



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

April 29, 2019

Ms. Pascale Convers  
Quality Manager  
Framatome Le Creusot  
Rue de l'Étange de la Forge  
71200 Le Creusot, France

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF  
FRAMATOME CREUSOT FORGE, NO. 99902074/2019-201

Dear Ms. Convers:

From March 11 through March 15, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection of Framatome at the Creusot Forge site in Le Creusot, France. The purpose of this inspection was to follow-up on issues identified during the Multinational Design Evaluation Programme (MDEP) inspection of Creusot Forge in 2016, which is currently owned by Framatome and previously owned by AREVA NP. The NRC inspection team verified that the corrective actions initiated during the 2016 MDEP inspection related to forging activities were adequately implemented and met the applicable requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and 10 CFR Part 21, "Reporting of Defects and Noncompliance," and other codes and standards, as applicable.

This technically focused inspection specifically evaluated Framatome's reconciliation of the manufacturing files for forgings with identified irregularities supplied by AREVA NP to U.S. operating nuclear power plants. Specifically, the NRC inspection team reviewed documentation to verify that forgings were properly fabricated, inspected, and tested in accordance with customer's design, regulatory, and code requirements. As a result of Framatome's evaluation of the irregularities on the manufacturing files, deviation notices were sent to Westinghouse for their evaluation. Westinghouse will complete their review by the end of April 2019. The preliminary results indicate that Westinghouse has not identified any safety concerns within these deviation notices on the forged components provided by Creusot Forge, and the components will still perform the intended safety functions. Additionally, the NRC inspection team concluded that the Framatome evaluations provide reasonable assurance that these forgings meet the design requirements and can perform their intended safety functions. Currently, there are no forgings being manufactured for U.S. reactors. The enclosed report presents the results of the inspection. 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 inspection team found the implementation of your QA program met the requirements imposed on you by your customers or NRC licensees. No findings of significance were identified.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter and its enclosure through the NRC Public Document Room or from the NRC's document system (ADAMS), which is accessible at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

*/RA/*

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

Docket No.: 99902074

EPID No.: I-2019-201-0036

Enclosure:  
Inspection Report No. 99902074/2019-201  
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF  
 FRAMATOME CREUSOT FORGE, NO. 99902074/2019-201  
 Dated: April 29, 2019

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NRO-002

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<b>DATE</b>	04/29/19	04/29/19	04/29/19

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

Docket No.: 99902074

Report No.: 99902074/2019-201

Vendor: Framatome Le Creusot  
Rue de l'Étange de la Forge  
71200 Le Creusot, France

Vendor Contact: Ms. Pascale Convers  
E-mail: pascale.convers@framatome.com

Nuclear Industry Activity: Framatome Creusot Forge site (previously known as AREVA NP), located in Le Creusot, France, manufactures forged components for the United States operating reactor fleet. In November 2016 AREVA SA and Électricité de France (EDF) signed a binding agreement conferring to EDF exclusive control of a new entity—New NP. As a result of a 2016 Multinational Design Evaluation Programme inspection, several corrective actions were initiated, and production of forged components ceased. On January 2018, the companies rebranded New NP, reviving the Framatome name.

Inspection Dates: March 11-15, 2019

Inspection Team Leader: Jonathan Ortega-Luciano, NRR/DIRS/QVIB

Inspectors: Taylor Lamb, NRO/DLSE/CIPB  
Sébastien Véziat, Autorité de Sûreté Nucléaire (ASN), Observer

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

Enclosure

## EXECUTIVE SUMMARY

Framatome Le Creusot  
999002074/2019-201

The U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Creusot Forge site, currently owned by Framatome. This inspection was a follow-up to the multinational inspection that was conducted in accordance with the inspection protocol of the Multinational Design Evaluation Program (MDEP) in 2016. The 2016 MDEP inspection was led by Autorité de Sûreté Nucléaire (ASN), in cooperation with representatives from the following regulatory bodies: Finland, Canada, China, United Kingdom, and United States. The NRC documented its participation in the MDEP inspection in a trip report available in Agencywide Documents Access and Management System (ADAMS) under Accession No. ML17052A119.

In May 2016, ASN stated that an ongoing quality assurance audit at Creusot Forge site identified irregularities in the manufacturing files of plant components produced there since 1965. In response to ASN requests, AREVA NP, as the responsible entity during this period, began to perform an evaluation of the irregularities identified in the manufacturing files and began to develop a technical conclusion. In December 2017, AREVA NP was acquired by EDF. Not included in the sale are contracts for the Olkiluoto 3 EPR project in Finland and for resources required to complete that project, as well as some contracts relating to components forged in the Creusot Forge site. These functions will remain within AREVA NP. In response to the ASN requests, AREVA NP contracted Framatome, who currently owns the Creusot Forge site, to perform the evaluation of the irregularities identified in the manufacturing files and provide a technical conclusion. Framatome identified the underlying causes of the failures observed in its Creusot Forge site and implemented an improvement plan. As described in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," AREVA NP continues to be responsible for evaluation and reporting of any potential defects in components supplied to the U.S. nuclear fleet.

ASN participated in this follow-up inspection as observer and provided support to the NRC inspection team with regards to the corrective actions. ASN has acquired extensive knowledge related to the corrective actions at Creusot Forge as result of their leadership in closing out the 2016 MDEP inspection. Further, these observations foster the sharing of international experiences with the construction of new reactors and replacement of components for operating reactors, oversight of vendors, and modular construction techniques consistent with the objectives of MDEP.

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

- Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"
- 10 CFR Part 21

The NRC inspection team used Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance."

The information below summarizes the results of this inspection.

## Part 21

The NRC inspection team reviewed Framatome's policies and implementing procedures that govern the implementation of its 10 CFR Part 21 program and determined that there is no specific guidance in Framatome's procedures regarding the requirements for evaluating deviations and failures to comply in accordance with the regulations aside from notification to the purchaser. However, the NRC inspection team noted that the deviation notices sampled did not meet the threshold for 10 CFR Part 21 reportability, and for those that Framatome could not further evaluate as they were not the design authority, they appropriately passed on to the customer to perform the evaluation. The NRC inspection team was able to verify that, as part of the contractual agreement between AREVA NP and Framatome, Framatome evaluated the irregularities found in the manufacturing files for Part 21 applicability. For those deviations Framatome identified in which they do not have the capability to make a determination or reach a conclusion, they forwarded those deviations to AREVA NP's customers for further evaluation. Therefore, this issue was determined to be not safety significant and is considered a minor issue. Framatome opened Corrective Action Notice No. 9038089, dated March 14, 2019, to address this issue.

The NRC inspection team evaluated whether Framatome's corrective action and 10 CFR Part 21 programs were sufficiently integrated such that issues identified in the corrective action program would be appropriately considered for 10 CFR Part 21 evaluations and reportability. Upon review of Framatome's corrective action procedure, PRM005, "Corrective Actions," it was determined that there was no direct connection to the Part 21 program and its corrective action procedures. It was concluded that this issue is considered minor and does not present a safety concern. Framatome opened Corrective Action Notice No. 9038103, dated March 15, 2019, to address this issue. No findings of significance were identified.

## Corrective Actions

As part of the NRC inspection team's review of the evaluations of the irregularities affecting forgings (i.e. "marked files") supplied to the U.S. operating reactors, the NRC inspection team recognized the ASN assessment and conclusions for the closeout of the 2016 MDEP multinational inspection. ASN determined that the corrective actions related to the quality assurance program and the manufacturing process have been acceptably implemented and are effective with certain conditions. For more information on these conditions please visit ASN website (<http://www.french-nuclear-safety.fr/Inspections/Supervision-of-the-EPR-reactor/Anomaly-affecting-the-Flamanville-EPR-reactor-vessel>). The NRC inspection team sampled several nonconformance reports and supporting documentation to verify that the forgings were properly fabricated, inspected, and tested in accordance with the customer's design specifications, as well as regulatory and code requirements. Based on ASN's conclusion and the NRC inspection team's evaluation of the corrective actions taken to address the irregularities identified in the manufacturing files, the NRC inspection team has reasonable assurance that there are no safety concerns and the forgings provided to the U.S. operating reactors will be able to perform their intended safety function. No findings of significance were identified.

## REPORT DETAILS

### 1. 10 CFR Part 21 Program

#### a. Inspection Scope

The NRC inspection team reviewed Framatome's policies and implementing procedures that govern the implementation of its 10 CFR Part 21, "Reporting of Defects and Noncompliance," program to determine compliance with the regulatory requirements. In addition, the NRC inspection team examined the 10 CFR Part 21 postings.

The NRC inspection team reviewed Framatome's procedure for reportability under 10 CFR Part 21. The NRC inspection team noted that a separate procedure addressed the requirements for evaluating deviations and failures to comply in accordance with the regulations. The NRC inspection team reviewed only the procedures because at the time of the inspection, Framatome had not performed any evaluations under 10 CFR Part 21 as they are currently not supplying forged components to the U.S. nuclear fleet.

The NRC inspection team evaluated whether Framatome's non-conformance, corrective action, and 10 CFR Part 21 programs were sufficiently integrated such that issues identified would be appropriately considered for 10 CFR Part 21 evaluations and reportability.

The NRC inspection team also discussed the 10 CFR Part 21 program with Framatome's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team as well as those interviewed in support of the inspection.

#### b. Observations and Findings

The NRC inspection team identified one minor issue concerning the procedure related to 10 CFR Part 21 implementation. During the review of procedure PRM019, "Application of the American Nuclear Regulations: 10 CFR 21, 10 CFR 50 App B," the NRC inspection team noted that the procedure did not contain many of the evaluation and reportability requirements of 10 CFR § 21.21(a). Rather, the contents of the procedure included some definitions, the notification requirements to the customer within 5 days from identification (10 CFR § 21.21(b)), and a partial list of the written report requirements. However, the NRC inspection team noted that the deviation notices sampled did not meet the threshold for 10 CFR Part 21 reportability, and for those that Framatome could not further evaluate as they were not the design authority, they appropriately passed on to the customer to perform the evaluation. The NRC inspection team concluded the procedure issue is minor and does not present a safety concern. Framatome opened Corrective Action Notice No. 9038089, dated March 14, 2019, to address this issue.

The NRC inspection team identified one minor issue concerning procedure PRM005, "Corrective Actions." Upon review of Framatome's corrective action procedure, it was determined that it did not contain the appropriate nexus to the 10 CFR Part 21 program and its procedures. This nexus ensures that deviations and noncompliances are detected and properly dispositioned. The NRC inspection team concluded that this issue is minor and does not present a safety concern. Framatome opened Corrective

Action Notice No. 9038103, dated March 15, 2019, to address this issue. Additionally, for the deviation notices sampled, the procedure used to evaluate those deviation notices, PRM 004, "Handling of Discrepancies," was adequately integrated to the 10 CFR Part 21 program.

c. Conclusion

The NRC inspection team concluded that, with the exception of the minor issues identified herein, Framatome has implemented its 10 CFR Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Framatome is implementing its policies and procedures associated with the 10 CFR Part 21 program.

2. Corrective Action Program

a. Inspection Scope

The NRC inspection team evaluated Framatome's policies and implementing procedures that govern the corrective action program to verify compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." Because Framatome has not supplied forgings to the U.S. nuclear power plants since the purchase of AREVA NP in December 2017, the NRC inspection team was not able to review a sample of items entered into the corrective action program. However, upon Electricite de France (EDF) acquisition of AREVA NP, AREVA NP contracted Framatome to complete the evaluation of the irregularities (i.e. "marked files") under the Framatome quality assurance program.

In May 2016 ASN stated that irregularities had been identified in the manufacturing files of plant components produced at the Creusot Forge site since 1965. AREVA NP assigned a task force, which was comprised of individuals with the appropriate skills, that solely concentrated on the evaluation of the irregularities, initially for the components forged for the French nuclear fleet. In Fall 2017, the focus transitioned to the U.S. nuclear fleet. When EDF purchased AREVA NP, the task force remained in place at the Creusot Forge site, now under Framatome's management. AREVA NP continued to own the responsibilities of the manufacturing files of the forgings supplied to the U.S. nuclear fleet.

As part of Framatome's process, any irregularities identified in the manufacturing files can be categorized as a Non-Conformance Notice (NCN) or Non-Conformance Report (NCR). NCNs are for those irregularities identified as a deviation from Framatome's, formerly AREVA NP's, internal requirements, which are more restrictive than the customer requirements. NCRs are for those irregularities identified as a deviation from customer requirements, regulations, or standards. Specifically, the NRC inspection team reviewed the NCRs and supporting documentation to verify that forgings were properly fabricated, inspected, and tested in accordance with customer's design specifications, as well as regulatory and code requirements. A small sampling of NCNs were also reviewed.

The sample selected by the NRC inspection team included one or more NCRs for each of the different types of deviations identified by Framatome. Framatome found deviations from the American Society of Mechanical Engineers (ASME) Code requirements, as well as internal production requirements, in the following areas: mechanical properties; dimensional; thermal treatment; chemical properties; gauging operations; and ultrasonic examination. Also, the sample reviewed contained all NCRs where Framatome was not able to make a determination because they are not the design authority or did not have access to the design requirements. The NRC inspection team reviewed the issues identified in the NCRs and determined that for the subset of NCRs that were sent to the affected customers for further evaluation that they were appropriately categorized by Framatome. Framatome contacted AREVA NP's customers that were affected and requested that they perform further evaluation of the deviations. For the sample reviewed, the NRC inspectors concluded that AREVA NP's and Framatome's evaluations had sufficient technical basis to conclude that the forgings continue to meet applicable ASME Code requirements.

The NRC inspection team discussed the process that Framatome is using to reconcile and evaluate AREVA NP's manufacturing files and how the dispositions of the deviations found in the manufacturing files has been communicated to the affected customers. The attachment to this inspection report lists the documents reviewed by the NRC inspection team as well as those interviewed in support of the inspection.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Framatome was implementing its corrective action program in accordance with 10 CFR Part 50, Appendix B, Criterion XVI. No findings of significance were identified.

3. Entrance and Exit Meeting

On Monday, March 11, 2019, the NRC inspection team discussed the inspection scope during an entrance meeting with David Haguët, Director of Framatome Le Creusot (FLC), and other members of Framatome and FLC's management and technical staff. On Friday, March 15, 2019, the NRC inspection team presented the inspection results during an exit meeting with David Emond, Senior Executive Vice President of the Component Manufacturing BU of Framatome, David Haguët and other members of Framatome and FLC's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

## ATTACHMENT

### 1. ENTRANCE/EXIT MEETING ATTENDEES

<u>Name</u>	<u>Title</u>	<u>Affiliation</u>	<u>Entrance</u>	<u>Exit</u>	<u>Interviewed</u>
Jonathan Ortega-Luciano	Inspector, Team Leader	NRC	X	X	
Taylor Lamb	Inspector	NRC	X	X	
Sébastien Véziat,	Observer	Autorité de Sûreté Nucléaire (ASN)	X	X	
Laure Monin	Observer	ASN	X		
François Colonna	Observer	ASN		X	
Jean-Pierre Labaste	Translator	Davron Translations	X	X	
Franck Charvieux	Technical Director	Framatome Le Creusot (FLC)	X		
Patrice Nogue	Director of Sales & Projects	FLC	X	X	
Thierry Berger	Technical & Regulatory Expert Manufacturing Component BU	Framatome	X	X	X
Pascale Convers	Quality and Safety Manager	FLC	X	X	X
David Haguët	Director FLC	FLC	X	X	
Hugues Lecour	Conformance Project Manager	FLC	X	X	
Pascale Levivien	Safety, Quality & Operational Performance Component Manufacturing BU	Framatome		X	X
David Emond	Senior Executive Vice President Component Manufacturing BU	Framatome		X	

### 2. INSPECTION PROCEDURES USED

- Inspection Procedure (IP) 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012
- IP 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017

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

None.

#### 4. DOCUMENTS REVIEWED

##### Procedures and Forms

- Procedure No. PRM 004, "Handling of Discrepancies," Revision 9, dated December 1, 2016
- Procedure No. PRM 005, "Corrective Actions," Revision 6, dated October 16, 2017
- Procedure No. PRM 007, "External/Internal Audits," Revision 7, dated October 3, 2017
- Procedure No. PRM 019, "Application of the American Nuclear Regulations: 10 CFR 21, 10 CFR App B," Revision 2, dated April 3, 2017
- Form No. NB7170, "Technical Treatment Form (TTF)," Revision 4, dated November 7, 2018

##### Deviation Notices

- |           |           |           |
|-----------|-----------|-----------|
| • 9032964 | • 9023659 | • 9033007 |
| • 9036589 | • 9021743 | • 9036147 |
| • 9032746 | • 9022621 | • 9036369 |
| • 9032765 | • 9036549 | • 9032270 |
| • 9036409 | • 9036586 | • 9036590 |
| • 9036367 | • 9036535 | • 9036594 |
| • 9036381 | • 9035884 | • 9036369 |
| • 9036466 | • 9031642 | • 9036320 |
| • 9008951 | • 9023687 | • 9037735 |
| • 9008952 | • 9036588 |           |

##### Corrective Actions Opened During the Inspection

- Corrective Action Notice No. 09038089, dated March 14, 2019
- Corrective Action Notice No. 09038103, dated March 15, 2019

##### Customer Response Letters

- D02-TFPF-IN-18-2896
- D02-TFPF-IN-18-2915
- D02-TFPF-IN-18-3025
- ENSA\_BGR\_18\_0808