DS 360 - Safety of Nuclear Reprocessing Facilities

COMMENTS BY REVIEWER Reviewer: Page of Country/Organization: All Date: May 2014				RESOLUTION			
Comment No.	Para/Line No.	Proposed new text	Reason	Accepted	Accepted, but modified as follows	Rejected	Reason for modification/rejection
EC WASSC Comments DS360							
EC.N01	General	Different font should be used for third and fourth level headings. E.g. Tornadoes, Extreme temperatures, Snowfall and ice storms and Flooding are all subsections for Extreme weather conditions, but this cannot be distinguished in the text (pp. 37-39). Similarly for Fire and following Fire hazard analysis and Fire prevention, detection and mitigation (pp. 29-30).	Clarity		These will be displayed as 4th and 5th level with appropriate fonts.		The original intent was to have these at the same level (4) however as an aid clarity these will be displayed as 4th and 5th level with appropriate fonts
EC.N02	General page 50 and page 78	It is suggested to combine both sections "Radioactive waste management" and "Waste and Effluent management" and address all relevant aspects for radioactive waste management with reference to relevant IAEA safety standards (e.g. GSG-1 on waste classification, GSG-3 on safety assessment/safety case), etc.	Two sections dealing with radioactive waste management are in the text with different titles – "Radioactive waste management" and "Waste and Effluent management"	X (align titles) X (reference to relevant IAEA (waste) standards)		X (Combining)	The sections are in 4. Design and 7. Operation respectively. .
EC.N03	General	Ensuring sufficient funding for radioactive waste management, decommissioning and disposal is very important. Suggested to be included in the text with reference to GSR Part 5, WS-R-5 and SSR-5	Completeness of the text	X			
EC.N04	04.109 -	Suggest including Effects of terrestrial	In Ref [1] (NS-R-5) of the	X			

	External initiating events 4.89 –	and aquatic flora and fauna in External initiating events.	document, Annex I lists external initiating events, including *(e) Effects of terrestrial and aquatic flora and fauna (leading to blockages of inlets and outlets and damage to structures)*. If this can be a safety issue at fuel reprocessing facilities, it should be mentioned in DS360 as well.				
EC.N05	04.121 - 4.110 –	Subsection Instrumentation and control should not be under Postulated initiating events, but at the same level (i.e. own subsection of 4. DESIGN)	Logic of the text	X			
EC.N06	04.110 - 4.107 –	Subsection Human factors considerations to be placed before Safety analysis.	Reports DS360 and DS381 have rather similar structure and lots of similar contents, thus it would be logical to have same order of the text, unless there is a good reason for the difference.	X			
EC.N07	04.108, 1st bullet point	Possible effects on safety of **human errors** (with account taken of ease of intervention by the operator and tolerance of human error);	"Unauthorized human actions" gives an impression of solely active human errors (errors of commission). Errors of omission should also be covered. Thus the use of a more general expression is suggested.	X			
EC.N08	04.129 - Safety analysis 4.113 –	In connection to the safety analysis, the Guide could recommend a systematic risk assessment of the entire nuclear fuel reprocessing facility.	Completeness of the text. Some separate hazard analyses, e.g. for fires are mentioned, but a holistic risk assessment is lacking.	X			
EC.N09	03.004 -	The source terms considered in site selection should include provision for the **processing** and interim storage of	Consistent terminology	X			

		waste products produced during the lifetime of the facility and for the eventual decommissioning of the facility.					
EC.N10	04.143 -	Suggested to: (i) include in the bullets human and financial resources; stakeholders involvement (opinion), etc. and (ii) make references to Safety Requirements GSR Part 5, and SSR-5	Consistency of standards	X			
EC.N11	04.144 -	Due to the nature and diversity of the composition of spent fuel (structural parts, spectrum of fission products and actinides) and to the chemical processes involved, reprocessing facility activities result in wastes that vary in type and quantity. The design of reprocessing facility should ~~try, as far as practicable, to~~ ensure that all wastes anticipated to be produced during the life cycle of the facility have designated **processing, storage and** disposal routes. These disposal route**s** need to **take** account **of** not only the isotopic composition of the waste but also its chemical and physical characteristics (e.g. `flammable, heat generating).	Clarity of the text	X			
EC.N12	07.093 -	… A strategy for management of radioactive waste should be produced **by the licensee**…in line with the national strategy	Clarity of text	X			
EC.N13	Section 8	Suggested to include the following important aspects: selection of a decommissioning strategy; development of a decommissioning plan at a design stage; periodic review and final decommissioning plan at least 2 years prior planned shutdown; measures for early shutdown	In line with WS-R-5	X			

EC.N14	08.001 -	Suggested to add references to RS-G-1.7, WS-G-5.1 and WS-G-5.2	To address aspects of clearance site release and safety assessment for decommissioning (completeness of references)	X			
ENISS Comments DS360							
ENISS.01	This guide is of good quality but the border between “shall” and “should” statement will have to be looked at in detail. Especially in Chapter 4 if the requirements doc (currently revised as DS478) does not define the requirements specific to the different types of facilities concerned.			X	The guide contains only recommendations (if a requirement is mentioned it is as a reference). When DS478 is published the need for revision of this Guide will be considered and these factors taken into account		
ENISS.02	01.006 -	This Safety Guide deals specifically with: … Production and storage of plutonium and uranium oxides as a feed material to form ‘fresh’ uranium oxide (UOX) or mixed oxide fuel rods, and assemblies (MOX) and,	U oxides are used to form fresh UOX fresh fuels also	X			
ENISS.03	01.007 -	The fuel reprocessing processes covered by this safety Guide are a mixture of high and low hazards, ~~wet and dry~~ chemical and mechanical processes...	To clarify	X			
ENISS.04	01.008 -	Or the ancillary process facilities in which wastes and effluents are conditioned, treated, ~~stored or disposed~~ except in so far as all wastes produced.	Waste disposal is excluded of the SG scope			X	This sentences is identifying what is excluded
ENISS.05	02.002 -	Reprocessing facilities have the potential for serious or major accidents with significant release of radioactive material	“release” missing	X			
ENISS.06	02.001 -	The SSCs related to Instrumentation and control are very important to the safety of reprocessing facilities	Avoid “safety related system” (NPP plant equipment)	X			
ENISS.07	02.018 - 2.26 to		Delete paragraph numbers and use only bullets	X			
ENISS.08	03.002 -	The potential for releases …. For a reprocessing facility potentially significant discharges include:	Simplified text according to bullets only	X			

		• Radioactive and chemical liquid discharges (including radioactive particulate or dispersed solvent droplet) of hazardous materials (~~radioactive and chemical~~); • ~~Liquid borne radioactive particulate or dispersed solvent droplet~~ • Gaseous or volatile ~~radioactive~~ material discharges (including airborne radioactive or chemo toxic particulate materials) • ~~Airborne radioactive or chemotoxic particulate materials~~					
ENISS.09	03.003 -	The major hazards in accident conditions that need to be considered are the potential release of highly radioactive material in the atmosphere or into the ground**,** in addition to the potential for direct radiation due to shielding loss, or criticality.	Accidental radioactive liquid discharge in the ground needs to be considered.	X			
ENISS.10	03.018 -		This paragraph should be moved in the “safety analysis “ chapter	X			
ENISS.11	04.001. 1)	Confinement of radioactive material (including removal of decay heat and dilution of radiolysis gases)	Missing	X			
ENISS.12	04.014 -	As far as achievable, and according to the graded approach, there should be at least three static barriers between radioactive materials and the environment. The first static barrier normally consists of process equipment, vessels and pipes, and, in some cases, gloveboxes. The second static barrier normally consists of cells around process equipment or when glove boxes are the first containment	This is a common rule used for reprocessing facilities	X			

		barrier ~~of the primary containment~~, the rooms around the glove boxes itself. The last static barrier is the building**.** The design…	The primary containment is introduced but the secondary is not.	X			
ENISS.13	04.031 -	Add a new paragraph **"**Batch wise transfer should be preferred for the transfer of process effluents to the their treatment facilities"	Volume shipper-receiver difference is a simple way to detect leaks	X			
ENISS.14	04.036 -	Pyrophoric metals (U or Zircaloy fines from fuel ~~breakdown~~ shearing) may induce fires or explosions.	Wording	X			
ENISS.15	04. - 037	• ~~Using personal radiation protection (torso & organ shields).~~	The use of personal protection against external exposure should not be used for the facility design**.** It should only be "remediation" means during operations if a hot spot cannot be dealt with thanks to the 4th first bullets		Reword 4.38 to clarify that bullet 4 (PPE) should not be used in normal or routine operations		The hierarchy presented is correct but the avoidance of PPE (shielding) as far as possible will be emphasized for clarity
ENISS.16	04.058 6th bullet	Add (e.g. last stages filters of the ventilation systems or electrical switch room	Important example	X			
ENISS.17	04.081 -	The loss of utilities should be considered both for individual item of equipment and facility wide ~~The loss of support systems should be considered , in turn of:~~ • ~~Individual item of equipment~~ • ~~The whole reprocessing facility, and on multi-facility sites;~~ • ~~Reprocessing facility ancillary and support facilities (e.g. waste treatment and storage) and other site facilities~~	To clarify	X			
ENISS.18	04.093 -	Emergency control panels should be accessible and operable by staff after a design basis earthquake and equipment required to maintain the reprocessing	Some of the equipment required to maintain *(control)* cannot be tested	X			

		facility in a safe and stable state and monitor the facility and environment should be ~~tested and~~ qualified using appropriate conservative methodologies including the use of an earthquake simulation platform					
ENISS.19	04.096 2nd bullet	Assess the associated event sequences affecting the facility based on statistical data	More precise	X			
ENISS.20	04.106 -	Add the following : In some Member states, the highest flood level historically recorded is taken into account and the nuclear facility is sited at specific locations above the flood level or at sufficient elevation and with sufficient margin to account for uncertainties (e.g., postulated effects of global warming) to avoid major damage from flooding. Where dams are built up-stream of potential or existing nuclear sites, consideration is taken of the hazard posed by the dam collapse. For a new reprocessing facility, balancing is done at the siting stage, between the site selection and the facility design required for coping with the dam collapse.	Missing	X			
ENISS.21	04.110 -	New paragraph According to the requirements of the safety analysis, I&C systems should incorporate redundancy and diversity to ensure an appropriate level of reliability and availability. This should include the requirements for a reliable power supply to the instruments	Missing	X			
ENISS.22	04.111 -	(..., criticality control and detection, fire detection and fighting systems, release of effluents and ventilation conditions)...	Addition	X			

ENISS.23	04.121 Criticality control 2nd bullet	Specific control parameter used in the criticality safety analysis ~~from the double contingency or similar~~ analysis	To clarify	X			
ENISS.24	04.121 Control of occupational radiation exposure: Internal exposure 2nd bullet	Devices for detecting ~~alpha~~ surface contamination should be installed close to the concerned working areas...	There is not only alpha contamination in a reprocessing facility	X			
ENISS.25	04.121 page 44 Glovebox and cells control Last bullet	Monitoring cells and glove box sump levels (leak detection systems)	Explanation	X			
ENISS.26	04.133 - 4.132 and	The following approaches should be considered in the assessment: **1)** An approach using the bounding case (the worst case approach), with account taken only of …. This approach is generally used for design basis accidents assessment**.** **2)** An approach using the bounding case (the worst case approach), with no account taken of any safety feature **…**This approach is generally used for beyond design basis accidents assessment 4.133 ~~The second case is generally used when the first one cannot be applied to justify the safety of an accidental condition~~	The approaches 1) and 2) do not correspond to the same types of accidents: 1) is generally used for DBA and 2) for beyond DBA		Replace 4.132 and 4.133 with a paragraph referencing GSR Part 4 and relevant parts of its supporting Guides for assessing accident consequences		See FR.N.549, 50 and 51
ENISS.27	04.137 - Last line	... of descriptions of the facility, demographic information and in-take path ways (e.g. food consumption)	To clarify	X			

ENISS.28	06.006 -	During commissioning, … (at the start and end of a campaign). ~~Such limits and values may include the type, quantity and state of the fuel to be accepted (including such factors as the 'burn up' and duration expired since the fuel was discharged from the reactor~~).	The characteristics of the fuel to be accepted are not a result of the commissioning; they are fixed by the regulatory body in reprocessing facility Authorization Act (Decree or equivalent) and when possible, "validated" during the commissioning stages.	X			
ENISS.29	06.007 -		To be moved to the beginning of section 6.	X			
ENISS.30	07.017 - Last line	Delete "using simulators where appropriate in these procedure"	Simulators are scarcely used in reprocessing facilities		"Using simulation or exercises for training in these procedures"		Simulator is a misprint for simulations, exercises added for clarity
ENISS.31	07.028 -	New After the transfer of liquid, as far as practicable, staff should verify the shipper–receiver difference between the volume that was sent and the one which was received	Recommendation	X			
ENISS.32	07.036 -	New The frequency of calibration and periodic testing of instrumentation important to safety i.e. part of the SSCs (including those related to the analytical laboratories) should be defined as OLCs	Recommendation	X			
ENISS.33	07.043 - Last line	The modifications made to a facility should be reviewed on a regular basis to ensure that the combined effect of a number of modifications with minor safety significance do not have unforeseen effects on the overall safety of the facility. This ~~may be~~ should be part of the periodic safety review or equivalent process	This recommendation is too weak ("may" form). It is contained as requirement in 4.26 of NS-R-5: " In conducting these (periodic safety) reviews, the operating organization shall expressly consider the cumulative effects of changes, to procedures, modifications to the facility and the operating	X			

			organization, technical developments , operating experience and ageing;				
ENISS.34	07.049 -	In chemical cycles, particular care should be given to the control and monitoring of those stages of the process where fissile materials are concentrated or may be concentrated …). A specific concern for reprocessing facilities is the ~~dilution~~ acidity of ~~fissile material~~ Plutonium solutions and/ or Pu valence changes which can result in hydrolysis and ~~precipitation~~ **polymerization.**	The concern is Pu acidity and polymerization risk	X (with JP.N10)			
ENISS.35	07.075 - 7.73 Last sentence First bullet	criticality “lockets” or belts	Other device	X			
ENISS.36	07.107 -	Periodic estimate of the impact to the public (representative person(s)) should be made using data on effluent releases and standard models ~~usually~~ agreed by the national authorities ~~regulators~~	Requirements relating to estimate of the impact to the public may vary according to the country	X			
DS360 France comments for NUSSC							

FR.N01			Considering the revision of NS-R-5 (DS478), it would be preferable to delay MS consultation so that future guidance and requirements are made consistent. For example, will NS-R-5 use still BDBA or DEC?			X	1. NS-R-5 (Rev.1) including the relevant Reprocessing Appendix has only just been published. 2. The majority of "shall's" and thus corresponding elaboration will remain unchanged by revision of NS-R-5. 3. A guide based upon NS-R-5 revision (DPP478, 2014) would not be available for several years.
FR.N02			Check for the proper use of "containment" and "confinement". The confinement function may be performed by containment or/and by ventilation (dynamic confinement)	X			
FR.N03	01.003 -	to maintain low levels of radiation and minimizing radioactive ~~of~~ discharges to the environment	typo	X			

FR.N04	01.012 -		"*This Safety Guide contains guidance specific to reprocessing facilities. The recommendations in this guide have been referenced to the corresponding requirements in (Ref. [1])*" ⇨ As ref [1] is evolving, this could only be a temporary cross reference			X	The references are to current, published Standard(s) (Requirements and Guides)
FR.N05	01.012 -	Reference should be made to the referenced documents and other IAEA standards for requirements and guidance on generic topics (such as radioactive wastes or ~~security~~ radiation protection) that are not specific to reprocessing facilities.	There are no IAEA standard on security (there are Nuclear Security Series publications)	X			

FR.N06	02.002 - 2.1	Combine 2.1 and 2.2 as follows 2.1. In reprocessing facilities, large quantities of fissile, radioactive and other hazardous materials are present (stored, processed and generated) often in easily dispersible forms (e.g. solutions, powders and gases) and sometimes subjected to vigorous chemical and physical reactions. Reprocessing facilities have the potential for serious or major accidents with significant of radioactive material. The main risks are criticality, loss of confinement and radiation exposure from which workers, the public, and the environment need to be protected by adequate technical and administrative measures provided during siting, design, construction, commissioning, operation and decommissioning. 2.2. ~~Reprocessing facilities have the potential for serious or major accidents with significant of radioactive material. The potential nuclear and radiation hazard of reprocessing facilities should be considered when implementing the graded approach concept to the facility as detailed in (Ref. [1]: Section 1).~~	First sentence of 2.2 would better fit in the middle of 2.1. Last sentence of 2.1 can be deleted as there is no added value (DS360 address a specific type of facility, section 1 of NS-R-5 reminds that NS-R-5 addresses several types of facilities). Para 4.2 of DS360 is enough	X X			
FR.N07	02.009 -	Reliability of process equipment should be ensured by an adequate design, manufacturing, installation, operation and management supported by application of a rigorous management system (quality assurance and quality control) during specification, procurement, manufacturing, storage (if necessary) ~~and~~, installation, operation and maintenance.	A management system won't help if design was wrong…	X			

FR.N08	02.010 -	The control and instrumentation of ~~safety-related~~ systems <u>important to safety</u> (facility control system, indicating and recording instrumentation, alarm and communications systems) are very important to reprocessing facility safety.	To encompass safety systems. Consistency with IAEA safety glossary	X			
FR.N09	02.010 -	Adequate and reliable controls and appropriate instrumentation should be provided to maintain variables within specified ranges <u>and initiate automatic protective action where necessary</u>.	Protection system should be mentioned so that unsafe conditions may be stopped if regulations were inefficient	X			
FR.N10	02.010 -	Where computers or programmable devices are used in safety-related systems <u>important to safety</u>, evidence should…	To encompass safety systems. Consistency with IAEA safety glossary	X			
FR.N11	02.013 -	Utility supply services are necessary to maintain the reprocessing facility safety systems in an operational state at all times, and they may also provide services to ~~safety-related~~ systems <u>important to safety</u>.	To encompass safety systems. Consistency with IAEA safety glossary	X			
FR.N12	02.018 - 2.15 to	Combine 2.15 to 2.18: 2.15. To maintain the facility in a safe state, some systems should continuously operate or should be restarted within a defined delay ~~after their loss~~ <u>if they became unavailable</u> e.g.: <u>2.16. •</u> Active heat removal systems in storage areas to remove decay heat; ~~2.17.~~ <u>•</u> Dilution (gas flow) systems to prevent hazardous hydrogen concentration; ~~2.18.~~ <u>•</u> Safety significant control, instrumentation and utility supply systems.	Bullet list seems appropriate	X			

FR.N13	Chapter 3	Delete 3.1 to 3.16 and replace by : "Site evaluation and siting for a fuel reprocessing facility should be performed as required in NS-R-3 and should follow the recommendations included in its associated Safety Guides."	Chapter 3 (site evaluation) should be limited to reference to NS-R-3 and associated guides (SSG-9, SSG-18, NS-G-3.1…) and, especially, DS433 gives detailed recommendations on this topic and these Safety Standards are applicable to fuel reprocessing facilities.	X			
FR.N14	Chapter 3	Delete 3.20 to 3.22	Chapter 3 (site evaluation) should be limited to reference to NS-R-3 and associated guides (SSG-9, SSG-18, NS-G-3.1…) and, especially, DS433 gives detailed recommendations on this topic and these Safety Standards are applicable to fuel reprocessing facilities. NS-R-3 is addressing the topics dealt with in 3.20 to 3.22.	X			
FR.N15	04.008 -	The ~~extensive, complex, continuous, multi-stage nature~~ <u>design</u> of a reprocessing facility ~~with numerous supporting inter-related ancillary processes, including waste and effluent treatment, with limited buffer between sub-processes and the potential for the fairly rapid development of some faults place particular emphasis on the application of~~ <u>should fully benefit from</u> the ergonomic and human factor requirements stated in (Ref. [1]: paras 6.15 and 6.16).	Simplification to get a shorter but as explicit recommendation	X			

FR.N16	04.010 - bullet list	However, particular consideration should be given to the following hazards in the specification of design basis accidents for reprocessing facilities: - Loss of cooling; - Explosion; - Nuclear criticality accident; - Fire; - External ~~events~~ hazards such as natural phenomena (earthquake, flooding, or tornadoes, etc.) or man-made hazards (aircraft crash…); - Loss of electrical power; ~~- Aircraft crash.~~	Aircraft crash is an external hazard	X			
FR.N17	04.011 -	Therefore, ~~in addition to the use of the DBA concept,~~ operational states and accident conditions of each reprocessing facility process should be assessed on a case by case basis (Ref. [1]: para. 6.9 and Annex III: para. III-10 and III-11).	No need to introduce a reference to DBA	X			
FR.N18	04.016 -	To complement the effectiveness of the static barriers, ~~dynamic containment~~ systems (dynamic confinement) should establish a cascade of pressure	Clarification			X	Glossary: *Confinement* is the safety function; *Containment*: the means of achieving that safety function
FR.N19	04.020 -	All filtration stages of the ventilation systems which require testing should be designed in accordance with ~~accepted~~ relevant standards such as those of the International Organization for Standardization (ISO) ~~and the American Society of Mechanical Engineers (ASME),~~	Accepted is implying someone (the regulator?) has formally agreed to their use. National standards should not be mentioned.	X X			
FR.N20	04.025 -	The static barriers (at least one between radioactive materials and operating areas) normally protect workers from radioactive contamination.	Clarification	X			

FR.N21	04.026 -	By supplementing the static barriers, dynamic ~~containment systems~~ confinement should be used to minimize the radiation exposure	Clarification			X	Glossary: *Confinement* is the safety function; *Containment*: the means of achieving that safety function
FR.N22	04.029 -	For normal operation, the need for personal protective respiratory equipment should be minimized through careful design of static and dynamic ~~containment~~ confinement systems	Clarification			X	Glossary: *Confinement* is the safety function; *Containment*: the means of achieving that safety function
FR.N23	04.030 - Title before	*Protection of the public and the environment*	Protection of the public should be added (even before protection of the environment).	X			
FR.N24	04.032 -	The cooling systems should be designed to prevent uncontrolled ~~environmental~~ releases of radioactive material, including to the environment, exposure of workers and the public, and criticality accidents (e.g. for highly active20 (HA) liquid waste storage vessels and PuO2 containers), (Ref. [1]: Appendix IV: paras. IV.4 and IV.6).	Clarification	X			
FR.N25	04.052 - Criticality preventio n 4.44 o		This section should be shortened by making reference to the Safety Guide on criticality safety (SSG-27).	X			
FR.N26	04.056 -	Locate 4.56 after 4.57	More logical order	X			
FR.N27	04.058 -	Locate 4.58 after 4.61	Generalities on the fire hazard analysis should appear first	X			
FR.N28	04.060 - 4.59	Combine 4.59 and 4.60		X			
FR.N29	04.067 -	Transform 4.67 into a footnote to 4.65		X			

FR.N30	04.069 -	Mechanical or electrical or ~~human~~ failures or human errors during the handling of radioactive or non-radioactive materials may result in degradation of criticality control, confinement, shielding, associated control or ~~safety~~ other systems important to safety or reduction of defense in depth.	Clarification	X			
FR.N31	04.070 -	~~These considerations apply mainly to instrument and control (I&C) components but also to mechanical systems such as crane braking systems.~~	Superfluous (why excluding electrical equipment?)			X	This section refers to equipment failure, loss of motive power etc. is considered elsewhere.
FR.N32	04.072 -	The design of all containment should include adequate ~~a realistic, pessimistic~~ allowance for the combined effects of all degradation mechanisms with particular attention paid to both general and localized corrosion effects	Unclear	X			
FR.N33	04.079 -	Walls (and floors if necessary) of rooms where flooding could occur should be designed to withstand the liquid load and other ~~safety related~~ equipment important to safety should not be affected by flooding.	Clarification	X			
FR.N34	Loss of support system		This section should be inserted in the “equipment failure” section		Place the “Equipment Failure” and “Loss of support system” sections together (next to each other)		To aid clarity the sections will be placed next to each other but the headings retained.
FR.N35	04.089 -		Consider deleting 4.89 as it does not bring any additional expectation compared to NS-R-3 (as revised following Fukushima)			X	The current version of NS-R-3 is the 2003 edition

FR.N36	04.091 -	A detailed seismic assessment (Ref. [10] and [11]) should be made of the reprocessing facility design to determine whether 4.90 is achieved. ~~The particular features addressed in the assessment include:~~ ~~- The large "footprint" of reprocessing facilities;~~ ~~- The variety of processes, the number and complexity of vessels, pipework, cells and gloveboxes providing primary and secondary containment;~~ ~~- The need for uninterrupted cooling;~~ ~~- The provision of a numerous different methods and devices for moving solid, liquid and gaseous radioactive materials;~~ ~~- Extensive active ventilation systems with tall discharge stacks;~~ ~~- The extensive networks of monitoring instruments and controls, data highways and control room(s);~~ ~~- The variety of utility and service provisions all with their own safety related seismic design requirements and complex interactions.~~	Simplification	X			
FR.N37	04.094 -	Delete 4.94	Covered by NS-R-3 and associated Safety Guides		As FR.N.38 text referring to tsunamis		Retain heading and refer to NS-R-3 etc. to preserve link to NS-R-5 requirements

FR.N38	04.108 - 4.99 to	Replace 4.99 to 4.101 by : "The design of the fuel reprocessing facility should be consistent with the nature and severity of the external hazards, either natural or man made, evaluated according to NS-R-3 and its associated Safety guides".	Consider deleting 4.99 to 4.108 Covered by NS-R-3 and associated Safety Guides. Only a very limited part of these para are specific to reprocessing facilities ("*For flooding events attention should be focused on potential leak paths (containment breaks) into active cells and SSCs at risk of damage. In all cases the equipment containing fissile material should be designed to prevent any criticality accident. Gloveboxes should be designed to be resistant (undamaged and static) to the dynamic effects of flooding and all glovebox penetrations should be above any potential flood levels (Ref. [1]: Appendix: para. IV.46).*")		As suggested text + the facility specific text identified in italics in FR.N.38		Reasons as given by commentator
FR.N39	04.110 -	The aim should be to ensure that adequate information can be obtained on the status of the facility and correct responses can be planned and taken in accordance with <u>normal</u> operating or emergency procedures or severe accident guidelines as appropriate, for all facility states. ~~In addition, in the event of an accident, that the reprocessing facility can be returned a safe, stable state~~	This is the "control" part of I&C, not the "information" part.		X		Move to "control part" 4.116 – 4.119

FR.N40	04.111 -	Provision should be made for the automatic measurement and recording of values of relevant parameters important to safety	Not all parameters warrant such provisions.	X			
FR.N41	04.114 -	For these strategic sample points, all the aspects related to the quality of sample taking and labelling, its ~~proper~~ safe transfer to the analytical laboratories, the quality of the measurements and their reporting to the facility operators should be documented, and justified	Clarification	X			
FR.N42	04.116 -	Passive and active engineering controls ~~are more reliable than administrative controls and~~ should be preferred for control in operational states and in accident conditions.	Its largely depends on their design…		Adequately designed passive and…..		Maintain the established hierarchy of controls
FR.N43	04.121 - Title before	~~*Safety related I&C*~~ *systems important to safety*	I&C for safety system is to be included	X			
FR.N44	04.121 -	The ~~safety related~~ I&C systems important to safety for normal operation should include systems	Clarification	X			
FR.N45	Section on safety analysis		The term “safety assessment” might be privileged (*preferred*) (for consistency with other Safety Standards)			X	Consistent with other NS-R-5 SSGs and DPP Section headings

FR.N46	04.124 -	For reprocessing facilities the safety analysis should be performed according to (Ref. [1]:Annex III) which should result in: - Doses to workers and the public during operational states that should be within acceptable limits for operational states and ALARA; - Radiological and chemical consequences of DBAs (or equivalent) to the public that should be within the limits specified for accident conditions and ALARA; - Final OLCs.	For radiation exposure, being within limits is not good enough as the ALARA principle applies. BDBA/DEC were mentioned earlier in DS360. What is the expectation for such conditions?	X X	Evaluate safety margin for relevant SSC's and the expected impact for selected extreme events and used to develop level 4 & 5 DiD guidelines and provisions in accordance with national criteria		
FR.N47	04.126 -	At the design stage of a new reprocessing facility, radiation doses to the workers should be estimated early-on in the design process	Clarification	X			
FR.N48	04.127 -	The assessment of the occupational external doses should be based on conservative assumptions	Clarification	X			

FR.N49	04.131 -	To estimate the on-site and off-site consequences of an accident, the range of physical processes that could lead to a release of radioactive material to the environment or loss of shielding should be ~~modelled~~ considered in the accident analysis and the bounding cases,	Clarification		See FR.N.51		
FR.N50	4.132 1)	An approach using the bounding case (the worst case approach), with account taken only of those safety features that mitigate the consequences of accidents and/ or that reduce their likelihood~~. If necessary, a more realistic case can be considered that includes the use of some safety features and some non-safety related features beyond their originally intended range of functions to reduce the consequences of accidents (the best estimate approach).~~	Only classified equipment should be considered (see 4.134 e))		See FR.N.51		
FR.N51	04.133 -		This should be discussed at NUSSC(with the view of understanding if such practice is relevant to all kind nuclear installations)		Replace 4.132 and 4.133 with a paragraph referencing GSR Part 4 and relevant parts of its supporting Guides for assessing accident consequences		Level of detail is beyond the scope of the Guide more appropriate to link to and reference IAEA Standards as use is not facility specific
FR.N52	04.138 -		The first bullet seems a quite “negative” approach of human factors… See comment on 4.140		See EC.N07		
FR.N53	04.139 -		What about BDBA or DEC?		Add: …”DEC /” (BDBA)..		BDBA is already mentioned

FR.N54	04.140 -	Add a bullet: - advantages and drawbacks of an automatic action vs an operator (manual) action	Additional topic of consideration	X			
FR.N55	04.143 -	- Local and national regulations and regulatory limits;	Clarification	X			
FR.N56	04.147 -	Gaseous and volatile waste from reprocessing facilities pose a particular challenge in both capturing the waste and its disposal. This should be addressed through design and operation provisions ~~Future designs of reprocessing facilities should consider addressing this issue and to immobilize, as far as practicable from environmental and economic points of view this waste.~~	Refocus the recommendation (hope is not a solution).	X			
FR.N57	04.149 -	Monitoring equipment should be installed such as:	Clarification	X			
FR.N58	04.153 -	The operating organization of a reprocessing facility is required to develop an emergency plan that takes into account the potential hazards at the facility (Ref. [1]: para. 9.62) and is consistent with the requirements of DS457. ~~The emergency plan and the necessary equipment and provisions should be determined on the basis of selected scenarios for beyond design basis accidents (or the equivalent).~~	Add a reference to DS457	X (GS-R-2)			

FR.N59	04.155 -	~~As far as practicable~~ the control room(s) should be designed and located so as to remain habitable (e.g. separate ventilation, low criticality event calculated dose) during postulated emergencies ~~(e.g. separate ventilation, low criticality event calculated dose)~~ not directly affecting the control room. For events that may affect control rooms, e.g. fire, externally generated hazardous chemical releases etc., the control of ~~major reprocessing facility~~ safety functions should be provided by the use of appropriately located (alternative) emergency control panels or emergency control rooms.	Clarification Control over a system may be lost but not control over a safety function.	X	Replace deleted phrase with …"selected (on the basis of the safety assessment)"…		Clarification that the meaning of the section is the same as comment.
FR.N60	04.156 -	Delete 4.156	Superfluous (see comment on 4.153)	X			
FR.N61	Chapter 5	Delete 5.1 to 5.10 and replace by "For the construction of a fuel reprocessing facility, the recommendation of SSG18 (38) should be followed".	Chapter 5 (Construction) should be further reduced considering SSG-38	X			
FR.N62	06.002 -	~~It is the best opportunity to develop a strong safety culture and positive behavioural attitudes throughout the entire organization.~~	Safety culture should not wait commissioning…	X			
FR.N63	06.003 -	To provide ~~considered~~ advice to the head of the facility on commissioning, a Safety Committee should be established at this stage (if one has not already been established).	Superfluous Clarification	X			
FR.N64	06.004 -	6.4. Prior to commissioning the expected values for parameters important to safety to be measured during commissioning should be established ~~as far as is reasonably practicable~~.	Expected result should be known beforehand.	X			

FR.N65	06.004 -	Any measurements during commissioning which fall outside the acceptable range should be the subject of retest ~~(~~and safety assessment~~,~~ ~~reassessment if confirmed).~~	Unsatisfactory result warrant an assessment.	X			
FR.N66	06.005 -	6.5. <u>When necessary,</u> ~~All~~ commissioning tests should be repeated ~~a sufficient number of times and, as necessary~~ under varying conditions~~, to verify their repeatability~~.	Not all tests have to be repeated	X			
FR.N67	06.005 -	~~The impact of a failure or error in the measurement or response (the graded approach) should determine the level of assurance required (this should also established in advance).~~	Superfluous (covered by comment on 6.4)			X	This refers to establishing that the value is reliable/ repeatable not a ‘failure’
FR.N68	06.006 -	During commissioning, operational limits and normal values for safety significant parameters should be ~~established~~ <u>confirmed</u> as well as acceptable variation values due to facility transients and other small perturbations.	Clarification	X			
FR.N69	06.007 -	Locate 6.7 at the beginning of section 6	More logical location	X			
FR.N70	06.007 -	~~Performance demonstration and/or process optimization, except in so far as supporting the safety case, SSCs or OLCs is a matter for the operating organization~~.	Superfluous (evident)	X			

FR.N71	06.009 -	Commissioning typically requires the use of temporary works (such as utility supplies, supports for items of plant and access openings in building structures) or devices (temporary electrical or instrument supplies and connections to allow the testing of items isolation or the injection of test signals). The operating organization should establish suitable controls to control the use of temporary works and devices (including the use of the modification process as required). These controls should include establishing a process for registering all such works and devices, appointing a responsible person to oversee the application of the controls, a process to approve the introduction of such works and devices and a process to verify that all such works and devices have either been removed at the end of commissioning or are properly approved to remain in place, as a modification and included in the safety case for operations. ~~Similar requirements apply to the use of temporary electrical or instrument supplies and connections to allow the testing of items isolation or the injection of test signals. Where these temporary changes affect any SSC important to safety a full functional check should be carried out and the results recorded after normal conditions have been restored.~~	Simplification	X			
FR.N72		Create a subsection “Commissioning by section” to gather 6.10 to 6.13 under a headline	Readability of the draft	X			

FR.N73	06.011 -	~~In accordance with the categorization of the SSC,~~ the opportunity for ~~it~~ a SSC important to safety being altered in any way during subsequent construction or installation	Introducing the categorization is not relevant.	X			
FR.N74	06.016 - 6.14 to	Locate 6.14 to 6.16 before the subsection “Commissioning by section”	General aspects should appear first.	X			
FR.N75	06.014 -	Where inactive simulates or temporary reagent supplies are introduced for commissioning purposes, care should be taken that these are identical, as far as practicable, (chemically and physically) to the material to be used during operations. If not identical, then the effect of any differences should be ~~rigorously~~ analyzed to determine the potential effects of any minor constituents or contaminants which might affect the integrity of the facility over its lifetime, before approval for use. This analysis should identify any effects on the commissioning results arising from these differences. It should also ~~assess the potential effects of any minor constituents or contaminants which might affect the integrity of the facility over its lifetime~~.	Clarification	X			
FR.N76	06.015 -	~~Typically,~~ each stage of commissioning ~~will~~ may require regulatory approval in accordance with national regulations, prior to starting and at completion.	Depends on national practices	X			
FR.N77	06.017 Stage 1 iv	~~In all cases the recommendations of paras. 6.11 and 6.12 should strictly apply.~~	Superfluous	X			

FR.N78	06.017 Stage 2 i	In this stage, the facility‘s systems are systematically tested, both individual items of equipment and the systems in their entirety. As much verification and testing as practicable should be carried out because ~~of the relative ease of~~ taking corrective actions in this stage won’t be impeded by radiation;	Clarification	X			
FR.N79	06.017 Stage 2 ii	In this stage, operators should take the opportunity to ~~develop~~ finalize the set of operational documents and to learn the details of the systems.	Clarification	X			
FR.N80	06.017 Stage 2 v	~~reprocessing facilities are complex facilities and to avoid any potential error the clear, consistent and unambiguous labelling of rooms, pieces of equipment, systems, components, cables, pipes etc. should be finalized as necessary during inactive commissioning;~~	Not commissioning aspect (construction aspect)		Add “checked and” before …finalized…		Clarification that all should have been labelled during construction that this is a check carried out as part of commissioning
FR.N81	06.017 Stage 2 vi	Locate vi at the beginning of section 6	General expectation	X			
FR.N82	06.017 Stage 3 i	Add a footnote Natural or depleted uranium should be used* in this stage, to avoid criticality risks, to minimize doses due to occupational exposure and to limit possible needs for decontamination. * : this may require prior regulatory permission	To be consistent with French practice.	X			

FR.N83	06.017 Stage 4 i	Regulatory permission to operate the facility is generally issued to the operating organization before the start of this stage. In this case, „hot processing‘ commissioning will be performed under the responsibility, safety procedures and organization of the operating organization for a fully operational facility. ~~It should be considered part of the operational stage of the facility;~~	Operating license may be already issued for commissioning, with subsequent hold points as needed	X			
FR.N84	06.017 Stage 4 ii	In any event, during active commissioning, and as far as defined and applicable, the safety requirements valid for the operation stage of the facility should be applied, unless a safety assessment is made to suspend or modify the regime and any required approval by the regulatory body has been granted;	Clarification	X			
FR.N85	06.017 Stage 4 v	All such modifications should be endorsed by the Safety Committee and approved by the head of the facility and subject to the regulatory body approval when required;	Clarification	X			
FR.N86	07.005 -	Shift and day operations staff ~~and support staff (especially maintenance, and radiation protection staffs)~~ within the reprocessing facility, as reprocessing facilities typically operate on a 24 hours/ 365 days a year basis even when not processing material;	Superfluous	X			

FR.N87	07.008 -	~~The need for~~ training all levels of management should ~~be considered in order for personnel involved in the management and operation to~~ enable them to ~~fully~~ understand the complexity and the range of hazards in reprocessing facilities, with a level of detail consistent with their level of responsibility.		X			
Germany WASSC and NUSSC comments on DS360							
DE.NW01	01.011 -	"This Safety Guide consists of eight sections and two annexes. These sections follow the general structure …"	Editorial.	X			
DE.NW02	02.006 -	2nd sentence: "However, all levels of defense-in-~~re~~depth should be addressed …"	Editorial.	X			
DE.NW03	02.014 -	2nd sentence: "Such situations include potential critically sequences, natural or man-made internal or external events."	Editorial.	X			
DE.NW04	03.019 -	1st sentence: "For ~~On multi-facility~~ reprocessing facility sites at which nuclear installations of different types are collocated, the hazards from interactions between facilities on the site should be taken into account …"	Clarification.	X			
DE.NW05	04.022 -	1st sentence: "On-line and standby fans should be provided according to the safety assessment results ~~(Para. IV.27 of Annex III)~~."	Misleading reference. Such Para does neither exist in DS360 nor in NS-R-5 (Rev. 1).	X			
DE.NW06	04.030 -	1st sentence: "… to provide protection during normal, abnormal and within DBA ~~accident~~ conditions."	Editorial.	X			
DE.NW07	04.034 -	Last sentence: "… (e.g. for ~~PuO2~~ PuO_2 powder or Pu contaminated waste)~~,~~ …"	Editorial.	X			

DE.NW08	04.046 -	2nd sentence: "… expected to occur under all operational or DBA ~~accident~~ conditions …"	Editorial.	X			
DE.NW9	04.048 -	Last sentence: "… and should consider the need for frequent inspection, continuous closed circuit television ~~CCTV~~ and adequate lighting."	The abbreviation CCTV should be explained here because it is not introduced elsewhere in the document.	X			
DE.NW10	04.063 -	6th bullet: "Consistency of the fire extinguishing media with the requirements of other safety analyses, …"	Wording.	X			
DE.NW11	04.086 -	1st bullet: "… In accordance with the safety analysis, valves should be used that are designed to fail to a safe position (see paras. ~~4.71-4.72~~ 4.70-4.71);"	Wrong Paras are cited.	X			
DE.NW12	04.123 -	"The list of hazards defined in (Ref. [1]: Annex ~~III~~ I) should be developed by identifying all postulated initiating events …"	Wrong annex is cited in this Para. A list of postulated initiating events is presented in Annex I of NS-R-5 (Rev. 1).	X			
DE.NW13	04.134 -	Bullet b): "Identification of workers and members of the public who could possibly be affected by accidents; i.e. ~~a 'critical group' of people~~ representative persons living in the vicinity of the facility;" Bullet i): "Quantification of the consequences for the representative person(s) ~~and critical group(s)~~ identified in the safety assessment"	According to the definitions in the IAEA Safety Requirements GSR Part 3, the term 'representative person' – an individual receiving a dose that is representative of the doses to the more highly exposed individuals in the population – has replaced the term 'critical group'. As indicated in the ICRP Publication 101, the dose to the representative person is the equivalent of the mean dose in the critical group.	X			
DE.NW14	04.137 -	"The identification of workers and mem-	See our related comment on	X			

		bers of the public (the ~~critical group of maximally exposed off-site individuals~~ 'representative persons') who may potentially be affected by an accident …"	Para 4.134.				
DE.NW15	04.143 -	1st sentence: "For safety, environmental and economic reasons, ~~the aim of~~ radioactive waste management is aiming to the reduction and/or ~~minimize~~ minimization of the generation of waste."	The reduction and/or minimization is only one aim in radioactive waste management.	X			
DE.NW16	04.143 -	5th bullet: "Available interim storage and disposal routes and their capacities."	Editorial (first step: interim storage; second step: disposal).	X			
DE.NW17	04.144 -	1st sentence: "… reprocessing facility activities result in wastes that widely vary in type, radiological characteristics, chemical composition and quantity. …"	Clarification and completeness.	X			
DE.NW18	04.144 -	Add new last sentence: "… its chemical and physical characteristics (e.g. flammable, heat generating). As disposal is the final step of radioactive waste management, preferably such waste processing techniques and procedures should be applied that provide waste forms and/or waste packages being in line with the waste acceptance requirements for disposal."	In order to avoid, as far as possible, re-conditioning and/or re-packaging of waste, it is useful and appropriate to consider requirements related to future disposal during waste processing.	X			
DE.NW19	04.145 -	"In case of existing disposal routes, the design of the reprocessing facility should establish the characteristics of each of them and provide (or identify) equipment and facilities for characterizing, ~~segregating,~~ pretreating, treating, conditioning, ~~directing~~ and transporting, as necessary, waste to the	According to the IAEA Safety Glossary (2007 Edition), the term 'pretreatment' is more comprehensive and includes 'collection', 'segregation', 'chemical adjustment' and 'decontamination'. Pretreatment, treatment and	X			

		appropriate disposal route …"	conditioning are part of the predisposal management of radioactive waste.				
DE.NW20	06.017 - prior to	Title of subsection: "COMMISSION~~N~~ING STAGES"	Editorial.	X			
DE.NW21	07.027 -	1st sentence: "All waste should be treated and stored in accordance with pre-established criteria and the national waste classification scheme. ~~and~~ Waste management should take into consideration both on-site and off-site storage capacity ~~and~~ as well as disposal options and operating disposal facilities (if available)."	Clarification and completeness.	X			
DE.NW22	07.027 -	Include new sentence: "… without a recognized disposal route. In case of a disposal facility being in operation, waste characterization should be performed in such a way that compliance with the waste acceptance requirements can be proved. The available information …"	Clarification and completeness.	X			
DE.NW23	07.028 - heading only	"Exclusion of foreign ~~M~~material"	Editorial correction.	X			
DE.NW24	07.081 -	"… the hazards associated with the use of strong acids and hazardous chemicals, partially (*particularly*) at high temperatures, throughout the process and the use of organic solvents in the extraction stages."	For completeness.	X			
DE.NW25	07.091 -	"Any waste generated at reprocessing facility should be characterized by physical, chemical and radiological properties to allow its subsequent optimum management, i.e. appropriate pretreatment, treatment~~,~~ and	In addition to treatment and conditioning, pretreatment is also part of the predisposal management of radioactive waste. According to the IAEA Safety Glossary (2007	X			

		conditioning, and selection or determination of a storage and/or disposal route."	Edition), the term 'pretreatment' includes 'collection', 'segregation', 'chemical adjustment' and 'decontamination'. Storage usually precedes disposal.				
DE.NW26	07.092 -	"To the extent possible, the management of waste should ensure that all waste will meet the specifications for existing storage and/or disposal routes. With respect to disposal options (i.e., if a disposal route is not available), a comprehensive waste characterization should be performed in order to provide a data base for future waste management steps."	1st sentence: Storage usually precedes disposal. 2nd sentence: The availability of a reprocessing waste data base strongly contributes to the avoidance of characterization work that may turn out to become necessary for future disposal.	X X			
DE.NW27	07.093 -	"A strategy for the management of radioactive waste should be produced and implemented on a reprocessing facility site depending on the types of waste to be reprocessed and the national waste management policy and strategy."	Clarification.	X			
DE.NW28	07.094 -	2nd sentence: "Trends in radioactive waste generation should be monitored and the effectiveness of applied waste reduction and/or minimization measures demonstrated."	Wording.	X			
DE.NW29	07.096 -	"Segregation ~~Characterization~~ and characterization ~~segregation~~ practices for radioactive wastes should be developed and applied to provide a foundation for safe and effective management of these wastes from generation through to disposal."	To place the steps for radioactive waste management in the correct order (Segregation precedes characterization).	X			

DE.NW30	07.097 -	"The waste collection and further pre-treatment, treatment and conditioning should be organized according to pre-established criteria and procedures defined to meet the requirements of defined or planned routes of ~~treatment~~ processing, storage and disposal ~~routes~~."	For completeness. Collection of radioactive waste is part of pretreatment operations. Storage usually precedes disposal.	X			
DE.NW31	07.098 -	1st sentence: "Consideration should be given to segregating solid waste according to its area of origin … and routes of ~~treatment~~ processing, storage and disposal."	For completeness. According to the IAEA Safety Glossary (2007 Edition), the term 'processing' is more comprehensive and includes 'pretreatment', 'treatment' and 'conditioning'. Storage usually precedes disposal.	X			
DE.NW32	07.100 -	1st sentence: "As far as reasonably achievable, decontamination should be used for reducing and/or minimizing environmental impact and maximizing nuclear material recovery. Decontamination of alpha contaminated (e.g., Pu) waste should be as complete as economically practicable to reduce and/or minimize the impact of long lived emitters to the environment, …"	Wording/Editorial.	X			
DE.NW33	Ref. [13]	"… Decommissioning of Facilities ~~Using Radioactive Materials~~, IAEA Safety Standards Series No. ~~WS-R-5~~ GSR Part 6, IAEA Vienna ~~(2006)~~ (2014)"	In the meantime, GSR Part 6 (revision of WS-R-5, formerly DS450) is established as an IAEA Safety Standard. Please refer to the new publication which will be issued this year.	X			
Japan NUSSC Comments on DS360							
JP.N01	03.013 8th bullet	・Security requirements[9]. [9] Detail is outside the scope of the document but any interface can and	Security matters are out of the scope of the document. The footnote is to clarify it.	X			

		should be identified as necessary. (Put a footnote on 8th bullet as shown below.)					
JP.N02	04.045 1st bullet	・A reference fissile material, taking ~~in to~~ into account any uncertainties ...;	Editorial.	X			
JP.N03	04.069 2nd sentence	Please rewrite the sentence taking into account the question in the right column.	Clarification It is hard to find how does the part “design and administrative measures including human factor analysis and a robust management system to reduce the failure frequency of mechanical handling systems” work grammatically in the whole sentence, e.g. how to relate to the former part of sentence, what is a verb and subject for “design and administrative measures”, connected to the former part	X			
JP.N04	4.155 3rd sentence	For events that may affect control rooms, e.g. fire, externally generated hazardous chemical releases etc., the control of major reprocessing facility safety functions should be provided by the use of appropriately located ~~(alternative)~~ emergency control rooms or alternative arrangements, e.g. emergency control panels ~~or emergency control rooms.~~	Here, providing a control function which works in emergency is important regardless of equipment itself, i.e. control rooms, panels or whatever. The proposed sentence is more constructive from the above viewpoint.	X			
JP.N05	05.002 1st sentence	Please rewrite the sentence taking into account the question in the right column.	The term “standardized” in the sentence seems to be an adjective. However, there is no noun after the “standardized”. Therefore, it is hard to understand the sentence on this	X			

			part. 1st sentence in the para 5.2 As large chemical and mechanical facilities the construction of reprocessing facilities should use modularized components, standardized as far as practical.				
JP.N06	06.003 -	The head of the facility has responsibility for safety throughout the reprocessing facility. To provide considered advice to the head of the facility, a Safety Committee should be established at this stage (if one has not already been established). The Safety Committee should advice ~~consider~~:	Wording The IAEA Safety Glossary defines “safety committee” as follows. *A group of experts from the operating organization convened to advise on the safety of operation of an authorized facility.* Para 9.15 in NS-R-5 says as follows. *The operating organization shall establish one or more internal safety committees to advise the management of the operating organization on safety issues related to the commissioning, operation and modification of the facility.* Therefore, the term “consider” must be “advice” to keep consistency with above documents.	X			
JP.N07	06.012 1st and	Consideration should ~~also~~ be given ~~by the Safety Committee~~ to the safety of arrangements for controlling such	The guide describes important items. However, why should the items be considered by		The Safety Committee should advise on the		To clarify that these are specific areas/ issues where the

	2nd sentences	section by section commissioning and the arrangements for communications between the commissioning and other groups in the facility. ~~The Committee~~ Consideration should also ~~consider~~ be given whether any safety components tested earlier in the programme require reassurance testing prior to the next stage of commissioning (as a check on arrangements in 6.11).	only the Safety Committee? It is not an essential matter that who should consider the issues. When we see the para 6.13, an issue itself is described with no description about who should consider the issue. What is the difference between the items in the para 6.12 and that in 6.13? Both items are equally important but no difference, i.e. there is no rational reason that the para 6.12 limits only the Safety Committee as personnel/organization who should consider the issue. The proposed sentence is to resolve above matters.		arrangements…… . The Safety Committee should also provide advice on whether…		Safety Committee is recommended to provide advice. The facility management should consider all items in 6.11, 6.12 and 6.13
JP.N08	06.014 1st sentence	Where inactive simulates or temporary reagent supplies are introduced for commissioning purposes, care should be taken that these ~~are~~ have identical characteristics for a commissioning purpose, as far as practicable, (chemically and physically) to the material to be used during operations.	Strictly speaking, “inactive simulates or temporary reagent supplies” and “the material to be used during operations” are not always exactly identical. The materials of “inactive simulates or temporary reagent supplies” should have identical characteristics with “the material to be used during operations” according to a commissioning purpose. The proposed sentence provides a collect statement taking into account above.	X			
JP.N9	07.024 2nd sentence	This programme of walk-around's should include a suitable level of independence (for example, including personnel from other facilities in or out	Clarification	X			

		of a site).					
JP.N10	07.049 2nd sentence	A specific concern for reprocessing facilities is the Pu-polymer creation which arises from hydrolysis in high Pu and low acid concentration condition in solution, and it can possibly lead to precipitation, local high Pu concentration portion ~~dilution of fissile material solutions and/ or Pu valence changes which can result in hydrolysis and precipitation~~.	This sentence tries to describe the concern of the Pu-polymer creation. However, it is not clear, and the original sentence can be improved to make clear its behavior so that readers of the document can understand the content of this guide easily. The proposed sentence can make clear the idea in the original sentence.	X (with ENISS.3.4)			
JP.N11	07.059 2nd sentence	Waste arising from maintenance or similar interventions should be segregated by type (i.e. disposal route), collected and directed to disposal storage appropriately, in a timely manner because it contributes to dose control/reduction as opposed to letting waste just accumulate in the work area. or Waste arising from maintenance or similar interventions should be segregated by type (i.e. disposal route), collected and directed to disposal storage appropriately, in a timely manner[n]. [n]It contributes (significantly) to both internal and external dose control/reduction as opposed to letting waste just accumulate in the work area.	It is afraid that the readers of the document misunderstand the issue is a matter of waste management. The proposed sentence adds the idea on how to contribute the protection against exposure to provide better understanding of the issue to the readers. Adding it as a note is OK.	X (with ENISS.3.4)			
JP.N12	07.069 - Item, a	A temporary controlled area, e.g. green house, should be created that includes the work area.	Put an example to provide better understanding of the issue to the readers.		add footnote to “enclosure” in bullet 1 - “often referred to as a		To meet intent of comment

					“tent”, “ greenhouse”, etc.		
Japan WASSC comments on DS360							
JP.W01	P50/L8	The title should be changed from” RADIOACTIVE WASTE MANAGEMENT” to “MANAGEMENT OF RADIOACTIVE WASTE”	Consistency with relevant Safety Guides	X			
JP.W02	04.143 -	Add the following sentences to the beginning. Requirements for managing radioactive wastes from R&D (*reprocessing*) facilities are established in paragraphs 9.54 to 9.57 in Ref. [1]. Detailed guidance on predisposal management of radioactive waste is set out in other relevant Safety Guide.[X] [X] DS447	Clarification Consistency with DS381.	X (WS-G-2.6 revision or WS-G-2.5, WS-G-2.6, WS-G-6.1, GSG-3 if not published)			
JP.W03	04.143 -	For safety, environmental and economic reasons, ~~the aim of radioactive waste management is to minimize~~ the generation of waste should be minimized.	“the aim of radioactive waste management is to minimize” is sense of incongruity.		…“aim”… -> …“an essential objective”….		Same as wording used in WS-G-2.5 (for compliance with SF-1 P7)
JP.W04	04.143 -	It is likely that an outcome of meeting this purpose will be the minimization, as far as practicable, of both the volume and activity of wastes generated in reprocessing facilities (Refs. [48] and [~~5~~X]). [X] INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities, DS447	Appropriate citation.	X (as JP.W02 above)			
JP.W05	4.149	Start a newline at the next position ‘/’ Injection and sampling equipment to test filter performance / should be installed and used.	Editorial	X			

JP.W06	4.151	Make texts.	This paragraph is deemed to be incomplete.	X (part of 4.150)			
JP.W07	7.102/2	Information about radioactive waste needed for its safe management now or in the future should be recorded and preserved according to the proper safety management system[17]. [17] GS-G-3.3	Consistency with DS381. Management system specific to processing, handling and storage of radioactive waste is provided in GS-G-3.3.		As proposal except "proper" -> "an appropriate"		Clarity
JP.W08	Reference	[13] INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Facilities Using Radioactive Materials Decommissioning of Facilities, IAEA Safety Standards Series No. WS-R-5 GSR Part 6, IAEA Vienna (20062014)	WS-R-5 will be superseded by GSR Part 6 (DS450.)	X			
DS360_Republic of Korea_NUSSC&RASSC&WASSC							
KR.NRW01	General comments	*(Comments)* *Additional guidance on the following subjects should be addressed in DS360:* - *Feedback of operating experience feedback (in operation);* - *Consideration to facilitate decontamination and eventual decommissioning (in design); and* - *Other considerations for reprocessing facility-specific design features like glove boxes, hot cells, gamma/neutron shielding, design for maintenance, etc.*	For providing guidance to fulfil appropriate requirements in Para. 9.16 of NS-R-5 and being compatible with similar documents such as Para 4.121 of SSG-7, etc.	X			
KR.NRW02	01.003 -	… to maintain low levels of radiation and minimizing ~~radioactive of discharges~~ <u>radioactivity discharged</u> to the environment …	For grammatical correction	X			
KR.NRW0	01.006 -	… mixed oxide <u>(MOX)</u> fuel rods and	For keeping consistency with	X			

3		assemblies ~~(MOX)~~, and; …	the expression in §1.1 of NS-R-5 as “mixed oxide (MOX) fuel”				
KR.NRW04	01.008 -	This Safety Guide is limited to the safety of reprocessing facility~~’s themselves.~~ itself and the protection of its workers, the public, and the environment around it.	For clarification of the scope of the Safety Guide dealing with both the safety of facility and the protection of workers, the public and the environment from harmful impact of ionizing radiation	X			
KR.NRW05	01.011 -	… These ~~section~~ sections follow the general structure …	For grammatical correction	X			
KR.NRW06	02.004 -	… ● The range of dispersible forms of material present includes: ~~● Particulates;~~ ~~● Solids: contaminated items, scrap etc.;~~ ~~● Liquids: aqueous, organic;~~ ~~● Gaseous and volatile species.~~ - Particulates; - Solids: contaminated items, scrap etc.; - Liquids: aqueous, organic; - Gaseous and volatile species.	The texts should be indented further, since particulates, solids, liquids, and gaseous/volatile species are types of dispersible forms of materials.	X			
KR.NRW07	02.006 -	.. all levels of ~~defense-in-re~~ defense-in-depth should …	For grammatical correction	X			
KR.NRW08	02.018 - 2.16~	… ~~2.16. Active heat removal systems in storage areas to remove decay heat;~~ ~~2.17. Dilution (gas flow) systems to prevent hazardous hydrogen concentration;~~ ~~2.18. Safety significant control, instrumentation and utility supply systems.~~	Paragraphs 2.16 to 2.18 should be converted to bullets under Para. 2.15.	X			

		● Active heat removal systems in storage areas to remove decay heat; ● Dilution (gas flow) systems to prevent hazardous hydrogen concentration; ● Safety significant control, instrumentation and utility supply systems.					
KR.NRW9	03.013 -	… ~~Information on local physical data relevant to the dispersion of released radioactivity and its potential effects on people;~~ ~~The physical factors affecting the dispersion and accumulation of released radioactivity and the radiological risk to people;~~ Local physical factors and data affecting the dispersion and accumulation of released radioactivity and the radiological risk to people;	Present two bullets describing similar aspects should be merged into one as appropriate.	X			
KR.NRW10	03.021 -	● Geological ~~and geotechnical~~ (…) ● … ● Geotechnical (…)	Geotechnical site characteristics were duplicated in Para. 3.21. In addition, examples shown in the parentheses should be also rearranged into two categories such as geological and geotechnical aspects, respectively.	X			
KR.NRW11	04.001 -	1) Confinement of radioactive materials ~~(including removal of decay heat)~~; 2) Removal of decay heat ~~2)~~ 3) Protection against external	Removal of decay heat is one of the most important safety functions for reprocessing facilities. Rather than being a part of confinement function, it			X	The original wording is consistent with the usage NS-R-5 for the 3 “main safety functions”

		exposure; ~~3)~~ 4) Prevention of criticality.	should be described in a separate part.				
KR.NRW12	04.005 -	4.5. The following considerations apply: ● The requirements on confinement of radioactive materials as established in (Ref. [1]: paras. 6.37–6.39, ~~6.52,~~ 6.53 and Appendix IV: IV.21–IV.25). During normal operation, internal dose is avoided by design and the use of personal protection (personal protective equipment, (Ref. [5])) should be avoided as far as possible; ● The requirements on removal of decay heat as established in (Ref. [1]: paras. 6.52 and Appendix IV: IV.4–IV.6). In view of the decay heat generated, all thermal loads and processes should be given appropriate consideration in design.	Removal of decay heat is one of the most important safety functions for reprocessing facilities, and therefore it deserves to be described in a separate Para.	X			
KR.NRW13	04.032 – 04.033	~~*Cooling*~~ **Cooling and removal of decay heat** 4.32. … 4.33. …	Cooling including removal of decay heat (sub-title and Paras. 4.32 and 4.33) should be changed to a new separated sub-section following Para 4.36.	X			
KR.NRW14	04.145 -	… These disposal ~~route~~ routes need to account for …	For grammatical correction	X			
KR.NRW15	04.149 -	4.149 Monitoring equipment such as the following should be installed and used: ● Differential pressure gauges to identify the requirement for filter changes~~, and~~; ● Activity or gas concentration measurement devices and discharge flow measuring devices with continuous sampling; and	For easy understanding	X			

		● Injection and sampling equipment to test filter performance ~~should be installed and used~~.					
KR.NRW16	07.093 -	7.93. A strategy for the management of radioactive waste should be ~~produce~~d established and implemented on a reprocessing facility site.	"Establishing strategy" rather than "Producing strategy" is more appropriate.	X			
KR.NRW17	Contents Section 8	~~8. PREPARATION FOR DECOMMISSIONING~~ 8. Decommissioning	The tile of Section 8 should be replaced with "Decommissioning" as already used in SSG-5, SSG-6 and SSG-7, since preparation of decommissioning is just a part of issues to be addressed in Section 8.			X	Current IAEA guidance for the scope of this section in facility guides is to use the title: "Preparation for Decommissioning". This is a change since SSG-5, -6 and -7 were published
KR.NRW18	Section 8	*(Comments)* *The structure of Section 8 should be rearranged to the format consisting of a few paragraphs of general descriptions, "PREPARATORY STEPS", and "DECOMMISSIONING PROCESS".*	The format of "Decommissioning" section should be compatible in similar guidance documents such as SSG-5, SSG-6, SSG-7, and even DS381.		section will be consistent with DS381		See KR.NRW17 re SSG-5, -6 and -7.
KR.NRW19	Ref. [8]	INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste ~~General Safety Requirements~~, IAEA Safety Standards Series No. GSR Part 5, IAEA, Vienna (2009).	For keeping constancy with format of references in IAEA documents	X			
Ukrainian NUSSC comments on DS360							
UA.N01	General	In the text of the Guidance "structures, systems and components (SSCs) **important to safety"** and "**safety-related systems"** are mentioned. It is desirable to use the same wording throughout the text or give clarification of difference between these two concepts, if any	Editorial	X			

UA.N02	Para 2.8, page 10, 3rd line	….. for ageing and degradation of structures, systems and components (SSCs) important for safety….	1. Editorial 2. Clarification of the addressed scope	X			
UA.N03	02.018 - Para 2.16	Delete numbering	Editorial	X			
UA.N04	03.010 - Para	Add bullet: "Within initiating meteorological events (wind, tornado, heavy rainfall, etc.)"	Meteorological events are important to mention to consider resistance of the facility components to failures as well as transfer of radioactive discharges	X			
UA.N05	03.019, page 16	Add phrase: "For multi-facility reprocessing sites, an overall impact of the site needs to be assessed"	To take into account the total impact of all facilities on the site	X			
UA.N06	04.005, page 18, 2)	2) Protection against internal and external exposure	Internal exposure should be mentioned as well			X	This is addressed in of bullet 1 (confinement)
UA.N07	04.001, page 17, last phrase	During normal operation, internal dose is avoided by design including dynamic barriers, adequate zoning and classification of premises…..	To avoid staff access to areas with potentially high contamination levels	X			
UA.N08	39. - Pages 38 Extreme weather conditions	It is desirable to describe measures for protection of facilities against tsunamis as well	Additional specification	X			
UA.N9	04.143 Page 50	…. one of the aims of radioactive waste management is to minimize the generation….	The general goal of radioactive waste management is to ensure protection of the public and the environment for as long as it remains hazardous. Radioactive waste management covers all activities that are involved in collection, handling, treatment,		See JP.W03 …"aim"… -> …"an essential objective"….		Same as wording used in WS-G-2.5 (for compliance with SF-1 P7)

			conditioning, transportation, storage, and disposal of various types of waste.				
UA.N10	04.145 Page 50, line 1	1) In case of existing disposal routs, the design should, <u>according to waste acceptance criteria for disposal,</u> establish ….. 2) Add phrases: Arrangements should be put in place and quality control of waste packages should be undertaken to verify that the waste and waste packages comply with established requirements and criteria for disposal. Special attention should be given to identifying the presence of long-lived radionuclides and fissile material in waste.	To guarantee that waste will correspond to criteria for disposal.	X X			
UA.N11	07.092, page 78	Add phrase: Given the lack of a finalized disposal program, the waste forms and packages should correspond to generic waste acceptance criteria to be compatible with a wide range of disposal systems.			Replace “Given the lack of a finalized disposal program…” with “Where no final disposal route has been defined…”		Final disposal routes may be defined for many waste (and effluent) forms but not all)
UA.N12	04.087	To add the following: Based on safety assessments, design should take into account effects of hazardous chemical releases such as failures or damage of equipment that can lead to unsafe conditions at the nuclear facility	Not only influence of chemical hazards on workers should be accounted for, but also possible impact on systems, structures and components with unfavorable consequences	X			
USA Comments DS 360 - NUSSC							
US.N01	General 1	Numerous references made to information in Reference 1 (2014), but Reference 1 (2014) was not available. Incorporate Reference 1 in current safety standard as an ANNEX.	Provides readers with easy access to the important information needed without having to go to another document.			X	Ref. [1] has now been published as: NS-R-5 (Rev. 1) (2014)

US.N02	General 4	Add Table for acronyms and abbreviations discussed in document	Makes it easier for reader to look up meaning acronym or abbreviation.	X			
US.N03a	08.001 to 8.4 General 5 & and Page 82	The Section on Preparation for Decommissioning as presented in paragraphs 8.1 to 8.4 needs to be revised to address the following aspects: Para 8.1: References need to be updated to refer to GSR Part 6 (Decommissioning of Facilities, 2014) and address facility release criteria as well as release of equipment for clearance.	Completeness & Clarification: The Section on "Preparation for Decommissioning" is incomplete and needs further discussion and elaboration as described in the left column.	X			
US.N03b	08.002	This is a repeat of Para 1.2, page 6. It does not provide guidance or discuss approaches to compliance with requirements. We suggest this paragraph to be expanded to address briefly: (1) requirements under GSR Part 6; and (2) requirements under NS-R-5 (Rev. 1) and approaches for addressing these requirements to prepare for decommissioning such as: (a) infrastructure design aspect to detect leaks early before spread of contamination; (b) environmental monitoring aspects and location of monitoring wells to detect leaks into ground water and/or surface water as early as possible before reaching offsite boundaries; (c) updating of financial assurance funds for decommissioning; and (d) keeping of historical records of incidents and spills, as well as environmental monitoring data to support early planning and informative		X			

		decisions regarding decommissioning.					
US.N03c	08.003	The design measures for decommissioning typically go beyond the operational stage and typically extend after cease of operation. For example, to support decommissioning design and preparation; characterization and survey is typically conducted after cease of operation to assess location (in 3D) and level of contamination to support design of cleanup activities and preparation of a decommissioning plan. We suggest adding these aspects in Para 8.3 with some elaboration . IAEA GSR Part 6 [Decommissioning of Facilities) presents safety requirements for decommissioning. In addition, Para 8.3 lacks any measures to assess and evaluate hazardous and toxic materials as well as mixed waste. Due to use of solvents and acids in the nuclear fuel processing, it is anticipated that mixed waste and hazardous chemicals are significant safety functions that need to have proper measures in planning for decommissioning.			The comments will be incorporated to the extent that they fall within the scope of "Preparation for Decommissioning "		.
US.N03d	08.004	This Para may contemplate that decommissioning of nuclear fuel processing facilities may be significantly delayed in order to be kept in safe store. In this regard we offer the following comments: 1. Significant delay in decommissioning need to be approved by the regulatory authority and should follow a decommissioning plan or a license termination plan. 2. Sufficient financial assurance		X X			

		funds need to be allotted for decommissioning if significant delay was authorized. 3. Institutional controls and safety and security aspects for access and monitoring should be in place. 4. Onsite/offsite environmental monitoring and active/passive controls need to be in place. Section 8 lacks guidance on preparation for dismantling and release of equipment for recycling, or clearance for reuse. [See IAEA GSR Part 3, BSS and IAEA RSG1.7]		X X		X	Outside scope of Guide
US.N04	General	Section 4 discussed safety considerations and safety aspects of radioactive waste management in the reprocessing facility and other design considerations. It indicated that waste can be of different categories as stated in Para 144: "*These disposal route need to account for not only the isotopic composition of the waste but also its chemical and physical characteristics (e.g. flammable, heat generating).*" In other words, DS360 recognized different kind of waste streams and fell short in describing waste categories and classes for storage, packaging, and ultimate disposal. The guidance needs to provide more elaboration on waste categories and classes anticipated including volumes and radioactive material inventories. In addition, the guidance needs to address a category of waste "Mixed Waste" which needs special	Completeness to address different waste categories and classes and associated safety issues, particularly "Mixed Waste" category.			X	This level of detail is beyond the scope of this Guide

		attention for treatment, storage, packaging and disposition. We suggest, providing more elaboration and discussion about radioactive waste categories and safety features and planning issues for its disposition,					
US.N05	01.001 Line 1	Add "Spent" before "Nuclear"	Improves clarity of standard	X			
US.N06	01.003 Line 2	Add "transuranic nuclides" after "solutions,"	Solutions of transuranic nuclides are part of reprocessing operations.	X			
US.N07	01.003, line 5, Page 6	Modify sentence to read: Uranium, plutonium, fission products, and all waste from reprocessing facilities should be characterized, handled, processed, treated, and stored safely to maintain low levels of radiation, thereby minimizing radioactive and hazardous discharges into the environment, as well as limiting the potential impact of accident on workers, the public and the environment	Add "fission products". Correctness, language.	X			
US.N08	01.006 Line 5	Add bullet for fission product separation and storage	Separation of fission products are major process in reprocessing of spent fuel.			X	Bullet 3 covers this
US.N9	01.007 Line 2	Replace "particulate" with "aerosol"	Aerosol more appropriate term for accidental releases.			X	Aerosols are defined as colloidal dispersions not all particulates of concern are colloidal
US.N10	02.001 Line 4	Add "chemical explosion, fires, pipe or vessel leaks," after "criticality, "	Chemical explosions, fires, pipe or vessel leaks are also significant accident types.			X	List of main risks not initiating events
US.N11	02.004 Line 7	Replace "particulates" with "aerosols"	Aerosol is a much preferred word to use.			X	See US.N9
US.N12	02.006, Page 10	Para 2.6 stated" "For the implementation of defense-in-depth (Ref. [1]: Section 2), the first two	Completeness to address different levels of DID	X			

		levels are the most significant; as the risks should be eliminated mainly by design and appropriate operating procedures (see Sections 4 and 7 below). However all levels of defense-in-depth in Ref. [1should be addressed (Ref. [1]: paras. 2.4-2.8). In this context, DS360 addressed defense-in-depth (DID) aspects for design and operation. However, DID aspects at level 4 (for example, beyond design basis) and DID aspects regarding external events were hardly discussed or addressed. Since DID concept and philosophy is of paramount significance for nuclear fuel reprocessing facilities; we recommend adding more discussion and elaboration on the different levels of DID including addressing hazards from external events.					
US.N13	03.002 Line 8	Delete "particulates" and replace with "aerosols"	Aerosols are a much preferred word to use.			X	See US.N9
US.N14	04.010 Line 4	Clarify loss of cooling for reprocessing facility	Loss of cooling normally associated with reactor accidents than with reprocessing facilities.	X			
US.N15	04.010 Line 11	Add "pipe or vessel leaks" as a separate bullet item.	Could be major cause of DBA for reprocessing facilities	X			
US.N16	04.028 Line 1	Clarify "medium active (MA) materials"	The meaning of these words is not entirely clear.	X			
US.N17	04.034 Line 2	List the potential production and build-up of degradation products.	Molecular hydrogen (H_2) is generally thought to be the major radiolysis product that could be involved in explosions.	X			
US.N18	04.042 Line 1	Insert comma after word "facility".	Provides clarity to the sentence.	X			
US.N19	04.065	Replace "diluents" with "reactants and	Provides more clarity to	X			

	Line 3	solvents”	standard.				
US.N20	04.072 Line 1	Section Title: Insert “Pipe or Vessel Leaks” before “Corrosion” and place parenthesis around “Corrosion, Erosion and Mechanical Wear”.	Pipe or Vessel leaks are a significant accident initiating event and should be described in this section.	X			
US.N21	04.082 Line 7	Clarify word “hydrogen”	Not sure if this is molecular hydrogen or hydrogen peroxide since both are produced by radiolysis.			X	Specifically hydrogen
US.N22	04.110 Line 5	Move section on Instrumentation and control (I&C) to another section of the standard, perhaps in the section on Safety Analysis	The topic on Instrumentation and Control (I&C) does not appear one that should be in the Postulated Initiating Events section of the safety standard.			X	Included in NS-R-5 as PIE
US.N23	04.113 Line 7	Define or provide example of local analysis	Provide clarification of standard.	X			
US.N24	04.121 Line 5	Add comma after :”acidity”	Correct grammar	X			
US.N25	04.121 Line 5	Delete space after “fissile”	Correct grammar	X			
US.N26	04.132 Line 12	Add an item 3) Risk Assessment Methodologies-Develop an approach that incorporates more quantitative risk assessment and PRA methods to adequately safety and risk at reprocessing facilities	Risk assessment and probabilistic risk assessment approaches should be used to assess the safety at reprocessing facilities.		See FR.N51 Replace 4.132 and 4.133 with a paragraph referencing GSR Part 4 and relevant parts of its supporting Guides for assessing accident consequences		Level of detail is beyond the scope of the Guide more appropriate to link to and reference IAEA Standards as use is not facility specific
US.N27	04.151 Line 2	Remove “Emergency preparedness and planning” from a topic under Radioactive Waste Management.	Emergency preparedness and planning are separate issues and should be discussed in other sections of the safety standard. Emergency Planning and Preparedness is discussed on Page 80, paragraphs 7.118 -	X (caused by a problem with the headings see EC.N01)			

			7.121 of the standard.				
US.N28	07.016 Line 3	More details should be provided under the discussion of Annex II	No details or discussion are provided for the items listed in the Tables of Annex II.	X			
US.N29	Annex I B	Replace “U Conversion” Box with “U Purification and Uranium Oxide Production”	“U Conversion” is very general, and a more specific term is needed to describe these processes.	X			
US.N30	Annex I D	Replace “Pu Conversion” Box and U/Pu Conversion” Box with more specific language relating to purification and powder production.	“Conversion” term is very general; a more specific wording is needed to describe these processes.	X			
US.N31	Annex II	Clarify column heading “First challenged SF* ” and explain terms listed under “Basic Safety Functions”	Not clear of meaning of this heading in the table, and the relationship of terms under Basic Safety Functions.	X			
US.N32	Annex II	The main SSCs for a Vessel are described on the second page of Annex II, but “Vessel” is first introduced on first page, and again on the third, fourth and fifth pages, without any SSCs.	Put SSCs in the “Vessel” category on first page to provide clear understanding and proper use of “Vessel” in Annex II.			X	The “generic” vessel category is placed as the last item in the first section and referred to elsewhere as necessary in the table
US.N33	Section on “Contributors” Page 94, Lines 3 and 6	Correct NRS to NRC	Editorial	X			