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# **DEPARTMENT OF DEFENSE REPORT: CREDENTIALING PROGRAM UTILIZATION**

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As requested on Page 150 of the Senate Report Accompanying S.1519, the National Defense Authorization Act for Fiscal Year 2018, Senate Report 115-125

## **OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR PERSONNEL AND READINESS**

The estimated cost of this report or study for the Department of Defense is approximately \$37,000 for the 2018 Fiscal Year. This includes \$100 in expenses and \$37,000 in DoD labor.

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# TABLE OF CONTENTS

Table of Contents .....	2
Executive Summary .....	3
I. Introduction .....	3
II. 10 U.S.C. § 2015 C&L Overview .....	4
III. Data Collection.....	4
IV. Credential Basics .....	5
V. Types of Credentials.....	5
VI. Cost To Government .....	8
VII. Other Credentialing Opportunities .....	9
a. Mission Required.....	10
b. DoD Tuition Assistance.....	10
c. CCAF.....	11
d. Apprenticeships.....	11
e. DoD SkillBridge.....	11
f. GI Bill.....	12
VIII. Recommendations .....	12
IX. Conclusions .....	13
References.....	14
List Of Acronyms And Abbreviations .....	14

## EXECUTIVE SUMMARY

The report that follows is submitted in response to the request in Senate Report 115-125, page 150, that the Department of Defense (DoD) submit a report to the Committees on Armed Services of the Senate and House of Representatives on the utilization of the program to assist members in obtaining professional credentials authorized by 10 U.S.C. § 2015. The report includes information and analysis in reference to the types of credentials obtained by Service members, by each Military Service, and the cost to the Government, as of June 1, 2017. In Fiscal Year (FY) 2017, DoD supported the attainment of 16,884 certifications and licenses pursuant to 10 U.S.C. § 2015, mostly in electrical and mechanical repair specialties, at a cost of \$12,590,691.00. These credentials represent a microcosm of the opportunities available to Service members in the attainment of industry-recognized credentials.

The Department was also asked to include any recommendations for regulatory or statutory change the Secretary considers appropriate to ensure members are able to obtain such credentials relating to their military training and skills from appropriately qualified entities. While no regulatory or statutory change is needed, DoD is working to enhance policies and procedures that strengthen the integrity of its Certification & Licensure (C&L) programs. DoD is also connecting with other Federal agencies, industry, non-governmental organizations, and academia to shape a common lexicon and craft standards for quality and utility.

## I. INTRODUCTION

The DoD places high value on programs designed to support the professional and personal development of our Service members, as well as their successful transition to the civilian workforce. A core mission within the DoD is the *readiness* of the force to fight and win our nation's wars. Within the readiness structure, a principal tenet of the all-volunteer force is to uphold the *social compact* wherein a Service member offers up his or her very life in exchange for pride of service in the short term, and perhaps a better life when returning to the civilian workforce. Thus, while the warfighter ethos is primary, the social compact is ever-present in readiness plans and processes.

One way in which DoD strives to support the social compact is to assist Service members in the attainment of civilian credentials that are aligned with their military training and experience. DoD defines a "credential" as any tangible evidence of knowledge, skill, or ability possessed by an individual person. In usage, credentials most often refer to academic degrees, licenses, and certifications that are commonly recognized in the civilian workforce.

Further, DoD supports a position that educational pursuits conducted off-duty contribute to maintaining future readiness of the force. Credentialed learning prepares individuals to think critically, develop leadership skills, and acquire other tools that are crucial to readiness. As such, DoD sponsors numerous programs, some discretionary and others compulsory, that prepare individuals for C&L.

This report presents information and analysis pursuant to the request in Senate Report 115-125, page 150, accompanying S. 1519, the National Defense Authorization Act for FY 2018. The

report language requests that the DoD submit a report on the utilization of the program authorized by 10 U.S.C. § 2015 to assist members in obtaining professional credentials. This report includes:

- Reporting by each Military Service, including the types of credentials obtained and the cost to the Government, as of June 1, 2017.
- Any recommendations for regulatory or statutory change the Secretary considers appropriate to ensure members are able to obtain credentials relating to their military training and skills from appropriately qualified entities.

## **II. 10 U.S.C. § 2015 C&L OVERVIEW**

Through 10 U.S.C. § 2015, the DoD has authority to administer a discretionary program that pays for certain C&L programs and their related expenses. The statute directs DoD to provide payment of expenses of Service members for professional accreditation, Federal occupational licenses, State-imposed and professional licenses, professional certification, and related expenses. “Related expenses” is further defined in the statute to mean expenses for classroom instruction, hands-on training (and associated materials), manuals, study guides and materials, text books, processing fees, test fees, and other related fees. The statute also addresses quality factors such as accreditation, industry and trade association recognition, and Federal or State recognition.

Programs designed to *prepare* individuals for C&L requirements of a State or industry are also covered expenses under 10 U.S.C. § 2015. DoD’s discretionary C&L program operates under this authority as part of a Joint-Service initiative administered through the Military Services’ Credentialing Opportunities On-Line (COOL) programs.

## **III. DATA COLLECTION**

To address the committee’s interest in C&L, DoD queried each Military Service on relevant data. The Military Services collect and store data related to individuals requesting payment of C&L requirements pursuant to 10 U.S.C. § 2015. This includes the type of support sought (examinations, renewal, memberships, gap training, etc.) as well as attainment information (training completion, license obtained, exam passed, etc.). This report does not reflect information about Service members who pursue C&L requirements on their own. While the Military Services track outcomes of C&L attainment for individual Service members who are currently serving, DoD is not able to capture information once our members transition to civilian life.

Although the report language requested 10 U.S.C. § 2015 utilization information for all Service members, the body of officers receiving credentials represents a small and demographically unique group. Therefore, this report reflects credentials primarily obtained by enlisted members of the military.

While the DoD was asked for information, “as of the date of enactment of June 1, 2017,” data systems reposing the requested information were not designed to easily parse date ranges within a single FY. Rather, these systems were designed around DoD’s annual reporting periodicity. Thus, this report contains information covering the entire FY 2017, as opposed to information only from June 1, 2017, forward.

#### **IV. CREDENTIAL BASICS**

Many civilian jobs have certain professional and technical standards. Obtaining credentials (i.e., occupational licenses and certifications) shows that these standards are met. Service members, through their Military Occupational Code, often obtain skills that directly relate to civilian credentials.

Credentialing boards determine the requirements for C&L. Typically they require a combination of the following:

- Education and training – College-level coursework and/or degree or other course of study by an educational institution or recognized training provider may be required. Credentials with educational pre-requisites may require extensive preparation by Service members.
- Documented work or professional experience – Experience gained in a specific occupational area or through on-the-job training. Formal arrangements with employers for job skills training is usually described as apprenticeships or internships.
- Examination – Test of knowledge or skills required before a credential can be awarded.
- Other unique job-related requirements – For example, residency or minimum age requirements.

#### **V. TYPES OF CREDENTIALS**

A consensus definition of a “credential” is any record that documents knowledge, skills, or abilities. According to this definition, the broader category of “credential” could include, degrees, certificates, certifications, licenses, and apprenticeships. A credential can even be a “badge”, a document attesting to a highly granular skill such as with a particular piece of software. The DoD and the Military Services typically classify credentials by three categories:

- Mission alignment – compulsory (required for military occupation) as opposed to discretionary (desired for personal or professional development).
- Pathway – academic (college courses, certificates, or degrees) versus industry (certification, licensure, or apprenticeship).
- Occupation – two-digit codes defined by the Defense Manpower Data Center (DMDC).

As the committee's request, centered on 10 U.S.C. § 2015, this report focuses primarily on discretionary industry pathway credentials, specifically C&L. A section enumerating compulsory industry pathway credentials and academic pathway credentials, as well as apprenticeships, appears near the end of the report, in an attempt to document and further describe the totality of DoD activity in the credentialing domain.

The first, and most important distinction that DoD makes among credentials is that of "mission alignment," or compulsory as opposed to discretionary. Compulsory credentials are those that must be obtained in order to perform mission duties. For example, personnel are required to obtain certain credentials to perform military functions as members of the cyber security workforce. Discretionary credentials are those that are related to a military specialty and for which Service members may have received related military training, but are not required in order to perform military duties. An example of such a credential could be a Commercial Driver's License (CDL), wherein much (but not all) training and experience required to attain a CDL may have been acquired in military training.

In the case of compulsory credentials, almost all of the work and cost necessary to attain the credential is managed by the military schoolhouse. Conversely, in the case of discretionary credentials, the Service member may seek information about gap training and its cost, documentation of experience, licensing requirements and cost, and any other associated fees. Because these elements stand apart from the compulsory requirements of the military schoolhouse, the Military Services manage awareness, payment, and record-keeping associated with discretionary credentials outside of military schoolhouse structures. The Military Services do not capture information about Service members that pursue C&L requirements on their own.

The compulsory versus discretionary distinction is also important from a cost perspective. Costs for compulsory credentials tend to get blurred in the milieu of other military schoolhouse costs. Thus, it becomes difficult to determine every point where a "training" cost ends and a "credentialing" cost begins. Conversely, because discretionary credentials tend to stand apart from training, DoD has greater confidence that reported costs of discretionary credentials truly capture the whole cost of such credentials.

Attention to "pathway" differentiations is necessary because the two primary pathways to credentials (academic versus industry) share few commonalities: neither statutory authority, nor funding lines, nor regulatory oversight, nor rigor are common across pathways. As the focus of this report is 10 U.S.C. § 2015, the report primarily addresses discretionary industry pathway credentials, specifically C&L.

A final method that DoD uses to distinguish among credentials is to sort by occupation. Department of Defense Instruction (DoDI) 1312.01, "DoD Occupational Information Collection and Reporting," published January 28, 2013, directs the DMDC to maintain an occupational database and analyze crosswalks to civilian occupations. The result of this work is a series of two-digit occupational categories to which the DoD can match proposed civilian credentials to existing military occupations. The first digit in the DMDC's coding system denotes Enlisted (1) versus Officer (2), while the second digit indicates the functional specialty (0-9).

Over 1,700 unique C&L’s have been mapped to enlisted military occupations through comparison of military job duties against the competencies covered by the civilian credential. Credentialing opportunities can be reviewed at the Military Services’ COOL websites (see references k-n).

This report utilizes the two-digit occupational category to report opportunities to which the C&L is most closely aligned. Table 1 identifies the number of individuals and the number of discretionary opportunities obtained by occupational category for FY 2017.

**Table 1: Discretionary C&L Participation and Attainment by Occupational Category**

<b>Two-Digit DoD Occupational Category*</b>	<b>Completing Participants</b>	<b>Credentials Obtained</b>
10. Infantry, Gun Crews, and Seamanship Specialists	872	906
11. Electronic Equipment Repairers	1,610	3,448
12. Communications and Intelligence Specialists	736	688
13. Health Care Specialists	842	939
14. Other Technical and Allied Specialists	153	178
15. Functional Support and Administration	995	1,050
16. Electrical/Mechanical Equipment Repairers	6,942	7,599
17. Craftworkers	1,156	1,164
18. Service and Supply Handlers	887	912
19. Non-Occupational	0	0
<b>TOTAL</b>	<b>14,193</b>	<b>16,884</b>

\* As the body of officers receiving credentials represents a small and demographically unique group, this table reflects credentials obtained by enlisted members of the military.

Table 1 shows slightly more discretionary credentials obtained than individual participants, indicating that a small number of participants obtained more than one credential. The Military Services reported 20,493 total individuals supported by 10 U.S.C. § 2015, meaning that a number of individual participants received some C&L assistance without attaining a positive outcome (roughly 30 percent). This may be partially explained by the attainment of the credential in a subsequent year from the reported participation. For example, a credential request initiated in the latter part of the FY are not always attained and/or completed during that same FY. Additional information is needed to verify and better understand the difference between individuals who may have participated but did not report successful attainment of a C&L opportunity.

Repairer specialties, such as “Electronic Equipment” (for sonar or cryptographic gear), and “Electrical/Mechanical Equipment” (for automatic transmissions or propulsion systems) form the largest category of discretionary opportunities obtained by Service members. These two categories combined represent over 65 percent of all discretionary C&L credentials attained. All other categories trend toward the same number of opportunities each year, though DoD has not conducted additional studies attempting to ascribe proportionality.

Table 2 provides a further breakdown by Military Service of the number of discretionary C&L opportunities obtained by occupational category for FY 2017.

**Table 2: Discretionary C&L Attainment by Military Service and Occupational Category**

<b>Two-Digit DoD Occupational Category*</b>	<b>Navy</b>	<b>Marines</b>	<b>Army</b>	<b>Air Force</b>
10. Infantry, Gun Crews, and Seamanship Specialists	220	98	545	43
11. Electronic Equipment Repairers	1,338	121	1,601	388
12. Communications and Intelligence Specialists	449	148	0	91
13. Health Care Specialists	748	0	0	191
14. Other Technical and Allied Specialists	86	0	7	85
15. Functional Support and Administration	91	152	635	172
16. Electrical/Mechanical Equipment Repairers	134	31	6,106	1,328
17. Craftworkers	15	3	1,114	32
18. Service and Supply Handlers	160	0	670	82
19. Non-Occupational	0	0	0	0
<b>TOTAL</b>	<b>3,241</b>	<b>553</b>	<b>10,678</b>	<b>2,412</b>

\* As the body of officers receiving credentials represents a small and demographically unique group, this table reflects credentials obtained by enlisted members of the military.

## **VI. COST TO GOVERNMENT**

In accordance with 10 U.S.C. § 2015, DoD will provide for the payment of expenses of Service members for professional accreditation, federal occupational licenses, State-imposed and professional licenses, professional certification, and related expenses. There are three key types of “expenses” associated with C&L:

- C&L preparation – includes college courses and degrees (if required), study materials, and non-college degree training.
- Initial C&L attainment – includes fees paid to the certification agency, which include application and exam fees.
- C&L maintenance and renewal – includes activities surrounding maintaining continuing education units, annual maintenance fees, recertification fees, and re-examination fees.

All Military Services currently fund fees associated with C&L attainment and C&L maintenance and renewal, including fees paid to the certification agency, which include application and exam fees, activities surrounding maintaining continuing education units, annual maintenance fees,



recertification fees, and re-examination fees. In some cases, the Military Services cover C&L preparation and/or gap training expenses including the cost of college courses and degrees (if required) through DoD’s Tuition Assistance (TA) program. The cost of study materials and non-college degree training are not consistently paid for by the Military Services. This may be due, in part, to the inconsistency of standards that could indicate quality and utility of study materials and non-college training programs. Table 3 identifies the cost to the government for FY 2017 pursuant to 10 U.S.C. § 2015.

**Table 3: Discretionary C&L Costs by Military Service and Cost Category**

<b>Cost Category</b>	<b>Navy</b>	<b>Marines</b>	<b>Army</b>	<b>Air Force</b>	<b>DoD Total</b>
<b>C&amp;L Preparation</b>					
Classroom Instruction	\$0	\$0	\$482,976	\$510,822	\$993,798
Study Materials	\$0	\$0	\$426,685	\$215,938	\$642,623
<b>Initial C&amp;L Attainment</b>					
Exams	\$1,190,010	\$225,811	\$1,932,210	\$2,515,414	\$5,863,445
Application Fees	\$45,730	\$1,066	\$0	\$105,660	\$152,456
<b>C&amp;L Maintenance and Renewal</b>					
Renewals	\$45,627	\$7,428	\$203,162	\$2,369	\$258,586
Membership Fees	\$0	\$0	\$58,550	\$0	\$58,550
Processing Fees	\$0	\$0	\$190,515	\$772,600	\$963,115
<b>Other Costs</b>					
Overhead (staffing, COOL systems, mapping, etc.)	\$2,276,395	\$575,000	\$335,420	\$471,303	\$3,658,118
<b>DoD &amp; Military Service Totals</b>	<b>\$3,557,762</b>	<b>\$809,305</b>	<b>\$3,629,518</b>	<b>\$4,594,106</b>	<b>\$12,590,691</b>

Military budgets are complex, particularly with regard to costs associated with training requirements and the documentation of training completed. Moreover, it is often difficult to segregate costs between discretionary requests for training and compulsory training for military skill development. For example, the Military Services were able to identify staff costs associated with awareness programs, as well as some costs associated with operating COOL systems and mapping credentials to military skills. Despite the challenges, DoD was able to derive a general picture of the aggregated costs associated with 10 U.S.C. § 2015. In FY 2017, the DoD spent over \$12.6 million on C&L requirements. This breaks down to roughly 13 percent on C&L preparation, 48 percent on C&L attainment, 10 percent on C&L maintenance and renewal, and 29 percent on overhead functions.

## **VII. OTHER CREDENTIALING OPPORTUNITIES**

In addition to the C&L offerings under 10 U.S.C. § 2015, DoD supports credentialing opportunities through numerous programs and resources both within and outside the DoD. Dependent upon the credential desired, programs exist to help Service members cover some of the other costs associated with preparing for, attaining, and maintaining a credential, including:

Mission Required, DoD TA, Community College of the Air Force (CCAF), Apprenticeships, and DoD SkillBridge. A summary of these initiatives follow.

**a. Mission Required**

The Military Services support C&L requirements when military occupations require a C&L. Typically these are referred to as mission required<sup>1</sup>, or compulsory, credentials. For example, cyber security technicians are required to obtain and maintain certain industry credentials in order to perform their military duties. Additionally, an array of C&Ls are required before certain health care functions can be performed.

In FY 2017, over 35,000 Service members earned/completed valuable certifications, licenses, and apprenticeships directly related to their military occupations. Certain mission required credentials reported by the Military Services are captured in Table 4.

**Table 4: Compulsory C&L Attainment by Occupational Category**

<b>Two-Digit DoD Occupational Category*</b>	<b>Completing Participants</b>	<b>Credentials Obtained</b>
10. Infantry, Gun Crews, and Seamanship Specialists	0	0
11. Electronic Equipment Repairers	481	629
12. Communications and Intelligence Specialists	312	319
13. Health Care Specialists	24,728	24,728
14. Other Technical and Allied Specialists	7,725	7,725
15. Functional Support and Administration	5	5
16. Electrical/Mechanical Equipment Repairers	529	529
17. Craftworkers	1,077	1,077
18. Service and Supply Handlers	300	300
19. Non-Occupational	0	0
<b>TOTAL</b>	<b>35,157</b>	<b>35,312</b>

\* As the body of officers receiving credentials represents a small and demographically unique group, this table reflects credentials obtained by enlisted members of the military.

**b. DoD TA**

The DoD TA program provides Service members with financial assistance to enhance their academic achievement (i.e., earn a degree or certificate) during their off-duty time, which in turn improves job performance, promotion potential, self-development, and personal quality

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<sup>1</sup> Mission Required credentials should not be confused with pre-requisite credentials. 10 U.S.C. §2015 states that its authority cannot be used to pay the expenses of a member to obtain professional credentials that are a prerequisite for appointment in the armed forces. Thus, the attainment of such pre-requisite credentials is not addressed in this report.

of life. The Military Services may pay TA for academic courses in preparation for C&L in accordance with 10 U.S.C. §§ 2005, 2006a, and 2007. Current DoD policy permits the Military Services to pay tuition for college courses (part of a degree or certificate program) of eligible Service members up to \$250 per semester-hour of credit with a maximum \$4,500 for each FY. Covered charges include tuition only; books and fees are not covered by TA.

The DoD has a signed Memoranda of Understanding (MOU) with over 2,700 accredited colleges and universities for the delivery of quality education programs. In FY 2017, 255,729 Service members enrolled in 726,305 academic courses at a cost of \$485.5M. Participating colleges and universities reported 48,911 degree completions (92 percent Enlisted) and 838 certificates (81 percent Enlisted) using TA in FY 2017.

#### **c. CCAF**

CCAF is a worldwide multi-campus community college established to meet the educational needs of Air Force enlisted personnel at the level of Associate of Applied Sciences. This model allows the Air Force to collate, on a single transcript, all military technical training, together with the General Education Requirement of the degree programs and also provide course work to satisfy Technical Education, as well as Leadership, Management and Military Studies requirements not completed at CCAF schools. Together these form a powerful credential that has utility both within the military and with industry.

CCAF is a part of Air University, accredited by the Southern Association of Colleges and Schools Commission on Colleges. CCAF confers over 23,000 Associate of Applied Science degrees each year. In FY 2017, CCAF supported over 269,000 enrolled students.

#### **d. Apprenticeships**

A registered apprenticeship is a formalized, structured training program. It combines on-the-job training and related technical instruction in which the apprentice receives practical and technical training. Because an apprenticeship is industry-driven career training, industry determines the essential skills. Most apprenticeships require in excess of 4,000 work hours to complete. Completion of the apprenticeship signifies documented work experience using sought-after skills in the workforce. It can lead to better jobs in industry, and commensurately higher wages.

DoD administers a formal apprenticeship program called the United Services Military Apprenticeship Program (USMAP). The USMAP program supports approximately 93,000 active participants each year and featured over 12,000 completions in FY 2017. Each completion reflected a Service member's proof of national recognition in the form of an official Department of Labor Certificate of Apprenticeship Completion.

#### **e. DoD SkillBridge**

The DoD SkillBridge program implements 10 U.S.C. § 1143(e). For credentials that may be desired for employment post-service, DoD SkillBridge allows transitioning Service members

the opportunity to participate in employer-driven job skills training, apprenticeships, and internships, starting up to 6 months before separation. SkillBridge programs provide industry-recognized skills needed to move into high-demand jobs and careers in the civilian sector, including short-term certification courses, “boot camps,” and other non-traditional courses and programs. While there is no provision for DoD to pay for the training or experience itself, Service members continue to receive military pay and benefits while participating. Some approved SkillBridge providers offer programs at no cost while others look to Service members to pay out of pocket or leverage earned GI Bill benefits to off-set any costs.

In FY 2017, over 2,000 Service members engaged in DoD SkillBridge preparatory activities in their last six months of service. Historically, over 90 percent of participants that complete SkillBridge training programs have acquired post-service jobs in industries such as welding, truck driving, advanced manufacturing, solar energy development, and information technology.

#### **f. GI Bill**

The Department of Veterans Affairs’ GI Bill offers financial assistance with C&L under 38 U.S.C., Chapter 30 (Montgomery GI Bill); 38 U.S.C., Chapter 33 (Post 9/11 GI Bill); and 10 U.S.C., Chapter 1606 (Reserve GI Bill). In general, eligible Service members can use the GI Bill to pay for up to \$2,000 in fees for civilian occupational C&L exams.

## **VIII. RECOMMENDATIONS**

At this time, the DoD offers no recommendations for regulatory or statutory change. However, DoD is engaged in numerous efforts to strengthen internal policies and procedures to ensure members are able to obtain credentials relating to military training and skills from appropriately qualified entities. The DoD’s C&L Program is now integrated with the Voluntary Education Program, where a single policy document can provide cohesive approaches to the attainment and “stacking” of credentials in such a way as to make each individual Service member as promotable (within the context of the military mission) or employable as possible. While such consolidations are promising, certain challenges, both internal and external, exist.

DoD’s C&L program faces a challenge related to Service member protections. Few structures exist to support oversight, enforcement, and evaluation of compliance, and to prevent abusive advertising and aggressive recruitment practices by C&L providers. Some tools, developed under DoDI 1322.25, “Voluntary Education Programs,” can be leveraged by the DoD to monitor, manage, and garner a better insight into provider interactions with Service members, but these rely on decades- or centuries-old societal structures that govern the academic marketplace. Very few such structures exist in the C&L space.

Numerous challenges exist with respect to structural gaps that DoD considers to be external to the Department, and largely outside of the DoD’s control. One such challenge is standard terminology. Nationally, several constituencies have increasingly ascendant roles in the credentialing space. Some examples include industries such as; Transportation, Services,

Hospitality, and Construction. Other constituencies include Academia, State entities, Non-profits, and other Federal agencies. All of these entities could benefit from a common lexicon with respect to credentials.

Another external challenge involves the assurance of quality and utility. Unlike in higher education, accreditation of certification programs is not widespread. Recent estimates place the number of credentials currently available in the hundreds of thousands. While the number of accrediting bodies continues to grow, the vast majority of credentials associated with military occupations remain unaccredited. Aside from important questions about the rigor of a credential, an assessment of whether highly rigorous to attain credentials can actually help in gaining employment remains unknown. Society's efforts to assess quality and utility in the credentialing marketplace should be informed and assisted by DoD, but the Department lacks the expertise and capacity to lead such efforts.

In DoD's assessment, a prime driver of current credential attainment rates appears to be voluntary pursuit, and that it might be useful for entities that have equities in the labor market to create a database of quality credentials that are mandatory or highly desired in the civilian workforce and sought after by employers, through which Service members can clearly quantify their job prospects following military service. Such a database could substantially increase demand for credential attainment.

## **IX. CONCLUSIONS**

DoD recognizes the important role that occupational C&L pursuits can play in professionalizing the Force and in enhancing the Service member's ability to transition to the civilian workforce upon completion of military service. Providing credentialing opportunities, whether academic or C&L related, is an investment in our people. Whether an individual is acquiring knowledge, skills, or abilities needed to perform mission functions or make a seamless transition to an industry profession, DoD supports credentials that maximize opportunities both in and out of service. In FY 2017, DoD supported the attainment of over 138,000 credentials to include: 16,884 for C&L (10 U.S.C. § 2015); 35,193 for mission-related; 48,911 for DoD TA; 23,471 for CCAF; 12,064 for USMAP; and 2,000 for DoD SkillBridge.

DoD appreciates the opportunity to explore and report on these workforce-shaping programs and dynamics. The analysis in this report reveals useful data that can inform policies and procedures for DoD C&L programs that positively impact Service members' pursuit of civilian workforce credentials.

## REFERENCES

- (a) United States Code, Title 10, Section 2015
- (b) United States Code, Title 10, Section 2005
- (c) United States Code, Title 10, Section 2006a
- (d) United States Code, Title 10, Section 2007
- (e) United States Code, Title 10, Section 1143(e)
- (f) United States Code, Title 10, Chapter 1606
- (g) United States Code, Title 38, Chapter 30
- (h) United States Code, Title 38, Chapter 33
- (i) Department of Defense Instruction 1312.01, “DoD Occupational Information Collection and Reporting,” January 28, 2013.  
(<http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/131201p.pdf>)
- (j) Department of Defense Instruction 1322.25, “Voluntary Education Programs,” March 15, 2011. (<http://www.dtic.mil/whs/directives/corres/pdf/132225p.pdf>)
- (k) Army Credentialing Opportunities On-Line (COOL) website  
(<https://www.cool.army.mil/index.htm>)
- (l) Navy COOL website (<https://www.cool.navy.mil/usn/index.htm>)
- (m) Marine Corps COOL website (<https://www.cool.navy.mil/usmc/index.htm>)
- (n) Air Force COOL website (<https://afvec.langley.af.mil/afvec/Public/COOL/Default.aspx>)

## LIST OF ACRONYMS AND ABBREVIATIONS

DoD	Department of Defense
DoDI	Department of Defense Instruction
C&L	Certification & Licensure
CCAF	Community College of the Air Force
CDL	Commercial Driver’s License
COOL	Credentialing Opportunities On-Line
DMDC	Defense Manpower Data Center
FY	Fiscal Year
TA	Tuition Assistance
USMAP	United Services Military Apprenticeship Program