

Document Preparation Profile (DPP) **Version 4 dated 28.11.2014**

1. IDENTIFICATION

Document Category **Specific Safety Guide**

Working ID: **DS489**

Proposed Title: **Storage of Spent Nuclear Fuel**

Proposed Action: **Revision of SSG-15: Storage of Spent Nuclear Fuel by Amendment**

Review Committee(s) or Group: **WASSC (Leading Committee), NUSSC, NSGC (interface document)**

Technical Officer(s): **Y. Kumano, NSRW**

2. BACKGROUND

In the wake of the TEPCO Fukushima Daiichi Nuclear Power Plant Accident (hereinafter referred as “Fukushima Daiichi Accident”), the IAEA Action Plan on Nuclear Safety (GOV/2011/59-GC(55)/14) was developed and endorsed by all Member States at the General Conference in September 2011. Following the endorsement, gap analysis of existing Safety Standards based on the feedback from the Fukushima Daiichi Accident has been conducted since 2011 to further improve nuclear safety. As part of this activity, the WASSC established a working group (WG) in October 2011 with the following objectives:

- To discuss collected feedback from WASSC members on lessons learnt from the Fukushima Daiichi Accident,
- To review the Waste Safety Requirements with the aim to identify gaps and those that would need revision,
- To advise the WASSC and the CSS on the way forward with the revision of the Waste Safety Requirements and Guides in the light of the lessons learnt from the Fukushima Daiichi Accident, and
- To prepare a Working Paper for discussion at the 32nd WASSC meeting based on work done during WG meeting.

The result of the WG discussion was presented at the 32nd WASSC meeting. At the meeting, the WG report “Working paper of the WASSC Working Group on Implications of the Fukushima Accident on Waste Safety Standards” was endorsed by the WASSC which advised to review and revise Safety Guides related to the safety of spent fuel considering the importance of ensuring the safety of spent fuel at all times.

At the 36th NUSSC meeting, the progresses achieved on the review of NS-G-1.5 (External Events Excluding Earthquakes in the Design of NPPs), NS-G-1.6 (Seismic Design and Qualification for NPPs), and SSG-2 (Deterministic Safety Analysis for NPPs) were reported by the Secretariat to check if a revision is needed in the light of the lessons learned from the Fukushima Daiichi Accident. Following the presentation by the Secretariat, the methodology for the review of Safety Standards following the Fukushima Daiichi Accident was discussed. As a result, the Secretariat was requested to conduct a review of SSG-15.

3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

As recommended by the WASSC and the NUSSC, the Secretariat carried out the review of SSG-15 through feedback analysis from Member States and consultancies. The outcome of this review is contained in the Feedback Analysis Report, which is attached to this document. The conclusions of the review confirmed that SSG-15 should be revised in the light of the lessons learned from the Fukushima Daiichi Accident.

In addition, as a result of gap analysis of existing Safety Standards based on the feedback from the Fukushima Daiichi Accident, revision of the Safety Requirements GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4 are in progress as DS462. DS462 has finally been endorsed by the Commission on Safety Standards (CSS) and is currently awaiting establishment by the Publication Committee.. Since topics addressed in these Safety Requirements are linked to SSG-15, it is necessary to revise SSG-15.

4. OBJECTIVE AND SCOPE

The main objective of the revision of SSG-15 is to incorporate the result of the gap analysis on the Safety Requirements and Safety Guides based on the feedback from the Fukushima Daiichi Accident and to establish harmony with relevant updated safety requirements document.. The revision will include the following topics but not limited to:

- Strengthening accident management
- Protection against internal and external hazards. The design of a spent fuel storage facility should provide for an adequate margin to withstand internal or external hazards exceeding those to be considered for the design.
- Practical elimination of accidents leading to early or large releases

The current version of the Specific Safety Guide, “Storage of Spent Nuclear Fuel” (SSG-15) covers spent nuclear fuel storage facilities that may be either collocated with other nuclear facilities (such as a nuclear power plant, research reactor or reprocessing plant) or located on their own sites. This document scope will not be affected by this revision.

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

The document will be published as a revision of Specific Safety Guide SSG-15.

Below is the list of interface documents mainly taken into consideration during this revision (the list is not intended to be final or exhaustive):

1. DS462: Revision through addenda of GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4
 - 1-1) DS463: Governmental, Legal and Regulatory Framework for Safety (GSR Part 1)
 - 1-2) DS464: Site Evaluation for Nuclear Installations (NS-R-3)
 - 1-3) DS465: Safety of Nuclear Power Plants: Design (SSR-2/1)
 - 1-4) DS466: Safety of Nuclear Power Plants: Commissioning and Operation (SSR-2/2)
 - 1-5) DS467: Safety Assessment for Facilities and Activities (GSR Part 4);

2. DS457: Preparedness and Response for a Nuclear or Radiological Emergency, revision of GS-R-2
3. GSR Part 5: Predisposal Management of Radioactive Waste
4. DS478: Revision of Safety Requirements NS-R-5: Safety of Nuclear Fuel Cycle Facilities
5. DS487: Revision of Safety Guide NS-G-1.4: Design of Fuel Handling and Storage Systems for Nuclear Power Plants
6. DS 483:Revision of NS.G-2.15: Severe Accident Management Programme for Nuclear Power Plants

6. OVERVIEW

This revision is not expected to affect the current structure and most of the current text of the published Safety Guide SSG-15. It will be a revision by amendment. The contents of the proposed new or modified paragraphs will be mainly based on the lessons learned from the Fukushima Daiichi Accident and the review by the Safety Standards Committees, the Member States and the Commission on Safety Standards on their implications for the Safety Standards.

Additional feedback is provided in the Feedback Analysis Report, which also outlines areas where SSG-15 should be revised.

7. PRODUCTION SCHEDULE:

Provisional schedule for preparation of the document, outlining realistic expected dates for:

STEP 1: Preparing a DPP	DONE
STEP 2: Approval of DPP by the Coordination Committee	DONE
STEP 3: Approval of DPP by the relevant review Committees	DONE
STEP 4: Approval of DPP by the CSS	Q2 2015
STEP 5: Preparing the draft	Q2 2015 - Q4 2015
STEP 6: Approval of draft by the Coordination Committee	Q1 2016
STEP 7: Approval by the relevant review Committees for submission to Member States for comments	Q2 2016
STEP 8: Soliciting comments by Member States	Q3 2016
STEP 9: Addressing comments by Member States	Q4 2016
STEP 10: Approval of the revised draft by the Coordination Committee Review in NS-SSCS	Q1 2017
STEP 11: Approval by the relevant review Committees	Q2 2017
STEP 12: Endorsement by the CSS	Q4 2017
STEP 13: Establishment by the Publications Committee and/or Board of Governors (for SF and SR only))	Q1 2018

STEP 14: Target publication date	Q1 2019
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8. RESOURCES

Staff: 15 staff weeks

Consultants: 10 consultant weeks

9. Attachement

- Feedback analysis report

Feedback Analysis Report
on
Revision by Amendment to the Specific Safety Guide,
“Storage of Spent Nuclear Fuel” (SSG-15)
Rev. 1 (updated on 21, Nov. 2014)

1. BACKGROUND

The current version of the Specific Safety Guide, “Storage of Spent Nuclear Fuel” (SSG-15), was published in 2012. The Safety Guide covers spent nuclear fuel storage facilities that may be either collocated with other nuclear facilities (such as a nuclear power plant, research reactor or reprocessing plant) or located on their own sites. However, it is not specifically intended to cover the storage of spent nuclear fuel as long as it remains a part of the operational activities of a nuclear reactor or a spent fuel reprocessing facility.

In the wake of the TEPCO Fukushima Daiichi Nuclear Power Plant Accident (hereinafter referred as “Fukushima Daiichi Accident”), the IAEA Action Plan on Nuclear Safety (GOV/2011/59-GC(55)/14) was developed and endorsed by all Member States at the General Conference in September 2011. Following the endorsement, gap analysis of existing Safety Standards based on the feedback from the Fukushima Daiichi Accident has been conducted since 2011 to further improve nuclear safety. As part of this activity, the WASSC established a working group (WG) in October 2011 with the following objectives:

- To discuss collected feedback from WASSC members on lessons learnt from the Fukushima Daiichi Accident,
- To review the Waste Safety Requirements with the aim to identify gaps and those that would need revision,
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- To prepare a Working Paper for discussion at the 32nd WASSC meeting based on work done during WG meeting.

The result of the WG discussion was presented at WASSC32. At WASSC32, the WG report “Working paper of the WASSC Working Group on Implications of the Fukushima Accident on Waste Safety Standards” was endorsed by the WASSC which advised to review and revise Safety Guides related to the safety of spent fuel considering the importance of ensuring the safety of spent fuel at all times.

2. REVIEW OF SSG-15

Taken into consideration the advice from WASSC, initial review of SSG-15 was conducted in September 2012 by organizing a consultancy meeting (CS). The conclusions of this initial review were:

- 1) Current SSG-15 is largely in a very good shape for its intended purpose.
- 2) Recommend addendum to some paragraphs in order to better capture extreme situations such as multiple initiating events occurring simultaneously.
- 3) Better to be made in the Safety Guide level

It was also recommended by the consultants that relevant Safety Requirements documents should be reviewed to ensure that these are consistent with the recommendations made at the initial review. The report from the CS is attached as ANNEX I of this report.

In July 2014, the second CS was organized for the additional review of SSG-15 taking into consideration the contents of DS462 as was requested at NUSSC36. At the second CS, further detailed review was conducted based on the discussion at the first CS, DS462, and other related Safety Standards. As a result of the discussion, the consultant team recommended to revise SSG-15 in order to elaborate lessons learned from the Fukushima Daiichi Accident. The consultants also identified several points for improvements in order to enhance consistency with the other Safety Standards, such as GSR Part 5 and NS-R-5. The report from the CS is attached as ANNEX II of this report.

3. AFFECTED SECTIONS OF THE SAFETY STANDARDS

Considering the wide range of recommendations provided by consultants, various sections of the current Safety Guide would need to be revised including following topics:

- Strengthening accident management
- Preventing severe accident through strengthening the design basis, including strengthening the consideration of external hazards and sufficient margins
- Avoiding long term off site contamination through strengthening severe accident mitigation

Possible affected paragraphs as a result of this revision include (but not limited to):

Paras. 6.4, 6.9 in relation to Multiple facilities on one site,

Paras. 5.21, 6.98 in relation to Combination of initiating events,

Para. 6.8 in relation to design basis important to provide for an adequate margin,

Paras. 6.9, 6.34, 6.41, 6.46 in relation to design extension conditions (DEC),

Para. 6.61 in relation to Accident management, and

Para. 6.73 in relation to Emergency preparedness and response.

4. RESOURCES IMPACTED:

At least three consultancy meetings would be necessary to draft the revised Safety Guide.

5. RECOMMENDATIONS:

The IAEA Secretariat recommends Focused Revision of SSG-15 by Amendment should be conducted.