IAEA
International Atomic Energy Agency

Technical Meeting
on
Design Basis Reconstitution for Long Term Operation of Nuclear Power Plants

IAEA Headquarters
Vienna, Austria

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Information Sheet

A. Introduction

Nuclear power plants (NPPs) must operate in a manner that meets their design intent over a period of many decades. Maintaining the safe operation expected of a plant requires that the initial design (or any other design changes thereto during its lifetime) be implemented, recorded and controlled via a meticulous, adequate, and structured process. Maintaining the very high level of safety and performance expected of a plant requires that modifications arising during the operation, no matter how minor, must be made with a full understanding of all design information for the plant and the specifications for each system and component; of the engineering compromises and assumptions made by the designers about operation and lifetime; of why the plant was designed the way it is; and of the interactions with other systems and components. Failure to ensure adequate knowledge of plant design will result in decisions on modifications, changes in operating procedures, and new or revised specifications for replacement and spare parts, etc., without a full understanding of the effect that these decisions may have on the safety and performance of the NPP.

There are several structured processes to maintain the design information, corresponding physical elements of the facility and its operation and maintenance specifications. Some of these include regulated processes, such as design control, or document control processes, which are typically required for safety related and quality assured design elements. Some of these processes are owner/operators' good design practices, such as maintenance of design manuals, design concepts and a graded application of the aforementioned required processes.

However, due to the nearly one century long lifetime of NPP, changes may affect the effectiveness and adequacy of design information maintenance, updating, recording and retention. Particularly significant changes include the turnover of workforce generations who had experience and unrecorded knowledge of the original design and the changes thereafter; lost or degraded contact with the original designers, who may or may not be in the business; and the corporate strategy of allocating resources to priorities which, in some cases, focus on only minimum required processes. Therefore, design control and configuration management processes, particularly on non-safety design information, such as design expectations from the system, structure and components, and design needs to be reflected on their operation, may be lost or inadequate as the operation phase progresses.

Lost or not, up-to-date design basis and associated information, as well as updated plant physical configurations and their exchange among the operating organization and supporting vendors, become visible and challenging when missing design concepts, intent or information are realized. Although such deficiencies may have gone unnoticed during daily operations, as they have been observed from the operating experience of owner/operating organizations, they are realized when a comprehensive review and understanding of the design basis is needed, particularly during conceptual design or assessment of major plant changes, such as power uprate, major equipment replacement and/or conversion of the plant to meet new or revised regulations, license conditions, codes and standards.

When the weakness of not having a complete, correct and sufficient design basis is recognized, the owner/operating organizations usually undertake a detailed and comprehensive review and assessment to compete and update the facility design basis, intents, interfaces, etc., which is known as ‘design basis reconstitution’. There are cases from operating experience where operating organizations spend substantial effort and human and financial resources to verify and constitute the existing design of their facility to match the original design (and the changes thereafter), due to the loss of design and configuration control over the years since the initial design. Therefore, design basis reconstitution needs to be performed under a programme associated with a project with the objective of identifying, establishing (or re-establishing), classifying, organizing and recording design information accumulated during the past lifetime of the NPP, and to document it so that it is reflected on the facility configuration and physical layout, to check if there are any discrepancies and to establish plans to maintain it in the future.

Furthermore, in some difficult cases, operation experience shows that, even after the start of such initiatives and efforts, following the recognition of inadequacy and the incompleteness of design information, due to the accumulated or unplanned burden and strain on the human and financial resources, the design basis reconstitution projects are abandoned, their scope is reduced, or the requirements and expectations are relaxed or dropped.

Therefore, once design and configuration control are lost, it is essential for the complete and correct reconstitution of design information to be efficient, effective and properly planned and scheduled with an understanding of the extent of such efforts.

B. Objectives

The purpose of the event is to provide a platform and forum for Member States to share knowledge and experiences related to the loss and re-establishing of design basis, as well as to the maintenance and control of facility design and configuration that prevent such a loss or need for reconstitution. The meeting will also introduce the draft of a Technical Document developed by the International Atomic Energy Agency (IAEA) on *Design Basis Reconstitution for Long Term Operation of Nuclear Power Plants* and collect comments, input and feedback from Member States.

C. Target Audience

The meeting is targeted at NPP owners/operators, responsible designers and technical support organizations, regulators, as well as service and equipment suppliers involved in the control and maintenance of technical and facility design of NPPs. Representatives of countries with operating NPPs, who have experience in the design and configuration of control, modification, concept changes, particularly regarding the establishment or reconstitution of design basis, as well as established design engineering programmes, processes and procedures, are encouraged to attend. It is possible that the meeting may have to be restricted to one participant per country.

Furthermore, representatives of Member States with a nuclear power programme or project for implementing their first NPP are also encouraged to attend in order to discuss the establishment and future control of their facility's design basis and maximize the exchange of information on lessons learned.

As such, participants should be knowledgeable and experienced in industry-wide operational practices, rules and regulations, as well as in their implementation with respect to operation and design changes while controlling the design basis and the recovery of lost design control. In particular, they should be able to describe and discuss their knowledge and experience in detail, as well as the challenges related to the design basis reconstitution.

The participants will be asked to give presentations on their personal, organizational, national, or international experience, as well as to take part in the discussions organized during the meeting to fulfil the meeting's objectives.

D. Working Language(s)

The working language of the event will be English with no interpretation provided. All communications, abstracts and papers must be submitted in this language.

E. Expected Outputs

The primary outcome of this meeting will be the identification and discussion of current and future challenges to establish and maintain a configuration management system. Discussions among leaders of the nuclear power industry will inform each other and the Member States about the common challenges, best practices, strategies and vision needed to overcome these challenges.

The secondary outcome of this meeting is to review the draft of an IAEA Technical Document with the provisional title *Design Basis Reconstitution for Long Term Operation of Nuclear Power Plants*.

This publication is currently under development via a consultancy process. A draft copy will be provided to event participants approximately one month prior to the meeting. Participants will be asked to provide written feedback on the draft text prior to the meeting and to highlight significant comments as part of their presentations at the meeting.

F. Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **28 June 2019**. Participants who are members of an organization invited to attend are requested to send the **Participation Form (Form A)** through their organization to the IAEA by above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

Please note that the IAEA is in a transition phase to manage the entire registration process for all regular programme events electronically through the new InTouch+ (https://intouchplus.iaea.org) facility, which is the improved and expanded successor to the InTouch platform that has been used in recent years for the IAEA's technical cooperation events. Through InTouch+, prospective participants will be able to apply for events and submit all required documents online. National authorities will be able to use InTouch+ to review and approve these applications. Interested parties that would like to use this new facility should write to: InTouchPlus.Contact-Point@iaea.org.

G. Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the objectives described in Section B above.

Participants who wish to give a presentation are requested to submit it as a Microsoft PowerPoint or PDF file. It should be sent electronically to Mr Harri Tapani Varjonen, the Scientific Secretary of the event (see contact details in Section K below), not later than **28 June 2019.**

In addition, participants have to submit the title of the presentation together with the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than **28 June 2019.**

H. Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made using the **Grant Application Form (Form C)** which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the **Participation Form (Form A)** by **28 June 2019**.

I. Venue

The event will be held at the Vienna International Centre (VIC) where the IAEA's Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page: http://www-pub.iaea.org/iaeaevents/GeneralInfo/Guide/VIC.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

J. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

K. IAEA Contacts

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/Secretaries and correspondence on other matters related to the event to the Administrative Secretary.

L. Event Web Page

Please visit the following IAEA web page regularly for new information regarding this event:

www.iaea.org/events/EVT1804425