The Work of FAA Airway Transportation Systems Specialists (ATSS; FV-2101) at Field Systems Support Centers (SSCs): Results of the 2016 Job Analysis

Dana Broach[1]
David Vestal[2]
April Martin[2]
Kelley J. Krokos[2]
Liza Josias[2]
Kirsten Manville[2]
Genevieve Johnson[2]
Alfretia Scarborough[1]

[1]FAA Civil Aerospace Medical Institute, Oklahoma City, OK
[2]American Institutes for Research, Washington, DC

July 2018

Final Report

NOTICE

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for the contents thereof.

_____

This publication and all Office of Aerospace Medicine technical reports are available in full-text from the Civil Aerospace Medical Institute's publications website:
http://www.faa.gov/go/oamtechreports

Technical Report Documentation Page

1. Report No. DOT/FAA/AM-18/12	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle The Work of FAA Airway Transportation Systems Specialists (ATSS; FV-2101) at Field Systems Support Centers (SSCs): Results of the 2016 Job Analysis		5. Report Date July 2018
		6. Performing Organization Code
7. Author(s) Broach D,[1] Vestal D,[2] Martin A,[2] Krokos KJ,[2] Josias L,[2] Manville K,[2] Johnson G,[2] Scarborough A[1]		8. Performing Organization Report No.
9. Performing Organization Name and Address [1]FAA Civil Aerospace Medical Institute, Oklahoma City, OK 73125 [2]American Institutes for Research, Washington, DC 20007		10. Work Unit No. (TRAIS)
		11. Contract or Grant No.
12. Sponsoring Agency name and Address Office of Aerospace Medicine Federal Aviation Administration 800 Independence Ave., S.W. Washington, DC 20591		13. Type of Report and Period Covered
		14. Sponsoring Agency Code
15. Supplemental Notes		

16. Abstract

The Federal Aviation Administration (FAA) Technical Operations Services manages, operates, maintains and repairs the technical infrastructure of the National Airspace System (NAS). To accomplish this mission, the Technical Operations Services employs about 4,400 Airway Transportation Systems Specialists (ATSSs; FV-2101) to service the over 30,000 individual facilities, services, and equipment that comprise that technical infrastructure. This report describes a comprehensive baseline job/task analysis for field, non-supervisory ATSSs who maintain, repair, calibrate and support the hardware and software on which over 35,000 flights per day rely for safe and efficient flight operations. The job analysis was conducted to support validation of the initial training course for ATSSs known as Common Principles. The report is organized into five major sections. First, a brief overview of job/task analysis is presented to provide background on the approach taken in this analysis of the ATSS job as performed in the FAA. Second, the development of an initial catalog of ATSS duties and tasks and required knowledge, skills, and abilities (KSAs) is described. That catalog of duties, tasks, and KSAs was translated into a Job Analysis Survey which was administered to 4,382 incumbent ATSSs in 2016. Overall, 1,649 incumbent ATSSs participated in the Job Analysis Survey, for a response rate of 38%. The results of the Job Analysis Survey are described in the third major section of the report, focusing on the identification of (a) the most critical and/or important job duties and tasks, and (b) the KSAs rated as most important to job performance overall. The next step in the job analysis was to determine the degree to which each important KSA was essential to the performance of each critical and/or important job duty or task. The results of this linkage exercise are reported in the fourth major section of the report. Linkage Surveys were completed by 250 ATSS first- and second-level supervisors of field ATSSs. The report concludes with a description of the essential KSAs required on Day 1 of employment as required by the Uniform Guidelines on Employee Selection Procedures (29 C.F.R. § 1607) to support validation of ATSS selection procedures. Future research and uses of the job analysis data for this mission-critical occupation are discussed in closing.

17. Key Words Airway Transportation Systems Specialist Job/Task Analysis		18. Distribution Statement Document is available to the public through the Internet: http://www.faa.gov/go/oamtechreports/	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 239	22. Price

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

ACKNOWLEDGMENTS

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

THE WORK OF FAA AIRWAY TRANSPORTATION SYSTEMS SPECIALISTS (ATSS; FV-2101) AT FIELD SYSTEMS SUPPORT CENTERS (SSCs): RESULTS OF THE 2016 JOB ANALYSIS

INTRODUCTION

The Federal Aviation Administration (FAA) Technical Operations Services manages, operates, and maintains the facilities, services, and equipment that comprise the U.S. National Airspace System (NAS). That technical infrastructure has over 30,000 individual components, ranging from runway lights to radios to sophisticated computer networks spanning the nation. Over 35,000 flights per day rely upon the availability and accuracy of the navigational and communications services provided by the Technical Operations Service.

To accomplish this mission, the Technical Operations Services employs about 4,400 Airway Transportation Systems Specialists (ATSSs or "technicians"; FV-2101) at Systems Support Centers (SSCs) across the country. Many SSCs are co-located with an air traffic control facility and maintain the equipment and services associated with that particular facility. Others serve multiple and geographically dispersed facilities, services, and equipment. These SSC ATSSs install, maintain, repair, operate, monitor, and certify the hardware, software, and services that enable safe and efficient flight operations in the NAS. This workforce is critical to the FAA mission. Recruiting, hiring, and training this mission-critical workforce is essential.

A key challenge faced by Technical Operations Services is ensuring that field SSC ATSSs have the essential knowledge and skills to operate and maintain a complex aerospace system that incorporates both existing ("legacy") and next generation systems and services. In response to that challenge, Technical Operations Services has developed and published its "*Technician Workforce Strategy*" (FAA Technical Operations Services, 2015). A key element of the strategy is to establish a clearly defined baseline description of the ATSS job as it is currently performed in the NAS. This report documents that baseline "as is" job analysis.

The comprehensive job/task analysis of the field, nonsupervisory ATSS job as performed at SSCs had three major phases. Phase 1 was the identification and cataloging of ATSS job duties/tasks, knowledge, skills, and abilities (KSAs), and tools and equipment (T&E). Phase 2 was a job analysis survey of incumbent SSC ATSSs, where the content of the job analysis survey was based on the catalog of duties/tasks, KSAs, and T&E developed in Phase 1. The goal of the Phase 2 survey was to identify to the critical and important job duties and tasks and the KSAs important to job performance. Phase 3 of the comprehensive job/task analysis was a linkage study, in which ATSS front-line managers (e.g., 1st-level supervisors of SSCs) determined which specific KSAs were essential to the successful performance of critical ATSS job duties/tasks.

Purpose of the job/task analysis

This report describes a comprehensive content-oriented job/task analysis for the field, non-supervisory ATSS workforce assigned to SSCs. The job analysis is designed specifically to support validation of proposed ATSS selection procedures in accordance with the agency policy (see FAA Human Resource Policy Manual EMP-1.32 *Job Analysis Assessment and Assessment Tools*) and relevant professional standards, principles, and practices. Specifically, performance in initial ATSS training in a course known as "*Common Principles*" (FAA Academy course number 43078001) as a criterion for continued employment, such that failure in the course might result in removal from the ATSS occupation and/or employment with the FAA. To support validation of a training course as an employee selection procedure, a content-oriented job analysis must (a) describe the duties and tasks required in a job, (b) identify the critical and/or important job duties and tasks, and (c) identify the knowledge, skills, and abilities that are essential to the successful performance of those critical job duties and tasks. This job analysis was specifically designed to accomplish these objectives.

Organization of report

The report is organized into five major sections. First, a brief overview of job/task analysis is presented to provide background on the approach taken. The development of the catalog of ATSS SSC duties and tasks, KSAs, and tools and equipment is described in the second section of the report. The job analysis survey administration and results are described in the third section of the report. The fourth section describes the results of the Linkage Exercise, in which first- and second-level supervisors and managers of field ATSSs identified the KSAs essential to the performance of critical and/or important job duties and tasks. The fifth and final section of the report summarizes key findings and use of the data to support validation of proposed ATSS selection procedures for the FAA.

OVERVIEW OF JOB/TASK ANALYSIS

Job analysis is the process of defining a job in terms of the work activities (e.g., job tasks) performed and the characteristics of workers required to perform that work (Brannick & Levine, 2002). The tools and equipment used on the job may be identified as part of a job analysis as well. Current job analysis data are required for the development and evaluation of virtually every HR system, including recruitment and selection, training, career development, performance management, workforce planning, job design, compensation systems, and health and safety requirements (Brannick & Levine, 2002). Job analysis is thus a fundamental building block for modern, data-based human resources and organizational management systems.

There are several potential approaches to conducting a job analysis (Brannick & Levin, 2002; Wilson, 2012). These approaches vary along a number of dimensions including the purpose of the analysis (e.g., to describe a current job or a job as it is proposed to exist in the future); the primary source of information (e.g., job incumbents, supervisors, policy experts, job

analysts, psychologists); and the purpose for which the data will be used (e.g., to build training, as the basis for a pre-employment selection test).

The primary purpose of this comprehensive job/task analysis is to support development and validation of employee selection procedures for the mission-critical ATSS occupation. Therefore, a "traditional" selection-oriented approach was taken in this job/task analysis, consistent with professional principles and practices. There are three major steps in a traditional selection-oriented job analysis: (1) Develop a catalog of job duties and tasks, KSAs, and supporting information; (2) Collect ratings of job duties and tasks and KSAs; and (3) Identify the important KSAs essential to the performance of the critical and/or important job duties and tasks (Baranowski & Anderson, 2005; Gutman & Dunleavy, 2012; Highhouse, Doverspike, & Guion, 2016; *Uniform Guidelines on Employee Selection Procedures ("Uniform Guidelines"), 29 C.F.R. § 1607*.14C(2)).

Terminology used in the report

See Appendix A for a list of acronyms used in this report.

Work Activities

Work activities may be captured at multiple levels of detail, but arguably the most common is task. *Tasks* are distinct activities or behaviors completed for a specific purpose with a defined beginning and end. Task statements begin with a verb, and succinctly and specifically describe a behavior. They typically do not describe *how* the work is done, but rather *what* is done. ATSS tasks are grouped into broader, high-level areas of responsibility called *duties*, which are defined as broad segments of the work performed by an incumbent (Cascio & Aguinis, 2005). This also corresponds to commonly used terminology in federal personnel documents such as position descriptions.

Worker Characteristics

The attributes required of ATSSs to perform their jobs well are captured in the form of KSAs. *Knowledge* is information that is accumulated and acquired through formal and informal learning. Because of the large number of knowledge statements, they are also grouped hierarchically. The higher level of description is termed "topic" and the lower level of description is termed "fact." In other words, knowledge facts are nested within knowledge topics. *Skills* are capabilities that are learned, but differ from knowledge in that they (skills) are typically acquired through practice. *Abilities* are general human attributes that give a person the capacity to perform physical and mental acts required to perform a job's tasks, such as the ability to detect the physical movement of objects and judge the direction of that movement. Abilities are largely innate rather than learned; they have limited potential for improvement. *Other personal characteristics* (*OPC*s) are attitudes, preferences, opinions, or personality traits that influence how well a person can carry out job tasks, such as a willingness to work in intense or high-

pressure situations. OPCs can include innate traits, learned preferences, or characteristics that are a mix of the two.

Throughout this report the term "KSAs" rather than "KSAOs" will be used in keeping with existing FAA job documentation to refer to the knowledge, skills, abilities, and other personal characteristics required of ATSSs, with "other personal characteristics" incorporated into the broader "abilities" category of relevant attributes.

Tools & Equipment

Workers in many jobs require tools and equipment to complete work tasks. *Tools and equipment* (T&E) include both concrete objects, such as wrenches, and more abstract constructs, such as computer software. For the ATSS job, it is important to note that the term "tools and equipment" does *not* refer to the equipment that specialists service and maintain but instead refers to the tools and equipment used to perform service or maintenance. For example, an ATSS might use a spectrum analyzer to evaluate the wavelength and strength of the signal emitted by an Air Route Surveillance Radar (ARSR); the tool is the spectrum analyzer, and the ARSR is the NAS equipment maintained. This job analysis sought to identify the tools and equipment that are required for the completion of ATSS job tasks and with which ATSSs may be expected to have proficiency.

Facilities, Services, and Equipment (FSE)

The hardware, software, and services that comprise the technical infrastructure of the NAS are collectively known as "*Facilities, Services, and Equipment*" (FSE) in the Technical Operations community. The FSE inventory is cataloged in the FAA Facility, Service, and Equipment Profile (FSEP; U.S. Department of Transportation, 2015). The list of FSEs is large and diverse, but restricted for internal use only. Therefore, a catalog of FSEs is not included in this public technical report.

Specialties or Disciplines

The FAA assigns FSEs used in the NAS into one of five broad categories or classes: Automation; Communication; Environmental; Navigational Aids; and Surveillance. In the Technical Operations Services, these five broad classes or categories of FSEs are referred to as "disciplines" or "specialties."

Generally speaking, the Automation specialty encompasses operation and maintenance of the computers, displays, and within-facility networks supporting controller workstations and flight data processing. The Communications specialty includes radios, inter-facility phone systems, antennas and transmission towers and can include between-facility communications networks. The Environmental specialty is associated with operation and maintenance of the physical plant itself, such as heating, ventilation and air conditioning, power conditioning and

distribution, and lighting systems. The Navigational Aids specialty encompasses operations and maintenance of equipment used for aerial navigation such as Variable Omnidirectional Radios (VORs), Distance Measuring Equipment (DME), and airport approach lighting systems. The Surveillance specialty is responsible for the operation and maintenance of air and surface radars, secondary beacons, and more recently, Global Positioning Satellite transceivers.

SSCs in which ATSSs work are in turn classified or labeled in terms of the dominant FSEs for which the SSC is responsible. For example, an SSC whose assigned FSE are automation systems for an ARTCC is classified as an "Automation SSC." A different SSC, say supporting an airport traffic control tower (ATCT) at a major airport, might be responsible for a mix of equipment, including an Instrument Landing System (ILS, in the Navigation specialty), an Airport Surveillance Radar (ASR, in the Surveillance specialty), and heating, ventilation, and air conditioning (HVAC) systems in the tower itself (in the Environmental specialty). That SSC would be classified as "Navigation-Surveillance-Environmental" multi-specialty SSC. In other words, the FSEs serviced and maintained by a particular workgroup drives its classification.

Typographic conventions

The typographic conventions used in this report in text and tables are listed in Table 1.

Table 1: Typographic conventions used in this report

Element	Typographic Convention	Example
Duty	*D# SMALL CAPS, ITALIC*	*D01 ESTABLISH SITUATION AWARENESS*
Task	T#.# Normal text	T01.01 Report to your duty station
KNOWLEDGE TOPIC	KW# SMALL CAPS	KW01 KNOWLEDGE OF THE FAA
Knowledge Fact	Kw#.# Normal text	Kw01.01 FAA mission, values, and goals
Skill Domain	SK# SMALL CAPS	SK01 BASIC
Skill	Sk#.# Capitalized Normal Text	Sk01.01 Active Learning
ABILITY DOMAIN	AB# SMALL CAPS	AB01 SENSORY
Ability	Ab#.# Capitalized Normal Text	Ab01.01 Far Vision
T&E CATEGORY	TE# SMALL CAPS	TE01 COMMUNICATIONS EQUIPMENT
T&E	TE#.# Normal text	TE01.01 Hand sets

Phases of job analysis

This job analysis had three primary phases of work (Figure 1). Lists of job duties and tasks, KSAs, T&E, and FSEs, were developed in Phase 1. The lists of job duties and tasks and KSAs were turned into the ATSS Job Analysis Survey. The ATSS Job Analysis Survey was administered in May and June 2016 to 4,382 incumbent non-supervisory, field ATSSs at SSCs in Phase 2. The key output from the analysis of the survey data was identification of the most critical job duties and tasks and the KSAs most important to successful performance of the job overall. The lists of critical job duties and tasks and important KSAs were turned into a linkage

survey in Phase 3. The linkage survey was distributed to all SSC and District managers (n=801) in November, 2016; 250 (31%) provided complete data. Respondents to the linkage survey rated the degree to which each important KSA was *essential* to the performance of each critical job task. The key output from the analysis of the linkage survey data was identification of the KSAs required on day 1 of employment that were essential to the performance of each critical job task.

1
- Conduct SME panels with job incumbents
- Develop duty/task & KSA lists

2
- Conduct Job Analysis Survey of incumbents
- Identify critical tasks & important KSAs needed on Day 1

3
- Supervisors link KSAs to specific tasks
- Identify KSAs essential to critical tasks
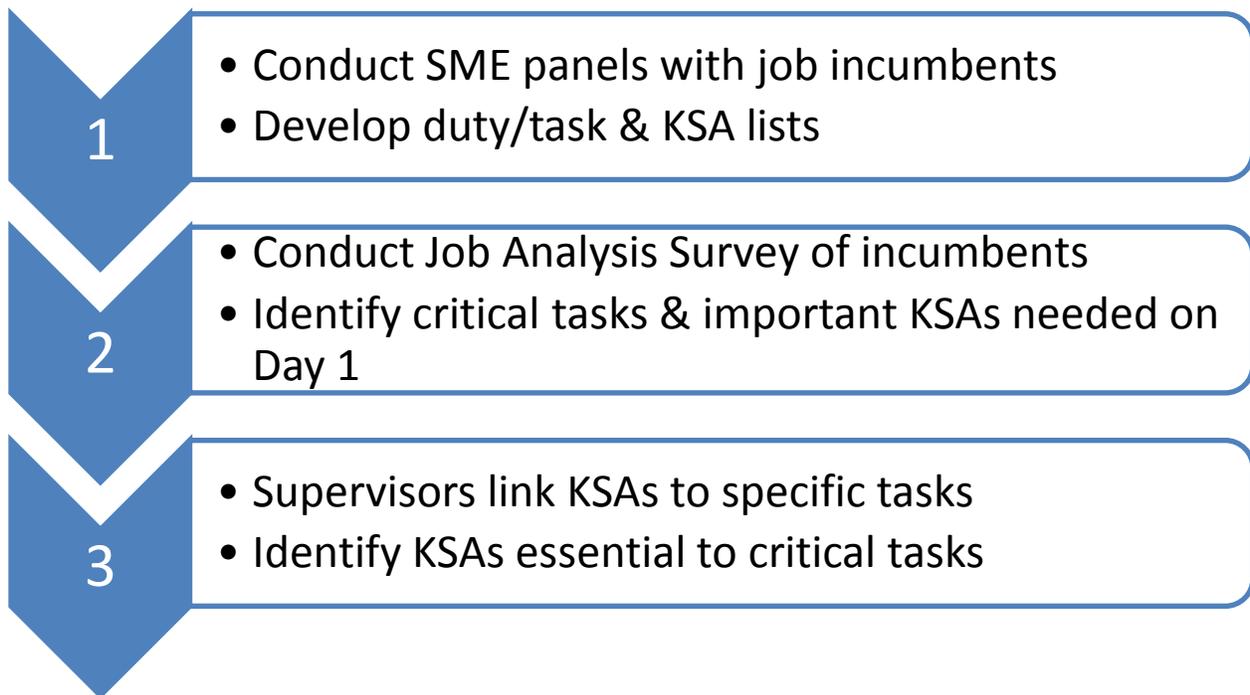
Figure 1: Phases of the 2101 job analysis

PHASE 1: DEVELOP LISTS OF DUTIES/TASKS, KSAS, AND T&E

Method

The six-step process used to develop the lists of SSC ATSS job duties and tasks, KSAs, and T&E is illustrated in Figure 2. The first step was a comprehensive review of existing documents to develop draft lists of job analysis data. In Step 2, job analysts visited ATSS work sites to become more familiar with the work performed by ATSSs and the work environment. Three subject matter expert (SME) panels were conducted in third step to review and revise the lists of ATSS job duties and tasks, KSAs, and T&E. The participating SMEs were non-supervisory incumbent ATSSs from field SSCs across the country. Step 4 was an interim review of the lists produced by the SME panel process by the job analysts. In Step 5, a joint labor-management panel reviewed and edited the lists. The lists of ATSS job duties and tasks, KSAs, and T&E were finalized in the sixth and final step within this phase of the job analysts. This phase of the ATSS job analysis was performed under a Cooperative Research Agreement (CRA) between the FAA and the American Institutes for Research (AIR®), Washington, DC (see Vestal, Martin, Krokos, Josias, Manville, & Johnson, 2015).

1.1	• Review available job information
1.2	• Familiarization visits to SSCs
1.3	• Subject Matter Expert (SME) panels
1.4	• Job analyst interim review
1.5	• Joint labor -management panel review
1.6	• Finalize lists
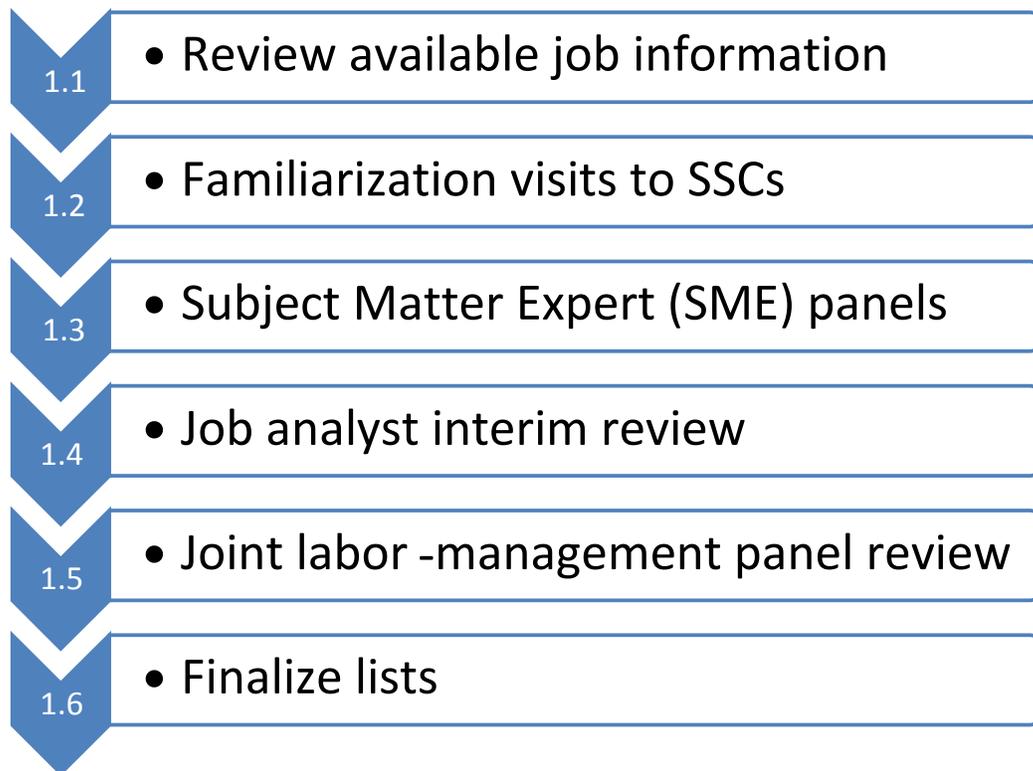
Figure 2: Phase 1 work elements

Review available job information

The first step in the analysis was to review existing ATSS job documentation. The primary sources of information about the ATSS job were two previous ATSS analyses (Raytheon Professional Services, LLC, 2013; Spackman, Norris, Salvaggio, Burns, & Heil, 2004). These analyses were conducted for different purposes and thus provided somewhat different information.

The most recent job analysis was completed in 2004 (Spackman et al., 2004). That job analysis was conducted to provide the scientific basis for new ATSS personnel selection procedures. The 2004 job analysis developed a hierarchical description of ATSS job responsibilities organized by duties and tasks. The analysis also described the knowledge, skills, and abilities required of field ATSSs. The 2004 ATSS job analysis served as the primary source for ATSS work activities and KSAs. In contrast, Raytheon Professional Services, LLC (2013) analyzed the resident ATSS *training courses* offered by the FAA Academy. The primary focus of the analysis was on training requirements associated with specific FSEs maintained by ATSSs. Because the Raytheon analysis was intended to inform ATSS training and resulted in lists of tasks and KSAs specific to each FSE, the content and structure of the analysis was not suitable to support the development and validation of ATSS selection procedures. Other contextual job information such as the Department of Labor Occupational Information Network (O*NET) and the FAA FSEP were also reviewed. A full list of the print and electronic documents reviewed is presented in Appendix B.

Familiarization visits to SSCs

In addition to gathering information about the ATSS job from existing documents and reports, AIR® staff members visited five SSCs in January and February 2015. The locations visited were Potomac TRACON (PCT), Ronald Reagan Washington National Airport (DCA) ATCT, San Francisco International Airport (SFO) ATCT, Northern California TRACON (NCT), and Oakland ARTCC (ZOA). These locations were selected to cover a variety of facility types and for proximity to researchers in the Washington, DC, and San Mateo, California areas.

During these familiarization visits, AIR® staff toured the SSCs at each location and informally observed and discussed ATSS work and workflow with SSC representatives. The familiarization visits provided a means for AIR® staff to develop a more concrete sense of the variety of work performed by ATSSs and the extensive range of knowledge and tools required.

The draft lists of ATSS work and KSA statements were revised after each site visit by AIR® staff. Key issues in revising the lists of work and KSA statements were consistency in the level of description and detail in the work statements, reduction of redundancy across work statements, organization, readability, and accuracy. For example, draft work statements with multiple verbs ("Repair or replace …") were broken into multiple work statements with a single verb per statement ("Repair …" and "Replace …").

A key issue in revising the draft lists of work and KSA statements was the degree of specialization associated with different SSCs. Each SSC is associated with a specific suite or set of facilities, systems, services, and equipment. For example, one SSC at an ATCT might be responsible for air and surface surveillance radars and associated automation and controller displays while the other SSC associated with that particular ATCT might be responsible for off- and on-airport navigation aids, radios, and environmental control systems for the tower. The first SSC would be characterized as a "Radar/Automation" SSC because of the equipment profile, and the second classified as a "Navigational Aids/Environmental" SSC. A critical issue, therefore, was phrasing the work duties, tasks, and KSAs in such a way as to reflect common versus specific requirements across the SSC types.

Subject matter expert (SME) panels

The next step in this phase of the 2101 job analysis was to convene subject matter expert (SME) panels to review, edit, and finalize the draft lists of work statement (duties, tasks) and KSA statements developed by AIR® staff. Although SMEs can include job incumbents, supervisors, and trainers (Guion, 1998), job incumbents have the most current and relevant information about the job and they possess expertise in performing the job as it was done at the time of this analysis (2016). Consequently, only job incumbents were solicited for participation in the focus groups. Recruitment of participants was conducted in accordance with Article 74 ("Job Task Analysis") of term agreement between the FAA and the Professional Association of Safety Specialists (PASS), the collective bargaining agent for the field, non-supervisory ATSS workforce.

Ultimately, 25 SMEs were recruited to participate in three panels under Article 74. The panels were conducted in Oklahoma City at the FAA's Civil Aerospace Medical Institute (CAMI) on April 14–16, April 28–30, and May 12–14, 2015. The professional certifications and disciplines associated with the specialists who participated in the SME panels are presented in Table 2.

Table 2: SME certification information (in alphabetical order)(across panels)

Certification Type	Current Certifications		Previously Held Certifications	
	N	%	N	%
Automation	11	44%	11	44%
Communication	19	76%	13	52%
Environmental	11	44%	7	28%
Navigation	12	48%	6	24%
Surveillance	10	40%	11	44%

Note: The number of participants tallies to a number greater than 25 because many of the SMEs held multiple certifications.

The 25 SMEs (22 men, 3 women) had worked for the FAA for an average of 18.2 years. They had an average of 26.5 years of experience (including FAA and non-FAA experience) and

an average age of 49.7 years. Each panel had a cross-section of specialties such that all specialties were represented in each panel.

Prior to conducting the focus groups, AIR® staff developed a structured protocol for the panels to ensure both consistency across interviews and comprehensiveness of the information collected (see Vestal, Martin, Krokos, Josias, Manville, & Johnson, 2015 for details). Each of the SME panels took 3 days; each day started at approximately 8:00 am and concluded at 5:00 pm, with multiple breaks and an hour for lunch each day. The structure of the SME panels was organized with the intent of reviewing and editing each list—work activities (duties and tasks), worker characteristics (i.e., KSAs), and tools & equipment.

The products from this process were (a) a hierarchical list of duties and tasks performed by non-supervisory ATSSs at field SSCs, (b) a hierarchical list of KSAs required of ATSSs to perform those duties and tasks, and (c) a list of the tools and equipment used by ATSSs in performing those duties and tasks.

Interim review

The products from the SME panels were reviewed again by AIR® staff and the author to make high-level decisions about the structure and formatting of the job analysis lists and to resolve instances where the information gathered was ambiguous or conflicting. For example, the task "T08.08 Conduct Operational Readiness Demonstration" was modified to "T08.08 Participate in Operational Readiness Demonstration" as the verb participate was a more accurate descriptor of the maximum level of responsibility that could be asked of a specialist. Minor edits were made as well to ensure that the lists were at the desired level of specificity and level of contextualization.

As part of this interim review, AIR® staff also refined the knowledge list. The goal was to ensure that the level of specificity across the knowledge topics and knowledge facts was consistent and that the descriptions were not confusing or ambiguous. Several changes were made for clarity and consistency. For example, AIR® relabeled "Kw11 KNOWLEDGE OF GEOGRAPHY" as "Kw11 KNOWLEDGE OF LOCAL FACILITY." The revised topic name enabled AIR® to include knowledge facts relevant to the ATSS job beyond that of geography, such as knowledge of the local facility's layout, operations, airspace boundaries, regulations, culture, and weather. AIR® also revised and collapsed some knowledge facts that were considered to be too specific and thus inconsistent with the level of specificity of other knowledge facts. For example, the list contained several knowledge facts related to wind phenomena. However, the list did not contain facts related to other types of weather phenomena. As a result, AIR® collapsed the specific knowledge facts about wind into a more general fact called "Kw09.01 Weather phenomena." As a result of AIR®'s revisions, the revised knowledge list contains greater consistency in the level of specificity across knowledge topics and knowledge facts.

The products of this interim review were the "semi-final" lists of duties/tasks, KSAs, and tools and equipment to be reviewed by a joint labor-management panel in the next step of Phase 1.

Joint labor–management review panel

The "semi-final" lists of duties/tasks, KSAs, and tools and equipment were then reviewed by a joint labor-management panel in keeping with the collective bargaining agreement and open collaboration practices. This review took place October 6, 2015, via teleconference. Five AIR® researchers, two ATSS managers, two representatives from PASS, one representative from FAA headquarters, and the first author participated.

Participants were provided with the following information: a general background on the project, an explanation of the overall project plan, information about the job analysis process, the scope of the current research, boundaries of coverage for the research, the job analysis plan and completed steps. The job analysis data were then presented to the participants for review, with particular attention to the comments and suggestions from the ATSS managers and PASS representatives. Comments and suggestions were captured for the final step in this phase of the job analysis.

List finalization

The last step in this phase of the job analysis was to finalize the duty/task, KSA, and T&E lists, incorporating the feedback from the joint Labor-Management review. In addition, AIR® staff ensured the final product met professional standards, adhered to a standardized terminology, to the maximum extent possible, followed proper spelling and grammatical conventions, was free of typographical errors, followed a consistent page layout scheme, and was print ready.

Results

The job analysis resulted in a coherent description of the job as it is currently performed. More specifically, ATSS job analysis data include the following:

- Duties
- Tasks (nested within duties)
- Knowledge (facts nested within topics)
- Skills
- Abilities (including other personal characteristics)
- Tools & Equipment (used in the performance of job duties/tasks)

Each of these job analysis components is described in more detail in the following sections. The data are included in list form in the appendices to this report.

Duties

The goal of the job analysis was to condense the extensive range of work performed by specialists and categorize the resulting components into coherent summaries. The result is the list of 13 ATSS job duties, shown in Table 3.

Table 3: ATSS job duties

ID	ATSS Job Duty
D01	ESTABLISH SITUATION AWARENESS
D02	PERFORM ADMINISTRATIVE TASKS
D03	MITIGATE SAFETY AND SECURITY RISKS
D04	PLAN PERIODIC AND CORRECTIVE MAINTENANCE ACTIVITIES
D05	PERFORM PERIODIC MAINTENANCE
D06	PERFORM CORRECTIVE MAINTENANCE
D07	PERFORM MODIFICATIONS
D08	CERTIFY FSES[1]
D09	SUPPORT FSE INSTALLATION AND CONSTRUCTION
D10	DECOMMISSION FSES
D11	ENSURE AVAILABILITY OF TOOLS & EQUIPMENT AND SPARE PARTS
D12	PERFORM TECHNICAL COLLATERAL TASKS
D13	PERFORM SPECIAL DUTIES

Notes: [1]FSEs=Facilities, Services, & Equipment

This list identifies the core functions of the ATSS job. Each item broadly defines an essential responsibility of ATSS personnel. Each duty is intended to be a discrete entity and, though it may have minor elements in common with another duty, represents a distinct function performed. The labels are designed to effectively communicate the primary functions within the job in just a few words. Note that carefully considering the tasks associated with each duty will help prevent misinterpretation. For example, D01 is labeled ESTABLISH SITUATION AWARENESS. However, it is the case that ATSSs must establish and reestablish situation awareness continually throughout the workday as time passes and situational characteristics change.

One challenge with this occupation involved deciding how to present information about tasks that might be repeated many times during the course of the workday. Such tasks were consolidated when possible. For example, ATSSs have to plan virtually every periodic and corrective maintenance activity. Rather than embedding what would be virtually the same planning tasks in both the periodic maintenance duty (D05 PERFORM PERIODIC MAINTENANCE) and the corrective maintenance duty (D06 PERFORM CORRECTIVE MAINTENANCE), a specific duty for planning was created (i.e., D04 PLAN PERIODIC AND CORRECTIVE MAINTENANCE ACTIVITIES), thus preventing the repetition of those tasks in both duties. Similarly, mitigating risk is part of virtually everything an ATSS does; however, to aid usability, a single duty (D03 MITIGATE SAFETY AND SECURITY RISKS) was created to eliminate the repetition that would result if the tasks were written in the order they occurred on the job.

To the extent possible, duties are presented in approximate temporal order of performance. For example, specialists must first (and continually) perform the duty of establishing situation awareness before they can effectively accomplish further tasks. In addition to a temporal ordering, duties are also roughly organized according to the relevance of the duty to the central mission of maintaining FSEs. For example, performing periodic maintenance is more central to the core mission of maintaining FSEs than is performing collateral tasks. Consequently, the duty D05 *PERFORM CORRECTIVE MAINTENANCE* is listed before the D12 *DUTY PERFORM TECHNICAL COLLATERAL TASKS*. Each job duty is further broken down into its constituent tasks. The organization of the task list is described in the following section.

D13 *PERFORM SPECIAL DUTIES* requires additional explanation as it is unique. Unlike the other duties that an ATSS could be required to perform, ATSSs typically perform "special duties" as a result of volunteering or receiving a special assignment. More specifically, special duties require additional training above and beyond what an ATSS typically would receive. Due to the unique nature of special duties, the items in this category list the roles or titles, such as T13.14 Rescue Tower Climber.

Tasks

The task list consists of 176 tasks divided among each of the 13 duties ([Appendix C](#)). Each duty contains 7 to 21 tasks, and although many of the duties contain roughly the same number of tasks, some variance exists by the nature of the number of tasks required to perform each duty.

Similar to the duties list, the purpose of the task list is to define the responsibilities of the ATSS job. However, the task list can be seen as a finer resolution of the work involved in accomplishing the overarching objectives defined by the duties list. That is, each task is a more specific and detailed representation of the individual steps carried out in performance of its governing duty. Whereas duties are defined more generally, task statements contain much more contextualized information that is intended to convey how a task supports the ATSS mission. However, it is important to note that the tasks were written in a way to avoid premature obsolescence that can be caused by being overly specific in task descriptions. For example, the task of "T01.03 Retrieve information regarding the current status of FSEs, NAS operations, and environmental conditions" can be expected to continue well into the future, whereas the continued use of the specific interfaces or equipment currently used to accomplish this task cannot so easily be assured. In such cases, less descriptive text was favored at the expense of well-defined, but more short-lived, descriptions.

Another area of the task list that is related to writing at the ideal level of specificity concerns tasks describing the performance of maintenance. Considering the wide variety of forms that maintenance for any one of the 226 FSE types may take, it was not feasible to provide a breakdown of the tasks involved in each specific instance of maintenance and still deliver a

usable product. For this reason, the plethora of potential maintenance activities are accounted for under a concise description such as D06 *PERFORM CORRECTIVE MAINTENANCE*. However, it is important to underscore that the majority of work performed by ATSSs, and their central job duty, is represented in these single task statements, and therefore should not be overlooked.

As with the duties list, the task list is organized in approximate temporal order to the extent possible. Additionally, if a task is expected to be performed repeatedly or continually while accomplishing a duty, it is listed only once to avoid redundancy. For example, specialists are required to log the work they perform. Logging is a continual process that happens at various stages of a specialist's workflow. As such, the first task listed in many of the duties (e.g., D05 PERFORM PERIODIC MAINTENANCE, D06 PERFORM CORRECTIVE MAINTENANCE) is logging the relevant activities.

Similarly, the level of responsibility of tasks may vary. In order to avoid repeating the same tasks at different levels of responsibility, only tasks with the highest level of responsibility were included. For example, a specialist may be asked to perform or support a risk assessment, but the task list only includes an item for "T03.07 Perform risk assessment," as performance (of a risk assessment) has a higher level of responsibility than support.

Although the duties and task lists explain what an ATSS might do on any given day, they do not explain what characteristics specialists must possess to do them effectively. The following sections describe the results from efforts focused on eliciting worker characteristics information during the SME focus groups.

Knowledge

The knowledge list (Appendix D) contains 161 knowledge facts that a specialist could be expected to possess, with no distinction being made between knowledge a specialist is expected to possess prior to being hired as an ATSS or after completion of ATSS training. These knowledge facts are categorized into 22 knowledge topics, which are presented in Table 4.

Recall that all ATSSs are required to possess a subset of knowledge facts. More specifically, some knowledge facts are considered common across the ATSS workforce. For example, all ATSSs are expected to have knowledge of the FAA organization and the contents of ATSS procedures and directives. In contrast, ATSSs are required to possess knowledge of theory and concepts relevant to the specific duties and tasks of their job and the FSEs they maintain. For example, ATSSs who maintain buildings are expected to possess knowledge of building automation control theory, while those ATSSs who maintain computer networks are expected to possess knowledge of networking hardware.

Table 4: ATSS knowledge topics

ID	ATSS Knowledge Topic
Kw01	KNOWLEDGE OF THE FAA
Kw02	KNOWLEDGE OF PROFESSIONAL ATSS REQUIREMENTS
Kw03	KNOWLEDGE OF NAS BASICS
Kw04	KNOWLEDGE OF AERONAUTICAL PUBLICATIONS AND ATSS PROCEDURES AND DIRECTIVES
Kw05	KNOWLEDGE OF SCIENCE AND MATHEMATICS
Kw06	KNOWLEDGE OF HUMAN FACTORS
Kw07	KNOWLEDGE OF SAFETY AND SECURITY
Kw08	KNOWLEDGE OF EMERGENCIES AND UNUSUAL SITUATIONS
Kw09	KNOWLEDGE OF WEATHER FUNDAMENTALS
Kw10	KNOWLEDGE OF TECHNICAL DRAWINGS
Kw11	KNOWLEDGE OF LOCAL FACILITY
Kw12	KNOWLEDGE OF ELECTRICAL THEORY
Kw13	KNOWLEDGE OF ELECTRONIC THEORY
Kw14	KNOWLEDGE OF RADIO FREQUENCY THEORY
Kw15	KNOWLEDGE OF COMPUTER NETWORKING
Kw16	KNOWLEDGE OF COMMUNICATION SYSTEM THEORY
Kw17	KNOWLEDGE OF AUTOMATION SYSTEM THEORY
Kw18	KNOWLEDGE OF NAVIGATIONAL SYSTEM THEORY
Kw19	KNOWLEDGE OF SURVEILLANCE SYSTEMS THEORY
Kw20	KNOWLEDGE OF ENVIRONMENTAL SYSTEM THEORY
Kw21	KNOWLEDGE OF FACILITIES, SERVICES, AND EQUIPMENT
Kw22	KNOWLEDGE OF TOOLS & EQUIPMENT

The knowledge list (Appendix D) is organized so that the knowledge facts that all ATSSs are required to possess are presented toward the top of the list, followed by those knowledge facts that are specific to each discipline, such as Communication and Automation. After the discipline-specific knowledge, the list contains knowledge facts relevant to FSEs. Finally, the knowledge facts related to Tools & Equipment used in the job are presented at the end of the list. Note that the knowledge list does not include those knowledge facts that are required for ATSSs who perform special duties (as listed in the duties and task list). This exclusion is because not all ATSSs are required to perform special duties. Furthermore, to be assigned to perform special duties requires that an ATSS complete additional training.

An enormous amount of information relates to the function, operation, limitations, maintenance, and procurement procedures of more than 69,000 FSEs across the NAS. The large volume of information can make it difficult to ensure that the knowledge list in the job analysis results is comprehensive and usable. To address this challenge, the FSE-specific knowledge facts are written at a general level so that they would be relevant to all FSEs, irrespective of facility, service, or equipment type. For example, "Kw21.01 Knowledge of FSE functionality" (which includes information about how an FSE works, the benefits of an FSE, and the FSE's service area) was used instead of writing specific, detailed knowledge facts about how each FSE works.

This approach helps to ensure that the job analysis is comprehensive and encompasses all types of knowledge relevant *across* different FSEs. For knowledge unique or specific to a given FSE, users of this job analysis would need to consult technical documentation specific to that particular FSE.

As for the Knowledge related to FSEs, the job analysis needed to accommodate the wide array of knowledge related to Tools & Equipment. ATSSs use many types of equipment ranging from heavy vehicles to hand tools. Subsequently, knowledge facts were written to be relevant to all the Tools & Equipment used by ATSSs. For example, the knowledge fact "Kw22.05 Use of Tools & Equipment" is relevant to all Tools & Equipment, irrespective of the specific type of tool or equipment used for a task.

Skills

The skills list identifies 46 skills (Appendix E) that ATSSs require to perform their job duties and tasks, and groups them into the seven domains listed in Table 5. Not all ATSSs are required to possess every skill listed in the job analysis results, and no distinction is made regarding whether an ATSS is expected to possess the listed skills prior to being hired as an ATSS or after completion of ATSS training.

Table 5: ATSS Skill domains and skills

ID	ATSS Skill Domain	General description
Sk01	COGNITIVE SKILLS	Basic cognitive skills
Sk02	INTERPERSONAL (SOCIAL)	Skills in working with and influencing others
Sk03	SELF-MANAGEMENT SKILLS	Skills in managing time, fatigue, stress and other factors
Sk04	PSYCHOMOTOR	Basic motor skills and typing
Sk05	RISK MITIGATION	Basic safety, housekeeping, etc.
Sk06	TECHNICAL	Basic skills in electronics & maintenance
Sk07	TOOLS & EQUIPMENT	Organizing, using, and maintaining the tools & equipment of the 2101 trade

Skills in the Sk01 COGNITIVE SKILLS domain are the most general and are likely to be required by all ATSSs for a variety of tasks. Skills in the Sk02 INTERPERSONAL (SOCIAL), Sk03 RESOURCE MANAGEMENT, Sk04 PSYCHOMOTOR, and Sk05 RISK MITIGATION domains are also likely to be required for all ATSSs, and are grouped by specific types of task they support (e.g., RISK MITIGATION skills all support the tasks in the duty D03 *MITIGATE SAFETY AND SECURITY RISKS*). Skills in the Sk07 TOOLS & EQUIPMENT domain are written at a general level and are required for all ATSSs, but the specifics of those skills will vary depending on the Tools & Equipment ATSSs use to service their particular FSEs. Skills in the first half of the Sk06 TECHNICAL domain are general and are required for all ATSSs, while skills in the second half are specific to subsets of FSEs and will therefore be required only for SMEs assigned FSEs in those areas.

Abilities

The abilities list identifies 65 abilities ([Appendix F](#)) that ATSSs require to perform their duties and tasks. This list also includes what some researchers characterize as "Other Personal Characteristics" to conform to FAA usage. Because abilities are generally innate, an ATSS would be expected to possess these abilities in some measure prior to being hired. They are organized into nine domains, shown in [Table 6](#).

Abilities are grouped into domains. Abilities in the Ab01 SENSORY domain describe components of the various senses such as vision. The VERBAL (Ab02), NUMERICAL (Ab03), REASONING (Ab04), SPATIAL (Ab05) and MEMORY (Ab06) domains are based on standard taxonomies of cognitive abilities and a reasonably self-explanatory. Abilities in the Ab07 PHYSICAL domain include strength, stamina, flexibility, and coordination on the scale of limbs or whole body. Finally, the Abilities in the Ab08 PSYCHOMOTOR domain include coordination on a finer scale than in the Ab07 PHYSICAL domain. These PSYCHOMOTOR abilities often require adjustment of movements to take into account environmental factors.

The PERSONALITY (Ab09) domain consists of 14 personal characteristics. Some characteristics are internalized such as personal preferences, inclinations, and personality traits (e.g., conscientiousness, integrity, emotional stability). This domain also includes externalized characteristics that are important when interacting with others (e.g., comfort working in teams, assertiveness). Several characteristics needed to work in the ATSS work environment (e.g., stress tolerance, risk tolerance, work-schedule flexibility) are also grouped under this broad domain.

Table 6: ATSS Ability domains and abilities

ID	ATSS Ability Domain	General description
Ab01	SENSORY	The 5 senses (vision, hearing, etc.)
Ab02	VERBAL	Speaking, writing, reading
Ab03	NUMERICAL	Arithmetic, computing, calculating
Ab04	REASONING	Logical reasoning, inferring
Ab05	SPATIAL	Visualization, rotation
Ab06	MEMORY	Long- and short-term memory, memorization
Ab07	PHYSICAL	Strength, stamina, flexibility, gross coordination
Ab08	PSYCHOMOTOR	Dexterity, fine coordination
Ab09	PERSONALITY	Normal personality (not psychopathology)

Tools & Equipment

Because much of the technical expertise necessary to perform ATSS work stems from specialists' proficiency with tools and equipment, it was important to make a concerted effort to capture the list of tools and equipment comprehensively. Moreover, while the Tools & Equipment component of many other job analyses tends to be a minor part of the finished product, here the essential role these play in the ATSS job and the wide array of technical

capabilities required of specialists are underscored by the extensive number and diversity of items in the Tools & Equipment list. The final list of ATSS Tools & Equipment consists of 340 items (Appendix G). Each item is assigned to one of the following 12 categories shown in Table 7.

Table 7: ATSS Tool and Equipment categories

ID	ATSS Tool and Equipment Categories	Examples
TE01	COMMUNICATIONS EQUIPMENT	Hand-held VHF & UHF radios
TE02	COMPUTER HARDWARE	Maintenance Data Terminal (Laptop)
TE03	COMPUTER SOFTWARE/APPLICATIONS	Specialized software apps for Tech Ops
TE04	LIGHT VEHICLES	Cars, pickup trucks, etc.
TE05	HEAVY VEHICLES	Large trucks, Cargo carriers
TE06	HEAVY EQUIPMENT	Excavators, Cranes
TE07	HAND TOOLS	Wrenches, Screwdrivers, Wire cutters
TE08	POWER-ASSISTED TOOLS	Power drills
TE09	TEST EQUIPMENT	Multi-meter
TE10	TEST EQUIPMENT ACCESSORIES	Leads, Probes
TE11	HEALTH AND SAFETY EQUIPMENT	Respirators, Masks, Harnesses
TE12	MATERIALS	Solder, Wire, Cable, Paint

COMMUNICATIONS EQUIPMENT (TE01) is used for the purposes of communicating information over a distance when direct (i.e., face-to-face) communication is not possible. COMPUTER HARDWARE (TE02) includes physical computer components such as keyboards and laptops that are used to operate computer systems. COMPUTER SOFTWARE/APPLICATIONS (TE03) includes the programs used to execute computer commands and operate computer systems. LIGHT VEHICLES (TE04) are those vehicles that can be legally operated without a license or with a standard driver's license with no additional endorsements. These are generally no larger than standard road vehicles. HEAVY VEHICLES (TE05) are those vehicles that generally require special endorsements or training to operate and which can be substantially larger than standard road vehicles. HEAVY EQUIPMENT (TE06) is standalone equipment that is too large to carry but may be operated in support of performing a task. HAND TOOLS (TE07) are manual, hand-operated tools that do not require an external energy source such as electricity or air pressure to function. POWER-ASSISTED TOOLS (TE08) are hand-operated tools that require an external energy source such as electricity or air pressure to function. TEST EQUIPMENT (TE09) is equipment used to assess the operability of FSEs and are generally of an electronic nature. TEST EQUIPMENT ACCESSORIES (TE10) includes those pieces of test equipment that cannot function without other test equipment and are used in support of assessing FSE operability. HEALTH AND SAFETY EQUIPMENT (TE11) is equipment used to protect the health and safety of ATSS personnel during or peripheral to the performance of their tasks. Finally, MATERIALS (TE12) consist of consumable supplies and materials required to perform tasks.

As with other lists, the Tools & Equipment list is not organized by FSE, though it is assumed that certain items on the list are used to a greater or lesser extent by specialists,

depending on the FSEs for which they are responsible. For example, an azimuth generator test set is likely to be used exclusively by those specialists performing work on navigation equipment. Attempting to delineate the list of tools and equipment according to which FSE they are most associated with is, however, impossible given the multipurpose nature of many of the items on the Tools & Equipment list.

Similarly, some items in the Tools & Equipment list could be classified as belonging to more than one of the categories that organize the list. For example, a saw could be considered both a HAND TOOL (TE07) and a POWER-ASSISTED TOOL (TE08). In instances where items could belong to multiple categories, such items are sorted into the category requiring the greatest amount of technical skill to operate. Items considered to be both HAND and POWER-ASSISTED TOOLS are therefore classified as POWER-ASSISTED TOOLS, and items that are both LIGHT and HEAVY VEHICLES are grouped under the HEAVY VEHICLE heading. This is done to minimize redundancies in the Tools & Equipment list.

Unconventionally, the list of Tools & Equipment includes materials. MATERIALS (TE12) can be thought of as mostly consumable supplies used in support of ATSS work. They are included because some of the materials require considerable expertise to use effectively (e.g., solder, fiber optic cables, thermal compounds, concrete, welding materials); it was deemed important to communicate those requirements in order to fully understand the ATSS job, rather than inadvertently conceal them by not listing them.

Finally, because many Tools & Equipment items can be representative of a variety of exemplars (e.g., wrenches can be box-end or open-end, fixed or adjustable, square or hex, 6 inches or 8 inches in length), these items are listed by the general name for those types of tool that describes their general purpose. The general names listed are intended to represent the entire class of objects performing the same essential function.

While generating the Tools & Equipment lists, the SMEs often referred to various pieces of computer software and test equipment by commercial or manufacturer name. In these instances, the generic name of the item was substituted where available and was created when a preexisting label was not available. This was done to avoid any implications of endorsement of specific products, and to help ensure future relevance of the job analysis by eliminating obsolescence due to changes in model and industry names and nomenclature.

Facilities, Services, and Equipment

As stated previously, the FSE list was generated by the FAA on March 26, 2014 by using the FSE database. The FSE list indicated the total number of FSEs in the NAS (approximately 69,000) at that time in each of 226 categories (e.g., there are 1,218 glide slopes in the NAS). As noted, the FSE list is not public and is for official internal use only, and is therefore not included in this public version of the ATSS job analysis report.

PHASE 2: CONDUCT JOB ANALYSIS SURVEY

The next phase of the analysis of the non-supervisory ATSS at SSCs was to conduct a survey of job incumbents and analyze the resulting data to identify (a) critical tasks in the job and (b) KSAs important to the overall successful performance of the job. This and subsequent phases of the ATSS job analysis were conducted by FAA researchers without the assistance of AIR®. There were three major work elements in Phase 2, as shown in Figure 3.

2.1
- Develop Job Analysis Survey from Phase 1 lists of duties, tasks, and KSAs

2.2
- Distribute survey invitation via e-mail to 4,382 incumbents

2.3
- Identify critical and/or important tasks
- Identify KSAs important to job overall
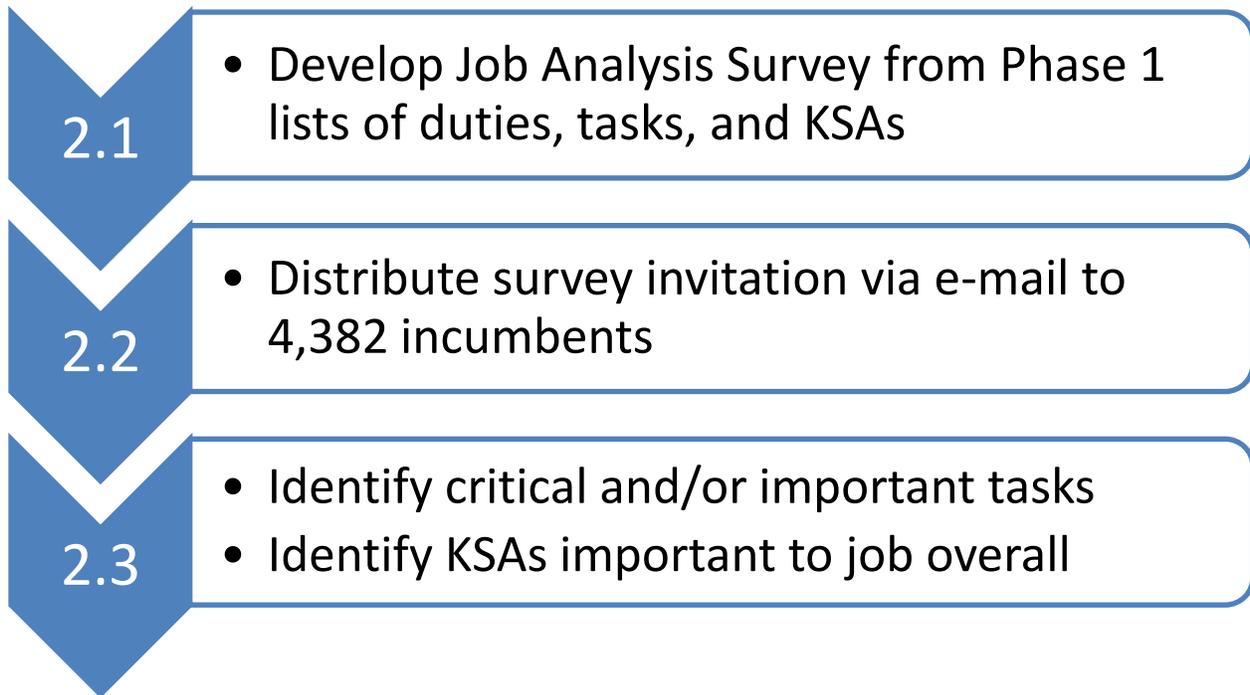
Figure 3: Phase 2 work elements

Method

Target population

The target population for the 2101 Job Analysis Survey was non-supervisory ATSSs assigned to field SSCs. As of April 2016, there were 4,382 non-supervisory ATSSs assigned to field SSCs according to the FAA Payroll and Personnel System (FPPS), the official system of personnel records for the FAA. The 2101 Job Analysis Survey was coordinated with the Professional Association of Safety Specialists (PASS) in accordance with Article 74 (Job Task Analysis) of the FAA-PASS collective bargaining agreement (*Agreement between the Professional Aviation Safety Specialists (AFL-CIO) and U.S. Department of Transportation, Federal Aviation Administration, 2012*).

Instrument

Development of the 2101 Job Analysis Survey began with the lists of job duties/tasks and KSAs developed in Phase 1 of the 2101 job analysis project. The survey content was expanded to include 67 knowledge items based on learning objectives for the *Common Principles* course (FAA Academy 43087001) to support evaluation of the content validity of that course, bringing the total number of knowledge statements to be evaluated to 228 (Table 7). Additional questions encompassed physical requirements of the work such as climbing, lifting, and exposure to weather. Three supplemental questions about driving, noise exposure, and physical exertion were also included in the survey. Participants were asked to estimate the proportion of time spent on each major duty. An overview of survey content is presented in Table 8.

Table 8: Overview of the 2101 job analysis survey content

Content area	N Items to be rated
Work statements (Duties, Tasks)	176
Knowledge statements	228
Skill statements	48
Ability statements	65
Other conditions of work	29
Supplemental questions	3

The survey was conducted electronically using the Qualtrics® survey platform by the CAMI internal support contractor, Cherokee CRC, LLC.

Rating scales

Task rating scales. Task rating scales are presented in Figure 4. First, participants were asked to evaluate how often each task was performed. All tasks were presented to the participant in this first pass. Second, participants were asked to rate how important each task was to the job overall. Importance was explicitly anchored in terms of impact on the safety, efficiency, or security of the National Airspace System (NAS) at the suggestion of the Technical Operations Services SMEs who reviewed the 2101 Job Analysis Survey.

KSA rating scales. KSA rating scales are presented in Figure 5. KSA statements were rated on how important the KSA was to successful performance of the job overall, the level of mastery on the KSA required for successful performance of the job at the journeyman (Career Level III) level, and whether the KSA was needed on the first day on the job.

(Frequency) **On average, how frequently do you perform this task?**
       0=I don't perform this task
       1=Annually
       2=Semi-annually
       3=Quarterly
       4=Monthly
       5=Weekly
       6=Daily
       7=Hourly

(Importance) **On average, how important is this task to your job as an ATSS at a SSC?**
       1=Least important – Task does not impact NAS safety, efficiency, or security
       2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or
           security
       3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or
           security
       4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
       5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or
           security

Figure 4: Task rating scales

(Importance) **How important is this KSA for doing the ATSS job overall at your SSC?**
       1=Not important
       2=Somewhat important
       3=Important
       4=More important
       5=Extremely important

(Level of Mastery) **Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job?**
       1=Minimal
       2=Intermediate
       3=Advanced
       4=Expert

(Needed on Day 1) **Is this KSA needed on the first day on the job with the FAA as a systems specialist at a SSC?**
       No=This KSA is NOT needed on the first day as an ATSS at a SSC and will be learned on the job or in
           FAA training
       Yes=This KSA IS needed on the first day as a systems specialist at a SSC and should have already been
           learned or developed before hire

Figure 5: KSA rating scales

Survey forms

With 176 work statements to be rated on two dimensions, 228 knowledge facts, 46 skills, and 65 ability statements (339 KSAs) to be rated on three dimensions, and 32 items rated on a single dimension, the survey would have required as many as 1,401 judgments from participants. The time required to complete the survey would have been greater than two hours, significantly increasing costs to Technical Operations Services. A very long survey requiring more than two hours also increased the potential for overly quick and casual judgments and "survey fatigue" leading to higher rates of abandonment. Therefore, the survey was divided into two forms with overlapping and unique content as shown in Table 9. Routing logic within each survey form was used to further reduce the burden on participants. For example, if a task was rated as "Not performed" by a participant, that task was not presented for rating on importance (based on the idea that a task could not be important if it was not performed by the participant). Similarly, if a KSA statement was rated as "Not important" to the job, it was not presented for rating on the level of mastery required or when needed (on Day 1 or later) (based on the idea that level of mastery and when needed were irrelevant for KSAs unimportant to the job).

Table 9: Distribution of 2101 job analysis survey items by type and form

	Form A	Form B	Form A&B	Total
Task statements	86	90		176
Other conditions of work			29	29
Additional questions			3	3
% of Time per Duty			1	1
Knowledge	60	62	106	228
Skill	23	23		46
Ability*	32	33		65
Total	201	208	139	548

Notes: *Ability includes "other personal characteristics" such as personality

Pilot testing indicated that this approach reduced the time required to complete the survey to 2 hours or less.

A combined version of the Job Analysis Survey is presented in Appendix H, annotated with routing logic (in bracketed italics) and form on which each item was presented.

Distribution

Invitations to complete the 2101 Job Analysis Survey were distributed via FAA e-mail in late April, 2016 to the 4,382 incumbent ATSSs. The invitational e-mail contained an explanation of the survey from the Vice President of Technical Operations Services and an embedded link to the survey proper. The link was unique to each ATSS. However, no identifying information was collected from participants.

Results

Survey participants

Overall, 1,649 incumbent ATSSs participated in the 2101 Job Analysis Survey for an overall response rate of 38%. Participants were asked to mark all the specialties that applied for their SSC: 1) Automation; 2) Communications; 3) Environmental; 4) Navigation; and 5) Surveillance. Table 10 presents a breakdown of the specialties marked by participants. The majority of incumbent 2101s work at multi-specialty SSCs (71%) compared to 61% of job analysis survey participants. About 14% of participants indicated that all five specialties applied to their SSC; however, there are no current "all specialties" SSCs. Similarly, persons working at Environmental-only SSCs represent about 12% of the 2101 population but accounted for about 20% of the participants in the job analysis survey. Overall, persons working at single-specialty environmental SSCs are slightly over-represented in the job analysis survey sample.

An alternative grouping of respondents is presented in Table 11. There are two broad categories of SSC type: Single-specialty SSCs; and Multi-specialty SSCs with and without an environmental component. A plurality of respondents (37.4%) came from a Multi-specialty SSC with Environmental. Somewhat fewer (23.3%) represented Multi-specialty SSCs without Environmental. The next largest group of respondents came from Environmental only SSCs (20%). On the other hand, the sample is geographically representative, as shown in Table 12.

Demographics such as race, sex, age, and tenure were not collected to avoid tracing responses back to any individual by segmenting the data on those dimensions. Given prior experience with surveys in the FAA, the research team determined that the potential negative impact on participation outweighed the potential benefit in assessing the demographic representativeness of the sample. Therefore, it is certainly possible that the respondents are not representative of the larger population in terms of race, sex, and tenure. However, given the large sample size, geographic dispersion, and organizational profile for participants, the participants are more likely than not to be broadly representative of the incumbent ATSS population assigned to field SSCs in non-supervisory positions.

Overall analysis

Task ratings.

Descriptive statistics for task ratings are presented in Table 13. The first statistic computed was the proportion of respondents indicating that they performed a given task (p(*Perform*)). The second statistics computed are the average (M(*Frequency*)) and standard deviation (SD(*Frequency*)) of the frequency of performance rating, computed only on those persons who indicated performing the task. The third set of statistics, again computed only on

Table 10: SSC specialties marked

| Type of SSC (Specialties) | N Specialties Marked | | | | | Total |
	1	2	3	4	5	
AUTO	115					115
COMM	106					106
ENV	330					330
NAV	40					40
SURV	57					57
AUTO-ENV		1				1
AUTO-SURV		55				55
COMM-AUTO		18				18
COMM-ENV		21				21
COMM-NAV		139				139
COMM-SURV		14				14
NAV-ENV		7				7
NAV-SURV		1				1
SURV-ENV		8				8
AUTO-SURV-ENV			11			11
COMM-AUTO-ENV			6			6
COMM-AUTO-SURV			96			96
COMM-NAV-AUTO			30			30
COMM-NAV-ENV			140			140
COMM-NAV-SURV			11			11
COMM-SURV-ENV			14			14
NAV-SURV-ENV			1			1
COMM-AUTO-SURV-ENV				45		45
COMM-NAV-AUTO-ENV				48		48
COMM-NAV-AUTO-SURV				20		20
COMM-SURV-NAV-ENV				89		89
NAV-AUTO-SURV-ENV				2		2
COMM-NAV-AUTO-SURV-ENV					224	224
Total	648 (39.3%)	264 (16.0%)	309 (18.7%)	204 (12.4%)	224 (13.6%)	1,649

Table 11: Job analysis survey participants by single- and multiple-specialty SSCs

	N	Percent
Automation (AUTO) Only SSC	115	7.0
Communications (COMMS) Only SSC	106	6.4
Environmental (ENV) Only SSC	330	20.0
Navigational Aids (NAV) Only SSC	40	2.4
Surveillance (SURV) Only SSC	57	3.5
Multi-specialty SSC without Environmental	384	23.3
Multi-specialty SSC with Environmental	617	37.4
Total	1,649	100.0

Table 12: Geographic representation

District	N	Sample N	Population %	Sample %
Albuquerque District	167	62	3.8%	3.8%
Anchorage District	205	82	4.7%	5.0%
Atlanta District	103	41	2.4%	2.5%
Boston District	221	81	5.0%	4.9%
Chicago District	171	64	3.9%	3.9%
Cleveland District	173	63	3.9%	3.8%
Columbia District	190	60	4.3%	3.6%
Dallas-Fort Worth District	176	59	4.0%	3.6%
Denver District	178	66	4.1%	4.0%
Honolulu District	91	37	2.1%	2.2%
Houston District	157	67	3.6%	4.1%
Indianapolis District	195	74	4.5%	4.5%
Jacksonville District	198	81	4.5%	4.9%
Kansas City District	204	64	4.7%	3.9%
Los Angeles District	210	81	4.8%	4.9%
Memphis District	163	55	3.7%	3.3%
Miami District	196	72	4.5%	4.4%
Minneapolis District	221	86	5.0%	5.2%
NEMC Operations	36	11	0.8%	0.7%
New York District	164	55	3.7%	3.3%
Oakland District	232	94	5.3%	5.7%
Philadelphia District	179	63	4.1%	3.8%
Salt Lake City District	187	68	4.3%	4.1%
Seattle District	188	100	4.3%	6.1%
Washington District	177	63	4.0%	3.8%
Total	4,382	1,649		

those persons who indicated performing the task, were the average (M(*Importance*)) and standard deviation (SD(*Importance*)) importance ratings for the task.

KSA ratings

Descriptive statistics for KSA ratings are presented in Table 14. The first statistics computed were the average (M(*Importance*)) and standard deviation (SD(*Importance*)) of the ratings of importance of the KSA to overall job performance. Second, the mean (M(*Mastery*)) and standard deviation (SD(*Mastery*)) of the level of mastery ratings for each KSA were computed. Finally, the proportion of raters indicating a KSA was needed on day 1 at the SSC (p(*Day 1*)) was computed for each KSA.

Table 13: Task ratings descriptive statistics

TaskID	Task Description	p(Perform)	Frequency[1]		Importance[2]	
			Mean	*SD*	*Mean*	*SD*
D01	*ESTABLISH SITUATION AWARENESS*					
T01.01	Report to your duty station	1.00	6.00	0.26	4.35	1.08
T01.02	Receive in-person briefing regarding the current status of FSEs, NAS ops, & environmental conditions	0.85	5.47	1.12	3.64	1.26
T01.03	Retrieve information regarding the current status of FSEs, NAS ops, & environmental conditions	0.97	5.94	0.74	4.32	0.83
T01.04	Scan FSEs by in-person inspection	0.86	5.51	0.96	3.90	1.05
T01.05	Scan FSEs by remote inspection	0.68	5.52	1.02	3.63	1.10
T01.06	Evaluate current & projected state of FSEs	0.89	5.62	0.93	4.22	0.83
T01.07	Evaluate current & projected state of NAS ops & environmental conditions	0.89	5.68	0.89	4.21	0.86
T01.08	Monitor FSEs continually	0.77	5.84	0.87	3.88	1.03
T01.09	Monitor NAS ops & environmental conditions continually	0.80	5.84	0.88	3.95	1.01
T01.10	Brief others regarding the status of FSEs, NAS ops, & environmental conditions	0.83	5.71	0.77	3.97	0.92
D02	*PERFORM ADMINISTRATIVE TASKS*					
T02.01	Complete human resource enrollment requirements	0.58	2.13	1.49	2.56	1.24
T02.02	Maintain currency, security, & condition of your PIV, PIV token, facility badges, & keys	0.90	3.25	2.43	4.09	1.07
T02.03	Complete required non-technical training	0.99	3.16	1.33	2.96	1.15
T02.04	Manage internal FAA communications	0.77	5.43	1.48	3.51	1.05
T02.05	Complete ongoing human resource activities	0.59	3.19	1.68	2.70	1.12
T02.06	Participate in performance appraisal	0.83	2.10	0.81	3.21	1.21
T02.07	Manage business travel	0.66	2.50	1.39	3.13	1.17
D03	*MITIGATE SAFETY AND SECURITY RISKS*					
T03.01	Log all safety & security activities	0.82	5.16	1.47	4.21	0.92

TaskID	Task Description	p(Perform)	Frequency[1]		Importance[2]	
			Mean	SD	Mean	SD
T03.02	Respond to emergency situations	0.75	4.90	1.66	4.67	0.65
T03.03	Follow prescribed safety & security standards & practices	0.99	6.08	0.86	4.55	0.71
T03.04	Identify safety hazards	0.94	5.29	1.53	4.48	0.79
T03.05	Identify security vulnerabilities	0.87	5.07	1.71	4.38	0.86
T03.06	Report hazard or vulnerability	0.89	4.92	1.71	4.47	0.81
T03.07	Perform risk assessment	0.88	5.36	1.39	4.21	0.88
T03.08	Plan risk mitigation activities with stakeholders	0.75	4.83	1.52	4.12	0.92
T03.09	Perform risk mitigation activities	0.85	4.93	1.52	4.23	0.89
T03.10	Maintain safety & security related documentation	0.83	4.76	1.67	4.01	0.98
T03.11	Maintain access control to operational network systems	0.73	5.67	1.21	4.28	0.91
T03.12	Escort contractors & other non-FAA personnel	0.95	4.17	1.32	3.54	1.21
D04	*PLAN PERIODIC AND CORRECTIVE MAINTENANCE ACTIVITIES*					
T04.01	Receive notification of situation requiring maintenance	0.98	5.81	0.82	4.50	0.73
T04.02	Determine that maintenance is required	0.99	5.92	0.76	4.50	0.68
T04.03	Report maintenance-related information to appropriate Control Center	0.98	5.87	0.78	4.34	0.86
T04.04	Collect data on current & past FSE performance	0.91	5.08	1.37	3.86	0.95
T04.05	Evaluate impact of maintenance to the NAS	0.90	5.72	1.08	4.46	0.77
T04.06	Participate in pre-maintenance discussion(s) or meeting(s)	0.93	5.21	1.14	3.82	0.98
T04.07	Prioritize maintenance tasks	0.97	6.01	0.71	4.22	0.79
T04.08	Review technical documentation for FSE & T&E	0.93	4.80	1.47	3.83	0.90
T04.09	Review Job Hazard Analysis (JHA)	0.88	3.84	1.87	3.75	1.01
T04.10	Identify maintenance activity requirements	0.96	5.49	1.18	4.06	0.82
T04.11	Ensure availability of all required personnel	0.63	5.44	1.14	3.94	0.94
T04.12	Ensure availability of T&E	0.90	5.36	1.18	4.08	0.85
T04.13	Ensure availability of spare parts	0.89	4.75	1.48	4.00	0.90
T04.14	Coordinate maintenance activities with stakeholders	0.89	5.61	0.94	4.24	0.86
T04.15	Log coordination activities	0.99	5.95	0.79	4.14	0.99
D05	*PERFORM PERIODIC MAINTENANCE*					
T05.01	Log all periodic maintenance activities	0.99	6.00	0.73	4.35	0.83
T05.02	Communicate intent to conduct periodic maintenance	0.99	5.84	0.71	4.30	0.86

TaskID	Task Description	p(Perform)	Frequency[1]		Importance[2]	
			Mean	SD	Mean	SD
T05.03	Assemble team of personnel required for periodic maintenance	0.85	5.16	1.29	3.83	0.99
T05.04	Gather T&E required for periodic maintenance	0.98	5.66	0.88	4.06	0.87
T05.05	Collect data on current & past FSE performance	0.88	5.13	1.28	3.80	0.98
T05.06	Evaluate current FSE performance data to past performance data to identify problems, deficiencies, or risks	0.87	5.01	1.35	3.91	0.96
T05.07	Perform final coordination of periodic maintenance	0.97	5.69	0.86	4.36	0.87
T05.08	Configure state of FSE for periodic maintenance	0.89	5.29	1.17	4.19	0.84
T05.09	Perform periodic maintenance on FSE per FAA Order 6000 Series etc	0.96	5.67	0.91	4.42	0.75
T05.10	Perform operational check on FSE	0.95	5.53	0.98	4.42	0.76
T05.11	Support flight check on FSE	0.56	2.76	1.84	4.28	0.93
T05.12	Certify FSE	0.90	5.03	1.21	4.64	0.67
T05.13	Configure state of FSE for normal ops	0.91	5.36	1.08	4.51	0.70
T05.14	Coordinate return of FSE to operational use	0.93	5.40	1.01	4.50	0.73
D06	*PERFORM CORRECTIVE MAINTENANCE*					
T06.01	Log all corrective maintenance activities	0.99	3.80	4.87	4.39	0.82
T06.02	Perform final coordination of corrective maintenance	0.98	3.50	5.06	4.41	0.84
T06.03	Configure state of FSE for corrective maintenance	0.95	3.04	5.43	4.37	0.77
T06.04	Gather T&E required for troubleshooting	0.98	3.53	5.00	4.17	0.84
T06.05	Collect data on current & past FSE performance	0.92	2.50	5.65	3.96	0.96
T06.06	Compare FSE performance to technical specifications	0.94	2.81	5.47	4.20	0.86
T06.07	Conduct additional research	0.94	2.59	5.45	3.77	1.01
T06.08	Isolate fault(s) to software, hardware, component, or lowest replaceable unit (LRU)	0.97	3.16	5.09	4.47	0.73
T06.09	Obtain second-level engineering & technical support	0.91	0.92	5.21	3.60	1.11
T06.10	Develop proposed solution	0.91	2.01	5.71	4.18	0.88
T06.11	Assemble team of personnel required for corrective maintenance	0.85	0.91	6.23	3.84	0.96
T06.12	Gather T&E required for FSE repair or replacement	0.95	2.39	5.63	4.05	0.90
T06.13	Procure appropriate parts	0.96	2.40	5.51	4.25	0.82
T06.14	Perform corrective maintenance tasks on FSE per the FAA Order 6000 etc	0.96	2.60	5.55	4.44	0.76
T06.15	Perform operational check on FSE	0.96	2.73	5.65	4.45	0.75

TaskID	Task Description	p(Perform)	Frequency[1] Mean	SD	Importance[2] Mean	SD
T06.16	Support flight check on FSE	0.58	-3.05	6.25	4.27	0.96
T06.17	Certify FSE	0.93	1.94	5.92	4.61	0.69
T06.18	Configure state of FSE for normal ops	0.94	2.45	5.76	4.51	0.70
T06.19	Coordinate return of FSE to operational use	0.96	2.58	5.68	4.47	0.77
D07	*PERFORM MODIFICATIONS ON FSEs*					
T07.01	Log all modification activities	0.91	3.59	1.71	4.20	0.93
T07.02	Receive modification materials (e.g., documentation, modification kit)	0.89	3.32	1.59	4.08	0.92
T07.03	Review documentation for FSE modification	0.91	3.46	1.64	4.09	0.92
T07.04	Order modification kit	0.79	3.12	1.58	4.03	0.92
T07.05	Inspect modification kit	0.85	3.17	1.59	4.01	0.92
T07.06	Develop plans for implementing modification	0.85	3.24	1.61	4.05	0.90
T07.07	Coordinate modification with stakeholders	0.84	3.27	1.64	4.16	0.93
T07.08	Configure state of FSE for modification	0.86	3.19	1.59	4.22	0.86
T07.09	Install FSE modification	0.88	3.13	1.58	4.26	0.85
T07.10	Perform operational check on modified FSE	0.88	3.22	1.60	4.41	0.81
T07.11	Support flight check on modified FSE	0.52	2.93	1.71	4.04	1.06
T07.12	Certify modified FSE	0.84	3.20	1.61	4.50	0.80
T07.13	Coordinate return of modified FSE to operational use	0.88	3.26	1.64	4.38	0.82
T07.14	Update documentation to reflect newly modified FSE	0.88	3.21	1.61	4.16	0.91
D08	*PERFORM FSE INSTALLATION AND CONSTRUCTION ACTIVITIES*					
T08.01	Log all installation & construction activities	0.76	3.78	1.97	3.70	1.08
T08.02	Review installation & construction documentation	0.77	3.38	1.84	3.73	1.01
T08.03	Participate in installation & construction design meetings	0.74	3.19	1.76	3.65	1.05
T08.04	Participate in site surveys and/or pre-construction meetings	0.77	3.07	1.69	3.64	1.08
T08.05	Assist in site preparation	0.78	3.13	1.72	3.53	1.05
T08.06	Coordinate with stakeholders	0.73	3.69	1.86	3.88	1.02
T08.07	Perform FSE installation or construction activities	0.62	2.77	1.72	3.50	1.10
T08.08	Participate in Operational Readiness Demonstration (ORD)	0.50	2.41	1.64	3.69	1.07
T08.09	Participate in Contractor Acceptance Inspection (CAI)	0.60	2.18	1.49	3.67	1.08
T08.10	Participate in Initial Operating Capability (IOC) Test	0.57	2.17	1.57	3.85	1.00

TaskID	Task Description	p(Perform)	Frequency[1]		Importance[2]	
			Mean	SD	Mean	SD
T08.11	Participate in flight check	0.50	2.08	1.44	4.17	0.98
T08.12	Participate in Joint Acceptance Inspection (JAI)	0.75	1.96	1.36	3.93	1.01
T08.13	Follow up with JAI exceptions after corrections are made	0.71	2.31	1.57	3.86	0.99
T08.14	Certify FSE	0.74	3.52	1.99	4.44	0.87
T08.15	Coordinate commissioning of FSE	0.57	2.17	1.64	4.25	0.91
T08.16	Update documentation to reflect newly commissioned FSE	0.62	2.15	1.60	4.09	0.95
T08.17	Log commissioning statement	0.55	2.15	1.65	4.18	0.96
D09	*CERTIFY FSEs*					
T09.01	Review FSE certification requirements	0.89	4.12	1.63	4.31	0.85
T09.02	Gather existing & new data regarding FSE performance	0.87	4.30	1.60	4.08	0.92
T09.03	Compare certification requirements & current FSE performance data	0.87	4.30	1.61	4.25	0.88
T09.04	Make certification decision based on all data gathered & according to FAA Orders & directives	0.89	4.66	1.47	4.51	0.75
T09.05	Log certification or decertification statement	0.91	4.72	1.43	4.51	0.78
D10	*DECOMMISSION FSEs*					
T10.01	Log all decommissioning activities	0.39	1.99	1.73	3.70	1.09
T10.02	Review documentation for FSE decommissioning	0.40	1.97	1.70	3.58	1.06
T10.03	Coordinate decommissioning activities with stakeholders	0.38	2.00	1.73	3.77	1.12
T10.04	Participate in site preparation	0.49	2.09	1.74	3.44	1.14
T10.05	Communicate decommissioning with stakeholders	0.39	2.02	1.75	3.77	1.12
T10.06	Remove FSE from service	0.43	2.00	1.71	3.62	1.12
T10.07	Participate in physical removal of FSE	0.50	1.82	1.50	3.06	1.18
T10.08	Transfer or dispose of FSE as appropriate	0.47	1.86	1.54	3.08	1.19
T10.09	Verify closure of all FSE logs	0.45	2.08	1.75	3.44	1.13
T10.10	Update documentation to reflect newly decommissioned FSE	0.43	2.04	1.72	3.57	1.12
T10.11	Perform site restoration	0.52	2.47	1.93	3.66	1.17
D11	*ENSURE AVAILABILITY OF TOOLS & EQUIPMENT AND SPARE PARTS*					
T11.01	Monitor inventory of T&E & spare parts	0.90	3.91	1.74	3.57	1.02
T11.02	Determine what action is required in response to inventory status	0.87	3.97	1.69	3.51	1.05
T11.03	Investigate options related to T&E & spare parts	0.88	3.94	1.66	3.47	1.06

TaskID	Task Description	_p_(Perform)	Frequency[1]		Importance[2]	
			Mean	_SD_	_Mean_	_SD_
T11.04	Order T&E & spare parts	0.91	3.99	1.56	3.70	0.99
T11.05	Verify orders upon receipt	0.91	4.20	1.52	3.67	1.02
T11.06	Complete expense report for T&E & spare parts	0.55	4.05	1.65	3.46	1.21
T11.07	Store T&E & spare parts in appropriate location	0.94	4.68	1.49	3.72	1.01
T11.08	Inspect T&E & spare parts	0.92	4.26	1.64	3.66	1.02
T11.09	Coordinate inspection of T&E by certifying authority	0.67	3.38	1.94	3.54	1.14
T11.10	Maintain T&E	0.93	4.60	1.62	3.82	0.97
T11.11	Ensure Availability of T&E & Spare Parts-Dispose of T&E & spare parts iaw FAA protocol	0.79	3.46	1.89	3.41	1.19
T11.12	Inventory T&E & spare parts	0.88	3.27	1.93	3.51	1.09
T11.13	Update inventory database to reflect current status of T&E	0.70	3.15	1.95	3.55	1.10
_D12_	_PERFORM TECHNICAL COLLATERAL TASKS_					
T12.01	Complete technical FSE training	0.88	2.52	1.57	4.08	0.93
T12.02	Complete technical safety & security training	0.95	2.30	1.45	3.86	1.03
T12.03	Train others in an informal capacity	0.85	3.74	1.78	3.77	1.00
T12.04	Train other specialists as OJTI in preparation for personnel certification	0.78	2.57	1.60	4.01	0.94
T12.05	Provide FSE performance data to assist the FAA in trend analysis & other evaluations	0.71	3.45	1.88	3.63	1.09
T12.06	Provide comments on technical reports	0.69	3.31	1.82	3.53	1.09
T12.07	Prepare technical reports on FSE performance (e.g., Technical Performance Record)	0.74	4.13	1.81	3.91	1.05
T12.08	Maintain local non-FSE databases & tracking sheets	0.53	3.91	1.86	3.27	1.11
T12.09	Maintain local copies of non-FSE & non-safety & security documentation	0.73	3.51	1.83	3.36	1.11
T12.10	Submit request for corrections to FSE & non-FSE documentation	0.53	2.48	1.74	3.43	1.10
T12.11	Submit request for a modification to an FSE	0.44	2.23	1.71	3.43	1.07
T12.12	Oversee maintenance performed by others including contractors	0.79	3.22	1.74	3.77	1.10
T12.13	Participate as a technical subject matter expert (SME)	0.60	3.35	1.92	3.76	1.05
T12.14	Provide briefings & training on technical matters	0.61	3.14	1.87	3.66	1.05
T12.15	Interface with external stakeholders	0.66	3.86	1.83	3.68	1.08
T12.16	Serve as Point-of-Contact (POC)	0.86	4.11	1.78	3.68	1.05

TaskID	Task Description	p(Perform)	Frequency[1]		Importance[2]	
			Mean	SD	Mean	SD
T12.17	Support post-accident/incident investigations	0.25	2.25	1.93	4.02	1.08
T12.18	Serve at another FAA facility as part of a Temporary Duty (TDY) assignment	0.34	2.08	1.61	3.44	1.16
T12.19	Support Joint Technical Inspections (JTI)	0.38	1.93	1.67	3.72	1.12
T12.020	National Airway Systems Technical Evaluation Program (NASTEP) Participant	0.57	1.48	1.36	3.70	1.15
T12.021	Inspect non-federal FSEs	0.18	2.63	1.98	3.68	1.06
D13	*PERFORM SPECIAL DUTIES*					
T13.01	Key & Core Coordinator	0.18	3.67	1.79	3.55	1.31
T13.02	PIV Card Coordinator	0.11	3.71	1.93	3.38	1.50
T13.03	OSHECCOM Representative	0.19	3.27	1.64	3.58	1.24
T13.04	Facility Safety Coordinator	0.19	3.55	1.83	3.56	1.17
T13.05	Communications Security (ComSec) Maintainer	0.10	3.60	2.01	3.75	1.38
T13.06	PASS Representative	0.23	5.13	1.60	4.07	1.18
T13.07	Contracting Officers Representative (COR)	0.21	3.38	1.91	3.59	1.18
T13.08	Certified Firearms Operator (wildlife protection)	0.03	5.22	1.96	3.24	1.99
T13.09	Disaster Relief Specialist	0.06	3.07	2.38	3.60	1.46
T13.10	Purchase Card Holder	0.54	4.73	1.48	3.60	1.15
T13.11	Unmanned Aircraft Systems (UAS) Operator	0.02	4.25	2.29	3.47	1.77
T13.12	Authorized Level II Climber	0.50	2.85	1.78	3.60	1.13
T13.13	Competent Climber	0.59	2.78	1.83	3.65	1.09
T13.14	Rescue Tower Climber	0.22	2.82	1.77	3.86	1.03
T13.15	Tower Assessment Team (TAT)	0.07	2.90	1.87	3.76	1.16
T13.16	First Aid/CPR/AED Instructor	0.11	2.26	1.99	4.00	1.21
T13.17	Facility Asbestos Coordinator	0.10	2.73	2.02	3.21	1.24
T13.18	Participate as a volunteer team member	0.44	3.49	1.87	3.47	1.18

Notes: [1]Frequency measured on 8-point scale (0=Task not performed, 1=Annually to 7=Hourly)
[2]Importance to job overall on 5-point scale (1=Least important to 5=Extremely important)

Table 14: KSA ratings descriptive statistics

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Kw01	KNOWLEDGE OF THE FAA					
Kw01.01	FAA mission, values, & goals	3.51	1.11	2.52	0.83	0.34
Kw01.02	FAA organizational structure	3.14	1.13	2.38	0.79	0.27
Kw01.03	Safety culture	3.85	1.07	2.82	0.77	0.53
Kw01.04	Labor management relations	3.23	1.19	2.30	0.82	0.26
Kw01.05	Compensation, payroll, & benefits	3.84	1.11	2.43	0.85	0.40
Kw01.06	FAA security requirements & procedures	3.69	1.04	2.62	0.78	0.42
Kw01.07	Time & attendance regulations & procedures	3.62	1.07	2.58	0.79	0.40
Kw01.08	Travel regulations for local & temporary duty	3.53	1.07	2.53	0.80	0.26
Kw02	KNOWLEDGE OF PROFESSIONAL ATSS REQUIREMENTS					
Kw02.01	Conduct & discipline regulations & procedures	3.53	1.07	2.65	0.85	0.53
Kw02.02	Medical requirements	3.25	1.07	2.34	0.84	0.55
Kw02.03	Persuasion: Skill at persuading others to change their minds or behavior	3.07	1.06	2.37	0.78	0.30
Kw02.04	Technical training requirements	4.14	0.89	2.95	0.77	0.39
Kw02.05	Certification requirements	4.37	0.82	3.19	0.78	0.24
Kw02.06	Individual development plan including your plan for certifications	3.65	1.09	2.67	0.83	0.23
Kw02.07	English language	4.36	0.85	3.18	0.82	0.91
Kw03	KNOWLEDGE OF NAS BASICS					
Kw03.01	ATC basics	3.36	1.11	2.37	0.86	0.32
Kw03.02	ATC phraseology & terminology	3.42	1.13	2.46	0.86	0.23
Kw03.03	Stress Management: Skill at continuing to work effectively even under stress	3.64	1.04	2.61	0.80	0.24
Kw03.04	Types of Technical Ops (Tech Ops) facilities	3.63	1.03	2.67	0.84	0.22

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Kw03.05	Tech Ops organizational structure	3.31	1.11	2.45	0.83	0.20
Kw04	KNOWLEDGE OF AERONAUTICAL PUBLICATIONS AND ATSS PROCEDURES AND DIRECTIVES					
Kw04.01	Purpose	3.55	1.09	2.60	0.82	0.45
Kw04.02	Types of aeronautical publications	3.09	1.12	2.41	0.82	0.22
Kw04.03	Types of ATSS procedures & directives (i.e., FAA Orders, notices, guidelines, & directives)	4.13	0.90	2.93	0.80	0.31
Kw04.04	Technical jargon, symbology, & acronyms	3.84	0.97	2.86	0.80	0.33
Kw04.05	Subject areas covered by each publication, procedure, & directive	3.71	0.99	2.73	0.79	0.22
Kw04.06	Content of aeronautical publications & ATSS procedures & directives	3.69	1.00	2.70	0.80	0.22
Kw04.07	Authoritative source of the information	3.39	1.12	2.51	0.84	0.20
Kw04.08	Location & format of current version	3.76	1.04	2.75	0.85	0.25
Kw04.09	Sensitivity level of documents	3.50	1.14	2.61	0.88	0.30
Kw05	KNOWLEDGE OF SCIENCE AND MATHEMATICS					
Kw05.01	Basic physics	2.99	1.16	2.21	0.83	0.61
Kw05.02	Electro-mechanical theory	3.35	1.13	2.52	0.82	0.64
Kw05.03	Basic chemistry	2.43	1.17	2.02	0.83	0.43
Kw05.04	Basic mathematics (i.e., addition, subtraction, multiplication, division) (CP)	3.95	1.02	2.92	0.87	0.88
Kw05.04.01	Addition, subtraction (CP)	4.28	0.82	3.17	0.86	0.95
Kw05.04.02	Multiplication, (long) division (CP)	4.16	0.91	3.12	0.87	0.93
Kw05.05	Intermediate mathematics (i.e., algebra, geometry, trigonometry) (CP)	3.59	1.15	2.69	0.86	0.74
Kw05.05.01	Exponents & roots (radicals) (CP)	3.71	1.10	2.82	0.88	0.77
Kw05.05.02	Logarithms (CP)	3.52	1.14	2.65	0.88	0.62
Kw05.05.03	Algebraic equations with one unknown variable (to solve for) (CP)	3.67	1.08	2.75	0.88	0.75
Kw05.05.04	Algebraic equations containing fractions (CP)	3.56	1.14	2.67	0.90	0.67

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	*SD*	*Mean*	*SD*	
Kw05.05.05	Algebraic equations containing radicals (e.g., square roots, etc.) (CP)	3.43	1.19	2.61	0.90	0.63
Kw05.05.06	Algebraic equations with polynomials (CP)	3.15	1.27	2.47	0.92	0.52
Kw05.05.07	Simplifying algebraic equations by factoring (CP)	3.14	1.24	2.55	0.90	0.67
Kw05.05.08	Algebraic systems of linear equations with two or more unknown variables (CP)	2.98	1.27	2.46	0.91	0.56
Kw05.05.09	Geometry of circles, ellipses, & other curved shapes (CP)	2.96	1.25	2.42	0.88	0.55
Kw05.05.10	Geometry for volume & surface area of 3-dimensional shapes (CP)	2.87	1.27	2.40	0.89	0.52
Kw05.05.11	Geometry of angles (CP)	3.27	1.22	2.57	0.88	0.63
Kw05.05.12	Geometry of triangles (CP)	3.18	1.24	2.54	0.89	0.61
Kw05.05.13	Trigonometric functions (also called circular functions) (sine, cosine, secant, tangent) (CP)	3.27	1.23	2.61	0.88	0.60
Kw05.05.14	Graphing of trigonometric functions (CP)	2.90	1.28	2.38	0.91	0.44
Kw05.05.15	Vectors & scalars (CP)	2.94	1.28	2.39	0.88	0.37
Kw05.05.16	Set theory (CP)	2.62	1.27	2.29	0.88	0.35
Kw05.05.17	Boolean algebra (CP)	2.90	1.26	2.44	0.86	0.48
Kw05.06	Advanced mathematics (i.e., calculus) (CP)	2.63	1.27	2.27	0.89	0.33
Kw05.06.01	Limit theory (CP)	2.93	1.21	2.34	0.89	0.33
Kw05.06.02	Differentiation in calculus (CP)	2.81	1.23	2.27	0.88	0.32
Kw05.06.03	Integration in calculus (CP)	2.82	1.24	2.27	0.87	0.32
Kw05.07	Trend & other analyses of FSE performance data	3.32	1.15	2.52	0.88	0.22
Kw06	KNOWLEDGE OF HUMAN FACTORS					
Kw06.01	Human cognitive performance limitations	3.57	1.07	2.52	0.81	0.62
Kw06.02	Human physical performance limitations	3.58	1.05	2.52	0.78	0.64
Kw06.03	Team concepts	3.80	1.04	2.68	0.80	0.66
Kw07	KNOWLEDGE OF SAFETY AND SECURITY					
Kw07.01	FAA safety & security policies, regulations, procedures, & guidelines	3.78	1.04	2.66	0.80	0.37

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	*SD*	*Mean*	*SD*	
Kw07.02	Local, state, & Federal safety & security regulations, procedures, & codes	3.54	1.08	2.43	0.80	0.27
Kw07.03	First aid, CPR, & use of AED	3.88	1.06	2.70	0.81	0.39
Kw07.04	Risk management policies & procedures	3.71	1.02	2.66	0.75	0.28
Kw07.05	Fire life safety theory	3.62	1.12	2.55	0.79	0.31
Kw07.06	Computer & network security concepts	3.57	1.06	2.56	0.80	0.37
Kw08	KNOWLEDGE OF EMERGENCIES AND UNUSUAL SITUATIONS					
Kw08.01	Types of emergencies or unusual ops	3.71	1.01	2.57	0.82	0.34
Kw08.02	Evacuation procedures	3.72	1.06	2.56	0.87	0.41
Kw08.03	Appropriate actions to resolve the emergency or unusual situation	3.85	1.00	2.68	0.85	0.30
Kw08.04	Emergency assistance techniques	3.74	1.01	2.58	0.82	0.32
Kw08.05	Notification requirements	3.78	1.00	2.67	0.84	0.31
Kw08.06	Coordination requirements	3.89	0.97	2.77	0.83	0.25
Kw08.07	Reporting requirements	3.80	0.99	2.71	0.83	0.28
Kw08.08	Survival techniques	3.55	1.23	2.48	0.91	0.31
Kw09	KNOWLEDGE OF WEATHER FUNDAMENTALS					
Kw09.01	Weather phenomena	3.09	1.16	2.17	0.81	0.20
Kw09.02	Atmospheric pressure (i.e., barometric pressure)	2.89	1.22	2.18	0.83	0.18
Kw09.03	Sources of weather information	3.07	1.18	2.27	0.82	0.20
Kw09.04	Weather forecasting terminology	2.79	1.18	2.12	0.82	0.17
Kw09.05	Weather forecast interpretation	2.78	1.18	2.15	0.84	0.14
Kw09.06	Impact of weather on NAS ops	3.74	1.12	2.66	0.85	0.21
Kw10	KNOWLEDGE OF TECHNICAL DRAWINGS					
Kw10.01	How to read & interpret content & symbols (CP)	4.16	0.90	3.00	0.78	0.74
Kw10.01.01	Basic symbols (ground, batteries, power, resistors, capacitors, inductors, diodes, transistors, etc) (CP)	4.30	0.83	3.11	0.78	0.86
Kw10.01.02	Specialty symbols (antennas, crystals, specialized diodes, J-FET, logic gates, photoresistor, relay) (CP)	4.06	0.97	2.98	0.81	0.69

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Kw10.01.03	Functional block (circuit, equipment) block diagrams (CP)	4.36	0.79	3.16	0.75	0.83
Kw10.01.04	Wiring diagrams (CP)	4.43	0.74	3.18	0.74	0.82
Kw10.01.05	Schematics (CP)	4.42	0.77	3.18	0.75	0.83
Kw10.02	Proper use of technical drawings	4.24	0.87	3.07	0.76	0.68
Kw10.03	Techniques for modifying technical drawings	3.57	1.18	2.64	0.88	0.29
Kw11	KNOWLEDGE OF LOCAL FACILITY					
Kw11.01	Facility layout	4.04	0.93	2.90	0.81	0.28
Kw11.02	Airport configuration	3.54	1.35	2.73	0.84	0.16
Kw11.03	Airport operating regulations or procedures	3.59	1.37	2.75	0.86	0.18
Kw11.04	Airspace boundaries	2.91	1.37	2.37	0.89	0.08
Kw11.05	Ops at own FAA facility including all areas of responsibility	4.05	0.97	2.95	0.83	0.24
Kw11.06	Ops at adjacent facilities	3.27	1.20	2.41	0.85	0.10
Kw11.07	Local weather patterns	3.34	1.12	2.29	0.85	0.14
Kw11.08	Local geography	3.23	1.18	2.37	0.85	0.18
Kw11.09	Local terrain	3.20	1.20	2.37	0.86	0.17
Kw11.10	Local culture & history	2.51	1.29	2.09	0.92	0.16
Kw12	KNOWLEDGE OF ELECTRICAL THEORY					
Kw12.01	AC & DC theory (CP)	4.03	1.02	2.95	0.80	0.85
Kw12.01.01	Direct current circuits (CP)	4.00	0.90	2.91	0.80	0.79
Kw12.02	Series, parallel, & combination circuits (CP)	3.85	1.08	2.85	0.83	0.78
Kw12.02.01	Parallel circuits (CP)	3.96	0.91	2.87	0.81	0.79
Kw12.02.02	Series circuits (CP)	3.96	0.91	2.88	0.81	0.79
Kw12.02.03	Combination circuits (CP)	3.93	0.93	2.85	0.80	0.75
Kw12.03	Electrical theorems (CP)	3.67	1.15	2.72	0.84	0.69
Kw12.03.01	Ohms Law formulas (CP)	4.06	0.92	2.95	0.81	0.83
Kw12.03.02	Power formulas (CP)	4.05	0.91	2.95	0.79	0.76
Kw12.04	Inductive & capacitive reactance	3.62	1.15	2.69	0.80	0.64
Kw12.05	Grounding, bonding, lightening protection theory	3.89	1.05	2.86	0.80	0.54

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Kw12.06	Power distribution systems theory	3.90	1.06	2.85	0.80	0.56
Kw12.07	Electrical interference	3.81	1.06	2.76	0.80	0.48
Kw12.08	Harmonics	3.65	1.14	2.65	0.84	0.42
Kw13	KNOWLEDGE OF ELECTRONIC THEORY					
Kw13.01	Digital logic basics (CP)	3.46	1.16	2.59	0.85	0.65
Kw13.01.01	Digital logic clock frequency (CP)	3.39	1.10	2.49	0.85	0.47
Kw13.01.02	Digital logic encoder (CP)	3.35	1.12	2.48	0.86	0.44
Kw13.01.03	Digital logic decoder (CP)	3.36	1.12	2.47	0.86	0.44
Kw13.01.04	Digital logic addressing (CP)	3.43	1.09	2.50	0.86	0.46
Kw13.01.05	Digital gate types (AND, NAND, etc.) (CP)	3.49	1.07	2.60	0.84	0.63
Kw13.01.06	Transistors, Field Effect Transistors, J-FET (CP)	3.49	1.07	2.59	0.83	0.60
Kw13.02	Digital signal theory	3.49	1.16	2.60	0.84	0.60
Kw13.03	Analog signal theory	3.55	1.15	2.64	0.84	0.64
Kw13.04	Electronic theorems (CP)	3.43	1.16	2.57	0.84	0.62
Kw13.04.01	Kirchoffs Law (CP)	3.43	1.10	2.51	0.89	0.58
Kw13.04.02	Circuit theorems (Thevenins & Nortons Theorems) (CP)	3.34	1.15	2.47	0.88	0.52
Kw13.05	Circuit components	3.70	1.05	2.73	0.81	0.72
Kw13.06	Circuit types (CP)	3.67	1.07	2.70	0.81	0.71
Kw13.06.01	Filter circuits (CP)	3.51	1.05	2.56	0.84	0.55
Kw13.06.02	Amplifier circuits (CP)	3.57	1.04	2.63	0.84	0.58
Kw13.06.03	Rectifier circuits (CP)	3.68	1.00	2.66	0.83	0.61
Kw13.06.04	Integrated circuits (CP)	3.59	1.01	2.61	0.84	0.58
Kw13.07	Fiber optic systems	3.25	1.20	2.41	0.86	0.30
Kw14	KNOWLEDGE OF RADIO FREQUENCY THEORY					
Kw14.01	RF spectrum (CP)	3.40	1.28	2.63	0.86	0.43
Kw14.01.01	Electro-magnetic spectrum (CP)	3.64	0.99	2.61	0.83	0.42
Kw14.01.02	Waveforms & fields (CP)	3.79	0.93	2.70	0.80	0.44
Kw14.01.03	Modulation (CP)	4.08	0.84	2.90	0.78	0.56
Kw14.01.04	RF transmission, transmitter, receiver, generator (CP)	4.15	0.83	2.95	0.77	0.56

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Kw14.01.05	Impedance calculation, transformation (CP)	3.77	0.99	2.70	0.81	0.45
Kw14.01.06	Standing wave ratio (CP)	4.05	0.89	2.89	0.79	0.52
Kw14.02	RF interference	3.48	1.25	2.61	0.84	0.35
Kw14.03	Effects of environmental factors (e.g., terrain, weather)	3.60	1.18	2.63	0.83	0.34
Kw14.04	Radiation patterns	3.43	1.31	2.66	0.85	0.37
Kw14.05	Antenna theory (CP)	3.45	1.29	2.69	0.85	0.43
Kw14.05.01	Reflection coefficient (CP)	3.78	0.99	2.69	0.84	0.41
Kw14.05.02	Transmission line loss (CP)	4.05	0.87	2.90	0.78	0.51
Kw14.05.03	Capacitive reactance (CP)	3.44	1.05	2.51	0.85	0.45
Kw14.05.04	Antenna physical & electrical length (CP)	3.78	0.99	2.75	0.82	0.43
Kw14.05.05	Parallel impedance (CP)	3.45	1.06	2.52	0.85	0.42
Kw14.06	Waveform propagation methods	3.34	1.31	2.64	0.84	0.36
Kw14.07	Transmission theory	3.46	1.28	2.72	0.85	0.44
Kw15	KNOWLEDGE OF COMPUTER NETWORKING					
Kw15.01	Connectivity principles	3.49	1.15	2.49	0.83	0.45
Kw15.02	Networking hardware (CP)	3.41	1.19	2.43	0.83	0.34
Kw15.02.01	Physical storage media types (hard disk, tape drive, etc.) (CP)	3.72	0.93	2.57	0.82	0.55
Kw15.02.02	Cables (CP)	3.80	0.93	2.69	0.81	0.51
Kw15.02.03	Repeaters (CP)	3.36	1.12	2.39	0.84	0.26
Kw15.02.04	Hubs (CP)	3.43	1.09	2.42	0.83	0.27
Kw15.02.05	Bridges (CP)	3.40	1.11	2.39	0.84	0.25
Kw15.02.06	Switches (CP)	3.61	1.02	2.52	0.84	0.31
Kw15.02.07	Routers (CP)	3.63	1.01	2.53	0.83	0.32
Kw15.02.08	Wireless access points (CP)	3.19	1.23	2.33	0.88	0.25
Kw15.02.09	Network addressing (CP)	3.51	1.09	2.47	0.86	0.29
Kw15.02.10	Network routing (CP)	3.46	1.10	2.44	0.86	0.26
Kw15.02.11	Network switching (CP)	3.45	1.11	2.43	0.86	0.24
Kw15.02.12	Network topology analysis (CP)	3.26	1.18	2.35	0.87	0.22
Kw15.03	Networking software	3.31	1.22	2.36	0.84	0.28

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	*SD*	*Mean*	*SD*	
Kw15.04	Cloud computing	2.66	1.28	2.12	0.88	0.18
Kw15.05	Networking security principles	3.35	1.24	2.36	0.86	0.29
Kw16	KNOWLEDGE OF COMMUNICATION SYSTEM THEORY					
Kw16.01	Communication concepts	3.73	1.12	2.82	0.79	0.59
Kw16.02	Fundamentals of communication systems	3.74	1.14	2.80	0.78	0.53
Kw16.03	Types of communication systems	3.64	1.13	2.75	0.80	0.43
Kw16.04	Components of communication systems	3.67	1.15	2.78	0.80	0.39
Kw16.05	Applications of communication systems	3.65	1.15	2.79	0.79	0.34
Kw16.06	Limitations of communication systems	3.62	1.17	2.75	0.82	0.32
Kw17	KNOWLEDGE OF AUTOMATION SYSTEM THEORY					
Kw17.01	Automation concepts	3.24	1.27	2.49	0.89	0.30
Kw17.02	Fundamentals of automation systems	3.25	1.27	2.49	0.88	0.28
Kw17.03	Types of automation systems	3.15	1.27	2.47	0.86	0.21
Kw17.04	Components of automation systems	3.21	1.28	2.51	0.87	0.20
Kw17.05	Applications of automation systems	3.25	1.27	2.50	0.88	0.18
Kw17.06	Limitations of automation systems	3.19	1.27	2.46	0.89	0.16
Kw18	KNOWLEDGE OF NAVIGATIONAL SYSTEM THEORY					
Kw18.01	Navigation concepts	3.33	1.40	2.67	0.88	0.30
Kw18.02	Fundamentals of navigation systems	3.34	1.41	2.69	0.89	0.30
Kw18.03	Types of navigation systems	3.26	1.36	2.67	0.87	0.26
Kw18.04	Components of navigation systems	3.31	1.38	2.69	0.88	0.20
Kw18.05	Applications of navigation systems	3.31	1.38	2.67	0.90	0.20
Kw18.06	Limitations of navigation systems	3.27	1.40	2.68	0.87	0.17
Kw19	KNOWLEDGE OF SURVEILLANCE SYSTEMS THEORY					
Kw19.01	Surveillance concepts	3.27	1.33	2.57	0.92	0.31
Kw19.02	Fundamentals of surveillance systems	3.24	1.33	2.56	0.91	0.28
Kw19.03	Types of surveillance systems	3.17	1.31	2.48	0.88	0.20
Kw19.04	Components of surveillance systems	3.19	1.33	2.54	0.92	0.18
Kw19.05	Applications of surveillance systems	3.20	1.33	2.53	0.90	0.19
Kw19.06	Limitations of surveillance systems	3.19	1.32	2.52	0.90	0.16

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Kw20	KNOWLEDGE OF ENVIRONMENTAL SYSTEM THEORY					
Kw20.01	Power conditioning theory	3.46	1.24	2.56	0.87	0.30
Kw20.02	HVAC theory	3.30	1.33	2.54	0.88	0.27
Kw20.03	Plumbing principles	2.79	1.35	2.28	0.90	0.28
Kw20.04	Building automation control theory	2.94	1.32	2.33	0.90	0.20
Kw20.05	Basic building construction	2.82	1.31	2.26	0.88	0.33
Kw21	KNOWLEDGE OF FACILITIES, SERVICES, AND EQUIPMENT (FSE)					
Kw21.01	FSE functionality	3.91	1.06	2.84	0.79	0.21
Kw21.02	FSE stakeholders	3.49	1.12	2.50	0.85	0.14
Kw21.03	How the FSE works	3.91	1.10	2.82	0.83	0.20
Kw21.04	FSE policies & procedures	3.66	1.04	2.68	0.80	0.16
Kw21.05	Components of FSE	3.80	1.03	2.81	0.81	0.18
Kw21.06	Location of FSE & components	3.85	1.03	2.84	0.82	0.14
Kw21.07	Applications of FSE	3.80	1.03	2.79	0.82	0.17
Kw21.08	Limitations of FSE	3.69	1.01	2.77	0.83	0.14
Kw21.09	FSE infrastructure	3.69	1.03	2.74	0.80	0.14
Kw21.10	Interoperability of FSEs	3.72	1.05	2.75	0.82	0.11
Kw21.11	Impact of weather on FSE	3.81	1.01	2.64	0.80	0.15
Kw21.12	PM procedures	4.30	0.88	3.21	0.74	0.23
Kw21.13	CM procedures	4.32	0.90	3.22	0.72	0.23
Kw21.14	Troubleshooting procedures	4.38	0.85	3.27	0.69	0.43
Kw21.15	Certification procedures	4.42	0.89	3.28	0.75	0.20
Kw21.16	FSE spare part procurement procedures	3.68	0.99	2.67	0.81	0.08
Kw21.17	FSE spare part inventory procedures	3.50	1.07	2.59	0.82	0.07
Kw21.18	Impact of FSE degradation or loss to stakeholders	3.92	1.06	2.82	0.86	0.14
Kw21.19	FSE activity logging procedures	3.90	1.03	2.96	0.80	0.18
Kw21.20	Availability & reliability performance metrics	3.42	1.20	2.60	0.89	0.08
Kw22	KNOWLEDGE OF TOOLS & EQUIPMENT					
Kw22.01	Types of T&E	4.00	0.89	2.89	0.80	0.64

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	*SD*	*Mean*	*SD*	
Kw22.02	Functionality of T&E	4.10	0.86	2.92	0.79	0.62
Kw22.03	Storage of T&E	3.54	1.01	2.59	0.85	0.40
Kw22.04	Appropriate T&E for task	4.08	0.87	2.92	0.80	0.53
Kw22.05	Use of T&E	4.11	0.88	2.96	0.81	0.65
Kw22.06	Limitations of the T&E	3.99	0.92	2.87	0.82	0.53
Kw22.07	Maintenance of T&E	3.75	0.93	2.65	0.83	0.43
Kw22.08	Inspection requirements for T&E	3.71	0.96	2.64	0.83	0.36
Kw22.09	Degradation indicators for T&E	3.69	0.97	2.63	0.82	0.36
Kw22.10	Minor troubleshooting procedures for T&E	3.64	0.95	2.66	0.82	0.46
Kw22.11	Procurement procedures for T&E	3.38	1.09	2.50	0.85	0.19
Kw22.12	Inventory procedures for T&E	3.26	1.07	2.42	0.89	0.23
Sk01	COGNITIVE SKILLS					
Sk01.01	Active Learning	3.91	0.92	3.91	0.92	0.72
Sk01.02	Mathematics	3.65	1.01	3.65	1.01	0.83
Sk01.03	Reading Comprehension	4.12	0.90	4.12	0.90	0.89
Sk01.04	Communication Flexibility	3.76	1.02	3.76	1.02	0.78
Sk01.05	Writing	3.84	1.00	3.84	1.00	0.85
Sk02	INTERPERSONAL SKILLS					
Sk02.01	Instructing	3.70	0.95	2.69	0.78	0.23
Sk02.02	Interpersonal	3.84	0.91	2.68	0.77	0.80
Sk02.03	Teamwork	4.01	0.90	2.82	0.79	0.82
Sk02.04	Negotiation	3.59	1.03	2.61	0.79	0.50
Sk02.05	Persuasion	3.26	1.13	2.49	0.82	0.40
Sk02.06	Service Orientation	3.58	1.05	2.66	0.81	0.65
Sk02.07	Leadership	3.71	1.02	2.67	0.80	0.39
Sk03	SELF-MANAGEMENT SKILLS					
Sk03.01	Fatigue Management	3.60	1.08	2.57	0.82	0.36
Sk03.02	Prioritization	3.93	0.95	2.92	0.74	0.57
Sk03.03	Resources	3.69	1.04	2.70	0.82	0.41
Sk03.04	Time Management	3.85	0.98	2.83	0.79	0.61

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Sk03.05	Stress Management	3.92	1.02	2.83	0.83	0.57
Sk04	PSYCHOMOTOR SKILLS					
Sk04.01	Gross Motor	3.53	1.16	2.63	0.84	0.81
Sk04.02	Fine Motor	3.58	1.15	2.70	0.82	0.80
Sk04.03	Typing	2.72	1.05	2.18	0.82	0.64
Sk05	GENERAL JOB SKILLS					
Sk05.01	Safety Procedure Adherence	4.00	0.96	2.86	0.79	0.67
Sk05.02	Hazard and Vulnerability Identification	3.96	0.98	2.86	0.80	0.56
Sk05.03	Risk Assessment	3.93	0.92	2.86	0.78	0.53
Sk05.04	Risk Mitigation	3.91	0.93	2.86	0.78	0.44
Sk05.05	Housekeeping	3.62	1.04	2.65	0.79	0.65
Sk05.06	Medical Assistance	3.75	1.04	2.66	0.82	0.39
Sk05.07	Establishing Situation Awareness	3.86	0.94	2.83	0.77	0.35
Sk05.08	Knowledge of Science and Mathematics	3.79	0.98	2.80	0.75	0.34
Sk05.09	Trend Analysis	3.44	1.04	2.57	0.80	0.21
Sk06	TECH OPS TECH SKILLS					
Sk06.01	Modifications	3.36	1.07	2.55	0.82	0.17
Sk06.02	Troubleshooting	4.54	0.68	3.22	0.73	0.78
Sk06.03	Assembly and Disassembly	4.21	0.81	3.08	0.76	0.76
Sk06.04	Interpreting Technical Drawings	4.30	0.78	3.12	0.76	0.76
Sk06.05	Modifying Technical Drawings	3.42	1.10	2.60	0.85	0.21
Sk06.06	Computer Scripts	2.54	1.29	2.24	0.92	0.20
Sk06.07	Computer Networking	3.06	1.21	2.35	0.89	0.31
Sk06.08	Computer Maintenance	3.24	1.19	2.49	0.87	0.45
Sk06.09	Mechanical Maintenance	3.87	1.03	2.82	0.84	0.58
Sk06.10	Electronic Maintenance	4.23	0.85	3.03	0.76	0.71
Sk06.11	Electrical Maintenance	4.00	0.97	2.89	0.83	0.63
Sk06.12	Pneumatic and Hydraulic Maintenance	2.93	1.34	2.33	0.92	0.32
Sk06.13	Construction Techniques	2.91	1.23	2.30	0.85	0.37
Sk07	TOOLS & EQUIPMENT SKILLS					

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Sk07.01	Tools and Equipment Selection	4.00	0.87	2.91	0.76	0.61
Sk07.02	Tools and Equipment Organization	3.72	0.94	2.75	0.77	0.47
Sk07.03	Tools and Equipment Use	4.04	0.88	2.95	0.77	0.62
Sk07.04	Tools and Equipment Maintenance	3.84	0.95	2.81	0.80	0.51
Ab01	SENSORY ABILITIES					
Ab01.01	Far Vision	3.24	1.03	2.43	0.81	0.82
Ab01.02	Near Vision	3.78	0.95	2.71	0.78	0.89
Ab01.03	Depth Perception	3.54	1.02	2.62	0.80	0.87
Ab01.04	Peripheral Vision	3.37	1.05	2.52	0.81	0.86
Ab01.05	Night Vision	3.15	1.08	2.45	0.82	0.78
Ab01.06	Glare Tolerance	3.08	1.08	2.40	0.82	0.77
Ab01.07	Color Detection	4.03	0.98	2.89	0.84	0.91
Ab01.08	Color Discrimination	3.88	1.03	2.84	0.84	0.89
Ab01.09	Auditory Detection	3.34	0.97	2.49	0.78	0.82
Ab01.10	Auditory Discrimination	3.29	0.99	2.50	0.79	0.80
Ab01.11	Auditory Attention	3.27	1.00	2.49	0.78	0.77
Ab01.12	Sound Localization	3.33	1.00	2.52	0.80	0.80
Ab01.13	Olfactory Discrimination	3.06	1.08	2.37	0.81	0.77
Ab01.14	Tactile Discrimination	3.19	1.04	2.44	0.82	0.78
Ab01.15	Proprioception	3.14	1.10	2.45	0.80	0.77
Ab01.16	Haptic Identification	3.06	1.09	2.44	0.81	0.76
Ab02	VERBAL ABILITIES					
Ab02.01	Oral Comprehension	4.06	0.86	2.89	0.73	0.93
Ab02.02	Oral Expression	4.01	0.89	2.87	0.72	0.91
Ab02.03	Speech Recognition	3.93	0.92	2.84	0.75	0.91
Ab02.04	Written Expression	3.88	0.93	2.81	0.75	0.89
Ab02.05	Speech Clarity	3.98	0.90	2.87	0.75	0.90
Ab03	NUMERICAL ABILITIES					
Ab03.01	Mathematical Reasoning	3.56	1.09	2.76	0.83	0.73
Ab03.02	Number Facility	4.02	0.99	3.03	0.81	0.92

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	SD	Mean	SD	
Ab04	REASONING ABILITIES					
Ab04.01	Analytic Ability	3.94	0.87	2.87	0.70	0.77
Ab04.02	Problem Sensitivity	4.09	0.86	2.99	0.69	0.76
Ab04.03	Pattern Detection	3.79	0.96	2.84	0.70	0.67
Ab04.04	Cognitive Ordering	3.74	0.96	2.80	0.71	0.71
Ab04.05	Deductive Reasoning	3.96	0.89	2.90	0.68	0.79
Ab04.06	Inductive Reasoning	3.86	0.94	2.87	0.69	0.74
Ab04.07	Idea Generation	3.69	1.01	2.76	0.72	0.66
Ab05	SPATIAL ABILITIES					
Ab05.01	Spatial Orientation	3.61	1.03	2.63	0.82	0.78
Ab05.02	Visualization	3.54	1.04	2.60	0.81	0.71
Ab06	MEMORY					
Ab06.01	Working Memory	3.84	0.92	2.85	0.72	0.88
Ab06.02	Long-Term Memory	3.71	0.94	2.73	0.76	0.79
Ab06.03	Concentration	3.98	0.90	2.90	0.73	0.87
Ab06.04	Time Sharing	3.75	0.94	2.82	0.74	0.76
Ab07	PHYSICAL ABILITIES					
Ab07.01	Trunk Strength	3.26	1.04	2.30	0.77	0.75
Ab07.02	Static Strength	3.24	1.05	2.31	0.76	0.75
Ab07.03	Dynamic Strength	3.12	1.07	2.29	0.77	0.73
Ab07.04	Dynamic Flexibility	3.18	1.06	2.33	0.75	0.74
Ab07.05	Extent Flexibility	3.21	1.05	2.34	0.75	0.75
Ab07.06	Dynamic Body Coordination	3.24	1.07	2.36	0.74	0.76
Ab07.07	Gross Body Equilibrium	3.34	1.01	2.37	0.75	0.77
Ab07.08	Stamina	3.17	1.08	2.33	0.76	0.71
Ab08	PSYCHOMOTOR ABILITIES					
Ab08.01	Manual Dexterity	3.69	1.01	2.54	0.77	0.82
Ab08.02	Finger Dexterity	3.73	0.97	2.57	0.77	0.82
Ab08.03	Arm-Hand Steadiness	3.58	1.01	2.51	0.78	0.79

KSA_ID[1]	Description	Importance[2]		Mastery[3]		p(Day 1)[4]
		Mean	*SD*	*Mean*	*SD*	
Ab08.04	Precise Use of Controls	3.57	1.06	2.54	0.78	0.75
Ab08.05	Multi-Limb Coordination	3.49	1.08	2.51	0.77	0.77
Ab08.06	Sensory-Motor Coordination	3.52	1.04	2.53	0.77	0.78
Ab08.07	Response to Competing Stimuli	3.58	1.04	2.56	0.80	0.77
Ab09	PERSONALITY					
Ab09.01	Work-Schedule Flexibility	3.78	1.12	2.84	0.81	0.74
Ab09.02	Stress Tolerance	4.14	0.86	3.04	0.75	0.82
Ab09.03	Conscientiousness	4.26	0.80	3.10	0.77	0.87
Ab09.04	Sense of Ownership	4.27	0.86	3.11	0.77	0.83
Ab09.05	Integrity	4.41	0.79	3.20	0.80	0.92
Ab09.06	Autonomy	4.38	0.80	3.19	0.76	0.74
Ab09.07	Time Consciousness	4.25	0.85	3.07	0.78	0.79
Ab09.08	Emotional Stability	4.08	0.87	2.98	0.78	0.94
Ab09.09	Self-awareness	4.08	0.83	3.00	0.76	0.93
Ab09.10	Adaptability	4.17	0.83	3.08	0.76	0.88
Ab09.11	Patience	4.17	0.86	3.05	0.75	0.89
Ab09.12	Assertiveness	3.84	0.94	2.80	0.79	0.72
Ab09.13	Risk Tolerance	4.01	0.90	2.96	0.77	0.71
Ab09.14	Environmental Tolerance	3.99	0.97	2.90	0.80	0.80

Note: [1]Kw=Knowledge; Sk=Skill; Ab=Ability

[2]Importance=Importance to job overall, rated on 5-point scale (1=*Not at all important* to 5=E*xtremely important for doing the job overall at your SSC*)

[3]Mastery Level=Level of mastery required for successful journeyman (Career Level III) performance on 4-point scale (1=*Minimal*, 2=*Intermediate*; 3=*Advanced*; 4=*Expert*)

[4]p(Day 1)=Proportion of raters indicating particular KSA needed on the first day and should have been learned or developed before hire

Other work activities ratings

Other work activities are activities performed in the course of duties but are ancillary or incidental to the work. For example, a systems specialist might climb a 60-foot caged vertical ladder to reach a radar platform; climbing the ladder is incidental to the task of servicing the radar. These other work activities were rated on the same frequency scales as for job tasks. As with tasks, the first statistic computed was the proportion of survey participants who indicated performing the other work activity (*p*(*Performance*)). Second, for those performing the other work activity, the mean and standard deviation of the frequency rating (*M*(*Frequency*), *SD*(*Frequency*)) were computed as shown in Table 15. These other work activities are grouped into seven categories in the table: Lift/carry; Physically uncomfortable activities; Climb; Stand; Calculate; Read; and Other conditions.

The response data indicate the work of ATSSs at field SSCs has a strong physical component. Nearly all respondents (98 or 99%) indicated lifting and carrying loads of 50 pounds or less on a weekly basis, on average. Slightly fewer (93%) indicated lifting and carrying loads of greater than 50 pounds on a monthly basis, on average. Performing work in physically uncomfortable ways, such as crouching, bending, working with raised arms for extended periods of time, were reported by the majority (73 to 99%) of respondents on a weekly to monthly basis, on average. About a quarter (26%) of respondents indicated working in poorly ventilated spaces that required personal protective equipment such as a respirator or positive-pressure mask on a quarterly basis, on average. Climbing appears to be an element of the job, but with wide variation. Climbing stairs and portable ladders to reach equipment was reported by 90% and 95% of respondents, respectively on a weekly to monthly basis. Climbing vertical ladders less than 30 feet tall was reported by 79% of respondents on a quarterly basis, on average. Few respondents (69%) indicated climbing taller vertical ladders on semi-annual basis, on average. Working in adverse environmental conditions appears to be relatively common as well. Substantial majorities of respondents indicated working outdoors (92%) on a weekly to monthly basis and in extremes of heat or cold (85%) on a monthly basis, on average.

The response data also indicate that reading and performing calculations in the course of their duties as ATSSs are also common. Almost all (97% and 99%) of respondents indicated reading on electronic and printed reference materials such as technical instructions. Large majorities of respondents also indicated performing calculations ranging from simple addition and subtraction (94%) on a weekly basis to calculations involving trigonometric functions (70%) on a quarterly basis. Interestingly, the participating ATSSs also reported performing calculations by hand with a calculator (80%) on a quarterly to monthly basis, on average. A similar percentage of specialists (78%) indicated performing calculations by hand to check values generated by test and diagnostic equipment on a quarterly to monthly basis.

Table 15: Descriptive statistics for other work activities

OWA_ID	Description	N Respond	N(Perf)	p(Perf)	M(Freq)	SD(Freq)
	LIFT/CARRY					
OWA.07	Lift anything weighing 50 pounds or less (including tools, tool bags, equipment, parts, etc.)?	646	631	0.98	5.22	1.23
OWA.08	Carry anything weighing less than 50 pounds?	535	529	0.99	5.26	1.31
OWA.09	Lift anything weighing more than 50 pounds (including tools, tool bags, equipment, parts, etc.)?	648	600	0.93	4.02	1.48
OWA.10	Carry anything weighing more than 50 pounds?	533	494	0.93	3.96	1.49
	PHYSICALLY UNCOMFORTABLE ACTIVITIES					
OWA.12	Crouch, stoop, or kneel to reach equipment?	537	529	0.99	5.42	1.25
OWA.15	Bend, twist, and/or reach into and hold an unusual body position to reach and/or work on equipment?	646	574	0.89	4.07	1.73
OWA.14	Work in cramped or tightly confined equipment spaces?	534	442	0.83	4.14	1.74
OWA.20	Work with raised arms, reaching overhead, for extended periods of time (20 minutes or more)?	530	411	0.78	3.47	1.66
OWA.13	Crawl or creep (around, under, through equipment or false floors) to reach equipment?	648	476	0.73	3.68	1.67
OWA.11	Walk across uneven, rough, or unfinished surfaces to reach equipment?	648	549	0.85	4.74	1.51
OWA.16	Work in poorly ventilated spaces requiring personal protective equipment such as a positive-pressure respirator/mask?	532	136	0.26	3.02	1.90
	CLIMB					
OWA.05	Climb stairs to reach equipment?	647	582	0.90	4.88	1.47
OWA.06	Use a portable ladder of less than 8 feet to reach equipment?	538	511	0.95	3.84	1.39
OWA.01	Climb a near-vertical ladder less than 30 feet tall to reach equipment?	648	509	0.79	3.07	1.53
OWA.02	Climb a near-vertical 30 foot or taller ladder to reach equipment?	535	367	0.69	2.13	1.26
	STAND					
OWA.04	Stand on a movable, adjustable platform lift to reach equipment?	533	315	0.59	2.41	1.56
OWA.03	Stand in a bucket lift to reach equipment?	647	296	0.46	1.91	1.27

OWA_ID	Description	N Respond	N(Perf)	p(Perf)	M(Freq)	SD(Freq)
	ADVERSE ENVIRONMENTAL CONDITIONS					
OWA.19	Work in poorly illuminated spaces requiring use of supplemental task lighting?	645	571	0.89	4.50	1.51
OWA.18	Work in extreme temperatures (heat or cold)?	533	452	0.85	3.95	1.78
OWA.17	Work out of doors?	645	594	0.92	5.00	1.36
	CALCULATE					
OWA.23	Perform calculations requiring basic addition and/or subtraction only?	648	612	0.94	5.00	1.33
OWA.24	Perform calculations requiring multiplication and/or (long) division?	533	479	0.90	4.17	1.64
OWA.26	Perform calculations using algebraic functions (formulas)?	533	452	0.85	3.66	1.72
OWA.28	Perform those calculations by hand using an advanced calculator?	532	428	0.80	3.59	1.75
OWA.29	Perform any calculations by hand to check values generated by BITE or other system diagnostic tools?	644	501	0.78	3.63	1.71
OWA.25	Perform calculations using exponents and/or logarithms?	643	500	0.78	3.54	1.68
OWA.27	Perform calculations using trigonometric functions (sine, cosine, radians, etc.) in a formula?	648	455	0.70	3.13	1.74
	READ					
OWA.22	Read electronic versions of reference materials, documentation, technical instructions, etc.?	533	526	0.99	5.47	1.15
OWA.21	Read hard-copy printed reference materials, documentation, technical instructions, etc.?	645	627	0.97	5.25	1.16

Note: Rated on frequency scale, where 0=I don't perform this activity, 1=Annually, 2=Semi-annually, 3=Quarterly, 4=Monthly, 5=Weekly, 6=Daily, and 7=Hourly

Other work characteristics ratings

Descriptive statistics for three other aspects of work (level of physical exertion, noise exposure, and time spent driving) are presented in Table 16. A majority (67%) characterized the overall level of physical exertion required on the job as moderate. Similarly, a majority (57%) characterized the typical noise level in their work space as "moderately loud." Time spent driving/riding in a government vehicle to reach a work site, in contrast, was more evenly distributed. Just 19% of 1,181 respondents indicated no driving/riding to reach their work sites. Slightly fewer (17%) indicated spending an hour less driving or riding in a government vehicle to get to their work sites. Some 30% of the respondents indicated spending 1 to 2 hours in a

vehicle to reach work sites, and 20% reported spending 2 to 3 hours driving or riding to reach their work sites.

Additional tasks

The job analysis survey provided participants the opportunity to write-in (electronically) additional tasks. Participants generated 207 additional task statements. The additional tasks are reproduced in Appendix I verbatim along with review and comparison with task statements in the Job Analysis Survey. Just 2 new task statements were derived from the write-in statements: "Act as employee-in-charge" and "Lockout/Tagout Coordinator." The majority (138 of 207) write-in statements were mapped to one or more existing task statements, and 67 were not tasks but commentary or otherwise unclassifiable. Many write-in task statements were ambiguous, and could be mapped to multiple existing task statements.

Table 16: Other characteristics of ATSS work

	N	*%*
Overall level of physical exertion		
1 Very light	32	3%
2 Light	223	19%
3 Moderate	796	67%
4 Heavy	110	9%
5 Very Heavy	21	2%
Total	1,182	
Typical noise level in work space		
1 Very quiet	6	1%
2 Quiet	201	17%
3 Moderately loud	673	57%
4 Loud	220	19%
5 Very Loud	83	7%
Total	1,183	
Time spent driving/riding in government vehicle to work site		
0 N/A (I don't drive or ride in a government vehicle to reach a work site)	227	19%
1 Less than 1 hour total	199	17%
2 Between 1 and 2 hours total	358	30%
3 Between 2 and 3 hours total	240	20%
4 More than 3 hours total	157	13%
Total	1,181	

Critical tasks and KSAs

<u>Identifying critical tasks</u>

A key goal in job analysis to support a personnel selection procedure is the identification of job duties and tasks that are critical and/or important. The *Uniform Guidelines* (29 C.F.R. § 1607) provide that for a "selection procedure measuring a knowledge, skill, or ability, the user should show that (a) the selection procedure measures and is a representative sample of that knowledge, skill, or ability; and (b) that knowledge, skill, or ability is used in and is a necessary prerequisite to performance of *critical or important* work behavior(s)" (emphasis added; 29 C.F.R. § 1607.14C.(4)). Therefore, a key goal in the job analysis is to identify critical or important work behaviors (tasks).

Multiple approaches have been described in the relevant literature for characterizing the criticality or importance of tasks to a job (see Aguinis, 2013; Belwalker, Anderson, & Igou, 2013; Curtin, 2003; Kane, Kingsbury, Colton & Estes, 1989; Laabs & Baker, 1989). For example, the Biddle Consulting Group (2013) recommends characterizing tasks with an average rating of at least 3 (on a 5-point scale similar to the one used in this job analysis) as "important" and tasks with an average importance rating of at least 4 as "critical." This approach does not take into consideration how often a task is performed. In contrast, Aguinis recommends multiplying the importance rating by the frequency rating ("multiplicative model" in Belwalker, et al.'s review). Belwalker, et al. found moderate to high correlations among four of the five methods for computing a "criticality index." Based on Belwalker, et al.'s review, the research team computed "criticality" as the product of importance and frequency. This essentially weights importance by how often a task is performed.

The research team considered the rules presented in Table 17 for determining the "important or critical" work behaviors. The first step was to compute the "criticality index" for each task as the product of an individual's ratings of task frequency and task importance. The second step was to aggregate the data across raters by task and compute the overall mean frequency, mean importance and mean criticality by task. The proportion performing the task (e.g., the proportion of raters assigning a frequency rating of 1 or higher to a task) was also computed in the aggregation. The third step was to categorize each task as critical and/or important based on mean frequency, importance, criticality, and proportion performing the task in accordance with the three rules in Table 17.

Table 17: Rules for identifying critical tasks

Rule	Frequency	Importance	Criticality Index[1]	p(Performing Task)
1	Mean > 0	Mean >= 3	-	>=.50
2	Mean > 0	Mean >= 3	Mean >= 10	>= .50
3	Mean > 0	Mean >= 3	Mean >= 18	>= .50

Notes: [1]Criticality Index = Frequency * Importance

The *Uniform Guidelines* require identification of "critical and/or important job behaviors" as a necessary step in a selection-oriented job analysis. The first rule reflects the "important" notion. Tasks identified as "important" (a) were performed by at least 50% of the job incumbents participating in the 2101 Job Analysis Survey, (b) had a mean frequency rating greater than zero, and (c) had a mean importance rating of 3 ("Important") or greater. The second and third rules added mean criticality to help sort "important" from "critical" tasks.

The research team considered two "cut scores" on the criticality index to identify the subset of tasks to be deemed "important and/or critical." Criticality scores of 10 or greater reflected tasks that were at least important *and* performed more frequently. Criticality scores below 10 included tasks that were rated as at least important but were infrequently performed. Inspection of the distribution of mean criticality scores across tasks (Figure 6) indicated a bi-modal distribution in criticality with a break at 17. Criticality scores of 18 or greater included tasks that were (a) very frequent (weekly and daily) and rated as important or higher, and (b) tasks performed less frequently (weekly or monthly) and rated as very or extremely important. Criticality scores below 18 excluded infrequent (quarterly or less often) but very or extremely important tasks.

The research team applied these three rules for categorizing tasks as "important and/or critical" to determine which resulted in a reasonable and sensible number of tasks that might be considered as the "core and essential functions" of the job of a non-supervisory ATSS at a field SSC.

Under Rule 1, 147 of 176 (84%) of the ATSS tasks were categorized as "critical and/or important." Thus, Rule 1 failed to adequately differentiate among tasks (that is, essentially, all tasks are "important and/or critical"). Under Rule 2, 118 of 176 tasks (67%) were categorized as "critical and/or important." While an improvement over Rule 1, Rule 2 also failed to adequately differentiate among tasks (that is, most tasks are important). Under Rule 3, the most stringent, a manageable 75 tasks (43%) were identified as "critical and/or important" (that is, *some* tasks are important and/or critical).

The 75 tasks identified as "critical and/or important" to the job of non-supervisory ATSSs assigned to field SSCs (without regard to specialty) are presented in Table 18. The task statements are grouped by duty and then sorted within duty (from high to low) on mean criticality index score, mean importance rating, and frequency of performance rating.
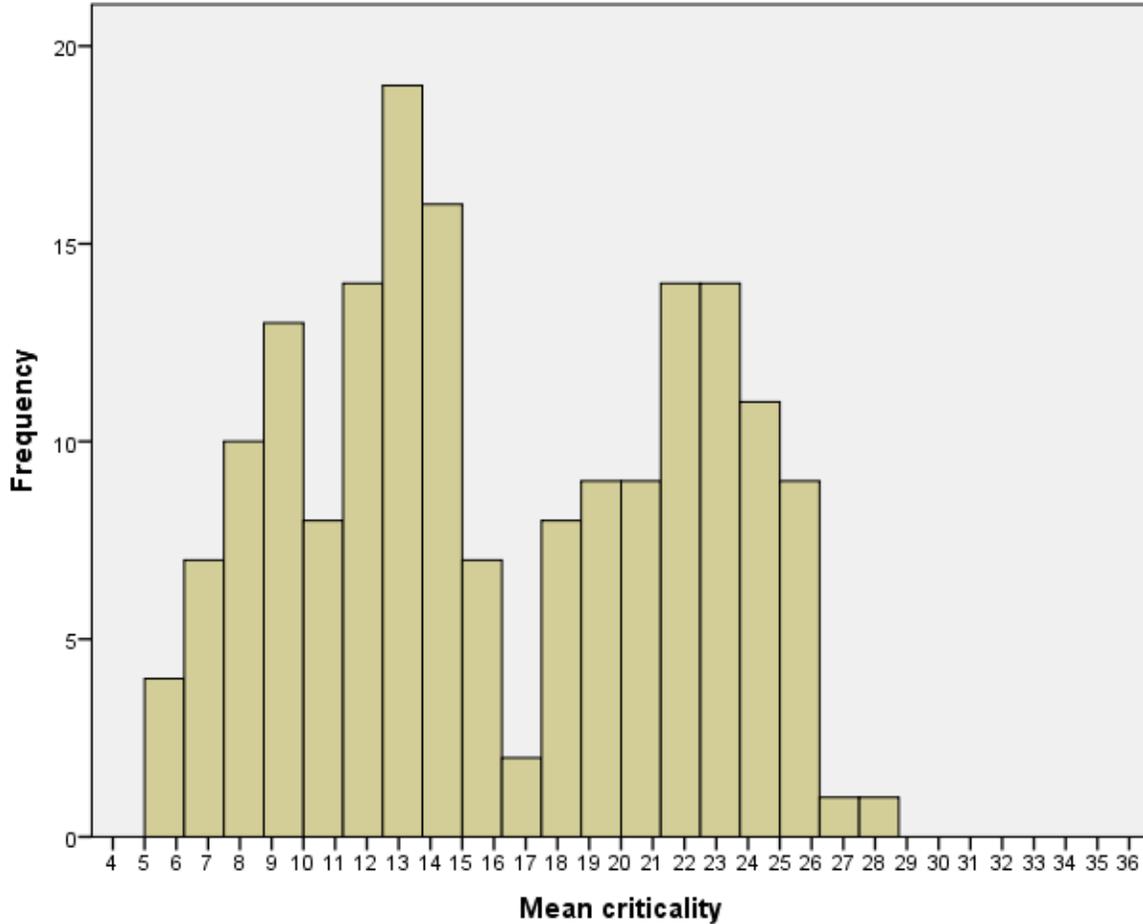
Figure 6: Distribution of mean criticality scores across tasks

Several observations on the 75 critical tasks are warranted. First, the critical tasks came from six (of the 13 duties):

- D03 MITIGATE SAFETY AND SECURITY RISKS (11 out of 12 tasks identified as critical and/or important);
- D04 PLAN PERIODIC AND CORRECTIVE MAINTENANCE ACTIVITIES (14 of 15 tasks identified as critical and/or important);
- D05 PERFORM PERIODIC MAINTENANCE (13 of 14 tasks identified as critical and/or important);
- D06 PERFORM CORRECTIVE MAINTENANCE (18 of 19 tasks identified as critical and/or important);
- D09 CERTIFY FACILITIES, SERVICES, AND EQUIPMENT (5 of 5 task identified as critical and/or important); and
- D01 ESTABLISH SITUATION AWARENESS (9 of 10 tasks identified as critical and/or important).

Table 18: Critical task descriptive statistics

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
D01 ESTABLISH SITUATION AWARENESS						
T01.01	Report to your duty station	690	1.00	6.00	4.35	26.12
T01.03	Retrieve information regarding the current status of FSEs, NAS ops, & environmental conditions	669	0.97	5.94	4.32	25.76
T01.07	Evaluate current & projected state of NAS ops & environmental conditions	605	0.89	5.68	4.21	24.02
T01.06	Evaluate current & projected state of FSEs	615	0.89	5.62	4.22	23.89
T01.09	Monitor NAS ops & environmental conditions continually	534	0.80	5.84	3.95	23.23
T01.08	Monitor FSEs continually	527	0.77	5.84	3.88	22.87
T01.10	Brief others regarding the status of FSEs, NAS ops, & environmental conditions	563	0.83	5.71	3.97	22.73
T01.04	Scan FSEs by in-person inspection	453	0.86	5.51	3.90	21.29
T01.02	Receive in-person briefing regarding the current status of FSEs, NAS ops, & environmental conditions	524	0.85	5.47	3.64	20.68
D05 PERFORM PERIODIC MAINTENANCE						
T05.01	Log all periodic maintenance activities	1,234	0.99	6.00	4.35	26.13
T05.09	Perform periodic maintenance on FSE per FAA Order 6000 Series etc	1,172	0.96	5.67	4.42	25.30
T05.02	Communicate intent to conduct periodic maintenance	1,223	0.99	5.84	4.30	25.13
T05.07	Perform final coordination of periodic maintenance	1,202	0.97	5.69	4.36	24.79
T05.10	Perform operational check on FSE	1,169	0.95	5.53	4.42	24.64
T05.14	Coordinate return of FSE to operational use	1,142	0.93	5.40	4.50	24.42
T05.13	Configure state of FSE for normal ops	1,121	0.91	5.36	4.51	24.29
T05.12	Certify FSE	1,097	0.90	5.03	4.64	23.53
T05.04	Gather T&E required for periodic maintenance	1,215	0.98	5.66	4.06	23.07
T05.08	Configure state of FSE for periodic maintenance	1,090	0.89	5.29	4.19	22.39
T05.03	Assemble team of personnel required for periodic maintenance	1,009	0.85	5.16	3.83	20.06
T05.06	Evaluate current FSE performance data to past performance data to identify problems, deficiencies, or risks	1,080	0.87	5.01	3.91	19.80
T05.05	Collect data on current & past FSE performance	1,092	0.88	5.13	3.80	19.69

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
D04 PLAN PERIODIC AND CORRECTIVE MAINTENANCE ACTIVITIES						
T04.02	Determine that maintenance is required	563	0.99	5.92	4.50	26.67
T04.01	Receive notification of situation requiring maintenance	559	0.98	5.81	4.50	26.13
T04.03	Report maintenance-related information to appropriate Control Center	559	0.98	5.87	4.34	25.56
T04.07	Prioritize maintenance tasks	556	0.97	6.01	4.22	25.50
T04.05	Evaluate impact of maintenance to the NAS	511	0.90	5.72	4.46	25.48
T04.15	Log coordination activities	558	0.99	5.95	4.14	24.62
T04.14	Coordinate maintenance activities with stakeholders	503	0.89	5.61	4.24	23.73
T04.10	Identify maintenance activity requirements	540	0.96	5.49	4.06	22.31
T04.12	Ensure availability of T&E	510	0.90	5.36	4.08	21.89
T04.11	Ensure availability of all required personnel	344	0.63	5.44	3.94	21.46
T04.06	Participate in pre-maintenance discussion(s) or meeting(s)	528	0.93	5.21	3.82	19.93
T04.04	Collect data on current & past FSE performance	514	0.91	5.08	3.86	19.87
T04.13	Ensure availability of spare parts	507	0.89	4.75	4.00	19.07
T04.08	Review technical documentation for FSE & T&E	519	0.93	4.80	3.83	18.63
D03 MITIGATE SAFETY AND SECURITY RISKS						
T03.03	Follow prescribed safety & security standards & practices	658	0.99	6.08	4.55	27.80
T03.11	Maintain access control to operational network systems	487	0.73	5.67	4.28	24.40
T03.04	Identify safety hazards	638	0.94	5.29	4.48	23.86
T03.02	Respond to emergency situations	500	0.75	4.90	4.67	23.00
T03.07	Perform risk assessment	600	0.88	5.36	4.21	22.77
T03.05	Identify security vulnerabilities	591	0.87	5.07	4.38	22.46
T03.06	Report hazard or vulnerability	601	0.89	4.92	4.47	22.02
T03.01	Log all safety & security activities	552	0.82	5.16	4.21	21.68
T03.09	Perform risk mitigation activities	571	0.85	4.93	4.23	21.19
T03.08	Plan risk mitigation activities with stakeholders	506	0.75	4.83	4.12	20.19
T03.10	Maintain safety & security related documentation	555	0.83	4.76	4.01	19.20
D06 PERFORM CORRECTIVE MAINTENANCE						
T06.01	Log all corrective maintenance activities	1,217	0.99	5.59	4.39	24.43
T06.02	Perform final coordination of corrective maintenance	1,179	0.98	5.49	4.41	24.14
T06.08	Isolate fault(s) to software, hardware, component, or lowest replaceable unit (LRU)	1,132	0.97	5.20	4.47	23.70
T06.03	Configure state of FSE for corrective maintenance	1,155	0.95	5.41	4.37	23.62
T06.19	Coordinate return of FSE to operational use	1,152	0.96	5.29	4.47	23.60
T06.17	Certify FSE	1,082	0.93	5.04	4.61	22.89

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
T06.04	Gather T&E required for troubleshooting	1,201	0.98	5.46	4.17	22.75
T06.18	Configure state of FSE for normal ops	1,109	0.94	5.26	4.51	22.50
T06.15	Perform operational check on FSE	1,121	0.96	5.39	4.45	22.19
T06.14	Perform corrective maintenance tasks on FSE per the FAA Order 6000 etc.	1,132	0.96	5.16	4.44	22.10
T06.06	Compare FSE performance to technical specifications	1,157	0.94	5.25	4.20	22.04
T06.16	Support flight check on FSE	680	0.58	3.17	4.27	21.48
T06.13	Procure appropriate parts	1,152	0.96	4.97	4.25	21.18
T06.12	Gather T&E required for FSE repair or replacement	1,156	0.95	5.07	4.05	20.62
T06.05	Collect data on current & past FSE performance	1,128	0.92	5.17	3.96	20.59
T06.10	Develop proposed solution	1,105	0.91	4.82	4.18	20.34
T06.07	Conduct additional research	1,145	0.94	5.04	3.77	19.11
T06.11	Assemble team of personnel required for corrective maintenance	1,031	0.85	4.68	3.84	18.20

D09 CERTIFY FSES

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
T09.05	Log certification or decertification statement	1,087	0.91	4.72	4.51	21.49
T09.04	Make certification decision based on all data gathered & according to FAA Orders & directives	1,076	0.89	4.66	4.51	21.22
T09.03	Compare certification requirements & current FSE performance data	1,050	0.87	4.30	4.25	18.54
T09.01	Review FSE certification requirements	1,076	0.89	4.12	4.31	18.00
T09.02	Gather existing & new data regarding FSE performance	1,049	0.87	4.30	4.08	17.89

D02 PERFORM ADMINISTRATIVE TASKS

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
T02.04	Manage internal FAA communications	445	0.77	5.43	3.51	19.36

D11 ENSURE AVAILABILITY OF TOOLS & EQUIPMENT AND SPARE PARTS

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
T11.10	Maintain T&E	605	0.93	4.60	3.82	17.97
T11.07	Store T&E & spare parts in appropriate location	613	0.94	4.68	3.72	17.64

D12 PERFORM TECHNICAL COLLATERAL TASKS

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
T12.07	Prepare technical reports on FSE performance (e.g., Technical Performance Record)	403	0.74	4.13	3.91	16.60

D13 PERFORM SPECIAL DUTIES

TaskID	Task_Label	N	p(Perform)	M(Frequency)	M(Importance)	M(Criticality)
T13.10	Purchase Card Holder	356	0.54	4.73	3.60	17.44

Overall, these six duties (comprised of 70 critical and/or important tasks) constitute the core and essential functions of the job of a non-supervisory ATSS at a field SSC without regard to specialty.

Identifying important KSAs

As with tasks, a key goal in a selection-oriented job analysis to support a personnel selection procedure is the identification of the knowledge, skills, and abilities that are important to and prerequisite for successful performance of the important or critical job tasks (29 C.F.R. § 1607.14C.(4)). This analysis took a two-step approach to identifying those KSAs that are essential to the performance of critical and/or important job tasks. The first step (reported here) was to reduce the pool of 339 KSA statements to a smaller pool determined to be important to performance of the job overall. The second step (reported later) was to determine if an important KSA was *essential* to the performance of each specific important job task through a linkage exercise.

The following criteria were used to identify KSAs to be characterized as important to the job overall. Two rules were considered. The first rule was that a KSA was characterized as important if (a) the proportion indicating the KSA was needed on Day 1 at the SSC was equal to or greater than 50% [$p(Day1) \geq .50$] *and* (b) the mean importance rating was equal or greater than 3 [$M(Importance) \geq 3$]. The second rule was a KSA was characterized as important if (a) the proportion indicating the KSA was needed on Day 1 was equal to or greater than 75% [$p(Day1) \geq .75$] *and* (b) the mean importance rating for the KSA was equal to or greater than 4 [$M(Importance) \geq 4$]. The impact of each proposed rule was evaluated by determining the number that met each criterion individually and the two criteria in a rule combined. The impact of the two rules is shown in Table 19.

Table 19: Rules for determining important KSAs

N Statements	*p(Day1)*	N	*M(Importance)*	N	Combined N
228 Knowledge	$p(Day1) \geq .50$	72	$M(Imp) \geq 3$	206	68
	$p(Day1) \geq .75$	31	$M(Imp) \geq 4$	18	11
46 Skill	$p(Day1) \geq .50$	27	$M(Imp) \geq 3$	42	26
	$p(Day1) \geq .75$	11	$M(Imp) \geq 4$	9	5
65 Ability	$p(Day1) \geq .50$	65	$M(Imp) \geq 3$	65	65
	$p(Day1) \geq .75$	49	$M(Imp) \geq 4$	16	14

Use of Rule 1 resulted in the identification of 68 knowledge statements (out of 228) as important to the job overall. Application of Rule 2 identified just 11 knowledge statements as important to the job overall, which was too stringent. Application of Rule 1 to the 46 skill statements resulted in 26 skills identified as important to the job overall. Rule 2 reduced the number of important skills to just 5. Application of Rule 1 to ability statements identified all 65 abilities as important to the job, and thus failed to discriminate among abilities. Rule 2 reduced

that number to just 14 important abilities, a more manageable number. All total, 87 (out of 339) KSAs were identified as important to the job overall with this decision strategy. Descriptive statistics for these 87 important KSAs are presented in [Table 20](#).

Table 20: Descriptive statistics for KSAs categorized as important to job overall

KSA ID	KSA Label	Importance			Mastery			Day 1	
		N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*p*
Kw01 KNOWLEDGE OF THE FAA									
Kw01.03	Safety culture	513	3.85	1.07	467	2.82	0.77	453	0.53
Kw02 KNOWLEDGE OF PROFESSIONAL ATSS REQUIREMENTS									
Kw02.01	Conduct & discipline regulations & procedures	616	3.53	1.07	555	2.65	0.85	547	0.53
Kw02.02	Medical requirements	618	3.25	1.07	544	2.34	0.84	537	0.55
Kw02.07	English language	617	4.36	0.85	571	3.18	0.82	564	0.91
Kw05 KNOWLEDGE OF SCIENCE AND MATHEMATICS									
Kw05.02	Electro-mechanical theory	1,129	3.35	1.13	992	2.52	0.82	966	0.64
Kw05.04	(CP) Basic mathematics (i.e., addition, subtraction, multiplication, division)	1,133	3.95	1.03	1,047	2.92	0.87	1,018	0.88
Kw05.04.01	(CP) Addition, subtraction	1,030	4.28	0.82	971	3.17	0.86	948	0.95
Kw05.04.02	(CP) Multiplication, (long) division	1,033	4.16	0.91	964	3.12	0.87	942	0.93
Kw05.05	(CP) Intermediate mathematics (i.e., algebra, geometry, trigonometry)	1,132	3.59	1.15	1,010	2.69	0.86	982	0.74
Kw05.05.01	(CP) Exponents & roots (radicals)	931	3.71	1.10	841	2.82	0.89	821	0.77
Kw05.05.02	(CP) Logarithms	934	3.52	1.14	829	2.65	0.88	805	0.62
Kw05.05.03	(CP) Algebraic equations with one unknown variable (to solve for)	933	3.67	1.08	838	2.75	0.88	818	0.75
Kw05.05.04	(CP) Algebraic equations containing fractions	932	3.56	1.14	825	2.67	0.90	803	0.67
Kw05.05.05	(CP) Algebraic equations containing radicals (e.g., square roots, etc.)	931	3.43	1.19	815	2.61	0.90	791	0.63
Kw05.05.06	(CP) Algebraic equations with polynomials	929	3.15	1.27	767	2.47	0.92	748	0.52
Kw05.05.07	(CP) Simplifying algebraic equations by factoring	931	3.14	1.24	775	2.55	0.90	752	0.67
Kw05.05.11	(CP) Geometry of angles	931	3.27	1.22	794	2.57	0.89	766	0.63
Kw05.05.12	(CP) Geometry of triangles	931	3.18	1.24	780	2.54	0.89	753	0.61

KSA ID	KSA Label	Importance			Mastery			Day 1	
		N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*p*
Kw05.05.13	(CP) Trigonometric functions (also called circular functions) (sine, cosine, secant, tangent)	931	3.27	1.23	793	2.61	0.88	769	0.60
Kw06 KNOWLEDGE OF HUMAN FACTORS									
Kw06.01	Human cognitive performance limitations	620	3.57	1.07	562	2.52	0.81	550	0.62
Kw06.02	Human physical performance limitations	619	3.58	1.05	562	2.52	0.78	550	0.64
Kw06.03	Team concepts	618	3.80	1.04	566	2.68	0.80	551	0.66
Kw10 KNOWLEDGE OF TECHNICAL DRAWINGS									
Kw10.01	(CP) How to read & interpret content & symbols	1,137	4.16	0.90	1,051	3.00	0.78	1,022	0.74
Kw10.01.01	(CP) Basic symbols (ground, batteries, power, resistors, capacitors, inductors, diodes, transistors, etc)	1,083	4.30	0.83	1,018	3.11	0.79	992	0.86
Kw10.01.02	(CP) Specialty symbols (antennas, crystals, specialized diodes, J-FET, logic gates, photoresistor, relay)	1,083	4.06	0.97	1,004	2.98	0.81	981	0.69
Kw10.01.03	(CP) Functional block (circuit, equipment) block diagrams	1,083	4.36	0.79	1,020	3.16	0.75	993	0.83
Kw10.01.04	(CP) Wiring diagrams	1,081	4.43	0.75	1,018	3.18	0.74	995	0.82
Kw10.01.05	(CP) Schematics	1,080	4.42	0.77	1,015	3.18	0.75	991	0.83
Kw10.02	Proper use of technical drawings	1,134	4.24	0.87	1,051	3.07	0.76	1,021	0.68
Kw12 KNOWLEDGE OF ELECTRICAL THEORY									
Kw12.01	(CP) AC & DC theory	1,134	4.03	1.02	1,041	2.95	0.80	1,016	0.85
Kw12.01.01	(CP) Direct current circuits	1,003	4.00	0.90	941	2.91	0.80	915	0.79
Kw12.02	(CP) Series, parallel, & combination circuits	1,132	3.85	1.08	1,033	2.85	0.83	1,006	0.78
Kw12.02.01	(CP) Parallel circuits	1,004	3.96	0.91	938	2.87	0.81	915	0.79
Kw12.02.02	(CP) Series circuits	1,004	3.96	0.91	938	2.88	0.81	914	0.79
Kw12.02.03	(CP) Combination circuits	1,001	3.93	0.93	938	2.85	0.80	915	0.75
Kw12.03	(CP) Electrical theorems	1,133	3.67	1.15	1,015	2.72	0.84	990	0.69
Kw12.03.01	(CP) Ohms Law formulas	949	4.06	0.92	886	2.95	0.81	860	0.83
Kw12.03.02	(CP) Power formulas	946	4.05	0.91	886	2.95	0.79	861	0.76
Kw12.04	Inductive & capacitive reactance	1,129	3.62	1.15	1,007	2.69	0.81	983	0.64

KSA ID	KSA Label	Importance			Mastery			Day 1	
		N	Mean	SD	N	Mean	SD	N	p
Kw12.05	Grounding, bonding, lightening protection theory	1,133	3.89	1.05	1,038	2.86	0.80	1,009	0.54
Kw12.06	Power distribution systems theory	1,131	3.90	1.06	1,035	2.85	0.80	1,004	0.56
Kw13 KNOWLEDGE OF ELECTRONIC THEORY									
Kw13.01	(CP) Digital logic basics	1,137	3.46	1.16	990	2.59	0.85	963	0.65
Kw13.01.05	(CP) Digital gate types (AND, NAND, etc.)	912	3.49	1.07	821	2.60	0.84	805	0.63
Kw13.01.06	(CP) Transistors, Field Effect Transistors, J-FET	913	3.49	1.07	822	2.59	0.83	798	0.60
Kw13.02	Digital signal theory	1,136	3.49	1.16	993	2.60	0.84	962	0.60
Kw13.03	Analog signal theory	1,134	3.55	1.15	995	2.64	0.84	971	0.64
Kw13.04	(CP) Electronic theorems	1,133	3.43	1.16	998	2.57	0.84	970	0.62
Kw13.04.01	(CP) Kirchoffs Law	886	3.43	1.10	803	2.51	0.89	784	0.58
Kw13.04.02	(CP) Circuit theorems (Thevenins & Nortons Theorems)	882	3.34	1.15	789	2.47	0.88	770	0.52
Kw13.05	Circuit components	1,136	3.70	1.05	1,024	2.73	0.81	998	0.72
Kw13.06	(CP) Circuit types	1,135	3.67	1.07	1,025	2.70	0.81	997	0.71
Kw13.06.01	(CP) Filter circuits	983	3.51	1.05	901	2.56	0.84	877	0.55
Kw13.06.02	(CP) Amplifier circuits	981	3.57	1.04	902	2.63	0.84	878	0.58
Kw13.06.03	(CP) Rectifier circuits	975	3.68	1.00	913	2.66	0.83	887	0.61
Kw13.06.04	(CP) Integrated circuits	978	3.59	1.01	905	2.61	0.84	886	0.58
Kw14 KNOWLEDGE OF RADIO FREQUENCY THEORY									
Kw14.01.03	(CP) Modulation	867	4.08	0.84	814	2.90	0.78	791	0.56
Kw14.01.04	(CP) RF transmission, transmitter, receiver, generator	869	4.15	0.83	814	2.95	0.77	793	0.56
Kw14.01.06	(CP) Standing wave ratio	868	4.05	0.89	811	2.89	0.79	789	0.52
Kw14.05.02	(CP) Transmission line loss	872	4.05	0.87	818	2.90	0.78	797	0.51
Kw15 KNOWLEDGE OF COMPUTER NETWORKING									
Kw15.02.01	(CP) Physical storage media types (hard disk, tape drive, etc.)	876	3.72	0.93	815	2.57	0.82	801	0.55
Kw15.02.02	(CP) Cables	878	3.80	0.93	819	2.69	0.81	802	0.51
Kw16 KNOWLEDGE OF COMMUNICATION SYSTEM THEORY									
Kw16.01	Communication concepts	512	3.73	1.12	458	2.82	0.79	446	0.59
Kw16.02	Fundamentals of communication systems	510	3.74	1.14	459	2.80	0.78	444	0.53

KSA ID	KSA Label	Importance			Mastery			Day 1	
		N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*p*
Kw22 KNOWLEDGE OF TOOLS & EQUIPMENT									
Kw22.01	Types of T&E	621	4.00	0.89	581	2.89	0.80	565	0.64
Kw22.02	Functionality of T&E	620	4.10	0.86	581	2.92	0.79	565	0.62
Kw22.04	Appropriate T&E for task	620	4.08	0.87	580	2.92	0.80	565	0.53
Kw22.05	Use of T&E	620	4.11	0.88	582	2.96	0.81	564	0.65
Kw22.06	Limitations of the T&E	620	3.99	0.92	579	2.87	0.82	560	0.53
Sk01 COGNITIVE SKILLS									
Sk01.03	Reading Comprehension	497	4.12	0.90	497	4.12	0.90	460	0.89
Sk02 INTERPERSONAL SKILLS									
Sk02.03	Teamwork	605	4.01	0.90	566	2.82	0.79	562	0.82
Sk06 TECHNICAL OPERATIONS TECH SKILLS									
Sk06.02	Troubleshooting	610	4.54	0.68	574	3.22	0.73	563	0.78
Sk06.03	Assembly and Disassembly	610	4.21	0.81	571	3.08	0.76	561	0.76
Sk06.04	Interpreting Technical Drawings	611	4.30	0.78	572	3.12	0.76	563	0.76
Ab01 SENSORY ABILITIES									
Ab01.07	Color Detection	601	4.03	0.98	559	2.89	0.84	551	0.91
Ab02 VERBAL ABILITIES									
Ab02.01	Oral Comprehension	492	4.06	0.86	463	2.89	0.73	458	0.93
Ab02.02	Oral Expression	490	4.01	0.89	465	2.87	0.72	457	0.91
Ab03 NUMERICAL ABILITIES									
Ab03.02	Number Facility	492	4.02	0.99	460	3.03	0.81	455	0.92
Ab04 REASONING ABILITIES									
Ab04.02	Problem Sensitivity	489	4.09	0.86	463	2.99	0.69	456	0.76
Ab09 PERSONALITY									
Ab09.02	Stress Tolerance	605	4.14	0.86	563	3.04	0.75	560	0.82
Ab09.03	Conscientiousness	603	4.26	0.80	567	3.10	0.77	562	0.87
Ab09.04	Sense of Ownership	604	4.27	0.86	567	3.11	0.77	561	0.83

KSA ID	KSA Label	Importance			Mastery			Day 1	
		N	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*p*
Ab09.05	Integrity	605	4.41	0.79	566	3.20	0.80	561	0.92
Ab09.07	Time Consciousness	603	4.25	0.85	564	3.07	0.78	559	0.79
Ab09.08	Emotional Stability	605	4.08	0.87	567	2.98	0.78	562	0.94
Ab09.09	Self-awareness	600	4.08	0.83	565	3.00	0.76	564	0.93
Ab09.10	Adaptability	603	4.17	0.83	567	3.08	0.76	563	0.88
Ab09.11	Patience	603	4.17	0.86	566	3.05	0.75	563	0.89

Notes: CP indicates a knowledge or skill corresponding to a learning or enabling objective in the *Common Principles* (FAA Academy course 43078001)

PHASE 3: CONDUCT LINKAGE EXERCISE

The next step in the job analysis was to conduct a linkage exercise. The linkage exercise requires participants to judge to what degree a specific KSA is needed to perform a specific task. The purpose of a linkage exercise is to explicitly identify the specific KSAs that are essential to the performance of each critical and/or important job task (Dy, 2010; Goldstein, Zedeck, & Schneider, 1993). Such linkages can be used to construct, for example, selection and promotion test specifications (Hughes & Prien, 1989). There were three primary work elements in Phase 3 of the job analysis as shown in Figure 7.

3.1 • Develop Linkage Exercise from Phase 2 lists of critical tasks and important KSAs

3.2 • Distribute survey invitation via e-mail to 801 supervisory ATSSs (Front-Line Managers & Technical Operations Managers)

3.3 • Calculate the number of tasks each KSA linked to as "essential" to performance
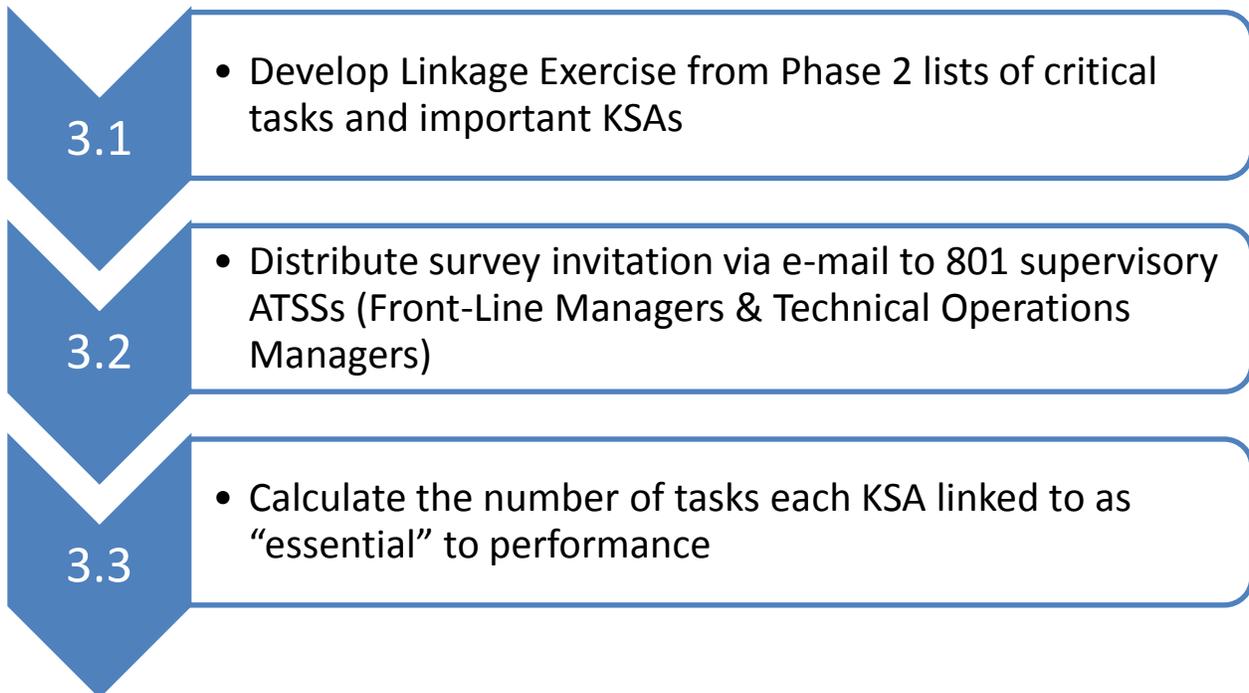
Figure 7: Phase 3 work elements

Method

Participants.

Front-Line Managers (FLMs) and Technical Operations Managers (TOMs) were invited to participate in the Linkage Exercise. FLMs are direct, 1st-level supervisors of SSCs (N=715). TOMs oversee groups of SSCs (N=86). Overall, 250 FLMs and TOMs completed the Linkage Exercise. Demographic information on participants is provided in Table 21.

Table 21: Demographic characteristics of Linkage Exercise participants (N=250)

Characteristic	Time	N	%
Tenure in current position	<1 Year	36	14.4%
	1-2 Years	52	20.8%
	3-5 Years	58	23.2%
	>5 Years	104	41.6%
Tenure as Technical Operations FLM or TOM	<1 Year	20	8.0%
	1-2 Years	33	13.2%
	3-5 Years	48	19.2%
	6-10 years	62	24.8%
	11-15 Years	36	14.4%
	>15 Years	51	20.4%
Years of technical electronics experience	<1 Year	4	1.6%
	1-2 Years	1	0.4%
	3-5 Years	5	2.0%
	6-10 Years	5	2.0%
	11-15 Years	13	5.2%
	16-20 Years	26	10.4%
	>20 Years	195	78.0%

Instrument.

As reported in Phase 2, 75 tasks were identified as critical to the ATSS job at SSCs and 87 KSAs were identified as important to the job overall, resulting in 6,525 possible task-KSA pairs to be judged. This would be an overwhelming number of judgments to require of any single FLM. Therefore, a multiple matrix sampling approach (Dy, 2010) was taken to construct multiple linkage exercise forms as follows. The first step was to determine if there would be any specific task-KSA pairs to be included in all forms. As noted, there were a total of 6,525 task-KSA pairs. Three specific tasks were selected for inclusion in all forms of the Linkage Exercise: "T05.09 Perform periodic maintenance on FSE per FAA Order 6000 Series etc.;" "T06.14 Perform corrective maintenance tasks on FSE per the FAA Order 6000 etc.;" and "T06.08 Isolate fault(s) to software, hardware, component, or lowest replaceable unit (LRU)." These three tasks had very high criticality indices, were universally performed, and represented the fundamental core of the ATSS job. Each of these tasks was paired with every KSA, for a total of 261 judgments (3 * 87). These 261 task-KSA pairs were removed from the master list, leaving 6,264 task-KSA pairs to be assigned to forms. At this point, each task-KSA pair was assigned a number 1 through 10, where the number represented the assigned form. As a result, each form required 886 or 887 judgments of participants.

Each form began with explanation of the purpose of the Linkage Exercise:

Purpose. The purpose of the *Technical Operations SSC FLM & TOM ATSS Job Analysis Linkage Exercise for 2016* ("Linkage Exercise") is to validate the results of the *ATSS Job Analysis Survey for 2016* by identifying which KSAs (important to the job overall) are *essential* to the safe and successful performance of critical ATSS job tasks.

Then an overview and instructions were provided to the participant:

Overview of the Linkage Exercise. The exercise has three parts: this introduction and informed consent; demographic questions (for analysis purposes only); and the exercise proper.

In this exercise, you will be presented with an ATSS task statement and an accompanying list of knowledge, skills, and abilities (KSAs). Your task is to answer this question for each KSA with respect to the single task statement:

> ***Is the KSA essential, helpful, or not needed to performing the task?***
>
> *Essential* means that the task cannot, under any circumstance, be performed safely and successfully if a systems specialist does not have or possess that KSA at the level of a journeyman systems specialist.
>
> *Helpful* means that the KSA is helpful, but not absolutely essential and necessary, to performing the task. The task could be done if the specialist didn't have the KSA, but it would be harder to do for a journeyman ATSS.
>
> *Not needed* means that performing the task (safely and successfully) does not require using the KSA being rated.

This was followed by a statement of the authority for the Linkage Exercise, conditions of participation, and informed consent. The following demographic information was requested of each participant: Role (FLM, TOM, or other [Selecting other routed the participant out of the exercise]; Type of SSC (Mark all that apply); Tenure in current position; Tenure as a FLM or TOM in Technical Operations; and Years of technical electronics experience. The Role question required a response (to ensure that only FLMs or TOMs participated); the other demographic items were optional.

The actual exercise began with presentation of a task statement as the focal object, followed by a list of the KSAs to be rated as *Not needed*, *Helpful*, or *Essential* to the performance of the focal task statement, as shown in Figure 8. The participant simply clicked on the appropriate rating of each KSA. A rating was not required to continue; KSAs could be skipped, but participants were encouraged not to skip KSAs. Participants could save their progress if interrupted and return to the exercise at the point where he or she left off. The majority (176 or 70%) of participants completed the exercise on the same day as when they began, taking an average of about an hour to complete the exercise.

Perform periodic maintenance on Facility, Service, and Equipment per FAA Order 6000 Series, etc.

Rate each KSA in relation to the presented task using the following scale:

Not needed: Performing the task (safely and successfully) does not require using the KSA being rated.

Helpful: Performing the task safely and successfully would be easier if the specialist had the KSA at a journeyman level but the KSA is not absolutely essential and necessary. The task could be done if the specialist didn't have the KSA, but it would be harder to do for a journeyman ATSS.

Essential: The task **cannot, under any circumstance,** be performed safely and successfully if a systems specialist does not have or possess that KSA at the level of a journeyman systems specialist.

KSA	Not Needed	Helpful	Essential
Color Detection	①	②	③
Oral Comprehension	①	②	③
Oral Expression	①	②	③
Basic Arithmetic	①	②	③
Problem Sensitivity	①	②	③
Stress Tolerance	①	②	③
Conscientiousness	①	②	③
Sense of Ownership	①	②	③
Integrity	①	②	③
Time Consciousness	①	②	③
Emotional Stability	①	②	③
Self-awareness	①	②	③
Adaptability	①	②	③
Patience	①	②	③
Safety culture	①	②	③
Conduct and discipline regulations and procedures	①	②	③
Medical requirements	①	②	③
English language	①	②	③

Figure 8: Example item-KSA presentation in Linkage Exercise

Analysis.

The analysis focused on identifying KSAs that were essential to the performance of critical tasks. If at least 50% of the participants rated a KSA as Essential for at least 1 critical task, then the KSA was deemed "essential" to the job. If less than 50% of participants rated a KSA as Essential or it was not linked to any critical task, then the KSA was deemed not essential to the job.

Results

Overall, 77 of the 87 KSAs identified as "important" to the job overall based on job analysis survey data were identified as "essential to the performance of at least one critical task" by this rule. The 77 essential KSAs included 58 knowledge statements, 5 skills, and 14 abilities as shown in Table 22.

Table 22: Linkage exercise results by KSA

KSA ID	KSA Description	N Tasks Linked	% Tasks Linked
Ab09.05	Integrity	74	98.7%
Sk01.03	Reading Comprehension	74	98.7%
Ab09.03	Conscientiousness	73	97.3%
Kw02.07	English language	73	97.3%
Ab02.01	Oral Comprehension	72	96.0%
Ab09.04	Sense of Ownership	70	93.3%
Ab09.07	Time Consciousness	67	89.3%
Ab02.02	Oral Expression	66	88.0%
Kw01.03	Safety culture	65	86.7%
Ab09.09	Self-awareness	64	85.3%
Ab04.02	Problem Sensitivity	60	80.0%
Sk06.02	Troubleshooting	59	78.7%
Ab09.10	Adaptability	56	74.7%
Sk02.03	Teamwork	56	74.7%
Ab09.11	Patience	49	65.3%
Ab09.08	Emotional Stability	48	64.0%
Sk06.04	Interpreting Technical Drawings	44	58.7%
Kw06.03	Team concepts	30	40.0%
Kw10.01	CP How to read & interpret content & symbols	29	38.7%
Kw22.02	Functionality of T&E	29	38.7%
Ab09.02	Stress Tolerance	28	37.3%
Kw10.02	Proper use of technical drawings	28	37.3%
Kw22.04	Appropriate T&E for task	27	36.0%
Kw22.05	Use of T&E	27	36.0%
Kw22.01	Types of T&E	25	33.3%
Kw22.06	Limitations of the T&E	24	32.0%
Ab03.02	Number Facility	23	30.7%
Sk06.03	Assembly and Disassembly	18	24.0%
Kw02.01	Conduct & discipline regulations & procedures	17	22.7%
Kw10.01.05	CP Schematics	17	22.7%
Kw10.01.03	CP Functional block (circuit, equipment) block diagrams	15	20.0%
Kw10.01.04	CP Wiring diagrams	15	20.0%
Kw06.02	Human physical performance limitations	14	18.7%
Kw05.04.01	CP Addition, subtraction	13	17.3%
Kw05.04	CP Basic mathematics (i.e., addition, subtraction, multiplication, division)	10	13.3%
Kw10.01.01	CP Basic symbols (ground, batteries, power, resistors, capacitors, inductors, diodes, transistors, etc)	8	10.7%
Kw12.03.02	CP Power formulas	8	10.7%
Kw16.02	Fundamentals of communication systems	8	10.7%
Kw14.01.06	CP Standing wave ratio	7	9.3%

KSA ID	KSA Description	N Tasks Linked	% Tasks Linked
Kw14.01.03	CP Modulation	6	8.0%
Kw16.01	Communication concepts	6	8.0%
Kw13.05	Circuit components	5	6.7%
Kw13.06	CP Circuit types	5	6.7%
Kw15.02.02	CP Cables	5	6.7%
Kw05.04.02	CP Multiplication, (long) division	4	5.3%
Kw05.05	CP Intermediate mathematics (i.e., algebra, geometry, trigonometry)	4	5.3%
Kw10.01.02	CP Specialty symbols (antennas, crystals, specialized diodes, J-FET, logic gates, photoresistor, relay)	4	5.3%
Kw12.01	CP AC & DC theory	4	5.3%
Kw12.01.01	CP Direct current circuits	4	5.3%
Kw12.02.02	CP Series circuits	4	5.3%
Kw12.05	Grounding, bonding, lightening protection theory	4	5.3%
Kw12.06	Power distribution systems theory	4	5.3%
Kw13.01	CP Digital logic basics	4	5.3%
Kw14.01.04	CP RF transmission, transmitter, receiver, generator	4	5.3%
Kw14.05.02	CP Transmission line loss	4	5.3%
Kw02.02	Medical requirements	3	4.0%
Kw05.02	Electro-mechanical theory	3	4.0%
Kw05.05.04	CP Algebraic equations containing fractions	3	4.0%
Kw12.02	CP Series, parallel, & combination circuits	3	4.0%
Kw12.02.01	CP Parallel circuits	3	4.0%
Kw12.02.03	CP Combination circuits	3	4.0%
Kw12.03.01	CP Ohms Law formulas	3	4.0%
Kw13.03	Analog signal theory	3	4.0%
Kw13.06.03	CP Rectifier circuits	3	4.0%
Kw06.01	Human cognitive performance limitations	2	2.7%
Kw13.02	Digital signal theory	2	2.7%
Kw13.06.01	CP Filter circuits	2	2.7%
Kw13.06.02	CP Amplifier circuits	2	2.7%
Kw05.05.03	CP Algebraic equations with one unknown variable (to solve for)	1	1.3%
Kw05.05.05	CP Algebraic equations containing radicals (e.g., square roots, etc.)	1	1.3%
Kw05.05.11	CP Geometry of angles	1	1.3%
Kw12.03	CP Electrical theorems	1	1.3%
Kw12.04	Inductive & capacitive reactance	1	1.3%
Kw13.04	CP Electronic theorems	1	1.3%
Kw13.06.04	CP Integrated circuits	1	1.3%
Kw15.02.01	CP Physical storage media types (hard disk, tape drive, etc.)	1	1.3%
Kw05.05.01	CP Exponents & roots (radicals)	0	

KSA ID	KSA Description	N Tasks Linked	% Tasks Linked
Kw05.05.02	CP Logarithms	0	
Kw05.05.06	CP Algebraic equations with polynomials	0	
Kw05.05.07	CP Simplifying algebraic equations by factoring	0	
Kw05.05.12	CP Geometry of triangles	0	
Kw05.05.13	CP Trigonometric functions (also called circular functions) (sine, cosine, secant, tangent)	0	
Kw13.01.05	CP Digital gate types (AND, NAND, etc.)	0	
Kw13.01.06	CP Transistors, Field Effect Transistors, J-FET	0	
Kw13.04.01	CP Kirchoffs Law	0	
Kw13.04.02	CP Circuit theorems (Thevenins & Nortons Theorems)	0	

Notes: Knowledge elements prefaced by "CP" are taught in the *Common Principles* course

CONCLUSIONS

Essential KSAs required Day 1 to perform critical tasks

The KSAs considered essential to the performance of critical tasks and needed on Day 1 at the SSC fell into two groups: Non-technical KSAs such as integrity and conscientiousness; and Technical KSAs such as intermediate mathematics and topics in basic electronics ("watts and ohms" topics). On one hand, the non-technical KSAs were linked to most critical tasks, a rather surprising result at first glance. However, it is important to understand that ATSSs often work under general rather than close supervision and are invested with significant responsibility, authority, and autonomy. The FAA relies upon the specialists to determine if crucial systems and services are fit for use in the NAS, where the safety of flight depends on those systems and services. This is a significant responsibility, and trustworthiness – integrity, conscientiousness, a sense of ownership – appears to be a vital attribute required of field SSC ATSSs. On the other hand, the technical KSAs were linked to fewer critical tasks, especially the two tasks that constitute the core of the systems specialist job: perform corrective maintenance (to restore a system or service to use); and perform periodic maintenance.

Adequacy of the job analysis for content validation of *Common Principles*

This job/task analysis was conducted with a two-fold purpose: (1) establish a baseline "as is" description of field ATSS work, and (2) provide a basis for evaluating the content validity of the *Common Principles* initial ATSS training course. Overall, this job analysis provides an adequate and appropriate technical basis for evaluating the content validity of the FAA Academy *Common Principles* course.

Future research and application

This analysis just touched the surface of the data collected in the course of the ATSS job analysis. First, further analyses by SSC specialty might yield further insight into the structure of the ATSS job. The present analysis focuses on the elements common across the five "disciplines;" additional analyses might draw out important differences by specialty. Second, continuing evaluation of the inter-rater agreement (as indexed by intraclass correlations) in the linkage exercise is required. Investigations of the degree of inter-rater agreement as a function of rater characteristics such as job tenure and technical experience would extend our understanding of the influence of rater characteristics on job analysis results.

The most immediate application of the results is to the content validation of the *Common Principles* course at the FAA Academy. The job analysis data have also been used (as of September 2017) to update and standardize the FAA "Job Analysis Tool" (e.g., position description) associated with ATSS position at SSCs. A longer-term application is a baseline against which to analyze future work duties and changes in KSA requirements associated with the shift from "box maintenance" to service management envisioned by the Technical Operations

Concept of Operations 2015. Finally, the job analysis data also provide a basis for enhancing and improving ATSS selection procedures such as interviews and pre-employment knowledge and skill assessments.

REFERENCES

Agreement between the Professional Aviation Safety Specialists (AFL-CIO) and U.S. Department of Transportation, Federal Aviation Administration (December 16, 2012). Retrieved from https://my.faa.gov/content/dam/myfaa/org/staffoffices/ahr/emp_labor_management_relations/labor_relations/agreements/PASS_2012_BU_0067_1384.pdf

Aguinis, H. (2013). *Performance management* (3rd Ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Baranowski, L.E., & Anderson, L.E. (2005). Examing rating source variation in work behavior to KSA linkages. *Personnel Psychology*, *58*, 1041-1054.

Belwalker, B., Anderson, L., & Igou, F. (2013, July). *Comparing models of calculating the criticality index in job analysis.* Paper presented at the IPMAAC Conference, Columbus, OH. Retrieved from http://www.ipacweb.org/Resources/Documents/conf13/belwalkar.pdf

Biddle Consulting Group (2013, February). *Guidelines-oriented job analysis.* Retrieved from https://www.autogoja.com/images/GOJA_booklet.pdf

Brannick, M. T., & Levine, E. L. (2002). *Job analysis: Methods, research, and applications for human resource management in the new millennium.* Thousand Oaks, CA: Sage Publications.

Cascio, W. F., & Aguinis, H. (2005). *Applied psychology in personnel management* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Curtin, P. (2003, June). *Task analysis: Examining four rating formulas.* Paper presented at the 26th Annual Conference of the International Public Management Association Assessment Council, Baltimore, MD.

Dy, S. B. (2010). *The application of multiple matrix sampling to KSAO-task linkages.* Unpublished master's thesis, California State University Sacremento. Retrived from http://csus-dspace.calstate.edu/handle/10211.9/689

FAA Technical Operations Services. (2015). *Technician workforce strategy.* Washington, DC: Author. Retrieved from https://employees.faa.gov/org/linebusiness/ato/operations/technical_operations/media/ATSS_Workforce_Strategy.pdf

Goldstein, I. L., Zedeck, S., & Schneider, B. (1993). An exploration of the job analysis-content validity process. In N. Schmitt & W. C. Borman (Eds.), *Personnel selection in organizations* (pp. 3-34). San Francisco: Jossey-Bass.

Guion, R. M. (1998). *Assessment, measurement, and prediction for personnel decisions.* Mahwah, NJ: Lawrence Erlbaum Associates.

Gutman, A., & Dunleavy, E.M. (2012). Documenting work analysis projects: A review of strategy and legal defensibility for personnel selection. M.A. Wilson, W. Bennett, Jr., Gibson, SG., & Alliger, G.M. (Eds.), *Work analysis: Methods, systems, applications and science of work measurement in organizations* (pp. 139-167). New York, NY: Routledge.

Highhouse, S., Doverspike, D., & Guion, R.M. (2016). *Essentials of personnel assessment and selection* (2nd Ed.). New York, NY: Routledge.

Hughes, G. L., & Prien, E. P. (1989). Evaluation of task and job skill linkage judgments used to develop test specifications. *Personnel Psychology*, *42*(2), 283-292.

Kane, M. T., Kingsbury, C., Colton, D., & Estes, C. (1989). Combining data on criticality and frequency in developing test plans for licensure and certification examinations. *Journal of Educational Measurement*, *26*, 17-27.

Laabs, G. J., & Baker, H. G. (1989). Selection of critical tasks for Navy job performance measures. Military Psychology, 1(1), 3.

Raytheon Professional Services, LLC. (2013). *FAA Technical Operations Course Analysis and Design.* [Data file]. Washington, DC: Federal Aviation Administration Air Traffic Organization, Safety and Technical Training Service, Curriculum Development Group (AJI-2130).

Spackman, M., Norris, D. G., Salvaggio, A. N., Burns, B. & Heil, M. (2004). *Job task analysis of the FAA Airway Transportation Specialist Systems Specialists (FG-2101) position.* (Final report delivered under FAA contract DTFA02-01-F-04728). Oklahoma City, OK: Federal Aviation Administration Civil Aerospace Medical Institute.

U.S. Department of Transportation, Federal Aviation Administration. (2015). *FSEP deskguide.* Washington, DC: Author.

Vestal, D., Martin, A., Krokos, K.J., Josias, L., Manville, K., & Johnson, G. (2015, November). *Technical report for the Airway Transportation Systems Specialist job analysis* (Deliverable 2B under the Federal Aviation Administration-American Institutes for Research® Cooperative Research Agreement #13-G-021). Washington, DC: American Institutes for Research.

Wilson, M.A. (2012). Methodological decisions in work analysis: A theory of effective work analysis in organizations. In M.A. Wilson, W. Bennett, Jr., S.G. Gibson, & G.M. Alliger (Eds.), *The handbook of work analysis: Methods, systems, applications and science of work measurement in organizations* (pp. 3-21). New York, NY: Routledge.

APPENDIX A: ACRONYMS

AIR®	American Institutes for Research
ARTCC	Air Route Traffic Control Center
ATCS	Air Traffic Control Specialist
ATCT	Airport Traffic Control Tower
ATSS	Airway Transportation Systems Specialist
CAMI	Civil Aerospace Medical Institute
DCA	Ronald Reagan Washington National Airport
FAA	Federal Aviation Administration
FSE	Facility, Service, and Equipment
FSEP	Facilities, Services, and Equipment Profile
HR	Human Resource
HVAC	Heating, Ventilation, and Air Conditioning
KSA	Knowledge, Skills, Abilities, and Other Personal Characteristics
NAS	National Airspace System
NAM	North American Management
NCT	Northern California TRACON
NEMC	Network Enterprise Maintenance Center
NextGen	Next Generation Air Transportation System
NOCC	National Operations Control Center
OCC	Operations Control Center
O*NET	Occupational Information Network
OPC	Other Personality Characteristic
OPM	Office of Personnel Management
PASS	Professional Aviation Safety Specialists
PTC	Potomac TRACON
SFO	San Francisco International Airport
SJA	Strategic Job Analysis
SME	Subject Matter Expert
SOC	Service Operations Center
SSC	System Support Center
STNA	Strategic Training Needs Assessment
Tech Ops	Air Traffic Organization Technical Operations Services
TRACON	Terminal Radar Approach Control
ZOA	Oakland ARTCC

APPENDIX B: MATERIALS REVIEWED

Ahlstrom, V., Koros, A., & Heiney, M. (2000). *Team processes in airway facilities operations control centers* (Report No. DOT/FAA/CT-TN00/14). Atlantic City International Airport: Federal Aviation Administration William J. Hughes Technical Center. http://www.dtic.mil/docs/citations/ADA385540

Careers in Government. (2013). *Airway Transportation Systems Specialist* [Job listing]. Retrieved from http://www.careersingovernment.com/

Chinoy, S. S., & Fischer, D. J. (2011, October). Advancing situational awareness for technical operations. *Proceedings of the 56th Air Traffic Control Association Annual Conference*, 16-27.

Fleishman, E. A. (1996). *Fleishman Job Analysis Survey.* Management Research Institute, Inc.

National Center for O*NET Development. (n.d.a). Abilities. O*NET OnLine. Retrieved from http://www.onetonline.org/find/descriptor/browse/Abilities/

National Center for O*NET Development. (n.d.b). O*NET OnLine. Retrieved from http://www.onetonline.org/

National Center for O*NET Development. (n.d.c). Skills. O*NET OnLine. Retrieved from http://www.onetonline.org/find/descriptor/browse/Skills/

National Center for O*NET Development. (n.d.d). Work Context. O*NET OnLine. Retrieved from http://www.onetonline.org/find/descriptor/browse/Work_Context/

National Center for O*NET Development. (2010). 17-3021.00. O*NET OnLine. Retrieved from http://www.onetonline.org/link/summary/17-3021.00

National Center for O*NET Development. (2011). 49-2022.00. O*NET OnLine. Retrieved from http://www.onetonline.org/link/summary/49-2022.00

National Center for O*NET Development. (2014). 49-2021.00. O*NET OnLine. Retrieved from http://www.onetonline.org/link/summary/49-2021.00

National Center for O*NET Development. (2014). 49-9021.01. O*NET OnLine. Retrieved from http://www.onetonline.org/link/summary/49-9021.01

Pierce, L. G. (2010). *Operations Control Centers (OCC) roadmap to 2014* (Task 10). Retrieved from http://www.faa.gov/data_research/research/med_humanfacs/humanfactors/media/2010%20Task%2010.%20OCC%20Roadmap%20to%202014.pdf

Professional Aviation Safety Specialists. (2013). *Professional Aviation Safety Specialists, AFL-CIO (PASS)*. Retrieved from https://www.passnational.org/

Raytheon Professional Services, LLC. (2013). *FAA Tech Ops Course Analysis and Design.* [Data file]. Waltham, MA: Raytheon.

Simmons, R. (2010, June). *Control centers of the future: The Integrated Control Center (ICC)* [PowerPoint slides]. Washington, DC: Federal Aviation Administration.

Spackman, M., Norris, D. G., Salvaggio, A. N., Burns, B. & Heil, M. (2004). *Job task analysis of the FAA Airway Transportation Specialist Systems Specialists (FG-2101) position.* (Final report delivered under FAA contract DTFA02-01-F-04728). Oklahoma City, OK: Federal Aviation Administration Civil Aerospace Medical Institute.

USAJOBS. (2014). *Airway Transportation Systems Specialist (Communication) (Job Announcement No. FAA-AHF-14-VRA-COM-34169)* [Job listing]. Retrieved from https://faa.usajobs.gov/Search?Keyword=Airway+Transportation+Systems+Specialist&Location=&search=Search&AutoCompleteSelected=False

USAJOBS. (2014). *Airway Transportation Systems Specialist (Environmental) (Job Announcement No. FAA-AHF-14-VRA-ENV-34154)* [Job listing]. Retrieved from https://faa.usajobs.gov/Search?Keyword=Airway+Transportation+Systems+Specialist&Location=&search=Search&AutoCompleteSelected=False

USAJOBS. (2014). *Airway Transportation Systems Specialist (Navigational Aids) (Job Announcement No. FAA-AHF-14-VRA-NAV-34171)* [Job listing]. Retrieved from https://faa.usajobs.gov/Search?Keyword=Airway+Transportation+Systems+Specialist&Location=&search=Search&AutoCompleteSelected=False

USAJOBS. (2014). *Airway Transportation Systems Specialist (Radar) (Job Announcement No. FAA-AHF-14-VRA-RAD-34165)* [Job listing]. Retrieved from https://faa.usajobs.gov/Search?Keyword=Airway+Transportation+Systems+Specialist&Location=&search=Search&AutoCompleteSelected=False

U.S. Department of Transportation, Federal Aviation Administration. (2015). *Job analysis tool: Airway Transportation Systems Specialist (automation discipline).* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2015). *Job analysis tool: Airway Transportation Systems Specialist (communications discipline).* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2015). *Job analysis tool: Airway Transportation Systems Specialist (environmental discipline).* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2015). *Job analysis tool: Airway Transportation Systems Specialist (navigational aids discipline).* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2015). *Job analysis tool: Airway Transportation Systems Specialist (radar discipline).* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2009). *Air Traffic Organization Technical Operations training and personnel certification programs* (FAA Joint Order JO 3000.57). Washington, DC: Author. Retrieved from http://www.faa.gov/documentlibrary/media/order/3000.57.pdf

U.S. Department of Transportation, Federal Aviation Administration. (2011). *Future control centers in the technical operations environment.* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2011). *Maintenance concept of operations for 2014 and beyond.* Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2011). *Welcome to T-SAP.* Retrieved from http://www.t-sap.org/faces/mainmenu.xhtml

U.S. Department of Transportation, Federal Aviation Administration. (2012). *Airway Transportation Systems Specialists.* Retrieved from http://www.faa.gov/about/office_org/headquarters_offices/ahr/jobs_careers/occupations/ats_specialists/

U.S. Department of Transportation, Federal Aviation Administration. (2012). *Technical operations integrated work environment segment 1 requirements.* Retrieved from http://www.hf.faa.gov/hfportalnew/Search/DOCs/Tech%20Ops%20IWE%20Segment%201%20Requirements.pdf

U.S. Department of Transportation, Federal Aviation Administration. (2013). *Approved technical operations CTP schools and associated checklists.* Retrieved from http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/operations/to_cti/schools/

U.S. Department of Transportation, Federal Aviation Administration. (2013). *Aviation careers.* Retrieved from http://www.faa.gov/jobs/career_fields/aviation_careers/

U.S. Department of Transportation, Federal Aviation Administration. (2013). JO 6000.15G: *General maintenance handbook for National Airspace System (NAS) facilities.* [FAA Order] Washington, DC: Author.

U.S. Department of Transportation, Federal Aviation Administration. (2014). *Technical training.* Retrieved from http://www.faa.gov/about/office_org/headquarters_offices/arc/programs/academy/tech_training/ama400.cfm

U.S. Department of Transportation, Federal Aviation Administration. (2015). FSEP desk guide. Washington, DC: Author.

U.S. Government Accountability Office. (2010). *Federal Aviation Administration: Agency is taking steps to plan for and train its technician workforce, but a more strategic approach is warranted* (GAO Report No: GAO-11-91). Retrieved from http://www.gao.gov/assets/320/311691.pdf

U.S. Office of Personnel Management. (2013). *Airway Transportation Systems Specialist, 2101.* [Qualification Standard] Retrieved from https://www.opm.gov/policy-data-oversight/classification-qualifications/general-schedule-qualification-standards/2100/airway-transportation-systems-specialist-2101/

APPENDIX C: TASK LIST

ID	Duty	Task
D01	*ESTABLISH SITUATION AWARENESS*	
	T01.01	Report to your duty station
	T01.02	Receive in-person briefing regarding the current status of FSEs, NAS operations, and environmental conditions
	T01.03	Retrieve information regarding the current status of FSEs, NAS operations, and environmental conditions
	T01.04	Scan FSEs by in-person inspection
	T01.05	Scan FSEs by remote inspection
	T01.06	Evaluate current and projected state of FSEs
	T01.07	Evaluate current and projected state of NAS operations and environmental conditions
	T01.08	Monitor FSEs continually
	T01.09	Monitor NAS operations and environmental conditions continually
	T01.10	Brief others regarding the status of FSEs, NAS operations, and environmental conditions
D02	*PERFORM ADMINISTRATIVE TASKS*	
	T02.01	Complete human resource enrollment requirements
	T02.02	Maintain currency, security, and condition of your Personal Identity Verification (PIV) badge, PIV token, facility badges, and keys
	T02.03	Complete required non-technical training
	T02.04	Manage internal FAA communications
	T02.05	Complete ongoing human resource activities
	T02.06	Participate in performance appraisal
	T02.07	Manage business travel
D03	*MITIGATE SAFETY AND SECURITY RISKS*	
	T03.01	Log all safety and security activities
	T03.02	Respond to emergency situations
	T03.03	Follow prescribed safety and security standards and practices
	T03.04	Identify safety hazards
	T03.05	Identify security vulnerabilities
	T03.06	Report hazard or vulnerability
	T03.07	Perform risk assessment
	T03.08	Plan risk mitigation activities with stakeholders
	T03.09	Perform risk mitigation activities
	T03.10	Maintain safety and security related documentation
	T03.11	Maintain access control to operational network systems
	T03.12	Escort contractors and other non-FAA personnel
D04	*PLAN PERIODIC AND CORRECTIVE MAINTENANCE ACTIVITIES*	
	T04.01	Receive notification of situation requiring maintenance
	T04.02	Determine that maintenance is required
	T04.03	Report maintenance-related information to appropriate Control Center
	T04.04	Collect data on current and past FSE performance

ID	Duty	Task
	T04.05	Evaluate impact of maintenance to the NAS
	T04.06	Participate in pre-maintenance discussion(s) or meeting(s)
	T04.07	Prioritize maintenance tasks
	T04.08	Review technical documentation for FSE and Tools & Equipment
	T04.09	Review Job Hazard Analysis (JHA)
	T04.10	Identify maintenance activity requirements
	T04.11	Ensure availability of all required personnel
	T04.12	Ensure availability of Tools & Equipment
	T04.13	Ensure availability of spare parts
	T04.14	Coordinate maintenance activities with stakeholders
	T04.15	Log coordination activities
D05	*PERFORM PERIODIC MAINTENANCE*	
	T05.01	Log all periodic maintenance activities
	T05.02	Communicate intent to conduct periodic maintenance
	T05.03	Assemble team of personnel required for periodic maintenance
	T05.04	Gather Tools & Equipment required for periodic maintenance
	T05.05	Collect data on current and past FSE performance
	T05.06	Evaluate current FSE performance data to past performance data to identify problems, deficiencies, or risks
	T05.07	Perform final coordination of periodic maintenance
	T05.08	Configure state of FSE for periodic maintenance
	T05.09	Perform periodic maintenance tasks on FSE per the FAA Order 6000 Series and appropriate FSE maintenance Order, Notice, or technical instructions. (Note: Periodic maintenance includes many steps that cannot be listed here due to the large number of FSEs and the fact that each FSE has its own unique steps.)
	T05.10	Perform operational check on FSE
	T05.11	Support flight check on FSE
	T05.12	Certify FSE (See D9-Certify FSEs)
	T05.13	Configure state of FSE for normal operations
	T05.14	Coordinate return of FSE to operational use
D06	*PERFORM CORRECTIVE MAINTENANCE*	
	T06.01	Log all corrective maintenance activities
	T06.02	Perform final coordination of corrective maintenance
	T06.03	Configure state of FSE for corrective maintenance
	T06.04	Gather Tools & Equipment required for troubleshooting
	T06.05	Collect data on current and past FSE performance
	T06.06	Compare FSE performance to technical specifications
	T06.07	Conduct additional research
	T06.08	Isolate fault(s) to software, hardware, component, or lowest replaceable unit (LRU)
	T06.09	Obtain second-level engineering and technical support
	T06.10	Develop proposed solution
	T06.11	Assemble team of personnel required for corrective maintenance
	T06.12	Gather Tools & Equipment required for FSE repair or replacement

ID	Duty	Task
	T06.13	Procure appropriate parts
	T06.14	Perform corrective maintenance tasks on FSE per the FAA Order 6000 Series and appropriate FSE maintenance Order, Notice, or technical instructions. (Note: Periodic maintenance includes many steps that cannot be listed here due to the large number of FSEs and the fact that each FSE has its own unique steps.)
	T06.15	Perform operational check on FSE
	T06.16	Support flight check on FSE
	T06.17	Certify FSE (See D9-Certify FSEs)
	T06.18	Configure state of FSE for normal operations
	T06.19	Coordinate return of FSE to operational use
D07	*PERFORM MODIFICATIONS ON FSEs*	
	T07.01	Log all modification activities
	T07.02	Receive modification materials (e.g., documentation, modification kit)
	T07.03	Review documentation for FSE modification
	T07.04	Order modification kit
	T07.05	Inspect modification kit
	T07.06	Develop plans for implementing modification
	T07.07	Coordinate modification with stakeholders
	T07.08	Configure state of FSE for modification
	T07.09	Install FSE modification
	T07.10	Perform operational check on modified FSE
	T07.11	Support flight check on modified FSE
	T07.12	Certify modified FSE (See D9-Certify FSEs)
	T07.13	Coordinate return of modified FSE to operational use
	T07.14	Update documentation to reflect newly modified FSE
D08	*PERFORM FSE INSTALLATION AND CONSTRUCTION ACTIVITIES*	
	T08.01	Log all installation and construction activities
	T08.02	Review installation and construction documentation
	T08.03	Participate in installation and construction design meetings
	T08.04	Participate in site surveys and/or pre-construction meetings
	T08.05	Assist in site preparation
	T08.06	Coordinate with stakeholders
	T08.07	Perform FSE installation or construction activities
	T08.08	Participate in Operational Readiness Demonstration (ORD)
	T08.09	Participate in Contractor Acceptance Inspection (CAI)
	T08.10	Participate in Initial Operating Capability (IOC) Test
	T08.11	Participate in flight check
	T08.12	Participate in Joint Acceptance Inspection (JAI)
	T08.13	Follow up with JAI exceptions after corrections are made
	T08.14	Certify FSE (See D9-Certify FSEs)
	T08.15	Coordinate commissioning of FSE
	T08.16	Update documentation to reflect newly commissioned FSE
	T08.17	Log commissioning statement

ID	Duty	Task
D09	*CERTIFY FSES*	
	T09.01	Review FSE certification requirements
	T09.02	Gather existing and new data regarding FSE performance
	T09.03	Compare certification requirements and current FSE performance data
	T09.04	Make certification decision based on all data gathered and according to FAA Orders and directives
	T09.05	Log certification or decertification statement
D10	*DECOMMISSION FSES*	
	T10.01	Log all decommissioning activities
	T10.02	Review documentation for FSE decommissioning
	T10.03	Coordinate decommissioning activities with stakeholders
	T10.04	Participate in site preparation
	T10.05	Communicate decommissioning with stakeholders
	T10.06	Remove FSE from service
	T10.07	Participate in physical removal of FSE
	T10.08	Transfer or dispose of FSE as appropriate
	T10.09	Verify closure of all FSE logs
	T10.10	Update documentation to reflect newly decommissioned FSE
	T10.11	Perform site restoration
D11	*ENSURE AVAILABILITY OF TOOLS & EQUIPMENT AND SPARE PARTS*	
	T11.01	Monitor inventory of Tools & Equipment and spare parts
	T11.02	Determine what action is required in response to inventory status
	T11.03	Investigate options related to Tools & Equipment and spare parts
	T11.04	Order Tools & Equipment and spare parts
	T11.05	Verify orders upon receipt
	T11.06	Complete expense report for Tools & Equipment and spare parts
	T11.07	Store Tools & Equipment and spare parts in appropriate location
	T11.08	Inspect Tools & Equipment and spare parts
	T11.09	Coordinate inspection of Tools & Equipment by certifying authority
	T11.10	Maintain Tools & Equipment
	T11.11	Dispose of Tools & Equipment and spare parts in accordance with FAA protocol
	T11.12	Inventory Tools & Equipment and spare parts
	T11.13	Update inventory database to reflect current status of Tools & Equipment
D12	*PERFORM TECHNICAL COLLATERAL TASKS*	
	T12.01	Complete technical FSE training
	T12.02	Complete technical safety and security training
	T12.03	Train others in an informal capacity
	T12.04	Train other specialists in a formal capacity as an On-the-Job Training Instructor (OJTI) in preparation for personnel certification
	T12.05	Provide FSE performance data to assist the FAA in trend analysis and other evaluations
	T12.06	Provide comments on technical reports

ID	Duty	Task
	T12.07	Prepare technical reports on FSE performance (e.g., Technical Performance Record)
	T12.08	Maintain local non-FSE databases and tracking sheets
	T12.09	Maintain local copies of non-FSE and non-safety and security documentation including Tools & Equipment user manuals, SOPs, FAA Orders, and other documentation in accordance with current policy and FAA Orders
	T12.10	Submit request for corrections to FSE and non-FSE documentation
	T12.11	Submit request for a modification to an FSE
	T12.12	Oversee maintenance performed by others including contractors
	T12.13	Participate as a technical subject matter expert (SME)
	T12.14	Provide briefings and training on technical matters
	T12.15	Interface with external stakeholders
	T12.16	Serve as Point-of-Contact (POC)
	T12.17	Support post-accident/incident investigations
	T12.18	Serve at another FAA facility as part of a Temporary Duty (TDY) assignment
	T12.19	Support Joint Technical Inspections (JTI)
	T12.20	National Airway Systems Technical Evaluation Program (NASTEP) Participant
	T12.21	Inspect non-federal FSEs
D13	*PERFORM SPECIAL DUTIES*	
	T13.01	Key and Core Coordinator
	T13.02	PIV Card Coordinator
	T13.03	OSHECCOM Representative
	T13.04	Facility Safety Coordinator
	T13.05	Communications Security (ComSec) Maintainer
	T13.06	PASS Representative
	T13.07	Contracting Officer's Representative (COR)
	T13.08	Certified Firearms Operator (wildlife protection)
	T13.09	Disaster Relief Specialist
	T13.10	Purchase Card Holder
	T13.11	Unmanned Aircraft Systems (UAS) Operator
	T13.12	Authorized Level II Climber
	T13.13	Competent Climber
	T13.14	Rescue Tower Climber
	T13.15	Tower Assessment Team (TAT)
	T13.16	First Aid/CPR/AED Instructor
	T13.17	Facility Asbestos Coordinator
	T13.18	Participate as a volunteer team member

APPENDIX D: KNOWLEDGE LIST

ID	Knowledge Topic	Knowledge Fact
Kw01	KNOWLEDGE OF THE FAA	
	Kw01.01	FAA mission, values, and goals
	Kw01.02	FAA organizational structure
	Kw01.03	Safety culture
	Kw01.04	Labor management relations
	Kw01.05	Compensation, payroll, and benefits
	Kw01.06	FAA security requirements and procedures
	Kw01.07	Time and attendance regulations and procedures
	Kw01.08	Travel regulations for local and temporary duty
Kw02	KNOWLEDGE OF PROFESSIONAL ATSS REQUIREMENTS	
	Kw02.01	Conduct and discipline regulations and procedures
	Kw02.02	Medical requirements
	Kw02.03	Non-technical training requirements
	Kw02.04	Technical training requirements
	Kw02.05	Certification requirements
	Kw02.06	Individual development plan including your plan for certifications
	Kw02.07	English language
Kw03	KNOWLEDGE OF NAS BASICS	
	Kw03.01	ATC basics
	Kw03.02	ATC phraseology and terminology
	Kw03.03	Technology as the foundation of NAS operations
	Kw03.04	Types of Technical Operations (Tech Ops) facilities
	Kw03.05	Tech Ops organizational structure
Kw04	KNOWLEDGE OF AERONAUTICAL PUBLICATIONS AND ATSS PROCEDURES AND DIRECTIVES	
	Kw04.01	Purpose
	Kw04.02	Types of aeronautical publications
	Kw04.03	Types of ATSS procedures and directives (i.e., FAA Orders, notices, guidelines, and directives)
	Kw04.04	Technical jargon, symbology, and acronyms
	Kw04.05	Subject areas covered by each publication, procedure, and directive
	Kw04.06	Content of aeronautical publications and ATSS procedures and directives
	Kw04.07	Authoritative source of the information
	Kw04.08	Location and format of current version
	Kw04.09	Sensitivity level of documents
Kw05	KNOWLEDGE OF SCIENCE AND MATHEMATICS	
	Kw05.01	Basic physics
	Kw05.02	Electro-mechanical theory
	Kw05.03	Basic chemistry

ID	Knowledge Topic	Knowledge Fact
	Kw05.04	Basic mathematics (i.e., addition, subtraction, multiplication, division)
	Kw05.05	Intermediate mathematics (i.e., algebra, geometry, trigonometry)
	Kw05.06	Advanced mathematics (i.e., calculus)
	Kw05.07	Trend and other analyses of FSE performance data
Kw06	KNOWLEDGE OF HUMAN FACTORS	
	Kw06.01	Human cognitive performance limitations
	Kw06.02	Human physical performance limitations
	Kw06.03	Team concepts
Kw07	KNOWLEDGE OF SAFETY AND SECURITY	
	Kw07.01	FAA safety and security policies, regulations, procedures, and guidelines
	Kw07.02	Local, state, and Federal safety and security regulations, procedures, and codes
	Kw07.03	First aid, CPR, and use of AED
	Kw07.04	Risk management policies and procedures
	Kw07.05	Fire life safety theory
	Kw07.06	Computer and network security concepts
Kw08	KNOWLEDGE OF EMERGENCIES AND UNUSUAL SITUATIONS	
	Kw08.01	Types of emergencies or unusual operations
	Kw08.02	Evacuation procedures
	Kw08.03	Appropriate actions to resolve the emergency or unusual situation
	Kw08.04	Emergency assistance techniques
	Kw08.05	Notification requirements
	Kw08.06	Coordination requirements
	Kw08.07	Reporting requirements
	Kw08.08	Survival techniques
Kw09	KNOWLEDGE OF WEATHER FUNDAMENTALS	
	Kw09.01	Weather phenomena
	Kw09.02	Atmospheric pressure (i.e., barometric pressure)
	Kw09.03	Sources of weather information
	Kw09.04	Weather forecasting terminology
	Kw09.05	Weather forecast interpretation
	Kw09.06	Impact of weather on NAS operations
Kw10	KNOWLEDGE OF TECHNICAL DRAWINGS	
	Kw10.01	How to read and interpret content and symbols
	Kw10.02	Proper use of technical drawings
	Kw10.03	Techniques for modifying technical drawings
	Kw10.04	Location of control drawings (i.e., current version)
Kw11	KNOWLEDGE OF LOCAL FACILITY	
	Kw11.01	Facility layout
	Kw11.02	Airport configuration
	Kw11.03	Airport operating regulations or procedures

ID	Knowledge Topic	Knowledge Fact
	Kw11.04	Airspace boundaries
	Kw11.05	Operations at own FAA facility including all areas of responsibility
	Kw11.06	Operations at adjacent facilities
	Kw11.07	Local weather patterns
	Kw11.08	Local geography
	Kw11.09	Local terrain
	Kw11.10	Local culture & history
Kw12	KNOWLEDGE OF ELECTRICAL THEORY	
	Kw12.01	AC and DC theory
	Kw12.02	Series, parallel, and combination circuits
	Kw12.03	Electrical theorems
	Kw12.04	Inductive and capacitive reactance
	Kw12.05	Grounding, bonding, lightening protection theory
	Kw12.06	Power distribution systems theory
	Kw12.07	Electrical interference
	Kw12.08	Harmonics
Kw13	KNOWLEDGE OF ELECTRONIC THEORY	
	Kw13.01	Digital logic basics
	Kw13.02	Digital signal theory
	Kw13.03	Analog signal theory
	Kw13.04	Electronic theorems
	Kw13.05	Circuit components
	Kw13.06	Circuit types
	Kw13.07	Fiber optic systems
Kw14	KNOWLEDGE OF RADIO FREQUENCY THEORY	
	Kw14.01	RF spectrum
	Kw14.02	RF interference
	Kw14.03	Effects of environmental factors (e.g., terrain, weather)
	Kw14.04	Radiation patterns
	Kw14.05	Antenna theory
	Kw14.06	Waveform propagation methods
	Kw14.07	Transmission theory
Kw15	KNOWLEDGE OF COMPUTER NETWORKING	
	Kw15.01	Connectivity principles
	Kw15.02	Networking hardware
	Kw15.03	Networking software
	Kw15.04	Cloud computing
	Kw15.05	Networking security principles
Kw16	KNOWLEDGE OF COMMUNICATION SYSTEM THEORY	
	Kw16.01	Communication concepts
	Kw16.02	Fundamentals of communication systems
	Kw16.03	Types of communication systems

ID	Knowledge Topic	Knowledge Fact
	Kw16.04	Components of communication systems
	Kw16.05	Applications of communication systems
	Kw16.06	Limitations of communication systems
Kw17	KNOWLEDGE OF AUTOMATION SYSTEM THEORY	
	Kw17.01	Automation concepts
	Kw17.02	Fundamentals of automation systems
	Kw17.03	Types of automation systems
	Kw17.04	Components of automation systems
	Kw17.05	Applications of automation systems
	Kw17.06	Limitations of automation systems
Kw18	KNOWLEDGE OF NAVIGATIONAL SYSTEM THEORY	
	Kw18.01	Navigation concepts
	Kw18.02	Fundamentals of navigation systems
	Kw18.03	Types of navigation systems
	Kw18.04	Components of navigation systems
	Kw18.05	Applications of navigation systems
	Kw18.06	Limitations of navigation systems
Kw19	KNOWLEDGE OF SURVEILLANCE SYSTEMS THEORY	
	Kw19.01	Surveillance concepts
	Kw19.02	Fundamentals of surveillance systems
	Kw19.03	Types of surveillance systems
	Kw19.04	Components of surveillance systems
	Kw19.05	Applications of surveillance systems
	Kw19.06	Limitations of surveillance systems
Kw20	KNOWLEDGE OF ENVIRONMENTAL SYSTEM THEORY	
	Kw20.01	Power conditioning theory
	Kw20.02	HVAC theory
	Kw20.03	Plumbing principles
	Kw20.04	Building automation control theory
	Kw20.05	Basic building construction
Kw21	KNOWLEDGE OF FACILITIES, SERVICES, AND EQUIPMENT	
	Kw21.01	FSE functionality
	Kw21.02	FSE stakeholders
	Kw21.03	How the FSE works
	Kw21.04	FSE policies and procedures
	Kw21.05	Components of FSE
	Kw21.06	Location of FSE and components
	Kw21.07	Applications of FSE
	Kw21.08	Limitations of FSE
	Kw21.09	FSE infrastructure
	Kw21.10	Interoperability of FSEs
	Kw21.11	Impact of weather on FSE
	Kw21.12	PM procedures

ID	Knowledge Topic	Knowledge Fact
	Kw21.13	CM procedures
	Kw21.14	Troubleshooting procedures
	Kw21.15	Certification procedures
	Kw21.16	FSE spare part procurement procedures
	Kw21.17	FSE spare part inventory procedures
	Kw21.18	Impact of FSE degradation or loss to stakeholders
	Kw21.19	FSE activity logging procedures
	Kw21.20	Availability and reliability performance metrics
Kw22	KNOWLEDGE OF TOOLS & EQUIPMENT	
	Kw22.01	Types of Tools & Equipment
	Kw22.02	Functionality of Tools & Equipment
	Kw22.03	Storage of Tools & Equipment
	Kw22.04	Appropriate Tools & Equipment for task
	Kw22.05	Use of Tools & Equipment
	Kw22.06	Limitations of the Tools & Equipment
	Kw22.07	Maintenance of Tools & Equipment
	Kw22.08	Inspection requirements for Tools & Equipment
	Kw22.09	Degradation indicators for Tools & Equipment
	Kw22.10	Minor troubleshooting procedures for Tools & Equipment
	Kw22.11	Procurement procedures for Tools & Equipment
	Kw22.12	Inventory procedures for Tools & Equipment

APPENDIX E: SKILLS LIST

ID	Skill	Definition
Sk01	COGNITIVE SKILLS	
Sk01.01	Active Learning	Skill at understanding the implications of new information for both current and future problem solving and decision-making
Sk01.02	Mathematics	Skill at using mathematics to solve problems
Sk01.03	Reading Comprehension	Skill at understanding written sentences in English in work-related documents
Sk01.04	Communication Flexibility	Skill at modifying content and style of communication to be appropriate for the audience and medium
Sk01.05	Writing	Skill at communicating effectively in English in writing
Sk02	INTERPERSONAL SKILLS	
Sk02.01	Instructing	Skill at using OJT training or instructional methods and procedures appropriate for the situation
Sk02.02	Interpersonal	Skill at interpersonal relations
Sk02.03	Teamwork	Skill at working in teams to accomplish a common goal
Sk02.04	Negotiation	Skill at bringing others together and trying to reconcile differences by compromising if necessary
Sk02.05	Persuasion	Skill at persuading others to change their minds or behavior
Sk02.06	Service Orientation	Skill at actively looking for ways to help people
Sk02.07	Leadership	Skill at leading or organizing efforts to accomplish projects
Sk03	SELF-MANAGEMENT SKILLS	
Sk03.01	Fatigue Management	Skill at managing and minimizing fatigue
Sk03.02	Prioritization	Skill at prioritizing job tasks
Sk03.03	Resources	Skill at utilizing resources (e.g., people, money, materials) efficiently
Sk03.04	Time Management	Skill at managing your time and the time of others
Sk03.05	Stress Management	Skill at continuing to work effectively even under stress
Sk04	PSYCHOMOTOR SKILLS	
Sk04.01	Gross Motor	Skill at performing gross motor movements
Sk04.02	Fine Motor	Skill at performing fine motor movements
Sk04.03	Typing	Skill at typing

ID	Skill	Definition
Sk05	RISK MITIGATION SKILLS	
Sk05.01	Safety Procedure Adherence	Skill at adhering to safety procedures
Sk05.02	Hazard and Vulnerability Identification	Skill at identifying safety hazards and security vulnerabilities
Sk05.03	Risk Assessment	Skill at assessing risks
Sk05.04	Risk Mitigation	Skill at mitigating risks
Sk05.05	Housekeeping	Skill at housekeeping in the workplace
Sk05.06	Medical Assistance	Skill at providing basic medical assistance (e.g., first aid, CPR, AED)
Sk05.07	Establishing Situation Awareness	Skill at interpreting information and the status of the current situation; Determine the net effect of FSEs under various levels of operational status
Sk05.08	Anticipating Future Situation	Skill at predicting the consequences of the current situation
Sk05.09	Trend Analysis	Skill at performing trend analysis
Sk06	TECH OPS TECHNICAL SKILLS	
Sk06.01	Modifications	Skill at proposing, developing, and/ or evaluating modifications
Sk06.02	Troubleshooting	Skill at troubleshooting
Sk06.03	Assembly and Disassembly	Skill at assembly and disassembly
Sk06.04	Interpreting Technical Drawings	Skill at interpreting technical drawings
Sk06.05	Modifying Technical Drawings	Skill at marking up changes to technical drawings
Sk06.06	Computer Scripts	Skill at writing simple computer scripts for various purposes
Sk06.07	Computer Networking	Skill at computer networking
Sk06.08	Computer Maintenance	Skill at computer hardware and software maintenance
Sk06.09	Mechanical Maintenance	Skill at mechanical system maintenance
Sk06.10	Electronic Maintenance	Skill at electronic system maintenance
Sk06.11	Electrical Maintenance	Skill at electrical system maintenance
Sk06.12	Pneumatic and Hydraulic Maintenance	Skill at pneumatic and hydraulic system maintenance
Sk06.13	Construction Techniques	Skill at basic construction techniques
Sk07	TOOLS & EQUIPMENT SKILLS	
Sk07.01	Tools & Equipment Selection	Skill at selecting appropriate Tools & Equipment

ID	Skill	Definition
Sk07.02	Tools & Equipment Organization	Skill at organizing Tools & Equipment and spare parts
Sk07.03	Tools & Equipment Use	Skill at using Tools & Equipment
Sk07.04	Tools & Equipment Maintenance	Skill at maintaining Tools & Equipment

ID	Ability	Definition
Ab01	SENSORY ABILITIES	
Ab01.01	Far Vision	The ability to see details at a distance
Ab01.02	Near Vision	The ability to see details at close range (i.e., within a few feet of the observer)
Ab01.03	Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object
Ab01.04	Peripheral Vision	The ability to see objects or the movement of objects to the side when your eyes are looking ahead
Ab01.05	Night Vision	The ability to see under low light conditions
Ab01.06	Glare Tolerance	The ability to see objects in the presence of glare or lighting that is bright relative to surroundings
Ab01.07	Color Detection	The ability to identify colors
Ab01.08	Color Discrimination	The ability to differentiate between colors (e.g., shades, brightness)
Ab01.09	Auditory Detection	The ability to detect sounds across a range of frequencies and volumes
Ab01.10	Auditory Discrimination	The ability to differentiate between sounds that vary in pitch and loudness
Ab01.11	Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds
Ab01.12	Sound Localization	The ability to discern the direction from which a sound originated
Ab01.13	Olfactory Discrimination	The ability to differentiate between odors
Ab01.14	Tactile Discrimination	The ability to differentiate between tactile sensations (e.g., temperature, vibration)
Ab01.15	Proprioception	The ability to sense the relative position of your body parts and the strength of effort being used
Ab01.16	Haptic Identification	The ability to identify objects through the sense of touch
Ab02	VERBAL ABILITIES	
Ab02.01	Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences
Ab02.02	Oral Expression	The ability to verbally communicate information so others will understand
Ab02.03	Speech Recognition	The ability to identify and understand the speech of another person
Ab02.04	Written Expression	The ability to communicate information and ideas in writing so others will understand
Ab02.05	Speech Clarity	The ability to speak clearly so others can understand you

ID	Ability	Definition
Ab03	NUMERICAL ABILITIES	
Ab03.01	Mathematical Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem
Ab03.02	Number Facility	The ability to add, subtract, multiply, or divide correctly
Ab04	REASONING ABILITIES	
Ab04.01	Analytic Ability	The ability to make sense of, combine, and organize information into meaningful patterns
Ab04.02	Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong
Ab04.03	Pattern Detection	The ability to identify or detect a known pattern (e.g., figure, object, word, sound) that is hidden in other distracting material
Ab04.04	Cognitive Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules
Ab04.05	Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense
Ab04.06	Inductive Reasoning	The ability to combine pieces of information, that may initially seem unrelated, to form general rules or conclusions
Ab04.07	Idea Generation	The ability to come up with a number of ideas about a topic irrespective of quality, correctness, or creativity
Ab05	SPATIAL ABILITIES	
Ab05.01	Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you
Ab05.02	Visualization	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged
Ab06	MEMORY	
Ab06.01	Working Memory	The ability to actively maintain information in memory in support of a task
Ab06.02	Long-Term Memory	The ability to remember information over periods of time ranging from minutes to years
Ab06.03	Concentration	The ability to concentrate on a task over a period of time without being distracted
Ab06.04	Time Sharing	The ability to quickly shift back and forth between two or more activities or sources of information (e.g., speech, sounds, touch)
Ab07	PHYSICAL ABILITIES	
Ab07.01	Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or becoming fatigued
Ab07.02	Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects

ID	Ability	Definition
Ab07.03	Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time, which involves muscular endurance and resistance to muscle fatigue
Ab07.04	Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/ or legs
Ab07.05	Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/ or legs
Ab07.06	Dynamic Body Coordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion
Ab07.07	Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position
Ab07.08	Stamina	The ability to exert yourself physically over long periods without getting winded or out of breath
Ab08	PSYCHOMOTOR ABILITIES	
Ab08.01	Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects
Ab08.02	Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects
Ab08.03	Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position
Ab08.04	Precise Use of Controls	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions
Ab08.05	Multi-Limb Coordination	The ability to coordinate two or more limbs (e.g., two arms, two legs, one leg and one arm) while sitting, standing, or lying down
Ab08.06	Sensory-Motor Coordination	The ability to coordinate movements with sensory stimulus
Ab08.07	Response to Competing Stimuli	The ability to choose an appropriate action in response to two or more different stimuli (e.g., lights, sounds, pictures)
Ab09	PERSONALITY	
Ab09.01	Work-Schedule Flexibility	The ability to work according to various schedules including rotating shifts, night shifts, and irregular work hours
Ab09.02	Stress Tolerance	The ability to function even during periods of high stress
Ab09.03	Conscientiousness	Being careful, thorough, precise, detail-oriented, organized, hardworking, and achievement-oriented

ID	Ability	Definition
Ab09.04	Sense of Ownership	Ability to accept personal responsibility for your FSE and other technical work
Ab09.05	Integrity	Propensity to consistently hold yourself to ethical standards
Ab09.06	Autonomy	Ability to work independently and make important decisions on your own
Ab09.07	Time Consciousness	Ability to manage time by making decisions and completing work in a timely manner
Ab09.08	Emotional Stability	Ability to self-regulate emotions and behavior
Ab09.09	Self-awareness	Internal awareness of your actions and attitudes, including knowing your limitations
Ab09.10	Adaptability	Ability to work in unstructured or changing environments
Ab09.11	Patience	Ability to accept or tolerate delays, problems, or suffering without becoming annoyed or anxious when working with others or FSEs
Ab09.12	Assertiveness	Ability to be upfront about your wants and needs, while still being considerate of the rights, wants, and needs of others
Ab09.13	Risk Tolerance	Ability to accept the substantial risks inherent in the NAS while simultaneously embracing the requirements of the job, including the role you play in mitigating risks
Ab09.14	Environmental Tolerance	Ability to work in uncomfortable environments (e.g. extreme weather, cramped quarters, high noise, low or bright light, at heights, around water)

APPENDIX G: TOOLS & EQUIPMENT LIST

ID	T&E Description
TE01	COMMUNICATIONS EQUIPMENT
TE01.01	Handsets
TE01.02	Headsets; Headphones
TE01.03	Radios
TE01.04	Phones
TE01.05	Public address (PA) systems
TE02	COMPUTER HARDWARE
TE02.01	Computer terminals
TE02.02	Networking hardware
TE02.03	Maintenance Data Terminal (MDT)
TE02.04	Centralized Maintenance Terminal (CMT)
TE02.05	Laptops
TE02.06	Keyboards
TE02.07	Mouse devices
TE02.08	Printer; Scanners; Copiers; Fax machines
TE02.09	Speakers
TE02.10	Flash drives
TE02.11	Frac keys
TE02.12	Wi-Fi hotspots; Air cards
TE02.13	Tablets
TE02.14	Televisions; Projectors; Monitors
TE02.15	GPS devices
TE03	COMPUTER SOFTWARE/APPLICATIONS
TE03.01	Time and attendance software
TE03.02	Ordering and returns (logistics management) software
TE03.03	FSE status monitoring software
TE03.04	Travel management software
TE03.05	Maintenance logging software
TE03.06	Maintenance management software for FSEs
TE03.07	Learning management software
TE03.08	Personnel records management software
TE03.09	FSE interface software
TE03.10	Operating systems
TE03.11	Basic office/business software
TE03.12	Configuration management software
TE04	LIGHT VEHICLES
TE04.01	Motor vehicles
TE04.02	Trailers
TE04.03	All terrain vehicles (ATV)
TE04.04	Snowmobiles
TE04.05	Golf carts
TE04.06	Lawnmowers

ID	T&E Description
TE04.07	Boats
TE05	HEAVY VEHICLES
TE05.01	Road graders
TE05.02	Front end loaders
TE05.03	Bulldozers
TE05.04	Backhoes
TE05.05	Elevated work platforms
TE05.06	Telehandlers
TE05.07	Forklifts
TE05.08	Dump trucks
TE05.09	Tractors
TE05.10	Trenchers
TE05.11	Augers
TE05.12	Snowcats
TE05.13	Snow plows
TE06	HEAVY EQUIPMENT
TE06.01	Generators
TE06.02	Hoists
TE06.03	Motorized stair-steppers
TE06.04	Lifts
TE07	HAND TOOLS
TE07.01	Electrostatic Discharge (ESD) protection equipment
TE07.02	Label makers
TE07.03	Stencil kits
TE07.04	Barcoding equipment
TE07.05	Coaxial stripping and terminating tools
TE07.06	Network cabling terminating tools
TE07.07	Punchdown tools
TE07.08	Fiber optic terminating tools
TE07.09	Test leads
TE07.10	Wire pin and plug tools
TE07.11	Wire cutters; Wire strippers
TE07.12	Wire wrap tools
TE07.13	Draw wires
TE07.14	Tie wrap tools
TE07.15	Banding tools
TE07.16	Insulated tools
TE07.17	Magnetic tools
TE07.18	Magnifying glasses
TE07.19	Mirrors
TE07.20	Fine adjustment tools
TE07.21	Dental tools
TE07.22	Chip insertion tools
TE07.23	Hemostats

ID	T&E Description
TE07.24	Multitools
TE07.25	Pliers
TE07.26	Cannon plug pliers
TE07.27	Vice grips
TE07.28	Wrenches
TE07.29	Torque wrenches
TE07.30	Hammers
TE07.31	Screwdrivers
TE07.32	Rivet tools
TE07.33	Clamps
TE07.34	Diagonal cutters
TE07.35	Bolt cutters
TE07.36	Punches
TE07.37	Taps; Dies
TE07.38	Deburring tools
TE07.39	Extractors
TE07.40	Drills
TE07.41	Speed handles
TE07.42	Bits
TE07.43	Sockets
TE07.44	Files
TE07.45	Saws
TE07.46	Knives
TE07.47	Axes
TE07.48	Pry bars
TE07.49	Anvils
TE07.50	Tool sharpeners
TE07.51	Levels
TE07.52	Carpenter squares
TE07.53	Length measuring tools
TE07.54	Time measuring tools
TE07.55	Chronometers
TE07.56	Cable diameter measuring tools
TE07.57	Micrometers
TE07.58	Feeler gauges
TE07.59	Scales
TE07.60	Padlocks
TE07.61	Keys
TE07.62	Writing utensils
TE07.63	Flashlights
TE07.64	Task lighting
TE07.65	Plumber's snakes
TE07.66	Cameras
TE07.67	Power strips; Extension cords
TE07.68	Jumper cables

ID	T&E Description
TE07.69	ID cards; Common Access Cards (CAC)
TE07.70	Squeegees
TE07.71	Grease guns
TE07.72	Paintbrushes
TE07.73	Wire brushes
TE07.74	Scrapers
TE07.75	Mops; Brooms; Dustpans
TE07.76	Gardening tools; Landscaping tools
TE07.77	Floor magnets
TE07.78	Hand augers
TE07.79	Post hole digger
TE07.80	Theodolites
TE07.81	Filter removal tools
TE07.82	Card removal tools
TE07.83	Card extenders
TE07.84	Pallet jacks
TE07.85	Bulkhead removers
TE07.86	Tile pullers
TE07.87	Gear pullers
TE07.88	Trash bins
TE07.89	Storage tanks
TE07.90	Coolers; Jugs
TE07.91	Tool containers
TE07.92	Wheelbarrows
TE07.93	Hand trucks; Dollys; Carts
TE07.94	Safety railings
TE07.95	Sawhorses; Work tables
TE07.96	Ladders; Stools
TE07.97	Pop-up canopies
TE07.98	Scaffolding
TE08	POWER-ASSISTED TOOLS
TE08.01	Soldering tools
TE08.02	Timing lights
TE08.03	Inverters
TE08.04	Line locators; Cable locators
TE08.05	Cable cutters
TE08.06	Crimping tools
TE08.07	Degaussing tools
TE08.08	Nail guns; Staple guns
TE08.09	Impact drivers
TE08.10	Drills
TE08.11	Drill presses
TE08.12	Jackhammers
TE08.13	Punchouts; Knockouts
TE08.14	Conduit benders

ID	T&E Description
TE08.15	Saws
TE08.16	Tile cutters
TE08.17	Plasma cutters
TE08.18	Acetylene torches
TE08.19	Welders
TE08.20	Grinders
TE08.21	Planers
TE08.22	Pressure washers
TE08.23	Sand blasters
TE08.24	Multi-purpose rotary tools
TE08.25	Power generators
TE08.26	Pumps
TE08.27	Vacuums
TE08.28	Air purifiers
TE08.29	Air compressors
TE08.30	Dehumidifiers
TE08.31	Fans
TE08.32	Air blower/ventilator
TE08.33	Air conditioners
TE08.34	Heaters
TE08.35	Heat guns
TE08.36	Refrigerant recovery machines
TE08.37	Guy-wire tensioning gauges
TE08.38	Paint sprayers
TE08.39	Weed trimmers
TE08.40	Leaf blowers
TE08.41	Dirt compactors
TE08.42	Manhole cover lifts
TE08.43	Cement mixers
TE08.44	Wildlife deterrents
TE09	TEST EQUIPMENT
TE09.01	Audio analyzers
TE09.02	Harmonic analyzers
TE09.03	Audio signal generators
TE09.04	Radio Frequency (RF) signal generators
TE09.05	Selective level meters
TE09.06	Network analyzers
TE09.07	Protocol analyzers
TE09.08	LANmeters
TE09.09	Frequency counters
TE09.10	Spectrum analyzers
TE09.11	Modulation meters
TE09.12	Radio direction finders
TE09.13	Oscilloscopes
TE09.14	Time domain reflectometers (TDRs)

ID	T&E Description
TE09.15	Fiber optics test sets
TE09.16	PC/LAN/Phone Patch cable testers
TE09.17	Communication test sets
TE09.18	Push-to-Talk (PTT) test box
TE09.19	Voice communication test sets
TE09.20	Line testing and tracing equipment
TE09.21	Telecom line testers
TE09.22	Responders
TE09.23	Power meters
TE09.24	Multimeters
TE09.25	Vector volt meters
TE09.26	Megohmmeters
TE09.27	Battery testers
TE09.28	Ground Fault Circuit Interrupt (GFCI) Testers
TE09.29	Breaker testers
TE09.30	Phase testers
TE09.31	Power quality monitors
TE09.32	Load banks
TE09.33	Precision power supplies
TE09.34	Digital manometers
TE09.35	HVAC pressure testers
TE09.36	Antifreeze testers
TE09.37	Digital manifolds
TE09.38	Hydrometers
TE09.39	Digital density meters
TE09.40	Temperature dew point calculators
TE09.41	Infrared (IR) imagers
TE09.42	Color monitor analyzers
TE09.43	Global Positioning Satellite (GPS) clocks
TE09.44	Portable Instrument Landing System (ILS) receivers
TE09.45	Monopulse beacon test sets
TE09.46	Azimuth generator test sets
TE10	TEST EQUIPMENT ACCESSORIES
TE10.01	Directional couplers
TE10.02	Signal Attenuators
TE10.03	Dummy loads
TE10.04	Radio Frequency (RF) detectors
TE10.05	Impedance matching test adaptors
TE11	HEALTH AND SAFETY EQUIPMENT
TE11.01	Safety hooks
TE11.02	Discharge sticks
TE11.03	Hot sticks
TE11.04	Arc flash equipment
TE11.05	Welding helmets
TE11.06	Foul weather gear

ID	T&E Description
TE11.07	Climbing gear
TE11.08	Fall arrest kits
TE11.09	Protective suits
TE11.10	Hard hats; Helmets
TE11.11	Face shields
TE11.12	Eye protection
TE11.13	Ear protection
TE11.14	Respirators; Masks
TE11.15	Life vests
TE11.16	Gloves
TE11.17	Leg sleeves
TE11.18	Safety shoes
TE11.19	Warning signs; Warning cones; Warning chains
TE11.20	Confined space gas detectors
TE11.21	Gas detectors
TE11.22	Eyewash stations
TE11.23	Fire extinguishers
TE11.24	Lockout/Tagout kits (LOTO)
TE11.25	Battery Personal Protective Equipment (PPE) kit
TE11.26	Spill kits
TE11.27	Emergency roadside kits
TE11.28	First aid kits
TE11.29	Automated External Defibrillators (AED)
TE12	MATERIALS
TE12.01	Glow sticks
TE12.02	Bulbs; Lamps
TE12.03	Batteries
TE12.04	Fuses
TE12.05	Solder
TE12.06	Solder flux
TE12.07	Electrical wire and cables
TE12.08	Fiber optic cables
TE12.09	Wire and cable connectors and caps
TE12.10	Pins
TE12.11	Terminal lug kits
TE12.12	Heat shrink tubing; Cold shrink tubing
TE12.13	Tie backs; Zip ties; Wire ties
TE12.14	Tapes
TE12.15	Circuit breaker collars
TE12.16	Couplings
TE12.17	Conduit
TE12.18	Conduit straps
TE12.19	Clamps
TE12.20	Fasteners
TE12.21	Putties

ID	T&E Description
TE12.22	Thread seal tape
TE12.23	Filters
TE12.24	Valves
TE12.25	Belts
TE12.26	Hoses
TE12.27	Seals
TE12.28	Gaskets
TE12.29	Fuels
TE12.30	Refrigerants
TE12.31	Sealants
TE12.32	Thermal compounds
TE12.33	Lubricants
TE12.34	Glues; Adhesives
TE12.35	Paints; Lacquers
TE12.36	Pesticides; Herbicides
TE12.37	Alcohols
TE12.38	Detergents; Waxes; Cleaners
TE12.39	Hand sanitizers
TE12.40	Water
TE12.41	Saline solution
TE12.42	Rags; Paper towels
TE12.43	Sandpaper; Emery cloth
TE12.44	Measuring sticks
TE12.45	Ballast
TE12.46	Sandbags
TE12.47	Ropes
TE12.48	Chains
TE12.49	Bungee cords; Straps
TE12.50	Graphite
TE12.51	Concrete
TE12.52	CAD welding materials
TE12.53	Baking soda
TE12.54	Water testing kits
TE12.55	Fuel sample kits
TE12.56	Oil sample kits
TE12.57	Antistatic sprays
TE12.58	Freeze sprays
TE12.59	Air fresheners
TE12.60	Office supplies
TE12.61	Ammunition
TE12.62	Building materials

APPENDIX H: ATSS JOB ANALYSIS SURVEY FOR 2016

Airway Transportation Systems Specialists (ATSSs or 2101s) at Systems Support Centers are on the front-lines for operating and maintaining the U.S. National Airspace System (NAS). It is an important job, critical to the safety, efficiency, and security of flights operating in the NAS.

The NAS is only growing more complex. NextGen is adding new systems and services to the NAS – but legacy systems will continue to be a part of the NAS, and maintained by field 2101s. Understanding what work will be performed on the mix of legacy and new systems and what knowledge and skills will be required of ATSSs in the mid-term is a significant challenge. The Technician Workforce Strategy, released in September 2016, helps us to meet that challenge.

As part of that strategy, Technical Operations has launched a comprehensive job analysis for ATSSs working in Systems Support Centers in cooperation with the Professional Aviation Safety Specialists (PASS). The last job analysis for ATSSs (2101s) was completed in 2002, over a decade ago. It is time to re-examine the job, describe the work performed and identify the required knowledge, skills, and abilities. The results of the ATSS Job Analysis Survey will be used to improve our 2101 hiring and training process.

Technical Operations engaged the FAA Civil Aerospace Medical Institute, through the FAA's NextGen Human Factors Division, to conduct the analysis of the nonsupervisory ATSS job at Systems Support Centers. In the first phase of the work, CAMI conducted three workshops with incumbent, non-supervisory 2101s to build descriptions of the work performed by 2101s at SSCs and of the knowledge, skills, and abilities required to do that work. This job analysis survey is based on the products developed by rank-and-file 2101s in those workshops.

This ATSS Job Analysis Survey 2016 is the primary method for collecting data from incumbent ATSSs about their work and the KSAs required. No one knows about the work better than the people doing the work. This ATSS Job Analysis Survey 2016 is your opportunity to tell us about your work and which knowledge, skills, and abilities are important to the job.

The survey reflects the complexity of the job. So we will tell you upfront that it is long, covering job tasks and knowledge, skills, and abilities. Field ATSSs have a lot of duties and perform a lot of tasks, and the body of knowledge required and skills used are equally broad. To ease the burden on participants, CAMI researchers developed two versions of the survey of nearly equal length, each with unique content and some overlapping items. But it is still long. This is not a job that can be described by 10 tasks and 5 KSAs. There's a lot to the job of 2101s at SSCs.

We hope that you will stick with it and finish the survey. It is important, in just the same way that a sound foundation is important to building a house. The data collected by this ATSS Job Analysis Survey will be the foundation for our workforce strategy.

With that, welcome to the ATSS Job Analysis Survey 2016.

[Vaughn Turner]   [Mike Perrone]

Introduction

Purpose. The purpose of the ATSS Job Analysis Survey 2016 is to gather baseline information about the work performed by and the knowledge, skills, and abilities (KSAs) required of Airway Transportation Systems Specialists (ATSS; FV-2101) assigned to Systems Support Centers (SSCs). The ATSS Job Analysis Survey 2016 is about the work you do at your SSC and the knowledge, skills, and abilities required for that work. It is not about you as an individual; it is about the job you do. The data collected with this survey will be used to improve how Technical Operations (AJW) hires new ATSSs into this critical, safety-related workforce.

Overview of the ATSS Job Analysis Survey 2016. The Job Analysis Survey has seven sections:
1. Demographics (Type of SSC)
2. Work Statements to be rated on Frequency and Importance
3. Other activities performed in the course of your duties and tasks
4. Additional questions about your work environment
5. Average proportion of work day spend on overall duties
6. Knowledge, Skills, and Abilities (KSA) rated on Importance, Level of Mastery, and When Needed
7. Comments

It will take about 2 hours to complete the ATSS Job Analysis Survey 2016 from start to finish. You will be able to stop, if needed, and then resume where you left off. More information on that is provided below.

Authority. This ATSS Job Analysis Survey 2016 is conducted by the FAA's Civil Aerospace Medical Institute (CAMI) at the request of the Vice-President of the Technical Operations Services. The survey is an element of CAMI's ongoing research on personnel selection in critical safety-related occupations. The CAMI research program is conducted under the authority of the *Aviation Safety Research Act of 1988* (Public Law 100-591), Section 44507 of Title 49 of the United States Code (49 U.S.C. § 44507).

Coordination. The ATSS Job Analysis Survey 2016 has been coordinated with the Professional Aviation Safety Specialists (PASS) in accordance with Article 74 (Job Task Analysis) of the FAA-PASS collective bargaining agreement. The results of this survey will be shared with PASS as required by the collective bargaining agreement. The job analysis project and survey were also reviewed by the Office of Aerospace Medicine Institutional Review Board (IRB) in accordance with Part 46 (Protection of Human Subjects in Research) of Title 45 of the Code of Federal Regulations (45 C.F.R § 46).

Confidentiality Assured. CAMI and the project team strictly adhere to professional ethical standards and principles, public law, and federal policies for safeguarding the confidentiality of all participants in this survey. All responses to survey and demographic items are confidential and anonymous, and only group statistics shall be used in reports, briefings, or presentations.

The ATSS Job Analysis Survey 2016 is hosted by a CAMI contractor (Cherokee CRC, LLC) off the FAA network. The contractor will deliver a data file to the FAA for analysis. That data file will not have any personally identifying information.

Accessing, stopping, and resuming the survey. The only way you can access this survey is through the embedded link provided in the invitational e-mail you received. You can stop at any point in the survey; the survey software (Qualtrics®; www.qualtrics.com) saves your responses as you progress from page to page. You can resume by clicking on the embedded link (survey URL) in the invitational e-mail.

We strongly recommend that you try to complete the survey in one session if possible.

Cookies. The Qualtrics® survey system uses a functional cookie to track your progress in the survey. No other software element is downloaded to your computer. Your browser must be configured to allow cookies from Qualtrics® for the survey to work properly. Your local IT support can help you configure your browser to allow the Qualtrics® survey functional cookie. The functional cookie is dropped when a survey is completed - it's not analytical and cannot scan the system. Qualtrics program looks for the cookie when a survey is accessed to prevent participants from completing the survey more than once. The cookie expires one year after the completion of the survey. As described previously, the data file delivered to the FAA by the contractor will not have any personally identifying information.

Data Retention. The raw response data from this ATSS Job Analysis Survey 2016 will be maintained by CAMI for ten (10) years or until a new job analysis is conducted. The aggregate, statistical results derived from the raw response data will be maintained by CAMI indefinitely. All reports and briefings based on the ATSS Job Analysis Survey 2016 will be maintained by CAMI indefinitely.

Voluntary. Participation this ATSS Job Analysis Survey is completely voluntary. You may choose freely to participate or not. You may choose to skip ratings of any given item, but we encourage you to please complete all ratings. You may stop and exit the survey at any time.

Work Time Authorized. You are authorized to complete this survey during normal working hours. Use the following code in LDR to record your time spent on the survey:

12XXFAORGIMP OR0100

Point of Contact. If you have any questions or comments about the ATSS Job Analysis Survey 2016 or to request a copy (PDF) of the informed consent letter, please contact

    Dana Broach, Ph.D. (AAM-520)
    NAS Human Factors Safety Research Laboratory
    FAA Civil Aerospace Medical Institute
    P.O. Box 25082
    Oklahoma City, OK 73125
    Voice: (405) 954-4839
    Fax: (405) 954-4852
    E-mail: Dana.Broach@FAA.GOV

You can also request a blank Adobe® PDF of the ATSS Job Analysis Survey 2016 for information purposes only from Dr. Broach. However, the only way to provide data for this survey is complete it on-line, through the link (URL) provided in the invitational e-mail. Please do not send the PDF back to Dr. Broach with responses marked.

Informed Consent

By clicking the Yes button below, you are indicating that you have read the description of the survey, are an FAA employee in the Technical Operations field workforce, are age 18 or older, that you agree to the terms of this informed consent as described above, and are willing to participate in the ATSS Job Analysis Survey 2016. Click here for a PDF of the informed consent terms and conditions which you can print and/or save to your computer (opens in a new window).

○ Yes, I agree to participate in the ATSS Job Analysis Survey 2016. I understand the purpose and nature of this survey and I am participating voluntarily. I understand that I am authorized to complete this survey during normal working hours. I understand that I can withdraw from completing the survey at any time, without any penalty or consequences.

○ No, I do not agree to participate in the ATSS Job Analysis Survey 2016 and wish to exit the survey at this time. *[Routes to survey Exit 1]*

[Survey Exit 1: This page is displayed if and only if the participant selects "No" on the Informed Consent page]

You have indicated you do not want to participate in the ATSS Job Analysis Survey 2016. While getting as many ATSSs to participate as possible is important, the survey is voluntary and your choice to decline must be respected.

To leave the survey, select the Exit Now button below. If you've changed your mind, select the Return to Survey button instead.

- ○ EXIT SURVEY
- ○ RETURN TO SURVEY

Section 1: Demographics [Required]

The following questions are for statistical purposes only, to determine the how well participants in the job analysis survey represent the non-supervisory SSC ATSS workforce overall.

Do you work in a (mark one only)
- ○ Systems Support Center (SSC)
- ○ Any other organization (not a SSC) *[Routes to Survey Exit 2]*

[Displayed only if SSC marked above]
What kind of SSC do you work in (mark all that apply if a multi-specialty SSC)?
- ○ Communications (COMM)
- ○ Navigation (NAV)
- ○ Automation (AUTO)
- ○ Surveillance (SURV/RADAR)
- ○ Environmental (ENV)

[Go to Section 2 Task Rating]

[Survey Exit 2: This page displayed if and only if participant marks "Any other organization (not a SSC)" on the Demographics]

You've indicated that you work at an organization other than a System Support Center (SSC). We are not presently collecting job analysis data for other types of Technical Operations organizations such as Integrated Operations Centers (IOCs), support staffs, etc. Thank you. The survey will now close.

[Exits survey]

Section 2: Work Statements to be rated on Frequency and Importance

Instructions for Rating Work Statements

The work performed by SSC ATSSs is complex and wide-ranging as reflected by the list of tasks to be rated. The tasks were developed by 3 panels of non-supervisory SSC ATSSs from across the NAS.

You will be asked to rate each task on two dimensions: (1) how often (how frequently) you perform or do the task, on average, and (2) how important each task is to NAS safety, efficiency, or security.

To do this most efficiently, you will be asked to rate how often (frequency) you perform the tasks in the first pass through the task list. An explanation of the frequency rating scale will be presented at the start of the first pass through the task list.

Then you will be asked to rate the importance of the tasks that you do in the second pass through the task list. An explanation of the importance rating scale will be presented at the start of the second pass through the task list. Tasks that you marked as not being done (e.g., "I don't perform this task") will not be presented in the second pass through the task list (there's no sense in rating the importance of a task you don't do).

There are 105 task statements to be rated.

Many of the task statements, as you might expect, focus on work related to the maintenance of facilities, services, and equipment. The acronym "FSE" will be used to generically refer to a single facility, service, system or equipment, while "FSEs" will be used to generically refer to multiple facilities, services, systems, and equipment.

Instructions for rating task Frequency

Read each task statement, and think about how often, on average, you perform that task, considering all the facilities, services, and equipment for which you are responsible in the SSC. Then indicate on the rating scale about how often, on average, you perform that particular task.

For example, if you perform preventative maintenance on one system or another several days per week, on average, then you would rate the frequency of performing preventative maintenance as about a "5" – Weekly. But say you install a modification of a system just twice a year, on average. Then you would rate the frequency of installing FSE modifications as a "2" – Semi-annually.

Some tasks in Technical Operations are performed only on an "as needed basis" Corrective maintenance is an example. If you perform corrective maintenance about once or twice a month, on average, then you would rate the frequency of performing corrective maintenance as about a "4" – Monthly. These are just examples.

Use your best judgment as to *about* how often you perform each task using the following scale:

On average, how frequently do you perform this task?
0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

Choose the frequency rating that best describes your experience performing a task, on average, across all the facilities, services, and equipment (FSE) for which you are responsible in the SSC.

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
1	**Establish Situation Awareness** *[Form A]*								
1.1	Report to your duty station	⓪	①	②	③	④	⑤	⑥	⑦
1.2	Receive in-person briefing regarding the current status of facilities, services, and equipment (FSEs), NAS operations, and environmental conditions	⓪	①	②	③	④	⑤	⑥	⑦
1.3	Retrieve information regarding the current status of FSEs, NAS operations, and environmental conditions	⓪	①	②	③	④	⑤	⑥	⑦
1.4	Scan FSEs by in-person inspection	⓪	①	②	③	④	⑤	⑥	⑦
1.5	Scan FSEs by remote inspection	⓪	①	②	③	④	⑤	⑥	⑦
1.6	Evaluate current and projected state of FSEs	⓪	①	②	③	④	⑤	⑥	⑦
1.7	Evaluate current and projected state of NAS operations and environmental conditions	⓪	①	②	③	④	⑤	⑥	⑦
1.8	Monitor FSEs continually	⓪	①	②	③	④	⑤	⑥	⑦
1.9	Monitor NAS operations and environmental conditions continually	⓪	①	②	③	④	⑤	⑥	⑦
1.10	Brief others regarding the status of FSEs, NAS operations, and environmental conditions	⓪	①	②	③	④	⑤	⑥	⑦
2	**Perform Administrative Tasks** *[Form B]*								

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
2.1	Complete human resource enrollment requirements	⓪	①	②	③	④	⑤	⑥	⑦
2.2	Maintain currency, security, and condition of your Personal Identity Verification (PIV) badge, PIV token, facility badges, and keys	⓪	①	②	③	④	⑤	⑥	⑦
2.3	Complete required non-technical training	⓪	①	②	③	④	⑤	⑥	⑦
2.4	Manage internal FAA communications	⓪	①	②	③	④	⑤	⑥	⑦
2.5	Complete ongoing human resource activities	⓪	①	②	③	④	⑤	⑥	⑦
2.6	Participate in performance appraisal	⓪	①	②	③	④	⑤	⑥	⑦
2.7	Manage business travel	⓪	①	②	③	④	⑤	⑥	⑦
3	Mitigate Safety and Security Risks *[Form A]*								
3.1	Log all safety and security activities	⓪	①	②	③	④	⑤	⑥	⑦
3.2	Respond to emergency situations	⓪	①	②	③	④	⑤	⑥	⑦
3.3	Follow prescribed safety and security standards and practices	⓪	①	②	③	④	⑤	⑥	⑦
3.4	Identify safety hazards	⓪	①	②	③	④	⑤	⑥	⑦
3.5	Identify security vulnerabilities	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
3.6	Report hazard or vulnerability	⓪	①	②	③	④	⑤	⑥	⑦
3.7	Perform risk assessment	⓪	①	②	③	④	⑤	⑥	⑦
3.8	Plan risk mitigation activities with stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
3.9	Perform risk mitigation activities	⓪	①	②	③	④	⑤	⑥	⑦
3.10	Maintain safety and security related documentation	⓪	①	②	③	④	⑤	⑥	⑦
3.11	Maintain access control to operational network systems	⓪	①	②	③	④	⑤	⑥	⑦
3.12	Escort contractors and other non-FAA personnel	⓪	①	②	③	④	⑤	⑥	⑦
4	Plan Periodic and Corrective Maintenance Activities *[Form B]*								
4.1	Receive notification of situation requiring maintenance	⓪	①	②	③	④	⑤	⑥	⑦
4.2	Determine that maintenance is required	⓪	①	②	③	④	⑤	⑥	⑦
4.3	Report maintenance-related information to appropriate Control Center	⓪	①	②	③	④	⑤	⑥	⑦
4.4	Collect data on current and past facility, service, and equipment (FSE) performance	⓪	①	②	③	④	⑤	⑥	⑦
4.5	Evaluate impact of maintenance to the NAS	⓪	①	②	③	④	⑤	⑥	⑦
4.6	Participate in pre-maintenance discussion(s) or meeting(s)	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
4.7	Prioritize maintenance tasks	⓪	①	②	③	④	⑤	⑥	⑦
4.8	Review technical documentation for FSE and Tools & Equipment	⓪	①	②	③	④	⑤	⑥	⑦
4.9	Review Job Hazard Analysis (JHA)	⓪	①	②	③	④	⑤	⑥	⑦
4.10	Identify maintenance activity requirements	⓪	①	②	③	④	⑤	⑥	⑦
4.11	Ensure availability of all required personnel	⓪	①	②	③	④	⑤	⑥	⑦
4.12	Ensure availability of Tools & Equipment	⓪	①	②	③	④	⑤	⑥	⑦
4.13	Ensure availability of spare parts	⓪	①	②	③	④	⑤	⑥	⑦
4.14	Coordinate maintenance activities with stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
4.15	Log coordination activities	⓪	①	②	③	④	⑤	⑥	⑦
5	Perform Periodic Maintenance *[Form A & B]*								
5.1	Log all periodic maintenance activities	⓪	①	②	③	④	⑤	⑥	⑦
5.2	Communicate intent to conduct periodic maintenance	⓪	①	②	③	④	⑤	⑥	⑦
5.3	Assemble team of personnel required for periodic maintenance	⓪	①	②	③	④	⑤	⑥	⑦
5.4	Gather Tools & Equipment required for periodic maintenance	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
5.5	Collect data on current and past FSE performance	⓪	①	②	③	④	⑤	⑥	⑦
5.6	Evaluate current FSE performance data to past performance data to identify problems, deficiencies, or risks	⓪	①	②	③	④	⑤	⑥	⑦
5.7	Perform final coordination of periodic maintenance	⓪	①	②	③	④	⑤	⑥	⑦
5.8	Configure state of FSE for periodic maintenance	⓪	①	②	③	④	⑤	⑥	⑦
5.9	Perform periodic maintenance tasks on FSE per the FAA Order 6000 Series and appropriate FSE maintenance Order, Notice, or technical instructions. (Note: Periodic maintenance includes many steps that cannot be listed here due to the large number of FSEs and the fact that each FSE has its own unique steps.)	⓪	①	②	③	④	⑤	⑥	⑦
5.10	Perform operational check on FSE	⓪	①	②	③	④	⑤	⑥	⑦
5.11	Support flight check on FSE	⓪	①	②	③	④	⑤	⑥	⑦
5.12	Certify FSE (See D9-Certify FSEs)	⓪	①	②	③	④	⑤	⑥	⑦
5.13	Configure state of FSE for normal operations	⓪	①	②	③	④	⑤	⑥	⑦
5.14	Coordinate return of FSE to operational use	⓪	①	②	③	④	⑤	⑥	⑦
6	Perform Corrective Maintenance *[Form A & B]*								

[Task Rating Loop 1: Frequency of task performance] [Randomize by Duty]

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
6.1	Log all corrective maintenance activities	⓪	①	②	③	④	⑤	⑥	⑦
6.2	Perform final coordination of corrective maintenance	⓪	①	②	③	④	⑤	⑥	⑦
6.3	Configure state of FSE for corrective maintenance	⓪	①	②	③	④	⑤	⑥	⑦
6.4	Gather Tools & Equipment required for troubleshooting	⓪	①	②	③	④	⑤	⑥	⑦
6.5	Collect data on current and past FSE performance	⓪	①	②	③	④	⑤	⑥	⑦
6.6	Compare FSE performance to technical specifications	⓪	①	②	③	④	⑤	⑥	⑦
6.7	Conduct additional research	⓪	①	②	③	④	⑤	⑥	⑦
6.8	Isolate fault(s) to software, hardware, component, or lowest replaceable unit (LRU)	⓪	①	②	③	④	⑤	⑥	⑦
6.9	Obtain second-level engineering and technical support	⓪	①	②	③	④	⑤	⑥	⑦
6.10	Develop proposed solution	⓪	①	②	③	④	⑤	⑥	⑦
6.11	Assemble team of personnel required for corrective maintenance	⓪	①	②	③	④	⑤	⑥	⑦
6.12	Gather Tools & Equipment required for FSE repair or replacement	⓪	①	②	③	④	⑤	⑥	⑦
6.13	Procure appropriate parts	⓪	①	②	③	④	⑤	⑥	⑦

[Task Rating Loop 1: Frequency of task performance] [Randomize by Duty]

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
6.14	Perform corrective maintenance tasks on FSE per the FAA Order 6000 Series and appropriate FSE maintenance Order, Notice, or technical instructions. (Note: Periodic maintenance includes many steps that cannot be listed here due to the large number of FSEs and the fact that each FSE has its own unique steps.)	⓪	①	②	③	④	⑤	⑥	⑦
6.15	Perform operational check on FSE	⓪	①	②	③	④	⑤	⑥	⑦
6.16	Support flight check on FSE	⓪	①	②	③	④	⑤	⑥	⑦
6.17	Certify FSE (See D9-Certify FSEs)	⓪	①	②	③	④	⑤	⑥	⑦
6.18	Configure state of FSE for normal operations	⓪	①	②	③	④	⑤	⑥	⑦
6.19	Coordinate return of FSE to operational use	⓪	①	②	③	④	⑤	⑥	⑦
7	Perform Modifications on FSEs *[Form A]*								
7.1	Log all modification activities	⓪	①	②	③	④	⑤	⑥	⑦
7.2	Receive modification materials (e.g., documentation, modification kit)	⓪	①	②	③	④	⑤	⑥	⑦
7.3	Review documentation for FSE modification	⓪	①	②	③	④	⑤	⑥	⑦
7.4	Order modification kit	⓪	①	②	③	④	⑤	⑥	⑦
7.5	Inspect modification kit	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
7.6	Develop plans for implementing modification	⓪	①	②	③	④	⑤	⑥	⑦
7.7	Coordinate modification with stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
7.8	Configure state of FSE for modification	⓪	①	②	③	④	⑤	⑥	⑦
7.9	Install FSE modification	⓪	①	②	③	④	⑤	⑥	⑦
7.10	Perform operational check on modified FSE	⓪	①	②	③	④	⑤	⑥	⑦
7.11	Support flight check on modified FSE	⓪	①	②	③	④	⑤	⑥	⑦
7.12	Certify modified FSE (See D9-Certify FSEs)	⓪	①	②	③	④	⑤	⑥	⑦
7.13	Coordinate return of modified FSE to operational use	⓪	①	②	③	④	⑤	⑥	⑦
7.14	Update documentation to reflect newly modified FSE	⓪	①	②	③	④	⑤	⑥	⑦
8	Perform FSE Installation and Construction Activities *[Form B]*								
8.1	Log all installation and construction activities	⓪	①	②	③	④	⑤	⑥	⑦
8.2	Review installation and construction documentation	⓪	①	②	③	④	⑤	⑥	⑦
8.3	Participate in installation and construction design meetings	⓪	①	②	③	④	⑤	⑥	⑦
8.4	Participate in site surveys and/or pre-construction meetings	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
8.5	Assist in site preparation	⓪	①	②	③	④	⑤	⑥	⑦
8.6	Coordinate with stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
8.7	Perform FSE installation or construction activities	⓪	①	②	③	④	⑤	⑥	⑦
8.8	Participate in Operational Readiness Demonstration (ORD)	⓪	①	②	③	④	⑤	⑥	⑦
8.9	Participate in Contractor Acceptance Inspection (CAI)	⓪	①	②	③	④	⑤	⑥	⑦
8.10	Participate in Initial Operating Capability (IOC) Test	⓪	①	②	③	④	⑤	⑥	⑦
8.11	Participate in flight check	⓪	①	②	③	④	⑤	⑥	⑦
8.12	Participate in Joint Acceptance Inspection (JAI)	⓪	①	②	③	④	⑤	⑥	⑦
8.13	Follow up with JAI exceptions after corrections are made	⓪	①	②	③	④	⑤	⑥	⑦
8.14	Certify FSE (See D9-Certify FSEs)	⓪	①	②	③	④	⑤	⑥	⑦
8.15	Coordinate commissioning of FSE	⓪	①	②	③	④	⑤	⑥	⑦
8.16	Update documentation to reflect newly commissioned FSE	⓪	①	②	③	④	⑤	⑥	⑦
8.17	Log commissioning statement	⓪	①	②	③	④	⑤	⑥	⑦
9	Certify FSEs *[Form A & B]*								

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
9.1	Review FSE certification requirements	⓪	①	②	③	④	⑤	⑥	⑦
9.2	Gather existing and new data regarding FSE performance	⓪	①	②	③	④	⑤	⑥	⑦
9.3	Compare certification requirements and current FSE performance data	⓪	①	②	③	④	⑤	⑥	⑦
9.4	Make certification decision based on all data gathered and according to FAA Orders and directives	⓪	①	②	③	④	⑤	⑥	⑦
9.5	Log certification or decertification statement	⓪	①	②	③	④	⑤	⑥	⑦
10	Decommission FSEs *[Form B]*								
10.1	Log all decommissioning activities	⓪	①	②	③	④	⑤	⑥	⑦
10.2	Review documentation for FSE decommissioning	⓪	①	②	③	④	⑤	⑥	⑦
10.3	Coordinate decommissioning activities with stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
10.4	Participate in site preparation	⓪	①	②	③	④	⑤	⑥	⑦
10.5	Communicate decommissioning with stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
10.6	Remove FSE from service	⓪	①	②	③	④	⑤	⑥	⑦
10.7	Participate in physical removal of FSE	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
10.8	Transfer or dispose of FSE as appropriate	⓪	①	②	③	④	⑤	⑥	⑦
10.9	Verify closure of all FSE logs	⓪	①	②	③	④	⑤	⑥	⑦
10.10	Update documentation to reflect newly decommissioned FSE	⓪	①	②	③	④	⑤	⑥	⑦
10.11	Perform site restoration	⓪	①	②	③	④	⑤	⑥	⑦
11	Ensure Availability of Tools & Equipment and Spare Parts *[Form A]*								
11.1	Monitor inventory of Tools & Equipment and spare parts	⓪	①	②	③	④	⑤	⑥	⑦
11.2	Determine what action is required in response to inventory status	⓪	①	②	③	④	⑤	⑥	⑦
11.3	Investigate options related to Tools & Equipment and spare parts	⓪	①	②	③	④	⑤	⑥	⑦
11.4	Order Tools & Equipment and spare parts	⓪	①	②	③	④	⑤	⑥	⑦
11.5	Verify orders upon receipt	⓪	①	②	③	④	⑤	⑥	⑦
11.6	Complete expense report for Tools & Equipment and spare parts	⓪	①	②	③	④	⑤	⑥	⑦
11.7	Store Tools & Equipment and spare parts in appropriate location	⓪	①	②	③	④	⑤	⑥	⑦
11.8	Inspect Tools & Equipment and spare parts	⓪	①	②	③	④	⑤	⑥	⑦
11.9	Coordinate inspection of Tools & Equipment by certifying authority	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
11.10	Maintain Tools & Equipment	⓪	①	②	③	④	⑤	⑥	⑦
11.11	Dispose of Tools & Equipment and spare parts in accordance with FAA protocol	⓪	①	②	③	④	⑤	⑥	⑦
11.12	Inventory Tools & Equipment and spare parts	⓪	①	②	③	④	⑤	⑥	⑦
11.13	Update inventory database to reflect current status of Tools & Equipment	⓪	①	②	③	④	⑤	⑥	⑦
12	Perform Technical Collateral Tasks *[Form B]*								
12.1	Complete technical FSE training	⓪	①	②	③	④	⑤	⑥	⑦
12.2	Complete technical safety and security training	⓪	①	②	③	④	⑤	⑥	⑦
12.3	Train others in an informal capacity	⓪	①	②	③	④	⑤	⑥	⑦
12.4	Train other specialists in a formal capacity as an On-the-Job Training Instructor (OJTI) in preparation for personnel certification	⓪	①	②	③	④	⑤	⑥	⑦
12.5	Provide FSE performance data to assist the FAA in trend analysis and other evaluations	⓪	①	②	③	④	⑤	⑥	⑦
12.6	Provide comments on technical reports	⓪	①	②	③	④	⑤	⑥	⑦
12.7	Prepare technical reports on FSE performance (e.g., Technical Performance Record)	⓪	①	②	③	④	⑤	⑥	⑦
12.8	Maintain local non-FSE databases and tracking sheets	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
12.9	Maintain local copies of non-FSE and non-safety and security documentation including Tools & Equipment user manuals, SOPs, FAA Orders, and other documentation in accordance with current policy and FAA orders	⓪	①	②	③	④	⑤	⑥	⑦
12.10	Submit request for corrections to FSE and non-FSE documentation	⓪	①	②	③	④	⑤	⑥	⑦
12.11	Submit request for a modification to an FSE	⓪	①	②	③	④	⑤	⑥	⑦
12.12	Oversee maintenance performed by others including contractors	⓪	①	②	③	④	⑤	⑥	⑦
12.13	Participate as a technical subject matter expert (SME)	⓪	①	②	③	④	⑤	⑥	⑦
12.14	Provide briefings and training on technical matters	⓪	①	②	③	④	⑤	⑥	⑦
12.15	Interface with external stakeholders	⓪	①	②	③	④	⑤	⑥	⑦
12.16	Serve as Point-of-Contact (POC)	⓪	①	②	③	④	⑤	⑥	⑦
12.17	Support post-accident/incident investigations	⓪	①	②	③	④	⑤	⑥	⑦
12.18	Serve at another FAA facility as part of a Temporary Duty (TDY) assignment	⓪	①	②	③	④	⑤	⑥	⑦
12.19	Support Joint Technical Inspections (JTI)	⓪	①	②	③	④	⑤	⑥	⑦
12.20	National Airway Systems Technical Evaluation Program (NASTEP) Participant	⓪	①	②	③	④	⑤	⑥	⑦

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
12.21	Inspect non-federal FSEs	⓪	①	②	③	④	⑤	⑥	⑦
13	Perform Special Duties *[Form A]*								
13.1	Key and Core Coordinator	⓪	①	②	③	④	⑤	⑥	⑦
13.2	PIV Card Coordinator	⓪	①	②	③	④	⑤	⑥	⑦
13.3	OSHECCOM Representative	⓪	①	②	③	④	⑤	⑥	⑦
13.4	Facility Safety Coordinator	⓪	①	②	③	④	⑤	⑥	⑦
13.5	Communications Security (ComSec) Maintainer	⓪	①	②	③	④	⑤	⑥	⑦
13.6	PASS Representative	⓪	①	②	③	④	⑤	⑥	⑦
13.7	Contracting Officer's Representative (COR)	⓪	①	②	③	④	⑤	⑥	⑦
13.8	Certified Firearms Operator (wildlife protection)	⓪	①	②	③	④	⑤	⑥	⑦
13.9	Disaster Relief Specialist	⓪	①	②	③	④	⑤	⑥	⑦
13.10	Purchase Card Holder	⓪	①	②	③	④	⑤	⑥	⑦
13.11	Unmanned Aircraft Systems (UAS) Operator	⓪	①	②	③	④	⑤	⑥	⑦
13.12	Authorized Level II Climber	⓪	①	②	③	④	⑤	⑥	⑦

[Task Rating Loop 1: Frequency of task performance] [Randomize by Duty]

On average, about how often do you perform this task?

0=I don't perform this task
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

		0=I don't perform this task	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
13.13	Competent Climber	⓪	①	②	③	④	⑤	⑥	⑦
13.14	Rescue Tower Climber	⓪	①	②	③	④	⑤	⑥	⑦
13.15	Tower Assessment Team (TAT)	⓪	①	②	③	④	⑤	⑥	⑦
13.16	First Aid/CPR/AED Instructor	⓪	①	②	③	④	⑤	⑥	⑦
13.17	Facility Asbestos Coordinator	⓪	①	②	③	④	⑤	⑥	⑦
13.18	Participate as a volunteer team member	⓪	①	②	③	④	⑤	⑥	⑦

Instructions for rating task Importance

As stated in the survey instructions, you've just completed the first pass through the task list and rated how frequently you perform each task.

The next step is to rate the importance of each task that you perform to your job overall at the SSC. Tasks that you marked as not being done will not be presented (it doesn't make sense to rate the importance of tasks you don't do, after all).

Task importance can mean different things. One way to think about importance is in terms of the relationship of a task to the safety, efficiency, or security of the NAS, with safety being the most important. A task that has a direct and major impact on NAS safety, for example, would be extremely important while a different task that does not directly or indirectly impact the safety, efficiency, or security of NAS operations would be least important. Another way to think about importance is in terms of whether the task could be deferred if another more important task came up.

While all system specialist tasks are important in one way or another, some are clearly more important and others are less important in the grand scheme of things to the safety, efficiency, and security of NAS operations, in your judgment as a ATSS at an SSC. It is important to use the full range of the rating scale to sort out those tasks that are extremely important because they have a direct, urgent, and high impact on the safety, efficiency, or security of the NAS from those tasks that are more routine (but important) and the tasks that are least important to the safety, efficiency, and security of NAS operations, based on your judgment.

Use the following rating scale to rate how important a task is to your job as an ATSS at a SSC:

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

Read each task, and then choose the importance rating that best describes your judgment of the overall importance of the task to your job as a systems specialist at a SSC.

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
1	**Establish Situation Awareness** *[Form A]*					
1.1	Report to your duty station	①	②	③	④	⑤
1.2	Receive in-person briefing regarding the current status of facilities, services, and equipment (FSEs), NAS operations, and environmental conditions	①	②	③	④	⑤
1.3	Retrieve information regarding the current status of FSEs, NAS operations, and environmental conditions	①	②	③	④	⑤
1.4	Scan FSEs by in-person inspection	①	②	③	④	⑤
1.5	Scan FSEs by remote inspection	①	②	③	④	⑤
1.6	Evaluate current and projected state of FSEs	①	②	③	④	⑤
1.7	Evaluate current and projected state of NAS operations and environmental conditions	①	②	③	④	⑤
1.8	Monitor FSEs continually	①	②	③	④	⑤
1.9	Monitor NAS operations and environmental conditions continually	①	②	③	④	⑤
1.10	Brief others regarding the status of FSEs, NAS operations, and environmental conditions	①	②	③	④	⑤
2	**Perform Administrative Tasks** *[Form B]*					
2.1	Complete human resource enrollment requirements	①	②	③	④	⑤
2.2	Maintain currency, security, and condition of your Personal Identity Verification (PIV) badge, PIV token, facility badges, and keys	①	②	③	④	⑤
2.3	Complete required non-technical training	①	②	③	④	⑤
2.4	Manage internal FAA communications	①	②	③	④	⑤
2.5	Complete ongoing human resource activities	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
2.6	Participate in performance appraisal	①	②	③	④	⑤
2.7	Manage business travel	①	②	③	④	⑤
3	**Mitigate Safety and Security Risks** *[Form A]*					
3.1	Log all safety and security activities	①	②	③	④	⑤
3.2	Respond to emergency situations	①	②	③	④	⑤
3.3	Follow prescribed safety and security standards and practices	①	②	③	④	⑤
3.4	Identify safety hazards	①	②	③	④	⑤
3.5	Identify security vulnerabilities	①	②	③	④	⑤
3.6	Report hazard or vulnerability	①	②	③	④	⑤
3.7	Perform risk assessment	①	②	③	④	⑤
3.8	Plan risk mitigation activities with stakeholders	①	②	③	④	⑤
3.9	Perform risk mitigation activities	①	②	③	④	⑤
3.10	Maintain safety and security related documentation	①	②	③	④	⑤
3.11	Maintain access control to operational network systems	①	②	③	④	⑤
3.12	Escort contractors and other non-FAA personnel	①	②	③	④	⑤
4	**Plan Periodic and Corrective Maintenance Activities** *[Form B]*					
4.1	Receive notification of situation requiring maintenance	①	②	③	④	⑤
4.2	Determine that maintenance is required	①	②	③	④	⑤
4.3	Report maintenance-related information to appropriate Control Center	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
4.4	Collect data on current and past facility, service, and equipment (FSE) performance	①	②	③	④	⑤
4.5	Evaluate impact of maintenance to the NAS	①	②	③	④	⑤
4.6	Participate in pre-maintenance discussion(s) or meeting(s)	①	②	③	④	⑤
4.7	Prioritize maintenance tasks	①	②	③	④	⑤
4.8	Review technical documentation for FSE and Tools & Equipment	①	②	③	④	⑤
4.9	Review Job Hazard Analysis (JHA)	①	②	③	④	⑤
4.10	Identify maintenance activity requirements	①	②	③	④	⑤
4.11	Ensure availability of all required personnel	①	②	③	④	⑤
4.12	Ensure availability of Tools & Equipment	①	②	③	④	⑤
4.13	Ensure availability of spare parts	①	②	③	④	⑤
4.14	Coordinate maintenance activities with stakeholders	①	②	③	④	⑤
4.15	Log coordination activities	①	②	③	④	⑤
5	**Perform Periodic Maintenance** *[Form A & B]*					
5.1	Log all periodic maintenance activities	①	②	③	④	⑤
5.2	Communicate intent to conduct periodic maintenance	①	②	③	④	⑤
5.3	Assemble team of personnel required for periodic maintenance	①	②	③	④	⑤
5.4	Gather Tools & Equipment required for periodic maintenance	①	②	③	④	⑤
5.5	Collect data on current and past FSE performance	①	②	③	④	⑤
5.6	Evaluate current FSE performance data to past performance data to identify problems, deficiencies, or risks	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
5.7	Perform final coordination of periodic maintenance	①	②	③	④	⑤
5.8	Configure state of FSE for periodic maintenance	①	②	③	④	⑤
5.9	Perform periodic maintenance tasks on FSE per the FAA Order 6000 Series and appropriate FSE maintenance Order, Notice, or technical instructions. (Note: Periodic maintenance includes many steps that cannot be listed here due to the large number of FSEs and the fact that each FSE has its own unique steps.)	①	②	③	④	⑤
5.10	Perform operational check on FSE	①	②	③	④	⑤
5.11	Support flight check on FSE	①	②	③	④	⑤
5.12	Certify FSE (See D9-Certify FSEs)	①	②	③	④	⑤
5.13	Configure state of FSE for normal operations	①	②	③	④	⑤
5.14	Coordinate return of FSE to operational use	①	②	③	④	⑤
6	Perform Corrective Maintenance *[Form A & B]*					
6.1	Log all corrective maintenance activities	①	②	③	④	⑤
6.2	Perform final coordination of corrective maintenance	①	②	③	④	⑤
6.3	Configure state of FSE for corrective maintenance	①	②	③	④	⑤
6.4	Gather Tools & Equipment required for troubleshooting	①	②	③	④	⑤
6.5	Collect data on current and past FSE performance	①	②	③	④	⑤
6.6	Compare FSE performance to technical specifications	①	②	③	④	⑤
6.7	Conduct additional research	①	②	③	④	⑤
6.8	Isolate fault(s) to software, hardware, component, or lowest replaceable unit (LRU)	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
6.9	Obtain second-level engineering and technical support	①	②	③	④	⑤
6.10	Develop proposed solution	①	②	③	④	⑤
6.11	Assemble team of personnel required for corrective maintenance	①	②	③	④	⑤
6.12	Gather Tools & Equipment required for FSE repair or replacement	①	②	③	④	⑤
6.13	Procure appropriate parts	①	②	③	④	⑤
6.14	Perform corrective maintenance tasks on FSE per the FAA Order 6000 Series and appropriate FSE maintenance Order, Notice, or technical instructions. (Note: Periodic maintenance includes many steps that cannot be listed here due to the large number of FSEs and the fact that each FSE has its own unique steps.)	①	②	③	④	⑤
6.15	Perform operational check on FSE	①	②	③	④	⑤
6.16	Support flight check on FSE	①	②	③	④	⑤
6.17	Certify the FSE					
6.18	Configure state of FSE for normal operations	①	②	③	④	⑤
6.19	Coordinate return of FSE to operational use	①	②	③	④	⑤
7	**Perform Modifications on FSEs** *[Form A]*					
7.1	Log all modification activities	①	②	③	④	⑤
7.2	Receive modification materials (e.g., documentation, modification kit)	①	②	③	④	⑤
7.3	Review documentation for FSE modification	①	②	③	④	⑤
7.4	Order modification kit	①	②	③	④	⑤
7.5	Inspect modification kit	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
7.6	Develop plans for implementing modification	①	②	③	④	⑤
7.7	Coordinate modification with stakeholders	①	②	③	④	⑤
7.8	Configure state of FSE for modification	①	②	③	④	⑤
7.9	Install FSE modification	①	②	③	④	⑤
7.10	Perform operational check on modified FSE	①	②	③	④	⑤
7.11	Support flight check on modified FSE	①	②	③	④	⑤
7.12	Certify modified FSE (See D9-Certify FSEs)	①	②	③	④	⑤
7.13	Coordinate return of modified FSE to operational use	①	②	③	④	⑤
7.14	Update documentation to reflect newly modified FSE	①	②	③	④	⑤
8	Perform FSE Installation and Construction Activities *[Form B]*					
8.1	Log all installation and construction activities	①	②	③	④	⑤
8.2	Review installation and construction documentation	①	②	③	④	⑤
8.3	Participate in installation and construction design meetings	①	②	③	④	⑤
8.4	Participate in site surveys and/or pre-construction meetings	①	②	③	④	⑤
8.5	Assist in site preparation	①	②	③	④	⑤
8.6	Coordinate with stakeholders	①	②	③	④	⑤
8.7	Perform FSE installation or construction activities	①	②	③	④	⑤
8.8	Participate in Operational Readiness Demonstration (ORD)	①	②	③	④	⑤
8.9	Participate in Contractor Acceptance Inspection (CAI)	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
8.10	Participate in Initial Operating Capability (IOC) Test	①	②	③	④	⑤
8.11	Participate in flight check	①	②	③	④	⑤
8.12	Participate in Joint Acceptance Inspection (JAI)	①	②	③	④	⑤
8.13	Follow up with JAI exceptions after corrections are made	①	②	③	④	⑤
8.14	Certify FSE	①	②	③	④	⑤
8.15	Coordinate commissioning of FSE	①	②	③	④	⑤
8.16	Update documentation to reflect newly commissioned FSE	①	②	③	④	⑤
8.17	Log commissioning statement	①	②	③	④	⑤
9	Certify FSEs *[Form A & B]*					
9.1	Review FSE certification requirements	①	②	③	④	⑤
9.2	Gather existing and new data regarding FSE performance	①	②	③	④	⑤
9.3	Compare certification requirements and current FSE performance data	①	②	③	④	⑤
9.4	Make certification decision based on all data gathered and according to FAA Orders and directives	①	②	③	④	⑤
9.5	Log certification or decertification statement	①	②	③	④	⑤
10	Decommission FSEs *[Form B]*					
10.1	Log all decommissioning activities	①	②	③	④	⑤
10.2	Review documentation for FSE decommissioning	①	②	③	④	⑤
10.3	Coordinate decommissioning activities with stakeholders	①	②	③	④	⑤
10.4	Participate in site preparation	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
10.5	Communicate decommissioning with stakeholders	①	②	③	④	⑤
10.6	Remove FSE from service	①	②	③	④	⑤
10.7	Participate in physical removal of FSE	①	②	③	④	⑤
10.8	Transfer or dispose of FSE as appropriate	①	②	③	④	⑤
10.9	Verify closure of all FSE logs	①	②	③	④	⑤
10.10	Update documentation to reflect newly decommissioned FSE	①	②	③	④	⑤
10.11	Perform site restoration	①	②	③	④	⑤
11	Ensure Availability of Tools & Equipment and Spare Parts *[Form A]*					
11.1	Monitor inventory of Tools & Equipment and spare parts	①	②	③	④	⑤
11.2	Determine what action is required in response to inventory status	①	②	③	④	⑤
11.3	Investigate options related to Tools & Equipment and spare parts	①	②	③	④	⑤
11.4	Order Tools & Equipment and spare parts	①	②	③	④	⑤
11.5	Verify orders upon receipt	①	②	③	④	⑤
11.6	Complete expense report for Tools & Equipment and spare parts	①	②	③	④	⑤
11.7	Store Tools & Equipment and spare parts in appropriate location	①	②	③	④	⑤
11.8	Inspect Tools & Equipment and spare parts	①	②	③	④	⑤
11.9	Coordinate inspection of Tools & Equipment by certifying authority	①	②	③	④	⑤
11.10	Maintain Tools & Equipment	①	②	③	④	⑤
11.11	Dispose of Tools & Equipment and spare parts in accordance with FAA protocol	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
11.12	Inventory Tools & Equipment and spare parts	①	②	③	④	⑤
11.13	Update inventory database to reflect current status of Tools & Equipment	①	②	③	④	⑤
12	**Perform Technical Collateral Tasks** *[Form B]*					
12.1	Complete technical FSE training	①	②	③	④	⑤
12.2	Complete technical safety and security training	①	②	③	④	⑤
12.3	Train others in an informal capacity	①	②	③	④	⑤
12.4	Train other specialists in a formal capacity as an On-the-Job Training Instructor (OJTI) in preparation for personnel certification	①	②	③	④	⑤
12.5	Provide FSE performance data to assist the FAA in trend analysis and other evaluations	①	②	③	④	⑤
12.6	Provide comments on technical reports	①	②	③	④	⑤
12.7	Prepare technical reports on FSE performance (e.g., Technical Performance Record)	①	②	③	④	⑤
12.8	Maintain local non-FSE databases and tracking sheets	①	②	③	④	⑤
12.9	Maintain local copies of non-FSE and non-safety and security documentation including Tools & Equipment user manuals, SOPs, FAA Orders, and other documentation in accordance with current policy and FAA orders	①	②	③	④	⑤
12.10	Submit request for corrections to FSE and non-FSE documentation	①	②	③	④	⑤
12.11	Submit request for a modification to an FSE	①	②	③	④	⑤
12.12	Oversee maintenance performed by others including contractors	①	②	③	④	⑤
12.13	Participate as a technical subject matter expert (SME)	①	②	③	④	⑤
12.14	Provide briefings and training on technical matters	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
12.15	Interface with external stakeholders	①	②	③	④	⑤
12.16	Serve as Point-of-Contact (POC)	①	②	③	④	⑤
12.17	Support post-accident/incident investigations	①	②	③	④	⑤
12.18	Serve at another FAA facility as part of a Temporary Duty (TDY) assignment	①	②	③	④	⑤
12.19	Support Joint Technical Inspections (JTI)	①	②	③	④	⑤
12.20	National Airway Systems Technical Evaluation Program (NASTEP) Participant	①	②	③	④	⑤
12.21	Inspect non-federal FSEs	①	②	③	④	⑤
13	Perform Special Duties *[Form A]*					
13.1	Key and Core Coordinator	①	②	③	④	⑤
13.2	PIV Card Coordinator	①	②	③	④	⑤
13.3	OSHECCOM Representative	①	②	③	④	⑤
13.4	Facility Safety Coordinator	①	②	③	④	⑤
13.5	Communications Security (ComSec) Maintainer	①	②	③	④	⑤
13.6	PASS Representative	①	②	③	④	⑤
13.7	Contracting Officer's Representative (COR)	①	②	③	④	⑤
13.8	Certified Firearms Operator (wildlife protection)	①	②	③	④	⑤
13.9	Disaster Relief Specialist	①	②	③	④	⑤
13.10	Purchase Card Holder	①	②	③	④	⑤
13.11	Unmanned Aircraft Systems (UAS) Operator	①	②	③	④	⑤

On average, how important is this task to your job as an ATSS at a SSC?

1=Least important – Task does not impact NAS safety, efficiency, or security
2=Somewhat important – Task has indirect or delayed minimal impact on NAS safety, efficiency or security
3=Important – Task has some direct and/or immediate moderate impact on NAS safety, efficiency, or security
4=Very important – Task has direct and immediate high impact on NAS safety, efficiency, or security
5=Extremely important – Task has direct and urgent very high impact on NAS safety, efficiency, or security

		1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important
13.12	Authorized Level II Climber	①	②	③	④	⑤
13.13	Competent Climber	①	②	③	④	⑤
13.14	Rescue Tower Climber	①	②	③	④	⑤
13.15	Tower Assessment Team (TAT)	①	②	③	④	⑤
13.16	First Aid/CPR/AED Instructor	①	②	③	④	⑤
13.17	Facility Asbestos Coordinator	①	②	③	④	⑤
13.18	Participate as a volunteer team member	①	②	③	④	⑤

Additional Task Statements *[Form A & B]*

Are there any other tasks that you think should be included in the analysis? If yes, please describe the task in the blank area labeled "New task statement" (put your cursor there and start typing). Please try to follow the format of the existing task statements by starting your task with a verb (the action you want to describe) followed by an object (what the verb acts on) with any modifiers or additional words you think are needed. After you write the task statement, rate the task on how often it is performed and how important it is, in your judgment. Add just one task at a time in the box; rate its importance and frequency, then press the "SUBMIT TASK" button to add your additional task statement. You can add multiple tasks, one at a time. You can delete an additional task statement from your list by pressing the "DELETE TASK" at the far right of the list.

	Additional Task Frequency								Task Importance					
	1=Once per year or less	2=More than once per year	3=More than once per month	4=More than once per week	5=Daily (everyday)	6=Several times per day	7=Hourly or more often	0=Did not do task in last year	1=Least important	2=Somewhat important	3=Important	4=Very important	5=Extremely important	
Enter each additional task statement in the space below, rate it on Importance and Frequency, then press SUBMIT TASK to add it to your list. You may add as many task statements as you like. You may delete a task statement by pressing the DELETE TASK button at the far right.														
(Additional task statement)	①	②	③	④	⑤	⑥	⑦	⓪	①	②	③	④	⑤	SUBMIT TASK
Additional Task Statement #1														DELETE TASK
Additional Task Statement #2														DELETE TASK

Section 3: Other activities performed in the course of your duties and tasks

This section of the ATSS Job Analysis Survey 2016 focuses on the activities at work that might be required in the course of performing a task such as performing preventative or corrective maintenance. For example, you might have to climb a ladder to reach some equipment, carry tools or parts, or work outside in heat, extreme cold, or wind.

Use the following scale to indicate how often you perform these activities in the course of your duties and tasks:

In the course of performing your duties and tasks, on average, about how often do you perform this activity?
0=I don't perform this activity
1=Annually
2=Semi-annually
3=Quarterly
4=Monthly
5=Weekly
6=Daily
7=Hourly

In the course of performing your duties and tasks, on average, about how often do you perform this activity?

     0=I don't perform this activity
     1=Annually
     2=Semi-annually
     3=Quarterly
     4=Monthly
     5=Weekly
     6=Daily
     7=Hourly

#	Activity	0=I don't perform this task or does not apply	1=Annually	2=Semi-annually	3=Quarterly	4=Monthly	5=Weekly	6=Daily	7=Hourly
1	Climb a near-vertical ladder less than 30 feet tall to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
2	Climb a near-vertical 30 foot or taller ladder to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
3	Stand in a bucket lift to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
4	Stand on a movable, adjustable platform lift to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
5	Climb stairs to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
6	Use a portable ladder of less than 8 feet to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
7	Lift anything weighing 50 pounds or less (including tools, tool bags, equipment, parts, etc.)?	⓪	①	②	③	④	⑤	⑥	⑦
8	Carry anything weighing 50 pounds or less?	⓪	①	②	③	④	⑤	⑥	⑦
9	Lift anything weighing more than 50 pounds (including tools, tool bags, equipment, parts, etc.)?	⓪	①	②	③	④	⑤	⑥	⑦
10	Carry anything weighing more than 50 pounds?	⓪	①	②	③	④	⑤	⑥	⑦
11	Walk across uneven, rough, or unfinished surfaces to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
12	Crouch, stoop, or kneel to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
13	Crawl or creep (around, under, through equipment or false floors) to reach equipment?	⓪	①	②	③	④	⑤	⑥	⑦
14	Work in cramped or tightly confined equipment spaces?	⓪	①	②	③	④	⑤	⑥	⑦
15	Bend, twist, and/or reach into and hold an unusual body position to reach and/or work on equipment?	⓪	①	②	③	④	⑤	⑥	⑦

16	Work in poorly ventilated spaces requiring personal protective equipment such as a positive-pressure respirator/mask?	⓪	①	②	③	④	⑤	⑥	⑦
17	Work out of doors?	⓪	①	②	③	④	⑤	⑥	⑦
18	Work in extreme temperatures (heat or cold)?	⓪	①	②	③	④	⑤	⑥	⑦
19	Work in poorly illuminated spaces requiring use of supplemental task lighting?	⓪	①	②	③	④	⑤	⑥	⑦
20	Work with raised arms, reaching overhead, for extended periods of time (20 minutes or more)?	⓪	①	②	③	④	⑤	⑥	⑦
21	Read hard-copy printed reference materials, documentation, technical instructions, etc.?	⓪	①	②	③	④	⑤	⑥	⑦
22	Read electronic versions of reference materials, documentation, technical instructions, etc.?	⓪	①	②	③	④	⑤	⑥	⑦
23	Perform calculations requiring basic addition and/or subtraction only?	⓪	①	②	③	④	⑤	⑥	⑦
24	Perform calculations requiring multiplication and/or (long) division?	⓪	①	②	③	④	⑤	⑥	⑦
25	Perform calculations using exponents and/or logarithms?	⓪	①	②	③	④	⑤	⑥	⑦
26	Perform calculations using algebraic functions (formulas)?	⓪	①	②	③	④	⑤	⑥	⑦
27	Perform calculations using trigonometric functions (sine, cosine, radians, etc.) in a formula?	⓪	①	②	③	④	⑤	⑥	⑦
28	Perform those calculations by hand using an advanced calculator?	⓪	①	②	③	④	⑤	⑥	⑦
29	Perform any calculations by hand (with or without a calculator) to double-check values generated by the Built-in Test Equipment or other system diagnostic tools?	⓪	①	②	③	④	⑤	⑥	⑦

[Go to Section 4 Additional Questions when completed]

Section 4: Additional questions about your work environment

[Form A & B]

How would you describe the overall level of physical exertion required to perform your day-to-day duties and tasks at your SSC?
- ① Very light
- ② Light
- ③ Moderate
- ④ Heavy
- ⑤ Very heavy

What is the typical noise level in the areas, spaces, and/or rooms in which you usually work at your SSC?
- ① Very quiet
- ② Quiet
- ③ Moderately noisy
- ④ Loud
- ⑤ Very loud

On average, what proportion of your work day is spent driving (or riding in) a government vehicle to reach a work site and return to the SSC, for all trips in a day?
- ⓪ Zero (don't have to drive or ride to reach a work site)
- ① Less than 1 hour total
- ② Between 1 and 2 hours total
- ③ Between 2 and 3 hours total
- ④ More than 3 hours total

[Go to Section 5 % Time Spent by Duty on completion]

Section 5: Average proportion of work day spend on overall duties

[Form A & B]

On average, what proportion of your work day at the SSC is spent in the following overall duties? (Percentages add up to 100%)

Average % of work day spent on this duty

  Establishing situation awareness
  Performing administrative tasks
  Mitigating safety and security risks
  Planning periodic and corrective maintenance activities
  Performing periodic maintenance
  Performing corrective maintenance
  Performing modifications on FSEs
  Performing FSE installation and construction activities
  Certifying FSEs
  Decommissioning FSEs
  Ensuring availability of tools & equipment and spare parts
  Performing technical collateral tasks
  Performing special duties

  100%

[Go to Section 6 KSA Rating on completion]

Section 6: Knowledge, Skills, and Abilities (KSA) to be rated on Importance, Level of Mastery, and When Needed

This section of the ATSS Job Analysis Survey 2016 contains a list of knowledge, skills, and abilities (KSAs). The KSAs were developed by 3 panels of non-supervisory SSC ATSSs from across the NAS. We want you to rate each KSA on three dimensions:
   (1) Whether the KSA is needed on the on the first day on the job at the SSC;
   (2) How important the KSA is to doing the job at the SSC; and
   (3) What level of mastery of the KSA is needed to perform the work successfully.

To do this most efficiently, you will be asked to rate the importance of each KSA in the first pass through the task list, then the level of master needed to do your job in a second pass through the list, and finally whether the KSA is needed on the very first day on the ATSS job at the SSC in a third and final pass through the KSA list.

There are 222 knowledge, skill, or ability statements to be rated.

Instructions for rating KSA Importance to doing your job at the SSC

The first step is to rate the importance of each knowledge, skill, or ability to doing your job overall at the SSC.

Importance can mean different things. One way to think about the importance of a knowledge, skill, or ability is in terms of how it impacts your being able to the work required of you on the job. For example, knowledge of FAA organizational structure might be generally informative but not particularly helpful in maintaining and operating the specific facilities, services, and equipment assigned to your SSC. On the other hand, deductive reasoning (reasoning from specifics to a general, often cause-and-effect, conclusion) might be very helpful and relevant to your job. This is just an example of a way to think about importance in this context.

Some knowledge, skills, and abilities are likely to be more important and others might be less important to doing your job as a ATSS at a SSC. So it is important to use the full range of the rating scale to sort out the knowledge, skills, and abilities that are extremely important because they have a direct, urgent, and high impact on your job at the SSC from the knowledge, skills, and abilities that are less important to your job at the SSC, based on your judgment.

Read each knowledge, skill, or ability statement, and then choose the importance rating that best describes your judgment of the overall importance of that knowledge, skill, or ability to your job as a systems specialist at a SSC using the following scale:

How important is this KSA for doing the ATSS job overall at your SSC?
      1=Not important
      2=Somewhat important
      3=Important
      4=More important
      5=Extremely important

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Kw1	**Knowledge of the FAA** *[Form B]*					
1.1	FAA mission, values, and goals	①	②	③	④	⑤
1.2	FAA organizational structure	①	②	③	④	⑤
1.3	Safety culture	①	②	③	④	⑤
1.4	Labor management relations	①	②	③	④	⑤
1.5	Compensation, payroll, and benefits	①	②	③	④	⑤
1.6	FAA security requirements and procedures	①	②	③	④	⑤
1.7	Time and attendance regulations and procedures	①	②	③	④	⑤
1.8	Travel regulations for local and temporary duty	①	②	③	④	⑤
Kw2	**Knowledge of Professional ATSS Requirements** *[Form A]*					
2.1	Conduct and discipline regulations and procedures	①	②	③	④	⑤
2.2	Medical requirements	①	②	③	④	⑤
2.3	Non-technical training requirements	①	②	③	④	⑤
2.4	Technical training requirements	①	②	③	④	⑤
2.5	Certification requirements	①	②	③	④	⑤
2.6	Individual development plan including your plan for certifications	①	②	③	④	⑤
2.7	English language	①	②	③	④	⑤
Kw3	**Knowledge of NAS Basics** *[Form B]*					

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
3.1	ATC basics	①	②	③	④	⑤
3.2	ATC phraseology and terminology	①	②	③	④	⑤
3.3	Technology as the foundation of NAS operations	①	②	③	④	⑤
3.4	Types of Technical Operations (Tech Ops) facilities	①	②	③	④	⑤
3.5	Tech Ops organizational structure	①	②	③	④	⑤
Kw4	**Knowledge of Aeronautical Publications and ATSS Procedures and Directives *[Form A]***					
4.1	Purpose	①	②	③	④	⑤
4.2	Types of aeronautical publications	①	②	③	④	⑤
4.3	Types of ATSS procedures and directives (i.e., FAA Orders, notices, guidelines, and directives)	①	②	③	④	⑤
4.4	Technical jargon, symbology, and acronyms	①	②	③	④	⑤
4.5	Subject areas covered by each publication, procedure, and directive	①	②	③	④	⑤
4.6	Content of aeronautical publications and ATSS procedures and directives	①	②	③	④	⑤
4.7	Authoritative source of the information	①	②	③	④	⑤
4.8	Location and format of current version	①	②	③	④	⑤
4.9	Sensitivity level of documents	①	②	③	④	⑤
Kw5	**Knowledge of Science and Mathematics *[Form A & B]***					
5.1	Basic physics	①	②	③	④	⑤
5.2	Electro-mechanical theory	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
5.3	Basic chemistry	①	②	③	④	⑤
5.4	Basic mathematics (i.e., addition, subtraction, multiplication, division)	①	②	③	④	⑤
5.4.1.CP	Addition, subtraction	①	②	③	④	⑤
5.4.2.CP	Multiplication, (long) division	①	②	③	④	⑤
5.5	Intermediate mathematics (i.e., algebra, geometry, trigonometry)	①	②	③	④	⑤
5.5.1.CP	Exponents and roots (radicals)	①	②	③	④	⑤
5.5.2.CP	Logarithms	①	②	③	④	⑤
5.5.3.CP	Algebraic equations with one unknown variable (to solve for)	①	②	③	④	⑤
5.5.4.CP	Algebraic equations containing fractions	①	②	③	④	⑤
5.5.5.CP	Algebraic equations containing radicals (e.g., square roots, etc.)	①	②	③	④	⑤
5.5.6.CP	Algebraic equations with polynomials	①	②	③	④	⑤
5.5.7.CP	Simplifying algebraic equations by factoring	①	②	③	④	⑤
5.5.8.CP	Algebraic systems of linear equations with two or more unknown variables	①	②	③	④	⑤
5.5.9.CP	Geometry of circles, ellipses, and other curved shapes	①	②	③	④	⑤
5.5.10.CP	Geometry for volume and surface area of 3-dimensional shapes	①	②	③	④	⑤
5.5.11.CP	Geometry of angles	①	②	③	④	⑤
5.5.12.CP	Geometry of triangles	①	②	③	④	⑤
5.5.13.CP	Trigonometric functions (also called circular functions) (sine, cosine, secant, tangent)	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
5.5.14.CP	Graphing of trigonometric functions	①	②	③	④	⑤
5.5.15.CP	Vectors and scalars	①	②	③	④	⑤
5.5.16.CP	Set theory	①	②	③	④	⑤
5.5.17.CP	Boolean algebra	①	②	③	④	⑤
5.6	Advanced mathematics (i.e., calculus)	①	②	③	④	⑤
5.6.1.CP	Limit theory	①	②	③	④	⑤
5.6.2.CP	Differentiation in calculus	①	②	③	④	⑤
5.6.3.CP	Integration in calculus	①	②	③	④	⑤
5.7	Trend and other analyses of FSE performance data	①	②	③	④	⑤
Kw6	Knowledge of Human Factors *[Form A]*					
6.1	Human cognitive performance limitations	①	②	③	④	⑤
6.2	Human physical performance limitations	①	②	③	④	⑤
6.3	Team concepts	①	②	③	④	⑤
Kw7	Knowledge of Safety and Security *[Form B]*					
7.1	FAA safety and security policies, regulations, procedures, and guidelines	①	②	③	④	⑤
7.2	Local, state, and Federal safety and security regulations, procedures, and codes	①	②	③	④	⑤
7.3	First aid, CPR, and use of AED	①	②	③	④	⑤
7.4	Risk management policies and procedures	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
7.5	Fire life safety theory	①	②	③	④	⑤
7.6	Computer and network security concepts	①	②	③	④	⑤
Kw8	**Knowledge of Emergencies and Unusual Situations** *[Form A]*					
8.1	Types of emergencies or unusual operations	①	②	③	④	⑤
8.2	Evacuation procedures	①	②	③	④	⑤
8.3	Appropriate actions to resolve the emergency or unusual situation	①	②	③	④	⑤
8.4	Emergency assistance techniques	①	②	③	④	⑤
8.5	Notification requirements	①	②	③	④	⑤
8.6	Coordination requirements	①	②	③	④	⑤
8.7	Reporting requirements	①	②	③	④	⑤
8.8	Survival techniques	①	②	③	④	⑤
Kw9	**Knowledge of Weather Fundamentals** *[Form B]*					
9.1	Weather phenomena	①	②	③	④	⑤
9.2	Atmospheric pressure (i.e., barometric pressure)	①	②	③	④	⑤
9.3	Sources of weather information	①	②	③	④	⑤
9.4	Weather forecasting terminology	①	②	③	④	⑤
9.5	Weather forecast interpretation	①	②	③	④	⑤
9.6	Impact of weather on NAS operations	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, …) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important		1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Kw10	**Knowledge of Technical Drawings** *[Form A & B]*					
10.1	How to read and interpret content and symbols	①	②	③	④	⑤
10.1.1.CP	Basic symbols (ground, batteries, power, resistors, capacitors, inductors, diodes, transistors, switches, transformers)	①	②	③	④	⑤
10.1.2.CP	Specialty symbols (antennas, crystals, specialized diodes, J-FET, logic gates, photoresistor, relay)	①	②	③	④	⑤
10.1.3.CP	Functional block (circuit, equipment) block diagrams	①	②	③	④	⑤
10.1.4.CP	Wiring diagrams	①	②	③	④	⑤
10.1.5.CP	Schematics	①	②	③	④	⑤
10.2	Proper use of technical drawings	①	②	③	④	⑤
10.3	Techniques for modifying technical drawings	①	②	③	④	⑤
10.4	Location of control drawings (i.e., current version)	①	②	③	④	⑤
Kw11	**Knowledge of Local Facility** *[Form A]*					
11.1	Facility layout	①	②	③	④	⑤
11.2	Airport configuration	①	②	③	④	⑤
11.3	Airport operating regulations or procedures	①	②	③	④	⑤
11.4	Airspace boundaries	①	②	③	④	⑤
11.5	Operations at own FAA facility including all areas of responsibility	①	②	③	④	⑤
11.6	Operations at adjacent facilities	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
11.7	Local weather patterns	①	②	③	④	⑤
11.8	Local geography	①	②	③	④	⑤
11.9	Local terrain	①	②	③	④	⑤
11.10	Local culture & history	①	②	③	④	⑤
Kw12	Knowledge of Electrical Theory *[Form A & B]*					
12.1	AC and DC theory	①	②	③	④	⑤
12.2	Series, parallel, and combination circuits	①	②	③	④	⑤
12.2.1.CP	Parallel circuits	①	②	③	④	⑤
12.2.2.CP	Series circuits	①	②	③	④	⑤
12.2.3.CP	Combination circuits	①	②	③	④	⑤
12.1.4.CP	Direct current circuits	①	②	③	④	⑤
12.3	Electrical theorems	①	②	③	④	⑤
12.3.1.CP	Ohm's Law formulas	①	②	③	④	⑤
12.3.2.CP	Power formulas	①	②	③	④	⑤
12.4	Inductive and capacitive reactance	①	②	③	④	⑤
12.5	Grounding, bonding, lightening protection theory	①	②	③	④	⑤
12.6	Power distribution systems theory	①	②	③	④	⑤
12.7	Electrical interference	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

How important is this KSA for doing the ATSS job overall at your SSC?
1=Not important
2=Somewhat important
3=Important
4=More important
5=Extremely important

ID	KSA	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
12.8	Harmonics	①	②	③	④	⑤
Kw13	Knowledge of Electronic Theory *[Form A & B]*					
13.1	Digital logic basics	①	②	③	④	⑤
13.1.1.CP	Digital logic clock frequency	①	②	③	④	⑤
13.1.2.CP	Digital logic encoder	①	②	③	④	⑤
13.1.3.CP	Digital logic decoder	①	②	③	④	⑤
13.1.4.CP	Digital logic addressing	①	②	③	④	⑤
13.1.5.CP	Digital gate types (AND, NAND, etc.)	①	②	③	④	⑤
13.1.6.CP	Transistors, Field Effect Transistors, J-FET	①	②	③	④	⑤
13.2	Digital signal theory	①	②	③	④	⑤
13.3	Analog signal theory	①	②	③	④	⑤
13.4	Electronic theorems	①	②	③	④	⑤
13.4.1.CP	Kirchoff's Law	①	②	③	④	⑤
13.4.2.CP	Circuit theorems (Thevenin's and Norton's Theorems)	①	②	③	④	⑤
13.5	Circuit components	①	②	③	④	⑤
13.6	Circuit types	①	②	③	④	⑤
13.6.1.CP	Filter circuits	①	②	③	④	⑤
13.6.2.CP	Amplifier circuits	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
13.6.3.CP	Rectifier circuits	①	②	③	④	⑤
13.6.4.CP	Integrated circuits	①	②	③	④	⑤
13.7	Fiber optic systems	①	②	③	④	⑤
Kw14	Knowledge of Radio Frequency Theory *[Form A & B]*					
14.1	RF spectrum	①	②	③	④	⑤
14.1.1.CP	Electro-magnetic spectrum	①	②	③	④	⑤
14.1.2.CP	Waveforms and fields	①	②	③	④	⑤
14.1.3.CP	Modulation	①	②	③	④	⑤
14.1.4.CP	RF transmission, transmitter, receiver, generator	①	②	③	④	⑤
14.1.5.CP	Impedance calculation, transformation	①	②	③	④	⑤
14.1.6.CP	Standing wave ratio	①	②	③	④	⑤
14.2	RF interference	①	②	③	④	⑤
14.3	Effects of environmental factors (e.g., terrain, weather)	①	②	③	④	⑤
14.4	Radiation patterns	①	②	③	④	⑤
14.5	Antenna theory	①	②	③	④	⑤
14.5.1.CP	Reflection coefficient	①	②	③	④	⑤
14.5.2.CP	Transmission line loss	①	②	③	④	⑤
14.5.3.CP	Capacitive reactance	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
14.5.4.CP	Antenna physical and electrical length	①	②	③	④	⑤
14.5.5.CP	Parallel impedance	①	②	③	④	⑤
14.6	Waveform propagation methods	①	②	③	④	⑤
14.7	Transmission theory	①	②	③	④	⑤
Kw15	**Knowledge of Computer Networking** *[Form A & B]*					
15.1	Connectivity principles	①	②	③	④	⑤
15.2	Networking hardware	①	②	③	④	⑤
15.2.1.CP	Physical storage media types (hard disk, tape drive, etc.)	①	②	③	④	⑤
15.2.2.CP	Cables	①	②	③	④	⑤
15.2.3.CP	Repeaters	①	②	③	④	⑤
15.2.4.CP	Hubs	①	②	③	④	⑤
15.2.5.CP	Bridges	①	②	③	④	⑤
15.2.6.CP	Switches	①	②	③	④	⑤
15.2.7.CP	Routers	①	②	③	④	⑤
15.2.8.CP	Wireless access points	①	②	③	④	⑤
15.2.9.CP	Network addressing	①	②	③	④	⑤
15.2.10. CP	Network routing	①	②	③	④	⑤
15.2.11.CP	Network switching	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
15.2.12.CP	Network topology analysis	①	②	③	④	⑤
15.3	Networking software	①	②	③	④	⑤
15.4	Cloud computing	①	②	③	④	⑤
15.5	Networking security principles	①	②	③	④	⑤
Kw16	Knowledge of Communication System Theory *[Form B]*					
16.1	Communication concepts	①	②	③	④	⑤
16.2	Fundamentals of communication systems	①	②	③	④	⑤
16.3	Types of communication systems	①	②	③	④	⑤
16.4	Components of communication systems	①	②	③	④	⑤
16.5	Applications of communication systems	①	②	③	④	⑤
16.6	Limitations of communication systems	①	②	③	④	⑤
Kw17	Knowledge of Automation System Theory *[Form A]*					
17.1	Automation concepts	①	②	③	④	⑤
17.2	Fundamentals of automation systems	①	②	③	④	⑤
17.3	Types of automation systems	①	②	③	④	⑤
17.4	Components of automation systems	①	②	③	④	⑤
17.5	Applications of automation systems	①	②	③	④	⑤
17.6	Limitations of automation systems	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, …) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

How important is this KSA for doing the ATSS job overall at your SSC?

1=Not important
2=Somewhat important
3=Important
4=More important
5=Extremely important

		1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Kw18	**Knowledge of Navigational System Theory *[Form A]***					
18.1	Navigation concepts	①	②	③	④	⑤
18.2	Fundamentals of navigation systems	①	②	③	④	⑤
18.3	Types of navigation systems	①	②	③	④	⑤
18.4	Components of navigation systems	①	②	③	④	⑤
18.5	Applications of navigation systems	①	②	③	④	⑤
18.6	Limitations of navigation systems	①	②	③	④	⑤
Kw19	**Knowledge of Surveillance Systems Theory *[Form B]***					
19.1	Surveillance concepts	①	②	③	④	⑤
19.2	Fundamentals of surveillance systems	①	②	③	④	⑤
19.3	Types of surveillance systems	①	②	③	④	⑤
19.4	Components of surveillance systems	①	②	③	④	⑤
19.5	Applications of surveillance systems	①	②	③	④	⑤
19.6	Limitations of surveillance systems	①	②	③	④	⑤
Kw20	**Knowledge of Environmental System Theory *[Form B]***					
20.1	Power conditioning theory	①	②	③	④	⑤
20.2	HVAC theory	①	②	③	④	⑤
20.3	Plumbing principles	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
20.4	Building automation control theory	①	②	③	④	⑤
20.5	Basic building construction	①	②	③	④	⑤
Kw21	**Knowledge of Facilities, Services, and Equipment (FSE)** *[Form B]*					
21.1	FSE functionality	①	②	③	④	⑤
21.2	FSE stakeholders	①	②	③	④	⑤
21.3	How the FSE works	①	②	③	④	⑤
21.4	FSE policies and procedures	①	②	③	④	⑤
21.5	Components of FSE	①	②	③	④	⑤
21.6	Location of FSE and components	①	②	③	④	⑤
21.7	Applications of FSE	①	②	③	④	⑤
21.8	Limitations of FSE	①	②	③	④	⑤
21.9	FSE infrastructure	①	②	③	④	⑤
21.10	Interoperability of FSEs	①	②	③	④	⑤
21.11	Impact of weather on FSE	①	②	③	④	⑤
21.12	PM procedures	①	②	③	④	⑤
21.13	CM procedures	①	②	③	④	⑤
21.14	Troubleshooting procedures	①	②	③	④	⑤
21.15	Certification procedures	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, …) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
21.16	FSE spare part procurement procedures	①	②	③	④	⑤
21.17	FSE spare part inventory procedures	①	②	③	④	⑤
21.18	Impact of FSE degradation or loss to stakeholders	①	②	③	④	⑤
21.19	FSE activity logging procedures	①	②	③	④	⑤
21.20	Availability and reliability performance metrics	①	②	③	④	⑤
Kw22	Knowledge of Tools & Equipment *[Form A]*					
22.1	Types of Tools & Equipment	①	②	③	④	⑤
22.2	Functionality of Tools & Equipment	①	②	③	④	⑤
22.3	Storage of Tools & Equipment	①	②	③	④	⑤
22.4	Appropriate Tools & Equipment for task	①	②	③	④	⑤
22.5	Use of Tools & Equipment	①	②	③	④	⑤
22.6	Limitations of the Tools & Equipment	①	②	③	④	⑤
22.7	Maintenance of Tools & Equipment	①	②	③	④	⑤
22.8	Inspection requirements for Tools & Equipment	①	②	③	④	⑤
22.9	Degradation indicators for Tools & Equipment	①	②	③	④	⑤
22.10	Minor troubleshooting procedures for Tools & Equipment	①	②	③	④	⑤
22.11	Procurement procedures for Tools & Equipment	①	②	③	④	⑤
22.12	Inventory procedures for Tools & Equipment	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Sk01	**Cognitive Skills** *[Form B]*					
Sk01.1	Active Learning: Skill at understanding the implications of new information for both current and future problem solving and decision-making	①	②	③	④	⑤
Sk01.2	Mathematics: Skill at using mathematics to solve problems	①	②	③	④	⑤
Sk01.3	Reading Comprehension: Skill at understanding written sentences in English in work-related documents	①	②	③	④	⑤
Sk01.4	Communication Flexibility: Skill at modifying content and style of communication to be appropriate for the audience and medium	①	②	③	④	⑤
Sk01.5	Writing: Skill at communicating effectively in English in writing	①	②	③	④	⑤
Sk02	**Interpersonal Skills** *[Form A]*					
Sk02.1	Instructing: Skill at using OJT training or instructional methods and procedures appropriate for the situation	①	②	③	④	⑤
Sk02.2	Interpersonal: Skill at interpersonal relations	①	②	③	④	⑤
Sk02.3	Teamwork: Skill at working in teams to accomplish a common goal	①	②	③	④	⑤
Sk02.4	Negotiation: Skill at bringing others together and trying to reconcile differences by compromising if necessary	①	②	③	④	⑤
Sk02.5	Persuasion: Skill at persuading others to change their minds or behavior	①	②	③	④	⑤
Sk02.6	Service Orientation: Skill at actively looking for ways to help people	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Sk02.7	Leadership: Skill at leading or organizing efforts to accomplish projects	①	②	③	④	⑤
Sk03	Self-Management Skills *[Form B]*					
Sk03.1	Fatigue Management: Skill at managing and minimizing fatigue	①	②	③	④	⑤
Sk03.2	Prioritization: Skill at prioritizing job tasks	①	②	③	④	⑤
Sk03.3	Resources: Skill at utilizing resources (e.g., people, money, materials) efficiently	①	②	③	④	⑤
Sk03.4	Time Management: Skill at managing your time and the time of others	①	②	③	④	⑤
Sk03.5	Stress Management: Skill at continuing to work effectively even under stress	①	②	③	④	⑤
Sk04	Psychomotor Skills *[Form A]*					
Sk04.1	Gross Motor: Skill at performing gross motor movements	①	②	③	④	⑤
Sk04.2	Fine Motor: Skill at performing fine motor movements	①	②	③	④	⑤
Sk04.3	Typing: Skill at typing	①	②	③	④	⑤
Sk05	General Job Skills *[Form B]*					
Sk05.1	Safety Procedure Adherence: Skill at adhering to safety procedures	①	②	③	④	⑤
Sk05.2	Hazard and Vulnerability Identification: Skill at identifying safety hazards and security vulnerabilities	①	②	③	④	⑤
Sk05.3	Risk Assessment: Skill at assessing risks	①	②	③	④	⑤
Sk05.4	Risk Mitigation: Skill at mitigating risks	①	②	③	④	⑤
Sk05.5	Housekeeping: Skill at housekeeping in the workplace	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Sk05.6	Medical Assistance: Skill at providing basic medical assistance (e.g., first aid, CPR, AED)	①	②	③	④	⑤
Sk05.7	Establishing Situation Awareness: Skill at interpreting information and the status of the current situation; Determine the net effect of FSEs under various levels of operational status	①	②	③	④	⑤
Sk05.8	Anticipating Future Situation: Skill at predicting the consequences of the current situation	①	②	③	④	⑤
Sk05.9	Trend Analysis: Skill at performing trend analysis	①	②	③	④	⑤
Sk06	Tech Ops Technical Skills *[Form A]*					
Sk06.1	Modifications: Skill at proposing, developing, and/ or evaluating modifications	①	②	③	④	⑤
Sk06.2	Troubleshooting: Skill at troubleshooting	①	②	③	④	⑤
Sk06.3	Assembly and Disassembly: Skill at assembly and disassembly	①	②	③	④	⑤
Sk06.4	Interpreting Technical Drawings: Skill at interpreting technical drawings	①	②	③	④	⑤
Sk06.5	Modifying Technical Drawings: Skill at marking up changes to technical drawings	①	②	③	④	⑤
Sk06.6	Computer Scripts: Skill at writing simple computer scripts for various purposes	①	②	③	④	⑤
Sk06.7	Computer Networking: Skill at computer networking	①	②	③	④	⑤
Sk06.8	Computer Maintenance: Skill at computer hardware and software maintenance	①	②	③	④	⑤
Sk06.9	Mechanical Maintenance: Skill at mechanical system maintenance	①	②	③	④	⑤
Sk06.10	Electronic Maintenance: Skill at electronic system maintenance	①	②	③	④	⑤
Sk06.11	Electrical Maintenance: Skill at electrical system maintenance	①	②	③	④	⑤
Sk06.12	Pneumatic and Hydraulic Maintenance: Skill at pneumatic and hydraulic system maintenance	①	②	③	④	⑤

How important is this KSA for doing the ATSS job overall at your SSC?

1=Not important
2=Somewhat important
3=Important
4=More important
5=Extremely important

ID	KSA	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Sk06.13	Construction Techniques: Skill at basic construction techniques	①	②	③	④	⑤
Sk07	Tools & Equipment Skills *[Form B]*					
Sk07.1	Tools & Equipment Selection: Skill at selecting appropriate Tools & Equipment	①	②	③	④	⑤
Sk07.2	Tools & Equipment Organization: Skill at organizing Tools & Equipment and spare parts	①	②	③	④	⑤
Sk07.3	Tools & Equipment Use: Skill at using Tools & Equipment	①	②	③	④	⑤
Sk07.4	Tools & Equipment Maintenance: Skill at maintaining Tools & Equipment	①	②	③	④	⑤
Ab01	Sensory Abilities *[Form A]*					
Ab01.1	Far Vision: The ability to see details at a distance	①	②	③	④	⑤
Ab01.2	Near Vision: The ability to see details at close range (i.e., within a few feet of the observer)	①	②	③	④	⑤
Ab01.3	Depth Perception: The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object	①	②	③	④	⑤
Ab01.4	Peripheral Vision: The ability to see objects or the movement of objects to the side when your eyes are looking ahead	①	②	③	④	⑤
Ab01.5	Night Vision: The ability to see under low light conditions	①	②	③	④	⑤
Ab01.6	Glare Tolerance: The ability to see objects in the presence of glare or lighting that is bright relative to surroundings	①	②	③	④	⑤
Ab01.7	Color Detection: The ability to identify colors	①	②	③	④	⑤
Ab01.8	Color Discrimination: The ability to differentiate between colors (e.g., shades, brightness)	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Ab01.9	Auditory Detection: The ability to detect sounds across a range of frequencies and volumes	①	②	③	④	⑤
Ab01.10	Auditory Discrimination: The ability to differentiate between sounds that vary in pitch and loudness	①	②	③	④	⑤
Ab01.11	Auditory Attention: The ability to focus on a single source of sound in the presence of other distracting sounds	①	②	③	④	⑤
Ab01.12	Sound Localization: The ability to discern the direction from which a sound originated	①	②	③	④	⑤
Ab01.13	Olfactory Discrimination: The ability to differentiate between odors	①	②	③	④	⑤
Ab01.14	Tactile Discrimination: The ability to differentiate between tactile sensations (e.g., temperature, vibration)	①	②	③	④	⑤
Ab01.15	Proprioception: The ability to sense the relative position of your body parts and the strength of effort being used	①	②	③	④	⑤
Ab01.16	Haptic Identification: The ability to identify objects through the sense of touch	①	②	③	④	⑤
Ab02	Verbal Abilities *[Form B]*					
Ab02.1	Oral Comprehension: The ability to listen to and understand information and ideas presented through spoken words and sentences	①	②	③	④	⑤
Ab02.2	Oral Expression: The ability to verbally communicate information so others will understand	①	②	③	④	⑤
Ab02.3	Speech Recognition: The ability to identify and understand the speech of another person	①	②	③	④	⑤
Ab02.4	Written Expression: The ability to communicate information and ideas in writing so others will understand	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, …) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Ab02.5	Speech Clarity: The ability to speak clearly so others can understand you	①	②	③	④	⑤
Ab03	Numerical Abilities *[Form B]*					
Ab03.1	Mathematical Reasoning: The ability to choose the right mathematical methods or formulas to solve a problem	①	②	③	④	⑤
Ab03.2	Number Facility: The ability to add, subtract, multiply, or divide correctly	①	②	③	④	⑤
Ab04	Reasoning Abilities *[Form B]*					
Ab04.1	Analytic Ability: The ability to make sense of, combine, and organize information into meaningful patterns	①	②	③	④	⑤
Ab04.2	Problem Sensitivity: The ability to tell when something is wrong or is likely to go wrong	①	②	③	④	⑤
Ab04.3	Pattern Detection: The ability to identify or detect a known pattern (e.g., figure, object, word, sound) that is hidden in other distracting material	①	②	③	④	⑤
Ab04.4	Cognitive Ordering: The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules	①	②	③	④	⑤
Ab04.5	Deductive Reasoning: The ability to apply general rules to specific problems to produce answers that make sense	①	②	③	④	⑤
Ab04.6	Inductive Reasoning: The ability to combine pieces of information, that may initially seem unrelated, to form general rules or conclusions	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Ab04.7	Idea Generation: The ability to come up with a number of ideas about a topic irrespective of quality, correctness, or creativity	①	②	③	④	⑤
Ab05	Spatial Abilities *[Form A]*					
Ab05.1	Spatial Orientation: The ability to know your location in relation to the environment or to know where other objects are in relation to you	①	②	③	④	⑤
Ab05.2	Visualization: The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged	①	②	③	④	⑤
Ab06	Memory *[Form B]*					
Ab06.1	Working Memory: The ability to actively maintain information in memory in support of a task	①	②	③	④	⑤
Ab06.2	Long-Term Memory: The ability to remember information over periods of time ranging from minutes to years	①	②	③	④	⑤
Ab06.3	Concentration: The ability to concentrate on a task over a period of time without being distracted	①	②	③	④	⑤
Ab06.4	Time Sharing: The ability to quickly shift back and forth between two or more activities or sources of information (e.g., speech, sounds, touch)	①	②	③	④	⑤
Ab07	Physical Abilities *[Form B]*					
Ab07.1	Trunk Strength: The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or becoming fatigued	①	②	③	④	⑤
Ab07.2	Static Strength: The ability to exert maximum muscle force to lift, push, pull, or carry objects	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

How important is this KSA for doing the ATSS job overall at your SSC?

1=Not important
2=Somewhat important
3=Important
4=More important
5=Extremely important

ID	KSA	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Ab07.3	Dynamic Strength: The ability to exert muscle force repeatedly or continuously over time, which involves muscular endurance and resistance to muscle fatigue	①	②	③	④	⑤
Ab07.4	Dynamic Flexibility: The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/ or legs	①	②	③	④	⑤
Ab07.5	Extent Flexibility: The ability to bend, stretch, twist, or reach with your body, arms, and/ or legs	①	②	③	④	⑤
Ab07.6	Dynamic Body Coordination: The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion	①	②	③	④	⑤
Ab07.7	Gross Body Equilibrium: The ability to keep or regain your body balance or stay upright when in an unstable position	①	②	③	④	⑤
Ab07.8	Stamina: The ability to exert yourself physically over long periods without getting winded or out of breath	①	②	③	④	⑤
Ab08	Psychomotor Abilities *[Form B]*					
Ab08.1	Manual Dexterity: The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects	①	②	③	④	⑤
Ab08.2	Finger Dexterity: The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects	①	②	③	④	⑤
Ab08.3	Arm-Hand Steadiness: The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position	①	②	③	④	⑤

[KSA Loop 1: Importance. Randomize by domain (Kw1, Kw3, ...) and then randomize items within that domain. Present items with CP in the ID if and only if the parent knowledge statement is rated as a "3" or higher on importance. For example KSA 5.4.1.CP (Addition, subtraction) would be presented if and only if KSA 5.4 (Basic mathematics (i.e., addition, subtraction, multiplication, division)) was rated as a 3 or higher on importance. Go to KSA Loop 2 – Level of Mastery – when completed]

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Ab08.4	Precise Use of Controls: The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions	①	②	③	④	⑤
Ab08.5	Multi-Limb Coordination: The ability to coordinate two or more limbs (e.g., two arms, two legs, one leg and one arm) while sitting, standing, or lying down	①	②	③	④	⑤
Ab08.6	Sensory-Motor Coordination: The ability to coordinate movements with sensory stimulus	①	②	③	④	⑤
Ab08.7	Response to Competing Stimuli: The ability to choose an appropriate action in response to two or more different stimuli (e.g., lights, sounds, pictures)	①	②	③	④	⑤
Ab09	Personality *[Form A]*					
Ab09.1	Work-Schedule Flexibility: The ability to work according to various schedules including rotating shifts, night shifts, and irregular work hours	①	②	③	④	⑤
Ab09.2	Stress Tolerance: The ability to function even during periods of high stress	①	②	③	④	⑤
Ab09.3	Conscientiousness: Being careful, thorough, precise, detail-oriented, organized, hardworking, and achievement-oriented	①	②	③	④	⑤
Ab09.4	Sense of Ownership: Ability to accept personal responsibility for your FSE and other technical work	①	②	③	④	⑤
Ab09.5	Integrity: Propensity to consistently hold yourself to ethical standards	①	②	③	④	⑤
Ab09.6	Autonomy: Ability to work independently and make important decisions on your own	①	②	③	④	⑤
Ab09.7	Time Consciousness: Ability to manage time by making decisions and completing work in a timely manner	①	②	③	④	⑤

	How important is this KSA for doing the ATSS job overall at your SSC? 1=Not important 2=Somewhat important 3=Important 4=More important 5=Extremely important	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important
Ab09.8	Emotional Stability: Ability to self-regulate emotions and behavior	①	②	③	④	⑤
Ab09.9	Self-awareness: Internal awareness of your actions and attitudes, including knowing your limitations	①	②	③	④	⑤
Ab09.10	Adaptability: Ability to work in unstructured or changing environments	①	②	③	④	⑤
Ab09.11	Patience: Ability to accept or tolerate delays, problems, or suffering without becoming annoyed or anxious when working with others or FSEs	①	②	③	④	⑤
Ab09.12	Assertiveness: Ability to be upfront about your wants and needs, while still being considerate of the rights, wants, and needs of others	①	②	③	④	⑤
Ab09.13	Risk Tolerance: Ability to accept the substantial risks inherent in the NAS while simultaneously embracing the requirements of the job, including the role you play in mitigating risks	①	②	③	④	⑤
Ab09.14	Environmental Tolerance: Ability to work in uncomfortable environments (e.g. extreme weather, cramped quarters, high noise, low or bright light, at heights, around water)	①	②	③	④	⑤

Instructions for rating the Level of Mastery required

The next step is to rate the level of mastery over each knowledge, skills, and abilities that is required to do your job at the SSC. Do you need to be a real expert with a knowledge, skill, or ability to do your job or just be minimally familiar with the knowledge, skill, or ability? Knowledge, skill, and ability statements that you rated as "Not important" to doing your job will not be presented (it doesn't make sense to rate the level of mastery required for KSAs that are not important to the job).

The key question to ask about each knowledge, skill, and ability is what level of expertise is needed on that KSA for successful performance on the job at the journeyman level (Career Level III)? It is important to use the full range of the rating scale.

Read each knowledge, skill, or ability statement, and then choose the level of mastery rating that best describes your judgment of the level of mastery needed to do your job as a systems specialist at your SSC using the following rating scale:

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job?
    1=Minimal
    2=Intermediate
    3=Advanced
    4=Expert

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Kw1	**Knowledge of the FAA** *[Form B]*				
1.1	FAA mission, values, and goals	①	②	③	④
1.2	FAA organizational structure	①	②	③	④
1.3	Safety culture	①	②	③	④
1.4	Labor management relations	①	②	③	④
1.5	Compensation, payroll, and benefits	①	②	③	④
1.6	FAA security requirements and procedures	①	②	③	④
1.7	Time and attendance regulations and procedures	①	②	③	④
1.8	Travel regulations for local and temporary duty	①	②	③	④
Kw2	**Knowledge of Professional ATSS Requirements** *[Form A]*				
2.1	Conduct and discipline regulations and procedures	①	②	③	④
2.2	Medical requirements	①	②	③	④
2.3	Non-technical training requirements	①	②	③	④
2.4	Technical training requirements	①	②	③	④
2.5	Certification requirements	①	②	③	④
2.6	Individual development plan including your plan for certifications	①	②	③	④
2.7	English language	①	②	③	④
Kw3	**Knowledge of NAS Basics** *[Form B]*				
3.1	ATC basics	①	②	③	④
3.2	ATC phraseology and terminology	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
3.3	Technology as the foundation of NAS operations	①	②	③	④
3.4	Types of Technical Operations (Tech Ops) facilities	①	②	③	④
3.5	Tech Ops organizational structure	①	②	③	④
Kw4	**Knowledge of Aeronautical Publications and ATSS Procedures and Directives** *[Form A]*				
4.1	Purpose	①	②	③	④
4.2	Types of aeronautical publications	①	②	③	④
4.3	Types of ATSS procedures and directives (i.e., FAA Orders, notices, guidelines, and directives)	①	②	③	④
4.4	Technical jargon, symbology, and acronyms	①	②	③	④
4.5	Subject areas covered by each publication, procedure, and directive	①	②	③	④
4.6	Content of aeronautical publications and ATSS procedures and directives	①	②	③	④
4.7	Authoritative source of the information	①	②	③	④
4.8	Location and format of current version	①	②	③	④
4.9	Sensitivity level of documents	①	②	③	④
Kw5	**Knowledge of Science and Mathematics** *[Form A & B]*				
5.1	Basic physics	①	②	③	④
5.2	Electro-mechanical theory	①	②	③	④
5.3	Basic chemistry	①	②	③	④
5.4	Basic mathematics (i.e., addition, subtraction, multiplication, division)	①	②	③	④
5.4.1.CP	Addition, subtraction	①	②	③	④
5.4.2.CP	Multiplication, (long) division	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
5.5	Intermediate mathematics (i.e., algebra, geometry, trigonometry)	①	②	③	④
5.5.1.CP	Exponents and roots (radicals)	①	②	③	④
5.5.2.CP	Logarithms	①	②	③	④
5.5.3.CP	Algebraic equations with one unknown variable (to solve for)	①	②	③	④
5.5.4.CP	Algebraic equations containing fractions	①	②	③	④
5.5.5.CP	Algebraic equations containing radicals (e.g., square roots, etc.)	①	②	③	④
5.5.6.CP	Algebraic equations with polynomials	①	②	③	④
5.5.7.CP	Simplifying algebraic equations by factoring	①	②	③	④
5.5.8.CP	Algebraic systems of linear equations with two or more unknown variables	①	②	③	④
5.5.9.CP	Geometry of circles, ellipses, and other curved shapes	①	②	③	④
5.5.10.CP	Geometry for volume and surface area of 3-dimensional shapes	①	②	③	④
5.5.11.CP	Geometry of angles	①	②	③	④
5.5.12.CP	Geometry of triangles	①	②	③	④
5.5.13.CP	Trigonometric functions (also called circular functions) (sine, cosine, secant, tangent)	①	②	③	④
5.5.14.CP	Graphing of trigonometric functions	①	②	③	④
5.5.15.CP	Vectors and scalars	①	②	③	④
5.5.16.CP	Set theory	①	②	③	④
5.5.17.CP	Boolean algebra	①	②	③	④
5.6	Advanced mathematics (i.e., calculus)	①	②	③	④
5.6.1.CP	Limit theory	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
5.6.2.CP	Differentiation in calculus	①	②	③	④
5.6.3.CP	Integration in calculus	①	②	③	④
5.7	Trend and other analyses of FSE performance data	①	②	③	④
Kw6	**Knowledge of Human Factors** *[Form A]*				
6.1	Human cognitive performance limitations	①	②	③	④
6.2	Human physical performance limitations	①	②	③	④
6.3	Team concepts	①	②	③	④
Kw7	**Knowledge of Safety and Security** *[Form B]*				
7.1	FAA safety and security policies, regulations, procedures, and guidelines	①	②	③	④
7.2	Local, state, and Federal safety and security regulations, procedures, and codes	①	②	③	④
7.3	First aid, CPR, and use of AED	①	②	③	④
7.4	Risk management policies and procedures	①	②	③	④
7.5	Fire life safety theory	①	②	③	④
7.6	Computer and network security concepts	①	②	③	④
Kw8	**Knowledge of Emergencies and Unusual Situations** *[Form A]*				
8.1	Types of emergencies or unusual operations	①	②	③	④
8.2	Evacuation procedures	①	②	③	④
8.3	Appropriate actions to resolve the emergency or unusual situation	①	②	③	④
8.4	Emergency assistance techniques	①	②	③	④
8.5	Notification requirements	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
8.6	Coordination requirements	①	②	③	④
8.7	Reporting requirements	①	②	③	④
8.8	Survival techniques	①	②	③	④
Kw9	**Knowledge of Weather Fundamentals** *[Form B]*				
9.1	Weather phenomena	①	②	③	④
9.2	Atmospheric pressure (i.e., barometric pressure)	①	②	③	④
9.3	Sources of weather information	①	②	③	④
9.4	Weather forecasting terminology	①	②	③	④
9.5	Weather forecast interpretation	①	②	③	④
9.6	Impact of weather on NAS operations	①	②	③	④
Kw10	**Knowledge of Technical Drawings** *[Form A & B]*				
10.1	How to read and interpret content and symbols	①	②	③	④
10.1.1.CP	Basic symbols (ground, batteries, power, resistors, capacitors, inductors, diodes, transistors, switches, transformers)	①	②	③	④
10.1.2.CP	Specialty symbols (antennas, crystals, specialized diodes, J-FET, logic gates, photoresistor, relay)	①	②	③	④
10.1.3.CP	Functional block (circuit, equipment) block diagrams	①	②	③	④
10.1.4.CP	Wiring diagrams	①	②	③	④
10.1.5.CP	Schematics	①	②	③	④
10.2	Proper use of technical drawings	①	②	③	④
10.3	Techniques for modifying technical drawings	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
10.4	Location of control drawings (i.e., current version)	①	②	③	④
Kw11	**Knowledge of Local Facility** *[Form A]*				
11.1	Facility layout	①	②	③	④
11.2	Airport configuration	①	②	③	④
11.3	Airport operating regulations or procedures	①	②	③	④
11.4	Airspace boundaries	①	②	③	④
11.5	Operations at own FAA facility including all areas of responsibility	①	②	③	④
11.6	Operations at adjacent facilities	①	②	③	④
11.7	Local weather patterns	①	②	③	④
11.8	Local geography	①	②	③	④
11.9	Local terrain	①	②	③	④
11.10	Local culture & history	①	②	③	④
Kw12	**Knowledge of Electrical Theory** *[Form A & B]*				
12.1	AC and DC theory	①	②	③	④
12.2	Series, parallel, and combination circuits	①	②	③	④
12.2.1.CP	Parallel circuits	①	②	③	④
12.2.2.CP	Series circuits	①	②	③	④
12.2.3.CP	Combination circuits	①	②	③	④
12.1.4.CP	Direct current circuits	①	②	③	④
12.3	Electrical theorems	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
12.3.1.CP	Ohm's Law formulas	①	②	③	④
12.3.2.CP	Power formulas	①	②	③	④
12.4	Inductive and capacitive reactance	①	②	③	④
12.5	Grounding, bonding, lightening protection theory	①	②	③	④
12.6	Power distribution systems theory	①	②	③	④
12.7	Electrical interference	①	②	③	④
12.8	Harmonics	①	②	③	④
Kw13	Knowledge of Electronic Theory *[Form A & B]*				
13.1	Digital logic basics	①	②	③	④
13.1.1.CP	Digital logic clock frequency	①	②	③	④
13.1.2.CP	Digital logic encoder	①	②	③	④
13.1.3.CP	Digital logic decoder	①	②	③	④
13.1.4.CP	Digital logic addressing	①	②	③	④
13.1.5.CP	Digital gate types (AND, NAND, etc.)	①	②	③	④
13.1.6.CP	Transistors, Field Effect Transistors, J-FET	①	②	③	④
13.2	Digital signal theory	①	②	③	④
13.3	Analog signal theory	①	②	③	④
13.4	Electronic theorems	①	②	③	④
13.4.1.CP	Kirchoff's Law	①	②	③	④
13.4.2.CP	Circuit theorems (Thevenin's and Norton's Theorems)	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
13.5	Circuit components	①	②	③	④
13.6	Circuit types	①	②	③	④
13.6.1.CP	Filter circuits	①	②	③	④
13.6.2.CP	Amplifier circuits	①	②	③	④
13.6.3.CP	Rectifier circuits	①	②	③	④
13.6.4.CP	Integrated circuits	①	②	③	④
13.7	Fiber optic systems	①	②	③	④
Kw14	Knowledge of Radio Frequency Theory *[Form A & B]*				
14.1	RF spectrum	①	②	③	④
14.1.1.CP	Electro-magnetic spectrum	①	②	③	④
14.1.2.CP	Waveforms and fields	①	②	③	④
14.1.3.CP	Modulation	①	②	③	④
14.1.4.CP	RF transmission, transmitter, receiver, generator	①	②	③	④
14.1.5.CP	Impedance calculation, transformation	①	②	③	④
14.1.6.CP	Standing wave ratio	①	②	③	④
14.2	RF interference	①	②	③	④
14.3	Effects of environmental factors (e.g., terrain, weather)	①	②	③	④
14.4	Radiation patterns	①	②	③	④
14.5	Antenna theory	①	②	③	④
14.5.1.CP	Reflection coefficient	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
14.5.2.CP	Transmission line loss	①	②	③	④
14.5.3.CP	Capacitive reactance	①	②	③	④
14.5.4.CP	Antenna physical and electrical length	①	②	③	④
14.5.5.CP	Parallel impedance	①	②	③	④
14.6	Waveform propagation methods	①	②	③	④
14.7	Transmission theory	①	②	③	④
Kw15	**Knowledge of Computer Networking** *[Form A & B]*				
15.1	Connectivity principles	①	②	③	④
15.2	Networking hardware	①	②	③	④
15.2.1.CP	Physical storage media types (hard disk, tape drive, etc.)	①	②	③	④
15.2.2.CP	Cables	①	②	③	④
15.2.3.CP	Repeaters	①	②	③	④
15.2.4.CP	Hubs	①	②	③	④
15.2.5.CP	Bridges	①	②	③	④
15.2.6.CP	Switches	①	②	③	④
15.2.7.CP	Routers	①	②	③	④
15.2.8.CP	Wireless access points	①	②	③	④
15.2.9.CP	Network addressing	①	②	③	④
15.2.10. CP	Network routing	①	②	③	④
15.2.11.CP	Network switching	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
15.2.12.CP	Network topology analysis	①	②	③	④
15.3	Networking software	①	②	③	④
15.4	Cloud computing	①	②	③	④
15.5	Networking security principles	①	②	③	④
Kw16	Knowledge of Communication System Theory *[Form B]*				
16.1	Communication concepts	①	②	③	④
16.2	Fundamentals of communication systems	①	②	③	④
16.3	Types of communication systems	①	②	③	④
16.4	Components of communication systems	①	②	③	④
16.5	Applications of communication systems	①	②	③	④
16.6	Limitations of communication systems	①	②	③	④
Kw17	Knowledge of Automation System Theory *[Form A]*				
17.1	Automation concepts	①	②	③	④
17.2	Fundamentals of automation systems	①	②	③	④
17.3	Types of automation systems	①	②	③	④
17.4	Components of automation systems	①	②	③	④
17.5	Applications of automation systems	①	②	③	④
17.6	Limitations of automation systems	①	②	③	④
Kw18	Knowledge of Navigational System Theory *[Form A]*				
18.1	Navigation concepts	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
18.2	Fundamentals of navigation systems	①	②	③	④
18.3	Types of navigation systems	①	②	③	④
18.4	Components of navigation systems	①	②	③	④
18.5	Applications of navigation systems	①	②	③	④
18.6	Limitations of navigation systems	①	②	③	④
Kw19	Knowledge of Surveillance Systems Theory *[Form B]*				
19.1	Surveillance concepts	①	②	③	④
19.2	Fundamentals of surveillance systems	①	②	③	④
19.3	Types of surveillance systems	①	②	③	④
19.4	Components of surveillance systems	①	②	③	④
19.5	Applications of surveillance systems	①	②	③	④
19.6	Limitations of surveillance systems	①	②	③	④
Kw20	Knowledge of Environmental System Theory *[Form B]*				
20.1	Power conditioning theory	①	②	③	④
20.2	HVAC theory	①	②	③	④
20.3	Plumbing principles	①	②	③	④
20.4	Building automation control theory	①	②	③	④
20.5	Basic building construction	①	②	③	④
Kw21	Knowledge of Facilities, Services, and Equipment (FSE) *[Form B]*				
21.1	FSE functionality	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
21.2	FSE stakeholders	①	②	③	④
21.3	How the FSE works	①	②	③	④
21.4	FSE policies and procedures	①	②	③	④
21.5	Components of FSE	①	②	③	④
21.6	Location of FSE and components	①	②	③	④
21.7	Applications of FSE	①	②	③	④
21.8	Limitations of FSE	①	②	③	④
21.9	FSE infrastructure	①	②	③	④
21.10	Interoperability of FSEs	①	②	③	④
21.11	Impact of weather on FSE	①	②	③	④
21.12	PM procedures	①	②	③	④
21.13	CM procedures	①	②	③	④
21.14	Troubleshooting procedures	①	②	③	④
21.15	Certification procedures	①	②	③	④
21.16	FSE spare part procurement procedures	①	②	③	④
21.17	FSE spare part inventory procedures	①	②	③	④
21.18	Impact of FSE degradation or loss to stakeholders	①	②	③	④
21.19	FSE activity logging procedures	①	②	③	④
21.20	Availability and reliability performance metrics	①	②	③	④
Kw22	Knowledge of Tools & Equipment *[Form A]*				

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
22.1	Types of Tools & Equipment	①	②	③	④
22.2	Functionality of Tools & Equipment	①	②	③	④
22.3	Storage of Tools & Equipment	①	②	③	④
22.4	Appropriate Tools & Equipment for task	①	②	③	④
22.5	Use of Tools & Equipment	①	②	③	④
22.6	Limitations of the Tools & Equipment	①	②	③	④
22.7	Maintenance of Tools & Equipment	①	②	③	④
22.8	Inspection requirements for Tools & Equipment	①	②	③	④
22.9	Degradation indicators for Tools & Equipment	①	②	③	④
22.10	Minor troubleshooting procedures for Tools & Equipment	①	②	③	④
22.11	Procurement procedures for Tools & Equipment	①	②	③	④
22.12	Inventory procedures for Tools & Equipment	①	②	③	④
Sk01	Cognitive Skills *[Form B]*				
Sk01.1	Active Learning: Skill at understanding the implications of new information for both current and future problem solving and decision-making	①	②	③	④
Sk01.2	Mathematics: Skill at using mathematics to solve problems	①	②	③	④
Sk01.3	Reading Comprehension: Skill at understanding written sentences in English in work-related documents	①	②	③	④
Sk01.4	Communication Flexibility: Skill at modifying content and style of communication to be appropriate for the audience and medium	①	②	③	④
Sk01.5	Writing: Skill at communicating effectively in English in writing	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Sk02	**Interpersonal Skills** *[Form A]*				
Sk02.1	Instructing: Skill at using OJT training or instructional methods and procedures appropriate for the situation	①	②	③	④
Sk02.2	Interpersonal: Skill at interpersonal relations	①	②	③	④
Sk02.3	Teamwork: Skill at working in teams to accomplish a common goal	①	②	③	④
Sk02.4	Negotiation: Skill at bringing others together and trying to reconcile differences by compromising if necessary	①	②	③	④
Sk02.5	Persuasion: Skill at persuading others to change their minds or behavior	①	②	③	④
Sk02.6	Service Orientation: Skill at actively looking for ways to help people	①	②	③	④
Sk02.7	Leadership: Skill at leading or organizing efforts to accomplish projects	①	②	③	④
Sk03	**Self-Management Skills** *[Form B]*				
Sk03.1	Fatigue Management: Skill at managing and minimizing fatigue	①	②	③	④
Sk03.2	Prioritization: Skill at prioritizing job tasks	①	②	③	④
Sk03.3	Resources: Skill at utilizing resources (e.g., people, money, materials) efficiently	①	②	③	④
Sk03.4	Time Management: Skill at managing your time and the time of others	①	②	③	④
Sk03.5	Stress Management: Skill at continuing to work effectively even under stress	①	②	③	④
Sk04	**Psychomotor Skills** *[Form A]*				
Sk04.1	Gross Motor: Skill at performing gross motor movements	①	②	③	④
Sk04.2	Fine Motor: Skill at performing fine motor movements	①	②	③	④
Sk04.3	Typing: Skill at typing	①	②	③	④
Sk05	**General Job Skills** *[Form B]*				
Sk05.1	Safety Procedure Adherence: Skill at adhering to safety procedures	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Sk05.2	Hazard and Vulnerability Identification: Skill at identifying safety hazards and security vulnerabilities	①	②	③	④
Sk05.3	Risk Assessment: Skill at assessing risks	①	②	③	④
Sk05.4	Risk Mitigation: Skill at mitigating risks	①	②	③	④
Sk05.5	Housekeeping: Skill at housekeeping in the workplace	①	②	③	④
Sk05.6	Medical Assistance: Skill at providing basic medical assistance (e.g., first aid, CPR, AED)	①	②	③	④
Sk05.7	Establishing Situation Awareness: Skill at interpreting information and the status of the current situation; Determine the net effect of FSEs under various levels of operational status	①	②	③	④
Sk05.8	Anticipating Future Situation: Skill at predicting the consequences of the current situation	①	②	③	④
Sk05.9	Trend Analysis: Skill at performing trend analysis	①	②	③	④
Sk06	Tech Ops Technical Skills *[Form A]*				
Sk06.1	Modifications: Skill at proposing, developing, and/ or evaluating modifications	①	②	③	④
Sk06.2	Troubleshooting: Skill at troubleshooting	①	②	③	④
Sk06.3	Assembly and Disassembly: Skill at assembly and disassembly	①	②	③	④
Sk06.4	Interpreting Technical Drawings: Skill at interpreting technical drawings	①	②	③	④
Sk06.5	Modifying Technical Drawings: Skill at marking up changes to technical drawings	①	②	③	④
Sk06.6	Computer Scripts: Skill at writing simple computer scripts for various purposes	①	②	③	④
Sk06.7	Computer Networking: Skill at computer networking	①	②	③	④
Sk06.8	Computer Maintenance: Skill at computer hardware and software maintenance	①	②	③	④
Sk06.9	Mechanical Maintenance: Skill at mechanical system maintenance	①	②	③	④
Sk06.10	Electronic Maintenance: Skill at electronic system maintenance	①	②	③	④

[KSA Loop 2: Same order as in Loop 1 – Importance. Present only those KSA statements, including the CP items, that were rated as Somewhat important or higher (2 or higher) in the first loop (importance rating) for mastery rating. Go to When Needed on completion] _____

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Sk06.11	Electrical Maintenance: Skill at electrical system maintenance	①	②	③	④
Sk06.12	Pneumatic and Hydraulic Maintenance: Skill at pneumatic and hydraulic system maintenance	①	②	③	④
Sk06.13	Construction Techniques: Skill at basic construction techniques	①	②	③	④
Sk07	**Tools & Equipment Skills** *[Form B]*				
Sk07.1	Tools & Equipment Selection: Skill at selecting appropriate Tools & Equipment	①	②	③	④
Sk07.2	Tools & Equipment Organization: Skill at organizing Tools & Equipment and spare parts	①	②	③	④
Sk07.3	Tools & Equipment Use: Skill at using Tools & Equipment	①	②	③	④
Sk07.4	Tools & Equipment Maintenance: Skill at maintaining Tools & Equipment	①	②	③	④
Ab01	**Sensory Abilities** *[Form A]*				
Ab01.1	Far Vision: The ability to see details at a distance	①	②	③	④
Ab01.2	Near Vision: The ability to see details at close range (i.e., within a few feet of the observer)	①	②	③	④
Ab01.3	Depth Perception: The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object	①	②	③	④
Ab01.4	Peripheral Vision: The ability to see objects or the movement of objects to the side when your eyes are looking ahead	①	②	③	④
Ab01.5	Night Vision: The ability to see under low light conditions	①	②	③	④
Ab01.6	Glare Tolerance: The ability to see objects in the presence of glare or lighting that is bright relative to surroundings	①	②	③	④
Ab01.7	Color Detection: The ability to identify colors	①	②	③	④
Ab01.8	Color Discrimination: The ability to differentiate between colors (e.g., shades, brightness)	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Ab01.9	Auditory Detection: The ability to detect sounds across a range of frequencies and volumes	①	②	③	④
Ab01.10	Auditory Discrimination: The ability to differentiate between sounds that vary in pitch and loudness	①	②	③	④
Ab01.11	Auditory Attention: The ability to focus on a single source of sound in the presence of other distracting sounds	①	②	③	④
Ab01.12	Sound Localization: The ability to discern the direction from which a sound originated	①	②	③	④
Ab01.13	Olfactory Discrimination: The ability to differentiate between odors	①	②	③	④
Ab01.14	Tactile Discrimination: The ability to differentiate between tactile sensations (e.g., temperature, vibration)	①	②	③	④
Ab01.15	Proprioception: The ability to sense the relative position of your body parts and the strength of effort being used	①	②	③	④
Ab01.16	Haptic Identification: The ability to identify objects through the sense of touch	①	②	③	④
Ab02	Verbal Abilities *[Form B]*				
Ab02.1	Oral Comprehension: The ability to listen to and understand information and ideas presented through spoken words and sentences	①	②	③	④
Ab02.2	Oral Expression: The ability to verbally communicate information so others will understand	①	②	③	④
Ab02.3	Speech Recognition: The ability to identify and understand the speech of another person	①	②	③	④
Ab02.4	Written Expression: The ability to communicate information and ideas in writing so others will understand	①	②	③	④
Ab02.5	Speech Clarity: The ability to speak clearly so others can understand you	①	②	③	④
Ab03	Numerical Abilities *[Form B]*				
Ab03.1	Mathematical Reasoning: The ability to choose the right mathematical methods or formulas to solve a problem	①	②	③	④
Ab03.2	Number Facility: The ability to add, subtract, multiply, or divide correctly	①	②	③	④
Ab04	Reasoning Abilities *[Form B]*				

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Ab04.1	Analytic Ability: The ability to make sense of, combine, and organize information into meaningful patterns	①	②	③	④
Ab04.2	Problem Sensitivity: The ability to tell when something is wrong or is likely to go wrong	①	②	③	④
Ab04.3	Pattern Detection: The ability to identify or detect a known pattern (e.g., figure, object, word, sound) that is hidden in other distracting material	①	②	③	④
Ab04.4	Cognitive Ordering: The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules	①	②	③	④
Ab04.5	Deductive Reasoning: The ability to apply general rules to specific problems to produce answers that make sense	①	②	③	④
Ab04.6	Inductive Reasoning: The ability to combine pieces of information, that may initially seem unrelated, to form general rules or conclusions	①	②	③	④
Ab04.7	Idea Generation: The ability to come up with a number of ideas about a topic irrespective of quality, correctness, or creativity	①	②	③	④
Ab05	Spatial Abilities *[Form A]*				
Ab05.1	Spatial Orientation: The ability to know your location in relation to the environment or to know where other objects are in relation to you	①	②	③	④
Ab05.2	Visualization: The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged	①	②	③	④
Ab06	Memory *[Form B]*				
Ab06.1	Working Memory: The ability to actively maintain information in memory in support of a task	①	②	③	④
Ab06.2	Long-Term Memory: The ability to remember information over periods of time ranging from minutes to years	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Ab06.3	Concentration: The ability to concentrate on a task over a period of time without being distracted	①	②	③	④
Ab06.4	Time Sharing: The ability to quickly shift back and forth between two or more activities or sources of information (e.g., speech, sounds, touch)	①	②	③	④
Ab07	**Physical Abilities** *[Form B]*				
Ab07.1	Trunk Strength: The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or becoming fatigued	①	②	③	④
Ab07.2	Static Strength: The ability to exert maximum muscle force to lift, push, pull, or carry objects	①	②	③	④
Ab07.3	Dynamic Strength: The ability to exert muscle force repeatedly or continuously over time, which involves muscular endurance and resistance to muscle fatigue	①	②	③	④
Ab07.4	Dynamic Flexibility: The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/ or legs	①	②	③	④
Ab07.5	Extent Flexibility: The ability to bend, stretch, twist, or reach with your body, arms, and/ or legs	①	②	③	④
Ab07.6	Dynamic Body Coordination: The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion	①	②	③	④
Ab07.7	Gross Body Equilibrium: The ability to keep or regain your body balance or stay upright when in an unstable position	①	②	③	④
Ab07.8	Stamina: The ability to exert yourself physically over long periods without getting winded or out of breath	①	②	③	④
Ab08	**Psychomotor Abilities** *[Form B]*				
Ab08.1	Manual Dexterity: The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Ab08.2	Finger Dexterity: The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects	①	②	③	④
Ab08.3	Arm-Hand Steadiness: The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position	①	②	③	④
Ab08.4	Precise Use of Controls: The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions	①	②	③	④
Ab08.5	Multi-Limb Coordination: The ability to coordinate two or more limbs (e.g., two arms, two legs, one leg and one arm) while sitting, standing, or lying down	①	②	③	④
Ab08.6	Sensory-Motor Coordination: The ability to coordinate movements with sensory stimulus	①	②	③	④
Ab08.7	Response to Competing Stimuli: The ability to choose an appropriate action in response to two or more different stimuli (e.g., lights, sounds, pictures)	①	②	③	④
Ab09	Personality *[Form A]*				
Ab09.1	Work-Schedule Flexibility: The ability to work according to various schedules including rotating shifts, night shifts, and irregular work hours	①	②	③	④
Ab09.2	Stress Tolerance: The ability to function even during periods of high stress	①	②	③	④
Ab09.3	Conscientiousness: Being careful, thorough, precise, detail-oriented, organized, hardworking, and achievement-oriented	①	②	③	④
Ab09.4	Sense of Ownership: Ability to accept personal responsibility for your FSE and other technical work	①	②	③	④
Ab09.5	Integrity: Propensity to consistently hold yourself to ethical standards	①	②	③	④
Ab09.6	Autonomy: Ability to work independently and make important decisions on your own	①	②	③	④

Overall, what level of mastery of this KSA is required for successful journeyman (Career Level III) performance on the job at your SSC?

1=Minimal
2=Intermediate
3=Advanced
4=Expert

		1=Minimal	2=Intermediate	3=Advanced	4=Expert
Ab09.7	Time Consciousness: Ability to manage time by making decisions and completing work in a timely manner	①	②	③	④
Ab09.8	Emotional Stability: Ability to self-regulate emotions and behavior	①	②	③	④
Ab09.9	Self-awareness: Internal awareness of your actions and attitudes, including knowing your limitations	①	②	③	④
Ab09.10	Adaptability: Ability to work in unstructured or changing environments	①	②	③	④
Ab09.11	Patience: Ability to accept or tolerate delays, problems, or suffering without becoming annoyed or anxious when working with others or FSEs	①	②	③	④
Ab09.12	Assertiveness: Ability to be upfront about your wants and needs, while still being considerate of the rights, wants, and needs of others	①	②	③	④
Ab09.13	Risk Tolerance: Ability to accept the substantial risks inherent in the NAS while simultaneously embracing the requirements of the job, including the role you play in mitigating risks	①	②	③	④
Ab09.14	Environmental Tolerance: Ability to work in uncomfortable environments (e.g. extreme weather, cramped quarters, high noise, low or bright light, at heights, around water)	①	②	③	④

Instructions for rating the When the KSA is Needed (When Needed)

The final step in evaluating the KSAs needed do your job at the SSC is to determine which KSAs are needed on the first day on the ATSS job at your SSC. Is a particular KSA needed when a new hire reports for duty at the SSC, or is it learned later through FAA training or on the job? Another way to think about this is whether the new hire should already know or have a particular KSA when hired or whether the FAA will or should train the new hire on that KSA. As in the level of mastery rating, KSA statements you previously rated as "Not important" to doing your job will not be presented (it doesn't make sense to determine if a KSA is needed on Day 1 if that KSA is not important to the job).

Read each knowledge, skill, or ability statement, and then decide whether the KSA is
    if the KSA is not needed on the first day and will be learned later through FAA training or on the job
    or
    needed on the first day as an ATSS at a SSC (and should have been already learned or developed before hire).

Use the following scale to indicate your judgment:

    Is this KSA needed on the first day on the job with the FAA as a systems specialist at a SSC?
        No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training
        Yes=This KSA <u>IS needed</u> on the first day as a systems specialist at a SSC and should have already been learned or developed before hire

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
Kw1	**Knowledge of the FAA** *[Form B]*		
1.1	FAA mission, values, and goals	N	Y
1.2	FAA organizational structure	N	Y
1.3	Safety culture	N	Y
1.4	Labor management relations	N	Y
1.5	Compensation, payroll, and benefits	N	Y
1.6	FAA security requirements and procedures	N	Y
1.7	Time and attendance regulations and procedures	N	Y
1.8	Travel regulations for local and temporary duty	N	Y
Kw2	**Knowledge of Professional ATSS Requirements** *[Form A]*		
2.1	Conduct and discipline regulations and procedures	N	Y
2.2	Medical requirements	N	Y
2.3	Non-technical training requirements	N	Y
2.4	Technical training requirements	N	Y
2.5	Certification requirements	N	Y
2.6	Individual development plan including your plan for certifications	N	Y
2.7	English language	N	Y
Kw3	**Knowledge of NAS Basics** *[Form B]*		
3.1	ATC basics	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
3.2	ATC phraseology and terminology	N	Y
3.3	Technology as the foundation of NAS operations	N	Y
3.4	Types of Technical Operations (Tech Ops) facilities	N	Y
3.5	Tech Ops organizational structure	N	Y
Kw4	Knowledge of Aeronautical Publications and ATSS Procedures and Directives *[Form A]*		
4.1	Purpose	N	Y
4.2	Types of aeronautical publications	N	Y
4.3	Types of ATSS procedures and directives (i.e., FAA Orders, notices, guidelines, and directives)	N	Y
4.4	Technical jargon, symbology, and acronyms	N	Y
4.5	Subject areas covered by each publication, procedure, and directive	N	Y
4.6	Content of aeronautical publications and ATSS procedures and directives	N	Y
4.7	Authoritative source of the information	N	Y
4.8	Location and format of current version	N	Y
4.9	Sensitivity level of documents	N	Y
Kw5	Knowledge of Science and Mathematics *[Form A & B]*		
5.1	Basic physics	N	Y
5.2	Electro-mechanical theory	N	Y
5.3	Basic chemistry	N	Y
5.4	Basic mathematics (i.e., addition, subtraction, multiplication, division)	N	Y
5.4.1.CP	Addition, subtraction	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
5.4.2.CP	Multiplication, (long) division	N	Y
5.5	Intermediate mathematics (i.e., algebra, geometry, trigonometry)	N	Y
5.5.1.CP	Exponents and roots (radicals)	N	Y
5.5.2.CP	Logarithms	N	Y
5.5.3.CP	Algebraic equations with one unknown variable (to solve for)	N	Y
5.5.4.CP	Algebraic equations containing fractions	N	Y
5.5.5.CP	Algebraic equations containing radicals (e.g., square roots, etc.)	N	Y
5.5.6.CP	Algebraic equations with polynomials	N	Y
5.5.7.CP	Simplifying algebraic equations by factoring	N	Y
5.5.8.CP	Algebraic systems of linear equations with two or more unknown variables	N	Y
5.5.9.CP	Geometry of circles, ellipses, and other curved shapes	N	Y
5.5.10.CP	Geometry for volume and surface area of 3-dimensional shapes	N	Y
5.5.11.CP	Geometry of angles	N	Y
5.5.12.CP	Geometry of triangles	N	Y
5.5.13.CP	Trigonometric functions (also called circular functions) (sine, cosine, secant, tangent)	N	Y
5.5.14.CP	Graphing of trigonometric functions	N	Y
5.5.15.CP	Vectors and scalars	N	Y
5.5.16.CP	Set theory	N	Y
5.5.17.CP	Boolean algebra	N	Y
5.6	Advanced mathematics (i.e., calculus)	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
5.6.1.CP	Limit theory	N	Y
5.6.2.CP	Differentiation in calculus	N	Y
5.6.3.CP	Integration in calculus	N	Y
5.7	Trend and other analyses of FSE performance data	N	Y
Kw6	Knowledge of Human Factors *[Form A]*		
6.1	Human cognitive performance limitations	N	Y
6.2	Human physical performance limitations	N	Y
6.3	Team concepts	N	Y
Kw7	Knowledge of Safety and Security *[Form B]*		
7.1	FAA safety and security policies, regulations, procedures, and guidelines	N	Y
7.2	Local, state, and Federal safety and security regulations, procedures, and codes	N	Y
7.3	First aid, CPR, and use of AED	N	Y
7.4	Risk management policies and procedures	N	Y
7.5	Fire life safety theory	N	Y
7.6	Computer and network security concepts	N	Y
Kw8	Knowledge of Emergencies and Unusual Situations *[Form A]*		
8.1	Types of emergencies or unusual operations	N	Y
8.2	Evacuation procedures	N	Y
8.3	Appropriate actions to resolve the emergency or unusual situation	N	Y
8.4	Emergency assistance techniques	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
8.5	Notification requirements	N	Y
8.6	Coordination requirements	N	Y
8.7	Reporting requirements	N	Y
8.8	Survival techniques	N	Y
Kw9	Knowledge of Weather Fundamentals *[Form B]*		
9.1	Weather phenomena	N	Y
9.2	Atmospheric pressure (i.e., barometric pressure)	N	Y
9.3	Sources of weather information	N	Y
9.4	Weather forecasting terminology	N	Y
9.5	Weather forecast interpretation	N	Y
9.6	Impact of weather on NAS operations	N	Y
Kw10	Knowledge of Technical Drawings *[Form A & B]*		
10.1	How to read and interpret content and symbols	N	Y
10.1.1.CP	Basic symbols (ground, batteries, power, resistors, capacitors, inductors, diodes, transistors, switches, transformers)	N	Y
10.1.2.CP	Specialty symbols (antennas, crystals, specialized diodes, J-FET, logic gates, photoresistor, relay)	N	Y
10.1.3.CP	Functional block (circuit, equipment) block diagrams	N	Y
10.1.4.CP	Wiring diagrams	N	Y
10.1.5.CP	Schematics	N	Y
10.2	Proper use of technical drawings	N	Y
10.3	Techniques for modifying technical drawings	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
10.4	Location of control drawings (i.e., current version)	N	Y
Kw11	Knowledge of Local Facility *[Form A]*		
11.1	Facility layout	N	Y
11.2	Airport configuration	N	Y
11.3	Airport operating regulations or procedures	N	Y
11.4	Airspace boundaries	N	Y
11.5	Operations at own FAA facility including all areas of responsibility	N	Y
11.6	Operations at adjacent facilities	N	Y
11.7	Local weather patterns	N	Y
11.8	Local geography	N	Y
11.9	Local terrain	N	Y
11.10	Local culture & history	N	Y
Kw12	Knowledge of Electrical Theory *[Form A & B]*		
12.1	AC and DC theory	N	Y
12.2	Series, parallel, and combination circuits	N	Y
12.2.1.CP	Parallel circuits	N	Y
12.2.2.CP	Series circuits	N	Y
12.2.3.CP	Combination circuits	N	Y
12.1.4.CP	Direct current circuits	N	Y
12.3	Electrical theorems	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
12.3.1.CP	Ohm's Law formulas	N	Y
12.3.2.CP	Power formulas	N	Y
12.4	Inductive and capacitive reactance	N	Y
12.5	Grounding, bonding, lightening protection theory	N	Y
12.6	Power distribution systems theory	N	Y
12.7	Electrical interference	N	Y
12.8	Harmonics	N	Y
Kw13	Knowledge of Electronic Theory *[Form A & B]*		
13.1	Digital logic basics	N	Y
13.1.1.CP	Digital logic clock frequency	N	Y
13.1.2.CP	Digital logic encoder	N	Y
13.1.3.CP	Digital logic decoder	N	Y
13.1.4.CP	Digital logic addressing	N	Y
13.1.5.CP	Digital gate types (AND, NAND, etc.)	N	Y
13.1.6.CP	Transistors, Field Effect Transistors, J-FET	N	Y
13.2	Digital signal theory	N	Y
13.3	Analog signal theory	N	Y
13.4	Electronic theorems	N	Y
13.4.1.CP	Kirchoff's Law	N	Y
13.4.2.CP	Circuit theorems (Thevenin's and Norton's Theorems)	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

> No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training
>
> Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
13.5	Circuit components	N	Y
13.6	Circuit types	N	Y
13.6.1.CP	Filter circuits	N	Y
13.6.2.CP	Amplifier circuits	N	Y
13.6.3.CP	Rectifier circuits	N	Y
13.6.4.CP	Integrated circuits	N	Y
13.7	Fiber optic systems	N	Y
Kw14	Knowledge of Radio Frequency Theory *[Form A & B]*		
14.1	RF spectrum	N	Y
14.1.1.CP	Electro-magnetic spectrum	N	Y
14.1.2.CP	Waveforms and fields	N	Y
14.1.3.CP	Modulation	N	Y
14.1.4.CP	RF transmission, transmitter, receiver, generator	N	Y
14.1.5.CP	Impedance calculation, transformation	N	Y
14.1.6.CP	Standing wave ratio	N	Y
14.2	RF interference	N	Y
14.3	Effects of environmental factors (e.g., terrain, weather)	N	Y
14.4	Radiation patterns	N	Y
14.5	Antenna theory	N	Y
14.5.1.CP	Reflection coefficient	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
14.5.2.CP	Transmission line loss	N	Y
14.5.3.CP	Capacitive reactance	N	Y
14.5.4.CP	Antenna physical and electrical length	N	Y
14.5.5.CP	Parallel impedance	N	Y
14.6	Waveform propagation methods	N	Y
14.7	Transmission theory	N	Y
Kw15	Knowledge of Computer Networking *[Form A & B]*		
15.1	Connectivity principles	N	Y
15.2	Networking hardware	N	Y
15.2.1.CP	Physical storage media types (hard disk, tape drive, etc.)	N	Y
15.2.2.CP	Cables	N	Y
15.2.3.CP	Repeaters	N	Y
15.2.4.CP	Hubs	N	Y
15.2.5.CP	Bridges	N	Y
15.2.6.CP	Switches	N	Y
15.2.7.CP	Routers	N	Y
15.2.8.CP	Wireless access points	N	Y
15.2.9.CP	Network addressing	N	Y
15.2.10. CP	Network routing	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
15.2.11.CP	Network switching	N	Y
15.2.12.CP	Network topology analysis	N	Y
15.3	Networking software	N	Y
15.4	Cloud computing	N	Y
15.5	Networking security principles	N	Y
Kw16	Knowledge of Communication System Theory *[Form B]*		
16.1	Communication concepts	N	Y
16.2	Fundamentals of communication systems	N	Y
16.3	Types of communication systems	N	Y
16.4	Components of communication systems	N	Y
16.5	Applications of communication systems	N	Y
16.6	Limitations of communication systems	N	Y
Kw17	Knowledge of Automation System Theory *[Form A]*		
17.1	Automation concepts	N	Y
17.2	Fundamentals of automation systems	N	Y
17.3	Types of automation systems	N	Y
17.4	Components of automation systems	N	Y
17.5	Applications of automation systems	N	Y
17.6	Limitations of automation systems	N	Y
Kw18	Knowledge of Navigational System Theory *[Form A]*		

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
18.1	Navigation concepts	N	Y
18.2	Fundamentals of navigation systems	N	Y
18.3	Types of navigation systems	N	Y
18.4	Components of navigation systems	N	Y
18.5	Applications of navigation systems	N	Y
18.6	Limitations of navigation systems	N	Y
Kw19	Knowledge of Surveillance Systems Theory *[Form B]*		
19.1	Surveillance concepts	N	Y
19.2	Fundamentals of surveillance systems	N	Y
19.3	Types of surveillance systems	N	Y
19.4	Components of surveillance systems	N	Y
19.5	Applications of surveillance systems	N	Y
19.6	Limitations of surveillance systems	N	Y
Kw20	Knowledge of Environmental System Theory *[Form B]*		
20.1	Power conditioning theory	N	Y
20.2	HVAC theory	N	Y
20.3	Plumbing principles	N	Y
20.4	Building automation control theory	N	Y
20.5	Basic building construction	N	Y
Kw21	Knowledge of Facilities, Services, and Equipment (FSE) *[Form B]*		

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
21.1	FSE functionality	N	Y
21.2	FSE stakeholders	N	Y
21.3	How the FSE works	N	Y
21.4	FSE policies and procedures	N	Y
21.5	Components of FSE	N	Y
21.6	Location of FSE and components	N	Y
21.7	Applications of FSE	N	Y
21.8	Limitations of FSE	N	Y
21.9	FSE infrastructure	N	Y
21.10	Interoperability of FSEs	N	Y
21.11	Impact of weather on FSE	N	Y
21.12	PM procedures	N	Y
21.13	CM procedures	N	Y
21.14	Troubleshooting procedures	N	Y
21.15	Certification procedures	N	Y
21.16	FSE spare part procurement procedures	N	Y
21.17	FSE spare part inventory procedures	N	Y
21.18	Impact of FSE degradation or loss to stakeholders	N	Y
21.19	FSE activity logging procedures	N	Y
21.20	Availability and reliability performance metrics	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
Kw22	**Knowledge of Tools & Equipment** *[Form A]*		
22.1	Types of Tools & Equipment	N	Y
22.2	Functionality of Tools & Equipment	N	Y
22.3	Storage of Tools & Equipment	N	Y
22.4	Appropriate Tools & Equipment for task	N	Y
22.5	Use of Tools & Equipment	N	Y
22.6	Limitations of the Tools & Equipment	N	Y
22.7	Maintenance of Tools & Equipment	N	Y
22.8	Inspection requirements for Tools & Equipment	N	Y
22.9	Degradation indicators for Tools & Equipment	N	Y
22.10	Minor troubleshooting procedures for Tools & Equipment	N	Y
22.11	Procurement procedures for Tools & Equipment	N	Y
22.12	Inventory procedures for Tools & Equipment	N	Y
Sk01	**Cognitive Skills** *[Form B]*		
Sk01.1	Active Learning: Skill at understanding the implications of new information for both current and future problem solving and decision-making	N	Y
Sk01.2	Mathematics: Skill at using mathematics to solve problems	N	Y
Sk01.3	Reading Comprehension: Skill at understanding written sentences in English in work-related documents	N	Y
Sk01.4	Communication Flexibility: Skill at modifying content and style of communication to be appropriate for the audience and medium	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
Sk01.5	Writing: Skill at communicating effectively in English in writing	N	Y
Sk02	Interpersonal Skills *[Form A]*		
Sk02.1	Instructing: Skill at using OJT training or instructional methods and procedures appropriate for the situation	N	Y
Sk02.2	Interpersonal: Skill at interpersonal relations	N	Y
Sk02.3	Teamwork: Skill at working in teams to accomplish a common goal	N	Y
Sk02.4	Negotiation: Skill at bringing others together and trying to reconcile differences by compromising if necessary	N	Y
Sk02.5	Persuasion: Skill at persuading others to change their minds or behavior	N	Y
Sk02.6	Service Orientation: Skill at actively looking for ways to help people	N	Y
Sk02.7	Leadership: Skill at leading or organizing efforts to accomplish projects	N	Y
Sk03	Self-Management Skills *[Form B]*		
Sk03.1	Fatigue Management: Skill at managing and minimizing fatigue	N	Y
Sk03.2	Prioritization: Skill at prioritizing job tasks	N	Y
Sk03.3	Resources: Skill at utilizing resources (e.g., people, money, materials) efficiently	N	Y
Sk03.4	Time Management: Skill at managing your time and the time of others	N	Y
Sk03.5	Stress Management: Skill at continuing to work effectively even under stress	N	Y
Sk04	Psychomotor Skills *[Form A]*		
Sk04.1	Gross Motor: Skill at performing gross motor movements	N	Y
Sk04.2	Fine Motor: Skill at performing fine motor movements	N	Y
Sk04.3	Typing: Skill at typing	N	Y
Sk05	General Job Skills *[Form B]*		

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
Sk05.1	Safety Procedure Adherence: Skill at adhering to safety procedures	N	Y
Sk05.2	Hazard and Vulnerability Identification: Skill at identifying safety hazards and security vulnerabilities	N	Y
Sk05.3	Risk Assessment: Skill at assessing risks	N	Y
Sk05.4	Risk Mitigation: Skill at mitigating risks	N	Y
Sk05.5	Housekeeping: Skill at housekeeping in the workplace	N	Y
Sk05.6	Medical Assistance: Skill at providing basic medical assistance (e.g., first aid, CPR, AED)	N	Y
Sk05.7	Establishing Situation Awareness: Skill at interpreting information and the status of the current situation; Determine the net effect of FSEs under various levels of operational status	N	Y
Sk05.8	Anticipating Future Situation: Skill at predicting the consequences of the current situation	N	Y
Sk05.9	Trend Analysis: Skill at performing trend analysis	N	Y
Sk06	Tech Ops Technical Skills *[Form A]*		
Sk06.1	Modifications: Skill at proposing, developing, and/ or evaluating modifications	N	Y
Sk06.2	Troubleshooting: Skill at troubleshooting	N	Y
Sk06.3	Assembly and Disassembly: Skill at assembly and disassembly	N	Y
Sk06.4	Interpreting Technical Drawings: Skill at interpreting technical drawings	N	Y
Sk06.5	Modifying Technical Drawings: Skill at marking up changes to technical drawings	N	Y
Sk06.6	Computer Scripts: Skill at writing simple computer scripts for various purposes	N	Y
Sk06.7	Computer Networking: Skill at computer networking	N	Y
Sk06.8	Computer Maintenance: Skill at computer hardware and software maintenance	N	Y
Sk06.9	Mechanical Maintenance: Skill at mechanical system maintenance	N	Y

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, not needed on Day 1	Yes, needed on Day 1
Sk06.10	Electronic Maintenance: Skill at electronic system maintenance	N	Y
Sk06.11	Electrical Maintenance: Skill at electrical system maintenance	N	Y
Sk06.12	Pneumatic and Hydraulic Maintenance: Skill at pneumatic and hydraulic system maintenance	N	Y
Sk06.13	Construction Techniques: Skill at basic construction techniques	N	Y
Sk07	Tools & Equipment Skills *[Form B]*		
Sk07.1	Tools & Equipment Selection: Skill at selecting appropriate Tools & Equipment	N	Y
Sk07.2	Tools & Equipment Organization: Skill at organizing Tools & Equipment and spare parts	N	Y
Sk07.3	Tools & Equipment Use: Skill at using Tools & Equipment	N	Y
Sk07.4	Tools & Equipment Maintenance: Skill at maintaining Tools & Equipment	N	Y
Ab01	Sensory Abilities *[Form A]*		
Ab01.1	Far Vision: The ability to see details at a distance	N	Y
Ab01.2	Near Vision: The ability to see details at close range (i.e., within a few feet of the observer)	N	Y
Ab01.3	Depth Perception: The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object	N	Y
Ab01.4	Peripheral Vision: The ability to see objects or the movement of objects to the side when your eyes are looking ahead	N	Y
Ab01.5	Night Vision: The ability to see under low light conditions	N	Y
Ab01.6	Glare Tolerance: The ability to see objects in the presence of glare or lighting that is bright relative to surroundings	N	Y
Ab01.7	Color Detection: The ability to identify colors	N	Y
Ab01.8	Color Discrimination: The ability to differentiate between colors (e.g., shades, brightness)	N	Y
Ab01.9	Auditory Detection: The ability to detect sounds across a range of frequencies and volumes	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
Ab01.10	Auditory Discrimination: The ability to differentiate between sounds that vary in pitch and loudness	N	Y
Ab01.11	Auditory Attention: The ability to focus on a single source of sound in the presence of other distracting sounds	N	Y
Ab01.12	Sound Localization: The ability to discern the direction from which a sound originated	N	Y
Ab01.13	Olfactory Discrimination: The ability to differentiate between odors	N	Y
Ab01.14	Tactile Discrimination: The ability to differentiate between tactile sensations (e.g., temperature, vibration)	N	Y
Ab01.15	Proprioception: The ability to sense the relative position of your body parts and the strength of effort being used	N	Y
Ab01.16	Haptic Identification: The ability to identify objects through the sense of touch	N	Y
Ab02	Verbal Abilities *[Form B]*		
Ab02.1	Oral Comprehension: The ability to listen to and understand information and ideas presented through spoken words and sentences	N	Y
Ab02.2	Oral Expression: The ability to verbally communicate information so others will understand	N	Y
Ab02.3	Speech Recognition: The ability to identify and understand the speech of another person	N	Y
Ab02.4	Written Expression: The ability to communicate information and ideas in writing so others will understand	N	Y
Ab02.5	Speech Clarity: The ability to speak clearly so others can understand you	N	Y
Ab03	Numerical Abilities *[Form B]*		
Ab03.1	Mathematical Reasoning: The ability to choose the right mathematical methods or formulas to solve a problem	N	Y
Ab03.2	Number Facility: The ability to add, subtract, multiply, or divide correctly	N	Y
Ab04	Reasoning Abilities *[Form B]*		
Ab04.1	Analytic Ability: The ability to make sense of, combine, and organize information into meaningful patterns	N	Y
Ab04.2	Problem Sensitivity: The ability to tell when something is wrong or is likely to go wrong	N	Y

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
	Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC? No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire		
Ab04.3	Pattern Detection: The ability to identify or detect a known pattern (e.g., figure, object, word, sound) that is hidden in other distracting material	N	Y
Ab04.4	Cognitive Ordering: The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules	N	Y
Ab04.5	Deductive Reasoning: The ability to apply general rules to specific problems to produce answers that make sense	N	Y
Ab04.6	Inductive Reasoning: The ability to combine pieces of information, that may initially seem unrelated, to form general rules or conclusions	N	Y
Ab04.7	Idea Generation: The ability to come up with a number of ideas about a topic irrespective of quality, correctness, or creativity	N	Y
Ab05	Spatial Abilities *[Form A]*		
Ab05.1	Spatial Orientation: The ability to know your location in relation to the environment or to know where other objects are in relation to you	N	Y
Ab05.2	Visualization: The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged	N	Y
Ab06	Memory *[Form B]*		
Ab06.1	Working Memory: The ability to actively maintain information in memory in support of a task	N	Y
Ab06.2	Long-Term Memory: The ability to remember information over periods of time ranging from minutes to years	N	Y
Ab06.3	Concentration: The ability to concentrate on a task over a period of time without being distracted	N	Y
Ab06.4	Time Sharing: The ability to quickly shift back and forth between two or more activities or sources of information (e.g., speech, sounds, touch)	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
Ab07	**Physical Abilities** *[Form B]*		
Ab07.1	Trunk Strength: The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or becoming fatigued	N	Y
Ab07.2	Static Strength: The ability to exert maximum muscle force to lift, push, pull, or carry objects	N	Y
Ab07.3	Dynamic Strength: The ability to exert muscle force repeatedly or continuously over time, which involves muscular endurance and resistance to muscle fatigue	N	Y
Ab07.4	Dynamic Flexibility: The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/ or legs	N	Y
Ab07.5	Extent Flexibility: The ability to bend, stretch, twist, or reach with your body, arms, and/ or legs	N	Y
Ab07.6	Dynamic Body Coordination: The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion	N	Y
Ab07.7	Gross Body Equilibrium: The ability to keep or regain your body balance or stay upright when in an unstable position	N	Y
Ab07.8	Stamina: The ability to exert yourself physically over long periods without getting winded or out of breath	N	Y
Ab08	**Psychomotor Abilities** *[Form B]*		
Ab08.1	Manual Dexterity: The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects	N	Y
Ab08.2	Finger Dexterity: The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects	N	Y
Ab08.3	Arm-Hand Steadiness: The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

		No, not needed on Day 1	Yes, needed on Day 1
	Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC? No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire		
Ab08.4	Precise Use of Controls: The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions	N	Y
Ab08.5	Multi-Limb Coordination: The ability to coordinate two or more limbs (e.g., two arms, two legs, one leg and one arm) while sitting, standing, or lying down	N	Y
Ab08.6	Sensory-Motor Coordination: The ability to coordinate movements with sensory stimulus	N	Y
Ab08.7	Response to Competing Stimuli: The ability to choose an appropriate action in response to two or more different stimuli (e.g., lights, sounds, pictures)	N	Y
Ab09	Personality *[Form A]*		
Ab09.1	Work-Schedule Flexibility: The ability to work according to various schedules including rotating shifts, night shifts, and irregular work hours	N	Y
Ab09.2	Stress Tolerance: The ability to function even during periods of high stress	N	Y
Ab09.3	Conscientiousness: Being careful, thorough, precise, detail-oriented, organized, hardworking, and achievement-oriented	N	Y
Ab09.4	Sense of Ownership: Ability to accept personal responsibility for your FSE and other technical work	N	Y
Ab09.5	Integrity: Propensity to consistently hold yourself to ethical standards	N	Y
Ab09.6	Autonomy: Ability to work independently and make important decisions on your own	N	Y
Ab09.7	Time Consciousness: Ability to manage time by making decisions and completing work in a timely manner	N	Y
Ab09.8	Emotional Stability: Ability to self-regulate emotions and behavior	N	Y
Ab09.9	Self-awareness: Internal awareness of your actions and attitudes, including knowing your limitations	N	Y
Ab09.10	Adaptability: Ability to work in unstructured or changing environments	N	Y

[KSA Loop 3: Same order as in Loop 2 – Mastery. Present only items previously presented for mastery rating. Go to Additional KSAs on completion.]

Is this knowledge, skill, or ability needed on the first day ("Day 1") as an ATSS at the SSC?

No=This KSA is <u>NOT</u> needed on the first day as an ATSS at a SSC and will be learned on the job or in FAA training

Yes=This KSA <u>IS needed</u> on the first day as an ATSS at a SSC and should have already been learned or developed before hire

		No, <u>not</u> needed on Day 1	Yes, needed on Day 1
Ab09.11	Patience: Ability to accept or tolerate delays, problems, or suffering without becoming annoyed or anxious when working with others or FSEs	N	Y
Ab09.12	Assertiveness: Ability to be upfront about your wants and needs, while still being considerate of the rights, wants, and needs of others	N	Y
Ab09.13	Risk Tolerance: Ability to accept the substantial risks inherent in the NAS while simultaneously embracing the requirements of the job, including the role you play in mitigating risks	N	Y
Ab09.14	Environmental Tolerance: Ability to work in uncomfortable environments (e.g. extreme weather, cramped quarters, high noise, low or bright light, at heights, around water)	N	Y

Additional KSAs

[Form A & B]

Are there any other knowledge, skills or abilities that you think should be included in the analysis? If yes, enter the additional KSA statement in the box below (Click anywhere in the box with the text "Additional KSA Statement" and start typing your additional KSA). Then rate the additional KSA in terms of (a) how important the additional KSA is to successful performance at the journeyman (Career Level III) level, (b) what level of mastery of the KSA is needed for that successful performance, and (c) whether the KSA is needed on Day 1 at the SSC or can be learned later through training.

Add just one KSA at a time in the box, make your ratings, and then press the "SUBMIT KSA" button to add it to the list. You must rate the additional KSA to submit it. You can delete an additional KSA from the list by pressing the "DELETE KSA" button for the additional KSA you wish to delete.

Enter your additional KSA statement below, rate it, then press SUBMIT KSA to add it to the list. You may add as many KSA statements as you like, one at a time. You may delete an additional KSA statement from your list by pressing the DELETE KSA button at the far right.	1=Not important at all	2=Somewhat important	3=Important	4=Very important	5=Extremely important	1=Minimal	2=Intermediate	3=Advanced	4=Expert	No, <u>not</u> needed on Day 1	Yes, needed on Day 1	
(Additional KSA Statement)	①	②	③	④	⑤	①	②	③	④	N	Y	SUBMIT KSA
Additional KSA #1												DELETE KSA
Additional KSA #2												DELETE KSA

[Go to Section 7 Comments on completion]

Section 7: Comments

[Form A & B]

Use the space below to add any other comments about the work you do, the KSAs required for that work, or other aspects of the job you feel were not adequately covered in the ATSS Job Analysis Survey. You can submit multiple comments by writing a comment and then pressing the SUBMIT COMMENT button. Then write another comment and submit it, and so forth. Each comment then will be added to the list of comments you have made. You can delete a comment by pressing the DELETE COMMENT button by each comment in the list.

[Write your comment here]	SUBMIT COMMENT

Comment #1	DELETE COMMENT
Comment #2	DELETE COMMENT

[Go to Survey End]

[Page displays when survey is completed] [Form A & B]

Thank you VERY much for taking the time to complete the ATSS Job Analysis Survey 2016. The data collected by this survey will be the foundation for improving how Technical Operations improves the 2101 hiring process as described in the Technical Operations Workforce Strategy.

As mentioned in the introduction, the results of the ATSS Job Analysis Survey 2016 will be fully shared with PASS. Copies of the briefings and reports based on the survey data can be requested by contacting [PASS representative, AJW POC, and/or AJG POC?] later in the spring of 2016.

Again, thank your for taking the time to finish the ATSS Job Analysis Survey 2016.

APPENDIX I: ADDITIONAL TASK STATEMENTS PROVIDED BY SURVEY PARTICIPANTS

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Verify current state of SSC FSEP via TechNet RMLS Dashboard.	D01.03 Retrieve information regarding the current status of FSEs, NAS ops, & environmental conditions	
Check equipment for normal operation as you pass through a room, ie normal light indications, fault screens, AC/Heat working, and equipment fans normal.	D01.04 Scan FSEs by in-person inspection	
Standing Watch and Continous Montitoring of a Level 1 Facilty.	D01.08 Monitor FSEs continually	
Watch Standing	D01.08 Monitor FSEs continually	
Monitor status of Airport Operations events	D01.09 Monitor NAS ops & environmental conditions continually	
Talking on the phone with other ATSS, MOCC,and Manager on my RDO.	D01.10 Brief others regarding the status of FSEs, NAS ops, & environmental conditions	
Airport access badges.	D02.02 Maintain currency, security, & condition of your PIV, PIV token, facility badges, & keys	Also D13.02 PIV coordinator - expand to other access badges?
Communication between all SSC employees on tasks that will be performed daily and location of where tasks will be performed..	D02.04 Manage internal FAA communications	
Filling out Castle/time sheets	D02.05 Complete ongoing human resource activities	
time card	D02.05 Complete ongoing human resource activities	
FIRST RESPONDERS	D03.02 Respond to emergency situations	
Handling and disposal of HAZMAT	D03.03 Follow prescribed safety & security standards & practices	
Housekeeping	D03.03 Follow prescribed safety & security standards & practices	
IT security	D03.03 Follow prescribed safety & security standards & practices	Too broad

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Use Hazardous materials (HAZMAT) to Perform maintenance	D03.03 Follow prescribed safety & security standards & practices	
Inspect work and maintenance areas and facilities to/against established and recognised workplace safety standards.	D03.04 Identify safety hazards	
Reporting Unsafe Conditions	D03.04 Identify safety hazards	
Threat Assessment	D03.05 Identify security vulnerabilities	
Escort Engineers	D03.12 Escort contractors & other non-FAA personnel	
Escorting contractors	D03.12 Escort contractors & other non-FAA personnel	
Reporting Failures	D04.03 Report maintenance-related information to appropriate Control Center	
Coordinate activities with outside organizations	D04.14 Coordinate maintenance activities with stakeholders	
COORDINATE WITH AIRPORT MAINTENACE ACTIVITIES (OBTAIN COGNIZANCE)	D04.14 Coordinate maintenance activities with stakeholders	
coordinating contractor activities to minimize effects on operational FSE	D04.14 Coordinate maintenance activities with stakeholders	
Coordination of maintenance activities	D04.14 Coordinate maintenance activities with stakeholders	
Coorespond with engineering on future projects.	D04.14 Coordinate maintenance activities with stakeholders	
support non faa functions vital to the NAS ie: DOD	D04.14 Coordinate maintenance activities with stakeholders	
Adaptation Upgrade	D07.09 Install FSE modification	Adaptation upgrade = software modification
Software Upgrade	D08 Perform FSE Installation and Construction Activities	
SSC Coordinator Attend construction and design meetings	D08.03 Participate in installation & construction design meetings	
asking SOC to prioritize tasks being received towards TCOMM	D08.06 Coordinate with stakeholders	

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Assist Air Traffic with their complaints of Techops equipment	D08.06 Coordinate with stakeholders	
Communicate maintenance activities and actions to all stakeholders, AT, Tech Ops and contractors	D08.06 Coordinate with stakeholders	Too broad
Communicate Requirements	D08.06 Coordinate with stakeholders	
COMMUNICATION BETWEEN PEERS, MANAGERS AND STAKEHOLDERS	D08.06 Coordinate with stakeholders	
Conduct conflict resolution from custormers	D08.06 Coordinate with stakeholders	
Logistics for purchases and parts ordered.	D11 Ensure Availability of Tools & Equipment and Spare Parts	
Logistics performance	D11 Ensure Availability of Tools & Equipment and Spare Parts	
LOGISTICS- Shipping and Receiving	D11 Ensure Availability of Tools & Equipment and Spare Parts	
Logistics, Ordering, Coordinating, Shipping	D11 Ensure Availability of Tools & Equipment and Spare Parts	
Ordering items	D11 Ensure Availability of Tools & Equipment and Spare Parts	
Procurement of goods and services to maintain FSE	D11 Ensure Availability of Tools & Equipment and Spare Parts	
Returning Repair Parts to Depot	D11.02 Determine what action is required in response to inventory status	
buying, finding and researching Parts	D11.04 Order T&E & spare parts	
calibration of test equipment: faa/dod	D11.10 Maintain T&E	
Ensure Safety of Life system(s)/Equipment are operable/working properly etc	D11.10 Maintain T&E	
GSA vehical maintenance	D11.10 Maintain T&E	
handling vehicle maintenance	D11.10 Maintain T&E	
Inspection of test equipment	D11.10 Maintain T&E	
Keeping government vehicle up (cleaning inside/outside, organizing)	D11.10 Maintain T&E	
Maintain Calibration of test equipment	D11.10 Maintain T&E	

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
MAINTAIN GOVERNMENT OWNED VEHICLES	D11.10 Maintain T&E	
Maintain Government Vehicle	D11.10 Maintain T&E	
Maintain MDT	D11.10 Maintain T&E	
maintain PPE	D11.10 Maintain T&E	
maintain vehicles	D11.10 Maintain T&E	
Maintain vehicles	D11.10 Maintain T&E	
Maintain Vehicles	D11.10 Maintain T&E	
Maintenance and Operation of GSA Vehicles.	D11.10 Maintain T&E	
Maintenance of vehicles.	D11.10 Maintain T&E	
Make sure vehicles are cleaned and properly maintained.	D11.10 Maintain T&E	
performing vehicle maintenance	D11.10 Maintain T&E	
Use;/Maintain Personal Protective Equipment	D11.10 Maintain T&E	
Vehicle Maint.	D11.10 Maintain T&E	
Vehicle maintenance	D11.10 Maintain T&E	
Vehicle support	D11.10 Maintain T&E	
ENVIRONMENTAL DUITES SUCH AS MOWING, CUTTING TREES AND BRUSH, CLEANING CULVERTS, OPERATING EQUIPTMENT,MOVING SNOW, DRIVING SNOW MACHINES, BUSH HOGGING WITH A TRACTOR, USING A CHAIN SAW.	D12 Perform Technical Collateral Tasks	
perform duties administrative	D12 Perform Technical Collateral Tasks	
Perform tasks not assigned, such as plumbing, lighting... Needs to be done and no one else to do it	D12 Perform Technical Collateral Tasks	
perform training exercises	D12 Perform Technical Collateral Tasks	
Provide watchbill covering 20 hours of operation at a Core Airport	D12 Perform Technical Collateral Tasks	
Providing administrative support to other organizations and facilities, Researching best	D12 Perform Technical Collateral Tasks	

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
prices for purchases, providing other ad-hoc mission related services		
Attend Training	D12.01 Complete technical FSE training	
Attend training in OKC.	D12.01 Complete technical FSE training	
Mentor	D12.03 Train others in an informal capacity	
Share knowledge	D12.03 Train others in an informal capacity	
train new employees/less experienced employees how to perform tasks.	D12.03 Train others in an informal capacity	
Train on other than EOSH issues, EOSH is captured in the survey.	D12.03 Train others in an informal capacity	
Trainer	D12.03 Train others in an informal capacity	
Training lesser qualified technicians.	D12.03 Train others in an informal capacity	
Work with lesser qualified techs to complete their workload.	D12.03 Train others in an informal capacity	
On the job training	D12.04 Train other specialists as OJTI in preparation for personnel certification	
Provide OJT and administer certification exams for other specialists.	D12.04 Train other specialists as OJTI in preparation for personnel certification	
FSEP Database maint.	D12.05 Provide FSE performance data to assist the FAA in trend analysis & other evaluations	
AITS/PROPERTY RECORDS	D12.08 Maintain local non-FSE databases & tracking sheets	
sme for any project and telcons for that info	D12.13 Participate as a technical subject matter expert (SME)	
commitee regarding oil platform communication sites.	D12.15 Interface with external stakeholders	
Interacting with airport workers and management to facilitate good repore with the airport and the public.	D12.15 Interface with external stakeholders	
Interface with engineers / contractors for building new or repairing exsisting facilities	D12.15 Interface with external stakeholders	
interfacoing with users such as Air Traffic, Military and local oficials	D12.15 Interface with external stakeholders	
perform customer service	D12.15 Interface with external stakeholders	

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Provide additional support to AT and TO personnel for construction projects, repairs, infrastructure improvements, etc.	D12.15 Interface with external stakeholders	
SSC Coordinator. On hand to answer phones to handle repairs and or set up site visits	D13 Perform special duties	
FIRE ALARM SYSTEMS	D13.04 Facility Safety Coordinator	
Contracting Officer Representative (COR)	D13.07 Contracting Officers Representative (COR)	
Contrator Support, I meet with and assist contractors for new installs and upgrades to facility and it's equipment	D13.07 Contracting Officer's Representative (COR)	
Maintain administrative data systems, to include payroll, time cards, travel vouchers, and credit card systems.	D13.10 Purchase Card Holder	
perform administrative tasks such as timesheet and purchase card admin tasks.	D13.10 Purchase Card Holder	
Performing credit card & PCPS paperwork	D13.10 Purchase Card Holder	
PERFORMING PURCHASES, PCPS, US BANK, RESEARCH	D13.10 Purchase Card Holder	
Purchase Card purchases.. This is a time consuming process but huge in getting parts for maintenance	D13.10 Purchase Card Holder	
Authorized Rescuer	D13.14 Rescue Tower Climber	
ADMINISTRATIVE TASKS	D2 Perform administrative tasks	
Check Email	D2 Perform administrative tasks	Too specific - part of overall admin (D2) and SA (D1)
checking emai	D2 Perform administrative tasks	Too specific - part of overall admin (D2) and SA (D1)
consumption, training amount of time spent	D2 Perform administrative tasks	
Computer Application Upgrades	D7 Perform Modifications on FSEs	
Ensure that all modifications meet the current FAA Orders and Regulations.	D7 Perform Modifications on FSEs	
Modfications	D7 Perform Modifications on FSEs	
Modify Infrastructure	D7 Perform Modifications on FSEs	

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Perform Equipment Modifications - Requires Coordination, Performing, logging, etc	D7 Perform Modifications on FSEs	
implementing new systems	DUTY 8 Perform FSE Installation and Construction Activities	
Installing new ac service to air conditioner at VOR	DUTY 8 Perform FSE Installation and Construction Activities	
Notify or communicate with supervisor or managers during emergencies, when you leave the site, or if they need me to do something when I am free	General job duty	
Accounting, Finance, Reveiwing, Correcting and Comparing Accounting Strings	Maintain financial records	New administrative task (D2)
Collateral duties prescribed by the ATSS: Administrative logging, Travel, Studying equipment.	Multiple tasks	Too broad - D2 Perform administrative tasks, D12 Training
Complete computer-based instruction (CBI) courses	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Complete E-Learning	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Coordinate all maintenace activities, periodic maintenance schedule, facility outages	Multiple tasks	Too broad - D04.14, D08.06, D02.04
coordinate equipment outages for special projects	Multiple tasks	Too broad - D04.14, D08.06, D02.04
Daily Troubleshooting calls on Radio Freq. or any calls going to TCOMM	Multiple tasks	Too specific - could be D01.02, D02.04
Maintain non tracked FSE, support type equipment such as air conditioners, ELD etc.	Multiple tasks	
Maintaining and cleaning miscellaneous facilities and roads and grounds	Multiple tasks	
Mowing and landscaping facilities	Multiple tasks	
Navigate software systems to input data to all FAA corporate activitities i.e. Logistics, Logging, Outage reporting, Pay and Tand A	Multiple tasks	

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Special Projects assigned to SSC Personnel to complete on DAILY	Multiple tasks	Too broad - could be maintenance, modification, administrative
Train on runway safety procedures.	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Training	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Training ELMS	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Training evaluation of technicians	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
training on computers	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Training on live and off line equipment.	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
updating training request	Multiple tasks	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Keeping documentation at sites up to date.	Multiple tasks for FSEs	
Logging work that we perform, a little too much	Multiple tasks for FSEs	
MAINTAIN AND UPDATE MAINTENANCE DATA TERMINAL	Multiple tasks for FSEs	
MAINTAIN EQUIPMENT WIRING DRAWING ACCURACY	Multiple tasks for FSEs	
Make sure FSEP is current.	Multiple tasks for FSEs	
Make sure peabody PM database is current. Update when handbook changes are issued.	Multiple tasks for FSEs	
employee in charge	New task	D13.19 Act as employee-in-charge
Employee in charge (EIC)	New task	D13.19 Act as employee-in-charge
Lockout/Tagout Coordinator	New task	D13.20 Lockout/Tagout Coordinator
Ability to multitask and prioritize corrective maintenance under extreme pressure with multiple facilities under unscheduled outages, with minimum staffing available for assistance.	Not a task	Ability
Add as required to list of time requirment	Not a task	Frequency

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Administrative Burden	Not a task	Commentary
airfield navigation	Not a task	Other work activity (driving)
Airport driving	Not a task	Other work activity (driving)
amount of time traveling to sites	Not a task	Travel time
Analyze RF spectrum	Not a task	Too specific - could be troubleshooting, preventative or corrective maintenance
As Required	Not a task	Frequency
As required which is the answer to most of the questions	Not a task	Frequency
Assist others in the proper way to do a task or modification.	Not a task	Too broad - could be corrective, preventative maintenance
award technicians for outstanding performance above ande beyond the requirements of the job	Not a task	Management
Basic Communication(Verbal and Electronic)	Not a task	Skill
Bean Counting	Not a task	Commentary
Check your manager if he's sleeping on the job and harassing everyone in the SSC.	Not a task	Commentary
Climbing towers	Not a task	Other work activity (climbing)
correct environmental conditions	Not a task	Too broad
create path for data/service for various programs as they occur at the SSC	Not a task	Unclear meaning
Demanding drive times between sites.	Not a task	Travel time
do away with salary caps for top performers	Not a task	Commentary
do the work of the incompetent people around you since they can't	Not a task	Commentary
DRIVE 1-2 HOURS TO SITES TO PERFORM PREVENTIVE AND CORRECTIVE MAINTENANCE	Not a task	Travel time
driving	Not a task	Travel time
Driving long distances to sites.	Not a task	Travel time
driving time to and from sites	Not a task	Travel time
Driving to locations that are hours away from the SSC	Not a task	Travel time
Driving to/from sites, remote sites.	Not a task	Travel time

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Earn trust of controllers and AT supervisors	Not a task	Commentary
gov operator	Not a task	Other work activity (driving)
High Voltage and Radiation Hazards	Not a task	
inexperienced Resident Engineers. We are often asked to fill in as RE's on a project.	Not a task	Commentary
Lets lose the term state holders we are technicians working our jobs, let the people on the sidelines who are not performing the tasks but making metrics be called stakeholders	Not a task	Commentary
Logistics	Not a task	
maintaining obtained knowledge of FSEs	Not a task	
Maintaning a sense of urgency when taking a certifiable FSE OTS for whatever reasone.	Not a task	
more notice on projets not one or two days notice	Not a task	
More software interaction	Not a task	
most of the tasks can happen at any time	Not a task	Commentary
obtain funding from the tight asses in the regional and headquarter offices	Not a task	
operated test equipment	Not a task	
Organize the technical manuals more properly would be a start.	Not a task	
planning & maintenance taska for technicians	Not a task	
Planning driving time to site.	Not a task	Travel time
prioritizng projects. We spend more time supporing site surveys, escorting, installations, takes away from our primary function of mainting the NAS.	Not a task	
Providing additional system support for co-workers systems. Capitalizing on my strong points to help someone else that may have a weakness in that area.	Not a task	
Receiving union propaganda	Not a task	Commentary

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Remembering the days when I was actually empowered to do my job. Now I have to interface with five seperate people in order to accomplish even the most trivial task.	Not a task	Commentary
required training	Not a task	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
respond to AT Requests	Not a task	Too broad -D12.01 (FSE), D12.02 (Safety training), or D02.03 (Non-tech training)
Review Logs for correctness and completeness	Not a task	Too broad - D04.15, D05.01, D06.01, D07.01
SAFETY	Not a task	
SAFETY ESSENTIAL	Not a task	
Staffing of facilty in order to perform preventative maintenance, corrective maintenance and modifications.	Not a task	Commentary
Struggling with poorly thought out regulations.	Not a task	Commentary
Supervision	Not a task	
Supervisor	Not a task	
support logistics	Not a task	Too broad
Time and attention to training and opportunities and the availability of certifiable systems courses. This is a common problem, not enough classes for people wanting to go.	Not a task	Commentary
time spent in hazardest duty	Not a task	
travel times to and from sites	Not a task	Travel
Travel to site for PM's	Not a task	Travel
travel to/from FSE sites	Not a task	Travel
We must accept deliveries at the loading dock, for everyone in the building. The logistics person left and wasn't replaced. I think is is not good to have technicians accepting items from the public without proper training concerning danerous packages coming in to the facility.	Not a task	Commentary
Weekly Rotating Shift Work	Not a task	Other work activities
Wishing for early retirement opportunities.	Not a task	Commentary

Write-in Task (Verbatim)	Corresponding Task Statement in Survey	Comment
Work Engagement / Real Communication / Real involvement and not pretending	Not a task	KSA