Department of Energy
Washington, DC 20585

March 19, 2014

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004

Dear Mr. Chairman:

The purpose of this letter is to transmit the *Independent Oversight Evaluation of Line Self-Assessments of Safety Conscious Work Environment – February 2014* report, and the *Plan for the Independent Oversight Evaluation of Line Self-Assessments of Safety Conscious Work Environment – April 2013*, as required by Action 2-7 in the Department of Energy's Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*.

In accordance with this action, the Office of Health, Safety and Security's Office of Enforcement and Oversight developed and executed the plan for oversight of site self-assessments for a broad set of Department of Energy sites and field offices.

If you have any questions or would like a briefing, please contact me at (202) 586-0271, or Mr. Thomas Staker, Deputy Director for Oversight, Office of Enforcement and Oversight, at (301) 903-5392.

Sincerely,

Glenn S. Podonsky
Chief Health, Safety and Security Officer
Office of Health, Safety and Security

Enclosures

E-Mail cc w/enclosures: Mari-Jo Campagnone, HS-1.1

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Independent Oversight Evaluation of Line Self-Assessments of Safety Conscious Work Environment

February 2014

Office of Safety and Emergency Management Evaluations
Office of Enforcement and Oversight
Office of Health, Safety and Security
U.S. Department of Energy

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Acronyms

APM	Office of Acquisition and Project Management
Board	Defense Nuclear Facilities Safety Board
CBFO	Carlsbad Field Office
CWI	CH2M-WG Idaho, LLC
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-ID	Idaho Operations Office
EM	Office of Environmental Management
HSS	Office of Health, Safety and Security
IP	Implementation Plan
LOI	Line of Inquiry
NNSA	National Nuclear Security Administration
SCWE	Safety Conscious Work Environment
SME	Subject Matter Expert
UCOR	URS|CH2M Hill Oak Ridge, LLC
WTP	Waste Treatment and Immobilization Plant
Y-12	Y-12 National Security Complex

EXECUTIVE SUMMARY

This report describes the results of an independent evaluation of line self-assessments of safety conscious work environment (SCWE) at sites across the U.S. Department of Energy (DOE) complex. The evaluation was performed to meet a commitment in the DOE implementation plan for Defense Nuclear Facilities Safety Board Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*. The evaluation methodology focused on evaluating the quality of the site SCWE self-assessment process (e.g., the methods used, sampling strategies, team qualifications, and the use of acceptable assessment protocols). The review was conducted by the DOE Office of Enforcement and Oversight (Independent Oversight), within the Office of Health, Safety and Security.

Independent Oversight acknowledges that this was a significant undertaking for the Department and noted some positive themes in the sites' SCWE self-assessments. The site SCWE self-assessment team members were strongly dedicated to success of the teams, took pride in the service they provided, sought to perform the self-assessments effectively, and appreciated the knowledge they gained from the experience relative to SCWE and safety culture. Although the overall effort in performing SCWE self-assessments varied, all sites benefited from the experience. The most obvious result of the SCWE self-assessments across the complex was an increased awareness, knowledge, and understanding of safety culture concepts, particularly SCWE. The self-assessments provided an opportunity for organizations to learn and improve their overall culture. Where organizations followed the suggested team composition in the SCWE self-assessment guidance document, the resulting team benefitted from the diversity and experience of the team leadership. In some cases, organizations used validated data collection methods, and the self-assessments provided valuable insights about the current state of SCWE within the assessed organizations. SCWE and safety culture data analysis involving behavior observations is a relatively new concept within the DOE community, and it was evident at most sites that much has been learned through this process.

Despite these positive themes, substantial improvements are needed across the complex to ensure that an effective and unbiased process is used to measure safety culture, including SCWE. Although most sites performed their self-assessments in accordance with the guidance document, Independent Oversight observed significant problems in most of the self-assessments, indicating that the guidance was not adequate (e.g., lack of data collection and analysis protocols). These problems were exacerbated by issues in communications and instruction from Headquarters program offices to the field offices. In some cases, the process deficiencies also tended to positively bias the results communicated to senior management (e.g., in report conclusions, executive summaries, recommendations, and presentations). Often, the positive bias minimized observations related to perceived retaliation or retribution.

The overall approach ultimately used to self-assess SCWE across the complex did not provide for consistent application of assessment methodologies and was not designed to ensure validity and credibility. In many cases, Independent Oversight's observations of the actual conduct of the self-assessments found considerable variability in how the self-assessments were conducted. The wide variation in the quality of methodologies and analysis of results significantly reduces the confidence in the conclusions of many of the self-assessments. Consequently, caution should be used in drawing firm conclusions about the state of SCWE or safety culture across the entire DOE complex based on a compilation of results from all the site self-assessments.

The Independent Oversight team concluded that DOE needs to take additional actions to ensure that future self-assessments provide a valid and accurate assessment of the status of the safety culture at DOE sites and organizations, with a particular focus on improving the guidance and tools that are used at the site level. To support this effort, the Independent Oversight team provided a detailed set of recommendations for improving guidance and management of the process.

Independent Oversight Evaluation of
Line Self-Assessments of Safety Conscious Work Environment

1.0   PURPOSE

The U.S. Department of Energy (DOE) Office of Enforcement and Oversight (Independent Oversight), within the Office of Health, Safety and Security (HSS), conducted an independent evaluation of line self-assessments of safety conscious work environment (SCWE) at sites across the DOE complex. The evaluation was performed to meet a commitment in the DOE implementation plan (IP) for Defense Nuclear Facilities Safety Board (Board or DNFSB) Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*. Data for the evaluation was collected during May-December 2013.

2.0   SCOPE

The Office of Enforcement and Oversight (Independent Oversight) within HSS performed the evaluation in several stages, including review and evaluation of completed self-assessment plans and self assessment reports, review of site program documents and previous assessments, and analysis of consolidated results. Independent Oversight's evaluation strategy for onsite evaluation was to visit as many sites and organizations as possible to observe the data collection activities of the self-assessments. For organizations completing their data collection activities prior to May 2013, Independent Oversight attempted to visit as many of those sites as the schedule allowed to interview personnel involved with the self-assessments and better understand their self-assessment processes.

During the course of the evaluation, Independent Oversight visited and observed activities in the 12 organizations listed in Table 1 during the conduct of their SCWE self-assessments.

Table 1. Organizations where Independent Oversight Observed Activities During the Self-Assessment Process

Pacific Northwest National Laboratory	Wackenhut Services, Inc. Savannah River Site
Nevada National Security Site (including the Nevada Field Office and their site contractors)	DOE Headquarters Office of Environmental Management (EM)
Lawrence Livermore National Laboratory	CH2M-WG Idaho, LLC (CWI)
Los Alamos National Laboratory	Y-12 National Security Complex (Y-12)
Savannah River Operations Office	Oak Ridge Office of Environmental Management
Idaho Operations Office (DOE-ID)	Pantex Plant

Independent Oversight also visited 10 organizations (see Table 2) after they conducted their SCWE self-assessments to obtain an overview of their process, review any improvement actions taken, and interview their staff on the SCWE self-assessment process.

Table 2. Organizations where Independent Oversight Examined the Completed Self-Assessment Process

Carlsbad Field Office (CBFO)	Idaho Treatment Group, LLC
Nuclear Waste Partnership, LLC	Richland Operations Office
URS|CH2M Hill Oak Ridge, LLC (UCOR)	Mission Support Alliance
Savannah River Nuclear Solutions	Washington Closure Hanford
Savannah River Remediation	CH2M HILL Plateau Remediation Company

Independent Oversight did not visit the remaining sites (see Table 3), but performed document reviews as

part of this evaluation.

Table 3. Organizations for which Independent Oversight Performed Only Document Reviews

Pacific Northwest Site Office	Bechtel National, Incorporated
Office of Science Field Operations Organization	Washington River Protection Solutions
National Nuclear Security Administration (NNSA) Headquarters and Field Offices	Advanced Technologies and Laboratories International, Inc (ATL)
Sandia National Laboratories	Office of River Protection
DOE Office of Acquisition and Project Management (APM)	

3.0   BACKGROUND

On June 9, 2011, the Board forwarded Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*, to the Secretary of Energy describing longstanding and unresolved issues in safety culture at the Hanford Site Waste Treatment and Immobilization Plant (WTP). The Board provided three recommendations, two of which are associated with WTP. The third recommendation was to "conduct an Extent of Condition Review to determine whether these safety culture weaknesses are limited to the WTP Project." The DOE IP in response to the Board's recommendation required extent-of-condition reviews, including HSS independent safety culture reviews at selected major DOE projects and SCWE self-assessments at the remainder of contractor sites with defense nuclear facilities and/or construction projects and the Federal offices associated with oversight responsibilities. (The sites referenced in the IP are identified above in Section 2.) Action 2-7 of the IP committed HSS to develop and execute a plan to independently review the site SCWE self-assessments. HSS issued its plan in April 2013.

4.0   METHODOLOGY

Details of the review methodology are provided in the *Plan for the Independent Oversight Evaluation of Line Self-Assessments of Safety Conscious Work Environment*. The methodology focused on evaluating the quality of the site SCWE self-assessment process (e.g., the methods used, sampling strategies, team qualifications, and the use of acceptable assessment protocols). The HSS Independent Oversight team used these criteria, to the extent practical, to evaluate site SCWE self-assessments. Independent Oversight also considered how well the individual self-assessment methodologies and reports conformed to the SCWE self-assessment guidance document. Where it was determined that other approaches were used to guide the self-assessments, Independent Oversight performed a comparative analysis of guidance approaches used, as well as a cross comparison to determine if there are correlations among the results and methods/guidance used. For each site or organization, the Independent Oversight evaluation effort consisted of extensive review of each site's or organization's self-assessment plan, independent review of the data collection methodology and results, and review of the final report (with the exception of Y-12 and APM, which had not transmitted their final reports to the Board by December 2013). In most cases, a team of Independent Oversight personnel performed one- or two-week site visits to observe the self-assessment process when possible, or to interview personnel involved in the assessments and review corrective action status for self-assessments completed prior to the Independent Oversight site visit.

5.0   RESULTS

SCWE Self-Assessment Guidance Document and Line Management Directions for Line Self-

Assessments

Action 2-4 of the 2011-1 IP stated, "Prepare guidance (e.g., Lines of Inquiry and techniques), based on safety culture attributes in the ISMS [Integrated Safety Management System] Guide and key lessons learned from the ongoing HSS independent assessments, that address SCWE, for use in the self-assessments." In response to this action, DOE developed a document titled "Safety Conscious Work Environment Self-Assessment Guidance," Revision G.

Action 2-3 of the 2011-1 IP stated that DOE would "Provide training on safety culture attributes and management behaviors for DOE and contractor key senior leadership and assign the appropriate line organizations to sponsor and conduct training for other employees." In addressing this action, DOE assembled a team to develop and present a training course targeted toward DOE and contractor senior leadership. According to the closure letter to the Board for Action 2-3, the goal of the course is to equip senior managers to lead a positive shift in their organization and culture by fostering a work environment that promotes trust, a questioning attitude, and a receptiveness to raising issues. In one year, between August 2012 and August 2013, the training team delivered the one-day course 70 times to approximately 1,700 DOE and contractor managers and leaders at both DOE Headquarters and sites across the DOE complex.

The SCWE leadership training was not part of the SCWE self-assessment process, and Independent Oversight did not address it as part of this evaluation except to note that the course materials do not mention the required SCWE self-assessments or the SCWE self-assessment guidance document. Further, this training was not required for SCWE self-assessment team members, although some team members had attended this training. The 2011-1 IP also stated, "The Response Team and DOE program offices will conduct training on use of the guidance for DOE and contractor employees participating in the self-assessments." Independent Oversight could find no evidence of formal training from the Response Team (designated to address this commitment in the 2011-1 IP) or program offices on the use of the guidance document, and interviews at the sites indicated considerable confusion about which, if any, training referenced in the 2011-1 IP was needed for the SCWE self-assessments. The letter transmitting the guidance document to the Board did not mention training on the SCWE self-assessment guidance but did state, "DOE plans to conduct a workshop on use of the self-assessment guidance prior to beginning the assessments." The Response Team developed a set of slides that could be used for presentations, consisting of an overview of the reasons for the SCWE self-assessments, definitions of safety culture and SCWE, and an outline of the guidance document in presentation form. However, these slides were not finalized until sometime after November 2012. Further, the slides had no accompanying lesson plan or notes, identified no training objectives, and provided minimal instruction on behavior based assessment techniques to be used during the self-assessments, therefore the utility of this presentation for meeting the commitment in the 2011-1 IP to conduct training on use of the guidance for DOE and contractor employees participating in the self-assessments is limited. Independent Oversight observed significant variation in training for SCWE self-assessment team members across the complex, ranging from a half-hour briefing for team members to a two-day formal training session. Independent Oversight observed use of the Response Team's slides in only a few of the training or briefing sessions. The slides were presented at a 2-hour session during an EFCOG workshop at the end of November 2012 and during at least one EM conference call; however, attendance was not taken on these occasions.

Following development of the SCWE self-assessment guidance document, DOE line management (i.e., DOE program offices) did not clearly communicate to site organizations their expectations for performing the self-assessments in a timely manner. In some cases, the SCWE self-assessment guidance document was not provided to the sites until months after it was issued. Interviews with senior DOE and contractor management at individual sites indicated that most sites received either confusing communications or no communications at all with regard to expectations for action on the guidance document or the 2011-1 IP

actions. For example, NNSA offices received a recommendation from their Response Team member to wait until after the workshop before beginning self-assessment activities, but no workshop was held. In another example, several site contractors never received direction (or received direction as late as June 2013) from the DOE offices to do the self-assessments, leaving them little time to adequately plan and perform a self-assessment. In other examples, organizations took the initiative to perform the self-assessments, but had not received the SCWE self-assessment guidance document from the DOE program offices and did not use it. As a result, some organizations did not meet the guidance or had to expend additional resources developing crosswalks to verify implementation of the guidance and/or performing additional assessment activities.

Site SCWE Self-Assessments

Although the overall effort in performing SCWE self-assessments varied, all sites benefited from the experience. The most obvious result of the SCWE self-assessments across the complex was an increased awareness, knowledge, and understanding of safety culture concepts, particularly SCWE. The self-assessments provided an opportunity for organizations to learn and improve their overall culture. Many of the organizations learned things they did not know before or obtained more clarity on known issues. Many sites integrated the self-assessment into existing assessment processes and/or modified existing processes to include safety culture attributes, thereby making the self-assessment a more sustainable and ongoing indicator of the health of the site culture. In a few cases, organizations applied the self-assessments to a broader population than required by the 2011-1 IP to gain a more holistic view of the health of their SCWE across their entire organization. In a few other cases, organizations performed the self-assessments to include both the DOE site office and the contractors, providing a better indication of the health of the entire site's SCWE. The following sections provide more detailed results on specific aspects of the SCWE self-assessment process across the complex. Details specific to individual SCWE self-assessments are being or have been provided to each affected organization.

Team Composition

The SCWE self-assessment guidance document provided detailed guidelines for team composition, and in most cases, SCWE self-assessment teams met the criteria. Frequent inclusion of senior management and executives, both inside and outside the organizations being assessed, contributed to the success of many self-assessments, and sharing of resources and lessons learned between companies and sites contributed to refinements of later self-assessment processes across the complex. In a few cases, organizations included union representatives on their teams, thereby enhancing employee involvement. According to the SCWE self-assessment guidance document, information in NEI-09-07, *Fostering a Strong Nuclear Safety Culture* (a guidance document developed in the commercial nuclear industry), was adapted to develop guidance pertaining to team composition for self-assessments to be performed at DOE. Independent Oversight noted one difference in the team composition guidance between NEI-09-07 and the DOE SCWE self-assessment guidance document. The SCWE self-assessment guidance document lists a suggested position of nuclear safety culture subject matter expert (SME). Although no such position is specified in NEI-09-07, Independent Oversight notes that because this process is new to the DOE complex, this position is essential to an effective self-assessment team. However, the guidance document provides no expectations on the qualification or experience needed for the nuclear safety culture SME. Across the complex, the training, qualifications, and experience of the named safety culture SMEs varied widely, but in general, most safety culture SMEs were individuals with varying levels of experience in performing safety culture assessments and little background in behavioral sciences or organizational culture.

Data Collection Techniques

The SCWE self-assessment guidance document recommends using a combination of data collection methods to develop a complete picture of the condition of the SCWE. It describes various data collection methods, such as surveys, interviews, and workplace observations. Most sites followed the suggestions in the SCWE self-assessment guidance document for data collection methods that, in some cases, resulted in a comprehensive and reliable set of data. In other cases, sites collected appropriate data because of the extensive amount of effort placed into planning and performance of the self-assessments. However, the SCWE self-assessment guidance document provides few expectations for protocols or processes to ensure that the behavioral data collection methods are valid and effective. Consequently, the sites and organizations that performed self-assessments were left to develop or obtain their own data collection methodologies and processes, resulting in widely varying approaches to data collection across the organizations and self-assessments. Although most sites collected data via multiple methods in accordance with the guidance document, Independent Oversight observed significant problems with the application of most of the data collection methods, indicating that the guidance was not adequate, and potential benefits from many of the self-assessments were limited due to the problems noted. Examples of observed problems include improper survey development, validation, and administration; inadequate management support to ensure acceptable survey response rates; problems with interview and focus group question development, confidentiality, independence, and administration; inadequate establishment of safe spaces for interviews; and insufficient or lack of field observations of hands-on work. See Appendix B of this report for further details on both positive attributes and areas for improvement in the area of data collection techniques.

SCWE Self-Assessment Data Analysis

The SCWE self-assessment guidance document states, "The self-assessment of SCWE is not the standard analysis of the products and processes typically performed during an oversight assessment. Rather, it is an evaluation of behavior and the team is expected to go beyond just making reference to documented processes when applying the LOIs [lines of inquiry]. The assessor's analysis should summarize the team's understanding and interpretation of the data collected and it should reference the sources of information, interviews conducted, and what activities were observed in order to collect the data necessary to answer each LOI." Because this process was new to many of the SCWE self-assessment teams, the site team members and leadership spent a considerable amount of time performing data analysis, both individually and in team meetings. As a result, the complex as a whole gained considerable experience on techniques for analyzing this type of data.

While many DOE and contractor self-assessment teams performed a significant amount of data analysis, only a few organizations demonstrated the ability to fully and comprehensively analyze the data to reach a balanced and accurate set of conclusions. Independent Oversight noted some areas where improvement in assessment guidance for data analysis is warranted to ensure that self-assessment teams have the ability and the tools to provide senior managers with accurate and unbiased information that helps them to understand the overall SCWE and safety culture health of their organizations. As with data collection, observed problems with data analysis can be attributed to the teams receiving few or no expectations for protocols or processes to ensure that analysis techniques are valid and effective.

In some cases, early analysis of some data, primarily surveys, may have biased later team data collection efforts (interviews, focus groups, and activity observations). Convergence of multiple data sources provides effective validation of the results only when the data streams are independent. For example, basing interview questions on the results of a survey could provide amplifying information on survey results, but at the expense of an independent and unbiased perspective from the interview results.

Many of the SCWE self-assessment reports provided limited documentation of the data and analysis supporting the results. Because the self-assessment of SCWE is not the standard requirements-based analysis of the products and processes typically performed during an assessment, more detailed explanation of results is needed. The SCWE self-assessment process is relatively new to the DOE community, and additional details, such as development and validation methods for surveys, specific protocols for interviews and focus groups, and specific analysis of results by demographics, are needed to establish the credibility of the results. Detailed documentation of the self-assessment process by each site is particularly important because of the commitments to the Board in the 2011-1 IP for rollup analysis and independent oversight of the SCWE self-assessments, as well as for better understanding of particular approaches by others in the complex to be used as lessons learned.

SCWE Self-Assessment Conclusions and Reporting

At a few sites, senior management's commitment to safety culture improvement, support for the SCWE self-assessment process, and acceptance of self-assessment findings and conclusions were notable. In these cases, senior management recognized that in order to ensure a healthy SCWE and achieve organizational excellence, behaviors and attitudes needed to reflect more than just meeting a minimum set of requirements or attributes. The following examples indicate some notable practices observed by the Independent Oversight team:

- NNSA included headquarters and all site offices in a single safety culture assessment of the Federal employees using a validated methodology. This approach allowed conclusions about the health of the entire organization and subsequent improvement actions without the need to address the biases and variability that could have occurred if they had performed separate self-assessments.

- The Nevada Field Office joined with its site contractors to perform a self-assessment of the health of the safety and security culture across what they termed the Nevada Enterprise, which comprises the group of organizations responsible for management, oversight, and operation of the Nevada National Security Site. The Nevada Enterprise leadership team viewed this assessment as an opportunity to learn about the safety and security culture of the entire enterprise, not just SCWE. The leadership team took the approach that if a problem existed within any sector of the enterprise, it would not meet the leadership team's expectations for the entire enterprise, and the report would accurately reflect the deficiencies. The leadership team demonstrated courage in supporting such a critical review of the enterprise and the transparency noted in the information documented in the report.

- At the Waste Isolation Pilot Plant, employees commended CBFO and contractor senior management for their presence in the field, engaging workers, leadership, and moving in a positive direction. The CBFO senior management team has developed a positive relationship with contractor management and the union. A significant amount of energy was applied to the conduct of the assessment and continues with employee-driven teams working on improvements.

- The senior management for UCOR, the DOE prime contractor for East Tennessee Technology Park, also demonstrated a strong commitment to cultural excellence and employee relations. In interviews with Independent Oversight, union representatives expressed overwhelming support of UCOR management in all aspects of safety and safety culture, including statements from life-long workers at the site that no previous contractor management at the site has demonstrated the commitment to improvement in organizational culture and trust like UCOR. In addition to employee praise for UCOR management, further management commitment for avenues to raise concerns was demonstrated by the Employee Concerns Manager performing frequent facility walkthroughs and unstructured interviews, and documenting and resolving "unofficial" employee concerns as part of

this Manager's normal job function. Independent Oversight considers this an excellent way for an employee concerns program manager to maintain awareness of employee perceptions, improve employee relations, and provide another measure of effectiveness of the employee concerns program.

Independent Oversight also observed a noteworthy practice with regard to lessons learned in several organizations. Specifically, the self-assessment teams at the Nevada National Security Site, DOE-ID, and CWI dedicated time for collection and analysis of lessons learned specifically on the self-assessment process and documented those lessons learned in their self-assessment reports. These lessons-learned sections are valuable input to other sites, as well as to the Response Team, as they develop future actions and recommendations.

Although senior management at a few sites demonstrated a strong commitment to improving safety culture, Independent Oversight noted that continued improvement in organizational attitudes related to the SCWE and safety culture assessment processes is warranted. In many of the self-assessment reports, the overall conclusions did not accurately reflect the information in the data and analysis sections. In some cases, negative results were presented with a statement rationalizing or minimizing the issue, rather than indicating a need to find out more about the issue and resolve it. In other cases, although data and/or analysis reflected potential problems, those problems were not mentioned in the conclusions or executive summaries, which senior management is most likely to read. For example, one self-assessment report indicated that some employees harbor concerns about retribution or more subtle forms of retaliation and that when concerns are reported they are not received positively, not appropriately analyzed for significance, and/or not resolved. In that example, the only statement related to retribution or retaliation in the section of the report titled "Leadership Conclusion" consisted of a single quote from one interview stating, "The vast majority of the work force does not feel retribution." The overall conclusion of the report never mentioned any concerns about fear of retaliation or retribution. In other examples, two reports reflected workplace bullying, intimidation, and other indicators of a hostile work environment, but the report's conclusions – that the reported bullying and humiliation "could eventually lead to conditions favorable to a chilled work environment" – appeared to minimize the significance of the data. Both reports made a narrow statement that no individuals expressed concerns about retaliation for raising safety concerns. However, Independent Oversight noted several examples in the raw data interview comments of individuals expressing concerns/fear of retaliation/retribution and a chilled environment not specific to safety concerns. Further, reports from multiple sources that bullying and humiliation exist in pockets of the organizations are clear indicators of a hostile work environment, so the conclusions of the report should not discount the possibility that a chilled work environment already exists. Senior managers across the complex need a balanced set of results to understand the overall SCWE and safety culture health of the organizations and need to acknowledge and accept those results as existing perceptions among their organizations. Providing overly positive conclusions that do not fully reflect the potential concerns identified in the assessment gives the perception of compromising the results for the sake of appearance and is not indicative of learning organizations committed to acknowledging and addressing problems in safety culture.

6.0   CONCLUSIONS

Independent Oversight acknowledges that this was a significant undertaking for the Department and noted some positive themes in the SCWE self-assessments. The SCWE self-assessment team members were strongly dedicated to success of the teams, took pride in the service they provided, sought to perform the self-assessments effectively, and appreciated the knowledge they gained from the experience relative to SCWE and safety culture. Although the overall effort in performing SCWE self-assessments varied, all sites benefited from the experience. The most obvious result of the SCWE self-assessments across the complex was an increased awareness, knowledge, and understanding of safety culture concepts,

particularly SCWE. The self-assessments provided an opportunity for organizations to learn and improve their overall culture. Where organizations followed the suggested team composition in the SCWE self-assessment guidance document, the resulting team benefitted from the diversity and experience of the team leadership. In several cases, the self-assessments provided valuable insights about the current state of SCWE within the assessed organizations. In those cases, the data collection methods were generally varied and appropriate. SCWE and safety culture data analysis involving behavior observations is a relatively new concept within the DOE community, and it was evident at most sites that much has been learned through this process.

Despite these positive themes, substantial improvements are needed across the complex to ensure that an effective and unbiased process is used to measure safety culture, including SCWE. The benefits of many of the self-assessments were limited by the problems noted in this report. In most cases, the limitations resulted from the teams being given few or no expectations for protocols or processes to ensure that behavioral data collection methods and analysis techniques were valid and effective; the sites and organizations performing self-assessments were therefore left to develop or obtain their own methodologies and processes, with widely varying results. These problems were exacerbated by issues in communications and instructions from Headquarters program offices to the field offices. In a few cases (including EM Headquarters), the self-assessments used validated third-party methodologies or took credit for independent safety culture assessments, resulting in a complete and balanced picture of their own organization. In the case of NNSA, a consistent approach across all of the field offices allowed complex-wide conclusions specifically for that organization. However, Independent Oversight observed significant problems in many of the other self-assessments; since most sites performed their self-assessments in accordance with the guidance document, the observed problems indicate that the guidance was not adequate. Examples of problems in the guidance include the lack of established criteria or qualification standards for a safety culture SME, data collection and administration protocols, and data analysis expectations and documentation. In some cases, data analysis was biased or influenced by earlier data streams (using survey results to identify and focus interviews), and in other cases the documentation of data analysis in reports was too limited to provide credibility to the results.

The process deficiencies at many sites and organizations tended to positively bias the results communicated to senior management (e.g., report conclusions, executive summaries, recommendations, and presentations). Often, the positive bias minimized observations related to perceived retaliation or retribution. In these cases, self-assessment teams collected data indicating SCWE problems, and sometimes this data was reported in the results sections or appendices to the SCWE self-assessment reports, but was not reflected in the conclusions of the reports or in the executive summaries. Providing overly positive conclusions that do not fully reflect the potential concerns identified in the assessment gives the perception of compromising the results for the sake of appearance and is not indicative of organizations committed to acknowledging and addressing problems in the safety culture.

The overall approach ultimately used to self-assess SCWE across the complex did not provide for consistent application of assessment methodologies and was not designed to ensure validity and credibility. In many cases, Independent Oversight's observations of the actual conduct of the self-assessments found considerable variability in the manner in which the self-assessments were conducted. The wide variation in the quality and balance of methodologies and analysis of results significantly undermines the conclusions of many of the self-assessments. Consequently, caution should be used in drawing firm conclusions about the state of SCWE or safety culture across the entire DOE complex based on a compilation of all the site self-assessments.

The Independent Oversight team concluded that DOE needs to take additional actions to ensure that future self-assessments provide a valid and accurate assessment of the status of the safety culture at DOE sites and organizations, with a particular focus on improving the guidance and tools that are used at the

site level. To support this effort, the Independent Oversight team provided a detailed set of recommendations for improving guidance and management of the process.

7.0   RECOMMENDATIONS

Consistent with the scope of this evaluation, the Independent Oversight team focused on identifying recommendations for improving the site self-assessments of safety culture across DOE, including changes to DOE guidance. Improvements in future self-assessments are one important aspect of the overall DOE effort to improve safety culture in accordance with the DOE IP for DNFSB Recommendation 2011-1.

Recommendation 1: DOE senior management, working through the Response Team for DNFSB Recommendation 2011-1, should enhance guidance and communications for performing safety culture self-assessments, with the goal of ensuring that future DOE site self-assessments effectively provide DOE management with an unbiased and accurate representation of the status of the safety culture at DOE sites and organizations. In close coordination with DOE program offices and sites and with the support of experts such as behavioral scientists with the appropriate education, background, and experience in safety culture assessments, the following actions should be considered and addressed:

- Broaden the intended scope of the DOE self-assessment guidance to include all aspects of safety culture. Although the near-term intent of DOE IP for DNFSB Recommendation 2011-1 was to address the extent of condition across the complex of SCWE problems at WTP, future self-assessment guidance needs to recognize that SCWE is one important element of the broader concept of safety culture. Clear direction that it is DOE's intent to assess the safety culture at a site, including SCWE considerations, is needed to ensure that future self-assessments address the full scope of the safety culture at a site and the full range of issues that can impact safety.

- Develop the next revision of the SCWE self-assessment guidance document (which should be re-titled as the Safety Culture Self-Assessment Guide, in accordance with the above bullet). To ensure systematic development and acceptance, develop and issue the next revision as a formal guide in accordance with DOE Order 251.1C, *Departmental Directives Program*, which provides a formal process for comment and dispute resolution. The Response Team should ensure that the final product establishes DOE expectations that self-assessments provide an integrated, comprehensive, and value-added approach to understanding the site safety culture (rather than a compliance-oriented approach that responds only to the language of the DNFSB recommendation). The guidance should allow flexibility to accommodate site-specific conditions but should call for documented management review and justification of alternative approaches for meeting DOE expectations for performing self-assessments of safety culture.

- Ensure that the revised self-assessment guide incorporates lessons learned from multiple sources, including but not limited to the HSS assessment of WTP, the HSS extent-of-condition reviews, site self-assessments of safety culture/SCWE, and this HSS evaluation of the site self-assessments, with the goal of improving the validity of self-assessment results. A few areas where enhanced guidance is particularly needed include:
  o Use of common validated survey questions to help facilitate a broad view of culture.
  o Enhanced guidance and tools for survey management, sampling strategy, conduct of interviews and focus groups, conduct of workplace behavior observations, analysis of data, and engagement and confidentiality of employees during the process.
  o Enhanced instructions for performing assessments and documenting assessment process details in such areas as development and validation methods for surveys, specific protocols for interviews and focus groups, and specific analysis of results by demographics.

o Methods to ensure that assessments use an appropriately balanced combination of data collection methods to assess SCWE or safety culture and that all data collection methods remain independent to prevent data from one data collection method influencing another data collection method.

o Methods to ensure that report results and conclusions accurately reflect both the problems and the positive aspects revealed by the data, including quality control to ensure that negative perceptions are also properly reflected in the conclusions and summaries that are presented to senior management.

o Provisions for review of the organization's first line leaders' (sometimes referred to as supervisory management) understanding of safety culture concepts and the ability to apply the principles. These individuals are typically the managers who have the most intimate knowledge of the day-to-day work and the most direct contact with individual contributors. While senior managers may change fairly often, the first line leaders tend to have long-term continuity and are the most direct purveyors of culture and expectations. The role of supervisors in training, coaching, mentoring, observing, and reinforcing is a well-established factor in strong safety cultures and warrants emphasis in self-assessment efforts.

o Provisions for review of the organization's senior managers' understanding of and support for safety culture concepts and principles. It is well established that a strong safety culture must start at the top of the organization, and the results of this HSS evaluation show a correlation between the level of senior management involvement and commitment to the self-assessment and the quality of the product.

o Qualification standards for self-assessment team members, including specific qualifications for team leaders and safety culture SMEs.

o Guidance for formal SCWE/safety culture team training.

o Use of behavioral science experts as necessary to initially design assessment approaches, ensure methodological and analytical integrity, and train assessors.

o Recognize in the guide that introductory-level safety culture/SCWE training, as is commonly provided at many DOE facilities, is important in familiarizing individuals with terminology and some basic concepts but is not sufficient to achieve a healthy safety culture.

Recommendation 2: DOE line management (program offices and site/field offices) should increase their involvement in, support for, and monitoring of site self-assessments of safety culture. The following actions should be considered and addressed by each program office that has nuclear facilities:

• Increase participation in DOE efforts to enhance self-assessment guidance, as discussed in Recommendation #1.

• Develop clear expectations, direction, and lines of communication for future safety culture/SCWE self-assessments, including senior management direction and statements of support for the efforts.

• Hold site office managers accountable for effective performance of site self-assessments (e.g., individual performance objectives) and ensure that site office managers provide clear direction to contractors and hold contractors accountable for effective performance of self-assessments (e.g., use of contractual performance objectives).

Recommendation 3: DOE sites (site offices and contractors) should increase their capabilities to perform self-assessments of safety culture, with the goal of performing self-assessments that provide an unbiased and accurate representation of the status of the safety culture at DOE sites and organizations. The following actions should be considered and addressed by each program office that has nuclear facilities:

- Obtain expertise in behavioral science to support design assessment approaches, ensure methodological and analytical integrity, and train assessors.

- Systematically enhance safety culture understanding at all levels of management through leadership development programs, advanced training, and other such methods.

- Actively participate in and support the development of new guidance as described in Recommendation 1, and proactively implement effective approaches.

Appendix A
Supplemental Information

Dates of Review

May 2013 – January 2014

Office of Health, Safety and Security Management

Glenn S. Podonsky, Chief Health, Safety and Security Officer
William A. Eckroade, Principal Deputy Chief for Mission Support Operations
John S. Boulden III, Director, Office of Enforcement and Oversight
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Quality Review Board

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Patricia Williams
Joseph Lischinsky
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Dr. Sonja Haber
Dr. Deborah Shurberg

Administrative Support

Mary Anne Sirk

Appendix B
Data Collection Methodology Review Results

During this evaluation, Independent Oversight gathered a significant amount of information about the varied data collection efforts across the complex. Positive attributes and areas for improvement are provided below for the benefit of the Response Team and others and are intended to be considered in future self-assessment guidance development and self-assessment performance.

Surveys. Many sites used various surveys as a means to collect SCWE data. While administering a survey is an excellent quantitative method to measure behaviors, surveys can be considered valid and reliable only if they are adequately developed and appropriately administered, with adequate measures to ensure anonymity. The term "reliability" relates to whether the survey gives the same answers at different times (i.e., repeatability), and whether the questions within it measure the same thing (only applicable if the team is administering a set of questions to measure a single issue). The term "validity" relates to whether the survey measures the factors it is intended to measure. If a survey is not reliable over time, it cannot be valid, because it will vary depending on when it is administered. Extensive testing efforts need to be undertaken to determine survey reliability and validity unless an "off the shelf" survey, for which reliability and validity has already been established, is used.

Positive Attributes:
- In several cases, organizations used fully validated and proven surveys and/or survey questions. In one example, EM distributed seven validated SCWE questions for all EM sites' use in order to provide a method for obtaining consistent results across the complex.
- Several organizations used a conservative approach to analysis of survey results, considering neutral responses as non-positive data.
- Several organizations used statisticians to assist in the data analysis.
- A number of organizations that administered the survey to a sample of the employee population ensured that a representative percentage of individuals within various work groups or employee levels was included in that sample.
- Most surveys used were developed with the intention of comprehensively addressing the concepts associated with safety culture and SCWE per the DOE attributes.
- Some organizations attempted to compare data collected via the survey for this self-assessment with other previously collected survey data.
- At least one organization compared data collected through this effort to data collected using the same survey at a number of benchmark organizations (although they provided limited detail on the types of organizations that comprised the benchmark group).
- Some organizations used surveys that had previously been administered within their organization as part of this effort, allowing some comparison and trending of data.

Areas for Improvement:
- Some questions contained leading or biased phrases, potentially skewing the results.
- Some questions were "double barreled," asking respondents to provide a single response to a question addressing more than one concept.
- Many surveys were developed by personnel with little survey experience.
- Surveys were frequently not validated to ensure accuracy, reliability, and repeatability. Only a few organizations understood the need to, or attempted to, validate their surveys.
- Survey participation rates were sometimes low. Several organizations did not understand the significance of getting a high participation rate to increase the confidence level that the sample reflects the whole population. In one case, a 25% response rate was perceived as being a good response rate; however, a response rate that low reduces confidence in the results and could produce a

large non-response bias. Unless analysis is conducted to ensure that those who did not participate did not differ significantly from those who did participate, one cannot assume that the results are representative of the population.

- Survey demographics were not appropriate in many cases. In some cases, demographics were so detailed that anonymity could not be assured. In other cases, little to no demographics were recorded, so potential problem areas within organizations or between organizational levels could be masked or otherwise not determined. Also in many cases, while demographics may have been collected, the data was not necessarily analyzed by the demographics (or at least these analyses were not reported). Looking at subcultures that may exist within the organization is a critical component of conducting a safety culture evaluation.
- In some cases, survey administration methods led some participants to question the anonymity of the survey. At most of the sites visited by Independent Oversight, several employees interviewed by Independent Oversight expressed doubt or mistrust regarding the anonymity of the surveys. Further questioning revealed that the standard government sign-on screen on every computer stating that activity may be monitored was the cause of their uneasiness. A few organizations addressed this mistrust by providing an introduction in the survey or in the e-mail related to the survey explaining the relationship between the anonymity of the survey and the standard startup screen stating that computer activities may be monitored.
- While a number of surveys included a comments section, not all organizations provided information on any analysis of those comments.

Interviews and Focus Groups. Most sites also used interviews and occasionally focus groups as a means to collect SCWE data.

Positive Attributes:
- Generally, information in the self-assessment reports could not be clearly tracked back to individuals' responses in interviews or focus groups.
- One site provided a crosswalk mapping the questions (developed through an outside organization) used in the interviews and focus groups to the ISMS guidance on safety culture.
- Some organizations applied a structure to the data analysis (a rating system) to better understand and compare the qualitative information collected through interviews and focus groups.
- At one site, dedicated scribes were used for all focus groups, providing an excellent record for data analysis.

Areas for Improvement:
- Interview questions were frequently inadequate to measure the desired behavior or attribute. In some cases, questions were leading or otherwise biased.
- In several cases, the location selected for interviews was not adequate to provide a safe space for the interviewees. For example, interviews were conducted in open spaces or rooms with glass walls. In one example, the focus groups were held in a glass walled break room off the lobby of a facility, with the entrances to the restrooms and two active classrooms through the break room. In another example, interviews were located in a space requiring escorts, and the escort was the manager's administrative support person.
- In a few cases, the interviewers had a perceived "reward authority" (i.e., capability to influence future raises, bonuses, promotions, etc.) over the interviewees. The self-assessment teams included executives and managers, and in some cases, those managers interviewed staff or bargaining union employees. For example, an Environment, Safety, and Health Manager of an organization was conducting focus groups. Several participants questioned the presence of management with perceived reward authority, and in one focus group, a group of union members asked to not have the manager conduct the focus group with them.

- In many cases, the methodology used to analyze the results obtained from interviews and focus groups was not provided in the report. Often there was no protocol for how the analysis would occur. In other cases, while a protocol for analysis was followed, limited information on the validation of the protocol for analysis was provided.
- In some cases, the selection of individuals to participate in the interviews/focus groups was not necessarily random, was limited to certain organizational groups, or included a preponderance of management personnel. In one case, interviewees were selected by supervisors, and in at least two cases, volunteers were solicited for the interviews.
- In some cases, the analysis of interview results did not look at the different results obtained from the various levels or groups within the organization.

Document Reviews. Most self-assessment teams used document reviews as a means to better understand the organization and identify and evaluate SCWE-related programs, processes, metrics, and contract incentives.

Positive Attributes:
- At some sites, document reviews were extensive and covered multiple SCWE-related processes and programs.
- Some organizations developed a systematic approach for review of information in documentation.

Areas for Improvement:
- The 2011-1 IP required effectiveness reviews of SCWE-related programs, such as the employee concerns program and the differing professional opinion process. In many cases, SCWE self-assessments performed a compliance review of the programs without actually measuring or evaluating effectiveness.
- In most of the self-assessments, no protocol was developed for analyzing the results obtained through the documentation review or how the results from the documentation review were analyzed in conjunction with results from other methods.

Direct Observations of Workplace Behavior. Some self-assessment teams included work observations in their assessment plans.

Positive Attributes:
- Some organizations used behavioral checklists for collecting the information from observations of workplace behavior. In at least one case, the organization had previously used these behavioral checklists.

Areas for Improvement:
- A protocol for direct observations was often lacking, with limited guidance regarding how observations would be conducted and analyzed during the self-assessments.
- Few assessments actually performed direct observations of workplace behavior. Most of the teams that did use observations focused on meetings and presentations, with few direct observations of hands-on work.
- For those organizations that conducted direct observations, the observations were often limited to only a few (three or so) meetings or work activities.
- Team members in a few self-assessments performed facility walkthroughs in which they observed the condition of the facility and interviewed any employees who happened to be present. However, they did not necessarily perform direct observation of hands-on work.

Use of Multiple Data Methods for the Assessment. Most self-assessments used a combination of data collection methods to assess SCWE.

Positive Attributes:
- A few organizations looked at the agreement between data collected on the survey and interviews.
- A few organizations provided a formal methodology for integrating the results from the multiple data sources used in the evaluation.
- One organization provided a crosswalk between the DOE safety culture attributes and the survey data and other evidence collected.

Areas for Improvement:
- A number of organizations only used two methods or relied primarily on a single method, with limited use of other methods (although the plan for the self-assessment may have indicated a more balanced use of multiple methods). In some cases the self-assessment was primarily a review of documentation without use of any other method; if the single method used is biased or skewed, it is of limited use in determining whether there is an issue in safety culture or SCWE.
- When multiple methods were used, it was not always clear how results from those methods were analyzed for convergence of findings, and limited discussion was provided on divergence of findings across the methods used.
- Organizations using a third-party methodology or taking credit for an independent safety culture assessment often did not adequately assess the SCWE supplemental attributes of contract incentives and performance measures.

Plan for the Independent Oversight Evaluation of Line Self-Assessments of Safety Conscious Work Environment

April 2013

Office of Safety and Emergency Management Evaluations
Office of Enforcement and Oversight
Office of Health, Safety and Security
U.S. Department of Energy

**Plan for the Independent Oversight Evaluation of Line Self-Assessments of
Safety Conscious Work Environment**

April 2013

Submitted by:

Patricia Williams
Office of Safety and Emergency Management Evaluations
Office of Enforcement and Oversight
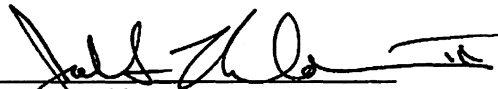Office of Health, Safety and Security

5/3/13
Date

Approved by:

Thomas R. Staker
Acting Director
Office of Safety and Emergency Management Evaluations
Office of Enforcement and Oversight
Office of Health, Safety and Security

5/3/13
Date

John S. Boulden III
Director
Office of Enforcement and Oversight
Office of Health, Safety and Security

5/3/13
Date

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Plan for the Independent Oversight Evaluation of
Line Self-Assessments of Safety Conscious Work Environment

I.   INTRODUCTION

On June 9, 2011, the Defense Nuclear Facilities Safety Board (Board) forwarded Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant* to the Secretary of Energy. The Board provided three recommendations; two of which are associated with the Hanford Waste Treatment and Immobilization Plant (WTP). The third recommendation was to "conduct an Extent of Condition Review to determine whether these safety culture weaknesses are limited to the WTP Project." The Department of Energy's (DOE's) Implementation Plan (IP) in response to the Board's recommendation requires extent of condition reviews, including safety conscious work environment (SCWE) self-assessments, to be conducted at contractor sites with defense nuclear facilities and/or construction projects and the Federal offices associated with oversight responsibilities (see list of sites referenced in the IP in the Scope section of this plan). These include the site and field offices, project offices, Headquarters' program offices, and the DOE Office of Acquisition and Project Management (APM) (formerly Office of Engineering and Construction Management (OECM)). Action 2-7 of the IP committed the Office of Health, Safety and Security (HSS), as the Department's independent oversight to develop and execute a plan to independently review the site SCWE self-assessments.

This document outlines the HSS activities planned to evaluate the site SCWE self-assessments.

This evaluation will be conducted according to DOE directives, including DOE O 227.1, *Independent Oversight Program*, which establishes the foundation for the Independent Oversight Appraisal Program. While this plan outlines expected evaluation activities, it should be understood that changes to specific activities and review focus areas may be made in response to emerging concerns and requests. Site DOE, contractor, and Defense Nuclear Facilities Safety Board (DNFSB) representatives will be kept informed of significant changes in proposed review activities.

II.   SCHEDULE

The evaluation will be performed in several stages, including review and evaluation of all completed self-assessment plans and reports, review of site program documents and previous assessments, and analysis of consolidated results, report writing, and validation with senior DOE management. If deemed necessary to understand a site's SCWE self-assessment process, the HSS evaluation may include a site visit. Data collected from each site review will be provided to the site for factual accuracy and validation. Following completion of individual site evaluations, the consolidated site results will be analyzed and a draft report outlining the Independent Oversight evaluation process, conclusions, and recommendations will be provided to senior line management for factual accuracy and validation. Finally, evaluation results will be briefed to key managers, consistent with HSS protocols. The overall schedule is provided below.

Contact all site points of contact (POCs)	April 15, 2013
Evaluate site self-assessment plans and processes	April – August 2013
Evaluate all completed self-assessment reports	April – August 2013
Complete Report	September 2013
Transmit Report to the DNFSB	October 2013

III. EVALUATION TEAM RESPONSIBILITIES AND ASSIGNMENTS

Patricia Williams will be the DOE official managing the HSS evaluation activities and the POC with site management. She will be assisted by a staff of technical specialists and administrative support personnel. The team leader and her staff will ensure that the evaluation is conducted fairly and in accordance with approved procedures.

The team composition is provided below:

Team Leader
Patricia Williams

Team Members
Joseph Lischinsky
William Miller
Edward Stafford
Mario Vigliani

HSS Technical Subject Matter Expert / Team Advisor
Earl Carnes

Independent Technical Subject Matter Experts / Team Advisors
Dr. Sonja Haber
Dr. Deborah Shurberg

Administrative Support
Mary Anne Sirk

IV. QUALITY REVIEW BOARD

HSS will establish a Quality Review Board to review the draft report for the HSS evaluation to ensure the report appropriately and effectively communicates the team's evaluation activities, results, and recommendations. HSS management has established the Quality Review Board process to ensure that HSS management and technical experts who are not directly involved in the evaluation formally review the draft report and provide quality feedback to the Team Leader. The process ensures that HSS management's questions and feedback on the draft report are discussed and that the draft report is revised as necessary.

V. INDEPENDENT OVERSIGHT METHOLOGY

Independent Oversight will perform the independent evaluation of the line self-assessments of SCWE as part of the Department's actions in response to the DNFSB's Recommendation 2011-1. Independent Oversight will evaluate the Department's guidance and line management directions to address the line self-assessments as committed to in the IP. Independent Oversight will also evaluate individual site and program self-assessments.

A. Review of the Department's Guidance and Line Management Directions to Address the Line Self-Assessments

In accordance with the IP, DOE issued Safety Conscious Work Environment Self-Assessment Guidance to support sites in the conduct of self-assessment. Independent Oversight will consider if the assessment methodology and reports conform to the guidance, and if not, review the guidance and methods used in formulating and conducting the self-assessments. Should it be determined that other approaches were used to guide the self-assessments, Independent Oversight will perform a comparative analysis of guidance approaches used, as well as a cross comparison to determine if there are correlations among the results and methods/guidance employed

B. Scope of SCWE Self-Assessment Oversight Evaluation

The scope of the SCWE self-assessment oversight evaluation is defined to include all employees, both Federal and contractor, in DOE Headquarters, Site Area Offices, Project Offices and Contractor Organizations at the following sites listed in the IP:

- NNSA Sites

  o Savannah River tritium operations/Savannah River Field Office (formerly Savannah River Site Office)
  o Los Alamos National Laboratory/NA-00-LA (formerly Los Alamos Site Office)
  o Sandia National Laboratory/Sandia Field Office (formerly Sandia Site Office)
  o Lawrence Livermore National Laboratory/Livermore Field Office
  o Nevada National Security Site/Nevada Field Office (formerly Nevada Site Office)
  o Y-12 National Security Complex/NNSA Production Office (formerly Y-12 Site Office)
  o Pantex Plant/NNSA Production Office (formerly Pantex Site Office)

- EM Sites

  o Savannah River Site (except tritium operations)/Savannah River Operations Office
  o Idaho Site (EM programs)/Idaho Operations Office

2

- o Hanford Site/Richland Operations Office/Office of River Protection
- o Waste Isolation Pilot Plant/Carlsbad Field Office
- o East Tennessee Technology Park/Oak Ridge Operations Office

- **Science Site**

  - o Pacific Northwest National Laboratory (Radiochemical Processing Laboratory)/Pacific Northwest Site Office

- **Headquarters Offices**

  - o NA
  - o EM
  - o SC
  - o APM (formerly OECM)

C. Evaluation Methodology

This section focuses on evaluating the quality of the site SCWE self-assessment process (e.g., the methods used, sampling strategies, team qualifications, and the use of acceptable assessment protocols).

NOTE: The HSS team will use the criteria in this section as applicable and to the extent practical to evaluate the site SCWE self-assessment, including potentially performing site visits to fully understand the process used at a given site.

Conduct of Evaluation

1. The HSS team leader will begin interactions with the site as early as possible during the planning and conduct of the SCWE self-assessment to gain an understanding of the assessment approach. Monitoring and observations will continue throughout the self-assessment to the extent possible. If a site visit is performed, care will be taken to minimize any potential effects of HSS's presence during self-assessment activities on participants' behavior and consequently the results.

2. During the planning phase, the team will communicate frequently with the site to stay informed of the status of implementation activities (e.g., conduct of survey, analysis of results) and emerging issues.

3. The team will request the following information from the site prior to the visit:

   a. The self-assessment plan, including tools and instruments used to conduct the site's SCWE self-assessment. These could include (but are not limited to) questionnaires, interview guides, or checklists, and the charter for the self-assessment.

   b. Names, qualifications, and contact information for the personnel who conducted the self-assessment.

   c. Assessment-specific training provided to the self-assessment team.

    d.   Documents produced by the site's SCWE self-assessment team. These could include (but are not limited to) surveys, interview plans and reports, status memos, briefing notes.

    e.   Documents that characterize the site's response to the SCWE self-assessment. These could include (but are not limited to) memoranda, meeting notes, corrective action program records, project plans, or other initiatives that were associated with or were initiated as a result of the assessment.

4. Review the documents relating to the site's SCWE self-assessment to obtain a general understanding of how the self-assessment was conducted, whether a validated assessment framework was used, what the self-assessment results were, and how the site responded.

5. The site's terminology may differ from HSS terminology for the same application, e.g., the site may call safety culture components by other terms such as safety culture attributes or principles, but the concepts addressed should be similar.

6. The team will evaluate whether the organizations sampled in the self-assessment adequately represented the site. If all organizations, including the site office, were not represented in the self-assessment, evaluate whether the organizations sampled are adequate to address the intent of a site self-assessment.

7. The team will verify that adequate samples of functional groups and organizational levels were assessed. That is, an assessment that focuses only on the functional groups that perform work that has a clear nexus to safe operations (e.g., operations, maintenance, engineering, security) but excludes individuals from other support groups or contractor organizations will be incomplete. Functional groups, such as human resources, financial services, and some technical support organizations, and contractor groups often fulfill roles in the organization that are important in shaping the site's safety culture.

8. Similar to the discussion above, an assessment that focuses only on some of the organizational levels may bias the results.

9. The team will evaluate whether the sample sizes used were adequate and sufficiently random to ensure that the findings and conclusions from the self-assessment were representative of the populations and subpopulations of interest.

    a.   In general, if the site's self-assessment team administered a survey in-person to groups of site employees and contractors and their sampling plan was to obtain responses from all site personnel, the number of survey respondents should be about 80% of the site population.

    b.   If the site's self-assessment plan was to administer the site survey by mail or electronically, the number of survey participants should fall between 60% and 70% of those who were asked to participate.

    c.   If the survey results were based on lower percentages of the population than was identified in the site's sampling plan, determine what the self-assessment team did to try and maximize participation in the survey. Evaluate why the efforts were not successful.

    d.   If the survey results were based on lower percentages of the population than was identified in the site's sampling plan, then the self-assessment team should have collected

and analyzed information to demonstrate that those who did participate and those who did not were not systematically different in a way that could bias the results of the survey. For example, if the survey systematically excluded everyone on the back shift, it is unlikely that the results would be valid. If there are inconsistencies in response rates among functional groups, i.e., certain group(s) exhibited lower participation rates, the self-assessment team should take actions to understand the reasons for the differences and the effect on the accuracy of the data.

10. Review the methods used by the site's SCWE self-assessment team to collect and analyze data for adequacy and appropriateness. Ensure the methods used are in accordance with a validated safety culture model and a validated set of safety culture components. Ensure the self-assessment utilized multiple methods and does not rely solely or heavily on a single method for data collection. Examples of the types of methods that would be considered appropriate for this type of assessment include:

   a. Functional Analysis

   The purposes of the Functional Analysis are to: (1) clearly identify the organizational units of the both Federal and Contractor Project teams; (2) gain an understanding of each organizational unit's functions and interfaces; (3) examine the way in which information flows within and between units; and, (4) identify the key supervisory and managerial positions of each organizational unit. Information to support this activity is obtained primarily through the review of the documentation identified below, some semi-structured interviews, and some observations of organizational activities.

   b. Documentation Review

   A wide variety of documents should be reviewed including program and project plans, technical and administrative procedures, project organization charts, interoffice memoranda, applicable DOE regulations and technical standards, corrective action reports, documented employee concerns, previous assessments (both external and internal on related subjects), and root cause analyses for significant events.

   c. Semi-structured Interview and Focus Group Protocol and Behavioral Anchored Rating Scales (BARS)

   Semi-structured Interview and Focus Group Protocols provide a predefined focus to an interview or focus group session to gather information related to the safety culture traits identified from the Functional Analysis.

   Quantitative instruments (such as BARS) provide the opportunity to quantitatively summarize qualitative data associated with the interviewee's perceptions of the organization.

   d. Behavioral Observations

   Behavioral observations provide an unobtrusive assessment of particular organizational behaviors and critical processes including work planning, management meetings, department meetings, and responses to planned or unplanned events.

   e. Organizational and Safety Culture/SCWE Survey

Administering a survey allows the measurement, in a quantitative and objective way, of topics related to the behaviors of interest. By conducting a survey, a broad sample of the individuals in the organization can be obtained and it is possible to gather information from a larger number of personnel than can be reached through the interview process alone.

11. In determining whether the methods used by the self-assessment team to collect and analyze the data were adequate and appropriate:

    a. Determine whether the site SCWE self-assessment ensured, to the extent possible, that information obtained during the self-assessment was not attributable to individual participants in any reports of self-assessment results or in discussions with others who were not members of the self-assessment team.

    b. If the SCWE self-assessment included interviews, then evaluate the interview questions, the plan by which interviewees were selected, and the interview techniques used by the self-assessment team.

    c. If the self-assessment included focus groups, then evaluate the questions used in the focus group meetings, the plan by which participants were selected, and techniques used to facilitate participation in the meetings.

    d. If the self-assessment included document reviews, then evaluate the self-assessment team's selection of documents and their review methodology.

    e. If the self-assessment included direct observations of meetings and/or work activities, then evaluate the self-assessment team's selection of meetings and activities to observe and the observation methodology.

    f. If the self-assessment included a structured survey, then evaluate the survey instrument used, a sampling of raw survey data including write-in comments (if available), survey results, and documentation that describes how the survey was developed and the methods used to administer it, and the statistical analyses applied to the survey data to determine if acceptable survey practices were followed.

    g. For each method used, determine whether the sample sizes were adequate and sufficiently random to ensure that results from the method were representative.

    h. For each of the methods used, determine whether:

        i. any method was likely to introduce any systematic bias into the results;

        ii. the methods were applied consistently; and

        iii. If multiple methods were used, the self-assessment team verified the consistency of the results obtained from the different tools and analysis.

12. In determining whether the self-assessment team members were sufficiently independent and qualified:

a. Determine whether the personnel who designed the SCWE self-assessment and analyzed the results were qualified through education and/or experience. There should be members on the team who have knowledge in safety culture, in particular at nuclear facilities, and appropriate knowledge and experience in implementing safety culture/organizational assessment activities. There should also be at least one member and/or advisor with a behavioral science background. If the self-assessment includes a survey, verify that the self-assessment team included members with survey design, administration, and analysis expertise.

b. Determine whether the site's SCWE self-assessment team members were site employees and whether any independent team members were used. At least one team member must be from outside the organization being assessed.

c. The team must contain least one team advisor from outside the organization being assessed. For teams assessing contractor organizations in the field, the DOE field office must concur with the team advisor selection. For teams assessing DOE organizations in the field, the HQ program office must concur with the team advisor.

d. The team must contain least one team executive from outside the site being assessed. For teams assessing contractor organizations in the field, the DOE field office must concur with the team advisor selection. For teams assessing DOE organizations in the field, the HQ program office must concur with the team advisor.

e. The team structure must include at least one safety culture subject matter expert with the appropriate background and experience.

f. Determine whether the self-assessment team included members with knowledge in the technical areas and organizational issues being assessed.

13. Review the following items related to the SCWE self-assessment results:

a. A sample of the self-assessment team's interview or observation notes;

b. Responses to survey items both at an overall level and by functional groups;

c. Statistical analyses performed; and

d. Responses from previous assessment activities, if similar techniques, such as the same or similar survey questions, were used, for comparison to current results.

14. Evaluate the methods used to communicate the SCWE self-assessment results to the site.

15. Contact labor union leaders and other applicable community or governmental stakeholders to determine their degree of participation in and perceptions of the site self-assessment.

16. If any substantial differences exist between the self-assessment results and the results of similar assessments performed within the previous years, the reason(s) for those differences are known and explained.

17. Verify the self-assessment included a comprehensive review of the site processes addressing safety conscious work environment, differing professional opinions, and the employee concerns program.

18. Verify the self-assessment included an evaluation of contract incentives and performance measures to determine if they achieved balanced priorities and included appropriate safety culture elements.

19. Evaluate the site's response to weaknesses identified in any safety culture/SCWE components; to the extent they are available during the time of the HSS evaluation.

    a. Determine whether the site appropriately identified those weaknesses within their corrective action program.

    b. In some cases, corrective actions may involve sensitive areas such as personnel actions or other matters that warrant confidentiality. These types of information may not be documented in any corrective action programs and must be solicited or inferred from discussions with site officials, such as Human Resource personnel or senior management. The HSS team leader should evaluate these circumstances and conduct activities to gather this information as needed. The HSS team leader should determine the extent of involvement of and knowledge by other team members in these activities on a need-to-know basis.

Validation

The HSS team will provide each site an opportunity to conduct a factual accuracy and validation review of the data collected for their site.

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