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**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

Washington, DC 20004-2901



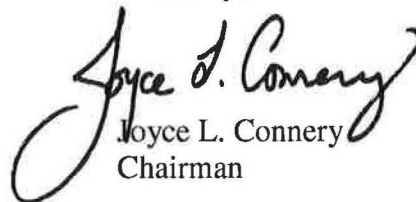
April 4, 2016

Dr. Monica Regalbuto
Assistant Secretary for Environmental Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Dr. Regalbuto:

The Defense Nuclear Facilities Safety Board identified several quality assurance (QA) deficiencies that may erode the integrity of safety-related structures, systems, and components (SSC) in storage at the Waste Treatment and Immobilization Plant (WTP). Failure to adhere to requirements for material control and storage introduces an indeterminate state of nuclear quality assurance that can reduce reliability of required safety systems. These deficiencies are long-standing, which indicates a need to improve Department of Energy (DOE) QA oversight in preservation and storage of SSCs. We are encouraged that DOE has recently resumed QA program assessments on the WTP, and the enclosed report is provided to assist these ongoing efforts. We plan to follow these efforts through our normal oversight process.

Sincerely,


Joyce L. Connery
Chairman

Enclosure

c: Mr. Joe Olencz

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

February 18, 2016

MEMORANDUM FOR: S. A. Stokes, Technical Director

COPIES: Board Members

FROM: S. Seprish, R. Eul, P. Fox

SUBJECT: Waste Treatment and Immobilization Plant Quality Assurance Review

Members of the Defense Nuclear Facilities Safety Board's (Board) staff conducted a quality assurance (QA) review of the Waste Treatment and Immobilization Plant (WTP) project. The review scope included storage conditions of safety-related structures, systems, and components (SSC), nonconformance processes, and other relevant Bechtel National, Incorporated (BNI) project documents, instructions, procedures, and engineering specifications. The staff review team identified 11 deficiencies representing conditions contrary to QA requirements. Failure to adhere to requirements for material control and storage introduces an indeterminate state of nuclear quality assurance that can reduce reliability of required safety systems. The Department of Energy Office of River Protection (DOE-ORP) and BNI have taken some necessary actions to begin addressing these deficiencies. However, in most cases, complete resolution may require additional actions. For example, this review scope did not include evaluating the quality of installed equipment that may have been impacted by deficient storage conditions or other deficiencies identified in this report. This report documents the staff review team's conclusions and corrective actions taken by DOE-ORP and BNI.

Background. During April 6–9, 2015, the staff review team conducted walkdowns of WTP project indoor and outdoor material storage areas. Indoor storage areas mainly consist of the Material Handling Facility (MHF; 240,000 ft²), Yakima Warehouse (180,000 ft²), and T-52 Jobsite (40,000 ft²) warehouses. Other indoor storage consists of small buildings, tents, and areas inside the WTP construction facilities. Outdoor storage areas include the 130 acre MHF Laydown Yard (see Figure 1 for an aerial photograph and additional information), the 4.5 acre Laydown Yard, and other outdoor laydown areas within the WTP construction site. There are a substantial number of safety-related SSCs in storage at these locations, which is largely the result of delays in Pretreatment and High-Level Waste Facility construction schedules. The construction delays could result in storage durations that exceed 20 years for some safety-related SSCs.

During storage area walkdowns, the staff review team took photographs of storage conditions and nonconformance report (NCR) hold tags hanging on safety-related SSCs.

Following the walkdowns, the staff review team requested a sampling of 24 NCRs from DOE-ORP. In addition, the staff review team reviewed BNI project documents, instructions, procedures, and engineering specifications related to storage, maintenance, and nonconformance processes. The staff review team compared the storage photographs, 24 NCRs, and BNI project documents instructions, procedures, and engineering specifications to QA requirements included in the WTP contract. These QA requirements include:

- Title 10 Code of Federal Regulations, Part 830, *Nuclear Safety Management*, Subpart A, *Quality Assurance Requirements* (10 CFR 830) [1].
- Department of Energy (DOE) Order 414.1C, *Quality Assurance* [2].
- ASME NQA-1-2000, *Quality Assurance Requirements for Nuclear Facility Applications* (NQA-1) [3].



Figure 1. An aerial photograph of the 130 acre MHF Laydown Yard located in Richland, Washington. The MHF Laydown Yard includes 10 miles of roadway, 24 storage rows (labeled in the photograph), 106,154 items, and 15,077 tons of structural steel. Approximately 47 and 50 percent of these SSCs are for the Pretreatment and High-Level Waste Facilities, respectively.

On June 29, 2015, the staff transmitted an agenda to DOE-ORP, which included supporting photographs from the April 2015 walkdowns. At the request of DOE-ORP, the onsite review was not conducted until November 17-19, 2015. On December 17, 2015, the staff review team conducted a closeout discussion with DOE and BNI personnel. During the closeout discussion, the staff review team briefed DOE and BNI personnel, including the DOE-ORP Technical and Regulatory Support Assistant Manager and the DOE-ORP Deputy Assistant Manager for the WTP, on the review results.

Deficiencies. The staff review team identified 11 QA deficiencies representing conditions contrary to QA requirements. These QA deficiencies are described below in no particular order:

Deficiency 1, SSC Storage at the MHF Laydown Yard—In April 2015, at the MHF Laydown Yard, the staff photographed a substantial number of pipe spools and other SSCs buried in the sand and surrounded by excessive vegetation. Some SSCs were missing required protective coverings on their openings, and as a result, some SSCs showed signs of animal intrusion, contained standing water, or had a buildup of sand inside. See Appendix 1, Figures A-1 to A-8, for example photographs. These storage conditions are contrary to the following requirements:

- 10 CFR 830 and DOE Order 414.1C, Criterion 5, require that work be performed consistent with approved instructions or procedures, and that items be maintained to prevent loss, damage, or deterioration. NQA-1, Requirements 5 and 13 contain similar requirements.
- BNI project procedures, *RPP/WTP Storage Plan* [4], Sections 2.4 and 3.1, and *Field Material Inventory Management* [5], Sections 4.2 and 4.5, specify a well-drained surface, preferably gravel-covered or paved for outdoor storage areas. “Items shall be stored on cribbing or equivalent to allow for air circulation and to avoid trapping water” [4]. “Weed and vegetation growth is to be controlled in a manner to ensure no more than a 4-inch maximum height on a continuous basis within 10 feet of any stored material and/or equipment” [5]. Piping and other SSCs with openings “...that require caps, plugs, or other restrictive devices such as flange covers, are to be covered appropriately while in storage” [5].

Deficient storage conditions at the MHF Laydown Yard largely result from frequent high winds, blowing sand, and tumbleweeds, combined with inadequate corrective actions. BNI project procedure, *Field Material Inventory Management*, requires monthly surveillances of the MHF Laydown Yard. BNI assigned craft personnel to correct deficiencies identified during monthly surveillances; however, these efforts were not effective in maintaining compliant storage conditions. After receiving the staff review team’s agenda, BNI temporarily removed SSCs from rows 19 and 20, removed all sand, and leveled the ground. Appendix 1, Figures A-9 and A-10 illustrate BNI’s corrective actions. BNI also submitted a request for gravel to DOE-ORP. Pending approval, BNI expects the MHF Laydown Yard will be completely resurfaced with gravel within 2 years.

Deficiency 2, Storage Tents—In April 2015, , the staff photographed non-weathertight storage tents being used for “Level C Storage” at the MHF Laydown Yard and the WTP construction site. See Appendix 1, Figures A-11, A-12, and A-13, for example photographs. Some tents also showed evidence of animal intrusion. See Appendix 1, Figure A-14. These observed conditions are contrary to the following requirements:

- 10 CFR 830 and DOE Order 414.1C, Criterion 5, require work be performed consistent with approved instructions or procedures and items be maintained to prevent loss, damage, or deterioration. NQA-1, Requirements 5 and 13 provide similar requirements.

- BNI project procedures, *RPP/WTP Storage Plan*, Section 2.3, and *Field Material Inventory Management*, Section 4.2, define Level C storage as “...a fire-resistant, tear-resistant, weather-tight, and well-ventilated building or equivalent enclosure.” In addition, BNI project procedure, *Material Control* [6], Section 5.8.1, requires material to be stored at appropriate storage levels.

Following receipt of the staff review team’s agenda, BNI performed an extent of condition for all Level C storage structures at the construction site. These structures included tents, small buildings, and trailers. BNI identified 10 structures requiring repairs and 8 structures that were less than adequate. BNI is relocating SSCs stored in deficient locations to warehouses. In addition, BNI will no longer designate storage tents located at the MHF Laydown Yard as Level C storage, unless they are repaired.

Deficiency 3, Commercial Grade Dedication (CGD)—The staff reviewed a use-as-is final disposition for an NCR [7], which included a CGD of Pretreatment Facility jumper support frames that did not directly verify critical characteristics (i.e., dimensions and mechanical properties). BNI did not perform dimensional checks on individual components but the checks were supported by engineering judgment. In addition, the method used to verify mechanical properties of the material did not directly measure the properties of concern (i.e., tensile, yield, and elongation). BNI sampled the jumper support frames for hardness and positive material identification, which were used to declare the manufacturer’s material test reports accurate. As a result, this CGD did not meet the requirements listed below:

- BNI project document, *Quality Assurance Manual* [8], Section 7.1.2.12.2.2, states, “When one or more critical characteristics for acceptance cannot be verified by the dedication methods, the requirements of this section shall not be utilized to procure and accept the CGI or CGS [commercial grade item or service].” BNI engineering instruction, *Evaluation of Commercial Grade Items and Services* [9], Section 3.3, contains a similar requirement.
- NQA-1, Requirement 7, Paragraph 700, states, “An alternate commercial grade item may be applied, provided the cognizant design organization provides verification that the alternate commercial grade item will perform the intended function and will meet design requirements applicable to both the replaced item and its application.”

BNI committed to verify the critical characteristics for dimensions and are tracking this action with a Condition Report [10]. BNI personnel said that this case is an exception and does not represent normal CGD practices. The staff review team did not review additional CGD packages to verify BNI’s claim since CGD was outside the original scope of this review. DOE-ORP is reviewing BNI’s processes for CGD [11].

Deficiency 4, Longstanding Nonconformance Reports—BNI is not processing longstanding NCRs in a timely manner. In addition, although DOE-ORP has incentivized ongoing efforts to clear existing NCRs, DOE-ORP has not established timeliness expectations for resolving NCRs. Timeliness goals are not defined in BNI project documents, instructions, procedures, and engineering specifications. At the time of this review, there were 254 open NCRs. Many of these involve Pretreatment Facility SSCs, which are not being processed due to

the suspension of work. However, the staff review team encountered several longstanding NCRs for other facilities. A November 2015 DOE Office of Inspector General report [12] raised similar concerns with longstanding NCRs. Longstanding NCRs are contrary to NQA-1, Requirement 16, which states, “Conditions adverse to quality shall be identified promptly and corrected as soon as practicable.” BNI claims that on average more than 70 percent of NCRs have been dispositioned in 6 months or less. BNI has established a program to process the backlog of NCRs. DOE-ORP personnel said that they plan to assess BNI’s dispositioning of NCRs in a 2016 annual assessment. BNI did not commit to additional actions beyond ongoing efforts to reduce the number of existing NCRs.

Deficiency 5, Identification of Nonconforming SSCs—BNI’s credited identification method for nonconforming SSCs in storage and the construction site is the use of electronic records in the Bechtel Procurement System (BPS) and Contractor Assurance Information System (CAIS) software. These electronic records identify the full list of active NCRs. In select storage areas, BNI uses electronic holds in the BPS software to identify nonconforming SSCs. When practical, BNI also hangs NCR hold tags on nonconforming SSCs. In April 2015 at the WTP construction site, the staff review team photographed NCR hold tags placed nearby when BNI judged it to be impractical to directly tag the SSC. See Appendix 1, Figures A-15 to A-18 for example photographs. These identification methods are defined in BNI project procedure, *Nonconformance Reporting and Control* [13]. This project procedure deviates from NQA-1 and the BNI project document, *Quality Assurance Manual*, without clear approval from DOE or the NQA-1 code committee. Additionally, since loss of either BPS or CAIS would result in the loss of these credited electronic records, BPS and CAIS should be evaluated against NQA-1, Requirement 17. These conditions are contrary to the requirements listed below:

- NQA-1, Requirement 15, Paragraph 200, states, “Nonconforming items shall be identified by legible marking, tagging, or other methods not detrimental to the item, on either the item, the container, or the package containing the item.” BNI project document, *Quality Assurance Manual*, Section 15.1.2.3.1, includes a similar requirement.
- NQA-1, Requirement 17, Paragraph 100, states, “[QA] records shall be identified, generated, authenticated, and maintained, and their final disposition specified.”

BNI submitted an inquiry (i.e., file 08-1419) to NQA-1 for using electronic holds as a method of controlling nonconforming items. However, this inquiry was submitted specifically to segregation requirements (Paragraph 300). As a result, on October 6, 2015, the staff review team submitted an inquiry to the NQA-1 code committee regarding using electronic holds as a method of identifying nonconforming SSCs. The committee has not yet replied.

Deficiency 6, Segregation of Nonconforming SSCs—In April 2015 at the WTP construction site, the staff photographed some SSCs that were tagged with NCR hold tags but not segregated from other SSCs when it was practical to do so. See Appendix 1, Figures A-19 to A-22 for example photographs. These situations are contrary to NQA-1, Requirement 15, Paragraph 300, and the BNI project document, *Quality Assurance Manual*, Section 15.1.2.3.1, which require nonconforming items be segregated when practical.

BNI located the nonconforming SSCs and discovered that in most instances, the NCR or construction deficiency report (CDR) had been closed but the hold tag had not been removed. However, per the BNI project procedure, *Nonconformance Reporting and Control*, these SSCs should have been segregated until it was confirmed that the NCR or CDR was closed. Of note, one hold tag was for a CDR that had been closed nearly four years prior. BNI personnel said that they have now segregated the nonconforming SSCs identified by the staff review team. In addition, they said that they removed the closed NCR and CDR hold tags from the SSCs. BNI did not disagree with this issue, but it has not discussed other corrective actions besides segregating the items and removing the tags identified by the staff review team.

Deficiency 7, Safety Software—BNI uses the BPS software to control further processing of NCRs but this software is not classified as safety software. The staff review team interprets this software application as providing a hazard control function by preventing the installation of SSCs that will not meet their safety functions. DOE Order 414.1C, Section 7, provides a definition of Safety Management and Administrative Controls Software, which includes, “Software that performs a hazard control function in support of nuclear facility or radiological safety management programs or technical safety requirements or other software that performs a control function necessary to provide adequate protection from nuclear facility or radiological hazards.” Attachment 5 of DOE Order 414.1C contains QA requirements for safety software. BNI agreed to review the software classification, but at this time believes the software does not meet the definition of safety software and thus would not need to meet the requirements in Attachment 5 of DOE Order 414.1C. However, BNI believes the software will still require compliance with all NQA-1 software QA requirements, which could address many of the staff’s concerns.

Deficiency 8, SSC Identification Markings—In April 2015, the staff review team photographed several SSCs in the MHF Laydown Yard with illegible identification markings. See Appendix 1, Figures A-23 to A-25 for example photographs. This condition is contrary to NQA-1, Requirement 8, and the BNI project document, *Quality Assurance Manual*, Section 8.1.2.3, which require legible identification. In April 2015, the staff review team conducted a sample inventory audit of SSCs at the MHF Laydown Yard. The staff review team experienced difficulty reading the correct labeling on several pipe spools with faded hand-written labeling. However, BNI and the staff review team were eventually able to use the BPS software and photographs to correctly interpret the labeling on each pipe spool. BNI is in the process of replacing hand-written identification labels with a more durable barcode labeling system.

Deficiency 9, Segregation of Dissimilar Metals—In April 2015, the staff review team photographed carbon and stainless steel piping in contact at the Yakima Warehouse and High-Level Waste Facility. The staff also photographed a carbon steel flange cover used on a stainless steel vessel in the 4.5-Acre Laydown Yard. See Appendix 1, Figures A-26 to A-29, for example photographs. Carbon and stainless steel piping in contact is contrary to a BNI engineering specification, *Field Fabrication and Installation of Piping* [14], Section 3.1.5.1 and the BNI project procedure, *RPP/WTP Storage Plan*, Section 3.1. An additional BNI engineering specification, *Packaging, Handling, and Storage Requirements* [15], Section 5.7.1, prohibits carbon steel flange covers on stainless steel vessels by stating, “Metallic plugs and caps contacting metal surfaces shall not cause galvanic corrosion at the contact areas.” DOE Order

414.1C and 10 CFR 830, Criterion 5, and NQA-1, Requirement 5, require work be performed consistent with approved instructions or procedures.

Following receipt of the staff review team's agenda on June 29, 2015, BNI conducted an extent of condition review. BNI personnel said they had corrected all instances of carbon and stainless steel piping in contact. They also said they had identified several other instances where carbon steel flange covers were being used on stainless steel equipment, which were also corrected.

Deficiency 10, Unsatisfactory, Over, Short, or Damaged (UOS&D) Process—BNI uses the UOS&D process to evaluate material after it arrives at the facility and before it is officially declared received material. The UOS&D process ensures BNI does not prematurely pay for nonconforming material. However, the staff review team determined that the UOS&D process does not require issuance of an NCR, as required by NQA-1, Part 1, Requirement 15, in every applicable case. Consequently, BNI project procedures, *Nonconformance Reporting and Control*, and *Field Material Receiving* [16], governing the nonconforming and UOS&D processes are contrary to NQA-1, Part 1, Requirement 15, and do not fully comply with Requirement 7, Paragraph 600.

NQA-1, Part 2, Subpart 2.2, Section 501, defines receipt as starting "...when the items arrive at a storage facility or construction site before unloading or unpacking." Therefore, NQA-1, Part 1, Requirement 15, applies to SSCs upon arrival. However, the BNI project procedure, *Nonconformance Reporting and Control*, Section 2.0, states, "Deficiencies discovered during receipt inspections utilize the UOS&D process....NCRs and CDRs are not required for nonconforming items discovered while in an in-process status, provided these items are under work process control procedures and are reworked within the scope of the work process control to meet existing design requirements." This implies that NQA-1, Requirement 15, does not apply to SSCs when they are discovered while in an "in-process" status defined by BNI.

The UOS&D processes defined in BNI project procedures, *Nonconformance Reporting and Control* and *Field Material Receiving*, could be strengthened to satisfy the intent of NQA-1, Part 1, Requirement 15. However, these procedures currently lack sufficient clarity to ensure consistent and acceptable processing of nonconforming items. Lastly, the staff review team noted that there were inconsistencies between the BNI project procedures, *Nonconformance Reporting and Control* and *Field Material Receiving* that define and execute the nonconforming and UOS&D processes.

BNI forwarded a draft UOS&D desk instruction [17] to the staff review team. The staff review team noted that the UOS&D desk instruction did not resolve all inconsistencies between BNI project procedures, *Nonconformance Reporting and Control* and *Field Material Receiving*. The UOS&D desk instruction also contains a different UOS&D flowchart than the one included in the BNI project procedure, *Nonconformance Reporting and Control*. Additionally, although the UOS&D desk instruction improves clarity of the UOS&D process, the staff review team noted that the following deficiencies still exist:

- BNI does not require NCRs to be immediately initiated in cases where an item is suspected to be nonconforming but is subsequently found to be acceptable.

- BNI does not require NCRs to be initiated in cases where an item is rejected and returned to the vendor.
- BNI does not require NCRs to be initiated in cases where rework is considered minor or the nature of the rework is not technical if the need for rework was discovered during the UOS&D process. While this might be an acceptable approach, the procedure does not adequately define where the use of this option is allowed.
- Records generated under the UOS&D process do not clearly meet the same criteria as those generated under the NCR process. For example, UOS&D records do not have the same retention requirements as NCRs.

The noted deficiencies result in potential gaps in the control of deficient material, and interrupt the coherency of the deficiency tracking and vendor feedback process defined in NQA-1. BNI does not agree with the staff review team's evaluation.

Deficiency 11, Cleanliness Levels of SSCs—At the MHF Laydown Yard, BNI tasked craft personnel with evaluating cleanliness levels of SSCs and determining appropriate cleanliness controls without established instructions or procedures. These and other activities for SSCs in storage were being conducted through a work package [18], which contained a scope of work, but did not include instructions or procedures. This is contrary to NQA-1, Requirement 13, Paragraph 100, which requires handling, storage, cleaning, and preservation of items to be controlled by procedure or instructions. Following receipt of the staff review team's agenda on June 29, 2015, BNI created a new work package [19] that contains instructions for cleaning and inspecting SSCs. BNI also trained craft personnel on this new work package.

Conclusion. The staff review team identified 11 deficient conditions. DOE-ORP and BNI have taken some necessary actions to begin addressing these deficiencies. However, in most cases, complete resolution may require additional actions. The staff review team notes some deficiencies appear to have existed for several years, which indicates a need to improve DOE QA oversight in preservation and storage of SSCs.

REFERENCES

- [1] Title 10 Code of Federal Regulations, Part 830, *Nuclear Safety Management*, Subpart A, *Quality Assurance Requirements*.
- [2] Department of Energy, *Quality Assurance*, Order 414.1C, Washington, DC, June 2005.
- [3] American Society of Mechanical Engineers, *Quality Assurance Requirements for Nuclear Facility Applications*, NQA-1-2000, New York, New York, May 2001.
- [4] Bechtel National, Incorporated, *RPP/WTP Storage Plan*, 24590-WTP-PL-MATL-07-0002, Rev 4, September 2014.
- [5] Bechtel National, Incorporated, *Field Material Inventory Management*, 24590-WTP-GPP-CGB-00102, Rev 0, August 2014.
- [6] Bechtel National, Incorporated, *Material Control*, 24590-WTP-GPP-CON-7109, Rev 8, January 2016.
- [7] Bechtel National, Incorporated, *Nonconformance Report, PTF Jumper Support Frames are of Indeterminate Quality*, 24590-WTP-NCR-CON-10-0107, Rev 0, July 2010.
- [8] Bechtel National, Incorporated, *Quality Assurance Manual*, 24590-WTP-QAM-QA-06-001, Rev 16, September 2014.
- [9] Bechtel National, Incorporated, *Evaluation of Commercial Grade Items and Services*, 24590-WTP-3DP-G06T-00904, Rev 1, October 2015.
- [10] Bechtel National, Incorporated, *Condition Report, Critical Characteristic Not Verified on NCR-CON-10-0107*, 24590-WTP-GCA-MGT-15-01430, August 2015.
- [11] Dawson, R. L. and Smith, K. W., Letter to M. McCullough. Contract No. DE-AC27-01RV14136 – Audit Report U-14-QAD-RPPWTP-003 – U.S. Department of Energy, Office of River Protection Audit of Bechtel National, Inc. Commercial Grade Dedication Program, Richland, Washington, 15-QAD-0038, Office of River Protection, August 6, 2015.
- [12] Department of Energy-Office of Inspector General, Office of Audits and Inspections, *Audit Report: Procurement of Parts and Materials for the Waste Treatment and Immobilization Plant at the Hanford Site*, DOE-OIG-16-03, November 2015.
- [13] Bechtel National, Incorporated, *Nonconformance Reporting and Control*, 24590-WTP-GPP-MGT-044, Rev 3, October 2015.

- [14] Bechtel National, Incorporated, *Engineering Specification for Field Fabrication and Installation of Piping*, 24590-WTP-3PS-PS02-T0003, Rev 10, November 2013.
- [15] Bechtel National, Incorporated, *Engineering Specification for Packaging, Handling, and Storage Requirements*, 24590-WTP-3PS-G000-T0003, Rev 3, December 2015.
- [16] Bechtel National, Incorporated, *Field Material Receiving*, 24590-WTP-GPP-GCB-00101, Rev 1, December 2015.
- [17] Bechtel National, Incorporated, *Unsatisfactory, Over, Short, and/or Damaged (UOS&D)*, Field Material Management Desktop Instruction No. 002, Draft, Received January 2016.
- [18] Bechtel National, Incorporated, *Storage Maintenance of Materials and Facilities*, 24590-CWP-MDD-0014, November 2014.
- [19] Bechtel National, Incorporated, *Cleaning Pipe Spools at the MHF*, 24590-CWP-MDD-0024, October 2015.

Appendix 1

Example Photographs of QA Deficiencies 1, 2, 5, 6, 8 and 9.



Figures A-1 to A-6. Staff review team photographs illustrating deficient storage conditions at the Material Handling Facility (MHF) Laydown Yard. Figure A-1 shows pipes buried in the sand. Figures A-2, A-4, and A-6 show missing pipe caps on pipe modules and a layer of sand built up inside. Figure A-3 shows excessive vegetation surrounding pipe modules. Figure A-5 appears to show part of an insect nest inside a structure, system, or component (SSC).



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Figures A-7 to A-8. Staff review team photographs illustrating deficient storage conditions at the MHF Laydown Yard. Figure A-7 shows water accumulated inside a vessel. Figure A-8 shows additional pipe modules buried in the sand.



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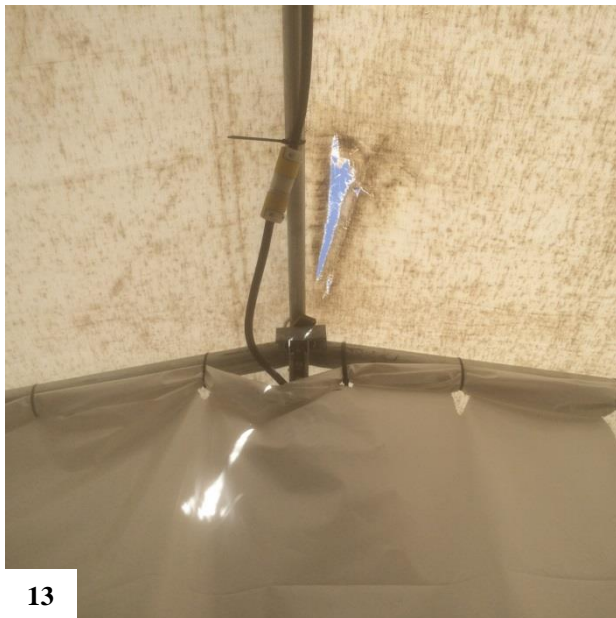
Figures A-9 and A-10. Photographs of the MHF Laydown Yard. Figure A-9 shows an aerial photograph of the 130 acre MHF Laydown Yard before Bechtel National, Incorporated (BNI) took corrective actions. Figure A-10 is a ground-level photograph of rows 19 and 20 following BNI corrective actions of temporarily removing all SSCs and removing the sand and leveling.



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Figures A-11 to A-14. Staff review team photographs illustrating deficient storage tents. Figure A-11 shows a ripped tent at the MHF Laydown Yard. Figures A-12 and A-13 show ripped tents at the Waste Treatment and Immobilization Plant (WTP) construction site. Figure A-14 shows evidence of animal intrusion in a tent at the WTP construction site.



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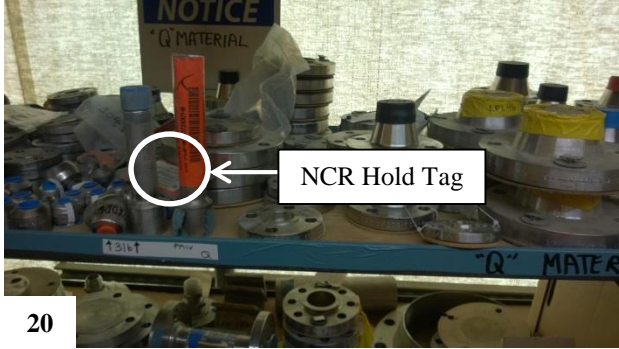


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Figures A-15 to A-18. Staff review team photographs illustrating alternate methods of identifying nonconforming items. Figures A-15 to A-17 depict Nonconformance report (NCR) hold tags on structural steel near the nonconforming item. Figure A-18 shows NCR hold tags on the outside of a storage tent near the Pretreatment Facility construction site.



Figures A-19 to A-22. Staff review team photographs illustrating nonconforming SSCs that were not properly segregated. Figures A-19 and A-21 are inside the High-Level Waste Facility. Figure A-20 was inside a storage area at the WTP construction site. Figure A-22 was inside a storage tent near the Pretreatment Facility.



Figures A-23 to A-25. Staff review team photographs illustrating illegible physical markings of SSCs at the MHF Laydown Yard.



Figures A-26 to A-29. Staff review team photographs illustrating improper segregation of dissimilar metals. Figures A-26 and A-27 show carbon and stainless steel in contact at the Yakima Warehouse. Figure A-28 shows carbon and stainless steel in contact at the High-Level Waste Facility. Figure A-29 shows a carbon steel flange cover on a stainless steel vessel at the WTP construction site