



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 1, 2000

MEMORANDUM TO: Susan F. Shankman, Deputy Director  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

FROM:  Nancy L. Osgood, Senior Project Manager  
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SUBJECT: TRIP REPORT, IAEA CONSULTANT SERVICES MEETING AND  
TECHNICAL COMMITTEE MEETING, OCTOBER 30 THROUGH  
NOVEMBER 10, 2000

From October 30 through November 10, 2000, I participated in meetings at the International Atomic Energy Agency (IAEA) Headquarters in Vienna, Austria. These meetings were held to support the 2003 Revision process for the IAEA Regulations for the Safe Transport of Radioactive Material (TS-R-1).

October 30 through November 3, 2000, I participated in Consultant Services Meeting No. 119 (CSM-119), "Transitional Arrangements for the Two Year Revision Cycle." CSM-119 was assembled to identify issues and develop recommendations for consideration in the subsequent Technical Committee Meeting. The CSM was to address how transitional arrangements, including "grandfathering" transportation package designs, would be implemented when the regulations are revised every two years. The topic of the CSM was listed among the identified problems at the previous meeting of the Revision Panel held at IAEA Headquarters in September 2000. The CSM-119 participants were Mr. L. Baekelandt (CSM Chairman), of the Belgian Federal Agency for Nuclear Control, Ms. M. Lesage, of the World Nuclear Transport Institute, and Mr. D. Krembel, of the French DSIN.

Technical Committee Meeting No. 1156.2 (TCM-1156.2) was held on November 6 through 10, 2000, to develop draft topical documents on provisions for application of the IAEA Regulations for the Safe Transport of Radioactive Material. There were approximately 39 participants representing 22 countries, organizations, and the IAEA. The participants split up into three working groups, and each working group focused on a single topic. I served as Chairman of Working Group 2, which was tasked with developing a report with recommendations for transitional arrangements for the two-year revision cycle. Working Group 2 considered the recommendations forwarded by CSM-119.

There was a consensus among the CSM and the Working Group 2 members that the transitional provisions and durations that had been established through the previous 10-year revision process should be retained. It was agreed that there should be as much stability of the regulations as possible, and specifically in the package performance standards.

Working Group 2 developed a report for consideration in the TRANSSC VI meeting to be held at IAEA Headquarters in February 2001. A summary of the results of Working Group 2 is Attachment 1 to this memorandum. The full report is Attachment 2 and includes the recommendations from CSM-119. At the final TCM-1156.2 session, IAEA stated that it intended to forward the draft report to TRANSSC members as soon as possible for information.

- Attachments:
1. Summary Report of CSM-119 and Working Group 2 of TCM-1156.2, October 30 through November 10, 2000.
  2. Report of Working Group 2 on Transitional Arrangements for the New 2 Year Revision Cycle.



December 1, 2000

**Summary Report of CSM-119 and  
Working Group 2 of TCM-1156.2  
October 30 through November 10, 2000**

Problem Statement:

- How will grandfathering provisions be provided under the two-year revision cycle for the IAEA Transportation Regulations.
- Develop regulatory and explanatory material for the 2003 edition of the regulations for grandfathering provisions.

Consensus:

- Retain and maintain transitional periods previously used.
- Encourage stability of the regulations while accommodating urgent changes.
- Facilitate revision of the regulations for transitional arrangements.
- Ensure compatibility with any length of revision cycle for transportation regulations and modal regulations.

Solution:

- **Matrix Method** (see following pages)

Recommendations (for IAEA):

- Implement the **Matrix Method** for grandfathering package designs starting with the 2003 Edition.
- Find a new terminology (not "transitional arrangements," which has been used previously but which is used by the modal organizations with a different meaning).
- Specify implementation date for the new edition of the regulations (with appropriate time period) in the regulations. Previously this has not been specified. This will facilitate transitioning to the new Edition by the UN modal organizations.
- Modify the revision process for the regulations. Two year revision should be reserved for urgent changes (can be safety or administrative). Other changes would be adopted at the previous ten-year interval.
- Retain the date suffix in the Package Identification Mark that indicates date of latest edition of the regulations that the package design was evaluated against (e.g., -85, -96, -03).
- Ensure that previous editions of the regulations are published and available throughout grandfathering periods.

Recommendations (for Competent Authorities):

- Accommodate review of package designs to new IAEA revisions prior to adoption (certification would not be issued until adoption).
- Issue overlapping certificates at renewal time (to allow shipping campaigns to continue).
- Allow  $A_1$  and  $A_2$  values used for package design evaluation (e.g., containment analysis) to be grandfathered along with the other design features. Note that  $A_1$  and  $A_2$  values used for package limits (e.g., contents of a Type A package) must comply with new values without a grandfathering period.

## MATRIX METHOD FOR IAEA GRANDFATHERING PROVISIONS

- Use a table in the regulations to specify various transition dates for package designs (see draft tables below).
- Include both competent authority approved and non-competent authority approved designs.
- Give "advance notice" of transitional dates, including removing package designs from service.
- Facilitate future revision of the regulations.
- Facilitate adoption into modal regulations.
- Retain previously-used grandfathering milestones and durations.
- For Competent Authority approved designs, add a "design" period that allows design development, testing, certification, fabrication, and modification to a single edition of the regulations (even though subsequent Editions have been issued).

**Table XIV. Non-Competent Authority Approved Designs  
(e.g., Type A, IP packages)**

Edition of the Regulations	Safety Significant Designs Changes <i>(can be made until)</i>	Manufacture and Use <i>(can be performed until)</i>
1985	December 31, 2000	December 31, 2003
1996	December 31, 2011	December 31, 2014
2003	December 31, 2018	December 31, 2021
N (year)	N+15	N+18

**Table XV. Competent Authority Approved Designs**

Edition of the Regs	Type (Package and Material)	Design (including any modifications, until)	New Manufacture (until)	Unilateral Approval (until)	Use (until)
1973	All Package Types	Dec. 31, 1990* (17y*)	Dec. 31, 1995 (22y)	Dec. 31, 1993 (20y)	Dec. 31, 2006 (33y)
1985	All Package Types	Dec. 31, 2001 (16y)	Dec. 31, 2006 (21y)	Dec. 31, 2003 (18y)	Dec. 31, 2018 (33y)
	Special Form	Dec. 31, 2001	Dec. 31, 2003 (18y)	--	Dec. 31, 2018
1996	All Package Types	Dec. 31, 2012 (16y)	Dec. 31, 2017 (21y)	Dec. 31, 2014 (18y)	Dec. 31, 2029 (33y)
	Special Form	Dec. 31, 2012	Dec. 31, 2017	--	Dec. 31, 2029
	Low Dispersible Material	Dec. 31, 2012	Dec. 31, 2017	--	Dec. 31, 2029
2003	All Package Types	Dec. 31, 2019 (16y)	Dec. 31, 2024 (21y)	Dec. 31, 2021 (18y)	Dec. 31, 2036 (33y)
	Special Form	Dec. 31, 2019	Dec. 31, 2024	--	Dec. 31, 2036
	Low Dispersible Material	Dec. 31, 2019	Dec. 31, 2024	--	Dec. 31, 2036
<b>N</b>		<b>N+16</b>	<b>N+21</b>	<b>N+18</b>	<b>N+33</b>

\*Date is different than table in working paper. Based on SS6 (1985) Para 713.



**INTERNATIONAL ATOMIC ENERGY AGENCY  
DIVISION OF RADIATION AND WASTE SAFETY**

**Technical Committee Meeting  
to Produce Draft Topical Documents on Provisions for the  
Application of the Regulations for the Safe Transport of  
Radioactive Material**

**IAEA Headquarters, Vienna  
6-10 November 2000**

**REPORT OF WORKING GROUP 2 ON  
TRANSITIONAL ARRANGEMENTS  
FOR THE NEW 2 YEAR REVISION  
CYCLE**

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Report of Working Group 2 of TC-11562  
6-10 November 2000

Transitional Arrangements for the New 2 Year Revision  
Cycle

**TABLE OF CONTENTS**

TABLE OF CONTENTS.....	2
PARTICIPANTS .....	3
WORK PROCESS.....	3
PAPERS CONSIDERED.....	3
CURRENT SITUATION .....	4
ISSUES IDENTIFIED.....	8
ESSENTIAL CRITERIA.....	8
ACCEPTABLE TIMESCALES .....	8
TERMINOLOGY .....	10
PROPOSED SOLUTIONS.....	10
<i>PROCEDURAL CONTROL OF REVISION PROCESS</i> .....	10
<i>SEPARATE PACKAGE DESIGN &amp; TESTING DOCUMENT (TS-R-2)</i> .....	10
<i>LEAVE TRANSITION ARRANGEMENTS TO MODAL AUTHORITIES</i> .....	10
<i>MATRIX METHOD</i> .....	10
<i>IAEA CONVENTION</i> .....	11
EVALUATION OF OPTIONS.....	11
<i>AGAINST ESSENTIAL CRITERIA</i> .....	11
<i>COST AND BENEFIT</i> .....	12
RECOMMENDATIONS.....	12
<i>CONSIDERATION OF RECOMMENDATIONS IN WORKING PAPER 4 (REPORT OF CSM-119)</i> .....	14
ATTACHMENT 1 - MATRIX METHOD.....	15
<i>DISCUSSION</i> .....	15
<i>PRELIMINARY TEXT FOR CONSIDERATION BY TRANSSC VI</i> .....	15
<i>COST BENEFIT</i> .....	24
<i>POSSIBLE MODAL REGULATION FORMAT</i> .....	25

## **PARTICIPANTS**

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## **WORK PROCESS**

The working group took some time initially to analyse the information papers and working papers of relevance to their work. From this the overall concept of the problem was identified, and a consensus understanding of the issues was reached. The problems associated with the current transitional arrangements were identified and noted - and from this a list of criteria was developed against which any possible future provisions could be assessed. The acceptable timescales were discussed and established.

The group then put together the list of various options and discussed them in light of the essential criteria. From this a recommended solution was developed. This is presented in an annex to this report.

## **PAPERS CONSIDERED**

IP1 This paper is not directly applicable, but demonstrates the issues which should be avoided in future.

IP2 (This paper was presented as a fuel cycle industry consensus view). Key issues were :

- Preserve existing timeframes - consensus amongst the group that this was acceptable and appropriate.
- Competent Authority identification mark date suffix - the group felt this should reflect the most current edition of IAEA regulations which the design has been approved as meeting. It was asked whether it was necessary - the group decided it was, particularly in some countries, it was also unlikely to cause public relations problems, so the consensus was that the suffix should be retained.
- Timely renewal - this was not considered acceptable, but competent authorities are recommended to consider overlapping certificate validity.
- Preservation of continued use - this was acceptable to the group.
- Unilateral approval - out of scope of this work.
- Transitional multilateral - no countries were identified that require this - but insufficient representation - pass back to TRANSSC (however see later consideration of IP10).
- Multi-country approvals - outside scope.

IP4 Reviewed for information - demonstrates the issues which should be avoided in future.

IP5 Not applicable to this working group.

IP10 Good paper - various tabular views - used extensively by group in discussion. Key issues were:

- The transitional multilateral should be tied to significant safety changes - accepted by group as a good idea.
- Develop generic system - agreed.
- New transitional arrangements - yes some will be needed, the group accepted they must consider special form radioactive material lifetimes. Another new arrangement that would be required is design.

IP11 For information only.

IP18 For information only.

IP19 For information.

IP20 Expand the chart in section 2 - the chart cannot give a fully accurate picture - other graphical representations are included to supplement this chart. Other issues have been considered in the group and will be addressed. Dates noted.

IP22 Explanatory notes give good background to current transitional arrangements. Trying to carry forward the same logic to the new process - this was considered essential by the group. This paper was used as a template for the type of product to be produced by the working group.

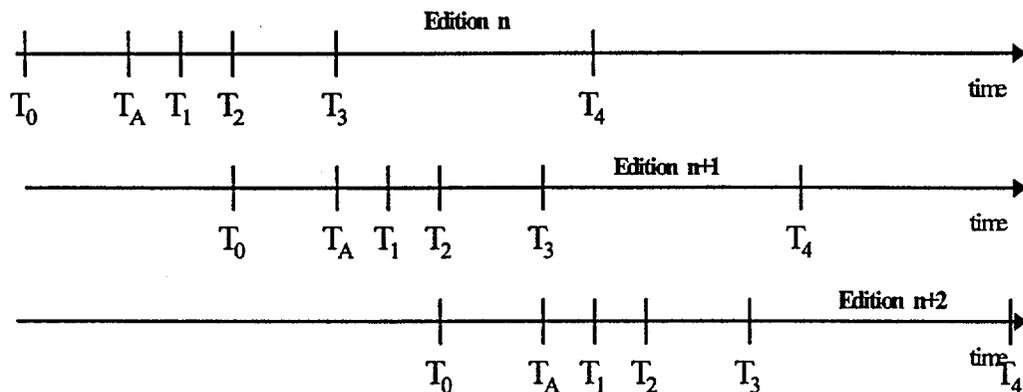
IP23 Useful background information. Includes good example of use of matrix method.

IP24 Important paper. Encourages reduction of the  $T_0$  to  $T_2$  gap.

WP4 This is the report of the consultants meeting on this subject. This formed the basis of the first method and aided in overall understanding of the problems.

## CURRENT SITUATION

*This diagram is not intended to be to scale*



The current situation was discussed in some detail. The  $T_0$  to  $T_4$  line was presented as an original description of the process.

where:

- $T_0$  is the date of publication of the new edition of the Regulations by the IAEA
- $T_A$  is the date of adoption of the IAEA Regulations by the modal organization
- $T_1$  is the date of publication of the modal Regulations
- $T_2$  is the date the modal Regulations become optional
- $T_3$  is the date the modal Regulations become mandatory; it is also the start of the transition period referred to below (termed 'IAEA transition period')
- $T_4$  is the end of the IAEA transition period

It must be noted that the time span between  $T_2$  and  $T_3$  is also called 'transition period' by the modal organizations; it is the time period during which the use of the new regulations is optional, i.e. during which either the new edition or the previous edition is allowed to be used.

After considering this it was pointed out that there are multiple values of  $T_A$ ,  $T_1$ ,  $T_2$ ,  $T_3$  and  $T_4$  for each timeline. There would be several modal regulations with a variety of dates, and several transitional arrangements in each edition of the IAEA regulations. The overlapping of the timelines was considered extremely difficult to cope with. The lengths of the timelines in the past were many years between  $T_0$  and  $T_4$ , thus several timelines overlapped.

Another table was developed of the key actions in the process of developing the IAEA regulations and transferring them into modal regulations

REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

Key Actions Pertaining to the 2003 Regulatory Revision					
IAEA		UN Committee of Experts		Modal Organizations	
2/01	TRANSSC VI (review/recommend on proposed changes)				
5/01	IAEA informs UN CoE and Modal organizations of expected changes				
		7/01	UN Com Mtg		
11/01	Rev Panel 2 (draft changed regulatory text)				
		12/01	UN Com. Mtg		
5/02	TRANSSC VII (approve revisions)				
5/02	CSS (approve revisions)				
		7/02	UN Com. Mtg		
9/02	B of G (approve 2003 revision for publication)				
		12/02	UN Com Mtg finalizes draft of 03 Recommendations		
5-8/03	TS-R-1 (03 edition) published	5-8/03	UN Model Regulations (03 Edition) published		
				1/05	Modal requirements reflecting IAEA and UN Model requirements into force

REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

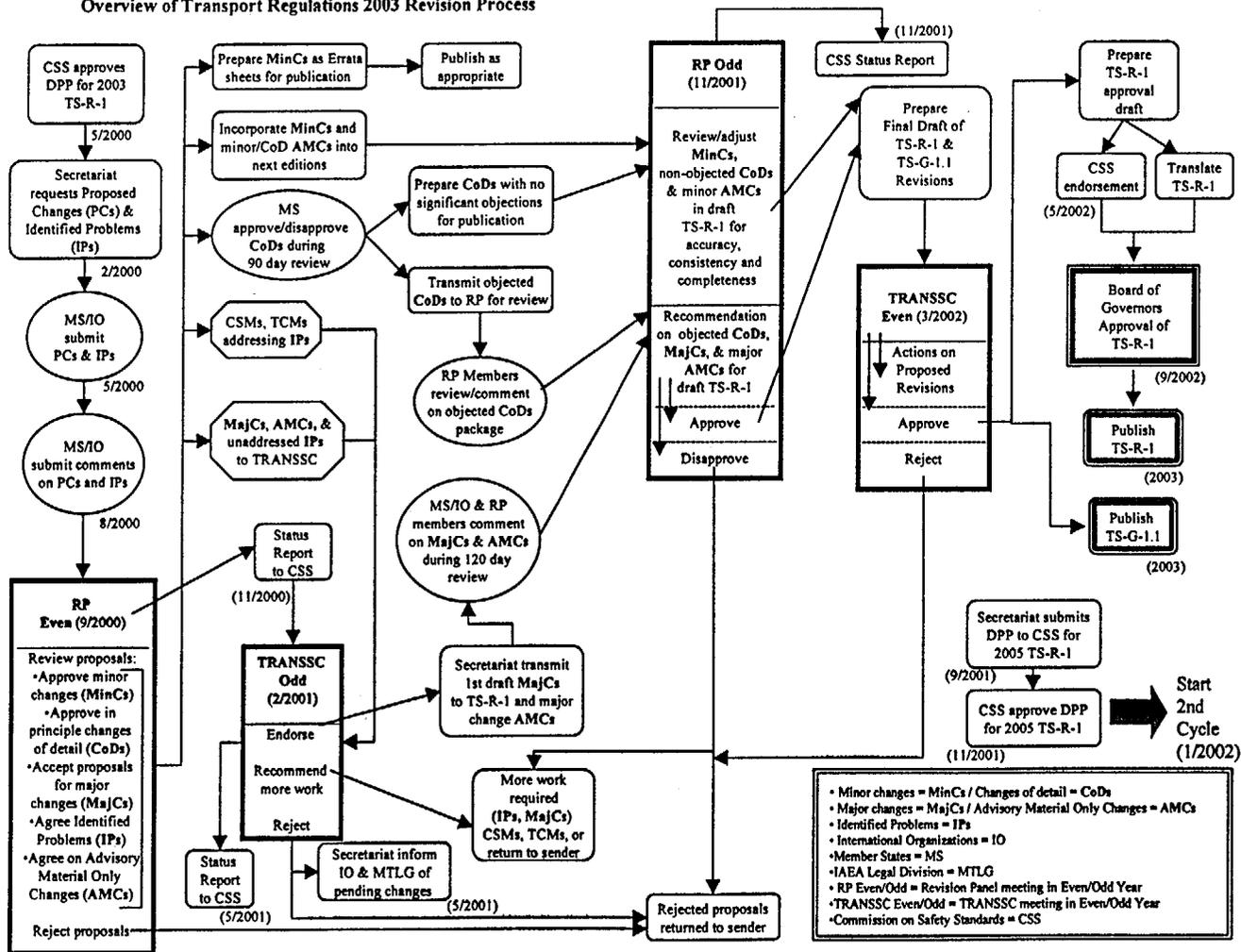
Further to this a review was carried out of the past IAEA timescales for the various T<sub>s</sub> included in the IAEA regulations. These would be used as a guide for developing generic transition periods. The following table illustrates these dates.

Item	Description	1985 Regulations	1996 Regulations
T <sub>0</sub>	Publication - information becomes available	1985	1996
T <sub>2</sub>	Sea		1/1/01
T <sub>2</sub>	Air		1/7/01
T <sub>2</sub>	Road/Rail in Europe		1/7/01
T <sub>3</sub>	Sea		31/12/01
T <sub>3</sub>	Air		1/7/01
T <sub>3</sub>	Road/Rail in Europe		31/12/01
T <sub>4</sub>	New activity limits and reduction to the contents of packages	1990	2001
T <sub>4</sub>	Quality assurance	1990	2001
T <sub>4</sub>	Non CA approved packages, manufacture and modification (unless to improve safety) of (previous reg) design		2003
T <sub>4</sub>	Non CA approved packages, use of (previous reg) design		2003
T <sub>4</sub>	CA approved packages, significant modification of (previous reg) design	1990	2001
T <sub>4</sub>	CA approved packages, manufacturing of (previous reg) design	1995	2006
T <sub>4</sub>	CA approved packages, multilateral approval of (previous reg) design	1992	2003
T <sub>4</sub>	CA approved packages, manufacturing of (two previous reg) design	1990	
T <sub>4</sub>	CA approved packages, multilateral approval of (two previous reg) design	1990	
T <sub>4</sub>	Use of a (three previous reg) packaging		2000
T <sub>4</sub>	Special form, manufacturing of (two previous reg) or (previous reg) design		2003
T <sub>4</sub>	Special form, use of (three previous reg) design		2000

For 1985 the "previous reg" means the 1973 edition of the IAEA regulations, and the "two previous reg" means the 1967 edition of the IAEA regulations. For 1996 the "previous reg" means the 1985 edition of the IAEA regulations, the "two previous reg" means the 1973 edition of the IAEA regulations, and the "three previous reg" means the 1967 edition of the IAEA regulations. Another view of the revision process considered to give good views of how the dates fitted together follows

# REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

Overview of Transport Regulations 2003 Revision Process



## REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

These charts serve to demonstrate the complexity of the revision process, with overlapping development of regulations, overlapping existing regulations and overlapping transitional periods. Add to this the problem of the various modal organizations transition periods and adoption into national regulations the whole picture becomes complex.

### **ISSUES IDENTIFIED**

During the various discussions of papers and timescales a list of issues of importance was generated. These are foundations to the decisions taken by the group.

- Competent Authority approved packages have extended timescales for development and approval.
- Competent Authority approved packages have extended timescales for use.
- Multiple regulation changes will take place between concept and production of CA approved packages.
- Need to define competent authority identification number date suffix requirements.
- Need for harmonization between modal organizations.
- Need for new transitional arrangements because of faster implementation of regulations (e.g. design)
- The word "transition" causes confusion.
- Essential to be able to approve against old versions of regulations (e.g. certificates may outlast regulations).
- Transitional arrangements for certificates are likely to be required.
- The transitional multilateral concept should be reviewed.
- Packages will seldom be designed to the regulations the CA approves them to under the new 2 year cycle.
- Design modification acceptability could become very complex.
- Existing timeframes need to be preserved.
- While timeframes should remain the same the timeframes which are important need to be identified.
- Multiple revisions of the regulations will be in existence at the same time.
- Old editions of the regulations MUST remain available for purchase for extended periods.
- Transitional periods have varied in different sets of regulations, so no method can preserve the timescales exactly.

### **ESSENTIAL CRITERIA**

The group spent some time considering the criteria against which the process should be gauged. The process should:

1. Ensure stability of regulations
  - a) Essential to encourage development of improved packages.
  - b) Essential to avoid safety problems.
2. Permit urgent changes must be allowed
  - a) This is the key reason for the 2 year cycle and must be retained.
3. Maintain previously used timescales
  - a) No arguments were put forward to show that the existing timescale was unsafe.
  - b) The group decided that a no-change option was essential for the TCM to put forward - changing the dates would required a greater consensus than just the sub-group.
4. Encourage consideration of the mechanics of change in the revision process.
  - a) Consideration of timescales involved in the implementation of changes should be made must be a part of the revision process.
5. Be compatible with various potential revision cycles of IAEA and modal organizations.
  - a) The ability to cope with delays in the implementation process has been demonstrated to be essential in the last revision cycle.

### **ACCEPTABLE TIMESCALES**

The following timescales were considered, and the reasoning behind them is given. Only the concepts of the times that are acceptable are included - the recommended numbers appear in later tables.

1. CA approved packages
  - a) design

## REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

- i) Currently there is a period between publishing the regulations and coming into force where design may be carried out but a package cannot be approved, this is of the order of 5 years.
    - ii) After the coming into force of the new requirements there is a period of around 11 years before packages can no longer be approved to the regulations. However, there is an exemption for modifications that do not significantly affect safety.
    - iii) Currently design has no transition period, but reducing the time from publishing the regulations to the coming into force of the NEXT edition of the regulations from 16 years to 4 years (minimum) will require new provisions for design.
  - b) manufacture
    - i) The 5 and 11 year periods for design also apply to manufacture.
  - c) use
    - i) Packages can typically be used for 11 years beyond the end of the time that construction is allowed.
- 2. CA approved shipments
  - a) use
    - i) Shipment approval certificate validity should be permitted until the expiry date of the shipment certificate.
- 3. Non-CA approved packages
  - a) design
    - i) It would appear the appropriate timescale for this is around 15 years from the date of initial publication of the regulations. However a date of around 4 years from the publishing of the NEXT set of regulations seems to have been the driving force in setting the dates by RTSG (based on other dangerous good regulations).
  - b) manufacture and modification (to improve safety)
    - i) It would appear the appropriate timescale for this is around 18 years from the date of initial publication of the regulations. However a date of around 7 years from the publishing of the NEXT set of regulations seems to have been the driving force in setting the dates.
  - c) use
    - i) It would appear the appropriate timescale for this is around 18 years from the date of initial publication of the regulations. However a date of around 7 years from the publishing of the NEXT set of regulations seems to have been the driving force in setting the dates.
- 4. Administrative requirements
  - i) A delayed implementation of around 5 years would seem to be in line with current practice.
- 5. Urgent safety requirements
  - i) A delayed implementation of around 5 years would seem to be in line with current practice.
- 6. Transitional multilateral approval
  - i) Typically this comes into play between the end of the "build" allowance and the end of use, around 18 or 19 years from the publishing of the regulations.
- 7. Special form
  - a) design
    - i) The timescales for this seem to be varied in different regulations. It is recognized that the new edition of the regulations corrects a transitional provision error for special form which was in previous regulations.
    - ii) No clear option appears in the regulations, however somewhere in the region of 16 years seems reasonable.
  - b) manufacture
    - i) The timescales for this seem to be varied in different regulations. It is recognized that the new edition of the regulations corrects a transitional provision error for special form which was in previous regulations.

## REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

- ii) No clear option appears in the regulations, however somewhere in the region of 21 years seems reasonable (based on package transitional arrangements)
- c) use
  - i) The timescales for this seem to be varied in different regulations. It is recognized that the new edition of the regulations corrects a transitional provision error for special form which was in previous regulations.
  - ii) No clear option appears in the regulations, however somewhere in the region of 33 years seems reasonable.
- 8. Low dispersible material
  - a) design, manufacture and use
    - i) It would seem sensible to treat this in a similar way as special form material.
- 9. Operational limits
  - i) A delayed implementation of around 5 years would seem to be in line with current practice.
- 10. New Type of package
  - i) A delayed implementation of around 5 years would seem to be in line with current practice.

### **TERMINOLOGY**

Because of the problems in terminology the following three options were considered to replace the IAEA term transitional arrangements:

- Grace period
- Continued use
- Grandparenting

No decision was made as to the best option, however the group considered new terminology was essential.

### **PROPOSED SOLUTIONS**

#### **PROCEDURAL CONTROL OF REVISION PROCESS**

The general idea of this is set out in WP4. The key aspect of this method is that it requires limited changes to the package design and testing regulations. This looks at setting out all of the different transition options and the procedure to be followed in the event of changes to the regulations. Because of the list of different transitional provisions and the list of different regulations to allow transition from this would result in a complete section of the regulations dealing simply with transitional arrangements.

#### **SEPARATE PACKAGE DESIGN & TESTING DOCUMENT (TS-R-2)**

This is based on the UK/045 proposal to the revision process. The basic idea is to split the regulations into two sections. One section dealing with packaging and testing (which would have a long revision cycle), and another dealing with other provisions (with a two year revision cycle). One document would cross reference the other.

Because of the amount of work involved and the possibility of complex and difficult cross-references this was considered hard to implement in a reasonable timescale.

#### **LEAVE TRANSITION ARRANGEMENTS TO MODAL AUTHORITIES**

The essential idea is not to include any transitional arrangements in the IAEA regulations.

#### **MATRIX METHOD**

The idea of the matrix method is fairly similar to the procedural control method, except to present the data in a matrix format. This method appears to be concise and clear. In addition it is proposed that future events should be "advertised". For example, the proposed end of use of regulations should be included in advance.

## **IAEA CONVENTION**

The idea is to remove the class 7 regulations from the modal regulations and have them as a stand alone annex to an international convention. This would remove the problems with transition periods of modal regulations, but does not address the essential IAEA transition period issue.

## ***EVALUATION OF OPTIONS***

### **AGAINST ESSENTIAL CRITERIA**

#### ***PROCEDURAL CONTROL OF REVISION PROCESS***

Positive Comments. This method appears to be consistent with all the essential criteria. Would allow urgent safety changes, since transition periods would be considered at each revision cycle. Retains previously used time scales, including a new design period to compensate for the more frequent revisions. Method is compatible with any potential revision cycles of IAEA and modal organizations.

Negative comments. Require multiple additional regulatory provisions at the time of each revision cycle. This could lead to confusion as there would be many provisions dealing with all the transitional periods. Complicated provisions may lead to misinterpretations. No immediate future notification of far-term regulatory milestones, such as end of use period. No clear set of dates for all phases of grandfathering.

#### ***SEPARATE PACKAGE DESIGN & TESTING DOCUMENT (TS-R-2)***

Positive Comments. Method appears to be consistent with all essential criteria, except that it may not be consistent with allowing urgent changes for package standards.

Negative Comments. Detracts from the purpose of going to a two-year revision cycle, i.e., urgent changes could be needed both for package design and testing and for operational controls and administrative requirements. Having two separate documents may in itself lead to difficulty in managing the revision process.

### ***LEAVE TRANSITION ARRANGEMENTS TO MODAL AUTHORITIES***

Positive Comments. None.

Negative Comments. Working group could not identify any advantage in adopting this method. Although IAEA would not have to address the issue, others that possibly have less expertise in package performance would have to develop grandfathering provisions. In addition, possible modal differences could develop and consistency would not be maintained.

## ***MATRIX METHOD***

Positive Comments. Promotes stability of the regulations, since minimal changes would be required each revision, and it provides a good future overview of all significant regulations. Would allow urgent safety changes, since transition periods would be considered at each revision cycle. Retains previously used time scales, including a new design period to compensate for the more frequent revisions. Method is compatible with any potential revision cycles of IAEA and modal organizations. Clear, well defined dates.

Negative Comments. None

### **IAEA CONVENTION**

Positive Comments. Would highlight the importance of the transportation regulations.

Negative Comments. This method may not be consistent with "essential criterion number 5," that is, it may not be compatible with various potential revision cycles of the IAEA and modal organizations. It is not clear to the Working Group members that having an IAEA convention would solve the problems in transitional period adoption and implementation. For example, there is already an IAEA resolution (GC(44)/RES/17) that addresses implementation of ST-1. Class 7 regulations are intertwined with other dangerous goods regulations. It would be extremely difficult to extract the Class 7 provisions from these regulations. It would also be difficult to implement this method in a reasonable period of time. It is judged that developing the convention, having the various members ratify the convention and entering the convention into force would be a very lengthy process.

### **COST AND BENEFIT**

#### **PROCEDURAL CONTROL OF REVISION PROCESS**

This is the "base case." Grandfathering provisions would need to be introduced into the future regulations, and this method provides a continuation of practices previously established, but suitable for a two-year revision cycle.

#### **SEPARATE PACKAGE DESIGN & TESTING DOCUMENT (TS-R-2)**

A major cost would be the actual development of the two separate documents. This would be a significant and lengthy technical effort. There is no identified benefit over having a single, clear document. In addition, the possibility of revising two separate documents could also add to the revision process costs.

#### **LEAVE TRANSITION ARRANGEMENTS TO MODAL AUTHORITIES**

Each modal organization would require updating regulations periodically, which would incur expense. Package owners/designers would need to update package designs at least every two years, to ensure they are consistent with the modal organizations. In addition, there is no guarantee that the provisions would be uniform, causing possible discrepancies in transitional arrangements among the different modes, which could incur expense for transport.

#### **MATRIX METHOD**

Lower cost to introduce new provisions at each revision cycle due to simplified format. Lower cost to industry in ability to predict future restrictions in transport and service life of packages. Most likely to result in uniform adoption by modal organizations.

### **IAEA CONVENTION**

It is judged that this method would incur significant expense over the other methods. The administrative costs for developing a consensus convention appear to be very large.

### **RECOMMENDATIONS**

1. The Matrix Method should be adopted.
2. Modify Revision Process (2 year cycle for urgent changes, 10-year other changes)
  - a) The two-year revision cycle should include only urgent changes. Other changes should be made at a ten-year interval. Urgent changes may include changes in package design standards, administrative changes, operational changes, and may

## REPORT ON TRANSITIONAL ARRANGEMENTS FOR THE NEW 2 YEAR REVISION CYCLE

include minor changes and changes of detail. Other changes should be reviewed at a proposed 10-year interval. The aim of the recommendation is to better implement the purpose of the two-year revision cycle, which was to have a timely adoption and implementation of urgent changes. The down side of this is that significant arguments of provisions could lead to a significant delay in implementation because of the extended revision cycle, while a benefit is that it would increase the stability of regulations.

3. Notification in IAEA and Modal Regulations of Upcoming Changes
  - a) Include the implementation date into Section 101 of the regulations and remove it from the FOREWORD section (although this is not clearly stated). This is to provide a specific date far enough ahead in the future to assure a single date that the revised regulations should be in force.
4. Harmonizing Transition Times in Modal Regulations
  - a) It is recommended that modal organizations harmonize the implementation dates as much as possible, and to minimize the time period during which two sets of regulations may be in force. The goal should be that all modes will have a single transition date. In this case provisions should be included to ensure that shipments in transport at the transition date may continue to their final destination.
5. Closer Coordination Among the Modal Organizations for Implementation.
  - a) It is recommended that coordination with the Modal Organizations is continued to facilitate a uniform adoption date (see the item above).
6. Certification of Packages to Revised Standards Before They Take Effect
  - a) It is recommended that allowance is made to review a package design to a new revision of the regulations prior to its implementation date. It is noted that some competent authorities already allow this practice. Authorization to transport the package would not be granted until the new regulations were effective.
7. Overlapping Certificates
  - a) To address the problem of harmonization of transition periods, it is recommended that design approval certificates be issued with overlapping periods (i.e., a new revision of a certificate is issued prior to, but without superseding, the previous revision).
8. Treatment of A2 Values for Containment Evaluation for Package Designs
  - a) It is recommended that approved Type B(U), Type B(M) or Type C package designs do not require immediate modification to the containment analysis if A2 values are changed. This is in contrast to Type A packages (and other package types) that use the A2 value as a LIMIT, where the new A2 values would apply immediately.
9. Activity limits in Section IV are only considered
  - a) To address the possible multiple changes in A2 values during the design and fabrication period of a package, it is recommended that, while changes in the A2 values shall be applied for package content limits, the A2 value applicable to the version of the regulations against which the package is designed should be used.
10. Publication of Past Editions of the Regulations.
  - a) Since package design and modifications may be authorized for a significant period of time after new Editions of the Regulations are published, it is important that multiple revisions of the Regulations remain available from IAEA.
11. TRANSSC and the Revision Panel should review this paper and, in particular, the Proposed Changes
  - a) The proposed text for TS-R-1 and TS-G-1.1 should be reviewed for content. The matrix method proposes general time intervals for transitional periods that have been used in the past. These are estimated values that should be considered by TRANSSC and the Revision Panel. In addition, TRANSSC and the Revision Panel should specifically address the need for and purpose of multilateral approval for Type B(U) grandfathered packages.
12. Retention of Year Designation in Package Identification Mark
  - a) The Working Group recommended that the year designation continue and remain consistent for all future revisions of the Regulations. This year designation should indicate the latest Revision of the Regulations that the package was approved to.

CONSIDERATION OF RECOMMENDATIONS IN WORKING PAPER 4  
(REPORT OF CSM-119)

1. It is strongly recommended that the IAEA and the relevant modal organizations agree upon a common date for the entry into force of the regulations. If this goal cannot be achieved, they should at least reach agreement on a common end date for the IAEA transition period, and adapt the modal transition period accordingly.
  - a) The working group has proposed providing an implementation date in the Regulations so that all modal organizations may work to the same date. The need for continued coordination between IAEA and the modal organizations was also included in the recommendations of the working group.
2. The revision panels should assess the proposed changes to the Regulations with respect to the need for transitional arrangements; if needed, appropriate transitional arrangements should be drafted. When setting the transitional arrangements, it should be kept in mind that the stability of the Regulations is important in relation to the confidence in the safety level of the regulations, and in relation to the overall period of use and manufacturing of packagings.
  - a) This recommendation was included in the recommendations of the working group. The group recommended that the 2-year revision cycle be reserved for "urgent" changes, and that all other changes should be addressed on the previous 10-year revision cycle to ensure stability of the regulations. The group recommended use of the matrix method that will facilitate future revision panels in identifying provisions that need to have transition periods. Also the group recommended the notification to the modal organizations by providing the implementation date in the Regulations to reduce the need to consider transitional periods for operational changes.
3. The identification mark should continue to refer to the year of Edition of the IAEA Regulations.
  - a) This recommendation was also included in the recommendations of the working group.
4. No fixed dates should be used in the transitional arrangements, but time spans referring to the date of entry into force of the Edition.
  - a) The working group discussed this recommendation, but decided to continue to use specific dates for transitional arrangements. The working group members felt that there was a benefit in specifying fixed dates (e.g., for implementation by the modal organizations). Also, the working group felt that as much future "notice" should be given to industry and regulators regarding provisions such as removing older package designs from service.

## ***ATTACHMENT 1 - Matrix method***

### **DISCUSSION**

#### ***THE ISSUE***

Transitional arrangements have been included in the last two editions of the IAEA regulations for the safe transport of radioactive material. These arrangements had the aims of permitting the continued use of existing hardware for a limited time period. Thus a balance is established between new provisions and continued use of existing hardware. This has the effect of encouraging continuous development of packages, which is essential to safety.

With the development of a two year revision cycle it was realized that these provisions would no longer be possible to sustain over multiple overlapping sets of regulations. In addition, various problems with the implementation of the 1996 edition of the regulations resulted in the conclusion that a more stable basis for transition must be developed.

The aim of this was to develop a new generic "formula based" method that could be applied on a fairly routine basis by the Revision Panel. This would allow regulators and industry to plan the changes to regulations and package designs over a reasonable timescale.

#### ***THE SOLUTION***

The proposed solution is that of the "matrix method". This method is developed by examining the time differences between publishing previous regulations and changes in their applicability and developing a matrix describing these differences.

The matrix is supported by text, which is essentially the same as the existing transitional arrangements in the current IAEA regulations. As a result the transitional arrangements are essentially the same as before.

### **PRELIMINARY TEXT FOR CONSIDERATION BY TRANSSC VI**

#### ***REGULATION***

101 [add to end of paragraph] These regulations are effective for transport operations commencing after 31<sup>st</sup> December 2008.

Packages not requiring competent authority approval of design

815. Excepted packages, Industrial packages Types IP-1, IP-2 and IP-3 and Type A packages which do not require approval of design by the competent authority and which meet the requirements of the regulations specified in column 1 of table XIV may continue to be used or manufactured until the corresponding date specified in column 3 of table XIV. Use or manufacture shall be subject to the mandatory programme of quality assurance in accordance with the requirements of para. 310 and the activity limits and material restrictions of section IV. Packages prepared for transport not later than the date specified in column 3 of table XIV for the corresponding Edition of the regulations specified in column 1, may continue in transport.

815bis. Excepted packagings, Industrial packagings Types IP-1, IP-2 and IP-3 and Type A packagings which do not require approval of design by the competent authority may be designed or modified until the date specified in column 2 of table

XIV in accordance with the requirements of the corresponding edition of the regulations specified in column 1 of table XIV.

Table XIV NON-COMPETENT APPROVED

	Safety Significant Design Changes	Manufacture. & Use
1985	Dec. 31, 2000	Dec. 31, 2003
1996	Dec. 31, 2011	Dec. 31, 2014
2003	Dec. 31, 2018	Dec. 31, 2021

Table XV

YEAR	TYPE	DESIGN	BUILD	UNILATERAL APPROVAL	END OF USE
1973	All Packages	Dec. 31, 1995	Dec. 31, 1995	Dec. 31, 1993	Dec. 31, 2006
1985	All Packages	Dec. 31, 2001	Dec. 31, 2006	Dec. 31, 2003	Dec. 31, 2018
	Special Form	Dec. 31, 2001	Dec. 31, 2003	-	Dec. 31, 2018
1996	All Packages	Dec. 31, 2012	Dec. 31, 2017	Dec. 31, 2014	Dec. 31, 2029
	Special Form	Dec. 31, 2012	Dec. 31, 2017	-	Dec. 31, 2029
	Low Dispersible	Dec. 31, 2012	Dec. 31, 2017	-	Dec. 31, 2029
2003	All Packages	Dec. 31, 2019	Dec. 31, 2024	Dec. 31, 2021	Dec. 31, 2036
	Special Form	Dec. 31, 2019	Dec. 31, 2024	-	Dec. 31, 2036
	Low Dispersible	Dec. 31, 2019	Dec. 31, 2024	-	Dec. 31, 2036

Packages approved under a previous Edition of these Regulations

816. Packagings manufactured to a package design approved by the competent authority as meeting the requirements of the regulations specified in column 1 of table XV may continue to be used until the date specified in column 5 of table XV corresponding with the edition of the regulations specified in column 1 of table XV and package category specified in column 2 of table XV. Use shall be subject to the mandatory programme of quality assurance in accordance with the requirements of para. 310, the activity limits and material restrictions of section IV and for packages containing fissile material and transported by air, the requirement of para. 680. After this date use may continue until the corresponding date specified in column 6 of table XV subject, additionally, to multilateral approval of package design. Packages prepared for transport after the date in column 5 of table XV for the selected Edition of the regulation specified in column 1, shall meet a subsequent Edition of the Regulation in full.

816bis. All packagings which require competent authority approval may be manufactured until the date specified in column 4 of table XV corresponding to the edition of the regulations in column 1 of table XV to which they are approved. After this date no new manufacture shall commence. These packagings may be manufactured subject to the mandatory programme of quality assurance in accordance

with the requirements of para. 310, the activity limits and material restrictions of section IV and for packages containing fissile material and transported by air, the requirement of para. 680.

816bis+1. All packagings which require competent authority approval may be designed or changes in the design or in the nature or quantity of the authorized radioactive contents which, as determined by the competent authority, would significantly affect safety, may be made until the date specified in column 3 of table XV, in accordance with the requirements of the corresponding edition of the regulations specified in column 1 of table XV. Design or modification shall be subject to the mandatory programme of quality assurance in accordance with the requirements of para. 310, the activity limits and material restrictions of section IV.

Delete paragraph 817

Special form radioactive material approved under a previous Edition of these Regulations

818. Special form radioactive material manufactured to a design which had received unilateral approval by the competent authority under the Edition of the Regulations specified in column 1 of table XV may continue to be used when in compliance with the mandatory programme of quality assurance in accordance with the applicable requirements of para. 310 until the corresponding date specified in column 6 of Table XV.

818bis. Special form radioactive material may be designed or modified until the date specified in column 3 of table XV in accordance with the requirements of the corresponding edition of the regulations specified in column 1 of table XV.

818bis+1. All special form radioactive material may be manufactured until the date specified in column 4 of table XV corresponding to the edition of the edition of the regulations in column 1 of table XV to which it is approved. After this date no new manufacture shall commence. These special form radioactive material may be manufactured subject to the mandatory programme of quality assurance in accordance with the requirements of para. 310.

Low dispersible radioactive material approved under a previous Edition of these Regulations

818bis+2. Low dispersible radioactive material manufactured to a design which had received multilateral approval by the competent authority under the Edition of the Regulations specified in column 1 of table XV may continue to be used when in compliance with the mandatory programme of quality assurance in accordance with the applicable requirements of para. 310.

818bis+3. Low dispersible radioactive material may be designed or modified until the date specified in column 3 of table XV in accordance with the requirements of the corresponding edition of the regulations specified in column 1 of table XV.

818bis+4. All low dispersible radioactive material may be manufactured until the date specified in column 4 of table XV corresponding to the edition of the edition of the regulations in column 1 of table XV to which it is approved. After this date no new manufacture shall commence. This low dispersible radioactive material may be manufactured subject to the mandatory programme of quality assurance in accordance with the requirements of para. 310.

819 REFERENCE TO 816-817 BECOMES 816BIS+1

828(d) For package design and special form radioactive material approval certificates, other than those issued under the provisions of paras 816-818, and for low dispersible radioactive material approval certificates, the symbols "-03" shall be added to the type code.

829 REPLACE ALL OCCURRENCES OF "96" BY "03".

#### *ADVISORY MATERIAL*

101.1 An effective from date is inserted for the first time in the regulations. In the previous edition of the regulations a recommendation was included in the foreword that recommended adoption of the revised Regulations occur within a period of five years from publication. However, transition from the previous edition to the new regulations proved difficult, and various different implementation dates and transition period were used by the various modal organizations. Placing a date of implementation in the Regulations was to facilitate the various modal organizations transitioning to the new Edition. The date was chosen to be sufficient to allow coordination and a greater degree of harmonization among these organizations.

#### TRANSITIONAL ARRANGEMENTS

##### **Packages not requiring competent authority approval of design under previous editions of these Regulations**

815.1. Following from the adoption of the 1985 Editions of the Regulations, packages not requiring approval of design by competent authority based on the 1973 Edition of the Regulations and the 1973 (As Amended) Edition of the Regulations could no longer be used. Continued operational use of such packages required either that the design be reviewed according to the requirements of the 1985 Editions of the Regulations, or that shipments be reviewed and approved by the competent authority as special arrangements, although this was not explicitly stated in the Regulations.

815.2. Paragraph 815 was introduced into the 1996 Edition of the Regulations to allow such existing packagings to continue in use for a limited and defined period of

time, following publication, during which the designs might be reviewed, and if necessary modified, to ensure they meet the requirements of the current Edition of the Regulations in full. Where such review and/or modification proves impractical, the transition period is intended to allow time for package designs to be phased out and new designs meeting the requirements of the latest Edition of the Regulations to be phased in.

815.3 Such transitional arrangements for these packages were continued in the 2003 Edition of the Regulations, with time intervals consistent with the 1996 Edition. The time intervals were introduced into a table format (Table XIV) to facilitate updating the transitional arrangements for these packages during future revisions of the regulations.

815.4 Packages prepared in accordance with previous Editions of the Regulations are sometimes stored for many years prior to further shipment. This may be particularly applicable in the case of Industrial or Type A packages containing radioactive waste and awaiting shipment to intermediate or final storage repositories. Paragraph 815 allows such packages, prepared during a defined period of time and when properly maintained, to be transported in the future on the basis of compliance with the earlier Editions of the Regulations.

815.5. Paragraph 815 emphasizes the requirement to apply quality assurance measures, according to the latest Edition of the Regulations, to ensure that only such packages remain in use, where they continue to meet the original design intent or regulatory requirements. This can best be achieved by ensuring that the latest quality assurance measures are applied to post-manufacturing activities such as servicing, maintenance, modification and use of such packages.

815.6. The reference to Section IV of the current Regulations is included to ensure that only the most recent radiological data (as reflected in  $A_1$  and  $A_2$  values) are used to determine package content and other related limits. It should be noted that the scope of the transitional arrangements of the regulations only extends to the requirements for certain packagings and packages. In all other aspects e.g., concerning general provisions; the requirements and controls for transport including consignment and conveyance limits; and approval and administrative requirements, the provisions of the latest Edition of the Regulations in force apply.

815bis.1. Any revision to the original package design, or increase in contained activity, or addition of other types of radioactive materials, which would significantly and detrimentally affect safety, as determined by the package owner in consultation with the package designer, will require the design to be reassessed according to the latest Edition of the Regulations. This could include such things as an increase in the mass of the contents, changes to the closure, changes to any impact limiters, changes to the thermal protection and shielding and changes in the form of the contents. Paragraph 815 bis defines the time period during which design and modifications, except to improve safety, may be made to a package design following the publication of revised Regulations. This paragraph refers to Table XIV which lists the date

applicable to designs that meet the specified Revisions of the Regulations. By default, modifications to improve safety are allowed until the date in column 3 of Table XIV.

815bis.2. The most recent radiological data, as reflected in the  $A_1$  and  $A_2$  values are used to determine package content and other related limits - this concerns the limitations given in paras. 226, 408, 410 to 419, 525, 558, 601, 657, 730, 820. It is also noted that when the  $A_1$  or  $A_2$  value is listed as a limit in the package approval (for example, contents may be limited to a certain number of  $A_2$ 's instead of specific radionuclides), the new  $A_1$  and  $A_2$  values in the new regulations should be used, without a transitional period. It is not expected that the calculations that may have been used to demonstrate compliance with the release criteria in paras. 656 and 669 of these Regulations will be immediately updated to include the most recent  $A_2$  values. If the package is evaluated to a more recent edition of the Regulations, the analysis, including the  $A_2$  values, should be updated.

### **Packages approved under previous Editions of these Regulations**

816.1. Previous Editions of the Regulations have included provisions that allow packages requiring approval of design by competent authority (Type B, Type B(U), Type B(M), Type C packages, packages for Uranium Hexafluoride and package designs for fissile material) based on earlier Revisions of the Regulations to be continued in use, subject to certain limitations on new manufacture, additional requirements to mark such packages with serial numbers and multilateral approval of all such designs. This provision, known colloquially as 'grandfathering', was newly introduced into the 1985 Editions of the Regulations to ease the transition to those Regulations. This allowed packages, provided they were properly maintained and continued to meet their original design intent, to continue in use to the end of their useful design lives. It also provided for a period of time, following publication, during which the designs could be reviewed, and if necessary modified, to ensure packages met the requirements of the 1985 Edition of the Regulations in full. Where such review and/or modification proved impractical, the transition period allowed time for packages to be phased out and new designs meeting the requirements of the 1985 Edition of the Regulations to be phased in. Indefinite continued use of older designs that could not be shown to meet later editions of the regulations was not considered necessary or justified.

816.2. Such transitional arrangements for these packages were continued in the 2003 Edition of the Regulations, with time intervals consistent with the 1996 Edition. The time intervals specified in the grandfathering provisions have been included in the Regulations in a tabular format (Table XV). The date for eventual phase out of package designs that cannot be practically modified to meet later Editions of the Regulations is specified in Table XV for each Revision of the Regulations, and for various package types, if applicable. It is judged that earlier phase-out dates might be justified for specific package types depending on the safety-significance of revised performance requirements in the later Editions of the Regulations.

816.3. When applying para. 816, the original competent authority identification mark and design type codes, assigned by the original competent authority of design, should

be retained both on the packages and on the competent authority certificates of design approval, notwithstanding that these packages may become subject to multilateral approval of design. This means that packages originally designated Type B(U) or Type B(U)F under the 1973 Editions of the Regulations should not be redesignated Type B(M) or Type B(M)F, nor should they be redesignated Type B(M)-03 or Type B(M)F-03, when used under the provisions of para. 816. This is to ensure that such packages can be clearly identified as packages "grandfathered" under the provisions of paragraph 816, having been originally approved under the 1973 Editions of the Regulations.

816.4 The most recent radiological data, as reflected in the  $A_1$  and  $A_2$  values are used to determine package content and other related limits - this concerns the limitations given in paras. 226, 408, 410 to 419, 525, 558, 601, 657, 730, 820. It is also noted that when the  $A_1$  or  $A_2$  value is listed as a limit in the package approval (for example, contents may be limited to a certain number of  $A_2$ 's instead of specific radionuclides), the new  $A_1$  and  $A_2$  values in the new regulations should be used, without a transitional period. It is not expected that the calculations that may have been used to demonstrate compliance with the release criteria in paras. 656 and 669 of these Regulations will be immediately updated to include the most recent  $A_2$  values. If the package is evaluated to a more recent edition of the Regulations, the analysis, including the  $A_2$  values, should be updated.

816.5. The references to Section IV and para. 680 of the 1996 Regulations are included to ensure that only the most recent radiological data (as reflected in the  $A_1$  and  $A_2$  values), and requirements for fissile material by air, may be used to determine package content and other related limits. It should be noted that the scope of the transitional arrangements of the regulations only extends to the requirements for certain packagings and packages. In all other aspects e.g., concerning general provisions, the requirements and controls for transport including consignment and conveyance limits, and approval and administrative requirements, the provisions of the latest Edition of the Regulations in force apply.

816.6 The continued use of packages approved under previous Editions of the Regulations is subject to multilateral approval from the date in column 5 of Table XV, in order to permit the competent authorities to establish a framework within which continued use may be approved.

816bis.1 Specified time intervals are also given for continued fabrication of designs that were approved to previous Editions of the Regulations. After such a period, fabrication is not permitted to commence.

816bis+1.1. See para. 538.2.

816bis+1.2 To accommodate possible frequent revision of the package design standards in the Regulations, a new transitional period for design and modification is defined. This period allows the design and certification of the package to be performed under a single Revision of the Regulations. It is appropriate to consider the date of application to the competent authority as the relevant date. During this period,

changes in the design of the package or in the nature or quantity of the radioactive contents would be assessed under the design standards in effect at the time of the design approval. This could include an increase in the mass of the contents, changes to the closure, changes to any impact limiters, changes to the thermal protection or shielding and changes in the form of the contents. It is judged that the period of time needed for package design, testing, approval by the competent authority, and fabrication may last over several revisions of the regulations. Modifications to the package design are commonly needed to allow the transport of new contents, or to include design improvements, particularly those based on operational experience. The specified design interval has been established to allow these activities to be performed under a single set of regulatory requirements.

816bis+1.3 See para. 816.4.

### **Special form radioactive material approved under previous Editions of these Regulations**

818.1. Paragraph 818 introduces transitional arrangements for special form radioactive material, the design of which is also subject to competent authority approval. It emphasizes the need to apply quality assurance measures according to the latest Edition of the Regulations in force to ensure that such special form radioactive material remains in use, only where it continues to meet the original design intent or regulatory requirements. This can best be achieved by ensuring that the latest quality assurance measures are applied to post-manufacturing activities such as servicing, maintenance, modification and use of such special form material. It should be noted that the scope of the transitional arrangements of the regulations only extends to the requirements for certain special form radioactive materials. In all other aspects e.g., concerning general provisions; the requirements and controls for transport including consignment and conveyance limits; and approval and administrative requirements, the provisions of the latest Edition of the Regulations in force apply.

818.2. In the process of developing the 1996 Edition of the Regulations it was determined that there was no need for an immediate change of the Regulations following their adoption, but that changes aiming at a long term improvement of safety in transport were justified. Therefore it was also decided to accept continued operational use of special form radioactive material designed and approved under the 1973 or 1985 Editions of the Regulations. The continued use of existing special form radioactive material with a 1967 Edition based design approval was considered to be no longer necessary or justified.

828.2. It is essential that easy means are available for determining under which edition of the Regulations the package design approval was issued, preferably in the identification mark. This will be achieved by adding the symbol '-03' to the type code. Using this two-digit year designation should be continued through subsequent revisions of the regulations.

Example:

Edition of Regulations	Package design identification mark
1967 Edition	A/132/B
1973 Edition	A/132B(U), or A/132/B(M)
1985 Edition	A/132/B(U)-85, or A/132/B(M)-85
1996 Edition	A/132/B(U)-96, or A/132/B(M)-96
2003 Edition	A/132/B(U)-03, or A/132/B(M)-03

### EXPLANATORY NOTES

1. Delayed implementation is included in the regulations for the first time. It is intended that both old and new regulations should be included in the modal regulations with the effective from date. As a result of this a consistent transition date can be managed by the IAEA.
2. The title “Transitional Arrangement” was changed to “Grandparenting” since the term transitional arrangement is used in the modal regulations and can lead to confusion with the IAEA regulations.
3. New sub-paragraphs were added to 815, 816 and 818 to separate the time frame allowed for the design, manufacturing and use to reduce confusion.
4. Paragraph 817 was removed as it no longer applied, with the introduction of the matrix method.
5. The proposed paragraphs 815, 815 bis, 816, 816 bis, 816 bis+1, 818, 818 bis, 818 bis+1 and 818 bis+2 follow a similar format and use similar transition periods as the previous regulations. The current regulations step forward several anticipated regulatory revision to ensure that the previous accepted transition periods are maintained. This allows time to design, test, obtain approval and manufacture the package. It ensures stability of the regulations by specifying a clear time period in which a package can be designed, modified, manufacture and used. The time periods were determined based on the previous regulations as explained below:
  - a) The time frame used for packages not requiring competent authority approval, in the proposed paragraph 815 for use and manufacturing was determined by subtracting the end of manufacturing date of December 31, 2003, as specified in para. 815 of the ST-1 regulation from the publication date of the 1985 regulation. This represents the time period the manufacturer becomes aware of the new regulations and can start designing and manufacturing to these new regulations. Therefore the time period is  $2003 - 1985 = 18$  years.
  - b) The time frame used for packages not requiring competent authority approval, in the proposed paragraph 815 bis for design or modifications, unless to improve safety, was determined by subtracting the implementation date of December 31, 2000, from the ST-1 regulations which require packages to be designed to the new regulations from the publication date of the 1985 regulations. Therefore the time period is  $2000 - 1985 = 15$  years.
  - c) The time frame in the proposed paragraph 816 for packages which will require multilateral approval to continue use was determined by subtracting the date (December 31, 2003) for continued use subject to

- multilateral approval specified in the ST-1 regulations from the publication date of the 1985 regulations. Therefore the time period is  $2003 - 1985 = 18$  years.
- d) The time frame in the proposed paragraph 816 bis, for the manufacturing of packages requiring competent authority approval was determined by subtracting the end of manufacturing (December 31, 2006) as specified in the ST-1 regulations from the publication date of the 1985 regulations. Therefore the time period is  $2006 - 1985 = 21$  years.
  - e) The time frame in the proposed paragraph 816 bis+1, for designing and modifying packages requiring competent authority approval was determined by subtracting the publication date of the ST-1 regulations from the publication date of the 1985 regulations and adding a 5 years transition period. Therefore the time period is  $1996 - 1985 + 5 = 16$  years.
  - f) The time frame in the proposed paragraph 816, for which packages can be used under the multilateral approval for a specific edition of the regulations was determined by subtracting the implementation date (December 31, 2000) of the ST-1 regulations which does not allow the continued use of the 1967 packages from the publication date of the 1967 regulations. Therefore the timeframe is  $2000 - 1967 = 33$  years.
  - g) The time frame in the proposed paragraph 818 for special form radioactive material which have received unilateral approval can continue use was determined by subtracting the date (December 31, 2003) for continued specified in paragraph 818 of the ST-1 regulations from the publication date of the 1985 regulations. Therefore the time period is  $2003 - 1985 = 18$  years.
  - h) The time frames used in the proposed paragraph 818 bis and 818 bis+1 are the same as in the time frames proposed paragraph 816 bis and 816 bis+1 respectively.
6. The notion that the quality assurance requirements of the new regulations shall apply (as far as practical) to old packages was maintained. As a result this is repeated in all the proposed paragraphs.
  7. The proposed paragraphs 815, 816, 816 bis and 816 bis+1 refer to the activity and fissile limits of Section IV to ensure that it is clear that the new table of A values, not the old, is the relevant one in determining package content limits.
  8. New paragraphs 818 bis+2, 818 bis+3 and 818 bis+4 introduce grandparenting of low dispersible radioactive material, which is not covered in the ST-1 regulation. Although low dispersible radioactive material requires multilateral approval, it was felt that the manufacturer should have a time frame specified for the use, design and manufacturing. The time frames selected are the same as the one suggested in the proposed paragraph 818, 818 bis and 818 bis+1.

## COST BENEFIT

Lower cost to introduce new provisions at each revision cycle due to simplified format. Lower cost to industry in ability to predict future restrictions in transport and service life of packages. Most likely to result in uniform adoption by modal organizations.

## POSSIBLE MODAL REGULATION FORMAT

Some discussion took place as to possible means of representing the various sets of regulations in the modal regulations, particularly with respect to the delayed implementation concept.

It was agreed that the minor changes and changes of detail from the IAEA regulations were not subject to delayed implementation, since neither category of change resulted in a change to the regulatory standard. As a result only major changes would be subject to delayed implementation.

Since there are expected to be relatively few of these it would then be possible to have several paragraphs in the modal regulations with multiple dates of applicability.

For example, in the 2006 published edition of the modal regulations (coming into force 1/1/2007 and remaining in force until 31/12/2008 - with an expected transition period lasting into 2009) the following is a possible structure for a modified regulation

*X.X.X.X Until 31/12/2008*

All packages will be painted Orange

*From 1/1/2009 until 31/12/2010*

All packages will be painted Green

*From 1/1/2011*

All packages will be painted Red