

Joint Publication 3-72



Joint Nuclear Operations



17 April 2020





PREFACE

1. Scope

This publication provides fundamental principles and guidance to plan, execute, and assess nuclear operations.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff (CJCS). It sets forth joint doctrine to govern the activities and performance of the Armed Forces of the United States in joint operations, and it provides considerations for military interaction with governmental and nongovernmental agencies, multinational forces, and other interorganizational partners. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs), and prescribes joint doctrine for operations and training. It provides military guidance for use by the Armed Forces in preparing and executing their plans and orders. It is not the intent of this publication to restrict the authority of the JFC from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of objectives.

3. Application

a. Joint doctrine established in this publication applies to the Joint Staff, commanders of combatant commands, subordinate unified commands, joint task forces, subordinate components of these commands, the Services, the National Guard Bureau, and combat support agencies.

b. This doctrine constitutes official advice concerning the enclosed subject matter; however, the judgment of the commander is paramount in all situations.

c. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence unless the CJCS, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance

or coalition) military command should follow multinational doctrine and procedures ratified by the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable and consistent with US law, regulations, and doctrine.

For the Chairman of the Joint Chiefs of Staff:

A handwritten signature in black ink, appearing to read "D. J. O'Donohue". The signature is stylized and cursive.

DANIEL J. O'DONOHUE
Lieutenant General, USMC
Director, Joint Force Development

TABLE OF CONTENTS

EXECUTIVE SUMMARY	v
CHAPTER I	
OVERVIEW OF NUCLEAR STRATEGY	
• Introduction.....	I-1
• Purpose of Nuclear Forces in United States Strategy	I-2
• Deterrence	I-2
• Assurance of Allies and Partners	I-5
• Achievement of United States Objectives if Deterrence Fails	I-6
• Hedge Against an Uncertain Future	I-6
• Sources of Policy Guidance on Nuclear Weapons	I-6
CHAPTER II	
NUCLEAR FORCES AND SUPPORT STRUCTURES	
• Characteristics.....	II-1
• Strategic Triad.....	II-2
• Nonstrategic Forces	II-3
• Nuclear Weapons Enterprise Infrastructure and Support Capabilities	II-3
CHAPTER III	
PLANNING AND TARGETING	
• Nuclear Planning.....	III-1
• Targeting	III-2
• Intelligence Support.....	III-2
• Theater Planning and Targeting Considerations.....	III-3
• Operational Consequences of Execution	III-4
CHAPTER IV	
COMMAND AND CONTROL	
• Introduction.....	IV-1
• National-Level Leadership and Release Authority	IV-1
• Operational Command and Control Considerations	IV-1
• Command of Nuclear Forces	IV-4
• Command and Control in Post-Nuclear Environments	IV-4
CHAPTER V	
NUCLEAR OPERATIONS	
• Introduction.....	V-1
• Principles and Purpose	V-2
• Operations in a Nuclear Environment.....	V-2
• Modeling in Support of Nuclear Planning/Operations	V-4

Table of Contents

CHAPTER VI
SURETY

- General VI-1
- Safety VI-2
- Security VI-3
- Control Measures VI-4

APPENDIX

- A Support Agencies' Roles and Responsibilities..... A-1
- B Points of Contact B-1
- C References C-1
- D Administrative Instructions D-1

GLOSSARY

- Part I Abbreviations, Acronyms, and Initialisms GL-1
- Part II Terms and Definitions GL-3

EXECUTIVE SUMMARY COMMANDER'S OVERVIEW

- **Outlines nuclear threats to the United States.**
 - **Presents United States nuclear policy and strategy.**
 - **Describes nuclear forces and support structures.**
 - **Discusses nuclear planning, targeting, command and control architecture, and operational command and control considerations.**
 - **Explains the purpose and principles of nuclear operations and activities.**
 - **Describes the Nuclear Surety Program.**
 - **Outlines specified duties and responsibilities executed by Department of Defense nuclear enterprise support agencies.**
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Overview of Nuclear Strategy

Nuclear weapons are a key feature of the security environment. There now exists an unprecedented range and mix of threats, including major conventional, chemical, biological, nuclear, space, and cyber threats and violent non-state actors. There is an increased potential for regional conflicts involving nuclear-armed adversaries in several parts of the world and the potential for adversary nuclear escalation in crisis or conflict.

Potential for regional conflicts involving nuclear-armed adversaries

Russia considers the United States and the North Atlantic Treaty Organization (NATO) to be the principal threats to its contemporary geopolitical ambitions. Russia's strategic nuclear modernization has increased, and will continue to increase, its warhead delivery capability, which provides Russia with the ability to rapidly expand its deployed warhead numbers.

China continues to increase the number, capabilities, and protection of its nuclear forces.

North Korea's continued pursuit of nuclear weapons capabilities poses the most immediate and dire proliferation threat to international security and stability.

Iran's development of increasingly long-range ballistic missile capabilities, and its aggressive strategy and activities to destabilize neighboring governments, raises questions about its long-term commitment to forgoing nuclear weapons capability.

Purpose of Nuclear Forces in US Strategy

The highest US nuclear policy and strategy priority is to deter potential adversaries from nuclear attack of any scale. The *(U) 2017 National Security Strategy of the United States of America* and *(U) 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* are supported through four principal roles for US nuclear force.

Deter nuclear and non-nuclear attack

Detering adversaries from aggression against vital US interests is a key objective of the *National Defense Strategy* and *(U) National Military Strategy of the United States of America, 2018*. The fundamental nature of deterrence is about decisively influencing an adversary's decision calculus regarding strategic attack or the escalation of a conflict. Joint military operations and activities (which include nuclear operations) contribute to deterrence by affecting the adversary's decision calculus elements in three ways: threatening to deny benefits, threatening to impose costs, and encouraging adversary restraint.

The ability to communicate US intent, resolve, and associated military capabilities in ways that are understood by adversary decision makers is vital. Direct military means include: forward presence, force projection, active and passive defense, strategic communications/messaging, and nuclear forces.

Assure allies and partners

Effectively assuring allies regarding the credibility of US nuclear deterrence enables most to eschew possession of nuclear weapons, thereby contributing to US nonproliferation goals.

If deterrence fails, achieve US objectives.

The United States would only consider the employment of nuclear weapons in extreme circumstances to defend US, allied, and partner vital interests. Flexible and limited US nuclear response options can play an important role in restoring deterrence following limited adversary nuclear escalation.

Hedge against an uncertain future Hedging strategies can help reduce geopolitical, technological, operational, and programmatic risks and mitigate threats that may emerge over time

Nuclear Forces and Support Structures

Characteristics Nuclear forces deter threats by sustaining modern, credible military capabilities. It is imperative that nuclear force capabilities are diverse, flexible, adaptable, effective, responsive, and survivable.

Strategic Triad The United States maintains a triad of strategic nuclear forces consisting of intercontinental ballistic missiles, submarine-launched ballistic missiles, and long-range bombers. Each system provides strength to the US nuclear force posture through unique and complementary attributes.

Nonstrategic Forces The United States and select NATO allies maintain dual-capable aircraft able to deliver nuclear or conventional weapons in support of extended deterrence and the defense of NATO.

Nuclear Weapons Enterprise Infrastructure and Support Capabilities Nuclear infrastructure and support includes those elements and structures organized, sized, and maintained to enable the full range of Department of Defense (DOD) nuclear operations and certain necessary US Government departments and agencies outside of DOD. They include aerial refueling; the National Nuclear Security Administration; maintenance, storage, and transportation; and nuclear command, control, and communications (NC3).

Planning and Targeting

Nuclear Planning Comprehensive plans enable the United States to employ nuclear forces in response to a variety of scenarios. The process begins with presidential guidance, establishing strategic objectives and broad employment guidance. Preplanning also provides a baseline from which branches and sequels may be developed.

Targeting The joint targeting cycle and supporting doctrine provide the combatant commanders (CCDRs) with a comprehensive, iterative, and logical methodology to

perform nuclear targeting to generate desired effects and achieve objectives.

Intelligence Support

Global situational awareness is essential to deterrence and includes two forms of intelligence. The first is knowledge of an adversary decision makers' perceptions of benefits, costs, and consequences of restraint. The second is information about adversary assets, capabilities, and vulnerabilities.

Theater Planning and Targeting Considerations

Employment, or potential employment, of nuclear weapons could have a significant influence on joint force operations. Therefore, the commander's guidance for integrating potential nuclear weapons employment in the combatant command's campaign plan, and for countering the impact of adversary nuclear use, is established early in the planning process to effectively make such options available to the President.

Commanders must maintain the capability to rapidly identify and strike newly identified or newly emerging targets. The unique effects of nuclear weapons require the staff to consider additional factors when planning for their operational employment. While not all-inclusive, the following considerations should be addressed during the planning process: law of armed conflict, yield selection, height of burst, fallout, and weapon system selection.

Operational Consequences of Execution

Commanders must employ appropriate protective measures to ensure mission-critical operations can continue after exposure to nuclear effects. To minimize impacts to military operations, civilian casualties, population centers, and items critical to mission success, a series of safety distances are utilized to preclude the negative effects to friendly forces.

Command and Control

Nuclear command and control (NC2) requires both centralized control and centralized execution, a unique construct different than command and control of conventional joint force operations.

National-Level Leadership and Release Authority

Only the President can authorize the use of nuclear weapons.

Operational Command and Control Considerations

CCDRs with a geographic area of responsibility play a critical role and are involved in any consideration of employing nuclear weapons in theater, as their use will have significant effects on the execution of theater plans and can potentially affect friendly forces. Top-down communication ensures receipt of critical orders for execution and minimizes significant impacts to theater operations. The tempo of modern warfare dictates streamlined and efficient methods of NC2 to facilitate timely decision making. Force direction implements decisions regarding the generation, execution, termination, destruction, and disablement of nuclear weapons. NC3 provides the President with the means to authorize and direct the use of nuclear weapons. The NC3 system performs five critical functions: situation monitoring (including warning and attack characterization), planning, decision making, force direction (including receiving/distributing presidential orders), and force management. Detection, warning, and attack characterization is accomplished through a combination of space-based and terrestrial sensors.

The US nuclear command, control, and communications architecture consists of two elements

The first element is the day-to-day and crisis architecture that supports US national policy by responding under all conditions, in both peacetime and war, to provide the means to exercise positive control and direction by the President, Secretary of Defense, and CCDRs. The second element provides the assured, unbroken, redundant, survivable, secure, and enduring architecture.

Command of Nuclear Forces

As prescribed by Title 10, United States Code, Section 162 (Combatant Commands), all nuclear forces are assigned to respective CCDRs, in accordance with assignment tables found in the *Global Force Management Implementation Guidance*.

Nuclear Operations

Nuclear operations are those activities within the range of military operations, to include deterrence, crisis response, strike, assessment, and return to stability. Nuclear operations must adhere to the law of armed conflict and the *Uniform Code of Military Justice*. They also include unique requirements and processes within policy and plans. Joint forces may rely on external support from multiple agencies for assistance with

targeting; nuclear/conventional planning integration; consequences of execution assessment; force protection; execution; and chemical, biological, radiological, and nuclear (CBRN) response or international CBRN response.

Principles and Purpose

The highest priority, but not sole purpose, of US nuclear forces is to deter nuclear attack on the US homeland and our allies and partners. Joint forces provide flexibility and employment options that allow the United States to provide effective deterrence and, if necessary, achieve US objectives if deterrence fails. A combination of redundant systems, mobility, quantity of delivery systems and weapons, hardening/protection, and varied employment concepts enhance survivability. Responsiveness compels the enemy to fully commit forces during a preemptive or preventive attack, which raises the threshold for nuclear weapons use by an enemy.

Operations in a Nuclear Environment

Possibly the greatest challenge confronting the joint force in a nuclear conflict is how to operate in a post-nuclear detonation radiological environment. Commanders must plan for and implement protective measures to mitigate these effects and continue operations. Preparing for nuclear employment and the consequences of nuclear employment requires detailed planning at all levels. Adversary employment of nuclear weapons can radically alter the course of a campaign. The potential consequences of using nuclear weapons will greatly influence military operations and vastly increase the complexity of the operational environment. Thus, integration of nuclear weapons employment with ongoing conventional operations is essential to the success of joint force nuclear operations and operations in a nuclear environment.

Surety

DOD and the Department of Energy (DOE), working through the National Nuclear Security Administration, share primary responsibility for the safety, security, and control of US nuclear weapons. National policy provides guidance for coordinated interagency efforts concerning safety, security, and control across the nuclear enterprise.

Surety Standards

DOD surety standards are promulgated under DOD Directive 3150.02, *DOD Nuclear Weapons Surety Program*. DOE surety standards are prescribed in DOE O 452.1E, *Nuclear Explosive and Weapon Surety Program*. Although the operating environments differ significantly, DOD and DOE standards share many similarities

Safety

The four principal safety themes for nuclear weapons are isolation, incompatibility, inoperability, and independence.

Security

Nuclear weapons security refers to the range of active and passive measures employed to protect a weapon from access by unauthorized personnel and to prevent loss or damage from unauthorized acts that would result in a nuclear yield, radiological dispersal/contamination, or rendering the weapon non-serviceable.

Control Measures

DOD Manual 5210.42, *Nuclear Weapons Personnel Reliability Program (PRP) Regulation*, establishes the **Personnel Reliability Assurance Program (PRAP)** to manage individuals assigned to perform specific duties associated with nuclear weapons, weapon systems, components, and materials. The PRAP is designed to ensure the highest possible standards of individual reliability for those personnel assigned to nuclear weapons duties.

The most important aspect of **procedural security** is the two-person rule, which requires the presence of at least two cleared, PRAP-certified, task-knowledgeable individuals whenever there is authorized access to a nuclear weapon.

The term “**use control**” refers to the collection of measures that facilitate authorized use of nuclear weapons and protects against unauthorized use. These measures include a combination of weapon design features and operational procedures. The **active protection system** senses attempts to gain unauthorized access to weapon-critical components. The **environmental sensing device** is a feature placed in the arming circuit of a weapon, providing both safety and control. A **permissive action link** is a device included in or attached to a nuclear weapon system to preclude arming and/or launching until the insertion of a prescribed, discrete code or combination.

CONCLUSION

This publication provides fundamental principles and guidance to plan, execute, and assess nuclear operations.

CHAPTER I OVERVIEW OF NUCLEAR STRATEGY

“[N]uclear deterrence will continue to play a critical role in deterring nuclear attack and in preventing large-scale conventional warfare between nuclear-armed states for the foreseeable future. US nuclear weapons assure and defend our allies against conventional and nuclear threats, furthering our nonproliferation goals and increasing global security.”

Secretary of Defense, James N. Mattis
2018 Nuclear Posture Review

1. Introduction

a. Nuclear weapons are a key feature of the security environment. Adversaries increasingly rely on nuclear weapons to secure their interests. Those adversaries seeking ways to use nuclear weapons for coercion and war termination present complex deterrence and escalation management challenges. US nuclear weapons and the associated capabilities needed to conduct nuclear operations are essential to ensure an effective deterrent.

b. While the United States has continued to reduce the number and salience of nuclear weapons, others, including Russia and China, have moved in the opposite direction. They have added new types of nuclear capabilities to their arsenal, increased the salience of nuclear forces in their strategies and plans, and engaged in increasingly aggressive behavior. There now exists an unprecedented range and mix of threats, including major conventional, chemical, biological, nuclear, space, and cyber threats and violent non-state actors.

c. Despite concerted US efforts to reduce the role of nuclear weapons in international affairs and to negotiate reductions in the number of nuclear weapons, since 2010 no potential adversary has reduced either the role of nuclear weapons in its national security strategy or the number of nuclear weapons it fields. Rather, they have moved decidedly in the opposite direction. As a result, there is an increased potential for regional conflicts involving nuclear-armed adversaries in several parts of the world and the potential for adversary nuclear escalation in crisis or conflict.

(1) **Russia.** Russia considers the United States and the North Atlantic Treaty Organization (NATO) to be the principal threats to its contemporary geopolitical ambitions. Russian strategy and doctrine emphasize the potential coercive and military uses of nuclear weapons. Russia’s strategic nuclear modernization has increased, and will continue to increase, its warhead delivery capability, which provides Russia with the ability to rapidly expand its deployed warhead numbers. In addition to modernizing “legacy” Soviet nuclear systems, Russia is developing and employing new nuclear warheads and launchers. It is also developing three new intercontinental-range nuclear weapon systems; a hypersonic glide vehicle; a nuclear-armed, nuclear-powered ground-launched cruise missile; and a nuclear-armed, nuclear-powered, undersea autonomous torpedo.

(2) **China.** China continues to increase the number, capabilities, and protection of its nuclear forces. China has developed a new road-mobile, strategic, intercontinental ballistic missile (ICBM); a new multi-warhead version of its DF-5 silo-based ICBM; and its most advanced ballistic missile submarine armed with new submarine-launched ballistic missiles (SLBMs). It has also announced development of a new nuclear-capable strategic bomber, giving China a nuclear triad.

(3) **North Korea.** North Korea has accelerated its provocative pursuit of nuclear weapons and missile capabilities and expressed explicit threats to use nuclear weapons against the United States and its allies in the region. North Korean officials insist they will not give up nuclear weapons. In the past few years, North Korea has dramatically increased its missile flight testing, most recently including the testing of intercontinental-range missiles capable of reaching the US homeland. North Korea's continued pursuit of nuclear weapons capabilities poses the most immediate and dire proliferation threat to international security and stability.

(4) **Iran.** Iran poses proliferation threats. Iran retains the technological capability and much of the capacity necessary to develop a nuclear weapon within one year of a decision to do so. Iran's development of increasingly long-range ballistic missile capabilities, and its aggressive strategy and activities to destabilize neighboring governments, raises questions about its long-term commitment to forgoing nuclear weapons capability.

2. Purpose of Nuclear Forces in United States Strategy

The highest US nuclear policy and strategy priority is to deter potential adversaries from nuclear attack of any scale. However, deterring nuclear attack is not the sole purpose of nuclear weapons. The *(U) 2017 National Security Strategy of the United States of America* and *(U) 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* are supported through four principal roles for US nuclear forces that guide the development of US force capabilities and prescribe the use of these capabilities. These roles are complementary and interrelated, and the adequacy of US nuclear forces is assessed against each role and the strategy designed to fulfill it:

- a. Deter nuclear and non-nuclear attack.
- b. Assure allies and partners.
- c. If deterrence fails, achieve US objectives.
- d. Hedge against an uncertain future.

3. Deterrence

a. Deterring adversaries from aggression against vital US interests is a key objective of the *National Defense Strategy* and *(U) National Military Strategy of the United States of America, 2018*.

b. Deterrence requires a national strategy that integrates diplomatic, informational, military, and economic elements of power.

c. The fundamental nature of deterrence is about decisively influencing an adversary's decision calculus regarding strategic attack or the escalation of a conflict. We deter attacks by ensuring the expected lack of success and perspective costs far outweigh any achievable gains.

d. Adversaries' decision calculus contains three primary variables:

(1) Their perception of the **benefits** of a course of action (COA).

(2) The perception of the **costs** of a COA.

(3) Their perception of the **consequences** of restraint or inaction (i.e., the benefits and costs of not executing the COA in question).

e. Understanding how these factors are interrelated is important to determining how best to influence the decision calculus of our adversaries. The perceived benefits and costs of a given COA (and of restraint) have two essential elements that influence adversary decision making. First, each benefit and cost has some relative value to the adversary. Second, each benefit and cost has a relative probability estimate associated with it in the adversary's mind. Additionally, an adversary's **risk-taking propensity** affects the relationship between values and probabilities of benefits and costs in the decision-making process.

f. Joint military operations and activities (which include nuclear operations) contribute to deterrence by affecting the adversary's decision calculus elements in three ways:

(1) Threatening to Deny Benefits. Denying benefits involves convincing adversary decision makers that the benefits they perceive are of little value and/or are unlikely to be achieved by taking the COA the United States seeks to deter. For example, ballistic missile defenses successfully intercepting adversary missiles are an operational capability that helps provide deterrence by threatening to deny benefits of an attack.

(2) Threatening to Impose Costs. Cost imposition involves convincing adversary decision makers that the costs incurred in response to or as a result of their attack will be both severe and highly likely. Cost imposition includes the full array of offensive operations, including kinetic and non-kinetic options.

(3) Encouraging Adversary Restraint. Encouraging adversary restraint involves convincing adversary decision makers that **not** undertaking the action we seek to deter will result in an outcome preferable to the outcome that will result if they do act.

g. The specific military "means" required to credibly threaten benefit denial and cost imposition or to encourage adversary restraint varies by adversary and situation. Military capabilities are the means by which the joint force commander (JFC) implements

deterrence. These capabilities must be credible to adversary decision makers, in terms of their ability to both deny perceived benefits and imposed perceived costs in a manner the United States is seen as willing to implement. Effective military capabilities require that they be visible to and known by the adversary. The ability to communicate US intent, resolve, and associated military capabilities in ways that are understood by adversary decision makers is vital. Direct military means include:

(1) Forward Presence. US capabilities resident in forward-stationed and forward-deployed, multi-purpose combat and expeditionary forces enhance deterrence by improving our ability to act rapidly around the globe.

(2) Force Projection. The capability to project US military power globally and conduct operational maneuver from strategic distances provides an important capability to deter adversaries. Force projection enhances the JFC's capacity to use all three ways of influencing an adversaries' decision making.

(3) Active and Passive Defense. Active and passive defense can contribute significantly to deterrence, particularly in deterring adversary weapons of mass destruction (WMD) use or attacks. Such defenses reduce an adversary's probability of achieving benefits from attacks on the United States, its forces, and/or its allies.

(a) Missile defense contributes to the deterrence of adversary aggression and the assurance of allies and partners. As such, missile defense is an essential component of US national security and defense strategies. It also strengthens US diplomacy, protects against missile attacks, supports US military operations if deterrence fails, hedges against future uncertainties and risk, and helps to preserve the US's and allies' freedom of action to meet and defeat regional adversary aggression.

(b) Additional detail is provided in Joint Publication (JP) 3-01, *Countering Air and Missile Threats*.

(4) Strategic Communications/Messaging. This consists of focused United States Government (USG) efforts to create, strengthen, or preserve conditions favorable for the advancement of national interests, policies, and objectives by understanding and engaging key audiences through the use of coordinated programs, plans, themes, messages, and products synchronized with the actions of all instruments of national power. This includes the ability to inform adversaries explicitly of US national interests and intentions, show US resolve, provide terms and conditions for adversary compliance, and affect other centers of power to influence adversary decision makers in a variety of ways. An example would be clearly communicating information on the types of forces the United States fields, how they are postured, and what their capabilities are. For additional information, see JP 3-13, *Information Operations*, and JP 3-61, *Public Affairs*.

(5) Nuclear Forces

(a) Nuclear weapons strongly influence an adversary's decision calculus when considering coercion, aggression, WMD employment, and escalatory COAs. Nuclear weapons threaten an adversary's most highly valued assets.

(b) US nuclear forces contribute uniquely and fundamentally to deterrence—through their ability to threaten to impose costs and deny benefits to an adversary in an exceedingly rapid and devastating manner.

h. For over six decades, US nuclear strategy has required flexible and limited US nuclear response options to adversary aggression. This is because, against a nuclear-armed adversary, a strategy of relying only on large-scale nuclear response options may lack the credibility necessary to deter limited adversary nuclear use and large-scale conventional aggression, particularly in a regional context.

i. Deterrence of adversary nuclear and non-nuclear escalation does not end when conflict begins. Nuclear and non-nuclear deterrence operations can continue to influence adversary decision making regarding escalation across the spectrum of conflict and during each stage of joint operations.

j. There is no “one size fits all” for deterrence because the content of each adversary’s decision calculus is unique, and the context in which each adversary’s decision making takes place varies. Consequently, the United States applies a tailored and flexible approach to effectively deter a range of adversaries.

k. An important element of maintaining effective deterrence is the articulation of US declaratory policy regarding the potential employment of nuclear weapons:

“The United States would only consider the employment of nuclear weapons in extreme circumstances to defend the vital interests of the United States, its allies, and partners. Extreme circumstances could include significant non-nuclear strategic attacks. Significant non-nuclear strategic attacks include, but are not limited to, attacks on the US, allied, or partner civilian population or infrastructure, and attacks on US or allied nuclear forces, their command and control, or warning and attack assessment capabilities.

The United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the Nuclear Non-Proliferation Treaty (NPT) and in compliance with their nuclear non-proliferation obligations.

Given the potential of significant non-nuclear strategic attacks, the United States reserves the right to make any adjustment in the assurance that may be warranted by the evolution and proliferation of non-nuclear strategic attack technologies and US capabilities to counter that threat.”

**Nuclear Posture Review
February 2018**

4. Assurance of Allies and Partners

The United States has formal deterrence commitments that assure European, Asian, and Pacific allies. No nation should doubt the strength of US deterrence commitments or the strength of US and allied capabilities to deter and, if necessary, defeat any threat’s

nuclear or non-nuclear aggression. Effectively assuring allies regarding the credibility of US nuclear deterrence enables most to eschew possession of nuclear weapons, thereby contributing to US nonproliferation goals.

5. Achievement of United States Objectives if Deterrence Fails

a. The United States would only consider the employment of nuclear weapons in extreme circumstances to defend US, allied, and partner vital interests.

b. If deterrence fails, US nuclear forces provide the President with a range of credible and effective response options to achieve US objectives. Those objectives include ending a conflict and restoring deterrence at the lowest level of damage possible for the United States, allies, and partners and minimizing civilian damage to the extent possible consistent with achieving those objectives.

c. Flexible and limited US nuclear response options can play an important role in restoring deterrence following limited adversary nuclear escalation. Restoring deterrence through such responses is not certain, but it may be achievable in certain circumstances. Successfully restoring deterrence of nuclear use would contribute to limiting damage in a conflict and to the achievement of US and allied war aims.

d. Commanders and their staffs must understand how nuclear options the President might consider to achieve US objectives would affect all joint planning and operations and be prepared to execute preplanned and/or adaptively planned options to achieve those objectives.

6. Hedge Against an Uncertain Future

The United States will continue efforts to create a more stable nuclear environment but must also plan against prospective and unanticipated risks. Hedging strategies can help reduce geopolitical, technological, operational, and programmatic risks and mitigate threats that may emerge over time.

7. Sources of Policy Guidance on Nuclear Weapons

a. *(U) 2017 National Security Strategy of the United States of America.* This presidential document states that nuclear weapons are the foundation of our strategy to preserve peace and stability by deterring aggression against the United States, our allies, and our partners.

b. *(U) 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge.* This Department of Defense (DOD) document establishes that the United States will modernize the nation's nuclear weapons strategic triad, to include command and control and options to counter an adversary's coercive strategies.

c. ***Nuclear Posture Review***. This document establishes US nuclear policy, strategy, capabilities, and force posture. Presenting a 5- to 10-year vision, the *Nuclear Posture Review* establishes the roadmap for implementing the President's nuclear strategy.

d. The President provides direction on the planning, command and control, safety, and security of nuclear weapons via written policy directives.

e. The nuclear annex to the *Contingency Planning Guidance* is a Secretary of Defense (SecDef) document implementing presidential guidance on nuclear planning.

f. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3110.04, *(U) Nuclear Supplement to Joint Strategic Campaign Plan*, provides the Chairman of the Joint Chiefs of Staff's (CJCS's) refinement of SecDef's implementing guidance to the United States Strategic Command (USSTRATCOM) for preparing and coordinating plans to deploy and employ nuclear weapons.

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CHAPTER II NUCLEAR FORCES AND SUPPORT STRUCTURES

“The bedrock of our deterrence is our safe, secure, ready, and reliable nuclear Triad. The surest way to prevent war is to be prepared for it.”

**General John Hyten, Commander, United States Strategic Command,
Testimony before the House Committee on Appropriations
Subcommittee on Defense, 11 April 2018**

1. Characteristics

a. Nuclear forces provide capabilities to achieve US national objectives. Nuclear forces deter threats by sustaining modern, credible military capabilities. It is imperative that nuclear force capabilities are diverse, flexible, adaptable, effective, responsive, and survivable.

b. **Diverse.** No single weapon system possesses all the characteristics required for deterrence; therefore, a variety of capabilities are necessary. Force diversity provides redundant and synergistic US capability and confronts any potential aggressor with insurmountable attack responses and defensive problems. The United States maintains a strategic triad to protect against unforeseen developments that might threaten US retaliatory capabilities. Each leg of the strategic triad exhibits attributes and capabilities that complement those of the other legs. The triad and non-strategic nuclear forces, with supporting nuclear command, control, and communications (NC3), provides diversity and flexibility as needed to tailor US strategies for deterrence; assurance; achieving objectives, should deterrence fail; and hedging.

c. **Flexible.** Flexibility is important because deterrent credibility hinges on having a credible capability to execute a variety of nuclear or non-nuclear options. US forces have the flexibility to provide nuclear and non-nuclear options that allow the United States to maintain deterrence and, if necessary, successfully execute a broad array of missions against the full spectrum of potential targets.

d. **Adaptable.** Effective deterrence requires a force that is adaptable to changing strategic environments. Strategies should address the complex and ever-changing strategic environment resulting from geopolitical and regional instabilities, state and non-state actors, WMD proliferation, and rapid advances in technology.

e. **Effective.** Nuclear forces must be capable of achieving presidentially directed objectives under all circumstances. This requires forces that can, with high confidence, survive adversary attack, penetrate adversary defenses, and destroy a wide range of targets. US nuclear forces are tested to achieve an extremely high confidence level such that they will work as intended.

f. **Responsive.** Responsiveness is critical to ensuring forces can be employed as promptly as necessary to pose a credible threat. Some targets must be struck quickly once a decision to employ nuclear weapons has been made, including high-priority, time-sensitive

targets that emerge after a conflict begins. Because force employment requirements may evolve rapidly and unexpectedly, some nuclear weapons must be capable of striking these targets within the brief time available.

g. **Survivable.** US nuclear forces and command and control structures are designed to survive enemy attacks to ensure, in any scenario, sufficient US capability will remain to deliver a retaliatory strike. Both deterrence and nuclear operations to achieve US objectives, if deterrence fails, require survivable nuclear forces and command and control structures. Survivability is enhanced by a combination of redundant systems, mobility, sufficient number of weapons, hardened sites, and an effective deployment/dispersal concept.

2. Strategic Triad

a. The United States maintains a triad of strategic nuclear forces consisting of ICBMs, SLBMs, and long-range bombers. Each system provides strength to the US nuclear force posture through unique and complementary attributes. Further, the strategic triad reduces the possibility that a technical problem in any one leg of the strategic triad or an adversary technical advancement will leave the United States at a strategic disadvantage.

b. **ICBMs.** The ICBM force remains continuously on alert and provides the President with the most-responsive options. Flexibility in response options and the ability to rapidly retarget complicates enemy attack planning. With dispersed basing, responsiveness, and robust command and control, the ICBM force creates an extraordinarily high threshold for a successful, large-scale, conventional, or nuclear attack on US strategic nuclear forces. The ICBM force is survivable if launched before an incoming adversary attack arrives.

A discussion of ICBM capabilities is found in Air Force Doctrine Annex 3-72, Nuclear Operations.

c. **SLBMs.** The ballistic missile submarine (nuclear-powered) (SSBN) and its associated SLBMs provide an assured, survivable strike capability. The SSBN force provides the nation with a highly reliable, safe, secure, accurate, flexible, and effective deterrent capability that complicates an adversary's planning, forcing them to consider the response capability from SSBNs.

For more information on SSBN/SLBM capabilities, refer to Navy Warfare Publication 3-72, Navy Strategic Nuclear Deterrence.

d. **Long-Range Bombers.** Long-range bombers are capable of striking targets around the globe, providing a visible and flexible nuclear deterrent capability, while assuring allies and partners. Once alerted, bombers provide survivable standoff and penetrating capabilities needed to defeat a variety of threats, to include modern air defenses, mobile targets, and targets embedded in complex terrain. Unlike SLBMs and ICBMs, bombers are recallable.

A discussion of bomber capabilities is found in Air Force Doctrine Annex 3-72, Nuclear Operations.

3. Nonstrategic Forces

Dual-Capable Fighter Aircraft. The United States and select NATO allies maintain dual-capable aircraft able to deliver nuclear or conventional weapons in support of extended deterrence and the defense of NATO. These nuclear forces offer an important capability against regional threats, assuring allies and providing a clear and visible signal to potential adversaries of US commitment to NATO.

4. Nuclear Weapons Enterprise Infrastructure and Support Capabilities

a. **General.** Nuclear infrastructure and support includes those elements and structures organized, sized, and maintained to enable the full range of DOD nuclear operations. An effective support structure is critical for nuclear forces to be successful. Necessary infrastructure and support capabilities include certain USG departments and agencies outside of DOD.

b. **Aerial Refueling.** A robust air refueling fleet is essential to the mission of the long-range bombers. Air refueling provides the global strike and safe recovery capabilities necessary for an effective bomber nuclear deterrent. Air refueling also provides essential support to airborne nuclear command and control (NC2) assets.

c. **National Nuclear Security Administration (NNSA).** Supporting DOD, the NNSA is the Department of Energy (DOE) entity responsible for developing and maintaining a safe, secure, and effective nuclear weapons stockpile. Additionally, the NNSA is responsible for securing related nuclear and radiological materials, providing the United States Navy (USN) with safe and effective nuclear propulsion fuels and reactors, securing nuclear and radiological materials, and providing the nation with nuclear counterterrorism and emergency response capabilities.

d. **Maintenance, Storage, and Transportation.** Maintenance, storage, and transportation of nuclear weapons requires qualified, specially trained personnel. The decision to deploy or disperse nuclear weapons requires the deployment or availability at the destination of qualified storage facilities separate from conventional munitions and nuclear-certified ordnance tools and equipment, as well as additional safety and security requirements and technical manuals. Prior to moving nuclear weapons to a new location, planners review support issues and incorporate unique support requirements for nuclear operations away from established infrastructure, to ensure all support requirements are in place.

e. **NC3.** The NC3 architecture is essential for deterrence and enables a response if deterrence fails. NC3 capabilities assure the integrity of transmitted information and possess the resiliency and survivability necessary to reliably overcome the effects of adversary nuclear attack. This important Nuclear Weapons Enterprise component is discussed in detail in Chapter IV, “Command and Control.”

For descriptions of additional organizations that support the nuclear enterprise, see Appendix A, “Support Agencies’ Roles and Responsibilities.”

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CHAPTER III PLANNING AND TARGETING

“I think the current policy [on no first use] is one that complicates an adversary’s decision making process and I wouldn’t recommend any change to simplify an adversary’s decision making calculus. I also can envision several circumstances where we would not want to remove that option from the president in the future....”

**General Joseph F. Dunford, Chairman of the Joint Chiefs of Staff
Testimony before the Senate Armed Services Committee, 14 March 2019**

1. Nuclear Planning

a. Comprehensive plans enable the United States to employ nuclear forces in response to a variety of scenarios. Developing nuclear contingency plans sends an important signal to adversaries and enemies that the United States has the capability and willingness to employ nuclear weapons to defend itself and its allies and partners. The United States is prepared to take actions to restore deterrence, limit damage, and/or terminate the conflict on the best achievable terms for the United States, its allies, and partners.

b. It is necessary and prudent to preplan nuclear employment options for contingencies prior to a crisis. This planning provides:

(1) Tailored deterrence options, as a basis for dialogue between planners and decision makers before a crisis arises;

(2) An opportunity to identify intelligence requirements;

(3) A means to assess the anticipated effectiveness of options prior to execution;

(4) A means to assess the nature and extent of unintended consequences; and

(5) The ability to rapidly implement select, flexible deterrent options and, if needed, preplanned nuclear employment options.

c. The process begins with presidential guidance, establishing strategic objectives and broad employment guidance. SecDef and the CJCS issue policy and amplifying guidance consistent with presidential direction.

d. Preplanning also provides a baseline from which branches and sequels may be developed. Planning is initiated upon direction from the President, SecDef, CJCS, or combatant commander (CCDR) with support from the subordinate JFCs and component commanders. It may involve synchronizing emergent target strikes with existing force employment plans, modifying an existing plan of sufficient similarity to the developing crisis, or creating new plans.

e. Additional planning guidance is available in Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3130.03, *Planning and Execution Planning Formats and Guidance*; the *Emergency Action Procedures of the Chairman of the Joint Chiefs of Staff*; and JP 5-0, *Joint Planning*.

f. In circumstances defined in Allied nuclear doctrine, Supreme Headquarters Allied Powers, Europe, can call on nuclear planners at US and Allied defense cooperation agreements organizations, and USSTRATCOM, for information to assist in formulating Supreme Allied Commander, Europe's, advice to NATO's Nuclear Planning Group.

2. Targeting

The joint targeting cycle and supporting doctrine provide the CCDRs with a comprehensive, iterative, and logical methodology to perform nuclear targeting to generate desired effects and achieve objectives. Pertinent references include JP 3-60, *Joint Targeting*; JP 3-09, *Joint Fire Support*; and CJCSI 3370.01, *Target Development Standards*.

3. Intelligence Support

a. Global situational awareness is essential to deterrence and includes two forms of intelligence. The first is knowledge of an adversary decision makers' perceptions of benefits, costs, and consequences of restraint. The second is information about adversary assets, capabilities, and vulnerabilities.

(1) Improved understanding of adversary decision makers' value structures and perceptions will enhance our ability to tailor deterrence operations against specific adversaries under varying scenarios.

(2) Assets highly valued by adversary leaders need to be identified, catalogued, targeted, weaponized, and maintained for strike planning.

(3) The high demand for many intelligence, surveillance, and reconnaissance assets necessitates flexible and creative approaches to managing high-demand assets in order to manage both deterrence and operational risk on a global scale.

b. A variety of agencies within the intelligence community provide vital input to three areas:

(1) Identification of military targets (facilities or forces) that meet targeting objectives. This requires looking at adversary facilities and force laydown by function and determining their impact on the functionality of the adversary system.

(2) Examination of facilities and forces to determine vulnerability to nuclear weapons effects. This step involves the physical characterization of the facility (e.g., size, construction, location); the location, movement, and disposition of forces; and adversary behavior to support planning to create the desired effect.

(3) Monitoring of detonations and their effects. Such collection would likely require reallocation of selected assets; such reallocation (such as to USSTRATCOM) should be preplanned and would likely occur at declaration of hostilities.

c. The resulting information is then coordinated and managed by the applicable joint force intelligence directorate to feed the target development process and produce a target nomination list. As a supported command, USSTRATCOM integrates the targeting processes and production elements to nominate a target list to achieve objectives. As a supporting command, USSTRATCOM adapts its battle rhythm and processes to complement the targeting objectives and requirements of the supported combatant command (CCMD) and joint force.

4. Theater Planning and Targeting Considerations

a. **CCDR's Guidance.** Employment, or potential employment, of nuclear weapons could have a significant influence on joint force operations. Therefore, the commander's guidance for integrating potential nuclear weapons employment in the CCMD's campaign plan, and for countering the impact of adversary nuclear use, is established early in the planning process to effectively make such options available to the President. Clear guidance will assist the staff in understanding targeting and mitigation parameters and aiding in ensuring key elements the CCDR requires for conducting operations are available. Integration of nuclear options into theater planning requires the consideration of multiple variables. Flexible and limited US nuclear response options can play an important role in restoring deterrence following limited adversary nuclear escalation. Limited nuclear use will create conditions that affect how commanders conduct operations. Weapons, platforms, weather conditions, and planning requirements are unique in the case of nuclear weapons due to their prompt and sustained effects. As such, an understanding of nuclear weapons use includes their impact on continuing operations throughout the operational environment.

Refer to JP 5-0, Joint Planning, and JP 3-0, Joint Operations, for more information on commander's guidance.

b. **Emergent Targets and Adaptive Planning.** Commanders must maintain the capability to rapidly identify and strike newly identified or newly emerging targets. This capability includes planning for, and being able to perform, time-sensitive or adaptive planning for newly identified targets by maintaining flexibility in planning for availability of weapons and delivery systems for striking these targets.

Refer to Emergency Action Procedures of the Chairman of the Joint Chiefs of Staff, Volume VIII, Adaptive Planning Procedures, for guidance on the coordination between the CCMDs.

c. **Weapon Application Considerations.** The unique effects of nuclear weapons require the staff to consider additional factors when planning for their operational employment. While not all-inclusive, the following considerations should be addressed during the planning process:

(1) **Law of Armed Conflict.** The law of armed conflict governs the use of nuclear weapons, just as it governs the use of conventional weapons. For example, nuclear weapons must be directed against military objectives. In addition, attacks using nuclear weapons must not be conducted when the expected incidental harm to civilians is excessive compared with the military objective sought. US policy on the use of nuclear weapons complies with all law of armed conflict requirements. CCDRs, and other subordinate commanders responsible for the conduct of nuclear operations, must ensure their staff judge advocate is involved in nuclear operations planning and targeting processes

(2) **Yield Selection.** The intensity of the blast wave, thermal effects, radiation effects, and the size of the affected area depend on the amount of energy released by the detonation. US weapons have varying yields, enabling the planning staff to select a weapon commensurate with the desired effect.

(3) **Height of Burst (HOB).** A weapon may be set to detonate at or near the Earth's surface. Some weapons may be employed at higher altitudes. Selection of HOB enables planners to take advantage of the incident blast wave, with resulting dynamic air pressures to vary the effect on the target. A higher HOB may be selected to alter the weapons effects footprint or to avoid the production of fallout. Some high-altitude bursts, in excess of 100,000 feet, will produce widespread electromagnetic pulse (EMP) events, which may affect non-EMP-hardened systems. Adverse effects on adjacent allies and partners, as well as the enemy, must be considered.

(4) **Fallout.** The weapon debris from a nuclear burst, mainly remnants of fissioned atoms, is highly radioactive. Soil swept into the radioactive debris cloud from a near-surface, surface, or subsurface burst may become activated by and combine with the radioactive debris to create a radioactive hazard, particularly as it falls to the ground. The heavier fallout particles reach the area around ground zero shortly after the burst. The lighter particles reach the ground at later times and at greater distances, depending on weather and atmospheric conditions.

(5) **Weapon System Selection.** The US nuclear arsenal consists of multiple capabilities to provide a credible, flexible deterrent for the United States and its allies. These systems include gravity bombs and air-launched cruise missiles delivered by aircraft, ICBMs, and SLBMs. Each system in the arsenal has unique planning and employment advantages and disadvantages that should be considered.

5. Operational Consequences of Execution

a. Survivability operations take on increased importance in a nuclear environment. The destructive power of nuclear weapons requires measures to reduce vulnerabilities and to increase survivability of US forces. Commanders must employ appropriate protective measures to ensure mission-critical operations can continue after exposure to nuclear effects. Units must also protect personnel and/or equipment from chemical, biological, and radiological contamination so mission-critical functions can continue following non-nuclear WMD attacks.

b. Commanders must rapidly assess the effects of nuclear weapons and determine appropriate actions and responses, including long-term effects on future operations. The immediate impact on combat power can degrade the joint force's ability to accomplish current and future missions. The timeliness and effectiveness of such assessment depends on commanders' prior identification of measures that are clear, observable, and preferably quantifiable.

c. To minimize impacts to military operations, civilian casualties, population centers, and items critical to mission success, a series of safety distances are utilized to preclude the negative effects to friendly forces.

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CHAPTER IV COMMAND AND CONTROL

“Maintaining strategic deterrence, assurance and escalation control capabilities requires a multifaceted long-term investment approach and a sustained commitment to maintaining a credible nuclear deterrent...[and] that nuclear deterrent is only as effective as the command and control that enables it to function.”

**General John E. Hyten, Commander, United States Strategic Command,
Testimony before the House Armed Services Committee, 8 March 2017**

1. Introduction

NC2 refers to the command and control construct for forces conducting nuclear operations. NC2 requires both centralized control and centralized execution, a unique construct different than command and control of conventional joint force operations. Centralized control not only ensures US policy decisions made at the national level directly affect the deployment and employment of joint nuclear forces but also provides clarity of purpose and unity of command. Centralized execution ensures joint nuclear forces are responsive to the direction of national authority. Various NC3 capabilities stretching across Services, CCMDs, and other DOD entities enable the execution of discrete portions of NC2.

2. National-Level Leadership and Release Authority

Only the President can authorize the use of nuclear weapons. The President bases this decision on, among other things, the recommendations of SecDef; the CJCS; Commander, USSTRATCOM; other CCDRs; other senior advisors; and allies. The President directs employment of nuclear weapons in accordance with established emergency action procedures.

3. Operational Command and Control Considerations

a. CCDRs with a geographic area of responsibility play a critical role and are involved in any consideration of employing nuclear weapons in theater, as their use will have significant effects on the execution of theater plans and can potentially affect friendly forces.

(1) CCDRs will have insight on current conditions, operations, and regional sensitivities that may shape weaponeering parameters by planners and decision making by the President and other senior leaders. Initiation of such discussions can be from top-down or bottom-up, to achieve national and/or theater objectives.

(2) Top-down communication ensures receipt of critical orders for execution and minimizes significant impacts to theater operations. For this reason, Commander, USSTRATCOM, and the affected CCDR advise the President on nuclear options and are a critical component of the President’s weapon employment decision.

b. To facilitate NC2, robust, survivable, and redundant communications are available for real-time discussion between the CCDR and national-level leadership. These communication systems are hardened against nuclear attack. Specific systems and architecture may vary between CCMDs.

c. For the CCDR, a key element in NC2 is timing. The tempo of modern warfare dictates streamlined and efficient methods of NC2 to facilitate timely decision making. The President must have the most current information and intelligence available and must be familiar with the CCDR's plans and options.

d. NC2 relies on a collection of activities, processes, and procedures performed by appropriate military commanders and support personnel that, through the chain of command, support presidential decisions on nuclear weapons employment. The President directs US nuclear forces via the Nuclear Command and Control System (NCCS). DOD ensures the communications architecture for US nuclear forces can serve as the core component of a broader national command and control system supporting the President.

e. The ability to move trusted data and advice from sensors to correlation centers, from presidential advisors to the President, from the President to the National Military Command System (NMCS), and from the NMCS to the nuclear weapons delivery platforms depends on NC3 systems.

f. Force direction implements decisions regarding the generation, execution, termination, destruction, and disablement of nuclear weapons. This function relates to nuclear surety, accomplished through procedures, physical security, electronic monitoring, internal warhead locks, and disabling mechanisms to prevent unauthorized use of nuclear weapons. Force direction also relies on positive control, accomplished through procedures, continuous training, equipment, and communications, which ensures receipt and implementation of the President's nuclear control through the NC3 system.

g. NC3 provides the President with the means to authorize and direct the use of nuclear weapons. The NC3 system performs five critical functions: situation monitoring (including warning and attack characterization), planning, decision making, force direction (including receiving/distributing presidential orders), and force management. Many NC3 requirements are set forth in national and DOD policy; among these are the requirements that NC3 be reliable, assured, enduring, redundant, resilient, unambiguous, survivable, secure, timely, flexible, and accurate. These requirements translate into specific, measurable, and testable criteria to evaluate the performance of NC3 through exercise, testing, and analysis.

h. Detection, warning, and attack characterization is accomplished through a combination of space-based and terrestrial sensors. North American Aerospace Defense Command is responsible for notifying national leaders of a missile attack against North America and all CCMDs. Space-based sensors provide indications of a missile launch, and ground-based radars provide additional information on launches and confirmation of nuclear attack. Nuclear detonation (NUDET) detection capabilities provide a persistent, global, and integrated sensor capability to provide surveillance coverage of critical regions

of the globe and provide warning and assessment recommendations to the President, SecDef, and CCDRs, indicating location, altitude, and yield of NUDETs.

i. Mission-critical NCCS facilities and equipment can resist the effects of a nuclear explosion, especially EMP, which can interrupt or destroy sensitive electronics. Additionally, modern systems are capable of operating on networks to provide survivable, reliable support for senior USG officials, the US military, and allies, as appropriate. It is necessary to protect critical information and information systems against malicious cyberspace activity.

j. The US NC3 architecture consists of two elements.

(1) The first element is the day-to-day and crisis architecture that supports US national policy by responding under all conditions in both peacetime and war to provide the means to exercise positive control and direction by the President, SecDef, and CCDRs. It provides secure, reliable, immediate, and continuous access to the President and provides robust command and control over nuclear and supporting government operations.

(2) The second element provides the assured, unbroken, redundant, survivable, secure, and enduring architecture for connectivity between the President, SecDef, CJCS, and designated commanders through all threat environments to perform all necessary NC2 functions.

k. The US NC3 architecture is ready, reliable, and effective at meeting today's strategic deterrence requirements. There are no gaps or seams that adversaries could exploit. However, in light of the critical need to ensure that the US NC3 system remains survivable and effective in the future, a series of initiatives are being pursued to strengthen NC3 and address 21st century challenges. In October 2018, SecDef designated responsibility of all NC3-related activities to the Deputy Secretary of Defense and CJCS. Under this governance structure, Commander, USSTRATCOM, is the NC3 Enterprise lead responsible for NC3 Enterprise operations, requirements, and systems engineering and integration, while the Under Secretary of Defense for Acquisition and Sustainment serves as the NC3 Capability Portfolio Manager. To date, NC3 governance roles and responsibilities have been codified, steps have been taken to sustain the current architecture with selective modernization, and the design and fielding of the next generation NC3 is in progress.

l. Theater-level NC2 architecture will vary from region to region. Integration with allies such as NATO may dictate a different communications architecture. Unilateral US NC2 varies by region as well.

m. There may exist a combination of supported and supporting command authorities when integrating conventional and nuclear operations. It is possible for Commander, USSTRATCOM, to be the supported commander for a nuclear response inside a CCDR's area of responsibility and also be a supporting commander to that same CCDR's theater campaign.

For additional information on the NMCS, see JP 6-0, Joint Communications System, and for additional information on protecting the DOD information network, see JP 3-12, Cyberspace Operations.

4. Command of Nuclear Forces

a. As prescribed by Title 10, United States Code (USC), Section 162 (Combatant Commands), all nuclear forces are assigned to respective CCDRs, in accordance with assignment tables found in the *Global Force Management Implementation Guidance*. At present, strategic forces (i.e., ICBMs, SSBNs/SLBMs, and long-range bombers) are assigned to Commander, USSTRATCOM. The air refueling fleet (i.e., tankers) are assigned to Commander, US Transportation Command. Nonstrategic nuclear forces (i.e., dual-capable fighter aircraft) are assigned to other CCMDs. The respective Service components exercise administrative control of forces and personnel, in support of CCDR priorities.

Refer to JP 1, Doctrine for the Armed Forces of the United States, for a general discussion on command and control.

b. JP 1 states that CCDRs have the authority to structure their command organizations as they see fit. Circumstances will dictate the specific organizational requirements related to the execution of nuclear operations as directed.

5. Command and Control in Post-Nuclear Environments

Environmental conditions in a post-NUDET environment will likely affect the NC3 system until those conditions dissipate. CCDRs and Services should be familiar with the effects EMP and radiation will have on critical weapon systems, command and control centers, and personnel. EMP and radiation shielding and hardening is one means to ensure continuous command and control in a post-NUDET environment. Reference Chapter V, “Nuclear Operations,” for specific effects.

CHAPTER V NUCLEAR OPERATIONS

“My view is that the Triad has worked. I mean, there's many reasons why there hasn't been a great power war since 1945. Clearly, one of them is nuclear deterrence, and part of that is the capability of the triad. Each leg of the triad gives you a different capability.... So all three present different problem sets to any adversary or any enemy, and I think it's critically important to keep all three.”

General Mark A. Milley, Chief of Staff of the Army, Testimony before the Senate Armed Services Committee, 11 July 2019

1. Introduction

a. Nuclear weapon capabilities constitute a vital element of national defense. Nuclear operations are those activities within the range of military operations, to include deterrence, crisis response, strike, assessment, and return to stability.

b. To deter an attack on the United States, its allies, and partners, joint forces conduct nuclear deterrence operations as part of the US strategic security posture. These nuclear deterrence operations ensure the security of allies and partners and reduce their need for their own nuclear capabilities.

Refer to JP 3-40, Joint Countering Weapons of Mass Destruction, for additional information.

c. Nuclear operations must adhere to the law of armed conflict and the *Uniform Code of Military Justice*. They also include unique requirements and processes within policy and plans. Any nuclear strike requires presidential approval and has far-ranging diplomatic, strategic, operational, and legal implications.

d. A subordinate joint force will not have, and the CCMD may not have, the organic/internal ability to nominate, plan for, and/or refine nuclear targets. Joint forces may rely on external support from multiple agencies for assistance with targeting; nuclear/conventional planning integration; consequences of execution assessment; force protection; execution; and chemical, biological, radiological, and nuclear (CBRN) response or international CBRN response. This assistance may be provided via deployed support teams and through reachback. For example, the United States Army Nuclear and Countering Weapons of Mass Destruction Agency's (USANCA's) nuclear employment augmentation teams (NEATs) assist in the integration of nuclear effects. Computer models for nuclear targeting reside within USSTRATCOM and effects estimation resides within the Defense Threat Reduction Agency (DTRA), which, without proper coordination between commands, would challenge the JFC to synchronize the ground scheme of maneuver, air tasking orders, friendly communications vulnerabilities, troop survivability, and force flow.

2. Principles and Purpose

a. The highest priority, but not sole purpose, of US nuclear forces is to deter nuclear attack on the US homeland and our allies and partners.

b. Joint forces provide **flexibility** and employment options that allow the United States to provide effective deterrence and, if necessary, achieve US objectives if deterrence fails. Flexibility requires an appropriate range and mix of nuclear and other capabilities to enable tailored deterrence strategies and to fulfill the other roles of nuclear weapons in US strategy. Flexibility, such as that offered by long-range bombers and dual-capable fighter aircraft, is important because deterrent credibility hinges on having a convincing capability to execute a variety of nuclear and non-nuclear options.

c. The application of tailored responses to an enemy's provocation affords greater control over the possible escalation of conflict. At the operational level, joint forces are able to adapt to a rapidly changing operational environment to provide commanders as many options as possible to prevent conflict and manage escalation if conflict does occur.

d. The survivability of nuclear weapons, delivery systems, and NC3 systems communicate to potential adversaries that the joint force is resilient in any phase of conflict. A combination of redundant systems, mobility, quantity of delivery systems and weapons, hardening/protection, and varied employment concepts enhance **survivability**. For example, mobility increases survivability because an enemy cannot attack joint forces with any certainty of destruction due to the unpredictability of their location at the time of attack. Survivability strengthens deterrence by providing nuclear forces for continued use, or the threat of use, against an enemy. Due to the difficulty in locating them at sea, SSBNs are the most survivable leg of the triad.

e. Responsiveness (measured as the interval between the decision to strike a specific target and detonation of a weapon against that target) is critical to ensuring forces can be employed as promptly as necessary to pose a credible threat. In some cases, surviving nuclear weapons must be capable of retaliatory strikes against enemy targets within a narrow window of opportunity. **Responsiveness** compels the enemy to fully commit forces during a preemptive or preventive attack, which raises the threshold for nuclear weapons use by an enemy. Continuously on alert, ICBMs provide the most responsive leg of the triad.

3. Operations in a Nuclear Environment

a. Possibly the greatest challenge confronting the joint force in a nuclear conflict is how to operate in a post-NUDET radiological environment. Knowledge of the special physical and physiological hazards, and psychological effects of the nuclear battlefield, along with guidance and training to counter these hazards and effects, greatly improves the joint force's ability to operate successfully.

b. Commanders and their staffs understand that, when planning operations, the use of nuclear weapons has specific, tangible implications that go well beyond the actual effects of the detonation. By design, nuclear weapons are highly destructive and have harmful

effects that conventional weapons do not have. Commanders must plan for and implement protective measures to mitigate these effects and continue operations.

c. Commanders should know how nuclear weapon effects can affect personnel, equipment, and the dynamics of combat power. They should train for and implement survivability measures and techniques.

For additional information on the effects of operating in a post-NUDET environment, see JP 3-11, Operations in Chemical, Biological, Radiological, and Nuclear Environments.

d. The spectrum of nuclear warfare may range from limited use to large-scale employment. Preparing for nuclear employment and the consequences of nuclear employment requires detailed planning at all levels. Whatever the scenario for employment of nuclear weapons, planning and operations must not assume use in isolation but must plan for strike integration into the overall scheme of fires.

e. Adversary employment of nuclear weapons can radically alter the course of a campaign. Adversary nuclear weapon employment could be the result of perceived failure in a conventional campaign, potential loss of control, or perceived threat to regime survival or to escalate the conflict to sue for peace on more-favorable terms. The potential consequences of using nuclear weapons will greatly influence military operations and vastly increase the complexity of the operational environment.

f. Integration of nuclear weapons employment with ongoing conventional operations is essential to the success of joint force nuclear operations and operations in a nuclear environment.

(1) In a regional conflict, the USN and United States Air Force (USAF) provide nuclear support to the CCDR by providing regional deterrence and/or flexible response options to the President.

(2) The United States Army (USA) and US Marine Corps no longer possess organic nuclear capability. However, these forces may be impacted by nuclear weapons effects disproportionately compared with other components. The land component and special operations forces, supported by joint assets, must be capable of conducting all operations in a post-NUDET radiological environment.

(3) The CCDR can nominate potential targets to consider for nuclear options that would support CCDR objectives in ongoing operations. The CCDR and staff must analyze any preplanned targets and provide options for mitigation of consequences of weapons employment or request reachback support and expertise to conduct such analysis.

For further information on operations in CBRN environments, see JP 3-11, Operations in a Chemical, Biological, Radiological, and Nuclear Environments, and Field Manual 3-11/Marine Corps Reference Publication 10-10E.3/Navy Warfare Publication 3-11/Air Force Tactics, Techniques, and Procedures 3-2.42, Multi-Service Doctrine for Chemical, Biological, Radiological, and Nuclear Operations.

4. Modeling in Support of Nuclear Planning/Operations

a. Several DOD agencies provide modeling tools that can support commanders' staffs in conducting nuclear planning. These tools enable planners to model effects of a nuclear weapons strike on both friendly and enemy forces to ensure the commander's intent is met.

b. DTRA conducts training on these tools at the Defense Nuclear Weapons School (DNWS). In addition, the USANCA can provide vital training and resources for staffs as they conduct planning.

c. US Special Operations Command's DOD Countering Weapons of Mass Destruction Fusion Center provides centralized countering weapons of mass destruction (CWMD) planning, exercises, assessments, and intelligence support for the DOD CWMD campaign plan and for the National Capital Region.

CHAPTER VI SURETY

“[W]e will first maintain a safe and secure nuclear deterrent.”

**General James N. Mattis, during his confirmation hearing before the Senate
Armed Services Committee, 12 January 2017**

1. General

a. The primary responsibility of the DOD and DOE stockpile mission is to ensure US nuclear weapons are safe, secure, reliable, and under positive control, a concept commonly referred to as “surety.” Stockpile programs and activities must be properly coordinated to ensure all US nuclear weapons will work as designed, when authorized, and remain safe, secure, and reliable.

b. **Dual-Agency Responsibilities.** DOD and DOE, working through the NNSA, share primary responsibility for the safety, security, and control of US nuclear weapons. In 2011, the Deputy Secretaries of Defense and Energy signed a DOD-DOE *Nuclear Physical Security Collaboration Memorandum*, which codified DOD-DOE commitment to develop common standards for the physical security of nuclear weapons and special nuclear material.

c. Because a nuclear weapon is in DOD custody for the majority of its lifetime, DOD is responsible for a wide range of operational requirements, including accident prevention and response. DOE/NNSA is responsible for the design, production, assembly, surety technology, disassembly, and dismantlement of US nuclear weapons. DOE/NNSA is also responsible for the transportation of weapons to and from the first military destination. There are, however, overlaps in responsibility between DOD and DOE/NNSA, requiring considerable coordination between the two regarding surety issues. For example, DOD and DOE/NNSA share responsibility for the interface between the weapon and the delivery system.

d. **National policy** provides guidance for coordinated interagency efforts concerning safety, security, and control across the nuclear enterprise.

e. **DOD and DOE Surety Standards.** DOD surety standards are promulgated under Department of Defense Directive (DODD) 3150.02, *DOD Nuclear Weapons Surety Program*. DOE surety standards are prescribed in DOE O 452.1E, *Nuclear Explosive and Weapon Surety Program*. Although the operating environments differ significantly, DOD and DOE standards share many similarities.

(1) DOD surety standards.

(a) Prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield.

(b) Prevent deliberate pre-arming, arming, launching, or releasing of nuclear weapons, except when directed by the President.

(c) Prevent inadvertent pre-arming, arming, launching, or releasing of nuclear weapons.

(d) Ensure adequate security of nuclear weapons, as governed by DODD 5210.41, *Security Policy for Protecting Nuclear Weapons*; deny unauthorized access to nuclear weapons; and, failing denial of unauthorized access, immediately take all authorized actions to reestablish security, prevent loss, or regain control of nuclear weapons.

(2) DOE nuclear explosive surety standards.

(a) For all nuclear explosive operations, there must be a positive measure that will effectively interrupt each credible scenario that leads to an unintended nuclear explosive detonation or main charge high-explosive violent reaction (HEVR).

(b) There must be effective interruption of each credible scenario that leads to an unintended nuclear explosive detonation or main charge HEVR given the first measure fails.

(c) There must be positive measures to prevent unauthorized access, intentional physical damage, misuse, and theft of nuclear explosives.

(d) There must be positive measures (a combination of site, facility, or nuclear explosive operation-specific as appropriate) to prevent malevolent acts that could lead to deliberate unauthorized use.

(e) New and refurbished nuclear weapons must have design attributes to prevent nuclear explosive detonation and main charge HEVR given an adverse environment or unauthorized act.

(f) New and refurbished nuclear weapons must have design attributes to prevent deliberate unauthorized use, given a malevolent act.

2. Safety

a. The four principal safety themes for nuclear weapons are isolation, incompatibility, inoperability, and independence. These themes are related to the protection concepts of “stronglinks,” which must be activated to enable operation of the fusing system, and “weaklinks,” which, if broken, will deactivate the weapon. The critical components necessary for a NUDET are **isolated** from their surroundings by placing them within a physical barrier known as an exclusion region. It is critical to ensure only a deliberate act activates the stronglinks and opens the energy circuit. An **incompatible** pattern will cause the switch to lock up and remain in a safe condition. Weaklinks perform the opposite function of stronglinks. They must be functional for a NUDET, but weaklinks are designed to fail in a predictable manner at lower environmental levels than stronglinks, thus

rendering the weapon **inoperable**. Typically, two different stronglinks with different patterns are used in each weapon to provide the required assurance of safety. With **independent** stronglinks, a flaw may cause one stronglink to fail, but the other stronglink will still protect the weapon.

b. **Insensitive High Explosive.** Nuclear weapon design safety is increased through the use of insensitive high explosive as opposed to conventional high explosive. By reducing sensitivity to shock or heat, a weapon is more resistant to accidental detonation and represents an advance in safety by reducing the likelihood of fissile material dispersal.

c. **Fire-Resistant Pit.** Another feature of nuclear weapons design safety is the fire-resistant pit. In an accident, fissile material can be dispersed if it is aerosolized by intense heat, such as that from ignited jet fuel. To prevent this, the nuclear weapon pit can be designed with a continuous barrier to contain the highly corrosive, molten fissile material, which provides sufficient time to extinguish the fire.

3. Security

a. **Nuclear weapons security** refers to the range of active and passive measures employed to protect a weapon from access by unauthorized personnel and to prevent loss or damage from unauthorized acts that would result in a nuclear yield, radiological dispersal/contamination, or rendering the weapon non-serviceable. These measures include nuclear security policy; security forces; equipment; technology; tactics, techniques, and procedures; and personnel security standards. Ensuring security is vital throughout the entire life cycle of a weapon, as it contributes directly to the shared surety objectives of both DOD and DOE/NNSA.

b. **Nuclear Custody.** DOD and DOE are responsible for providing appropriate security for all nuclear weapons in their custody. Custody is the responsibility for controlling the transfer, movement, and access to a nuclear weapon or its components. Inherent in these custodial responsibilities is control, and the custodial agent must secure the weapon to ensure positive control is maintained at all times.

c. **DOD Nuclear Weapon Security Standard.** DODD 5210.41, *Security Policy for Protecting Nuclear Weapons*, establishes the DOD Nuclear Weapon Security Standard and implements measures to ensure consistency with Presidential Policy Directive-35, *US Nuclear Weapons Command and Control, Safety, and Security*. The objectives of the standard include:

- (1) Deny unauthorized access to nuclear weapons.
- (2) Prevent damage or sabotage to nuclear weapons.
- (3) Prevent loss of control of nuclear weapons.
- (4) Prevent unauthorized NUDET.

(5) Prevent, to the maximum extent possible, radiological contamination caused by unauthorized acts or damage, emergency destruction actions, or security force actions. Security forces must not let the concern over possible contamination deter their actions to neutralize an adversary.

(6) Ensure weapons are operationally available to the President.

d. To develop a standardized approach to nuclear security, as it is applied to DOD-DOE nuclear weapons environments, the 2011 DOD-DOE *Nuclear Physical Security Collaboration Memorandum* pledges to develop and use a common threat assessment, the Nuclear Security Threat Capabilities Assessment and methodology to identify and assess threat capabilities and determine nuclear weapons security vulnerabilities. The Nuclear Security Threat Capabilities Assessment is developed, reviewed annually, and updated as necessary to support the preparation of unit or facility vulnerability assessments.

4. Control Measures

a. **DOD Nuclear Weapons Personnel Reliability Assurance.** Department of Defense Manual (DODM) 5210.42, *Nuclear Weapons Personnel Reliability Program (PRP) Regulation*, establishes the Personnel Reliability Assurance Program (PRAP) to manage individuals assigned to perform specific duties associated with nuclear weapons, weapon systems, components, and materials. The DOD PRAP is designed to ensure the highest possible standards of individual reliability for those personnel assigned to nuclear weapons duties. It emphasizes the importance of the individual's loyalty, integrity, trustworthiness, behavior, and competence. The program applies to all personnel who handle nuclear weapons, nuclear weapon systems, or nuclear components, as well as to those who have access to nuclear weapons.

b. **Procedural Security.** The most important aspect of procedural security is the **two-person rule**, which requires the presence of at least two cleared, PRAP-certified, task-knowledgeable individuals whenever there is authorized access to a nuclear weapon. Each person is required to be capable of detecting incorrect or unauthorized actions pertaining to the task being performed. Restricted entry to exclusion areas based on strict need-to-know criteria reduces the possibility of unauthorized access.

c. **Use Control.** The term "use control" refers to the collection of measures that facilitate authorized use of nuclear weapons and protects against unauthorized use. These measures include a combination of weapon design features and operational procedures. Use control is achieved by designing weapon systems with electronic and mechanical features that prevent unauthorized use and allow authorized use. Not all use control features are installed on every weapon system.

(1) **Weapons System Coded Control.** Both nuclear missile systems and bomber aircraft use system coded control. ICBM and SSBN crews require externally transmitted codes to launch an ICBM or SLBM. Bomber crews use a pre-arming circuit that also requires an externally transmitted authorization code to employ nuclear bombs or cruise missiles.

(2) **Coded Control Device.** A coded control device is a use control component that may be a part of the overall weapons system coded control.

(3) **Command Disablement System (CDS).** The CDS enables manual activation of the non-violent disablement of essential weapons components, which renders the weapon inoperable. The CDS may be internal or external to the weapon and requires human initiation. The CDS is not installed on all weapon systems.

d. **Active Protection System.** The active protection system senses attempts to gain unauthorized access to weapon-critical components. In response to unauthorized access, critical components are physically damaged or destroyed automatically. This system requires no human intervention for activation and is not installed on all weapons systems.

e. **Environmental Sensing Device.** The environmental sensing device is a feature placed in the arming circuit of a weapon, providing both safety and control. It prevents inadvertent functioning of the circuit until the weapon is launched or released and experiences environmental parameters specific to its particular delivery system. For example, accelerometers are a common tool employed for this purpose.

f. **Permissive Action Link.** A permissive action link is a device included in or attached to a nuclear weapon system to preclude arming and/or launching until the insertion of a prescribed, discrete code or combination. It may include equipment or cabling external to the weapon or weapons system to activate components within the weapon or weapons system. Most modern US permissive action link systems include a multiple coded switch.

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APPENDIX A

SUPPORT AGENCIES' ROLES AND RESPONSIBILITIES

The following are specified duties and responsibilities executed by DOD nuclear enterprise support agencies.

a. **DTRA.** DTRA enables DOD, the USG, and international partners to counter and deter WMD and improvised threats networks. Implied in this mission is the strategic imperative to enable a safe, secure, and effective nuclear deterrent. DTRA provides nuclear experts and mission support to the Office of the Secretary of Defense (OSD), Joint Staff, Services, and CCMDs and partners with the NNSA and other USG departments and agencies. DTRA provides or participates in:

(1) **Mission Assurance.** Conducts mission assurance assessments in support of OSD, the Joint Chiefs of Staff, CCMDs, the Services, and other DOD and USG departments and agencies.

(2) **Contingencies and Exercises.** DTRA serves as the DOD lead for US nuclear weapon incident training and manages the Nuclear Weapon Accident Incident Exercise program. DTRA also provides CWMD-related operational expertise and capabilities to support special operations forces, nuclear exercises and training, and international CBRN response exercise support to CCMDs and interagency partners.

(3) **Nuclear Inspections.** The Defense Nuclear Surety Inspection Oversight Team supports the nuclear surety inspection oversight of both USAF and USN nuclear surety inspection teams, while visiting every nuclear-capable base or ship every 48 months. Additionally, they instruct the Nuclear Weapons Technical Inspectors Course, ensuring inspection standards across both Services.

(4) **Nuclear Logistics Operations.** Responsible for policy support and technical and operational matters for managing and sustaining the US nuclear weapons stockpile, including the reliability, accountability, safety, security, and control of nuclear weapons.

(5) **Nuclear Surety.** Focal point for nuclear surety; nuclear and physical security research, development, test, and evaluation; Explosive Ordnance Disposal Steering Group; use control and weapons project officer groups; nuclear safety; weapons system safety reviews; policy support; and the NATO Joint Theater Surety Management Group. The Mighty Guardian program executes force-on-force exercises to evaluate nuclear weapon security policy.

(6) **DTRA Planners and Liaison Officers.** Provide a crucial link between theater planners and DTRA technical assets to support theater nuclear planning.

(7) **Nuclear Technologies.** Researches, develops, and transitions technologies and capabilities to mitigate the threat and/or effects of nuclear/radiological events and to enhance the safety, security, survivability, and performance of US nuclear systems and facilities. Technologies include nuclear detection, nuclear effects, treaty verification assurance

technologies, nuclear forensics, and nuclear survivability. The National CWMD Technical Reachback Enterprise provides DOD with time-sensitive access to CBRN subject matter experts and modeling and technical information for planning, execution/response, and assessment.

(8) **On-Site Inspection.** DTRA reduces the threat of WMD through arms-control treaty monitoring and on-site inspections and by providing advice and support on WMD and nonproliferation matters. Under international arms-control treaties and agreements, DTRA conducts USG inspections of foreign facilities, units, or events and coordinates and escorts foreign inspections at US facilities, units, or events.

(9) **DNWS.** DNWS provides nuclear weapons core competencies and response training for WMD and CBRN incidents to DOD; national laboratories personnel; and other federal, state, and local agencies to ensure our nation maintains a safe, reliable, and credible nuclear deterrent and a robust incident response capability. Additionally, the DNWS maintains DOD's only radiological training site and the Nuclear Weapons Instructional Museum, which houses an example of every nuclear weapon in the US arsenal.

(10) **Hard Target Research and Analysis Center.** DTRA's Hard Target Research and Analysis Center provides support to the CCDRs and the intelligence community through a unique partnership with the Defense Intelligence Agency's (DIA's) Underground Facility Analysis Center. The center:

- (a) Develops new techniques to characterize complex proliferation threats.
- (b) Maintains a collaborative capability for information sharing that combines intelligence collection and all-source analysis expertise with science and engineering research and development capabilities.
- (c) Integrates DTRA, intelligence community, and other expertise in a multi-disciplined effort to address hard and deeply buried target developments.
- (d) Develops innovative collection and analysis processes and technical capabilities to understand hard and deeply buried targets.

b. Intelligence Community. Contributes to global situational awareness, which is key to deterrence. Provides worldwide threat assessments that include regional and country assessment of nuclear technology, tests, weapon development, and fielded nuclear forces. The Underground Facilities Analysis Center, a government-wide consortium managed by the DIA:

- (1) Analyzes foreign facility design, construction, and physical vulnerability trends.
- (2) Performs computational, static, and dynamic structural analysis of nuclear weapons effects on structures.
- (3) Produces and maintains nuclear vulnerability data in the National Production Workshop.

(4) Maintains nuclear weapons effects reference documents.

(5) Leads the US hard and deeply buried target knowledge-building activities and works with partner nations and allies to ensure broad-based substantive cooperation.

(6) Maintains an enduring, interactive relationship with each operational, policy, and weapons development/acquisition entity with essential underground facility knowledge.

(7) Examines new ways to collect against, analyze, and exploit underground facilities of all types.

c. USANCA

(1) USANCA's NEATs are an integral part of nuclear planning in support of the CCMDs, subordinate unified commands, and Army Service component commands. NEATs deploy on order to support the CCDR with additional nuclear expertise. The teams provide the ability to assist in the integration of nuclear effects with theater objectives and potential impacts to the conventional scheme of maneuver. This includes the analysis of nuclear weapons effects on US, allies, and multinational partners' systems, structures, and forces.

(2) The NEAT provides a preclusion-focused analysis to allow the commander to understand the effects and advise/recommend potential mitigation options.

d. 20th Chemical, Biological, Radiological, Nuclear, and Explosives Command

(1) Integrates, coordinates, deploys, and provides trained and ready chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) forces.

(2) Exercises command and control of specialized CBRNE operations to support JFCs and USA commanders, primarily for overseas contingencies and warfighting operations but also in support of homeland defense.

(3) Maintains technical links with appropriate joint, USA, federal, and state CBRNE assets, as well as the research, development, and technical communities to ensure USA CBRNE response readiness.

e. Armed Forces Radiobiology Research Institute (AFRRI). Provides response and consultation in the event of any accident or incident involving radiation or radioactive materials by way of the medical radiobiology advisory team (MRAT) and/or reachback. Provides consultation specializing in the health effects of radiation, biodosimetry, and treatment of radiation casualties. The AFRRI also provides educational outreach via the Medical Effects of Ionizing Radiation course, Biodosimetry Assessment Tool, and *Medical Management of Radiological Casualties* handbook.

f. Army Public Health Center

(1) Provides consultation on all aspects of nuclear and radiation health effects in support of all of DOD. This includes radiation dose assessments and health risk assessments for military personnel and the general public.

(2) Provides response and consultation in the event of any accident or incident involving radiation or radioactive materials by way of the MRAT.

(3) Provides consultation on operational exposure guidance and the Radiation Exposure System as a reachback resource or through on-site evaluation. The Army Public Health Center also offers operational exposure guidance and Radiation Exposure System training to other units.

(4) Provides technical reachback capability in a post-NUDET environment to deployable medical units with nuclear medicine science officer and/or preventive medicine specialist health physics.

g. Regional Public Health Command-Europe and Regional Public Health Command-Pacific

(1) The Regional Public Health Command-Europe provides support to both US European Command and US Central Command areas of responsibility. The Regional Public Health Command-Pacific provides support to US Indo-Pacific Command areas of responsibility.

(2) Provides consultation on all aspects of nuclear and radiation health effects, including radiation dose assessments and health risk assessments for the Armed Forces of the United States and the general public.

(3) Provides response and consultation in the event of any accident or incident involving radiation or radioactive materials.

(4) Provides consultation on operational exposure guidance and the Radiation Exposure System as a reachback resource, or through on-site evaluation, and offers operational exposure guidance and Radiation Exposure System training to other units.

(5) Provides technical reachback capability in a post-NUDET environment to deployable medical units with nuclear medicine science officer and/or preventive medicine specialist health physics.

h. Air Force Nuclear Weapons Center (AFNWC). AFNWC is Air Force Materiel Command's supported center for synchronizing nuclear materiel management across the USAF. AFNWC delivers nuclear capabilities used by US nuclear forces to deter our adversaries and assure our allies. This includes the development of solutions to acquire, sustain, recapitalize, and modernize nuclear capabilities to ensure safe, secure, and effective nuclear weapon systems and related nuclear-certified systems in support of the President, as well as supporting operational objectives. AFNWC is assigned direct support authority to facilitate and synchronize nuclear materiel management support to Air Force Global Strike Command, to include direct communication at all levels regarding nuclear

materiel management. The Commander, AFNWC, is also the USAF Program Execution Officer for Strategic Systems. AFNWC mission responsibility includes the following:

(1) **ICBM Systems Capabilities.** Responsible for the life cycle of ICBMs and infrastructure for the ground-based leg of the nuclear triad. They are also responsible for interagency synchronization of ICBM delivery systems with applicable warheads managed by NNSA.

(2) **Air-Delivered Capabilities.** Responsible for acquiring and sustaining air-delivered nuclear capabilities and integration with aircraft. Manages the life cycle integrated weapon systems management of nuclear bomb, warhead, and air-launched cruise missile programs and oversees the Weapon Storage and Security System program. Also responsible for interagency synchronization with applicable air-delivered warheads and bombs managed by NNSA.

(3) **NC3 Weapon System Integration.** Responsible for integrating the NC3 weapon system across the USAF, to include authority and responsibility for weapon system architecture, weapon system configuration management, overall integration, system test, system verification, and system certification.

(4) **Nuclear Technology and Integration.** Responsible for nuclear certification, to include assessing the safety, security, and effectiveness of USAF nuclear weapon systems. Analyzes the full spectrum of weapons effects to support acquisition programs and inform tactics and procedures; assesses current and future nuclear systems to identify and mitigate potential vulnerabilities.

i. **USN Strategic Systems Programs.** The Strategic Systems Programs manages development, production, and life cycle support of the USN's fleet ballistic missile strategic weapons system.

(1) Maintains and extends the life of the Trident II Strategic Weapons System.

(2) Ensures the security of nuclear weapons in USN custody.

(3) Provides rapid and cost-effective expansion of submarine-based capabilities that fill validated joint warfighting gaps.

(4) Ensures Department of Navy compliance with all applicable arms control treaties and agreements.

j. **Defense Logistics Agency (DLA).** DLA is a DOD combat support agency that provides effective and efficient logistics solutions to CCMDs and Military Departments. In this role, DLA recognizes that nuclear enterprise weapon systems require special consideration because of their strategic and military importance to national security.

(1) Establishes and enforces processes and procedures necessary to optimize nuclear enterprise sustainment to USSTRATCOM and Military Departments by dedicating

resources in DLA's supply chains, demand chains, and process areas specifically to support the DOD nuclear enterprise.

(2) Provides nuclear enterprise customer materiel requirements. Ensures DLA-managed materiel is not a limiting factor for nuclear enterprise warfighters by intensively managing inventory investment to satisfy customer requirements.

(3) Collaborates closely with the Military Departments' weapon system program offices and sustainment organizations.

k. Air Force NC3 Center. The Air Force NC3 Center is the Air Force Global Strike Command-supported center responsible for lead command management of and centralized organize, train, and equip functions of the Air Force NC3 weapon system, AN/USQ-225. The center delivers strategic vision, dynamic capabilities, and sustainment of the AN/USQ-225 and provides technical and operational support to maintain the health of the Air Force-provisioned communication links between the President and the nuclear warfighters of the USAF. The center's mission is to ensure national leadership has a survivable, secure, and resilient communications path for issuing nuclear orders to the warfighter. It also provides a focal point for support to all USAF elements of the national NC3 system.

(1) Provides NC3 systems operational, logistics, planning, programming, and communications support.

(2) Provides "direct support" to the Headquarters Air Force Global Strike Command staff.

(3) Provides liaison support to NC3 using and supporting major commands.

(4) Provides support for the Council on Oversight of the National Leadership Command, Control, Communications System, and the NC3 Enterprise governance frameworks.

l. Air Force Technical Applications Center. As an Air Combat Command field operating agency, the center performs research and development of nuclear proliferation detection technologies to enhance nuclear treaty verification and encourage nuclear nonproliferation.

(1) Performs nuclear treaty monitoring and nuclear event detection.

(2) Provides national authorities with quality technical measurements to monitor nuclear treaty compliance.

**APPENDIX B
POINTS OF CONTACT**

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APPENDIX C REFERENCES

The development of JP 3-72 is based upon the following primary references.

1. General

- a. Title 10, USC.
- b. *2017 National Security Strategy of the United States of America.*
- c. *(U) 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge.*
- d. *(U) National Military Strategy of the United States of America, 2018.*
- e. *Defense Strategy Review.*
- f. *Guidance for Employment of the Force.*
- g. *Nuclear Posture Review, 2018.*
- h. *2016 Nuclear Matters Handbook.*

2. Department of Defense Publications

- a. DODD 2060.02, *DOD Countering Weapons of Mass Destruction (WMD) Policy.*
- b. DODD 3020.26, *DOD Continuity Policy.*
- c. DODD 3100.10, *Space Policy.*
- d. DODD 3150.02, *DOD Nuclear Weapons Surety Program.*
- e. DODD 3150.08, *DOD Response to Nuclear and Radiological Incidents.*
- f. DODD S-3710.01, *(U) National Leadership Command Capability (NLCC).*
- g. DODD 5100.03, *Support of the Headquarters of Combatant and Subordinate Unified Commands.*
- h. DODD 5105.62, *Defense Threat Reduction Agency (DTRA).*
- i. DODD 5210.41, *Security Policy for Protecting Nuclear Weapons.*
- j. DODD S-5210.81, *(U) US Nuclear Weapons Command and Control Safety, and Security.*

k. Department of Defense Instruction (DODI) 2000.21, *DOD Support to International Chemical, Biological, Radiological, and Nuclear (CBRN) Incidents*.

l. DODI 3020.45, *Mission Assurance (MA) Construct*.

m. DODI 3020.52, *DOD Installation Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) Preparedness Standards*.

n. DODI S-3150.07, *(U) Controlling the Use of Nuclear Weapons*.

o. DODI 3150.09, *The Chemical, Biological, Radiological and Nuclear (CBRN) Survivability Policy*.

p. DODI 3150.10, *DOD Response to US Nuclear Weapon Incidents*.

q. DODI O-3710.02, *Secretary of Defense Communications (SDC)*.

r. DODI S-3730.01, *(U) Nuclear Command, Control, and Communications (NC3) System*.

s. DODI 4540.05, *DOD Transportation of US Nuclear Weapons*.

t. DODI S-5200.16, *(U) Objectives and Minimum Standards for Communications Security (COMSEC) Measures Used in Nuclear Command and Control (NC2) Communications*.

u. DODI 5210.42, *DOD Nuclear Weapons Personnel Reliability Assurance*.

v. DODI 5210.83, *DOD Unclassified Controlled Nuclear Information (UCNI)*.

w. DODI 8330.01, *Interoperability of Information Technology (IT), Including National Security Systems (NSS)*.

x. DODM 3150.02, *DOD Nuclear Weapons System Safety Program Manual*.

y. DODM 5210.42, *Nuclear Weapons Personnel Reliability Program (PRP) Regulation*.

z. DOD S-5210.92M, *(U) Physical Security Requirements for Nuclear Command and Control (NC2) Facilities*.

3. Chairman of the Joint Chiefs of Staff Publications

a. CJCSI 2310.01C, *Implementing Procedures for Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War Between the United States of America and the Russian Federation*.

b. CJCSI 3110.01K, *(U) 2018 Joint Strategic Campaign Plan (JSCP)*.

- c. CJCSI 3110.04B, *(U) Nuclear Supplement to Joint Strategic Capabilities Plan for FY05.*
- d. CJCSI 3150.04B, *(U) Nuclear Weapons Stockpile Logistics Management and Nuclear Weapons Reports Under the Joint Reporting Structure.*
- e. CJCSI 3222.01B, *(U) CJCS Requirements for High Altitude Electromagnetic Pulse Protection of Nuclear C3 Nodes and Systems.*
- f. CJCSI 3231.01C, *Safeguarding Nuclear Command and Control Extremely Sensitive Information.*
- g. CJCSI 3260.01E, *(U) Joint Policy Governing Positive Control Material and Coded Control Devices.*
- h. CJCSI 3261.01C, *(U) Recapture and Recovery of Nuclear Weapons.*
- i. CJCSI 3262.01J, *(U) Nuclear Command and Control Staff Assessment Visit (SAV) Program.*
- j. CJCSI 3263.01D, *Nuclear Command and Control Command Assistance Visit (CAV) Program.*
- k. CJCSI 3263.05D, *Nuclear Weapons Technical Inspections.*
- l. CJCSI 3264.01F, *(U) Nuclear Command, Control, and Communications (NC3) Operational Assessment Programs.*
- m. CJCSI 3265.01A, *Command and Control Governance and Management.*
- n. CJCSI 3280.01D, *(U) National Military Command System (NMCS).*
- o. CJCSI 3401.04A, *Alert System of the Chairman of the Joint Chiefs of Staff.*
- p. CJCSI 3420.01E, *CJCS Conferencing Systems.*
- q. CJCSI 3431.01E, *Joint Nuclear Accident and Incident Response Team.*
- r. CJCSI 3500.02B, *Universal Joint Task List Program.*
- s. CJCSI 3520.01D, *Nuclear Command and Control Mission-Essential Tasks and Computer-Based Training.*
- t. CJCSI 5220.01B, *Security Classification Policy for Multiple Independently Targetable Reentry Vehicles and Maneuverable Reentry Vehicles.*
- u. CJCSM 3122.01A, *Joint Operation Planning and Execution System (JOPES) Volume I, Planning Policies and Procedures.*

- v. CJCSM 3150.01C, *Joint Reporting Structure General Instructions*.
- w. CJCSM 3150.03D, *Joint Reporting Structure Event and Incident Reports*.
- x. CJCSM 5222.01E, *(U) National Military Command System Security Classification Manual*.
- y. JP 1, *Doctrine for the Armed Forces of the United States*.
- z. JP 3-0, *Joint Operations*.
- aa. JP 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments*.
- bb. JP 3-40, *Joint Countering Weapons of Mass Destruction*.
- cc. JP 3-41, *Chemical, Biological, Radiological, and Nuclear Response*.
- dd. JP 5-0, *Joint Planning*.

APPENDIX D ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication using the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

a. The lead agent and Joint Staff doctrine sponsor for this publication is the Joint Staff Operations Directorate (J-3).

b. The following staff, in conjunction with the joint doctrine development community, made a valuable contribution to the writing of this joint publication: lead agent and Joint Staff doctrine sponsor, CDR Christopher Blais, Joint Staff J-3; Mr. Alan Armitstead, Joint Staff J-7, Joint Doctrine Analysis Division; and Mr. Larry Seman, Joint Staff J-7, Joint Doctrine Division.

3. Change Recommendations

a. To provide recommendations for urgent and/or routine changes to this publication, please complete the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil.

b. When a Joint Staff directorate submits a proposal to the CJCS that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Services and other organizations are requested to notify the Joint Staff J-7 when changes to source documents reflected in this publication are initiated.

4. Lessons Learned

The Joint Lessons Learned Program (JLLP) primary objective is to enhance joint force readiness and effectiveness by contributing to improvements in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy. The Joint Lessons Learned Information System (JLLIS) is the DOD system of record for lessons learned and facilitates the collection, tracking, management, sharing, collaborative resolution, and dissemination of lessons learned to improve the development and readiness of the joint force. The JLLP integrates with joint doctrine through the joint doctrine development process by providing lessons and lessons learned derived from operations, events, and exercises. As these inputs are incorporated into joint doctrine, they become institutionalized for future use, a major goal of the JLLP. Lessons and lessons learned are routinely sought and incorporated into draft JPs throughout formal staffing of the

development process. The JLLIS Website can be found at <https://www.jllis.mil> (NIPRNET) or <http://www.jllis.smil.mil> (SIPRNET).

5. Distribution of Publications

Local reproduction is authorized, and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified JPs must be IAW DOD Manual 5200.01, Volume 1, *DOD Information Security Program: Overview, Classification, and Declassification*, and DOD Manual 5200.01, Volume 3, *DOD Information Security Program: Protection of Classified Information*.

6. Distribution of Electronic Publications

a. Joint Staff J-7 will not print copies of JPs for distribution. Electronic versions are available on JDEIS Joint Electronic Library Plus (JEL+) at <https://jdeis.js.mil/jdeis/index.jsp> (NIPRNET) and <https://jdeis.js.smil.mil/jdeis/generic.jsp> (SIPRNET), and on the JEL at <http://www.jcs.mil/doctrine> (NIPRNET).

b. Only approved JPs are releasable outside the combatant commands, Services, and Joint Staff. Defense attachés may request classified JPs by sending written requests to Defense Intelligence Agency (DIA)/IE-3, 200 MacDill Blvd., Joint Base Anacostia-Bolling, Washington, DC 20340-5100.

c. JEL CD-ROM. Upon request of a joint doctrine development community member, the Joint Staff J-7 will produce and deliver one CD-ROM with current JPs. This JEL CD-ROM will be updated not less than semi-annually and when received can be locally reproduced for use within the combatant commands, Services, and combat support agencies.

GLOSSARY
PART I—ABBREVIATIONS, ACRONYMS, AND INITIALISMS

AFNWC	Air Force Nuclear Weapons Center
AFRRI	Armed Forces Radiobiology Research Institute
CBRN	chemical, biological, radiological, and nuclear
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives (USA/NGB/USCG)
CCDR	combatant commander
CCMD	combatant command
CDS	command disablement system
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CJCSM	Chairman of the Joint Chiefs of Staff manual
COA	course of action
CWMD	countering weapons of mass destruction
DIA	Defense Intelligence Agency
DLA	Defense Logistics Agency
DNWS	Defense Nuclear Weapons School
DOD	Department of Defense
DODD	Department of Defense directive
DODI	Department of Defense instruction
DODM	Department of Defense manual
DOE	Department of Energy
DTRA	Defense Threat Reduction Agency
EMP	electromagnetic pulse
HEVR	high-explosive violent reaction
HOB	height of burst
ICBM	intercontinental ballistic missile
JFC	joint force commander
JP	joint publication
MRAT	medical radiobiology advisory team
NATO	North Atlantic Treaty Organization
NC2	nuclear command and control
NC3	nuclear command, control, and communications
NCCS	Nuclear Command and Control System
NEAT	nuclear employment augmentation team
NMCS	National Military Command System
NNSA	National Nuclear Security Administration (DOE)

Glossary

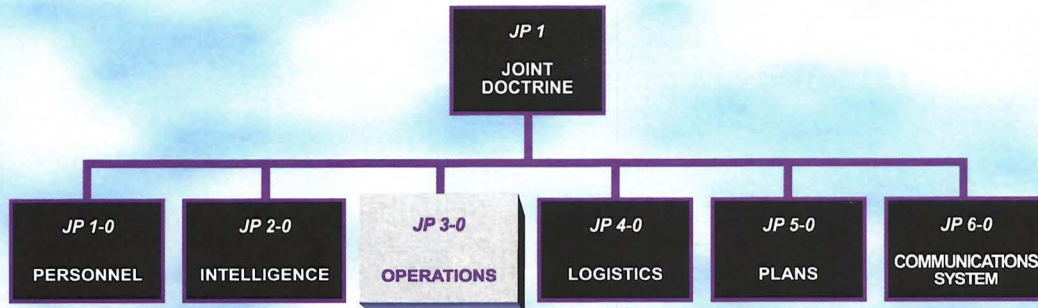
NUDET	nuclear detonation
OSD	Office of the Secretary of Defense
PRAP	Personnel Reliability Assurance Program
SecDef	Secretary of Defense
SLBM	submarine-launched ballistic missile
SSBN	ballistic missile submarine (nuclear-powered)
USA	United States Army
USAF	United States Air Force
USANCA	United States Army Nuclear and Countering Weapons of Mass Destruction Agency
USC	United States Code
USG	United States Government
USN	United States Navy
USSTRATCOM	United States Strategic Command
WMD	weapons of mass destruction

PART II—TERMS AND DEFINITIONS

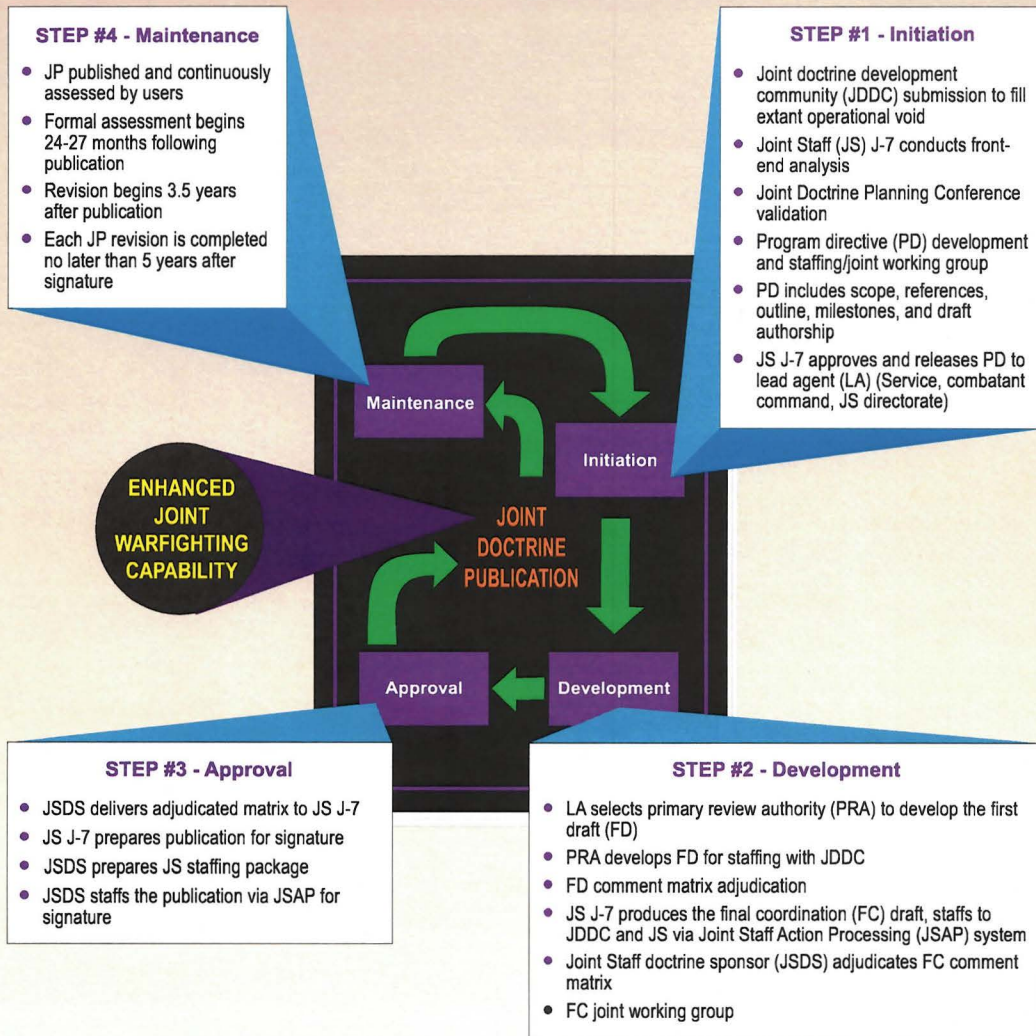
There are currently no terms sourced to JP 3-72.

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JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint publications are organized into a comprehensive hierarchy as shown in the chart above. **Joint Publication (JP) 3-72** is in the **Operations** series of joint doctrine publications. The diagram below illustrates an overview of the development process:







**DEPARTMENT OF DEFENSE
FREEDOM OF INFORMATION DIVISION
1155 DEFENSE PENTAGON
WASHINGTON, DC 20301-1155**

Ref: 20-F-1464
July 1, 2021

Mr. Steven Aftergood
1112 16th Street NW
Suite 400
Washington, DC 20036

Dear Mr. Aftergood:

This is a final response to your August 11, 2020 Freedom of Information Act (FOIA) request, a copy of which is enclosed for your convenience. We received your request on August 11, 2020, and assigned it FOIA case number 20-F-1464. We ask that you use this number when referring to your request.

The Joint Staff, a component of the Office of the Secretary of Defense, conducted a search of their records systems and provided the enclosed documents, totaling 66 pages. Mr. Scott McPherson, Chief, Information Management Division, Declassification Branch, in his capacity as the Initial Denial Authority, has determined these 66 pages to be responsive to your request and are appropriate for release in their entirety, without excision.

This constitutes a full grant of your request and closes your case file in this office. There are no assessable fees associated with this response.

If you have any questions or concerns about the foregoing or about the processing of your request, please do not hesitate to contact the Action Officer assigned to your request, Celeste Killens, at celeste.n.killens.civ@mail.mil or 571-372-0471. Our FOIA Public Liaison is also available to assist you and may be reached at 571-372-0464.

Sincerely,

for Pamela Andrews
Stephanie L. Carr
Chief

Enclosures:
As stated