordination at joint and combined levels to minimize the threat to air missions from friendly fires.

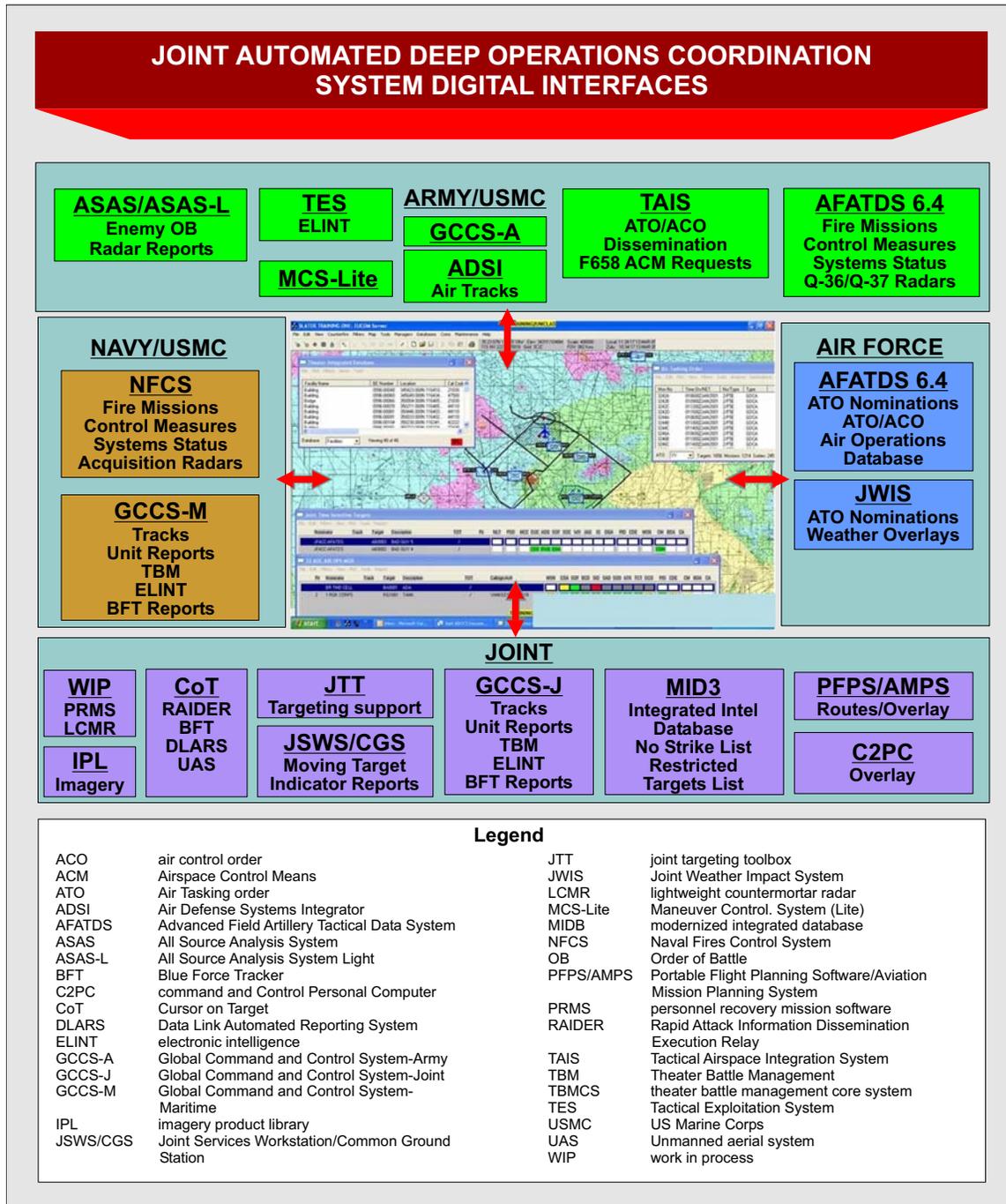


Figure C-1. Joint Automated Deep Operations Coordination System Digital Interfaces

d. **Coalition Coordination and Integration Function.** This function facilitates the integration of coalition artillery with respect to both the counterfire battle and other surface fires missions. During recent experiments, JADOCS has initiated the digital integration of Allied and US tube and rocket artillery systems through a Counterfire Simulation Center. Other recent improvements include Allied use of JADOCS to conduct counter fire operations resulting in an integrated Blue CF-COP across a theatre.

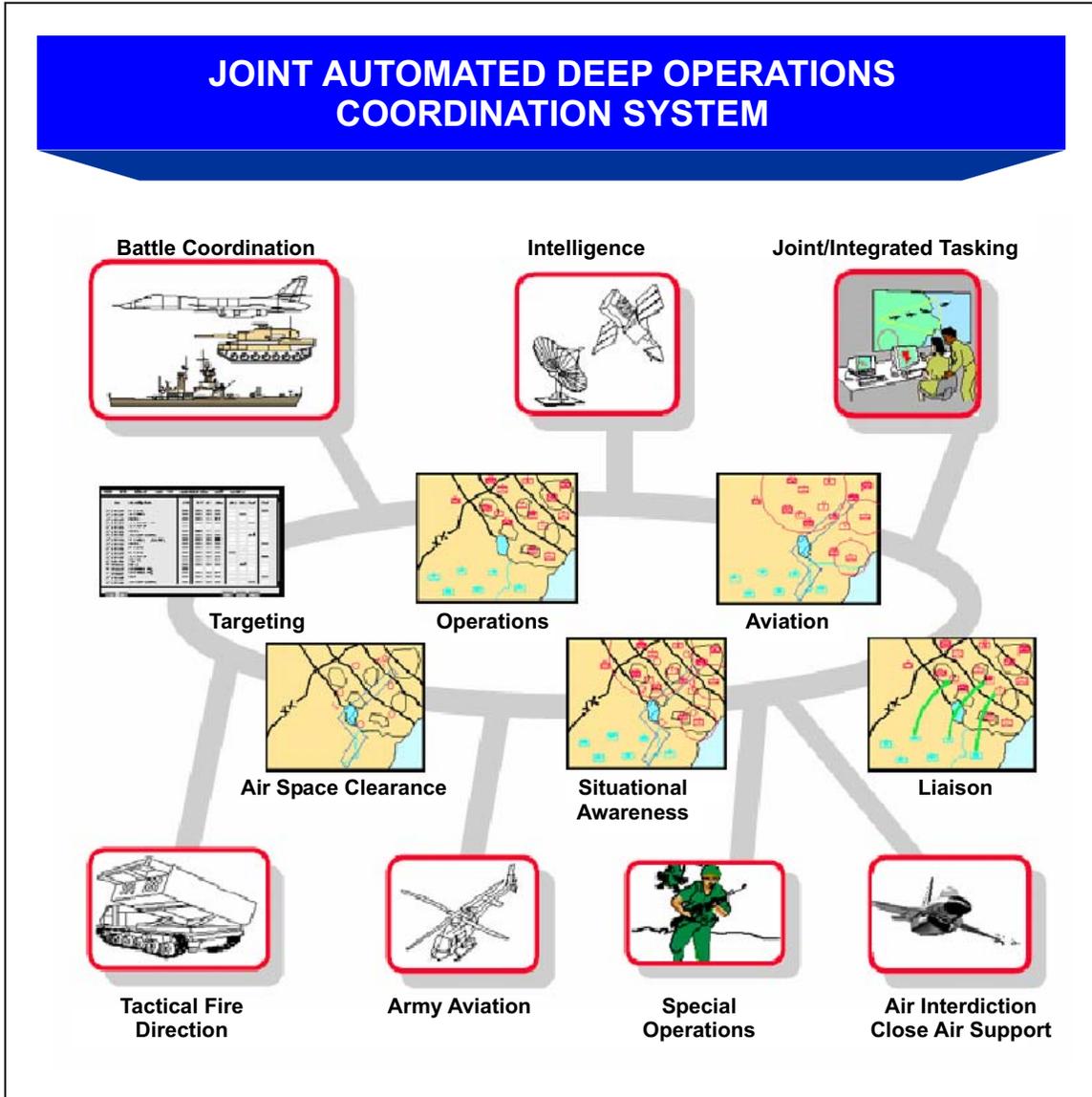


Figure C-2. Joint Automated Deep Operations Coordination System

e. **Air Interdiction Planning and Execution Function.** This function provides more effective employment of AI assets through timely and improved information flow for the identification, assignment, and nomination of AI targets. It enables the commander and staff to allocate critical air resources in a more efficient manner through early assessment of potential and planned missions. AI provides the ability to monitor ATO execution through all phases and provides immediate visibility into AI nominations

throughout the targeting process, including eight- and four-hour updates to tune AI missions and maximize other fires.

f. **Fire Support Coordination Measures Analysis.** This function provides a means for assessing changes and movements of the FSCL on current and planned missions in the ATO. It provides immediate visibility of targets exposed or covered by movements in the FSCL. It also offers the commander and staff opportunities to assess the consequences of FSCL movement prior to commitment.

g. **Operational Area Visualization Function.** This function enables improved SA, faster and more accurate deep attack planning, and operational area assessment. It uses tools that provide visualization of coordination measures, ingress and egress routes, and air defense threats. It also enables the commander and staff to visualize friendly fires in three dimensions over any area. Control and coordination measures also can be overlaid with imagery and terrain data to improve SA and planning.

### 3. Modernized Integrated Database

#### a. Purpose

(1) The **MIDB** is a Department of Defense Intelligence Information System (DODIIS) Intelligence Mission Application. It serves as **the primary repository for data production and dissemination of military intelligence** involving worldwide orders of battle, facilities, C2 networks, targeting, BDAs, and other related information required for strategic assessments and national policy decision-making. This data is maintained and updated by the DIA. Combatant commands and Services are delegated responsibility to maintain their portion of the database.

(2) MIDB is a DOD migration system. DOD is in the process of establishing a simplified baseline of the best common information systems across the business functions of the Department. These migration systems represent a stage of process improvement designed to achieve a common set of automated processes and practices in DOD. MIDB expanded upon the basic order of battle, equipment, and facility holdings of the Integrated Data Base to include several legacy systems:

- (a) Electronic order of battle services.
- (b) Expeditionary warfare.
- (c) Military facilities file.
- (d) Target material management.
- (e) US Central Command/US Special Operations Command integrated data system.

- (f) Force trends database.
- (g) Force tracking information system.
- (h) Space data base.

b. **Users.** MIDB serves as the primary repository of intelligence data for the entire DOD community, Australia, Canada, and the United Kingdom.

c. **Products.** Typical MIDB products and outputs include:

- (1) Facility location list by country and category with remarks.
- (2) Facilities with associated units on equipment, facility equipment, and facility remarks.
- (3) Facility listing BE/category sort, facilities with associated units, equipment, and remarks.
- (4) Facility location list by country and category.
- (5) Equipment on-hand quantities by facility and unit name.
- (6) Equipment list by force and primary function.
- (7) Active ground order of battle related facilities by category.
- (8) Facility location list with vulnerabilities and remarks.
- (9) Defensive missile order of battle.
- (10) Target materials planning document.
- (11) TNL.
- (12) Combined target list.

d. **Network Interfaces and Communications.** MIDB provides intelligence information from the DIA MIDB to the Global Command and Control System-Joint Integrated Intelligence and Imagery (GCCS-J I3) application. MIDB is a structured relational database. Data elements are highly structured in American Standard Code for Information Interchange format. Data is replicated between Network Interfaces and Communications MIDB and Intelligence Shared Data Server (ISDS) databases, sharing the same schema. Data sources are DIA tactical message (order of battle report, imagery interpretation report, intelligence report) via automated message handling /joint message handling system. The MIDB repository is available through Intelink (to the DODIIS community) and through GCCS-J I3, to tactical units.

## 4. Joint Targeting Toolbox

### a. Purpose

(1) The joint targeting toolbox (JTT) is a suite of software applications hosted on Service, Command, and government agency core system environments which are specifically engineered to support operations and targeting requirements at the national, theater, and tactical level. JTT supports the entire targeting cycle from commander's objectives, guidance and intent to generating the target list for the ATOs to CA (BDA), with the goal of leveraging off of current targeting applications by packaging their functionality into a non-duplicative collection of interoperable targeting tools. JTT provides a capability to rapidly receive, correlate, manipulate, display and disseminate target intelligence data from multi-discipline sources and apply the resulting information to the battle planning, mission execution and assessment processes (i.e., view the COP of the JOA, call up imagery for selected targets, retrieve and manipulate relevant portions of tasking orders, Master Attack Plans and candidate/priority target lists; share information, search common MIDB/ISDS targeting databases, conduct online web-based target management, and assess results of attacks). By including targeting applications compatible within the force/theater-level planning environments, JTT provides the targeting community the capability to be seamless, collaborative, knowledgeable, focused, decisive, correct, and fast.

(2) The follow-on software suite for the JTT is the STRIKE application (Software for Targeting Requirements Information Operations and Kinetic Effects).

b. **Users.** JTT is a Joint Chiefs of Staff initiative that is being developed and fielded DOD-wide. It is the primary targeting application for the GCCS that allows "complete targeting interoperability" within the joint community. JTT brings all Services, Commands, and government agencies targeting requirements together in one tool, increasing their interoperability and collaboration capability.

c. **Network Interfaces and Communications.** JTT operates in current open architectures and systems such as: defense information infrastructure-common operating environment, DODIIS Client Server Environments, GCCS, GCCS-J I3, GCCS-M (Maritime) / I3, and TBMCS. JTT operates at the sensitive compartmented information, collateral general service (message), and Multi-national Collateral (Tier 1) security levels.

## 5. Theater Battle Management Core System

### a. Purpose

(1) The TBMCS is a force level integrated air C2 system. TBMCS provides hardware, software, and communications interfaces to support the preparation, modification, and dissemination of the force-level air battle plan (ABP). The ABP includes the ATO and airspace coordination order. TBMCS unit-level operations and intelligence applications provide Air Force Wings the capability to receive the ABP, parse it, and manage wing operations and intelligence to support execution of the ABP.

(2) TBMCS supports the development and sharing of a common relevant operational picture of theater air and surface activity. Common TBMCS applications and interfaces provide a network for joint force data sharing. The TBMCS intelligence and targeting applications at the theater JFACC level, at the ASOC, and the DASC supports the coordination of precision engagement fires, safe passage zones, and near real-time warnings of impending air attack. The air and surface surveillance and weapons coordination engagement options enable synchronized operations and employment of the correct weapons for each target to generate the desired results. Engagement intentions and results assessments are shared by all TBMCS network participants, contributing to improved decision making by commanders. (See Figure C-3).

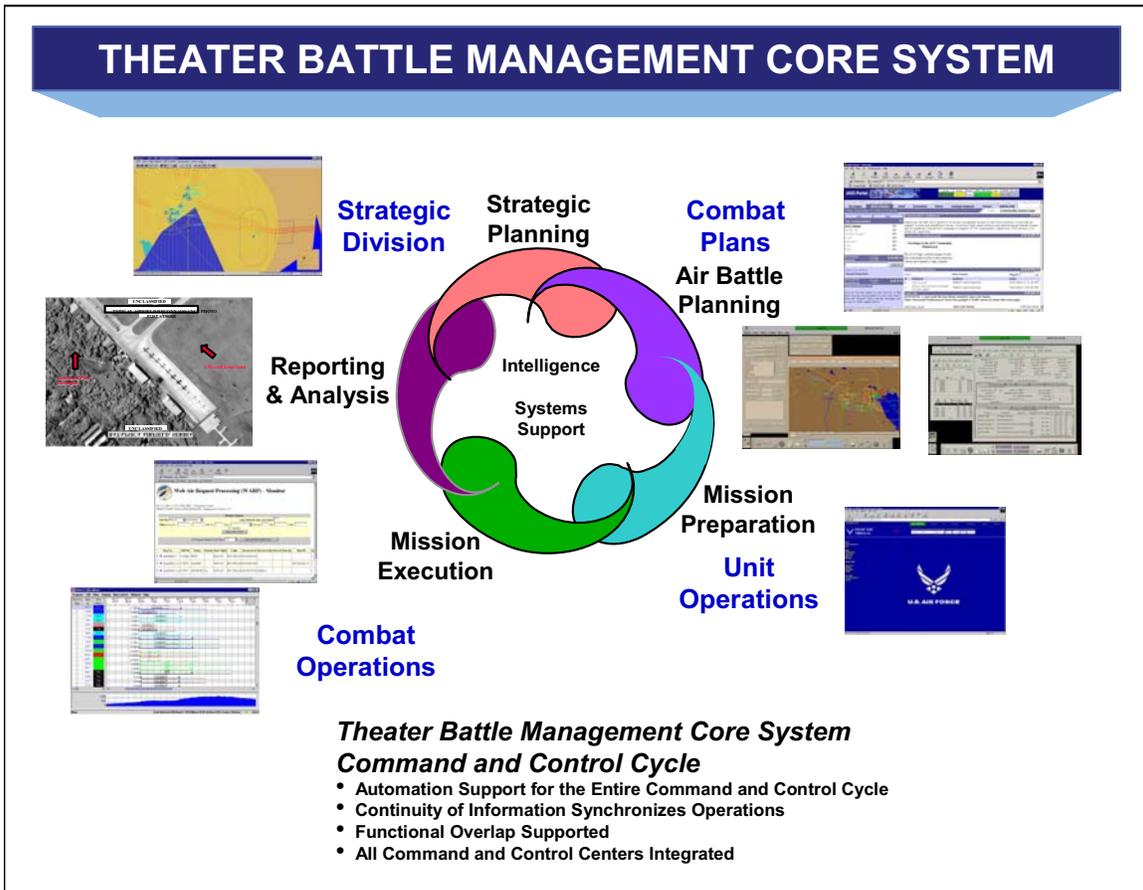


Figure C-3. Theater Battle Management Core System

(3) TBMCS links tactical aviation and related units to the JFACC (see Figure C-4). When properly employed, TBMCS is a tool enabling linkage from the CJTF operational objectives, through the JFACC, to the tactical activity of individual units. It also facilitates air battle planning, intelligence, operations, and execution functions for theater air operations; and enables coordination among higher, adjacent, and subordinate units and across service boundaries.

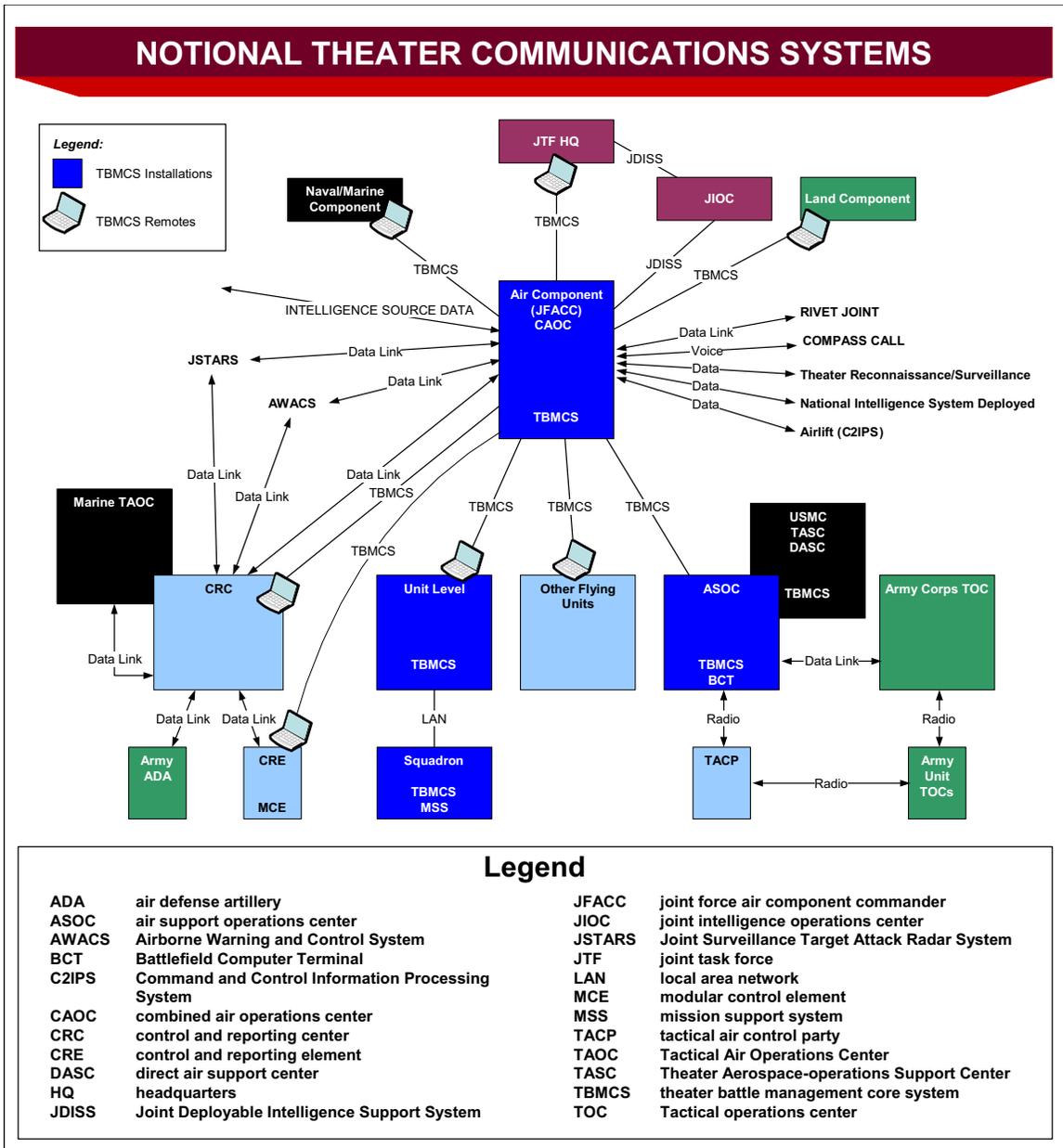


Figure C-4. Notional Theater Communications Systems

b. **Users.** TBMCS fielding includes every theater air component, all Navy aircraft carriers, and command ships, all Marine air wings, and all Air Force flying wings and ASOC squadrons. Army BCDs also interface with TBMCS.

c. **Products.** TBMCS uses two primary databases: the air operations database (AODB) and MIDB.

(1) AODB contains the following data:

(a) Friendly order of battle.

- (b) Friendly units.
- (c) Friendly bases.
- (d) Components.
- (e) Standard conventional load / configurations.
- (f) Base inventory.
- (g) Mission type and aircraft type mappings.
- (h) Airspace.

(2) MIDB contains the following data:

- (a) Target data.
- (b) EOB.

(3) TBMCS contains a combination of processes and tools to support ATO production, which is the primary product:

(a) Theater air planning (TAP) is the primary tool used in Combat Plans for producing the ATO and Special Instructions.

(b) Target weaponeering module, JTT, and interim targeting solution are the applications used to produce the TNL.

(c) Airspace deconfliction is the tool used to produce the airspace control order (ACO).

(d) Airlift import manager imports airlift missions from C2 Information Processing System into TAP.

(e) MAAP toolkit is an automated means of developing the MAAP, which can be imported into TAP.

(f) The remote access mission planner is a web based planning tool used by components to plan and send mission to TAP.

(g) The ATO/ACO tool is a browser.

(h) Execution management replanner is nearly identical to TAP. However, it is used in combat operations to adjust the ATO.

(i) Image recognition integrated systems is the message services incorporated in TBMCS.

(4) All these applications are part of the ATO Production process:

- (a) Air battle planning.
- (b) Air battle execution management.
- (c) Situation and target analysis.
- (d) Enemy course of action prediction.
- (e) Collection management support.
- (f) Maintains local order of battle and threat databases.
- (g) Air defense artillery and friendly unit aircraft reports.
- (h) Surface C2 reports.
- (i) Missiles, mission, base reports.
- (j) Verify effective utilization of offensive, defensive and support assets.
- (k) Verify that mission support needs are satisfied.
- (l) Manage and deconflict airspace.
- (m) Generate, change, and monitor the ACO.
- (n) Verify the consistency and completeness of the ABP.
- (o) ATO and ACO production.

d. **Network Interfaces and Communications.** Figure C-5 depicts the TBMCS Interfaces.

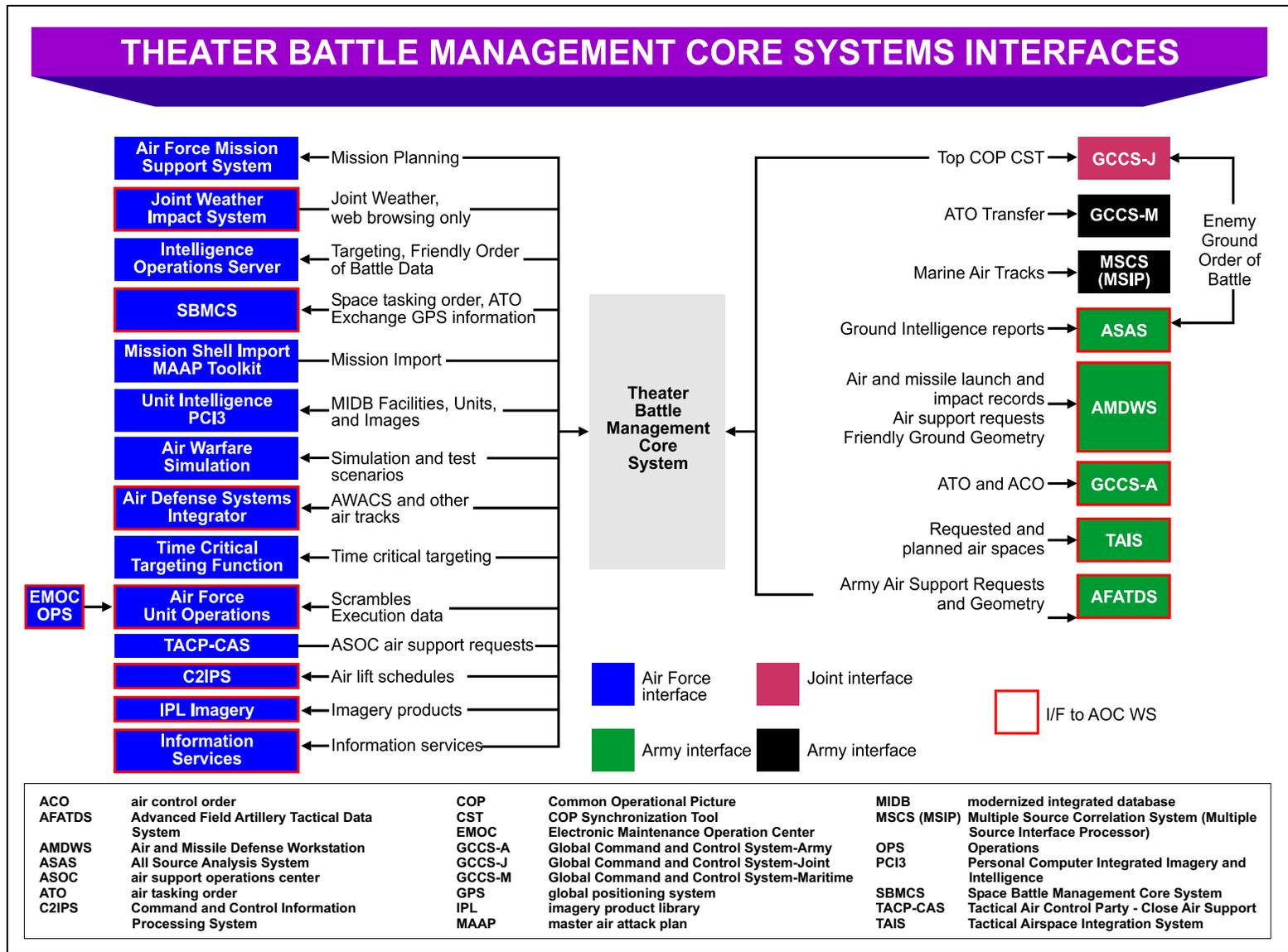


Figure C-5. Theater Battle Management Core Systems Interfaces

## 6. Remote Operations Video Enhanced Receiver

a. Remote Operations Video Enhanced Receiver (ROVER) III provides real-time full motion video for SA, targeting, BDA, surveillance, convoy operations and other situations where eyes on target are required. The ROVER III receives data from transmitters on multiple platforms (e.g., unmanned aerial systems, fighters equipped with LITENING AT, Sniper targeting pods) and displays the data to a laptop computer or other viewing device. The ROVER III receiver is a portable receive-only terminal.

b. ROVER III provides enhanced air-ground coordination, which shortens talk-on-target for time-critical operations. It has proven interoperability with data links in L-Band, C-Band, and Ku-Band with platforms such as Predator, Shadow, Dragon Eye, LITENING pod, and other joint and coalition assets. ROVER III is small, lightweight, and rugged. It comes as a complete, ready-to-use system, including antennas, cables, video displays, recording capabilities and a wireless access point. (See Figure C-6).

c. ROVER IV will allow better two-way communication. Operators on the ground will be able to electronically mark a target instead of having to talk fighter pilots through an attack on it.

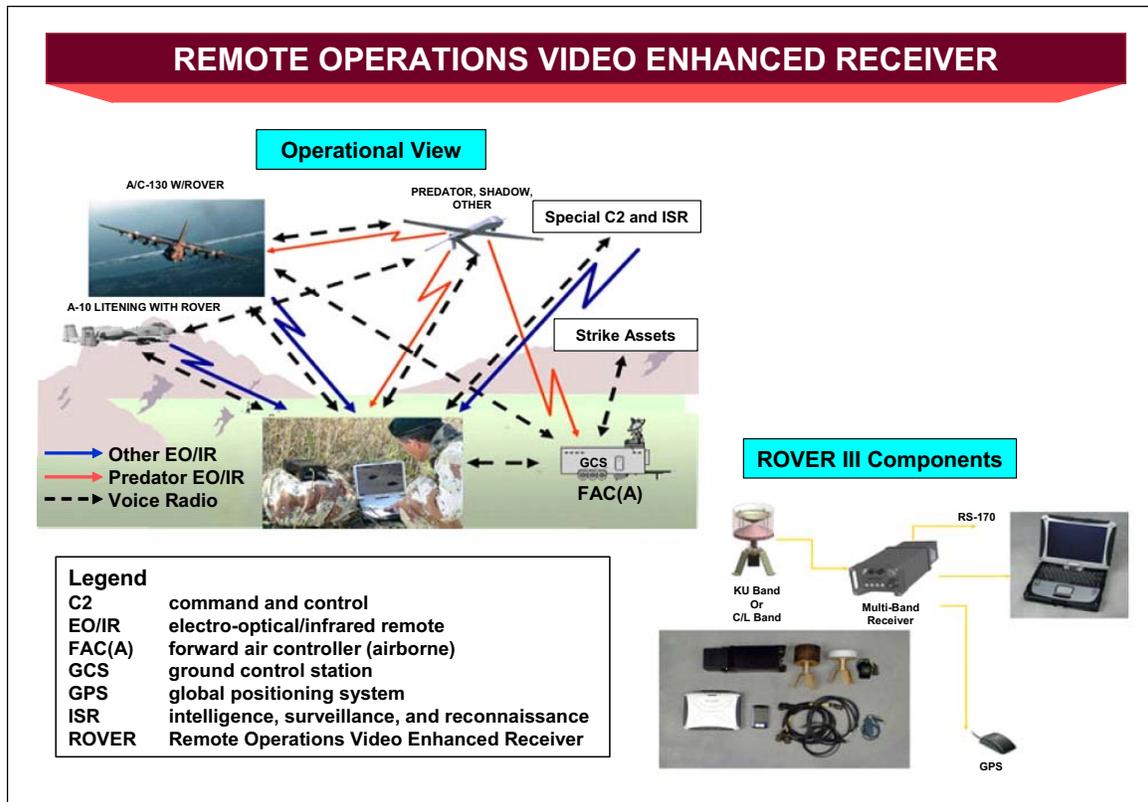


Figure C-6. Remote Operations Video Enhanced Receiver

## 7. Distributed Common Ground/Surface System

a. The **Distributed Common Ground/Surface System (DCGS)** is an architectural model for modular, scaleable and interoperable multi-intelligence, full-spectrum support to a JTF and below force structure. The JTF DCGS/ Tasking, Processing, Exploitation and Dissemination (TPED) Enterprise provides structure, capability descriptions, standards and guidance for Service employment of ISR processing and exploitation systems operating in a secure, net-centric environment. Joint intelligence operations centers will incorporate the DCGS architecture into theater systems plans as part of their comprehensive information technology infrastructure, and to integrate and synchronize military and national intelligence capabilities within their theaters.

b. The DCGS/TPED Enterprise enables the complete integration of ISR capabilities and easily supports current and emerging operational requirements. It supports JTF-level planning, targeting, execution, and combat assessment, and improves flexibility in all phases of the value-added information exploitation process to achieve information and decision superiority. While leveraging the synergistic capabilities of the Service DCGS systems, the Enterprise will also include joint, coalition, and national TPED elements providing broad-based or operationally specific support within the federated exploitation concept.

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## APPENDIX D

### DATUM AND COORDINATE SYSTEMS

#### 1. Global Area Reference System

a. The GARS is an area reference system based on lines of longitude and latitude, to provide an integrated common frame of reference for joint force SA and to facilitate air-to-ground operations coordination and deconfliction, integration, and synchronization. **It is important to note that GARS is primarily designed as a management tool and not to be used for navigation or targeting. The usefulness of GARS is that it enables establishment of appropriate control and coordination measures.**

b. In multinational and joint operations, JFCs should direct the use of GARS unless it's determined that the use of another area reference system (e.g., locally developed area reference systems such as the Korean common grid reference system) is mission critical. **The use of GARS will eliminate confusion regarding which system is being used in reporting areas.**

c. GARS uses a standard over-up cell address convention which brings you to a 30'x30' cell. That number-character naming convention is already in use. Each quadrant (15'x15') sub-division is depicted in its entirety on a single 1:50,000 chart. There are easy to see keypad (5'x5') sub-divisions that already exist on a 1:50,000 chart. Using 5'x5' as the smallest level of granularity makes it easy to use the 5'x5' keypad as a building block for larger area definitions (see Figure D-1).

d. GARS can be used to rapidly identify:

- (1) Locations of friendly surface forces.
- (2) Ground force maneuver boundaries.
- (3) Areas of intended attack (can include kill boxes).
- (4) ACM or FSCM boundaries.
- (5) NAI; ISR areas of interest.
- (6) Terrain or airspace orientation.
- (7) Aircraft orbits and geographic reference (GEOREF) locations.

e. GARS is not a replacement for any existing reference system, such as the World Geographic Reference System (World Geographic Reference System or GEOREF), or the military grid reference system or used to specify precise target location or for platform/weapon targeting; but rather aids establishment of joint fire support coordination

or airspace measures. GARS can be a useful tool for rapid deconfliction of operations in non-contiguous operational areas (such as SOF operating behind enemy lines), in featureless terrain, and may even be employed as a primary method to describe a contiguous operational area.

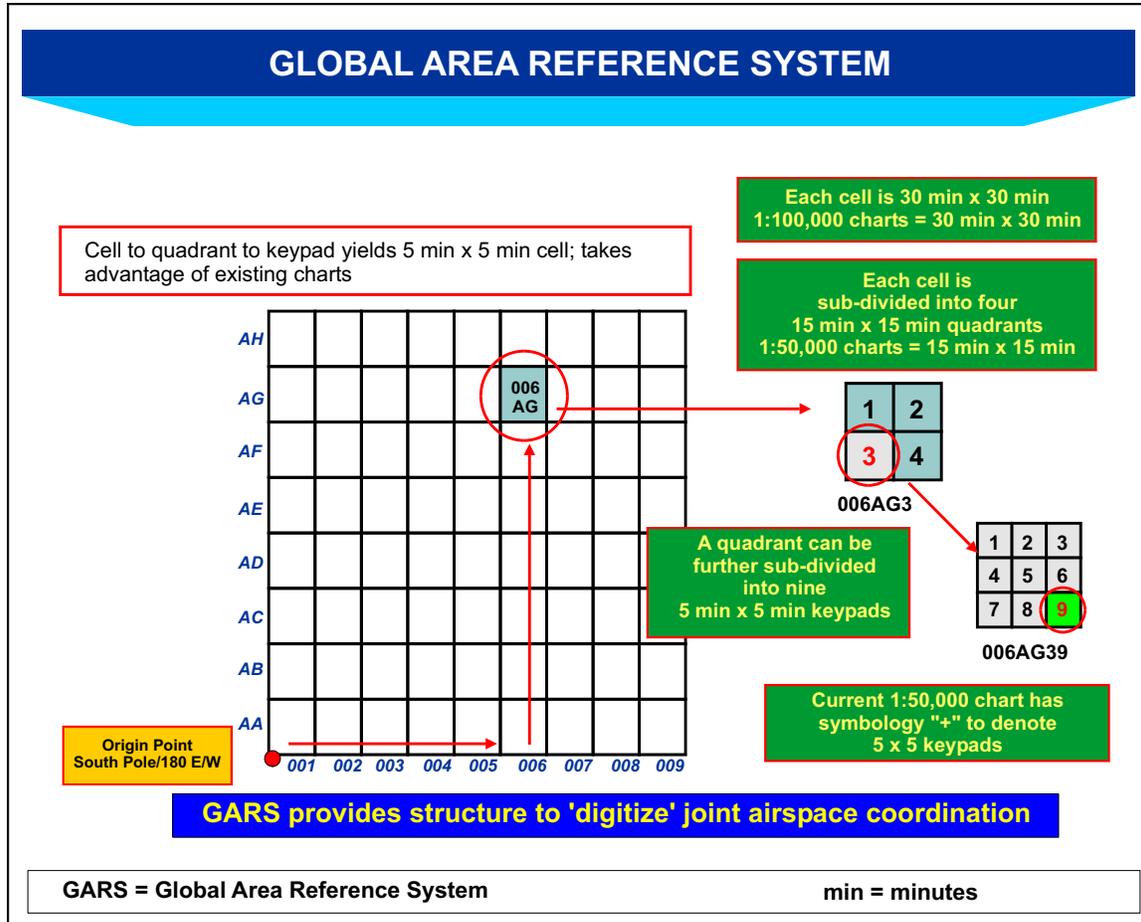


Figure D-1. Global Area Reference System

f. GARS is flexible enough to be used for a variety of purposes such as to identify littoral maritime warfare areas for antisubmarine warfare and antisurface warfare forces.

*For more information on area reference procedures, refer to JP 2-03, Geospatial Intelligence Support to Joint Operations.*

## 2. Target Point Mensuration

a. Mensuration is the act of precisely measuring something. It is commonly used in targeting to refer to the exact measurement of a target’s geographical coordinates. Point mensuration has always been an important part of targeting, since the points measured represent the DPis for the munitions employed. As the accuracy of weapons delivery has improved, the importance of mensuration has grown in proportion and is a vital part of targeting. Due to the potential consequences of inaccurately mensurating coordinates, the

CJCS has mandated that those involved in point mensuration be certified to do it according to CJCS instructions. When accomplished before ATO execution, it permits employment of an entire class of weapons (those, like global positioning system [GPS]-aided and cruise missiles that guide to pre-set coordinates). This allows JAOC personnel to significantly shorten the dynamic targeting “kill chain.” GPS-aided weapons are not so much “smart” as they are “obedient.” They guide to the mensurated point they are programmed to attack, so accurate mensuration is vital to their employment; however, mensuration is not required for accurate employment of all weapons.

**KEY TERM**

**mensuration. A mensuration is the process of measurement of a feature or location on the earth to determine an absolute latitude, longitude, and elevation. For targeting applications, the errors inherent in both the source for measurement as well as the measurement processes must be understood and reported.**

**JP 3-60, Targeting**

b. Because mensuration is a form of measurement, errors are inevitable and the extent of the estimated error must be captured as part of the coordinate. The standard method endorsed by the NGA is to express coordinate accuracy as a CE and vertical accuracy as a “linear error” (LE) to a 90 percent degree of certainty (CE/LE 90%). When NGA validates a mensuration software algorithm, it is actually the fidelity of the CE/LE accuracy estimates over a range of mensuration situations that is judged. These estimates are used during weaponeering to derive type and quantity of weapons, and targeting coordinate data must be considered incomplete without them. The modernized intelligence database and the ATO both have coordinate accuracy fields for this reason.

c. The effort to mensurate coordinates, especially for a target set with a large number of DPis, can be extremely long. Technological advances have helped shorten the effort somewhat, but for the time being at least, it will remain manpower- and time-intensive. If this planning is not conducted beforehand, it may adversely affect the JAOC’s battle rhythm or even unit mission planning. Conversely, targeteers may become rushed, leading to mensuration errors that prevent effective employment or have unwanted effects like collateral damage. Targeteers will not know what munitions will be used to prosecute a target, thus the more precise they are in mensurating coordinates, the more options they will give targeteers. Again, this effect is magnified during dynamic targeting.

*For additional guidance on individual and organizational target coordinate mensuration and certification for unilateral and joint operations, refer to CJCSI 3505.01, Target Coordination Mensuration Certification.*

### **3. Basic Encyclopedia Number**

a. All targeteers should understand the theater BE number plan. While many targets already have BE numbers assigned, many identified during combat do not have them.

**Without an established plan for assigning BE numbers, components may take it upon themselves to assign them, creating the potential for confusion and lack of SA on what targets are being struck.** Confusion can adversely affect battle rhythm or, worse, result in targeting errors.

b. Standard DPI numbering is also important, and the joint targeting committee is finalizing the adoption of the joint designated point of impact concept using a six-character format with a central numbering registry involving the joint commands and allied nations. A theater designated point of impact registry will ensure standardization of designated point of impacts and eliminate duplication and possible error. The convention should address both static and mobile targets.

c. It is usually not feasible to assign standard BE numbers to mobile targets. However, for proper database management, such mobile targets still require some sort of identification. While the numbers may not be actual BE numbers, the theater must still have some way of identifying the target. Again, planners should understand the theater naming convention to minimize targeting errors and the time needed for effective air planning.

## APPENDIX E

### REGIONAL JOINT AIR OPERATIONS

#### 1. General

a. Earlier discussions in this handbook revolved around a “standard” JTF structure as described in JP 3-33, Joint Task Force Headquarters. That is, a subordinate organization established within a combatant commander’s AOR, containing Service or functional components (and commanders) under a single CJTF. However, with the Air Force’s introduction of **new C2 structures in support of each combatant commander**, including a theater or regional JFACC and JAOC, that organizational layout is currently being rethought.

(1) First, the Air Force established a new Air Force component headquarters (AFCHQ) construct to serve as the core of the US Air Force Service component headquarters to the combatant commands.

(2) Second, the Air Force established a warfighting headquarters (WFHQ) within each combatant command. The WFHQ is a headquarters element designed to support the US Air Force component commander at the operational and tactical level. The WFHQ will include an AOC weapons system and AFFOR staff, each appropriately tailored to support their combatant commander.

b. **The AFCHQ (strategic) and WFHQ (operational and tactical) functions are part of any US Air Force component command structure.** The AFCHQ and WFHQ may be commanded by the same individual if/when feasible or necessary. However, the basics of doctrine remained unchanged: the Air Force component commander should be prepared to act as a COMAFFOR and as such exercise both operational authorities (e.g., OPCON and TACON) when delegated by the JFC; assume administrative control (ADCON) of all assigned and attached US Air Force forces; and be prepared to assume responsibilities as the JFACC. In the event of multiple JTFs in an AOR, the US Air Force component commander may attach air component coordination elements (ACCes) to the respective JTFs or sister component headquarters to ensure each JTF or component commander receives proper air and space support. In this case, **there would only be one COMAFFOR/JFACC per theater** (see Figure E-1).

#### 2. Regional JFACC

a. The regional JFACC construct relies on one fully capable JAOC servicing a mix of several JTFs within a theater. This lone JAOC would report to a single JFACC who would work directly for the regional/theater commander (normally the geographic combatant commander). This arrangement is sometimes referred to as the “theater or regional” JFACC. The JFACC provides centralized control of all assigned and attached air and space power across the theater and supports the multiple JTFs based on the priorities set by the theater commander.

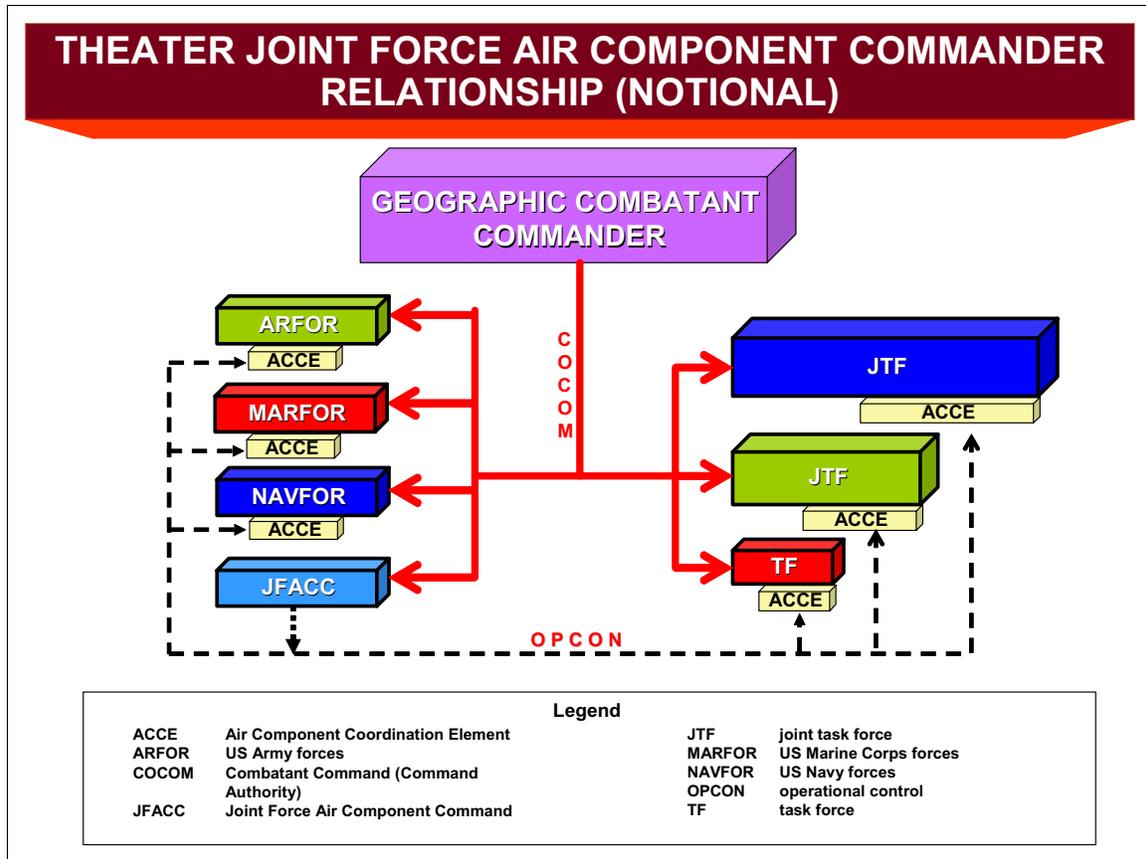


Figure E-1. Theater Joint Force Air Component Commander Relationship

b. **Falconer AOC.** The US Air Force’s AOC weapon system (AN/USQ-163) is the operations command center of the JFACC and provides the capability to plan, task, execute, monitor, and assess the activities of assigned or attached forces. The Falconer AOC is the senior C2 element of the tactical air control system (TACS) and includes personnel and equipment from many necessary disciplines to ensure the effective conduct of air and space operations (e.g., communications, operations, intelligence, etc). **The Falconer AOC provides operational-level C2 of air and space forces as the focal point for planning, executing, and assessing regional air and space operations.** Although the Air Force provides the core manpower for the regional AOC, other Service component commands contributing air and space forces, as well as any coalition partners, may provide personnel in accordance with the magnitude of their force contribution

c. For example, the Commander, US Air Forces, Central Command, while acting as the JFACC for CDRUSCENTCOM, simultaneously provides support to separate JTFs and Task Forces (TFs) in Iraq, Afghanistan, and the Horn of Africa from a single JAOC located within the USCENTCOM AOR. Similarly, the Commander, US Air Forces, Northern Command, acting as the JFACC for Operation NOBLE EAGLE in the continental US (CONUS), may also support multiple JTFs or TFs responding to separate crises or disasters in the CONUS.

### 3. Liaison Elements

a. Joint components and headquarters staffs normally exchange liaisons and coordinating elements with each other in order to better integrate planning, execution, and assessment.

(1) The JFACC normally provides an air component coordination element, or ACCE, laterally to sister components as needed, and to the CJTF. In the event of a regional or theater JAOC servicing more than one JTF, the JFACC may establish one or more ACCEs with the additional JTFs to better integrate air and space operations within the overall joint force.

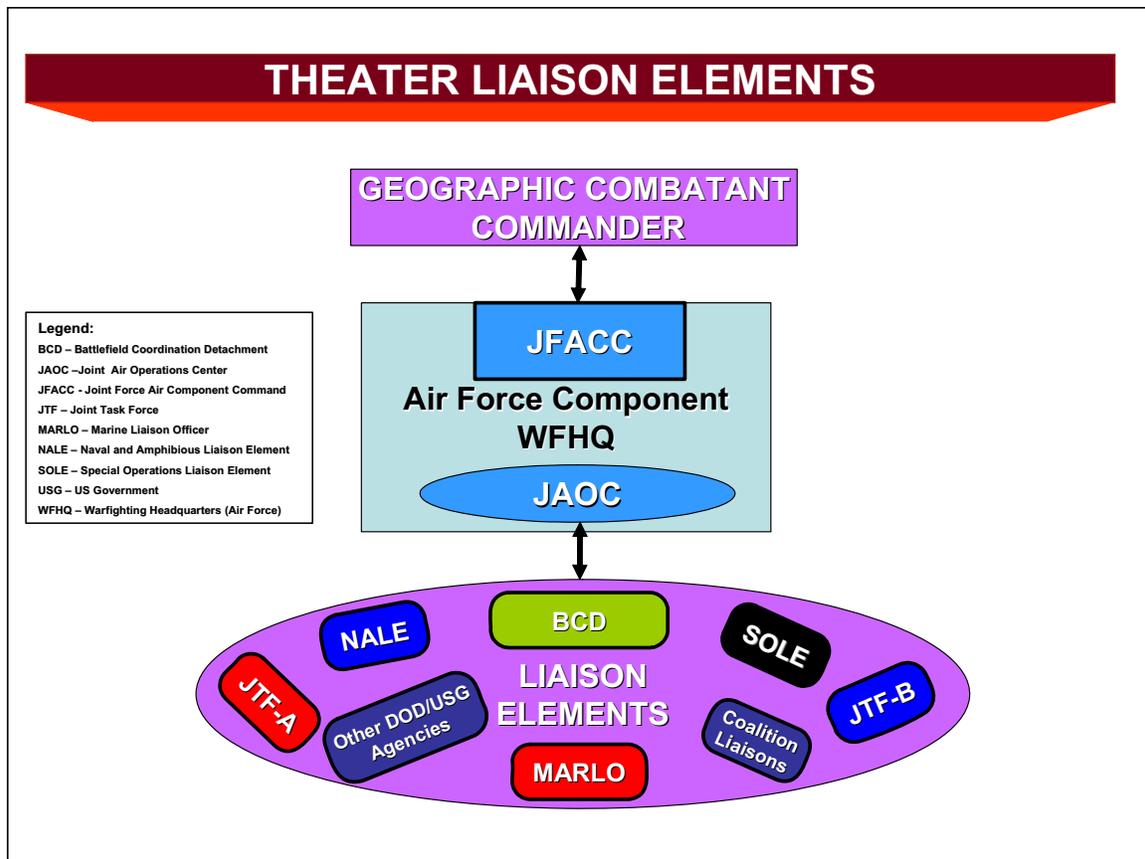
(a) When established, ACCEs act as the JFACC's primary representatives to the respective commanders and facilitate interaction among the respective staffs. The ACCE assists integration by exchanging current intelligence, operational data, and support requirements. ACCEs support the integration of JFACC requirements for airspace coordinating measures, joint fire support coordinating measures, close air support, air mobility, and space requirements. **The ACCE is a liaison element, not a C2 node; thus, the ACCE normally has no authority to direct or employ forces.** The make-up of the ACCE is dependent upon the scope of the operation and the size of the staff with which they will interface.

(b) If the ACCE will perform liaison duties for both the COMAFFOR and JFACC staff, the ACCE should be tailored with the expertise necessary to perform effectively. Element expertise may include plans, operations, intelligence, airspace management, logistics, space, and air mobility.

(c) The ACCE also communicates the various CJTFs' decisions and interests to the JFACC. However, the ACCE should not replace, replicate, or circumvent normal request mechanisms already in place in the component/JTF staffs, nor supplant normal planning performed by the JAOC and theater AFFOR staff. The ACCE director is the JFACC's personal and official representative, and should have sufficient rank to effectively work with the component or JTF commander to which he or she is attached. Finally, to maintain proper perspective and focus, the ACCE director should not normally be dual-hatted as the commander of a tactical unit.

(2) **Joint Liaisons in the Theater JAOC.** Depending on the nature of the operation, the JFACC may have a number of liaison teams within the JAOC to facilitate planning and execution among the other components in the joint force (see Figure E-2).

(a) **JTF Liaisons.** **JTF liaisons work for their respective JTF commanders.** They are assigned by the JTF commanders to work with the JFACC and staff, including within the JAOC. Typically, these liaison elements consist of experienced specialists who provide JTF expertise (particularly in planning and tasking) and coordination capabilities. They help integrate, coordinate, and deconflict their JTF's operations and requirements with theater priorities and activities.



**Figure E-2. Theater Liaison Elements**

(b) **Battlefield Coordination Detachment (BCD).** The BCD supports integration of air and space operations with ground maneuver. BCD personnel are integrated into the various JAOC divisions to support planning, operations, air defense, intelligence, airlift/logistics, airspace control, and communications. In particular, the BCD coordinates ground force priorities, requests, and items of interest. One of the BCD's most important functions is to coordinate boundary line and fire support coordination line changes and timing. The BCD brings ground order of battle (both friendly and enemy) situational awareness and expertise into the JAOC and will normally brief the ground situation/intelligence update. The BCD may also provide current ground situation inputs to JAOC teams for incorporation into daily briefings and intelligence summaries.

(c) **Naval and Amphibious Liaison Element (NALE).** The NALE personnel (from the maritime components) support the JAOC in integrating naval air, naval fires, and amphibious operations into theater air operations. They also monitor and interpret the maritime battle situation for the JAOC.

(d) **Marine Liaison Officer.** MARLOs are representatives of the COMMARFOR and his associated aviation combat element commander. The MARLO will support the JFACC in integrating MAGTF fires, maneuver, and Marine air into the theater campaign.

#### 4. Targeting Process with a Regional JFACC

a. The targeting process with a regional JFACC generally mirrors the targeting process described in this handbook. The JTF will conduct an internal targeting effort similar to that described for functional and component commands (see chapter II, section B, this publication). Targets that require external support are included in a JTF TNL and submitted through the normal target nomination process (normally the TET) to the regional JFACC. Once nominated, all targets proceed through the same targeting cycle for evaluation, prioritization, and possible inclusion on a theater-level JIPTL, MAAP, and ATO. As previously noted, TNLs can be submitted by a variety of sources for integration and prioritization. Once submitted, the targeting process treats all nominated targets identically. Prioritization is based on the theater commander's guidance, effects, objectives, and end state..

b. JTF participation in the JTCB (if formed) may be either direct or indirect. That is, the JTF can send a senior representative to the JTCB to advocate JTF interests or the JTF can work through other agencies represented in the JTCB, typically the theater component or Service representatives. Disputes that cannot be resolved through direct discussions or in the JTCB are resolved by the regional.

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## APPENDIX F REFERENCES

The development of the *Joint Fires and Targeting Handbook* is based upon the following primary references.

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### 2. Chairman of the Joint Chiefs of Staff Directives

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b. CJCSI 3122.06B, *Sensitive Target Approval and Review (STAR) Process (U)*.

c. CJCSI 3151.01A, *Global Command and Control System Common Operational Picture Reporting Requirements*.

d. CJCSI 3505.01, *Target Coordinate Mensuration Certification*.

e. CJCSI 3900.01B, *Position Reference Procedures*.

f. CJCSM 3122.01A, *Joint Operation Planning and Execution System (JOPES) Volume I (Planning Policies and Procedures)*.

g. CJCSM 3122.03B, *Joint Operation Planning and Execution System (JOPES) Volume II – Planning Formats*.

h. CJCSM 3500.04D, *Universal Joint Task List*.

i. CJCSM 3500.05A, *Joint Task Force Headquarters Master Training Guide*.

### 3. Joint Publications

a. JP 2-0, *Joint Intelligence*.

b. JP 2-01, *Joint and National Intelligence Support to Military Operations*.

c. JP 2-01.3, *Joint Tactics, Techniques, and Procedures for Joint Intelligence Preparation of the Battlespace*.

d. JP 2-03, *Geospatial Intelligence Support to Joint Operations*.

e. JP 3-0, *Joint Operations*.

- f. JP 3-01, *Countering Air and Missile Threats*.
- g. JP 3-03, *Joint Interdiction*.
- h. JP 3-09, *Joint Fire Support*.
- i. JP 3-09.1, *Joint Tactics, Techniques, and Procedures for Laser Designation Operations*.
- j. JP 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*.
- k. JP 3-13, *Information Operations*.
- l. JP 3-13.1, *Electronic Warfare*.
- m. JP 3-13.3, *Operations Security*.
- n. JP 3-30, *Command and Control for Joint Air Operations*.
- o. JP 3-31, *Command and Control for Joint Land Operations*.
- p. JP 3-32, *Command and Control of Joint Maritime Operations*.
- q. JP 3-33, *Joint Task Force Headquarters*.
- r. JP 3-52, *Joint Doctrine for Airspace Control in the Combat Zone*.
- s. JP 3-59, *Joint Doctrine, Tactics, Techniques, and Procedures for Meteorological and Oceanographic Operations*.
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- u. JP 5-0, *Joint Operation Planning*.

#### **4. Multi-Service Publications (Air Land Sea Applications Center [ALSA])**

- a. FM 3-01.4, MCRP 3-22.2A, NTTP 3-01.42, AFTTP(I) 3-2.28, *Multi-Service Tactics, Techniques, and Procedures for the Suppression of Enemy Air Defenses in a Joint Environment (U)*.
- b. FM 3-01.15, MCRP 3-25E, NTTP 3-01.8, AFTTP(I) 3-2.31, *Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*.
- c. FM 3-01.20, AFTTP(I) 3-2.30, *Multi-Service Tactics, Techniques, and Procedures for Joint Air Operations Center and Army Air and Missile Defense Command Coordination*.

- d. FM 3-01.51, NTTP 3-01.13, AFTTP(I) 3-2.24, *Multi-Service Procedures for Joint Theater Missile Target Development*.
- e. FM 3-04.15, NTTP 3-55.14, AFTTP(I) 3-2.64, *Multi-Service Tactics, Techniques, and Procedures for Tactical Employment of Unmanned Aircraft Systems*.
- f. FM 3-06.1, MCRP 3-35.3A, NTTP 3-01.04, AFTTP(I) 3-2.29, *Multi-Service Tactics, Techniques, and Procedures for Aviation Urban Operations*.
- g. FM 3-09.32, MCRP 3-16.6A, NTTP 3-09.2, AFTTP(I) 3-2.6, *Multi-Service Procedures for the Joint Application of Firepower (JFIRE)*.
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- m. FM 3-60.1, MCRP 3-16D, NTTP 3-60.1, AFTTP(I) 3-2.3, *Multi-Service Tactics, Techniques, and Procedures for Targeting Time-Sensitive Targets*.

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- b. FM 3-09.22, *Tactics, Techniques, and Procedures for Corps Artillery, Division Artillery, and Field Artillery Brigade Operations*.
- c. FM 3-09.31, *Tactics, Techniques, and Procedures for Fire Support for the Combined Arms Commander*.
- d. FM 6-2, *Tactics, Techniques, and Procedures for Field Artillery Survey*.
- e. FM 6-20-10, *Tactics, Techniques, and Procedures for the Targeting Process*.

f. FM 6-20-30, *Tactics, Techniques, and Procedures for Fire Support for Corps and Division Operations*.

g. FM 6-30, *Tactics, Techniques, and Procedures for Observed Fire*.

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b. AFDD 2-1.3, *Counterland Operations*.

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d. AFDD 2-1.5, *Nuclear Operations*.

e. AFDD 2-1.7, *Airspace Control in the Combat Zone*.

f. AFDD 2-1.9, *Targeting*.

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h. AFDD 2-2.1, *Counterspace*.

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j. AFDD 2-5.1, *Electronic Warfare Operations*.

k. AFDD 2-8, *Command and Control*.

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n. AFDCH 10-01, *Air and Space Commander's Handbook for the JFACC*.

o. AFDCH 10-02, *Air and Space Commander's Handbook the COMAFFOR*.

p. AFDCH 10-03, *Air Component Coordination Element Handbook*.

## 7. Navy

a. NWP 3-09.1, *Navy Strike and Fire Support*.

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- c. NTTP 3-03.4 (Rev. A), *Naval Strike and Air Warfare (U)*.
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- e. TACMEMO 2-01.1-02, *Naval Fires Network*.
- f. TACMEMO 3-03.1-06, *Maritime Dynamic Targeting*.

## **8. Marine Corps Doctrinal Publications**

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- b. MCRP 3-16.1A, *Tactics, Techniques, and Procedures For Field Artillery Target Acquisition*.
- c. MCRP 3-16.1C, *Tactics, Techniques, and Procedures For Multiple Launch Rocket System (MLRS) Operations*.
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- e. MCRP 3-16C, *Tactics, Techniques, and Procedures For Fire Support For The Combined Arms Commander*.
- f. MCWP 3-16, *Fire Support Coordination In The Ground Combat Element*.
- g. MCWP 3-16.1, *Artillery Operations*.
- h. MCWP 3-16.3, *Tactics, Techniques, and Procedures For The Field Artillery Cannon Battery*.
- i. MCWP 3-16.4, *Tactics, Techniques, and Procedures For The Field Artillery Manual Cannon Gunnery*.
- j. MCWP 3-16.5, *Field Artillery Meteorology*.
- k. MCWP 3-16.6, *Supporting Arms Observer, Spotter, and Controller*.
- l. MCWP 3-16.7, *Marine Artillery Survey Operations*.
- m. MCWP 3-21.1, *Aviation Ground Support*.
- n. MCWP 3-22.2, *Suppression of Enemy Air Defenses (SEAD)*.

- o. MCWP 3-23, *Offensive Air Support*.
- p. MCWP 3-23.2, *Deep Air Support*.
- q. MCWP 3-24, *Assault Support*.
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- s. MCWP 3-25.3, *Marine Air Command and Control System Handbook*.
- t. MCWP 3-25.4, *Marine Tactical Air Command Center Handbook*.
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- v. MCWP 3-25.7, *Tactical Air Operations Center Handbook*.
- w. MCWP 3-43.3, *MAGTF Fires*. (Draft)

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- a. Global Cyberspace Integration Center <https://gcic.af.mil/warfighter/divisions/A2/JTT/index.htm>
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## GLOSSARY

### PART I - ABBREVIATIONS AND ACRONYMS

AADC	area air defense commander
AAGS	Army air-ground system
AAMDC	US Army Air and Missile Defense Command
ABO	air battle plan
ACA	airspace control authority
ACCE	air component coordination element
ACE	aviation combat element
ACM	airspace coordinating measure
ACMREQ	airspace control means request
ACO	air control order
ACP	airspace control plan
ACV	aircraft cockpit video
ADA	air defense artillery
ADC	air defense commander
AFATDS	Advanced Field Artillery Tactical Data System
AFFOR	Air Force forces
AFTTP	Air Force tactics, techniques, and procedures (instruction)
AGM	attack guidance matrix
AI	air interdiction
ALO	air liaison officer
ALLOREQ	allocation request
AMD	air mobility division
AO	area of operations
AOA	amphibious objective area
AOD	air operation directive
AODB	air operations data base
AOR	area of responsibility
ARFOR	Army forces
ASCC	Army Service component commander
ASOC	air support operations center
ASWC	antisubmarine warfare commander
ATACMS	Army Tactical Missile System
ATO	air tasking order
AWACS	Airborne Warning and Control System
BCD	battlefield coordination detachment
BCT	brigade combat team
BDA	battle damage assessment
BE	basic encyclopedia
C2	command and control
CA	combat assessment

CAP	crisis action planning
CAS	close air support
CATF	commander, amphibious task force
CCIR	commander's critical information requirement
CDE	collateral damage estimation
CDRUSSTRATCOM	Commander, United States Strategic Command
CE	circular error
CF-COP	countefire common operational picture
CFL	coordinated fire line
CIA	Central Intelligence Agency
CID	combat identification
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of Joint Chiefs of Staff instruction
CJCSM	Chairman of Joint Chiefs of Staff manual
CJTF	commander, joint task force
CM	collection manager
CNA	computer network attack
CNO	computer network operations
COA	course of action
COD	combat operations division
COG	center of gravity
COMAFFOR	commander, Air Force forces
COMARFOR	commander, Army forces
CONOPS	concept of operations
COP	common operational picture
COPS	current operations
CPCL	component prioritized collection list
CPD	combat plans division
CR	collection requirement
CTL	candidate target list
CV	critical vulnerability
CWC	composite warfare commander
DASC	direct air support center
DCA	defensive counterair
DCGS	Distributed Common Ground/Surface System
DCJTF	deputy commander, joint task force
DE	directed energy
DIA	Defense Intelligence Agency
DJIOC	Defense Joint Intelligence Operations Center
DMPI	desired mean point of impact
DOD	Department of Defense
DODIIS	DOD Intelligence Information System
DOS	Department of State
DPI	desired point of impact

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DS	direct support
DTRA	Defense Threat Reduction Agency
EA	electronic attack
EMCON	emissions control
EMD	effective miss distance
EME	electromagnetic
EOB	enemy order of battle
EP	electronic protection
ES	electronic warfare support
ETF	electronic target folder
EW	electronic warfare
FA	field artillery
FFA	free fire area
FFCC	force fires coordination center (USMC)
FM	field manual
FOC	future operations center
FPC	future plans center
FRAGORD	fragmentary order
FSA	fire support area
FSCC	fire support coordination center
FSCL	fire support coordination line
FSCM	fire support coordination measure
FSE	fire support element
FSS	fire support station
GARS	Global Area Reference System
GCC	geographic component commander
GCCS	Global Command and Control System
GCE	ground combat element (MAGTF)
GEOINT	geospatial intelligence
GEOREF	geographic reference
GI&S	geospatial information and services
GPS	global positioning system
GS	general support
HPT	high-payoff target
HPTL	high-payoff target list
HQ	headquarters
HUMINT	human intelligence
HVI	high-value individual
HVT	high-value target
I3	integrated intelligence and imagery
IAW	in accordance with

IC	intelligence community
ID	identification
IGO	intergovernmental organization
IMINT	imagery intelligence
INR	Bureau of Intelligence and Research (DOS)
IO	information operations
IR	intelligence requirement
ISDS	intelligence shared data server
ISR	intelligence, surveillance, and reconnaissance
ISRD	intelligence, surveillance, reconnaissance division
IWSC	Information Warfare Support Center
J-2	intelligence directorate of a joint staff
J-3	operations directorate of a joint staff
J-4	logistics directorate of a joint staff
J-5	plans directorate of a joint staff
J-8	force structure, resource, and assessment directorate
JADOCS	Joint Automated Deep Operations Coordination System
JAEP	joint air and space estimate process
JAOC	joint air operations center
JAOP	joint air operations plan
JDPI	joint desired point of impact
JFA	joint fires area
JFACC	joint force air component commander
JFC	joint force commander
JFCC-ISR	joint force component commander-intelligence, surveillance, and reconnaissance
JFE	joint fires element
JFLCC	joint force land component commander
JFMCC	joint force maritime component commander
JFSOCC	joint force special operations component commander
JIOC	joint intelligence operations center
JIOWC	Joint Information Operations Warfare Command
JIPOE	joint intelligence preparation of the operational environment
JIPCL	joint integrated prioritized collection list
JIPTL	joint integrated prioritized target list
JISE	joint intelligence support element
JMEM	Joint Munitions Effectiveness Manual
JOA	joint operations area
JOC	joint operations center
JOPES	Joint Operation Planning and Execution System
JOPP	joint operation planning process
JP	joint publication
JPG	joint planning group
JPRC	joint personnel recovery center
JSOA	joint special operations area

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JSOTF	joint special operations task force
JSpOC	joint space operations center
JSTARS	Joint Surveillance Target Attack Radar System
JTCB	joint targeting coordination board
JTCG/ME	Joint Technical Coordinating Group for Munitions Effectiveness
JTF	joint task force
JTL	joint target list
JTT	joint targeting toolbox
JWAC	Joint Warfare Analysis Center
LE	linear error
LNO	liaison officer
LOAC	law of armed conflict
LOC	line of communications
LOO	line of operations
MAAP	master air attack plan
MACCS	Marine air command and control system
MAGTF	Marine air-ground task force
MARFOR	Marine Corps forces
MARLO	Marine liaison officer
MASINT	measurement and signature intelligence
MCRP	Marines Corps reference manual
MCWP	Marine Corps warfighting publication
MEA	munitions effectiveness assessment
MHQ	maritime headquarters
MIAC	maritime intelligence and analysis center
MIDB	modernized integrated database
MILDEC	military deception
MISREP	mission report
MLRS	Multiple Launch Rocket System
MOC	maritime operations center
MOCC	mobile operations control center
MOE	measure of effectiveness
MOP	measure of performance
NAI	named area of interest
NALE	Naval and Amphibious Element
NASIC	National Air and Space Intelligence Center
NATO	North Atlantic Treaty Organization
NAVFOR	naval forces
NFA	no-fire area
NGA	National Geospatial-Intelligence Agency
NGO	nongovernmental organization
NLT	not later than
NSA	National Security Agency

NSFS	naval surface fire support
NSL	no-strike list
NST	NGA Support Team
NTTP	Navy tactics, techniques, and procedures
OCA	offensive counterair
OFD	operational fires directorate (Army)
OGA	other government agency
OMA	Office of Military Affairs
OPCON	operational control
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
OSINT	open source intelligence
OTC	officer in tactical command
PA	probability of arrival
PD	probability of damage
PIR	priority intelligence requirements
PL	phase line
PMESII	political, military, economic, social, infrastructure, and information
PSYOP	psychological operations
QRT	quick reaction team
RAC	responsible analytic center
RFA	restrictive fire area
RFI	request for information
RFL	restrictive fire line
ROE	rules of engagement
ROVER	Remote Operations Video Enhanced Receiver
RR	reattack recommendation
RTL	restricted target list
SA	situational awareness
SD	strategic division
SEAD	suppression of enemy air defenses
SecDef	Secretary of Defense
SIGINT	signals intelligence
SJA	staff judge advocate
SME	subject matter expert
SOF	special operations forces
SOLE	special operations liaison element
SOP	standing operating procedure
SORTIEALOT	sortie allotment message
SPINS	special instructions

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STANAG	standardization agreement
STAR	sensitive target approval and review
STO	special technical operations
STWC	strike warfare commander (USN)
SUWC	surface warfare commander (USN)
TA	target audience
TACC	tactical air control center (USN); tactical air command center (USMC); tanker airlift control center
TACEMO	tactical memorandum
TACON	tactical control
TACP	tactical air control party
TACS	tactical air control system
TADC	tactical air direction center
TAGS	theater air ground system
TAI	target area of interest
TAOC	tactical air operations center (USMC)
TAP	theater air planning
TBMCS	theater battle management core system
TCIM	Tactical Communication Interface Module
TDN	target development nomination
TET	targeting effects team
TLAM	Tomahawk land attack missile
TLE	target location error
TMD	theater missile defense
TNL	target nomination list
TOC	tactical operations center
TOT	time on target
TPED	tasking, processing, exploitation and dissemination
TPFDD	time-phased force and deployment data
TSA	target system analysis
TSC	TLAM strike coordinator
TSG	target support group
TSM	targeting synchronization matrix
TSS	target selection standards
TST	time-sensitive target
TVA	target value analysis
UAS	unmanned aircraft system
US	United States
USAF	United States Air Force
USG	United States Government
USJFCOM	United States Joint Forces Command
USN	United States Navy
USMTF	United States message text format
USSTRATCOM	United States Strategic Command

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## Glossary

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WMD	weapons of mass destruction
WSV	weapon system video
ZF	zone of fire

## PART II - TERMS AND DEFINITIONS

**air interdiction.** Air operations conducted to divert, disrupt, delay, or destroy the enemy's military potential before it can be brought to bear effectively against friendly forces, or to otherwise achieve objectives. Air interdiction is conducted at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required. (JP 1-02)

**airspace control area.** Airspace that is laterally defined by the boundaries of the operational area, and may be subdivided into airspace control sectors. (JP 1-02)

**airspace control authority.** The commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area. Also called **ACA**. (JP 1-02)

**airspace coordinating measures.** Measures employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Also called **ACMs**. (JP 1-02)

**airspace coordination area.** A three-dimensional block of airspace in a target area, established by the appropriate ground commander, in which friendly aircraft are reasonably safe from friendly surface fires. The airspace coordination area may be formal or informal. Also called **ACA**. (JP 1-02)

**air tasking order.** A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. Normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. Also called **ATO**. (JP 1-02)

**allocation (air).** The translation of the air apportionment decision into total numbers of sorties by aircraft type available for each operation or task. (JP 1-02)

**apportionment (air).** The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations for a given period of time. Also called **air apportionment**. (JP 1-02)

**assessment.** 1. A continuous process that measures the overall effectiveness of employing joint force capabilities during military operations. 2. Determination of the progress toward accomplishing a task, creating an effect, or achieving an objective. 3. Analysis of the security, effectiveness, and potential of an existing or planned intelligence activity. 4. Judgment of the motives, qualifications, and characteristics of present or prospective employees or "agents." (JP 1-02)

**base defense zone.** An air defense zone established around an air base and limited to the engagement envelope of short-range air defense weapons systems defending that base.

Base defense zones have specific entry, exit, and identification, friend or foe procedures established. Also called **BDZ**. (JP 1-02)

**battle damage assessment.** The estimate of damage resulting from the application of lethal or nonlethal military force. Battle damage assessment is composed of physical damage assessment, functional damage assessment, and target system assessment. Also called **BDA**. (JP 1-02)

**battle rhythm.** A deliberate daily cycle of command, staff, and unit activities intended to synchronize current and future operations. (JP 1-02)

**candidate target list.** A list of objects or entities submitted by component commanders, appropriate agencies, or the joint force commander's staff for further development and inclusion on the joint target list and/or restricted target list, or moved to the no-strike list. Also called **CTL**. (JP 1-02)

**center of gravity.** The source of power that provides moral or physical strength, freedom of action, or will to act. Also called **COG**. (JP 1-02)

**close air support.** Air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. Also called **CAS**. (JP 1-02)

**collateral damage.** Unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. Such damage is not unlawful so long as it is not excessive in light of the overall military advantage anticipated from the attack. (JP 1-02)

**combat assessment.** The determination of the overall effectiveness of force employment during military operations. Combat assessment is composed of three major components: (a) battle damage assessment; (b) munitions effectiveness assessment; and (c) reattack recommendation. Also called **CA**. (JP 1-02)

**concept of operations.** A verbal or graphic statement that clearly and concisely expresses what the joint force commander intends to accomplish and how it will be done using available resources. The concept is designed to give an overall picture of the operation. Also called **commander's concept** or **CONOPS**. (JP 1-02)

**coordinated fire line.** A line beyond which conventional and indirect surface fire support means may fire at any time within the boundaries of the establishing headquarters without additional coordination. The purpose of the coordinated fire line is to expedite the surface-to-surface attack of targets beyond the coordinated fire line without coordination with the ground commander in whose area the targets are located. Also called **CFL**. (JP 1-02)

**course of action.** 1. Any sequence of activities that an individual or unit may follow. 2. A possible plan open to an individual or commander that would accomplish, or is related

to the accomplishment of the mission. 3. The scheme adopted to accomplish a job or mission. 4. A line of conduct in an engagement. 5. A product of the Joint Operation Planning and Execution System concept development phase and the course-of-action determination steps of the joint operation planning process. Also called **COA**. (JP 1-02)

**critical capability.** A means that is considered a crucial enabler for a center of gravity to function as such and is essential to the accomplishment of the specified or assumed objective(s). (JP 1-02)

**critical requirement.** An essential condition, resource, and means for a critical capability to be fully operational. (JP 1-02)

**critical vulnerability.** An aspect of a critical requirement which is deficient or vulnerable to direct or indirect attack that will create decisive or significant effects. (JP 1-02)

**decision support template.** A graphic record of wargaming. The decision support template depicts decision points, timelines associated with the movement of forces and the flow of the operation, and other key items of information required to execute a specific friendly course of action. (JP 1-02)

**decisive point.** A geographic place, specific key event, critical factor, or function that, when acted upon, allows commanders to gain a marked advantage over an adversary or contribute materially to achieving success. (JP 1-02)

**desired mean point of impact.** A precise point, associated with a target, and assigned as the center for impact of multiple weapons or area munitions to create a desired effect. May be defined descriptively, by grid reference, or by geolocation. Also called **DMPI**. (JP 1-02)

**desired point of impact.** A precise point, associated with a target, and assigned as the impact point for a single unitary weapon to create a desired effect. May be defined descriptively, by grid preferences, or geolocation. Also called **DPI**. (JP 1-02)

**effect.** 1. The physical or behavioral state of a system that results from an action, a set of actions, or another effect. 2. The result, outcome, or consequence of an action. 3. A change to a condition, behavior, or degree of freedom. (JP 1-02)

**electronic attack.** Division of electronic warfare involving the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Also called **EA**. (JP 1-02)

**end state.** The set of required conditions that defines achievement of the commander's objectives. (JP 1-02)

**fires.** The use of weapon systems to create a specific lethal or nonlethal effect on a target. (JP 1-02)

**fire support.** Fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. (JP 1-02)

**fire support coordination.** The planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons. (JP 1-02)

**fire support coordination center.** A single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. Also called **FSCC**. (JP 1-02)

**fire support coordination line.** A fire support coordination measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. A fire support coordination line does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The fire support coordination line applies to all fires of air, land, and sea-based weapon systems using any type of ammunition. Forces attacking targets beyond a fire support coordination line must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the fire support coordination line must ensure that the attack will not produce adverse effects on, or to the rear of, the line. Short of a fire support coordination line, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. The fire support coordination line should follow well-defined terrain features. Coordination of attacks beyond the fire support coordination line is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the fire support coordination line. However, failure to do so may increase the risk of fratricide and could waste limited resources. Also called **FSCL**. (JP 1-02)

**fire support coordination measure.** A measure employed by land or amphibious commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. Also called **FSCM**. (JP 1-02)

**fragmentary order.** An abbreviated form of an operation order issued as needed after an operation order to change or modify that order or to execute a branch or sequel to that order. Also called **FRAGORD**. (JP 1-02)

**high-payoff target.** A target whose loss to the enemy will significantly contribute to the success of the friendly course of action. High-payoff targets are those high-value targets that must be acquired and successfully attacked for the success of the friendly commander's mission. Also called **HPT**. (JP 1-02)

**high-payoff target list.** A prioritized list of high-payoff targets by phase of the joint operation. Also called **HPTL**. (JP 1-02)

**high-value target.** A target the enemy commander requires for the successful completion of the mission. The loss of high-value targets would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. Also called **HVT**. (JP 1-02)

**interdiction.** 1. An action to divert, disrupt, delay, or destroy the enemy's military surface capability before it can be used effectively against friendly forces, or to otherwise achieve objectives. 2. In support of law enforcement, activities conducted to divert, disrupt, delay, intercept, board, detain, or destroy, as appropriate, vessels, vehicles, aircraft, people, and cargo. (JP 1-02)

**joint air operations.** Air operations performed with air capabilities/forces made available by components in support of the joint force commander's operation or campaign objectives, or in support of other components of the joint force. (JP 1-02)

**joint fires.** Fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective. (JP 1-02)

**joint fires element.** An optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization. Also called **JFE**. (JP 1-02)

**joint fire support.** Joint fires that assist air, land, maritime, and special operations forces to move, maneuver, and control territory, populations, airspace, and key waters. (JP 1-02)

**joint integrated prioritized target list.** A prioritized list of targets approved and maintained by the joint force commander. Targets and priorities are derived from the recommendations of components and other appropriate agencies, in conjunction with their proposed operations supporting the joint force commander's objectives and guidance. Also called **JIPTL**. (JP 1-02)

**joint intelligence preparation of the operational environment.** The analytical process used by joint intelligence organizations to produce intelligence assessments, estimates and other intelligence products in support of a joint force commander's decision making process. It is a continuous process that includes defining the operational environment; describing the effects of the operational environment; evaluating the adversary; and determining and describing adversary potential courses of action. Also called **JIPOE**. (JP 2-0)

**Joint Operation Planning and Execution System.** A system of joint policies, procedures, and reporting structures, supported by communications and computer systems, that is used by the joint planning and execution community to monitor, plan, and execute

mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint operations. Also called **JOPEs**. (JP 1-02)

**joint operation planning process.** An orderly, analytical process that consists of a logical set of steps to analyze a mission; develop, analyze, and compare alternative courses of action against criteria of success and each other; select the best course of action; and produce a joint operation plan or order. Also called **JOPP**. (JP 1-02)

**joint targeting coordination board.** A group formed by the joint force commander to accomplish broad targeting oversight functions that may include but are not limited to coordinating targeting information, providing targeting guidance and priorities, and refining the joint integrated prioritized target list. The board is normally comprised of representatives from the joint force staff, all components, and if required, component subordinate units. Also called **JTCB**. (JP 1-02)

**joint target list.** A consolidated list of selected targets, upon which there are no restrictions placed, considered to have military significance in the joint force commander's operational area. Also called **JTL**. (JP 1-02)

**joint task force.** A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a subunified commander, or an existing joint task force commander. Also called **JTF**. (JP 1-02)

**line of operations.** 1. A logical line that connects actions on nodes and/or decisive points related in time and purpose with an objective(s). 2. A physical line that defines the interior or exterior orientation of the force in relation to the enemy or that connects actions on nodes and/or decisive points related in time and space to an objective(s). Also called **LOO**. (JP 1-02)

**link.** 1. A behavioral, physical, or functional relationship between nodes. 2. In communications, a general term used to indicate the existence of communications facilities between two points. 3. A maritime route, other than a coastal or transit route, which links any two or more routes. (JP 1-02)

**master air attack plan.** A plan that contains key information that forms the foundation of the joint air tasking order. Sometimes referred to as the air employment plan or joint air tasking order shell. Information that may be found in the plan includes joint force commander guidance, joint force air component commander guidance, support plans, component requests, target update requests, availability of capabilities and forces, target information from target lists, aircraft allocation, etc. Also called **MAAP**. (JP 1-02)

**measure of effectiveness.** A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. Also called **MOE**. (JP 1-02)

**measure of performance.** A criterion used to assess friendly actions that is tied to measuring task accomplishment. Also called **MOP**. (JP 1-02)

**mensuration.** The process of measurement of a feature or location on the earth to determine an absolute latitude, longitude, and elevation. For targeting applications, the errors inherent in both the source for measurement as well as the measurement processes must be understood and reported. (JP 1-02)

**mission type order.** 1. An order issued to a lower unit that includes the accomplishment of the total mission assigned to the higher headquarters. 2. An order to a unit to perform a mission without specifying how it is to be accomplished. (JP 1-02)

**munitions effectiveness assessment.** Conducted concurrently and interactively with battle damage assessment, the assessment of the military force applied in terms of the weapon system and munitions effectiveness to determine and recommend any required changes to the methodology, tactics, weapon system, munitions, fusing, and/or weapon delivery parameters to increase force effectiveness. Munitions effectiveness assessment is primarily the responsibility of operations with required inputs and coordination from the intelligence community. Also called **MEA**. (JP 1-02)

**named areas of interest.** The geographical area where information that will satisfy a specific information requirement can be collected. Named areas of interest are usually selected to capture indications of adversary courses of action, but also may be related to conditions of the battlespace. Also called **NAI**. (JP 1-02)

**naval surface fire support.** Fire provided by Navy surface gun and missile systems in support of a unit or units. Also called **NSFS**. (JP 1-02)

**node.** 1. A location in a mobility system where a movement requirement is originated, processed for onward movement, or terminated. 2. In communications and computer systems, the physical location that provides terminating, switching, and gateway access services to support information exchange. 3. An element of a system that represents a person, place, or physical thing. (JP 1-02)

**no-fire area.** An area designated by the appropriate commander into which fires or their effects are prohibited. Also called **NFA**. (JP 1-02)

**no-fire line.** A line short of which artillery or ships do not fire except on request or approval of the supported commander, but beyond which they may fire at any time without danger to friendly troops. (JP 1-02)

**no-strike list.** A list of objects or entities characterized as protected from the effects of military operations under international law and/or rules of engagement. Attacking these may violate the law of armed conflict or interfere with friendly relations with indigenous personnel or governments. Also called **NSL**. (JP 1-02)

**objective.** 1. The clearly defined, decisive, and attainable goal toward which every operation is directed. 2. The specific target of the action taken (for example, a definite terrain feature, the seizure or holding of which is essential to the commander's plan, or, an enemy force or capability without regard to terrain features). (JP 1-02)

**offensive counterair.** Offensive operations to destroy, disrupt, or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, but as close to their source as possible. Offensive counterair operations range throughout enemy territory and are generally conducted at the initiative of friendly forces. These operations include attack operations, suppression of enemy air defenses, fighter escort, and fighter sweep. Also called **OCA**. (JP 1-02)

**operational area.** An overarching term encompassing more descriptive terms for geographic areas in which military operations are conducted. Operational areas include, but are not limited to, such descriptors as area of responsibility, theater of war, theater of operations, joint operations area, amphibious objective area, joint special operations area, and area of operations. Also called **OA**. (JP 1-02)

**operational art.** The application of creative imagination by commanders and staffs - supported by their skill, knowledge, and experience - to design strategies, campaigns, and major operations and organize and employ military forces. Operational art integrates ends, ways, and means across the levels of war. (JP 1-02)

**operational design.** The conception and construction of the framework that underpins a campaign or major operation plan and its subsequent execution. (JP 1-02)

**operational environment.** A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 1-02)

**operation order.** A directive issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. Also called **OPORD**. (JP 1-02)

**operation plan.** 1. Any plan for the conduct of military operations prepared in response to actual and potential contingencies. 2. In the context of joint operation planning level 4 planning detail, a complete and detailed joint plan containing a full description of the concept of operations, all annexes applicable to the plan, and a time-phased force and deployment data. It identifies the specific forces, functional support, and resources required to execute the plan and provide closure estimates for their flow into the theater. Also called **OPLAN**. (JP 1-02)

**psychological operations.** Planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals. The purpose of psychological operations is to induce or reinforce

foreign attitudes and behavior favorable to the originator's objectives. Also called **PSYOP**. (JP 1-02)

**restricted target.** A valid target that has specific restrictions placed on the actions authorized against it due to operational considerations. (JP 1--02)

**restricted target list.** A list of restricted targets nominated by elements of the joint force and approved by the joint force commander. This list also includes restricted targets directed by higher authorities. Also called **RTL**. (JP 1-02)

**restrictive fire area.** An area in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. Also called **RFA**. (JP 1-02)

**restrictive fire line.** A line established between converging friendly surface forces that prohibits fires or their effects across that line. Also called **RFL**. (JP 1-02)

**rules of engagement.** Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called **ROE**. (JP 1-02)

**scheduled target.** Planned target upon which fires or other actions are scheduled for prosecution at a specified time. (JP 1-02)

**special operations forces.** Those Active and Reserve Component forces of the Military Services designated by the Secretary of Defense and specifically organized, trained, and equipped to conduct and support special operations. Also called **SOF**. (JP 1-02)

**system.** A functionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole. (JP 1-02)

**target.** 1. An entity or object considered for possible engagement or other action. 2. In intelligence usage, a country, area, installation, agency, or person against which intelligence operations are directed. 3. An area designated and numbered for future firing. 4. In gunfire support usage, an impact burst that hits the target. (JP 1-02)

**target acquisition.** The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. Also called **TA**. (JP 1-02)

**target analysis.** An examination of potential targets to determine military importance, priority of attack, and weapons required to obtain a desired level of damage or casualties. (JP 1-02)

**target area of interest.** The geographical area where high-value targets can be acquired and engaged by friendly forces. Not all target areas of interest will form part of the

friendly course of action; only target areas of interest associated with high priority targets are of interest to the staff. These are identified during staff planning and wargaming. Target areas of interest differ from engagement areas in degree. Engagement areas plan for the use of all available weapons; target areas of interest might be engaged by a single weapon. Also called **TAI**. (JP 1-02)

**targeting.** The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (JP 1-02)

**target nomination list.** A target-consolidated list of targets made up of the multiple candidate target lists. A prioritized list of targets drawn from the joint target list and nominated by component commanders, appropriate agencies, or the joint force commander's staff for inclusion on the joint integrated prioritized target list. Also called **TNL**. (JP 1-02)

**time-sensitive target.** A joint force commander designated target requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. Also called **TST**. (JP 1-02)

**validation.** 1. A process associated with the collection and production of intelligence that confirms that an intelligence collection or production requirement is sufficiently important to justify the dedication of intelligence resources, does not duplicate an existing requirement, and has not been previously satisfied. 2. A part of target development that ensures all vetted targets meet the objectives and criteria outlined in the commander's guidance and ensures compliance with the law of armed conflict and rules of engagement. 3. In computer modeling and simulation, the process of determining the degree to which a model or simulation is an accurate representation of the real world from the perspective of the intended uses of the model or simulation. 4. Execution procedure used by combatant command components, supporting combatant commanders, and providing organizations to confirm to the supported commander and United States Transportation Command that all the information records in a time-phased force and deployment data not only are error free for automation purposes, but also accurately reflect the current status, attributes, and availability of units and requirements. (JP 1-02)

**vetting.** A part of target development that assesses the accuracy of the supporting intelligence to targeting. (JP 1-02)

**weaponneering.** The process of determining the quantity of a specific type of lethal or nonlethal weapons required to achieve a specific level of damage to a given target, considering target vulnerability, weapons characteristics and effects, and delivery parameters. (JP 1-02)

**zone of fire.** An area into which a designated ground unit or fire support ship delivers, or is prepared to deliver, fire support. Fire may or may not be observed. Also called **ZF**. (JP 1-02)



