

April 27, 2009

Richard Budzinski, Director
Operational Excellence & Quality Systems
Dresser Industries Incorporated
Intersection LA 3225 and US Hwy 167N
Alexandria, Louisiana 71309

SUBJECT: NRC INSPECTION REPORT NO. 99900054/2009-201, NOTICE OF VIOLATION AND NOTICE OF NONCONFORMANCE TO DRESSER INDUSTRIES INCORPORATED

Dear Mr. Budzinski:

This refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on March 9-13, 2009, at the Dresser Industries Incorporated (Dresser) relief valve facility in Alexandria, Louisiana. The enclosed report presents the results of this inspection.

This was a limited scope inspection that focused on assessing your compliance with the provisions of Part 21 of Title 10 of the *Code of Federal Regulations* (10 CFR Part 21), "Reporting of Defects and Noncompliance," and selected portions of Appendix B to 10 CFR Part 50 (Appendix B), "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." This NRC inspection report does not constitute NRC endorsement of your overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC has determined that four Severity Level IV violations of NRC requirements occurred. Specifically, a review of Dresser's 10 CFR Part 21 implementation identified that Dresser did not adopt appropriate procedures to evaluate deviations and failures to comply associated with substantial safety hazards. These violations are cited in the enclosed Notice of Violation (NOV) and the circumstances surrounding them are described in detail in the subject inspection report.

The enclosed NOV cites the Violation of 10 CFR Part 21, and the enclosed inspection report discussed the circumstances surrounding it. You are required to provide a written explanation within 30 days of this letter in accordance with the instructions specified in the enclosed NOV. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In addition, based on the results of this inspection, the NRC inspectors determined that the implementation of Dresser's QA program failed to meet certain NRC requirements imposed on you by your customers. Specifically, the NRC inspectors determined that there were inadequacies in Dresser's policies, procedures, and implementing actions for the dedication of commercial grade items; the control of purchased material, equipment, and procedures; the control of nonconforming parts, material and equipment, corrective actions and audits. These nonconformances to the requirements of Appendix B are cited in the enclosed Notice of Nonconformance (NON), and the enclosed inspection report discusses the circumstances surrounding it.

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON.

In accordance with 10 CFR 2.390, "Public Exemptions, Requests for Withholding," the agency will make a copy of this letter, its enclosures, and your response available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), 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 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, 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 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 will 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, "Requirements for the Protection of Safeguards Information."

Sincerely,

/RA/

John A. Nakoski, Chief
Quality and Vendor Branch 2
Division of Construction Inspection
& Operational Programs
Office of New Reactors

Docket No: 99900054

Enclosures: 1. Notice of Violation
2. Notice of Nonconformance
3. Inspection Report No. 99900054/2009-201

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON.

In accordance with 10 CFR 2.390, "Public Exemptions, Requests for Withholding," the agency will make a copy of this letter, its enclosures, and your response available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), 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 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, 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 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 will 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, "Requirements for the Protection of Safeguards Information."

Sincerely,
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John A. Nakoski, Chief
Quality and Vendor Branch 2
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Docket No: 99900054

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DATE	4/22/09	4/20/09	4/21/09
OFFICE	R-II/DCI/CIB3	NRO/DCIP/CCIB/CAET	NRO/DCIP/CQVB
NAME	JBartleman	NRivera-Feliciano for RPascarelli	ASakadales
DATE	4/22/09	4/21/09	4/22 /09
OFFICE	NRO/DCIP/CQVB	NRO/DCIP/CQVB	NRO/DCIP/CQVB: BC
NAME	FTalbot	DPasquale	JNakoski
DATE	4/22/09	4/27/09	4/27/09

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NOTICE OF VIOLATION

Dresser Industries Incorporated
Intersection LA 3225 and US Hwy 167N
Alexandria, LA 71309

Docket No: 99900054
Inspection Report Number: 2009-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted March 9-13, 2009, of activities performed at Dresser Industries Incorporated (Dresser) facility at Alexandria, LA, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. Section 21.21, paragraph (a) of Part 21 of Title 10 of the *Code of Federal Regulations* (10 CFR 21.21(a)), "Notification of Failure to Comply or Existence of a Defect and Its Evaluation," requires, in part, that each individual, corporation, partnership, dedicating entity, or other entity shall adopt appropriate procedures to address 10 CFR Part 21 requirements.

Section 21.21 paragraph (a)(3) of 10 CFR Part 21 (10 CFR 21.21(a)(3)) states, in part, "Ensure that a director or responsible officer subject to the regulations of this part is informed as soon as practicable, and, in all cases, within the 5 working days after completion of the evaluation described in paragraphs (a)(1) or (a)(2) of this section if the manufacture, construction, or operation of a facility or activity, a basic component supplied for such facility or activity or the design certification or design approval under part 52 of this chapter, (i) fails to comply with the AEC of 1954, as amended, or any applicable rule, regulation, order or license of the commission, related to a substantial safety hazard, or (ii) contains a defect."

Section 21.21 paragraph (b) of 10 CFR Part 21 (10 CFR 21.21(b)) states that "If the deviation or failure to comply is discovered by a supplier of basic components, or services associated with basic components, and the supplier determines that it does not have the capability to perform the evaluation to determine if a defect exists, then the supplier must inform the purchasers or affected licensees within five working days of this determination so that the purchasers or affected licensees may evaluate the deviation or failure to comply, pursuant to § 21.21(a)."

Section 21.21 paragraph (d)(4) of 10 CFR Part 21 (10 CFR 21.21(d)(4)) states, in part, that "The written report required by this paragraph shall include, but need not be limited to, the following information, to the extent known:

- (i) Name and address of the individual or individuals informing the Commission.
- (vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part."

Dresser Quality System Manual (QSM) for ASME B&PV Code Section III & NR Program, Revision 2, dated December 19, 2008, describes the quality system utilized by Dresser to assure control and compliance with applicable specifications and customer requirements during the design and manufacture of pressure relief valves governed by documents, including Appendix B to 10 CFR Part 50 (Appendix B).

Dresser Quality Control Procedure (QCP)-031, "Evaluation and Reporting of Deviations and/or Noncompliance Affecting Safety Related to NRC Regulation 10 CFR Part 21," Revision 0, dated November 13, 1998, establishes the process for evaluating a deviation or noncompliance to determine whether it could create a substantial safety hazard and describes the reporting process.

Contrary to the above, as of March 13, 2009, Dresser failed to adopt appropriate procedures to address 10 CFR Part 21 requirements. Specifically, QCP-031 does not provide for:

1. Notification to the director or responsible officer within five working days after completion of evaluation that a basic component fails to comply or contains a defect.
2. Measures to inform purchasers or affected licensees within five days of determination that the entity does not have the capability to perform the evaluation.
3. Inclusion on the written notification informing the NRC of the reporting entity's name and address, and number and location of all basic components in use at facilities.

These issues are identified as **Violation 99900054/2009-201-01**.

This is a Severity Level IV violation (Supplement VII).

- B. Section 21.31 of 10 CFR Part 21 (10 CFR 21.31), "Procurement documents," requires, in part, that each individual, corporation, partnership, dedicating entity, or other entity shall ensure that each procurement document specifies, when applicable, that provisions of 10 CFR Part 21 apply.

Dresser QSM, Section 4.0, "Procurement Document Control," describes, in part, the process for preparation and control of procurement documents, including the selection of the applicable quality system requirements to be included with the purchase document to suppliers.

Dresser Quality System Procedure (QSP)-06, "Purchasing - Supplier Qualification, Evaluation, Selection," Revision 10, dated August 24, 2007, describes the process to prepare purchase documents.

Contrary to the above, as of March 13, 2009, Dresser failed to include appropriate requirements in the QSM and/or QSP-06 that provide instructions for determining when the requirements of 10 CFR Part 21 are applicable and must be included in Dresser's procurement documents to suppliers on its Approved Nuclear Supplier List.

This issue is identified as **Violation 99900054/2009-201-02**.

This is a Severity Level IV violation (Supplement VII).

- C. Section 21.51 of 10 CFR Part 21 (10 CFR 21.51), "Maintenance and Inspection of Records," subparagraphs 21.51(a)(1), (a)(2), and (a)(3) require that each individual, corporation, partnership, dedicating entity, or other entity shall prepare and maintain records necessary to accomplish the purposes of this part, specifically:

- (a) Each individual, corporation, partnership, dedicating entity, or other entity subject to the regulations in this part shall prepare and maintain records necessary to accomplish the purposes of this part, specifically:
 - (1) Retain evaluations of all deviations and failures to comply for a minimum of five years after the date of the evaluation;
 - (2) Suppliers of basic components must retain any notifications sent to purchasers and affected licensees for a minimum of five years after the date of the notification.
 - (3) Suppliers of basic components must retain a record of the purchasers of basic components for 10 years after delivery of the basic component or service associated with a basic component.

Dresser QSM, Section 17.0, "Quality Assurance Records," describes, in part, the retention times for quality records.

Dresser QCP-031 establishes the process for evaluating a deviation or noncompliance to determine whether it could create a substantial safety hazard and describes the reporting process.

Contrary to the above, as of March 13, 2009, Dresser failed to include appropriate requirements in the QSM and/or QSP-06 that provide instructions for determining when the requirements of 10 CFR Part 21 are applicability and must be included in Dresser's procurement documents to suppliers on its Approved Nuclear Supplier List.

This issue is identified as **Violation 99900054/2009-201-03**.

This is a Severity Level IV violation (Supplement VII).

- D. Section 21.21 of 10 CFR Part 21 (10 CFR 21.21), "Notification of Failure to Comply or Existence of a Defect and Its Evaluation," paragraph 21.21(d)(3)(i), requires, in part, that notification required by paragraph (d)(1) must be made initially by facsimile (preferred method) to the NRC Operations Center within two days following receipt of information by the director or responsible corporate officer on the identification of a defect or failure to comply.

QCP-031, Section 11.0, states, in part, that "The initial notification to the NRC is required within two days."

Contrary to the above, Dresser failed to complete initial notification to the NRC of Dresser 10 CFR 21 File No. 2007-02 within two days as required by the regulation and the QCP.

This issue is identified as **Violation 99900054/2009-201-04**.

This is a Severity Level IV violation (Supplement VII).

Pursuant to the provisions of 10 CFR 2.201, Dresser is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to John A. Nakoski, Chief, Quality and Vendor Branch 2, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Violation. This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further violations; and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Since your response will be made available electronically for public inspection in the NRC Public Document Room or through the NRC Agencywide Documents Access and Management System (ADAMS), to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. 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 withholding of such material, 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 will 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, "Requirements for the Protection of Safeguards Information."

Dated at Rockville, Maryland, this 27th day of April 2009

NOTICES OF NONCONFORMANCE

Dresser Industries Incorporated
Intersection LA 3225 and US Hwy 167N
Alexandria, LA 71309

Docket Number 99900054
Inspection Report No. 2009-201

Based on the results of a Nuclear Regulatory Commission (NRC) inspection conducted March 9-13, 2009 at Dresser Industries Incorporated (Dresser) the NRC staff has found that certain activities were not conducted in accordance with NRC requirements.

- A. Part 21 of Title 10 of the *Code of Federal Regulations* (10 CFR Part 21), "Reporting of Defects and Noncompliance," Section 21.3 of 10 CFR Part 21 (10 CFR 21.3), "*Definitions, Dedication*," states, in part, that the dedication process must be conducted in accordance with the applicable provisions of Appendix B to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 (Appendix B), "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." It also states that dedication is an acceptance process undertaken to provide reasonable assurance that a commercial grade item to be used as a basic component will perform its intended safety function. This assurance is achieved by identifying the critical characteristics of the item and verifying their acceptability through inspections, tests, or analyses performed by the purchaser or third-party dedicating entity after delivery, supplemented as necessary by one or more of the following: commercial grade surveys, product inspections or witness at hold points at the manufacturer's facility, and analysis historical records for acceptable performance.

Criterion III, "Design Control," of Appendix B states, in part, that measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components.

Criterion VII, "Control of Purchased Material, Equipment and Services," of Appendix B, states, in part, that "Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery. Documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear power plant or fuel reprocessing plant site prior to installation or use of such material and equipment. This documentary evidence shall be retained at the nuclear power plant or fuel reprocessing plant site and shall be sufficient to identify the specific requirements, such as codes, standards, or specifications, met by the purchased material and equipment. The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee at intervals consistent with the importance, complexity, and quantity of the product or services."

Dresser Quality System Manual (QSM), Revision 2, Section 21.0, "Commercial Grade Dedication of Materials and Parts," Step 21.2.3, states, in part, "The material is dedicated for use in or as a basic component based upon processing in accordance with

written Engineering Instructions which shall outline as a minimum, the critical design characteristics, critical characteristics for acceptance, and the method used to condition the commercial grade item for safety-related use.”

Dresser Quality System Manual (QSM), Revision 2, Section 21.0, and Section 22, “Abbreviations, Terms and Nomenclature,” also provides details and instructions describing the authority, responsibilities and methods used to be implemented by Dresser to designate, dedicate, and control commercial grade items (CGIs) in safety-related applications.

Contrary to the above, as of March 13, 2009, Dresser’s dedication procedures and practices for dedicating CGIs did not provide reasonable assurance that all commercial grade items received from its suppliers conformed to the applicable specification requirements noted above. Specifically:

1. Dresser’s CGI dedication process, as described in QSM, Section 22, is not in conformance with the definitions outlined in Section 21.3 of 10 CFR Part 21. Specifically, Dresser did not include the correct definition for “Commercial Grade item” nor did it include any definition for “Basic Component,” “Critical Characteristics,” “Dedicating Entity,” or “Dedication.”
2. The Dresser QSM and Engineering Instruction (EG)-037, “Quality Classification of Parts, Nuclear Pressure Relief Valves,” defined a Quality Class C component as:

Quality Class C – “Essential items, non pressure boundary that are outside the scope of the Code. These items are essential to the safety-related function of the valve. Items are safety-related. These are commercial grade items.”

This Quality Class C definition does not meet the definition of a basic component, as defined in 10 CFR 21.3. Quality Class C CGIs must satisfy the “dedication” process before the items become basic components in safety-related valves.

3. In accordance with QSM, Section 21.0, Step 21.2.3 and Tier 2 Engineering Instructions (e.g., EG-037, EG-059, and EG-490) did not provide the technical evaluation process for identifying the critical characteristics of CGIs dedicated as basic components in safety-related valves.
4. In accordance with the Dresser QSM, Tier 2 Engineering Instructions (e.g., EG-037, EG-059, and EG-490) did not provide procedural guidance to identify CGIs dedicated as basic components in safety-related valves, CGI critical characteristics, or the list of CGIs and their critical characteristics in Tier 3 Master Control Documents for items dedicated as basic components in safety-related valves.
5. The Dresser QSM and EG-368, “Reconciliation for Replacement Parts,” did not address like-for-like replacement or equivalency evaluations for CGI replacement parts dedicated as basic components in safety-related valves.
6. The Dresser QSM and EG-368, “Reconciliation for Replacement Parts,” did not address the seismic critical characteristics (e.g., dimensions, weight of the part, and seismic dynamic loading analysis of replacement parts) for CGIs dedicated as basic component in safety-related valves.

These issues are identified as **Nonconformance 99900054/2009-201-05**.

- B. Criterion III, "Design Control," of Appendix B, requires, in part, that "These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, etc... Design control measures shall be applied to items such as the following: stress, thermal, hydraulic, and accident analyses, etc..."

Contrary to the above, as of March 13, 2009, Dresser did not include the dynamic valve discharge actuation load in the Dresser design report as required by design specifications for a North Anna pressurizer safety valve (PSV).

This issue is identified as **Nonconformance 99900054/2009-201-06**.

- C. Criterion IV, "Procurement Document Control," of Appendix B, states that "Measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material, equipment, and services, whether purchased by the applicant or by its contractors or subcontractors. To the extent necessary, procurement documents shall require contractors or subcontractors to provide a quality assurance program consistent with the pertinent provisions of this appendix."

Dresser Quality System Manual (QSM) for ASME B&PV Code Section III & NR Program, dated December 19, 2008, describes the quality system utilized by Dresser to assure control and compliance with applicable specifications and customer requirements during the design and manufacture of pressure relief valves governed by documents, including Appendix B.

Dresser Quality System Procedure (QSP)-06, "Purchasing Supplier Qualification, Evaluation, Selection and Verification of Purchased Product," Revision 10, dated August 24, 2007, describes the process to prepare purchase documents.

Contrary to the above, as of March 13, 2009, Dresser QSM and QSP-06 do not include adequate instructions to include the appropriate quality assurance (QA) requirements in Dresser's procurement documents to suppliers on its Approved Nuclear Supplier List (ANSL). Neither the QSM nor QSP-06 includes a requirement to include a statement in Dresser's purchase documents to suppliers on the ANSL that it shall have a QA program that meets Appendix B requirements. As a result of Dresser's inadequate QA program documents, Dresser failed to include a requirement in its procurements documents to suppliers on the ANSL to have a program that meets the requirements of Appendix B.

This issue is identified as **Nonconformance 99900054/2009-201-07**.

- D. Criterion V, "Instructions, Procedures and Drawings," of Appendix B, requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings.

Instructions, procedures or drawings shall include appropriate acceptance criteria for determining that important activities have been satisfactorily accomplished.

Section 5.2 of procedure QSP-17 requires that objective evidence of corrective action is to be recorded in the supplier's file in relation to nonconformances (NCRs) or issues related to Dresser's suppliers.

Contrary to the above:

Three (3) Dresser NCRs, 120581, 121238 and 121305 related to the Dresser 2007 supplier audit of American Foundry Group (AFG) were not contained within Dresser's supplier files for AFG. This issue is identified as **Nonconformance 99900054/2009-201-08**.

- E. Criterion XI, "Test Control," of Appendix B requires, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems and components (SSCs) will perform satisfactorily in service, and are identified and performed in accordance with written test procedures that incorporate the requirements and acceptance limits contained in applicable design documents.

Dresser Engineering Instruction (EG)-450, Revision 6, "Hydrostatic Test Pressures for Valve Components," dated January 23, 2009, provides requirements for the test pressures for ASME valves. The 2007 edition of ASME Section III, Division 1, NB-6400 requires that the range of indicating pressure gages shall be within a specified range based on the test pressure (for analog type pressure gages) and/or have a restriction defined as having a combined error of less than 1% based on the test pressure (for digital type pressure gages).

Contrary to the above:

Dresser's calibration procedure CAL-009, Section 5.0 states that working test gages (digital & dial type) used for hydrostatic testing will be accurate to +/- 0.1% of range with a Dead Weight Tester or accurate to +/- 0.5% of range with a Test Gauge. For a 0-20,000 psi test gauge the resultant accuracy would be +/- 20 psi when using a Dead Weight Tester and +/- 100 psi when using a Test Gauge. Per the 2007 ASME Code Section III, Division 1 – NB-6400 the maximum combined error allowed would be +/- 7.5 psi for a hydrostatic test being conducted at 750 psi, and +/- 37.5 psi for a hydrostatic test being conducted at 3750 psi. Therefore, during the hydrostatic test conducted at 750 psi when using a 0-20,000 psi pressure gauge the lowest (best) possible combined error per the ASME Code would be +/- 20 psi, which is in excess of that allowed by the ASME Code. With a hydrostatic test conducted at 3750 psi while using the 0-20,000 psi pressure gauge the highest possible combined error would be +/- 100 psi, which would be in excess allowed by the ASME Code if a Test Gauge were used for instrument calibration. This issue is identified as an example of Dresser failing to perform testing in accordance with the requirements defined in ASME Section III. This issue is identified as **Nonconformance 99900054/2009-201-09**.

- F. Criterion XIII, "Handling, Storage, and Shipping," of Appendix B, requires that measures shall be established to control the handling, storage, shipping, cleaning and preservation of material and equipment in accordance with work and inspection instructions in order to prevent damage or deterioration. QSM Section 13, "Handling, Storage and Shipping",

Issue 3, Revision 2, dated December 19, 2008, and QSP-15, "Handling, Storage, Packaging, Preservation and Delivery," Revision 5, provide the Dresser requirements for handling, shipping, and storing safety-related items.

ASME NQA-1-1994, Subpart 2.1 states the following: 1) that the possibility of contaminants (introduced during fabrication, storage, installation, repairs or service) contributing to or causing such malfunction or failure shall be considered; 2) for Class A criteria a very high level of cleanness as evidenced by the freedom from all types of surface contamination; and 3) other materials and compounds to be used on surfaces of items made from austenitic stainless steel or corrosion-resistant alloy shall be evaluated for potential harmful contaminants.

ASME NQA-1, Subpart 2.2 states the following: 1) Level A items which are not immediately packaged shall be protected from contamination; 2) Level C items require protection from exposure to contaminants; 3) Level D items subject to detrimental contamination or corrosion, either internal or external, shall be suitably protected; 4) tapes or adhesives that could have damaging effects on the item or system shall not be used. For austenitic stainless steel and nickel alloys surfaces paperbacked masking tape shall not be used; 5) Barrier and wrap materials shall not readily support combustion; 6) carbon steel rigging equipment shall not come in direct contact with stainless steel; 7) austenitic stainless steel and nickel-base alloy materials shall be handled in such a manner that they are not in contact with lead, zinc, copper, mercury, or other low melting point elements, alloys, or halogenated material; and 8) levels and methods of storage are defined to minimize the possibility of damage or lowering the quality due to corrosion, contamination, deterioration, or physical damage from the time an item is stored upon receipt until the time the item is removed from storage.

Contrary to the above:

1. The NRC inspectors witnessed numerous examples of where austenitic stainless steel and nickel-base alloy materials (i.e. bar stock) were in direct contact with carbon steel racks and tables while this corrosion resistant material was being maintained in storage. Also, there was corrosion resistant material bar stock in direct contact with carbon steel and other low alloy steel bar stock. Dresser does not have a procedure defining how to properly store corrosion resistant steel materials to prevent them from deterioration due to contamination by contact with carbon steel or other low alloy steel materials. This issue is identified as **Nonconformance 99900054/2009-201-10a**.
 2. The NRC inspectors also noted that masking tape was widely used on austenitic stainless steel and nickel-base alloy materials while it was in storage. Also, Dresser separates stored materials by using cardboard material as an isolating material between the stainless steel stored material and carbon steel storage racks/tables. This issue is identified as **Nonconformance 99900054/2009-201-10b**.
- G. Criterion XVIII, "Audits," of Appendix B requires, in part, that periodic audits shall be carried out to verify compliance with all aspects of the QA program and to determine the effectiveness of the program. The audits shall be performed in accordance with the written procedures or check lists by appropriately trained personnel that do not have direct responsibilities in the areas being audited. The results of these audits shall be documented and reviewed by management having responsibility in the area audited.

Contrary to the above:

The NRC inspectors noted multiple examples where Supplier Audit Assessment Checklists, completed by Dresser Lead Auditors, were improperly and inconsistently filled out. Dresser procedure QSP-17 was missing guidance on how to complete the Supplier Audit Assessment Checklist form correctly and specifically what information needed to be provided. This issue is identified as **Nonconformance 99900054/2009-201-11**.

- H. Criterion V, "Instructions, Procedures and Drawings," of Appendix B requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings. Instructions, procedures or drawings shall include appropriate acceptance criteria for determining that important activities have been satisfactorily accomplished.

Dresser QSM for ASME B&PV Code Section III & NR Program, Revision 2, dated December 19, 2008, Section 23, "Exhibits," includes 52 exhibits of forms, document templates, etc. to be used when conducting quality affecting work in support of the activities described in the QSM. Specifically:

- Exhibit 19 – Form AE901-05, "Rework/Repair Routing, ASME Section III & Section XI," and
- Exhibit 24 – Form 250-2101, "Nonconformance Report."

Dresser QSM, Section 5.0, "Instructions, Procedures, and Drawings," describes the use and control of instructions, procedures and drawings for activities affecting quality.

Dresser QSM, Section 19.0, "Repair/Replacement Activities (NR Program Controls)," subsection 19.20, "Nonconforming Materials or Items," describes the processing of nonconforming materials and items that are handled during repair/replacement activities.

Quality Control Procedure (QCP)-031, "Evaluation and Reporting of Deviations and/or Noncompliance Affecting Safety Related to NRC Regulation 10 CFR Part 21," Revision 0, dated November 13, 1998, Section 10.0, "Corrective Action," describes the process for requesting corrective actions, if the 10 CFR Part 21 investigation reveals the need for these actions.

Quality System Procedure (QSP)-13, "Control of Nonconforming Products – Processing of Internal Nonconformance Reporting and Customer Complaints," Revision 6, dated September 20, 2007, provides for controlling nonconformities detected prior to shipment.

QSP-14, "Corrective and Preventive Action," Revision 4, dated October 9, 2007, addresses corrective and preventive action processes.

Contrary to the above, as of March 13, 2009, Dresser failed to provide adequate and consistent procedural guidance for interfaces among Dresser's 10 CFR Part 21 evaluation process, corrective and preventive action program, control of nonconforming items process, and repair/replacement activities processes. Specifically:

1. QSP-14 does not include an interface with Dresser's 10 CFR Part 21 reporting process that is described in QCP-031.
2. QSP-14 does not reflect Dresser's current process for corrective action reporting, nor is the process integrated adequately with the control of nonconforming items process described in QSP-13 and the repair/replacement activities process described in QSM Section 19.0, as necessary.
3. QSP-13, Form AE901-05 and Form 250-2101 address nonconformance reporting, but the processes are not integrated, do not provide consistent guidance, and do not provide adequate interface with Dresser's 10 CFR Part 21 reporting process that is described in QCP-031.

These issues are identified as **Nonconformance 99900054/2009-201-12**.

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, John A. Nakoski, Chief, Quality and Vendor Branch 2, Division of Construction Inspection and Operational Programs, Office of New Reactors, 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 noncompliances; and (4) the date when your corrective action will be completed. Where good cause is shown, consideration will be given to extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html>. 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 withholding of such material, 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 will 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.

Dated at Rockville, Maryland, this 27th day of April 2009

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DIVISION OF CONSTRUCTION INSPECTION AND OPERATIONAL PROGRAMS
VENDOR INSPECTION REPORT

Docket No.: 99900054

Report No.: 99900054/2009-201

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Nuclear Industry: Dresser is a safety-related relief valve manufacturer for the nuclear industry worldwide. Dresser manufactures safety-related and American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code items and components.

Inspection Dates: March 9-13, 2009

Inspectors: Daniel Pasquale, NRO/DCIP/CQVB, Team Leader-in-training
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Approved by:

IRA

John A. Nakoski, Chief
Quality and Vendor Branch 2
Division of Construction Inspection
& Operational Programs
Office of New Reactors

4/27/2009

Date

EXECUTIVE SUMMARY

Dresser Industries Incorporated
99900054/2009-201

The purpose of this inspection was to verify that Dresser Industries Incorporated (Dresser) implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 (Appendix B), "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." The inspection also verified that Dresser implemented a 10 CFR Part 21, "Reporting of Defects and Noncompliance," program that met U.S. Nuclear Regulatory Commission (NRC) regulatory requirements. The inspection was conducted at Dresser's facility in Alexandria, Louisiana.

The NRC inspection bases were the following:

- 10 CFR Part 21
- Appendix B

The NRC staff implemented Inspection Procedure 43002, "Routine Inspections of Nuclear Vendors" Inspection Procedure 43004, "Inspection of Commercial Grade Dedication Programs," and Inspection Procedure 36100, "Inspection of 10 CFR Part 21 and 50.55(e) Programs for Reporting Defects and Nonconformance" during the conduct of this inspection.

During the NRC inspection at Dresser daily meetings were conducted between the NRC inspectors and Dresser staff to discuss observations and/or findings. The NRC inspectors also discussed ongoing inspection activities daily during the inspection to share issues with the Dresser staff.

The last NRC inspection conducted at Dresser's facility in Alexandria, Louisiana, occurred in March 1995. The NRC inspectors reviewed Dresser's QA program and implementation procedures governing key fabrication activities. The inspection team also evaluated Dresser's implementation of 10 CFR Part 21 for evaluating deviations and reporting of defects that could cause a substantial safety hazard. The results of the inspection are summarized below.

With the exception of the areas described below, the NRC inspectors concluded that Dresser's QA policies and procedures were in compliance with the applicable requirements of 10 CFR Part 21 and Appendix B and that Dresser personnel were implementing these policies and procedures effectively.

10 CFR Part 21 Program

The NRC inspectors identified **Violations 99900054/2009-201-01, 99900054/2009-201-02 and 99900054/2009-201-03** for Dresser's failure to adopt QA procedures that ensure compliance with 10 CFR Part 21 evaluation and reporting requirements. The NRC inspectors also identified **Violation 99900054/2009-201-04** for Dresser's failure to complete initial notification to the NRC within the required time frame required by 10 CFR Part 21.

Commercial Grade Dedication Program

The NRC inspectors identified **Nonconformance 99900054/2009-201-05** for Dresser's failure to adopt effective commercial grade dedication procedures. Specifically, Dresser's procedures for commercial grade dedication (CGD) did not include the following guidance: (1) appropriate definitions from 10 CFR 21.3 applicable to the dedication of commercial grade items (CGIs); (2) incorrect classification of Quality Class C components as CGIs; and (3) no technical evaluation process for dedicating CGIs as basic components. Further, Dresser's Tier 2 procedures for CGD also did not include guidance to provide (1) the list of CGIs and their critical characteristics in dedication packages; (2) seismic critical characteristics for CGIs dedicated as basic components; and (3) like-for-like replacement or equivalency evaluations for CGI replacement parts dedicated as basic component.

Design Control

The NRC inspectors identified **Nonconformance 99900054/2009-201-06** for Dresser's failure to include the dynamic valve discharge actuation load in the Dresser design report as required by design specification for a North Anna pressurizer safety valve (PSV).

Procurement Document Control

The NRC inspectors identified **Nonconformance 99900054/2009-201-07** for Dresser's failure to control procurement documents sent to suppliers on the Dresser Approved Nuclear Supplier List (ANSL). Specifically, the NRC inspectors found that Dresser's Quality System Manual (QSM) and procedures do not include adequate instructions to include the appropriate QA requirements in Dresser's procurement documents to suppliers on its ANSL.

Instructions, Procedures, and Drawings

The NRC inspectors identified **Nonconformance 99900054/2009-201-12** for Dresser's failure to provide adequate and consistent procedural guidance for interfaces among Dresser's 10 CFR Part 21 reporting process, the corrective and preventive action program, the control of nonconforming items process, and the repair/replacement activities processes.

Test Control

The NRC inspectors identified **Nonconformance 99900054/2009-201-09** related to Dresser's inadequate control of measuring and test equipment that may have resulted in hydrostatic test pressures outside of the required pressure ranges under ASME Section III.

Handling, Shipping and Storage

The NRC inspectors identified **Nonconformance 99900054/2009-201-10a and 10b** for Dresser's failure to properly handle and store safety related basic components. Specifically, the NRC inspectors found that Dresser did not have procedure guidance to define how to store corrosion resistant steel materials to prevent them from deterioration due to contamination by contact with carbon steel or other low alloy steel materials. The inspectors found numerous examples where austenitic stainless steel and nickel-base alloy materials (i.e., bar stock) were in direct contact with carbon steel racks and tables while this corrosion resistant material was in storage at Dresser. The NRC inspectors also found masking tape and combustible material

was in direct contact with austenitic stainless steel and nickel-base alloy materials while it was in storage at Dresser.

Corrective Action

The NRC inspectors identified **Nonconformance 99900054/2009-201-08** for Dresser's failure to follow QA procedures to document objective evidence of corrective actions for three nonconformance reports and for failure to follow procedure steps taken to ensure that criteria within a quality procedure are satisfactorily accomplished.

Audits

The NRC inspectors identified **Nonconformance 99900054/2009-201-11** for Dresser's failure to maintain accurate audit documents (e.g., multiple examples Supplier Audit Assessment Checklists not filled out correctly). In addition, the QA procedure was missing guidance on how to complete the checklists forms correctly.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspectors reviewed Dresser's policies and implementing procedures that govern the 10 CFR Part 21 program to verify compliance with the requirements of 10 CFR Part 21, "Reporting of Defects and Noncompliance." The NRC inspectors evaluated the 10 CFR Part 21 postings for compliance with the requirements of 10 CFR 21.6, "Posting Requirements." The NRC inspectors also examined samples of Dresser's purchase orders (POs) for compliance with the requirements of 10 CFR 21.31, "Procurement Documents." 10 CFR Part 21 records were also examined for compliance with preparation and maintenance of records requirements of 10 CFR 21.51, "Maintenance and Inspection of Records." Specifically, the NRC inspectors reviewed the following Dresser policies and procedures:

- Dresser Quality System Manual (QSM), Section A, "Quality System Introduction and Approval," Issue 3, Revision 2, dated December 19, 2008.
- Dresser QSM, Section 4.0, "Procurement Document Control."
- Dresser QSM, Section 17.0, "Quality Assurance Records."
- Dresser Quality Control Procedure (QCP)-031, "Evaluation and Reporting of Deviations and/or Noncompliance Affecting Safety Related to NRC Regulation 10 CFR Part 21," Revision 0, dated November 13, 1998.
- Dresser Quality System Procedure (QSP)-06, "Purchasing – Supplier Qualification, Evaluation & Selection," Revision 10, dated August 24, 2007.
- Dresser 10 CFR 21 File No. 2007-01, closed May 10, 2007.
- Dresser 10 CFR 21 File No. 2007-02, three Consolidated[®] 31533VX Electromatic[®] relief valves with deformation of cages.
- Dresser 10 CFR 21 File No. 2008-01, closed August 8, 2008.
- Dresser 10 CFR 21 File No. 2008-02, open.
- Dresser 10 CFR 21 File No. 2008-03, open.
- Dresser purchase orders (POs) 81292-5, 82962-5, 83453-8, 83458-8, 83612-8, and 79207-1.

b. Observations and Findings

b.1 Postings

The NRC inspectors evaluated Dresser's compliance with the posting requirements of 10 CFR 21.6. The NRC inspectors found that Dresser had posted notices in four locations within the facility, two in the office area and two on the shop floor. Each location included a copy of Section 206 of the Energy Reorganization Act of 1974, a current copy of 10 CFR Part 21, and a current revision of QCP-031. The NRC inspectors did not identify any findings in this area.

b.2 10 CFR Part 21 Procedure

The NRC inspectors evaluated several Dresser documents to determine if 10 CFR Part 21 requirements were included. QCP-031 outlines the procedure and responsibilities to initiate, investigate, evaluate and report deviations and noncompliances that could affect safety. The NRC inspectors also examined Section A of the QSM, QCP-031, QSP-06, five 10 CFR Part 21 files, and six purchase documents.

The NRC inspectors noted that Section 7.0 of QCP-031 provide instructions for the initiation of a report that describes a known or suspected deviation or noncompliance and requires notification to the QA Manager, Applications Engineering (or designees) within 24 hours of identification. A Quality Engineer is assigned the action to enter the file number in the Nuclear Deviation and Noncompliance Log. The procedure requires that investigative actions and the evaluation process described in sections 8.0 and 9.0 are to be completed within 60 days of discovery. The NRC inspectors discussed Dresser's 10 CFR Part 21 program with Dresser's Director, Operational Excellence & Quality Systems; two Quality Engineers; and an Auditor.

During the review of the procedures, the NRC inspectors noted that QCP-031 did not contain adequate guidance to meet the regulatory requirements of 10 CFR Part 21, nor did the other documents examined. Specifically, QCP-031 did not contain a requirement for notification to the director or responsible officer within 5 working days after completion of the evaluation that a basic component fails to comply or contains a defect associated with a substantial safety hazard. Additionally, QCP-031 did not provide for measures to inform purchasers or affected licensees within 5 days of determination that Dresser does not have the capability to perform the evaluation. Lastly, QCP-031 did not include the reporting entity's name and address, and number and location of all basic components in use at facilities in the list of items for inclusion on the written notification informing the NRC. This issue is identified as **Violation 99900054/2009-201-01**.

The NRC inspectors noted that maintenance of records is addressed in QSM, Section 17, and QCP-031, Section 12.0, but retention times for 10 CFR Part 21 required records are not included. Dresser's QSM and procedures do not provide for the following maintenance of 10 CFR Part 21 records: 1) evaluations of deviations and failures - five years after date of notification; 2) notification sent to purchasers and affected licensees - five years after delivery of basic component or service associated with basic component; and 3) record of purchasers of basic components 10 years after delivery. This issue is identified as **Violation 99900054/2009-201-03**.

b.3 10 CFR Part 21 Implementation

The NRC inspectors requested copies of records of 10 CFR Part 21 evaluations that Dresser had completed since January 2007. The inspectors found that Dresser management had performed five potential 10 CFR Part 21 evaluations, and four of the five evaluations were determined and documented by Dresser to not be reportable. For 10 CFR 21 File No. 2007-02, Dresser notified the NRC of a potential defect in a letter dated April 27, 2007. However, notification to the NRC under 10 CFR Part 21 was made beyond the two-day requirement of 10 CFR 21.21(d)(3)(i) and QCP-031. Further evaluation by Dresser determined the potential defect was reportable, and it was reported to the NRC in a letter dated July 13, 2007. Dresser failed to notify the NRC within the two day requirement of 10 CFR 21.21(d)(3)(i) and QCP-031. This issue is identified as **Violation 99900054-2009-201-04**.

b.4 Purchase Orders (POs)

The NRC inspectors reviewed six Dresser POs to suppliers on the Dresser's Approved Nuclear Suppliers List (ANSL) with the expiration date of June 12, 2009, and verified that Dresser implemented a program consistent with the requirements described in 10 CFR 21.31 regarding specifying the applicability of 10 CFR Part 21 in its POs for basic components. Section A of the QSM includes the following as Note #2: "The requirement of 10 CFR Part 21 shall be applicable to orders when invoked by mutual agreement between the company and its customer." All reviewed POs contained the 10 CFR Part 21 provision. Although the 10 CFR Part 21 requirement is included in the POs, the NRC inspectors noted that QSM, Section 4.0, and QSP-06 do not provide for determining inclusion of 10 CFR Part 21 applicability in Dresser's procurement documents to suppliers on its ANSL. This issue is identified as **Violation 99900054/2009-201-02**.

c. Conclusions

The NRC inspectors concluded that Dresser's program requirements for 10 CFR Part 21 were not consistent with the regulatory requirements of 10 CFR Part 21. Dresser's policies and procedures are not developed adequately nor integrated effectively to ensure compliance with regulations. This issue is identified as **Violation 99900054-2009-201-01**. The NRC inspectors determined that Dresser failed to provide adequate direction in the QSM or in a procedure to include 10 CFR Part 21 applicability in its procurements to suppliers on its ANSL. This issue is identified as **Violation 99900054-2009-201-02**. Dresser procedures do not specify retention times for 10 CFR Part 21 required records. This issue is identified as **Violation 99900054-2009-201-03**. The NRC inspectors noted that Dresser failed to notify the NRC within the two day requirement of 10 CFR 21.21(d)(3)(i). This is identified as **Violation 99900054-2009-201-04**.

2. Commercial Grade Item Dedication

a. Inspection Scope

The NRC inspectors reviewed the Dresser Quality System Manual (QSM) and implementing procedures that govern the dedication of commercial grade items (CGIs) provided by Dresser for use in safety-related applications to verify compliance with applicable regulatory requirements. To verify implementation of the Dresser CGI dedication process, the NRC inspectors reviewed the following Dresser documents:

- Dresser Quality System Manual (QSM), Revision 2, dated December 19, 2008.
- Dresser QSP-04, Design Control, Revision 2, dated August 24, 2007.
- Dresser QSP-08, Material/Product Identification and Traceability, Revision 6, dated 08/24/2007.
- Dresser Engineering Instruction (EG)-002, Nuclear Applications Manual, Revision 15, dated May 20, 2008.
- Dresser EG-034, Nuclear Installation/Pressure Relief Valves, Revision 11, dated May 20, 2008.
- Dresser EG-037, Quality Classification of Parts, Nuclear Pressure Relief Valves, Revision 1, dated May 20, 2008.
- Dresser EG-059, Preparation of NC Master Control Document, Revision 2, dated March 13, 1998.
- Dresser EG-368, Reconciliation for Replacement Parts, dated August 2, 1994.
- Dresser EG-490, Final Inspection of Nuclear Products, Revision 0, dated February 8, 2007.
- QCP-005, Positive Material Identification, Revision 2, dated March 5, 2007.
- Master Control Document (MCD), Nuclear Component (NC) Log List, Safety Relief Valves, Application Engineering.
- MCD 3NC3287, Revision 1, dated February 21, 2008.
- MCD 3NC3295, Revision 1, dated June 23, 2008.
- MCD 3NC3305, Revision 0, dated November 12, 2008.
- MCD 3NC3307, Revision 0, dated November 11, 2008.

For safety-related valves manufactured by Dresser for nuclear power plants, the NRC inspectors sampled a number of MCDs to verify if Dresser identified basic components and CGIs and their critical characteristics for items dedicated as basic components. The inspectors also conducted a limited review of Purchase Order Specifications for valve sub-components (e.g., base, bonnet, spring assembly, disc holder, guide, cap, gasket, screws, locknuts, plugs, etc) that Dresser procured as CGIs dedicated for safety-related valves in nuclear power plants.

b.1 Observations and Findings - Review of the Dresser Quality System Manual (QSM)

The Dresser QSM Section 21, "Commercial Grade Dedication of Material and Parts," QSM Section 22, "Abbreviations, Terms and Nomenclature," and Engineering Instructions provide the details and instructions describing the authority, responsibilities, and methods to be implemented by Dresser or its supplier to designate, dedicate, and control CGIs in safety-related valves.

During the review of these Dresser procedures, the NRC inspectors found that the QSM Sections 21 and 22 did not include the correct definition for "Commercial Grade Item" nor did the procedures include any definition for "Basic Component," "Critical Characteristics," "Dedicating Entity" or "Dedication," as defined in 10 CFR 21.3. This omission is significant since these terms embody the regulatory process that, once effectively implemented, culminates in a successful CGI dedication program. This issue is identified as an example of a failure to adopt effective dedication procedures and is being identified as part of **Nonconformance 99900054/2009-201-05**.

In QSM Subsection 3.4.14, "Quality classes for various parts are as follows:" (page 29 of 155), states:

Quality Class C - Essential items, non pressure boundary that are outside the scope of the Code. These items are essential to the safety-related function of the valve. Items are safety-related. These are commercial grade items.

This Quality Class C definition does not meet the definition of a basic component used in a safety-related application, such as a valve, defined in 10 CFR 21.3. Quality Class C CGIs must satisfy the "dedication" process before the items become basic components in safety-related valves. As such, this issue is identified as the second example of a failure to adopt effective dedication procedures and is being identified as part of **Nonconformance 99900054/2008-201-05**.

b.2 Observations and Findings - Review of the Dresser Tier 2 Engineering Instructions

QSM Section 21, "Commercial Grade Dedication of Materials and Parts," Step 21.2.3, states, "The material is dedicated for use in or as a basic component based upon processing in accordance with written Engineering Instructions which shall outline as a minimum, the critical design characteristics, critical characteristics for acceptance, and the method used to condition the commercial grade item for safety-related use."

Generic Letters 89-02 and 91-05 conditionally endorses the guidance in EPRI NP-5652, "Guidelines for the Utilization of commercial Grade Items in Nuclear Safety Related Applications," dated June 1988. EPRI NP-5652, Section 2, "Generic Process," provides guidance on the technical evaluation process used to verify CGI critical characteristics. The technical evaluation process uses four methods in combination (i.e. inspections and tests, source verification, commercial grade survey of suppliers, and item performance records) to meet Criteria III and VII of Appendix B. Based on this guidance, dedicating entities should perform technical evaluations to identify CGIs and their critical characteristics for items being upgraded as basic components used in safety-related valves.

Contrary to the above, a number of Tier 2 Engineering Instructions (e.g., EG-002, EG-037, EG-059, EG-368, and EG-490) reviewed by the NRC inspectors did not provide the technical

evaluation process for identifying CGIs and their critical characteristics for items being dedicated as basic components in safety-related valves. This issue is identified as the third example of a failure to adopt effective dedication procedures and is being identified as part of **Nonconformance 99900054/2009-201-05**.

The inspectors also found that none of the Tier 2 Engineering Instructions provided guidance to identify in Tier 3 Master Control Document (MCD) dedication packages; (1) CGIs dedicated as basic components for safety-related use, (2) CGI critical characteristics, or (3) the list of CGIs and their critical characteristics for items dedicated as basic components in safety-related valves. This issue is identified as the fourth example of a failure to adopt effective dedication procedures and is being identified as part of **Nonconformance 99900054/2009-201-05**. For additional details, see section 2.b.3 of this report below.

EPRI NP-5652, Appendix F, "Maintaining Seismic and Environmental Qualification," provides guidance on seismic qualification of replacement items and their critical characteristics for items used as basic components. Once the items complete the "dedication" process, the items may be used as basic components in safety-related applications.

Contrary to the above, the NRC inspectors found that EG-368, "Reconciliation for Replacement Parts," discussed seismic reports for replacement parts but it does not discuss seismic critical characteristics (e.g., dimensions, weight of the part, and seismic dynamic loading analysis of spare part) for CGIs being dedicated as basic component in safety-related valves. Because of the need for certain safety related components to operate during and after a seismic event, the characteristics of the component that demonstrate it is capable of performing its safety-related functions during and after a seismic event are required to be verified for a CGI being dedicated. As such, this issue is identified as the fifth example of a failure to adopt effective dedication procedures and is being identified as part of **Nonconformance 99900054/2009-201-05**.

Dresser Engineering Instruction EG-368 identifies the process for replacement parts in safety-related pressure relief valves. Dresser provides replacement parts in accordance with ASME Section III and XI code requirements. The replacement parts must meet the code requirements for NB, NC, ND, and NX prefixes for valves parts that need to meet various subsections of Section III for "construction code" and Section XI for "service code."

EG-368 also states, in part, that "Reconciliation for replacement parts shall be prepared for each "spare part (MCD) listed in Engineering Instructions EG034." EG-368, further states, in part that "Reconciliation shall provide, at least, the following information."

- 4.4.1 Identify the parent valve(s) including serial number, valve code and drawings.
- 4.4.2 Identify original construction history including construction code, design report, seismic reports, environmental reports and design specifications.
- 4.4.3 Any Field Modifications.
- 4.4.4 For each Part:
 - Original Part Number
 - Replacement Part Number
 - Original Material
 - Replacement Material
 - Reason for change in Part Number or Material
 - Configuration Changes on Design, Performance, ETC
 - Effects of Change of Design, Performance, ETC
 - Dresser Quality Class or Equal Statement

Statement of Form, Fit and Function
Statement that 10 CFR Part 21 is or is not dedicated.

Based on the guidance in EPRI NP-5652, dedicating entities should perform technical evaluations to identify CGIs and their critical characteristics for items being upgraded as basic components used in safety-related applications. EPRI NP-5652, Appendix A, "Technical Evaluations," Subsection A.1, "Like-for-Like Replacement" provides guidance on like-for-like replacement items and their critical characteristics for items being upgraded as basic components. EPRI NP-5652, Subsection A.2, "Alternate Replacement," provides guidance on equivalency evaluations for replacement items and their critical characteristics for items being upgraded as basic components. Once the items complete the dedication process, the items may be used as basic components in safety-related applications.

Contrary to the above, the inspectors found that EG-368 did not address like-for-like replacement or equivalency evaluations for CGI replacement parts being dedicated as basic components in safety-related applications. Because the nuclear industry needs to replace safety-related valves from valve manufacturers that no longer exist, current valve manufacturers need to evaluate like-for-like replacement valves or equivalency evaluations to dedicate these new CGI valves as basic components. This issue is identified as the sixth example of a failure to adopt effective dedication procedures and is being identified as part of **Nonconformance 99900054/2009-201-05**.

b.3 Review of Tier 3 Master Control Documents (MCD) 3NC3287, 3NC3295, 3NC3305 and 3NC3307

The NRC inspector reviewed the MCD, Nuclear Component (NC) Log List, Safety Relief Valves, Application Engineering. From this list, the inspectors sampled four MCDs.

In accordance with EPRI NP-5652, the Dresser QSM and Dresser Engineering Instructions, the inspectors found that MCDs 3NC3287, 3NC3295, 3NC3305 and 3NC3307 did not contain technical evaluations that identify CGIs and their critical characteristics. These MCDs identify inspections and tests that can be used to determine if a CGI or basic component can meet applicable ASME Section III code requirement or safety related design functions that meets Appendix B. The following types of inspections or tests are provided in the MCDs:

- Radiographic Testing (RT) or Ultrasonic Testing (UT)
- Magnetic Particle Testing (MT) or PT (Penetrant Testing)
- Visual
- Hydrostatic
- Hardness Checks
- Product Material Inspection
- Heat Treatment
- Minimum Wall Thickness
- Raw Material Certification Codes
- Traceability

The Raw Material Certification Code included:

- Code I – Chemical & Mechanical & Heat Treat Certificates
- Code II – Chemical & Mechanical & Heat Treatment Charts

- Code III – Heat Treat Certification (Fabricate Part)
- Code IV – Weld Rod Certificate
- Code V – Hardfacing Rod Certificate

These MCDs also had traceability check offs for a CGI or basic component serial number, heat number and/or lot number; however, this particular MCD did not have a check off for lot number traceability. Dresser performs 100% inspections and tests for basic components; thus, sample inspections and tests of lots are not necessary.

The inspectors reviewed these MCDs to verify that Dresser performs functional testing of Dresser relief valves. The MCDs reference a functional test report and PT-145, Revision 3, “Functional Testing for 1900 Safety Relief Valves, Nuclear Grade,” for testing the functions of each safety related valves. These tests confirm that Quality Class C items dedicated as basic components will perform their intended safety-function.

However, the inspectors found that MCDs did not identify all of the items in the valve that are CGIs that should be dedicated as basic components and as a result it does not identify their critical characteristics. The MCDs do identify all inspection and tests that are used to verify that the valve as a whole is a basic component that will perform its intended safety function. Dresser needs to revise MCDs to identify CGIs dedicated as basic components and their critical characteristics to provide reasonable assurance that the dedicated items will perform their safety-related function.

The inspectors sampled four MCDs and found the same issues in each MCD. The inspectors discussed these issues with Dresser staff. Dresser staff stated that Class A and B valve items are identified as basic components. Dresser Class C and D items are commercial grade items. Dresser staff also stated that they either dedicate some of the items in their relief valves or they dedicate all of the items in their relief valves.

The inspectors also found that none of the Dresser Tier 2 Engineering Instructions provided guidance to Dresser staff to identify in Tier 3 MCD dedication packages; (1) CGIs dedicated as basic components for safety-related use, (2) CGI critical characteristics, or (3) the list of CGIs and their critical characteristics for items dedicated as basic components in safety-related valves. The inspectors sampled four Tier 3 MCDs and could not identify a listing of the CGIs dedicated as basic components or their critical characteristics. This issue is identified as another example of a failure to implement an effective CGI dedication process and is being identified as part of **Nonconformance 99900054/2009-201-05**.

c. Conclusions

The inspectors found a number of examples where Dresser did not have adequate commercial grade dedication procedures and implementing practices associated with the dedication of CGIs as basic components in safety related valves. These six examples are identified as a failure to adopt and implement adequate dedication procedures and are identified as **Nonconformance 99900054/2009-201-05**.

3 Design Control

a. Inspection Scope

The NRC inspectors reviewed Dresser policies and procedures governing the implementation of Dresser's design control program to verify compliance with the QA requirements of Criterion III, "Design Control," of Appendix B. The NRC inspection team reviewed an example of a completed design package for components originally designed, fabricated, and supplied by Dresser, an Original Equipment Manufacturer (OEM) certified as an ASME N stamp supplier and in accordance with a nuclear QA program meeting the requirements of Appendix B.

Within the scope of this area of the inspection, the NRC inspectors reviewed the following procedures, records, and other documents:

- Dresser Quality System Manual, Revision 2, dated December 19, 2008.
- Dresser Engineering Instruction EG076, "Guidelines for Writing Design Specifications for Pressure Relief Valves, 4-Inches and Less," Revision 1, dated March 16, 1995.
- NAP-0142 - ASME III, "Class 1 Valve Design Specification for Pressurizer Safety Valve (PSV) - North Anna Power Station," Units 1 and 2, Revision 2.
- DR05-007, "6-Inch - 31759A-2-XFA1-NC2026 Design Report for Safety Valve for Dominion North Anna Nuclear Power Plant, Units 1 & 2," Revision 6, dated December 12, 2008.
- Drawing 3NC2026, "Revision 2 for North Anna 1&2 Pressurizer Safety Valve - Valve Code 31759A-2-XFA1-NC2026."
- Design Report for a 3-inch - 31759A PSV for TMI-2 (Dresser Document No. 73S-317-7, Revision 1).
- Letter from L.B. Engle, USNRC, to Mr. W.R. Cartwright, Virginia Electric Power Company, transmitting Safety Evaluation Report for North Anna Power Station, Units 1 and 2 - NUREG-0737, Item II.D.1, Performance Testing of Relief and Safety Valves, dated March 21, 1989 (ADAMS accession no. 8903300118).
- Dresser Instruction No. PT069, "Production Testing of 31759 Pressurizer Safety Valve," Revision 10, dated May 6, 2008.

b. Observations and Findings

The Dresser QSM section for design control prescribes the design process for the construction of pressure relief valves, including parts, under the rules of the ASME Code Section III. It states that measures are established to ensure that the applicable requirements of the Design Specification and the Code are correctly translated into specifications, drawings, procedures, and instructions. It also states that design output documents shall be verified for adequacy and compliance with the Code and the Design Specification.

To review how effectively the design control process is being implemented, the NRC inspectors reviewed a completed design specification and the associated design report for an ASME Code Section III component recently supplied to a nuclear power plant. The reviewed documents were for a North Anna 1&2 pressurizer safety valve (PSV) replacement (NAP-0142 - ASME III, Class 1 Valve Design Specification and DR05-007, 6-Inch - 31759A-2-XFA1-NC2026 Design Report). The inspectors reviewed these documents regarding analysis of various loads in meeting ASME design requirements and compared the documents with each other for consistency of transferred information. Dresser document EG076, provides specific detailed guidance regarding consideration of various loads, including any design mechanical loads. Dresser indicated that this guidance is for use by Dresser (in-house) for generating design specifications. They indicated that there are a few cases (including the above North Anna Pressurizer Safety Valve (PSV) example) where the design specification is first generated by the owner/purchaser. When generated by Dresser, the design specification has to be approved by the owner, who has ultimate responsibility for the design specification.

In satisfying the design specification, several analyses of various parts of the North Anna PSV were performed and documented in the design report, including a detailed thermal fatigue analysis and an evaluation of seismic loading of extended mass portions of the safety valve (i.e., the bonnet and parts inside the bonnet) as required by ASME Section III NB-3592.3. For the seismic loading of the bonnet parts, Dresser used a model composed of three springs and masses and applied dynamic loads equal to 6 g (i.e., 6 times the weight of the masses) in each of three normal directions. Also, a comparison of cross-sectional areas and section moduli of the valve body and the attached pipe was also documented. This verified that the valve body portion of the valve is stiffer in resisting forces and moments than the attached piping, such that, if the attached piping is loaded to the maximum allowable Code stress values, the valve body stresses will be within those values.

The reaction force resulting from the discharge of steam through the valve outlet is provided on the valve drawing (3NC2026 Sheet 5, Revision 2), indicated by $FR = 6700$ pounds. A note on the drawing indicates that this discharge load is for a valve inlet pressure of 103% of the set pressure value, which is the inlet pressure at which the Code states the valve must be designed to be fully open (ASME Section III NB-7512.1). This infers that the load is based on the fully developed steady state flow condition. In attempting to determine if this force takes into consideration the dynamic valve actuation load (i.e., a load changing with time during valve opening), the inspectors noted that in Appendix A of the design specification, there is an asterisk (*) with no numeric value in the table for the dynamic discharge load. A note states that the asterisk value was to be determined by Dresser. However, the Dresser design report contains the same Appendix A table and did not replace the asterisk with a numeric value for the dynamic discharge load. The inspectors also noted that the Dresser file contained six revisions to the design report that incorporated various comments from the owner, but no comments were made regarding the missing "asterisk" information.

On further inquiry by the inspectors regarding the basis for the 6700 pound load provided on the drawing, Dresser was unable to immediately provide further information regarding this value for this particular valve. However, after further investigation, Dresser found a comparison of the dynamic and steady state loads for a Three Mile Island, Unit 2 (TMI-2) PSV, a valve of similar design and vintage. (It is noted that this information was found in a file for the Arkansas Nuclear One (ANO) facility, because this valve was transferred from TMI-2 to ANO.) This evaluation indicates that the steady state load would be bounding for the TMI-2 PSV, based on the natural frequency of the valve structure and the valve opening time, and Dresser indicated its position

that this conclusion would also apply to the North Anna PSV for a steam discharge condition. The lack of valve dynamic actuation load information in the Dresser valve design documentation is identified as a nonconformance against Criterion III of Appendix B. This issue is identified as **Nonconformance 99900054/2009-201-06**.

As a separate dynamic valve discharge issue, the specific fluid inlet condition at North Anna is a liquid loop seal condition, which represents a dynamic discharge condition very different from a steam discharge condition. This is important information that the owner should have provided to Dresser so that the unique nature of the loop seal discharge loads could have been specifically addressed in the design report. The inspectors found no mention of the loop seal condition in either the design specification by the owner or in the design report by Dresser. While this information should have been provided by the customer this may point to a lack of necessary questioning on the part of Dresser regarding needed information for valve design, such as operating fluid conditions for which the valve will be required to function.

The Dresser design specification and design report indicate that the PSV supplied to North Anna by Dresser is a replacement valve having the same design configuration and materials of construction as the originally installed PSVs at North Anna 1&2 (with the exception that the replacements meet both the 1974 Edition and 2001 Edition through 2003 Addenda of the ASME Code vs. the 1974 Edition for the original valves). In this specific case, the inspectors are aware that valves representing the originally installed PSVs were tested with the loop seal condition during an Electric Power Research Institute (EPRI) full scale, full flow test program for satisfying the post-TMI NUREG-0737, Item II.D.1 requirement. This included a requirement to evaluate the pressurizer safety and relief valves and the inlet and outlet piping for the plant-specific loading conditions, and the North Anna 1&2 licensee satisfied this requirement as documented in a safety evaluation report dated March 21, 1989 (ADAMS accession no. 8903300118). Since the replacement PSV has the same design configuration and materials of construction as the originally installed valves at North Anna 1&2, the conclusions of the safety evaluation report would also apply to the replacement valve. If this had been a different circumstance where an original valve, not a replacement, was to be supplied, the inspectors believe that the lack of fluid inlet condition information in the valve design specification could result in significantly underestimating the loads on the valve that are supposed to be addressed in the vendor's design report.

After discussing the above findings regarding the North Anna PSV, Dresser stated that they would initiate an evaluation to determine if there are needed corrective actions in accordance with 10 CFR Part 21 requirements.

The inspectors also noted that the operating ambient environment (i.e., temperature) was not provided in the design specification for the North Anna 1&2 PSV. The ambient temperature environment affects the specific temperature profile of the valve and can affect the valve set pressure. This has been discussed in NRC Information Notice 96-03, and the ASME Operations and Maintenance (OM) Code Appendix I requires that ambient temperature of the operating environment be simulated during set pressure testing. Dresser stated that the ambient temperature was not accurately controlled for the as-shipped set pressure for this order, because the owner wished to perform their own set pressure test (at Wyle Laboratory) that addressed the operating environmental temperature. However, Dresser stated that if they are requested to perform this type of set pressure testing before a valve is supplied to the owner, the Dresser facility has the necessary testing capability and a test procedure (Dresser Instruction No. PT069, Revision 10) for simulating the operating environmental temperature specified by the owner. The inspectors did not identify an issue in this regard.

The inspectors also noted that there is no documentation of reconciliation of differences between ASME Code editions (i.e., between the 1974 Edition used for the originally supplied valve and 2001 Edition through 2003 Addenda referenced in the documents for the new replacement). Dresser stated that a reconciliation is not necessary in this case because the component was constructed to the more limiting of either of the Code versions. However, they also stated that if a reconciliation was to be required, it would be documented in a Code-required Certificate of Compliance (COC) document, which would become part of the Dresser records. A separate example was provided wherein a reconciliation of differing allowable material properties was made. The inspectors did not identify an issue in this regard.

The inspectors also asked for documentation of the Code required capacity certification for the above North Anna model PSV. Dresser stated that this information is not maintained in the Dresser records, but is documented in the National Board of Boiler and Pressure Vessel Inspectors document NB-18 (also known as the "red book"). The inspectors verified that the NB-18 document, available at <http://www.nationalboard.org>, contains the capacity certification for this model valve and was established by the Coefficient of Discharge method. The inspectors did not identify an issue in this regard.

c. Conclusion

The NRC inspectors concluded that the Dresser design control program requirements are consistent with the regulatory requirements of Criterion III of Appendix B. However, the NRC inspectors found that Dresser failed to adequately implement all of the program requirements. Specifically, Dresser failed to describe the evaluation of the dynamic valve actuation load in the design documentation for a pressurizer safety valve. This issue is identified as a nonconformance against Criterion III of Appendix B. This issue is identified as **Nonconformance 99900054/2009-201-06**.

4. Procurement Document Control

a. Inspection Scope

The NRC inspectors reviewed procedural requirements and the implementation of Dresser's QA program for adherence to the requirements of Criterion IV, "Procurement Document Control," of Appendix B; and to Basic Requirement 4, "Procurement Document Control," of ASME NQA-1-1994.

The NRC inspectors reviewed the following Dresser QA procedures used to implement policies and procedures that govern the control of Dresser's procurement document control program:

- QSM, "ASME B&PV Code Section III & NR Program," Issue 3, Revision 2, dated December 19, 2008.
- QSM, Section 4.0, "Procurement Document Control," Issue 3, Revision 2, dated December 19, 2008.
- QSP-02, "Quality System," Revision 4.
- Dresser Quality System Procedure (QSP)-06, "Purchasing – Supplier Qualification, Evaluation & Selection," Revision 10, dated August 24, 2007.

- QSP-08, "Material / Product Identification and Traceability," Revision 6.
- QSP-15, "Handling, Storage, Packaging, Preservation and Delivery," Revision 5.
- QSP-17, "Quality System Audits," Revision 5.
- Purchase order (PO) 79207-1.
- PO 81292.
- SNT-TC-1A Audit Assessment Checklist Form, Revision 0, dated November 7, 2007.
- Supplier Audit Assessment Checklist Form, Revision 4, dated August 28, 2008.
- Supplier Quality Control Program Requirements (QCPR)-1, Quality Class "A" parts, materials and services.
- Supplier QCPR-6, Class "B" and "C" parts, materials, and services.
- Supplier QCPR-7, calibration services.

The NRC inspectors also evaluated the following sample of Customer Purchase Orders (PO) for safety-related relief valves. This evaluation was performed in order to verify compliance with and adequate implementation of Dresser's procurement document control program:

- Duke Power PO # 00085177, Revision 2; per Enertech PO # 619052-1.
- American Electric Power (AEP) PO # 01527136, dated February 28, 2008; per Enertech PO # 620825, dated March 3, 2008.
- Amergen Energy PO # 80 023729; per Enertech PO # 619725.
- Exelon PO # 00415847, Revision 3, dated January 26, 2007; per Enertech PO # 618629, dated February 7, 2007.
- AEP PO # 01528181, dated April 11, 2008; per Enertech PO # 621057, dated April 15, 2008.
- TVA PO # 00001682, dated May 1, 2006; per Enertech PO # 616986, dated April 21, 2006.
- Dominion PO # 45383781, dated September 16, 2005; per Enertech PO # 615553, dated September 8, 2005.

b. Observations and Findings

b.1 Procurement Document Control Process Items Reviewed

On the basis of the review completed by the NRC inspectors, the inspectors found that QSP-06: 1) provides requirements that assure that Dresser POs are only issued to vendors that are on Dresser's ANSL; 2) that the applicable requirements from its customer's POs are passed on to Dresser's suppliers and sub-suppliers; 3) provides appropriate requirements for Certified Material Test Reports (CMTRs); and 4) Dresser's QA staff reviews the POs to assure they meet the necessary requirements.

The NRC inspectors reviewed QSM Section 4.0, which provides a reference to three Supplier Quality Control Program Requirements (QCPR) documents: QCPR-1, QCPR-6, and QCPR-7. Section 4.0 also states that QCPR-1 supports ASME Code Section III, NCA3800 requirements and requires that the supplier use the Quality Program accepted by ASME. The NRC inspectors observed that QSM Section 4.0 and procedure QSP-06 do not include a requirement to include a statement in Dresser's purchase documents to suppliers on the ANSL that it has a QA program that meets Appendix B requirements, including having a corrective action program. The NRC inspectors noted that the two POs reviewed do not include the requirement to have a QA program that complies with Appendix B. Subsequent discussions among the NRC inspectors and Dresser staff revealed that Dresser does not include the requirement to comply with Appendix B in its nuclear POs. Additionally, Section 7.3.2 of the QSM states that "Suppliers whose performance consistently fails to meet Code or the company requirements will be required to furnish corrective action for the deficiency." Dresser purchase documents do not satisfy the requirement to have a QA program that meets Appendix B passed on to its ANSL suppliers. This issue is identified as **Nonconformance 99900054/2009-201-07**.

c. Conclusions

The NRC inspectors concluded that Dresser's procurement control program is generally consistent with the regulatory requirements in Criterion IV of Appendix B. Based upon the limited sample reviewed, the NRC inspectors also determined that Dresser's QSM and associated procurement control procedures were being effectively implemented, with the following exception: The NRC inspectors found that Dresser failed to include a requirement in its procurements documents to suppliers on the ANSL to have a program that meets the requirements of Appendix B. This issue is identified as **Nonconformance 99900054/2009-201-07**.

5. Instructions, Procedures, and Drawings

a. Inspection Scope

The NRC inspectors reviewed Dresser's QSM and implementing policies and procedures that govern instructions, procedures, and drawings to assess compliance with Criterion V, "Instructions, Procedures, and Drawings," of Appendix B; and to Basic Requirement 5, "Instructions, Procedures, and Drawings," of ASME NQA-1-1994. The NRC inspectors reviewed the following sample of instructions, procedures, and drawings related to safety-related activities to verify compliance with program requirements and adequate implementation of those requirements:

- QSM Section 5.0, "Instructions, Procedures, and Drawings," Issue 3, Revision 2, dated December 19, 2008.
- QSM Section 7.0, "Control of Purchased Materials, Items and Services," Issue 3,

Revision 2, dated December 19, 2008.

- QSM Section 15.0, "Control of Nonconforming Items," Issue 3, Revision 2, dated December 19, 2008.
- QSM, Section 19.0, "Repair/Replacement Activities (NR Program Controls)," Issue 3, Revision 2, dated December 19, 2008.
- Quality Control Procedure (QCP)-031, "Evaluation and Reporting of Deviations and/or Noncompliance Affecting Safety Related to NRC Regulation 10 CFR Part 21," Revision 0, dated November 13, 1998.
- Dresser Quality System Procedure (QSP)-06, "Purchasing – Supplier Qualification, Evaluation & Selection," Revision 10, dated August 24, 2007.
- QSP-08, "Material / Product Identification and Traceability," Revision 6.
- QSP-13, "Control of Nonconforming Products – Processing of Internal Nonconformance Reporting and Customer Complaints," Revision 6, dated September 20, 2007.
- QSP-14, "Corrective and Preventive Action," Revision 4, dated October 9, 2007.
- QSP-15, "Handling, Storage, Packaging, Preservation and Delivery," Revision 5.
- QSP-17, "Quality System Audits," Revision 5.
- QSP-19, "Servicing and Repair of Products," Revision 3.
- Procedure CAL-009, "Calibration of Pressure Gauges (Digital and Dial Type)," Revision 1.
- Form 250-2101, "Nonconformance Report," Revision 02-80.
- Form AE901-05, "Rework/Repair Routing, ASME Section III & Section XI."

b. Observations and Findings

b.1 Instructions, Procedures and Drawings Items Reviewed

The NRC inspectors reviewed these procedures and documents associated with activities being conducted by Dresser staff. The NRC inspectors observed that guidance was missing within QSP-17 on how the Lead Auditor should fill out the Supplier Audit Assessment Checklist form, especially in the area of completing the section related to identifying what Codes, Standards or other industry requirements that the supplier's program is intended to cover. In some cases the ASME Section III, Code Year was left blank, filled-in incorrectly or marked with a checkmark rather than listing a year number and then the associated Addenda was left blank or incorrectly filled-in. In addition, the fill-in area labeled "Other (Describe)" was filled in, but no description of what the other item listed meant. There was inconsistency between how the lead auditors completed this checklist and interpreted the form, and how they were expect to complete the

form and fill it in.

The NRC inspectors also found that QSP-17, Section 5.2 was not completed. Specifically, QSP-17, Section 5.2 states, in part, "Dresser staff will provide objective evidence that corrective actions will be recorded in the supplier's file." Contrary to this procedural statement in QSP-17, Section 5.2, the NRC inspectors observed that during the 2007 Supplier Audit of American Foundry Group (AFG) there were three (3) Dresser NCRs: 120581, 121238 and 121305 that were not contained within Dresser's supplier files for AFG. This issue is identified as an example of Dresser failing to verify that appropriate steps have been taken and quality forms were being completed correctly to ensure that criteria within a quality procedure has been satisfactorily accomplished.

Criterion V, of Appendix B, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings. The NRC inspectors identified that audit activities were not accomplished in accordance with quality related audit instructions and that these instructions were inadequate. This issue is identified as **Nonconformance 99900054/2009-201-08**.

The NRC inspectors also determined that Dresser failed to provide adequate and consistent procedural guidance for interfaces among Dresser's 10 CFR Part 21 reporting process, the corrective and preventive action program, the control of nonconforming items process, and the repair/replacement activities processes.

For example, QSP-14 does not reflect Dresser's current process for corrective action reporting, nor is the process integrated adequately with the 10 CFR Part 21 reporting described in QCP-031, the control of nonconforming items process described in QSP-13, and the repair/replacement activities process described in QSM Section 19.0, as necessary. In another example, QSP-13 does not provide specific instructions, or a reference to another procedure, to handle nonconforming materials, parts and services detected after shipment to the customer. Furthermore, QSM Section 7.5.15 states that rejected materials are identified as described in Section 15.0 of the QSM. Furthermore, QSM Section 7.5.15 states that rejected materials are identified as described in Section 15.0 of the QSM.

Form 250-2101, Revision 02-80, does not include an interface with 10 CFR Part 21 evaluation and reporting, nor does it reflect accurately the disposition choices described in QSP-13 and QSM Section 15.0. Also, Form AE901-05 is used in lieu of Form 250-2101 for returned materials. The two nonconformance reporting processes for in-house (not yet shipped) and shipped materials are not parallel, and clear direction is not provided for entering the nonconformances in the same system. This issue is identified as **Nonconformance 99900054/2009-201-12**.

c. Conclusions

There was no objective evidence that the requirements defined in QSP-17, Section 5.2 was satisfactorily completed. This issue is identified as an example of Dresser failing to verify that appropriate steps have been taken to ensure that criteria within a quality procedure have been satisfactorily accomplished. The inspectors also found that procedures audit steps were not adequate. This issue is identified as **Nonconformance 99900054/2009-201-08**.

The NRC inspectors found that Dresser failed to provide adequate and consistent procedural guidance for interfaces among Dresser's 10 CFR Part 21 reporting process, the corrective and preventive action program, the control of nonconforming items process, and the repair/replacement activities processes. This issue is identified as **Nonconformance 99900054/2009-201-12**.

Except for the issues identified in **Nonconformance 99900054/2009-201-08** and **Nonconformance 99900054/2009-201-12**, the NRC inspectors concluded that Dresser's instructional, procedural, and drawing requirements are consistent with the regulatory requirements of Criterion V of Appendix B. Based on the limited sample of documentation reviewed, the NRC inspectors also determined that Dresser's QSM and associated instructional, procedural, and drawing documents were effectively implemented.

6. Control of Special Processes

a. Inspection Scope

The NRC inspectors reviewed Dresser's QA policies and implementing procedures that govern the control of special processes to verify compliance with the requirements of Criterion IX, "Control of special Processes," of Appendix B. Specifically, the NRC inspectors reviewed the following policies and procedures established by Dresser.

- Dresser QSM, Section 9, "Process Control System," Revision 2, dated December 12, 2008.
- QSP-09, "Process Control," Revision 5, dated September 25, 2007.
- EG342, "Procedure for Creating New Welding Procedure Specifications (WPS), Procedure Qualification Record (PQR), and Welding Performance Qualifications (WPQ)," Revision 3, dated May 20, 2008.
- Dresser QSM, dated December 18, 2008, Sections 2.5, 2.6, and 2.9 as related to the qualification of Nondestructive Examination Personnel.
- QSP001, "Written Practice for Personnel Qualification and Certification in Nondestructive Examination Processes," Revision 6, dated August 27, 2007.
- QCP-003, "Qualification of NDE Procedures," Revision 3, dated January 22, 2008.
- QCP-002, "Nondestructive Testing Program," Revision 2, dated May 15, 2004.
- HY017, "Hydrostatic Shell Testing of Nuclear Pressure Relief Valves," Revision 12, dated May 23, 2008.
- QUT001, "Ultrasonic Inspection," Revision 26, dated February 4, 2009.
- QPT-001, "Liquid Penetrant Examination," Revision 44, dated March 4, 2009.

QSP-09 identifies welding, heat treatment and nondestructive examination as special processes. The NRC inspectors also reviewed a sample of welding procedure specifications (WPS) and supporting procedure qualification records (PQRs) to verify compliance with Section IX, "Welding and Brazing Qualification," of the ASME Code and effective implementation of the stated requirements.

b. Observations and Findings

Section 9 of Dresser's QSM describes the system used to control special processes for the fabrication of ASME Section III Code items and repair and replacement activities. It also describes; 1) the control system for manufacturing processes, 2) the control of welding operations, 3) the control of heat treating operations, and 4) the control of nondestructive examination operations.

The NRC inspectors verified that Dresser's manufacturing process used shop travelers as the method for controlling shop production and inspection activities. The shop travelers incorporate witness and hold points for customers, authorized nuclear inspectors (ANIs), and Dresser quality control inspectors, as applicable. The shop travelers identify applicable drawings, material specifications, work instructions, and procedures applicable to the manufacturing operation and inspection activities being performed. The NRC inspectors concluded that the shop traveler serves to assure that the fabrication and inspection activities are accomplished in accordance with specified requirements and conducted in the correct operational sequence.

Welding

EG342 establishes the specific instructions for the qualification of welding procedures and performance qualification of welding processes in accordance with the requirements of ASME Section IX and purchase orders.

During the inspection at Dresser, the NRC inspectors did not directly observe any welding operations. Instead the staff reviewed travelers and procedures for two completed items. Based on this review, the NRC inspectors found the welding on ASME Code materials and fabrication of ASME Code items is performed by qualified welders in accordance with approved welding procedure specifications (WPS). Each welder is qualified in accordance with the requirements of Dresser's QSM and ASME Section III and Section IX.

As a result of the review of documentation related to welding activities performed on production order shop travelers, the NRC inspectors confirmed that the completion of sign off of specific operations on the shop traveler by quality control inspector, welder, customer, and ANI witness and hold points were performed.

Nondestructive Examination (NDE)

The NRC inspectors verified on a limited sample that NDE of ASME Code materials and at specific fabrication points of ASME Code items were performed consistent with Dresser's QA program requirements and were conducted by personnel who had been qualified and certified. The NRC inspectors also observed personnel perform penetrant testing and hydrostatic testing of ASME Code items. The NRC inspectors verified the use of procedures by qualified and certified personnel.

c. Conclusions

The NRC inspectors concluded that Dresser's program requirements for control of special processes are consistent with the regulatory requirements of Criterion IX of Appendix B. Based on the limited sample of records reviewed, the NRC inspectors concluded that the Dresser QSM and associated fabrication and special process procedures were adequately and effectively being implemented by qualified personnel, using qualified equipment and processes. There were no inspection findings identified in this area.

7. Welder and NDE Training and Qualification

a. Inspection Scope

The NRC inspectors reviewed Dresser's QA policies and implementing procedures that govern the control of welder and NDE training to assess compliance with the requirements of Criterion II, "Quality Assurance Program," of Appendix B. Specifically, the NRC inspectors reviewed the following controls that Dresser has in place for the training and qualification of welding and NDE personnel:

- QSM 2.7, "Qualification of Welders and Welding Operators," Revision 2, dated December 19, 2008
- QSM 2.9, "Qualification of Nondestructive Examination Personnel (NDE)," Revision 2, dated December 19, 2008
- QCP001, "Written Practice for Personnel Qualification and Certification in Nondestructive Examination Process," Revision 6, dated August 27, 2007
- QCP-002, "Nondestructive Testing Program," Revision 2, dated May 15, 2004
- QCP-003, "Qualification of NDE Procedures," Revision 3, dated January 22, 2008
- QSP-18, "Training, Indoctrination and Qualification," Revision 2, dated March 16, 2007
- EG-342, "Procedure for Creating New Welding Procedure Specs (WPS) Procedure Qualification Records (PQR) & Welding Performance Qualifications (WPQ)," Revision 3, dated May 20, 2008

b. Observations and Findings

The NRC inspectors reviewed a sample of welder qualification records in order to determine if welders were qualified in accordance with the requirements of the ASME Code Section IX. The review results showed that welders were properly qualified in accordance with the requirements of the ASME Code Section IX.

The NRC inspectors also reviewed a sample of certification records for NDE personnel. In addition, the NRC inspectors observed the performance of a liquid penetrant test by a level II NDE technician. All reviewed certification records were found to be in compliance with the

requirements of the ASME Section III Code and the American Society for Non-Destructive Testing (ASNT) Practice SNT-TC-1A.

c. Conclusions

The NRC inspectors concluded that Dresser's training and qualification program elements for welding and NDE personnel are consistent with regulatory requirements. Based on the limited sample reviewed, the NRC inspectors determined that the Dresser QSM and associated training and qualification procedures were adequate and effectively implemented. The NRC inspectors did not identify any issues in this area.

8. Inspection and Test Control

a. Inspection Scope

The NRC inspectors reviewed Dresser's QSM and applicable implementing policies and procedures for the control of test programs that are performed to demonstrate that the applicable item will perform satisfactorily in service to assess compliance with the requirements of ASME Section III, Division 1 – NB; Criterion XI, "Test Control," of Appendix B; and to Basic Requirement 11, "Test Control," of ASME NQA-1-1994. The NRC inspectors reviewed a sample of completed test records of testing activities such as hydrostatic pressure testing and relief valve set point lift testing. This limited sample of completed test records that the NRC inspectors reviewed were compared to the requirements of the applicable Code, the purchase orders and material specifications.

The NRC inspectors also reviewed the Dresser QSM and implementing procedures that govern the inspection and test controls for Dresser safety-related valves to verify compliance with Criterion X and XI of Appendix B.

The following procedures, documents, and records reviewed within the scope of the inspection in this area included:

- Dresser QSM Section 11, "Hydrostatic And Functional Test Control," Issue 3, Revision 2, dated December 19, 2008.
- Dresser QSM Section 12, "Control of Measuring And Testing Equipment," Issue 3, Revision 2, dated December 19, 2008.
- Dresser QSP-02, "Quality System," Revision 4.
- Dresser QSP-08, "Material / Product Identification and Traceability," Revision 6.
- Dresser QSP-15, "Handling, Storage, Packaging, Preservation and Delivery," Revision 5.
- Dresser QSP-19, "Servicing and Repair of Products," Revision 3.
- Dresser Procedure CAL-009, "Calibration of Pressure Gauges (Digital and Dial Type)," Revision 1.
- Dresser QSP-10, Inspection and Test, Revision 6, dated October 10, 2007.

- Dresser Engineering Instruction (EG)-450, Revision 6, Hydrostatic Test Pressures for Valve Components, dated January 23, 2009.
- Dresser Quality Procedure Test (QPT)-1, Liquid Penetrant Test, Revision 44, dated March 9, 2009.
- Dresser Liquid Penetrant Test Report, dated March 10, 2009.
- Dresser Hydrostatic Procedure Test (HY) 017, Hydrostatic Shell Testing of Nuclear Pressure Relief Valves, Revision 12, dated March 23, 2009.
- Dresser Hydrostatic Test Report of Valve Base Piece Parts, dated March 10, 2009.
- Dresser Industries Valve Operations Accutest Technical Report dated May 5, 2008

The inspectors discussed use of these procedures with Dresser QA personnel and test technicians. The inspectors also observed test technicians complete liquid penetrant tests and hydrostatic tests of valve parts in the Dresser facility.

b. Observations and Findings

b.1 Test Control Items Reviewed

Dresser's QSM Sections 11 and 12, and procedure CAL-009 provide some of the requirements for test control under Dresser's QA program. Based on the review of a sample of PO packages and associated completed test records the NRC inspectors determined that completed tests were not accomplished in accordance with ASME Section III Code requirements. No discrepancies were noted between completed test records and testing activities as it relates to material, and customer design specifications and POs.

During review of some completed Valve Test Record Function Test and Hydrostatic Test Report forms the NRC inspectors noted that the same serial number test pressure gauges were used for hydrostatic tests conducted at test pressures as low as 750 psig and as high as 3750 psig. The NRC inspectors identified that the vendor maintained proper test control over the conduct of testing and calibration activities; however, the NRC inspectors identified the following issue with the test control program for ASME Code Hydrostatic pressure testing and pressure gauge calibration as required in the 2007 Edition of the ASME Section III Code, Division 1 – NB-6400.

The ASME Code defines the range of pressure test gages as a function of test pressure. The Code defines requirements for both analog and digital type pressure gages. When the NRC inspectors reviewed completed Valve Test Record Function Test and Hydrostatic Test Report forms for several customer POs, it was noted that the same test pressure gauges (based on serial number) were being used for hydrostatic tests conducted at test pressures of 750 psig and 3750 psig and at pressures in between. The range of some of these digital pressure test gauges were 0-15,000 psi and even as high as 0-20,000 psi. The ASME Section III Code requires that digital pressure gages have a combined error due to both calibration and readability that does not exceed 1% of the test pressure.

Dresser's calibration procedure CAL-009, Section 5.0 states that working test gages (digital & dial type) used for hydrostatic testing will be accurate to +/- 0.1% of range with a Dead Weight Tester or accurate to +/- 0.5% of range with a Test Gauge. For a 0-20,000 psi test gauge the resultant accuracy would be +/- 20 psi when using a Dead Weight Tester and +/- 100 psi when using a Test Gauge. Per the 2007 ASME Code Section III, Division 1 – NB-6400 the maximum combined error allowed would be +/- 7.5 psi for a hydrostatic test being conducted at 750 psi, and +/- 37.5 psi for a hydrostatic test being conducted at 3750 psi.

Therefore, during the hydrostatic test conducted at 750 psi when using a 0-20,000 psi pressure gauge the lowest (best) possible combined error per the ASME Code would be +/- 20 psi, which is in excess of that allowed by the ASME Code. With a hydrostatic test conducted at 3750 psi while using the 0-20,000 psi pressure gauge the highest possible combined error would be +/- 100 psi, which would be in excess allowed by the ASME Code if a Test Gauge were used for instrument calibration. This issue is identified as an example of Dresser failing to perform testing in accordance with ASME Section III requirements for components that were manufactured in accordance with ASME Section III. This issue is documented as **Nonconformance 99900054/2009-201-09**.

b.2 Review and Observation of Liquid Penetrant Test and Hydrostatic Test

In accordance with Dresser QPT-1, the NRC inspectors witnessed a Dresser Liquid Penetrant (LP) test of two valve disk retainer plates, Part No 4233401N, Order Number 86-04111-0, Quality 2. The inspector verified that the test technician follow QPT-1 for testing the plates. The inspector found that the technician met all occupational safety and health requirements for conducting the LP test. The inspector witnessed the test technician identify a visual crack in the thread of one of the plates. In accordance with QPT-1 test criteria, the crack still passed acceptance criteria tests since it did not affect leak tightness of plate threads.

In accordance with Dresser HY-017, the NRC inspectors witnessed a Dresser Hydrostatic Pressure test of valve base piece parts. The test technician properly followed procedure instructions for hydrostatic testing of the base to between 450-475 psig for ten minutes to verify if there were no leaks in the valve base. The test technician tested the base piece part for ten minutes at 470 psig and the inspectors witnessed no leakage from the piece parts. The test technician also made sure that the piece parts did not reach a pressure over 506 psig since this would cause the technician to reject the piece part.

Dresser Procedure HY-017 Section 6.2, High Quality Water, provided water chemistry limits in parts per million (ppm) (chlorine, fluorine, etc) for testing the base piece part. The inspectors requested Dresser staff to provide test data to verify that the parts were tested within water chemistry limits.

Dresser informed the inspectors that they periodically send water sample bottles to Accutest Laboratories, a National Environmental Laboratory Accreditation Conference (NELAC) Lab. Dresser provided the inspectors with a Dresser Industries Valve Operations Accutest Technical Report dated May 5, 2008. For the hydrostatic test, test data reports indicated that water chemistry met the requirement of HY-017, Section 6.2 and NQA-1-1994 Edition, Table 3.4-1, "Water Requirements, High Quality Water – Minimum Requirements at Point of Entry into the Item."

c. Conclusions

Except for the issues identified in **Nonconformance 99900054/2009-201-09**, the NRC inspectors concluded that Dresser's test control program requirements appear to be consistent with the regulatory requirements of Criterion XI of Appendix B.

For observation of a liquid penetrant test and a hydrostatic test, the NRC inspectors found that Dresser inspection and testing activities are being performed in accordance with Dresser Procedures and Appendix B, Criterion IX and X.

Based on the limited sample of test control documents and activities reviewed, the NRC inspectors also determined that Dresser's QSM and associated test control procedures were effectively implemented. When using a 0-20,000 psi range digital pressure gage Dresser, as a minimum, exceeded the ASME Section III Code maximum allowable error for hydrostatic testing at 750 psi and possibly for hydrostatic testing at 3750 psi. This issue is identified as **Nonconformance 99900054/2009-201-09**.

9. Handling, Storage and Shipping

a. Inspection Scope

The NRC inspectors reviewed the applicable implementing policies and procedures of Dresser's QA program for handling, storage, and shipping to assess compliance with the requirements of Criterion XIII, "Handling, Storage and Shipping", of Appendix B; ASME Section III, NCA-3857.4, "Handling, Storage, Shipping, and Preservation"; and to Basic Requirement 13, "Handling, Storage and Shipping", of ASME NQA-1-1994. The NRC inspectors reviewed sections of the Dresser QSM and associated QSPs to verify that Dresser maintains a program that effectively controls the handling, storage and shipping of materials to prevent damage or deterioration. The NRC inspectors reviewed the following Dresser QA procedures used to implement policies and procedures that govern Dresser's handling, storage and shipping of materials, items and components:

- QSM Section 13, "Handling, Storage and Shipping", Issue 3, Revision 2, dated December 19, 2008.
- QSP-02, "Quality System", Revision 4.
- Dresser Quality System Procedure (QSP)-06, "Purchasing – Supplier Qualification, Evaluation & Selection," Revision 10, dated August 24, 2007.
- QSP-08, "Material / Product Identification and Traceability," Revision 6.
- QSP-15, "Handling, Storage, Packaging, Preservation and Delivery," Revision 5.

The NRC inspectors also evaluated the following sample of Customer Purchase Orders (PO) for safety-related relief valves. This evaluation was performed in order to verify compliance with any special handling, storage or shipping requirements:

- Duke Power PO # 00085177, Revision 2; per Enertech PO # 619052-1.

- AEP PO # 01527136, dated February 28, 2008; per Enertech PO # 620825, dated March 3, 2008.
- Amergen Energy PO # 80 023729; per Enertech PO # 619725.
- Exelon PO # 00415847, Revision 3, dated January 26, 2007; per Enertech PO # 618629, dated February 7, 2007.
- AEP PO # 01528181, dated April 11, 2008; per Enertech PO # 621057, dated April 15, 2008.
- TVA PO # 00001682, dated May 1, 2006; per Enertech PO # 616986, dated April 21, 2006.
- Dominion PO # 45383781, dated September 16, 2005; per Enertech PO # 615553, dated September 8, 2005.

b. Observations and Findings

b.1 Handling, Storage and Shipping Items Reviewed

Criterion XIII of Appendix B, requires that measures shall be established to control the handling, storage, shipping, cleaning and preservation of material and equipment in order to prevent damage or deterioration. ASME Section III Code, NCA-3857.4, "Handling, Storage, Shipping, and Preservation", states that instructions shall be established for handling, storage, shipping, and preservation of material and source material to prevent damage or deterioration. ASME NQA-1-1994, Subpart 2.1 and 2.2 provide requirements for management of cleaning/cleanness, packaging, shipping, receiving, storage and handling of nuclear plant items and components.

ASME NQA-1-1994, Subpart 2.1 states the following: 1) that the possibility of contaminants (introduced during fabrication, storage, installation, repairs or service) contributing to or causing such malfunction or failure shall be considered; 2) for Class A criteria a very high level of cleanness as evidenced by the freedom from all types of surface contamination; and 3) other materials and compounds to be used on surfaces of items made from austenitic stainless steel or corrosion-resistant alloy shall be evaluated for potential harmful contaminants.

ASME NQA-1-1994, Subpart 2.2 contains the requirements for packaging of items for protection against corrosion, contamination, physical damage, or any effect that would lower the quality or cause the items to deteriorate during the time they are shipped, handled and stored. ASME NQA-1, Subpart 2.2 states the following: 1) Level A items which are not immediately packaged shall be protected from contamination; 2) Level C items require protection from exposure to contaminants; 3) Level D items subject to detrimental contamination or corrosion, either internal or external, shall be suitably protected; 4) tapes or adhesives that could have damaging effects on the item or system shall not be used. For austenitic stainless steel and nickel alloys surfaces paperbacked masking tape shall not be used; 5) Barrier and wrap materials shall not readily support combustion; 6) carbon steel rigging equipment shall not come in direct contact with stainless steel; 7) austenitic stainless steel and nickel-base alloy materials shall be handled in such a manner that they are not in contact with lead, zinc, copper, mercury, or other low melting point elements, alloys, or halogenated material; and 8) levels and methods of storage are defined to minimize the possibility of damage or lowering the quality due to corrosion,

contamination, deterioration, or physical damage from the time an item is stored upon receipt until the time the item is removed from storage.

The NRC inspectors inspected the storage area for nuclear grade stainless steel and nickel alloy steel material components and observed numerous examples of where austenitic stainless steel and nickel-base alloy corrosion resistant materials (i.e. – bar stock) were in direct contact with low alloy carbon steel racks and tables while this material was being maintained in storage. The NRC inspectors also noted that masking tape was being widely used on austenitic stainless steel and nickel-base alloy materials while these materials were being stored. This issue is identified as **Nonconformance 99900054/2009-201-10a**.

When Dresser became aware of the NRC's concern with the issue of nuclear safety-related quality stainless steel and other corrosion resistant materials being in direct contact with carbon steel storage racks, tables, and other carbon and/or low alloy steel material items it decided to separate the corrosion resistant materials from carbon and/or low alloy steel materials. Dresser put cardboard material between the stored stainless steel material and carbon steel storage racks/tables to act as a barrier between the corrosion resistant from carbon and/or low alloy steel materials. This is in contrary to the requirement of ASME NQA-1-1994 that states barrier and wrap materials shall not readily support combustion. The issue of using combustible material as a barrier is identified as **Nonconformance 99900054/2009-201-10b**.

c. Conclusions

Essentially, all austenitic stainless steel and/or nickel alloy steel bar stock stored at Dresser was in contact with non-stainless steel metal and had unqualified (masking) tape in direct contact with austenitic stainless and nickel alloy steel. Further, combustible material was placed in the storage area to isolate this material. These conditions are contrary to Criteria XIII of Appendix B and ASME NQA-1, Subparts 2.1 and 2.2 and are identified as **Nonconformance 99900054/2009-201-10a** and **Nonconformance 99900054/2009-201-10b**.

10. Nonconforming Materials, Parts or Components

a. Inspection Scope

The NRC inspectors reviewed Dresser's QA policies and implementing procedures that govern the control of nonconformances to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B. Specifically, the NRC inspectors reviewed the following policies and procedures established by Dresser:

- Dresser QSM, Section 7.0, "Control of Purchased Materials, Items, and Services," Issue 3, Revision 2, dated December 19, 2008.
- Dresser QSM, Section 15.0, "Control of Nonconforming Items," Issue 3, Revision 2, dated December 19, 2008.
- Dresser QSM, Section 19.0, "Repair/Replacement Activities (NR Program Controls)," Issue 3, Revision 2, dated December 19, 2008.
- QSP-13, "Control of Nonconforming Products – Processing of Internal Nonconformance Reporting and Customer Complaints," Revision 6, dated September

20, 2007.

- QCP-031, "Evaluation and Reporting of Deviations and/or Noncompliance Affecting Safety Related to NRC Regulation 10 CFR Part 21," Revision 0, dated November 13, 1998.
- Form 250-2101, "Nonconformance Report," Revision 02-80.
- Form AE204F, "Repair Plan," Revision 0.
- Form AE901-02, "Deviation Disposition Request," Revision 2.
- Form AE901-05, "Rework/Repair Routing, ASME Section III & Section XI," Revision 4.
- Nonconformance Report 121238 (valve base) – closed 4/30/2007: rework.
- Nonconformance Report 121305 (valve guide) – closed 4/22/07: returned to supplier

b. Observations and Findings

The NRC inspectors noted that QSP-13 includes provisions to address nonconforming materials, parts and services identified prior to shipment to Dresser's customers, but it does not address those detected after shipment to the customer. QSM Section 7.5.15 states that rejected materials are identified as described in Section 15.0 of the QSM. However, QSP-13, as stated above, does not address rejected materials from the customer. Section 19.0 of the QSM addresses nonconformance reporting for repair/replacement activities for shipped materials that may be, or are, returned from the customer. Reporting of nonconformances in shipped items may be documented on various forms such as Form AE901-02, Form AE901-05, and Form AE204F. Of these forms, Form AE204F (used solely for Dresser's 3700 Series Safety Valves) is the only form that includes a reference to 10 CFR Part 21 applicability, whereas Form AE901-02 and Form AE901-05 do not include a reference.

The NRC inspectors observed that the nonconformance reporting process for materials not yet shipped to the customer and the nonconformance reporting process for those materials already shipped to the customer are not parallel, nor is clear direction provided for entering the nonconformances into the same system. Form 250-2101, used for materials not yet shipped, does not reflect accurately the disposition choices described in QSP-13 and QSM Section 15.0. Form AE901-05 is used in lieu of Form 250-2101 for returned materials and includes a block for a nonconformance report number. Neither form nor process includes an interface with 10 CFR Part 21 evaluation and reporting.

The NRC inspectors noted that Dresser's processes governing implementation of Criterion XV of Appendix B and integration with 10 CFR Part 21 processes do not provide consistent and integrated requirements to implement an effective nonconformance reporting process. This issue is identified as **Nonconformance 99900054/2009-201-12**, as examples of inadequate procedure integration and interface.

The NRC inspectors examined two nonconformance reports with completed dispositions. The NRC inspector determined that the issues were documented adequately, the dispositions were

reasonable for the issues identified, and the evaluations appropriately indicated that reporting under 10 CFR Part 21 was not required.

c. Conclusions

The NRC inspectors concluded that Dresser's program requirements for nonconformance reporting are not consistent with the regulatory requirements of Criterion XV of Appendix B, nor is the nonconformance reporting process integrated adequately with 10 CFR Part 21 requirements. The NRC inspectors determined that Dresser's processes to document nonconforming materials are not consistent between those materials still in-house and those already shipped to the customer. This issue is identified as **Nonconformance 99900054/2009-201-12**.

11. Corrective Actions

a. Inspection Scope

The NRC inspectors reviewed Dresser's QA policies and implementing procedures that govern the control of corrective actions to verify compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B. Specifically, the NRC inspectors reviewed the following policies and procedures established by Dresser:

- QSM, Section 16.0, "Corrective Action," Issue 3, Revision 2, dated December 19, 2008.
- QSP-14, "Corrective and Preventive Action," Revision 4, dated October 9, 2007.
- Corrective Action Request (CAR) 2006-014, Dresser did not receive all required information from customer.
- CAR 2006-060, series 1900 bonnets supplied with chaplets in the castings from supplier 1.
- CAR 2006-061, series 1900 bonnets supplied with chaplets in the castings from supplier 2.
- CAR 2009-007, findings identified during external audit.
- Concern/Issue #08-103, series 1900 bonnets supplied with chaplets in the castings from multiple suppliers.
- Effective Problem Solving No. EPS 09-007, "NUPIC Joint Utility Audit #20132", dated January 7, 2009.

b. Observations and Findings

The NRC inspectors examined CARs 2006-014, 2006-060, 2006-061 and 2009-007. CAR 2006-014 was assigned and issued in 2006. Corrective actions were completed, reviewed by QA and the Authorized Nuclear Inspector in 2007, and verified for closure. CAR 2006-014 was determined to be an isolated case based on investigative actions, and training was determined

to be the action to prevent occurrence.

CARs 2007-060 (supplier 1) and 2007-061 (supplier 2), addressing series 1900 bonnets that were supplied with chaplets in the castings, were assigned on December 12, 2007, and on July 14, 2008. Both CARs were closed. The two issues had been initiated on May 15, 2008 in CEBOS (a business process management software that is replacing the currently used SQUID [Supplier Quality Information Database] software) as concern/issue #08-103. These issues are being evaluated by Dresser using the Effective Problem Solving (EPS) process of the Automotive Industry Action Group, CQI-10, "Effective Problem Solving Guideline." The EPS system is being used by Dresser to document all issues, not just those that may lead to issuance of a CAR. CAR 2009-007 (also assigned as EPS 09-007) was initiated, but is being resolved under the EPS process, not the documented CAR process.

Dresser has been using the EPS system in a testing phase and recognizes that the EPS process is not addressed in the QSM or in any Dresser procedure. An interface with the requirements of 10 CFR Part 21 reporting is not specified, nor is the process integrated with the control of nonconforming items process and the repair/replacement activities process, as necessary. The failure to link this process to the Dresser Part 21 program is another example of **Nonconformance 99900054/2009-201-12.**

Section 16.2 of the QSM requires the Manager QA to review annually pertinent data to determine if recurring problems exist. This determination is included in the annual quality system evaluation (similar to the trending process). The NRC inspectors examined the annual evaluation of the quality system, as documented in the management reviews of July 16, 2008 ("Status of Preventative and Corrective Actions") and February 4, 2009 ("Quality Management Review Weekly Summary of Open Issues") for the annual quality system evaluation. Dresser compiles a Total Weekly Open Issues by Department summary, which is discussed at the weekly quality staff meetings. Graphs display the number of complaints categorized by area (e.g., shipping). These issues are also discussed at the monthly Goal Deployment Process meetings. On the basis of the NRC inspector's review of these processes, the inspector concluded that Dresser is effectively implementing its process for identifying recurring problems.

c. Conclusions

The NRC inspectors concluded that Dresser's program requirements, as written, for corrective actions are generally consistent with the regulatory requirements of Criterion XVI of Appendix B. However, Dresser is using the EPS system to document the corrective action process that is not documented within the QSM or in quality procedures. Additionally, the corrective action process is not integrated with other related process, such as 10 CFR Part 21 reporting, control of nonconforming items process, and repair/replacement activities processes, as necessary. The NRC inspectors determined that this issue is another example of **Nonconformance 99900054/2009-201-12.**

12. Audits

a. Inspection Scope

The NRC inspectors reviewed Dresser's QSM and implementing policies and procedures that govern the control of periodic audits to assess compliance with Criterion XVIII, "Audits," of Appendix B; and to Basic Requirement 18, "Audits," of ASME NQA-1-1994. The NRC inspectors reviewed a limited sample of Dresser's Supplier Audits.

Criterion XVIII, "Audits," of Appendix B requires, in part, that periodic audits shall be carried out to verify compliance with all aspects of the QA program and to determine the effectiveness of the program. The audits shall be performed in accordance with written procedures or check lists by appropriately trained personnel not having direct responsibilities in the areas being audited. Audit results shall be documented and reviewed by Dresser's management having responsibility in the area audited.

ASME NQA-1-1994 Edition states that: 1) audits shall be performed in accordance with written procedures or checklists; 2) elements that have been selected for audit shall be evaluated against specified requirements; 3) objective evidence shall be examined to the depth necessary to determine if these elements are being implemented effectively; and 4) audit results shall be documented by auditing personnel and shall be reviewed by management having responsibility for the area audited.

b. Observation and Findings

The NRC inspectors reviewed procedures and documents associated with audits that were conducted by Dresser staff of their respective suppliers on Dresser's ANSL and completed Supplier Audit Assessment Checklists. There were multiple examples of completed Supplier Audit Assessment Checklist forms, where the checklists were improperly filled out and inconsistently completed, especially in the section of the form related to identifying required Codes, Standards or other industry requirements and their particular edition. The NRC inspectors observed that guidance did not exist in Dresser procedure QSP-17 on how the Lead Auditor should complete the Supplier Audit Assessment Checklist form. In some cases the ASME Section III Code Year was left blank, filled-in incorrectly or marked with a checkmark rather than listing the appropriate code year/edition and then the associated ASME Code Addenda area was left blank or incorrectly filled-in. The area labeled "Other (Describe)" was filled in, but no description of what the other item listed meant.

The lead auditors who completed this checklist interpreted the form differently and as to how they were expected to fill in the form. Contrary to Appendix B requirements were not being properly implemented to maintain accurate audit documents and for consistent management review of such audit documents. Contrary to ASME NQA-1, Dresser's written procedures (QSP-17) did not provide guidance on how to properly complete the Supplier Audit Assessment Checklists. This issue is identified as **Nonconformance 99900054/2009-201-11**.

c. Conclusions

The NRC inspectors reviewed procedures and documents associated with audits conducted by Dresser QA staff of their respective suppliers on their ANSL and the associated completed Supplier Audit Assessment Checklists. There were multiple examples of where Dresser's completed Supplier Audit Assessment Checklist forms were improperly filled out and inconsistently completed. The NRC inspectors observed that guidance was missing within Dresser procedure QSP-17 on how the Lead Auditor should complete the Supplier Audit Assessment Checklist form. This is contrary to Appendix B requirements for maintaining accurate audit documents and for lack of consistent management review of such audit documents. Contrary to ASME NQA-1 the written procedures (QSP-17) were not sufficient to provide guidance on how to properly complete the Supplier Audit Assessment Checklists.

13. Entrance and Exit Meetings

On March 9, 2009, the NRC inspectors discussed the scope of the inspection with Richard Budzinski, Director of Operational Excellence & Quality Systems of Dresser; and Dresser management and engineering staff. On March 13, 2009, the NRC inspectors presented the inspection results and observations during an exit meeting with Richard Budzinski and other Dresser management and engineering staff. A list of entrance and exit meeting attendees is included as an attachment to this report.

ATTACHMENT

1. PERSONS CONTACTED

<u>NAME</u>		<u>TITLE</u>	<u>ENTRANCE</u>	<u>EXIT</u>	<u>INTERVIEWED</u>
Allen, John	Dresser	Purchasing Mgr	√		√
Alwell, Kerry	Dresser	Project Administrator			√
Bartleman, John	USNRC	Inspector	√	√	
Budzinski, Rich	Dresser	Director, Operational Excellence & Quality Systems	√	√	√
Clayton, Mark	Dresser	Purchaser			√
Collins, Marlene	Dresser	OPEX & Quality Systems, Lead Field Specialist			√
Danzy, Roger	Dresser	VP, Technology & Development	√	√	
Deville, Trint	Dresser	Industrial Engr.			√
Dikson, Jeramy	Dresser	Mgr, Sustaining Engr.	√		
Dingeldein, Ernie	Dresser	Director of Projects		√	
Douzart, Martin	Dresser	Receiving Inspector			√
Eddeninger, Ted	Dresser	Material Handler			√
Freet, Rodney	Dresser	QA Document Specialist			√
Hammer, Charles "Gary"	USNRC	Technical Expert	√	√	
Hanson, Kevin	Dresser	QC Supervisor			√
Heck, Erik	Dresser	Mgr., Quality Assurance	√	√	√
Hudson, Andy	Dresser	Chief Engr. Nuclear Design	√	√	√
Huffman, Rolland	Dresser	Sr. Application Engr.			√
Keim, Andrea	USNRC	Inspector-In-Training	√	√	
Klein, Jason	Dresser	Chief Engr., Apps.	√	√	
Lair, Brenda	Dresser	OPEX & Quality Systems, Quality Engineer			√
Lueder, Thomas	Dresser	Dir. Manufacturing	√		√
McNabb, Tom	Dresser	Mgr. Quality Control	√	√	
Moreau, Everette	Dresser	QA Document Specialist			√
Nakoski, John	USNRC	Branch Chief, CQVB2	√	√	
Neal, Michael	Dresser	Quality Engineer			√
Pasquale, Daniel	USNRC	Inspection Team Leader-In-Training	√	√	√

Peterson, Bill	Dresser	Director of Operations	√	√	
Sinks, Donna	USNRC	Inspector-In-Training	√	√	
Smart, Larry	Dresser	Mgr. Appl. Engr.	√	√	
Smith, Hilton	Dresser	QA Inspector			√
Talbot, Francis	USNRC	Inspector	√	√	
Teer, Bill	Dresser	Quality Engr.	√	√	√
Watz, John P.	Dresser	Quality System Support	√	√	√

2. INSPECTION PROCEDURES USED

Inspection Procedure 43002, "Routine Inspections of Nuclear Vendors."

Inspection Procedure 43004, "Inspection of Commercial-Grade Dedication Programs."

Inspection Procedure 36100, "Inspection of 10 CFR Part 21 and 50.55(e) Programs for Reporting Defects and Nonconformance."

3. LIST OF ITEMS OPEN, CLOSED AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
99900054/2009-201-01	Opened	Violation	Inadequate procedure related to reporting requirements of 10 CFR 21.21
99900054/2009-201-02	Opened	Violation	Inadequate controls for requiring 10 CFR Part 21 on purchase orders
99900054/2009-201-03	Opened	Violation	Inadequate procedure for control of 10 CFR Part 21 records
99900054/2009-201-04	Opened	Violation	Failure to notify the NRC in the required timeframe of 10 CFR 21.21
99900054/2009-201-05	Opened	Nonconformance	Inadequate commercial grade dedication program requirements
99900054/2009-201-06	Opened	Nonconformance	Dynamic load not included in documentation for a relief valve as required by the ASME Code
99900054/2009-201-07	Opened	Nonconformance	Inadequate controls for requiring Appendix B on purchase orders
99900054/2009-201-08	Opened	Nonconformance	Inadequate records associated with auditing of a supplier
99900054/2009-201-09	Opened	Nonconformance	Inadequate controls for the conduct of hydrostatic testing with test equipment appropriate for test
99900054/2009-201-10a	Opened	Nonconformance	Inadequate protection of austenitic stainless steel while in storage or while handling

99900054/2009-201-10b	Opened	Nonconformance	Inadequate control of combustible material in storage and handling areas
99900054/2009-201-11	Opened	Nonconformance	Inadequate guidance for completion of audit forms
99900054/2009-201-12	Opened	Nonconformance	Inadequate controls linking corrective action, nonconformance, and returned items issues to 10 CFR Part 21 Program