



**Direction des déchets,
des installations de recherche et du cycle**

Montrouge, 29 May 2020

Our ref: : CODEP-DRC-2020-026061

**For the attention of the Director
of the Orano Cycle site
of La Hague
50 444 BEAUMONT-HAGUE CEDEX**

Subject: Oversight of basic nuclear installations
Orano Cycle centre of La Hague – BNI 33 – UP2-400
Inspection No. INSSN-DRC-2019-0270
Inspection of the DFG project

Ref. : *See end of document*

Dear Sir,

Under the attributions of ASN (*Autorité de Sûreté Nucléaire*, the French nuclear regulator), concerning the oversight of basic nuclear installations (BNI) [1], an announced inspection was held from 14 to 17 October 2019 within the Orano Cycle La Hague site. It focused on the progress of the DFG project (DFG is the French acronym for "*Déchets de Faible Granulométrie*", or "small-particle waste") within basic nuclear installation (BNI) No. 33, called UP2-400, currently undergoing decommissioning [5].

Background

Article L. 593-25 of the Environment Code stipulates that, when a basic nuclear installation is in final shutdown status, "*its licensee proceeds with its decommissioning in the shortest possible time under economically acceptable conditions [...]*". The legacy waste retrieval and conditioning (WRC) operations in UP2-400 are necessary for its decommissioning, and must therefore be carried out within the shortest time possible. Moreover, these are high-risk operations, given the non-compliance of the waste storage with current practises, the extent of the potential source term and the accident risk stemming from it, which justifies defining a specific scenario in the licensee's on-site emergency plan (PUI) to prepare for this possibility. Given that we have "*asked you several times to deploy the industrial phase of the waste retrieval and conditioning operations*" and noting "*that the various forward-looking schedules submitted for the accomplishment of this phase [...]*in response to these requests have not been adhered to", ASN set down, in 2014, the deadlines for the WRC operations, prioritising them according to the risks [2].

www.asn.fr
15 rue Louis Lejeune – CS 70013 – 92541 Montrouge cedex
Téléphone 01 46 16 40 00 • Fax 01 46 16 44 20

Since 2016, ASN has been conducting inspections on complex projects concerning WRC and decommissioning to ensure that you exercise your responsibilities and implement a project management organization that enables the prescribed deadlines to be met.

To date, ASN still observes repeated schedule overruns. You have submitted several requests to ASN to push back these deadlines. This situation is unsatisfactory and calls into question the validity of the schedules you proposed and which have been prescribed by ASN.

In 2014, ASN more specifically prescribed the start of retrieval of the waste stored in settling tanks 1 to 3 and 6 to 9 of the "decladding" and "HA/DE" facilities before 1 January 2020, and deadlines for retrieval and conditioning of the waste from pits 217-01 and 217-02 in the decladding building, of the sludges from pit 26 in the north-west zone of the site, of the ion exchange resins from the SOC (organised storage of hulls) and SOD (organised storage of waste) pools [2]. For the retrieval and conditioning of these wastes, you are developing the DFG ("small-particle waste") project).

This project plans for a single cementation line, on which all the batches of waste will be treated in series over a period spanning six years. This industrial choice requires absolute control of the operating schedule in order to meet the prescribed deadlines, given the particularities of each batch of waste. Furthermore, the cementation process you are considering is also the reference scenario for the conditioning of the waste present in the other facilities of the site. This project is therefore also essential for maintaining control of the UP2-400 decommissioning schedule.

At present, Orano Cycle plans making a final investment decision in June 2020 to start the DFG project, which corresponds to the start of construction of the cementation building. Eight months before this date, and two months before the regulatory date for the start of retrieval of the above mentioned waste, ASN wanted to check on the overall of the project to enter the execution phase, the credibility of the critical deadlines, and the organisation and processes in place to keep the project on track to meet the required deadlines, in compliance with the abovementioned regulations.

The progress of these projects is also linked to their funding. This funding is based on provisions corresponding to the end-of-cycle charges¹. ASN was accompanied in this inspection by the competent authority for controlling the securing of funding for long-term charges, in order to ensure compatibility between the decommissioning and WRC schedules and their funding. Consequently, officials from the DGEC (General Directorate for Energy and Climate) examined more specifically the application to the DFG project of the methods you use to evaluate these charges. ASN and the DGEC were thus able to have an integrated view of the project components.

I have the honour to convey to you below the requests concerning the DFG project.

Through my last two requests (A.17 and A.18), I wish you to conduct an assessment of your organisation for the management of WRC projects and suggest improvements where necessary. I would remind you that during the in-depth inspection of the WRC projects conducted on the La Hague site in October 2016 [6], ASN had already identified areas for improvement in your organisation.

Several requests concern:

- the performance of independent checks on the projects. The required degree of independence of the check, its scope and the required skills are to be assessed according to the risks it represents. I consider that independent checks can be carried out internally if the persons performing the checks have the necessary independence and skills;
- schedule-driven project management. This method of management should lead you to make trade-offs giving priority to compliance with schedules, even if this leads to higher costs. The extra costs must of course remain acceptable, as stipulated in Article L. 593-25 of the

¹ The obligations of which are covered by Articles L. 594-1 et seq. of the Environment Code

Environment Code. They must be evaluated conservatively, updated regularly and be covered by provisions, as stipulated in Articles L. 594-1 et seq. of the Environment Code.

I – Strong points of the Orano approach

ASN carried out this inspection after completing a preliminary procedure. This procedure began with the inspection team assimilating the main documents of Orano's project management baseline and the associated processes. This procedure lasted several months and was based to a large extent on the licensee's voluntary handing over of all the existing documentation, with explanations where necessary. The inspectors wish to underline Orano's willingness to cooperate and its proactive and transparent attitude throughout the procedure.

The inspection confirmed the strong points in Orano's project management, already identified during the in-depth inspection of October 2016 [6]:

- the engineering skill in the development and mastering of technical solutions, supported by tried and tested processes;
- the existence of an organisation dedicated to the preparation and operational commissioning of the new facilities;
- the open-platform functioning between the Project Owner and the Project Manager, which fosters the circulation of information;
- periodic reporting on project progress to the governance board.

The inspectors moreover noted during this inspection:

- the proper application of the project control process;
- the improvement steps taken for WRC project management on the La Hague site, and in particular the systematic assessment of project maturity at each change of phase.

II – DFG project maturity

The DFG project necessitates firstly, a new building in which a specific conditioning process will be set up, and secondly, industrial operations on facilities which at present are shut down in order to retrieve the waste stored in them and transfer it to this new building.

The inspectors observe that the maturity of waste retrieval and of the existing installation modifications is significantly less than for the new part of the project. More specifically:

- the work packages concerning cells 929 A and B do not have a confirmed maturity of the level of a detailed design study (DDS);
- the work package concerning pit 26, which was at the preliminary design study (PDS) stage in 2014, has not since then been developed to the detailed design study (DDS) stage. The treatment of the waste from this pit is essential for determining the duration of the process operating life. The uncertainties of this work package, based on the hypotheses of the 2014 PDS, appear to be substantial (retrieval process, sizing of the tank, need for substance characterisations during transfers, feasibility of cementation when no tests have been performed on samples, etc.). You stated that this PDS was to be supplemented by additional characterisations of this waste. These characterisations have not yet been carried out, and you attribute these delays to technical difficulties. The inspectors have found no analysis of the acceptability of the new schedule with respect to the overall progress of the project or of its required definition level before proceeding to the execution phase; the inspectors observe that the work carried out on pit 26 in five years is very limited and could penalise the overall schedule;
- the inspectors note significant uncertainties in the control of basic data relative to the existing facilities: the characterisation of the waste to retrieve, as is shown by the IRSN expert

assessment [4], the determining of the emptiness of the settling tanks and the operability of the retrieval devices;

- an analysis of the storage needs was undertaken recently through a flow study, which must be completed before making the final investment decision;
- in view of experience feedback, the inspectors observe that retrieval will require careful management and the learning curve will be long, even for an experienced operator, which introduces a degree of uncertainty into the production schedule of the facility

You did not show the inspectors, in the documents relating to project execution and the design of the facility, any elements demonstrating that these uncertainties have been taken into account.

The inspectors also note that the WRC from settling tanks 1-2, from pits 217-01 and 217-02, of the resins from the SOC and SOD pools and from pit 26, although prescribed [2] by ASN, is at this stage excluded from the final investment decision. This could be incompatible with meeting the deadlines prescribed for the DFG project. Indeed, you have planned for the new reference schedule, which will be submitted to your project governance board for validation, to cover the entire scope of the project, and to include the WRC of settling tanks 1-2, of pits 217-01 and 217-02, of the resins from the SOC and SOD pools and from pit 26.

Your strategy for DFG aims firstly to retrieve and package the waste presenting the least difficulty. You have justified this approach by indicating that it allowed the experience feedback from the first sequences to consolidate the strategy for the more complex waste. The inspectors consider this approach to be suitable if the definition level of all the work packages today is sufficient. In practice, the inspectors noted a significant difference - the impact of which was not assessed - between the definition level of the operations concerning the waste presenting the least difficulty (at "end of DDS" gate) and the definition level of the operations concerning the other waste work packages. Concerning pit 26 more particularly, the inspectors note a major uncertainty with the schedule considered, and perhaps a risk concerning the actual feasibility of conditioning. As the precise definition of the project, the forward planning and control of its maturity over the entire scope are fundamental requirements for keeping the schedule on track once the project enters the execution phase, your ability to meet the prescribed deadlines is not guaranteed.

More generally, the inspectors find an overall schedule overrun of five years, if not more, in the deadlines that you are considering at present with respect to those prescribed in 2014 [3] and therefore insufficient control over the DFG project schedule.

A1. I would ask you to explicitly assess the impact of the uncertainties concerning the existing facilities on project planning, in terms of upgrading needs necessary for waste retrieval and transfer, and the level of characterisation of the waste. If the uncertainties cannot be reduced, I would ask you to increase the flexibility of the project execution and facility design plans in proportion to their impact.

You will conduct the assessment required in request A1 taking into account more specifically:

- the conclusions of IRSN opinion [4],
- the initial state of the HA/DE and decladding facilities (have the as-built drawings available, the need to upgrade the ventilation, functional state of all lines and equipment, etc.),
- the uncertainty in determining the emptiness of the settling tanks and, consequently, on the strategy for retrieving the residues from the bottom of the settling tanks,
- the impact of the variability in the concentration of the transferred waste on the speed of the process²

² The process is carried out in two successive stages: a first stage relative to preparation of the batch and a second stage relative to the cementation. The durations of these two stages vary according to several parameters. The batch preparation time depends more particularly on the waste concentration. The licensee has not considered the preparation time variability

- the possibility of on-line characterisation of the retrieved waste and faster analysis methods,
- the need to have sufficient interim storage capacities.
- the possibilities of modifying the sequencing of settling tank emptying if an unforeseen incident affects a tank, with the aim of mitigating the consequences on the overall project schedule.

The planning of a complex project necessitates identifying and controlling the deliverables that govern the control of the schedule, called "critical deliverables" in this letter. These critical deliverables must reflect the stakes of the project, defined with respect to the Project Owner's strategy. They take into account the risks of "bottlenecks" resulting from convergences in schedule sequencing, over the entire scope of the project.

A2. To improve the defining, forward planning, tracking and control of the deadlines for the critical deliverables, I would ask you to take measures to ensure convergence planning³ and to periodically monitor the associated margins.

The inspectors have examined the planning strategies for the construction and preparation of commissioning of the retrieval and conditioning facilities, primarily on the basis of the integrated project schedule⁴, in the absence of other sufficiently advanced documents. Although detailed schedules can be developed at a later stage in the project, the integrated schedule should set down, from the outset, sufficiently well-defined strategies to identify needs that could modify the sequencing or necessitate forward-looking action. The sampling inspection carried out by the inspectors reveals disparities in the definition level and a lack of forward planning that could lead to poorly robust sequencing. The project execution priorities (installation of equipment, preliminary tests, etc.), the sequencing logic, and the consideration of the requirements concerning interfaces, logistics and resources are notably insufficient.

A3. I would ask you to improve the construction planning and scheduling strategy and the preparation for commissioning in order to guarantee the robustness of project sequencing.

Your forward planning time frame for human resource needs, particularly for the pre-commissioning preparation team and recruitment of the future operational control operators, is one to two years. The inspectors consider that this time frame for forward-looking human resources planning and scheduling is not sufficiently substantiated in view of past experience. Thus, the silo 130 retrieval project, for which you chose similar objectives, suffered deficiencies in the forward planning of human resource needs or in the measures taken to meet them.

A4. I would ask you to justify the time frame chosen for the forward planning of human resources, by formalising the analysis of the needs and the measures taken to satisfy them.

in its current flow study. The variability of the first stage will not be able to be compensated by that of the second stage, which will lead to an inevitable extension of the process operating time which has not been taken into consideration by the licensee.

³ Convergence planning aims to control the important project milestones by prior identification of the critical deliverables of the project and to protect them by having time reserves (buffer times). It serves to prevent risks of delay and to safeguard the project schedule by committing project management and the company to produce these deliverables on time, even if this implies additional costs.

⁴ The integrated project schedule covers all the project scopes, its essential external interfaces and all the contributing disciplines (engineering, purchasing, manufacturing, construction, commissioning, operation) in a balanced manner and with sufficient detail to identify the interdependences and justify the overall sequencing of the project and its duration. It does not replace the detailed schedules of each discipline.

Schedules are prioritised according to the targeted management objective. Among these schedules, the integrated project schedule³ constitutes an essential reference for project management and decision making. It is therefore important to control its quality in order to ensure maturity and robustness, through the following criteria in particular:

- the number of tasks and the balance between the disciplines and the various phases of the project, over its entire scope;
- the identification and control of the associated interfaces;
- the schedule structure (type of links between the tasks, rules of logic and sequencing, etc.) ;
- the realistic nature of task durations;
- the appropriateness of the buffer times and the margins that guarantee the critical deadlines, especially their position in the schedule;
- the procedures for authorising the utilisation of buffer times and margins.

In addition, a baseline is associated with the integrated project schedule and is used to measure project progress. This baseline is intended to reflect the strategy approved by the governance board and to be a lasting reference.

You informed that inspectors of the recent development of a procedure aiming to control the quality of the schedule, but limited solely to its structure. The inspectors observe, considering the other above mentioned quality criteria, that substantial work is still required to correctly develop the integrated schedule for the DFG project.

The licensee stated that a schedule peer-review was held in 2018, but this was not a frequent practice. Holding an independent review of complex project schedules is a good practice - and one that is common in industry - which can confirm the quality of the schedule and ensure the continuity of the basic reference.

A5. I would ask you to:

- **revise the project schedule preparation procedure to introduce quality criteria that can confirm the maturity and robustness of the schedule, and a control at certain key stages for which you will substantiate the depth of analysis and level of independence;**
- **produce an integrated schedule for the DFG project in conformity with this updated procedure and including an independent check before the project enters the execution phase.**

You will send the revised procedure and the revised DFG project integrated schedule to ASN.

In March 2019 you engaged a procedure to optimise the DFG building civil engineering work, which has led to a substantial amount of "residual work" required to modify the engineering studies, process the calls for tenders revised for this purpose, and revise the safety analysis notes. However, you do not plan pushing back the target facility commissioning date, which remains planned for 2024. Yet completion of this optimisation procedure governs the revision of an authorisation application file required under Articles R. 593-55 and R. 593-56 of the Environment Code, submitted to ASN in November 2018 [7]. The revision of this file is on the critical path of the project. The inspectors note that this modification was decided after validation of the detailed design study (DDS) of the work package concerned, and only three months after submitting the abovementioned file. ASN has abandoned the examination of this authorisation application due to the potential impact on your safety case. I consider that this optimisation decision should have been taken earlier, at least during the DDS, for it to be integrated in the application file. This late decision to undertake an optimisation procedure testifies to a lack of forward planning, affecting the control of the project.

The inspectors note that fundamental optimisation possibilities remain open⁵. The indirect impact of these optimisations can be significant, for example on the consolidation of the integrated schedule or

⁵ With regard, for example, to the conditioning process, the drying time prior to sample analysis, the time required for the laboratory analyses, the work pattern of the teams on the job, the supernatant microfiltration throughput, and the number of storage locations available for maturing the packages.

the study of additional modifications, such as the installation of a microfiltration system. The inspectors consider that their development, coming after the DDS, is also too late.

With regard to the control of procurements, random sampling inspections reveal that:

- the specifications for the front-end cementation workstation, which is critical for the functioning of the process and forms part of what you term the *special machines* work package, indicate a requirement as a number of packages per day; yet this value, which reflects a functional requirement specification, is not broken down into operational technical requirements;
- the specifications for the agitators that will be installed in the process tanks do not include any reliability requirements. In order to consult more suppliers, you decided to downgrade these agitators to "standard procurement" status. You have nevertheless indicated that these agitators, immersed in active solutions and subject to radiological constraints, will be difficult to maintain. As the agitators are critical items of equipment, the inspectors consider that a failure modes analysis, or an equivalent procedure, should have been carried to demonstrate the required level of reliability.

You have recently developed a procedure for carrying out a systematic assessment of the maturity of a project at each change of stage. I consider that the development of this procedure represents a significant step forward. However, the inspectors observe that some subjects that are critical for the DFG project are not covered by this procedure, such as the procurement strategy (control of technical requirements, allotment, supplier assessment, contractual strategy, contract reviews, etc.) whereas, for the DFG project, the licensee has set a criterion of having analysed 80% of the tenders before seeking the final investment decision.

Furthermore, the deliverables required at each stage of the project, with a view to this maturity assessment, are not always defined.

A6. I would ask you to supplement the DFG project maturity assessment before making the final investment decision, taking into account:

- the achieving of a minimum level of maturity over the scope that is currently not defined to an end-of-DDS level;
- the maturity and robustness of the integrated schedule, consistently with request A5;
- the maturity of the project execution strategies for the construction, preparation for commissioning of the retrieval and conditioning facilities and their start-up until industrial commissioning, taking into account requests A3 and A4;
- the maturity of the strategy for deploying the pre-commissioning teams;
- the flexibility of the project execution process and strategies to take account of the irreducible uncertainties and risks such as they were assessed on the basic data of the project, in particular on completion of the analysis that is the subject of request A1;
- the maturity of the procurement strategy (control of technical requirements, allotment, supplier assessment, contractual strategy, contract reviews, state of the suppliers' tenders and ability to place critical orders, etc.).

You will please clarify each of the required deliverables before assessing the maturity of the DFG project.

III - Organisation of Project Management

Project Management has management of change (MOC) tools and processes. Several project changes – notably the optimisation of the DFG building, interaction of the decladding building with the DFG

building in the event of an earthquake, and the downgrading of the service life standard of the DFG building – have impacts on safety and on the schedule, in particular because the required personnel resources have not been sufficiently anticipated and secured. During the inspection, the licensee was unable to present adequate proof of control of these changes. The inspectors nevertheless noted initiatives to improve the MOC process, such as putting in place tracking indicators and holding periodic meetings.

A.7 I would ask you to continue the consolidation of the project MOC process, in particular the procedures for rapidly assessing the direct and indirect impacts, including with regard to human resource requirements, envisaged DFG project changes concerning the scope, costs and deadlines.

The project risks management process is implemented without systematically assessing the impact of the risks on the schedule. When the impact is assessed, it only concerns the critical path of the schedule.

Furthermore, the project risks assessment rating thresholds have not been adapted to the DFG project. A high ratio of priority risks can be detrimental to the proper control of these risks. 35 % of the project risks are qualified as priorities, which seems high to the inspectors.

Projects management has identified risks for the project that are not considered to come under the responsibility of the project coordinator even though they could jeopardise achievement of the objectives. In the opinion of projects management, these risks - qualified as exogenous – are the responsibility of the licensee. Thus, the risk of interaction between the decladding building and the new DFG building, which could lead to considerable reinforcement work on these buildings, is qualified as exogenous. The inspectors were unable to obtain any information or registers documenting this risk.

A.8 I would ask you to consolidate the project risk assessment process:

- **by systematically assessing the impact of the risks on the schedule;**
- **by justifying the rating threshold chosen for the DFG project and by adapting the list of priority risks if necessary;**
- **by indicating the methods of tracking the exogenous risks and proposing, if necessary, improvements to control them and clarify the role of the entities responsible for them.**

You have presented the quantitative approach used to consolidate the assessment of provisions for risks, which is established in the initial approach by qualitative "statistical expectancy" analysis. You have stated that you also plan to use this quantitative approach for the risks that impact the schedule. However, the elements presented were found to be limited with respect to the state of the art, which recommends taking into account task duration uncertainties and not just risks, rating the data on three points and not one, assessing the sensitivity of the modelled variables, assessing the quality of the input data and excluding some of them from the model to build, etc. The advantage of a quantitative schedule risk analysis lies more in the identification of the intrinsic vulnerabilities of the schedule and in the application of iterations to improve the robustness of the schedule, than in the probabilised value of the milestones. Consequently, although I acknowledge the benefit of such analyses, I consider that, in the absence of a confirmed method, they risk artificially increasing the schedule times.

A.9 I would ask you to submit a technical note defining the targeted objective and the method of quantitative schedule risk analysis of the DFG project schedule. You will prove that the best techniques, references and standards available are used.

IV - Organisation of the Project Owner

In a high work load situation linked to the optimisations, changes and processing of call for tender renewals, the Project Management is concentrating on the short term to the detriment of the later stages. These stages, despite being critical for the overall schedule, are relatively less well controlled and constitute a weakness; the Project Owner should take better account of the long-term outcomes.

The inspectors have noted that, in reality, no distinction is made between the short- and the long-term outcomes, due to the close integration of the Project Owner and Project Management teams. Thus, the Project Owner relies primarily on the skills and deliverables of Project Management, in particular for:

- the schedule;
- the civil engineering studies and the work phase (construction, overall tests);
- procurement management;
- management of change;
- project control;
- project reviews.

Although the choice of organisation between Project Owner and Project Management is your decision, I consider that the Project Owner must be able to fully assume its function of Project Management coordinator. The Project Owner is the guarantor, in particular, of the priority of schedule-driven project management; the current integrated organisation leads to Project Management playing the role of assistant to the Project Owner. I consider that this method of functioning can tend to reduce the Project Owner's sense of responsibility in its role of developing an opinion on the project situation that is independent of Project Management, of verifying its level of resources and checking the quality of the work performed.

The Project Owner must also ensure that the future operator is consulted for the fundamental project decisions, via the "pre-commissioning" team. Despite the close involvement of the pre-commissioning project manager, appointed in April 2019, it is noted that the pre-commissioning workload is not planned for sufficiently far in advance. The inspectors thus observed, on examining the remarks sheets issued in 2017, that pre-commissioning reviews had been carried out one week before the inspection.

A.10 I would ask you, in application of the prescription [ARE-LH-RCD-13] of resolution [2], to conduct a DFG project management review in order to:

- **clarify the role of the Project Owner, particularly in its schedule-driven project management duty;**
- **assess its needs in terms of resources to enable it to exercise its duties, and notably exercise genuine authority over Project Management and manage the interfaces with other entities;**
- **improve its capacities for control and forward planning of the project technical choices, by looking ahead to the medium- and long-term risks to a greater extent.**

Furthermore, for this complex project ASN notes the large number of interfaces to control and the way they translate into interdependencies between the various sub-projects, which are sources of significant risks of schedule overruns for the project as a whole. Interfaces representing risks were examined by the inspectors and their satisfactory control could not be demonstrated during the inspection, and more specifically:

- the lack of knowledge of the state of the settling tanks once emptied and concerning the retrieval of the residues, which might require the development of additional retrieval means and possibly have an impact on the overall project schedule;
- the additional measures to develop to overcome the uncertainties in the characterisation of the waste from the settling tanks;
- the interfaces needed to develop the analysis capacities required to support the retrieval and conditioning of the waste from pit 26: the site's Central quality control laboratory (LCC),

- the NuLab laboratory on the Marcoule site, a shut down facility in the HADE building which could be reused as a laboratory according to the licensee's statement;
- the CEA's long-term studies to develop a definitive conditioning strategy for packages destined for near-surface disposal.

ASN underlines the advantage of "programme-based" management for the control of interdependencies between projects and for taking into account the DFG project planning and scheduling risks that lie farther ahead.

A11. I would ask you to assess the possibility of implementing programme-based management to support the thus clarified role of the Project Owner and, in particular, to improve the forward planning for the short-, medium- and long-term risks, control of the interfaces and coordination of the various projects necessary to achieve the objectives of the DFG project. The scope of this programme shall be defined by Orano. I encourage you to benchmark programme management systems applied in industry in order to develop your thoughts on the matter. Once this is done, you will kindly send ASN your action plan.

V – Functioning of the governance board

The Project Owner reports regularly on project progress to the various Orano governance boards. The sampling inspection of the documents presented during the inspection did not provide any confirmation of the effective monitoring by these governance boards of the Project Owner and its ability to control the project deadlines. The sampling inspection on the optimisation of the DFG building and the decision-making process reveals that the decisions are made on the basis of simple Project Owner presentation media and recorded in a brief report. The elements presented do not provide confirmation that the governance boards question the proposed options and decisions sufficiently.

For the projects whose deadlines are prescribed (in the decommissioning decrees or ASN resolutions [2]), the governance board must make sure that all their components (scope, costs, schedules) are controlled and, more particularly, that they comply with schedule-driven management without prejudice to the implementation of cost control processes. More particularly, ASN considers it necessary for the governance board, in the event of significant or repeated schedule deviations⁶, to use independent checks to determine the root causes and obtain robust action plans to address them.

Furthermore, the recent setting up of the project maturity assessment procedure should lead you to specify the required conditions for the governance board to authorise crossing of the main milestones. These milestones would typically be those materialising the end-of-gate stages (PDS, DDS, final investment decision, etc.) and the major convergences resulting from the project sequencing choice. In order to support the governance board in its decisions, these milestones should be assessed in accordance with established project maturity criteria which are adapted to their stakes, with, for example, an independent cross-check when justified.

A.12 I would ask you to detail and to supplement for the DFG project where appropriate the way in which the governance board monitors:

- **compliance with the project schedules and its effective schedule-driven management, while ensuring clear rules for reporting information on schedule deviations and analysing them, and ensuring the effectiveness of the corrective actions decided upon;**

⁶ The schedule deviation is a performance metric for measuring compliance with a project schedule. This notion is important in the implementation of the project control process.

- **the principal project milestones when they require an authorisation from or notification of the governance board;**
- by performing independent verifications when the governance board considers it necessary, to enable it to take a position.**

Orano does not inform ASN of the schedule deviations detected on the project. Regularly informing ASN of these deviations seems necessary, insofar as the effective handling of deviations is one of the prerequisites for meeting the prescribed deadlines.

A13. I would ask you to propose methods of monitoring the progress of the DFG project, demonstrating effective schedule-driven project management, based on the implementation of the provisions defined in response to request A2 and request A16. You will inform ASN periodically and in a proportionate manner, of the identified schedule deviations, their causes and the actions decided upon to control the schedule.

As far as the project maturity assessment is concerned, the governance board must also ensure that this has been correctly carried out before authorising continuation of the project. The maturity assessment procedure you have presented is recent. It is based primarily on self-checking of the project by the Project Owner and the Project Manager, with the participation of an independent expert. In principle, these self-checks are necessary and this initiative is a step forward.

However, I consider it necessary for these self-checks to be supplemented by independent checks when the stakes justify this, in order to guarantee robust decisions. This is particularly the case when making the final investment decision, for which ASN considers that the governance board should base its decision on the conclusions of an independent review that cuts across the various disciplines of complex project management. The current procedure does not show any independent check preceding the high-stake decision steps that necessitate the notification of, or a decision from, the governance board.

A.14 I would ask you, consistently with request A12, to conduct an independent review that cuts across the various project disciplines in order to assess the maturity of the DFG project before making the final investment decision for this project.

VI- Safety approaches methodology for WRC and decommissioning projects

Article 1.1 of Order [3] indicates the possibility of adopting an approach proportionate to the risks for the safety provisions to devise and implement within a basic nuclear installation. ASN considers that designing the waste retrieval and conditioning facilities to meet "the strict need" (fit-for-purpose approach) is admissible on condition that the design is acceptable from the safety aspect and allows the potential danger of the definitively shut down facilities to be reduced more quickly. Orano has adopted this approach to a certain extent for the design of the "bâti bulle" (bubble frame) building of the facility for retrieval and conditioning of the waste from silo 130; this approach is again put forward for the design of the DFG building, without ASN being informed of the subtending criteria.

A.15 I would ask you to formalise your fit-for-purpose approach strategy in the particular context of WRC and decommissioning. This strategy must be based on a holistic analysis that prioritises the safety-related risks and the constraints associated with faster retrieval of the waste, with a view to having an optimised trade-off between control of safety and control of schedules. This strategy must include the appropriate justifications. Such a strategy commits you to meeting the stated deadlines, which are part of the basic design of the project. In the light of the design options that result from such a strategy, Orano shall produce a case substantiating its choices for the DFG project, and will enclose it with the future noteworthy modification authorisation application for BNI 33.

After the inspection, Orano notified ASN in late December 2019 [8] of the failure to meet several DFG project deadlines prescribed by resolution [2]. Failure to meet deadlines prescribed by this resolution is also observed for other projects. These deadlines and the scope of the WRC and decommissioning projects have been prescribed on account of the associated risks for safety and environmental protection. Thus, these project management activities which are necessary for controlling the schedule, contribute to, or could affect, the technical or organisational provisions mentioned in Article L. 593-7 of the Environment Code. This article explicitly mentions the organisational requirements to prevent or limit the risks or adverse effects presented by the facility, particularly during its decommissioning. The prevention and limitation of risks and adverse effects during this phase are based in particular on the requirement for decommissioning to be accomplished in as short a time as possible, as stipulated in Article L. 593-25 of the Environment Code. The legacy waste retrieval and conditioning project management activities, which are necessary in order to control the schedule, include more specifically the integrated assessment and control of the project deadlines, costs and scopes, which are interdependent.

A.16 I would ask you to identify those project management activities that are important to protection within the meaning of the Order [3]. You will assign defined requirements to these activities, and establish the requisite deviation management provisions.

VII- General improvement of your WRC project management organisation as a whole on the La Hague site

The majority of the requests formulated in this letter are not based on deviations from the licensee's project management arrangements. These requests are justified by their implications for safety and by consideration of reference practices and standards implemented in industry for the management of complex projects. For this reason, these issues extend beyond the scope of the DFG project alone and therefore concern, more broadly, the licensee's organisation for the management of complex projects - such as the WRC projects - on the La Hague site.

I have duly noted, in relation to request A6, the recent development of a procedure for systematically assessing project maturity at each change of stage. With a view to supplementing the maturity assessment, I think it is necessary - for the La Hague WRC projects - to consider in particular:

- the criteria associated with request A6,
- your ability to submit the regulatory authorisation application files to the authorities within deadlines and with the required standard of quality,
- the systems and processes for project monitoring and control.

With a view to clarifying the assessment, and at the beginning of each project stage, I consider it necessary for you to set out explicitly:

- the definition of the deliverables to produce, taking into account the project specifics for each maturity assessment criterion to be met,
- the scheduling of independent cross-checks to assess the main milestones of the stage, in order to provide the governance board with adequate assessment information.

A.17 I would ask you to establish initial experience feedback for the project maturity assessment procedure, integrating the more specific analysis of the preceding points and to inform me of any envisaged changes in said maturity assessment procedure.

A.18 I would ask you to analyse the conditions for extending requests A2 and A7 to A16 to the management of all the WRC projects on the La Hague site.

Please send me your observations and replies concerning requests A1 to A10, A12, A13, A15 and A16 within four months at the most and, concerning requests A11, A14, A17 and A18, within 7 months at the most. With regard to the commitments that you might have to make, I would ask you to kindly identify them clearly and indicate the completion deadline for each one.

Yours sincerely,

Chief inspector

Signed by

Christophe Quintin

REFERENCES

- [1] Environment Code, and more specifically chapter VI of title IX of book V
- [2] ASN resolution 2014-DC-0472 of 9 December 2014 relative to the retrieval and packing of legacy waste from basic nuclear installations No.33 ([UP2-400](#)), No.38 ([STE 2](#)), No.47 (ELAN IIB), No.80 (HAO), No.116 (UP3-A), No.117 ([UP2-800](#)) and No.118 (STE 3), operated by [AREVA](#) NC on the La Hague site (Manche *département*)
- [3] Order of 7th February 2012 setting the general rules concerning basic nuclear installations.
- [4] IRSN Opinion 2019-00220 of 1 October 2019 concerning the characterisation of the waste stored in the settling tanks of the HA/DE and Decladding facilities.
- [5] Decree 2013-996 of 8 November 2013 authorising AREVA NC to carry out final shutdown and decommissioning operations on BNI 33, called the "UP2-400 spent fuel reprocessing plant" situated at the AREVA NC site of La Hague (Manche département);
- [6] ASN follow-up letter to inspection CODEP-CAE-2017-015804 of 27 May 2017 (in-depth inspection in October 2016 of the La Hague site WRC projects)
- [7] Orano letter 2018-48640 of 28 November 2018
- [8] Orano letter 2019-75029 of 27 December 2019