



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 12, 2019

Mr. Dan Bolling
Quality Assurance Manager
L&S Machine Company
709 Donohoe Road
Latrobe, PA 15650

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF
L&S MACHINE COMPANY, NO. 99901476/2019-201, NOTICE OF
NONCONFORMANCE

Dear Mr. Bolling:

From May 6 through May 10, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at L&S Machine Company's (hereafter referred to as L&S) facilities in Latrobe, PA. The purpose of this limited-scope inspection was to assess L&S's compliance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This technically-focused inspection specifically evaluated L&S's implementation of the quality activities associated with fabrication, assembly, and testing of safety-related components for nuclear fuel assemblies being supplied to the U.S. operating nuclear power plants. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of L&S's overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC inspection team found that the implementation of your QA program did not meet certain regulatory requirements imposed on you by your customers or NRC licensees. Specifically, the NRC inspection team determined that L&S was not fully implementing its QA program in the area of corrective action. The specific finding and references to the pertinent requirements are identified in the enclosures to this letter. In response to the enclosed Notice of Nonconformance (NON), L&S should document the results of the extent of condition review for the finding and determine if there are any effects on other safety-related components. Please provide a written statement or explanation within 30 days of this letter in accordance with the instructions specified in the enclosed NON. We will consider extending the response time if you show good cause for us to do so.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, should not include any personal privacy, proprietary, or Safeguards Information (SGI)

so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If SGI is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

Kerri A. Kavanagh, Chief **/RA/**
Quality Assurance Vendor Inspection Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

Docket No.: 99901476

EPID No.: I-2019-201-0048

Enclosure:

1. Notice of Nonconformance
2. Inspection Report No. 99901476/2019-201
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF
L&S MACHINE COMPANY, NO. 99901476/2019-201, NOTICE OF
NONCONFORMANCE Dated: June 12, 2019

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DATE	5/31/2019	6/5/2019	6/12/2019

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NOTICE OF NONCONFORMANCE

L&S Machine Company
709 Donohoe Road
Latrobe, PA 15650

Docket No. 99901476
Report No. 2019-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the L&S Machine Company (hereafter referred to as L&S) facilities located at Latrobe, PA from May 6, 2019, through May 10, 2019, L&S did not conduct certain activities in accordance with NRC requirements that were contractually imposed upon L&S by its customers or NRC licensees:

- A. Criterion XVI, "Corrective Action," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," states in part that, "measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."

Paragraph 3.16.1.2 of Section 3.16, "Corrective Action", of L&S's "Quality Assurance Manual," Revision 11, dated December 20, 2018, states in part that, "Conditions adverse to the quality of items and services are identified, documented, analyzed, and corrected in accordance with established procedures."

Contrary to the above, as of May 10, 2019, L&S failed to promptly correct conditions adverse to quality. Specifically, L&S failed to implement corrective actions to address findings from the 2017 NRC Inspection Report 99901476/2017-201 for corrective action report (CAR)-17-17 and CAR-17-4. As a result, the NRC inspection team identified the following examples of inadequate corrective actions:

1. During the 2017 NRC inspection, CAR 17-4 was opened because L&S did not have objective evidence that safety-related material was used on procedure qualification record, PQR-027. L&S closed out CAR 17-4 on March 25, 2017, without revising GOP 9.0, "Special Processes," to require the use of safety-related materials during the Weld Procedure Qualification.
2. During the 2017 NRC inspection, CAR 17-17 was opened because L&S failed to ensure audits were performed by personnel not having direct responsibilities in the area being audited. During the performance of Audit LSM-IA18-17, "2018 Internal Audit- Marion Center Internal Audit," December 18, 2018, an individual audited an element (10 CFR Part 21) for which the individual had direct responsibility.

This issue has been identified as Nonconformance 99901476/2019-201-01

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Quality Assurance Vendor Inspection Branch, Division of Inspection and Regional Support, Office of Nuclear Reactor Regulation, within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include for each noncompliance: (1) the reason for the

noncompliance or, if contested, the basis for disputing the noncompliance; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further noncompliance; and (4) the date when the corrective action will be completed. Where good cause is shown, the NRC will consider extending the response time.

Because your response will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/readingrm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or Safeguards Information so that the NRC can make it available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Dated this the 12th day of June 2019.

**U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF INSPECTION AND REGIONAL SUPPORT
QUALITY ASSURANCE VENDOR INSPECTION REPORT**

Docket No.: 99901476

Report No.: 99901476/2019-201

Vendor: L&S Machine Company
709 Donohoe Road
Latrobe, PA 15650

Vendor Contact: Mr. Dan Bolling
Quality Assurance Manager
L&S Machine Company
E-mail: dan@lsmachineco.com
Phone: 724-837-5500

Nuclear Industry Activity: L&S's scope of supply includes fabrication, assembly, and testing of safety-related components for nuclear fuel assemblies being supplied to U.S. operating nuclear power plants.

Inspection Dates: May 6-10, 2019

Inspection Team Leader Paul Prescott NRR/DIRS/IQVB

Inspectors: Jonathan Ortega-Luciano NRR/DIRS/IQVB
Aaron Armstrong NRR/DIRS/IQVB
Nicholas Savvoir NRR/DIRS/IQVB

Approved by: Kerri A. Kavanagh, Chief
Quality Assurance Vendor Inspection Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

L&S MACHINE COMPANY
99901476/2019-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the L&S Machine Company (hereafter referred to as L&S) facility in Latrobe, PA, to verify that it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities" and 10 CFR Part 21, "Reporting of Defects and Noncompliance." This was the second NRC vendor inspection at L&S (see NRC Inspection Report 99901476/2017-201 Agencywide Documents Access and Management System (ADAMS) No. ML17115A486).

This technically-focused inspection specifically evaluated L&S's implementation of the quality activities associated with the fabrication, assembly, and testing of safety-related components for nuclear fuel assemblies being supplied to U.S. operating nuclear power plants.

These regulations served as the bases for the NRC inspection:

- Appendix B to 10 CFR Part 50
- 10 CFR Part 21

During the course of this inspection, the NRC inspection team implemented inspection procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017, IP 43003, "Reactive Inspections of Nuclear Vendors," dated December 14, 2015, IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017, IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting of Defects and Noncompliance," dated February 13, 2012, and IP 71152, "Problem Identification and Resolution," Appendix 1, "Guidance for Gathering SCWE and PI&R Insights," dated February 26, 2015.

With the exception of the nonconformance described below, the NRC inspection team concluded that L&S's QA policies and procedures comply with the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, and that L&S's personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

10 CFR Part 21

The NRC inspection team reviewed L&S's policies and implementing procedures that govern the implementation of its 10 CFR Part 21 program and determined that there is no specific guidance in L&S's procedures to ensure that returned components are entered into an L&S existing process to ensure a Part 21 evaluation or extent of condition review. While the NRC inspection team did not identify any returned items that would have clearly required an evaluation under 10 CFR Part 21 or extent of condition review, the lack of guidance in this area was considered a minor issue by the NRC inspection team. L&S initiated corrective action report (CAR) 19-17, to address this issue. No findings of significance were identified.

Nonconforming Materials, Parts, or Components and Corrective Action

The NRC inspection team issued Nonconformance 99901476/2019-201-01 in association with L&S's failure to implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Nonconformance 99901476/2019-201-01 cites L&S for failing to ensure that conditions adverse to quality are corrected. Specifically, L&S closed out CAR 17-4 and CAR 17-17 without revising the procedure that controls welding qualification and failing to ensure audits were performed by personnel not having direct responsibilities in areas being audited.

Manufacturing Control and Control of Special Processes

The NRC inspection team reviewed L&S's policies and implementing procedures that govern the fabrication and work control processes to verify compliance with the regulatory requirements of Criterion V, "Instructions, Procedures, and Drawings," Criterion VIII, "Identification and Control of Materials, Parts and Components," Criterion IX, "Control of Special Processes," and Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50, and as well Section IX, "Welding and Brazing Qualification," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code. During the evaluation of the implementation of these programs the NRC inspection team identified two issues that had been categorized as minor. The first issue relates to the straightening operations used by L&S as part of the fabrication process and the second one with loss of traceability of welding material. These issues did not affect the safety function of the parts fabricated by L&S. L&S initiated CARs 19-9 and 19-12 respectively to address these issues. No findings of significance were identified.

Oversight of Contracted Activities and Internal Audits

The NRC inspection team reviewed L&S's policies and implementing procedures that govern oversight of contracted activities and the internal audit program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of L&S procurement documents and internal audits. The inspection team identified a minor issue related to internal audits. Specifically, the area of commercial-grade dedication was not included in the latest L&S internal audit. The NRC inspection team determined this issue to be minor after the NRC reviewed L&S's commercial-grade dedication scope of work, procedures, and accreditations for calibration and testing service packages. L&S initiated CAR 19-10 to address this issue. No findings of significance were identified.

Identification and Control of Materials, Parts, and Components

The NRC inspection team reviewed L&S's policies and implementing procedures that govern the identification, and control of materials, parts and components to verify compliance with the requirements of Criterion VIII, "Identification and Control of Materials, Parts, and Components" of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed the identification and the control of items to ensure that only specified and accepted items are used, markings are applied using materials and methods that provide a clear and legible identification and do not adversely affect the function or service life of the item. No findings of significance were identified.

Safety Conscious Work Environment (SCWE)

The NRC inspection team concluded that L&S's SCWE program and implementation were consistent with the NRC's guidance in IP 71152, "Problem Identification and Resolution," Appendix 1, "Guidance for Gathering SCWE and PI&R Insights." Based on interviews conducted of selected individuals within L&S's organization, the NRC inspection team determined that individuals were comfortable, and willing to raise safety concerns to their supervisors and senior management. The L&S personnel perceived management to be responsive to any identified concerns and that issues are adequately resolved.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The Nuclear Regulatory Commission (NRC) inspection team reviewed the policies and implementing procedures that govern the implementation of its 10 CFR Part 21, "Reporting of Defects and Noncompliance," program to determine compliance with regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of L&S Machine Company's (hereafter L&S) purchase orders (POs) for compliance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," and 10 CFR 21.31, "Procurement Documents." The NRC inspection team evaluated whether L&S's corrective action and nonconformance programs were sufficiently integrated such that identified issues would be appropriately considered for 10 CFR Part 21 evaluation and reportability.

The NRC inspection team reviewed L&S's procedure to perform a 10 CFR Part 21 evaluation and determined that it addressed the requirements for evaluating deviations and failures to comply. The NRC inspection team reviewed only the procedures because at the time of the inspection L&S had not performed any evaluations under 10 CFR Part 21.

The NRC inspection team discussed the 10 CFR Part 21 program with L&S's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team identified one minor issue concerning the integration between L&S's process control procedures and identifying potential deviations. L&S's General Operating Procedure (GOP) 15.5, "Repair/Rework Procedure for Customer Returned Products," does not ensure that returned components are evaluated for 10 CFR Part 21 reportability or an extent of condition review. L&S's GOP 15.5 also lacked the connection to L&S's GOP 15.2, "Reporting of Defects & Noncompliance in Accordance with Regulatory and Customer Requirements" and GOP 16.0, "Corrective Action." Both procedures require 10 CFR Part 21 reportability evaluations and extent of condition reviews. The NRC inspection team discussed GOP 15.5 with L&S's staff and, while the NRC inspection team did not identify any returned items that would have clearly required an evaluation under 10 CFR Part 21 or extent of condition review, the lack of guidance in this area was considered a minor issue by the NRC inspection team. L&S issued Corrective Action Report (CAR) 19-17, dated May 9, 2019, to address this issue. No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that with the exception of the minor issue identified herein, L&S is implementing its 10 CFR Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed, the NRC inspection team also determined that L&S is

implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Nonconforming Materials, Parts, or Components and Corrective Action

a. Inspection Scope

The NRC inspection team reviewed L&S's policies and implementing procedures that govern the control of nonconformances and corrective action to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50, respectively. The NRC inspection team reviewed L&S's nonconformance report (NCR) log and reviewed a sample of NCRs to ensure that L&S implemented an adequate program to assess and control nonconforming items, including appropriate identification, documentation, segregation, evaluation and disposition. Additionally, the NRC inspection team interviewed L&S staff to verify there were designated areas to segregate and control nonconforming materials.

The NRC inspection team attended L&S's daily nonconformance disposition meeting. The meeting evaluated six nonconformances. Three were NCRs identified in-process and scrapped while the other three were found during inspection and dispositioned as rework. At L&S, CARs are designated by minor and major significance. CARs of minor significance are designated as conditions adverse to quality (CAQs) and those of major significance are designated as significant conditions adverse to quality (SCAQs).

The NRC inspection team discussed the nonconformances and corrective action programs with L&S's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

b.1 Corrective Action Associated with Nonconformance No. 99901476/2017-201-01

In the May 2017 inspection of L&S, the NRC issued Nonconformance (NON) 99901476/2017-201-01 for L&S's failure to establish measures for source evaluation and provide objective evidence of quality furnished by a contractor or subcontractor. Additionally, L&S failed to ensure that conditions adverse to quality were promptly identified and corrected. Specifically, L&S closed out CAR NC621 on October 16, 2015, without completing the corrective actions to evaluate a supplier prior to designating them on the Approved Supplier List (ASL). L&S responded to the NRC inspection report by letters dated June 22, 2017, (ADAMS Accession No. ML17177A082) and July 21, 2017, (ADAMS Accession No. ML17200C936). L&S stated it conducted a supplemental audit, LSM-15-EA-1, and assumed the supplemental audit satisfied the requirements to close NC-621. L&S also stated the L&S Quality Management Team failed to share this information with the NRC inspection team during the previous 2017 inspection.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions and reviewed supplemental audit LSM-15-EA-1. Based on the review, the NRC inspection team closed

Nonconformance 99901476/2017-201-01.

b.2 Corrective Action Associated with Nonconformance No. 99901476/2017-201-02

During the 2017 inspection, the NRC inspection team identified that the audits conducted at the Latrobe facility in 2013, 2015, and 2016 and the Marion Center facility in 2014 and 2016, had elements that were performed by individuals directly responsible for that area. In L&S's response dated June 22, 2017, L&S identified that the planning and execution of audits were the cause of the NON. L&S took the following steps which included; 1) initiating CAR LSM-CAR-17-17, 2) conducting an extent of condition review of internal audits, and 3) employing a third-party lead auditor.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective action and L&S's internal audits conducted after the NRC March 20, 2017 inspection. The NRC inspection team identified that during audit LSM-IA18-17: 2018 Internal Audit- Marion Center Internal Audit December 18, 2018, an individual audited an element (10 CFR Part 21) for which the individual had direct responsibility. Based on the corrective actions being inadequate, the NRC inspection team documented this as the first example of ineffective corrective actions. The NRC inspection team issued NON 99901476/2019-201-01 and closed NON 99901476/2017-201-02.

b.3 Corrective Action Associated with Inspection Report No. 99901476/2017-201

During 2017 NRC inspection, CAR 17-4 was opened because L&S did not have objective evidence that safety-related material was used during implementation of procedure qualification record, PQR-027. L&S closed out CAR 17-4 on March 25, 2017, without revising GOP 9.0, "Special Processes," to state the use of safety-related materials. The NRC inspection team identified this as the second example of ineffective corrective actions. The NRC inspection team issued NON 99901476/2019-201-01.

c. Conclusion

The NRC inspection team closed NON 99901476/2017-201-02 and issued a new NON 99901476/2019-201-01 in association with L&S' failure to adequately implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. NON 99901476/2019-201-01 cites L&S for two examples of failing to effectively correct conditions adverse to quality identified from the 2017 NRC inspection. CAR 17-4 was closed with L&S failing to update their procedure that controls the welding qualification program, GOP 9.0, "Special Processes." CAR 17-17 was closed with L&S's actions failing to prevent an auditor from reviewing an area in which the individual had direct responsibility.

3. Manufacturing Control and Control of Special Processes

a. Inspection Scope

The NRC inspection team reviewed L&S's policies and implementing procedures that govern the fabrication and work control processes to verify compliance with the regulatory requirements of Criterion V, "Instructions, Procedures, and Drawings," Criterion VIII, "Identification and Control of Materials, Parts and Components," Criterion IX, "Control of Special Processes," and Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50, and Section IX, "Welding and Brazing Qualification," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code. The NRC inspection team interviewed personnel and verified that Westinghouse's, L&S's customer, technical and quality requirements were properly translated into the L&S POs, project quality plans, project instructions, welding procedures, and travelers.

The NRC inspection team walked down the shop fabrication areas to verify proper identification and control of materials, parts and components specifically related to safety-related activities. The NRC inspection team reviewed work packages to verify adherence to L&S work control policies and procedures. The NRC inspection team verified that work documents properly identified welding, nondestructive examination (NDE), quality control inspection requirements, and hold points. Further, the NRC inspection team observed the in-process straightening operation of a nozzle via compressive force by a L&S operator using a hydraulic press to assess compliance with Westinghouse's design drawing. The NRC inspection team interviewed personnel to assess their understanding of L&S's policies and procedures related to work control, identification of materials, parts and components, and problem resolution.

Additionally, the NRC inspection team observed safety-related gas metal arc welding (GMAW) and shielded metal arc welding (SMAW) performed on a bottom nozzle by an L&S welder to assess compliance with the work package. The NRC inspection team reviewed the welding procedure specification (WPS) and associated procedure qualification record (PQR) to verify the procedure used was qualified in accordance with Section IX of the ASME B&PV Code requirements. The NRC inspection team verified the welder was qualified for the welding technique, material used, and the weld position and the welder-maintained continuity of qualifications were in accordance with Section IX of the ASME B&PV Code requirements. The NRC inspection team also performed a walk-down of the weld storage and issue areas to ensure that the weld material was adequately controlled until its consumption and reviewed records associated with the storage, issuance, and return of weld filler wires. The weld filler metal was either in hermetically sealed containers or was kept in a baking oven to control the moisture content. The NRC inspection team also verified that the baking oven used for SMAW filler metal used calibrated thermometers in accordance with the applicable L&S procedures. In addition, the NRC inspection team verified that L&S storage and control of weld filler material was in accordance with L&S's procedures.

The NRC inspection team also discussed the manufacturing control program and control of special processes with L&S's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team identified a minor issue concerning the control of welding material. Specifically, the NRC inspection team identified that four stainless steel tungsten inert gas (TIG) wires were left unattended on top of a carbon steel welding table. The NRC inspection team reviewed the log used by L&S to issue the welding material and noted that the material was logged out 3 days prior to the NRC inspection team finding the welding material. The NRC inspection team determined that L&S failed to follow GOP 9.0, "Special Processes," which states that the welder is responsible for maintaining accountability of welding materials and must return any unused welding material to the weld material depository. The NRC inspection team interviewed L&S's Welding Supervisor and it was explained that the welder performed the weld on a bottom nozzle and after the safety-related work order was completed the welder returned the completed pieces to the container but failed to return the unused welding material to the weld material depository. The NRC inspection team evaluated the significance of the loss of traceability of the welding material and determined to be minor since the safety-related weld was not affected. L&S took prompt action and segregated the welding material and issued CAR 19-9, dated May 7, 2019.

The NRC inspection team identified a second minor issue related to straightening operations performed by L&S on top and bottom nozzles being manufactured for Westinghouse. The straightening operation consists of placing the nozzle underneath a hydraulic press which applies a compressive load to straighten the nozzle after residual stresses from machining operations or welding, which are introduced during previous fabrication steps. The NRC inspection team noted that the operational steps of the hydraulic press used by the L&S operator as part of the fabrication process was not properly captured in the work traveler. The NRC inspection team evaluated L&S's procedures and identified that only two of L&S's procedures contain a description for straightening. Both procedures describe straightening only as an acceptable method that can be used to perform rework of nonconforming parts.

The NRC inspection team expressed their concern to L&S about these straightening operations being utilized as part of the fabrication process without any controls in place to assure that the structural integrity of the part and welds is not affected. The NRC inspection team evaluated L&S's manufacturing process to understand if this straightening operation was a process that was evaluated and approved by the design authority, Westinghouse. To perform this evaluation the NRC inspection team took a sample of a Manufacturing and Quality Plan (MAQP). L&S GOP 5.1, "Preparation of Manufacturing and Quality Plans," described the process used by L&S to prepare an MAQP. An MAQP is a document prepared by L&S that contains customer and L&S specifications/instructions and provides detailed steps to conduct specific work activities. Once L&S completes the MAQP, it is sent to the customer for approval. During the review of MAQP_2300, "Manufacturing and Quality Plan 14 x 14 Cast Bottom Nozzle Skirted Debris Filter," Revision 6, dated August 15, 2016, the NRC inspection team noted that the straightening operation was not part of the fabrication sequence submitted to Westinghouse for approval. MAQP_2300 identified the straightening operation as an acceptable method for re-work, which is consistent with L&S's policies and procedures describing the straightening operation.

The NRC inspection team discussed with L&S what controls they had in place to perform the straightening operation. L&S described their process and explained that they do not

have a procedure that established the control for or define what will be the lower or upper limit of pressure that can be applied when a straightening operation is being performed on a top or bottom nozzle. L&S is not the design authority of these nozzles and as such the NRC inspection team was not expecting L&S to perform an engineering evaluation of the straightening operation to verify if the pressure being applied was potentially detrimental to the structural integrity of the part.

The NRC inspection team held a teleconference with representatives from Westinghouse, to discuss the concern with the straightening operations being performed by L&S on top and bottom nozzles being manufactured for Westinghouse fuel bundle components. Engineers from Westinghouse explained to the NRC inspection team that straightening of nozzles via compressive force is an acceptable practice because the material selected as part of the design of these nozzles is very ductile and will readily accommodate the small strains necessary to return the nozzle to a straight and flat condition. According to Westinghouse these materials have excellent fracture toughness and are expected to respond to force by yielding rather than crack nucleation. Westinghouse's conclusion also extends to the welds used to make up the complete nozzle. As such, the use of straightening operations on the final nozzle weldments is also not a concern. Following the conference call, Westinghouse submitted Letter MFRD-19-55, dated May 9, 2019, that documents their engineering evaluation and conclusion with regards to the straightening operation utilized by L&S as part of the fabrication process. The NRC inspection team concluded that due to the design of these nozzles and the extensive quality control inspections performed during the fabrication process, any part that is submitted to excessive compression forces as part of the straightening process would cause a deformation on the part and be identified as a nonconforming part during subsequent inspections. Based on the Westinghouse's engineering evaluation and the steps that are going to be taken by Westinghouse and L&S to address the lack of procedural guidance concerns expressed by the NRC inspection team, it was concluded that this can be categorized as a minor issue. L&S issued CAR 19-12, dated May 7, 2019, to address the procedural guidance concerns.

c. Conclusion

The NRC inspection team concluded that with the exception of the minor issues identified herein, L&S is implementing its manufacturing controls and control of special processes in accordance and with the regulatory requirements of Criterion V, Criterion VIII, Criterion IX, and Criterion XI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and work observed, the NRC inspection team also determined that L&S is implementing its policies and procedures associated with manufacturing control and control of special processes. No findings of significance were identified.

4. Oversight of Contracted Activities and Internal Audits

a. Inspection Scope

The NRC inspection team reviewed L&S's policies and implementing procedures that govern its oversight of contracted activities and internal audit program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," Criterion VII, "Control of Purchased Material, Equipment, and Services," and

Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed procedures and controls for commercial-grade dedication (CGD) of calibration or testing services and ensured the appropriate requirements were imposed in the procurement documents. The NRC inspection team reviewed a sample of POs to verify inclusion, as appropriate, of the scope of work and the extension of contractual requirements to subcontractors. The NRC inspection team reviewed L&S's ASL and selected a sample of suppliers to review the methodology of conducting and documenting audits. The NRC inspection team reviewed L&S's process of selecting and approving suppliers and service providers for safety-related components. In addition, the NRC inspection team confirmed that all safety-related POs reviewed included clauses invoking the provisions of 10 CFR Part 21.

The NRC inspection team reviewed a sample of internal audits and the qualifications of L&S's auditors to verify the implementation of the internal audit program. The NRC inspection team verified that L&S had prepared and approved plans that identify the audit scope and applicable checklist criteria before the initiation of the audit activity.

The NRC inspection team also discussed the oversight of contracted activities and internal audit programs with L&S's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observation and Findings

The NRC inspection team reviewed a sample of L&S's internal audits. While retrieving the internal audits from the QA manager, it was identified that L&S did not include a review of the CGD program as apart their LSM-IA-18-16: 2018 internal audit. The NRC inspection team determined this issue to be minor after the NRC reviewed L&S's scope of CGD activities. L&S initiated CAR 19-10, dated May 7, 2019 to address this issue. No findings of significance were identified

c. Conclusion

The NRC inspection team concluded that with the exception of the minor issue identified herein, L&S is implementing its oversight of contracted activities and internal audit program in accordance with the regulatory requirements of Criterion IV, Criterion VII, and Criterion XVIII, respectively, of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team determined that L&S is implementing its policies and procedures associated with oversight of contracted activities and internal audit program. No findings of significance were identified.

5. Identification and Control of Materials, Parts, and Components

a. Inspection Scope

The NRC inspection team reviewed L&S's policies and implementing procedures that govern the identification and control of materials, parts, and components to verify compliance with the requirements of Criterion VIII, "Identification and Control of Materials, Parts, and Components" of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed the identification and control of items to ensure that only specified and accepted items are used, markings are applied using materials and methods that provide a clear and legible identification and do not adversely affect the function or service life of the item. The NRC inspection team also verified that markings are maintained on the item or in documents traceable to the item. The NRC inspection team engaged L&S personnel and reviewed the electronic Q-Pulse functions which control manufacturing route sheets (MRS) and work orders, to ensure traceability and configuration control is maintained.

The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observation and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that L&S is identifying and controlling materials, parts, and components in accordance with the regulatory requirements of the Criterion VIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that L&S is implementing its policies and procedures associated with the identification and control of materials, parts, and components. No findings of significance were identified.

6. Safety Conscious Work Environment (SCWE)

a. Inspection Scope

The NRC inspection team reviewed the program that implements L&S's nuclear safety culture. The NRC inspection team selected and interviewed a sample of the technical staff, supervisors, and managers to gain insight on the willingness of L&S staff to raise nuclear safety issues. The NRC inspection team determined that the L&S staff are willing to raise nuclear safety concerns and have not observed any hesitation of their coworkers in raising safety concerns. L&S staff also indicated that they felt comfortable raising concerns to their supervisor and management, and elevating issues up through supervision or management if not appropriately addressed. The staff can enter issues directly into the corrective action or nonconformance programs; however, most prefer to submit issues through their supervisor to enter an issue into these programs. The L&S staff interviewed were unsure if there was an anonymous process for submitting a safety concern. The L&S staff were also unsure what processes were in place, if any, to keep the reporting of nuclear safety concerns confidential, but interviewed staff

stated that they could use a specific manager to function as an ombudsman for their issues if needed.

The NRC inspection team and L&S management discussed L&S's safety culture and SCWE. L&S's staff work to a high level of skill-of-the-craft and the interviewed staff have comfortable and approachable relationships with coworkers, supervisors and management which promotes an adequate SCWE. The NRC inspection team strongly recommended that L&S strengthen the safety culture by clarifying and implementing a formal SCWE program and communicate L&S's expectations for staff to participate in the program.

b. Observations and Findings

The NRC inspection team and L&S management discussed L&S's SCWE assessment and potential improvement recommendations.

c. Conclusion

The NRC inspection team concluded that the safety culture is L&S is adequate.

7. Entrance and Exit Meetings

On May 6, 2019, the NRC inspection team discussed the scope of the inspection with Mr. Dan Bolling, QA Manager, and other members of L&S's management and technical staff. On May 10, 2019, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Bolling, and other members of L&S's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. Entrance/Exit Meeting Attendees and Persons Interviewed

Name	Title	Affiliation	Entrance	Exit	Interviewed
Paul Prescott	Inspection Team Leader	NRC	X	X	
Jonathan Ortega	Inspector	NRC	X	X	
Aaron Armstrong	Inspector	NRC	X	X	
Nicholas Savwoir	Inspector	NRC	X	X	
Rob DiNardi	President/Owner	L&S	X	X	X
Tom Jennings	CMM Programmer	L&S			X
Dan Bolling	QA Manager	L&S	X	X	X
Bob Jones	Shop Foreman	L&S			X
Jon Klejka	Tool Room	L&S			X
Jeffery Patterson	Inspector	L&S			X
Lauren Morlacci	Industrial Engineer	L&S		X	
Jason Baker	Quality Engineer Supplier Quality, Quality Environment, Health & Safety	Westinghouse			X
David Cook	Manager	L&S			X
Josh Campbell	Shift Supervisor	L&S			X
Jeffrey Heaton	Machinist	L&S			X
Adam Rodkey	Machinist	L&S			X
Jason Smathers	Manufacturing Manager	L&S			X
Josh Smith	Machinist	L&S			X
Alexandria Thornton	Parts Washer	L&S			X
William Woods	Manager	L&S			X
Joseph Frescura	Bead Blaster	L&S			X
James Sigafos	Machinist	L&S			X
Michael Boyce	Machine Operator	L&S			X
John Malnofsky	Machinist	L&S			X
Brian Mcdowell	Machinist/Grinder	L&S			X
Zane Ferrel	Shift Supervisor	L&S			X
Dave Smathers	General Manager	L&S	X	X	X

2. INSPECTION PROCEDURES USED

- Inspection Procedure (IP) 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012
- IP 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017
- IP 43003, "Reactive Inspections of Nuclear Vendors," dated December 14, 2015
- IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017
- IP 71152, "Problem Identification and Resolution," Appendix 1, "Guidance for Gathering SCWE and PI&R Insights," dated February 26, 2015.

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
99901476/2017-201-01	CLOSED	NON	Criterion VII & Criterion XVI
99901476/2017-201-02	CLOSED	NON	Criterion XVIII
99901476/2019-201-01	OPEN	NON	Criterion XVI

4. DOCUMENTS REVIEWED

Policies and Procedures

- General Operating Procedure (GOP) 2.2, "Qualification of Audit Personnel," Revision 1, March 8, 2019
- GOP 3.0, "Product Planning," Revision 1, dated February 28, 2019
- GOP 3.1, "Work Order Management," Revision 2, dated March 8, 2019
- GOP 5.1, "Preparation of Manufacturing and Quality Plans," Revision 0, dated April 10, 2017
- GOP 5.3, "Final Inspection Documentation," Revision 0, December 24, 2018
- GOP 6.0, "Document Control," Revision 0, October 8, 2015
- GOP 7.0, "Control of Purchased Items and Services," Revision 2, December 7, 2017
- GOP 7.3, "Dedication of Commercial Grade Items & Services," Revision 0, December 20, 2017
- GOP 9.0, "Special Processes," Revision 1, dated July 20, 2017
- GOP 15.0, "Control of Nonconforming Items," Revision 2, June 22, 2016
- GOP 15.1, "Rework Instruction," Revision 1, dated February 6, 2018
- GOP 15.2, "Reporting of Non-conformances and Defects," Revision 1, February 18, 2019
- GOP 15.5, "Repair/Rework Procedure for Customer Returned Products," Revision 0, dated January 11, 2019
- GOP 4.0, "Procurement Document Control," Revision 3, February 25, 2019

- GOP 16.0, "Corrective Action and Preventive Action," Revision 1, April 10, 2019
- LSM-PQR_027, "Procedure Qualification Record, Revision 3, dated August 31, 2017
- QI-0024, "Cleaning Procedure," Revision 6, dated June 1, 2015
- QI-0051, "Generic Rework Procedure for Top & Bottom Nozzles, Springs Clamps and Siders," Revision 7, dated March 26, 2019
- QI-0058, "CMM Calibration Procedure," Revision 2, July 27, 2017
- CDI-1000, "Record of Dedication," Revision 1, October 3, 2018
- Welding Procedure Specifications (WPS): LSM-WPS-027, Revision 3, August 31, 2017 – supports PQR LSM PQR 027, welding process: GTAW
- Welding Procedure Specifications (WPS): LSM-WPS-028 Revision 3, August 31, 2017 – supports PQR LSM PQR 027, welding process: SMAW

Nonconformances (NCRs)

- LSM-NC-17-751, dated November 8, 2017
- LSM-NC-17-752, dated November 8, 2017
- LSM-NC-17-960, dated February 28, 2018
- LSM-NC-17-1195, dated February 28, 2018
- LSM-NC-17-1196, dated May 14, 2018
- LSM-NC-17-1197, dated May 14, 2018
- LSM-NC-17-1198, dated May 14, 2018
- LSM-NC-17-943, dated February 28, 2018
- LSM-NC-17-944, dated February 28, 2018
- LSM-NC-17-945, dated February 28, 2018
- LSM-NC-17-1174, dated April 23, 2018
- LSM-NC-18-964, dated December 4, 2018
- LSM-NC-19-240, dated March 15, 2019
- LSM-NC-19-258, dated March 22, 2019
- LSM-NC-19-259, dated March 22, 2019
- LSM-NC-19-290, dated April 2, 2019
- LSM 19-295, dated April 3, 2019
- LSM 19-324, dated April 16, 2019
- LSM 19-325, dated April 16, 2019
- LSM 19-415, dated May 8, 2019
- LSM 19-416, dated May 7, 2019
- LSM 19-417, dated May 8, 2019
- LSM 19-419, dated May 7, 2019
- LSM 19-421, dated May 7, 2019
- LSM 19-422, dated May 8, 2019

Corrective Actions

- LSM-CAR-17-4, dated March 25, 2017
- LSM-CAR-17-7, dated June 2, 2017
- LSM-CAR-17-10, dated June 28, 2017
- LSM-CAR-17-16, dated August 7, 2017
- LSM-CAR-17-21, dated October 16, 2017
- LSM-CAR-17-23, dated November 8, 2017

- LSM-CAR-17-26, dated September 18, 2017
- LSM-CAR-17-27, dated October 30, 2017
- LSM-CAR-17-29, dated January 12, 2019
- LSM-CAR-17-31, dated March 9, 2018
- LSM-CAR-17-37, dated February 20, 2018
- LSM-CAR-18-2, dated April 18, 2018
- LSM-CAR-18-3, dated April 18, 2018
- LSM-CAR-18-7, dated January 17, 2019
- LSM-CAR-18-11, dated September 16, 2018
- LSM-CAR-18-15, dated April 3, 2019

Corrective Actions generated during this inspection

- CAR No. 19-9, dated May 7, 2019
- CAR No. 19-10, dated May 7, 2019
- CAR No. 19-11, dated May 7, 2019
- CAR No. 19-12, dated May 7, 2019
- CAR No. 19-13, dated May 9, 2019
- CAR No. 19-14, dated May 9, 2019

Manufacturing Control Documents

- LSM-WPS-027, "Welding Procedure Specification," Revision 3, dated August 31, 2017
- LSM-WPS-028, "Welding Procedure Specification," Revision 3, dated August 31, 2017
- Manufacturing Route Sheet for LS Work Order No. 15100-1, "Assembly Spider 17 x 17 RCCA," dated January 29, 2019
- Manufacturing Route Sheet for LS Work Order No. 15183-1, "Assembly Weld 14 x 14 RTN," dated January 24, 2019
- Manufacturing Route Sheet for LS Work Order No. 15184-1, "Assembly – Weld 17 x 17 Plugless," dated January 22, 2019
- Manufacturing Routing Sheet LS Work Order No. 15331-1, "Assembly Weld for DFBN 17STD Bottom Nozzle," dated April 16, 2019
- MAQP_2300, "Manufacturing and Quality Plan 14 x 14 Cast Bottom Nozzle Skirted Debris Filter," Revision 6, dated August 15, 2016
- PDINFO00, "Supplemental Information," Revision 40
- PDINFOAP00, "AP1000 Supplemental Product Information," Revision 4
- PDINFOF0, "Supplemental Product Information," Revision 5
- PDSPDRNG01, "Machined Two-Piece Spider," Revision 4

Procurement Documents (PO)

- PO G18002, December 17, 2018
- PO S170021, December 12, 2017
- PO G190025, March 12, 2019

Commercial-Grade Surveys/Audit Reports

- Audit: L&S 16-04 NIAC 21123, dated May 5, 2016
- Audit: L&S 18-02 NIAC 23097, dated June 19, 2018
- Audit: Closure L&S 18-02 NIAC 23097, dated January 23, 2019
- NIAC Audit Report No. 23049, dated February 12, 2018
- NIAC Audit Report No. 2824, dated April 4, 2016
- NIAC Audit No. 21061, dated May 11, 2016
- NIAC Survey Report, dated January 26, 2017
- Audit: 16-07, dated September 26, 2016
- NIAC Commercial Service Survey #22014, dated April 14, 2017
- Audit: 16-07, dated September 26, 2016
- Audit: 16-05 (Commercial-Grade Survey), dated July 7, 2016
- Audit Report LSM-IA-18-16: 2018 Internal Audit- Latrobe Facility, December 18, 2018
- Audit Report LSM-IA-18-17: 2018 Internal Audit- Marion Center Internal Audit, December 18, 2018
- Audit Plan LSM-EA-19-3: Supplier Audit, dated April 17, 2019

Training

- Inspection and Test Personnel Qualification: March 5, 2019
- Inspection and Test Personnel Qualification: March 8, 2019
- Excel Spreadsheet L&S Training Records
- Record of Lead Auditor Qualification: June 24, 2014