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Document Preparation Profile (DPP)
Version 1.0 dated March 15, 2016

1. IDENTIFICATION

Document Category: Safety Guide

Working ID: DS502

Proposed Title: Continuous Improvement of Operational Safety Performance in Nuclear Power Plants

Proposed Action: To develop a new document

Review Committee(s) or Group: NUSCC, RASSC, TRANSSC, WASSC

Technical Officer(s): ZAHRADKA Dian, OSS/NSNI

2. BACKGROUND

The need for continuous improvement of operational safety in nuclear power plants has been widely recognised by nuclear community. Weak barriers can exist anywhere in the organization's processes and work practices. Such issues are often latent and only become visible when they develop into consequential events with impact on operational safety. An effective event prevention capability can be achieved through implementation of a system for continuous performance improvement aiming at:

- Establishing desired performance and monitoring current operational safety performance
- Analysing and closing performance gaps in a proactive manner;
- Identifying opportunities for on-going operational safety performance improvement;
- Identifying inconsistencies in operation of a nuclear power plant (NPP) at precursor level;
- Recognizing issues resulting from low or deteriorating performance;
- Implementing effective long-term solutions.

Experience from organizations striving for excellence in safety shows that a continuous performance improvement system typically includes activities such as:

- Monitoring of performance through lagging and proactive performance indicators
- Self-assessment of processes and practices for their effectiveness to identify opportunities for further performance improvement
- Task and behavioural observations to improve human performance
- Corrective action programme and use of operating experience from events both internal and external
- Aggregate data reviews, performance assessment and trending
- Benchmarking – improving organisation's performance using industry best practice

- Independent oversight to bring cultural, process, leadership, and other performance independent insights.

The process develops capability of the organization to learn and continuously improve safety in all aspects of the plant operation. The effective continuous operational safety performance improvement pervades operations at NPPs with strong safety culture.

Note: The process proposed in this DPP follows Requirement 9 of SSR 2/2 and Requirement 13 of GSR Part 2. It does not substitute and is different from Living Probabilistic Safety Assessments and Risk inform decision making discussed in different requirements– those tools are part of a systems engineering process which emphasizes the proper use of risk analysis to make risk-informed decisions. The continuous improvement processes as will be defined by the new guide has broader application on human performance and organisational processes improvement in line with the above requirements.

3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

The requirements for establishing a system for continuous monitoring and review of the safety of the plant and of the performance of the operating organization are set in the Specific Safety Requirements: “Safety of Nuclear Power Plants: Commissioning and Operation” (SSR 2/2 rev.1, Requirement 9) and the General Safety Requirements: Leadership and Management for Safety (GSR Part 2, Requirement 13).

During a Technical Meeting held in Vienna (TM to Share Lessons Learned from Recent Human Performance Related Events at NPPs and Considerations for Performance Improvement, 30 May - 3 June 2016) member states representatives requested IAEA to develop further practical guidance on this topic.

Therefore, development of a new safety guide that would provide comprehensive guidance on establishing the system of continuous monitoring and review of safety performance for NPPs including detailed introduction of related processes applicable (exclusively) to NPPs is deemed as necessary.

This DPP complements:

- Recommendations of Vienna Declaration on Nuclear Safety
- Requirement 9 of SSR-2/2 rev.1
- Recommendations of Technical Meeting to Review the IAEA Safety Guides on NPP Operational Safety (IAEA&EC JRC, 16-20 November 2015, Brussels, Belgium)
- DS497 (approved by relevant SSCs in June 2016) which calls for a new guide on “Monitoring and review of safety performance in Operation of NPP”.

4. OBJECTIVE

The objective of this publication is to provide recommendations and guidance on how to establish Continuous Operational Safety Performance Improvement at NPPs in line with relevant requirements of SSR 2/2 rev.1 “Safety of Nuclear Power Plants: Commissioning and Operation” (2016), GSR Part 2 “Leadership and Management for Safety” (2016), recommendations of GS-G-3.1 “Application of the Management System for Facilities and Activities “ (2006) and GS-G-3.5 “The Management System for Nuclear Installations” (2009).

5. SCOPE

The Safety Guide will be applicable for nuclear power plants. However, the Guide may also provide useful information to other nuclear installations, regulatory authorities and other organizations in Member States.

6. PLACE IN THE OVERALL STRUCTURE OF THE RELEVANT SERIES AND INTERFACES WITH EXISTING AND/OR PLANNED PUBLICATIONS

This safety guide will fall within the thematic areas of operational safety and will interface with the following IAEA Safety Standards and other publications (this is not, and cannot be, regarded as an exclusive list):

- SF-1 Fundamental Safety Principles (2006)
- SSR-2/2 rev.1 Safety of Nuclear Power Plants: Commissioning and Operation (2016)
- GSR Part 2 Leadership and Management for Safety (2016)
- GS-G-3.1 Application of the Management System for Facilitation and Activities (2006)
- GS-G-3.5 The Management System for Nuclear Installations (2009)
- NS-G-2.4 The Operating Organization for Nuclear Power Plants (2001)
- DS479 Operating Experience Feedback for Nuclear Installations
- DS497 Nuclear Power Plants Operation
- OSART Guidelines (IAEA Service Series No. 12, 2015)
- PROSPER Guidelines (IAEA Service Series No. 10, 2003)
- IAEA-TECDOC-1125 Self-Assessment for Operational Safety of Nuclear Power Plants (1999)

In a similar way as for DS 497, a two-step approach is proposed for the development of the Safety Guide.

Step 1:

- Development (under the current DPP) of the Safety Guide for Continuous Operational Safety Performance Improvement at NPPs. Due to the fact that the new Safety Guide will be closely interrelated with the Safety Guides that will be revised under DS 497, work on this DPP and DS 497 will be done in close coordination and in parallel. A specific, effective coordination mechanism between all the different groups that will work on the development/ revision of the guides will be established.

Step 2:

- Once the new Safety Guide has been developed and the Safety Guides under DS497 have been updated, the same process will be applied as proposed in the DS497:
 - publishing all the Safety Guides (including the new Safety Guide developed in line with this DPP) in a form of one single guide with different volumes thus keeping the structure of the NPP Safety Guides intact and consistent with the IAEA SSR-2/2 Rev. 1 (following the intention of the Long Term Structure of the IAEA Safety Standards to reduce the number of the safety standards, combine some guides and eliminate unnecessary duplication), or

- publishing all Safety Guides in the domain of NPP operation (including the new Safety Guide developed in line with this DPP) as individual guides
- Opportunity will be used to link the NPP operation safety standards to the standards which will be developed under GSR Part 2, and thus avoid duplication and inconsistency on expectations related to integrated management systems, systemic approach to safety and safety culture.

7. OVERVIEW

The publication is expected to cover the following contents:

1. INTRODUCTION

1.1. Background

1.2. Objective

1.3. Scope

1.4. Structure

2. LEADERSHIP REPONSIBILITIES

This part will provide guidance on leadership key roles and support in managing and improving safety performance (e.g. setting goals that are aligned with long-term vision and strategy of the organisation, behavioural expectations/ leadership tools to achieve desired performance, instilling a culture striving for improvement, supporting the system of monitoring and review of safety performance).

3. CONTINUOUS MONITORING OF OPERATIONAL SAFETY PERFORMANCE

This part will provide guidance on implementing the system and tools for effective monitoring of operational safety performance (what and how to monitor).

4. ANALYSIS AND ASSESSMENT OF OPERATIONAL SAFETY PERFORMANCE

This part will provide guidance on operational safety performance analysis and assessment (e.g. aggregate data reviews, risk assessment, identifying areas for improvement and their prioritizing, developing performance improvement plans, management review).

5. ACTIONS TO IMPROVE OPERATIONAL SAFETY PERFORMANCE

This part will provide guidance on the management of actions taken to improve operational safety performance.

6. EFFECTIVENESS REVIEW

This part of the safety guide will provide guidance on the system effectiveness review and follow-up.

REFERENCES

CONTRIBUTORS TO DRAFTING AND REVIEW

8. PRODUCTION SCHEDULE: Provisional schedule for preparation of the document, outlining realistic expected dates for each step (*fill the column corresponding to your proposed document and delete the other columns*):

STEP 1: Preparing a DPP	DONE
STEP 2: Approval of DPP by the Coordination Committee	Q3 2016
STEP 3: Approval of DPP by the relevant review Committees	Q4 2016
STEP 4: Approval of DPP by the CSS	Q2 2017
STEP 5: Preparing the draft (TM to be organized)	Q1-Q3 2017
STEP 6: Approval of draft by the Coordination Committee	Q4 2017
STEP 7: Approval by the relevant review Committees for submission to Member States for comments Consultation with all SSC on possible restructuring of the safety guides and preparing of one guide	Q1 2018
STEP 8: Soliciting comments by Member States	Q2 2018
STEP 9: Addressing comments by Member States	Q4 2018
STEP 10: Approval of the revised draft by the Coordination Committee Review in NS-SSCS	Q1 2019
STEP 11: Approval by the relevant review Committees	Q2 2019
STEP 12: Endorsement by the CSS	Q4 2019
STEP 13: Establishment by the Publications Committee and/or Board of Governors (for SF and SR only)	Q1 2020
STEP 14: Target publication date	Q4 2020

9. RESOURCES

Staff: 20 staff weeks

Consultants: 10 consultant weeks