

A SMALL CASK FOR SPENT FUEL SAMPLE TRANSPORTATION

—

SOME CONSIDERATIONS ABOUT TRANSPORT REGULATIONS INCLUDING FISSILE EXCEPTIONS AND LICENSING

Ingo Reiche

Federal Office for Radiation Protection, Salzgitter, Germany

CSM Vienna, May 2010

Content

Transport of fissile material – revision of the exceptions

Transport regulations – package types

European Technical Guide: Package Design Safety Reports for the Transport of Radioactive Material

Transport of fissile material – revision of the exceptions

As a result of the current revision process of the IAEA transport regulations a change of the criteria for fissile excepted material is expected:

- Exception for 15g of fissile nuclides per package subject to consignment limit will be replaced by smaller limit (0.5g for fissile U and Pu isotopes)
- New exception will be introduced for 45g of fissile nuclides per package if transported under exclusive use, max. 45g of fissile nuclides per conveyance
- Fissile material may be transported without multilateral package design approval under new para. 672: max. 35g (23g if mixed with PE,...) of fissile nuclides, with CSI=10 and FISSILE UN number

Transport regulations – package types

For transporting spent fuel (10^{15} Bq) a type B(U) or type C package is required.

For air transport Type B(U) is restricted to

- low dispersible radioactive material as authorised for the package design
- special form radioactive material up to $3000 A_1$ or $10^5 A_2$ (which is lower)
- other radioactive material up to $3000 A_2$

Investigations in Type C casks have been reported from Russia and France.

European Technical Guide: Package Design Safety Reports for the Transport of Radioactive Material

Development of the guide

- Initiated and supported by the European Commission to improve harmonization in this field in Europe
- first meeting in May 2005, Issue 1 published in June 2008
- Development of the guide by a special working group with experts from Belgium, France, Germany, Spain, UK, WNTI and AREVA

Scope of the guide

- For all types of packages (competent authority approved or not)
- Based on TS-R-1 (suitable also for ADR, RID, IMDG code, ADNR, ICAO)
- Does not replace the regulations but provides a structure and a minimum contents of the PDSR to assist the applicant or designer in demonstrating compliance with the regulatory requirements

Structure of the guide

0 Introduction and generalities

- Objective and scope
- Definitions
- Structure of the document
- Unit system
- Document control

1 Package design safety report: Part 1

2 Package design safety report: Part 2

3 References

Figure: Structure of Package Design Safety Report

Table: Matrix of IAEA, ADR Regulatory Requirements and Package Type

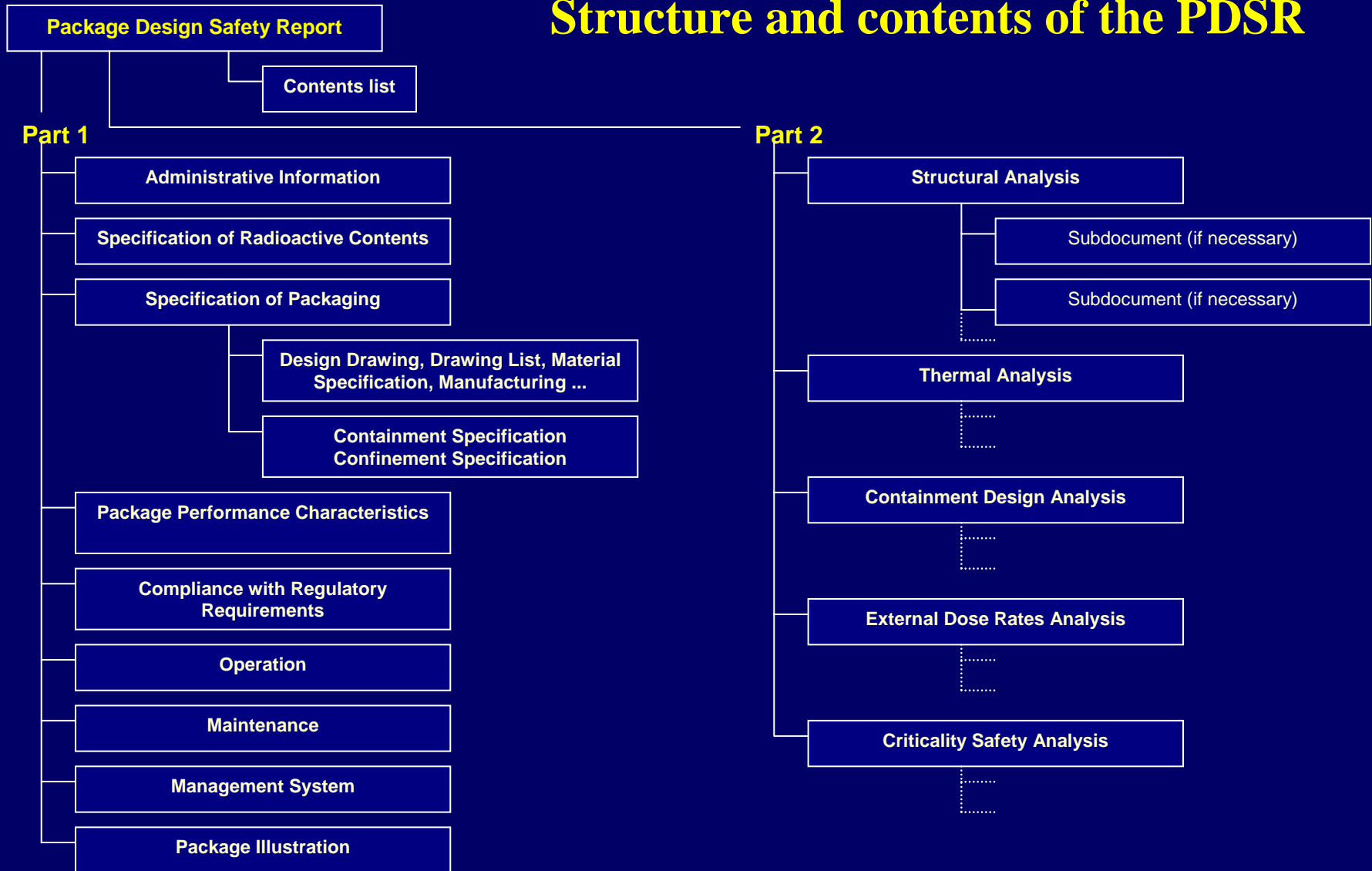
Annexes

- Annex 1: Excepted package
- Annex 2: Industrial package (Type IP-1, Type IP-2, Type IP-3)
- Annex 3: Type A package
- Annex 4: Type B(U), Type B(M), Type C package
- Annex 5: Package containing fissile material
- Annex 6: Package containing more than 0.1 kg uranium hexafluoride

Generic information applicable to all package types

package type dependent information

Structure and contents of the PDSR



Matrix of IAEA and ADR regulatory requirements and package type

Section	§ TS-R-1 (2005)	§ 2007ADR	package type							additional provisions		Remarks		
			excepted	TYPE IP-1	TYPE IP-2	TYPE IP-3	A	B(U), B(M)	C	fissile	UF6			
DEFINITIONS	222	2.2.7.2									x		fissile material	
	225	2.2.7.2								x			LDM and transport by air	
	226	2.2.7.3.1 + 2 (x2.2.7.2)		x	x	x							LSA	
	239	2.2.7.4.1 (x2.2.7.2)	x				x	x	x				special form material	
	241	2.2.7.5 (x2.2.7.2)		x	x	x							SCO	
QA	306	1.7.3	x	x	x	x	x	x	x				quality assurance	
ACTIVITY LIMITS AND MATERIAL RESTRICTIONS	408-410	2.2.7.7.1.2.1 + 2 X	x										§410: transport by post	
	412-413	x			x	x							SCO and LSA activity limits for transport by air	
	414-415	2.2.7.7.1.4.1 + 2					x						activity limit for Type A package	
	416	2.2.7.7.1.5.1							x				activity limit for Type B(U) and B(M) package	
	417	x							x				activity limits for Type B(U) and B(M) package by air	
	418	2.2.7.7.1.6 + Note								x				activity limits for Type C package
	419	2.2.7.7.1.7									x			fissile material restrictions
	420	2.2.7.7.1.8										x		Uranium hexafluoride restrictions
REQUIREMENTS AND CONTROLS FOR TRANSPORT	503	4.1.9.1.3		x	x	x	x	x	x				transport of other dangerous goods	
	507	1.7.5, 2.1.3.5.3, M	x	x	x	x	x	x	x				subsidiary risk	
	508	4.1.9.1.2	x	x	x	x	x	x	x				Non-fixed contamination on package - §609	
	515-520	2.2.7.9.1 to 7	x										Excepted package requirements	

European Technical Guide: Package Design Safety Reports for the Transport of Radioactive Material

Available at

<http://www.dft.gov.uk/adobepdf/165226/460089/radioactive-material.pdf>