



# **Independent Assessment of Safety Culture Survey Methods and Interpretation for the Portsmouth and Paducah Depleted Uranium Hexafluoride Conversion Facilities**

**February 2023**

Office of Enterprise Assessments  
U.S. Department of Energy

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## Acronyms

COVID-19	Coronavirus Disease 2019
DOE	U.S. Department of Energy
DUF6	Depleted Uranium Hexafluoride
EA	Office of Enterprise Assessments
EFCOG	Energy Facility Contractors Group
INPO	Institute of Nuclear Power Operations
ISMS	Integrated Safety Management System
MCS	Mid-America Conversion Services, LLC
OFI	Opportunity for Improvement
ORAU	Oak Ridge Associated Universities
Paducah	Paducah Site
Portsmouth	Portsmouth Site
PPPO	Portsmouth/Paducah Project Office
SCMP	Safety Culture Monitoring Panel

# **INDEPENDENT ASSESSMENT OF SAFETY CULTURE SURVEY METHODS AND INTERPRETATION FOR THE PORTSMOUTH AND PADUCAH DEPLETED URANIUM HEXAFLUORIDE CONVERSION FACILITIES**

## **Executive Summary**

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of safety culture survey methods used by Mid-America Conversion Services, LLC (MCS), the contractor for operation of the depleted uranium hexafluoride (DUF6) conversion facilities at the Portsmouth and Paducah Sites. EA also assessed the interpretation of survey data by the MCS management team, and the effectiveness of safety culture monitoring activities conducted by DOE's Portsmouth/Paducah Project Office (PPPO).

DOE allows each organization to determine how it will promote and maintain a strong safety culture, and how it will assess or monitor its culture. MCS's safety culture monitoring efforts have differed for DUF6 operations at the Portsmouth and Paducah Sites and for corporate activities at the Lexington office for the duration of the contract. For the Portsmouth Site, MCS has relied primarily on quarterly quantitative surveys, and, for the Paducah Site, has relied primarily on quarterly qualitative safety culture monitoring panels. Surveys have not been routine practice for the MCS Lexington office. MCS's safety culture monitoring approach was evolving during the period of this assessment, most notably with the contracting of Oak Ridge Associated Universities to conduct an independent safety culture survey at all three MCS locations using highly credible and well-established evaluation methods.

EA identified the following positive attributes:

- MCS developed a safety culture policy describing safety culture elements.
- MCS self-identified its in-house limitations in safety culture survey design and analysis, deciding to obtain support from external recognized safety culture assessment experts.
- PPPO staff have extensive interactions and maintain good rapport with MCS workers and management, which facilitates an informal approach for safety culture oversight.
- PPPO conducts safety culture assessments as a component of safety-related assessments.

EA also identified several areas needing attention, as summarized below:

- The MCS in-house approaches to safety culture monitoring have not been consistent with safety culture survey standards and practices accepted as valid and reliable for credible decision-making.
- MCS has not defined processes for analyzing survey data or for comparing data from multiple sources to support decision-making.
- At the time of this assessment there was no strategic plan to help guide the communication of safety culture improvements; however, MCS management acknowledged recurring issues with the effectiveness of communicating and socializing safety culture survey results.
- PPPO does not have a formally documented culture monitoring framework.

MCS, with the support of PPPO, has implemented several positive aspects of a safety culture monitoring program, although important weaknesses remain. MCS's decision to enlist safety culture survey expertise from Oak Ridge Associated Universities, which has been encouraged and supported by PPPO, is a substantive step toward an enhanced safety culture monitoring and management strategic approach. This decision to enhance its understanding of safety culture is an indicator of MCS's commitment to ongoing organizational learning.

# INDEPENDENT ASSESSMENT OF SAFETY CULTURE SURVEY METHODS AND INTERPRETATION FOR THE PORTSMOUTH AND PADUCAH DEPLETED URANIUM HEXAFLUORIDE CONVERSION FACILITIES

## 1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Nuclear Safety and Environmental Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of safety culture survey methods and interpretation used by Mid-America Conversion Services, LLC (MCS), the contractor for operation of the depleted uranium hexafluoride (DUF6) conversion facilities at the Portsmouth Site (Portsmouth) and Paducah Site (Paducah). Assessment activities were conducted remotely from October 17 to November 14, 2022.

The EA report *Assessment of Safety Culture Sustainment Processes at U.S. Department of Energy Sites – June 2020* is a rollup report of eight safety culture assessments performed at a cross-section of DOE sites. The rollup report identified that one of the most significant areas of variance within the DOE complex is the quality of safety culture survey instruments and the proper interpretation of gathered survey data<sup>1</sup>. In consultation with the Office of Environment, Health, Safety and Security, program offices, and local DOE field offices, EA established the goal of conducting follow-up reviews of the quality of safety culture surveys used for safety culture decision-making, both of contractors that were assessed in the rollup report and some that were not, in accordance with the *Plan for the Enterprise-wide Assessment of Safety Culture Survey Methods and Interpretation – February 2022*.

MCS uses different approaches at Portsmouth and Paducah to monitor their organizational culture. Portsmouth's approach is based on a 10-question multiple-choice survey provided to various employee groups quarterly. Paducah's approach is based on a panel format asking 12 questions of a small group of employees quarterly, with interviews performed by a management and union team. For the first time, this year employees at both sites and MCS's corporate office in Lexington, KY were invited to take the same survey, which was developed and administered for MCS by Oak Ridge Associated Universities (ORAU).

In accordance with the *Plan for the Independent Assessment of Safety Culture Survey Methods and Interpretation at the Portsmouth and Paducah DUF6 Conversion Project – October 2022*, this assessment evaluated how the survey questions were developed and validated, how the responses are gathered, how the results are evaluated, and what decisions are made based on the survey outcomes. This assessment also evaluated the effectiveness of safety culture monitoring activities conducted by the Portsmouth/Paducah Project Office (PPPO).

DOE Policy 450.4A, *Integrated Safety Management Policy*, sets the expectation that all organizations embrace a strong safety culture where core values are safe work performance and the involvement of workers in all aspects of work performance. That culture includes, among other key considerations, establishing a safety conscious work environment in which employees feel free to raise safety concerns to management without fear of retaliation. While DOE does not set specific requirements for how organizations should promote and maintain a strong safety culture or how they should assess or monitor

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<sup>1</sup> Safety culture surveys, as discussed in the 2020 EA report, are quantitative instruments and associated administrative processes used to gather employee perceptions about factors important for the safe performance of work. To be helpful in decision-making, survey questions should be designed to measure the right factors, and the people participating in the survey should be representative of the full organization.

their culture, DOE and industry guidance documents present acceptable methods for safety culture evaluation as described in section 2.0 below.

## **2.0 METHODOLOGY**

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which is implemented through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. As identified in the assessment plan, EA used selected criteria from objectives SC.1 and SC.3 of EA Criteria and Review Approach Document 30-08, Rev. 0, *Safety Culture Assessment*, to guide the assessment.

Because DOE provides guidance related to safety culture but expresses no specific requirements, EA referenced generally accepted standards and practices for safety culture surveys and monitoring. Core references used in this assessment included the DOE Safety Culture Improvement Panel's *Tailoring the Analysis of Safety Culture Health Monitoring Means and Methods Working Group*, January 2022; the Energy Facility Contractors Group's (EFCOG) *A Guide to Safety Culture Evaluation*, Rev. 0, September 2015; EFCOG's *Safety Culture Practitioner Guide*, Rev. 0, June 2019; EFCOG's *Best Practice #249: Strategy and Design for Internal Surveys*, November 18, 2021; and the International Atomic Energy Agency's *Performing Safety Culture Self-Assessments*, Rev. 0, June 2016.

EA examined 79 documents related to safety culture management and surveys, including program/process descriptions, training records, and assessment reports. EA interviewed personnel responsible for developing and executing MCS safety culture monitoring, and leadership responsible for acting on the results. There is no written process documentation that guides how questions were developed and administered for in-house MCS surveys/panels. Responsible MCS personnel stated that they selected the survey/panel questions using their judgement, and to their knowledge the questions had not been tested to ensure validity and reliability. Given the lack of documented descriptions of safety culture monitoring approaches, remote interviews were the primary source of data for this assessment.

The members of the assessment team, the Quality Review Board, and management responsible for this assessment are listed in appendix A.

## **3.0 RESULTS**

### **3.1 Valid and Reliable Methods to Maintain Cognizance of Safety Culture**

#### **Positive Attributes**

##### *Culture Survey Development and Survey Methods*

MCS developed a safety culture policy (DUF6-POL-048, *Safety Culture*) that contains a set of six principles used as a basis for their safety culture. The policy also lists elements that "offer the greatest potential for executing our responsibility to achieve excellence in both safety and production performances," which are the three safety culture focus areas of leadership, employee engagement, and organizational learning from DOE Guide 450.4-1C, *Integrated Safety Management System Guide*, attachment 10, *Safety Culture Focus Areas and Associated Attributes*. The safety culture policy also lists a set of seven additional safety culture principles that align with most of the Institute of Nuclear Power Operations' (INPO) 2003 *Principles for a Strong Nuclear Safety Culture*. The policy is a good first step in documenting the organization's goals for their culture.

MCS established in-house culture monitoring efforts that differ at Portsmouth, Paducah, and the Lexington office. Portsmouth relies primarily on quantitative survey information—employees’ rating scale responses to 10 multiple-choice questions. Interviewed personnel stated that the quantitative Portsmouth nuclear safety culture surveys have been conducted quarterly since 2016 (except in 2020 and 2021 because of COVID-19 precautions), and EA was provided with some results tables from 2019 and 2022. The survey questions were stated to be based on safety culture survey questions previously used by Fluor-BWXT Portsmouth, LLC, another contractor at Portsmouth. The MCS Environment, Safety, and Health Manager at Portsmouth distributes a hard copy of the survey to a different department manager each quarter, and tasks the department manager with distributing the hard copies and collecting completed surveys. Department managers control the survey forms to protect anonymity.

For Paducah, MCS relies primarily on qualitative information obtained from the discussions (verbal comments) of participants at safety culture monitoring panel (SCMP) meetings, facilitated by the Paducah Environment, Safety, and Health Manager. Interviewed personnel stated that the Paducah SCMP meetings were conducted quarterly since 2015 and entail asking a selected group of exempt and union employees 12 safety culture discussion questions. The SCMP process and 12 discussion questions were said to be derived from the previous Paducah DUF6 contractor’s (BWXT Conversion Services, LLC) nuclear safety culture effort. Records from each SCMP meeting were controlled by the session facilitator to protect the anonymity of the participants.

MCS’s safety culture survey approach was evolving during the period of this assessment, with a focus on creating a common approach for the entire organization instead of separate activities at each location. Recognizing its safety culture monitoring limitations, prior to this assessment, MCS retained ORAU to conduct an independent safety culture survey of all three MCS locations. The ORAU safety culture evaluation method is based on the model of a healthy nuclear safety culture developed by the U.S. Nuclear Regulatory Commission (NRC) and INPO (INPO 12-012, *Traits of a Healthy Nuclear Safety Culture*, Revision 1, April 2013). The model defines 10 traits as the primary determinants of nuclear safety culture. ORAU developed a survey that was constructed to measure attitudes about and perceptions of the 10 traits and administered it to the MCS organization in August and September 2022. ORAU representatives provided documentation explaining how their survey questions have been tested using appropriate procedures. These test results indicated that their survey questions adequately measure the 10 key traits identified by NRC and INPO. ORAU personnel stated that they have used their evaluation approach with over 40,000 employees within the DOE enterprise and the nuclear power industry over a six-year period. EA reviewed ORAU’s safety culture assessment approach and concluded that it is one of the most credible and well-established evaluation methods used to assess safety culture at DOE nuclear sites.

### *Culture Survey Results Analysis and Communication*

The survey response rate of MCS employees to the ORAU survey was 51% after the survey period was extended from the initial two weeks to four weeks. Although this response rate is considered adequate, it is at the low end of what survey experts consider to be acceptable in terms of response rates required for survey results to be considered representative of the entire organization (rate should be a minimum of 50%). ORAU compared MCS’s survey scores to scores from a DOE reference population and reported pertinent descriptive and frequency statistics on survey participants’ responses to each of the 48 rating scale questions. ORAU appropriately analyzed qualitative data that consisted of 97 “statements” written by survey participants in response to the open-ended question: “Do you have any other comments about the safety culture at MCS?” EA’s review of the MCS ORAU safety culture survey concluded that it provides a good basis to gain an accurate assessment of the current safety culture.

MCS executives stated that they communicate safety-related information to their employees through a number of methods. For example, a daily briefing topics sheet is distributed to the management team across MCS that provides information about safety, human performance, leadership, and general topics. The safety, quality, production flag program provides a visual indication of safety-related incidents along with a written event summary. A number of other written communication tools are also used, as are learning luncheons, which are currently on hold due to COVID-19 precautions.

MCS executive leadership (President, Chief Operating Officer/Deputy Project Manager, and two site managers) receive briefings on safety culture monitoring results along with data from other monitoring mechanisms on a routine basis. The results of the surveys are presented to the plant manager, department managers, and to employees in the monthly Safety First meetings. Results from the SCMP meetings not relating to specific people are discussed in site safety meetings. Senior leadership interviewees characterized management field observations and direct interaction with front line supervisors and employees as their preferred means of obtaining insights about employee perceptions of safety culture.

### *Qualification of Responsible Personnel*

MCS's primary safety culture monitoring administrators stated that they have participated in DOE National Training Center safety culture classes (TLP-100, *Safety Culture Employee Training*, and TLP-200, *Safety Culture for Senior Leaders*) and are train-the-trainer qualified for DOE TLP-150 (*Safety Culture Training for Front Line Leaders*).

ORAU is experienced in conducting surveys of multiple DOE contractor organizations using teams with expertise in executive leadership, safety management, organizational behavior, psychology, political science, data science, biostatistics, and engineering. The project lead for the MCS ORAU safety culture survey has expertise in safety culture evaluations, environmental health engineering, qualitative data analysis, statistical analysis, survey administration and evaluation design, and project management. The project lead has designed, planned, and conducted nuclear safety culture evaluations for DOE contractors, national laboratories, and commercial customers.

## **Areas Needing Attention**

### *Culture Survey Development and Survey Methods*

The MCS safety culture policy contains two sets of principles and a set of elements to include both INPO safety culture principles and the DOE safety culture focus areas, yet MCS does not have a defined safety culture model. The importance of a defined model (referred to in safety culture research as a “construct”) is that it provides a common language for talking about safety culture and provides a basis for consistent measurement that can serve as a valuable performance indicator. Examples of such models are the INPO 12-012, *Traits of a Healthy Nuclear Safety Culture* and the International Atomic Energy Agency's *Harmonized Model for Enhanced Safety Culture in Nuclear Organizations*, published in 2020. Such defined constructs are communicated broadly within an organization and can serve as the basis for questions used in safety culture surveys. To be credible, safety culture survey questions should be tested to determine whether they accurately measure the factors defined in the model chosen by the organization. MCS managers and safety culture administrators were not aware of the necessity of having a defined, consistent model to communicate and measure MCS safety culture. (See **OFI-MCS-1**.) Without a defined, consistently communicated model, culture is challenging to assess.

The Portsmouth survey does not meet the criteria for scientifically designed instruments to gather employee perceptions to support reliable decision-making. The original survey used by Fluor-BWXT Portsmouth may have been tested for validity and reliability, however those original documents were not



available to compare to the questions used by MCS for Portsmouth. Additionally, there is no way to determine the representativeness of the sample of employees who responded to the survey relative to the total population because there was no record of who, within a department, was given the opportunity to take the survey. By having the department managers collect the completed surveys, the appearance of the anonymity of participants is challenged. Finally, there was no documented process for analyzing data or comparing the results to other data sources for convergence. (See **OFI-MCS-2**.) Comparing data from multiple types of assessment methods strengthens the validity of conclusions.

Similarly, the Paducah SCMP meetings do not meet the criteria for scientifically designed instruments to gather employee perceptions to support reliable decision-making. There was no documentation to establish SCMP question validity or reliability. Although the SCMP facilitator attempts to vary the participation in each of the SCMP meetings to gain different perspectives, there were no records to indicate the representativeness of the sample of employees who participated in the panel discussions relative to the total population. According to the facilitator, the number of participants in the quarterly panels was in the single digits for each session, and such small samples cannot be characterized as representative of the total population. Additionally, in-person discussions do not allow for anonymous responses. The SCMP facilitator stated that the approach to safety culture feedback was informal. During interviews, senior management expressed a desire to increase the frequency of the SCMP meetings, including expanding them to Portsmouth as well. They also expressed interest in improving the facilitation quality of the SCMP meetings to ensure all attendees' perspectives are represented. (See **OFI-MCS-3**.)

#### *Culture Survey Results Analysis and Communication*

DUF6-PLN-281, *DUF6 Project Safety Culture Sustainment Plan*, Revision 0, lists 14 programs and activities available to inform the status of safety culture for decision-making. However, the sustainment plan does not include processes for analyzing survey data or for comparison of data from multiple sources for either of the Portsmouth or Paducah in-house efforts. (See **OFI-MCS-4**.) MCS managers acknowledged that such analysis is informal and based on applied experience and consensus. The informality and inconsistencies in their processes have been recognized as contributing to the decision to engage ORAU to conduct a project-wide validated safety culture survey.

EA's review of the MCS ORAU safety culture survey concluded that it provides a good basis to gain an accurate assessment of the current safety culture. However, at the time of the assessment MCS had not collected qualitative data or performed triangulation to look for convergence of results using other sources of information. Collecting and analyzing qualitative data (i.e., words and text) derived in interviews and focus groups enables a deeper and richer understanding of an organization's safety culture than would be possible by relying solely on the quantitative results of a survey. The words spoken and written by managers and members of the workforce provide context and specific examples that complement the numerical results of a survey. Triangulation is used to compare data from multiple sources to identify where there is agreement (i.e., convergence) and disagreement (i.e., divergence). When the data from the different data sources converge, the evaluator has greater confidence in the validity of the findings. When there is divergence, more evaluation may be needed to understand why the differences exist. The process of convergence helps define the varying perspectives that may exist within an organization. MCS management interviewees indicated that the choice to administer the ORAU survey was only their first step toward an organization-wide monitoring approach, and that use of other inquiry techniques would be considered for future assessments. (See **OFI-MCS-2**.)

Reviews of survey reports and SCMP meeting reports, along with interviews, indicate that communication persists as a primary issue of dissatisfaction among employees. However, there has been no focused analysis on the communication issues to examine potential common causes. Structured

analysis of communication issues could reveal if employees do not get feedback about issues they have raised; if they are not satisfied by resolutions of their issues; if there are relationship or personnel issues that cause lack of trust; or other similar factors.

Based on interviews, feedback to employees appears to be primarily through Safety First meetings and direct management/employee interactions. However, there was no strategic communication plan to integrate and systematically communicate safety culture information (purpose of safety culture surveys, results of the surveys, or improvement actions as a result of surveys) to the employees. Most executive leaders who were interviewed stated that they believed that the ORAU survey results and subsequent attempts to improve their culture should be well communicated to all employees. Executive leadership stated that they intended to communicate the results of the ORAU survey to the workforce; however, there was no strategic plan to do so and decisions about communication plans were awaiting further discussion of the ORAU survey final report. (See **OFI-MCS-5**.) When employees do not receive consistent feedback from leadership on survey results, they may think that their survey response concerns and opinions have not been heard, and therefore may be less likely to participate in future surveys. Communicating survey results and the decisions made in response to them can help employees understand the basis for initiatives designed to improve their organization's safety culture and safety management.

#### *Qualification of Responsible Personnel*

MCS personnel responsible for safety culture survey question development, survey administration, and data analysis have no formal training or education in these areas. MCS's organizational knowledge of survey development and administration resides in the practical management experience of the primary safety culture monitoring administrators, who are experienced environment, safety, and health professionals. While familiar with basic safety culture concepts, none have formal training in the proper conduct of safety culture surveys. (See **OFI-MCS-6**.)

One manager summarized the situation, subsequently supported by other managers, by observing that because of all the responsibilities assigned, their lack of expertise, and limited resources available to a small organization, the MCS approach to safety culture assessment and feedback was informal. This was a supporting factor for engaging expert assistance from ORAU.

### **3.2 DOE Oversight of Contractor Safety Culture Efforts**

#### **Positive Attributes**

##### *Culture Monitoring Framework*

PPPO appropriately incorporates assessments of safety culture into larger assessment topics as a component of integrated safety management. PPPO assessed MCS's safety culture as part of its Integrated Safety Management System (ISMS) Phase I and II Verification review, conducted in November 2018, by including a criterion under the management functional area. The assessment results reported that MCS has mechanisms in place to direct, monitor, and verify the integrated implementation of the ISMS, which includes safety culture. During this assessment, PPPO identified that, contrary to DOE Policy 450.4A, MCS had not adequately fostered a strong safety culture or encouraged a questioning attitude. This was appropriately categorized as a finding that has the strong potential to affect MCS's ability to comply with ISMS guiding principles and core functions. The finding is still open, due to the recent extended shutdowns. In addition, PPPO included a line of inquiry in its October 2021 assessment of MCS's worker safety and health program that focused on whether MCS supported a safety conscious work environment.

PPPO also assessed whether the management team embraced a strong safety culture as a part of the Federal readiness assessments for the restarts of both the Paducah DUF6 facility in 2021 and the Portsmouth DUF6 facility in 2022. During interviews, PPPO managers stated that safety culture is always a part of a restart assessment activity. In addition to formal assessments, PPPO Facility Representatives and other technical staff have extensive interactions with MCS workers and maintain good rapport to facilitate informal oversight. These informal observations are discussed biweekly at staff meetings, where observations from the two locations are compared. During interviews, PPPO staff were aware of challenges impacting MCS's organizational culture and stated that they encouraged MCS's improved safety culture monitoring.

#### *Development of Safety Culture Competencies*

PPPO personnel recognize the importance of their informal interactions and observations to improve culture monitoring, and continually improve their oversight in this area through dialogue with their peers within and outside of PPPO. Based on interviews with current and former Facility Representatives, many PPPO technical staff have experience working in high consequence environments and are aware of the importance of culture to support safe performance. Some have taken the DOE training course TLP-200, *Safety Culture for DOE & DOE Contractor Senior Leaders*.

### **Areas Needing Attention**

#### *Culture Monitoring Framework*

PPPO does not have a formally documented culture monitoring framework. While PPPO evaluates MCS's safety culture during some larger assessments, these are limited to event-driven assessments, such as readiness assessments; they are not regularly occurring assessments. Interviewees expressed that there is not a lot of direction on how to monitor safety culture. PPPO also does not currently include monitoring of safety culture indicators in the contractual performance objectives, measures, and commitments for MCS, nor is it one of the criteria of the contractor assurance system. (See **OFI-PPPO-1**.) This lack of structured, routine monitoring could result in latent MCS organizational weaknesses relating to safety culture going unaddressed by PPPO.

#### *Development of Safety Culture Competencies*

PPPO has not initiated a formal effort to ensure that PPPO staff members have safety culture competencies commensurate with their safety culture responsibilities. PPPO staff who assess safety culture during readiness reviews and other oversight activities have the required competencies from previous work experience, but there is no structured approach to ensure that new hires to the office either already have the experience they need or have a way to obtain it. Although some PPPO staff have received DOE safety culture training, they expressed the perspective that experience was more valuable for learning to incorporate cultural awareness into their management and oversight responsibilities.

### **3.3 SUMMARY**

In-house MCS monitoring approaches are basic in design and implementation and do not ensure the quality of data to support informed decisions and subsequent improvement opportunities. The decision to enlist safety culture survey expertise from ORAU is a substantive step toward an enhanced safety culture assessment and management strategic approach. MCS management expressed commitment for such enhancements, and senior management discussions about instituting periodic independent surveys by ORAU were underway during this assessment.

MCS managers primarily consider observations from informal, direct interactions with employees and management the best information to use for MCS safety culture decision-making. Frequent ongoing interactions between management and staff are the primary relationship building tools to strengthen trust and enhance communications. PPPO managers and staff also rely on informal direct interactions with workers and MCS management to support their culture oversight, in addition to assessing safety culture as a component of safety-related assessments.

MCS management's recognition of the need for an enhanced safety culture survey approach positively reflects a questioning attitude by the organization. MCS management's self-identified interest (with the support of PPPO) in benchmarking and peer review opportunities are examples of the desire for ongoing organizational learning; this could benefit DOE more broadly. The MCS leadership team identified potential further enhancements to the MCS safety culture survey strategy. These refinements include the use of qualitative data collection methods with periodic ORAU surveys, additional survey formalization, and increased senior leadership involvement in SCMPs that are focused on monitoring safety culture improvement efforts. Establishing a strategic methodology for the communication of safety culture survey activities, including improvement initiatives and results, was also an identified enhancement. Implementation of these enhancements has the potential to support the establishment of a robust safety culture survey and interpretation methodology.

#### **4.0 OPPORTUNITIES FOR IMPROVEMENT**

EA identified seven opportunities for improvement (OFIs) to assist cognizant managers in improving programs and operations. These OFIs are offered only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

##### **Mid-America Conversion Services, LLC**

**OFI-MCS-1:** Consider specifying in the safety culture policy (or similar senior governance document) an MCS safety culture model that is based on a validated model, such as the one used in the ORAU safety culture survey, or one which aligns with the DOE ISMS safety culture attributes.

**OFI-MCS-2:** Consider enhancing safety culture survey methodology through periodic use of the ORAU survey (or other reliable, validated method that can demonstrate the representativeness of the results and ensure employee confidentiality), supplemented with focus groups and/or interviews.

**OFI-MCS-3:** Consider enhancing SCMPs through expansion to Portsmouth, increased senior leadership involvement, improved moderation, and increased focus on monitoring safety culture improvement initiatives.

**OFI-MCS-4:** Consider revising the MCS sustainment plan to include enhanced formal safety culture monitoring, such as analyzing and comparing quantitative survey results, SCMPs, and informal relational interactions through management field observations and other direct employee interaction mechanisms.

**OFI-MCS-5:** Consider engaging the workforce in change management to ensure effective communication while developing safety culture improvement initiatives in response to the ORAU survey results.

**OFI-MCS-6:** Consider enhancing in-house safety culture monitoring expertise using EFCOG's *Safety Culture Practitioner Guide*, exploring opportunities for benchmark visits with other DOE sites where MCS parent companies are partners and more broadly within the EFCOG community, and exploring corporate reach back for professional expertise in safety culture assessment and improvement.

**Portsmouth/Paducah Project Office**

**OFI-PPPO-1:** Consider developing a formal safety culture monitoring framework.

## **Appendix A Supplemental Information**

### **Dates of Assessment**

Remote Assessment: October 17 – November 14, 2022

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