

Document Preparation Profile (DPP)

1. IDENTIFICATION

Document Category Safety Guide

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Safety Series No.: NS-G-2.10

SS Committee(s): NUSSC, RASSC and WASSC

Technical Officer(s): Toth C. ESS, NS

2. OBJECTIVE

According to the Requirements “Safety of Nuclear Power Plants: Operation” (NS-R-2) “Systematic safety reassessments of the plant in accordance with the regulatory requirements shall be performed by the operating organization throughout its operational lifetime, with account taken of operating experience and significant new safety information from all relevant source. A comprehensive periodic safety review (PSR) of the plant would fulfil this requirement. The strategy for the review and the safety factors to be evaluated shall be approved by or agreed to by the regulatory body.”

The purpose of this Safety Guide is to provide recommendations to meet the requirements for periodic safety review of NPPs, providing rationale and methodologies for this purpose. It applies to NPPs of any age including plants considering life time extension.

This safety guide is intended for use by utilities/operators of nuclear power plants, involved technical support organizations as well as by regulatory bodies.

3. BACKGROUND

The Technical Meeting on “Experience in Implementing Periodic Safety Review of NPPs” in November 2006 and the consultancy meetings in 2007 highlighted that although the existing Safety Guide is sound, Member States’ experience in its implementation showed that the safety guide should provide additional recommendations on

- follow-up PSRs (i.e. 2nd, 3rd, etc.),
- use of PSR as a tool for reviewing long term operation.

The TM also recommended to consider additional safety factor such as Management systems and safety culture and to elaborate in more detail the global assessment.

NUSSC in 2007 decided that the long term operation (LTO) aspects, like the impact of ageing and adequate knowledge management should be considered during the revision of this Safety Guide.

4. INTERFACES

The reviewed SG will have interfaces with:

- Fundamental Safety Principles, Safety Standards Series No. SF-1
- International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No. 115
- Safety Requirements NS-R-1, “Safety of Nuclear Power Plants: Design” and associated Safety Guides
- Safety Requirements NS-R-2, “Safety of Nuclear Power Plants: Operation” and associated Safety Guides
- Safety Requirements GS-R-1, “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and transport safety”
- Safety Requirements GS-R-3, “The Management System for Facilities and Activities”
- New Safety Requirement DS348 on Safety assessment and Verification of Nuclear Facilities and Activities and associated Safety Guides (DS 394, DS393, DS365, DS385 and DS395).
- Safety Guide GS-G-4.1, Format and Content of the Safety Analysis Report for Nuclear Power Plants
- DS 382 Draft Safety Guide, Ageing Management for Nuclear Power Plants

5. OVERVIEW

The main structure and recommendations of the present Safety Guide will be retained. The scope of the Safety Guide will be expanded to include recommendations for performing follow-up PSRs highlighting specific review topics (safety factors) that are likely to be important such as human factors, organization and administration and a new safety factor “Management systems and safety culture”. Accident management and radiation protection will be addressed in more detail.

Recommendations on specific aspects of ageing (such as fatigue, embrittlement, ageing of cables and other electrical equipment and refurbishment of I&C components) that are relevant to LTO will be added. Also aspects of knowledge management related to LTO will be considered.

Recommendations for global assessment in the PSR Report will be expanded and will be presented in a dedicated section.

The revised Safety Guide will take into account the interfaces of Periodic Safety Review with other operational programs and safety management processes, such as

updating of Final Safety Analysis Report, Configuration Management and Design Basis Reconstitution.

The revised Safety guide will give recommendations how to share Experience feedback on PSR findings internationally.

National review approaches used by Member States in performing PSRs and other alternate safety review approaches will be presented in the Annex.

6. PRODUCTION: Provisional schedule for preparation of the document:

Approval of DPP by the Steering Committee:	2008 March
Approval of DPP by the NUSSC:	2008 May
Approval of DPP by the CSS:	2008 May
Development:	
CSs to prepare the draft	2008
Approval on draft by the Steering Committee	2009 1. Q
Approval by the NUSSC, WASSC and RASSC for submission of the draft SG to Member States for comments:	2009 2. Q
CS to revise draft SG taking into account the comments by Member States:	2009 3. Q
Approval by the NUSSC, WASSC and RASSC for submission to the CSS; Editing	2010 2. Q
Endorsement by the CSS:	2010 2. Q
Submission to Publications Committee:	2010 3. Q
Target publication date:	2010 4. Q

APPENDIX I EXTENDED OUTLINE

1. INTRODUCTION
 - Background
 - Objective
 - Scope
 - Structure
2. GENERAL RECOMMENDATIONS (*new*)
3. RATIONALE FOR AND OBJECTIVE OF PERIODIC SAFETY REVIEW
 - Rationale for a Periodic Safety Review
 - Objective and principles of a Periodic Safety Review
4. REVIEW STRATEGY
 - Scope and time frame of PSR
 - Review methodology
 - Comprehensiveness of the review
 - Use of existing information from internal and external sources,
 - Initial and other PSRs (2nd, 3rd, etc.)
 - Reporting
5. BASIS FOR THE CONTINUED PLANT OPERATION (*new*)
 - PSR input in assessing long term operation
 - Review and updating of FSAR during PSR
 - Use of configuration management.
6. SAFETY FACTORS IN A PERIODIC SAFETY REVIEW
 - Introduction
 - Safety factors
 - Plant design (e.g. site, design basis of systems, structures and components, etc.)
 - Actual condition of systems, structures and components
 - Equipment qualification
 - Ageing
 - Deterministic safety analysis
 - Probabilistic safety assessment
 - Hazard analysis (internal and external hazards)
 - Safety performance
 - Use of experience from other plants and research findings
 - Organization and administration
 - Procedures
 - Human factors
 - Emergency planning
 - Radiological impact on the environment
 - Management systems and safety culture (*new*)
 - Interfaces between safety factors
 - Requirements for the report on the review of safety factors

7. GLOBAL ASSESSMENT
 - Global assessment - Ranking of identified safety issues,
 - Expected impact on different areas (e.g. ageing)
 - Prognosis for the period until the next PSR
 - Identification of Corrective actions or improvements
8. ROLES AND RESPONSIBILITIES
9. REVIEW PROCEDURE
 - Preparation of the PSR project
 - Activities of the plant operating organisation and their TSOs
 - Activities of the regulatory bodies and their TSOs
10. POST REVIEW ACTIVITIES
 - Approval of corrective action implementation plan
 - Implementation of corrective actions
 - Sharing Experience feedback on PSR internationally

APPENDIX 1: ELEMENTS OF THE REVIEW

ANNEX 1: ALTERNATE PSR REVIEW APPROACHES (new) Examples from different Member States