

Q	1	有効期間	審査部門	HDP-69B1号機が完成した日（製造日）はいつですか？耐用年数60年ですが、有効期間はどのように決めるのですか	
Q	2	不正	法務	原子力製品の不正が次々明らかになっていますが、原子力規制委員会は不正をどの様に把握し、措置するのですか？ 原子力事業者、製造者（下請け）ごとに教えてください。	法律、規則のたてつけ
Q	3	品質管理	法務	「原子力施設の保安のための業務に係る品質管理に必要な体制の基準に関する規則」その他の法令に基づいて、品質管理基準規則に違反している製作工場に対して、規制庁として措置は可能ですか？どのような措置がありますか？	法律、規則のたてつけ
Q	4	製造者の不正	審査/検査部門	原子力規制委員会は、HDP-69B1号機及び大型キャスクタイプ2の製造にかかわった日本軽金属の不正、JSWの不正は、いつ、どのように知りましたか？	2/21貯蔵事業の変更許可承認との関係
Q	5	JSW特別調査委員会報告	審査/検査部門	JSWの特別調査委員会の報告では、原子力製品に限っても配布資料のような不正が報告されていますが、原子力規制委員会としても同様の認識を持っていると理解してよいですか？	2/22貯蔵事業の変更許可承認との関係
Q	6	RFSの混乱	審査/検査部門	JSW、M&Eの不正発覚後について、RFSは今年7月5日の県民説明会で、「RFSは2022年10月に現地で安全を確認した」と説明していますが、原子力規制委員会は、RFSから安全確認をいつ、報告を受けましたか？それは文書ですか？口頭ですか？どの部門が窓口ですか？	7/1試験使用承認 移送容器承認審査中
Q	7	RSFの混乱	審査/検査部門	RFSは、現地での安全確認の時期を7月17日になって「10月から12月に訂正」しましたが、原子力規制委員会には報告されていますか？	7/2試験使用承認 移送容器承認審査中
Q	8	東京電力からの不正関連資料	審査部門	7月9日の東京電力からのヒアリング資料では、「RFSと日立GEは実地調査を実施し、上記を確認している。」となっています。開示されていない別紙2には、誰が、いつ、どのように安全確認をしたか書かれているのですか？7月18日のヒアリングで確認しましたか？	移送容器承認審査中
Q	9	フランス～国際基準との比較	法務/審査/検査部門	JSW,M&E製品はフランスにも輸出されていました。不正発覚後、フランス原子力安全局（ASN）フランス国営電力（EDF）は2022/12/6～8まで、原子力規制委員会の同席のもとに検査を行い、必要な情報をすべてASNに送るように指示しています。2024/4/16～17にも継続の検査を行い、今もまだ調査は続いています。日本では、原子力規制委員会は調査をしないのですか？どこかの組織に調査を指示できないのですか？	移送容器承認審査中 使用前検査予定

今年9月に、新潟県柏崎刈羽から青森県むつ市に搬入が予定されている
核のゴミについて原子力規制庁と懇談
～中古・不正疑惑の容器で大丈夫なの？

日時:2024/8/7(水) 11:00～12:00

場所:衆議院第2議員会館 会議室 と ZOOM

(ZOOM ID: 878 2944 1673 Pass Code: 641404)

議員会館に参加希望者は、otakes@herb.ocn.ne.jp まで申し込みをお願いします。

紹介議員:高橋千鶴子衆議院議員

主催:核のゴミから未来を守る青森県民の会

<懇談のポイント>

今回運び込まれ、その後50年貯蔵する核のゴミの容器は、HDP-69B1号機という容器で、2010年に製造され、2013年に移送用容器として承認を得ました。車の車検と同じで、その後何度も車検を取り直しています。今まで、核のゴミを入れたことはないそうですが、製造から14年もたった中古品(新古車)です。

柏崎刈羽原発で、まだ冷め切らない核のゴミをこの容器に詰めて、船でむつ市まで海上輸送します。関根浜港で陸揚げしリサイクル燃料貯蔵施設に搬入され、その後50年は容器に入ったままむつ市で保管されます。

この容器 HDP-69B1号機を製造したのは日本製鋼所 JSW(M&E 室蘭)でしたが、2022年2月に不正が内部告発されました。

JSW の製品は、フランスにも輸出されていました。フランスの原子力安全局(ASN)は、室蘭と東京での検査を今も続けています。そして、JSW に資料を全部出すように、安全管理体制を再構築するように要求し、今も検査は終了していません。

ところが、日本の原子力規制委員会には、最近7月9日になって、初めて不正に関する文書が提出され、現在審査が行われています。日仏の温度差、安全文化に対する国際基準との違いについても見直すきっかけにしたいと考えています。

RFS 貯蔵事業の許可承認 : 原子力規制部 審査グループ 核燃料施設審査部門

RFS 使用済燃料貯蔵施設に係る試験使用を承認 : 検査グループ専門検査部門

HDP-69B1号機 輸送用容器としての許可申請 審査中 : 核燃料施設審査部門

法律、規則、ガイドライン等について : 長官官房の法務部門

に懇談をお願いしています。

RFS 営業までに残っている審査・検査は、輸送容器としての承認、使用前検査のみです。

2022/11/14 JSW 特別調査委員会報告

https://www.jsw.co.jp/news/news_file/file/ReportFinal.pdf

日本製鋼所の外部弁護士が入った特別調査委員会報告では、「第6 調査の限界」について、以下のように記載している。

当委員会は、上記第 2 の目的を達成するために必要な調査を実施したが、以下の点に起因する

本調査及び本調査報告書の限界があったことを付言する。

・関係資料等の一部について、JSW グループ各所定の保存期間を超えたものがあったことその他の理由により本調査において当委員会が入手することができなかつた関係資料が存すること
当委員会の事実認定は上記の限界がある中で実施した本調査の結果に基づくものであり、本調査報告書における事実認定が変更される可能性がある。

「原子力製品の不正」のまとめ:原子力製品で、2013～2021年で20件の不正があった。

(1)確認された不適切行為

ア 材番打ち替えに伴うデータ改ざん

イ 常温引張試験において参考試験結果を報告値として記載したことによるミルシートの改ざん
(註 大竹:ミルシートとは、鋼材の材質や品質を証明するための書類のことです。)

ウ シャルピー衝突試験において参考試験結果を報告値として記載したことによるミルシートの改ざん

エ 寸法測定に伴うねつ造/不正検査

オ グライnder作業前の客先送付材の寸法記録のねつ造

カ 材料試験で対象製品とは異なる材料から作成した試験片を用いたことによるデータねつ造

シャルピー衝撃試験において、意図的に対象製品とは異なる材料から試験片を作成し、とうがいしけんへんをもちいて立ち合い試験を実施してデータをねつ造し、その結果を検査成績書において顧客に報告した。2013年 リング材

異なる材番の保管材から作成した試験片でシャルピー衝撃試験の立ち合い試験をする一方で、2013年11月30日付連絡票により、当該立ち合い試験の前に本来の材番から作成した試験片を用いて実力値確認試験を実施して問題がないことを確認した。当該説明は、不適切行為を正当化する理由とはならないと認定する。

キ 楕円矯正に係る虚偽記載

熱処理後に、製品の変形により納入計上を確保できないことが判明したため、楕円矯正のための修正鍛錬を実施した。2014年のリング材

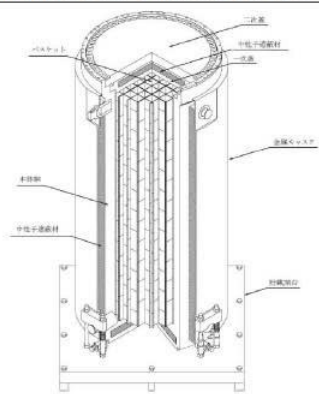
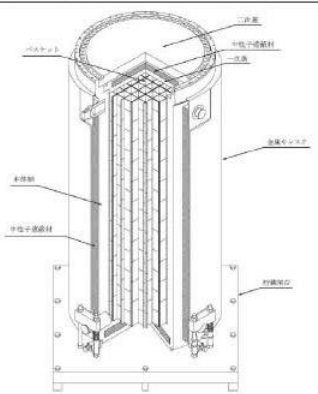
ク 浸透探傷検査(PT 検査)における虚偽記載

ケ 表面欠陥居に伴う虚偽記載

(3) 原子力製品に関する特記事項

上記(1)の事例は、いずれも当委員会主導によるデジタルフォレンジック調査等を通じて得られた証拠を通じて解明された事例である。また、これらの事例の発見の端緒となった連絡票については、2021年度分以前の採番台帳が開示されていないほか、紙ベースでの原本について採番順の保存はしていないとのことであり、かつ、連絡票自体が、当委員会が開示依頼した2018年から2021年までの4年分のうち、約77.3%しか特別調査委員会に開示されておらず、未開示の約22.7%については検証できなかった。

削除及び既許可の金属キャスクの概要

	BWR用大型キャスク(タイプ2)	BWR用大型キャスク(タイプ2A)
概要図		
全質量(t)	約119	同左
全長(m)	約5.4	同左
外径(m)	約2.5	同左
貯蔵する燃料 (最高燃焼度、 冷却期間)	新型8×8ジルコニウムライナ燃料 (40,000MWd/t、18年以上 [※])	新型8×8燃料 (34,000MWd/t、24年以上 [※]) 新型8×8ジルコニウムライナ燃料 (40,000MWd/t、18年以上 [※]) 高燃焼度8×8燃料 (40,000MWd/t、18年以上 [※])
貯蔵体数	69体	同左

※ 原子炉から取り出して金属キャスクに収納するまでの最短年数

削除するキャスク

既許可キャスク

容器承認申請書

第 24NFC(TE)020
令和6年7月9日

原子力規制委員会 殿

住所 東京都千代田区内幸町1丁目1番3号

氏名 東京電力ホールディングス株式会社
代表執行役社長 小早川 智明

核原料物質、核燃料物質及び原子炉の規制に関する法律第59条第3項及び核燃料物質等の工場又は事業所の外における運搬に関する規則第21条第1項の規定により、下記のとおり申請します。

記

1. 輸送容器の名称
HDP-69B型
2. 輸送容器の外形寸法及び重量
 - (1) 輸送容器の外形寸法
外 径：3.550m (上・下部緩衝体を含む)
長 さ：6.789m (上・下部緩衝体を含む)
 - (2) 輸送容器の重量 : 110.6 トン以下 (輸送架台は含まず)
 - (3) 核燃料輸送物の総重量 : 131.8 トン以下 (輸送架台は含まず)

Référence courrier :
CODEP-DTS-2024-021926

ORANO NPS
Futura 2
23 Place de Wicklow
78180 Montigny-Le-Bretonneux

Montrouge, le 24 avril 2024

Objet : Contrôle des transports de substances radioactives
Suites de l'inspection des 16 et 17 avril 2024 sur le thème de la fabrication des viroles forgées des emballages TN Eagle

N° dossier : Inspection n° INSNP-DTS-2024-0322

Références : [1] Code de l'environnement, notamment ses articles L. 557-46, L. 592-19, L. 592-22, L. 593-33 et L. 596-3 et suivants
[2] Accord relatif au transport international des marchandises dangereuses par route (ADR), version 2023
[3] Arrêté du 29 mai 2009 modifié relatif aux transports de marchandises dangereuses par voies terrestres, dit « *arrêté TMD* »
[4] Guide de l'ASN n° 44 actualisé : Système de gestion de la qualité applicable au transport de substances radioactives sur la voie publique
[5] Courrier Orano NPS référencé COR-23-000050-051 du 21 juillet 2023
[6] Courriel Orano NPS du 21 décembre 2022

Monsieur le Directeur,

Dans le cadre des attributions de l'Autorité de sûreté nucléaire (ASN) en référence [1] concernant le contrôle des transports de substances radioactives, une inspection a eu lieu les 16 et 17 avril 2024 dans les locaux de votre fournisseur Japan Steel Work (JSW) à Muroran, au Japon. Elle avait pour thème la fabrication des viroles forgées monobloc des emballages TN Eagle.

Je vous communique ci-dessous la synthèse de l'inspection ainsi que les demandes, constats et observations qui en résultent.

SYNTHÈSE DE L'INSPECTION

Le modèle de colis TN Eagle est développé par Orano NPS pour le transport par voies routière, ferroviaire, fluviale et maritime, en tant que colis de type B(U) chargé de matières fissiles, d'assemblages combustibles usés à oxyde d'uranium (UO₂) et à oxyde mixte d'uranium et de plutonium (U-PuO₂), ainsi qu'à l'entreposage temporaire à sec de ces contenus.



Après une présentation générale de l'emballage TN Eagle, puis des activités de votre forgeron JSW, les inspecteurs ont examiné le système de gestion de la qualité de ce dernier applicable à la fabrication des viroles forgées. Ils ont notamment vérifié, par sondage, l'adéquation de la formation du personnel, le traitement des non-conformités et la traçabilité des opérations de fabrication.

Par la suite, les inspecteurs ont examiné la surveillance réalisée par votre entreprise sur JSW, en tenant compte de vos engagements formulés suite aux cas récents de contrefaçon, falsification et suspicion (CFS) de fraude détectés chez votre forgeron et portant sur la production d'autres produits. Ils ont également contrôlé, toujours par sondage, la conformité des dossiers de fabrication des viroles n° 1 à n° 10 avec les exigences retenues dans la démonstration de sûreté du modèle de colis et dans vos spécifications de fabrication.

Enfin, les inspecteurs ont inspecté les ateliers de lingotage, de forgeage, d'usinage, de trempe et de contrôles, utilisés lors des opérations de fabrication des viroles des emballages TN Eagle.

Au vu de leur examen, les inspecteurs considèrent que le système de gestion de la qualité mis en place par JSW, ainsi que les actions de surveillance mises en œuvre par Orano NPS dans le but de prévenir de nouveaux cas de CFS sont satisfaisants. Toutefois, les engagements formulés par votre entreprise sur ce dernier point n'ont pas tous été tenus.

I. DEMANDES À TRAITER PRIORITAIREMENT

Sans objet

II. AUTRES DEMANDES

Suffisance du programme de surveillance

La prévention et la lutte contre les contrefaçons, les falsifications et les fraudes au sein des usines de vos fournisseurs et de leurs sous-traitants constitue un enjeu majeur pour assurer la sûreté des transports de vos emballages.

Le guide de l'ASN n° 44 [4] précise les attentes de l'ASN en matière de système de gestion de la qualité applicable au transport de substances radioactives sur la voie publique. Il indique que « lorsque les enjeux le justifient, afin de confirmer que les exigences spécifiées par le donneur d'ordre sont effectivement respectées ou que les écarts détectés font l'objet d'un traitement appropriés, les sous-traitants et les fournisseurs sont surveillés par le donneur d'ordre. L'étendue et les modalités générales de cette surveillance sont définies par le donneur d'ordre et portés à la connaissance des sous-traitants et fournisseurs concernés. Cela peut notamment inclure le contrôle des produits lors de leur réception, la vérification documentaire de la qualification des opérateurs, la réalisation d'inspections et d'audits chez le sous-traitant ou le fournisseur, etc. Lorsque les activités sous-traitées ou les matériels fournis présentent des enjeux importants, la surveillance comprend notamment des évaluations périodiques effectuées par le donneur d'ordre ».



Suite aux cas de CFS détectés chez JSW en 2022, vous vous étiez engagés [6] à réaliser une contre-expertise des viroles dont le processus de fabrication avait débuté à cette date, ainsi qu'à renforcer votre programme de surveillance en réalisant notamment des inspections inopinées, en complément des inspections annoncées prévues. Le rapport de votre contre-expertise, dont la démarche analytique est apparue robuste, conclut sur l'absence de CFS pour les pièces forgées du TN Eagle. En revanche, les inspecteurs de l'ASN ont constaté qu'aucune action de surveillance inopinée n'a été réalisée par vos services sur votre sous-traitant.

Demande II.1 : Respecter votre engagement [6] en réalisant des actions de surveillance inopinée pour les fabrications d'emballage TN Eagle chez JSW. Transmettre à l'ASN le compte rendu de la prochaine action de surveillance inopinée.

Valeur des tests de dureté

Conformément votre engagement C formulé dans votre courrier [5], JSW procède à des mesures de dureté en suivant des lignes de mesure à l'intérieur de la cavité de la virole des emballages. Votre spécification de fabrication fixe à 30 HBW la différence maximale de dureté entre deux points de mesure d'une même ligne. Dans sa documentation, JSW indique réaliser le test de dureté selon la méthode EQUOTIP en ce qui concerne le fond de la cavité pour des raisons opérationnelles, mais ne convertit pas les données en HBW dans les procès-verbaux de mesure. Il n'est ainsi pas possible de constater directement si les valeurs sont conformes à l'attendu.

Vous avez indiqué aux inspecteurs, à l'appui de preuves documentaires, que cette non-conformité a été identifiée et est en cours de traitement.

Demande II.2 : Faire respecter par vos sous-traitants vos spécifications de fabrication.

Liste des documents applicables

Conformément à son point 1.7.1.3, l'accord relatif au transport international des marchandises dangereuses par route (ADR) [2], rendu d'application obligatoire par l'arrêté dit TMD [3], « *s'applique au transport de matières radioactives par route, y compris le transport accessoire à l'utilisation des matières radioactives. Le transport comprend toutes les opérations et conditions associées au mouvement des matières radioactives, telles que la conception des emballages, leur fabrication, leur entretien et leur réparation, et la préparation, l'envoi, le chargement, l'acheminement, y compris l'entreposage en transit, le déchargement et la réception au lieu de destination final des chargements de matières radioactives et de colis* ».

Conformément au point 1.7.3, « *un système de management fondé sur des normes internationales, nationales ou autres qui sont acceptables pour l'autorité compétente doit être établi et appliqué pour toutes les activités relevant de l'ADR, telles qu'indiquées au 1.7.1.3, pour garantir la conformité avec les dispositions applicables* ».



de l'ADR. (...) Le fabricant, l'expéditeur ou l'utilisateur doit être prêt à (...) prouver à l'autorité compétente qu'il observe l'ADR ».

Lors de l'examen des opérations de fabrication, les inspecteurs ont relevé que deux documents définissant les étapes de fabrication de la virole coexistaient dans le système de gestion de la qualité de votre forgeron. Le champ d'application de ces deux documents n'est pas claire à leur lecture. Or, dans le cadre d'un système de gestion de la qualité performant, et afin de prévenir tout risque de confusion entre ces documents, une description claire relative à l'applicabilité de chacun de ces documents doit pouvoir permettre de les discriminer facilement.

Demande II.3 : Clarifier le référentiel documentaire des opérations de fabrication des emballages TN Eagle chez JSW.

III. CONSTATS OU OBSERVATIONS N'APPELANT PAS DE RÉPONSE

Analyse d'une non-conformité

Conformément à la demande des inspecteurs, vous leur avez transmis en amont de l'inspection la fiche d'analyse de la non-conformité concernant la température à laquelle le test de traction sur éprouvettes a été réalisé (i.e. 176,7°C, alors que la température doit être comprise entre 177°C et 183°C) selon l'édition 2017 de l'ASTM E21-20. Vous avez attribué cet écart à la déformation d'une éprouvette sous l'effet de la chaleur qui a engendré une perte de contact avec l'un des thermocouples. Ceci est satisfaisant.

Cependant, dans l'analyse d'impact fourni par JSW qui conclut sur l'absence de conséquences sur les résultats obtenus, les inspecteurs de l'ASN ont noté une coquille dans le report des valeurs minimales de traction et de limite d'élasticité, indiquées respectivement à 380 MPa et 540 MPa, au lieu de 270 MPa et 390 MPa.

*

* *



Vous voudrez bien me faire part, **sous deux mois**, et selon les modalités d'envois figurant ci-dessous, de vos remarques et observations ainsi que des dispositions que vous prendrez pour remédier aux constatations susmentionnées. Pour les engagements que vous prendriez, je vous demande de les identifier clairement et d'en préciser, pour chacun, l'échéance de réalisation.

Je vous rappelle par ailleurs qu'il est de votre responsabilité de traiter l'intégralité des constatations effectuées par les inspecteurs, y compris celles n'ayant pas fait l'objet de demandes formelles.

Enfin, conformément à la démarche de transparence et d'information du public instituée par les dispositions de l'article L. 125 13 du code de l'environnement, je vous informe que le présent courrier sera également mis en ligne sur le site Internet de l'ASN (www.asn.fr).

Je vous prie d'agréer, Monsieur le Directeur, l'assurance de ma considération distinguée.

L'adjoint au directeur du transport et des sources

Signé par

Thierry CHRUPEK



AUTORITÉ
DE SÛRETÉ
NUCLÉAIRE

Direction
des équipements
sous pression nucléaires

Letter reference:

CODEP-DEP-2022-062690

EDF DI

The Director of the Industrial Division
2 rue Ampère
93206 Saint Denis Cedex 1

Dijon, 10 January 2023

Subject: Monitoring of outside contractors – Prevention, detection and addressing irregularities –
Inspection of EDF DI concerning the addressing of irregularities at JSW
INSNP-DEP-2022-1106 of 06 and 07 December 2022

Follow-up letter to the inspection of 6 and 7 December 2022 on the Prevention,
detection and addressing of irregularities

File No.: Inspection No. INSNP-DEP-2022-1106

References: see appendix 1

For the attention of the Director,

As part of the mandate of ASN (*Autorité de sûreté nucléaire*), the French Nuclear Regulator, concerning the inspection of basic nuclear installations (BNI) stipulated in Article L. 592-22 of the Environment Code, a routine inspection of EDF was carried out on the 06 and 07 December 2022 relative to EDF's monitoring associated with the irregularities detected at the supplier Japan Steel Works (JSW) in Muroran (Japan).

I give you below the inspection summary and the resulting requests, findings and observations.

INSPECTION SUMMARY

On May 10 2022, EDF informed ASN that irregularities had been detected at Japan Steel Works (JSW) in its conventional industry sector. The irregularities detected at JWS concerned more specifically chemical analyses, mechanical test, non-destructive inspections and residual stress measurements. Nevertheless, and although the nuclear sector was not directly concerned, in order to guarantee the situation for products intended for the nuclear sector, EDF set up a *Task force* comprising the licensees EDF and Orano, and the manufacturers of level N1 nuclear pressure equipment (NPE)

(Framatome, Mitsubishi Heavy Industries, Westinghouse Electric France) and General Electric, to conduct inspection investigations. EDF is the leader of this Task force.

EDF recorded the work and conclusions of the *Task force*, available on 30 September 2022 in the report reference[5]

By letter reference [7], ASN formulated several requests to the Task force and the manufacturers concerning the resuming of production at JSW, which had been stopped as a precautionary measure as soon as the detection of irregularities in the conventional sector was announced. To meet these requests, EDF sent ASN the letters references [8] and [9].

Alongside this, JSW mandated a special investigation committee (SIC), including third-party lawyers, tasked with conducting an in-depth internal investigation. On 14 November 2022, the JSW SIC issued a press release reporting the discovery of an extension of the irregularities to products in the nuclear sector.

The ASN inspection concerned the investigations carried out by EDF, the *Task force* leader, before this press release was issued. It was based in particular on the information figuring in reference documents [5], [8] and [9]. The inspection allowed the integration of a certain amount of new information obtained from JSW following their press statement announcing irregularities in the nuclear sector.

The ASN inspectors met JSW senior management at the head office in Tokyo, the JSW personnel of the Muroran site and representatives of EDF and the manufacturers Framatome and Mitsubishi Heavy Industries (MHI). Representatives of the Japanese nuclear regulation authority (NRA) and of the accredited organisations Bureau Veritas Exploitation and APAVE, also attended this inspection as observers.

The ASN inspectors examined the investigation methods deployed by the *Task force* and JSW during the first phase of investigation, the different cases of irregularities detected in the

nuclear sector and the progress of certain plans defined by JSW following detection of the irregularities in the conventional sector.

They noted the determination of the JSW representatives to address the detected problem exhaustively. To this end, the JSW representatives undertook to conduct a new phase of investigations in a climate of transparency, thereby enabling the *Task force* to perform its work in depth.

The inspectors observed that the investigation methods employed by EDF in phase 1 had not enabled the irregularities in the nuclear sector to be detected.

The inspectors therefore consider it necessary to revise the *Task force's* analysis methodology for the future investigations, more specifically by having guaranteed access to all the JSW documentation.

ASN expects EDF to ascertain that the JSW action plans for resuming production are robust and, if necessary, to adapt its contracting and monitoring methods.

Lastly, EDF must learn the lessons from these irregularities.

This inspection provided ASN with initial points of information concerning the irregularities detected in the nuclear sector and the associated causes. These irregularities concern more particularly non-destructive tests, destructive tests, dimensional checks and failure to carry out or to declare manufacturing operations. The handling of these deviations, currently being examined by JSW, was not analysed during this inspection. Only one case out of those affecting the French nuclear scope concerns an item of equipment in service. The item concerned is a steam generator nozzle support ring of reactor 1 of the Cruas nuclear power plant. After analysing the elements provided by JSW, separately from the inspection, EDF concludes that this irregularity does not affect the integrity of this equipment item.

ASN asks EDF to adopt a position regarding the impact if other irregularities that affect or could affect the equipment in service are identified. ASN also asks EDF to adopt a position regarding the impact of the irregularities on the conformity of the equipment currently in the manufacturing process with their manufacturing baseline requirements.

The following requests concern all the equipment items intended for the nuclear sector (NPE, safety-important components, packages, etc.). EDF will send the updates of the CFSI (Counterfeit, Fraudulent, Suspect Items) report incorporating the responses to the following requests and the schedule for these updates.

I. REQUESTS TO BE ADDRESSED IN PRIORITY

Not applicable

II. OTHER REQUESTS

Irregularities detected at JSW

Integration of lessons learned

Article 2.4.1 of the BNI order reference [4] stipulates:

"I. - The licensee defines and implements an integrated management system that ensures that the requirements relative to protection of the interests mentioned in Article L. 593-1 of the Environment Code are always taken into account in any decision concerning the installation."

*III. - The integrated management system notably includes provisions enabling the licensee:
- to collect and use the experience feedback"*

The inspectors examined the investigation methods used by the Task force, the SIC and JSW in phase 1¹¹. EDF pointed out that the technical documentation requested of JSW to conduct the investigations in phase 1 corresponded to the files relating to the conventional equipment concerned by the irregularities (reports, work records from the operators and source data). EDF pointed out that it had not had access to the preliminary investigations or the possibility of interchanging with JSW senior management located in TOKYO; the interchanges were limited to the Quality Assurance Group (QAG) of the Muroran site. The JSW representatives pointed out that they had responded strictly to the requests of the Task force, by sending only the requested documentation. Consequently, the Task force did not receive the Internal Communication Sheets (ICS) tracing the interchanges on the irregularities as the manufacturing operations proceeded.

With regard to experience feedback, it is pointed out that several cases of irregularities

¹ Phase 1 corresponds to the investigations conducted by the Task Force on the nuclear equipment files when the JSW SIC announced that it had detected irregularities on equipment in the conventional sector.

detected in the past with other suppliers from the nuclear sector had revealed the use of internal documents to formally record the handling of irregularities.

The inspectors therefore observed that EDF and the other Task force members had not asked themselves whether the irregularities might be recorded in JSW's internal documents. This led to a de facto limitation of the Task force's documentary scope of investigation.

Despite JSW's lack of transparency with the Task force during the investigations conducted from May to October 2022, notably through the failure to inform of the internal documentation tracing the irregularities, the inspectors considered that EDF and the NPE manufacturers, in their methods of conducting their investigations, had not taken into account the lessons learned from past irregularities.

Request II.1: The lessons learned in this respect must be taken into account in the EDF quality system and in particular in the methodological aspects of investigating irregularities.

Request II.2, as part of integrating the lessons from past experience, transmit the measures EDF plans using to assess whether the types of irregularities detected at JSW are found with other suppliers. Specify the calendar time frames for these actions.

Scope of the JSW sites concerned by the irregularities

EDF pointed out that JSW had three other manufacturing sites in addition to the Muroan site: Hiroshima, Yokohama, Meiki. JSW indicated that these sites did not manufacture constituent parts of equipment for the nuclear sector.

Request II.3: confirm that the other JSW sites are not involved in the manufacture of components or equipment for the nuclear sector.

Irregularities detected in the nuclear sector

Defining the irregularities

JSW senior management pointed out to the ASN inspectors that there had been numerous

interchanges between the SIC and the JSW personnel to define the criteria enabling the irregularities to be identified in an equipment file. The example of internal manufacturing operations was mentioned in particular. The JSW representatives stated that the criteria had been agreed upon and were used as the basis for deploying the investigation method.

Request II.4: In the CFSI report to be submitted by EDF, give a conclusion on the appropriateness of the irregularity criteria defined and adopted by JSW.

Identified cases and exhaustiveness

JSW presented to the ASN inspectors the deviations detected in the nuclear sector concerning the non-destructive tests, destructive tests, dimensional inspection and the failure to perform or declare manufacturing operations. Framatome, who attended the inspection, indicated that it has identified that other nuclear equipment items were impacted by the failure to perform or to declare manufacturing operations.

Further to the irregularities detected in the nuclear sector, EDF indicated that the Task force was going to carry out another examination of the equipment files, analysing in particular the internal communication sheets so that it could adopt a position regarding an exhaustive list of case types.

Request II.5: Adopt a position on the conformity of the in-service equipment affected or liable to be affected by irregularities, and on the ongoing contracts. Inform ASN without delay of newly detected cases of irregularities that could have an impact on the integrity of an item of equipment.

Undeclared moulding operation

An irregularity detected by the SIC concerned an undeclared forging operation (forging rework). This operation can have an impact on the characteristics of the part, mechanical in particular. The inspectors asked JSW about the recurrence of forging rework operations of this type during manufacture. For the EDF steam generator replacement contracts 4 to 6, the JSW Quality Department representative stated that this operation had only been

carried out once. The inspectors questioned the EDF representatives whether other forging suppliers practised this type of operation, in order to have a critical analysis of JSW's assertions. This information could not be provided during the meeting.

Request II.6: Characterise the risk of this deviation at JSW extending to other products.

Action plans and corrective action further to the detected irregularities

Safety culture, CFSI risk, integration of experience feedback by JSW

The *Task force* had defined several prerequisites for restarting nuclear pressure equipment (NPE) production, and notably the need for a reinforcement of the JSW personnel safety culture through a new training course and self-assessment based on the WANO principles. EDF stated in its letter reference [8] that this point was settled. The inspectors examined the JSW procedure concerning the safety culture approach which indicates that an initial self-assessment was carried out on 15 September 2022 followed by complementary training on the operators' weak points identified by this self-assessment, which ran until 15 December 2022.

The JSW representatives indicated that the self-assessment phase was finalised but the complementary training had not yet been carried out. The inspectors considered that EDF had not adequately monitored the progress of the safety culture action plan defined by JSW.

Request II.7: Detail the causes behind this deviation, the corrective actions identified and the procedures defined by the Task force for monitoring current and future action plans at JSW.

Position of the Quality Assurance Group (QAG) department and JSW's new organisation

The irregularities detected in the nuclear sector highlighted the involvement of JSW's QAG Department in the irregularities. EDF pointed out that a new department named QMO (Quality Management Office) reporting to the JSW President in Tokyo had been created recently.

The aim of this new service is more specifically to establish the quality policy of the JSW group and supervise the quality departments situated on the different sites (quality recommendations, personnel training, dealing with irregularities), but also to conduct inspections on the JSW sites. The EDF representatives indicated that they were in direct contact with this new department for the future investigations concerning the nuclear equipment.

Request II.8: Transmit the Task force's analysis of the preventive and corrective actions (organisational changes, monitoring, additional provisions) defined by JSW following detection of the irregularities in the nuclear sector.

Detail the factors guaranteeing the independence of the QMO quality department on the Muroran site.

Production monitoring feedback

Article 2.5.4 of the order reference [4] states:

"I.- The licensee schedules and implements appropriate random verifications of the measures taken in application of articles 2.5.2 and 2.5.3, and carries out periodic assessments of their suitability and effectiveness.

II. ? When the protection important activities or their technical control are performed by outside contractors, the ensuing verifications and assessments constitute monitoring of the outside contractors, and the provisions of article 2.2.3 apply. "

The ASN inspectors observed that the monitoring methods applied by EDF and the manufacturers during the manufacturing operations at JSW did not detect the irregularities (untraced manufacturing operations, modifications of tests, etc.).

The irregularities detected in the nuclear sector highlight the need to monitor the internal documentation of the suppliers of EDF and of the manufacturers.

The inspectors also determined, through the elements presented by JSW, that:

- having the test pieces marked by a third party, ensuring that it is impossible to alter the test source data, and retrieving the test pieces, for example, limit the potential possibilities of committing irregularities,
- for some singular parts, thick parts for example, there was a risk that the manufacturing

process would not always produce the required characteristics.

The inspectors therefore consider that the licensee's and manufacturers' monitoring procedures must take experience feedback into account in order, in the future, to limit the risks of committing irregularities and to be able to detect them, at JSW and other suppliers alike.

Request II.9: Adopt a position on the robustness of the JSW action plans for resuming manufacturing operations. If applicable, specify the changes made in the contracting and monitoring procedures to provide the necessary guarantees that no new irregularities will arise.

Investigation methodology of the Task force

EDF pointed out to the ASN inspectors that several investigation methodologies had been implemented by the *Task force* members in phase 1; some manufacturers based their analyses on JSW's investigations, while others conducted independent analyses. The inspectors noted that the investigation procedures established by the *Task force* were not all subject to strict quality assurance procedures. EDF mentioned that the investigations are considered to be an activity monitoring protection important activities (PIA) as defined in reference document [4]. In this context, the inspectors considered it necessary, prior to the further investigations conducted in phase 2², for the *Task force* to have an investigation procedure established in compliance with strict quality assurance procedures.

Request II.10: Establish an investigation procedure that is subject to strict quality assurance procedures for the nuclear equipment scope.

EDF showed the ASN inspectors the various documents to which the JSW SIC had had access for its investigations. EDF pointed out in particular that it had asked JSW for access to the Internal Communication Sheets (ICS) which formalise the management of irregularities

² Phase 2 corresponds to the new investigations undertaken by the Task Force on the nuclear equipment files when the JSW SIC announced the finding of irregularities concerning equipment in the nuclear sector.

within JSW.

The ASN inspectors questioned the EDF representatives about the benefits of having access to other JSW documents that were analysed by the SIC in order to better understand the past processes at JSW that led to the irregularities and thereby define an appropriate investigation method and scope (internal rules, minutes of meetings, results of employee questionnaires, computerized data).

JSW gave the ASN inspectors some of the information transmitted by the SIC, and in particular the investigated data, the number of interviews conducted and the deviations observed in the nuclear sector. The representative of JWS senior management pointed out during this interchange that they had not obtained the detailed results from the SIC. The inspectors observed in particular that it had not been possible to confirm the examination period or the exhaustiveness of the files examined.

The members of JSW senior management informed the ASN inspectors, primarily on the basis of the interviews conducted, of a number of hypotheses relative to the time frame of the irregularities. They noted in particular, as from 2011, organisational and human problems, schedule constraints and a change in safety requirements. JSW explained in particular that these findings were temporally consistent with the detection of the first case of irregularity in the nuclear sector in 2013.

The inspectors considered it necessary for the new methodology for detecting irregularities defined by EDF and the *Task force* to take into consideration all the documentation and relevant information and enable conclusions to be drawn on:

- the facts and the causes of the irregularities,
- the time frame concerned,
- the different types of irregularities,
- the extent of the irregularities,
- the conformity of the equipment.
- the residual risk of non-characterised irregularities and, where applicable, the measures defined to provide the required guarantees (controls in presence of all parties, etc.)

The inspectors identified, among other things, the need for the *Task Force* to integrate the following specific points in its investigation method:

- the exhaustiveness of the files analysed for the nuclear sector (NPE, PICs, etc.) in relation with a justified time range;

- the examination method for detecting any welding facing operations following undeclared grinding operations;
- consideration of related operations contributing to operations conformity (e.g. calibration of ultrasound testing equipment, etc.) ;
- the analysis of files that do not contain all the available documentation (archive retention time expired, etc.)

Request II.11: Establish an investigation method that meets these various requirements.

Consultation of JSW data for the investigations

EDF informed the inspectors that JSW had undertaken to conserve the material from past manufacturing operations and all the internal data for the equipment (NPE, PICs) until the investigations were completed.

Request II.12: Specify, in the methodology requested previously, the procedures established for conserving the material and the type of documentation archived (hard copy data, electronic data) for the various nuclear equipment items (NPE, PICs, packages, etc.).

Data archiving

ASN letter reference [10] states:

"The licensee, the supplier and its subcontractors must therefore take measures to guarantee the availability of the data at all times and for a duration compatible with the various life cycle phases of a BNI. Restricting human intervention in the management of these data helps to reduce the risk of fraud. »

The inspectors examined the new archiving conditions for the technical documentation defined by the Task force in document reference [8] and the JSW procedures in references [11] and [12]. Following the detection of irregularities in the conventional sector, the Task force pointed out that the 20-year period for source data retention had been specified at JSW for the data relating to the manufacturers Framatome, Mitsubishi Heavy Industries and Westinghouse Electric France. These data are saved on a computer server.

In view of experience in dealing with past irregularities that necessitated consultation of the internal documentation of certain suppliers more than 40 years after manufacture, the inspectors question the retention period adopted by the Task force. The inspectors also questioned your representatives on the retroactivity of this archiving for the data still available at JSW. No answers were given during the meeting.

Lastly, considering the new types of irregularities detected in the nuclear sectors, particularly in the internal documentation, the inspectors considered that the *Task force* needs to re-examine the list of documents to be archived at JSW.

Request II.13: With regard to the irregularities detected at JSW, clarify EDF's analysis of:

- **the consistency of the defined 20-year period with the data integrity requirement figuring in the letter reference [10] indicating the need to guarantee availability of the data at all times and for a period compatible with the BNI life cycle phases;**
- **the transfer of data between the supplier, the manufacturer and the licensee;**
- **the conditions for archiving the data still available at JSW (types of documents archived, procedures for backing up on the JSW computer servers).**

Feedback after the start of the phase 2 investigations

Request II.14: Plan for an interim review with ASN to present the feedback after applying the new investigation methodology to the first equipment files.

JSW investigation methodology

During phase 1 of the investigations, some members of the *Task Force* considered that, as JSW was required to review the manufacturing files, it must have an appropriate method. EDF set out the JSW investigation method in reference [6], relative to the scope of the manufacturer Framatome. EDF pointed out to the inspectors on the basis of the JSW analysis form presented during the inspection, that this methodology was effectively inappropriate for detecting the irregularities identified in the nuclear sector, such as the detection of untraced manufacturing operations. In relation to the types of irregularities detected in the nuclear sector, the inspectors considered that the investigation method implemented by JSW in phase

1 was inappropriate.

The EDF representatives stated that they were waiting for a new investigation procedure from JSW to be deployed on the basis of exhaustive manufacturing documents.

Request II.15: Confirm that the new JSW methodology established in compliance with strict quality assurance procedures, covers all the nuclear product manufacturing operations and type of nuclear equipment (NPE, PICs, transport packages, etc.).

Transmit the Task force's assessment of the robustness of this new JSW investigation technology.

Detail the methods of formalising the assessment actions and JSW's technical positioning on each of the analysed files.

Protection important activities (PIA)

The inspectors consulted some tracking documents linked to the replacement steam generators EDF 6 and the TP900MWE replacement elbows manufactured by MHI.

The manufacturer stated that the list of protection important activities (PIA) according to the order reference [4] had been defined in relation with the EDF requirement reference EDMSN130127 rev A and the Guide RM 18 019 rev A of 14/05/2019. The EDF representative pointed out to the inspector that the list of PIAs and technical controls (CT) had been approved by EDF.

The inspectors observed that the welding operations were defined as PIAs but with no technical controls recorded on the manufacturing tracking document. It was pointed out more particularly that the welding technical controls were the pre-welding (fit-up) and post-welding operations (NDT in particular).

The inspectors noted that the list of PIAs adopted for these projects differed from the list established by EDF for certain manufacturing operations on the Flamanville EPR project (VVP - main steam system - welds) and referenced in EDF document reference [13], such as the activities of marking, taking tests specimens or mechanical tests which are not defined as PIAs. Furthermore, some welding operation technical controls are defined in reference document [13] whereas these controls are not mentioned in the MHI manufacturing tracking

document.

Lastly, further to the first analysis of the irregularities in the nuclear sector detected at JSW, a risk of irregularities during the marking of test coupons and specimens was evidenced, particularly when there was no monitoring. The inspectors thus considered, in addition to the consistency with the abovementioned memo reference [13], that EDF should reflect upon the classification of this activity.

Request II.16: Send a table, like the one in memo reference [13] for the Flamanville EPR project, listing the PIAs and technical controls adopted for the ongoing projects. Detail and justify the identified differences in approach.

III. FINDINGS OR OBSERVATIONS NOT REQUIRING A RESPONSE FROM ASN

Action plans and corrective actions further to the detection of irregularities

Personnel interviews

The ASN inspectors conducted several personnel interviews in order to understand the issuing process for internal communication sheets (ICS), the context for issuing them and the lessons learned from the irregularities detected. The people interviewed have satisfactory knowledge of the types of irregularities encountered and were aware of the seriousness of the acts.

The inspectors nevertheless observed that the forging engineer interviewed did not know about the irregularity detected on the forging operations of a nuclear equipment item.

Observation III.1: Ascertain that the measures applied by JSW enable all the JSW personnel to benefit from the lessons learned from the detected irregularities.

QAG Monitoring

The inspectors examined the elements provided by the Task force concerning the new

monitoring methods of the QAG entity of JSW, defined following the detection of irregularities in the conventional sector. The JSW documentation examined indicates in particular the role of the quality engineers regarding the comparison of raw data.

In relation with the new types of irregularities detected in the nuclear sectors, the inspectors reflected on the additional monitoring measures implemented by JWS to guarantee the detection of irregular internal documents, as well as any internal nonconformities that were not subject to the opening of a nonconformity report.

The JSW representatives stated that their objective was to create a data retention system without human intervention to limit the risks of irregularities being committed. The inspectors consider it necessary, until the new tool is available, for the Task force to detail the complementary monitoring actions defined by JSW for detecting any future irregularities.

Observation III.2: Ascertain that the complementary monitoring actions defined by JSW will detect potential future irregularities, particularly through the supplier's internal documentation.

Process relating to the quality events at JSW

The EDF representatives told the ASN inspectors that at this stage, all the irregularities detected were traced through the issuing of an internal communication sheet (ICS). JSW presented the newly revised quality management system, specifying that from now on, no documents other than those mentioned in the quality manual could be used; this means that the JSW personnel cannot use the ICS's.

Observation III.3: Ascertain that the new procedures adopted by JSW for internal communications between services cannot be used to formalise irregular practices.

JWS investigation methodology

The phase 1 investigations led that Task force to highlight the Quality Assurance Group (QAG) department as the main organisational entity constituting a strong defence against the risk of irregularities in the nuclear sector. The elements presented by JSW showed that this

department was involved in all the cases of irregularities detected in the nuclear sector. JSW's current method provides for an examination of the equipment files by QAG, which is itself implicated in the detected CFSIs.

Observation III.4: Ascertain that the parties involved in the investigation are impartial in their handling of the cases.

* *

I would therefore ask you to communicate to me **within two months, using the transmission methods indicated below**, your remarks and observations and the measures you will take to remedy the above findings and respond to the requests. As regards any commitments you might make, I would ask you to identify them clearly and indicate a date of accomplishment for each one.

I would moreover remind you that it is your responsibility to address all the findings made by the inspectors, including those which have not formed the subject of formal requests.

Lastly, in accordance with the transparency and public information initiative instituted by the provisions of Article L. 125-13 of the Environment Code, I inform you that this letter will be posted on line on the ASN website (www.asn.fr).

Yours sincerely,

The Director of ASN/DEP,

Signed by

Corinne SILVESTRI

Appendix 1 to CODEP-DEP-2022-062690 : List of references

- [1] Environment Code, and its Article L. 592-22 in particular
- [2] Environment Code, and more specifically chapter VI of title IX of book V;
- [3] Environment Code, and more specifically chapter VII of title V of book V
- [4] Order of 7 February 2012 setting the general rules concerning basic nuclear installations
- [5] D309522034387 rev. A of 30 September 2022 – Summary notice of the CFSI risk analysis at the supplier Japan Steel Works concerning the orders for EDF French nuclear fleet
- [6] JSW Procedure 22-QTCS-03 rev.0
- [7] CODEP-DEP-2022-044752 of 28 September 2022- JSW irregularities – ASN prerequisites for restarting procurements of level N1 NPE components
- [8] EDF letter D309522038972 of 10 November 2022 responses to points 1 to 5 of letter CODEP-DEP-2022-044752 of 28 September 2022
- [9] EDF letter D309522345169 of 14 October 2022: responses to point 6 of letter CODEP-DEP-2022-044752 of 28 September 2022
- [10] ASN letter CODEP-DEU-2018-021313 of 15 May 2018: Measures relative to the prevention, detection and dealing with irregularities (fraud)
- [11] JSW procedure NQ 10003 AD1
- [12] JWS Procedure CSP DC 15039
- [13] EDF document D458518038750: Conformity assessment of the CPP-CSP assembly