



SOURCES SOUGHT/REQUEST FOR INFORMATION (RFI)

I. CONTRACT OPPORTUNITY

- + **Name:** *FAA Safety Culture Assessment*
- + **Notice ID:** 693KA9-27-FAA Safety Culture Assessment
- + **Related Notice:** N/A
- + **Department/Ind. Agency:** TRANSPORTATION, DEPARTMENT OF
- + **Sub-tier:** 6920 FEDERAL AVIATION ADMINISTRATION
- + **Office:** *AAQ-460*

II. GENERAL INFORMATION

- + **Contract Opportunity Type:** Sources Sought (Original)
- + **Original Response Date:** *N/A*

III. CLASSIFICATION

- + **Product Service Code:** R431 SUPPORT- PROFESSIONAL: HUMAN RESOURCES
- + **NAICS Code:** *541612 Human Resources Consulting Services*
- + **Place of Performance:** *Vendor and Various FAA Locations*

IV. DESCRIPTION

The acquisition strategy for the procurement has not been determined at this time; however, either an unrestricted competition or a set-aside may be chosen depending on the responses to this Sources Sought / RFI Notice.

- a) *This is not a Screening Information Request or Request for Proposals of any kind;*
- b) *The FAA is not seeking or accepting unsolicited proposals;*
- c) *The FAA will not pay for any information received or costs incurred in preparing the response to the market survey; and*
- d) *Any costs associated with the market survey submittal are solely at the interested vendor's expense. State that the FAA is seeking sources or information for specific supplies and or services. Provide a description of the supplies and/or services to be provided as part of the potential requirement. The length of the description will vary depending on the nature of the requirement.]*

THIS IS NOT A REQUEST FOR PROPOSALS OR OFFERS. A SIR/Request for Proposal may be made under a separate announcement in the future. The FAA is not seeking or accepting unsolicited proposals. The FAA will not pay for any information received or costs incurred in preparing vendor responses to this market survey. Therefore, any cost associated with a market survey submission is solely at the interested vendor's expense.

The purpose of this announcement is to solicit statements of interest and capabilities from large businesses, small businesses, service-disabled veteran-owned small businesses and 8(a) certified firms, capable of providing the supplies outlined in this document, in the timeframe stated in this document. The responses to this RFI will help determine the acquisition strategy and whether adequate competition exists to set-aside the competition among small businesses, service-disabled veteran-owned small businesses or Socially & Economically Disadvantage Business (SEDB/8(a)) certified firms. Below is a list of required items. **Please see attachments for specific information.**

Note: The FAR references cited in SAM.gov are not applicable to the Federal Aviation Administration (FAA) as the FAA has its own policies and guidance referenced in the Acquisition Management System (AMS). <https://fast.faa.gov/>
https://fast.faa.gov/PPG_Procurement.cfm



U.S. Department
of Transportation
**Federal Aviation
Administration**

V. ATTACHMENTS

Attachments

1. Draft Requirement & Submission Instructions
2. The Development and Implementation of a Safety Culture Survey for High-Performing Aviation Organizations (2024)

VI. Contact Information: Contracting Office: AAQ-460; E-mail: 9-AFN-AWA-AAQ460-Contracting-Team@faa.gov

Draft Requirement Scope

FAA is conducting market research to identify qualified industry sources capable of performing a comprehensive, multi-phase safety culture assessment. Organizational culture factors that contribute to safety, and that impact FAA's safety management and safety oversight capabilities, should be included in the assessment. The selected partner will conduct a multi-method assessment of the safety culture within the FAA, develop a proposed process by which the FAA can conduct recurring culture assessment, and recommend improvements that would advance FAA's safety culture maturity. The multi-method assessment will include a climate survey, site visit pilot, and environmental scan of existing data and leading practices.

The selected team is expected to:

- Establish or Liaise with Governance and Develop and Manage Detailed Requirements
- Conduct Climate Survey of FAA Workforce and Manage Safe Handling of Confidential Employee Data
- Conduct a Current State Environmental Scan of Existing Data, Artifacts, and Leading Practices
- Conduct Site-Based Assessments of 3-5 Pilot Sites Including Qualitative and Observational Analysis
- Deliver a Baseline Results Technical Report
- Deliver an Approach to Recurring Culture Assessment Technical Report
- Deliver an Improvement Plan Roadmap

The final deliverable(s) for this initiative will be the baseline results technical report, a technical report providing FAA a framework and guidance for conducting ongoing assessment, and a report giving the FAA a roadmap for enterprise improvement. The future award would be Firm Fixed Price.

Vendor Capability Questions – No more than 10 pages

Interested vendors **must directly address** the following questions within their capability statement submission:

- **Methodological Expertise:** Describe your organization's experience in designing, statistically validating, and deploying large-scale, enterprise-wide quantitative safety climate surveys. Or, describe how your organization might deploy an existing instrument such as the [FAA Safety Culture Survey](#).
- **Qualitative Facilitation:** Detail your approach to conducting qualitative listening sessions or focus groups across geographically dispersed and operationally diverse workforces, ensuring psychological safety and high participation rates.

- **Federal Experience, Oversight & Compliance:** Provide examples of how your culture assessments have successfully aligned with federal mandates, executive orders, or specific regulatory frameworks. Describe how you have accounted for considerations such as labor union coordination, protection of employee information from FOIA, generating high response rates from operational (non-desk job) employees, and other related considerations.
- **Reporting & Strategy Delivery:** Provide an overview of your data analysis and reporting capabilities, specifically how you translate complex raw quantitative and qualitative data into actionable, high-level executive findings for ongoing organizational strategy.
- **Data Security & Privacy:** Confirm your organization's capability to handle sensitive employee feedback data in compliance with federal privacy standards, ensuring complete anonymity for participants.
- **Knowledge & Experiences (Optional):** Demonstrate your organization's familiarity with FAA Safety Management System (SMS) policies and regulations, and with guidance and assessment performed by aviation authorities like the International Civil Aviation Organization and Civil Air Navigation Services Organization.
- **Organizational Improvement:** Demonstrate your organization's understanding of safety and organizational culture, and your experience helping industry or federal organizations develop and/or implement comprehensive improvement plans and strategy for advancing safety culture maturity.

Required Corporate Capabilities & Vendor Qualifications – No more than 5 pages

- **Past Performance:** Minimum of 3–5 years of experience executing organizational culture and/or safety assessments of similar size, scope, and complexity, ideally within the federal government or in aviation/transportation or other high-hazard industry sectors. Corporate experience must include development of improvement plans and strategies supportive of assessment results.
- **Personnel Qualifications:** Availability of key personnel possessing advanced degrees (Ph.D. or Master's) in Industrial-Organizational (I-O) Psychology, Organizational Behavior, Sociology, or a closely related behavioral science field.
- **Personnel Availability:** Vendors must be able to staff a team of sufficient size and expertise that the team can rapidly conduct multiple methods of assessment (e.g., survey, site visits / interviews) simultaneously, rather than sequentially, in order to deliver a quick-turn report to the FAA and support rapid progression to the improvement planning phase
- **Survey Infrastructure:** Possession of or access to a secure, commercially field-tested enterprise application or survey platform capable of hosting thousands of concurrent users while protecting data integrity.
- **Third-Party Neutrality:** Ability to act as an objective, unbiased third-party research team to ensure the credibility of the culture assessment baseline for internal stakeholders and external oversight bodies.

Industry Feedback – No more than 3 pages

Industry feedback is requested on the draft requirement. Please list any challenges or potential performance roadblocks related to fulfilling this type of requirement and any suggestions for improving. Feedback is also requested regarding the proposed PSC and NAICS codes. Comments on PSC/NAICS and suggestions for alternative must include supporting rationale.

Rough Order of Magnitude (ROM) – No more than 2 pages

Interested vendors are requested to provide a Rough Order of Magnitude (ROM) estimate based on the preliminary requirements provided in this notice. The ROM will be used strictly for internal market research, feasibility analysis, and budgetary planning. The ROM is for informational purposes only and is not a legally binding commitment or a formal contract offer. The Government does not require rigorous cost or pricing data. Responses should provide a high-level, "ballpark" estimate broken down by major cost drivers. Vendors are encouraged to briefly state the critical assumptions or risk factors underlying their cost/price ranges. This notice does not commit the Government to contract for any supply or service whatsoever. Respondents are advised that the Government will not pay for any information or administrative costs incurred in response to this market survey. Not responding to this RFI does not preclude participation in any future RFP, if issued.

Submission Instructions & Administrative Timeline

Submission Format: Responses must be submitted via email to the designated Contracting Officer in PDF format, not exceeding the page limitations above.

Required Administrative Details: Vendors must include their company name, address, Unique Entity ID (UEI), CAGE code, socio-economic status (e.g., 8(a), SDVOSB, WOSB, Small Business), and designated Point of Contact (POC) information.

Questions and Clarifications: Industry questions regarding this notice must be submitted in writing no later than **10** business days following the posting date.

Final Response Deadline: All capability statements must be submitted no later than **the date identified in the SAM.gov announcement.**

Government Review Window: The program office, in coordination with the Enterprise Safety Culture Program, will review submissions to determine the appropriate acquisition strategy

Federal Aviation Administration

Aviation Research

Statement of Work

Maturation of FAA Safety Culture Assessment

A. Introduction and Overview

The Federal Aviation Administration (FAA) is an operating mode of the U.S. Department of Transportation responsible for the safety of civil aviation. The FAA's major roles include issuing and enforcing regulations, encouraging and developing new aviation technology, and managing air traffic in the U.S. airspace. Its continuing mission is to provide the safest, most efficient aerospace system in the world.

The FAA recognizes that an organization's safety culture ("the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands") is integral to effective safety management and to positive safety outcomes. The National Airspace System (NAS) continues to rapidly evolve and as new entrants and technologies are integrated, safety culture continues to be of critical importance. As a regulator and as an air navigation services provider, the health of FAA's own internal safety culture plays a critical role in its effective management of safety and on the overall safety of the NAS.

B. Background

The FAA has a requirement to thoroughly document its current safety culture by 2027 to initiate targeted steps for improvement and to provide guidance for recurring safety culture assessment of the organization. In 2027, the FAA must thoroughly assess its current safety culture, initiate targeted steps for improvement and establish guidance for recurring safety culture assessment of the organization, in alignment with [FAA Safety Management Order 1030.8](#).

By fulfilling the Order's requirement to assess the FAA safety culture, the agency acknowledges and demonstrates its responsiveness to related requirements and recommendations from Congress, the Civil Air Navigation Services Organization (CANSO), and the Transportation Research Board (TRB). This requirement will also enable ongoing culture assessment and improvement past the current Department of Transportation (DOT) Office of the Inspector General (OIG) audit, and past the Congressionally mandated annual assessment of FAA's Aviation Safety Organization

(AVS) safety culture under the Aircraft Certification, Safety, and Accountability Act (ACSAA).

The Aviation Safety Management Organization is sponsoring this research to provide a baseline assessment of current state FAA-wide safety culture, to provide a roadmap to culture improvement, and to provide the FAA with a structured approach for performing ongoing assessment and monitoring.

C. Scope of Work

The contractor must provide support to perform a comprehensive, multi-phase safety culture assessment focusing on organizational culture factors that contribute to safety, and that impact FAA's safety management and safety oversight capabilities. The work includes conducting a multi-method assessment of the safety culture within the FAA, developing a proposed process by which the FAA can conduct recurring culture assessment, and documenting recommended improvements that would advance FAA's safety culture maturity. The multi-method assessment must entail, but not necessarily be limited to, a climate survey, site visit pilot, and environmental scan of existing data and leading practices.

D. Requirements

The tasks include:

1. Immediate Enterprise Assessment:

- a. Establish or liaise with governance and develop and manage detailed requirements: Stand up a governance model (e.g., executive sponsor, steering committee, field representation) to support assessment planning and implementation. Governance should inform decisions, remove barriers, and oversee local versus enterprise action tracking. Facilitate regular engagements to ensure organizational requirements are captured and stakeholders are kept informed and engaged.
- b. Establish Enterprise Baseline: Conduct an environmental scan of FAA-accessible data and artifacts, such as reports, findings, training, corrective actions, and reporting program data, to inform enterprise culture baseline. Where possible, use culture-related data and metrics, informed by current FAA research and assessment, to support baseline.
- c. Conduct a climate survey of FAA workforce and manage safe handling of confidential employee data: Collaborate with the sponsor office in ASM to prepare and execute an FAA-wide climate survey in 2027. Teams should look to [*The Development and Implementation of a Safety Culture Survey for High-Performing Aviation Organizations*](#) for guidance and may suggest possible alternatives if recommended.

- d. Build the FAA Safety Culture Assessment Toolkit: Design a multi-method assessment framework that establishes an accurate safety culture baseline for the FAA, including defining criteria for selecting pilot sites representative for the diversity across FAA operational environments for evaluations. A standard toolkit, which may include communication templates, observation guides, interview guides, action plan templates, and other tools should be also developed.
 - e. Conduct Site Visit Pilot: Conduct assessments across 3-5 pilot sites while minimizing employee time burdens to validate the designed tools, with emphasis on regional hubs where multiple FAA operations and oversight activities can be assessed in a single trip. A Standard Operating Procedure (SOP) for comparable site visit assessment, gap analysis, and leading practice identification should be developed. This preparation will include coordination with the ASM sponsor, pilot site leads, and labor partners.
2. **Scale Blueprint & Actionable Improvement, Expansion & Sustainment:**
- a. Deliver Baseline Results Technical Report: Produce detailed FAA-level, organization-level, and pilot site assessment report documenting results of quantitative and qualitative analyses, including analysis of strengths, barriers, and current safety culture practices.
 - b. Deliver Approach to Recurring Culture Assessment Technical Report: This product will shift the research activity to enable operational sustainment, accountability, and continuous improvement of FAA's ability to perform culture assessment. This report should provide tools for implementation, such as the SOP, facilitator guides, quality assurance checks, and references on culture assessment leading practices to enable expanded, recurring FAA-wide culture assessment to meet the operational requirement defined in [FAA Safety Management Order 1030.8](#).
 - c. Deliver an Improvement Plan Roadmap: Develop improvement recommendations informed by the climate survey results, the environmental scan of artifacts, and the insights from the site visits pilot. This may include FAA-level, organization-level, and pilot site-level improvement recommendations supported by the results and by methods proven to support culture change in other safety-focused organizations.

E. Milestones

Item No.	Milestone	Activities	Delivery Schedule
1	Conduct Kick-off Meeting	Project kickoff	Within 1 week after contract award
2	Develop Governance Framework	Establish and document the data management plan and the governance model to	Within 1 month after contract award

		support assessment planning and implementation	
3	Develop Safety Culture Assessment Toolkit	Complete the design of a toolkit to support the multi-method assessment (e.g., data collection templates, interview guides, SOPs, etc.)	Within 3 months after contract award
4	Complete Enterprise Baseline Environmental Scan	Review available data, documentation, and other enterprise information to inform FAA current state culture baseline.	Within 6 months after contract award
5	Complete Climate Survey	Conduct a climate survey of FAA workforce and manage safe handling of confidential employee data	Within 7 months after contract award
6	Complete Site Visit Pilot	Conduct assessments across 3-5 pilot sites and collect data including qualitative methods such as staff listening sessions or interviews	Within 9 months after contract award
7	Brief Initial Assessment Results including Climate Survey, Baseline Study, and Site Visit Pilot	Conduct initial analysis and integrate findings and analysis from Climate Survey, Baseline Study, and Site Visit Pilot to provide a snapshot of findings	Within 9 months after contract award
8	Finalize Assessment Results Report	Complete analysis and develop a detailed FAA-level assessment results report including results and analysis of the climate survey, baseline study, and site visit pilot findings	Within 11 months after contract award
9	Finalize Recurring Culture Assessment Technical Report	Complete a final report to document approach for implementation of recurring FAA-wide culture assessment	Within 12 months after contract award

10	Finalize Improvement Plan Roadmap	Develop improvement recommendations informed by the climate survey results, the environmental scan of artifacts, and the insights from the site visits pilot.	Within 12 months after contract award
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F. Deliverables

The final deliverable for this initiative will be a comprehensive report documenting all findings, which FAA will utilize to design a long-term strategy for periodic culture evaluations. The general criteria for acceptance are that deliverables must:

- Be complete and accurate in presentation and technical content.
- Be legible and free of spelling, grammar and typographical errors.
- Adhere to applicable formats, templates, style guides, and standards.
- Be submitted timely and in accordance with the applicable SOW.

The deliverables may be returned for correction and resubmission should general criteria not be met. Final reports containing data or result documentation shall incorporate a mandatory two-week FAA draft review period followed by a minimum of one week for the contractor adjudication of the FAA's feedback prior to final acceptance.

Item No.	Deliverable	Acceptance Criteria	Format	Delivery Schedule
1	Kick-off Meeting Report	Timely, Accurate and Complete	Microsoft Office Suite	Ten (10) business days after Kick-off meeting
2	Monthly Status Reports Integrated Project Schedule status to include a breakdown of the work to be completed, the status of deliverables, key actions.	Timely, Accurate and Complete	Microsoft Office Suite	Monthly. Updates must be delivered by the 15th of each month, to FAA CO, COR and Technical PM.

3	Monthly Financial Status Report Financial Status Report must include the following: • Cost/hours funded • Projected date when 80% of funds spent • Funds/hours remaining • Other Direct Costs (ODCs) estimated, used, and remaining by month Summary of expenditures by resource and labor category for the monthly reporting period, as well as cumulative year-to-date totals for the performance period	Timely, Accurate and Complete	Microsoft Office Suite	Monthly Updates must be delivered to FAA COR and CO, by the 15 th of each month.
4	Governance Framework Document documenting the data management plan and the governance model to support assessment planning and implementation	Timely, Accurate and Complete	Microsoft Office Suite	Within 1 month after contract award
5	Safety Culture Assessment Toolkit including Templates for Data Collection and Interviews, Supporting Documentation, SOPs, etc.	Timely, Accurate and Complete	Microsoft Office Suite	Within 3 months after contract award
6	Enterprise Baseline Environmental Scan Project Plan including Calendar, Documentation of Procedures, Data and Observations for Planned Collection and Analysis, and Data Management Approach	Timely, Accurate and Complete	Microsoft Office Suite	Within 4 months after contract award

7	Climate Survey Project Plan including Calendar, Updated Survey Instrument, Communication Package and Labor Coordination Requirements, and Data Management Plan for safeguarding employee data and confidentiality	Timely, Accurate and Complete	Microsoft Office Suite	Within 4 months after contract award
8	Site Visit Pilot Project Plan and Calendar Including Access and Labor Coordination Requirements, Data Management Approach	Timely, Accurate and Complete	Microsoft Office Suite	Within 6 months after contract award
9	Enterprise Baseline Environmental Scan Update Briefing initial snapshot of findings	Timely, Accurate and Complete	Microsoft Office Suite	Within 6 months after contract award
10	Climate Survey Project Status Update Briefing initial snapshot of findings	Timely, Accurate and Complete	Microsoft Office Suite	Within 7 months after contract award
11	Assessment Results Report Update Briefing Draft report integrating findings and analysis from Baseline Study, Climate Survey, and Site Visit Pilot	Timely, Accurate and Complete	Microsoft Office Suite	Within 9 months after contract award
12a	Assessment Results Report Final report of full results and complete analysis	Timely, Accurate and Complete	Microsoft Office Suite	Within 10 months after contract award
12b	Assessment Results Data File(s) Complete data collection according to the data management plan	Timely, Accurate and Complete	Microsoft Office Suite	Within 10 months after contract award

13	Recurring Culture Assessment Technical Report Including Approach for FAA to Operationalize Ongoing Culture Assessment Final report	Timely, Accurate and Complete	Microsoft Office Suite	Within 12 months after contract award
14	Improvement Plan Roadmap including Recommendations to Improve on Baseline Findings and Approach for FAA Implementation Final report	Timely, Accurate and Complete	Microsoft Office Suite	Within 12 months after contract award

Optional Task: Post Assessment Transition and Implementation Support

The objective of this optional task is to provide the Agency with specialized change management, transition guidance, and hands-on implementation support to operationalize the culture improvement recommendations.

This phase is strictly optional and contingent upon the successful completion, delivery, and Agency acceptance of the Improvement Plan Roadmap. The Agency reserves the right, at its sole discretion, to exercise this option within 60 calendar days following the formal acceptance of Improvement Plan Roadmap. There is no implied or explicit guarantee that the Agency will execute this phase, and the Vendor shall not perform any work under this section until a formal, written contract modification or notice to proceed is issued by the Contracting Officer (CO). *Period of Performance for the Optional Task is TBD.*

Scope:

If exercised, the Vendor shall collaborate closely with Agency leadership, regional heads, and designated change champions to translate approved cultural recommendations into measurable institutional practices across the agency. The Vendor shall provide the following support functions:

- **Implementation Roadmap & Action Planning:** Convert the approved high-level Improvement Plan Roadmap into a tactical, phased implementation schedule. This plan must account for the agency's Flight Plan goals and other related priorities, as well as assessment and improvement requirements described in Safety Management Order 1030.8 and its subsequent guidance documentation.

- **Change Management Support:** Develop and implement a comprehensive change management plan working with stakeholders to affect change in their areas (e.g., change management templates, sponsor tools, stakeholder map).
- **Communication Support:** Develop and implement a comprehensive communication plan and toolkit (e.g., key messages, leadership talking points, agency-wide messaging, town hall agendas) supporting the rollout of assessment results and the approved Improvement Plan.
- **Monitoring, Sustainment, & KPIs:** Establish qualitative and quantitative key performance indicators (KPIs) and continuous feedback loops and conduct monitoring of behavioral adoption, track progress against the cultural baseline, and ensure long-term sustainability.
- **Implementation Support for 1030.8 Guidance and Ongoing Culture Assessment:** Aid the Agency in socializing and implementing the ongoing culture assessment guidance, once approved, and the related guidance following the publication of 1030.8 (e.g., host webinars with affected stakeholders to raise awareness and education, iterate on guidance products, build web-based tools).

Deliverables:

- **Implementation Roadmap:** Tactical, phased schedule for implementing the approved Improvement Plan activities across the affected organizations.
- **Change Management Plan:** Tools to support change practitioners, culture program liaisons and leaders working with stakeholders to affect behavior change in their areas (e.g., change management templates, sponsor tools, stakeholder map).
- **Communication Plan:** Tools to support the rollout of assessment results and the approved Improvement Plan (e.g., key messages, leadership talking points, agency-wide messaging, town hall agendas, graphics and multimedia products).
- **Playbook for Leaders:** Tools to support leaders in their unique role leading change and setting the tone for acceptable behaviors and achievement of desired cultural behaviors and indicators.
- **Guidance Tools:** Support implementation of assessment and improvement guidance to FAA organizations by developing web-based tools and engagement opportunities that raise awareness, understanding and ability to conduct culture assessment and design and monitor improvements.

F. Travel

The Contractor must travel to support the safety culture assessment. The FAA COR must approve all travel in advance of its occurrence. The Contractor will not be reimbursed for any unauthorized travel.

G. Period of Performance

The period of performance is anticipated to be 12-18 months.

Contract/Agreement type will be firm fixed price.

DRAFT



DOT/FAA/AM- 24/18

Aviation Safety

Office of Aerospace Medicine

Washington, D.C. 20591

The Development and Implementation of a Safety Culture Survey for High-Performing Aviation Organizations

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NOTICE

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Technical Report Documentation

1. Report No. DOT/FAA/AM-24/18		2. Title & Subtitle The Development and Implementation of a Safety Culture Survey for High-Performing Aviation Organizations	
3. Report Date July 2024		4. Performing Organization Code	
5. Author(s) K. Worthington, P. Hu, D.Schroeder, I. Choi		6. Performing Org Report Number	
7. Performing Organization Name & Address Civil Aerospace Medical Institute (CAMI), FAA Oklahoma City, OK 73169		8. Contract or Grant Number	
9. Sponsoring Agency Name & Address Office of Aerospace Medicine, Federal Aviation Administration, 800 Independence Ave., S.W., Washington, DC 20591		10. Type of Report & Period Covered Technical Report	
11. Supplementary Notes			
12. Abstract A positive safety culture requires an intentional approach and periodic assessment to determine where things stand and where improvements can be made. To fulfill requirements of the Aircraft Certification, Safety, and Accountability Act (ACSAA, §132(c)), the FAA developed and deployed a novel survey to help assess safety culture in the regulatory environment. The survey was developed in substantial part by leveraging insights from both the scientific literature and existing regulatory frameworks of safety culture. The survey measures the ten core traits set forth in the Harmonized Safety Culture Model developed by the International Atomic Energy Agency. As designed, the survey covers important aspects of any safety-critical workplace, including individual and leader commitment to safety, just and reporting culture, competing pressures, resource allocation, problem identification and resolution, workload and work planning, and others. This report provides (a) an overview of the safety culture survey development and design; (b) a study examining safety culture perceptions within a large participating FAA line of business; and (c) a brief discussion of survey administration best practices and follow-up. The value of the survey is that it provides a comprehensive assessment of safety culture perceptions in regulatory organizations; however, its utility is only fully realized when used judiciously and when the results are acted upon as part of a larger strategy for managing safety culture change.			
13. Key Words safety culture, survey, assessment		14. Distribution Statement Document is available to the public through the National Transportation Library: http://www.faa.gov/go/oamtechreports/	
15. Security Classification (of this report) Unclassified	16. Security Classification (of this page) Unclassified	17. No. of Pages 44	



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Table of Contents

Acknowledgments	iv
List of Tables	vi
List of Figures.....	vi
List of Abbreviations	vii
Introduction	1
Phase 1: Documenting Stakeholder Priorities and Assessment Requirements	2
Phase 2: Survey Development	3
Framework of Positive Safety Culture Traits	3
Item Selection	4
Item Validation	5
Content Validity	5
Face Validity.....	5
Final Safety Culture Survey.....	5
Phase 3: Survey Deployment to a Large FAA Line of Business.....	7
Survey Administration	7
Survey Logistics	7
Confidentiality Assurances.....	8
Survey Results.....	8
Sample Representativeness	8
Survey Usability Ratings.....	10
Phase 4: Documenting Lessons Learned and Recommended Practices.....	12
Survey Administration	12
Survey Follow-Up.....	13
Discussion.....	15
Limitations and Future Directions	16
Conclusions	17
References.....	19
Appendix A. Safety Culture Survey	24
Survey Introduction Page	24
Question Items.....	25
Communication	25
Individual Responsibility	26
Questioning Attitude	26



Leader Responsibility	27
Decision-Making	28
Respectful Work Environment.....	29
Continuous Learning	30
Problem Identification and Resolution.....	31
Environment for Raising Concerns	32
Work Planning	33
Open-ended Feedback.....	33
Demographics	34
Survey Usability.....	34
Appendix B. Supplemental Modules	35
Supplemental Module Question Items.....	35
Engagement.....	35
Job Satisfaction	36
Pressure and Workload	36
Performance.....	36
Well-Being.....	37
Underperformance.....	37
Personal Growth	37
Autonomy	37

List of Tables

Table 1 <i>Participation Response Rates by Staff Office</i>	9
Table 2 <i>Survey Usability Items</i>	10

List of Figures

Figure 1 <i>Respondent Years of Service</i>	10
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List of Abbreviations

Acronym	Abbreviation Explained
ACSAA	Aircraft Certification, Safety, and Accountability Act
AVS	Aviation Safety
CAA	Civil Aviation Authority
CAMI	Civil Aerospace Medical Institute
FAA	Federal Aviation Administration
FEVS	Federal Employee Viewpoint Survey
IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organization
INSAG	International Nuclear Safety Advisory Group
LOB	Line of Business
M-SCAIT	Maintenance Safety Culture Assessment and Improvement Toolkit
NASA	National Aeronautics and Space Administration
National Academies	National Academies of Engineering, Science, and Medicine
NIOSH	National Institute for Occupational Safety and Health
NOSACQ-50	Nordic Occupational Safety Climate Questionnaire
NRC	Nuclear Regulatory Commission
SCMT	Safety Culture Measurement Toolkit
SHo-Me	Safety Health of Aviation Maintenance Engineering (Tool)
SME	Subject Matter Expert
SMICG	Safety Management International Collaboration Group
TRB	Transportation Research Board
WellBQ	Worker Well-Being Questionnaire



Introduction

“Safety culture is arguably the single most important influence on the management of safety. If an organization has instituted all the safety management requirements but does not have a positive safety culture, it is likely to underperform” (International Civil Aviation Organization [ICAO], 2018; p. 3-1).

The FAA defines safety culture as “...the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands” (Department of Transportation Safety Council; see Morrow & Coplen, 2017). A positive safety culture requires shared responsibility across individuals and leaders, demonstrating a clear commitment to safety. Further, a positive safety culture is characterized by a questioning attitude and a respectful work environment where trust, honesty, and open communication are fostered. Creating this environment for raising safety concerns empowers problem identification and resolution, where safety issues are identified, evaluated, and properly resolved. As safety concerns are addressed, organizations with a positive safety culture will continuously learn and share the lessons learned, promoting decision-making that prioritizes safety. Finally, there should be a support infrastructure in place, including communications and work planning that mutually emphasize safety.

A positive safety culture requires an intentional approach and periodic assessment to determine where things stand and where improvements can be made. It also requires frameworks to enable positive safety culture behaviors and continuous actions, informed by periodic assessments, to strengthen and improve.

The need for safety culture assessment became visible with the passage of the Aircraft Certification, Safety, and Accountability Act (ACSAA, §132(c); as part of the Consolidated Appropriations Act of 2021, 2020), which requires the Federal Aviation Administration (FAA) to conduct safety culture assessments of all Aviation Safety (AVS) employees annually through 2031. This requirement is reflected in the FAA’s strategic planning; initiating a safety culture campaign is one of the initiatives supporting the Safety pillar in FAA’s Flight Plan 21 (2022).

To fulfill ACSAA requirements, the FAA developed and deployed a novel survey to help assess safety culture in the regulatory environment. The survey was designed to balance the goals of scientific robustness with the need for generalizability and ease of use across the FAA. This was achieved by taking a collaborative approach to the project, where researchers and FAA-level safety culture community of practice representatives worked together to define and develop the survey. To test its efficacy, the survey was deployed to one large FAA line of business (LOB).

This report provides (a) an overview of the safety culture survey development and design; (b) a study examining safety culture perceptions within a large participating FAA LOB; and (c) a brief discussion of survey administration best practices and follow-up. This report describes four phases of research:

1. Documenting stakeholder priorities and assessment requirements
2. Survey development
3. Survey deployment to a large FAA LOB
4. Documenting lessons learned and recommended practices for administering and acting on the safety culture survey



Phase 1: Documenting Stakeholder Priorities and Assessment Requirements

The researchers hosted brainstorming sessions to identify stakeholder priorities and requirements for a successful safety culture assessment. The brainstorming session participants included leadership and other stakeholders from the FAA-level safety culture community of practice, with diverse representation invited from all FAA LOBs.

The stakeholders prioritized the development of a comprehensive safety culture assessment that could (a) quickly and independently gather a snapshot of the workforce perceptions of the safety culture at a given timeframe,¹ (b) monitor safety culture over time, and (c) track the effectiveness of safety culture promotion and improvement actions. Specific requirements of the safety culture survey include:

- Generalizable for use across the FAA
- Scientifically robust (i.e., assess a known framework of safety culture traits, measuring and leveraging multiple indicators)
- Anonymous aggregate results
- Collaborative with labor partners

Stakeholders agreed that the assessment should consist of a survey because it provides a systematic and inclusive approach to assessment, such that all employees have an opportunity to share their perspectives. Results can be compared readily across demographic variables of interest, such as department, location, or job role (National Academies of Science, Engineering, and Medicine [National Academies], 2016); this helps identify culture silos that may require targeted improvements.

Stakeholders prioritized that the survey should be both comprehensive and quick to administer (i.e., use pulse survey methodology). The LOB and stakeholder groups mutually agreed that the survey must assess all ten traits of a positive safety culture across all members of the LOB's workforce, but the amount of time needed to answer the survey could be shortened during administration by asking each respondent to answer only a randomly selected fraction of the question items needed to fully assess each safety culture trait.

¹ Snapshots of workforce perceptions at a given timeframe are often referred to as measures of safety climate. The terms safety culture and safety climate are often used interchangeably, though there are some academic differences. Safety culture refers to the more enduring behaviors, norms, and assumptions in the organization, whereas safety climate is a more temporal, dynamic construct (Wiegmann et al., 2002).



Phase 2: Survey Development

The survey was designed as an a priori (planned) measurement of a safety culture based on an existing, well-used framework (i.e., the *Harmonized Safety Culture Model*, described below). It assesses internationally recognized traits of a positive safety culture (Appendix A), along with supplemental modules that can help address specific work unit needs (Appendix B). The researchers developed this survey to be used in its entirety, but to meet the dual needs of assessing the ten safety culture traits while maintaining brevity, a pulse survey methodology can be adopted where respondents complete a randomly selected subset of question items per safety culture trait.

Framework of Positive Safety Culture Traits

The survey was developed in substantial part by leveraging insights from both the scientific literature (see Key et al., 2023) and existing regulatory frameworks of safety culture. The survey measures the ten core traits set forth in the *Harmonized Safety Culture Model* developed by the International Atomic Energy Agency (IAEA, 2020). The model represents an evolution of assessments dating to 1992 when the International Nuclear Safety Advisory Group (INSAG) identified human factors as having contributed to the 1986 Chernobyl nuclear disaster and noted, among other findings, a *general lack of safety culture* (1992).

The Harmonized Safety Culture Model consists of ten traits:²

- **Individual Responsibility.** “All individuals are personally accountable for safety.”
- **Questioning Attitude.** “Individuals remain vigilant for assumptions, anomalies, conditions, behaviors or activities that can adversely impact safety and then appropriately voice those concerns.”
- **Communication.** “Communications support a focus on safety.”
- **Leader Responsibility.** “Leaders demonstrate a commitment to safety in their decisions and behaviors. Leaders are role models for safety.”
- **Decision-Making.** “Decisions are systematic, rigorous, thorough, and prudent.”
- **Respectful Work Environment.** “Trust and respect permeate the organization.”
- **Continuous Learning.** “Learning is highly valued.”
- **Problem Identification and Resolution.** “Issues potentially impacting safety are systematically identified, fully evaluated, and promptly resolved according to their significance.”
- **Environment for Raising Concerns.** “Personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination.”
- **Work Planning.** “The process of planning and controlling work activities is implemented so that safety is maintained.”

Nine of the traits were recommended by the Transportation Research Board (TRB; IAEA, 2020; National Academies, 2022); an additional trait captures the priority of safety in decision-making.

² Quotes are reproduced from IAEA (2020).



These ten core traits are further characterized and organized by the IAEA into *attributes* of a positive safety culture.

Item Selection

A panel of four researchers (i.e., the authors) specializing in human factors research, each with a minimum of three years of expertise on the topic of safety culture, convened to develop the survey. The researchers have previously developed safety culture assessments for use in other aviation environments (i.e., regulatory organizations, certificate holders).

To start the development process, the researchers identified available survey instruments relevant to safety climate/culture. The selection criteria for instruments to review were that they must be (a) published, with the constituent question items publicly available, and (b) developed for and/or used by a governance organization. This search yielded the following survey instruments of safety climate/culture:

- Civil Aviation Authority (CAA), *Safety Health of Aviation Maintenance Engineering (SHo-Me) Tool* (CAA, 2003).
- EUROCONTROL, *Safety Culture Measurement Toolkit (SCMT) for European Air Navigation Service Providers* (Gordon & Kirwan, 2004; Mearns et al., 2013).
- FAA, *2020 AVS Safety Culture Assessment* (MITRE, 2020).
- FAA, *Maintenance Safety Culture Assessment and Improvement Toolkit (M-SCAIT)* (Key et al., 2023).
- FAA, *[2022 AVS] Safety Culture Assessment* (Human Synergistics; Cooke et al., Unpublished Manuscript).
- Office of Personnel Management (n.d.), *2022 Office of Personnel Management Federal Employee Viewpoint Survey results [FEVS]*.
- IAEA, *Safety Culture Perception Questionnaire for License Holders* (IAEA, 2017).
- National Aeronautics and Space Administration (NASA), *Safety Culture Survey (SCS)*; NASA, 2015).
- Nuclear Regulatory Commission (NRC), *Safety Culture and Climate Survey* (NRC, 2006, 2009, 2016).
- National Institute for Occupational Safety and Health (NIOSH), *Worker Well-Being Questionnaire (WellBQ)*; Chari et al., 2022).
- Nordic Occupational Safety Climate Questionnaire (NOSACQ-50; Kines et al., 2011).
- Safety Management International Collaboration Group (SMICG), *Industry Safety Culture Evaluation Tool* (SMICG, 2019).
- Transport Canada, *Score Your Safety Culture* (Transport Canada, n.d.).

A set of items evaluating the effectiveness of voluntary reporting programs was included without modifications from a previous safety culture assessment to allow year-on-year comparison (Cooke et al., unpublished manuscript).

Cumulatively, these instruments totaled over 700 items for review. Each researcher independently rated each item for relevance. Specifically, each researcher reviewed each item



and categorized them into one of the ten IAEA traits. The researchers then ranked each item by how closely it aligned with the IAEA attributes. The researchers found that the attributes overlapped, resulting in some items being classified in a secondary attribute as well. In lieu of sampling-based inter-rater reliability methods, researcher consensus for the attribute categorization of each item was reached through discussion. Many items were found not to align well with any attributes, reducing the list to approximately 300 items.

Item Validation

Next, the question items were reviewed by stakeholders to ensure their operational readiness. An iterative two-step evaluation was performed to confirm the content and face validity of the selected items;³ consequently, the number of items in the final survey instrument was reduced.

Content Validity

A separate and independent group of safety culture subject matter experts (SMEs) evaluated the content validity of question items. SMEs held Ph.D.s in psychology or human factors, each of whom has previously led research studies assessing safety culture. SMEs rated the extent to which each of the items measured the IAEA's attribute; the definitions of each attribute were provided to the SMEs in the rating exercise. More specifically, the SMEs were asked to "Please rate the extent to which each item measures the attribute", using a rating scale of 0 to 100 in 10-pt increments. Items were not retained if the average agreement that the item measured the attribute was less than 70 of 100. The SMEs were also provided the opportunity to suggest item wording changes or request additional items to measure the attributes. This process reduced the count from 300 items to 146 items.

Face Validity

Representatives were sampled from an agency-level community of practice on safety culture to assess the face validity of each question item. Notably, one of the aims of the community of practice is to develop methods to measure and monitor safety culture across FAA LOBs. The representatives evaluated the face validity of each item to ensure that they were worded appropriately and could be answered by individuals within their respective work units. More specifically, representatives were asked to "Please rate whether employees in your work group (i.e., routing code) can comprehend and answer each item", using a rating scale of 0 ('Not at all') to 10 ('Definitely'). Items were not retained if the average agreement that the item was understandable was less than 7 of 10. This process reduced the count from 146 items to 75 items.

Final Safety Culture Survey

The researchers scoped the survey instrument by retaining items that (a) were consistently the highest-rated across the aforementioned stages of survey development and (b) were necessary and sufficient to measure a given attribute according to SME standards. Minor wording changes

³ Content validity is the degree to which the question items measure the intended construct (in this case, safety culture). Face validity is the degree to which the items are perceived to measure the intended construct. Both are important to evaluate during survey development.



were made to items as needed to address feedback obtained throughout the development process and to enhance comprehension. The complete and final list of 75 safety culture question items administered in the survey can be found in Appendix A.



Phase 3: Survey Deployment to a Large FAA Line of Business

In order to fulfill the Congressional direction set forth in ACSAA and FAA's strategic plans, the survey was deployed to a large FAA LOB. This survey administration is in addition to the LOB's history of commitment to fostering a positive safety culture. As a demonstration of the LOB's commitment to safety culture, recent actions have included the implementation of a voluntary reporting program (2021), the completion of a baseline safety culture assessment (2022), and the completion of a targeted safety culture assessment (2023).

Survey Administration

Given the documented priorities described in Phase 1, it was determined that the survey administration should only adopt the elements of a pulse approach that allowed the quick gathering of employee perceptions while ensuring the comprehensive assessment of all ten traits of a positive safety culture. This was achieved by inviting the entire workforce to complete the survey over a period of one month. All question items were asked, but each respondent completed a random subset of items to reduce the time expenditure per person. It was estimated that respondents could complete this survey within ten minutes, achieving one of the stakeholders' goals. The resulting dataset contained responses for all survey question items, with each item representing the views of a fraction of respondents. Specifically, each member of the LOB's workforce received a survey that contained 32 question items:

- *Safety Culture Perceptions* consisted of two question items per safety culture trait. Agreement was rated using a 5-point Likert scale plus an "NA/Don't know" option.
- *Demographics* (3 items) included staff office, job role, and years of service. Response options were customized to the participating LOB.
- *Usability* (8 items) probed the appropriateness of survey content and length and whether the results could be used to affect meaningful change. Agreement was rated using a 5-point Likert scale plus an "NA/Don't know" option.
- *Comments* (1 item) in response to the prompt: "Please share any final thoughts about the safety culture in your work environment". This offered participants an opportunity to voice their opinions, raise concerns, and share general feedback in an open-ended text entry box.

Survey Logistics

The survey's question items were coordinated and approved by the LOB's leadership and collective bargaining units. Leadership promoted the survey through email messages encouraging voluntary participation by all members of the workforce (a) one week before the four-week survey administration period opened and (b) a final reminder the week the survey period closed. Weekly reminder emails ($n = 4$) were also sent by the survey distributor to invitees who had not yet completed the survey.



The survey was administered using the Qualtrics⁴ FedRamp platform. Each Federal employee who had been employed by the LOB for one year or longer ($N = 7,734$) received a unique Qualtrics link to participate, and the survey was open for a total of four weeks (concluding in winter 2023). Technical support was provided via email and over the phone. No incentives were offered for participation.

Confidentiality Assurances

The survey was reviewed and approved by the FAA Civil Aerospace Medical Institute's (CAMI) Institutional Review Board under approval number 202335 and followed all pertinent ethical principles set forth in the Belmont Report.⁵

The invitation identified the survey's confidentiality assurances. Specifically, participants were informed that participation is voluntary; responses are confidential and are provided in aggregate form only; and that no one at the FAA has access to individual responses.

To protect the confidentiality of the participants, an anonymous online link was provided, and the survey itself did not collect any personally identifiable information. A third-party FAA research contractor collected survey responses for de-identification, analysis, and reporting. Responses were retrieved from Qualtrics and stored on a server maintained by the FAA but accessible only by a third-party contractor, Cherokee Federal. Only aggregated results with no personally identifiable information were provided by Cherokee Federal to the FAA. Only de-identified and aggregated data (i.e., where $n \geq 8$) were included in research reports, presentations/briefings, or released to the FAA.

An executive summary of the survey results was delivered to the FAA, with the option to request supplemental data analyses and/or briefings. This report was intended to empower management to evaluate the nature of their safety culture, identify areas in need of improvement, and assess changes arising from improvement efforts.

Survey Results

The survey was started by 2,983 respondents, although some only submitted partial responses. Responses were retained for analysis if the respondent (a) accepted the invitation to participate and (b) completed two question items for at least one safety culture trait. The final sample retained for analysis included 2,879 members of the workforce, representing a 37.2% response rate. The median time to complete the survey was 7.6 minutes.⁶

Sample Representativeness

To ensure the representativeness of the sample, the sample data were compared to the LOB's workforce plan, which provides population data by staff office. Representative participation is

⁴ <http://www.qualtrics.com>

⁵ National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979).

⁶ Response times reported as total time to completion from the start of the survey to the end.



critical because research has shown that respondents from different workgroups may have different perceptions of safety culture.⁷

Some responses are omitted because (a) respondents chose not to self-identify or (b) a data collection error occurred,⁸ whereby the staff office was not clearly identifiable. Results are solely based on self-reporting. To maintain confidentiality, responses were not verified against other sources, such as employment records.

A breakdown of response rates by staff office is provided in Table 1. This response rate pattern is as expected, given the relative distribution of employees across the staff office.

Table 1
Participation Response Rates by Staff Office

Staff Office	Proportion of Received Responses (%)	Proportion of Total LOB Workforce (%)
[A]	64.3%	68.1%
[B]	17.7%	20.0%
[C]	6.2%	5.5%
[D]	5.8%	1.0%
[E]	2.2%	1.2%
[F]	1.8%	1.7%
[G]	0.7%	0.6%
[H]	0.6%	1.2%
[I]	0.6%	0.7%

The distribution of job roles is also as expected. Most respondents reported that they filled non-Manager roles ($n = 2,269$); in comparison, 495 respondents reported filling Manager roles ($n = 282$ Front-Line Manager, $n = 161$ Middle Manager, $n = 52$ Senior Manager). Some respondents ($n = 115$) declined to provide their staff office.

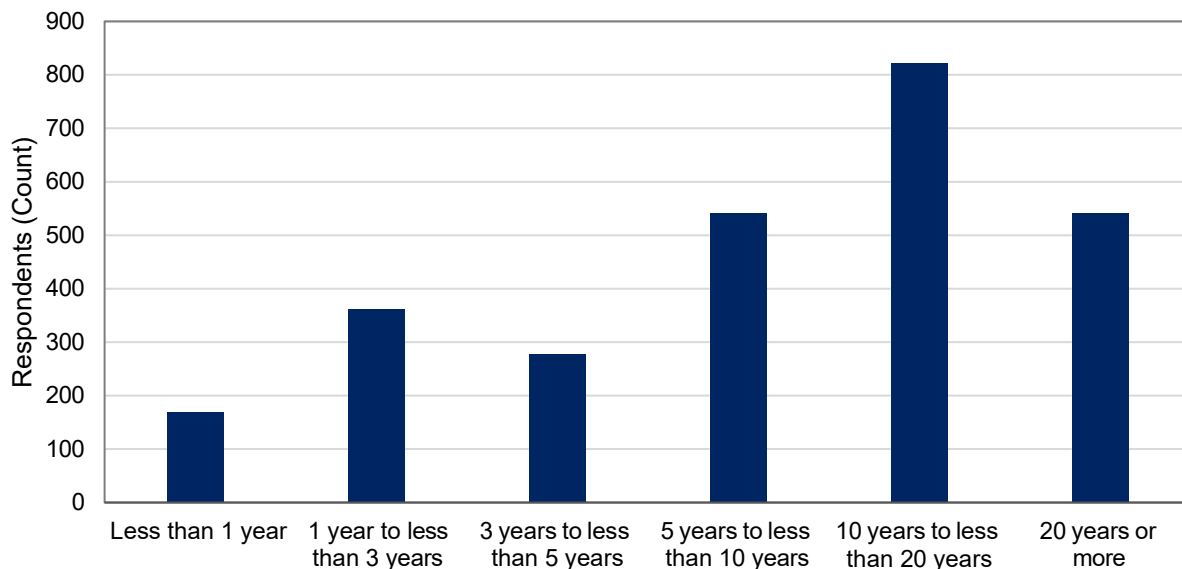
The survey respondents reported a range of years of service within their staff office, representing diverse viewpoints and experiences (Figure 1). Just over half of respondents (50.2%) reported having 10 or more years of service.

⁷ For reviews, see Zohar (2010, 2014), Zohar and Hofmann (2012), and Zohar and Luria (2003, 2005).

⁸ One small staff office was unintentionally omitted from the list of options and was immediately added per respondent feedback the morning following the survey launch.



Figure 1
Respondent Years of Service



Survey Usability Ratings

Overall, respondents rated usability favorably, as shown in Table 2. Respondents agreed the time required to complete the survey is appropriate for the value of the data collected, the survey contains important items to assess an organization's safety culture, it is user-friendly, and the survey is recommended for future use.

Table 2
Survey Usability Items

Question Item	<i>M</i>	<i>SD</i>
The time required to complete this survey is appropriate for the value of the data collected.	4.12	0.79
The survey contains important items to assess an organization's safety culture.	3.68	1.11
The survey is user-friendly.	4.33	0.67
I would recommend this survey for future use.	3.71	1.16
The survey results will be used to identify areas in need of improvement.	3.22	1.46
Managers will make meaningful improvements based on the survey results.	2.67	1.61
I thought there was too much inconsistency in the survey.*	1.47	1.14
I found the survey unnecessarily complex.*	1.09	1.02

Note. Responses were provided on a 5-point Likert scale that increased from “strongly disagree” to “strongly agree” with an additional NA/Don’t Know option. Items marked with an asterisk (*) are reverse-worded so that lower agreement ratings indicate more favorable perceptions of usability.

These results illustrate the effectiveness of incorporating elements of a pulse methodology on a population of this size — administering a random subset of items per respondent and then aggregating the results from all respondents. Notably, the results also highlight the need for improved awareness about how leadership will use the survey results to affect meaningful change.



Phase 4: Documenting Lessons Learned and Recommended Practices

As illustrated in Phase 3, the survey is a useful tool for capturing employee perceptions of safety culture traits within regulatory contexts, and the pulse methodology employed was successful in documenting the perceptions of the LOB's workforce. When administered judiciously, this survey can help form a foundational understanding of any aviation agency's safety culture and areas in need of transformation. In summary, "The process of designing, implementing, administering, and reporting back the data from an organizational survey is as important, if not more important, than the actual results that are generated" (p. 63, Burke et al., 1996). However, because judicious administration and action from surveys can be challenging, this section documents lessons learned during survey deployment and recommended practices for administering and acting on the survey results.

Survey Administration

Recommended practices for administering the survey include:

- **Finalize survey content.** It is recommended that the entire set of safety culture questions be administered in Year 1 in order to set a baseline for the safety culture. Supplemental topics can be added as appropriate (see Appendix B).
Because small wording changes can have unpredictable effects on responses (see Converse and Presser, 1986), it is important that the question items be administered without wording changes. Differences in question item wording between organizations or between successive survey administrations may cause respondents to answer them differently, potentially resulting in misleading conclusions to be drawn.
- **Conduct a beta-test.** Prior to launching the survey, trial responses can be submitted by testers (e.g., 10% of the total respondents) to ensure the survey is functioning as intended and that the items are understandable to the respondents. Check that the downloaded data are provided in a format that can be used, that the data appear to be complete with respondents answering all questions, and that the survey takes the desired amount of time to complete.
- **Choose between an anonymous and unique survey link.** An anonymous link may produce higher response rates and encourage free sharing; on the other hand, this precludes the ability to send reminders while allowing for the potential of ballot-stuffing (i.e., the submission of multiple responses by a single respondent, usually in an effort to skew the results). A unique link per person allows follow-up reminders to be sent only to those who have not yet completed the survey; however, the final dataset will have identifiable information, which must be protected.
- **Invite a representative sample of respondents.** Diverse, representative participation is critical because research has shown that employees from different workgroups will likely have different perceptions of safety culture (for reviews, see Zohar, 2010, 2014; Zohar & Hofmann, 2012).
Demographic differences may be observed, highlighting the importance of gathering a diverse, representative sample of respondents. Research has found differences in safety



culture across (a) national culture and job/professional culture (Zohar & Hoffman, 2012), (b) job roles, e.g., leaders have more positive perceptions than the workforce (Singer et al., 2003; Zohar, 2010), and (c) those of the same job role who work for different units or supervisors, potentially due to differences in leadership characteristics (Zohar, 2014; Zohar & Luria, 2003). In particular, research has shown that differences may exist between management/administrative and employee perceptions. Greater variation signals more divergence in perceptions, allowing more room to align future behaviors to reflect the desired culture (National Academies, 2016).

- **Protect respondent anonymity.** Caution is necessary to protect respondent anonymity. It is generally recognized that reporting results for work units with fewer than seven respondents can reveal individual identities (Macey, 1996). Written comments also require attention to maintain anonymity; consider only reporting if there are 20 to 50 comments. Even then, the comments must also be de-identified and cleaned (e.g., to remove names or other personally identifiable information, improper language, off-topic comments). For pulse survey methodologies, the smaller number of respondents may necessitate limiting reporting to higher levels in the organization's structure so that anonymity is maintained. Reporting larger work units can also reduce the risk of sampling error, as the sampling margin of error for pulse survey methodologies can be as high as ± 15 percentage points (which is considered nonrepresentative; Colihan & Wacławski, 2006).
- **Utilize a communications campaign** to raise awareness about the assessment, build interest, and instruct respondents on how to participate. At a minimum, the invitation should explain the following: (a) the survey purpose and how the results will be used, (b) the voluntary nature of the survey, (c) protections for anonymity or confidentiality and desire for genuine feedback, (d) how long the survey will remain open for response, (e) the anticipated time it will take to complete the survey, and (f) a designated point of contact so respondents know who to reach out to for assistance.
- **Give employees time to participate.** Consider leaving the survey open for 2-4 weeks minimum, with an optional extension to achieve the desired response rate. Employees are more likely to complete a survey quickly if they are informed and encouraged in advance to participate. Setting aside time for completing the survey can also help achieve the desired response rate.
- **Send regular reminders.** After the survey 'goes live,' it can be helpful to send regular reminders about participating (e.g., weekly). Often, these reminders will produce a spike in responses.

Survey Follow-Up

A positive safety culture is not an end goal. Safety culture must be fostered, and members of leadership and the workforce alike must maintain vigilance to help identify where improvements can be made within the organization. Because of the fluid nature of safety culture, regular assessments are needed to help inform decision-making and improvement programs. The following future directions not only provide suggestions for examining the survey results but also emphasize that the survey results are but one source of information that the organization has



among many upon which to support and foster a positive safety culture. Recommended practices for survey follow-up include:

- **Perform demographic breakouts to support comparisons.** To increase the utility of survey response results, demographic breakouts can help leadership and other stakeholders identify cultural silos and differences in perceptions across LOBs. For instance, responses can be examined by making comparisons across staff offices, years of service, and job role (i.e., level of management). These comparison analyses can provide leadership and stakeholders with the ability to make targeted improvement efforts designed to address the sometimes-divergent perceptions of different groups within a single organization.
- **Analyze open-text feedback to raise contextual awareness.** Open-textbox comments can be analyzed to increase the utility of survey response results. For example, comments provided by respondents can be thematically organized to corroborate and emphasize the issues identified in the survey. The comments can provide important context and interpretive guidance to help make sense of the survey response results and inform discussions on the state of an organization's safety culture overall.
- **Bolster survey findings with other indicators.** These additional indicators can be used to verify and corroborate survey results, and they can help ensure that any safety culture improvements are well-targeted and based upon a thorough understanding of the safety culture strengths and opportunities (National Academies, 2016; Transportation Research Board, 2022). Additional data sources may include employee reports of safety concerns, audit findings (including missed audits or inadequate response to reported concerns), observations of normal operations (including tolerance for routine errors and failures in carrying out or complying with procedures and policies), and accident/incident/injury data (National Academies, 2016; Transportation Research Board, 2022). These metrics tend to be more objective than survey results and are an important component of a synergistic, comprehensive assessment of safety culture.
- **Share the results.** The more broadly the results are disseminated, the more useful the information is likely to become, and the more likely respondents will feel that taking the survey was worthwhile (Sorra et al., 2019; p. 26). Interpreting and acting on the results will require engagement from all stakeholders working together to identify what aspects of the workplace and safety culture need improvement.
- **Develop and implement an action plan.** Safety culture change is an iterative process of continuous improvement that requires awareness and dedication to safety goals (Ward et al., 2010). Real change requires the development and implementation of an action plan. The action plan should be evidence-based (based on the results), targeted and appropriately scoped, measurable, and co-developed by representatives from all stakeholder groups so there is mutual buy-in and support for the change efforts that will follow. The action plan should also be well-communicated; proactively communicating the action plan for change has multiple benefits, including improving employee engagement and buy-in and reducing resistance to change (Blackburn et al., 2011). An action plan should address those findings that are consistent across years, along with any new emerging opportunities. Remember, an action plan need not focus on only

one area at a time; in fact, some actions could improve multiple dimensions of safety culture simultaneously. For example, work to enhance communication could enhance (a) understanding of the reasons for decisions and (b) perceptions that final decision-makers prioritize safety over competing demands.

- **Periodically re-assess safety culture.** To track progress over time, it can be helpful to examine how the results compare across years, paying particular attention to the areas of overlap. After a pre-determined timeline of implementing the action plan, re-assess safety culture using the same methods used in the baseline. It would be beneficial to reassess safety culture annually or biennially because there is some evidence that culture change is slow and that actual improvements to safety culture may lag up to two years after the improvement action begins (Bergman et al., 2014; Neal & Griffin, 2006). Surveying more frequently may induce survey fatigue (i.e., reduce enthusiasm for participation) and increase the difficulties associated with communication and acting upon the results. However, for specific behavioral changes, reassessment could occur more frequently.

Even if the reassessment shows no improvement (or even a decrease) in safety culture perceptions, never give up! Continue any in-progress efforts because the safety culture may actually decrease if the plan is stopped prematurely or not followed correctly. For example, employees may distrust leadership, provide insincere feedback, and have a lowered commitment to safety.⁹

Finally, recognize that safety culture assessment isn't a "one-time thing"; it is a journey with no finish line. The results should be compared to a target/goal — which should be set by leadership and continually benchmarked against to track progress over time. A positive safety culture is something to continuously work toward. It takes time, effort, and commitment to growth.

Discussion

This survey leverages insights from both the scientific literature (200+ peer-reviewed sources; Key et al., 2023) and governance organization frameworks for culture management. The survey was closely adapted from a framework of safety culture dimensions, which has been successfully applied to the measurement of safety culture in the energy sector for over 20 years (*Harmonized Safety Culture Model*; IAEA, 2020).

As designed, the survey covers important aspects of any safety-critical workplace, including individual and leader commitment to safety, just and reporting culture, competing pressures, resource allocation, problem identification and resolution, workload and work planning, and others.

Unlike other assessments of organizational culture that only provide high-level aggregated feedback, this survey can be used to make comparisons across LOBs or staff offices, find culture silos, and identify areas of opportunity for safety culture improvement. This level of feedback ensures that the survey results are actionable and can be used to affect targeted and

⁹ As discussed by Taylor and Patankar (2001).



meaningful change. It has successfully undergone initial tests in the regulatory aviation environment and is ready for large-scale application.

To achieve the brief ‘pulse’ of safety culture requested by stakeholders, the survey was presented with only two randomly selected questions for each of the ten traits per respondent (plus usability and basic demographic items). It is noteworthy that the methodology deployed here deviates from what is typically considered to be a pulse survey. Generally speaking, pulse surveys are targeted, short (e.g., 20 items or less), and brief (e.g., require less than 10 minutes to complete). To achieve this, the typical pulse survey is limited in content (e.g., focused on 1-2 topic areas) and/or sampling (i.e., only administered to targeted samples, such as only managers or only new hires), thereby reducing the effort needed by each member of the workforce to complete. However, just as taking a pulse does not give a full picture of human health, a pulse survey may not give a full picture of the topic(s) or populations of interest (Colihan & Waclawski, 2006).

The methodology deployed here avoids the limitations of the typical pulse survey by providing a comprehensive assessment of all positive safety culture traits across a representative sample of the workforce, albeit with the tradeoff of not capturing all respondents’ views of all survey items. Though this methodology choice limits the ability to conduct statistical validation of the survey (as described below), the dataset collected still provides a valuable, comprehensive snapshot of safety culture perceptions in the LOB to inform leadership action planning.

Limitations and Future Directions

This effort represents the first administration of a novel survey. During its administration, the researchers noted areas where future assessments can be improved. For example, an improved response rate could bolster confidence in the findings for assessments conducted in future years. In the current effort, 37% of those invited responded. This response rate is comparable to ~40% of the U.S. Office of Personnel Management (OPM) workforce who responded to the Federal Employee Viewpoint Survey (FEVS) in recent years (U.S. Department of Transportation, 2024). However, other Federal agencies conducting safety culture surveys have achieved higher response rates (e.g., the Department of Energy, which has achieved higher response rates at times near the IAEA’s target of 70%; see Carnes & Rich, 2020), providing a target to strive toward.

Achieving a sufficient response rate can be complicated by the organizational size and structure. In smaller organizations, pulse methodology may exacerbate challenges with survey margins of error and protection of anonymity, so caution is warranted (Colihan & Waclawski, 2006). Notably, staff office sizes vary greatly across the FAA, and the perceptions of particularly small workgroups may not be well represented in the survey results. Future efforts should strive to better represent the views of the entire workforce.

It is important to remember that employee surveys, no matter how high the response rate, are comprised of voluntary responses and, therefore, may not represent the views of the entire workforce. To more fully represent the safety culture, survey results should be verified with other indicators. Recall that the IAEA model represents a framework of safety culture traits but is agnostic about which assessment method(s) are most appropriate to fully capture organizational safety culture against each attribute. During data analysis, the researchers developed the



hypothesis that some of the safety culture attributes may be more difficult than others for members of the workforce to answer via survey questions. Evidence of this can be found in the survey findings. Certain safety culture attributes (i.e., those measuring organizational processes for safety management such as Problem Identification and Resolution) received upwards of 20% neutral responses and/or greater than 10% NA/Don't Know responses. This response pattern could be interpreted to mean that (a) the items did not apply to respondents and/or (b) that respondents were reluctant to answer truthfully. These neutral and NA/Don't Know responses merit deeper exploration, potentially through other assessment methods such as one-on-one interviews, listening sessions/focus groups, or safety stand-downs to better understand the pattern of responses. This finding could indicate that some attributes might be better addressed through other forms of assessment. Alternatively, this finding could indicate that revisions are needed to the survey items for these traits/attributes to better capture perceptions of these areas. This could be investigated via factor analysis or other statistical methods of identifying redundant or uninformative items.

A remaining question is whether the survey is sensitive to contextual factors, such as changes in leadership, technology, and current events, that may influence perceptions in time. For context, the LOB was experiencing reorganization and leadership changes during the survey administration, including effects resulting from Congressional budgetary actions — which may have affected the workforce's perceptions. Further efforts are needed to better identify and understand these contextual factors and ensure that the survey is sufficiently sensitive yet generalizable across aviation contexts.

Finally, statistical analyses validating the survey could not be conducted due to the methodology that the LOB leadership and stakeholders agreed to deploy. Although adopting elements of a pulse survey reduced the time commitment needed from each respondent, this resulted in an incomplete set of results because not all question items were answered by all respondents. This limits the statistical options for confirming factor structure, identifying relationships across traits/attributes, and removing uninformative items. It is strongly recommended that the next administration of the survey asks each respondent to answer the full complement of safety culture question items so that statistical validation of the survey can be performed. Such a validation effort would bolster confidence that the traits of a positive safety culture are assessed comprehensively, thereby providing decision-makers with sufficient information from which to build action plans.

Conclusions

In developing this survey assessment, the FAA recognized the need to balance the goals of scientific robustness with the need for it to be generalizable for use across the FAA. This was achieved by taking a collaborative approach to the project, where researchers and the FAA-level safety culture community of practice worked together to develop the survey. To test its efficacy, the survey was deployed within one large FAA LOB. The results illustrate the value of stakeholder engagement when developing assessment tools, as the resulting product has several advantages:

- Provides an a priori (planned) measurement of a safety culture framework.
- Provides a targeted look at strengths and opportunities.



- Allows for comparisons to be made across work units, detecting cultural silos and local processes and perceptions.
- Detects trends and deeper characterization of safety culture not as evident in more organizationally oriented survey assessments of culture norms.

The value of the survey is that it provides a comprehensive assessment of safety culture perceptions in regulatory organizations; however, its utility is only fully realized when used judiciously and when the results are acted upon as part of a larger strategy for managing safety culture change. In their seminal textbook chapter on the role of surveys in transforming culture, Wagner and Spencer (1996) stated, “surveys should be only one part of a total toolkit of interventions. The use of that toolkit should be driven by a well-articulated business rationale for changing the organization's culture and guided by an integrated change agenda that is based on a systemic view of organizations” (p. 67). These authors underscore that surveys are not a one-stop-shop for culture change but instead serve as a tool for assessing where transformation is needed and monitoring the effectiveness of any resulting change efforts.

Continued use of this survey would empower the monitoring of cultural strengths and opportunities and allow for tracking the effectiveness of improvement efforts across time. It is helpful to remember that the survey was designed to assess the state of safety culture in the fulfillment of Congressional direction (ACSAA §132(c) as part of the Consolidated Appropriations Act of 2021, 2020) and the FAA’s strategic plans (FAA, 2022). Continued assessment is needed, as changes in management, work group, and technology are likely to influence safety culture perceptions moving forward. Like any aspect of organizational culture, safety culture is fluid, and the actions to improve it will require commitment from the FAA’s stakeholders and workforce that extends beyond the reach of any legislation.

It is important to note that the need for a positive safety culture is not unique to aviation; the ten traits measured in this survey were originally developed for the energy sector, with items, in turn, sourced from safety-critical industries like healthcare and construction. It is reasonable to hypothesize that the survey would be applicable to those industries with minor revisions. We look forward to shaping collective, interdependent thinking about the strategic priorities and behaviors to support high-performing regulatory organizations within and beyond aviation.



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Appendix A. Safety Culture Survey

The survey measures the ten traits set forth in the *Harmonized Safety Culture Model* developed by the International Atomic Energy Agency (IAEA, 2020). The model represents an evolution of assessments dating to 1992 when the International Nuclear Safety Advisory Group (INSAG) identified human factors as having contributed to the 1986 Chernobyl nuclear disaster, and noted, among other findings, *a general lack of safety culture* (1992).

The *Harmonized Safety Culture Model* consists of ten traits, including Individual Responsibility, Questioning Attitude, Communication, Leader Responsibility, Decision-Making, Respectful Work Environment, Continuous Learning, Problem Identification and Resolution, Environment for Raising Concerns, and Work Planning.

These ten traits are further characterized and organized by the IAEA into *attributes* of a positive safety culture. Supplemental modules to assess other topics relevant to safety culture beyond the ten traits are provided in Appendix B.

Although the survey can be administered in full, the survey was administered to the workforce by presenting a random subset of items (i.e., two items per safety culture trait) to each respondent. Because this “pulse” form of the survey presented each respondent with fewer question items, less time was needed for completion.

Because small wording changes can have important effects (see Converse & Presser, 1986), the evidence presented in this report cannot be used to make claims about the effectiveness of modified question items. Instead, the authors recommend administering question items as provided and without modification.

Survey Introduction Page

Respondents were provided with an introduction to the survey’s purpose, confidentiality assurances, voluntary nature (i.e., of the data collection in general), provisions of duty time or other incentives to complete the survey, and contact information for support or questions. Language for the survey included:

The purpose of this survey is for [Organization] to engage its workforce in assessing factors that contribute to a positive safety culture. Your participation will allow us to identify concerns and highlight areas of opportunity where we can best focus our safety culture efforts.

The Civil Aerospace Medical Institute (CAMI) Aerospace Human Factors Research Division (AAM-500) is administering this survey on behalf of [Organization] with the assistance of a third-party contractor, Cherokee Nation 3S. **To ensure confidentiality of all responses, results will be provided to [Organization] in aggregate form only.** No one at the FAA will have access to your individual responses.

Participation in the survey is completely voluntary and may be completed during duty time. If you choose to participate, please ensure you have at least 10 minutes to complete this survey. Voluntary participants shall be afforded sufficient duty time to complete the survey.

If you agree to participate in this survey, please click Next to begin.



It is also generally recommended that key terms or organizations should also be defined. Language for the survey included:

Please use these definitions when completing the survey:

- [Organization]. Organization administering the survey.
- **Leaders**. Includes supervisors and managers, up to and including Senior Managers who manage a staff office.
- **Individuals**. Includes all individuals with whom you work closely.

Question Items

It is generally recommended that respondents are instructed to base their responses on their own experiences in the work environment. The responses may be provided on an agreement scale anchored with the labels “Strongly disagree”, “Disagree,” “Slightly disagree”, “Slightly agree,” “Agree,” “Strongly agree,” and “NA/Don’t know.” Higher scores reflect more positive perceptions. Note, all “NA/Don’t know” responses should be excluded for score averaging.

Communication

“Communications support a focus on safety” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Information is effectively communicated across teams.	Free flow of information	IAEA (2017).
An effective communication flow exists up, down, and across the chain of command (or equivalent).	Free flow of information	M-SCAIT (Key et al., 2023).
[Organization] communicates transparently with oversight, audit, regulatory organizations, and the public.	Transparency	Drafted per IAEA (2020).
The overriding priority of safety is communicated clearly by leaders.	Expectations	IAEA (2017).
Leaders adequately communicate the reasons for decisions.	Reasons for Decisions	NRC (International Survey Research, 2006).
When decisions are made that are contrary to professional recommendations, leaders communicate effectively why the decision was made.	Reasons for Decisions	NRC (Willis Towers Watson, 2020).
The information individuals need to do the job is readily available.	Workplace Communication	NRC (Willis Towers Watson, 2016).

Individual Responsibility

“All individuals are personally accountable for safety” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Individuals adhere to established standards.	Adherence	Drafted per IAEA (2020).
Safety is a responsibility shared throughout [Organization]’s structure.	Ownership	EUROCONTROL (Mearns et al., 2013).
Commitment to safety is evident in the behaviors and work practices of individuals.	Ownership	Drafted per IAEA (2020).
Individuals work together effectively within and across work units to achieve goals.	Collaboration	IAEA (2017).

Questioning Attitude

“Individuals remain vigilant for assumptions, anomalies, conditions, behaviors or activities that can adversely impact safety and then appropriately voice those concerns” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Individuals understand the unique risks associated with aviation, including advanced technology.	Recognize Unique Risks	Drafted per IAEA (2020).
Individuals strive to avoid complacency.	Avoid Complacency	Drafted per IAEA (2020).
Individuals feel free to stop work when uncertain.	Question Uncertainty	IAEA (2017).
Individuals feel free to ask questions about any issue.	Recognize and Question Assumptions	IAEA (2017).
It is acceptable to challenge the way things are done.	Recognize and Question Assumptions	M-SCAIT (Key et al., 2023).

Leader Responsibility

“Leaders demonstrate a commitment to safety in their decisions and behaviors. Leaders are role models for safety” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Leaders' strategic plans reflect safety as the overriding priority.	Strategic Alignment	IAEA (2017).
Leaders place safety before production.	Strategic Alignment	NOSACQ-50 (Kines et al., 2011).
Leaders regularly demonstrate their commitment to safety.	Leader Behavior	SHo-Me (CAA, 2003).
Leaders demonstrate they value safety by "walking the talk".	Leader Behavior	NASA (2015). ¹⁰
Leaders encourage employees to participate in resolving issues which affect safety.	Employee Engagement	Drafted per IAEA (2020).
Individuals are involved in contributing to the design, implementation, and measurement of safety related changes.	Employee Engagement	EUROCONTROL (Gordon & Kirwan, 2004).
Individuals have sufficient resources (e.g., people, materials, budget) to get the job done safely.	Resources	NASA (2015).
Leaders are visibly present in work environments (including virtual environments) and maintain awareness of work progress.	Field Presence	IAEA (2017).
Individuals are recognized for safety conscious behaviors.	Rewards and Sanctions	IAEA (2017).
Individuals are held to the same standards of ethical behavior.	Rewards and Sanctions	NRC (Willis Towers Watson, 2016).
Changes to the organization, systems, and procedures are properly assessed for safety risk.	Change Management	Drafted per IAEA (2020).
Roles and responsibilities are clearly defined by leaders.	Authorities, Roles, and Responsibilities	IAEA (2017).

¹⁰ National Aeronautics and Space Administration.

Decision-Making

“Decisions are systematic, rigorous, thorough, and prudent” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Individuals' decisions reflect safety as the overriding priority.	Systematic Approach	IAEA (2017).
Final decision makers prioritize safety over competing demands (e.g., politics, industry pressure).	Systematic Approach	Cooke et al. (Unpublished Manuscript).
Individuals take a conservative approach to decision-making, where safety is prioritized over competing demands.	Conservative Approach	Drafted per IAEA (2020).
Authority and responsibility for decisions is specific and well defined.	Clear Responsibility	Drafted per IAEA (2020).
Individuals understand the decision making responsibility of their job roles.	Clear Responsibility	Drafted per SME recommendation.
[Organization]'s risk based decision-making process allows individuals to be flexible under unforeseen situations.	Resilience	Drafted per SME recommendation.

Respectful Work Environment

“Trust and respect permeate the organization” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Individuals are treated with respect in [Organization], regardless of their job.	Respect is Evident	NRC (Willis Towers Watson, 2016).
[Organization] would support individuals if they had a safety concern.	Opinions are Valued	EUROCONTROL (Mearns et al., 2013).
Individuals are encouraged to ask questions, voice concerns, and provide suggestions.	Opinions are Valued	Drafted per IAEA (2020).
Differing opinions are solicited and respected.	Opinions are Valued	Drafted per IAEA (2020).
In my work unit, individuals are encouraged to report safety concerns to the safety reporting program.	Opinions are Valued	Drafted per Cooke et al. (Unpublished Manuscript).
There is a high level of trust among work units.	Trust is Cultivated	IAEA (2017).
Openness and honesty are fostered throughout [Organization].	Trust is Cultivated	Drafted per IAEA (2020).
Conflicts are resolved in a timely manner.	Conflicts are Resolved	Drafted per IAEA (2020).
Our work facilities are conducive to the safe performance of our duties.	Facilities Reflect Respect	Drafted per M-SCAIT (Key et al., 2023).

Continuous Learning

“Learning is highly valued” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Safety-related events or discussions are viewed as an opportunity to learn and make improvements.	Constant Examination	Cooke et al. (Unpublished Manuscript).
There is a genuine focus on continuous improvement.	Constant Examination	M-SCAIT (Key et al., 2023).
[Organization] uses information from past experiences to improve safety.	Learning from Experience	NASA (2015).
[Organization] openly shares lessons learned.	Learning from Experience	IAEA (2017).
The results of this survey will be used to make [Organization] a better place to work.	Learning from Experience	FEVS (Office of Personnel Management, n.d.).
[Organization] provides effective training.	Training	Drafted per SME recommendation.
Safety decision makers maintain the knowledge, skills, qualifications, and recency of experience necessary to make appropriate safety-related decisions.	Training	Drafted per Cooke et al. (Unpublished Manuscript).
[Organization] encourages knowledge transfer across employees (e.g., through mentorship, on the job training).	Training	Drafted per SME recommendation.
[Organization] ensures that leadership skills are developed systematically.	Leadership Development	IAEA (2017).
[Organization] adopts safety practices that have been used effectively in other industries.	Benchmarking	Drafted per SME recommendation.

Problem Identification and Resolution

“Issues potentially impacting safety are systematically identified, fully evaluated, and promptly resolved according to their significance” (IAEA, 2020).

Question Item	IAEA Attribute	Source
[Organization] places a high value on self-reporting of safety issues.	Identification	Drafted per SME recommendation.
Reported safety issues are investigated thoroughly.	Evaluation	NRC (Willis Towers Watson, 2016).
Safety issues are investigated in a timely manner.	Evaluation	Drafted per SME recommendation.
Existing safety reporting programs and systems adequately capture safety concerns.	Evaluation	MITRE (Unpublished Manuscript).
Safety issues are investigated to find underlying causes, rather than to place blame.	Evaluation	Drafted per SME recommendation.
Reported safety issues are resolved appropriately.	Resolution	NRC (Willis Towers Watson, 2016).
The effectiveness of corrective actions is assessed.	Resolution	IAEA (2017).
Appropriate action is taken when safety concerns are reported.	Resolution	Drafted per MITRE (Unpublished Manuscript).
Lessons learned are shared with individuals.	Resolution	Drafted per SME recommendation.
[Organization] analyzes safety issues to identify possible patterns, trends, and causal factors.	Trending	Drafted per IAEA (2020).

Environment for Raising Concerns

“Personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination” (IAEA, 2020).

Question Item	IAEA Attribute	Source
Individuals can report safety issues without fear of negative consequences.	Supportive Policies are Implemented	Drafted per M-SCAIT (Key et al., 2023).
In my work unit, employees do not face negative consequences for reporting safety concerns/incidents.	Supportive Policies are Implemented	Drafted per MITRE (Unpublished Manuscript).
In my work unit, employees who report safety concerns to the safety reporting program are treated in a just and fair manner.	Supportive Policies are Implemented	Cooke et al. (Unpublished Manuscript).
I am aware of existing safety reporting programs and systems and when to use them.	Confidentiality is Possible	MITRE (Unpublished Manuscript).
I feel comfortable reporting a safety concern/incident to the safety reporting program.	Confidentiality is Possible	Cooke et al. (Unpublished Manuscript).
I feel comfortable reporting a safety concern/incident to my manager.	Confidentiality is Possible	Cooke et al. (Unpublished Manuscript).
Individuals receive timely feedback on how their safety concerns are being addressed.	Confidentiality is Possible	Drafted per SME recommendation.

Work Planning

“The process of planning and controlling work activities is implemented so that safety is maintained” (IAEA, 2020).

Question Item	IAEA Attribute	Source
There is a systematic approach for managing work activities such that safety is emphasized.	Work Management	Drafted per IAEA (2020).
Work is planned and conducted such that safety margins are preserved.	Safety Margins	Drafted per IAEA (2020).
It is easy to identify where documentation (e.g., policies, procedures) has been revised.	Documentation and Procedures	SHo-Me (CAA, 2003).
Documentation (e.g., policies, procedures) reflects safety as the overriding priority.	Documentation and Procedures	IAEA (2017).
Deadlines appropriately match the level of effort required to complete tasks.	Work Management	Cooke et al. (Unpublished Manuscript).

Open-ended Feedback

Open-ended text entry fields can be included at the end of the survey, offering respondents an opportunity to voice their opinions, raise concerns, and share general feedback.

Question Item	Source
Please share any final thoughts about the safety culture in your work environment.	Drafted per SME recommendation.

Demographics

Includes items such as service office, job role, and years of service within the organization. Response options should be tailored to the participating organization.

Question Item	Source
In which Service or Office do you work? ¹¹	MITRE (Unpublished Manuscript).
What is your level? ¹²	MITRE (Unpublished Manuscript).
How long have you worked for [Organization]?	MITRE (Unpublished Manuscript).

Survey Usability

Includes perceptions of the survey's content, length, and potential for the results to affect meaningful change.

Question Item	Source
The time required to complete this survey is appropriate for the value of the data collected.	M-SCAIT (Key et al., 2023).
The survey contains important items to assess an organization's safety culture.	M-SCAIT (Key et al., 2023).
The survey is user-friendly.	M-SCAIT (Key et al., 2023).
I would recommend this survey for future use.	Drafted per M-SCAIT (Key et al., 2023).
The survey results will be used to identify areas in need of improvement.	Drafted per M-SCAIT (Key et al., 2023).
Managers will make meaningful improvements based on the survey results.	M-SCAIT (Key et al., 2023).
I thought there was too much inconsistency in the survey.*	M-SCAIT (Key et al., 2023).
I found the survey unnecessarily complex.*	M-SCAIT (Key et al., 2023).

¹¹ Sample response options include all Service or Organizations within the participating organization, including FAA routing codes as appropriate.

¹² Sample response options include "Non-Manager," "Front-Line Manager," "Middle Manager," and "Senior Manager."

Appendix B. Supplemental Modules

The supplemental modules provided have been scientifically researched, and each has been shown to have a relationship with safety culture. Supplemental modules probe specific topics important to each unit of the organization. Research shows the inclusion of such topics provides richer diagnostic information about specific concerns of interest and can augment the utility of the survey assessment results (Jiang et al., 2019; Zohar, 2014). However, care must be taken when choosing these items, as not all topics apply to all work units. It may be beneficial to work together with stakeholders who can assist with identifying important topics and selecting appropriate supplemental modules.

Supplemental Module Question Items

It is generally recommended that respondents are instructed to base their responses on their own experiences in the work environment. The responses may be provided on an agreement scale anchored with the labels “Strongly disagree”, “Disagree,” “Slightly disagree”, “Slightly agree,” “Agree,” “Strongly agree,” and “NA/Don’t know.” Higher scores reflect more positive perceptions. Note, all “NA/Don’t know” responses should be excluded for score averaging.

Engagement

The level of enthusiasm and dedication an employee feels toward their job. This outcome has one of the strongest relationships to a positive safety culture (Nahrgang et al., 2011) and has specifically been linked to organizational culture within the context of governance organizations (Arleth, 2019).

Question Item	Source
I would recommend [Organization] as a good place to work.	NRC (International Survey Research, 2006).
I am proud to be associated with [Organization].	NRC (International Survey Research, 2006).
My work gives me a sense of personal accomplishment.	NRC (Willis Towers Watson, 2016).
The work I do is meaningful to me.	NIOSH WellBQ (Chari et al., 2021). ¹³

¹³ Worker Well-Being Questionnaire.



Job Satisfaction

The level of job satisfaction, along with employee intent to leave their current organization.

Question Item	Source
I find my job rewarding.	M-SCAIT (Key et al., 2023).
The morale in my work unit is high.	M-SCAIT (Key et al., 2023).
I often think about quitting my job.*	M-SCAIT (Key et al., 2023).

Pressure and Workload

“The extent to which the workload overwhelms one’s ability to perform safely” (Christian et al., 2009). Scheduling and time pressure, pressure to take shortcuts, and role overload (potentially due to inadequate staffing) contribute to increased work pressure, which, in turn, contributes to employee strain, burnout, and, ultimately, safety-related outcomes (Christian et al., 2009; Nahrgang et al., 2011).

Question Item	Source
There is pressure to quickly complete assigned tasks at the cost of safety.*	M-SCAIT (Key et al., 2023).
There is sufficient staffing to achieve allocated tasks on time.	M-SCAIT (Key et al., 2023).

Performance

Unit-level performance on the job. A positive safety culture has been linked to improved safety performance across safety-critical industries and within aviation (Christian et al., 2009; Sexton & Klinec, 2001).

Question Item	Source
My work unit works efficiently.	M-SCAIT (Key et al., 2023).
My work unit consistently meets its objectives.	M-SCAIT (Key et al., 2023).



Well-Being

Employees' recent well-being mentally, physically, and overall. The job demands and resources that underlie safety culture can directly affect well-being, making it an important contributor to measure (Nahrgang et al., 2011).

Question Item	Source
The nature of the work environment negatively impacts my mental well-being (e.g., stress, depression, anxiety, and problems with emotions).*	NIOSH WellBQ (Chari et al., 2021).
The nature of the work environment negatively impacts my physical well-being (e.g., physical illness and injury).*	NIOSH WellBQ (Chari et al., 2021).
I feel stressed at work.*	M-SCAIT (Key et al., 2023).

Underperformance

The extent to which underperformance is dealt with effectively. Failure to correct underperformance can lead to co-working employee strain and burnout, ultimately impacting safety-related outcomes (Nahrgang et al., 2011).

Question Item	Source
Underperformance is dealt with effectively.	M-SCAIT (Key et al., 2023).
Inexperienced staff are promoted/appointed too quickly into leadership roles.*	M-SCAIT (Key et al., 2023).

Personal Growth

Opportunities for development and growth in the organization. When employees perceive there is room for growth, they are more engaged and participative in safety (Crawford et al., 2010).

Question Item	Source
[Organization] is doing a good job of retaining its most talented people.	NRC (International Survey Research, 2006).
[Organization] is doing a good job of developing its people to their full potential.	NRC (Towers Perrin ISR, 2009).

Autonomy

The degree to which employees believe they have the freedom to make their own work-related decisions and are trusted to do their job. Autonomy is a job resource that improves employee engagement and safety-related outcomes (Nahrgang et al., 2011).

Question Item	Source
Individuals are micromanaged.*	M-SCAIT (Key et al., 2023).