

# **SSC MEMBERS COMMENTS**

**DS439 Version 1**

**ADDENDUM TO NS-R-5**

**APPENDIX IV – REPROCESSING FACILITIES**

**APPENDIX V – FUEL CYCLE RESEARCH & DEVELOPMENT  
FACILITIES**

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**TITLE: DS 439 ADDENDUM TO NS-R-5** - version 1

**APPENDIX IV – REPROCESSING FACILITIES & APPENDIX V – FUEL CYCLE RESEARCH & DEVELOPMENT FACILITIES**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
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1.	General		What about the new format of requirements documents (overarching and associated requirements?)		Understand the reason for the comment, but it is not possible to adopt the new format. The proposed format is consistent with the current appendix structure of NS-R-5. Note that the main text and Appendices I-III of NS-R-5 were only approved by the SSC's in 2008 and are not subject to review or change at this time.		

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2.	general		Consistency with requirements and wording used in the upcoming update of NS-R-1 (SSR-2.1) and SS-R-2.2? A formal comparison should be performed by IAEA.		For the reason given against comment 1, the consistency will be confirmed when NS-R-5 comes up for its 10 yearly review.		
3.	general		No need to refer explicitly to the safety assessment	Y			
4.	general		In the interest of balance, it would be appropriate that the Appendix IV is not too shorter than the Appendix II.			Y	The length of each Appendix will be determined by the requirements necessary to supplement those in the main text of NS-R-5.

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5.	general		Were (known) lessons learned from Fukushima taken into account?		DS439 was written and approved for submission to the SSC's on 11 March 2011, i.e. before the Fukushima event.		
6.	introduction	<u>In reprocessing plants, the full range of radioactive materials and the risks that may be encountered in the fuel cycle facilities, are present.</u>	Worth mentioning	Y			

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7.	introduc tion	<p><u>Specific attention should be devoted to some of its processes :</u></p> <ul style="list-style-type: none"> <li>- <u>the pool storage of spent fuel and associated risks because of the source term (feedback of Fukushima accident for example);</u></li> <li>- <u>-the receiving and unloading (dry or wet) spent fuels.</u></li> <li>- <u>the vitrification process effluent HA and storage of glass containers.</u></li> </ul>	Worth mentioning Fukushima lesson learned		<p>Although out of scope of this Appendix, it is worth noting that specific attention to some of the processes at the reprocessing facility will be required, including:</p> <ul style="list-style-type: none"> <li>• receiving and unloading (dry or wet) spent fuels;</li> <li>• pool storage of spent fuel;</li> <li>• vitrification of high level waste and the storage of associated glass containers, if located within the reprocessing facility.</li> </ul> <p>Note that this text is also consistent with the scope of the Safety Guide on Reprocessing facilities. See DPP for DS360.</p>		

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8.	IV.1	Transfer this requirement in the main part of NS-R-5	Although true, this requirement is not specific to reprocessing facilities.			Y	Agreed. However, it was judged that this aspect was not adequately covered in the main text of NS-R-5 and was therefore added to the appendix. Note that it is not possible to amend the text in NS-R-5 at this time as the main text of NS-R-5, which was only approved by the SSC's in 2008. Consider this comment when NS-R-5 comes up for its 10 yearly review.

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9.	IV.1	Add :  <u>“Investigation and assessment regarding the safety aspects of site selection for a reprocessing plant shall be mainly focused on the site conditions through the potential effects of natural and man-induced events or aggressions on the facilities. The site shall be also evaluated with the respect to:</u> - <u>safety aspects of storage and transportation (both from and to the site)of materials or waste.”</u> - <u>the possibility for the environment to receive liquid or aerial radioactive and chemical discharges.”</u>	The recommendation is not specific to reprocessing plants. These points aims to focus on specific safety issues.	Y			
10.	IV.2/2 <sup>nd</sup> bullet	<ul style="list-style-type: none"> <li>• Prevent the <del>accidental</del> <u>uncontrolled</u> release of hazardous <u>(including radioactive)</u> materials;</li> </ul>	Release during normal operation should also be considered	Y			
11.	IV.2/3 <sup>rd</sup> bullet	<ul style="list-style-type: none"> <li>• Keep radiation exposure during normal operation <u>and accident conditions</u> as low as reasonably achievable;</li> </ul>	ALARA is also applicable for accident conditions. This is not specific to reprocessing facilities and could be transferred to the main part of NS-R-5...	Y			

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12.	IV.2/4 <sup>th</sup> bullet		One comment about the safety functions: The safety function: "provide adequate cooling" is only a means to meet the three functions listed above.		Agreed. Deleted cooling as a safety function.		
13.	IV.2	After the bullet list, add: <u>A specific attention shall be paid to the design and dimensioning of the storage pools for spent fuel, that are sensitive to external hazards, internal hazards (drop load...), dewatering fuels</u>	Fukushima lesson learned			Y	Spent fuel storage is out of scope of the document.
14.	IV.2	At the end of IV.2 : <u>The design shall take into account the operating experience feedback of similar facilities"</u>	This is not specific to reprocessing facilities and could be transferred to the main part of NS-R-5...		Text added under Engineering Design.		
15.	IV.4	Cooling systems, including any support features, shall have adequate capacity, availability and reliability <del>as established in the safety assessment</del> to remove heat from radioactive decay and for removing heat due to chemical reactions.	Superfluous (covered by "adequate")	Y			

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16.	IV.4	At the end, add: <u>Spent fuel pool and associated cooling systems shall be designed to minimize the risk of siphoning water out of the pool.</u>	It is an important safety issue of the storage pool of spent fuel.			Y	Spent fuel storage is out of scope of the document.
17.	IV.5	Cooling systems shall be designed <del>according to the safety assessment</del> for preventing coolant from leaking into moderation control areas designated for criticality safety.	Superfluous	Y			
18.	IV.6	The design <del>and operational procedures</del> of the reprocessing facility shall allow, <u>as necessary</u> , representative sampling of process and waste streams, either manual or automatic, <del>for ensuring compliance with the requirements established in the safety assessment.</del>	Operational procedure are to be dealt with in “operation” section, not in “design” section.		Agreed, but IV.6 modified as a result of comment 19 and incorporating text from SSR-2.1 R 71. Therefore comment no longer relevant.		
19.	IV.6		Why no using wording of SSR-2.1 (Requirement 59, Requirement 71 and 6.47 and 6.80) ?		Wording taken from R71 and 6.47 & 6.80.		

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20.	IV.7	<u>As part of the overall safety assessment of the facility, a criticality safety assessment shall be performed prior to the commencement of any activity involving fissionable material.</u>	To highlight that criticality assessment is only a part, although important, of the safety assessment	Y			
21.	IV.7	Safety criteria and safety margins shall be developed to ensure sub-criticality, based on <del>either the neutron multiplication factor, Keff, or on controlled parameters, such as geometry, mass, enrichment or moderation.</del> <u>control modes such as geometry, mass, moderation.</u>	The end of the last sentence does not appear correct. Calculation of Keff is only a means to validate or control modes selected.		Reference to controlled parameters retained for consistency with DS407 Criticality Safety.		
22.	IV.8	A reference fissile <del>medium—material composition</del> shall be defined.	Clarification		Medium added, but reference to material composition retained as it was specifically requested by Japan during the drafting phase.		

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23.	IV.8	The <u>criticality</u> safety assessment performed using this fissile material composition shall be a bounding case of the actual fissile material composition being handled or processed.	Consistency	Y			
24.	IV.9	Particular attention shall be paid to those system interfaces where there is a change in the fissile material state <u>or in the control mode</u> .	To improve the completeness of this item.	Y			
25.	IV.9	At the end, add <u>Particular attention shall also be paid to the transfer between a safe geometry equipment toward a geometry unsafe equipment</u>	To improve the completeness of this item.		Particular attention shall also be paid to the transfer of fissile material between equipment with a safe geometry to equipment with an unsafe geometry.		

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26.	IV.10	If the design of the reprocessing facility takes <del>credit</del> for burn-up <u>credit</u> , its use shall be appropriately justified.	Alternative wording		If the design of the reprocessing facility accounts for burn-up credit, its use shall be appropriately justified.		
27.	IV.12	In the criticality safety assessment, the choice and safety of the use of fire extinguishing media, e.g. water <u>or powder</u> , shall be addressed.	To improve the completeness of this item.	Y			
28.	IV.14	In the criticality safety assessment, consideration shall be given to the potential for internal and external flooding, <u>and other internal or external hazards that may compromise criticality prevention measures.</u>	Flooding is not the only hazard that can defeat criticality prevention measures...	Y			

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29.	CRITIC ALITY PREVE NTION	In general, for the consideration of the risks of criticality at the design stage, the recommendations II.3, II.4, II.5*, II.6 *, II.7* and II.8 (* need to be adapted to reprocessing plants) set for the manufacturing MOX fuel (Appendix II) shall be added.	To improve the completeness of the criticality articles.			Y	Consider that the items referred to in Appendix II are already covered in the general text in NS-R-5 covering the design requirements for criticality prevention and therefore do not need to be repeated in an appendix.
30.	Title before IV.15	<del>CONFINEMENT OF NUCLEAR AND</del> RADIOACTIVE MATERIAL	Superfluous The appendix IV refers to safety and not to proliferation issue.	Y			

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31.	IV.15	During normal operation, internal <u>exposure dose</u> shall be minimized by design <del>to the extent possible</del> <u>as far as reasonably practicable</u> and <del>the need to use personal protection equipment shall be minimized.</del>	Consistency with IV.16. Personal protection should be used only during specific intervention and not during normal operation. The design must fulfill this requirement.	Y			
32.	IV.15		Although true, this requirement is not specific to reprocessing facilities.		Noted.		
33.	IV.16		IV.15 and IV.16 are partly redundant. Combination may be useful :		Noted, but current paragraph structure retained.		
34.	IV.16		Although true, this requirement is not specific to reprocessing facilities.		Noted.		
35.	IV.17		Use SSR-2.1 wording (6.48, requirement 79 and 6.61 and 6.63)		Wording in R79 used. Wording in 6.48 added to “Occupational protection” section.		

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36.	IV.17		Although true, this requirement is not specific to reprocessing facilities.		Noted.		
37.	IV.18		Use wording of SSR-2.1 (Requirement 78, requirement 79 and 6.61 and 6.62)		Wording in R79 used.		
38.	IV.18		Although true, this requirement is not specific to reprocessing facilities.		Noted.		
39.	IV.17 and IV.18		It could also be added <u>The design shall seek to optimize processes to reduce waste production and discharge of gaseous and liquid hazardous (including radioactive) substances.</u>			Y	This requirement is covered in the main text of NS-R-5, in 6.31.

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40.	CONFIDENTIAL OF RADIOMATERIALS	Overall, for the consideration of the risks of dissemination of radioactive materials at the design stage, the recommendations II.9, II.10, II.11, II.12 (need to be adapted to the reprocessing plants) set for manufacturing MOX fuel (see in appendix II) shall be added.	To improve the completeness of the confinement items.		II.11 & 12 have been added. However, the objective of the requirements in II.9 & 10 are considered to have been covered in the general text of NS-R-5, in 6.38.		
41.	IV.19	Criticality accidents shall be <u>prevented and</u> controlled by means of design, as far as is reasonably practicable.	Prevention is a key requirement	Y			
42.	IV.20	The use of fire extinguishing media shall be consistent with <del>the requirements established in the safety assessment, e.g. criticality safety provisions.</del>	Superfluous. Furthermore, IV.20 is largely redundant with IV.12. IV.20 might be deleted.		IV.20 deleted.		

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43.	IV.21	During the design of a reprocessing facility, the potential for the formation of red oil and any resulting explosion shall be considered <del>in the safety assessment</del> and appropriate safety measures identified and implemented.	Superfluous		Agreed. However, please note that IV.21 was deleted and combined with IV.3 as a result of Japan comment No 3 and IV.3 was then moved to the Postulated Initiating events Section under "Fire and explosion".		

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44.	IV.21	Add : <u>The potential formation of explosive materials inside ventilation equipments due to the gaseous mixture shall be considered and appropriate safety measures implemented</u>	To take into account the feedback of events which occurred in different reprocessing plants (France, Germany...)? Example of formation of explosive materials is ammonium nitrate		The potential formation of explosive materials inside ventilation equipment due to gaseous mixtures shall be considered and appropriate safety measures implemented.		

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45.	IV.21	<p>Add:  <u>The risk of explosion or of excess internal pressure resulting from:</u>  - <u>the use of explosive gases, flammable liquids and chemical substances such hydrogen or hydrogen peroxide, TBP and diluents, hydrazine nitrate ;</u>  - <u>the generation of hydrogen by radiolysis in aqueous or organic solutions and solids ;</u>  - <u>the forming of explosive products due to chemical reaction or thermal runaway reaction;</u>  - <u>pyrophoric materials (zircaloy fines) ;</u>  <u>Shall be considered and appropriate safety measures implemented.</u></p>	<p>To improve the completeness of this item</p> <p>Forming of explosive products due to chemical reaction or thermal runaway reaction: formation of hydrazoic acid, TBP/nitrate reaction, reoxidation of UIV to UVI, formaldehyde/nitric acid reaction, hydroxylamine nitrate/nitric acid reaction...</p>	Y			
46.	IV.22	<p><del>During the design of a reprocessing facility, plant equipment used in a radiological environment shall be suitably assessed for its actions or failure.</del></p>	<p>Although true, this requirement is not specific to reprocessing facilities.</p>		Noted		
47.	IV.23	<p><del>Provisions to prevent, monitor for and collect leaks shall be implemented according to the requirements established in the safety assessment.</del></p>	<p>Initial wording is ambiguous. Prevention is important, as well as monitoring and collection.</p>	Y			

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48.	IV.23	Add <u>Specific attention shall be given to equipment containing concentrated acid solutions, especially when at high temperatures.</u>	To improve the completeness of this item	Y			
49.	IV.24	.	This item is not specific to reprocessing plants. It is a general requirement of fuel cycle facilities and could be transferred to the main part of NS-R-5....		Noted.		
50.	IV.25	During the design of a reprocessing facility, the loss of safety systems, <u>safety related items or their</u> supporting features shall be considered and their impact on safety shall be assessed.	Why limiting the assessment to safety systems?		During the design of a reprocessing facility, the loss of safety related items and safety systems (including their supporting features) shall be considered and their impact on safety shall be assessed.		

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51.	IV.26	The design of electrical power supplies to reprocessing facilities shall ensure <del>the necessary levels of</del> <u>adequate</u> availability and reliability <del>as established in the safety assessment.</del>		Y			
52.	IV.26	In case of the loss of normal power, emergency electrical supply shall be provided to the <u>relevant</u> items important to safety, <u>taking into account</u> <del>according to</del> the reprocessing facility's operational status (e.g. normal operation, shutdown, maintenance, clean-out ...), <del>and the requirements established in the safety assessment.</del>	Is it enough considering Fukushima accident ?	Y			

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53.	IV.27	<del>The potential consequences of a failure or leak shall be assessed in order to determine complementary</del> Safety measures to minimize the consequences <u>of potential failure or leak in high active area shall be sought.</u>	Rewording		The potential consequences of a failure or leak shall be assessed in order to determine complementary safety measures to minimize the consequences. Safety measures to minimize the consequences of potential failure or leak in high active area shall be implemented.		

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54.	IV.29	Extreme weather conditions shall be taken into account in the design of <u>items important to safety, in particular</u> cooling systems associated with the storage of heat generating high level waste or <u>spent fuel</u> .	No reason to limit the requirement to cooling systems. For example, what about confinement systems a.s.o. ?		Extreme weather conditions shall be taken into account in the design of items important to safety, in particular cooling systems associated with the storage of heat generating high level waste.  Note, spent fuel storage is out of scope.		

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55.	POSTULATED INITIATING EVENTS	In general, the recommendations II.15, II.16, II.17, II.18, II.19, II.20, II.21, II.22, II.23 (need to be adapted to reprocessing plants) set for the manufacturing MOX fuel (Appendix II) shall be added.	<p>To improve the completeness of these items</p> <p>It may be mentioned the installations where the risks of loss of cooling are the most sensitive: such as pools, concentrated fissile products solutions storage, vitrified waste...</p> <p>It may be also mentioned the installations where the radiolysis risks are the most sensitive.</p>		<p>II.15 added, see also Japan comment No 25.</p> <p>II.16 First sentence added. However, second sentence covered under Criticality Prevention.</p> <p>II.17 added, see also German IV comment No 3.</p> <p>II.18 objective of this requirement considered to be covered by IV.15 &amp; 34.</p> <p>II.20 covered by IV.15.</p> <p>II.21 covered by IV.5.</p> <p>II.22 added.</p> <p>II.23 covered by IV.33.</p> <p>Loss of cooling covered by IV.5.</p> <p>Radiolysis risk covered in IV.28, under Fire and Explosion.</p>		

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56.	IV.30	Adequate instrumentation shall be provided for measuring the variables that <u>are relevant to <del>can</del> affect</u> the safety of the reprocessing facility, <u>both</u> : <ul style="list-style-type: none"> <li>- <u>in normal operation</u> to ensure that the process is being operated within the safety limits and to monitor its environmental impact ;</li> <li>- <u>for detecting and managing accident conditions, such as criticality or earthquake detection.</u></li> </ul>	To also cover accident conditions	Y			
57.	IV.31	Automated safety control systems, e.g. safety interlock systems, shall be designed to ensure adequate <del>the necessary levels of</del> availability and reliability <del>as established in the safety assessment</del>		Y			
58.	IV.31	<del>to ensure that the related process parameters remain within the operational limits and conditions.</del> Where prompt and reliable action is necessary, provision shall be made in the design for automatic safety control or action.	See SSR-2.1 (5.11). For example, in case of earthquake detected by seismographs, certain functions (transfer of radioactive solution for example) or system should be stopped.	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
59.	IV.32	<del>Instrumentation shall be provided to confirm that filtration systems are working effectively.</del>	Although true, this requirement duplicates IV.30	Y			
60.	IV.33	<del>The design of the reprocessing facility shall enable Requirements for the safe management of radioactive waste and effluents arising from normal operation, maintenance and periodic wash-out of the facility shall be established. Due consideration shall be paid to the various nature, composition and, when radioactive, activity level, of the waste generated in the facility.</del>	Rewording It is important to take into account the separation of the streams of waste with different characteristics and the choice of the waste management process taking into account safety issues	Y			
61.	IV.34	<del>In reprocessing facilities, commissioning shall be divided into stages (typically inactive and active). Consideration shall be given to defining commissioning activities as early as possible to avoid difficulties in performing a test satisfactorily or with a higher risk, at a later stage.</del>	It is more a recommendation than a requirement. No added value as 8.9 of NS-R-5 already requires stages...	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
62.	IV.35	Special attention shall be paid to ensuring that no commissioning tests are performed that might place the plant in an unanalysed condition. Each safety function shall be verified as fully as practicable before the stage in which the function becomes necessary to ensure safe commissioning. <del>For example, shielding is generally ensured by inspection in the construction stage and testing and checking during inactive commissioning and confirmed during active commissioning.</del>	See SSR-2.2 (6.1). No examples in requirements.	Y			
63.	IV.36 1.	During inactive commissioning: <ul style="list-style-type: none"> <li>• Confirmation of the performance of shielding and confinement systems, including confirmation of the weld quality of static containment;</li> <li>• Confirmation of the performance of criticality control measures;</li> <li>• Demonstration of the availability of criticality detection and alarm systems;</li> <li>• Demonstration of the performance of emergency shutdown systems.</li> <li>• <u>Demonstration of the availability of emergency power supply</u></li> </ul>	Add power supply verifications	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
64.	IV.36.2		Delete IV.36. The first bullet might be changed to verification of radiation conditions in the facility (but not of workers' doses)		IV.36 deleted.		
65.	IV.37	The capability of the reprocessing facility and systems to be <u>tested</u> and maintained <u>once commercial operation has started</u> shall be addressed in the commissioning programme, especially for hot cells and remote equipment.	Periodic testing should also be considered...	Y			
66.	IV.39		Delete IV.39. Covered by 8.1 of NS-R-5	Y			
67.	IV.43	A spent fuel acceptance and reprocessing feed programme of a reprocessing facility shall be prepared and assessed to ensure that the requirements established in <u>the operating licence and in</u> the safety assessment are met throughout the reprocessing processes, and to ensure no unacceptable impact on the reprocessing facility products and waste/ <u>discharges generated</u> .	Licence conditions shall also be considered Discharges to the environment should also be considered.	Y			
68.	IV.49		Although true, not specific to reprocessing facilities		Noted.		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
69.	IV.50		Although true, not specific to reprocessing facilities and too detailed.		Noted.		
70.	IV.51		Delete IV.51. It is more a recommendation...;			Y	Retained as inter-campaigns are a feature of the operation of reprocessing facilities.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
71.	IV.54	Add <u>Before changing location of process equipment installed in inaccessible cells, their associated neutron reflector or connections with other equipment, the criticality assessment shall be updated to determine whether such change is possible .</u>	To improve the completeness of this item.		Prior to modifying the location, or neutron reflectors or connections of process equipment installed in inaccessible cells, the criticality assessment shall be updated to determine whether such change is acceptable.		
72.	Before IV.55	Add : <u>IV.## Specific provisions shall be provided to reduce the risk of accumulation of organic phase in tanks which handle aqueous solutions containing fissile materials.</u>	To improve the completeness of this item.	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
73.	IV.56	The inadvertent addition of water or neutralizing chemicals (often used for decontamination) to fissile solutions, which can cause precipitation with a criticality risk, shall be minimized. Such liquid feed lines shall be isolated or shall be subject to appropriate administrative controls <del>during normal operations according to the requirements established in the safety assessment.</del>	Superfluous	Y			
74.	After IV.56	Add: <u>The lack of accumulation of fissile material in tanks, for which the sub-criticality is not guaranteed only by the geometry, shall be periodically reviewed by appropriate means after draining and rinsing, if any.</u>	To take into account operational experience feedback.	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
75.	IV.58	<del>Due to the wide range of radiation types and physical and chemical forms of radioactive materials, the type of monitor used, either fixed or mobile monitors, shall be specified by suitably qualified radiation protection personnel.</del> <u>Appropriate equipment, either stationary or mobile, shall be provided at the reprocessing facility to ensure that there is adequate radiation monitoring in operational states and, as far as is practicable, in accident conditions.</u>	See SSR-2.1 (requirement 82 and associated)	Y			
76.	IV.59	Delete IV.59	Although true, this requirement is not specific to reprocessing facilities. Covered by 9.37, 9.40, 9.41 and 9.48 of NS-R-5			Y	Retained to emphasize that resorting to PPE is to be limited.
77.	IV.60	The potential for fire <u>or explosion</u> and the control of ignition sources and potential combustible materials, including <u>hazardous and toxic</u> process chemicals, shall be carefully considered, included during maintenance operations.	Explosion should also be considered. Hazardous chemicals should be highlighted	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
78.	After IV.60	Add a new requirement : <u>IV.## Each handling device used for transferring loads containing radioactive substances or loads in line of equipment containing radioactive materials or participating in safety functions shall be subjected to appropriate check and operating instructions.</u>	To focus on handling devices such as crane...	Y			
79.	Title before IV.61	<del>RADIOACTIVE WASTE AND EFFLUENT MANAGEMENT</del>	Superfluous			Y	Agreed. However, retained to remain consistent with other Appendices
80.	IV.61	<b>Solid waste management</b> IV.61. <del>Solid</del> waste generation, treatment and storage shall be organised according to pre-established criteria and shall take into consideration <u>both on-site storage capacity and disposal.</u>	No reason to limit to solid waste. To take into account operational experience feedback.	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
81.	IV.62	<del>Liquid waste management</del> IV.62. Heat generating high level waste shall be stored in facilities that address <del>(through design and operation measures)</del> the need to maintain suitably reliable cooling, <del>in accordance with the requirements established in the safety assessment.</del>	Superfluous	Y			
82.	IV.63		Delete IV.63 (duplicates commissioning requirement + complying with OLC or taking action if OLC are not complied with)	Y			
83.	IV.64		Delete IV.64 (duplicates commissioning requirement + complying with OLC or taking action if OLC are not complied with)	Y			
84.	Append ix V general		The recommendations of this Appendix are very general and do not focus on specific safety issues of R&D facilities.		Noted.		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
85.	Before “DESI GN”	Add a new introductory paragraph: <u>Some safety issues specific to R &amp; D facilities are:</u> a. <u>the manipulation of small amounts of radioactive material;</u> b. <u>the diversity of the experiments carried out and the associated safety assessment, which might be covering several different experiments;</u> c. <u>the potential manipulation of unusual radionuclides, such as “exotic” actinides, with the associated risks;</u> d. <u>the organizational and human factors as the operations are mainly manual and require the cooperation between the operating personnel of the facility and personnel the “R&amp;D personnel”.</u>	To give some focus of specific issues of R&D facilities	Y			
86.	V.1	The facility shall be designed to prevent a criticality accident and the accidental release of hazardous ( <u>including radioactive</u> ) materials.	To put emphasis on radioactive substances	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
87.	V.1	The design shall keep radiation exposures during normal operation <u>and accident conditions</u> as low as reasonably achievable.	ALARA is also applicable for accident conditions. This is not specific to reprocessing facilities and could be transferred to the main part of NS-R-5...	Y			

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
88.	V.2	Containment shall be the primary method for ensuring confinement against the spreading of contamination. <del>Containment can be provided by two complementary containment systems — static and dynamic. In view of the large range of potential radiological hazards presented by fuel cycle research and development facilities, a graded approach shall be used in the design of the containment systems.</del>	Superfluous. In addition, like the MOX facilities (item II.9-Appendix II), there is some confusion between “systems” and “barriers” (Every containment system may be composed of static or dynamic barriers).		Containment shall be the primary method for ensuring confinement against the spreading of contamination. Containment can be provided by two complementary containment systems — static (e.g. physical barriers) and/or dynamic (e.g. ventilation). In view of the large range of potential radiological hazards presented by fuel cycle research and development facilities, a graded approach shall be used in the design of the containment systems with respect to the nature and number of the barriers and their performance, in accordance with the severity of the potential radiological consequences of their failure.		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: F. Féron, V. Lhomme, D. Martineau, JP Carreton, M. Philippe, JP Daubard Country/Organization: France/ASN + IRSN /09/2011				Page : Date: 19			
Comm ent No.	Para/Lin e No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/reje ction
89.	V.7		True but not specific to research facilities		Noted.		
90.	V.8		Why other hazards (earthquake, flooding...) have been neglected ?		Overall, the requirement to address hazards is covered by the emergency requirements specified in the general text of NS-R-5. However, it was judged appropriate to highlight a number of specific hazards associated with operating an R&D facility.		
91.	/						

**Draft Safety Requirements DS439 “ADDENDUM TO NS-R-5, APPENDIX IV – REPROCESSING FACILITIES”, Step 7, Version 1, 2011-08**

COMMENTS BY REVIEWER					RESOLUTION			
Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)</b> (with comments of GRS) Country/Organization: <b>Germany</b>					Page 1 of 2 Date: 2011-09-22			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1	IV.8	2 <sup>nd</sup> sentence: “A reference fissile material composition shall be defined. The safety assessment performed using this fissile material composition shall be a <u>conservative</u> bounding case of the actual fissile material composition being handled or processed.”	Clarification. Compare with NS-R-5, para 6.47: “Criticality evaluations and calculations shall be performed on the basis of making conservative assumptions.”	Y			
1	2	IV.13	“In the criticality safety assessment, account shall be taken of the effects of corrosion, <del>and</del> erosion <u>and vibration cracking in systems exposed to oscillations.</u> ”	Additional important effect that could give rise to criticality incidents.	Y			
1	3	after IV.21	include new para with the following text: “ <u>In areas with potentially explosive atmospheres, the electrical network and equipment shall be protected</u> ”	The proposed para is taken from Appendix I, para I.12; Appendix II, para II.17; Appendix III, para III.12. The	Y			

COMMENTS BY REVIEWER					RESOLUTION			
Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)</b> (with comments of GRS) Country/Organization: <b>Germany</b> 22					Page 1 of 2 Date: 2011-09-			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			<u>in accordance with industrial safety regulations.</u> ”	requirement applies to reprocessing facilities as well.				
3	4	IV.34	2 <sup>nd</sup> sentence: “Consideration shall be given to <del>define</del> <del>defining</del> commissioning activities as early as possible to avoid difficulties in performing a test ...”	Editorial.		Agreed. However, IV.34 was deleted by France comment No 61.		
3	5	title of subsection after IV.38	“COMMISSIONING STAGES”	Editorial.	Y			
3	6	IV.39	“... shall be tested for loss of or failures in, the supporting systems, as far as practicable ...”	Wrong comma.		Agreed. However, IV.39 was deleted by France comment No 66.		
3	7	IV.43	“... throughout the reprocessing processes, and to ensure <u>that there is</u> no unacceptable impact on the reprocessing facility products and waste.”	Wording to improve understanding.	Y			
3	8	IV.44	2 <sup>nd</sup> bullet point:	Editorial.			Y	Current

			“In addition to meeting the requirement of para 9.14, covering the minimum staffing for operation, ...”					wording is acceptable.
2	9	IV.53	“Procedures for the transfer or disturbance of fissile material during operational states (including maintenance) shall be defined, <del>including hold-points submitted to clearance</del> from a persons who <del>is</del> <u>are</u> independent of the operations management.”	Meaning of the phrase “hold-points submitted to clearance” sentence is unclear. Clarification is required.		Procedures for the transfer or movement of fissionable material during operational states (including maintenance) shall be defined and submitted for approval from criticality safety staff that are, to the extent necessary, independent of the operations management.  Note, proposed text includes Japan comment Nos 22 & 31.		
3	10	IV.55	“All transfers of fissile material, including waste <u>and residues</u> , ... shall be subject to certification <del>as such</del> by the sending plant and acceptance by the receiving plant prior to sending.”	Editorial.	Y			
3	11	IV.60	“The potential for fire ... shall be	Editorial.	Y			

			carefully considered, <del>included</del> including during maintenance operations.”					
1	12	section DECOM MISSION ING	include new section with title “DECOMMISSIONING” and the following para:  “ <u>Special procedures shall be implemented to ensure that criticality control is maintained in dismantling equipment whose criticality is controlled by geometry.</u> ”	Essential completion with respect to criticality prevention. The proposed para is taken from Appendix III, para III.35. The requirement applies to reprocessing facilities as well.	Y			

**Draft Safety Requirements DS439 “ADDENDUM TO NS-R-5, APPENDIX V – FUEL CYCLE RESEARCH & DEVELOPMENT FACILITIES”, Step 7, Version 1, 2011-08**

COMMENTS BY REVIEWER					RESOLUTION			
Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)</b> (with comments of GRS) Country/Organization: <b>Germany</b>					Page 1 of 4 Date: 2011-09-23			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	1	introductory text	1 <sup>st</sup> paragraph: “... receive, handle, process, examine and store a large variety of radioactive materials with very different physical characteristics (e.g. uranium, thorium, plutonium), other actinides (e.g.	Essential completion. Examples of special fissionable and non-fissionable materials sometimes encountered in fuel cycle R&D facilities include <sup>233</sup> U, <sup>237</sup> Np, <sup>242</sup> Pu,	Y			

COMMENTS BY REVIEWER					RESOLUTION			
Reviewer: <b>Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)</b> (with comments of GRS) Country/Organization: <b>Germany</b> 23					Page 1 of 4 Date: 2011-09-			
Relevance	Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			americium, neptunium, curium), <u>separated isotopes (fissionable and non-fissionable)</u> , fission products, activated materials and irradiated fuel. <u>Furthermore, a wide range of other materials is used in such facilities, for example graphite, boron, gadolinium, hafnium, zirconium, aluminium, heavy water and various metal alloys.</u> ”	<sup>241</sup> Am and <sup>242</sup> Am. See IAEA Draft Specific Safety Guide DS407 “Criticality Safety for Facilities and Activities handling Fissionable Materials” (Draft version 2, June 2010, para 5.86).				
1	2	introductory text	Add 3 <sup>rd</sup> paragraph with the following text: “ <u>Fuel cycle research and development facilities at laboratories are generally characterized by the need for high flexibility in their operations and processes, but typically have low inventories of fissionable materials and can include both hands-on and remote handling operations.</u> ”	To complete the general characterization of fuel cycle R&D facilities. The proposed text is adopted from the IAEA Draft Specific Safety Guide DS407 “Criticality Safety for Facilities and Activities handling Fissionable Materials” (Draft version 2, June 2010, para 5.85) in a slightly modified form.	Y			

2	3	V.2	<p>“Containment shall be the primary method for ensuring confinement against the spreading of contamination. Containment can be provided by two complementary containment systems – static (<u>e.g. physical barriers</u>) and dynamic (<u>e.g. ventilation</u>). In view of the large range of potential radiological hazards presented by fuel cycle research and development facilities, a graded approach shall be used in the design of the containment systems- <u>with respect to the nature and number of the barriers and their performance, in accordance with the severity of the potential radiological consequences of their failure.</u>”</p>	Clarification and completion.	Y			
1	4	section DESIGN	<p>subsection SAFETY FUNCTIONS:</p> <p>include new item after para V.2 with title “Criticality prevention” and the following para:</p> <p><u>“Criticality safety shall be ensured by means of preventive measures. Preference shall be given to</u></p>	<p>The proposed requirement is taken from Appendix I, paras I.3+I.4; Appendix II, para II.3+II.4; Appendix III, para III.3+III.4. The requirement applies to fuel cycle R&amp;D facilities as well.</p>	Y			

			<u>achieving criticality safety by design, to the extent practicable, rather than by means of administrative measures.</u> ”					
1	5	section DESIGN	<p>subsection SAFETY FUNCTIONS:</p> <p>include new item after para V.3 with title “Protection against internal fires and explosions” and the following paras:</p> <p>“<u>A fire detection system shall be installed that is commensurate with the risks of fires and is in compliance with national requirements.</u>”</p> <p>“<u>In areas with potentially explosive atmospheres, the electrical network and equipment shall be protected in accordance with industrial safety regulations.</u>”</p>	<p>The proposed text of the 1<sup>st</sup> new para is adopted from Appendix I, para I.10; Appendix II, para II.15; Appendix III, para III.10.</p> <p>The proposed text of the 2<sup>nd</sup> new para is taken from Appendix I, para I.12; Appendix II, para II.17; Appendix III, para III.12.</p> <p>Both requirements apply to fuel cycle R&amp;D facilities as well.</p> <p>The possible sources of explosions include gases (e.g. hydrogen used in sintering furnaces) and chemical compounds (e.g. ammonium nitrate used in recycling workshops).</p>	Y			
1	6	section DESIGN	<p>include new subsection with title “ENGINEERING DESIGN” and the following para:</p> <p>“<u>The design shall as far as reasonably practicable prevent</u></p>	<p>The proposed text is adopted from Appendix IV, para IV.3, in a modified form.</p> <p>The requirement applies to fuel cycle R&amp;D</p>	Y			

			<u>hazardous concentrations of gases and other explosive or flammable materials.”</u>	facilities as well.				
1	7	section OPERA TION	subsection MANAGEMENT SYSTEM:  include new item after para V.4 with title “Qualification and training of the personnel” and the following para:  <u>“An inappropriate response to a fire or explosion at the facility could increase the consequences of the event (e.g. radiological hazards including criticality, chemical hazards). Specific training and drills for personnel and external fire and rescue staff shall be organized by the operating organization.”</u>	The proposed text is adopted from Appendix I, para I.16; Appendix II, para II.40; Appendix III, para III.21. The requirement applies to fuel cycle R&D facilities as well.	Y			
1	8	section OPERA TION	subsection “CRITICALITY PREVENTION:  include new para after V.5: <u>“In the criticality safety assessment, the choice and safety of the use of fire extinguishing media, e.g. water, shall be addressed.”</u>	Consistency with para V.9. The proposed requirement is taken from Appendix IV, para IV.12. It applies to fuel cycle R&D facilities as well.		In the criticality safety assessment, the choice and safety of the use of fire extinguishing media, e.g. water or powder, shall be addressed. Reference to powder added to be consistent with		

						France comment No 27.		
1	9	V.9	<p><u>“In dealing with a fire or a release of hazardous materials (e.g. UF<sub>6</sub>), a fire fighting medium shall be used that does not itself the actions taken or the medium used to respond to the emergency shall not create a criticality hazard or add to the chemical hazard.”</u></p>	<p>Essential completion to cover laboratories handling UF<sub>6</sub>. The chemical toxicity of UF<sub>6</sub> and its reaction products (HF and UO<sub>2</sub>F<sub>2</sub>) with water is predominant over uranium’s radiotoxicity.</p>	Y			
1	10	section DECOM MISSION ING	<p>include new section with title “DECOMMISSIONING” and the following paras:</p> <p><u>“Special procedures shall be implemented to ensure that criticality control is maintained in dismantling equipment whose criticality is controlled by geometry.”</u></p> <p><u>“Criticality safety shall be ensured for the temporary storage of radioactive waste contaminated with plutonium that is generated by the dismantling of gloveboxes and their contents.”</u></p>	<p>Essential completions with respect to criticality prevention during the decommissioning stage.</p> <p>The proposed requirement is taken from Appendix III, para III.35. It applies to fuel cycle R&amp;D facilities as well.</p> <p>The proposed requirement is taken from Appendix II, para II.46. It applies to fuel cycle R&amp;D facilities handling plutonium as well.</p>	Y			

**Title: Appendix IV "Reprocessing Facilities" , DS439 (An appendix to NS-R-5)**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: S. Maki Country/Organization: Japan/ NISA Date: 28 Sept. 2011							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modify./rejection
1	General comment	<ul style="list-style-type: none"> <li>The structure of chapters and titles should be reconsidered.</li> </ul>	The structure of chapters and titles is not systematic so that some changes of them are pointed out, i.e. comment No.3, 4, 5, 6, 7, 8, 9, 10, 11 and 12. However, the document still leaves room for improving their structure. Therefore, it is recommended to reconsider the structure in earnest.		Addressed in the corresponding sheets below.		
2	General comment in a future	<ul style="list-style-type: none"> <li>The structure of chapters and titles should be reconsidered not only for the appendix IV but also appendix I, II and III.</li> </ul>	When chapters and titles of appendix I, II, III and IV are compared each other, some of them are not well-balanced and consistent. Therefore, the structures of chapters and titles of appendix I, II, III and IV should be reconsidered based on the reconsideration's results of appendix IV shown above at the next opportunity to review them, i.e. in every 5 years after their publishing.		Agreed. Structure will be reconsidered when NS-R-5 comes up for its 10 yearly review.		
Comments from No.3 to 12 are those relating with the structure of chapters and titles as shown in the comment No.1.							

3	IV.3	This paragraph should go to the place before IV.20.	It is appropriate that this paragraph is under the POSTULATED INITIATING EVENTS with IV.20 and IV.21. Accordingly, the title “ <i>Fire</i> ” before IV.20 should be changed to “ <i>Fire and explosion,</i> ” and the title “ <i>Explosion</i> ” before IV.21 should be deleted. (Regarding the comments for the titles, they are shown also at corresponded places in this sheet.)		Agreed. IV.3 replaced with paragraph suggested by France comment No 45.		
4	• <b>ooling</b> IV.4. IV.5	C These paragraphs and their title “ <b>Cooling</b> ” should go to the place after IV.29.	It is appropriate that this paragraph is under the POSTULATED INITIATING EVENTS. Accordingly, some titles and a structure of them under “POSTULATED INITIATING EVENTS” should be changed. Detailed of these changes are shown later at corresponded places in this sheet.			Y	These paragraphs are referring to the performance of the cooling systems and not PIEs.
5	• <b>amplin g and analysis</b> IV.6	S The paragraph IV.6 and its title “ <b>Sampling and analysis</b> ” should go to the place after IV.32.	It is appropriate that this paragraph is under the INSTRUMENTATION AND CONTROL SYSTEMS.			Y	Agreed, it could go in either location and the current position is retained.
6	• <b>ENGINE ERING DESIG</b>	E Delete the title “ENGINEERING DESIGN.”	All paragraphs under the “ENGINEERING DESIGN” are supposed to go other places according to the comments No. 3, 4			Y	Title is retained as a number of paragraphs

	N (between IV.2 and IV.3)		and 5. Therefore, this title should be deleted.				remain under this section.
7	Between IV.18 and 19	<ul style="list-style-type: none"> <li>Delete the title “<b>Internal initiating events.</b>”</li> </ul>	Strictly speaking, the title “Internal initiating events” and descriptions under the title do not go along with, e.g. the sentence IV.24 has “external flooding.” One of measures for this inconsistency is to delete the both titles “Internal initiating events” and “External Initiating Events.” The measure dose not gives a significant demerit to us because it is easy for us to distinct internal and external initiating events by reading sentences.		Title is retained and reference to external flooding in IV.24 removed		
8	Between IV.19 and 20	<ul style="list-style-type: none"> <li>The title “<i>Fire</i>” should be changed to “<i>Fire and explosion.</i>”</li> </ul>	See the reason of comment No. 3.	Y			
9	Between IV.19 and 20	Insert IV. 3 under the new title “ <i>Fire and explosion</i> ” shown above.	See the reason of comment No. 3.	Y			
10	Between IV.20 and 21	<ul style="list-style-type: none"> <li>Delete the title “<i>Explosion.</i>”</li> </ul>	See the reason of comment No. 3.	Y			

11	Between IV.27 and 28	<ul style="list-style-type: none"> <li>Delete the title “<b>External Initiating Events.</b>”</li> </ul>	See the reason of comment No. 7.			Y	See comment No 7.
12	After IV.29	<ul style="list-style-type: none"> <li>Insert the title “<b>COOLING</b>”, IV. 4 and IV.5.</li> <li>Note: The original title “<b>Cooling</b>” should be “<b>COOLING.</b>”</li> </ul>	See the reason of comment No. 4.  Note: “Cooling” is given as an important function independently in the “SAFETY FUNCTIONS.” Therefore, it is appropriate that the position of title changes from “ <b>Cooling</b> ” to “ <b>COOLING.</b> ”			Y	Cooling as a safety function was deleted by France comment No 12.
Comments No.13 and 14 are those regarding with the scope of the document.							
13	Introduction	The processes covered here are: the shearing, decladding and dissolution of spent fuel; <u>all</u> the chemical cycles of separation and purification (including solvent removal from aqueous solutions, <del>and</del> solvent treatment <u>and rework</u> ); the concentration of fission products and plutonium and uranium nitrates; the conversion of plutonium and uranium nitrate to oxides (including MOX powder); the storage of these products; and associated waste conditioning and storage ( <u>including vitrification</u> ).	A rework process should be within the scope because the process handles high-active-liquid especially in an unusual operation. In order to prevent missing a safety important process, e.g. rework, “chemical cycle” should be “ <u>all</u> chemical cycle.”  A vitrification process also should be under the scope because of its importance from a safety aspect.		Reference to “all” and “rework” added. However, vitrification is out of scope. See DPP for DS360 “Safety of Reprocessing Facilities”.		

14	Introduction	Add sentence/s according to the comment in the light column	It should be clearly stated that the cask unloading facilities and the spent fuel storage facilities are outside the scope of this document or not because it is not clear and this situation confuses reader of the document. When such facilities are outside of the scope, the document/s, which provide requirements for such facilities, should be given for the reader of this document.		Reference to spent fuel handling being out of scope of the document added. As stated in 1.6, covering the scope of NS-R-5, the requirements in the main text apply to spent fuel storage.		
Comments from No.15 to 22 are words for clarification							
15	IV.4	“chemical reactions”	Heat removal for chemical reaction is, to our understanding, not considered in the safety design while decay heat removal is considered in. Need clarification of requiring the heat removal in the design.		A number of chemical reactions are exothermic and require cooling to control them, i.e. dissolving spent fuel in nitric acid. Recommendations on how to address this requirement will be provided in the accompanying safety guide on reprocessing.		
16	• V.8	I “a bounding case”	Need clarification as for specific case for reprocessing facilities.		A bounding case would define the fissionable material characteristics, i.e. mass, volume, enrichment and isotope vector, and include conservative estimates of anticipated variations in those parameters. Recommendations on how to address this requirement will be provided in the accompanying safety guide on reprocessing.		

17	IV.22	<ul style="list-style-type: none"> <li>• “measures” , “radiological environment” and “nuclear environment”</li> <li>• _____</li> </ul>	Need clarification as for specific term for reprocessing facilities.		Measures include guards, fuses, seals, torque limiters, insulation etc that are required to ensure conventional health and safety should be adapted to the radiological environment.		
17	IV.22	<ul style="list-style-type: none"> <li>• “radiological environment” and “nuclear environment”</li> <li>• _____</li> </ul>	<ul style="list-style-type: none"> <li>• Need clarification of the difference between “radiological environment” and “nuclear environment”</li> </ul>		For consistency, reference to nuclear environment has been deleted.		
18	IV.27, IV.28	<ul style="list-style-type: none"> <li>• _____ ” provision”</li> <li>• _____</li> </ul>	Need clarification as for specific term for reprocessing facilities.		IV.28 provision relates to instrumentation, supporting systems and procedures that are required to enable the safety status and achievement of the safety functions post-earthquake.	Y	Clarification not required in IV.27 as the provisions are referred to those defined by the national requirements for testing pressurized equipment etc.
20	IV.37	<ul style="list-style-type: none"> <li>• _____ “capability”</li> <li>• _____</li> </ul>	Need clarification as for specific term for reprocessing facilities.		IV.37 reworded to improve clarity using “ability” instead of “capability”.		

21	IV.44	<ul style="list-style-type: none"> <li>• “off-site”</li> <li>•</li> </ul>	Need clarification as for specific term for reprocessing facilities.			Y	The term “off-site” is already defined in the IAEA safety glossary.
22	IV.53	<ul style="list-style-type: none"> <li>• “disturbance”</li> <li>• _____</li> </ul>	Need clarification as for specific term for reprocessing facilities.		For clarity, disturbance is replaced with movement.		
Comments from No.23 to 33 are those regarding with the modification of descriptions.							
23	IV.16	The design and layout of plant equipment shall include provisions to minimize exposures arising from maintenance, inspection and testing activities <u>to the extent possible</u> .	In a practical manner the situation such that just a design and layout could not provide 100% minimization of exposures might occur. In IV.15 “to the extent possible” is added, i.e. “---be minimized by design to the extent possible—,” for such case. IV.16 should have “to the extent possible” as shown in the left column because of the same logic.		For consistency with the modified IV.15, see France comment No 31, as far as reasonably practicable is used.		
24	IV.17	In the design of the reprocessing facility it shall be ensured that, during reprocessing facility operation, airborne discharges of radioactive materials pass through a filter system prior to discharge to the environment <u>unless the consequences without a filter system are acceptably</u>	Some facilities e.g. storage of uranium products, storage of low level solid waste, do not have dynamic containment system. Such facilities have a very simple ventilation system but do not work 24 hours. In some case, such simple ventilation system starts working when workers get in the facility,			Y	IV.17 was deleted, see France comment No 35.

		<p><u>low</u> and that the release of volatile and gaseous radionuclides remain within authorized limits.</p>	<p>however, the system stop when nobody works there. (The purpose of the simple ventilation system is not to control negative pressure, but just to exchange air in the facility.) In these facilities, only handling of packages (steel drum or special can etc.) itself is allowed. In other word, the open of packages is prohibited inside the facilities. (A frequent inspection is carried out to make sure packages are in a fine condition.) These measures are reasonable to keep safety. Probably, other reprocessing plants have the common situation as above. In order to avoid the inconsistency shown above it is necessary to modify the description as shown in the left column.</p>				
25	IV.20	<p>Delete original IV.20 and add following paragraphs.</p> <p>IV.**. A detection and/or suppression system shall be installed that is commensurate with the risks of fires and is in compliance with national requirements.</p> <ul style="list-style-type: none"> <li>• IV.**. Extinguishing devices, automatically or manually operated, shall be</li> </ul>	<p>Firstly, a detection system is necessary. Secondly, extinguishing devices should be installed. Such logical requirements should be given instead of original one.</p> <p>Note: Two new paragraphs should go <u>after</u> IV.3 which is supposed to be here according to the comment No.3.</p>	Y			

		installed in areas where a fire is possible.					
26	IV.32	<ul style="list-style-type: none"> <li>Instrumentation shall be provided to confirm that filtration systems are working effectively. <u>Instrumentation shall be provided to monitor aerial discharges continuously.</u></li> </ul>	Continuous monitoring is necessary for aerial discharges but not for liquid discharges. For example, regarding some liquid discharges periodic or scheduled sampling can be applied for monitoring. Second sentence should be modified to clarify its meaning taking account of matters above.		Agreed. However, IV.32 has been deleted, see France comment No 59.		
27	IV.33	<ul style="list-style-type: none"> <li>Requirements for the safe management of radioactive waste and effluents arising from <del>normal</del> operation, maintenance and periodic wash-out of the facility shall be established.</li> <li>Note: Delete “normal”</li> </ul>	Radioactive waste and effluents arising not only normal <u>but also abnormal</u> operation needs the requirements for their safe management.		Reference to operational states, a term defined in the IAEA safety glossary is used instead. This term covers more than normal operation and includes anticipated operational occurrences.		
28	Note 5 of IV.43	<ul style="list-style-type: none"> <li>The feed programme is the planned sequence of fuel feeding to the <del>dissolver</del> <u>head end facility</u> in a given campaign.</li> </ul>	The feed programme of fuel feeding is not just to the dissolver but in some case to the shearing machine. The proposal description can include all such cases. Strictly speaking, a definition of campaign is not completely same among operating organizations. The original explanation of campaign is too detailed and may give inconsistency about the definition of a campaign among operating		Retained reference to dissolver to cover other organizations interpretations.		

			organizations. It is appropriate to delete the explanation because the requirement IV. 43 can work without such detailed explanation.				
29	IV.45	<ul style="list-style-type: none"> <li>Procedures shall be developed to ensure that radioactive material received at <del>the</del> <u>each</u> facility is appropriately characterized and acceptable before it is allowed to be stored or used within the facility.</li> </ul>	<p>Clarify the meaning taking account into following</p> <p>The sentences states on procedures for a facility and among facilities on the site.</p>	Y			
30	IV.52	<ul style="list-style-type: none"> <li><del>All</del> <u>Relevant</u> facility personnel shall be trained in the general principles of criticality control, including the requirements of the emergency response plan.</li> </ul>	<p>More precisely expression (Precisely speaking, there are some exceptions for training, e.g. gatekeepers, workers at a cafeteria on the site.)</p>	Y			
31	IV.53	<ul style="list-style-type: none"> <li>Procedures for the transfer or disturbance of fissile material during operational states (including maintenance) shall be defined, including hold-points submitted to clearance from a person who is <u>to the extent necessary</u> independent of the operations management.</li> </ul>	<p>A degree of an independency of a person, who checks the transfer etc. of fissile material, should depend on the importance of procedures from the viewpoint of criticality prevention based on a graded approach. It is not always necessary that such person is completely independent from the operational management.</p>	Y			
32	IV.63	<p><u>Aerial discharges shall be adequately monitored.</u> <del>As required by the safety assessment, the efficiency and effectiveness of gaseous waste</del></p>	<p>Essential logic to show here is as follows.</p> <p>- Adequate monitoring of discharge is necessary. Then, "Aerial discharges shall be adequately</p>		Agreed. However, IV.63 has been deleted, see France comment No 82.		

		<del>treatment equipment and last stage filters shall be confirmed and action shall be taken if</del> <u>If</u> results are not compliant with those specified in the operational limits and conditions, <u>corrective actions shall be taken.</u>	monitored” comes first. Because the adequateness of monitoring is not always confirmed by the “efficiency and effectiveness”, the corresponding description is deleted. -Then, if results are not compliant with those specified in the OLCs, corrective actions shall be taken. The modified description shows above logic clearly.				
33	IV.64	<u>Liquid discharges shall be adequately monitored.</u> <del>As required by the safety assessment, the effectiveness of liquid waste treatment systems shall be confirmed and action shall be taken if</del> <u>If</u> results are not compliant with those specified in the operational limits and conditions, <u>corrective actions shall be taken.</u>	Essential logic to show here is as follows. - Adequate monitoring of discharge is necessary. Then, “Liquid discharges shall be monitored” comes first. Because the adequateness of monitoring is not always confirmed by the “effectiveness”, the corresponding description is deleted. -Then, if results are not compliant with those specified in the OLCs, corrective actions shall be taken. The modified description shows above logic clearly.		Agreed. However, IV.64 has been deleted, see France comment No 83.		
Comments from No.34 to 36 are those regarding with the deletion.							
34	IV.19	• Delete IV.19.	A content of first sentence is not a special requirement for just a reprocessing facility. Furthermore, points to be considered from the aspect of criticality are provided in		First sentence moved to Criticality Prevention section. Second sentenced moved under Postulated initiating events section as an introduction to the events presented		

			the section "CRITICALITY PREVENTION" Second sentence does not have any special meanings.		below.		
35	IV.44	<ul style="list-style-type: none"> <li>Delete the last sentence, i.e. "In addition to ----- shutdown state."</li> </ul>	Contents of the sentence are as same as that of the paragraph 9.14 in the NS-R-5. Therefore, it is appropriate to delete the sentence.			Y	During drafting of the document, it was judged that 9.14 needed to be supplemented to ensure that the shutdown state was not overlooked.
36	IV.48	<ul style="list-style-type: none"> <li>Delete IV.48 if it states about nuclear material accountancy.</li> </ul>	Nuclear material accountancy is out of the scope of this document. If IV.48 states about other matter than nuclear material accountancy, please provide us its detailed explanation as a response to this comment. We might give further comments after reviewing the response.		Reference is to accounting for nuclear material from a nuclear safety perspective.		
Other comment							

37	IV.39	<ul style="list-style-type: none"> <li>• Relevant items important to safety shall be tested for loss of or failures in the supporting systems, as far as practicable in the inactive stage, in accordance with the requirements established in the safety assessment.</li> <li>• (Delete “,” after failures in.)</li> </ul>	Typing error	Y			
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**TITLE**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: S.Y. Jeong, S.H. Lee, K.T. Kim Page.... of.... Country/Organization: Republic of Korea / Korea Institute of Nuclear Technology Date: Sep 08, 2011							
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1.	IV.3.	hydrazine) – delete “)”	correction	Y			
2.	IV.4.	delete “for removing heat due to	repeated			Y	Text does not repeat. One is concerned with the removal of decay heat, the other with the removal of heat from chemical reactions.
3.	IV.6.	manually or automatic	correction		Accepted, but IV6 was deleted as a result of France comment No 19.		
4.	IV.19.	Postulated Initiating Events need to add Fire, Leak		Y			

5	IV.23	Change the sentence to: Reprocessing facility shall be designed to precedent corrosion/erosion according to the requirements established in the safety assessment.	Current sentence is about leaks, not corrosion/Erosion		Title changed to Leaks.		
6.	IV.62	Change the title of “Liquid waste management” to High level waste management	Content is about High level waste management		Title was changed to “Waste Management” by France comment No 80.		
7.	IV.62	Need new title and text Liquid waste management : Liquid waste shall be transfer into solid and neutralization to enhance safety, and shall be considered corrosion and leakage of liquid storage container	Need new title and text about Liquid waste management		Text, “Liquid waste shall be transferred into a solid and neutralized to enhance safety” added. Reference to leaks addressed previously.		
8.	Over all	The Appendix IV only describes Liquid reprocessing of Spent Fuel. Therefore, New Appendix is necessary to develop describing “Pyroprocessing Facility” which is dry and high temperature process of spent fuel.	Suggestion for new appendix			Y	Noted. Current DPP, which provides the specification for the document, only covers the PUREX process.



**DS439 Safety Requirements for Reprocessing Facilities and Fuel Cycle Research and Development Facilities (Date: )  
FOR OFFICIAL MEMBER STATES COMMENTS**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: ONR		Page.1... of.1...					
Country/Organization: UK Member States comments		Date: 22/09/11					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
UK1		Sampling and analysis crop up in several locations; particularly IV 6, but also IV 43 and 45. It is important that the timescale of sample analysis and assessment is commensurate with the processing lag in the system. In some plants, the material has been processed before the results of the analysis have been assessed.			The text, "The timescale of sample analysis and assessment shall be commensurate with any processing lag in the system" added to IV.6 & IV.45.		
UK2		Corrosion/erosion: IV 23. I think the entry against this heading; "Provision for leaks shall be implemented according to the requirements established in the safety assessment" will be meaningless to most readers.			Text in IV.23 modified following France comment Nos 47 & 48 and Republic of Korea comment No 5.		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer: ONR		Page.1... of.1...					
Country/Organization: UK Member States comments		Date: 22/09/11					
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection

**Member State Comments on IAEA Draft Safety Guide “NS-R-5 Appendix IV, Reprocessing Facilities, and Appendix V, Fuel Cycle Research and Development Facilities” (DS439)**

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
1	IV.2	Suggest adding “achieve criticality safety by design”.	Consistency with Appendix I and II of NSR5 Standard			Y	Current text layout refers to preventing criticality by design and is consistent with Appendices I & II.
2	IV.2.	Under Title “Design” – Safety Functions, add a new bullet: <ul style="list-style-type: none"> <li>Prevent Fire and industrial accidents and provide adequate emergency response logistics to mitigate such events.</li> </ul>	Prevention of fire and industrial accidents, as well as establishing emergency response logistics to mitigate such accidents, are important safety functions that must be considered in the design.			Y	The hazards referred to are challenges to the achievement of the safety functions, along with faults, and need to be considered in the design of the systems that achieve the safety functions.
3	IV.6	Change to last sentence: .... for ensuring compliance with the requirements established in the safety assessment and by material control and accounting	This addition is suggested to insure that safety and safeguards groups work together during the development		Reference added to requirements for material control and		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		requirements	of sampling techniques. MC&A needs assurance of representative sampling too, which would be easier to achieve at the facility design stage.		accounting. Note IV.6 also modified by France comment No 19, UK comment No 1.		
4	IV.8	Addition to existing text: Such materials should be used in engineering studies performed prior to the initial start-up of any process step. These studies should be designed to assure that processes, in-process measurements, and analytical measurements perform within established limits.	Such studies are typically performed prior to the introduction of enriched nuclear materials to the process. They will confirm that process steps, transfer points, and measurements are designed and done in such a way to accurately monitor and account for material in process.		Following text added “Such a reference shall be used in engineering studies performed prior to the initial start-up of any process step. These studies shall be designed to		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
					assure that processes, in-process measurements , and analytical measurements perform within established limits.” Note use of “shall” and not “should”, this is a requirements document.		
5	IV. 9	Addition to existing text: Also stringent controls should be considered for any processing steps performed before an analytical value is determined for the	Typically materials in process are assigned values “book values” received from other facilities until a step such		Following text added “Stringent controls shall be considered		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		materials in process.	as first dissolution where a sample can be taken and actual values determined. In such cases the most robust engineered controls should be in place for any material processed before that analytical value can be determined.		for any processing steps performed before an analytical value is determined for the materials in process.” Note use of “shall” and not “should”, this is a requirements document.		
6	IV.16	Addition to existing text: However such measures should be reviewed with safeguards staff before finalization/installation.	This would insure that the safety/security/MC&A interface is considered. Otherwise safety controls		Following text added “However, such measures shall be		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			could make security/MC&A more difficult.		reviewed with safeguards staff before being finalized and installed.” Note use of “shall” and not “should”, this is a requirements document.		
7	IV.18	Addition to existing text: Analytical results from such discharges shall be also reported to material control and accounting personnel at the facility.	Measured discards results will be needed to account for materials in process and inventory calculations.		Following text added “Analytical results from such discharges shall be reported to material control and		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
					accounting personnel at the facility.”		
8	IV.20 (Fire)	Editorial Comment: Put “Fire” subtitle in the next page and also subtitle “Explosion” in the next page has a different font and seems that should have the same font as “Fire”	Editorial comment.	Y			
9 Gonzalez	IV.22 (Explosions)	Suggest changing red oil to nitrated organics as defined earlier in the report.	Consistency in the technical terms as defined earlier.		Amendment was made to IV.21 not IV.22. However, IV.21 was deleted and combined with IV.3 as a result of Japan comment No 3. IV.3 was		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
					then moved to the Postulated Initiating Events section.		
10	IV.50.	<p>Under the Title “Operating Documentation” add the following bullets:</p> <ul style="list-style-type: none"> <li>• Operator shall document all incident/accidents/events and associated radionuclide releases</li> <li>• Operator shall document all environmental monitoring data as required by regulations or license conditions.</li> <li>• Operator shall document radioactive waste inventory including those disposed or stored onsite</li> <li>• [per Case]Operator shall</li> </ul>	<p>Completeness: The additional items listed under “Operating Documentation” are significant to safety and corrective actions.</p>		<p>The following text added “The operator shall document the following:</p> <ul style="list-style-type: none"> <li>• all incident/accidents/events and associated radionuclide releases;</li> <li>• all environmental monitoring data as required by</li> </ul>		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
		document all inspection records and corrective actions.			regulations or license conditions; • radioactive waste inventory including those disposed or stored onsite; • all inspection records and corrective actions.”		
11	IV.54 (Criticality Prevention)	Suggest revising the sentence to “Fissile material, in particular waste materials that have not been monitored for fissile content, shall be placed in containers specifically designed and approved for that purpose.”	Current sentence seems to have too many negatives in the same sentence and might read better as suggested.			Y	Proposed text changes the meaning of the original text.

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
12	Preamble to Appendix IV and V. Insert at the end of the existing preamble text.  Or, it may be more appropriately inserted in the Introduction Section of the main	Safety measures and security measures <sup>1</sup> have in common the aim of protecting human life and health and the environment. The interface between safety measures and security measures must be assessed, designed, implemented and managed in an integrated manner so that these activities do not adversely affect each other and to the degree possible they are mutually supportive.  <sup>1</sup> See also publications issued in the IAEA Nuclear Security Series.  [Or replace third paragraph in DS-R-5 within the Introduction, subsection titled, THE IAEA SAFETY STANDARDS” with the proposed text above. The existing third paragraph text is below:	Nuclear material and nuclear facilities may pose a security risk. In the most recent version of INFCIRC 225, Nuclear Security Recommendations on Physical protection of Nuclear Material and Nuclear Facilities rev 5, issued in January 2011, it was recognized that safety and security should be designed and implemented in a coordinated manner.  Reason for the proposed insertion is to harmonize with the revised INFCIRC 225 rev 5 Sections 4.11, 4.52, and		Accept the point that is being made.  As the proposed text is general, i.e. applicable to all fuel cycle facilities, it should be placed, as suggested, in the main text of NS-R-5. This will be done when NS-R-5 comes up for its 10 yearly review. In the meantime, it		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
	portion of NS-R-5 Replacing the third paragraph within the subsection titled, THE IAEA SAFETY STANDARDS, as the proposed text is applicable to all fuel cycle facilities.	Safety measures and security measures have in common the aim of protecting human life and health and the environment. Safety measures and security measures must be designed and implemented in an integrated manner so that security measures do not compromise safety and safety measures do not compromise security.]	5.18. The analogous “foundation” transportation safety document has similar text and pertinent Section text is provided to show how consistent language may be identified. TS-R-1, 2009 Section titled “The IAEA Safety Standards.” and the cited INFCIRC 225 rev 5 Sections are provided below.  <b>INFCIRC 225 Rev 5, 2011.</b>  Section 4.11 The operator should assess and manage the physical protection interface with safety and nuclear		is noted that the objective of the suggested text is already addressed in NS-R-5, in the section at the beginning of the document that explains the IAEA safety standards.		

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			<p>material accountancy and control activities in a manner to ensure they do not adversely affect each other and to the degree possible they are mutually supportive.</p> <p>Section 4.52 The State should ensure that contingency plans - including interfaces with safety as appropriate are established by operators to locate and recover any missing or stolen nuclear material.</p> <p>Section 5.18 The operator should assess and manage the physical protection interface with</p>				

COMMENTS BY REVIEWER				RESOLUTION			
Reviewer:							
Country/Organization: United States of America				Date: 28 September 2011			
Comment No. / Reviewer	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
			<p>safety activities in a manner to ensure they do not adversely affect each other and to the degree possible they are mutually supportive.</p> <p><b>TS-R-1, 2009.</b></p> <p>Within Section titled “The IAEA Safety Standards”</p> <p>“Safety measures and security measures1 have in common the aim of protecting human life and health and the environment. Safety measures and security measures must be designed and</p>				

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			<p>implemented in an integrated manner so that security measures do not compromise safety and safety measures do not compromise security.”</p> <p>1 See also publications issued in the IAEA Nuclear Security Series.</p>				
13	General	<p>The document lacks requirements addressing:</p> <ul style="list-style-type: none"> <li>Decommissioning and consideration of planning for decommissioning.</li> <li>Waste minimization.</li> </ul>	<p>Completeness: Decommissioning and waste minimization are significant for reprocessing facilities.</p>			Y	<p>WASTE: Already addressed in NS-R-5. The general requirements covering the management of waste, including its generation, are covered in the main text of NS-R-5 by cross reference to WS-R-2. Please note</p>

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							<p>that this safety standard has recently been replaced by GSR Part 5. This cross referencing will be updated when NS-R-5 comes up for its 10 yearly review. Also, avoiding the generation of radioactive waste is a general requirement given in NS-R-5, 6.31.</p> <p>DECOMMISSIONING: Already addressed in NS-R-5. The general requirements for decommissioning are addressed in the main text of NS-R-5. Note, that as a result of comments made by</p>

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							others, a number of facility specific decommissioning requirements have now been added to the appendices.