TEST AND EVALUATION SEMI-PROFESSIONAL ACQUISITION WORKFORCE CAREER FIELD

CHRIS J. ADDISON

May 2013

PUBLISHED BY
THE DEFENSE ACQUISITION UNIVERSITY PRESS
PROJECT ADVISER: JEFF CATON
THE SENIOR SERVICE COLLEGE FELLOWSHIP PROGRAM
ABERDEEN PROVING GROUND, MD

PAGE
LEFT
BLANK
INTENTIONALLY

TEST AND EVALUATION SEMI-PROFESSIONAL ACQUISITION WORKFORCE CAREER FIELD

CHRIS J. ADDISON

May 2013

PUBLISHED BY
THE DEFENSE ACQUISITION UNIVERSITY PRESS
PROJECT ADVISER: JEFF CATON
THE SENIOR SERVICE COLLEGE FELLOWSHIP PROGRAM
ABERDEEN PROVING GROUND, MD

PAGE
LEFT
BLANK
INTENTIONALLY

Table of Contents

List of Figures

List of Tables

Abstract

The intent of this research study was to examine the impact of changes in the certification standards for the Test and Evaluation (T&E) Acquisition Workforce Career Field (AWCF) from the perspective of leaders, supervisors, and Human Resources staff members within the Army test community. On October 1, 2012, the proponent for the T&E AWCF directed implementation of sweeping changes in certification standards to "increase the intellectual proficiency within test and evaluation." These sweeping changes affected the formal civilian education requirements and amount of Defense Acquisition University (DAU) training required to achieve certification in the T&E AWCF.

The impact of the changes on the Army test community is significant. The changes impact hiring practices, position descriptions, and coding of positions for inclusion in the T&E AWCF. Many positions coded as T&E AWCF positions do not require the level of civilian education dictated by the new standards. An additional impact is the exclusion of prior military personnel from being hired into these positions if they do not meet the formal education requirements. This research study also addressed the loss of operational and tactical knowledge and experience provided by prior military personnel, particularly within the Operational Test Command, which has a major impact on their ability to perform their mission.

The research study recommended splitting the current T&E AWCF into two tiers: A professional tier for engineering and scientific positions and a semi-professional tier for T&E AWCF positions not requiring an engineering or science degree. Certification standards for the semi-professional tier were also proposed in this research study. The proposed recommendation would achieve the goal of providing Army test organizations the flexibility to tailor formal education and DAU training certification standards to meet the requirements of their specific job positions.

Chapter 1—Introduction

This research study examined the impact of changes in the certification requirements for the Test and Evaluation (T&E) Acquisition Workforce Career Field (AWCF) within the Army test community and Army Test organizations. The proponent for the T&E AWCF is the Deputy Assistant Secretary for Defense (DASD), Development Test and Evaluation (DTE), Office of the Secretary of Defense. On June 7, 2012, the DASD, DTE published a memorandum titled "FY 2013 Annual Certification Test and Evaluation (T&E) Acquisition Career Field." This memorandum revised the core educational requirements for certification in the T&E AWCF for the stated purpose of increasing intellectual proficiency within T&E.

Background

Per the DASD (DT&E) (July 2011), effective October 1, 2012, the requirement for certification within the T&E AWCF was revised to require a bachelor's or master's degree in a technical or scientific field, such as engineering, physics, chemistry, biology, mathematics, operations research, engineering management, or computer science. U.S. Army Test Centers and the Operational Test Command (OTC), which are subordinate organizations of the Army Test and Evaluation Command (ATEC), employ numerous associate testers, test support, and technician personnel with specialized technical skills to conduct and support testing. The specialized skills required to execute and provide test support in many cases does not require an individual with an advanced college degree in one of the engineering or scientific fields cited to perform their duties. Many of these job positions currently are not coded as T&E AWCF positions, as required by the AT&L (Acquisition, Technology and Logistics) Workforce Position Category Description (PCD) (June 2012). While personnel currently holding one of these positions are grandfathered from meeting the new requirements, this change affected the qualifications for hiring new personnel to fill future vacancies and personnel who do not

currently meet the qualification standards. Highly capable associate tester, test support, and technician personnel possessing the desired skills needed by the test center, but lacking the required degree, will be ineligible to fill these positions. Former military personnel who are extremely knowledgeable and capable of performing these duties are eliminated from consideration for these positions if they lack the prerequisite degree.

Problem Statement

Changes to the formal education requirements for T&E AWCF certification for personnel serving within Army test organizations have narrowed the field of potential candidates to fill these positions. Requiring a bachelor's or master's degree in engineering or science has not only narrowed the pool of candidates to fill positions, but also excludes qualified former military testers, test support, and technician personnel possessing skills desired by test centers and OTC if they lack the required college degree. The increase in the number of Defense Acquisition University (DAU) training courses required to meet certification standards for the T&E AWCF (see Table 3) also will require employees to devote more time to training, meaning more time away from their jobs, time away from performing their primary duties. The impact of increasing training time required to meet certification requirements on a unit's capability to meet mission requirements is an additional consideration of this study.

Purpose of this Research Study

The purpose of this research study was to examine the impact of changes in the T&E AWCF certification requirements. Also examined are the feasibility and desirability of creating a new T&E Semi-Professional AWCF for associate tester, test support, and technician positions that do not require an engineering or science degree to perform their job duties to mitigate the impact.. (For purposes of this research study, semi-professional refers to all T&E-related positions determined by Army test centers as not requiring an engineering of science degree, but who

within the definition must be coded as T&E AWCF positions. This would include Army Evaluation Center positions not examined during this research study.) Army test centers and OTC have a need for associate tester, test support, and technician personnel to fill many important test roles, such as overseeing test execution, instrumentation, laboratory work, logistics support, new equipment training, and so forth. Having prior military personnel available, who are familiar with specific system requirements, tactics, and doctrine based on their military training and experience, to support operational test (OT) events enhances test center and OTC mission capabilities. Changes to the T&E AWCF certification requirements significantly impacted the ability of Army test organizations in hiring otherwise qualified personnel to fill T&E AWCF-coded positions. Limitations imposed by the change prevent organizations from hiring experienced, capable personnel who lack the formal education requirements. An unintended consequence is the loss of the capability to hire former military personnel with valuable military training and experience to provide support of test planning, test execution oversight, and system evaluation since most lack the required formal education to meet the job T&E AWCF certification requirements.

Significance of This Research

The significance of this research study was to address concerns and issues within the Army test community regarding changes to the T&E AWCF certification requirements. Army test organizations, in comments submitted to the DASD (DT&E), expressed significant concerns regarding the impact of the changes on their organization and personnel leading up to implementation of these changes (OTC, 2011). This research study addressed some of those concerns and collected data to assess their validity from the perspective of supervisors and leaders within the Army test community whose personnel have been impacted. The research

study also proposes recommendations to reduce the impact of validated concerns regarding changes to the T&E AWCF certification standards.

Overview of the Research Study Methodology

This research study utilized an applied research methodology approach involving the collection of qualitative and quantitative research data from the affected population. Data were collected from leaders, supervisors, and staff within ATEC organizations affected by the changes to the T&E AWCF certification standards. Results of the survey were analyzed to address the research questions, presented in the following section. Data were collated and analyzed using standard statistical procedures for survey data analysis.

Limitations of the Research Study

This research study only addressed the effect of changes in the T&E AWCF certification standards on Army test organizations and personnel, specifically those within ATEC. The changes in T&E AWCF certification requirements were implemented across the entire Department of Defense (DoD). Therefore, all Services across DoD are impacted by the changes. In addition, within the Army there are numerous T&E AWCF coded positions outside of Army test organizations, primarily in Program Management and Army Research organizations. This study did not address the impact of the changes to these organizations.

Chapter 2—Literature Review

Introduction

The framework for establishment of the Army Acquisition Corps and Acquisition Career Fields was the Defense Acquisition Workforce Improvement Act (DAWIA) of 1990. Per the DAWIA (1990), "The Secretary of Defense shall establish policies and procedures for the effective management (including accession, education, training, and career development) of persons serving in acquisition positions in the Department of Defense." DAWIA requires the Secretary of Defense, acting through the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)), to coordinate and manage human systems integration activities throughout the acquisition programs of DoD. It further requires that each Major Defense Acquisition Program (MDAP) and Major Automated Information System (MAIS) program developmental tester be a properly qualified member of the Armed Forces or a full-time employee of the DoD.

The intent of DAWIA is to ensure that the DoD develops and maintains a highly skilled professional acquisition workforce with the technical expertise and business skills to ensure the Department receives the best value for the expenditure of public resources. Specific features of the act include flexibility in management, hiring, and training of AWCF employees; a requirement to develop attractive career paths for AWCF employees; encouragement of continuing education and training of AWCF employees; the requirement to hire experts who are skilled acquisition professionals to serve in leadership positions within the acquisition workforce to strengthen management and oversight; and the requirement to design education and training courses for AWCF employees. To support education and training requirements for the AWCF, the USD(AT&L) is charged with prescribing policies and requirements for the educational programs provided by the DAU.

Under DAWIA, the Secretary of Defense is empowered to designate, through regulations, those positions in the DoD that are to be coded as acquisition positions. Specific positions that are required to be coded as acquisition positions, at a minimum, include all acquisition-related positions in the area of Systems Planning, Research, Development and Engineering, and Testing and Evaluation. The USD(AT&L) establishes appropriate career paths for civilian and military personnel who wish to pursue careers in the acquisition workforce by identifying education, training, experience, and assignment requirements necessary to support career progression to the most senior acquisition positions. The intent is to ensure that civilian personnel are provided a fair opportunity to acquire the education, training, and experience necessary to qualify and compete for senior acquisition positions. The education, training, and experience requirements for each acquisition position are based on the level of complexity of duties carried out by that position.

In establishing these requirements, the Secretary of Defense determines them by categories of positions. The USD(AT&L) establishes requirements for continuing education and periodic renewal of individual certifications. Career path requirements, for each career path, establish course work and related on-the-job training and demonstration of qualifications required to perform the critical acquisition-related duties and tasks of that career path. Individuals in the AWCF are to maintain and enhance the currency of their acquisition knowledge and related acquisition disciplines through academic programs and other self-development activities.

The DAWIA required the Secretary of Defense to establish an Acquisition Corps within the DoD. Members must meet educational requirements prescribed by the Secretary of Defense. Requirements, at a minimum, must include the following:

- Baccalaureate degree from an accredited educational institution authorized to grant baccalaureate degrees or possess significant potential for advancement to levels of greater responsibility and authority, based on demonstrated analytical and decision-making capabilities, job performance, and qualifying experience, or
- Completion of at least 24 semester credit hours (or the equivalent) of study from an accredited institution of higher education from among the following disciplines: Accounting, business finance, law, contracts, purchasing, economics, industrial management, marketing, quantitative methods, or organizational management, or
- At least 24 semester credit hours (or the equivalent) from an accredited institution of higher education in the person's career field and 12 semester credit hours (or the equivalent) from such an institution from among the disciplines listed above, or
- Equivalent training as prescribed by the Secretary to ensure proficiency in the disciplines listed above.
- Experience required by the Secretary of Defense (at a minimum, at least 4 years of experience in an acquisition position in the DoD or in a comparable position in industry or government).

The Secretary may grant a waiver for employees who possess significant potential for advancement to levels of greater responsibility and authority, based on demonstrated analytical and decision-making capabilities, job performance, and qualifying experience. A written request, with complete justification, is required for waiver approval.

AT&L Workforce Position Category Descriptions (PCD)

The AT&L workforce PCD (June 2012) is accustomed to assisting in the determination to which AT&L career field path to assign an AT&L position per Title 10. If 50 percent or more of the duties and responsibilities of the position match the “General Acquisition-Related Duties”

and the preponderance of those duties match the "AT&L Career Field Specific Duties," the position should be assigned to that position category. The AT&L specific career paths and duties for the T&E AWCF include the following:

- Chief, Developmental Tester for an MDAP or MAIS.
- Chair, T&E Working-Level Integrated Product Team (T&E WIPT), or member representing the system developer, tester, and/or system evaluator.
- Workforce members who analyze requirements for testability and measurability.
- Workforce members who plan, organize, manage, or conduct tests and/or evaluations associated with concepts, emerging technologies, or experiments involving new, fielded, or modified systems, equipment, or materiel throughout all acquisition phases including developmental tests and support to in-service tests and operational tests.
- Employees who determine the scope, infrastructure, resources, and/or data sample size to ensure system requirements are adequately demonstrated and analyzes, assesses, and evaluates test data/results; prepares reports of system performance and T&E findings.
- Employees who develop T&E processes, modify, adapt, tailor, or extend standard T&E guidelines, precedents, criteria, methods, and techniques, to include Design of Experiments, M&S (Modeling and Simulation), and Information Assurance certification.
- Employees who design and use existing or new test equipment and procedures.
- Employees who write, edit, and staff the T&E Strategy (TES) or T&E Master Plan (TEMP), as well as system-level and/or individual element test plans.

- Employees who conduct Developmental T&E (DT&E); support operational tests; evaluate and analyze test results/test data; and prepare and present evaluation/assessment results.
- Workforce members who categorize test data and system deficiencies and certify readiness for operational T&E.

The typical locations where most Army T&E AWCF positions are found include developmental and/or operational test organizations, Army test centers, Major Range and Test Facility Bases (MRTFB), and ATEC and subordinate command Headquarters (HQ).

Job Position Classification Standards for Professional Engineers

The Job Family Position Classification Standard for Professional Work in the Engineering and Architecture Group (November 2008) provides detailed classification guidance for engineering positions. This guide also provides the following clarifications between professional and technical work:

Table 1. Distinction Between Professional and Technical Work

Professional Work	Technical Work
Creating, exploring, evaluating, designing, and sharing solutions and the validity of predicted performance to resolve problems, conditions, and issues.	Using and/or carrying out recurring methods, standardized procedures, and established processes for a specialized industry, technology, or science field.
Applying a range and depth of knowledge acquired specifically through an intensive learning regimen of the phenomena, theories, and concepts of a scientific body of engineering knowledge.	Applying basic engineering knowledge acquired through practical experience and on-the-job activities of accepted processes, standards, methods, and their corresponding scientific principles and results.
Understanding theories, concepts, principles, and their relationships underlying the practices of engineering and/or professional architecture to improve the efficiency and quality of work performed or to protect the public's interests in the quality of life, health, infrastructures, and natural resources.	Understanding and skill in applying predetermined procedures, methodology, and standardized practices in a narrow specialized industry, technology, or science field, or performing technical work requiring originality, initiative, and practical judgment in using and adapting standardized engineering techniques and methods.
Identifying, analyzing, advising, consulting, and reporting on scientific, theoretical, and factual data, conditions, and problems.	Carrying out tasks, methods, procedures, and computations based on oral instructions and/or precedents, guidelines, and standards.

Assessing, resolving, and predicting relationships and interactions of data and findings under varying conditions.	Collecting, observing, testing, and recording factual and scientific data within the oversight and management of professional employees.
Reasoning from existing knowledge and assumptions in the engineering and/or architecture field to unexplored areas and phenomena.	Foreseeing the effects of procedural changes or appraising the validity of results on the basis of experience and practical reasoning.
Staying abreast of and evaluating scientific subjects, analyses, and proposals in professional literature.	Staying abreast of existing and new practical methods and applications through on-the-job and classroom training.

Associate tester, test support, and technician personnel frequently perform nonprofessional technical work that does not require a professional degree. They typically implement test plans or execute projects based on extensive experience and supplemental on-the-job training, rather than apply formal academic education obtained in the engineering or science disciplines. Nonprofessional and semi-professional work requires a high degree of practical knowledge and skill. The employees do not need to apply the range and depth of knowledge acquired specifically through an intensive learning regiment of the phenomena, theories, and concepts of a body of engineering or scientific knowledge. Associate tester, test support, and technician personnel apply basic engineering and scientific knowledge acquired through practical experience and on-the-job activities following accepted processes, standards, methodologies. The new T&E AWCF qualification standards do not recognize the value of associate tester, test support, and technician personnel performing nonprofessional and semi-professional work within the testing community, which does not require a professional engineering or science degree (ATEC (TEDT-PL), personal communication, January 19, 2011, subject: Proposal for a Second T-coded Acquisition Career Field).

Test and Evaluation Certification Requirements Prior to October 1, 2012

Prior to October 1, 2012, the formal education requirements for certification in the T&E AWCF called for a bachelor's degree or higher in any field of study (DASD, 2011). However,

regardless of the field of study, there was an additional requirement to have completed a minimum of 24 semester hours or the equivalent in technical or scientific courses, such as mathematics (calculus, probability, or statistics), physical sciences (biology, chemistry, or physics), psychology, operations research/systems analysis, engineering, computer science, or information technology. Table 2 provides the T&E AWCF certification requirements as they existed prior to implementation of the new standards on October 1, 2012.

Table 2. Test and Evaluation Certification Standards Prior to October 1, 2012

Level I Certification	
Training	• ACQ 101—Fundamentals of Systems Acquisition Management • TST 101—Introduction to Acquisition Workforce Test and Evaluation
Education	Baccalaureate degree with 24 semester hours or equivalent in physical science, mathematics, chemistry, engineering, physics, biology, operations research, or a related field, or at least 10 years of experience in acquisition positions (as of October 1, 1991).
Experience	One year of acquisition experience (T&E experience of experience with a technical orientation in an acquisition position is preferred).
Level II Certification	
Training	• ACQ 201A—Intermediate Systems Acquisition, Part A • ACQ 201B—Intermediate Systems Acquisition, Part B • TST 202—Intermediate Test and Evaluation
Experience	Two years of acquisition experience, of which at least 1 year is T&E experience.
Level III Certification	
Training	• TST 301—Advanced Test and Evaluation
Experience	Four years of acquisition experience, of which at least 2 years is T&E experience.

Test and Evaluation Certification Requirements Effective October 1, 2012

The DASD(DT&E) (June 2012) revised the requirements for certification in the T&E AWCF effective October 1, 2012, to address the increasing complexity of systems being developed and to advance the intellectual proficiency of members of the T&E AWCF. Revised training requirements for T&E AWCF certification now in affect are provided in Table 3 (changes shown in bold italics).

Table 3. Test and Evaluation Certification Standards After October 1, 2012

Level I Certification	
Acquisition Training	• ACQ 101—Fundamentals of Systems Acquisition Management
Functional Training	• *CLE 023—Modeling and Simulation for Test and Evaluation* • *CLE 025—Information Assurance* • *CLE 035—Introduction to Probability and Statistics* • *SYS 101—Fundamentals of Systems Planning, Research, Development, and Systems Engineering* • *TST 102—Fundamentals of Test and Evaluation*
Education	Baccalaureate or graduate degree in a technical or scientific field, such as engineering, physics, chemistry, biology, mathematics, operations research, engineering management, or a computer science.
Experience	One year of Test and Evaluation experience.
Core Plus Optional Training	• *CLE 004—Introduction to Lean Enterprise Concepts* • *CLE 015—Continuous Process Improvement Familiarization* • IRM 101—Basic Information Systems Acquisition
Level II Certification	
Training	• ACQ 201A—Intermediate Systems Acquisition, Part A • ACQ 201B—Intermediate Systems Acquisition, Part B • TST 202—Intermediate Test and Evaluation
Functional Training	• *CLE 003—Technical Reviews* • *CLE 029—Testing in a Joint Environment* • *CLE 301—Reliability and Maintainability* • *CLR 101—Introduction to the Joint Capabilities Integration and Development System* • SYS 202—Intermediate Systems Planning, *Research, Development, and Engineering* • *TST 203—Intermediate Test and Evaluation*
Experience	Two years of acquisition experience, of which at least 1 year is T&E experience.
Level III Certification	
Training	• TST 301—Advanced Test and Evaluation
Experience	Four years of acquisition experience, of which at least 2 years is T&E experience.
Core Plus Optional Training	• *CLB 007—Cost Analysis* • *CLB 016—Introduction to Earned Value Management* • *CLE 017—Technical Planning* • *CLE 021—Technology Readiness Assessments* • *CLE 037—Telemetry* • *CLE 038—Time-Space Position Information* • *CLE 039—Environmental Issues in Test and Evaluation* • *CLE 060—Practical Software and Systems Measurement* • *CLM 013—Work-Breakdown Structure* • *CLM 016—Cost Estimating* • *CLM 017—Risk Management* • *CLM 035—Environmental Safety and Occupational Health*

Table 3. Test and Evaluation Certification Standards After October 1, 2012 (cont.)

Level III Certification	
Functional Training	• *CLB 009—Planning, Programming, Budgeting, and Execution and Budget Exhibits* • *CLL 015—Product Support Business Case Analysis* • *CLM 014—IPT Management and Leadership* • *CLM 031—Improved Statement of Work* • *TST 303—Advanced Test and Evaluation*
Experience	Four years of Test and Evaluation experience.
Core Plus Optional Training	• *CLC 011—Contracting for the Rest of Us* • *CLE 009—ESOH in Systems Engineering* • *CLE 066—Systems Engineering for Systems of Systems* • *CLL 012—Supportability Analysis* • *CLL 014—Joint Systems Integrated Support Strategies* • *CLM 032—Evolutionary Acquisition* • *CLR 151—Analysis of Alternatives* • *CLR 250—Capabilities-Based Assessments* • *HBS 409—Decision Making* • *HBS 427—Meeting Management* • *HBS 441—Team Management* • *PMT 251—Program Management Tools Course*

Along with the change in formal civilian education requirements, as shown in bold italics in Table 3, the DAU training course requirements for T&E AWCF certification have been revamped. The prior TST 202 and TST 301 have been modified, with the replacement TST 203 going from 4.5 days to 9.5 days and TST 303, which will go into effect in 2014, likely to be longer as well to accommodate proposed curriculum changes. The ATEC Test and Evaluation Basic Course can no longer be substituted for credit for TST 101 and TST 202. The time required to complete all training requirements to achieve Level III T&E AWCF certification has increased, requiring personnel to be away from their job duties for longer periods.

Chapter 3—Research Methodology

Introduction

This research study employed a descriptive, applied research approach in which qualitative and quantitative data were collected to address the research questions. The target audience of the data collection effort consisted of leaders, supervisors, and human resources staff members of ATEC HQ, OTC, and various subordinate ATEC test centers. The target audience was selected based on their perceived stake regarding the effect of the changes for T&E AWCF certification requirements on members of their organization. Data were collected via a survey instrument designed to provide responses addressing the essential elements of the research questions. Given the senior grades and positions of the target audience, as well as their T&E AWCF qualifications and experience, target audience members are considered subject matter experts (SME) for addressing the impact of the changes in the T&E AWCF qualification standards for their organization and workforce.

Research Questions

This research study addressed the following three questions:

1. What types of associate tester, test support, and technician personnel do test centers currently employ, are these positions T&E AWCF coded, and what are their current education requirements?

2. What are the pros and cons of creating a T&E Semi-Professional AWCF that does not require a 4-year engineering or science degree from an accredited college?

3. Which elements of the current T&E AWCF training requirements should be retained if a T&E Semi-Professional AWCF certification process is created?

Research Perspective

The research perspective of this study is that of the ATEC test community affected by the changes to the T&E AWCF qualification standards. This research project studied the impact of the changes in the T&E AWCF qualification standards on ATEC test community employees and recommends ways to mitigate identified negative consequences. Surveys were administered anonymously via SurveyMonkey, a tool provided by DAU to facilitate research studies. Personnel surveyed included supervisors primarily in the grade/rank of GS-12/13 (or equivalent)/Major (0-4) and above, along with Human Resources Staff members. Based on their T&E AWCF qualifications and experience, participants in the survey are considered highly knowledgeable SMEs qualified to address the impact of the changes in the T&E AWCF qualification standards for their organization and workforce.

Data Collection Instrument

Data were collected using a single survey composed of 14 survey questions. The first three questions addressed demographic characteristics of the respondent, while the remainder of the survey addressed the research questions. The survey design was primarily multiple choice questions, with the ability to provide additional comments for most of the questions. The data collection instrument provided qualitative and quantitative data from the target audience to address the research questions. Personnel selected to take the survey were chosen based on their perceived expertise and knowledge to address the issues associated with the impact of changes related to the T&E AWCF qualification standards on their organization and workforce. The average time to complete the survey was estimated to be 20 to 30 minutes from start to finish.

Participants, Population, and Sample

A total of 90 personnel participated in this study. Of the total, 38 percent (34 participants) represented the Army operational test community, 55 percent (50 participants combined from the

various test centers) represented the Army developmental test community, and the remaining 7 percent (6 participants) represented ATEC HQ, which oversees both operational and developmental testing. Of the 6 responses from ATEC Headquarters, 3 participants (50 percent) were human resources staff members responsible for management and implementation of personnel policies, to include job descriptions, training, and T&E AWCF certification. Of the total responses, 49 percent (44 participants) were first-line supervisors at the Division Chief level who interact daily with affected personnel. The 8 percent of participants (7 personnel) who identified themselves as "other" consisted of senior test engineers and analysts selected by their command to respond. The majority of respondents (50 percent) hold a duty grade of LTC/GS-14, which is the prevalent grade for an ATEC division chief. The number of participants from the targeted population for this study satisfied the required sample size needed to validate this research study. Table 4 provides a breakdown of the population of research participants who responded to the survey instrument used to complete this study.

Table 4. Breakdown of Research Study Participants

Assigned Organization		
Responses	Response Percent	Response Count
Aberdeen Test Center	15.6%	14
Army Test and Evaluation Command	6.7%	6
Electronic Proving Ground	10.0%	9
Operational Test Command	37.7%	34
Redstone Test Center	5.6%	5
Yuma Test Center	20.0%	18
White Sands Test Center	4.4%	4
Total Responses		90

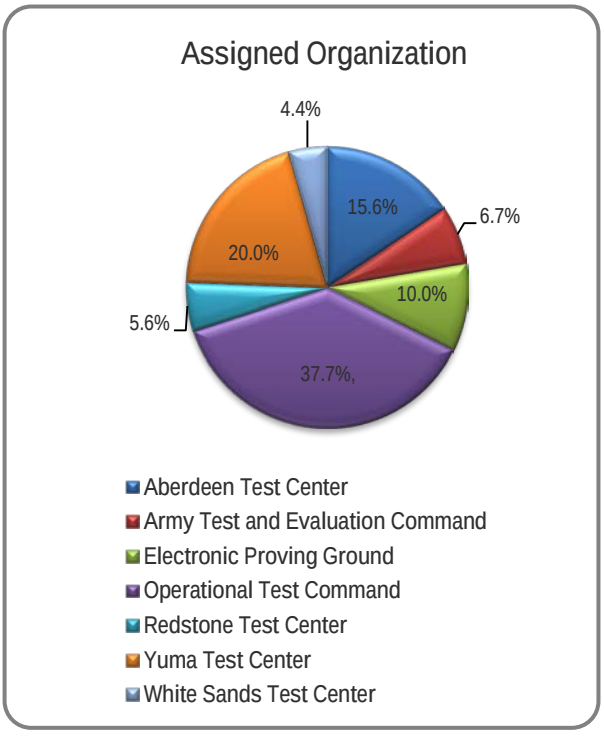

Table 5 provides a breakdown of the duty positions of the population of research participants who responded to the survey instrument used to complete this study.

Table 5, Breakdown of Research Study Participants Duty Positions

Duty Position Assigned		
Responses	Response Percent	Response Count
Command or Center Technical Director	5.6%	5
Command or Center Support Staff	14.4%	13
Command or Center Human Resources Director/ Staff	3.3%	3
Director, Test Directorate	13.3%	12
Technical Director /Staff, Test Directorate	6.7%	6
Division Chief, Test/Test Support Division	48.9%	44
Other	7.8%	7

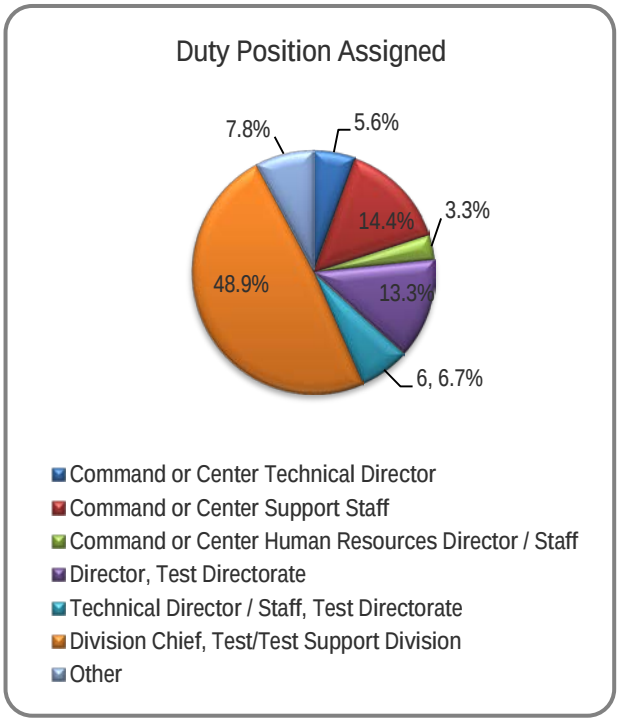

Table 6 provides a breakdown of the duty grades of the population of research participants who responded to the survey instrument used to complete this study.

Table 6. Breakdown of Research Study Participants Duty Grades

Current Rank or Grade		
Responses	Response Percent	Response Count
Colonel (06) or GS-15 (or equivalent)	23.3%	21
Lieutenant Colonel (05) or GS-14 (or equivalent)	50.0%	45
Major (04) or GS-13/GS-12 (or equivalent)	26.7%	24

Chapter 4—Findings

Introduction

The survey instrument used to support this research was administered between December 15, 2012, and January 25, 2013. The survey was administered to ATEC HQ and major Army test centers. The survey was provided to the Technical Director of each test center, who used their discretion in selecting personnel to participate in the study. Survey findings were synthesized and tabulated for presentation. Summary findings are provided following the tabulation of each data set. The survey also provided participants an opportunity to provide open-ended comments. A summary of the open-ended comments is provided at Appendix 1. Findings are parsed according to the research question addressed by the data.

Do Organizations Currently Employ Associate Tester, Test Support, and Technician Personnel?

Survey participants were asked whether their organization employs associate tester, test support, and technician personnel to support mission execution. This question was used to verify that participants in the survey were part of the target population, meaning their organization actually employs associate tester, test support, and technician personnel. Responses to this question also provided insight into the scale of the issue—i.e., what percentage of participants actually were affected by changes to the T&E AWCF certification standards? Participants who answered no to this question were instructed to discontinue the survey and submit it at that point.

Of 90 total survey participants, 76 (84 percent) indicated their organization employs associate tester, test support, and/or technician personnel, while the remaining 14 (16 percent) indicated their organization does not. For those that answered “no”, test support and technician functions are being met by contractor personnel or support from other test centers. Of the 14 participants who answered “no” to this question, 4 participants continued the survey and provided responses to select questions. These individuals chose to provide additional input on

questions regarding education and certification requirements based on their experience and subject matter expertise. Findings indicate that for all test centers the overwhelming majority (84 percent) use Associate Tester, Test Support, and Technician government employees.

Types of Associate Tester, Test Support, and Technician Personnel Employed Within Test Centers

The following data provided by participants indicates the types of associate tester, test support, and technician personnel currently are employed by test centers in support of their mission.

Table 7. Tester, Test Support, and Technician Types Employed

Responses	Yes	No	Response Rate (n=76)	Didn't Respond (n=76)	Yes / Total Respondents (n=76)	No / Total Respondents (n=76)
Ammunition / Explosives Technician	19 (44%)	24 (56%)	43 (57%)	33 (43%)	25%	32%
Associate Test Officer / Test Engineer Technician	53 (86%)	9 (14%)	62 (82%)	14 (18%)	70%	10%
Automotive Technician	19 (46%)	22 (54%)	41 (54%)	35 (46%)	25%	29%
Computer / IT / Software Technician	39 (85%)	7 (15%)	46 (61%)	30 (39%)	51%	9%
Electrical / Electronic Technician	43 (88%)	6 (12%)	49 (65%)	27 (35%)	57%	8%
Instrumentation / Geodetic Technician	39 (80%)	10 (20%)	49 (64%)	27 (35%)	51%	13%
Laboratory Technician	12 (34%)	23 (66%)	35 (46%)	41 (54)%	16%	30%
Logistics / Supply Technician	37 (79%)	10 (21%)	47 (62%)	29 (38%)	49%	13%
Machine Shop Technician	15 (43%)	20 (57%)	35 (46%)	41 (54)%	20%	26%
Operations Management Technician	24 (56%)	19 (44%)	43 (57%)	33 (43%)	32%	25%
Radio Technician	10 (28%)	26 (72%)	36 (47%)	40 (53%)	13%	34%
Training Technician	9 (24%)	28 (76%)	37 (49%)	39 (51%)	12%	37%
Vehicle Operator Technician	18 (50%)	18 (50%)	36 (47%)	40 (53%)	24%	24%

Survey findings show that associate tester, test support, or technician positions most often found within Army test centers and OTC is that of associate test officer or test engineer technician. This is a critical position that serves as the backup or assistant to the primary test officer for a program. Other positions survey that participants indicated their test centers employ most frequently included computer/IT/software technicians, electrical/electronic technicians,

instrumentation/geodetic technicians, and logistics/supply technicians, all were in the range of 50 percent or more for all respondents. The least reported test support and technician positions employed included operations management, machine shop, vehicle operators, automotive, and ammunition technicians. The findings suggest that the importance and frequency of specific test support and technician-type positions employed are test-center specific, based on the type of testing conducted. The representation of laboratory technician positions in the findings was lower than expected; however, test centers may be choosing to fill that role through contractor personnel or means other than government employees. Laboratory technicians typically provide a variety of critical support functions during developmental testing, such as material failure analysis and chemical analysis of fluids.

Positions Coded as T&E AWCF

Table 8 provides findings regarding the percentages of Associate Testers, Test Support, and Technician positions currently coded as T&E AWCF.

Table 8. Positions Coded as T&E AWCF

Responses	Yes	No	Responses (n=76)	Didn't Respond (n=76)	Yes / Total Responses (n=76)	No / Total Responses (n=76)
Ammunition/Explosives Technician	0 (0%)	18 (100%)	18 (24%)	58 (76%)	0%	24%
Associate Test Officer/Test Engineer Technician	14 (28%)	36 (72%)	50 (66%)	26 (34%)	18%	47%
Automotive Technician	1 (5%)	19 (95%)	20 (26%)	56 (74%)	1%	25%
Compute /IT/Software Technician	10 (29%)	24 (71%)	34 (45%)	42 (55%)	13%	32%
Electrical/Electronic Technician	10 (26%)	28 (74%)	38 (50%)	38 (50%)	13%	37%
Instrumentation/Geodetic Technician	8 (23%)	27 (77%)	35 (46%)	41 (54%)	11%	36%
Laboratory Technician	1 (8%)	12 (92%)	13 (17%)	63 (83%)	1%	16%
Logistics/Supply Technician	4 (13%)	27 (87%)	31 (41%)	45 (59%)	5%	36%
Machine Shop Technician	0 (0%)	18 (100%)	18 (24%)	58 (76%)	0%	24%
Operations Management Technician	2 (9%)	20 (91%)	22 (29%)	54 (71%)	3%	26%
Radio Technician	0 (0%)	13 (100%)	13 (17%)	63 (83%)	0%	17%
Training Technician	0 (0%)	10 (100%)	10 (13%)	66 (87%)	0%	13%
Vehicle Operator Technician	1 (7%)	14 (93%)	15 (20%)	61 (80%)	3%	18%

Survey participants revealed that a low percentage of associate testers, test support, and technician positions identified currently are coded as T&E AWCF positions. Based on the standards for coding a position as falling into the T&E AWCF, per the AT&L Workforce PCD (June 2012), test centers appear to be choosing not to code positions T&E AWCF that should be included. Relevant standards for coding these positions as T&E AWCF include the following:

- Conducts tests/evaluations associated with concepts, emerging technologies, or experiments of new, fielded, or modified systems, equipment, or materiel throughout all acquisition phases, to include DT, in-service tests, and OT.
- Design or operation of existing or new test equipment, procedures, and approaches.
- Conduct DT&E; support OT&E; evaluate/analysis test results/test data.
- Categorize test data, equipment/materiel data, or system deficiencies.

Survey findings explain that test centers are not coding positions as T&E AWCF because of formal education and/or certification requirements. Survey comments point out that test centers would favor an AWCF category requiring a general 4-year degree and a three- level certification process specific to T&E skills and knowledge. Test Officer GS-0301 positions are not being coded as T&E AWCF primarily due to the 4-year engineer or science degree requirement. It is clear that some positions that should be coded as T&E AWCF are not being properly coded. The T&E AWCF standards for education and certification play a critical role in test center decisions regarding whether to code a position as belong to the T&E AWCF.

Positions Requiring a 4-Year Degree

Table 9 provides findings regarding the percentage of the positions identified that require a 4-year degree to be performed successfully.

Table 9. Positions Requiring a 4-Year Degree

Responses	Yes	No	Responses (n=76)	Didn't Respond (n=76)	Yes / Total Responses (n=76)	No / Total Responses (n=76)
Ammunition/Explosives Technician	0 (0%)	19 (100%)	19 (25%)	57 (75%)	0%	25%
Associate Test Officer/Test Engineer Technician	8 (17%)	40 (83%)	48 (63%)	28 (37%)	11%	53%
Automotive Technician	0 (0%)	20 (100%)	20 (26%)	56 (74%)	0%	26%
Computer/IT/Software Technician	8 (24%)	26 (76%)	34 (45%)	42 (55%)	11%	34%
Electrical / Electronic Technician	9 (24%)	29 (76%)	38 (50%)	38 (50%)	12%	38%
Instrumentation/Geodetic Technician	10 (31%)	22 (69%)	32 (42%)	44 (58%)	13%	29%
Laboratory Technician	2 (17%)	10 (83%)	12 (16%)	64 (84%)	3%	13%
Logistics/Supply Technician	1 (3%)	28 (97%)	29 (38%)	47 (62%)	1%	37%
Machine Shop Technician	0 (0%)	17 (100%)	17 (22%)	59 (78%)	0%	22%
Operations Management Technician	2 (9%)	20 (91%)	22 (29%)	54 (71%)	3%	26%
Radio Technician	0 (0%)	11 (100%)	11 (14%)	65 (86%)	0%	14%
Training Technician	0 (0%)	10 (100%)	10 (13%)	66 (87%)	0%	13%
Vehicle Operator Technician	0 (0%)	15 (100%)	15 (20%)	61 (80%)	0%	20%

Table 9 shows that very few of the positions identified as associate tester, test support, or technician positions by survey participants require a 4-year degree to perform. The exceptions include a small percentage of the advanced technology positions, such as computer/IT/software, electrical/ electronics, instrumentation/geodetics, test engineer, and laboratory technician positions. The overwhelming finding is that a 4-year degree requirement is not needed for the vast majority of these positions. However, imposition of a 4-year degree requirement can have second- and third-order effects, such as limiting the pool of candidates who can compete for these jobs and increasing salary requirements to compensate for the higher formal education requirement.

Positions Requiring an Engineering or Science Degree

Table 10 provides additional findings regarding the need for associate testers, test support, and/or technician personnel to have an engineering or science degree to perform their duties.

Table 10. Positions Requiring an Engineering or Science Degree

Responses	Yes	No	Responses (n=76)	Didn't Respond (n=76)	Yes / Total Responses (n=76)	No / Total Responses (n=76)
Ammunition / Explosives Technician	0 (0%)	19 (100%)	19 (25%)	57 (75%)	0%	25%
Associate Test Officer/Test Engineer Technician	7 (15%)	41 (85%)	48 (63%)	28 (37%)	9%	54%
Automotive Technician	1 (5%)	20 (95%)	21 (28%)	56 (72%)	1%	26%
Computer/IT/Software Technician	6 (18%)	27 (82%)	33 (43%)	43 (57%)	8%	36%
Electrical/Electronic Technician	9 (24%)	28 (76%)	37 (49%)	36 (51%)	12%	37%
Instrumentation/Geodetic Technician	11 (32%)	23 (68%)	34 (45%)	42 (55%)	14%	30%
Laboratory Technician	1 (8%)	11 (92%)	12 (16%)	64 (84%)	1%	14%
Logistics/Supply Technician	2 (7%)	27 (93%)	29 (38%)	47 (62%)	3%	36%
Machine Shop Technician	1 (6%)	16 (94%)	17 (22%)	59 (78%)	1%	21%
Operations Management Technician	1 (5%)	21 (95%)	22 (29%)	54 (71%)	1%	28%
Radio Technician	0 (0%)	11 (100%)	11 (14%)	65 (86%)	0%	14%
Training Technician	0 (0%)	10 (100%)	10 (13%)	66 (87%)	0%	13%
Vehicle Operator Technician	0 (0%)	15 (100%)	15 (20%)	61 (80%)	0%	20%

Table 10 findings are very similar to those for Table 9. Survey participants indicate slightly fewer associate tester, test support, or technician positions require a 4-year engineer or science degree to perform. The exceptions include previously identified high technology positions in computer/ IT/software and electrical/electronics, and to a lesser degree instrumentation/geodetics and test engineer positions. Referring to the *Job Family Position Classification Standard for Professional Work in the Engineering and Architecture Group* (November 2008) and the standards for Engineering vs. Technician job duties (Table 1), the positions identified by the survey participants fall predominantly into the technician category. The main finding is that imposition of a 4-year engineering or science degree requirement is not needed for most positions. Those that do require an engineering or science degree should be in accordance with the *Job Family Position Classification Standard for Professional Work in the Engineering and Architecture Group* (November 2008), as opposed to a T&E AWCF certification standard. The arbitrary decision to make this a requirement for all T&E AWCF positions limits the pool of candidates who can compete for these jobs and increases the salary requirements to compensate employees for their higher formal education.

Positions Requiring a Training Certificate in Lieu of a Degree

Table 11 presents findings regarding the percentages of associate tester, test support, and technician positions currently employed by Army test centers for which a training certificate indicating technical proficiency to perform specific job duties is sufficient, rather than a 4-year degree.

Table 11. Positions Requiring a Training Certificate in Lieu of a Degree

Responses	Yes	No	Responses (n=76)	Didn't Respond (n=76)	Yes / Total Responses (n=76)	No / Total Responses (n=76)
Ammunition/Explosives Technician	6 (32%)	13 (68%)	19 (25%)	57 (75%)	8%	17%
Associate Test Officer/Test Engineer Technician	13 (28%)	34 (72%)	47 (62%)	29 (38%)	17%	44%
Automotive Technician	8 (40%)	12 (60%)	20 (26%)	56 (74%)	11%	16%
Computer/IT/Software Technician	13 (42%)	18 (58%)	31 (41%)	45 (59%)	17%	24%
Electrical/Electronic Technician	11 (31%)	25 (69%)	36 (47%)	40 (53%)	14%	33%
Instrumentation/Geodetic Technician	12 (38%)	20 (62%)	32 (42%)	44 (58%)	16%	26%
Laboratory Technician	3 (25%)	9 (75%)	12 (16%)	64 (84%)	4%	12%
Logistics/Supply Technician	7 (24%)	22 (76%)	29 (38%)	47 (62%)	9%	29%
Machine Shop Technician	5 (29%)	12 (71%)	17 (22%)	59 (78%)	7%	16%
Operations Management Technician	3 (14%)	19 (86%)	22 (29%)	54 (71%)	4%	25%
Radio Technician	3 (27%)	8 (73%)	11 (14%)	65 (86%)	4%	11%
Training Technician	1 (10%)	9 (90%)	10 (13%)	66 (87%)	1%	12%
Vehicle Operator Technician	7 (47%)	8 (53%)	15 (20%)	61 (80%)	9%	11%

Table 11 findings indicate little support for a training certification in lieu of a 4-year degree for most associate tester, test support, and/or technician positions. Survey participants indicated the education requirements for the position are closely related to the degree of skills required to perform the job duties. Some of the positions identified for which a training certificate would be adequate included Computer/IT/Software, Electrical/Electronics, Instrumentation/Geodetics, Test Engineer, and skilled positions involving ammunition, automotive maintenance, vehicle operation, radio technician, machine shop technician, logistics support, and laboratory technicians. However, the ratings for all categories were below 50 percent, and the overall findings strongly suggest that survey participants do not view a training certificate as sufficient in lieu of a 4-year degree for the positions identified.

Pros and Cons of Creating a T&E Semi-Professional AWCF

Survey findings indicate a very small percentage of Associate Tester, Test Support, or Technician positions currently require T&E AWCF certification. These results are consistent with Table 8, in which the survey participants indicated that a very small percentage of identified positions currently are coded as T&E AWCF positions. As previously stated, these results are contrary to the standards for coding a position as falling into the T&E AWCF, per the AT&L Workforce PCD (June 2012). Table 12 presents the findings, based on input from survey participants, in regard to including associate tester, test support, and technician positions in the T&E AWCF.

Table 12. Positions Currently Requiring T&E AWCF Certification

Responses	Yes	No	Responses (n=76)	Didn't Respond (n=76)	Yes / Total Responses (n=76)	No / Total Responses (n=76)
Ammunition/Explosives Technician	1 (0%)	18 (100%)	19 (24%)	58 (76%)	1%	24%
Associate Test Officer/Test Engineer Technician	15 (31%)	34 (69%)	49 (64%)	26 (36%)	20%	45%
Automotive Technician	3 (15%)	17 (85%)	20 (26%)	56 (74%)	4%	22%
Computer/IT/Software Technician	11 (33%)	22 (67%)	33 (43%)	42 (57%)	14%	29%
Electrical / Electronic Technician	10 (27%)	27 (73%)	37 (49%)	38 (51%)	13%	36%
Instrumentation/Geodetic Technician	6 (19%)	25 (81%)	31 (41%)	41 (59%)	8%	33%
Laboratory Technician	0 (0%)	13 (100%)	13 (17%)	63 (83%)	0%	17%
Logistics/Supply Technician	4 (14%)	25 (86%)	29 (38%)	45 (62%)	5%	33%
Machine Shop Technician	1 (6%)	16 (100%)	17 (22%)	58 (78%)	1%	21%
Operations Management Technician	2 (9%)	20 (91%)	22 (29%)	54 (71%)	3%	26%
Radio Technician	1 (9%)	10 (100%)	11 (14%)	63 (86%)	1%	13%
Training Technician	0 (0%)	10 (100%)	10 (13%)	66 (87%)	0%	13%
Vehicle Operator Technician	1 (7%)	14 (93%)	15 (20%)	61 (80%)	1%	18%

Importance of Creating a T&E Semi-Professional AWCF

A very small percentage of associate testers, test support, or technician positions are currently coded for inclusion in the T&E AWCF, as shown in Table 8 and Table 12. Slightly more than 50 percent of study participants indicate they consider it very important or important to create a T&E AWCF certification process to support professional development of associate testers, test support, and technician personnel. An additional 16.5 percent believe it is desirable, but not critical, while 30.4 percent responded that it is either not of great importance or not required. These findings indicate strong support (66.5 percent) among test center survey participants for a T&E AWCF for associate testers, test support, and technician personnel. Figure 1 shows the perspective of survey participants regarding the importance of creating a T&E Semi-Professional AWCF to address the needs of personnel holding a position identified as falling into one of the associate tester, test support, or technician categories.

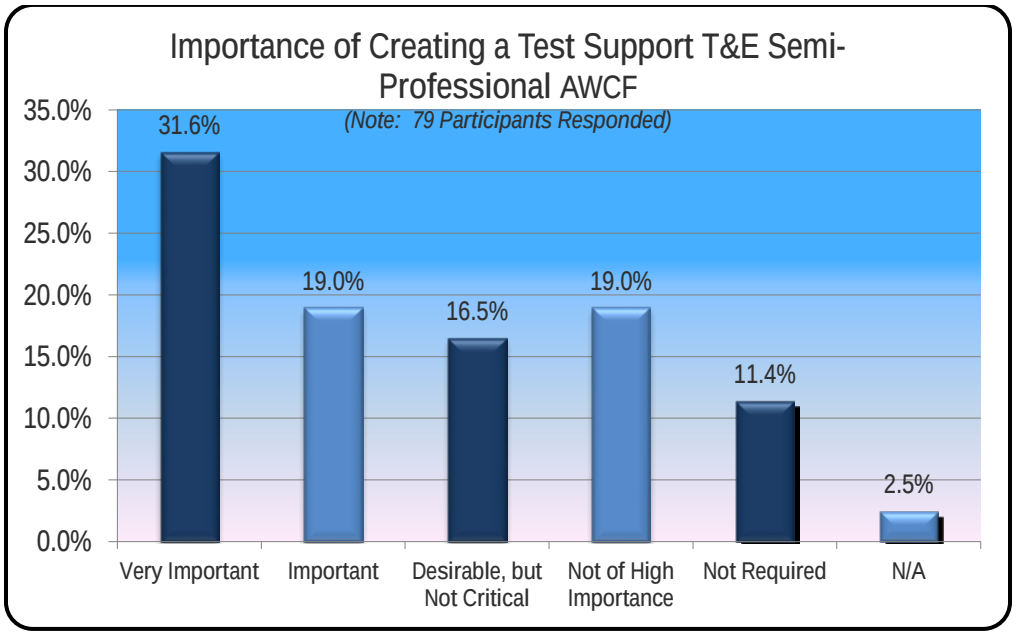

Figure 1. Importance of Creating a T&E Semi-Professional AWCF

Benefits of Creating a T&E Semi-Professional AWCF

Survey findings show that 50 percent or more of participants believe that creating a T&E Semi-Professional AWCF would provide benefits to their organization and/or associate testers, test support, and technician personnel in five of the eight categories listed, while 15 percent indicated there would be additional benefits not listed. Only 22 percent responded that there would be no benefit, indicating that, of the 76 participants who answered this question, 78 percent perceive at least some benefits. The findings clearly indicate support for creating a T&E Semi-Professional AWCF to mitigate the impact of changes in the T&E AWCF certification standards. Figure 2 illustrates these findings regarding the benefits of creating a T&E Semi-Professional AWCF.

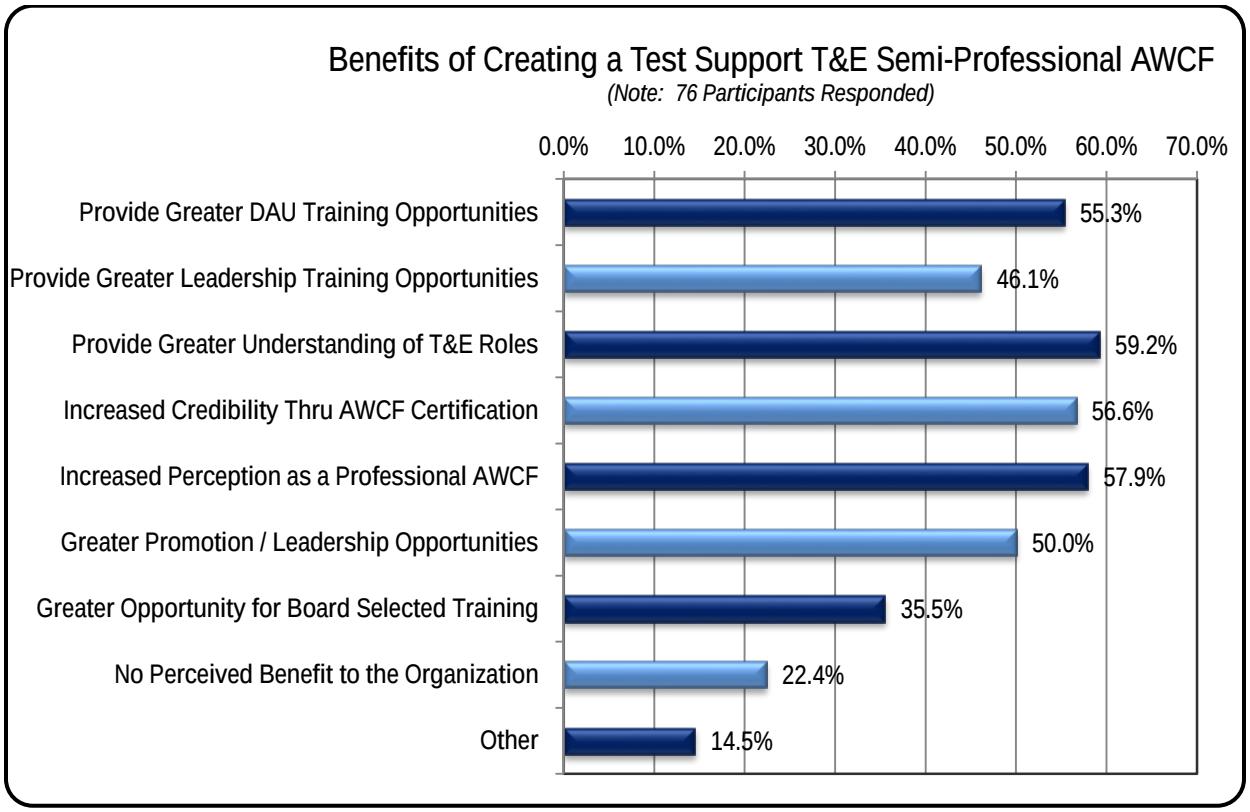

Figure 2. Benefits of Creating a T&E Semi-Professional AWCF

Some of the additional benefits for creating a T&E Semi-Professional AWCF offered by survey participants in the comment section included:

- Ability to tailor training to meet specific needs of each test center or individual.
- Credibility linked to successful completion of the certification requirements vs. formal education requirements.
- Equality of training requirements and opportunities with co-workers.
- Greater flexibility to move into other career fields once certification is achieved.
- Mitigates ATEC's ability to retain, recruit, and hire the most qualified personnel for specific T&E positions, to include prior military personnel.
- Increased opportunity to compete for tuition assistance in pursuit of a degree.

The prevalent opposing viewpoint among those who disagreed with creating a T&E Semi-Professional AWCF was based on a perception it would not improve the contributions associate testers, test support, and technician personnel make to the organizational mission. Their belief is that the cost and added training requirements of being included in an AWCF would outweigh any potential advantages of making associate tester, test support, and technician personnel part of an AWCF.

Elements of Current T&E AWCF Training That Should be Retained

The following findings address input from survey participants regarding current T&E AWCF training requirements that should be retained as part of a T&E Semi-Professional AWCF certification process. Figure 3 provides findings regarding the number of certification levels survey participants deemed appropriate for a T&E Semi-Professional AWCF certification process.

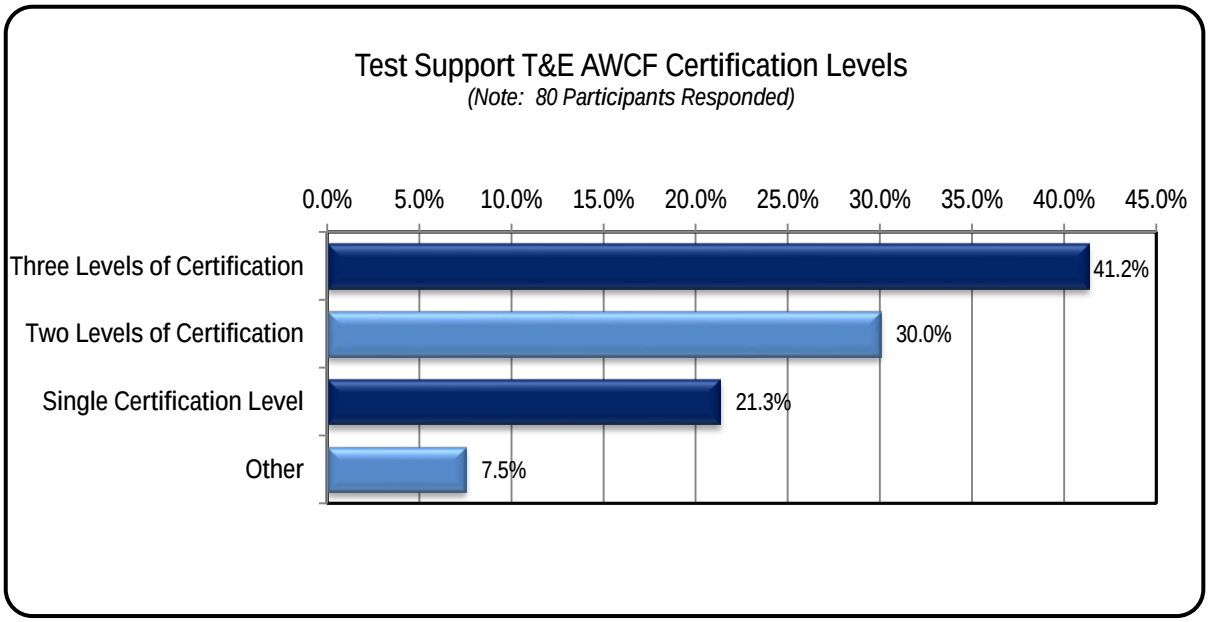

Figure 3. T&E Semi-Professional AWCF Recommended Certification Levels

The majority of survey participants responded that a III- or II-level certification process would be appropriate (74 percent of 77 participants). The sentiment regarding the levels required for a T&E Semi-Professional AWCF certification process appears to be tied to the job positions included in the career field. Given the traditional approach to AWCF certification is a three-tier certification level process and survey responses, there is not enough support to justify deviating from the traditional model.

Only 11 percent of 76 survey participants responded that a 4-year degree should be required. Among those that responded that a 4-year degree is needed, the specified field of study for the degree could be in any area provided certification is achieved in the specified test support or technician specialty. Findings that addressed recommended education requirements for a newly created T&E Semi-Professional AWCF are provided in Figure 4.

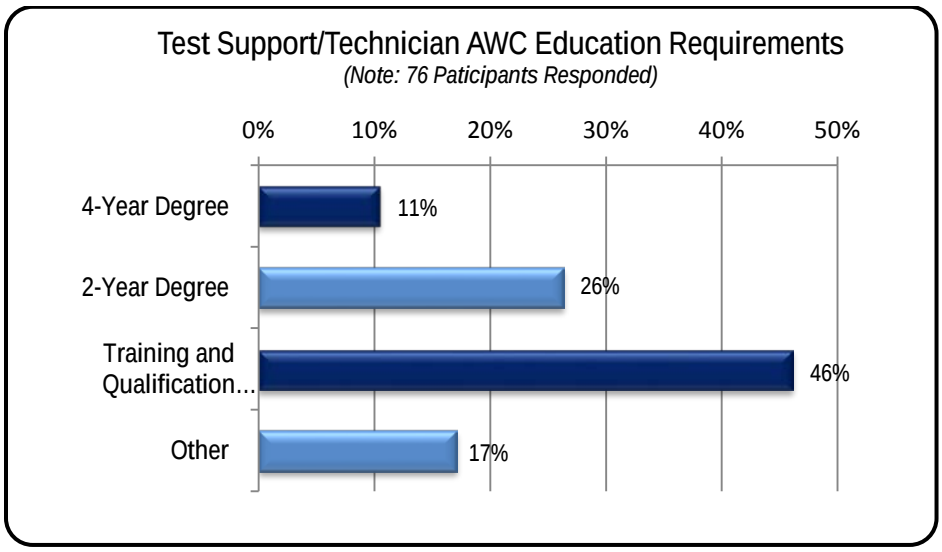

Figure 4. T&E Semi-Professional AWCF Recommended Education Requirements

Another viewpoint expressed was that formal education requirements should be related to the specific position held. As previously indicated, a 4-year degree requirement for some high technology positions, such as computer/IT/software, is considered more important than other others, such as automotive technicians. For less technical areas, a training certificate and prior experience in the specific specialty are sufficient. This would include areas such as heavy equipment operators, data management specialists, machinists, instrumentation specialists, etc.

Among the 26 percent who replied that a 2-year degree would be sufficient, exchanging experience for formal education was suggested. In this case, experience would be supplemented by requiring completion of the same DAU training courses currently required for T&E AWCF-coded positions and certification. It also was suggested that the 4-year degree requirement could be relaxed and not required until the Level III certification point. Participants holding this viewpoint placed more emphasis on subject matter expertise for the job duties, knowledge required to use or operate required equipment needed to perform duties in a field environment, and knowledge of Army doctrine and tactics. Communication skills (both written and verbal)

were cited as an important characteristic for associate tester, test support, and technician personnel.

The 46 percent who answered that training and qualification certification is sufficient focused primarily on personnel with previous military experience. For those personnel, the critical knowledge and skills they contribute derives from their military training and experience rather than their formal civilian education. In operational testing, the primary skills needed are a working knowledge of doctrine and tactics, the ability to translate test data requirements into operational test scenarios, and the ability to assess system performance from a warfighter's perspective regarding its military utility. Another viewpoint expressed was that technicians can get on-line acquisition training without coding their position AWCF.

Survey participants were asked to select which DAU training courses from the current T&E AWCF certification process should be retained as part of a three-tier T&E Semi-Professional AWCF certification process. Figures 5 through 7 provide those findings.

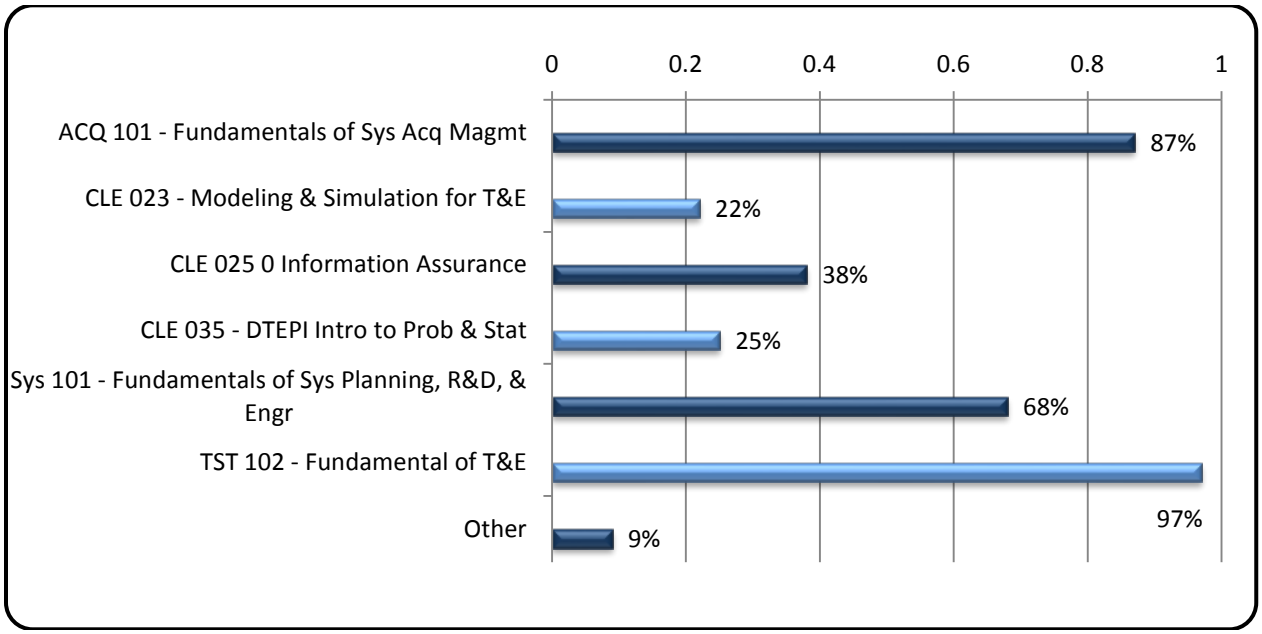

Figure 5. Recommended Level I DAU Training Certification Requirements

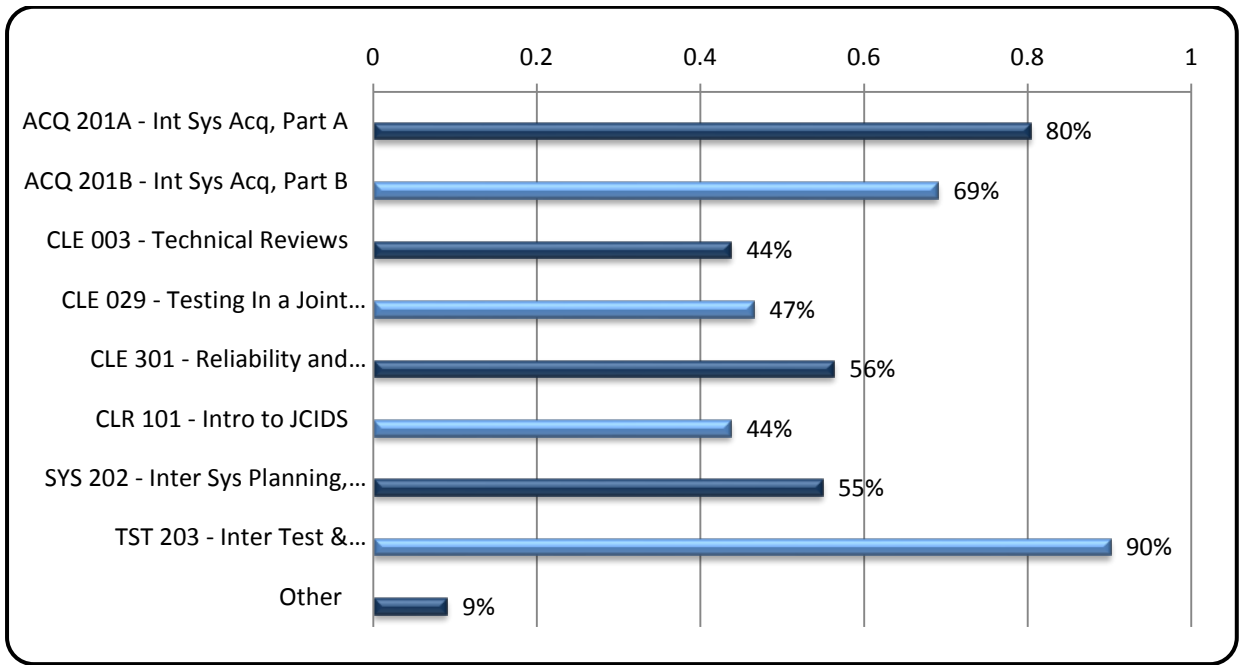

Figure 6. Recommended Level III DAU Training Certification Requirements

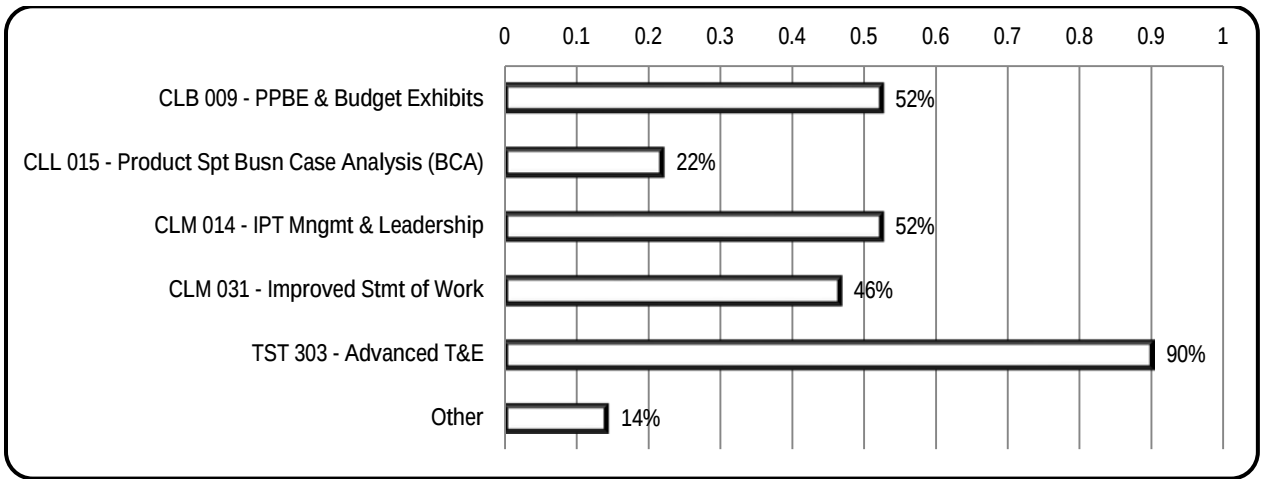

Figure 7. Recommended Level III DAU Training Certification Requirements

For Level I, there were 76 survey responses. For Level II, there were 71 survey responses. For Level III, there were 69 survey responses. Some survey participants who disagreed with a Level II or Level III certification process choose not to answer for those levels. Findings based on the actual responses indicate that the core DAU T&E certification courses should be retained: TST 102, TST 203, and TST 303, plus ACQ 101, ACQ 201, SYS 101, and

SYS 202. The only other DAU courses that received support of 50 percent or more of the survey participants were CLE 301, CLB 009, and CLM 014. The key finding in this area is a desire to see a reduction in the DAU training required for a T&E Semi-Professional AWCF certification. Survey participants indicated that associate tester, test support, and technician personnel training requirements should focus primarily on technical subjects in their occupational fields; be flexible in allowing supervisors to tailor training to meet specific personnel needs; and include budgeting, cost analysis, and/or earned value management training. Concerns expressed focused on the ability of the associate tester, test support, and technician personnel to successfully complete the DAU training courses without the prerequisite formal civilian education needed to succeed and whether the investment in this additional training would increase productivity of the test support and technician personnel receiving it.

Findings regarding job experience requirements for a T&E Semi-Professional AWCF certification indicate the current experience requirements should remain unchanged. Of the 77 survey participants who responded to this question, 67 percent agreed that job experience requirements should remain the same, while only 16 percent thought that the experience requirements should be changed. The other 17 percent disagreed with a Level III certification process. An alternate viewpoint expressed was to impose job experience requirements along the lines of those found in an apprenticeship: Level I up to 3 years, Level II up to 10 years, and Level III more than 10 years. Personnel would advance based on their demonstrated capabilities.

At the conclusion of the survey instrument, participants were provided the opportunity to provide open-ended comments. Comments received primary fell into two categories: Support for a T&E Semi-Professional AWCF or opposition to it. A summary of pertinent comments can be found at Appendix A. In total, 32 survey participants provided open-ended comments. Of those, 22 (69 percent) were in favor of a T&E Semi-Professional AWCF and 10 (31 percent)

were opposed. While the individual viewpoints in favor of or against a T&E Semi-Professional AWCF offer many rational arguments in support of the position taken, the survey findings indicate a large majority (by a factor of more than 2 to 1) of survey respondents support a new T&E Semi-Professional AWCF.

Chapter 5—Conclusions and Recommendations

Introduction

The major findings of this study are that Army test organizations have been impacted by changes to the T&E AWCF standards; there is strong support for a modified T&E Semi-Professional AWCF and certification standards that give test organizations more flexibility in the formal education requirements and professional development training of associate tester, test support, and technician personnel; and the current T&E certification standards in terms of core DAU training courses, certification levels, and experience level should remain in place. The greatest concern among Army test organizations involves personnel with previous military experience who will be excluded from consideration for associate tester, test support, and technician positions due to the lack of an engineering or science degree. The changes in the standards do not provide a means to provide equivalency credit for military training and experience, or, in the case of technicians, credit for their specific technical training and experience. Army test organizations must balance many factors: Compliance with AT&L Workforce PCD (June 2012) standards for position coding, meeting T&E AWCF certification standards for positions coded as T&E; recruiting and retaining the best-qualified personnel to fill position vacancies; and meeting professional development requirements of their personnel to allow them to fulfill their highest potential. This study indicates that Army test organizations must adjust to the recently enacted T&E certification standards to meet all these requirements.

Impact of Changes to the T&E AWCF Certification Standards

Army Test and Evaluation organizations heavily employ associate tester, test support, and technician personnel. Eighty-four percent of the respondents from Army test organizations surveyed confirmed their use of either an associate tester, test support, or various types of technician personnel to accomplish their mission. Many of these positions do not require having

an individual with an engineering or science degree to fill them. Among personnel currently filling and successfully performing these duties, only a small percentage are required to have an engineering or science degree, primarily in the areas of computer/IT/software, electrical/electronics, instrumentation/ geodetics, associate test officer/engineer, and laboratory technician. For categories in which some positions were identified as requiring an engineering or a science degree, only 32 percent or less of those positions were identified as having that degree requirement.

Changes to the certification standards have impacted future hiring practices and reduced the pool of candidates to fill these positions. Organizations are being forced to either exclude positions from the T&E AWCF, which in most cases is contrary to the AT&L Workforce PCD (June 2012) standards for position coding, or to hire only personnel with engineering or science degrees for future vacancies. The impact is that organizations are forced increase the position grade and salary to recruit personnel with the right degree, while eliminating potential candidates with the capabilities and skills needed to do the job at lower cost. Most notably, former military personnel with highly valued skills and experience are eliminated from consideration if they lack an engineering or science degree. Prior to the changes in the T&E AWCF certification standards, test organizations had greater flexibility in hiring decisions and position coding.

Is a T&E Semi-Professional AWCF Certification Process Needed?

Eliminating positions from the T&E AWCF impacts the organization's ability to provide professional development and promotion opportunities to deserving personnel who lack the engineering or science degree required for certification. Organizations currently are coding only a very small percentage of their associate tester, test support, and technician positions as T&E AWCF. Of the associate test, test support, and technician types identified, only three position types (associate test officer/ engineer, computer/IT/software, and electrical/electronics) have 31

to 33 percent of their positions coded as T&E AWCF, with the remainder all below 20 percent. Test organizations surveyed indicated strong support (cumulatively 65 percent considered it in the very important to desirable range) for inclusion of associate tester, test support and technician personnel in a modified AWCF. In addition, it is strongly believed (by 78 percent) that being part of an AWCF would provide professional development benefits for organizational employees, such as access to DAU training, additional leadership training opportunities, increased acquisition knowledge, and great opportunity for promotion. Being part of a modified AWCF also would provide additional opportunities for employees to move into other career fields, while enhancing ATEC's ability to recruit and retain personnel to fill critical associate tester, test support, and technician positions.

A small percentage of respondents (22 percent) oppose a modified AWCF for T&E Semi-Professional personnel. They contend that the contribution of these employees will not be increased or provide any material benefit to the organization by their becoming AWCF certified. As such, they oppose the training cost and time taken away from performing job duties for these individuals to participate in a certification process.

Training Requirements for a T&E Semi-Professional AWCF Certification Process

Army test organizations clearly favor a modified T&E Semi-Professional AWCF option with the flexibility to determine formal education and DAU training requirements needed to support specific positions. There is agreement that the current core T&E DAU training requirements be retained: TST 102, TST 203, TST 303, ACQ 101, ACQ 201, SYS 101, and SYS 202. Among other courses currently required for certification, only CLE 301 (Reliability and Maintainability), CLB 009 (PPBE & Budget Exhibits), and CLM 014 (IPT Management and Leadership) garnered more than 50 percent support for inclusion as mandatory requirements for a modified T&E Semi-Professional AWCF. Additional DAU training requirements would be position-specific and

tailored by the organization to meet the professional development needs of the employee. In addition to DAU training courses, test organizations want to include non-DAU technical courses specific to the position career field, such as computer courses, electronics courses, explosives safety and handling courses, and so forth.

Regarding formal education requirements, test organizations do not support requiring a 4-year college degree for certification in a modified T&E Semi-Professional AWCF. Only 11 percent of respondents agreed a 4-year degree is needed. Those who support a degree requirement suggest that the degree would be acceptable in any subject, provided the individual is approved by a certification process to perform their job duties. Most important, test organizations want the flexibility to determine the formal education requirements and type of degree required based on an assessment of the needs of the position. Test organizations also want a mechanism for exchanging experience and military training for formal education to ensure candidates who hold needed skills for positions are not excluded. Another way to accommodate a 4-year degree requirement would be to require completion of the degree only once the individual is achieving Level III certification.

Finally, the current three-level certification process and years of experience requirements for each certification level should remain unchanged. The three-level certification process had the most support at 41 percent, followed by a two-level process at 30 percent. There was not enough support to justify moving away from the traditional three-level certification process. As for job experience, 67 percent of survey participants agreed that the experience requirements should remain unchanged. Of the remaining 33 percent, 16 percent offered that experience requirements should be tied to the specific position, while the other 17 percent disagreed with the three-level certification process.

Recommendations

Rather than create an entirely new T&E Semi-Professional AWCF, it is recommended that the current T&E AWCF be split into two tiers: A professional tier for engineer and scientist positions and a semiprofessional tier for associate tester, test support, and technician personnel. Creating an entirely new T&E Semi-Professional AWCF requiring the same core DAU training, three-level certification process, and experience requirements would not be necessary to provide Army test organizations the flexibility to tailor formal education and DAU training certification standards to meet the requirements of their job positions. The professional tier would be unchanged and follow the current T&E AWCF certification standards.

The formal education requirements for the T&E Semi-Professional AWCF tier should remain a 4-year degree in a field determined by the test organization as appropriate for the position. The requirement should be relaxed so completion of the degree is not required prior to the Level III certification point. The test organization could be given the flexibility to determine whether a position requires certification at Level III or if Level II is sufficient. If someone in the position wants to make a career advance, he or she would have the option of obtaining a 4-year degree and moving into a position requiring Level III certification. Regarding certification training requirements beyond the DAU core courses, for each level of certification the supervisor and individual would agree on three elective training courses. These courses would be selected to meet the professional development needs of the individual, as well as to enhance the skills and knowledge required to successfully perform the job duties of the position. These electives could consist of DAU courses, college courses, or technical training courses, as deemed appropriate by the test organization. This model would still meet the DASD(DT&E) objective of “increasing intellectual proficiency within test and evaluation.”

Under this model, the certification standards for the semi-professional tier would be as shown in Table 13.

Table 13. Proposed Semi-Professional T&E AWCF Certification Standards

Level 1 Certification	
Training	• ACQ 101—Fundamentals of Systems Acquisition Management • SYS 101—Fundamentals of System Planning, Research, Development, and Engineering • TST 102—Introduction to Acquisition Workforce Test and Evaluation • Three Electives
Experience	One year of acquisition experience (T&E experience of experience with a technical orientation in an acquisition position is preferred).
Level 2 Certification	
Training	• ACQ 201A—Intermediate Systems Acquisition, Part A • ACQ 201B—Intermediate Systems Acquisition, Part B • SYS 201— Intermediate System Planning, Research, Development, and Engineering • TST 203—Intermediate Test and Evaluation • Three Electives
Experience	Two years of acquisition experience, of which at least 1 year is T&E experience.
Level 3 Certification	
Training	• TST 303—Advanced Test and Evaluation • CLE 301—Reliability and Maintainability • CLB 009—PPBE & Budget Exhibits • CLM 014—IPT Management and Leadership • Three Electives
Education	Baccalaureate degree with 24 semester hours or equivalent in physical science, mathematics, chemistry, engineering, physics, biology, operations research, or a related field, or at least 10 years of experience in acquisition positions
Experience	Four years of acquisition experience, of which at least 2 years involve T&E experience.

Suggestions for Future Research

This study only addressed Army test organizations. Additional areas for study include:

The impact on Army organizations that employ T&E certified personnel other than test organizations, such as the Army Evaluation Center, the Army Research and Development Command, and Program Executive Office/Program Management Offices.

The T&E certification standard changes apply equally to other DoD services—particularly the U.S. Air Force, the U.S. Navy, and the U.S. Marine Corps. The impact of the changes on other Services also should be researched.

References

Defense Acquisition University (DAU). (2012). *Certification & Core Plus Development Guides*. Retrieved from http://icatalog.dau.mil/onlinecatalog/CareerLvl.aspx#

Office of Personnel Management . (November 2008). *Job Family Position Classification Standard for Professional Work in the Engineering and Architecture Group*. Washington, DC.

Office of the Assistant Secretary of Defense. (July 5, 2011). Memorandum, subject: Change to the Certification Requirements for the Test and Evaluation (T&E) Acquisition Career Field. Washington, DC.

Office of the Assistant Secretary of Defense. (June 7, 2012. Memorandum, subject: FY2013 Annual Certification— Test and Evaluation (T&E) Acquisition Career Field. Washington, DC.

Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) (June 1, 2012). *AT&L Workforce Position Category Description (PCD).* Washington, DC.

United States Army Operational Test Command (OTC). (2011, May 12). Memorandum, subject: Test and Evaluation (T&E) Functional Integrated Product Team (FIPT) Meeting Minutes (Intent to Change the T&E Certification Requirements, June 2, 2011. Fort Hood, TX.

United States Army Test and Evaluation Command (TEDT-PL). (January 19, 2011). E-mail, subject: Proposal for a Second T-coded Acquisition Career Field). Aberdeen Proving Ground, MD.

United States Code (U.S.C) Title 10—Armed Forces (2012, January 3). Subtitle A— General Military Law, Part II – Personnel, Chapter 87 – Defense Acquisition Workforce, Amendment to 1991 – Pub. Law 102-25, title VII, Sec. 704(b)(1), April 6, 1991, 105 Stat.

119, Technical Amendment to Directory Language of Pub. Law 101-510, Div. A, Title XII, Sec. 1202(a), November 5, 1990, 104 Stat. 1638.

Glossary of Acronyms and Terms

ACQ .....Acquisition Management

ATEC .....U.S. Army Test and Evaluation Command

AT&L..... Acquisition, Technology and Logistics

AWCF.....Acquisition Workforce Career Field

ATEC .....U.S. Army Test and Evaluation Command

CLB.....Continuous Learning Business

CLC.....Continuous Learning Contracting

CLE.....Continuous Learning Engineering & Technology

CLL.....Continuous Learning Logistics

CLM.....Continuous Learning Acquisition and Management

CLR.....Continuous Learning Requirements

DASD (DT&E) .....Deputy Assistant Secretary for Defense for Developmental Test and Evaluation

DAU.....Defense Acquisition University

DAWIA.....Defense Acquisition Workforce Improvement Act

DoD.....Department of Defense

DT .....Developmental Test/Testing

DT&E.....Developmental Test and Evaluation

FY .....Fiscal Year

HBS.....Harvard Business School

IPT.....Integrated Product Team

M&S Modeling and Simulation

MAIS.....Major Acquisition Information System

MDAP .....Major Defense Acquisition Program

MRTFB .....Major Range and Test Facility Bases

OT .....Operational Test/Testing

OT&E.....Operational Test and Evaluation

OTC.....U.S. Army Test Centers and the Operational Test Command

PCD.....Position Category Description

PMT .....Program Management

PPBE .....Planning, Programming, Budgeting, and Execution

SME .....Subject Matter Expert

SPRDE .....Systems Planning, Research, Development, and Engineering

T&E.....Test and Evaluation

TEMP.....Test and Evaluation Master Plan

TES ..... Test and Evaluation Strategy

TST .....Test & Evaluation

USD(AT&L).....Under Secretary of Defense for Acquisition, Technology and Logistics

WIPT.....Working-level Integrated Product Team

Appendix A—Open-Ended Survey Comments

The final section of the survey instrument provided the opportunity for participants to make open-ended comments. The comments received primary fell into two categories: Support for a T&E Semi-Professional AWCF or opposition to it. A summary of pertinent comments follows.

Comments in favor of a T&E Semi-Professional AWCF

- "As an organization, we must take care of these professionals and maintain continuity in transferring the knowledge and experience they possess to the new generations. I have people in my division who have been in the T&E business for more than 30 years. Most of the systems that they started testing early in their careers are no longer in service, but these professionals continue providing excellent support for the testing of the new weapon systems that will be used to defend our nation and its interests. And they continue to pass the knowledge and expertise to my junior-grade technicians, who at one point or another were wearing a green uniform and now are proudly serving as a civilian service professional. We can't afford to let this knowledge and expertise disappear."

- "We currently employ non-engineers as test managers. They do exactly the same function as our Engineers that are classified as test officers. Internally, they are all treated exactly the same and have the ability of being assigned the same workload or type of tests. We have kept our mix of engineers to non-engineers at close to 50-50. Having the hard-core engineering degree can be helpful in analysis, interpretation, etc., but some of my non-engineers are just as intuitive. I like having the ability to hire either when it comes time to fill a test officer/test manager position. It would be good to be able to give the non-engineers the same training opportunities and requirements as the engineers."

- "I firmly support this endeavor. It will create more opportunities for the professional electronics technicians in my division for getting more training, experience, and the opportunity

to network with other technicians during training. In my division, electronics technicians do wonderful work for the U.S. Army supporting test events from planning instrumentation systems, instrumenting weapon systems for test, operating data acquisition systems, and for performing data quality assurance and control."

- "A Test Technician Career Field would add depth to this portion of the Acquisition Life Cycle and help focus on the differences therein. PEO/PMO focus is different and while valuable to understand doesn't completely cover the issues requiring a test technician's attention: i.e., contract management, budget requirements, earned value management, cost analysis, appropriations, project management, system planning and analysis, etc."
- "While our permanent technicians are currently not in the Acquisition workforce, more and more positions have been more or less forced that way in the past. If that were to happen, and a 4-year hard science degree became a prerequisite, it would make filling those positions when they become vacant much harder."
- "I have been in this command since 1989. I have seen test officers with masters degrees who just do not understand the logic and flow of how to conduct an operational test. I have seen test officers without any college degree that are the best at what they do in this organization. This organization has tried five times since 1992 to bring our test officers into the AWCF. All five attempts to bring our test officers into the AWCF have failed because of the college degree requirement and the labor union. If there is any way that DAU can create a new T&E AWCF field that fits our test officers, it would be a huge victory for our test officers and this command. A 2-year degree, along with all the T&E Level II courses, TEBC {Test and Evaluation Basic Course], and our Test Officer Certification Course would be perfect."
- "I was hoping that this effort might help open the door to AWCF membership for OT test officers for whom the most highly desired skill set is operational experience, which is not

often found in the population of technical-degreed personnel. The reality is that current requirements place ATEC at risk going forward to be able to retain and hire the best qualified personnel for these positions."

- "The new standard would prevent most retired military personnel or those with military experience from applying for these positions. Believe we will lose operational flavor to testing without military experienced personnel."
- "Operational testing is unique in that it requires personnel who have military operational experience. One cannot effectively design an operational test if one doesn't know what a military operation consists of and has never executed one. Having a hard science degree adds no benefit to planning an operational mission or assessing how a piece of kit performs from an operator's perspective."

Comments opposed to a T&E Semi-Professional AWCF

- "Not be created. Most technicians only have a certification vice a hard degree and have varied skills. The career category could not be broad enough to meet their needs."
- "I realize this is not a popular position, but I agree with the education requirements for people that we bring on in the future. The mistake I think we made is that we have a lot of experienced, valued contributors who entered the system before this requirement. I think we have to figure out how to deal with the people who are here today in a respectful manner without lowering our standards for the people we bring on in the future."
- "This should not be done. My opinion is that the Greer guidance did not go far enough as it is. He should not have allowed anyone to grandfather into it. Folks grandfathering in just dilute the intent and strength of any program. ATEC and others would be stronger if/when it is really required to be an engineer to hold said technical positions."

- “Perhaps in order to manage the resources and who does or does not get this training, the criteria should be that only job positions requiring the individual to be directly engaged in the test design, execution, and data acquisition shall be eligible. Thus, a machinist, instrumentation tech, or test operations tech would not be eligible.”
- “While there may be an advantage for training and development that addresses specified technical skills associated with conducting Test & Evaluation, pursuit of this should remain focused on categorizing this new field separate from (yet similar to) Test and Evaluation. Concern is that this may result in attempts to circumvent T&E certification in order to bypass more restrictive educational requirements.”
- “For very close to what you pay a technician, you can get a degreed engineer who has bona fide technical skills, analysis, and writing skills.”
- “I don't see technicians becoming part of the Acquisition Workforce as bringing value to the test mission. Most technicians work in a specific area and their day-to-day job does not require knowledge of the acquisition process. Mission support is their primary objective. To bog them down with additional training that is neither applicable or will ever be used in their career field is costly in terms of time, money, and effectively supporting the test mission. If a technician has the desire to understand the acquisition process and become involved at that level, they generally go to school and get a degree and change their work series.”
- “Do not recommend adding the additional training work load onto Technicians. Technicians need to focus on commercial technical certifications available through universities, technical colleges, and technical programs. Do not recommend added DA [Department of the Army] certifications on top of the current technical certification requirements.”