

**Office of Enterprise Assessments
Assessment of Occupational Injury and Illness
Recordkeeping and Reporting
at the Lawrence Livermore National Laboratory**



June 2018

**Office of Worker Safety and Health Assessments
Office of Environment, Safety and Health Assessments
Office of Enterprise Assessments
U.S. Department of Energy**

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ACRONYMS

CAIRS	Computerized Accident/Incident Reporting System
CFR	Code of Federal Regulations
CRAD	Criteria and Review Approach Document
CRD	Contractor Requirements Document
CY	Calendar Year
DART	Days Away, Restricted or Transfer
DAW	Days Away From Work
DFR	Doctor's First Report
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
eCAR	Electronic Case Analysis Report
eHR	Electronic Health Record
ES&H	Environment, Safety, and Health
HSD	Health Services Department
LFO	Livermore Field Office
LLNL	Lawrence Livermore National Laboratory
LLNS	Lawrence Livermore National Security, LLC
OFI	Opportunity for Improvement
OII	Occupational Injury and Illness
OSHA	Occupational Safety and Health Administration
RWD	Restricted Work Day
STS	Standard Threshold Shift

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Lawrence Livermore National Laboratory

EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) Office of Worker Safety and Health Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of occupational injury and illness (OII) reporting and recording by Lawrence Livermore National Security, LLC (LLNS) at the Lawrence Livermore National Laboratory, and DOE oversight of the program by the National Nuclear Security Administration Livermore Field Office (LFO). The assessment included an onsite data collection visit on February 5-9, 2018. The objective of this assessment was to ensure the quality and accuracy of safety performance metric data available to DOE and DOE contractor management for feedback and improvement analysis and decision-making purposes.

EA reviewed LLNS's calendar year (CY) 2015-2017 OII records, including, but not limited to, electronic Case Analysis Report (eCAR) entries, Occupational Safety and Health Administration (OSHA) forms, and medical records maintained in the electronic Health Record (eHR). EA interviewed LLNS management and administrative personnel who are integral to the OII recordkeeping and reporting process, as well as 18 LLNS employees associated with injury cases. LLNS effectively uses the eCAR database to document, investigate, classify, and report OII cases. When LLNS determines that injury and illness cases are work-related, LLNS generally classifies cases appropriately and reports recordable cases in the DOE Computerized Accident/Incident Reporting System (CAIRS). The interviewed workers and union officials did not express any fear of or actual reprisal for reporting injuries and illness.

However, EA found five areas warranting management attention:

- LLNS has not consistently established auditable case files containing information fully supporting classification decisions for each OII case.
- LLNS has not consistently classified injury and illness cases per 29 CFR 1904 criteria, particularly in deciding whether a case meets the OSHA work-relatedness criteria.
- LLNS has not reported recordable OII cases into CAIRS within the required timeframe.
- LLNS has not been effective in recording and reporting subcontractor OII cases because it did not: (1) report 14 subcontractor recordable injuries between CY 2015 and 2017 into CAIRS; (2) include OII cases, for supplemental labor subcontracted employees supervised on a day-to-day basis by LLNS, on the LLNS OSHA 300 Log and certified 300A summaries; or (3) ensure that subcontractor OII information was received and recorded/reported in the required timeframes.
- LLNS quality checks were not effective in identifying discrepancies between local OII case records and CAIRS.

Collectively, these weaknesses reduce LLNS's ability to effectively implement the DOE and OSHA OII Recordkeeping and Reporting requirements.

LFO has not conducted oversight of LLNS OII recordkeeping activities in CY 2017 due to a vacant position that typically covers this area, but LFO expects to resume oversight in CY 2018.

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1.0 PURPOSE

The U.S. Department of Energy (DOE) Office of Worker Safety and Health Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of occupational injury and illness (OII) recording and reporting at the Lawrence Livermore National Laboratory (LLNL). The purpose of this assessment was to ensure the quality and accuracy of safety performance metric data available to DOE and DOE contractor management for feedback and improvement analysis and decision-making purposes. This assessment included an onsite data collection visit on February 5-9, 2018.

2.0 SCOPE

The assessment evaluated the effectiveness of OII recordkeeping and reporting in accordance with the *Plan for the Office of Enterprise Assessments Assessment of Injury and Illness Recordkeeping and Reporting at the Lawrence Livermore National Laboratory, February 2018*. The scope included evaluation of the OII recordkeeping and reporting activities of Lawrence Livermore National Security, LLC (LLNS), which is the prime management and operating contractor at LLNL, and five LLNS subcontractors. DOE line oversight of the LLNS OII recordkeeping and reporting program was also evaluated.

3.0 BACKGROUND

LLNL is located in Livermore, California. The Laboratory's primary mission is research and development in support of national security. As a nuclear weapons design laboratory, LLNL has responsibilities in nuclear stockpile stewardship and applies its expertise to prevent the spread and use of weapons of mass destruction and strengthen homeland security. Other areas of expertise include advanced defense technologies, energy, environment, biosciences, and basic science. There are approximately 6000 contractor employees working at LLNL.

LLNS corporate team members include Bechtel National, Inc., the University of California, Babcock and Wilcox Company, AECOM, and Battelle Memorial Institute. The National Nuclear Security Administration Livermore Field Office (LFO) provides Federal oversight of LLNS.

4.0 METHODOLOGY

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*. EA implements the independent oversight program through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. Organizations and programs within DOE use varying terms to document specific assessment results. In this report, EA uses the terms "deficiencies, findings, and opportunities for improvement (OFIs)" as defined in DOE Order 227.1A. In accordance with DOE Order 227.1A, DOE line management and/or contractor organizations must develop and implement corrective action plans for the deficiencies identified as findings. Other important deficiencies not meeting the criteria for a finding are also

highlighted in the report and summarized in Appendix C. These deficiencies should be addressed consistent with site-specific issues management procedures.

As identified in the assessment plan, this assessment considered requirements related to 10 CFR Part 851, *Worker Safety and Health Program*. Specifically, LLNS must use the requirements and criteria in 29 CFR Part 1904, *Recording and Reporting Occupational Injuries and Illnesses*, and DOE Order 231.1B, *Environment, Safety and Health Reporting*, to accurately record OII cases locally and report the recordable cases into the DOE Computerized Accident/Incident Reporting System (CAIRS) database within a prescribed timeframe.

EA used selected criteria from objectives OII.1 and OII.2 of EA Criteria and Review Approach Document (CRAD) EA-32-07, *Occupational Injury/Illness Recordkeeping*, for this assessment, which was primarily a review of a sample of OII records from calendar years (CYs) 2015 through 2017. The assessment was not intended to be a full programmatic review; however, the records review was supplemented by other activities, such as interviews with managers who have OII recordkeeping responsibilities, to assess the effectiveness of some elements of LLNS OII recordkeeping procedures.

EA evaluated available LLNS and DOE records associated with the identification, investigation, classification, recording, and reporting of OII cases, including those in electronic Case Analysis Report (eCAR), electronic Health Record (eHR), and DOE CAIRS case records (based on CAIRS records as of January 18, 2018). When the records review identified an issue requiring follow-up, EA requested interviews with the associated injured workers for additional information. EA also examined key documents, such as procedures, analyses, and training records, and interviewed key personnel responsible for developing and executing the associated programs.

The members of the EA assessment team, the Quality Review Board, and EA management responsible for this assessment are listed in Appendix A. A detailed list of the documents reviewed, personnel interviewed, and observations made during this assessment, relevant to the findings and conclusions of this report, is provided in Appendix B. Appendix C lists identified deficiencies, and Appendix D summarizes the results of EA's case file reviews.

EA has not previously conducted an assessment of OII recordkeeping and reporting at LLNL. Therefore, there were no items for follow-up during this assessment.

5.0 RESULTS

Objectives:

A procedure is in place to ensure that OII cases to DOE contractor employees are identified, properly classified, and accurately recorded. (CRAD EA-32-07, Objective OII.1, Criteria 1 through 4)

DOE contractor and subcontractor OII cases are accurately classified, and recordable OII cases, as well as work exposure hours, are reflected in CAIRS in a timely manner. (CRAD EA-32-07, Objective OII.2, Criteria 1 through 9)

Criterion:

The organization maintains a formal injury and illness recordkeeping program that outlines the responsibilities and procedures for identifying, reporting, classifying, and documenting OII cases. (10 CFR § 851.11(a)(3)(i), 851.20(a)(3) and (6), 851.23(a)(2), and 851.26(a)(2)-(4))

LLNS's procedures for reporting, investigating, documenting, classifying, and reporting OII cases include:

- DES-2450, *Worker Safety and Health Program*
- DES-0080, *Event Notification and Reporting*
- Injury and Illness Analysis Office Desk Procedure, *Case Analysis Report (eCAR) Preparation and Completion*
- Environment, Safety, and Health (ES&H) Manual Document 2.1, *General LLNL Worker ES&H Responsibilities*
- ES&H Manual Document 2.5, *Managing Subcontracted Work at LLNL*
- ES&H Manual Document 10.1, *Occupational Medical Program*
- LLNL *Injury and Illness Reporting Provisions*
- LLNL *Injury and Illness Reporting with Quarterly Updates Provisions.*

These procedures show that LLNS has established an OII recordkeeping program for reporting injuries and investigating and classifying OII cases that, if implemented, should result in OII cases being recorded and reported appropriately. LLNS generally did a good job in capturing OII cases. However, the *eCAR Preparation and Completion* desk procedure that the ES&H Injury and Illness Analysis Office uses does not: (1) reflect changes accounting for the use of the new eHR system; (2) facilitate classification and recording of injuries within the required seven days of becoming aware of potentially recordable injuries; or (3) include any implementing procedures, to ensure that new recordable OII cases are submitted to CAIRS by the 15th or last day of the month, or other CAIRS-related data submittals. (See **OFI-LLNS-OII-1.**)

Criterion:

CAIRS organization code changes are required to reflect current reporting organizations, including separate organization codes for contractors and their subcontractors. (DOE Order 231.1B, Attachment 1, Contractor Requirements Document (CRD), Section 2.a. (3))

LLNS has established seven CAIRS organization codes to report recordable OII cases and report work exposure hours, including codes: 0580403 LLNL; 0580404 LLNL Services; 058409 LLNL Security; 0580414 LLNL Service Subcontractors; 0580416 LLNL Construction Subcontractors; 0580426 LLNL RAMP (roofing contractors); and 0580503 LLNL- Nevada. Use of these CAIRS organization codes to capture LLNS recordable cases is appropriate.

Criteria:

Workers are trained to report all injuries and illnesses promptly per the organizational procedure. (10 CFR 851.25(a))

Workers report occupational injuries and illnesses without fear of reprisal. (10 CFR 851.20(a)(6))

The LLNS ES&H Manual requires workers to report injuries and illnesses, and they receive training on the injury reporting procedure when they are hired. Interviewed workers understood the procedure for reporting injuries and generally stated that they received very good care and treatment for their injuries and illnesses from LLNS ES&H and the Health Services Department (HSD).

In addition, interviewed workers indicated that supervisors and managers actively encourage workers to report injuries and that they did not fear any reprisal for reporting injuries and illnesses. Union officials

stated that OII recording and reporting was implemented properly at LLNL and did not relay any concerns about reprisals for reporting injuries and illnesses.

Criterion:

The OII reporting requirements flow to appropriate subordinate organizations, and sub-tier contractor records are reported to the DOE CAIRS and recorded on Occupational Safety and Health Administration (OSHA) 300 Logs. (10 CFR 851.11 and DOE Order 231.1B, Attachment 1, CRD, Section 2.a. (1))

LLNS has established procedural and contractual mechanisms to identify injury cases involving its subcontractor workers, including reporting injuries to LLNL representatives overseeing the subcontracted work. In addition, LLNS has established separate CAIRS organization codes for reporting their subcontractor injuries. While the LLNS procedures and contract provisions require notifying LLNS when a subcontractor injury or illness occurs, LLNS has primarily defaulted to a practice of requesting subcontractor OII-related information on a quarterly basis. This quarterly collection does not always facilitate the reporting of new subcontractor OII cases to CAIRS by the 15th or last day of each month as required.

The CY 2015-2017 injury records (including subcontractor OSHA Forms 300/300A and the LLNS Injury Log) indicate that 14 of 20 subcontractor-recordable OII cases were not reported in CAIRS as required. Most of the subcontractor OII days away from work (DAW) or restricted work days (RWD) are under reported on LLNS's Injury Log. LLNS has not captured the recordable OII cases on its OSHA 300 Log for the supplemental subcontractor labor workers whom LLNS directly supervises on a day-to-day basis. **(Deficiency)**

Akima Infrastructure Services and Clean Harbors are subcontractors that supply approximately 500 supplemental labor workers to LLNS. These workers are assigned to LLNS organizations, receive day-to-day supervision from LLNS, and follow all the same workplace requirements as LLNS workers and therefore any injuries to these supplemental labor employees are recorded on the LLNS OSHA 300 Log. EA noted that both Akima Infrastructure Services and Clean Harbors maintain OSHA Forms 300 and 300A separate from LLNS, and LLNS did not have these subcontractor forms for review until requested for this assessment. OSHA recordkeeping requirements require recordable OII cases and exposure work hours for workers who augment the employer's workforce and receive day-to-day direction from the employer to be included on the employer's (LLNS's) OSHA 300 Log and 300A summary for the "establishment." **(Deficiency)**

Criterion:

Personnel with assigned CAIRS/OII recordkeeping responsibility are informed of all contractor and subcontractor injuries and illnesses through established accident/occurrence reporting mechanisms and review of other documentation. (CRAD EA-32-07, Objective OII.2, Criteria 2)

EA found that injured or ill LLNS workers report through the ES&H HSD for evaluation and treatment as needed. The OII Case Manager starts a new OII case in eCAR upon receiving notification that a worker has visited HSD for evaluation and/or treatment for an injury or illness. The OII Case Manager then assigns responsibilities for providing information in the eCAR case record, including the appropriate supervisor and ES&H investigator. When the OII Case Manager is informed of OII cases (including subcontractor cases) that are not initiated by an HSD email notification, the OII Case Manager sends a copy of the injury report to HSD to initiate a new eCAR case for processing. The OII Case Manager uses the HSD Doctor's First Report (DFR) in the eHR to determine whether medical treatment went beyond first aid, and whether the work restrictions and/or work-relatedness meet OSHA OII recordability criteria.

The OII Case Administrator then uploads the OII cases determined to be recordable directly from eCAR into CAIRS, and enters the recordable case on the OSHA 300 Log. This OII case notification process works well for LLNS workers; however, as noted above, the procedure has not been effective in fully identifying, documenting, and reporting subcontractor injuries.

Criterion:

Verifiable case files are established for each OII containing information supporting classification decisions. (10 CFR 851.26(a)(1) and DOE Order 414.1D, Attachment 2, Quality Assurance Criteria, Criterion 4, Management/Documents and Records)

LLNS relies on its eCAR system to maintain case files and generate local records (Injury Log, OSHA 300 Log, OSHA Form 300A, and CAIRS case reports). Medical information associated with each eCAR case record is pulled from the eHR DFR and summarized in the eCAR case. The DFR is used for OII case classification decisions; however, follow-up doctor/HSD visits that could change the recordability classification (new medical treatment or new/changed work restrictions) are not currently available in eHR for use by the OII Case Manager and Administrator. Tracking this follow-up HSD information is important to ensure that cases previously judged to be non-recordable are recorded and reported to CAIRS when case circumstances affect recordability. In the 63 OII cases reviewed by EA, the eHR records consistently showed multiple follow-up HSD visits with pertinent medical information that potentially could have changed the recording classification of the cases. LLNS informed EA that the OII Case Manager now has access as of March 5, 2018, to eHR HSD follow-up medical records for OII cases for tracking and case classification purposes.

EA's review of the LLNS Injury Log and detailed review of 63 cases showed that LLNS classification decisions are not always sufficiently documented in eCAR, especially injury and illness cases classified as "not work related." LLNS's determination of injury and illness cases as "not work related" are further discussed below under the criterion regarding OSHA case classification requirements.

Criterion:

Work exposure hours for each assigned reporting organization code are properly accounted for and electronically reported into CAIRS on or before the due date (10th of the month that follows each calendar quarter). (DOE Order 231.1B, Attachment 3, Section 1.e)

The LLNS OII Case Administrator uses a spreadsheet completed by subcontractors to document workhours for their organizations that are required to report OIIs through LLNS to the CAIRS database. The subcontractor workhours, along with LLNS hours that are automatically extracted by eCAR from an LLNS financial database, provide input for uploading workhours into CAIRS. CY 2017 workhours were reported into CAIRS in a timely manner. LLNS also used this work exposure hour documentation to complete OSHA Form 300A Summaries for CYs 2015-2017. Work hours in CAIRS and on the signed/certified OSHA Forms 300A were consistent.

Criterion:

The organization electronically submits initial case reports to the CAIRS database on or before the 15th and the last workday of the month and updated by the 10th of the month that follows each quarter until closed. (DOE Order 231.1B, Attachment 3, Section 1.d)

LLNS was chronically late in reporting most of its recordable OII cases to the CAIRS database in CYs 2015-2017. (**Deficiency**) Late case reporting can skew the safety performance statistics available to

DOE organizations through CAIRS by keeping injury incidence rates lower than actual performance, particularly when CAIRS is viewed shortly after the end of a quarter. Subsequently, the rates increase for months as cases continue to be submitted late. In addition, DOE line management and independent oversight organizations rely on CAIRS OII case and incidence trend data for timely performance analysis and feedback.

As part of a quality assurance review of the CAIRS Logs for LLNS, EA calculated the timeliness of the submission of new recordable OII cases into CAIRS by determining the lag time between the date the case was required to be submitted (calculated using the case injury date) and the date of initial CAIRS entry. Using this method, only 7 out of 217 CAIRS cases were submitted within the required time period, and the rest were late by an average of 57 days for CY 2015, 60 days for CY 2016, and 45 days for CY 2017. LLNS may not become aware of an injury on the day the injury occurred. In some cases, LLNS may not be aware of a recordable injury for up to a month after the injury date. For example, an injury case that was initially classified as a non-recordable First Aid could subsequently become recordable at a later date when medical treatment is provided or a day away from work is taken due to the injury. EA did not have case-by-case data to indicate when LLNS became “aware” that a case was potentially recordable. To account for this potential awareness lag time in the evaluation of timeliness for each case, EA screened out those cases that were entered into DOE CAIRS up to 52 days after the injury date (a 30 day awareness lag time, plus seven days to record on the OSHA 300 Log and a subsequent 15 days to report into CAIRS). With this conservative awareness lag, EA identified 127 CAIRS cases to be more than 30 days late, and 6 were more than 180 days late.

EA identified three factors that contributed to late CAIRS reporting:

- LLNS OII procedures do not facilitate case investigation and report preparation within the required seven days of becoming aware of an injury and do not have implementing procedures for meeting CAIRS time requirements for submitting new OII cases.
- The lack of timely case information hinders submittal of OII cases since CAIRS forms can only be submitted to DOE when all required data elements are entered.
- LLNS has not held subcontractors accountable for reporting injury and illness cases as they occur, but instead has defaulted to requesting a summary of injuries from the subcontractor at the end of each calendar quarter.

Criterion:

OIIs are investigated and classified per 29 CFR 1904 criteria with cases found to be recordable documented on the CAIRS form and on the local OSHA 300 Log within seven days. (29 CFR 1904.29(b)(3))

The LLNS CAIRS Log shows that of the 894 injuries and illnesses recorded on the LLNS Injury Log between CY 2015 and CY 2017, LLNS determined 217 to be OSHA recordable. EA selected 63 cases from CYs 2016 and 2017 for detailed review, and interviewed injured workers associated with 18 of the selected cases. EA found that in this sample, the cases that were determined to be work-related were classified properly, with only minor discrepancies. A summary table of the results of EA’s case file reviews is provided in Appendix D.

EA review of available eCAR and eHR records and interviews with injured workers found 18 OII cases that were not properly classified, 2 OII cases that require further investigation by LLNS to determine the appropriate OSHA classification and 2 OII cases that were not entered in the OSHA 300 Log. EA found that in 14 cases, the OSHA classification criteria for whether a case was work-related were not properly applied. **(Deficiency)** Of the 894 OII cases on LLNS’s CY 2015-2017 Injury Log, 195 cases (22%) are designated as “Not Work Related.” Discussions with the LLNS OII Case Manager and the Medical

Director indicated that LLNS relies on medical opinions based, in part, on the *Cumulative Trauma Conditions Medical Treatment Guidelines*, developed by the Colorado Division of Workers' Compensation, to determine whether an injury or illness is work-related. However, the methods and algorithms used for Colorado's workers' compensation guidelines for work-relatedness determinations do not match the OSHA criteria for work-relatedness. OSHA determines work-relatedness in 29 CFR 1904.5(a) as follows: "You must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a pre-existing injury or illness. Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the work environment, unless an exception in §1904.5(b)(2) specifically applies." An OSHA interpretation letter regarding this requirement goes further and states that "a case is presumed work-related if an event or exposure in the work environment is a discernible cause of the injury or illness or of a significant aggravation to a pre-existing condition. The work event or exposure need only be one of the discernable causes; it need not be the sole or predominant cause." However, the Colorado workers' compensation guidelines require that the work environment or event contribute 50% of the cause of the injury to be work-related.

Criterion:

DOE line management evaluates contractor and DOE programs, and management systems, including site assurance systems, for effectiveness of performance (including compliance with requirements). (DOE Order 226.1B, Section 4.b.(1))

LFO did not conduct oversight of LLNS OII recordkeeping activities or records in CY 2017 due to a vacant industrial hygiene position that typically covered this area. While LFO did not have any formal oversight scheduled, the LFO Assistant Manager for ES&H stated he expects oversight of LLNS OII recordkeeping to resume in CY 2018.

Criterion:

Contractor conducts quarterly quality checks of local OII data and associated CAIRS records to ensure information is thorough, accurate, and consistent. (DOE Order 231.1B, Attachment 3, Section 1.f)

EA performed a comprehensive quality assurance check that included a crosswalk between case information contained in CY 2015-2017 CAIRS Logs, OSHA 300 Logs, 300A Summaries, the DOE Occurrence Reporting and Processing System, the LLNS Injury Log and subcontractor OII records. LLNS OII records have numerous case discrepancies where records were either not entered into OSHA 300 Log or the record entries do not match between OSHA 300 Log and CARIS Log. **(Deficiency)** For example, in:

- CY 2017: five recordable LLNS cases not on the LLNS OSHA 300 Log, and five cases on the Injury Log with different DAW or RWD counts than in CAIRS
- CY 2016: three recordable LLNS cases not on the OSHA 300 Log, and six cases on the Injury and OSHA 300 Logs with different DAW or RWD counts than in CAIRS
- CY 2015: nine cases on the Injury and OSHA 300 Logs with different DAW or RWD counts than in CAIRS.

In addition, these record errors indicate that the LLNS certified annual OSHA 300A Summary forms are not "true, accurate, and complete," as required.

LLNS conducted quality checks biannually and not quarterly as required and did not document them. Furthermore, the quality checks were not effective in finding the record issues noted above or the OII OSHA classification errors detailed in Appendix D. (See **Finding F-LLNS-OII-1**.)

Criterion:

Personnel with OII recordkeeping responsibilities are properly trained. (10 CFR 851.25c and DOE Order 231.1B, Attachment 3, Section 1.i)

The OII Case Manager did not have formal training in OSHA OII recordkeeping requirements, but EA found that the LLNS manager and administrator responsible for OII recordkeeping had years of experience in OII case management. Discussions with the OII Case Manager and HSD Director and EA's review of OII case records indicated that the OSHA classification criteria for work-relatedness have been misapplied or misunderstood in a number of cases. (See **OII-LLNS-OII-2**.)

6.0 FINDINGS

Findings are deficiencies that warrant a high level of attention from management. If left uncorrected, findings could adversely affect the DOE mission, the environment, the safety or health of workers and the public, or national security. DOE line management and/or contractor organizations must develop and implement corrective action plans for EA appraisal findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems developed in accordance with DOE Order 227.1A to manage these corrective action plans and track them to completion. In addition to the findings, deficiencies that did not meet the criteria for a finding are listed in Appendix C, with the expectation from DOE Order 227.1A for site managers to apply their local issues management processes for resolution.

Finding F-LLNS-OII-1: LLNS's quality checks were not conducted quarterly, were not documented, and were not effective in identifying quality errors in occupational injury and illness records identified as part of EA assessment, as required by 10 CFR 851.26(a)(2) and DOE Order 231.1B, Attachment 3, Section 1.f.

7.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified some OFIs to assist cognizant managers in improving programs and operations. While OFIs may identify potential solutions to findings and deficiencies identified in appraisal reports, they may also address other conditions observed during the appraisal process. EA offers these OFIs only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

OII-LLNS-OII-1: LLNS should consider revising OII procedures to: (1) ensure that injuries and illnesses are recorded on the OSHA 300 Log within seven days as required; (2) provide implementing procedures for reporting recordable OII cases into DOE CAIRS accurately and on time; and (3) account for changes needed in eCAR to address the new eHR system.

OII-LLNS-OII-2: LLNS should consider arranging for professional OII Recordkeeping training for ES&H who have OII recordkeeping responsibilities and HSD personnel providing medical advice impacting OII classifications, in order to reinforce OSHA recordkeeping requirements and interpretations.

Appendix A Supplemental Information

Dates of Assessment

Onsite Assessment: February 5-9, 2018

Office of Enterprise Assessments (EA) Management

William A. Eckroade, Acting Director, Office of Enterprise Assessments
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Appendix B

Key Documents Reviewed, Interviews, and Observations

Documents Reviewed

- Organization Charts for LFO and LLNS
- DES-2450, *Worker Safety and Health Program*, Revision 1, 9/30/17
- DES-0080, *Event Notification and Reporting*, Revision 5, 8/18/10
- Injury and Illness Analysis Office Desk Procedure, *Case Analysis Report (eCAR) Preparation and Completion*, Revision 0, 2/12/13
- ES&H Manual Document 2.1, *General LLNL Worker ES&H Responsibilities*, Revision 7, 5/14/14
- ES&H Manual Document 2.5, *Managing Subcontracted Work at LLNL*, Revision 12, 8/1/16
- ES&H Manual Document 10.1, *Occupational Medical Program*, Revision 15, 1/19/16
- LLNL *Injury and Illness Reporting Provisions*, 2/17/15
- LLNL *Injury and Illness Reporting with Quarterly Updates Provisions*, 2/17/15
- LLNL-AR-744783, *Functional Management Review Report Injury and Illness Reporting*, 1/17/18
- 2015 and 2016 *Injury and Illness Annual Report*
- *OII Case Manager and Administrator Training Records*, 1/18/18
- CAIRS Logs for LLNS (05804% Organizational Codes Search) for CY2015-2017, Data Pulled 1/18/18
- LLNS *Injury Log* for CY2015-2017
- LLNS OSHA Forms 300 and Certified 300A Forms for CY2015-2016
- LLNS Workers Compensation Log for CY2015-2017
- LLNS Workers Compensation Causality Analysis
- Akima Infrastructure Services Subcontractor OSHA 300 and 300A Forms for CY2015-2017
- Akima Construction Services Subcontractor OSAH 300 and 300A Forms for CY2015-2017
- Alameda County Fire Department Subcontractor OSHA 300 and 300A Forms (names redacted) for CY2015-2017
- Clean Harbors Subcontractor OSHA Forms 300 CY2015-2017
- EA Table of Occurrence Reporting and Processing System Search Results of LLNL Occurrences with Occupational Injuries Cross-walked to LLNS OII Records
- Occurrence Reporting and Processing System Report NA-LSO-LLNL-LLNL-2018-0001, *Subcontractor Injures Arm*
- LLNR-AR-746019 LLNS *Causality Spreadsheet* (Sample Only)
- OSHA Interpretation Letter to Mr. Pangrace regarding Section 1904.5, 2/28/2014
- OSHA Interpretation Letter from Director, Directorate of Technical Support and Emergency Management to Gary Smiley, 8/23/16
- OSHA Letter of Interpretation dated 8/26/2008 to Mr. Wasser regarding restrictions to work from home
- OSHA Letter of Interpretation dated 4/29/2016 to Mr. Stepkin regarding Section 1904.10

Interviews

Livermore Field Office

- Deputy Manager
- Assistant Manager for ES&H
- Safety Engineer

Lawrence Livermore National Security, LLC

- Deputy Director
- ES&H Director
- Management Assurance Director
- HSD Medical Director
- HSD Mission Assurance Manager
- HSD Health Information Manager
- HSD Workers Compensation Manager
- OII Case Manager
- OII Case Administrator
- Workers Compensation Manager
- Akima Infrastructure Services General Manager and Safety Manager
- Akima Construction Services Manager
- LLNS Subcontractor Technical Representative for Construction Services Projects
- Alameda County Fire Department Business Manager and Workers Compensation Specialist
- Clean Harbors Subcontractor Managers (4)
- Diede Construction Services Superintendent and Safety Manager
- LLNS Subcontractor Technical Representative for Diede Construction Services Project
- Union Representatives (2) for University Professional and Technical Employees
- Union Representative for LLNS Security Officers
- Workers Associated With OII Cases (18)

Observations

- End-of-Day Meetings

Appendix C Deficiencies

Deficiencies that do not meet the criteria for a finding are listed below, with the expectation from DOE Order 227.1A that site managers will apply their local issues management processes for resolution.

- LLNS did not submit 14 (out of 20) recordable subcontractor OII cases into DOE CAIRS as required by 10 CFR 851.26(a)(2) and DOE Order 231.1B, CRD, Section 2.a.(3) and Attachment 3, Section 1.d.
- LLNS did not include OII cases and exposure work hours on their OSHA 300 Logs and 300A Summaries for subcontracted supplemental labor workers (currently approximately 500 supplemental workers from two subcontractors) who receive day-to-day supervision from LLNS, as required by 29 CFR 1904.31(b)(2).
- LLNS did not report 210 out of 217 recordable OII cases into DOE CAIRS within the time period required by 10 CFR 851.26(a)(2) and DOE Order 231.1B, Attachment 3, Section 1.d.
- LLNS did not properly classify 18 occupational injuries and illnesses, as required by 10 CFR 851.26(a)(2) and 29 CFR 1904.4, including 13 cases where LLNS did not appropriately apply the OSHA classification criteria for work-relatedness as required by 10 CFR 851.26(a)(2) and 29 CFR 1904.5.
- The accuracy and quality of OII records do not adequately reflect the requirements of 10 CFR 851.26(a)(2); DOE Order 231.1B, CRD, Section 2.a.(1); and DOE Order 414.1D, Attachment 2, Quality Assurance Criteria, Criterion 4, Management/Documents and Records.

**Appendix D
Results of Case File Reviews**

OII Cases Not Properly Classified		
Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 664708</p> <p>Injury Date 2/10/2016</p>	<p>Not Work Related</p>	<p>A Service Maintenance and Construction Coordinator was kneeling, crouching, and duck-walking around a cryogenic system and heard a “pop” in the right knee (during a squatting move) that was loud enough for a subcontractor employee to hear, per the Coordinator. When the worker subsequently walked down stairs, the same right knee bent backwards, and the worker felt pain. Overnight the knee swelled, and the worker notified management of the injury the next morning. A medical procedure was performed to remove fluid from the swelled knee. Subsequent MRI identified a torn meniscus, and surgery was performed. The worker was given medical restriction to limit to sedentary work with minimal walking and no climbing for 2/17-3/17/2016. After surgery, medical restriction was given to the worker for “off work” for 3/23-5/19/2016. From 5/23-7/17/2016, the worker was given medical restriction (no bending, stooping, twisting, or climbing ladders, and allow elevation of leg). A permanent restriction was issued on 7/17/2016 for no prolonged standing, no repetitive kneeling or squatting, and no lifting greater than 25 lb. Medical evaluation for workers’ compensation determination noted “reasonably medically probable that injury to worker right knee arose out of and/or during course of his employment.” The worker stated that routine activities included at least 50% field work (walking, bending, kneeling, and climbing stairs and ladders).</p> <p>Required Classification: <u>Work Related; Recordable Days Away, Restricted or Transfer (DART) Case with 57 DAW and 93 RWD</u></p>

OII Cases Not Properly Classified

Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 170152</p> <p>Injury Date 12/25/2016</p>	<p>Not Work Related</p>	<p>A worker doing computer work felt sudden pain in the shoulder/arm. Imaging showed spinal stenosis. HSD provided prescription medication and provided physical therapy. During an interview, the worker indicated that using the computer all day is a routine activity.</p> <p>Required Classification: <u>Work Related; Recordable Injury, Medical Treatment</u></p>
<p>Local Case No. 170049</p> <p>Injury Date 3/1/2017</p>	<p>Not Work Related</p>	<p>An engineer that used computers for extended periods felt pain when their elbow locked as they pointed to the computer screen. Elbow continued to lock one or two times a day. HSD record indicates bilateral carpal tunnel syndrome and treatment with a cortisone shot.</p> <p>Required Classification: <u>Work Related; Recordable Injury, Medical Treatment</u></p>
<p>Local Case No. 671606</p> <p>Injury Date 7/13/2016</p>	<p>Not Work Related</p>	<p>An engineer that performed routine duties using the computer, had increasing pain while working at computer. Splint and physical therapy were ordered.</p> <p>Required classification: <u>Work Related; Recordable Injury, Medical Treatment with Possible RWD</u></p>

OII Cases Not Properly Classified		
Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 665252</p> <p>Injury Date 2/26/2016</p>	<p>Not Work Related</p>	<p>Worker was bending down to pick up trash, felt back spasm sensation, and ceased movement. The employee reported to supervisor and went home. The employee remembers taking leave on the following Monday and returned to work on Tuesday. HSD ordered physical therapy on 3/7/2016, work restriction for no lifting over 20 lb, and limiting lifting to 10-20 lb, plus other posture restrictions.</p> <p>The employee used assistance to carry computer servers. The above restrictions were given for 4/4-4/21/2016. Worker returned to full duty on 7/21/2016. As a result of a previous injury in 2012, the employee sustained chronic back pain and would have pain flare-ups. The employee said that he had the usual chronic discomfort and no flare-ups on the date of injury prior to bending down to pick up trash.</p> <p>Required Classification: <u>Work Related; Recordable Injury, Medical Treatment; Possible DART Case with DAW and RWD</u></p>
<p>Local Case No. 170163</p> <p>Injury Date 4/13/2017</p>	<p>Injury, Medical Treatment</p>	<p>An Akima Infrastructure Services subcontract worker was lifting and moving boxes of paper onto a dolly and felt discomfort in the right shoulder. HSD ordered prescription medicine and administered a sling for right shoulder. HSD issued work restrictions for no lift, pull, or push, and weight limited to no more than 20 lb. No work over mid-chest level 4/19-4/26/2017. HSD eHR record indicates “2 lost workdays.” The Akima subcontractor OSHA 300 Log recorded “22 days – on job transfer or restrictions.” The worker stated that routine activities included loading boxes containing reams of copy paper on a dolly and delivering them. After the injury and because of work restriction, the worker managed to accomplish the same task by handling manageable pieces of reams from boxes when loading and off-loading the dolly.</p> <p>Required Classification: <u>DART Case with 2 DAW and 22 RWD</u></p>

OII Cases Not Properly Classified

Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 664943</p> <p>Injury Date 2/23/2017</p>	<p>First Aid Only</p>	<p>While walking on an asphalt walkway toward car from Building 3726 to go to a meeting, the worker tripped and fell, injuring right hand and arm. CAIRS report stated “First Aid Only.” eCAR stated “Restriction was issued but did not impact employee’s routine function.” Work restriction was given to limit typing to 4 hours per day. Orthopedic surgeon prescribed Diclofenac; workers’ compensation program paid for orthopedist and prescription. Worker stated they “adjusted their work schedule to fit work restriction into normal work day.”</p> <p>Required Classification: <u>Recordable Injury, Medical Treatment; Possible DART Case with 180 RWD</u></p>
<p>Local Case No. 170207</p> <p>Injury Date 8/4/2017</p>	<p>Not Work Related</p>	<p>Worker riding personal bicycle to the cafeteria for lunch hit a barrier and fell down. Information provided by employer does not provide justification to conclude that the injury was not work related. EA asked to interview the worker, but the worker did not attend scheduled interviews.</p> <p>Required Classification: <u>Work Related; Recordable Injury; Medical Treatment. LLNS should investigate to determine possible DART Case with 17 RWD.</u></p>

OII Cases Not Properly Classified		
Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 170294</p> <p>Injury Date 10/10/2017</p>	<p>Not Work Related</p>	<p>Worker was using computer keyboard for typing and felt pain in left index finger; pain progressed to shoulder. Case was accepted by workers' compensation. Employee was provided a "BandFit" brace. Based on ergonomist evaluation, a new keyboard was ordered. It arrived broken and could not be used, and new parts did not arrive for 3 months. Work restriction provided for 30 minutes' typing with 5 minutes' rest. Prescription issued. HSD prescribed "forearm and wrist bracing, therapy, acupuncture, cortisone injection." Employee did not go to therapy because they did not have leave available.</p> <p>Required Classification: <u>Work Related; Recordable Injury, Medical Treatment</u></p>
<p>Local Case No. 170047</p> <p>Injury Date 2/27/2017</p>	<p>Injury, Medical Treatment</p>	<p>Worker returning to car after delivering documents to B216 fell and fractured ankle. Provided cam walker (rigid boot). Restrictions, work from home, no driving. This is recordable per OSHA letter of interpretation. Could not be determined whether employee could do all of the routine duties upon return to work onsite.</p> <p>Required Classification: <u>Recordable Injury, Medical Treatment; DART Case with DAW while at home due to restrictions. Possible RWD when worker returned to work onsite. See OSHA Letter of Interpretation dated 8/26/2008 to Mr. Wasser regarding restrictions to work from home.</u></p>

OII Cases Not Properly Classified		
Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 170054</p> <p>Injury Date 3/2/2017</p>	<p>Not Work Related</p>	<p>A hearing loss, Standard Threshold Shift (STS) case: Worker had chronic exposure to noise from machinery and equipment over 50 years. Worker is in the hearing conservation program. Clinical notes say to retest when worker is not congested. HSD medical notes say bilateral STS, but the worker currently has no exposure to high noise. No industrial hygiene exposure monitoring results in record, and no evidence that the condition is not work related.</p> <p>Required Classification: <u>Work Related; Recordable Injury; Medical Treatment.</u></p>
<p>Local Case No. 170097</p> <p>Injury Date 4/24/2017</p>	<p>Not Work Related</p>	<p>A hearing loss, STS case: Mechanic, working in noise areas, has a job that consists of repair and maintenance of large equipment, such as emergency generators, on a daily basis. Employer provided ample evidence of occupational noise exposure over years in record. LLNS writes “There is no specific event that caused hearing loss.”</p> <p>Required Classification: <u>Work Related; Recordable Injury; Medical Treatment.</u></p>
<p>Local Case No. 160268</p> <p>Injury Date 10/17/2016</p>	<p>Not Work Related</p>	<p>Lab worker, taking out the trash, developed a rash that spread over the body. eCAR record indicates worker “ate new food” and may have had a reaction. HSD record indicates that the worker did not eat anything new. No medical treatment or work restrictions in record.</p> <p>Required Classification: <u>Work Related.</u></p>

OII Cases Not Properly Classified

Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 160277</p> <p>Injury Date 10/24/2016</p>	<p>Not Work Related</p>	<p>Worker was lifting a machine tool fixture weighing less than 10 pounds and experienced soreness in the right shoulder that prevented the employee from lifting without help from a fellow employee. When soreness persisted, employee went to LLNL medical and was treated with Ibuprofen and an ice pack. Employee was advised to not use the right arm/shoulder for lifting until the pain subsided. Monday night the employee continued treatment (Ibuprofen and ice). By Tuesday morning, the pain was almost gone and employee was able to use right arm again. Employee thinks it was just a slight muscle strain due to inactivity in the prior 3 weeks. Employee was advised by supervisor to take it easy on the arm until the employee was sure that there was no longer a problem. No treatment.</p> <p>Required Classification: <u>Work Related; First Aid Case. LLNS should make a determination on recordability as a DART case.</u></p>
<p>Local Case No. 160251</p> <p>Injury Date 9/26/2016</p>	<p>Not Work Related</p>	<p>Worker was stung by an insect while eating lunch. Employer applies 1904.5 (b)(2)(v) “personal task exemption.” Lunch breaks are considered working hours.</p> <p>Required Classification: <u>Work Related; First Aid Case</u></p>

OII Cases Not Properly Classified		
Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 170318</p> <p>Injury Date 11/28/2017</p>	<p>Doctor Visit Only</p>	<p>Worker performs computer activities using the computer keyboard and mouse for 70-80% of their work activity. Other activities include setting up project binders and preparing conference rooms/training rooms. The worker spends 3 days in Bldg. 543 (new) and 2 days in Bldg. 1889. Shortly after moving to Bldg. 543, the employee developed pain in both wrists and numbness in the hands. Worker purchased wrist splints and used them at night. Based on an ergonomist's evaluation, the worker received a new keyboard and mouse for use in Bldg. 543. The employee stated that they were diagnosed with carpal tunnel syndrome and planning to have surgery to repair. Medical records indicate advising the employee for continual use of wrist splints at night and work restrictions to limit use of keyboard and mouse to tolerance for 12/12-12/26/2017.</p> <p>Required Classification: <u>Work Related; First Aid. Possible recordable Medical Treatment case if surgery is performed. Possible DART case with work restriction. LLNS should track this case to ensure a proper classification due to the potential for additional medical treatment.</u></p>
<p>Local Case No. 170048</p> <p>Injury Date 2/28/2017</p>	<p>Not Work Related</p>	<p>Worker had sharp pain in hand while trying to take paperwork from co-worker and dropped the paperwork. Worker uses computer 6-8 hours per day. HSD email of 4/3/2017 indicates "case is not recordable. Employee has a good ergo[nomic] setup. No clear diagnosis." However, medical record shows Kaiser diagnosed injury as tendonitis and prescribed Vicodin and rigid wrist brace. Physical therapy was given. Work restriction was issued for no lifting over 5 lb, but can do all work.</p> <p>Required Classification: <u>Work Related; Recordable Injury; Medical Treatment</u></p>

OII Cases Not Properly Classified		
Case File and Injury Date	LLNS Classification	Case Summary and Required Classification
<p>Local Case No. 170204</p> <p>Injury Date 8/1/2017</p>	<p>Injury, Medical Treatment</p>	<p>Worker was lifting a catering tub filled with ice/water. Next day the employee saw HSD for pain. Work restrictions issued: no lifting more than 10 lb, limited bending. Prescription medication issued. The employee obtained assistance from facility persons lifting heavy items. After third work day, the employee took sick leave on Thursday and Friday because of severe pain and returned to work on Monday.</p> <p>Required Classification: <u>DART Case with 4 DAW.</u></p>

OII Cases Requiring Additional Information to Properly Classify		
Case File and Injury Date	LLNS Classification	Case Summary and Determination
<p>Local Case No. 160213</p> <p>Injury Date 8/23/2016</p>	<p>Non-reportable</p>	<p>Worker had speck blown into eye. HSD could not remove the speck with Q-tip and sent worker to ophthalmologist. Ophthalmologist removed foreign body (no information on how it was removed) and gave worker antibiotic ointment. Possible recordable injury with medical treatment due to possible prescription medication and use of medical procedure beyond first aid.</p> <p>Determination: <u>LLNS should obtain more information to classify as First Aid or Medical Treatment.</u></p>
<p>Local Case No. 170154</p> <p>Injury Date 5/24/2017</p>	<p>Not Work Related</p>	<p>Worker installs antenna on towers for 11 years in site 300, 2-3 times week, and lives near the site in the valley. Both locations are identified as a valley fever area. The employee said he is aware of valley fever. The worker was hospitalized 5/28-6/5/2017 for an illness, later identified as valley fever, and was placed off work through 6/25/2017. Placed on off work again 6/26-7/9/2017, 7/22-8/4/2017, and 8/5-8/15/2017. Medical record for 8/15/2017 identified no return date. Employee returned to work on 9/6/2017. Work restriction was issued for no outdoor work 9/11-9/29/2017. Returned to normal duties with work restriction to avoid exposure to direct sunlight for extended period of time, 10/2-12/2/2017. The employee worked only indoors, inspecting gear. The employee became a Ground Supervisor supervising tower climbing activities from the ground. Workers' compensation accepted this as a work-related illness. LLNS did not document information on how this case was determined to be caused by exposures outside the workplace.</p> <p>Determination: <u>Inconclusive due to lack of adequate documentation to determine work-relatedness.</u></p>

OII Cases Not Entered in OSHA 300 Log		
Case File and Injury Date	LLNS Classification	Case Summary and Determination
<p>Local Case No. 160279</p> <p>Injury Date 10/25/2016</p>	<p>Injury, Medical Treatment</p>	<p>Employee has daily computer activity using computer keyboard and mouse. The individual was diagnosed with ganglion and carpal tunnel syndrome in right wrist. Employee was issued a wrist brace with thumb spica. Work restrictions issued to limit strong gripping right hand and take a 5-minute break every 30 minutes of repetitive motion for 10/25-11/8/2016 and 11/8-12/9/2016.</p> <p>Required Classification: <u>Classification appropriate. LLNS agreed to add the case number 160279 to the OSHA 300 Log.</u></p>
<p>Local Case No. 170219</p> <p>Injury Date 8/7/2017</p>	<p>Injury, Restricted Workdays</p>	<p>Task was to change out pole from one area to another. The conduit and coax cable that was mounted on an old pole needed to be removed. During tracing of the cables in a manhole, the manhole cover fell on the employee's head. A CT scan confirmed concussion. CAIRS Log indicates it was recorded (concussion, restricted 13 workdays) but it was not on the OSHA 300 Log. Employee is a High Voltage Lineman. The restriction was "Desk Duty Only."</p> <p>Required Classification: <u>Classification appropriate. LLNS agreed to add the case number 170219 to the OSHA 300 Log.</u></p>