

July 31, 2013

Giancarlo Sprenger, Quality Manager  
IBF S.p.A.  
Via E. Berlinguer, 18  
20040 Colnago (MI)  
Italy

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION REPORT  
NO. 99901428/2013-201 AND NOTICE OF NONCONFORMANCE

Dear Mr. Sprenger:

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the IBF S.p.A. facility (hereafter referred to as IBF) in San Nicolo, Italy, from June 17 to June 21, 2013. The purpose of this limited scope inspection was to assess IBF's compliance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This inspection evaluated the implementation of IBF's quality assurance (QA) program, with a focus on fabrication of reactor coolant piping for the AP1000 reactors and for other operating reactor plants. The enclosed report presents the results of this inspection. This NRC inspection report does not constitute the NRC's endorsement of your overall QA or 10 CFR Part 21 programs.

Based on the results of this inspection, the inspectors found that the implementation of your QA program failed to meet certain NRC requirements imposed on you by your customers in the areas of procurement document control and control of purchased material, equipment, and services. These nonconformances are cited in the enclosed notice of nonconformance (NON) and the circumstances surrounding them are described in the enclosed report.

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON. The NRC will consider extending the response time if you show good cause to do so.

The NRC inspectors determined that overall, the fabrication of the reactor coolant piping for the AP1000 fleet and for other operating reactor plants was conducted in accordance with the Commission's rules and regulations and the technical and quality requirements passed down from your customers or NRC licensees. The NRC inspectors determined that, with the exception of the cited nonconformances, your programs for implementing the requirements of 10 CFR Part 21 and Appendix B to 10 CFR Part 50 for control of special processes, material traceability, control of measuring and test equipment, and corrective actions and nonconformances generally met the applicable regulations.

The NRC inspection, however, did identify some concerns with the way you qualified suppliers of services and procuring services that have and will be used in safety-related applications. The circumstances surrounding this issue are described in detail in the subject inspection report. This inspection was limited in scope, and it is expected that you will determine the extent to which these commercial services were used in safety-related applications, develop and implement a commercial-grade dedication program, and then verify that all the appropriate critical characteristics for performance of the services were adequately conducted by the supplier of the commercial service. These issues warrant your attention and consideration for their impact on past and future safety-related work and reportability in accordance with 10 CFR Part 21.

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

Sincerely,

/RA/

Edward H. Roach, Chief  
Mechanical Vendor Branch  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Docket No.: 99901428

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901428/2013-201  
and attachment

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

Sincerely,

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Docket No.: 99901428

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and attachment

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<b>DATE</b>	07/29/2013	07/29/13	07/30/2013	07/29/2013
<b>OFFICE</b>	NRO/DCIP/CAEB	NRO/DCIP/CMVB		
<b>NAME</b>	TFrye	ERoach		
<b>DATE</b>	07/22/2013	07/31/2013		

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## NOTICE OF NONCONFORMANCE

IBF S.p.A.  
San Nicolo, Italy

Docket No. 99901428  
Report No. 2013-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the IBF S.p.A. (IBF) facility in San Nicolo, Italy, on June 17-21, 2013, certain activities were not conducted in accordance with NRC requirements that were contractually imposed on IBF by its customers or NRC licensees:

- A. Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, 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."

Contrary to the above, IBF failed to assure that purchased material, equipment, and services conformed to the procurement documents through source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, or examination of products upon delivery. Specifically,

1. The IBF quality program allows for the procurement and acceptance of materials and services from commercial suppliers without performing commercial-grade dedication to verify that the material and services will perform their intended safety function. IBF procured commercial services from vendors supplying material, forging services, machining services, calibration services, chemical analysis services, material pickling services, lead auditor services, and nondestructive examination Level III services without conducting appropriate oversight and commercial-grade dedication for these commercially procured services.
2. IBF Quality System Manual (QSM) Section 11, "Control of Purchased Material Equipment and Services" and IBF Procedure PGQ-N25, "Qualification of Suppliers," allow IBF to procure material and services based on American Society of Mechanical Engineers (ASME) certification without verifying implementation of their quality assurance program through audit or other actions, as described in NRC Information Notice 86-21 and supplements 1 & 2.
3. IBF QSM Section 11 adopts the provisions of Subsection NCA 3855.3(c) of Section III of the ASME Boiler and Pressure Vessel Code that allows for the acceptance of commercial calibration services for use in safety-related applications without performing commercial-grade dedication, including the use of additional accrediting bodies not approved by the NRC, and the use of calibration laboratories outside of the United States.

These issues have been identified as Nonconformance 99901428/2013-201-01.

- B. Criterion IV, "Procurement Document Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic

Licensing of Production and Utilization Facilities,” states, in part, 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.”

Contrary to the above, as of June 21, 2013, IBF failed 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. Specifically,

1. QSM Section 11 describes the control of purchased materials, equipment, and services and the ASME Section III NCA-3800 process for utilization of unqualified source material. The IBF QSM was written to specifically support ASME Section III NCA-3800 code implementation activities and includes specific controls that implement the quality program requirements to meet ASME requirements. However, the manual does not address implementing specific quality assurance requirements to support the supply of 10 CFR Part 50 Appendix B safety-related basic components as defined 10 CFR Part 21.
2. QSM Section 11 and PGQ-N40 define the requirements for procurement documentation; however, neither document requires the invocation of Appendix B to 10 CFR Part 50 or 10 CFR Part 21 for safety-related purchase orders. In addition, PGQ-N25 defines the responsibilities and methods for selection and qualification of materials, source materials, and services suppliers for nuclear components under ASME section III NCA-3800, but does not identify or reference Appendix B to 10 CFR Part 50 for these specific responsibilities and methods for procurement of safety-related basic components.

These issues have been identified as Nonconformance 99901428/2013-201-02.

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, Mechanical Vendor Branch, 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 noncompliance; and (4) the date when your corrective action will be completed. Where good cause is shown, the NRC will consider extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC’s Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or Safeguards Information so that the NRC can make it available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld, you must specifically identify the portions of your response that you seek to have withheld

and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information 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, "Protection of Safeguards Information: Performance Requirements."

Dated this 31<sup>st</sup> of July 2013.

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

Docket No.: 99901428

Report No.: 99901428/2013-201

Vendor: IBF S.p.A.  
Via E. Berlinguer, 18  
20040 Colnago (MI)  
Italy

Vendor Contact: Mr. Giancarlo Sprenger  
Quality Manager  
Telephone: +39-335-7702107  
E-mail: g.sprenger@ibfgroup.it

Nuclear Industry Activity: IBF S.p.A., is under contract to fabricate reactor coolant piping for the AP1000 fleet and operating reactors.

Inspection Dates: June 17 - 21, 2013

Inspectors: Samantha Crane NRO/DCIP/CMVB, Team Leader  
Richard McIntyre NRO/DCIP/CMVB, Inspector  
Brent Clarke NRO/DCIP/CMVB, Inspector  
Eric Reichelt NRO/DE/CIB, Technical Specialist

Approved by: Edward H. Roach, Chief  
Mechanical Vendor Branch  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

## **EXECUTIVE SUMMARY**

IBF S.p.A.  
99901428/2013-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the IBF S.p.A. (IBF) facility in San Nicolo, Italy, from June 17 – 21, 2013. The purpose of this inspection was to verify that IBF is adequately implementing a quality assurance (QA) program in accordance with Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance."

During this inspection, the NRC inspectors evaluated the implementation of IBF's QA program activities associated with the fabrication of reactor coolant piping for AP1000 reactor plants and operating reactors. Specifically, the NRC inspectors reviewed the procurement, and fabrication of reactor coolant piping, as well as IBF's corrective action, nonconformance, and 10 CFR Part 21 programs. The inspectors observed IBF's staff performing heat treatment, nondestructive examination, mechanical testing, dimensional testing, calibration, controlling material traceability, and segregating nonconforming items.

Additionally, the inspection team conducted interviews with responsible IBF personnel and reviewed documents to determine if IBF performed activities in accordance with the applicable design, quality, and technical requirements of the customer specifications, Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, and applicable American Society for Testing and Materials standards imposed by IBF's customers.

The following regulations served as the bases for the NRC inspection:

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

During the conduct of this inspection, the inspectors implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated April 25, 2011, and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012.

This was the first NRC vendor inspection performed at IBF in San Nicolo, Italy.

The inspectors determined that, in general, the manufacturing activities that IBF performed in support of safety-related reactor coolant piping was performed in accordance with the Commission's rules and regulations and the technical and quality requirements passed down to IBF from NRC licensees or its contractors. The information below summarizes the results of this inspection.

### **Procurement Document Control and Control of Purchased Material, Equipment, and Services**

The inspectors reviewed the IBF process for controlling purchased materials, source materials, and subcontracted services to verify conformance to NRC regulatory requirements, ASME Section III code, and customer's purchase order requirements. The inspectors determined that



IBF's procurement document control and control of purchased material, equipment and services did not conform to the requirements of Criteria IV and VII of Appendix B to 10 CFR Part 50.

The inspectors issued NON 99901428/2013-201-01 because IBF procured commercial services for use in safety-related applications without conducting appropriate oversight and commercial-grade dedication; IBF's QA program allows for the qualification of safety-related suppliers based on ASME certification without verifying implementation of their QA program through audit or other actions; and IBF's QA program adopts the provisions of NCA 3855.3(c) that allows for the acceptance of commercial calibration services for use in safety-related applications without performing commercial-grade dedication, the use of additional accrediting bodies not approved by the NRC, and the use of calibration laboratories outside of the United States.

The inspectors issued NON 99901428/2013-201-02 because IBF's quality assurance program does not address implementing specific quality assurance requirements to support the supply of Appendix B to 10 CFR Part 50 safety-related basic components as defined 10 CFR Part 21; and IBF's quality assurance program does not identify or reference Appendix B to 10 CFR Part 50 for the responsibilities and methods for selection and qualification of materials, source materials, and services suppliers for safety-related basic components.

#### Other Inspection Areas

The inspectors determined that IBF is implementing its programs for the control of special processes, traceability, control of measuring and test equipment, nonconforming materials parts and components, and corrective actions in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the inspectors also determined that IBF is implementing its policies and procedures associated with these programs. No findings of significance were identified.

## **REPORT DETAILS**

### **1. 10 CFR Part 21 Program**

#### **a. Inspection Scope**

The Inspectors reviewed the policies and implementing procedures that govern the IBF program under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance." Additionally, the inspectors reviewed and evaluated postings for compliance with 10 CFR 21.6, "Posting Requirements." To verify an adequate link to the 10 CFR Part 21 process, the inspectors also reviewed IBF's procedures that govern corrective action and nonconforming conditions to verify adequate implementation of the regulatory requirements identifying items that cause conditions adverse to quality. The attachment to this inspection report lists the documents reviewed by the Inspectors.

#### **b. Observations and Findings**

The inspectors verified that IBF's procedure, PGQ-N71, "Procedure for Reporting of Defects and Noncompliance (Reference to 10 CFR Part 21)," Revision 1, dated May 15, 2013, effectively implemented the requirements of 10 CFR 21.21(a)(1) for evaluating deviations and failures to comply. PGQ-N71 also implemented the requirements of 10 CFR 21.21(d) regarding directors or responsible officers notifying NRC or informing affected customers (when applicable) of identified defects or failures to comply associated with a substantial safety hazard.

The inspectors verified that the corrective action report (RAC) form and the nonconformance report (NCR) form included in PGQ-N75, "Corrective Actions Management Procedure," and PGQ-N70, "Nonconformity Control," respectively, provided a link to the 10 CFR Part 21 program. At the time of the inspection, IBF had not performed any 10 CFR Part 21 evaluations. The inspectors reviewed a sample of 11 RACs and 10 NCRs to verify that IBF correctly determined that they did not need to perform an evaluation in accordance with 10 CFR Part 21 requirements.

The inspectors observed that IBF satisfied the posting requirements in 10 CFR 21.6. The postings included a copy of Section 206 of the Energy Reorganization Act of 1974, as amended, a copy of 10 CFR Part 21, and a copy of PGQ-N71.

The inspectors verified a sample of IBF's purchase orders (PO), and determined that IBF had implemented a program consistent with the requirements in 10 CFR 21.31 for specifying the applicability of 10 CFR Part 21 in its POs for basic components.

#### **c. Conclusions**

The inspectors determined that IBF appropriately translated the requirements of 10 CFR Part 21 into implementing procedures and, for those activities that the inspectors reviewed, implemented them in accordance with IBF's procedures. No findings of significance were identified.

## 2. Procurement

### a. Inspection Scope

The inspectors reviewed IBF's policies and procedures for procurement processes, including IBF Quality Systems Manual (QSM) Section 11, "Control of Purchased Material Equipment and Services" and PGQ-N40, "Quality System Procedure for Material, Source Material and Services Procurement for Nuclear Components," and PGQ-N25, "Qualification of Suppliers," to verify compliance with Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

The inspectors reviewed the IBF processes for controlling purchased materials, unqualified source material, and subcontracted services, as well as the IBF purchase orders, purchase specifications, supplier triennial audits, and receiving inspection activities, to verify conformance to NRC regulatory, ASME Section III code, and customer purchase order requirements. The inspectors reviewed IBF oversight activities for a sample of vendors supplying unqualified source material, qualified source material, forging services, machining services, calibration services, chemical analysis services, pickling services, lead auditor services, and nondestructive examination (NDE) Level III services. The attachment to this inspection report lists the documents reviewed by the inspectors.

### b. Observations and Findings

#### b.1 Procurement Policies and Procedures

The inspectors reviewed QSM Section 11, PGQ-N40, and PGQ-N25 to verify compliance with Criterion IV and Criterion VII of Appendix B to 10 CFR Part 50.

Criterion IV of Appendix B to 10 CFR Part 50 states, in part, 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."

As of June 21, 2013, IBF failed 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 procurement documents. IBF's QA program is designed to ASME Section III Subsection NCA 3800 and does not address the differences in requirements when performing work under 10 CFR 50 Appendix B, as it relates to addressing 10 CFR Part 50 Appendix B in procurement documents.

QSM Section 11 describes the implementation for controlling purchased materials and services for source material (ingots, forgings, bars, and pipes), various support services, quality material organizations (QMO), approved suppliers of source materials, and the ASME Section III NCA-3800 process for utilization of unqualified source material. The IBF QSM was written to support ASME Section III NCA-3800 code implementation activities and includes specific controls that implement the quality program requirements

to meet ASME requirements. The manual does not address implementing specific quality assurance requirements to support the supply of 10 CFR Part 50 Appendix B safety-related basic components as defined in 10 CFR Part 21. The inspectors identified this issue as an example of Nonconformance 99901428/2013-201-02 for failure 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. IBF took immediate corrective action and issued RAC 13000031 to address this issue.

QSM Section 11 and PGQ-N40 define the requirements for procurement documentation; however, neither document requires the invocation of 10 CFR 50 Appendix B or 10 CFR Part 21 for safety-related purchase orders. The inspectors reviewed a sample of six purchase orders for safety-related components and services and identified that none of the purchase orders invoked Appendix B to 10 CFR Part 50. In addition, PGQ-N25 defines the responsibilities and methods for selection and qualification of materials, source materials, and services suppliers for nuclear components under ASME section III NCA-3800, but does not identify or reference Appendix B to 10 CFR Part 50 for these specific responsibilities and methods for procurement of safety-related Appendix B basic components. The inspectors identified this issue as another example of Nonconformance 99901428/2013-201-02 for failure to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in procurement documents. IBF took immediate corrective action and issued RAC 13000031 to address this issue.

Criterion VII of Appendix B to 10 CFR Part 50 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."

As of June 21, 2013, IBF failed 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 and to assure that purchased material, equipment, and services conformed to the procurement documents. Specifically, IBF's QA program is designed to ASME Section III Subsection NCA 3800 and does not address the differences in requirements when performing work under Appendix B to 10 CFR Part 50, as it relates to the qualification of subsuppliers. In addition, the IBF quality program allows for the procurement and acceptance of materials and services from commercial suppliers without performing commercial-grade dedication to verify that the material and services will perform their intended safety function.

ASME Section III Subsection NCA 3820(c) allows the user of material supplied by a certificate holder to procure material without performing a survey, qualification, or audit. In addition, NCA 3842.1(b) allows for the procurement of material from a material organization that has been qualified by a different certified Material Organization or Certificate Holder without requalifying the supplier. QSM Section 11 and PGQ-N25 incorporate the provisions of NCA 3820(c) and 3842.1(b) and allow IBF to procure material and services based on ASME certification without verifying implementation of

the supplier's QA program through audit or other actions described in NRC Information Notice (IN) 86-21 with Supplements 1 & 2. NRC IN 86-21 with Supplements 1 & 2 allow ASME certificate holders to take credit for the ASME certification for meeting the programmatic aspects of the QA program; however, in most cases the certificate holder must perform activities such as audit to verify full implementation of the program when purchasing basic components in accordance with Appendix B to 10 CFR Part 50. The inspectors identified this issue as an example of Nonconformance 99901428/2013-201-02 for failure to assure that purchased material, equipment, and services conform to the procurement documents. IBF took immediate corrective action and opened RAC 13000036 to address this issue.

NCA 3855.3(c) allows an ASME Material Organization or Certificate Holder to accept subcontracted calibration services without performing a survey or audit of the calibration supplier. This acceptance is dependent on the supplier's accreditation by an accrediting body recognized by National Voluntary Laboratory Accreditation Program (NVLAP) through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), provided the following requirements are met:

- (1) The accreditation is to ANSI/ISO/IEC 17025:2005, "General Requirements for the Competence of Testing and Calibration Laboratories."
- (2) The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.
- (3) The Material Organization or Certificate Holder shall specify through procurement documents that the calibration certificate/report shall include identification of the laboratory equipment/standards used and shall include as-found and as-left data.
- (4) The Material Organization or Certificate Holder shall be responsible for reviewing objective evidence for conformance to the procurement documents.
- (5) This activity shall be documented in the Material Organization's or Certificate Holder's Quality Program Manual.

Accreditation by an accrediting body recognized by NVLAP through the ILAC MRA may only be used as the basis for qualifying a commercial calibration laboratory as part of the commercial-grade dedication process when all of the requirements described in the Arizona Public Service Company safety evaluation report (Agencywide Documents Access and Management System Accession No. ML052710224) are met. Additionally, the accreditation must be by one of the six accrediting bodies approved by the NRC and the calibration laboratory must be located within the United States. Accreditation by one of the six accrediting bodies recognized by NVLAP through the ILAC MRA and approved by the NRC may not be used as the basis for qualifying safety-related calibration services without performing commercial-grade dedication.

QSM Section 11 adopts the provisions of NCA 3855.3(c) that allows for the following: acceptance of commercial calibration services for use in safety-related applications without performing commercial-grade dedication, the use of additional accrediting bodies not approved by the NRC, and the use of calibration laboratories outside of the United States. Additionally, IBF does not have a commercial-grade calibration program and therefore could not dedicate the services.

The inspectors identified this issue as an example of Nonconformance 99901428/2013-201-02 for failure to assure that purchased material, equipment, and

services conform to the procurement documents. IBF took immediate corrective action and issued RAC 13000020 to address this issue.

**b.2 Implementation of Procurement Document Control and Control of Purchased Material, Equipment, and Services**

The inspectors reviewed IBF oversight activities for a sample of vendors supplying unqualified source material, materials from QMOs, forging services, machining services, calibration services, chemical analysis services, pickling services, lead auditor services, and NDE Level III services. The inspectors reviewed the applicable purchase orders, purchase specifications, qualification audits, and receiving inspection activities to verify program implementation.

Foroni SpA supplies ingots and rough round bars to IBF for the production of hot legs, cold legs, and surge lines. The inspectors reviewed the purchase order, purchase specification, and the qualification audit. For the ingots procured from Foroni, IBF completed the necessary code requirements of NCA-3855.5 for the "utilization of unqualified source material" as allowed by their ASME Quality System Certificate issued in April 2011. The inspectors verified that IBF performed all verification activities required by the purchase specifications, including review of the Foroni Technical Program of Manufacturing Document for the round bars and the accompanying certified material test report. The inspectors also reviewed the IBF material receiving report dated January 17, 2013, and the chemical analysis from their subcontractor Exnova SrL, dated January 17, 2013, which was part of NCA-3855.5 material upgrade process. No findings of significance were identified during this review.

The inspectors reviewed IBF procurement and oversight activities for vendors supplying forging services, machining services, calibration services, chemical analysis, pickling services, lead auditor services, and NDE Level III services. These suppliers were listed on the IBF ASL as approved suppliers of safety-related services. For each service, the inspectors reviewed the IBF purchase order, purchase specification, quality control plan, manufacturing specification, supplier qualification audit, receiving inspection activities, and the supplier's material test report or certificate of conformance or compliance, as applicable.

Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50, 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."

As of June 21, 2013, IBF failed 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, and to assure that purchased material, equipment, and services conformed to the procurement documents. Specifically, IBF procured commercial services for use in safety-related applications without conducting appropriate oversight and commercial-grade dedication for these commercially procured services.

The inspectors reviewed the supplier qualification audits for Forgiatura Morandini for forging and bending services, OPM for machining and milling services, Exova SrL for chemical analysis, Smart NDT for calibration services, and Mr. Pier Luigi Dinelli for NDE Level III services and the conduct of IBF internal audits. The inspectors identified that the suppliers were not implementing an Appendix B to 10 CFR Part 50 QA program, but had varying degrees of commercial programs such as ISO-9001, ISO-17025 or other commercial quality program requirements. After review of all applicable documentation and multiple discussions with IBF staff, the inspectors concluded that the IBF program allows for the procurement and acceptance of materials and services from commercial suppliers without performing commercial-grade dedication to verify that the material and services will perform their intended safety function. Additionally, IBF does not implement a commercial-grade dedication program. The inspectors identified this issue as an example of Nonconformance 99901428/2013-201-01 for failure 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 and to assure that purchased material, equipment, and services conform to the procurement documents. IBF took immediate corrective action and issued RAC13000017 and RAC13000020 to address this issue.

To determine the acceptability of using these commercial services for safety-related applications, IBF will need to establish and implement a commercial-grade item dedication program. Then, IBF will need to verify that all the appropriate critical characteristics for performance of the services were adequately conducted by the supplier of the commercial service. Finally, IBF will need to perform a 10 CFR Part 21 evaluation, as appropriate, to determine the effect of using these commercial services on basic components already delivered to US nuclear customers.

c. Conclusions

The inspectors reviewed the IBF process for controlling purchased materials, source materials, and subcontracted services to verify conformance to NRC regulatory requirements, Section III of the ASME Code, and customer's purchase order requirements. The inspectors determined that IBF's procurement document control and control of purchased material, equipment and services did not conform to the requirements of Criteria IV and VII of Appendix B to 10 CFR Part 50.

The inspectors issued Nonconformance 99901428/2013-201-01 because IBF procured commercial services for use in safety-related applications without conducting appropriate oversight and commercial-grade dedication. IBF's QA program allows for the qualification of safety-related suppliers based on ASME certification without verifying implementation of their QA program through audit or other actions; and IBF's QA program adopts the provisions of NCA 3855.3(c) that allows for the acceptance of commercial calibration services for use in safety-related applications without performing commercial-grade dedication, the use of additional accrediting bodies not approved by the NRC, and the use of calibration laboratories outside of the United States.

The inspectors issued Nonconformance 99901428/2013-201-02 because IBF's quality assurance program does not address to implementing specific quality assurance requirements to support the supply of Appendix B to 10 CFR Part 50 safety-related basic components as defined in 10 CFR Part 21; and IBF's quality assurance program does

not identify or reference 10 CFR Part 50 Appendix B for the responsibilities and methods for selection and qualification of materials, source materials, and services suppliers for safety-related basic components.

### 3. Material Traceability

#### a. Inspection Scope

The inspectors reviewed IBF policies and procedures that govern material traceability to verify compliance with Criterion VIII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50. The inspectors observed the manufacture, inspection, and testing of reactor coolant piping for the AP1000 reactor plants at V. C. Summer and Vogtle to verify that all materials were marked with unique identifiers traceable to procurement records. The attachment to this inspection report lists the documents reviewed by the inspectors.

#### b. Observations and Findings

The inspectors verified that IBF established and implemented policies and procedures for identifying and controlling items and that identification markings were applied using materials and methods that provided a clear and legible identification and did not adversely affect the function or service life of the piping. Section 12 of IBF's QSM provided the guidance for traceability and Section 13 of IBF's QSM provided guidance on process controls. The inspectors identified that IBF used both a shop manufacturing traveler system and a quality plan for each manufactured pipe. In combination, these two documents adequately established and tracked the quality activities associated with the manufacturing, inspection, and shipping of the piping.

The inspectors verified that IBF permanently stamped all pipe sections with piece marks traceable to design, shop, and erecting drawings. Shop manufacturing travelers and quality plans were used following receipt of the steel ingot through final inspection and shipping. Shop manufacturing travelers and piece marks were witnessed on several pipes during many stages of manufacture including before and after heat treatment, during dimensional testing, during liquid dye penetrant testing, and during eddy current testing.

Additionally, test specimens were inspected before and after destructive testing. The inspectors verified stamping on all specimens before tensile and bend testing and then verified the resulting pieces were adequately labeled and bagged following testing.

#### c. Conclusions

The inspectors reviewed IBF's processes and procedures for ensuring that material traceability was maintained in accordance with customer requirements. The inspectors verified piece marks and shop manufacturing travelers on several pipes and selected one cold leg pipe that was in final inspection and verified that it was traceable to procurement and inspection records. The inspectors also verified that no uncontrolled materials were present in the shop. No findings of significance were identified.

### 4. Control of Special Processes



a. Inspection Scope

The inspectors reviewed IBF policies and implementing procedures that govern the control of special process to verify compliance with Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. The inspectors observed heat treatment, NDE, and mechanical testing performed in the Metallurgical Testing Lab and reviewed completed heat treatment and NDE reports to verify compliance with the regulatory and customer requirements. The inspectors also met with the IBF Quality Control Inspectors to discuss the relationship between the shop travelers and the Quality Control Plans. The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

The inspectors witnessed production heat treatment of a cold leg section for Vogtle Unit 4 and verified that the heat treatment was performed in accordance with the IBF production heat treatment procedure. The inspectors reviewed the heat treatment logs and verified that they complied with QSM Section 13. The inspectors also verified that the heat treatment operator's qualifications were in accordance with PGQ-N15 "Heat Treatment Personnel Qualification," and that the operator's qualifications were reviewed annually and are based on education, training and satisfactory performance.

The inspectors witnessed mechanical testing performed for reactor coolant piping. The inspectors witnessed tensile testing and bend testing for the Vogtle Unit 4 cold leg, and grain size monitoring for the V.C. Summer Unit 3 cold leg. The inspectors verified that the test results met the acceptance criteria in the customer's specifications and the appropriate ASME and ASTM standards.

The inspectors witnessed a dye penetrant test (PT), and an ultrasonic test (UT) performed on a cold leg for V.C. Summer Unit 3. The inspectors verified that the PT and UT were performed in accordance with customer requirements and IBF procedures, that the Level II operators' qualifications complied with PGQ-6.2.1, "Written practice for training and qualification of Non Destructive Testing Personnel," and that PGQ 6.2.1 met American Society of Nondestructive Testing Recommended Practice SNT-TC-1A.

In addition, the inspectors met with IBF's NDE Level III examiner, reviewed his qualifications, and found them to meet the requirements of PGQ-6.2.1 and SNT-TC-1A for PT, UT, magnetic particle testing, and radiography. Lastly, the inspectors reviewed procedures for UT and PT and verified that they were written by a Level II and approved by the Level III, as required by PGQ 6.2.1.

c. Conclusions

The inspectors determined that IBF appropriately translated the requirements of Criterion IX into implementing procedures and, for those activities that the inspectors reviewed, implemented them in accordance with IBF's procedures. No findings of significance were identified.

## 5. Control of Measuring and Test Equipment

### a. Inspection Scope

The inspectors reviewed IBF policies and implementing procedures that govern the Measuring and Test Equipment (M&TE) program to verify compliance with the requirements in Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. The inspectors reviewed a sample of calibration records for various M&TE and the training records of personnel that conduct calibration and testing. Additionally, the inspectors discussed the M&TE program with IBF's management and technical staff. The attachment to this inspection report lists the documents reviewed by the inspectors.

### b. Observations and Findings

The inspectors verified that the M&TE requirements in IBF's QSM and IO-10, "Operating Instructions for Calibration of Monitoring and Measuring Equipment," provided a system for the control of M&TE. The M&TE program was designed so that devices used in activities that affect quality were of the proper range, type, and accuracy to verify conformance with established requirements.

The inspectors performed a visual inspection of several M&TE used during the manufacturing of reactor coolant piping for AP1000 reactor plants. In particular, the inspectors verified that the equipment used during heat treatment, dimensional testing, liquid dye penetrant testing, eddy current testing, tensile testing, and bend testing had approved calibration labels or stickers. Then, the inspectors conducted interviews and reviewed the computer spreadsheet program used to track the calibrated equipment. The inspectors verified that IBF had a laboratory where most of IBF's equipment was calibrated. IBF used external calibration services for those items they did not have the capability to calibrate. Additional details on the acceptability of IBF's procurement of calibration services are described in Section 2, "Procurement," of this report.

The inspectors verified that all sampled M&TE had appropriate calibration stickers and current calibration dates, including the calibration due date. Additionally, for a sample of calibration records reviewed, the inspectors verified that the records included the as-found or as-left conditions, accuracy required, calibration results, calibration dates, and the due date for recalibration. The inspectors verified that the selected M&TE was calibrated against certified equipment having known valid relationships to nationally recognized standards.

### c. Conclusion

The inspectors determined that IBF is implementing its measuring and test equipment program in accordance with the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, and activities observed, the inspectors also determined that IBF is implementing its policies and procedures associated with the control of measuring and test equipment. No findings of significance were identified.

## 6. Nonconforming Materials, Parts, or Components

### a. Inspection Scope

The inspectors reviewed policies, implementing procedures, and records that govern the control of nonconforming materials, parts, and components to verify compliance with Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. The inspectors reviewed the QSM and PGQ-N70 that describe the requirements for identification, documentation, evaluation, segregation, disposition, and control of nonconforming items. In addition, the inspectors reviewed a sample of NCRs and nonconforming items on the shop floor to verify implementation of PGQ-N70 and the requirements of Criterion XV of Appendix B to 10 CFR Part 50. The attachment to this inspection report lists the documents that the inspectors reviewed.

### b. Observations and Findings

For a sample of ten NCRs, the inspectors verified that IBF had taken adequate actions regarding nonconforming materials or items. In addition, the inspectors verified that nonconforming items were reviewed in accordance with PGQ-N70. Nonconforming items were dispositioned as accepted, rejected, repair, rework, or use-as-is. For NCRs dispositioned as repair or use-as-is, the inspectors verified that technical justifications were documented to verify the acceptability of nonconforming items. In addition, the inspectors verified that the NCR form provides a connection to the 10 CFR Part 21 program.

### c. Conclusions

The inspectors concluded that IBF is implementing its nonconforming material, parts, or components program in accordance with Criterion XV of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the inspectors also determined that IBF is implementing its policies and procedures associated with its nonconforming material, parts, and components. No findings of significance were identified.

## 7. Corrective Actions

### a. Inspection Scope

The inspectors reviewed policies, implementing procedures, and records that govern corrective actions to verify compliance with Criterion XVI, "Corrective Actions," of Appendix B to 10 CFR Part 50. The inspectors reviewed the QSM and PGQ-N75, "Corrective Actions Management Procedure," Revision 2, dated May 6, 2013 that describes the processes and procedures for addressing conditions adverse to quality. In addition, the inspectors reviewed a sample of RACs and the root cause analysis performed for the V.C. Summer Unit 3 reactor coolant piping to verify compliance with the requirements of Criterion XVI. The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

b.1 Corrective Action Program

The inspectors reviewed a sample of 14 RACs that addressed internally identified conditions adverse to quality, customer identified conditions adverse to quality, and subcontractor identified nonconformances. The inspectors verified that RACs provide for documentation and description of the condition adverse to quality, the cause and corrective action taken to prevent recurrence, review and approval by the responsible authority, status of corrective actions reviewed, and follow-up action taken to verify timely and effective implementation of corrective action.

The inspectors verified that the QSM and PGQ-N75 require subcontractors to submit nonconforming reports and proposed corrective action for approval before implementing corrective action. The RAC form provided in PGQ-N75 provides a link to IBF's 10 CFR Part 21 program. In addition, the QSM and PGQ-N75 require the trending of audit findings, RACs and NCRs.

b.2 Root Cause Analysis for V.C. Summer Unit 2 Cold Leg

The inspectors reviewed TAR1100006, "Root Cause Analysis AP1000 RCL Piping," Revision 1, dated July 15, 2011 and "RCA Corrective Action Plan for TAR-1100006 rev 1," to verify that IBF identified the cause of the significant condition adverse to quality and took corrective action to preclude its repetition. In December 2010, IBF identified that four cold leg pieces for VC Summer Unit 2 that were in the final heat treatment condition had grain size numbers (GSN) less than two. IBF later identified that four surge line sections for V.C. Summer Unit 2 also had GSNs less than two. The customer specification requires that the GSN be larger than two to support in-service inspectibility.

The inspectors verified that the problem was evaluated using a systematic methodology to identify the root and contributing causes and that the root cause analysis was conducted to a level of detail commensurate with the significance of the problem. The root cause analysis considered prior occurrences of the problem and addressed the extent of the condition and extent of the cause.

IBF contracted with WesDyne to perform a test program using established UT techniques based on generic ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Mandatory Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," procedures. The test program was performed to address the impact of stainless steel forgings with GSNs below 2 on ASME Section XI in-service inspectibility. WesDyne issued WDI-PJF-1306502-TR-004, "Technical Basis Document: Ultrasonic Examination of Integrally Forged Stainless Steel Piping Having ASTM Grain Size Numbers Less than 2," Revision 0, issued June 2012, that recommends using UT attenuation measurements in addition to minimum GSN for acceptance criteria.

The inspectors verified that appropriate corrective actions were specified for each root and contributing cause. The inspectors reviewed the corrective action plan and verified that corrective actions were prioritized with consideration of risk significance and regulatory compliance and that a schedule was established for implementing the corrective actions. In addition, quantitative and qualitative measures of success were

developed for determining the effectiveness of the corrective actions to prevent recurrence.

c. Conclusions

The inspectors concluded that IBF is implementing its corrective action program in accordance with Criterion XVI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the inspectors also determined that IBF is implementing its policies and procedures for corrective actions. No findings of significance were identified.

8. Entrance and Exit Meetings

On June 17, 2013 the inspectors discussed the scope of the inspection with Mr. Luigi Cazzaniga, Chairman of IBF, IBF management and staff, and representatives from Westinghouse Electric Company and Tioga Pipe Supply Company. On June 21, 2013, the inspectors presented the inspection results and observations during an exit meeting with Mr. Cazzaniga, IBF management and staff, and representatives from Westinghouse Electric Company and Tioga Pipe Supply Company. The attachment to this report lists the entrance and exit meeting attendees, as well as those interviewed by the inspectors.

## ATTACHMENT

### 1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Samantha Crane	Inspection Team Leader	NRC	X	X	
Richard McIntyre	Inspector	NRC	X	X	
Brent Clarke	Inspector	NRC	X	X	
Eric Reichelt	Technical Specialist	NRC	X	X	
Luigi Cazzaniga	President	IBF	X	X	
Giancarlo Sprenger	Quality Manager	IBF	X	X	X
Claudio Scurattu	QA Engineer	IBF	X	X	X
Lorretta Zacconi	QC Manager	IBF	X	X	X
Lodovico Baldeschi	QA Manager	IBF	X	X	X
Dominico Grrgorin	Operations Manager	IBF	X	X	X
Piero Fanaletti	Production Manager	IBF	X	X	X
Jack Stuart		Tioga	X	X	
Michael DeBasi	Program Manager	Westinghouse	X	X	
Ricardo Romanini	Heat Treat Operator	IBF			X
Matteo Brocca	Metallurgical Technician	IBF			X
Marco Iaccarino	Metallurgical Technician	IBF			X
Mr. Dinelli	NDE Level III	IBF			X
Ismet Hoxha	UT Level II	IBF			X
Giambattista	UT Level II	IBF			X
Romanini Riccardo	Heat Treatment Operator	IBF			X
Marco Iaccarino	LAB / Calibration	IBF			X
Denis Mancin	Mechanical Testing Technician	IBF			X
Marco Carra	NDE Manager	IBF			X
Andrea Balestrieri	Dimensional Testing Technician	IBF			X
Giovanni Tirelli	Visual and Dimensional Testing Technician	IBF			X
Fabio Manigrassi	Visual and Dimensional Testing Technician	IBF			X
Allessandro Bensi	QC Inspector	IBF			X

### 2. INSPECTION PROCEDURES USED

Inspection Procedure (IP) 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated April 25, 2011

IP 43002, "Routine Inspections of Nuclear Vendors," dated April 25, 2011

### **3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

The following items were found during this inspection:

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
99901428/2013-201-01	Open	NON	Criterion VII
99901428/2013-201-02	Open	NON	Criteria IV

### **4. DOCUMENTS REVIEWED**

#### Policies and Procedures

- IBF Quality Systems Manual, Edition 1, Revision 2, dated February 11, 2011
- IO – 10, "Operating Instruction for Calibration of Monitoring and Measuring Equipment," Revision 6, dated April 16, 2013
- MS-0800013, "Heat Treatment (Solution Annealing) procedure to be used for the heat treatment of Hot Leg Forgings, Cold Leg Forgings, and Surge Line Spool Pieces," Revision 6
- PGQ-6.2.1 "Written Practice for Training and Qualification of Non-Destructive Testing Personnel," Revision 5, dated December 1, 2010
- PGQ-N15, "Heat Treatment Personnel Qualification," Revision 2, dated December 15, 2008
- PGQ-N60, "Destructive Testing Guidelines ," Revision 1, dated November 26, 2010
- PGQ-N71, "Procedure for Reporting of Defects and Noncompliance (Reference to 10 CFR Part 21)," Revision 1, dated May 15, 2013
- PGQ-N75, "Corrective Actions Management Procedure," Revision 2, dated May 6, 2013
- Quality Control Plan (QCP), "Cold Leg of Vogtle Unit 4," Revision 1, dated February 27, 2013
- QCP 0900059, "Quality Control – Inspection & Test Plan for Surge Line (Southern #4) ASME SA312 TP316LN Surge Line," Revision 2, Dated May 3, 2010
- QCP 1300009, "Quality Control Plan – "Source Line Segment A – ASME SA 312 TP316LN," Revision 1, dated February 27, 2013
- QCP0800004, Revision 3, dated May 11, 2010
- QCP0800005, Revision 3, dated May 11, 2010
- QCP1300014, Revision 1, dated April 22, 2013
- T200031576/MS-0800003, "Mechanical Testing/Destructive Testing Procedure," Revision 12
- TS-08000002, "Liquid Penetrant Examination Procedure," Revision 2
- TS-09000003, "UT to meet ISI requirements," Revision 2
- TS-09000004, "UT Examination Procedure RAC1300031, Revision 01," Revision 3

#### Calibration, Heat Treatment, NDE, and Inspection Reports

- Calibration Report, S136926, FARO Platinum Arm, Serial #E12-05-12-27987, dated April 18, 2013
- Calibration Report, S136973, "N" Thermocouple, Serial #CIN96, dated May 2, 2013

- Calibration Report, S136970, "N" Thermocouple, Serial #CIN77, dated March 21, 2013
- Calibration Report, S136971, "N" Thermocouple, Serial #CIN95, dated May 2, 2013
- Calibration Report, S137081, Digital Caliper, Serial #06316906, dated May 30, 2013
- Certificate of Calibration from Delta Strumenti, Pyrometer, Serial #2027626, dated October 10, 2010
- Certificate of Calibration from Servizio Ditaratura, Master Measuring Block, dated July 1, 2010
- Certificate of Calibration from S.M.I. Misure Ingenerestiche, Extensometer, Serial #0921216, dated May 9, 2013
- Certificate of Calibration from S.M.I. Misure Ingenerestiche, Tensile Test Machine, dated May 9, 2013
- Heat Treatment Data Sheet HTD1300013 – Example of Data Sheet that is used when HT is being performed.
- Heat treatment Time-Temperature Strip Chart, "Surge Line 90 of Vogtle Unit 4," dated May 13, 2013
- Heat treatment Time-Temperature Strip Chart, "Surge Line 70 of Vogtle Unit 4," dated April 30, 2013
- Heat treatment Time-Temperature Strip Chart, "Cold Leg 20 of Vogtle Unit 4," dated June 7, 2013
- Heat treatment Time-Temperature Strip Chart, Cold Leg 30 of Vogtle Unit 4, dated June 10, 2013
- Heat treatment Time-Temperature Strip Chart, Cold Leg 10 of Vogtle Unit 4, dated May 23, 2013
- Heat treatment Time-Temperature Strip Chart, Cold Leg 40 of Vogtle Unit 4, dated June 18, 2013
- Test Report 171069, "EXNOVA SRL Chemical Analysis Test Report," Revision 00, dated January 17, 2013
- VDR1300012, Visual and Dimensional Check Report of Hot Leg, dated January 15, 2013

#### Purchase Order s and Audit Reports

- 12-08, "Certificate of Conformance for PO 2012003881," dated October 16, 2012
- 5880, "Certificate of Conformance for PO 20011000760 Item 10," dated October 22, 2012
- 5880, "Certificate of Conformance for PO 20011000760 Rev.3 POS.15," dated May 21, 2013
- ACL1100005, "Audit Checklist," dated February 14, 2011
- ACL1100010, "Audit Checklist," dated March 18, 2011
- ACL1300009 Part 2, "IBF Audit Checklist, 10 CFR Part 21 Implementation," dated March 27, 2013
- "BAMA SRL "Pickling and Passivation for Nuclear Use Certificate" for PO 2011004105," dated November 7, 2011
- Email from Dennis Tauber to Lodovico Baldeschi and Claudio Scuratti, "Audit Plan for my visit," dated September 24, 2010



- FORONI S.p.A EN 10204-3.1, "Certified Material Test Report," Revision 00, dated September 21, 2010
- FS 37/12, "Technical Instruction Forging Sequence," Revision 00, dated October 8, 2012
- IBF ACL1100001, "Audit Checklist," dated January 14, 2011
- IBF ACL1100022, "Audit Checklist," dated September 15, 2011
- IBF ACL1200016, "Audit Checklist," dated September 24, 2012
- "IBF Approved Vendor List," Revision 07/2013, Dated May 17, 2013
- "IBF Audit Plan for Audit Checklist ACL1100001," dated January 14, 2011
- "IBF Audit Plan for Audit Checklist ACL1100005," Dated January 31, 2011
- "IBF Audit Plan for Audit Checklist ACL1100022," dated September 15, 2011
- "IBF Audit Plan for Audit Checklist ACL1100010," Dated March 18, 2011
- "IBF Audit Plan for Audit Checklist ACL1200016," Dated September 24, 2012
- IBF VAR1100001, "Vendor Audit Report," Revision 00, dated January 1, 2011
- IBF RI-1100023, "Material Receiving Report," Revision 00, dated January 17, 2013
- IBF VAR1100003, "Vendor Audit Report," Revision 00, dated February 14, 2011
- IBF VAR1100008, "Vendor Audit Report," Revision 00, dated September 15, 2011
- IBF VAR1100010, "Vendor Audit Report," Revision 00, dated March 18, 2011
- IBF VAR1200004, "Vendor Audit Report," Revision 00, dated September 24, 2012
- IBF VAR1300002, "Vendor Audit Report," Revision 00, dated March 27, 2013
- Letter from Tioga Pipe Supply Company, Inc to IBF S.p.A., "Audit of Material Supplier," March 14, 2013
- Letter from Tioga Pipe Supply Company, Inc to IBF S.p.A., "Audit Report of Material Supplier including the following locations: - 20040 Colnago, MI Italy (Head office) - 20010 Vittuone, MI Italy (mill) - 29010 San Nicolo', PC, Italy (mill)," dated May 1, 2013
- Letter from Tioga Pipe Supply Company, Inc to IBF S.p.A., "Quality Systems Audit Report; performed on Sept 28 to Oct 5, 2010," October 29, 2010
- Letter from Tioga Pipe Supply Company, Inc to IBF S.p.A., "Quality Systems Audit Report; performed on Sept 1 to 4, 2008," September 23, 2008
- Letter from Tioga Pipe Supply Company, Inc to IBF S.p.A., "Quality Systems Audit Report; performed on Sept 18 to 20, 2007," October 23, 2007
- Letter from IBF S.p.A. to Tioga Pipe Supply Company, Inc., "Tioga Pipe's documents assessment.," dated September 30, 2011
- Letter from Tioga Pipe Supply Company, Inc to IBF S.p.A., "Audit Plan," September 24, 2010
- Letter from IBF S.p.A. to SMART N.d.T.SRL, "Initial survey for qualification of UT equipments calibration service," dated March 28, 2013
- Letter from IBF S.p.A. to EXNOVA S.r.l., "Supplemental audit to verify the QA Program and its implementation to the QA requirement documents," dated September 24, 2012
- Letter from IBF S.p.A. to BAMA S.r.l., "Triennial audit for maintaining the qualification BAMA as approved supplier of subcontracted services: pickling and passivation treatments.," dated February 14, 2011
- Letter from IBF S.p.A. to OMP OFF.MECC. di Pirola Carlo e Figli SRL, "Triennial survey for renewal the OMP's qualification as Approved Supplier of Subcontracted Services: machining.," dated March 18, 2011
- Letter from IBF S.p.A. to Forgiatura Morandini S.r.l., "Renewing the qualification as Qualified Material Organization" – Triennial Audit Results," dated January 14, 2011
- Letter from IBF S.p.A. to FORONI S.p.A., "Renewal the Foroni's qualification as approved supplier of subcontracted services: Steelmaker," dated September 19, 2011

- PO 2011000760, "Purchase Order to Forgiatura Morandini SRL", dated February 2, 2011
- PO 2010002896, "Purchase Order to Foroni SPA INGOT for Hot Leg and Colg Leg and Surge lines," dated August 3, 2010
- PO 2011004105, "BAMA S.r.l Pickling," dated November 4, 2011
- PO 2012003881, "OMP Machining", dated October 16, 2013
- PO 2013000091, "EXNOVA SRL Chemical Analysis", dated January 14, 2013
- PO 2013001245, "SMART N.d.T.SRL Calibration Services", dated April 2, 2013
- PS-1100008, "Purchasing Specification for ASME SA376 TP316LN Bloom for Cold Leg," Revision 1, dated June 27, 2011
- PS-100020, "General Quality Requirements for Purchasing of Source Material for Suppliers with Certified Quality System," Revision 00, dated October 20, 2010
- PS-0800001, "Purchasing Specification for INGOTS for Hot Legs," Revision 03, dated June 19, 2009
- PS-0800002, "Purchasing Specification for Rough Round Bars for Cold Leg," Revision 3, dated June 19, 2009
- PS-0800003, "Purchasing Specification for Rough Round Bars for Surge Line," Revision 2, dated May 22, 2009
- PS-1000018, "General Quality Requirements for Purchasing of Services of Surface Treatment in Compliance with ASME Code Material for Suppliers without a Quality System Program," Revision 00, dated March 10, 2010
- PTF 138, "Round Bars of TP316LN (UNS S31653) Material 340 mm < Diameter < 540 mm, Technical Program of Manufacturing," Revision 2, dated June 22, 2009
- PS-0900014, "General Quality Requirements for Supplying Machining Services in Compliance with ASME Code NCA-3800 for Suppliers without a Quality System Program," Revision 3, dated August 20, 2012
- RDA1300001, "Purchase Request," Revision 00, dated January 8, 2013
- Ref. No. QA1200012-NUC, "IBF Internal Communication Letter," dated September 24, 2012
- Test Report 171064, "Test Report of ASME SA376 TP 316LN," Revision 00, dated January 17, 2013
- "Tioga Pipe Supply Quality Assurance Audit Report", dated October 29, 2010
- "Tioga Pipe Supply Co., Inc., Vendor Evaluation Coversheet and Checklist," dated October 5, 2010

#### Customer Specifications and Reports

- APP-PLO1-T1-002, "AP1000 RCL Pipe Grain Size Monitor for Production Pieces," Revision 0
- PAR 4500269770-069-0, "Westinghouse Procurement Advisory Release," dated April 7, 2012
- WCE1300010, "Yearly Heat Treatment Test for operators to maintain qualification."

#### Nonconformance Reports

- Q000000004 Revision 0
- Q000000002 Revision 0
- S000000906 Revision 1
- S000001136 Revision 1

- S000001137 Revision 1
- S000001479 Revision 0
- S000001579 Revision 0
- S000001580 Revision 0
- V000000416 Revision 0
- V000000438 Revision 0

Corrective Action Reports and Root Cause Analysis Documents

- RAC1100007 Revision 1
- RAC1100008 Revision 0
- RAC1100011 Revision 0
- RAC1100018 Revision 0
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