Document Outline (~DPP)
Version 32 dated 520 JuneApril 2012

1. IDENTIFICATION

Document Category	**Safety Requirements**
Working ID:	**DS462**
Proposed Title:	**Revision through addenda of GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4**
Proposed Action:	**Revision of several documents**
Review Committee(s) or Group:	**NUSSC, RASSC, WASSC, TRANSSC**
Technical Officer(s):	**D. Delattre for the coordination (DS462), A. Nicic and H. Mansoux for GSR Part 1 (DS463), S. Samaddar for NS-R-3 (DS464), P. Hughes for SSR-2/1 (DS465) and GSR Part 4 (DS466), M. Lipar for SSR-2/2 (DS467)**

2. BACKGROUND/RATIONALE

The IAEA Action Plan on Nuclear Safety (GOV/2011/59-GC(55)/14) includes an action to "Review and strengthen IAEA Safety Standards and improve their implementation".

It requires the Commission on Safety Standards and the IAEA Secretariat to review, and revise as necessary using the existing process in a more efficient manner, the relevant IAEA Safety Standards in a prioritised sequence. A footnote clarifies that this review could include, inter alia, regulatory structure, emergency preparedness and response, nuclear safety and engineering (site selection and evaluation, assessment of extreme natural hazards including their combined effects, management of severe accidents, station blackout, loss of heat sink, accumulation of explosive gases, nuclear fuel behaviour and ways to ensure the safety of spent fuel storage).

The Secretariat carried out a first review on the basis of the lessons from the information that was available up to September 2011. This included the two reports from the Government of Japan, issued in June and September 2011, the report of the IAEA Fact Finding Mission conducted from 24 May to 2 June 2011 and the letter from INSAG dated 26 July 2011.

The results of the work of the Secretariat and of its consideration by the four Safety Standards Committees and by the meeting of the Chairs held in February 2012 was submitted to the Commission on Safety Standards at its meeting on 27–29 March 2012 with a view to proposing a process for further developing the set of recommendations on how to address the gaps identified, as necessary. The CSS agreed that a document outline be prepared to initiate the revision process, through addenda to be prepared in a concomitant manner of GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4

3. OBJECTIVE

The objective of the revision is to incorporate the result of the gap analysis on the Safety Requirements based on the feedback from the TEPCO' Fukushima Dai-ichi NPP accident into

the revised Safety Requirements and to do so in a consistent manner in the whole set of requirements as well as in conjunction to the already agreed revision of GS-R-2 and GS-R-3.

4. JUSTIFICATION

The revision is justified by the first result of the gap analysis that was performed in 2011 and submitted to the CSS in March 2012, indicating the areas for relevant addition or modification of existing requirements. The table as of February 2012 is provided in annex.

As additional information becomes available this first list in annex will evolve and likely expand. These lessons learned will continue to inform the gap review and serve for the development of the technical bases supporting changes to the IAEA Safety Standards. It is expected that this annex will continue to be updated with national, regional and international contributions~~, as well as with the contribution from the second CNS Extraordinary Meeting in August 2012~~.

In particular, additional input to the revision of the Safety Requirements publications is expected from several meetings, including the extraordinary meeting of the Convention on Nuclear Safety in August 2012. Any such additional input will lead to an updating of the detailed proposals for strengthening the Safety Requirements publications.

5. PLACE IN THE OVERALL STRUCTURE OF THE RELEVANT SERIES AND INTERFACES WITH EXISTING AND/OR PLANNED PUBLICATIONS

The proposed addenda will relate to the some General Safety Requirements and some Specific Safety Requirements. They will be prepared in conjunction to the on-going revision of GS-R-2 and GS-R-3 and keep consistency with the Fundamental Safety Principles SF-1.

6. OVERVIEW

The revisions, through addenda, are not expected to affect the current structure of the published Safety Requirements. The content of the proposed new or modified paragraph will be based on the lessons learned from the TEPCO' Fukushima Dai-ichi NPP accident and the review by the Safety Standards Committees, the Member States and the Commission on Safety Standards on their implications for the Safety Requirements. The annex provides a first idea of those topical areas to be covered and will be kept updated as new information becomes available. Throughout the revision, the terminology will be updated so as to reflect in a consistent manner the latest version of the Safety Glossary

7. PRODUCTION SCHEDULE:

STEP 1: Preparing a Document outline	DONE
STEP 2: Approval of Document outline by the Coordination Committee	April 2012
STEP 3: Approval of Document outline by the Safety Standards Committees or the relevant group where appropriate	June/July 2012
STEP 4: Approval of Document outline by the CSS	October 2012
STEP 5: Preparing the draft addenda, including consideration of the results of the CNS meeting in August 2012	2011/2012
STEP 6: Approval of draft addenda by the Coordination Committee	September 2012
STEP 7: Approval by the Safety Standards Committees for submission to Member States for comments or the	October/ November

relevant group where appropriate	2012
STEP 8: Soliciting comments by Member States	December 2012 to March 2013
STEP 9: Addressing comments by Member States	April 2013
STEP 10: Approval of the revised draft addenda by the Coordination Committee Review in NS-SSCS	April 2013
STEP 11: Approval by the Safety Standards Committees for submission to the CSS or the relevant group where appropriate	June-July 2013
STEP 12: Endorsement by the CSS	October 2013
STEP 13: Establishment by Board of Governors	December 2013
STEP 14: Target publication date	1st Q 2014

8. RESOURCES

Safety Standards Review Task Force meetings

CM

Chairs meetings

TM as necessary

ANNEX : Synthesis of the input from the Secretariat on proposal for strengthening the Safety Requirements as a result of a first discussion of the annex A of the CSS Secretariat progress report rev.8 dated 23 February 2012 on the review of the IAEA Safety Standards in light of the TEPCO' Fukushima Daiichi NPP accident

Status as of 22 February 2012 after the meeting of the Chairs held on 20 and 21 February 2012

The tables below include the first proposal from the Secretariat for strengthening the Safety Requirements identified as priority for the review process: GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2, GSR Part 4.

These proposals are being further elaborated by the Secretariat with a view to submitting them to the Safety Standards Committees for their first review at their meeting in October/November 2012. ***The Committees are therefore not requested to provide comments on these at the stage of approval of the document outline, but will be consulted on the elaborated table****.*

Addendum to GSR Part 1

Lesson learned	Current text	Modification	Addition
2.1	2.8. To be effectively independent, the regulatory body shall have sufficient authority and sufficient staffing and shall have access to sufficient financial resources for the proper discharge of its assigned responsibilities. The regulatory body shall be able to make independent regulatory judgements and decisions, free from any undue influences that might compromise safety, such as pressures associated with changing political circumstances or economic conditions, or pressures from government departments or	2.8. To be effectively independent, the regulatory body shall have sufficient authority and sufficient staffing and shall have access to sufficient financial resources for the proper and timely discharge of its assigned responsibilities. The regulatory body shall be able to make independent regulatory judgements and decisions, under normal or emergency circumstances, free from any undue influences that might compromise safety, such as pressures associated with changing political	

	from other organizations. Furthermore, the regulatory body shall be able to give independent advice to government departments and governmental bodies on matters relating to the safety of facilities and activities.	circumstances or economic conditions, or pressures from government departments or from other organizations. Furthermore, the regulatory body shall be able to give independent advice to government departments and governmental bodies on matters relating to the safety of facilities and activities.	
2.2	2.23. The government shall specify and shall assign clear responsibilities for decision making in an emergency, and shall make provision for effective liaison between authorized parties and competent authorities and for an effective means of communication.	2.23. The government shall specify and shall assign clear responsibilities for timely decision making in an emergency, and shall make provision for effective liaison between authorized parties and competent authorities and for an effective means of communication.	
A5.1	**Overarching Requirement 14: International obligations and arrangements for international cooperation** **The government shall fulfil its respective international obligations, participate in the relevant international arrangements, including international peer reviews, and promote international cooperation to enhance safety globally.**		After existing § 3.2, add a new §: 3.3 The government shall establish and maintain adequate structures and mechanisms to benefit from international cooperation and assistance during a radiological or nuclear emergency, whenever necessary.
4.1	4.24. The regulatory body shall foster mutual understanding and respect on the part of authorized parties through frank, open and yet formal relationships, providing constructive liaison on safety related issues.	4.24. The regulatory body shall foster mutual understanding and respect on the part of authorized parties through in-depth technical dialogue, frank, open and yet formal relationships, providing constructive liaison on safety related issues.	

5.1	4.43. The regulatory body shall assess all radiation risks associated with normal operation, anticipated operational occurrences and accident conditions, prior to operation of the facility or conduct of the activity, and periodically throughout the lifetime of the facility or the duration of the activity, to determine whether radiation risks are as low as reasonably achievable.	4.43. The regulatory body shall assess all radiation risks associated with normal operation, anticipated operational occurrences and accident conditions, including low frequency extreme events, prior to operation of the facility or conduct of the activity, and periodically throughout the lifetime of the facility or the duration of the activity, to determine whether radiation risks are as low as reasonably achievable. See also GSR Part 4 lesson 5.1	
A6.2	4.68. The authorized party has an obligation to inform the public about the possible radiation risks associated with the operation of a facility or the conduct of an activity, and this obligation shall be specified in the regulations promulgated by the regulatory body, in the authorization or by other legal means.	4.68. The authorized party has an obligation to inform the public about the possible radiation risks associated with the operation of a facility or the conduct of an activity (both for normal operation and in accident conditions), and this obligation shall be specified in the regulations promulgated by the regulatory body, in the authorization or by other legal means.	

Addendum to NS-R-3

Lesson learned	Current text	Modification	Addition
10.1 and others	Use of the term “proposed site” throughout the document	To be modified so that existing sites be also considered	
10.1 and 12.1	USES FOR SITE EVALUATION 2.3. In addition to providing the technical basis for the safety analysis report to be submitted to the nuclear regulatory body, the technical information obtained for use in complying with these safety requirements will also be useful in fulfilling the requirements for the environmental impact assessment for radiological hazards GENERAL CRITERIA 2.5. Proposed sites for nuclear installations shall be examined with regard to the frequency and severity of external natural and human induced events and phenomena that could affect the safety of the installation.	USES FOR SITE EVALUATION 2.3. In addition to providing the technical basis for the safety analysis report to be submitted to the nuclear regulatory body, the technical information obtained for use in complying with these safety requirements will also be useful in safety re-evaluation and back fitting of existing nuclear installations, and fulfilling the requirements for the environmental impact assessment for radiological hazards GENERAL CRITERIA 2.5. The sites for nuclear installations shall be examined, for ensuring the safety goals, with regard to the frequency and severity of external natural and human induced events and phenomena that could affect the safety of the installation.	
9.1	2.18. Appropriate methods shall be adopted for establishing the hazards that are associated with major external phenomena. The methods shall be justified in terms of being up to date and compatible with the characteristics of the region. Special consideration should be given to applicable probabilistic methodologies. It should be noted that probabilistic hazard curves are generally needed to conduct probabilistic safety assessments for external events.	2.18. Appropriate methods shall be adopted for establishing the hazards that are associated with major external phenomena including low frequency high consequence events that may lead to cliff edge effects. The methods shall be justified in terms of being up to date and compatible with the characteristics of the region. Special consideration should be given to applicable probabilistic methodologies. It should be noted that probabilistic hazard curves are generally needed to conduct probabilistic safety assessments for external events.	

Addendum to SSR-2/1

Lesson learned	Current text	Modification	Addition
21.1	§ 2.12 to 2.14 and § 4.9 to 4.13		Reinforce the need for DID for severe accident. Can this be included in the set of § 2.12 to 2.14 and under requirement 7 (§4.9 to 4.13)
19.1	**External hazards**[7] 5.17. The design shall include due consideration of those natural and human induced external events (i.e. events of origin external to the plant) that have been identified in the site evaluation process. Natural external events shall be addressed, including meteorological, hydrological, geological and seismic events. Human induced external events arising from nearby industries and transport routes shall be addressed. In the short term, the safety of the plant shall not be permitted to be dependent on the availability of off-site services such as electricity supply and fire fighting services. The design shall take due account of site specific conditions to determine		5.17 … In addition, to enhance defense in depth, the design shall include provisions to avoid short-term cliff-edge effect in case of: - an extreme external hazard of an intensity or a duration exceeding the one considered as the general design basis ; - a complex combination of events.

	the maximum delay time by which off-site services need to be available.		
22.1	**Requirement 20: Design extension conditions** **A set of design extension conditions shall be derived on the basis of engineering judgement, deterministic assessments and probabilistic assessments for the purpose of further improving the safety of the nuclear power plant by enhancing the plant's capabilities to withstand, without unacceptable radiological consequences, accidents that are either more severe than design basis accidents or that involve additional failures. These design extension conditions shall be used to identify the additional accident scenarios to be addressed in the design and to plan practicable provisions for the prevention or mitigation of such accidents.**		Add under requirement 20: The safety assessment shall identify critical safety systems or components which are essential to avoid short term cliff edge effects if the plant was to be challenged by events exceeding its general design basis (including DEC). The design shall be such that these critical safety systems or components can remain operational in conditions harsher than the one considered in the plant general design basis.
25.2	5.18. Items important to safety shall be designed and located to minimize, consistent with other safety requirements, the likelihood of and the possible harmful consequences of external events. 5.55. The design shall support operating personnel in the fulfilment of their responsibilities and the performance of their tasks, and shall	Requirement 5.55 should be modified, as well as 5.18 so as strengthen the requirement on the layout of the plant.	

	limit the effects of operating errors on safety. The design process shall pay attention to plant layout and equipment layout, and to procedures, including procedures for maintenance and inspection, to facilitate interactions between the operating personnel and the plant.		
21.2	Where ?		Add the provision of alternative/mobile additional resources for performing safety functions. See also lesson 29.1, 35.1, 46.16 and 46.17 See also addendum to SSR-2/2 lesson 46.1
29.1	**Requirement 53: Heat transfer to an ultimate heat sink** **Systems shall be provided to transfer residual heat from items important to safety at the nuclear power plant to an ultimate heat sink. This function shall be carried out with very high levels of reliability for all plant states.**		Add a requirement on alternative means for providing an ultimate heat sink for an extended period
35.1, 46.16 and 46.17	6.44. The combined means to provide emergency power (such as by means of water, steam or gas turbines, diesel engines or batteries) shall have a reliability and type that are	6.44. The combined means to provide emergency power (such as by means of water, steam or gas turbines, diesel engines or DC power sources) shall have a reliability and type that are	Add availability during a extended period of time (see also lesson 21.2 for alternative measures) The backup power supply shall be ensured to cope with a station

	consistent with all the requirements of the safety systems to be supplied with power, and their functional capability shall be testable.	consistent with all the requirements of the safety systems to be supplied with power, and their functional capability shall be testable.	blackout during severe accident for an extended period including both on-site coping capacity and the ability to marshal off-site resources promptly. The backup power supply shall be able to provide support of key important safety functions, including the cooling of the core and the inventory of spent fuel in pools, for several days of blackout.
30.2	**Requirement 58: Control of containment conditions** **Provision shall be made to control the pressure and temperature in the containment at a nuclear power plant and to control any buildup of fission products or other gaseous, liquid or solid substances that might be released inside the containment and that could affect the operation of systems important to safety.**	Need to strengthen the paragraphs below Requirement 58 on venting systems, hydrogen mitigation and filters	
30.1	6.29. Design features to control fission products, hydrogen, oxygen and other substances that might be released into the containment shall be provided as necessary: (1) to reduce the amounts of fission products that could be released to the environment in accident conditions; (2) to control the concentrations of hydrogen, oxygen and other substances		Consider explosive gas outside the containment. Could this be added under Requirement 20 on Design Extension Conditions and under Requirement 80 on Fuel Handling and Storage Systems

	in the containment atmosphere in accident conditions so as to prevent deflagration or detonation loads that could challenge the integrity of the containment.		
42.1	FUEL HANDLING AND STORAGE SYSTEMS **Requirement 80: Fuel handling and storage systems** **Fuel handling and storage systems shall be provided at the nuclear power plant to ensure that the integrity and properties of the fuel are maintained at all times during fuel handling and storage.** And § 6.64 to 6.68 below Requirement 80	To be strengthened on the need for means for reliable monitoring of the water level and means for maintaining the cooling	
25.1	**Requirement 33: Sharing of safety systems between multiple units of a nuclear power plant** **Safety systems shall not be shared between multiple units unless this contributes to enhanced safety.**		Add under requirement 33: A systematic process shall be used to review multiple unit sites and multiple sites for the potential for common cause failures and for ensuring that common resources (if any) expected to be used in accident conditions are still effective for each unit if all units at the site are in accident conditions
46.3	6.42. Information about important plant parameters and radiological conditions at the nuclear power plant and in its immediate surroundings shall be provided in the on-site emergency control centre. The on-site		Nuclear sites shall have an adequate on-site seismically robust, suitably shielded, ventilated and well equipped buildings to house the Emergency Response Centre. The Emergency Response Centre shall not be prone to external hazards such

	emergency control centre shall provide means of communication with the control room, the supplementary control room and other important locations at the plant, and with on-site and off-site emergency response organizations. Appropriate measures shall be taken to protect the occupants of the emergency control centre for a protracted time against hazards resulting from accident conditions. The emergency control centre shall include the necessary systems and services to permit extended periods of occupation and operation by emergency response personnel.		as flooding. It shall require sufficient provisions and shall also have sufficient capacity to maintain the welfare and radiological protection of workers needed to manage severe accident.

Addendum to SSR-2/2

Lesson learned	Current text	Modification	Addition
43.1 and 43.2	4.44. Safety reviews shall be carried out at regular intervals. Safety reviews shall address, in an appropriate manner, the consequences of the cumulative effects of plant ageing and plant modification, equipment requalification, operating experience, current standards, technical developments, and organizational and management issues, as well as siting aspects. Safety reviews shall be aimed at ensuring a high level of safety throughout the operating lifetime of the plant.	4.44. Safety reviews shall be carried out at regular intervals. Safety reviews shall address, in an appropriate manner, the consequences of the cumulative effects of plant ageing and plant modification, equipment requalification, operating experience, current standards, technical developments, and organizational and management issues, as well as site related aspects. Safety reviews shall be aimed at ensuring a high level of safety throughout the operating lifetime of the plant.	
46.15	5.8. An accident management programme shall be established that covers the preparatory measures and guidelines that are necessary for dealing with beyond design basis accidents. The accident management programme shall be documented and periodically reviewed and revised as necessary. It shall include instructions for utilization of the available equipment – safety related equipment as far as possible, but also conventional equipment – and the technical and administrative measures to mitigate the consequences of an accident. The accident management programme shall also include organizational arrangements for accident		Add a requirement in para 5.8 under Req 19 to indicate that the accident management programme shall be based on a systematic safety assessment

	management, communication networks and training necessary for the implementation of the programme.		
46.1, 21.2 and 46.17	**Requirement 19: Accident management programme** **The operating organization shall establish an accident management programme for the management of beyond design basis accidents.**		Add a requirements after para 5.9 on the need for alternative contingency measures such as supply of water, compressed air, mobile power and alternative ultimate heat sink to mitigate severe accident including any necessary equipment With flexibility on where this is located (partly on-site and partly off-site) See also addendum to SSR-2/1 lessons 21.2, 29.1, 35.1, 46.16 and 46.17
46.7	**Requirement 18: Emergency preparedness** **The operating organization shall prepare an emergency plan for preparedness for, and response to, a nuclear or radiological emergency.** **Requirement 19: Accident management programme** **The operating organization shall establish an accident management programme for the management of beyond design basis accidents.**		Add under requirement 18 or requirement 19: For multiple units sites, the accident management programme shall take due account of the potential for all units to be simultaneously in a severe accident. The programme should enable common resources (if any), whether material or human, expected to be used in accident conditions are still effective for each unit if all units at the site are in accident conditions
47.2	**Requirement 18: Emergency preparedness** **The operating organization shall prepare an emergency plan for preparedness for, and**		Add under requirement 18 or requirement 19:

	response to, a nuclear or radiological emergency. **Requirement 19: Accident management programme** **The operating organization shall establish an accident management programme for the management of beyond design basis accidents**		An accident management programme shall be established that covers the preparatory measures and guidelines that are necessary for dealing with beyond design basis accidents (current § 5.8), including unavailability of infrastructures and simultaneous severe accidents on multiple units due to external hazard. ... Adequate resource in terms of trained and experienced personnel, equipment, supplies and external support to cope with simultaneous severe accidents on multiple units shall be available.
46.8	5.9. Arrangements for accident management shall provide the operating staff with appropriate systems and technical support in relation to beyond design basis accidents. These arrangements and guidance shall be available before the commencement of fuel loading and they shall address the actions necessary following beyond design basis accidents, including severe accidents. In addition, arrangements shall be made, as part of the emergency plan, to expand the emergency response arrangements, where necessary, to include the responsibility for long term actions.		Add: For a nuclear power plant with multiple units, an adequate number of qualified personnel, equipment and supplies shall be available to manage all the units if each of them is under an accident condition.
46.3	**Requirement 19: Accident management programme** **The operating organization shall establish an accident management programme for the**		Add to paragraph 5.9 Nuclear sites shall have an adequate on-site seismically robust, suitably shielded, ventilated and well

	management of beyond design basis accidents 5.9. Arrangements for accident management shall provide the operating staff with appropriate systems and technical support in relation to beyond design basis accidents. These arrangements and guidance shall be available before the commencement of fuel loading and they shall address the actions necessary following beyond design basis accidents, including severe accidents. In addition, arrangements shall be made, as part of the emergency plan, to expand the emergency response arrangements, where necessary, to include the responsibility for long term actions		equipped buildings to house the Emergency Response Centre. The Emergency Response Centre shall not be prone to external hazards such as flooding. It shall require sufficient provisions and shall also have sufficient capacity to maintain the welfare and radiological protection of workers needed to manage severe accident.
44.1	7.8. The emergency control room and the shutdown panel and all other safety related operational panels outside the control room shall be kept operable and free from obstructions, as well as from non-essential material that would prevent their immediate operation. The operating organization shall periodically confirm that the emergency control room or the shutdown panel and all other safety related operational panels are in the proper state of operational readiness, including proper documentation, communications, alarm systems and habitability. 7.9. The alarms in the main control room shall be managed as an important feature		Add after § 7.9 a requirement specifying need to ensure safety parameter information and communications in design extension conditions is effective between the on-site emergency control rooms/response centres For the role of the on-site and off-site EOC, the clarification is provided in table 14 and 15, starting p. 114 of GS-G-2.1 See also Contribution to the revision of GS-R-2

	in operating a plant safely. The plant information system shall be such that off-normal conditions are easily recognizable by the operators. Control room alarms shall be clearly prioritized. The number of alarms, including alarm messages from process computers, shall be minimized for any analysed operational state, outage or accident condition of the plant. The operating organization shall establish procedures for operators to manage the response to alarms.		
46.12	**Requirement 18: Emergency preparedness** **The operating organization shall prepare an emergency plan for preparedness for, and response to, a nuclear or radiological emergency.**		See also Contribution to the revision of GS-R-2 Add under requirement 18: Building or rooms expected to house emergency workers shall be adequately protected, taking into account the radiological conditions encountered during an accident and the number of workers involved for its management

Addendum to GSR Part 4

Lesson learned	Current text	Modification	Addition
50.1	**Requirement 14: Scope of the safety analysis** **The performance of a facility or activity in all operational states and, as necessary, in the post-operational phase shall be assessed in the safety analysis.**		On multi-facility sites, the safety assessment should consider the site as a whole to establish that hazards from interactions between facilities or activities have been taken into account. The assessment of interactions between facilities requires the identification of all potential radiological hazards and facilities on site and the explicit consideration of interactions between facilities. In considering the risks from a facility or activity, a site-wide basis is needed for internal or external hazards that have the potential to affect several facilities or activities on the site. This should include as in Fukushima the potential for hydrogen generation and explosions in one unit to affect others See also 50.2 here below
50.2	4.51. Anticipated operational occurrences and accident conditions that challenge safety are to be identified in the safety analysis. This includes all internal and external events and processes that may have consequences for physical barriers for confining the		Supplement requirement (4.51) to consider in the safety assessment consequences of having several installations (eventually in accident conditions) located at a same site. See also 50.1 here above

	radioactive material or that otherwise give rise to radiation risks.[10] The features, events and processes to be considered in the safety analysis are to be selected on the basis of a systematic, logical and structured approach, and justification has to be provided that the identification of all scenarios relevant for safety is sufficiently comprehensive.[11] The analysis has to be based on an appropriate grouping and bounding of the events and processes, and partial failures of components or barriers as well as complete failures have to be considered.		
5.1	4.48.It has to be determined in the safety assessment whether there are adequate safety margins in the design and operation of the facility, or in the conduct of the activity in normal operation and in anticipated operational occurrences or accident conditions, such that there is a wide margin to failure of any structures, systems and components for any of the anticipated operational occurrences or any possible accident conditions. Safety margins are typically specified in codes and standards as well as by the regulatory body. It has to be determined in the safety assessment whether acceptance criteria for each aspect of the safety analysis are such that an adequate safety margin is ensured.	Modify § 4.48 to include consideration of low frequency extreme events See also GSR Part 1 lesson 5.1	
44.1, 68.1 and	5.26. For facilities in threat category I or II emergency facilities shall be designated where the following will be performed in the different phases of the response:	5.26. For facilities in threat category I or II[1] emergency facilities shall be designated where the following will be performed in the different phases of the response:	And add after § 5.27

[1] The use of the terminology «threat category» will need to be reviewed in consultation with the office of nuclear security

68.2	the coordination of on-site response actions; the co-ordination of local off-site response actions (radiological and conventional); the co-ordination of national response actions; co-ordination of public information; and co-ordination of off-site monitoring and assessment. Several of these activities may be performed at a single centre and the location may change in the different phases of the response. These emergency facilities shall be suitably located and/or protected so as to enable the exposure of emergency workers to be managed in accordance with international standards. 5.27. [For facilities in threat category I, an] "on-site emergency control centre, separated from the [facility] control room, shall be provided to serve as [a] meeting place for the emergency staff who will operate from there in the event of an emergency. Information about important [facility] parameters and radiological conditions in the [facility] and its immediate surroundings should be available there. The room should provide means of communication with the control room, the supplementary control room and other important points in the [facility], and with the on-site and off-site emergency response organizations. Appropriate measures shall be taken to protect the occupants for a protracted time against hazards resulting from a severe accident."	the coordination of on-site response actions; the co-ordination of local off-site response actions (radiological and conventional); the co-ordination of national response actions; co-ordination of public information; and co-ordination of off-site monitoring and assessment. Several of these activities may be performed at a single centre and the location may change in the different phases of the response. These emergency facilities shall be suitably located and designed to resist to the accident conditions at the facility and to the event (external hazards..) generating it, and/or protected so as to enable the exposure of emergency workers to be managed in accordance with international standards. 5.27. [For facilities in threat category I, an] "on-site emergency control centre, separated from the [facility] control room, shall be provided to serve as [a] meeting place for the emergency staff who will operate from there in the event of an emergency. Information about important [facility] parameters and radiological conditions in the [facility] and its immediate surroundings should be available there. The room should provide means of communication with the control room, the supplementary control room and other important points in the [facility], and with the on-site and off-site emergency response organizations. Appropriate measures shall be taken to protect the occupants for a protracted time against hazards resulting from a severe accident as well as events that induced this severe accident."	EOCs and other emergency facilities for threat category I or II from which accident mitigation and protective actions will be taken or directed should have available essential safety related parameters and communications with other on and off-site facilities and response personnel that are designed to remain operational for the range of postulated severe accident conditions For the role of the on-site and off-site EOC, the clarification is provided in table 14 and 15, starting p. 114 of GS-G-2.1
60.1	5.9. Sufficient numbers of qualified personnel shall be available at all times in order that appropriate positions can be promptly staffed as necessary following the declaration and notification of a nuclear or radiological emergency.	Sufficient number of qualified personnel shall be available in the long term to staff the various positions needed to implement the mitigation measures	
72.2	4.83. Arrangements shall be made for: providing useful, timely, truthful, consistent and appropriate	4.83. Arrangements shall be made for: providing useful, timely, truthful, consistent, appropriate and	And add

	information to the public in the event of a nuclear or radiological emergency; responding to incorrect information and rumours; and responding to requests for information from the public and from the news and information media.	clear information to the public in the event of a nuclear or radiological emergency; responding to incorrect information and rumours; and responding to requests for information from the public and from the news and information media.	These arrangements shall take into account that usual communication capabilities may have been damaged by the consequences of the accidents justifying the emergency or by the event (earthquake, flooding…) generating the accident.