Agenda Item W3.1
Progress Report on the development of DS468


John Rowat
Decommissioning and Remediation Unit, NSRW

Gerhard Proehl
Assessment and Management of Environmental Releases Unit, NSRW

Tamara Yankovich
Assessment and Management of Environmental Releases Unit, NSRW
Motivation and Context for Revision

Motivations for Revision of WS-G-3.1:
1. To update to the new situation of the Safety Requirements
2. In light of Fukushima to reflect better the needs of post accident situations.

DS468 - Scope and Context:
• the scope for the guide is very broad – it is intended to cover all remediation situations.
• the only IAEA Safety Standard specific to remediation.
• covers situations derived from past practices and accidents.
• Understanding context for application is particularly important for DS468 (TM highlighted this).
Context in Terms of the IAEA Safety Standards


In the 2007, a campaign to cap the number of IAEA Safety Standards subsumed WS-R-3 into the BSS (WASSC-24).

The 2007 recommendations of the ICRP (ICRP-103) introduced the notion of (1) existing exposure situations and (2) reference levels for existing exposure situations that were incorporated into the BSS.

Safety Requirements for DS468 centre on GSR Part 3 (the BSS), in particular Section 5. Existing Exposure Situations

Other safety requirements and safety guides are of course applicable.
BSS Para 5.1. *The requirements for existing exposure situations in Section 5 apply to:*

(a) *Exposure due to contamination of areas by residual radioactive material deriving from:*
   
i. *Past activities that were never subject to regulatory control or that were subject to regulatory control but not in accordance with the requirements of these Standards;*
   
ii. *A nuclear or radiological emergency, after an emergency has been declared to be ended (as required in para. 4.20).*
BSS – Existing Exposure Situations

BSS Para 5.1 (cont’d)

(b) Exposure due to commodities, including food, feed, drinking water and construction materials, that incorporate radionuclides deriving from residual radioactive material as stated in para. 5.1(a).

(c) Exposure due to natural sources, including:

i. $^{222}$Rn and its progeny and $^{220}$Rn and its progeny ...in dwellings and in other buildings ...;

ii. Radionuclides of natural origin, regardless of activity concentration, in commodities, ...;

iii. Materials, other than those stated in (c)(ii) above, ...;

iv. Exposure of aircrew and space crew to cosmic radiation.

Both (b) and (c) are out-of-scope of DS468
(i) Past activities that were never subject to regulatory control or that were subject to regulatory control but not in accordance with the requirements of these Standards;

Most remediation situations are connected with former industrial sites, or in some cases sites still in operation.

Many different situations can arise – some of which fall into “grey areas”.

Complex “legacy sites”, which in the past may not have been under appropriate regulatory control, may have old and modern parts.
Requirement 46: Arrangements for the transition from an emergency exposure situation to an existing exposure situation

The government shall ensure that arrangements are in place and are implemented as appropriate for the transition from an emergency exposure situation to an existing exposure situation.

4.20. The government shall ensure that, as part of its overall emergency preparedness, arrangements are in place for the transition from an emergency exposure situation to an existing exposure situation. The arrangements shall take into account that different geographical areas may undergo the transition at different times. The responsible authority shall take the decision to make the transition to an existing exposure situation. The transition shall be made in a coordinated and orderly manner, by making any necessary transfer of responsibilities between organizations, with the involvement of relevant authorities and interested parties.
(ii) A nuclear or radiological emergency, after an emergency has been declared to be ended (as required in para. 4.20).

Issues:

• In the context of accidents, what is the starting point for DS468?
• Should DS468 elaborate upon Requirement 46?
• How does DS468 interface with DS474: Arrangements for the termination of a nuclear or radiological emergency?

“Long emergencies” can mean that existing exposure situations never begin.
Reference level concept for existing exposure situations

BSS Requirement 48, Para 5.8  ... Reference levels shall typically be expressed as an annual effective dose to the representative person in the range of 1–20 mSv or other corresponding quantity, the actual value depending on the feasibility of controlling the situation and on experience in managing similar situations in the past.

- The reference level concept for existing exposure situations is a new concept.
- There is little experience *per se* with application of the concept.
How to choose the reference level?

Answer: it depends upon the “prevailing circumstances”.

Example. A former industrial site, where there had been no previous habitation, in a region that is sparsely populated or unpopulated presents one set of prevailing circumstances. Public lands that have been contaminated by a major nuclear accident, that were inhabited and where population density is high, present an entirely different set of prevailing circumstances.
The guide should make clear boundaries between decommissioning and remediation.

**GSR Part 6 Para 1.1:** Decommissioning refers to the administrative and technical actions taken to allow the removal of some or all of the regulatory controls from a facility. It covers the six major stages in the lifetime of an authorized facility and of the associated licensing process (siting, design, construction, commissioning, operation and decommissioning).

**GSR Part 6, Para 1.3:** In this publication, ‘facility’ means buildings, and their associated land and equipment, in which radioactive material was or still is produced, processed, used, handled or stored on a scale with such a degree of hazard and risk that consideration of protection and safety is required. ‘Land’ includes the surface, subsurface soil horizons and any surface or subsurface water or aquifers potentially affected by the radioactive material.

**GSR Part 6 Para 7.6:** For existing facilities where there is no decommissioning plan, a suitable plan for decommissioning shall be prepared by the licensee as soon as possible. The plan shall be periodically reviewed and updated by the licensee.
GSR Part 3: Remediation refers to *measures that may be carried out to reduce the radiation exposure due to existing contamination of land areas through actions applied to the contamination itself (the source) or to the exposure pathways to humans.*

In terms of **objects:**
Decommissioning generally applies to buildings and structures while remediation generally applies to contaminated environmental media.

There may be instances when the decontamination and dismantlement of buildings and structures would appear within a remediation plan – this would usually depend upon the regulatory framework.
The amount of contaminated material to be managed in any remediation project depends upon factor such as the:

- scale of the contamination (how widespread),
- nature of the contamination (radiological and non-radiological characteristics),
- reference level chosen,
- waste classification system (radioactive and non-radioactive materials),
- disposition routes available for contaminated materials (e.g., decay storage).

On matters pertaining to radioactive waste management the guide defers to the appropriate waste safety standards.
The guide promotes implementation of the “waste hierarchy” through appropriate planning and segregation measures. Optimization as it pertains to number and siting of waste management facilities has not yet been included.
# INTRODUCTION

- Background
- Objective
- Scope
- Structure

# SAFETY PRINCIPLES AND SAFETY REQUIREMENTS

- Safety Principles
- Safety Requirements

# REGULATORY FRAMEWORK AND RESPONSIBILITIES

- General
- Requirements
- Responsibilities
- Regulatory Framework
- Interested Parties Involvement
- Funding of Remediation
DS468 – Draft Table of Contents

4 REMEDIATION GOALS AND OVERVIEW OF THE REMEDIATION PROCESS
   Remediation Principles and Goals
   The Remediation Process
   Remediation Decision Criteria
   Selecting the Reference Level
   Optimization of remedial measures

5 PRELIMINARY EVALUATION AND PLANNING
   Historical Area Assessment and Determination of Need for Remediation
   Area Characterization
   Remedial Options Study and Selection
   Remedial Action Plan
   Safety and Environmental Assessments
# DS468 – Draft Table of Contents

## 6 CONDUCT OF REMEDIATION
- Radiation Protection During Remediation
- Monitoring and Ongoing Surveys During Remediation
- Transportation
- Emergency Planning
- Security in the Area
- Management System
- Ensuring Compliance with Requirements
- Record Keeping and Information

## 7 RESIDUAL MATERIAL AND RADIOACTIVE WASTE
- General Issues
- Residual Material
- Radioactive Waste
- Interested Parties Involvement
8 POST-REMEDIATION MANAGEMENT
   Release of Areas
   Unrestricted Use
   Restricted Use
   Restricted Access
   Removal of Restrictions
   Records
   Interested Parties Aftercare and Public Communication
   Monitoring and Surveillance Programme

9 REFERENCES

Appendices and Annexes
DS468 - Timeline

DPP for DS468 approved at WASSC-33 (2-5 July 2012).

DS468 Consultancy Meetings:
- March 11-15, 2013
- September 2-6, 2013
- February 3-7, 2014
- June 30 to July 4, 2014
- December 8-12, 2014

Technical Meeting: February 16-20, 2015
Follow-on consultancy: June 15-19, 2015
What is ahead?

Final consultancy to prepare DS468 for review by WASSC will be held 16-20 November 2015.

Some home-based assignments to be carried out before November consultancy.

First draft of DS468 to be presented and discussed at WASSC-40.
Thank you