# Overview of Explosives Safety Governance in the Department of Defense

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### **Abstract**

Within the Department of Defense (DoD), components maintain an accurate policy framework within their functional area of responsibility that is updated to reflect changes as they occur to ensure the effective and efficient functioning of the DoD and its components. In other words, change is institutionalized in the policy framework. The explosives safety community has a well-defined policy framework that is continually evolving. The challenge remains in integrating explosives safety into all facets of DoD operations with the aim of preventing catastrophic munitions related accidents. This paper will provide an overview of DoD' explosives safety policy framework as a major element of an overview of DoD explosives safety governance.

# **Introduction**

The International Organization for Standardization (ISO) describes a management system as the way in which an organization manages the inter-related parts of its business in order to achieve its objectives [1]. Simply put "governance" means: the process of decision-making and the process by which decisions are implemented (or not implemented) [2]. Governance of explosives safety in the Department of Defense (DoD) is described here in terms of process, specifically the continuous improvement management system process.

#### Main Body:

## **DoD Organization and Functions**

A quick review of the major functions and organization of the DoD will help provide the context of governance of explosives safety in the DoD.

The DoD is an executive department of the federal government established by the National Security Act of 1947 but its roots go back to pre-revolutionary times. At the head of the DoD is the Secretary of Defense. The Secretary of Defense is the principal assistant to the President in all matters relating to the Department of Defense [3].

The Office of the Secretary of Defense, or OSD, is the principal staff element of the Secretary of Defense in the exercise of policy development, planning, resource management, fiscal, and program evaluation responsibilities [4]. Simply stated, OSD is responsible for policy, advocacy and oversight.

The Chairman of the Joint Chiefs of Staff is the senior ranking member of the Armed Forces. As such, the Chairman is the principal military adviser to the President. In carrying out his duties, the Chairman of the Joint Chiefs of Staff consults with and seeks the advice of the other members of the Joint Chiefs of Staff and the combatant commanders, as he considers appropriate [5].

The Joint Staff, similar to OSD, is the principal staff element of the Chairman of the Joint Chiefs of Staff. The Joint Staff assists the Chairman of the Joint Chiefs of Staff in accomplishing his responsibilities for: the unified strategic direction of the combatant forces; their operation under unified command; and for their integration into an efficient team of land, naval, and air forces [5].

There are three Military Departments: the Army, The Navy and The Air Force. The Marine Corps, mainly an amphibious force, is part of the Department of the Navy. The primary job of the military departments is to train and equip their personnel to perform warfighting, peacekeeping and humanitarian/disaster assistance tasks.

The Unified Combatant Commands are military commands having broad, continuing missions and are composed of forces from two or more military departments<sup>[7]</sup>. There are currently 10 unified combatant commands.

The following excerpt for DoD 101<sup>[6]</sup> describe how the DoD executes the mission:

Directions for military operations emanate from the National Command Authority, a term used to collectively describe the President and the Secretary of Defense. The President, as commander-in-chief of the armed forces, is the ultimate authority. The Office of the Secretary of Defense carries out the Secretary's policies by tasking the military departments, the Chairman of the Joint Chiefs of Staff and the unified commands.

- The military departments train and equip the military forces.
- The Chairman plans and coordinates military deployments and operations.
- The unified commands conduct the military operations.

This is only a cursory look at the organization and functions of the DoD. Additional detail is available on the official DoD website under DoD 101<sup>[6]</sup>.

### **DoD Policy Framework**

DoD also has a well-defined policy framework to codify policy and guidance. The primary means of codifying policy and guidance is through DoD Issuances. DoD issuances are published by the DoD and establish or implement DoD policy, designate authority, assign responsibilities, or provide procedures<sup>[8]</sup>. The types of DoD issuances most relevant to explosives safety governance are the: DoD Directive (DoDD), DoD Instruction (DoDI) and DoD Manual (DoDM).

DoD Directives are DoD issuances that that exclusively establish policy, assign responsibility, and delegate authority to the DoD Components<sup>[8]</sup>. There are actually 2 types of DoDDs: a

chartering DoDD and a direct oversight DoDD. DoDDs do not contain procedures. Direct oversight DoDDs are limited to 12 pages.

DoD Instructions establish policy and assign responsibilities within a functional area. DoDIs may also provide general procedures for implementing that policy. DoDIs are limited to 50 pages per volume<sup>[8]</sup>.

DoD Manuals provide procedures for implementing policy established in DoDDs and DoDIs<sup>[8]</sup>. DoDMs are limited to 100 pages per volume. Previously, DoD issuances also included publications such as catalogs, compendiums, directories, handbooks, indexes, inventories, lists, modules, pamphlets, plans, series, standards, supplements, and regulations. A change to the DoD issuances program mandated that all of these other publication types must be transformed onto DoDMs.

In addition to DoD Issuances described above there a number of other document types pertinent to the governance of explosives safety in DoD:

Chairman of the Joint Chiefs of Staff Instructions (CJCSI) primarily contain CJCS/JS policy, but can also include procedures. They may implement or supplement DoD Issuances, and/or establish and prescribe JS Forms<sup>[9]</sup>.

Joint Use Technical Manuals are technical manuals used by two or more components and which carry a publication number for each component. A technical manual is a publication containing instructions for the installation, operation, maintenance, training and support of weapon systems, weapon system components and support equipment, to include Interactive Electronic Technical Manuals (IETM)<sup>[10]</sup>.

Unified Facilities Criteria (UFC) documents provide planning, design, construction, sustainment, restoration, and modernization criteria. They apply to the Military Departments, the Defense Agencies, and the DoD Field Activities. UFCs are distributed only in electronic media and are effective upon issuance<sup>[11]</sup>.

Defense Standards are documents that establish uniform engineering and technical requirements for military-unique or substantially modified commercial processes, procedures, practices, and methods. United States defense standards, often called a military standard, "MIL-STD" or "MIL-SPEC", are used to help achieve standardization objectives by the U.S. Department of Defense [12].

### **National Defense Strategy**

No discussion of the DoD would be complete without mentioning the National Defense Strategy (NDS). The current NDS, the first new NDS issued in ten years, articulates the DoD strategy to compete, deter, and win in an increasingly complex global security environment. An unclassified summary of the NDS<sup>[13]</sup> describes the current strategic environment, specifies DoD objectives and describes a three-pronged strategic approach:

- Build a More Lethal Force
- Strengthen Alliances and Attract New Partners
- Reform the Department for Greater Performance and Affordability

These three imperatives provide the overarching test of all activity within DoD. If an activity cannot be related to one of these imperatives, perhaps it should not be done. Accordingly, the explosives safety program activities use the strategic approach as a test for relevancy and a gauge for priority.

## The DoD Explosives Safety Board

The Department of Defense Explosives Safety Board (DDESB), formerly called the Armed Forces Explosives Safety Board, was established in 1928 by the Seventieth Congress after a major disaster occurred at the Naval Ammunition Depot, Lake Denmark, New Jersey in 1926. The accident virtually destroyed the depot, causing heavy damage to adjacent Picatinny Arsenal and the surrounding communities, killing 21 people, and seriously injuring 53 others. The monetary loss to the Navy alone was \$84 million. As a result of a full-scale Congressional investigation, Congress directed the establishment of the Board to provide oversight of the development, manufacture, testing, maintenance, demilitarization, handling, transportation and storage of explosives, including chemical agents, on DoD facilities worldwide. The DDESB mission is to provide objective advice to the Secretary of Defense and Service Secretaries on matters concerning explosives safety and to prevent hazardous conditions to life and property on and off Department of Defense installations from the explosives and environmental effects of DoD-titled munitions.

The board currently consists of the Chairman / Executive Director and an appointed board member from each of the military Services. With the support of a fulltime staff, they shape the explosives safety landscape, develop and implement the DoD Explosives Safety Management Program, and work towards harmonization with the joint warfighting requirements and mission.

The DDESB staff is currently composed of 22 civilians, a liaison officer from each of the military services and 1 contractor. As an OSD office, the staff focus is in the areas of policy, advocacy and oversight. Major areas of staff emphasis include"

- Development and maintenance the DoD Explosives Safety Management Program
- Support to Combatant Commanders' Mission where DoD Munitions are involved
- Support to Multinational Organizations and Operations (NATO, UN, and State Department)
- Support to the Joint Staff
- Development and maintenance of DoD Explosives Safety Policy and Regulations
- Evaluation of Military Services, Combatant Command and other DoD Explosives Safety Programs
- Limited explosives safety related research and development

Organizationally, the DDESB is part of the Office of the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)). As of this writing, DDESB reports to the Assistant Secretary of Defense for Energy, Installations and Environment through the Deputy Assistant Secretary of Defense for Environment, Safety and Occupational Health. Some of the organizational structure may change in the near future as the fairly new office of the USD(A&S) continues to evolve.

# **Management System Structure**

A basic, widely used model for continuous improvement is the four-step plan-do-check-act or P-D-C-A cycle. This model is also known as the Shewhart cycle of the Deming Cycle. A slightly expanded version of this cycle, often used to describe an environmental or a safety management system, consists of five steps:

- Policy (commitment)
- Planning
- Implementation
- Checking & Corrective Action (measurement & evaluation)
- Management Review

This model will be used as an outline to examine the governance of explosives safety in the DoD.

A detailed description of management systems is beyond the scope of this paper but there are many references available. A good reference, although concentrating on environmental management systems, can be found on the EPA website at <a href="https://www.epa.gov/ems">https://www.epa.gov/ems</a>.

# **Policy**

**DoDD 6055.09E**, *Explosives Safety Management*, November 18, 2016, as amended <a href="http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/605509e\_dodd\_2016.pdf">http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/605509e\_dodd\_2016.pdf</a>

This document contains the overarching policy for explosives safety in the DoD. It charters the DDESB and establishes policy for explosives safety management in DoD. Policy specified in this document includes the provisions that the DoD:

- Protects people and property from the unintentional, potentially-damaging effects of DoD military munitions.
- Exposes the minimum number of people for the minimum time to the minimum amount of DoD military munitions required to safely and effectively execute the mission.
- Provides for the explosives and chemical agent safety of DoD military munitions throughout the munition's life cycle.
- Develops explosives and chemical agent safety standards that provide minimum safety standards for the military munitions covered by this issuance.
- Provides that explosives and chemical agent safety standards and regulations developed and maintained by the Office of the Under Secretary of Defense for Acquisition &

- Sustainment, through the DDESB, carry the full weight and authority of the Secretary of Defense.
- Requires DoD Components to implement and maintain an effective Explosives Safety Management Program.

This directive authorizes publication of standards and regulations outside the normal issuance process. This allows for the DDESB to develop documents formatted to meet user needs. This provision is the authorization for the publication of the Defense Explosives Safety Regulation discussed later in this paper.

**Planning / Implementation & Operation.** For the purpose of this paper, the Planning step and the Implementation & Operation step are combined. They are collectively presented in terms of the publications that guide these phases of the process.

**DoDI 6055.16,** *Explosives Safety Management Program*, July 29, 2008, as amended <a href="http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/605516p.pdf?ver=2017-11-14-112331-590">http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/605516p.pdf?ver=2017-11-14-112331-590</a>

This document implements most of the policy in DoDD 6055.09E. It prescribes procedures for the implementation and operation of the Explosives Safety Management Program (ESMP) at all management levels.

A total revision of DoDI 6055.16 is currently underway. This revision adds ESMP program areas including Human Capital Management, Process Safety Management, Transportation, and Munitions Related Infrastructure. A goal of this revision is to better align with ESMP evaluations by better defining program pillars and their contribution to the overall ESMP.

CJCSI 4360.01A , Explosives Safety and Munitions Risk Management for Joint Operations Planning, Training and Execution, , November 25, 2014 <a href="http://www.jcs.mil/Portals/36/Documents/Library/Instructions/4360\_01.pdf?ver=2016-02-05-175039-810">http://www.jcs.mil/Portals/36/Documents/Library/Instructions/4360\_01.pdf?ver=2016-02-05-175039-810</a>

The CJCSI prescribes policies and practices aimed at integrating Explosives Safety and Munitions Risk Management (ESMRM) into all facets of operations. This document clarifies the level in the chain of command that will accept and approve munitions risk decisions in situations where explosives safety criteria cannot be met due to operational necessity or compelling need. The CJCSI is a major force in "operationalizing" explosives safety.

CJCSI 4360.01 was initially published in 2012 and administratively updated in 2014. Currently it is in the final phases of a 2018 update that clarifies the role of the combatant commander in munitions related risk decisions. It also provides more granularity to the contents of munitions risk assessments.

**DoDM 6055.09 (Volumes 1-8),** *DOD Ammunition and Explosives Safety Standards*, February 29, 2008 as amended

http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/605509v1\_dodm\_2008.pdf?ver=2017-12-29-094017-803

The eight volumes of DoDM 6055.09 are the current "home" of the DoD Explosives safety standards. The DoDM establishes explosives safety standards for the Department of Defense. These standards are designed to manage risks associated with DoD-titled ammunition and explosives (AE) by providing protection criteria to minimize serious injury, loss of life, and damage to property. DoDM 6055.09 also provides standards to protect the public, DoD personnel, and DoD assets and mission from non-DoD explosives located on DoD installations.

Prior to Oct 2007, DoD Publications included Catalogs, Directories, Guides, Handbooks, Indexes, Inventories, Lists, Manuals, Modules, Pamphlets, Plans, Regulations, Standards and Supplements. A Standard was defined as a publication containing technical directions and regulatory material. A Manual was defined as a document that outlines procedures and usually contains examples to help users perform specific tasks.

A revision of publication guidance mandated that all publications that were not manuals be converted to manuals on their next reissuance and manuals exceeding 100 pages were to be separated into two or more volumes. Subsequently, the single volume DoD Standard 6055.09 was converted into the eight volumes of DoD Manual 6055.09.

As of this writing, DoDM 6055.09 is still the official home of DoD explosives safety standards. Work is near complete in publishing a replacement document, Defense Explosives Safety Regulation (DESR), in the very near future. Upon publication of the DESR, DoDM 6055.09 will be cancelled.

# **Defense Explosives Safety Regulation, DESR 6055.09**

Attempting to maintain the eight volumes of DoDM 6055.09 proved to be a Sisyphean task. Although converting all special publications to manuals may have resulted in valuable standardization for most publications, it stifled the usefulness and maintainability of the explosives safety standards.

The explosives safety standards are technical. Technical terms are terms of art, and are not easily replaced with "plain language" substitutes. Repetition of purpose statements, policy, responsibilities and references in each volume adds to user's confusion. Although waived for the current version of DoDM 6055.09, future versions would have to comply with paragraph numbering requirements that will result in flipping 20 pages or more (in some cases) to determine the full paragraph citation for an item of criteria.

The alternative was to develop and publish the standards outside of the normal publication process. To accomplish this required a change in DoD Policy. This was accomplished in the reissuance of DoDD 6055.09E in November 2016 by the addition of a few key provisions:

- Under "Purpose" Authorizes the development and maintenance of supporting and clarifying DoD issuances and other publications, such as DoD Explosives Safety Regulations and DoD Explosives Safety Standards.
- Under "Policy" Provides that explosives and chemical agent safety standards and regulations developed and maintained by the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) [Now Under Secretary of Defense for Acquisition and Sustainment (USD(A&S))], through the DDESB, carry the full weight and authority of the Secretary of Defense.

With the policy in place, work could begin on publishing the DESR. Edition 1 of the DESR is complete and awaiting the approval of the USD(A&S). It is currently delayed pending the completion of organizational changes resulting from the reorganization of USD(AT&L) into USD(Research &Engineering) and USD(A&S).

Edition 1 of the DESR combines the existing 8 volumes of DoDM 6055.09 into a single volume. It eliminates redundant sections (responsibilities, purpose, policy and references contained in each volume), reformats for readability (better highlighted headings and spacing), and incorporates Board-approved but as yet unpublished criteria changes. Edition 1 of the DESR should be published in the very very near future and will be posted at: <a href="https://www.denix.osd.mil/ddes/home/">https://www.denix.osd.mil/ddes/home/</a>

**DoDI 4145.26**, *DoD Contractor's Safety Requirements for Ammunition and Explosives*, April 9, 2005

**DoDM 4145.26,** *DoD Contractor's Safety Manual For Ammunition and Explosives,* March 13, 2008 as amended

DoDI 4145.26 states the DoD policy that the Department of Defense shall prescribe and enforce ammunition and explosives safety standards in DoD Manual 4145.26 (DoD Contractor's Safety Manual for Ammunition and Explosives) for work performed under DoD contracts.

Both of these documents are old and require revision. Goals of next revision include:

- Clarification of applicability at Government Owned Contractor Operated (GOCO) facilities. In other words, should DoDM 6055.09 / DESR 6055.09 take precedence over DoDM 4145.26?
- Inclusion of requirements for implementing Process Safety Management (PSM).
- Reduction or elimination of duplicate requirements and conflicting requirements between DoDM 6055.09 / DESR 6055.09 and DoDM 4145.26.
- Clear guidance on the use of risk based assessments.
- Consideration of industry input to the extent possible.

**Other pertinent publications.** There are a number of other publications that flesh out the DoD implementation framework. They are listed below:

**DoDI 414.62.** *Material Potentially Presenting an Explosives Hazard*, August 20, 2015 as amended

 $\underline{\text{http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/414062p.pdf?ver=2017-10-18-143048-107}$ 

# UFC 3-340-02, Structures to Resist the Effects of Accidental Explosions,

December 5, 2008

https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-3-340-02

**TB 700-2,** *DoD Ammunition & Explosives Hazard Classification Procedures*, July 30, 2012

**DDESB Technical Papers (TPs)**. DDESB TPs amplify policy and standards, provide tools and methods to implement standards and catalog approved designs. Current versions of DDESB TPs can be found at

https://ddesb.altess.army.mil/documents/TechnicalPapers.aspx or https://www.denix.osd.mil/ddes/home/

**Service implementing publications.** Each of the Services implement the ESMP through their own publications. Some of these are listed below:

#### **Army**

Army Regulation 385–64, U.S. Army Explosives Safety Program DA Pam 385-64, Ammunition and Explosives Safety Standards Commander's Guide to Explosives Safety Management Program

### Navy

OPNAVINST 8020.14A, Department of the Navy Explosives Safety Policy Manual NAVSEA OP 4, Ammunition and Explosives Safety Afloat NAVSEA OP 5, Ammunition and Explosives Safety Ashore

#### Air Force

AF Manual 91-201, Explosives Safety Standards

## **Marine Corps**

MCO 8020.10, Marine Corps Explosives Safety Management Program

### **Checking & Corrective Action**

The checking & corrective action step of the process is generally internal to the Services and their subordinate units. Included here are self-assessments and other process measures to ensure processes are operating correctly. This step is used to evaluate compliance, perform internal audits and implement corrective actions.

Here are some examples of checking & corrective action processes at the Service level.

- Navy: Ammunition Hazard (AMHAZ) Materials Handling Review
- Marine Corps: Explosives Safety Inspection (ESI)
- Air Force: Operational Readiness Inspection (ORI)
- Army: DAC Ammunition Logistics and Explosives Safety Review

Additionally, special and targeted studies and evaluations are used as a means of checking & corrective actions. Some examples include:

- DDESB Site Plan Review
- Navy Fleet Concentration Area Magazine Study (FCAMS)
- DDESB Korea Evaluation
- DDESB Earth Covered Magazine Study

### **Management Review**

From a corporate level, the management review process is accomplished through the DDESB program evaluation. This review measures the DoD Component's ability and effectiveness in supporting the warfighting mission while implementing explosives safety requirements consistently across their organization. By focusing on the Component's implementation of their ESMP and their associated business processes, DDESB can better assess how the DoD Component integrates explosives safety tasks into their mission execution.

Currently there is a four-year cycle of program reviews. Each Service is reviewed every four years. This timing may change as the program continues to mature. Program evaluations are conducted on multiple administrative and management levels based on the functional areas being examined. The evaluation levels are tailored to the appropriate management, administrative, and execution functions being conducted. Evaluations are designed to review the entire ESMP organizational structure.

Each program evaluation is based on a matrix of functions and responsibilities that are appropriate for the functional level being evaluated: Headquarters, Intermediate, or Installation. The individual program evaluation matrices were developed in coordination with the Components to be representative of the best value added with respect to program feedback and efficient utilization of resources.

The Component Headquarters level is responsible for the implementation and direction of the DoD ESMP. As a result, the Component Headquarters level matrix consists of responsibilities in three implementation areas: DoD Directive 6055.09E, DoD Instruction 6055.16 and DoDM 6055.09 / DESR 6055.09.

The Intermediate Component Headquarters level is responsible for the implementation and direction of the Service Headquarters ESMP. As a result, the Intermediate Service Headquarters level matrix consists of responsibilities in three implementation areas: Management, Execution and Specialized Areas.

The Installation level is responsible for the implementation and direction of the Intermediate and Headquarters ESMP. As a result, the Installation level matrix consists of responsibilities in four implementation areas: Management, Plans Policies Procedures, Execution Operations and Execution Operations Support.

Individual installations are not evaluated during a program evaluation. The DDESB is evaluating the Component ESMP therefore no installation specific data is reported. Nevertheless, the installation is provided an outbrief of issues observed during the evaluation.

Upon completion of the Component headquarters, installation and activity evaluations, the DDESB provides a summary report to the Component. Installation data collected during evaluations is evaluated to identify systemic issues and trends. Results attributable to an individual installation are not contained in the final report. Rather, significant trends are noted.

A key part of the Component report are DoD Actions. As these management reviews are used to assess the overall effectiveness of the system, it is important to identify those issues that will improve the entire DoD explosives safety program.

**Summary**. The DoD ESMP continually evolves to meet ever-changing mission requirements. Central to the DoD management systems model is process improvement. The governance structure covered here is designed with this management systems approach to keep the DoD ESMP vibrant and relevant.

## **References**:

- 1. International Organization for Standardization. "Management System Standards" https://www.iso.org/management-system-standards.html (accessed July 2, 2018)
- 2. United Nations Economic and Social Commission for Asia and the Pacific. "What is Good Governance?" https://www.unescap.org/sites/default/files/good-governance.pdf (accessed July 2, 2018)
- 3. 10 U.S. Code § 113 Secretary of Defense
- 4. United States Department of Defense, "Office of the Secretary of Defense" <a href="https://www.defense.gov/About/Office-of-the-Secretary-of-Defense/">https://www.defense.gov/About/Office-of-the-Secretary-of-Defense/</a> (accessed July 2, 2018)
- 5. Joint Chiefs of Staff, "About the Joint Chiefs of Staff" http://www.jcs.mil/About/ (accessed July 2, 2018)
- 6. United States Department of Defense, "DOD 101: Overview of the Department of Defense"
  - https://www.defense.gov/About/DoD-101/ (accessed July 2, 2018)
- 7. 10 U.S. Code § 161 Combatant commands: establishment
- 8. DoDI 5025.01, DoD Issuances Program, August 1, 2016 as amended

- http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/502501p.pdf?ver=201 8-01-16-094731-017 (accessed July 2, 2018)
- CJCS / JS Directives Electronic Libraries http://www.jcs.mil/library/ (accessed July 2, 2018)
- 10. Air Force Instruction 20-118, *Instructions for the Interservicing of Technical Manuals and related Technology Program*, February 3, 2016
  <a href="https://armypubs.army.mil/epubs/DR\_pubs/DR\_a/pdf/web/r25\_36.pdf">https://armypubs.army.mil/epubs/DR\_pubs/DR\_a/pdf/web/r25\_36.pdf</a> (accessed July 2, 2018)
- 11. Whole Building Design Guide. Unified Facilities Criteria (UFC) <a href="https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc">https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc</a> (accessed July 2, 2018)
- 12. Defense Acquisition University. "Aquipedia" article on "Specifications and Standards" <a href="https://www.dau.mil/acquipedia/Pages/ArticleDetails.aspx?aid=e9371f64-af19-4100-acf7-68556013b0c3">https://www.dau.mil/acquipedia/Pages/ArticleDetails.aspx?aid=e9371f64-af19-4100-acf7-68556013b0c3</a> (accessed July 2, 2018)
- 13. United States Department of Defense, "Summary of the 2018 National Defense Strategy of the United States of America"

  <a href="https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf">https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf</a> (accessed July 2, 2018)