Action Plan of Bulgaria as a result of the WENRA study: "Harmonisation of Reactor Safety in WENRA Countries"

Differences between the practices of Bulgaria and the Reference levels (revision of January 2008), which need to be addressed for harmonisation

Safety issue	**Ref. level**	**Difference/gap that needs to be addressed with regard to L= the legal side (regulations/guides) I= implementation at NPP**	**Action to be taken**	**Time for completing action**
A. Safety Policy	2.1.	I: Directives for implementation of the safety policy and monitoring safety performance are not included in the safety policy.	The Regulatory body will require the licensee to develop a strategy or directives for implementation of the safety policy.	2007
	2.2.	I: The implementation of the safety policy, monitoring of the safety objectives and targets are not performed in a systematic way.	The Regulatory body will require the licensee to adopt a system of safety performance indicators to monitor the safety objectives and targets.	2007
B. Operating Organisation	3.3.	I: There is no long term staffing plan[1] for activities important to safety.	The Regulatory body will require the licensee to develop a long term staffing plan for activities important to safety.	2007
C. Management System	1.1.	L: There is no rule that an integrated management system shall be established, implemented, assessed and continually improved by the licensee. I: An integrated management system is not established and implemented by the licensee.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The licensee will be required to establish and implement an integrated management system.	2009 2011
	2.1.	L: The basis for grading the application of the management system requirements is not fully covered in the existing rules. I: Graded approach is used in the application of the quality requirements to each activity, based on its safety significance. The other aspects of the reference level are not considered.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The regulatory body will require consideration of all aspects of the reference level in the application of the quality requirements to each activity.	2009 2011

[1] Long term is understood as 3-5 years for detailed planning and at least 10 years for prediction of retirements etc.

	2.2.	L: There is no specific rule requiring all the components of the documentation of the management system. The following aspects of the reference level are not covered: description of the management system and description of the processes and supporting information that explain how work is to be prepared, reviewed, carried out, recorded assessed and improved. I: All the aspects of the reference level are not fully considered in the documentation of the existing system.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The regulatory body will require consideration of all aspects of the RL with respect to the documentation of the management system.	2009 2011
	2.3.	L: There is no rule that the documentation of the management system shall be understandable to those who use it. Documents shall be up to date, readable, readily identifiable and available at the point of use.	Such rule will be included in the new Regulatory guide on Management System for facilities and activities.	2009
	3.1.	L: No specific legal requirement for development of the goals, strategies, plans and objectives of the organisation in an integrated manner so that their collective impact on safety is understood and managed. I: The goals, strategies, plans and objectives of the organisation are not developed in an integrated manner so that their collective impact on safety is understood and managed.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The regulatory body will require the development in an integrated manner of the goals, strategies, plans and objectives.	2009 2011
	3.2.	L: No specific legal requirement for ensuring that it is clear when, how and by whom decisions are to be made within the management system	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	3.3.	L: There is no specific legal requirement that management at all levels shall demonstrate its commitment to the establishment, implementation, assessment and continual improvement of the	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009

		management system and shall allocate adequate resources to carry out these activities		
	3.4.	L: No specific legal requirement that the licensee shall foster the involvement of all staff in the implementation and continual improvement of the management system	Such rule will be included in the new Regulatory guide on Management system.	2009
	4.1.	L: There is no requirement that the licensee shall determine and provide the resources necessary to carry out the activities and to establish, implement, assess and continually improve the management system	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	5.1.	L: No specific requirement to the identification, development, implementation, assessment and continual improvement of the processes that are needed to achieve the goals, provide the means to meet all requirements and deliver the products of the licensee organisation. I: The processes are not identified, developed and implemented.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The licensee will be required to identify the processes and plan their development, implementation, assessment and continual improvement.	2009 2011
	5.2.	L: There is no requirement that the methods necessary to ensure the effectiveness of both the implementation and the control of the processes shall be determined and implemented. I: The methods necessary to ensure the effectiveness of both the implementation and the control of the processes are not determined and implemented.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The licensee will be required to determine and implement the methods necessary to ensure the effectiveness of the implementation and the control of the processes.	2009 2011
	5.3.	L: There is no explicit requirement that the changes to documents shall be reviewed and recorded and shall be subject to the same level of approval as the documents themselves. It shall be ensured that document users are aware of and use correct documents.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009

	5.4.	L: There is no rule that the records shall be specified in the management system documentation, shall be controlled and shall be readable, complete, identifiable and easily retrievable.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	5.6.	L: There is no requirement to the licensee to select the suppliers of products and services on the basis of specified criteria and to evaluate their performance.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	5.7.	L: There is no rule that purchasing requirements shall be specified in procurement documents and the evidence that products meet these requirements shall be available to the licensee before the product is used.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	6.1.	L: There is no rule addressing the monitoring and measurement of the effectiveness of the processes and the self-assessment to be carried out by the managers. I: The monitoring and measurement of the effectiveness of the processes is not fully implemented.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities. The regulatory body will require monitoring and measurement of the effectiveness.	2009 2011
	6.2.	L: There is no rule that an organisational unit shall be established with the responsibility for conducting independent assessments, having sufficient authority to discharge its responsibilities.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	6.3.	L: There is no specific requirement to the licensee to evaluate the results of the assessments and take any necessary actions, and to record and communicate inside the organisation the decisions and the reasons for the actions.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	6.4.	L: There is no rule that a management system review shall be conducted at planned intervals to ensure the effectiveness of the system.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009

		I: The reference level is not systematically implemented.	The regulatory body will require the licensee to implement systematically a management system review.	2011
	6.5.	L: There is no rule that the causes of non-conformances shall be determined and remedial actions shall be taken to prevent their recurrence.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
	6.6.	L: There is no rule that improvement plans shall include plans for the provision of adequate resources, that actions for improvement shall be monitored through to their completion and the effectiveness of the improvement shall be checked.	Such rule will be included in the new Regulatory guide on Management system for facilities and activities.	2009
D. Training and authorisation of NPP staff		None	None	
E. Design Basis Envelope for existing reactors	6.1.	L: There is no specific requirement to the methods that can be used for the selection of event combinations.	Specification of the methods for selection of event combinations will be made in the new Regulatory Guide on deterministic safety analysis	2007
	8.5.	L: (B-difference) The legal requirement covers the substance of the reference level in more general terms.	Rules on the analysis assumptions for safety system operability will be included in the new Regulatory Guide on deterministic safety analysis	2007
F. Design Extension of Existing Reactors	2.1. and App.	I: The design extension event “loss of core cooling in the residual heat removal mode” is not fully analysed.	The Regulatory body will require the licensee to include a full analysis of this sequence in the safety analysis report.	2009
	3.1.	I: The implementation of a critical parameter monitoring system for accident and post-accident situations (PAMS) at units 5 and 6 is still not completed.	Completion of the PAMS system implementation by the licensee	2009
	3.2.	I: The information necessary for timely assessment of the plant status and critical safety functions in severe accident conditions is not relayed to the main control room so far. The necessary information is	Completion of the SPDS system implementation by the licensee. Provision for relaying the	2009 After

		not relayed to a separately located supplementary control room/post.	necessary information to a supplementary control room/post.	2009
	4.1.	L: There is no specific requirement for mitigation of the consequences of events leading to containment bypass. I: The prevention of early containment bypass in specific severe accident scenarios is not sufficiently effective for units 5 and 6.	Such rule will be included in the new Regulatory guide on NPP design. The Regulatory body will require the licensee to design and implement means for effective prevention of early containment bypass.	2008 2012
	4.2.	L: There is no specific rule requiring that the leaktightness of the containment shall not degrade significantly for a reasonable time after a severe accident. I: The prevention of early containment bypass in specific severe accident scenarios is not sufficiently effective for units 5 and 6.	Such rule will be included in the new Regulatory guide on NPP design. The Regulatory body will require the licensee to design and implement means for effective prevention of early containment bypass.	2008 2012
	4.4.	I: The system for hydrogen measurement and passive recombination of units 5, 6 has not enough capacity to cover all severe accident conditions.	The Regulatory body will require the licensee to implement (alternative) means for effective control of combustible gases in a all severe accident conditions.	2010
	4.7.	L: There is no specific requirement for mitigation of containment degradation by molten fuel as far as reasonably practicable. I: (B-difference). Investigations on alternative ways of melt through prevention are planned.	Such rule will be included in the new Regulatory guide on NPP design. The Regulatory body will require implementation of reasonably practicable means for prevention or mitigation.	2008 2012
G. Safety classification of Structures, Systems and Components	3.1.	L: There is no specific requirement that SSCs important to safety shall be designed, constructed and maintained such that their quality and reliability is commensurate with their classification.	Such rule will be included in the new Regulatory guide on NPP design.	2008
	4.2.	I: Qualification procedure for SSCs important to safety has been adopted but not fully implemented.	Completion of the remaining activities under the qualification program.	2009
H.	5.1.	L: There is no specific	Such rule will be included in	2008

Operational Limits and Conditions		requirement to the margins between the operational limits and the established safety systems settings.	the new Regulatory guide on NPP design	
	6.1.	L: There is no specific rule on the unavailability limits included in the OLCs	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	6.2.	L: (B-difference) The reference level is covered in more general terms.	The new Regulatory guide on NPP operation will specify that where operability requirements cannot be met, the actions to bring the plant to a safer state and the time allowed to complete the action shall be stated.	2008
	6.3.	L: There is no specific rule on the unavailability limits included in the OLCs	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	7.1.	L: There is no specific rule on the OLCs unconditional requirements.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	7.2.	L: There is no specific rule on the OLCs unconditional requirements.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	9.1.	L: There is no specific rule on the OLC surveillance.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
I. Ageing Management	1.1.	L: The objectives of the ageing management program itself and as a part of an integrated approach to maintaining within acceptable limits the ageing related degradation of SSCs are not specified.	Such rules will be included in the new Regulatory guide on NPP operation.	2008
	3.2.	L: Requirements to the surveillance of major structures and components are not specified.	Such rules will be included in the new Regulatory guide on NPP operation.	2008
J. System for Investigation of Events and OEF	1.3.	L: (B-difference) The substance of the reference level is covered in a general way.	Such rule will be specified in the new Regulatory guide on NPP operation.	2008
	1.4.	L: (B-difference) The substance of the reference level is covered in a general way.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.2.	L: (B-difference) The substance of the reference level is covered in a general way.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	4.4.	L: (B-difference) The existing rules are not specific with regard to the organisations	Such rule will be specified in the new Regulatory guide on NPP operation.	2008

		(manufacturer, research organisation, designer), for which the licensee shall maintain liaison with the aim of feeding back information.		
K. Maintenance In-service Inspection and Functional Testing	2.2.	L: (B-difference) The substance is covered by general requirements. It is not specified that in-service inspections shall be carried out at intervals whose length shall be chosen in order to ensure that any deterioration of the most exposed component is detected before it can lead to failure.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.3.	L: There is no rule for comprehensive work planning and control system for the maintenance, testing, surveillance and inspection works.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.4.	L: There is no rule for full consideration and approval of the proposed reconfiguration followed by a documented confirmation of its correct configuration, before returning the equipment to service.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.5.	L: There is no rule for defining the actions to be taken in response to deviations from the acceptance criteria in the maintenance, testing, surveillance and inspection tasks.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.6.	L: There is no rule for authorisation of SSCs repairs and establishment of priorities with account taken of the relative importance to safety of the defective structure, system, or component.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.7.	L: There is no rule for revalidation of the safety functions and functional integrity of component or system following an abnormal event.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.8.	L: (B-difference) The substance is covered by general requirement. It is not specified	Such rule will be included in the new Regulatory guide on NPP operation.	2008

		that the reactor coolant pressure boundary shall be subject to a system leakage test before resuming operation after a reactor outage in the course of which its leaktightness may been affected.		
	3.9.	L: There is no rule for system pressure tests of the reactor coolant pressure boundary.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.10.	L: There is no rule for qualification and calibration before use of all items of equipment used for examinations and tests.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
	3.12.	L: There is no rule for additional examinations of detected flaw that exceeds the acceptance criteria.	Such rule will be included in the new Regulatory guide on NPP operation.	2008
LM. EOPc and Severe Accident Management Guidelines	1.1.	I: SAMGs and EOPs for beyond design basis accidents (BDBA) have been already developed but are not still implemented.	The regulatory body will require the licensee to enforce the set of EOPs, including for BDBAs, and the SAMGs.	2009
	2.3.	I: SAMGs have been already developed but are not still implemented.	The regulatory body will require the licensee to enforce the SAMGs.	2009
	2.4.	L: There is no rule that includes alternative for combined symptom-based and event-based procedures for DBAs. I: The required types of EOPs are not implemented at units 5 and 6.	Such rule will be included in the new Regulatory guide on NPP operation. The Regulatory body will require the implementation of the full set of EOPs.	2008 2009
	6.1.	L: There is no rule to require training of the shift and on-site technical support staff by exercising of the EOPs using simulators and also of the SAMGs, where practicalble.	Such rules will be included in the new Regulatory guide on NPP operation.	2008
	6.2.	L: There is no rule to require explicitly exercising of the transitions between EOPs and SAMGs.	Such rules will be included in the new Regulatory guide on NPP operation.	2008
	6.3.	L: There is no rule for planning and regular exercising of the interventions called for in the SAMGs and needed to restore necessary safety functions.	Such rules will be included in the new Regulatory guide on NPP operation.	2008
N. Contents and updating	2.11	L: The existing legal requirement does not specify	Such rules will be specified in a new Regulatory guide on	2008

of Safety Analysis Report		the emergency arrangements and the liaison and co-ordination with off-site organisations involved in the response to an emergency. I: (B-difference) The substance is covered in a separate document, the amendment of which is subject of authorisation.	the content of a SAR. The Regulatory body will require the licensee to include in the SAR a description of the on-site emergency preparedness arrangements and the liaison and co-ordination with off-site organisations involved in the response to an emergency	 2009
	2.13	I: There is no information in the SAR on how the relevant decommissioning and end-of-life aspects are taken into account during operation.	The Regulatory body will require the licensee to include in the SAR the relevant decommissioning aspects.	2009
O. Probabilistic Safety Analysis (PSA)	1.1.	I: The scope of low-power and shut down level-1 PSA for units 5, 6 of Kozloduy NPP does include internal fire, flooding and seismic events. The level-2 PSA is developed only for full power operation so far.	The Regulatory body will require the licensee to include internal hazards in the level-1 PSA studies and to develop low-power and shut down level-2 PSA of the required scope.	PSA – level 1: 2008. PSA – level 2: 2010.
	3.4.	L: There is no rule for using the PSA for assessment of the significance of operational occurrences	Such rules will be included in the new Regulatory guide on the use of PSA in support of the plant safety management.	2008
	3.6.	L: There is no rule for the use of PSA in the inspection programs. I: Risk-informed optimisation of the in-service inspection programs is not fully implemented at all units.	Such rule will be included in the new Regulatory guide on the use of PSA in support of the plant safety management. A program for risk-informed optimisation of the operation and maintenance is under implementation by the licensee.	2008 2009
	4.1.	L: There is no rule for recognizing and consideration of the PSA limitations.	Such rule will be included in the new Regulatory guide on the use of PSA in support of the plant safety management.	2008
	4.2.	L: There is no rule with regard to the use of PSA for evaluation or changing the requirements on periodic testing or allowed outage time for a system or component. I: There is no use of PSA for evaluation or changing the	Such rule will be included in the new Regulatory guide on the use of PSA in support of the plant safety management. By this rule the Regulatory body will require the licensee	2008 planned

		requirements on periodic testing or allowed outage time for a system or component.	to consider the limitations when PSA is used for evaluation or changing the requirements on periodic testing or allowed outage time.	
	4.3.	L: There is no rule for ensuring the operability of components that have been found by PSA to be important to safety and documenting their role in the SAR. I: Consider ensuring the operability of components that have been found by PSA to be important to safety and documenting their role in the SAR for all units.	Such rule will be included in the new Regulatory guide on the use of PSA in support of the plant safety management. The Regulatory body will require systematic consideration of the components that have been found by PSA to be important to safety.	2008 2009
P. Periodic Safety Review		None	None	
Q. Plant modifications	1.2.	I: The safety significance of modifications is defined based on specific methodology and criteria, however the modification of management systems is not covered.	The Regulatory body will require the licensee to develop a graded approach to modifications.	2008
R. On-site Emergency Preparedness		None	None	
S. Protection against internal fires	2.1.	L: There is no specific rule for design and location of SSCs important to safety so as to minimize the frequency and effects of fire and to maintain capability for shutdown, residual heat removal, confinement of radioactive material and monitoring of plant state during and after a fire event.	The rule will be included in the new Regulatory guide on NPP design	2008
	2.3.	L: There is no specific rule that fully covers the fire compartment approach.	The rule will be included in the new Regulatory guide on NPP design. The full concept is covered in the Regulatory guide on protection against internal fires at nuclear facilities.	2008
	2.4.	L: There is no specific rule for fire resistance of the buildings that contain radioactive	The rule will be included in the new Regulatory guide on NPP design	2008

		materials and could cause radioactive releases in case of fire.		
	3.1.	L: There is no specific requirement to the objectives, content and update of the fire hazard analysis.	The rule will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008
	3.2.	L: There is no specific requirement to the scope and content of the fire hazard analysis	The rule will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008
	3.3.	L: There is no specific requirement on demonstration how the consequential effects of fire extinguishing systems operation have been taken into account.	The rule will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008
	3.4.	L: There is no specific requirement that the fire hazard analysis shall be complemented by probabilistic fire analysis.	The rule will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008
	4.1.	L: There is no specific requirement about the features of fire detection and alarm.	The rules will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008
	4.3.	L: There is no rule for the coverage of the distribution loops for fire hydrants.	The rule will be included in the new Regulatory guides on NPP design and on protection against internal fires at nuclear facilities.	2008
	4.5.	L: There is no specific requirement about the features of the ventilation systems and their components.	The rules will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008
	5.1.	L: There is no specific rule for the procedures for fire prevention and for ensuring the effectiveness of the fire protection measures.	The rules will be included in the new Regulatory guide on protection against internal fires at nuclear facilities.	2008