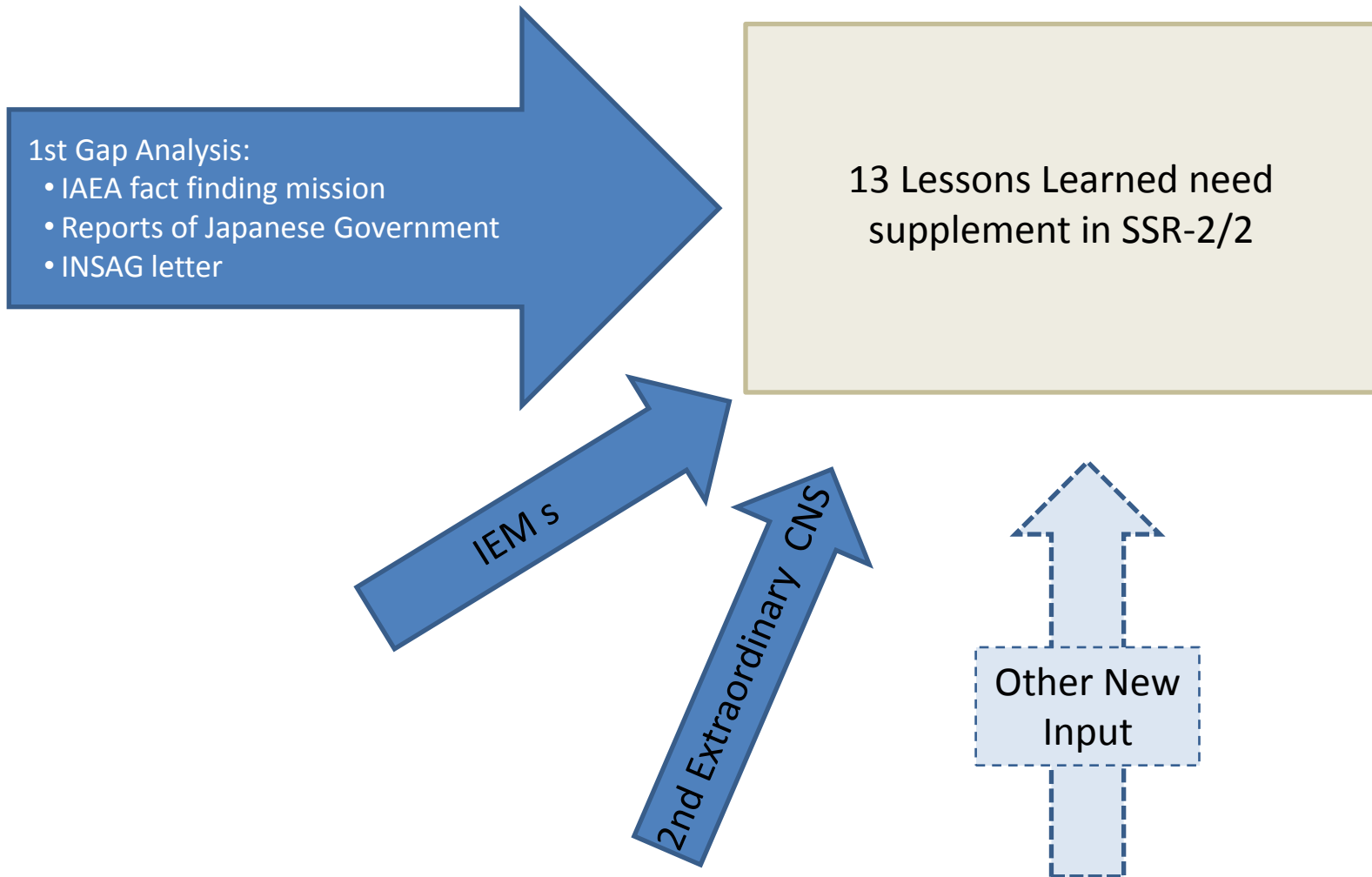


Result of Gap Analysis for SSR-2/2



SSR-2/2 DS462 Proposal

Safety of Nuclear Power Plants: Commissioning and Operation

	Management of Operational Safety	Operational Safety Programmes	Plant Operations	
	Req. 4.44 (LL 43.1/43.2)	Req.5.8 (LL 46.1/21.2/46.17/46.2)	Req. 7.8 (LL 44.1)	
		Req. 5.8 (LL 46.7/46.8/47.2)		
		New Para after Req. 5.8 (LL 46.15/46.3/46.17)		
		Req. 5.27 (LL 45.1)		

DS462 – Proposal for LL 43.1/43.2

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
43.1/ 43.2	Requirement 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.	Requirement 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 <u>site related</u> aspects. Safety reviews shall be aimed at ensuring a high level of safety throughout the operating lifetime of the plant.	Requirement 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 <u>site related</u> aspects. Safety reviews shall be aimed at ensuring a high level of safety throughout the operating lifetime of the plant.

Comments from USA

DS462 – Proposal for LL 44.1

Lesson Learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
44.1	Requirement 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.	Requirement 7.8: The supplementary 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 supplementary 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. <u>The operating organization shall ensure safety parameter information is available in emergency centre and communications is effective between control rooms and emergency centre in accident conditions.</u>	Requirement 5.7: Facilities, instruments, tools, equipment, documentation and communication systems to be used in an emergency shall be kept available and shall be maintained in good operational condition in such a manner that they are unlikely to be affected by, or made unavailable by, accident conditions. <u>The operating organization shall ensure relevant safety parameter information is available in the emergency centre and technical support center and communication is effective between the control rooms and these centres in accident conditions. These capabilities shall be tested periodically.</u>

Comments from USA/ENISS/GERMANY/France

DS462 – Proposal for LL 45.1

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
45.1 Comments from USA/ENISS/France	Requirement 5.27: The operating organization shall establish and implement a programme to report, collect, screen, analyse, trend, document and communicate operating experience at the plant in a systematic way. It shall obtain and evaluate information on relevant operating experience at other nuclear installations to draw lessons for its own operations. It shall also encourage the exchange of experience within national and international systems for the feedback of operating experience. Relevant lessons from other industries shall also be taken into consideration, as necessary.	Requirement 5.27: The operating organization shall establish and implement a programme to report, collect, screen, analyse, trend, document and communicate operating experience at the plant in a systematic way. It shall obtain and evaluate information on relevant operating experience at other nuclear installations to draw lessons for its own operations <u>including lessons related to post accident and emergency arrangements</u>. It shall also encourage the exchange of experience within national and international systems for the feedback of operating experience. Relevant lessons from other industries shall also be taken into consideration, as necessary.	Requirement 5.27: The operating organization shall establish and implement a programme to report, collect, screen, analyse, trend, document and communicate operating experience at the plant in a systematic way. It shall <u>seek to</u> obtain and evaluate information on relevant operating experience at other nuclear installations to <u>incorporate</u> lessons for its own operations <u>including emergency related arrangements</u>. It shall also encourage the exchange of experience within national and international systems for the feedback of operating experience. Relevant lessons from other industries shall also be taken into consideration, as necessary.

DS462 – Proposal for LL 46.1/21.2/46.17/46.2

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
46.1/ 21.2/ 46.17/ 46.2	Requirement 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 management, communication networks and training necessary for the implementation of the programme.	Requirement 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 —	5.8a1). An accident management programme shall be established that covers the preparatory measures and guidelines that are necessary for dealing with beyond design basis accidents*, including for spent fuel storage. The accident management programme shall be documented and periodically reviewed and revised as necessary. <u>5.8a2) For a site where several units are co-located, the accident management program shall consider concurrent severe accidents on multiple units due to, for example, external hazards. Resource in terms of trained and experienced personnel, equipment, supplies and external support shall be available to cope with the above**.</u> <u>5.8b) It shall include instructions for utilization of the available equipment — safety related equipment as far as possible, but also conventional equipment.</u> <u>5.8c) It shall include alternative contingency measures such as supply of water, compressed air and mobile power to mitigate severe accidents, including any necessary equipment. This equipment shall be located and maintained so that it can withstand an accident***.</u> 5.8d) It shall include the technical and administrative measures to mitigate the consequences of an accident, organizational arrangements for accident management, communication networks. <u>5.8e) It shall include training necessary for the implementation of the programme****.</u> 5.8f) When developing the accident management programme and associated procedures, adverse working conditions (e.g. elevated radiation levels, lack of lighting) for operating staff, as well as degraded operating conditions for equipment shall be taken into account to ensure expected accident management actions will be feasible. <i>*to include ref. to DEC in SSR 2.1</i> <i>** to revisit req. 5.3 for consistency</i> <i>*** link to sect.8</i> <i>**** add a point in 5.9 “See below”.</i>

DS462 – Proposal for LL 46.3

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
46.3	Part of New Para after Requirement 5.8:	Part of New Para after Requirement 5.8: <u>Nuclear sites shall have an adequate on-site seismically robust, suitably shielded, ventilated, sized and well equipped emergency facilities to house necessary workers under severe accident conditions. The emergency facilities shall not be prone to external hazards.</u>	To be transferred to SSR-2/1 (under req. 5 or 68): <u>Nuclear sites shall have adequate on-site or in its immediate vicinity suitably shielded, ventilated, sized and well equipped emergency facilities to house workers to perform accident management actions under severe accident conditions, including concurrent severe accidents involving multiple units. The emergency facilities shall be designed to withstand the effects of external hazards.</u>

Comments from USA/ENISS/JAPAN

DS462 – Proposal for LL 46.7/46.8/47.2

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSC WG
46.7/ 46.8/ 47.2	Requirement 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 management, communication networks and training necessary for the implementation of the programme.	Requirement 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 <u>including unavailability of infrastructure and simultaneous severe accidents on multiple units due to external hazards. 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. The accident management programme shall cover accidents occurring at all plant states, in spent fuel pools and occurrence of multiunit accidents.</u> 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 management, communication networks and training necessary for the implementation of the programme.	

DS462 – Proposal for LL 46.15

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSC WG
46.15	New Para after Requirement 5.8:	New Para after Requirement 5.8: <u>On the basis of the results of the systematic safety assessment, the operating organization shall implement reasonably practicable improvement and modifications for reducing the likelihood of severe accidents by preparing the plants to respond without significant damage and by limiting the consequences of a severe accident, if one should occur.</u>	<u>(to move to para 4.47)</u> 4.47. On the basis of the results of the systematic safety assessment, the operating organization shall implement any necessary corrective actions and reasonably practicable modifications for compliance with applicable standards aiming at enhancing the safety of the plant. This shall include the goal of further reducing the likelihood and consequences of severe accidents.

Comments from USA/ENISS/UAE/JAPAN

DS462 – Proposal for LL 46.17

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
46.17	Part of New Para after Requirement 5.8:	Part of New Para after Requirement 5.8: <u>Alternative means shall be ensured for providing an ultimate heat sink for an extended period in the event that normal and safety-related heat transport systems are unavailable.</u>	<u>(Not needed as design issue)</u>

Comments from USA/ENISS/JAPAN/GERMANY/France

DS462 – Proposal

Lesson learned	Current text	Finland Proposals	Conclusion of NUSSC WG
	Requirement 5.4: The operating organization shall be responsible for ensuring that appropriate procedures are in place for effectively coordinating and cooperating with all firefighting services involved. Periodic joint fire drills and exercises shall be conducted to assess the effectiveness of the fire response capability.	Requirement 5.24: The operating organization shall be responsible for ensuring that appropriate procedures and staffing are in place for effectively coordinating and cooperating with all firefighting services involved. Periodic joint fire drills and exercises shall be conducted to assess the effectiveness of the fire response capability. <i>(If the fire protection systems are to be used in accidents this type of use has to be considered in the design phase and staffing plans.)</i>	ok

Comments from FINLAND

DS462 – Proposal for LL 44.1

Lesson learned	Current text	USA/France Proposals	Conclusion of NUSSC WG
44.1	Requirement 5.7: Facilities, instruments, tools, equipment, documentation and communication systems to be used in an emergency shall be kept available and shall be maintained in good operational condition in such a manner that they are unlikely to be affected by, or made unavailable by, accident conditions.	Requirement 5.7: Facilities, instruments, tools, equipment, documentation and communication systems to be used in an emergency shall be kept available and shall be maintained in good operational condition in such a manner that they are unlikely to be affected by, or made unavailable by, accident conditions. <u>The operating organization shall ensure relevant safety parameter information is available in the emergency centre and communication is effective between the control rooms and emergency centre in accident conditions. These capabilities should be tested periodically.</u>	(Addressed in Req. 7.8 above)

Comments from USA/France

DS462 – Proposal for Para 7.2 (Re. Para 5.55 in SSR-2/1)

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
	Requirement 7.2: Procedures shall be developed for normal operation to ensure that the plant is operated within the operational limits and conditions.	Requirement 7.2: Procedures shall be developed for normal operation to ensure that the plant is operated within the operational limits and conditions. <u>Procedures shall facilitate interaction between the operating personnel and the plant.</u>	Requirement 7.2: Procedures shall be developed for normal operation to ensure that the plant is operated within the operational limits and conditions.

DS462 – Proposal for Para 7.3 (Re. Para 5.55 in SSR-2/1)

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
	Requirement 7.3: Procedures shall be developed for use in the event of anticipated operational occurrences and design basis accidents. Emergency operating procedures and guidance for managing beyond design basis accidents shall also be developed. Both event based approaches and symptom based approaches shall be used, as appropriate. The related analysis and justifications shall be documented.	Requirement 7.3: Procedures shall be developed for use in the event of anticipated operational occurrences and design basis accidents. Emergency operating procedures and guidance for managing beyond design basis accidents shall also be developed. Both event based approaches and symptom based approaches shall be used, as appropriate. The related analysis and justifications shall be documented. <u><i>Procedures and guidance shall facilitate interaction between the operating personnel and the plant.</i></u>	Requirement 7.3: Procedures shall be developed for use in the event of anticipated operational occurrences and design basis accidents. Emergency operating procedures and guidance for managing beyond design basis accidents shall also be developed. Both event based approaches and symptom based approaches shall be used, as appropriate. The related analysis and justifications shall be documented.

DS462 – Proposal for Para 5.7 Re. Testing of Emergency Equipment

Lesson learned	Current text	IAEA Proposals	Conclusion of NUSSC WG
	Requirement 5.7 Facilities, instruments, tools, equipment, documentation and communication systems to be used in an emergency shall be kept available and shall be maintained in good operational condition in such a manner that they are unlikely to be affected by, or made unavailable by, accident conditions	Requirement 5.7 Facilities, instruments, tools, equipment, documentation and communication systems to be used in an emergency, <u>including for the accident management programme</u>, shall be kept available and shall be maintained in good operational condition in such a manner that they are unlikely to be affected by, or made unavailable by, accident conditions. <u>Equipment and supplies designed to support the accident</u>	Facilities, instruments, tools, equipment, documentation and communication systems to be used in an emergency, <u>including for the accident management programme</u>, shall be kept available and shall be maintained in good operational condition in such a manner that they are unlikely to be affected by, or made unavailable by, accident conditions. 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, be tested in exercises, 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.