Assessment Report 76376

Assess the Quality of Center 00600 Completed Assessments for Fiscal Year 2018

Assessment Type: Line Assess Line
Sponsoring Manager/Department: Tanja Fitzgerald, Department 00635
Assessing Organization: Department 00635
Organization(s) Being Assessed: Departments 00622, 00627, 00628, 00632, 00635, 00641, 00642, and 00643

Assessment Lead/Author:

Tanja Fitzgerald for 1-29-19

Elizabeth Quinley Date
Assessment Lead, Organization 00635

Approved by:

Tanja Fitzgerald 1-30-19

Tanja Fitzgerald Date
Manager, Organization 00635

Assessor:

Kathleen Morgans-Harrer 01/29/2019

Kathleen Morgans-Harrer Date
Assessor, Organization 00635

Assessor:

Arthur E Tryon 1/29/19

Arthur Tryon Date
Assessor, Organization 00635

Reviewer:

Pascale Waffelaert 1/29/19

Pascale Waffelaert Date
Subject matter expert for Sandia Environmental Management System, Organization 00643

U.S. DEPARTMENT OF ENERGY NNSA

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S.Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.
SAND No. 20XX-XXXX.

Sandia National Laboratories

Contents

List of Tables

List of Acronyms

Acronym	Definition
ACRR	Annular Core Research Reactor
AIS	Assurance Information System
ANSI	American National Standards Institute
AOP	administrative operating procedure
CBDPP	Chronic Beryllium Disease Prevention Program
CFR	Code of Federal Regulations
CIS	Chemical Information System
ConOps	conduct of operations
CRA	Contractor Readiness Assessment
DOE	U.S. Department of Energy
DOELAP	DOE Laboratory Accreditation Program
ES&H	Environment, Safety, and Health
FY	fiscal year
ISO	International Organization for Standardization
KTF	Kauai Test Facility
MS4 Permit	Municipal Separate Storm Water System
MSGP	Multi-Sector General Permit
NNSA	National Nuclear Security Administration
Org.	organization
PSM	*Pressure Safety Manual*
Q	quarter
RCSU	reactivity control system upgrade
RP	Radiation Protection
RPSD	Radiation Protection Sample Diagnostics
SA	self-assessment
SNL	Sandia National Laboratories
SNL/NM	Sandia National Laboratories, New Mexico
TA	technical area

Units of Measure

Unit	Definition
µg	microgram
m^3	cubic meter

1 Purpose

Department 00635, Performance Assurance, assessments reveal risks and opportunities for improvement Labs-wide. This assessment was conducted to identify opportunities for improving the Department 00635 Assessment Program.

2 Scope

This evaluation was conducted to identify opportunities for improving the Center 00600 assessment process by reviewing the quality of assessments completed by Environment Safety and Health (ES&H) personnel in fiscal year (FY) 2018. Approximately 20 percent of the Center 00600 assessments completed in FY18 were reviewed. One assessment was selected from each Center 00600 department contingent on availability in the Assurance Information System (AIS).

Note: Line ES&H coordinators were integrated into Center 00600 during FY18 in departments 00633, 00634, 00636, and 00637; this evaluation did not include assessments performed by personnel in these departments.

The assessment team, comprised of Performance Assurance personnel, for this effort identified specific data, including:

- Type of assessments conducted (e.g., Line Assess Line, Policy Area Assess Implementation, or Policy Area Assess Adequacy)
- Number of assessments conducted by each department
- Percentage of assessments that included an assessment plan
- Percentage of assessments that resulted in findings or observations
- Percentage of assessments that resulted in a causal analysis
- Percentage of assessments that resulted in corrective actions

The review of selected assessments analyzed the following:

- Execution, including implementation of available assessment plan documents
- Assessment results (e.g., findings, observations, or noteworthy practices)
- Adherence with requirements and guidance found in:
  - CA002, *Performance Monitoring Policy*
  - CA002.1, *Conduct Internal Assessments*
  - ES&H administrative operating procedure (AOP) 04-04, *Assessments*, Revision 9
  - U.S. Department of Energy (DOE) G 414.1-1C, *Management and Independent Assessments Guide*

Note: AOP 04-04, *Assessments*, does not reflect current Center 00600 organization or practices. However, AOP 04-04, *Assessments*, is the most recently signed ES&H administrative operating procedure for assessments. If gaps are identified between the AOP and current practices, then findings or observations will focus on the AOP rather than the assessment execution.

Note: The Laboratory Policy System replaced the Corporate Policy System in September 2018, the last month of FY18. As a result, CA002.1, *Conduct Internal Assessments*, replaced CG100.6.3, *Determine, Plan, and Perform Assessments*. This assessment will focus on the current requirements found in CA002.1, *Conduct Internal Assessments*.

The assessment team reviewed requirements from additional sources and determined that they applied to assessment programs rather than individual assessments. These additional sources included the following:

- DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*, 4/25/2011
- DOE O 414.1D, Admin Chg.1, *Quality Assurance*, 5/8/2013
- National Nuclear Security Administration (NNSA) SD 226.1B, *NNSA Site Governance*, 8/12/2016
- CA002.3, *Management Review Process*

The relevant requirements and guidance were categorized as specific or subjective, and each of the selected assessments was reviewed for adherence with the specific and subjective requirements (*Requirements Analysis Summary*, tabs 2 and 3). The assessment team members were not able to determine adherence with many of the requirements and much of the guidance for the analyzed assessments, as they were not team members on those tasks. For example, the AOP 04-04 requirement "Results should be modified, as appropriate, and then finalized" and the DOE G 414.1-1C guidance "Therefore, participants in performance-based assessments should be technically competent in the areas they are assessing" could not be evaluated.

3 Results

3.1 Results from Analysis of All Center 00600 Assessments Completed in FY18

The assessment team entered a query in AIS to identify Center 00600 assessments that fell within the scope of this evaluation. The query parameters are provided in Tab 2 of *FY18 Assessments Data Analysis*. The assessment team identified 34 Center 00600 AIS records with Evaluation Type: Assessment completed in FY18 (*FY18 Assessments Data Analysis*, Tab 3). Review of the query report and documentation available in the identified AIS assessment records resulted in the following data (detailed results are provided in tabs 4–7 of the *FY18 Assessments Data Analysis* spreadsheet).

3.1.1 Type of Assessment

The identified assessments were completed in FY18 and were entered using FY18 assessment types (Table 3-1). Performance Assurance personnel did not assess the accuracy of the provided assessment type.

Table 3-1. Types of Center 00600 assessments completed in FY18

Type	Number (total 34)	Percentage
Policy Area Assess Adequacy	15	44
Policy Area Assess Implementation	12	35
Line Assess Line	5	15
Corrective Action Validation	2	6

Updates to AIS made in FY19 reflect the assessment types provided in CA002.1, *Conduct Internal Assessments*, for example Organization Assess Organization.

3.1.2 Number of Assessments Conducted by Each Department in FY18

Table 3-2 presents the number of assessments conducted by each department (excluding departments 00633, 00634, 00636, and 00637) in FY18.

Table 3-2. Number of assessments conducted by Center 00600 departments in FY18

Organization	Number (total 34)	Percentage
00600, ES&H	1	3
00622, Safety Engineering	3	9
00627, Industrial Hygiene Program	5	15
00628, Radiation Protection	8	24
00632, ES&H Planning	6	18
00635, Performance Assurance	0*	0
00641, Environmental Compliance and Monitoring	5	15
00642, Analytical Services	3	9
00643, Environmental Systems	3	9

*Department 00635 personnel did perform evaluations and enter them in AIS in FY18. However, none of these evaluations were categorized as Evaluation Type: Assessment.

3.1.3 Percentage of Assessments That Included an Assessment Plan

Per documentation contained in AIS, it was determined that 47 percent of the identified assessments included a stand-alone assessment plan.

3.1.4 Percentage of Assessments with Results

One hundred percent of the identified assessments included results (i.e., at least one finding, observation, acceptable practice, or noteworthy practice).

- Seventy-nine percent of the identified assessments had at least one finding or observation.
- Twenty-six percent of the identified assessments had at least one finding.

3.1.5 Percentage of Assessments That Resulted in Corrective Actions

Sixty-five percent of the identified assessments had at least one corrective action, 74 percent of the observations had at least one associated corrective action, and 80 percent of the findings had at least one associated corrective action.

Three percent of the assessments resulted in a corrective action with a causal analysis. Upon review by the assessment team, the causal analysis was conducted for a nonreportable event and then erroneously listed as an Assessment: Policy Area Assess Implementation. Thus, none of the findings in the FY18 assessments reviewed resulted in a causal analysis.

3.2 Results from Analysis of Selected Center 00600 Assessments Completed in FY18

The assessment team selected an assessment from each Center 00600 department (except the newly added ES&H System Integration departments, 00633, 00634, 00636, and 00637) for analysis. The nine selected assessments are presented in Table 3-3. The parameters used for the AIS query to

identify Center 00600 assessments (provided in the *FY18 Assessments Data Analysis* spreadsheet, Tab 2) included only records with Evaluation Type: Assessment.

Table 3-3. Center 00600 assessments selected for analysis

Org.	AIS Record	Assessment Title	Evaluation Type
00622	67997	Self Assessment of the Safety Engineering Pressure Safety Program	Policy Area Assess Adequacy
00627	68264	2018 Self-Assessment of the Chronic Beryllium Disease Prevention Program	Policy Area Assess Adequacy
00628	50509	00628 RP Program SA: Q2 FY17: Organization and Administration	Policy Area Assess Adequacy
00632	56617	FY18 ConOps Assessment: Assess line implementation of Conduct of Operations Requirements	Policy Area Assess Implementation
00635*	76395	ES&H Center Causal Analysis Assessment	Analysis and Trending
00641	55266	00641- Evaluate Need for Water Quality Data Validation for Stormwater Program	Policy Area Assess Adequacy
00642	55502	00631 FY18, RPSD, Self-Assessment, Whole Body Counting	Line Assess Line
00643	67878	0643 FY18 Environmental Management System Assessment of Kauai Test Facility	Policy Area Assess Implementation
00643	72051**	981/135 Shelf Falling during CIS Reconciliation	Policy Area Assess Implementation

*Department 00635 personnel did perform evaluations and enter them in AIS in FY18. However, none of the evaluations were categorized as Evaluation Type: Assessment. The Department 00635 manager and the assessment team chose a completed evaluation for review, AIS 76395 "ES&H Center Causal Analysis Assessment," which was categorized in AIS as Analysis and Trending. Though not categorized as an assessment, this evaluation record was reviewed against the same requirements and guidance identified in Section 2, "Scope."

**AIS 72051, "981/135 Shelf Falling during CIS Reconciliation," was added to the analysis list because it was entered as Evaluation Type: Assessment and was the only assessment identified in the query that had an associated causal analysis. However, review of this record revealed that although entered as an assessment, the record was used to document a nonreportable event and to link to the subsequent causal analysis. Therefore, this record was not evaluated further in this assessment.

AIS = Assurance Information System
CIS = Chemical Information System
ConOps = conduct of operations
FY = fiscal year
Org. = organization
Q = quarter
RP = Radiation Protection
RPSD = Radiation Protection Sample Diagnostics
SA = self-assessment

3.2.1 Compliance Takeaways

The eight selected assessments were compared to the specific requirements found in AOP 04-04, *Assessments*, and CA002.1, *Conduct Internal Assessments*. The assessment team grouped the takeaways into the four criteria areas presented in the Assessor Qualification Program Description (i.e., Identification, Plan, Conduct, and Results). Assessment team takeaways regarding quality of content are addressed in Section 3.2.2.

The assessment team identified the following:

- Identification
  - Assessment drivers (e.g., a request by a manager or compliance with a requirement or standard) were identified, as this is a required field in AIS; however, the risk basis was not included consistently.

- Plan
  - Most of the assessments included an attached assessment plan that was compliant with requirements. Two assessments did not include an attached assessment plan.
- Conduct
  - Assessment records did not consistently include evidence or data analysis to support the results.
  - Factual accuracy reviews were not documented consistently.
- Results
  - Assessment results were categorized as findings, observations, acceptable practices, or noteworthy practices. One assessment report did not categorize results.
  - Using AIS resulted in assessments being submitted electronically to sponsoring managers for result acknowledgement.
  - Lessons learned were not documented consistently in the corporate Lessons Learned, Best Practices tool.

3.2.2 Analysis Summaries

The results of the analysis compared to both specific and subjective requirements and guidance are considered in the following selected assessment analysis summaries. These summaries include assessment team takeaways regarding quality of content.

3.2.2.1 Department 00622

AIS 67997, "Self Assessment of the Safety Engineering Pressure Safety Program," evaluated the requirements identified in MN471000, *Pressure Safety Manual*, for compliance with federal regulations, consensus standards, and DOE orders.

The AIS record had an attached assessment report that identified no findings, no observations, and two noteworthy practice results. The assessment report included a detailed list of reviewed regulations, codes, orders, procedures, and other documentation. The report also described the purpose, scope, methodology, conclusions, and results. No stand-alone assessment plan was available; however, the record included short planning entries (e.g., a description, the scope, and the team) in the AIS data fields.

With no stand-alone assessment plan to document the detailed assessment approach, the assessment report was used to review assessment criteria. The assessment report's description of criteria referenced a list of documents reviewed without an explanation of what constituted an acceptable or unacceptable flow-down of requirements to the *Pressure Safety Manual*. While the assessment appeared to evaluate the manual's compliance line by line, neither the AIS record nor the assessment criteria addressed this review.

The report's conclusions section included apparent observations that were not specified as such in the assessment report or AIS. For example, the conclusion states, "The chapter on Testing and Evaluation for Pressure Systems was very vague and did not provide a lot of guidance or references that would be beneficial to line customers." This lack of detail as to the weaknesses found and the

actions taken resulted in no findings, observations, or resultant corrective actions recorded in the AIS record for this assessment.

The conclusions section also included actions already taken to improve the manual. For example, the conclusion states "Terminology was added in the SNL PSM glossary, more specific guidance in the Design chapter was added, and the Vacuum Systems chapter was merged into the rest of the document" (SNL = Sandia National Laboratories; *Pressure Safety Manual* = PSM). However, the report does not describe what weaknesses this action was addressing.

There were no attachments to the report or other evidence uploaded in AIS that demonstrated how the manual was reviewed against the requirements found in regulations, codes, orders, procedures, and other documentation.

3.2.2.2 Department 00627

AIS 68264, "2018 Self-Assessment of the Chronic Beryllium Disease Prevention Program [CBDPP]," is a biennial assessment. This assessment "addresses performance of the CBDPP and includes a review of the current and potential future regulatory compliance status" under DOE 10 Code of Federal Regulations (CFR) 850, *Chronic Beryllium Disease Prevention Program*, proposed rulemaking change dated June 7, 2016. If finalized as proposed, the changes would result in administrative impacts to the CBDPP at Sandia as well as minor operational impacts to ongoing beryllium activities. These impacts were identified in the assessment report but were not reflected as assessment results (finding, observation, etc.) An attachment to the assessment report included the detailed review results.

The assessment also included performance reviews in the following areas: (1) monitoring of beryllium hazards, (2) beryllium-related occurrence reports, and (3) medical surveillance trends including in cadence of beryllium sensitization and chronic beryllium disease. The assessment report addressed the performance reviews as follows:

1. Personal air sampling from June 2016 through April 2018 found the "beryllium exposure profile for center section workers performing Z Machine operations has increased from historical level." Thus these workers "were exposed above the DOE action level" (0.2 $\mu g/m^3$). Beryllium was not detected above the reporting limit (0.025 μg/sample). As in the 2018 assessment, the 2016 assessment found "the beryllium exposure profile for center section workers performing Z Machine operations has increased from historical levels." However, the scope of the 2018 assessment did not include review of actions taken since the last biennial assessment.

   The assessment report stated that the Sandia Field Office approved the Z Facility Exposure Reduction and Minimization Plan on July 14, 2017. The report and related AIS records did not include the specific plan actions or their status.

   The increased beryllium exposure profile was not categorized as an observation in the assessment report, but it was specified as an observation in AIS. The resultant corrective action, AIS 68282, "Teaming with Z Facility to Reduce Be Exposure," was not specific: continue sampling, monitor Exposure Reduction and Minimization Plan progress, and continue "ad-hoc in-person meetings with Z management." Specific mitigations to address

increased exposure levels were not identified in the corrective action. The corrective action was closed, but no closure evidence was linked in AIS.

2. During the assessment reporting period, an event involving beryllium contamination on components received from an outside organization occurred (SNL-NMSITE-2018-0001). The discussion in the assessment report provided a summary of the event but did not include takeaways pertinent for the future. This could be because the causal analysis was in process at the time this assessment was issued. Subsequent to the 2018 assessment, Sandia completed the associated causal analysis and entered issues and corrective actions in AIS 70770.

3. The assessment reported that Sandia's Beryllium Medical Surveillance Program records found one beryllium-associated worker who was potentially diagnosed with beryllium sensitization. This case was referred to the National Jewish Hospital for follow-up. This person "formerly worked at Rocky Flats and is not exposed to beryllium" at Sandia. Prior to this case, one beryllium-associated worker had been diagnosed with beryllium sensitization. No Sandia workers were diagnosed with Chronic Beryllium Disease to date.

3.2.2.3 Department 00628

AIS 50509, "00628 RP Program SA: Q2 FY17: Organization and Administration," evaluated the "extent to which Sandia's Radiation Protection Program satisfies requirements contained in 10 CFR 835 Subpart B, *Management and Administrative Requirements*."

The AIS record had an attached assessment plan, which was signed and dated by the authorizing manager, the lead assessor, and a quality reviewer. The record also had an attached assessment report that identified one finding, one observation, three opportunities for improvement, and three noteworthy practices. The report was signed and dated by the authorizing manager, the lead assessor, and a quality reviewer. AIS 50509 also contained attached evidence for the corrective action associated with its observation.

The assessment's finding (i.e., not all Radiation Protection [RP] technical staff and managers had completed required training) referenced the specific requirements that had not been met. The manager for the assessed organization did not assign any corrective actions for the finding but noted that some required courses listed on personnel's corporate learning (TEDS To-Do) lists were not offered in TEDS, and "Courses were reviewed for applicability and either removed or replaced." Although no corrective actions were assigned, the assessment report mentioned that the finding "may be a symptom of a bigger issue," and that "a cross-check between Tables 1 and 3, in RPA-02, and RP personnel's training notebook needs to be done."

The assessment report identified that not all procedures can be reviewed every three years as required due to resource constraints. This assessment result was not categorized as a finding in the AIS record because the Validation of Corrective Actions Report (AIS 37361) also identified the issue. However, the assessment report attached to AIS 37361 indicated that "Corrective actions have not been entirely implemented, those put into place have been ineffective and superseded by further actions as the issue continued to be identified." The report for AIS 37361 discusses several possible actions to address the issue, but it does not provide connectivity between the actions and a location to track them when they have been completed.

This periodic procedure review issue was reiterated as a "concern" in a subsequent external DOE Laboratory Accreditation Program (DOELAP) audit, *Radiobioassay Onsite Assessment Report*, dated May 2, 2018. Radiation Protection Sample Diagnostics (RPSD) personnel conducted a causal analysis on this concern and documented corrective actions in AIS 68284 and child record AIS 70675. The corrective action related to updating procedures is listed as open until April 30, 2019. A proactive RP approach to increase learning would have been to categorize the periodic procedures as a finding in the AIS 50509 assessment and develop corrective actions at that time (i.e., February 2017).

The final report for AIS 50509 includes three opportunities for improvement without commitment owners or dates. Opportunities for improvement is not a result category specified in CA002.1, *Conduct Internal Assessments*. These opportunities for improvement should have been evaluated further to determine whether they were observations or ideas for future improvements that should have been documented.

Furthermore, the assessment's observation (i.e., documents were identified that required updates; in some cases, information was out of date or missing) resulted in a corrective action without causal analysis. The observations in the final report included space for a commitment owner and date; these items were not identified, but this information was in the AIS record. In addition, the evidence for the corrective action included the attachment of one updated document (RPP-01, *Radiation Protection Program*) but not the other (RPA-02, *Personal Training and Qualification*).

3.2.2.4 Department 00632

AIS 56617, "FY18 ConOps Assessment: Assess Line Implementation of Conduct of Operations Requirements" was planned to assess the conduct of operations (ConOps) matrices for the three nuclear facilities in Technical Area (TA) V. A review of past years' TA-V self-assessments led to a recommendation that a minimum of six ConOps areas needed assessment. As a result, AIS 56617 was revised to review 14 TA-V self-assessments completed between 2011 and 2018, which included the six ConOps areas recommended for assessment.

Reviewing previous TA-V self-assessments to focus the FY18 assessment appeared to reduce duplicative effort and reduce the potential of scope creep. The FY18 assessment found weaknesses in prior TA-V self-assessments and summarized these weaknesses in Table 1, "Summary of Collected Information." For example, "MSA did not evaluate or report on all cited implementing documents or their appropriate implementation" (MSA = management self-assessment). The AIS 56617 assessment report did not categorize these weaknesses as findings or observations for corrective action by TA-V personnel or provide documentation as to why these weaknesses were not findings or observations.

AIS 56617 included an attached assessment plan, a review of previous TA-V self-assessments, and an assessment report. This assessment resulted in no findings, three observations, one noteworthy practice, and one recommendation. The assessment's documentation, structure, and result categorization were consistent with required format and content. The documentation provided evidence of how results were determined and criteria were evaluated.

The observations and recommendation provided ways to improve assessments conducted by both Department 00632 and TA-V personnel. The recommendation was not entered into the AIS record. The observations were not assigned any corrective actions; without corrective actions or further

documentation, it is not clear whether future assessments will benefit from these observations. This is noteworthy for Observation 1, "as noted by this review of the most recent MSAs and by the Findings from the recent CRA for Restart of ACRR after the RCSU, this approach does not effectively evaluate MOWs' (operators and supervisors) performance, i.e. compliance to the ConOps requirements. An opportunity for improvement exists to adjust the scope and focus of future assessments, both Corporate (Org. 00632) and Line (Org. 01380), to include more observations of operations and activity evolutions so operator/supervisor performance can be evaluated." (**Note:** CRA = Contractor Readiness Assessment, ACRR = Annular Core Research Reactor, RCSU = reactivity control system upgrade, MOW = Member of the Workforce.)

AIS 56617 appeared to meet its objective to determine whether specific ConOps matrices accurately cite applicable implementing documents.

3.2.2.5 Department 00635

AIS 76395 "ES&H Center Causal Analysis Assessment," "reviewed causal analyses performed by or for Environment, Safety and Health (ES&H) Center department personnel during the specified period [July 2014 to July 2017]. The purpose was to determine the degree to which ES&H Center personnel learn from use of the causal analysis process."

The assessment report included three appendices, one of which was the assessment plan. The plan by itself did not include signatures, but the report as a whole was signed and dated by the author, technical advisor, and senior manager (although the signature dates were approximately six months after the report date of December 2017).

The report was thorough and comprehensive. This assessment leveraged three previous analysis reports. Conclusions and recommendations from those reports that were also found to be a result of this assessment were referenced along with new conclusions and recommendations from review of the causal analyses. This approach enhanced the depth of the assessment. The report provided supporting evidence for the additional conclusions and recommendations resulting from the analysis.

The report provided robust descriptions of needed areas of improvement in conclusion statements and provided actionable recommendations for managers to consider. The report also provided conclusions and recommendations to improve the quality of Center 00600 causal analyses; five observations with associated corrective actions were entered in AIS, which matched the new conclusions and recommendations listed in the assessment report. The assessment report also included cross-cutting and significant issues and recommendations from two additional sources (*Analysis of Reportable Events Involving High Energy/Stored Energy from 2011 through the 1st Quarter of 2016* and *Analysis of 2016 Occurrence Reports Involving Electrical Energy*); these results do not fit into the assessment results structure provided in CA002.1, *Conduct of Internal Assessments* (i.e., findings, observations, acceptable practices, and noteworthy practices).

Although the assessment plan was attached to the assessment report as an appendix, some information that would be in an assessment plan was not included. For example, team members were not identified in the plan but were specified in the report, and no schedule was provided. The assessment plan included a list of steps for phases 1 and 2 of the assessment. Phase 2 results were not included in the report, and a discussion of why they were missing was not provided.

3.2.2.6 Department 00641

AIS 55266, "00641-Evaluate Need for Water Quality Data Validation for Stormwater Program," evaluated the "sampling method, constituents, receiving water standards and designated uses, and regulatory requirements for the MSGP [Multi-Sector General Permit] and MS4 Permit [Municipal Separate Storm Sewer System]" to determine whether third-party data validation would be appropriate and practicable for collected water quality data.

The AIS record had an attached assessment plan and an attached assessment report (including evidence of assessed criteria that supported assessment results). The assessment resulted in no findings, no observations, no noteworthy practices, and one acceptable practice that "third party data validation is not required or recommended for stormwater samples at this time."

The assessment report contained a relevant, comprehensive review of data validation, current Sandia practices, regulatory requirements and guidance, and stormwater quality sampling.

Because the assessment resulted in an acceptable practice, no follow-on activities were undertaken immediately; however, according to the report, "It is recommended that the current decision to forego stormwater data validation be re-evaluated in the future in the event of a significant change of stormwater monitoring requirements." This conclusion, along with other ideas for the future, are not captured in AIS.

One area mentioned within the report that may benefit from further investigation involves the reasoning behind data validation on stormwater samples collected between 2009 and 2014. The report states that "between 2009 and 2014, some of the stormwater samples collected SNL/NM underwent data validation (the reason is unknown)" (SNL/NM = SNL, New Mexico). If stormwater data validation is considered necessary in the future, the reasons should be documented in order to identify possible trends.

3.2.2.7 Department 00642

AIS 55502, "00631 FY18, RPSD, Self-Assessment, Whole Body Counting," is an annual self-assessment. The assessment plan stated that the purpose of the annual self-assessments is to "evaluate compliance with national standards for radiobioassay measurements."

AIS 55502 linked to an assessment plan. The plan included the scope and criteria for the assessment, a brief summary of the assessment schedule, and the assessment team members. The plan's scope included the DOELAP audit checklist and prior radiobioassay corrective actions that were closed since the last self-assessment, a commendable element. The assessment criteria were requirements from DOE-STD-1112-2016, *Department of Energy Laboratory Accreditation Program for Radiobioassay*, and American National Standards Institute (ANSI) N13.30-2011, *Performance Criteria for Radiobioassay*. A focus area was review of RPSD-03-08, *Data Backup and Maintenance*, implementation.

AIS 55502 also attached the final assessment report (completed in March 2018), which identified three findings, eight observations, and one noteworthy practice. Two findings involved prior assessment corrective actions that were not completed as specified in the action statements in AIS. The third finding was the failure to follow RPSD-03-08 requirements for backing up radiobioassay data. Four observations involved weaknesses in flow down of ANSI N13.30-2011 specifications to RPSD procedures.

Each finding and observation was addressed by actions without causal analysis, and the actions were documented in 11 child AIS records. Each corrective action without a causal addressed an individual weakness, but no areas were selected to address why the results existed.

One finding, the failure to backup data from radiobioassay instrument analyses, was reiterated as a concern in the subsequent external DOELAP audit, *Radiobioassay Onsite Assessment Report*, dated May 2, 2018. This report credited the RPSD self-assessment for previously identifying the issue. RPSD personnel then conducted a causal analysis on the finding's weaknesses related to whole-body counting and documented the actions in AIS 68284 and child record AIS 70674. These actions were more robust than those associated with AIS 55502. A proactive RPSD approach to increase learning would have been to subject the findings and the related observations to causal analyses prior to the external DOELAP audit.

The creation of 11 child corrective actions without causal records was inefficient and could have been addressed in one or two child records. This approach would allow managers and team leads to easily see issues and actions holistically, determining patterns and developing actions for more robust evaluation.

3.2.2.8 Department 00643

AIS 67878, "0643 FY18 Environmental Management System Assessment of Kauai Test Facility," was conducted to determine the level at which the International Organization for Standardization (ISO) 14001, *Environmental Management Systems*, is implemented at the Kauai Test Facility (KTF). The assessment plan stated that KTF processes would be evaluated to determine whether they meet the ISO 14001:2004 standard.

AIS 67878 was linked to an assessment plan. The schedule included notifying KTF of the assessment, issuing the plan, conducting off-site document reviews, conducting on-site reviews and observations, issuing the draft assessment report, performing a factual accuracy review by KTF, and issuing a final report. The plan addressed most of these items and included a proposed agenda that detailed activities for a two-day on-site visit.

AIS 67878 had an attached final assessment report (completed in late February or early March 2018), which identified one finding, four observations, five noteworthy practices, and two items labeled as "remarks." The finding involved required training that had not been performed or repeated at required intervals. One observation, a weakness in the Evaluation of Compliance Spreadsheet, was the responsibility of Department 00641. Three observations were the responsibility of KTF personnel. Remarks are a type of assessment result in Sandia performance assurance processes (e.g., CA002.1, *Conduct Internal Assessments*, and AOP 04-04, *Assessments*); however, based on their descriptions they appear to be recommendations for improvement.

KTF personnel addressed and documented the single finding and three observations in AIS, and Department 00641 personnel addressed and documented the one observation in AIS.

The finding was addressed with a corrective action without causal analysis. As a result, the discrepancies identified in training were corrected, and evidence was provided to support closure. The two KTF observations were stated as corrected in AIS, but a corrective action without causal was not created. Thus the specific action taken could not be evaluated since evidence of completion was not linked in AIS.

The assessment report contained attachments that provided evidence to support the ISO 14001 elements reviewed, Sandia documents included in the review, and conclusions that supported findings and observations in the assessment report. The assessment report also contained an attachment that reviewed each finding and observation from an FY14 environmental assessment. Not only were corrective actions reviewed, but on-site locations that were impacted by the actions were observed. Photographs to show action completion were provided in this attachment.

In the evidence and assessment methodology attachment to the assessment report, the results of oil storage inspections were discussed. There was confusion on the use of an inspection form for used oil drums. This weakness was labeled as an observation in the attachment; however, this observation was not included as an assessment result in the assessment report.

AIS 67994, a corrective action without causal that resulted from Observation 2, was linked to a copy of the Evaluation of Compliance Spreadsheet as evidence. The changes made to the spreadsheet that were used to close this corrective action were not specified or highlighted.

3.3 Assessment Results

3.3.1 Observations

The assessment team identified and developed the following observations.

Observation 1: Causal analyses are rarely conducted for Center 00600 assessment results. No individual findings or observations or grouping of findings and/or observations were considered to warrant a causal analysis. Instead, learning from assessment findings and observations was limited to correcting specific conditions or discrepancies that supported the finding or observation. While correcting specific weaknesses is important, this approach does not address why the weakness existed; thus actions were not developed to reduce the probability of future similar weaknesses occurring.

- Only one of the 34 Center 00600 assessments completed in FY18 (AIS 72051) was recorded in AIS as having corrective actions with causal analysis. Review of this record identified that although labeled as an assessment, the record was used to document a nonreportable event and link to the subsequent causal analysis.
- Of the 20 findings identified in the 34 assessments, 16 had specific corrective actions entered in AIS and four were closed with "no further action" (e.g., AIS 50509 and AIS 65508). Some observations were also closed with "no further action" (e.g., AIS 56617 and AIS 67878). AIS 76395 reported similar closures without corrective action in recent years.
- In-depth review of AIS records 50509 and 55502 showed potential findings and a grouping of observations where the performance of an apparent cause analysis would have increased learning by addressing why these issues existed and developing actions to reduce such weaknesses in the future.

Observation 2: Documentation of assessment plans and results are implemented inconsistently and lack the appropriate level of detail.

- Two assessments did not have an associated stand-alone assessment plan (AIS 67997 and AIS 68264).
- Assessment plans exhibited administrative weaknesses, for example, the plan did not identify assessment team members (AIS 67878), the plans were not signed and dated (AIS 55266,

AIS 55502, AIS 67878, and AIS 76395), or the plans did not include adequate schedule detail (AIS 55502 and AIS 76395).

- Some reports lacked adequate documentation of evidence to support assessment results and criteria review (e.g., AIS 55502 and AIS 67997).
- Some plans and reports had data fields that were not filled in, had questionable dates, and had errors in context in the assessment report or in AIS (e.g., AIS 50509, AIS 55266, AIS 55502, and AIS 67878).

Observation 3: Multiple assessment reports identified weaknesses or opportunities for improvement that were not reflected as findings or observations.

- Some reports alluded to potential issues without describing or adequately describing why the issues were not findings or observations without closure (AIS 50509, AIS 56617, and AIS 67997).
- One assessment report included three opportunities for improvement; however, opportunities for improvement is no longer an assessment results category in AIS. These items should have been evaluated further to determine whether they were observations or ideas for future improvements that should have been documented (AIS 50509).

Observation 4: Assessments have identified valuable information and ideas for future improvements that do not fit into the assessment results structure provided in CA002.1, *Conduct of Internal Assessments* (i.e., findings, observations, acceptable practices, and noteworthy practices). Guidance for handling such information appears to be lacking.

- Ideas for improving processes were described without a method to save the information for future use (AIS 55266).
- Opportunities for improvement and remarks were provided in some assessments; however, such results are not recognized by CA002.1, *Conduct of Internal Assessments*, as assessment results (e.g., AIS 76395, AIS 50509 and AIS 56617).

Observation 5: In some assessments, managers requested specific objectives that were not conducive to reporting results as prescribed in CA002.1, *Conduct of Internal Assessments*. These assessment reports provided conclusions and recommendations. Guidance for documenting and tracking the outcomes of these assessments appears to be lacking.

- The analyses requested in AIS 76395 by managers and periodic analyses events to determine trends (MN471022, *ES&H Manual*, "ES&H Reporting") had specific objectives that did not align with CA002.1, *Conduct of Internal Assessments*.
- The objective of one FY18 assessment was to determine whether data validation needed to be performed for stormwater measurements (AIS 55266).

Observation 6: AOP 04-04, *Assessments*, was last revised in August 2016 and has not been updated to reflect changes to Center 00600 Performance Assurance elements and CA002.1, *Conduct of Internal Assessments*.

3.3.2 Acceptable Practices

The assessment team identified the following acceptable practice.

Acceptable practice: All ES&H departments within the scope of this assessment used AIS to document evaluations, as required in AOP 04-04, *Assessments*, and CA002.1, *Conduct Internal*

Assessments. The use of AIS within the center facilitates tracking, follow-up, and demonstration of continuous improvement throughout ES&H.

- The AIS format assists users in meeting many of the general requirements and guidance found within AOP 04-04, *Assessments*, CA002, *Performance Monitoring Policy*, CA002.1, *Conduct Internal Assessments*, and DOE G 414.1-1C, *Management and Independent Assessments Guide*. Therefore, all eight assessments reviewed met multiple basic requirements for ES&H assessments (e.g., the presence of a description and scope, a list of team members, and categorization of results).
- Additionally, five of the eight assessments reviewed (AIS 68264, AIS 50509, AIS 76395, AIS 55502, and AIS 67878,) used the Record Relationships feature of AIS. This feature links parent, child, and/or peer records within AIS to demonstrate direct relationships among evaluations and promote the ability to leverage existing work.

3.3.3 Noteworthy Practices

The assessment team identified the following noteworthy practices.

Noteworthy practice 1: Two assessments included review of corrective actions completed since the last assessment of that area. One of these assessments included the review of corrective actions completed in the assessment plan's scope.

- One assessment report contained an attachment that reviewed each finding and observation from an FY14 ISO 14001, *Environmental Management Systems*, assessment (AIS 67878). Not only were corrective actions reviewed, but surveillances were performed of on-site locations that were impacted by the actions. Photographs to show action completion were provided in this attachment.
- One plan's scope included the DOELAP audit checklist and prior radiobioassay corrective actions that were closed since the previous self-assessment (AIS 55502).

Noteworthy practice 2: Most assessments were successful in identifying valuable takeaways within and occasionally beyond their scope. Usually captured in the Results section of the report or in AIS, the assessments generally identified weaknesses and ideas for future improvements.

Noteworthy practice 3: Several assessments were conservative in assigning findings and observations (AIS 55502 and AIS 67878). The conservative categorization of results encourages the appropriate level of monitoring and the development of corrective actions that fix problems and are long lasting.

- Opportunities for clarification and improvement were considered observations (AIS 67878).
- Two findings involved prior assessment corrective actions that were not completed as specified in the action statements in AIS (AIS 55502).

3.4 ISO 14001 Environmental Management System Review

An ISO 14001, *Environmental Management Systems*, review of this assessment provided the following response.

Assessments are an integral component to an effective management system and a requirement of the ISO 14001:2015 standard (9.2, "Internal Audit"). Assessments provide information on whether the organization is conforming to its own requirements, complying with regulatory requirements,

and/or effectively implementing and maintaining processes that support its mission. Additionally, assessments can identify opportunities to improve customer service and efficiency of operations. Improvements to Center 00600 assessments support the Environmental Management System as well as assist the Center in meeting its goal of developing an Integrated ES&H Management System. Resultant actions stemming from this assessment that strengthen the Center Assessment Program will support the Sandia Environmental Management System.

Resources

Related Laboratory Policies and Processes

- AOP 04-04, *Assessments*
- CA001.2, *Identify and Manage Issues*
- CA002, *Performance Monitoring Policy*
- CA002.1, *Conduct Internal Assessments*
- CA002.3, *Management Review Process*

References

- 10 CFR 850, *Chronic Beryllium Disease Prevention Program*
- DOE G 414.1-1C, *Management and Independent Assessments Guide*
- DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*
- DOE O 414.1D, Admin Chg.1, *Quality Assurance*
- *FY18 Assessments Data Analysis*
- ISO 14001, *Environmental Management Systems*
- MN471000, *Pressure Safety Manual*
- NNSA SD 226.1B, *NNSA Site Governance*
- *Requirements Analysis Summary*

Systems, Applications, and Websites

- Assessor Qualification Program Description
- Lessons Learned, Best Practices