

**CHANGE MANAGEMENT: FROM THE EXPECTATIONS
OF THE COMPETENT AUTHORITY
(IN RELATION TO THE REGULATIONS)
TO THE IMPLEMENTATION BY OPERATORS**
Example of collaborative work with Orano¹

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Abstract

One of the main challenges of the day-to-day job for the nuclear security competent authority is to ensure the security of the facilities holds at all times the adapted level of performance to counter the actual threat, and at least is never degraded by the evolutions of the installations. In France, a new legal and regulatory framework has been recently applied to enhance the protection of nuclear material and facilities. As a result, fuel cycle facilities and nuclear power plants had to carry out a numerous upgrade construction works to improve the level of security and to comply with the new reference. The urgency put the system under tension and imposed choices. The temptation could have been to go fast and forget to set up an adequate organization including skipping the administrative process of authorization to rush directly to the concrete works. The story began when inspectors witnessed a new building on a nuclear site was under construction without neither prior authorization nor prior information to the competent authority. What if this extension has been implemented regardless security? What if the works associated with this extension had deteriorated the defense of the site? Were security personnel informed of these works? It was concluded that even if it was clear that the works was made to improve physical protection, it was not clear if all potential security impacts had be considered. This paper will not use technical terms. It uses terms such as ‘non-significant’, ‘substantial’ and ‘notable’ modifications, or ‘compensatory measures’, ‘analysis and examination time’. It also shares experiences on how the competent authority ensured no more works started without prior authorization.

1. INTRODUCTION

The paper aims to present the way the French nuclear security competent authority has worked to supervise the management of changes on nuclear sites.

The French nuclear security competent authority had set a regulatory framework for enabling changes that could have an impact on security on site. The requirement set in the regulation concerned modifications affecting one of the elements taken into account to license the operator. The regulation notably distinguishes the notions of simple information of the competent authority and the authorization before starting construction works. This general requirement in the regulation takes into account the change in a large way and does not give any detail on the type of information to be transmitted according to the type of change, nor the nature of demonstration that this information should include.

Nuclear power plants and fuel cycle facilities are constantly changing, particularly in recent years with upgrade works related to the implementation of security reinforcements. The security of a facility can be weakened by a lack of anticipation of the potential impacts of the changes implemented on the facilities, in particular those relating to physical protection systems. However, according to the important number of nuclear facilities in France, according to the huge number of files and reports that each facility could transmit to the nuclear security competent authority, it quickly became clear that setting up an organization was not enough to overwhelm these files and reports.

¹ Orano (previously Areva) is a French multinational in the energy sector, working mainly in the nuclear business. Its activities are mainly related to nuclear energy: uranium mining, concentration, uranium conversion and enrichment, nuclear fuel assembly manufacturing, nuclear fuel transportation, spent nuclear fuel treatment, nuclear dismantling and management of radioactive waste. In France, Orano operates 7 sites, including 3 significant.

The French nuclear security competent authority wants to constantly empower the license holder. That's why a collaborative work has been set up with the operator Orano to define a dedicated guide to the management of changes for the different nuclear sites it operates. The aim of this guide is, for each facility, to know what information the operator has to communicate to the competent authority before beginning the upgrade and construction works.

This information should systematically include the answer to the following three questions:

- Do the modifications and the works improve security?
- Do the modifications and the works weaken security?
- In the latter case, what compensatory measures are planned?

In addition, for changes which are not related to physical protection, the operator has to be able to explain to what extent security by design has been taken into account.

2. THE COLLABORATIVE WORK BETWEEN AN OPERATOR AND THE COMPETENT AUTHORITY, THROUGH TECHNICAL MEETINGS

In 2017, during an on-site inspection, it was found that a construction had started without the competent authority had received any prior information. The competent authority then required that the operator put in place corrective actions on the site. Initially, the purpose was the information concerning the construction in progress was made, even if it was late. Then, the lesson learned were shared to guarantee this type of error no longer occurs again.

The corrective actions resulting from the experience feedback were of two kinds:

- 1- Locally, with the implementation of an internal audit loop systematically involving the services responsible for site security;
- 2- More widely at the national level, with exchanges between the competent authority and the central services of the operator, allowing to set up a shared process of definition of the files to be written and transmitted according to the importance of the construction works.

These two steps are essential to move towards regulatory compliance and to ensure a better control of the security. In order to establish a framework of the subject on the site, the competent authority organized a technical meeting on which the corrective action in connection with the first point has been examined. Other technical meetings have been organized, with the national level in a second time, in order to exchange on the basis of a draft guide created by the operator.

The purpose of this second round of meeting was to:

- clarify the expectations of the competent authority in management of change;
- identify the crucial phases of construction works for which an application for authorization should be made;
- define categories according to the importance of the modification;
- agree on the level of detail to be conveyed according to the degree of importance of the subject;
- define the arrangements for exchanges and follow-up between the operator and the competent authority.

Since the establishment of this process, periodical technical meetings have been set up with each site to keep exchanges on which a presentation of all scheduled modifications is made. For each of them the substantial or non-substantial aspect is defined, the examination of the files is followed, ... That's how a finding during an inspection turned into a collaborative work, instead of issuing to sanctions!

3. THE NATURE OF INFORMATION REQUIRED

The French regulations contain a rather vague article on the obligation of information before the implementation of a modification. Article R.1333-7 of the Defence Code provides: "Any proposed modification affecting any of the elements taken into account when issuing the authorization must be subject to prior notification by the competent Minister. If the Minister considers that the proposed amendment is not compatible with the conditions and limits set out in the authorization, he shall inform the license holder within one month that

a new application for authorization is required and sets the conditions in which the license in force can be used during the processing of the new application. Otherwise, the license is modified to take into account the new element (s)."

This article does not allow to evaluate the importance of the modification nor the importance to be considered on the impacted elements.

From the point of view of the French nuclear security competent authority, in regards to nuclear security, the three major questions mentioned before need to be asked at first ('does it improve security? does it weaken it? and, in the latter case, what compensatory measures are taken?').

The following figure is a simplified vision of the analysis and can be seen as an efficient tool for this purpose.

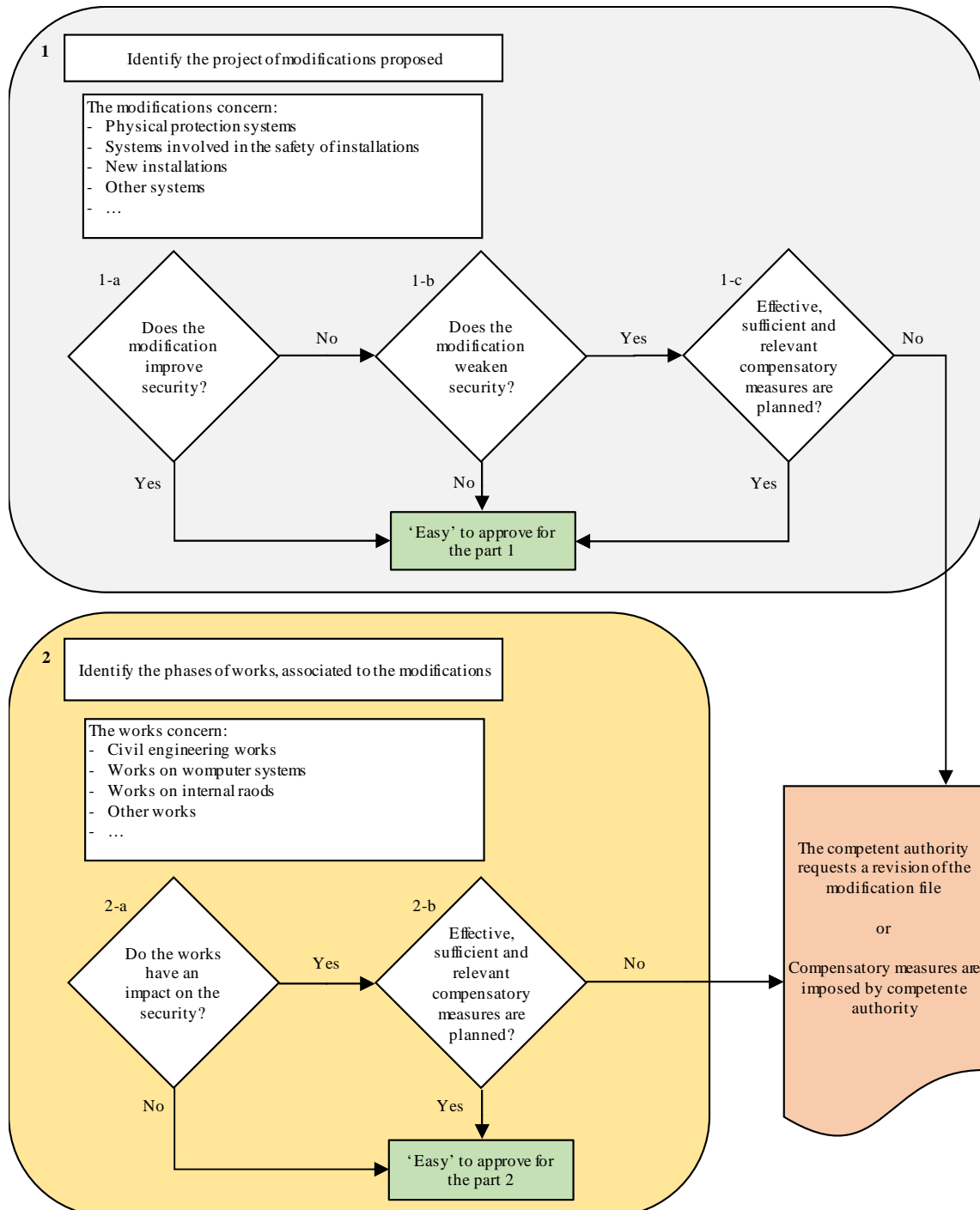


FIG. 1. Process of evaluating a modification request.

The most important part of the process consists in the examination of the compensatory measures, for both the modifications and the construction works phase. With some practice, the operator is now able to automatically identify and provide compensatory measures directly related to a specific impact, especially during the phases of works.

It appears that the information required depend directly on the nature of the modification, the way it impacts or not the security, the nature of the works associated to the modification and also the way they have an impact or not the security.

4. A GUIDE USED TO MANAGE CHANGES ON SITE

Under the impulse of the French nuclear security competent authority, and in order to clarify all different topics previously explained, an operator decided to build a guide. This guide presents a management process to cover projects and modifications of functions, equipment or facilities (linked or not to the protection and control system), material and / or organizational changes likely to occur having an impact on the performance of the nuclear material protection and security control system site facilities or their critical information systems.

Depending on the nature and importance of the projects or modifications concerned, this guide proposes a categorization of the management methods and procedures to be followed for each step, situation and their follow-up over time.

4.1. Categorization of the modifications

First of all, modifications have been categorized between:

- Non-significant;
- Notable;
- Substantial.

It is not really easy to give a precise definition of each category, but it is quite obvious that a modification will be considered substantial if it has a high impact on the performance of the physical protection system. Actually, it must be considered that the choice of the category depends directly on the level of impact on the performance of the nuclear material physical protection system and control security system and site facilities.

According to the number of cases applying to each facility, it could be decided to adapt the level of the information in order to focus on the most relevant and problematic cases. For example, for a particular nuclear facility, it appears that more than 1000 modifications are implemented each year. It has been decided to focus only on the two levels: notable and substantial. The non-significant modifications are processed internally under a quality-control process. Experience has shown that almost 90% of the modifications could be considered as non-significant.

4.2. Documents to be provided and typical contents associated

After a detailed description of the projected final situation, the necessary modifications to reach that point are presented, as well as the way malicious acts detailed in the DBT are addressed, by security function. The aim is to analyse the impact on current and target performance once the modification is achieved, after the functioning tests are achieved and equipment are qualified.

The number and type of documents differs according to the category determined for the modification. For each phase of the project, comparable to the usual phases that characterize an industrial project, documents help to understand the different evolutions and the possible impacts that the security (immediately or in the long run).

It has been identified the following documents:

- A “DOSEC” (French technical term for SECurity DOCument – DOcument de SECurité) is a file presenting the main security options for the project. This document is the first transmitted and is associated to a formal presentation to the competent authority.
- The informative document describes and presents the risk analysis specifically related to the construction phase (intermediate situation) as well as those related to the modification itself (final situation) in terms of physical protection and / or NMAC with regard to the assigned security functions. The analysis is conducted in direct connection with the threats of the DBT.
- The security studies (theft / unauthorized removal or sabotage) are carried out according to the type of nuclear material involved. They concern not only theft and unauthorized removal but also sabotage.
- Other documents can be updated during the process. For example: internal security plan, ...

TABLE 1. Type of documents to be filed in support of a modification request

Category of modification	Non-significant	Notable	Substantial
	Nothing is required	Security studies (optional) Informative document of the final and the intermediate situation	DOSEC Informative document of the intermediate situation Informative document of the final situation Security studies Other documents updated (if necessary)

The table above lists the documents for each modification category. It clearly shows that the number of document increases with the importance of the modification.

The guide provides a template of each major document to support the sites.

At this point, it seems essential to explain that “non-significant modification” doesn’t mean that this modification should not be subject to an evaluation of possible impacts on security. On the contrary, this analysis is systematic. And only the result of this analysis can conclude that the change has no impact. No particular document is expected but the competent authority can require the operator to present the analysis that has been conducted and that led to this category.

4.3. Definition of anticipation periods in accordance with the examination time

Obviously, the transmission of information to the competent authority should be done as soon as possible. But realistically, the date of transmission of the documents is defined in connection to the time of examination and the progress of the project (presenting a file on a project whose contours need changes is not an option).

Deadlines vary from 3 months before the start of the construction works for notable modification, to 9 months before the start of the construction works for substantial modification, according to the complexity of the documents the competent authority has to examine. The examination phase may require many exchanges, on-site visits, etc.

5. SOME BENEFITS OF THIS PROCESS

The experiment conducted with Orano presents a lot of benefits.

5.1. Integration in quality management

The modification management guide is included in the license for each site. As a result, this becomes binding on the operator and may lead to an enforcement process in case of significant deviation.

With regard to the specific case of Orano, the guide is a technical note in the management process associated with the nuclear security activity of its sites. As any management document, the correct implementation of this technical note is verified through internal audits.

After an experimentation phase, the operator will carry out a feedback of experience after a few years of practice and then a review will be done if it considers it necessary.

5.2. Harmonization of the documents received by the French nuclear security competent authority

The introduction of standardized documents thanks to the guide allows the competent authority to analyse well-structured documents, containing each time at least the required information. In addition, the standardized form of these documents makes the reading and the comprehension easier and faster.

5.3. What about the other nuclear operators?

A first operator initiated the process described in the paper. Another followed the movement and wrote his own guide, largely inspired by the first. For operators who have not created such a guide, the competent authority has annexed to the license the essential elements they have to transmit in support of any application to modify the license.

6. CONCLUSIONS AND PERSPECTIVES

Considering nuclear security aspects in the modification and completion of associated works in nuclear facilities is essential. It should be taken into account as far upstream as possible of the project. It is the best way to limit extra costs and offer significant gains in security.

Beyond security personnel, all project stakeholders must be involved in the identification of security aspects. They must be appropriately trained and exercised to identify potential security impacts of their projects. That is indispensable to guarantee the success of this process and ensure that all changes go through a security screening.