

**BY ORDER OF THE COMMANDER
AIR FORCE MATERIEL COMMAND**

**AIR FORCE MATERIEL COMMAND
INSTRUCTION 62-202**



13 NOVEMBER 2023

Developmental Engineering

***CRITERIA FOR CRITICAL
ENGINEERING POSITIONS***

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements DAFI 62-601, *Airworthiness*, and is consistent with AFI 36-1301, *Management of Acquisition Key Leadership Positions*, and AFI63-101/20-101, *Integrated Life Cycle Management*. This instruction establishes minimum core criteria for use in selecting personnel for Critical Engineering Positions (CEPs), Key Leadership Positions (KLPs), and for evaluating incumbents in these positions. Per AFMCI 63-1201, *INTEGRATED LIFE CYCLE SYSTEMS ENGINEERING AND TECHNICAL MANAGEMENT*, Chief Engineers (CEs), Lead Engineers (LEs), Science & Technology (S&T) Chief Engineers, and Directors of Engineering have direct Operational Safety, Suitability, and Effectiveness (OSS&E) responsibility. Criteria may be added to the minimum core criteria by the selection authority. This instruction applies to Regular Air Force, and civilians. This instruction does not apply to Air National Guard units, Air Force Reserve units, or members. This AFMCI is not applicable to Chief Developmental Testers, Test Managers, Test Engineers, or Directors of Test. Ensure all records generated as a result of processes prescribed in this publication adhere to AFI 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. Submit requests for waivers through the chain of command to the Publication OPR for non-tiered compliance items.

SUMMARY OF CHANGES

This document has significant revisions and should be reviewed thoroughly. DoDI 5000.66 incorporates and cancels DoDD 5000.52, *Defense Acquisition, Technology, and Logistics Workforce Education, Training, and Career Development Program*, January 12, 2005, references have been updated. **Attachment 1** reflects changes to the definition of an Engineering Degree. **Attachment 4** has been updated accordingly per the Office of the Under Secretary of Defense for Acquisition and Sustainment Memorandum, *“Back to Basics Implementation for the Defense Acquisition Workforce,” February 4, 2021*. References to incorrect **Attachments** have been fixed. In alignment with updated AFI 36-1301, candidates for Key Leadership Positions must meet position requirements prior to assignment or obtain a waiver with training plan when nominated. All grace period references have been removed. Candidates for Critical Engineering Positions must meet position requirements prior to assignment or obtain a waiver with training plan when nominated. Clarified definition of S&T Chief Engineer. A bachelor’s degree of engineering degree is required for Chief Engineer positions.

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1. Purpose. AFMC is committed to ensuring the personnel assigned to critical engineering positions have the knowledge, experience, and professionalism to serve in their capacities and perform their duties in the highest interest of the Air Force. To help accomplish this purpose, this instruction establishes the core criteria to be used as quality ranking factors for selection by the selecting authority for civilian service assignments or by the reviewer/supervisor for military assignments. This instruction does not apply to civilian Senior Executive Service, Senior Level (SL), and Scientific and Professional, Senior Scientific Technical Manager) positions, or general officer positions and does not supplant any existing regulation or policy.

2. Applicability.

2.1. Positions. The titles below are reserved for the roles defined within this instruction. All positions that meet the title definitions herein must have Unit Manning Document (UMD)

codes assigned per [paragraph 3.2.2](#). Positions that do not meet these definitions cannot use the duty titles in [paragraph 2](#), unless approved by the AFMC S&E Center or Laboratory Senior Functionals. This instruction is mandatory for all Chief Engineer, Director of Engineering (DOE), S&T Chief Engineering, Technical Director, Engineering, and select Lead Engineer positions as defined below. These duty titles are intended to convey engineering or technical leadership responsibility within the scope of the assignment, regardless of whether the individual assigned is military or civilian.

2.1.1. Lead Engineer. A Lead Engineer is the senior engineer at the Branch or Integrated Product Team (IPT) level (4-Letter level). An LE directly supports one of the following: Chief Engineer, Deputy Program Manager (DPM), or Branch Chief. An LE's responsibilities include: implementing sound systems-engineering technical processes on assigned systems, sub-systems, or commodities; providing technical advice to their CE, DPM, or Branch Chief; and ensuring engineers within their organization are executing their roles and responsibilities appropriately. The use of the Lead Engineer duty title is limited to those individuals on positions with significant system, sub-system, or commodity responsibility and/or authority, as determined by the Chief Engineer or Organization Senior Functional. An LE typically reports directly to a CE, a DPM, or a Branch Chief.

2.1.2. Chief Engineer. A Chief Engineer is the senior engineer at the Division level (3-Letter level) or, the senior engineer of an Acquisition Category (ACAT) 1 program, regardless of its organizational level. The CE directly supports the Program Manager (PM) or Division Chief (if not a PM) and is responsible to implement sound systems engineering technical processes on assigned systems and on behalf of the PM, is responsible to ensure Operational Safety, Suitability, and Effectiveness of assigned systems. In addition, the CE provides technical advice to their PM or Division Chief and ensures Lead Engineers within their organization are executing their roles and responsibilities appropriately. A CE is typically a direct report to the PM or Division Chief (if not a PM).

2.1.3. Director of Engineering. A Director of Engineering is the senior engineer at the Directorate level (2-Letter level). The DOE directly supports the Program Executive Officer (PEO) or Director (if not a PEO) and is responsible to ensure sound systems engineering technical processes are being implemented and OSS&E is being addressed on systems assigned to their Directorate. In addition, the DOE provides technical advice to their PEO or Director and ensures Chief Engineers within their organization are executing their roles and responsibilities appropriately. A DOE is typically a direct report to the PEO or Director (if not a PEO).

2.1.4. S&T Chief Engineer. The senior Air Force Research Laboratory (AFRL) or technology directorate Technical Engineering Authority. This position provides systems engineering, program management, and engineering technical counsel to the AFRL Commander and/or technology directorate Director as applicable. It defines the scope and rigor of system engineering and program management related technical processes, policies, training, and tools; and ensures implementation of best practices and compliance with Laboratory and higher headquarters policies through technical engineering management. It tailors and applies OSS&E and Mission Assurance principles to AFRL programs as appropriate.

2.1.5. Technical Director, Engineering. Senior engineer; technical specialty position for engineering; provides expertise on technical aspects supporting directorate or wing operation & processes; has various levels of OSS&E responsibility.

2.2. Position Types. This instruction applies to civilian and military positions identified in [paragraph 2.1](#).

2.3. Grade Levels and Ranks. This instruction applies to both civilian positions at NH-04/DR-04/GS-15 equivalent and below and military positions at the rank of colonel and below.

3. Responsibilities and Authorities.

3.1. S&E CSFs have the responsibility and authority to implement this instruction at their Centers.

3.1.1. Vacant Positions. S&E CSFs shall ensure the Centers' implementation of this instruction in filling vacancies for positions described in [paragraph 2](#).

3.1.2. Encumbered Positions. S&E CSFs will review the job-related skills and experience of the individuals encumbering the positions described in [paragraph 2](#) to determine if they meet the core criteria of [Attachment 2](#). For any discrepancies found, S&E CSFs will work with the individuals to bring them in conformance with [Attachment 2](#) criteria, in accordance with [paragraph 4.2](#).

3.1.3. Course lists. S&E CSFs will establish, maintain, and make available to the S&E work force lists of courses that provide knowledge level competency for the criteria listed in [Attachment 2](#). To provide knowledge level competency, a course must adequately cover the process or processes, the tools available, and the possible metrics for the competency.

3.1.4. Final authority.

3.1.4.1. S&E CSFs are the final authority in determining the applicability of this instruction to a position as defined in [paragraph 2](#).

3.1.4.2. S&E CSFs are the final authority in determining whether an individual or candidate meets the criteria of [Attachment 2](#) or in determining what additional actions are needed to meet the criteria of [Attachment 2](#).

3.2. CCs/ CLs and Unit Senior Functionals for Science and Engineering.

3.2.1. With S&E CSF guidance and coordination, implement this instruction in their unit.

3.2.2. With S&E CSF guidance and coordination, identify civilian and military positions meeting the definitions in [paragraph 2](#) and code the positions using the following duty title codes in the 'Duty Title' field on the UMD.

3.2.2.1. 356 – Technical Director, Engineering

3.2.2.2. 805 – Chief Engineer

3.2.2.3. 806 – Lead Engineer

3.2.2.4. 807 – Director of Engineering

3.2.2.5. 809 – S&T Chief Engineer

4. Procedures.

4.1. Vacant Positions.

4.1.1. General. S&E CSFs will ensure candidates selected to fill positions described in **paragraph 2** meet the minimum core criteria of **Attachment 2**.

4.1.2. Criteria. In selecting personnel, the selecting authority will evaluate each candidate against the criteria in **Attachment 2**. Candidates must meet position requirements prior to going into the position or provide a waiver and training plan when nominated. If there are insufficient candidates meeting all the criteria in **Attachment 2** for adequate competition, as determined by local procedures, the selecting authority or official will select from the candidate list those coming closest to meeting the **Attachment 2** criteria for further evaluation. If there are insufficient candidates capable of meeting **Attachment 2** criteria, the selecting authority will seek to extend the area of consideration to obtain a larger candidate pool.

4.1.2.1. Individuals not meeting criteria. Individuals selected for critical engineering positions, as defined in **paragraph 2** will meet the criteria in **Attachment 2**, prior to going into the position or provide a waiver and training plan when nominated or management will reassign them to a position not covered by this instruction unless a waiver as described in **paragraph 6** is granted.

4.1.2.2. Additional Criteria. S&E CSFs may add other job-related criteria to the **Attachment 2** criteria. If this occurs, S&E CSFs shall post the additions such that all employees are notified and shall set appropriate cut-off dates for the additional criteria.

4.1.2.3. Program Phase. Some of the criteria in **Attachment 2** vary depending on whether the program is primarily in a material solution analysis, technology development, engineering & manufacturing development, production & deployment, or operations & support phase.

4.1.2.4. KSA Levels. The Knowledge, Skill, and Ability (KSA) criteria are expressed in terms of these KSA levels:

4.1.2.4.1. Knowledge - An academic or related training, understanding of the ideas, concepts, principles, theories, and techniques of a subject matter.

4.1.2.4.2. Skill - Demonstrated experience, to process, translate, interpret, and apply a subject matter effectively and readily in varied situations.

4.1.2.4.3. Ability - Demonstrated accomplishment, relative to a subject matter, to apply concepts, synthesize, and make decisions based on the overall "system" characteristics--i.e., systems engineering focus of a decision.

4.1.2.4.4. Individual Competencies. **Attachment 3** provides guidance and clarification for evaluating KSA criteria. This attachment is not part of the criteria but may be used as an aid in evaluating individuals against the KSA criteria and in developing courses that cover individual KSA criteria. It correlates commonly recognized competencies with each of the KSA criteria.

4.1.2.4.5. Relation to Acquisition Professional Development Program (APDP) Certification. In evaluating individuals against **Attachment 3** KSA criteria, APDP

certifications may be used as evidence of meeting certain knowledge or skill competencies. **Attachment 4** shows what specific APDP certifications may be used as evidence of meeting specific **Attachment 3** KSA criteria. APDP certification may not be used as evidence of meeting ability-level competency. **Attachment 4** is not part of the core criteria but may be used as evidence of meeting specific **Attachment 3** KSA criteria.

4.2. Encumbered Positions.

4.2.1. Individuals encumbering critical engineering positions, as defined in **paragraph 2**, must meet all criteria as defined in **Attachment 2** when assigned to the position unless a waiver as described in **paragraph 6** is granted.

5. Key Leadership Positions.

5.1. In accordance with the DoDI 5000.66 Key Leadership Positions are a subset of Critical Acquisition Positions (CAPs). The Component Acquisition Executive designates KLPs which require special Component Acquisition Executive attention and Under Secretary of Defense (Acquisition & Sustainment) oversight. In general, KLP incumbents have direct responsibility for, and direct influence on, the success of an acquisition program, acquisition system, or major technical area of responsibility. Section 4.1 identifies the basic framework for career progression and clarifies the hierarchy between KLPs and CAPs.

5.2. The engineering positions listed below are designated as mandatory KLPs for ACAT I and ACAT 1A programs. The only position that is coded as KLP is the Chief Engineer of ACAT I programs. This AFMCI is not applicable to Chief Developmental Testers, Test Managers, Test Engineers, and Directors of Test.

5.3. KLPs benefit from broad experience within the following cross-functional competencies: Executive Leadership, Program Execution, Technical Management, and Business Management. These cross-functional competencies are defined below:

5.3.1. Executive Leadership consists of demonstrated competencies in leading change, leading people, managing results, building coalitions, business acumen, and an enterprise-wide perspective. The DoD leader competency framework provides the governing model. Refer to DoD Instruction 1430.16, "Growing Civilian Leaders."

5.3.2. Program Execution is the leadership and management of a defense acquisition program covering every aspect of the acquisition process, such as integration, engineering program control, test and evaluation, deployment configuration management production and manufacturing, quality assurance, and logistics support.

5.3.3. Technical Management is the organization, governance, and effective application of current technology, acquisition practices, design, and security considerations in building/acquiring and maintaining large complex systems.

5.3.4. Business Management is the oversight of controlling, leading, monitoring, organizing and planning for the business success of a program. This includes achieving best value to the Government.

6. Waivers. If a Critical Engineering Position or Key Leadership Position candidate does not meet the minimum position requirements prior to assignment, a waiver request on a DD Form 2905, *Acquisition Technology, and Logistics (AT&L) Workforce Position Requirements or Tenure*

Waiver, needs to be sent with the proposed selection. The gaining organization provides the target date by which the individual is expected to meet the position requirements. CEPs that are CAPs have requirements set by congressional law that must be met. CCs/CLs (for Wing organization structures), in coordination with S&E CSFs, or S&E CSFs (for Directorate or soon-to-be Directorate organization structures) shall submit waiver requests with justifications in writing to HQ AFMC/EN. HQ AFMC/EN is the appropriate senior level official within the command to approve position waivers and will provide a copy of the approved waiver to SAF/AQH.

7. Reporting Requirements. S&E CSFs with identified positions as described in [paragraph 2](#) shall report to HQ AFMC/ENR bi-annually (typically in January and July) on the number of positions identified, the number of persons on identified positions who meet the [Attachment 2](#) criteria (as of the end of the prior month), the number of persons on identified positions who do not meet the [Attachment 2](#) criteria (show deadline by which date employee must achieve compliance), the number of identified positions occupied by someone on a waiver as described in [paragraph 6](#) above, the number of fills on vacancies of identified positions during the bi-annual period, and the number of those fills where the person selected met the [Attachment 2](#) criteria.

ROBERT B. FOOKES, Jr., SES DAF
Director, Engineering and Technical Management

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DoDI 5000.66, *Defense Acquisition Workforce Education, Training, Experience, and Career Development Program*, 25 March 2022

DAFI 62-601, *Airworthiness*, 10 June 2022

AFI 63-101/20-101, *Integrated Life Cycle Management*, 30 June 2020

AFI 36-1301, *Management of Acquisition Key Leadership Positions (KLP)*, 23 July 2019

AFMCI 63-1201, *Integrated Life Cycle Systems Engineering and Technical Management*, 2 December 2022

Memorandum for Secretaries of the Military Departments Component Acquisition Executives Directors of the Defense Agencies, *Key Leadership Positions and Qualification Criteria*, 8 November 2013

Prescribed Forms

None

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

ABET—Accreditation Board for Engineering and Technology

ACAT I—Acquisition Category I

ACAT 1A—Acquisition Category I, Major Automated Information Systems

AFRL—Air Force Research Laboratory

APDP—Acquisition Professional Development Program

CAP—Critical Acquisition Positions

CEP—Critical Engineering Position

CE—Chief Engineer

CL—Civilian Leader

CSF—Center Senior Functional

DOE—Director of Engineering

DPM—Deputy Program Manager

IPT—Integrated Product Team

KLPs—Key Leadership Positions

KSA—Knowledge, Skill, and Ability

LE—Lead Engineer

OSS&E—Operational Safety, Suitability and Effectiveness

PEO—Program Executive Officer

PM—Program Manager

S&E—Science and Engineering

S&T—Science and Technology

SL—Senior Level

UMD—Unit Manning Document

Office Symbols

HQ AFMC/EN—Headquarters, Air Force Materiel Command, Engineering and Technical Management

HQ AFMC/ENR—Headquarters, Air Force Materiel Command, Engineering and Technical Management Resources Division

SAF/AQH—Office of the Secretary of the Air Force for Acquisition

Terms

Advanced Degree (Technical)—A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one engineering (not engineering technology) program accredited by of the Accreditation Board for Engineering and Technology (ABET), or choose one of the following:

1. A Master's Degree or Doctorate in computer science from a department that administers at least one computer science program accredited by ABET.
2. A Master's Degree or Doctorate in physics, geophysics, hydrology, chemistry, computer science, or metallurgy from an institution accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

Advanced Degree (Technical, Business, or Administration)—A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one engineering (not engineering technology) program accredited by the Accreditation Board for Engineering and Technology (ABET), or choose one of the following:

1. A Master's Degree or Doctorate in computer science from a department that administers at least one computer science program accredited by the ABET.
2. A Master's Degree or Doctorate in physics, geophysics, hydrology, chemistry, computer science, or metallurgy from an institution accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.
3. A Master's Degree in a program accredited by the AACSB International – The Association to Advance Collegiate Schools of Business (AACSB) or by the **Accreditation Council for Business Schools and Programs (ACBSP)**.

4. A Master of Military Operational Art and Science, Master of Airpower Art, or Science and Master of Strategic Studies degree conferred by Air University.

5. A Master's Degree in Administration-Logistics Management from an institution accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

6. A Master's Degree in a program accredited by the National Association of Schools of Public Affairs and Administration (NASPAA).

Competency—A measurable pattern of skills, knowledge, ability, behavior, and other characteristics which an individual needs to perform work, roles, or occupational functions successfully.

End-item—The final combination of assemblies, components, parts, and materiel that performs a complete operational function and needs no further augmentation to make it ready for its intended use.

Engineering Degree—A Bachelor's Degree in an engineering discipline (not engineering technology) from an engineering program accredited by the Accreditation Board for Engineering and Technology (ABET) or a Master's or Doctorate Degree in an engineering discipline from a department that administers at least one ABET accredited undergraduate engineering (not engineering technology) program.

Reviewer/supervisor—The first level supervisor for a civilian position or the person responsible for the Officer Performance Report for a military position.

Product Technical Management Experience—Two or more years working in acquisition or sustainment of a system or an end item.

S&E Center Senior Functional (S&E CSF)—The senior official within the Center science and engineering staff function aligned under the Center Commander. The S&E CSF is not considered a Director of Engineering as used in this instruction.

Selecting authority—Managers and supervisors with the authority to hire from selection certificates or the person with decision authority for a management reassignment.

System—A specific grouping of subsystems, commodities and/or components designed and integrated to perform a military function.

Technical Degree—A Bachelor's Degree in an engineering discipline (not engineering technology) from an engineering program accredited by the Accreditation Board for Engineering and Technology (ABET), or choose one of the following:

1. A Bachelor's Degree in physics, geophysics, hydrology, chemistry, computer science, or metallurgy from an institution accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.
2. A Master's or Doctorate Degree in an engineering discipline from a department that administers at least one engineering (not engineering technology) program accredited by the Accreditation Board for Engineering and Technology (ABET).
3. A Master's Degree or Doctorate in computer science from a department that administers at least one computer science program currently accredited by ABET.

4. A Master's Degree or Doctorate in physics, geophysics, hydrology, chemistry, computer science, or metallurgy* from an institution currently accredited by a regional accrediting organization recognized by the Council for Higher Education Accreditation.

* Substantiating documentation should be available as to the need for metallurgy as a qualifying factor.

Unit Commander (CC)/Civilian Leader (CL)—The individual who reports directly to the Center or Laboratory Commander and is responsible for the execution of all programs within the unit.

Unit Senior Functional for Science & Engineering—The senior science and engineering functional position within a unit to include wings, groups, and squadrons (the senior functional may reside anywhere within the unit or its subordinate units).

Attachment 2

CRITICAL ENGINEERING POSITION CORE CRITERIA

A2.1. Critical Engineering Position Core Criteria. This CEP Core Criteria is not applicable to Chief Developmental Testers, Test Managers, Test Engineers, and Director of Test.

Table A2.1. Core Criteria Elements.

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
UMD Duty Code		806	805	807	809	356
Experience				Displays leadership in field and depth/breadth of understanding	Displays leadership in field and depth/breadth of understanding	Displays leadership in field and depth/breadth of understanding
				Experience in managing engineering resources across all technical disciplines.		Shows breadth and depth of experience in scientific or engineering specialty
			Prior product technical management experience	Prior product technical management experience	Prior S&T and/or product technical management experience and/or S&T or	

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
					product engineering experience.	
KLP specific requirements **			8 years acquisition experience or equivalent			
**For Chief Engineers of ACAT 1 programs only			3 years experience in a Program Management Office or equivalent			
			5 years supervisory / team lead experience			
			Demonstrated performance in leading engineering activities on a program			
Education		Technical Degree	BS Engineering Degree	Technical Degree	Technical Degree	Technical Degree
Engineering & Manufacturing Development or Production			Applicable Advanced Degree (Technical)	Applicable Advanced Degree (Technical, Business, or Administration)		Applicable Advanced Degree (Technical)

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
n & Deployment Programs						
-- Operations & Support Programs				Applicable Advanced Degree (Technical, Business, or Administration)		Applicable Advanced Degree (Technical, Business, or Administration)
-- Material Solution Analysis or Technology Development Programs					Applicable Advanced Degree (Technical, Business, or Administration)	
Certifications						
- APDP		Functional area and tier required for the position	Functional area and tier required for the position	Functional area and tier required for the position	Functional area and tier required for the position	Functional area and tier required for the position
Knowledge, Skills, and Abilities*						
- Engineeri	Recognized technical					

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
ng Specialty	expert in a functional					
- - Primary area	specialty, with experience in making	Ability	Ability	Ability	Ability	Ability
- - Other areas	critical, and technologically relevant decisions.	Knowledge	Knowledge with increasing breadth	Knowledge with increasing breadth	Knowledge with increasing breadth	Knowledge with increasing breadth
- Systems Engineering	Understanding of the interdisciplinary approach encompassing the entire set of scientific, technical, and managerial efforts needed to evolve, verify, deploy (or field), and support an integrated and life-cycle balanced set of system solutions that satisfy customer needs. Focuses on an iterative, disciplined method which includes requirements analysis, requirements	Skill	Ability	Ability		Ability

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	allocation, design synthesis, and technical management processes in a new capabilities-based construct. Can understand how systems engineering is applied to the joint arena.					
	Understanding of the interdisciplinary approach encompassing the entire set of scientific, technical, and managerial efforts needed to develop and mature technologies that satisfy customer needs. Focuses on an iterative, disciplined method which includes requirements analysis, requirements allocation, design				Ability	

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	synthesis, and technical management processes in a new capabilities-based construct. Can understand how systems engineering is applied in the S&T environment.					
- Test and Evaluation	Skills used to manage test and evaluation within a program office or an S&T demonstration program including planning, monitoring, and evaluating test results. Analyze, assess and evaluate test data and test reports with the ability to prepare written reports of the	Skill	Ability	Ability	Ability	Skill

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	findings. Can understand how test and evaluation is applied to AF and joint programs.					
- Capability-Based Requirements/Customer Needs	Focus on system requirements as derived from a capabilities-based assessment, such as the Capability Review and Risk Assessment process, (utilizing tools such as modeling, simulation, <i>etc.</i>). Customer-centric consideration in concert with most viable solution to achieve capability-based results.	Knowledge	Skill	Ability	Ability	Skill

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
- System Development	Understanding of the relevant issues within system development.					
- - Engineering & Manufacturing Development or Production & Deployment Programs	Functional disciplines necessary to execute a technically superior program include attention to varied activities (which may include, but not limited to system integration, system level architecture, manufacturing, quality assurance, product certification, system safety, human factors and environmental issues, <i>etc.</i>).	Skill	Ability	Ability	Knowledge	Ability
- - Operations & Support Programs		Knowledge	Skill	Skill		Skill
- - Material Solution Analysis or Technology Development	Understanding of the relevant issues within system development in S&T environment.				Ability	

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
ent Programs	Functional disciplines necessary to execute a technically superior S&T program.					
- Sustainment	Understanding the role of sustainment within the system lifecycle.					
-- Engineering & Manufacturing Development or Production & Deployment	This key competency focuses on utilizing integrated products and processes (including but not limited to engineering support requests, mishap reporting/accident investigation, tech insertion, work specs, <i>etc.</i>) in the development, production, supportability, and product support of Air Force systems.	Knowledge	Skill	Skill		Skill
-- Operations & Support Programs		Skill	Ability	Ability		Ability
-- Material Solution Analysis or Technology Development Programs					Knowledge	

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
- Acquisition	Understanding and applying acquisition strategies in the conceptualization, initiation, design, development, test, contracting, production, deployment, logistic support, modification, sustainment and disposal of weapons and other systems, supplies or services. Includes understanding the process of planning, organizing, monitoring, overseeing and performing engineering activities relating to the development, production, and/or modification	Skill	Ability	Ability		Skill

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	of a system and recognition of the need to establish and implement acquisition engineering objectives, policies and specification guidelines necessary for a robust system design.					
	Understanding and applying acquisition strategies related to appropriations categories consistent with level of S&T program activities (Basic, Applied, or Advanced Research)				Skill	
- Program Management	Skills/Processes used to manage and develop a system level product and/or develop/matur	Knowledge	Skill	Skill	Skill	Knowledge

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	e technologies in an S&T program.” (May include skills and tools that manage resources and outcomes such as Earned Value Management System, Integrated Master Plans, Integrated Master Schedules, <i>etc.</i> Areas addressed include, but are not limited to, program execution, technical planning, technical risk management, and decision analysis)					
- Leadership	Skills that focus on leadership and management (fundamental leadership skills, leading change, leading people, results	Skill	Skill	Ability	Ability	Ability

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	driven, building coalitions, business acumen, and enterprise-wide perspective). Models organizational improvements and technological innovations through new programs/processes.					
- Technical Management	Skills used to organization, governance, and effective application of current technology, acquisition practices, design, and security considerations in building/acquiring and maintaining large complex systems. Areas addressed include, but are not limited to the following: technical	Skill	Skill	Ability	Ability	Ability

	Description	Lead Engineer	Chief Engineer	Director of Engineering (DOE)	S&T Chief Engineer	Technical Director, Engineering
	management, requirements analysis, integration, design considerations , technical assessment, and configuration/interface management.					
- Business Management	Skills used to provide oversight in controlling, leading, monitoring, organizing, and planning for the business success of a program. Includes achieving best value for the Government.	Skill	Skill	Ability	Ability	Ability

* **Knowledge** = An academic, or related, training understanding of the ideas, concepts, principles, theories, and techniques of a subject matter.

Skill = Demonstrated experience to process, translate, interpret, and apply a subject matter effectively and readily in varied situations.

Ability = Demonstrated accomplishment relative to a subject matter, to apply concepts, synthesize, and make decisions based on the overall "system" characteristics--i.e., systems engineering focus of a decision.

Attachment 3

KNOWLEDGE, SKILL, AND ABILITY (KSA) COMPETENCIES

A3.1. Knowledge, Skill, And Ability (KSA) Competencies. Provides guidance and clarification for evaluating KSA criteria. This attachment is not part of the criteria but may be used as an aid in evaluating individuals against the KSA criteria and in developing courses that cover individual KSA criteria.

Table A3.1. Knowledge, Skill, And Ability (KSA) Competencies.

Competency	Knowledge, Skill, and Ability Area								
	- Engineering Specialty*	- Systems Engineering	- Test and Evaluation	- Capability-Based Requirements/ Customer Needs	- System Development	- Sustainment	- Acquisition	- Program Management	- Leadership
- - Building Coalitions									X
- - Business Acumen									X
- - Configuration Management		X			X	X	X	X	
- - - Data Management		X	X		X	X	X	X	
- - - Interface Management		X	X		X	X		X	
- - Contracting Process/Management			X			X	X	X	
- - Cost Estimating		X		X	X		X	X	
- - Earned Value Management		X			X		X	X	
- - Effective Communication Skills	X	X	X	X	X	X	X	X	X
- - Engineering Discipline Awareness		X	X	X	X			X	
- - Engineering Support Requests						X			
- - Environmental Issues		X	X	X	X	X	X	X	

Competency	Knowledge, Skill, and Ability Area								
	- Engineering Specialty*	- Systems Engineering	- Test and Evaluation	- Capability-Based Requirements/ Customer Needs	- System Development	- Sustainment	- Acquisition	- Program Management	- Leadership
- - Familiarity with Military, International, & Industry Specifications & Standards (e.g., MIL, ISO, IEEE, ANSI)		X		X	X		X	X	
- - Financial Management			X			X	X	X	
- - Hardware/ Software Design Methodology		X	X		X				
- - Human Factors		X			X				
- - Independent Technical Review Leadership		X	X		X			X	X
- - Integration		X	X	X	X	X	X	X	
- - Integrity Programs		X			X	X			
- - Leading an IPT		X	X	X	X	X	X	X	X
- - Leading Change		X							X
- - Leading People		X	X					X	X
- - Logistics Management		X	X	X	X	X	X		
- - Manufacturing/QA		X	X		X	X	X	X	
- - Mishap Reporting/ Accident Investigation		X	X	X	X	X			
- - Modeling, Simulation, and Performance Analysis		X	X	X	X				

Competency	Knowledge, Skill, and Ability Area								
	- Engineering Specialty*	- Systems Engineering	- Test and Evaluation	- Capability-Based Requirements/ Customer Needs	- System Development	- Sustainment	- Acquisition	- Program Management	- Leadership
- - Modification Management				X		X	X	X	
- - Operational Risk Management		X	X	X			X	X	
- - Program Objective Memorandum Process & Execution							X	X	
- - Process Engineering		X	X			X	X	X	
- - Reducibility		X			X		X		
- - Product Certification		X	X	X	X	X	X	X	
- - Project Planning		X	X	X		X	X	X	
- - Reliability & Maintainability		X	X	X	X	X		X	
- - Requirements Management		X	X	X	X	X	X	X	
- - Results Driven				X					X
- - Risk Management		X	X	X	X	X	X	X	
- - System Interoperability		X		X	X				
- - Systems Architecture		X		X	X		X		
- - System Safety		X	X	X	X	X	X	X	
- - Technical Performance Measures		X	X	X	X		X	X	
- - Technical Reviews & Audits		X	X		X	X	X	X	
- - Technology Insertion		X	X	X	X	X	X	X	

KNOWLEDGE AND SKILL LEVEL COMPETENCY VS. APDP CERTIFICATION

APDP Certification		Knowledge, Skill, & Ability Area								
Functional Area	Tier	- Engineering Specialty	- System Engineering	- Test and Evaluation	- Capability-Based Requirements/ Customer Needs	- System Development	- Sustainment	- Acquisition	- Program Management	- Leadership
Life Cycle Logistics	Foundational						K	K		
	Advanced						K	K		K
Program Management	Practitioner							K	K	
	Advanced				K			K	K	K
Engineering Technical Management	Foundational		S			S	K	S		
	Practitioner		S		K	S	K	S		K
Test & Evaluation	Foundational			K				K		
	Practitioner			K				K		K

A K or S indicates APDP certification in the functional area and at the indicated level constitutes evidence of knowledge-level or knowledge and skill-level competency in the indicated Knowledge, Skills, & Abilities area.

K = Knowledge
S = Knowledge & Skill

This table indicates KSA achievement and is to be used as an evaluation tool. It is not necessary to acquire all certifications.