**RULES ON OPERATIONAL SAFETY OF RADIATION OR NUCLEAR FACILITIES**

UNOFFICIAL TRANSLATION

Prepared by the Slovenian Nuclear Safety Administration in December 2019.

The official text of these Rules is located on the pages of the Legal Information System.

WARNING: The unofficial text of these Rules is just an informative work tool, for which the Slovenian Nuclear Safety Administration does not guarantee.

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Pursuant to the paragraph 3 of Article 60, paragraphs 2 and 3 of Article 80a, paragraphs

4 and 5 of Article 81, paragraph 7 of Article 83, paragraph 3 of Article 87 and for the operation of the first paragraph of Article 63 and Article 105 of the Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of the Republic of Slovenia, No.

76/17 and 26/19) the Minister of the Environment and Spatial Planning hereby issues the following

RULES

ON OPERATIONAL SAFETY OF RADIATION OR NUCLEAR FACILITIES

1. GENERAL PROVISIONS

Article 1 (Subject)

(1) These Rules lay down the following for radiation and nuclear facilities:

1. method of application of operational limits and conditions;

2. method and frequency of reporting on the implementation of the operational experience collection and analysis programme;

3. method and scope of ageing management;

4. method of maintenance, testing and inspection of systems structures and components

5. contents, scope and frequency of regular and special reporting;

6. frequency, contents, scope, duration and method of performing Periodic Safety

Reviews and the methods of reporting such reviews;

7. cases where the Slovenian Nuclear Safety Administration (hereinafter: Administration) on its own initiative orders a Periodic Safety Review has a new and relevant evidence concerning radiation or nuclear safety of a facility;

8. contents, quality and method of application of probabilistic safety analyses to verify the safety of nuclear facilities;

9. methodology of assessment and classification of modifications and method and form of reporting and proposing modifications to radiation or nuclear facilities.

(2) These Rules furthermore lay down detailed requirements for:

1. the emergency plan for the management of emergencies in radiation or nuclear facilities;

2. procedures to be undertaken in emergencies in radiation or nuclear facilities; and

3. method of reporting of emergencies.

(3) With these Rules are transposed into the Slovenian legal system the Council Directive

2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations (OJ L No. 172 of 7 June 2009, p. 18 ), Council Directive

2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a

Community framework for the nuclear safety of nuclear installations (OJ L No. 219 of 25

July 2014, p. 42 ), the Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (OJ L No. 199 of 2 August 2011, p. 48 ) and the Council Directive

2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives

89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom

(OJ L No. 13 of 17 January 2014, p. 1).

Article 2 (Definitions)

The terms appearing in these Rules shall have the following meanings:

1. Action levels shall mean predetermined values of the physical parameters or indicators of conditions on site, in which the operator must act in accordance with protection and rescue plan;

2. Human error shall mean an error made or caused by a human action due to a misinterpretation of a process or an erroneous assessment of the situation. It may also arise as a consequence of an inadvertent action or omission;

3. Human factors shall mean elements of the relationship between a human and his tasks, such as factors affecting the ability of the control room operator to comply with written procedures in the control room: readability, grammar, training, external stress etc.;

4. Risk factors shall mean SSC, human activities related to the operation (management, maintenance, testing), external events etc. that affect the facility risk levels;

5. The deterministic safety analysis shall mean safety analysis carried out by modelling, identifying and calculating safety-relevant parameters and processes in a radiation or nuclear facility, which arise after the postulated initial events. The main purpose is to verify that the authorized values of basic safety parameters of the object are not exceeded.

6. Deterministic radiation effects shall mean clinically identifiable damage of an irradiated organ, tissue or organism due to harm to cells. Dose levels at which such an effect occurs can be determined. Above such threshold dose levels, a higher dose results in more severe deterministic effects;

7. Near miss shall mean a set of circumstances that may induce an inappropriate action or event and thereby challenge radiation or nuclear safety, safety of personnel or availability of the facility, but because of the conditions at that time there were no consequences;

8. An event shall be a human error or action, caused by incorrect written procedure or instruction, equipment failure, operational error, natural event or design deficiency that may challenge radiation or nuclear safety;

9. The emergency worker shall be a person who carries out an emergency intervention in accordance with protection and rescue plan of a nuclear or radiation facility, and may be exposed to radiation during intervention;

10. Control room shall mean a room in a nuclear power plant or research reactor, in which information is gathered on the facility operation and from which all processes important for safety can be controlled;

11. Qualification shall mean a process that proves that a specific SSC can operate on demand in predicted environmental conditions until the end of its qualified lifetime and in accordance with the required criteria;

12. Site shall mean a geographical area where a radiation or nuclear facility is located and where its intended practices are carried out;

13. International nuclear and radiation event scale shall mean the tool for harmonised informing of the general public on the safety importance of events related to radiation and nuclear safety. The informing is carried out through the International Atomic Energy Agency;

14. Abnormal operation shall mean operation outside normal ranges of expected operating parameters, which happens at least once during the operating lifetime of the facility, but which, in view of appropriate design provisions, does not cause any significant damage to SSCs important to safety or lead to an accident;

15. Direct cause shall mean a failure, action, omission to act or state, which directly causes an event. Usually, it does not explain the reasons of occurrence of circumstances that have caused the deviation;

16. Accident shall mean deviation from normal operation, which is less frequent and has more severe consequences than an abnormal operation. In the case of an accident severe damage of a nuclear or radiation facility or reduced efficiency of safety barriers may occur;

17. Beyond-design-basis-accident shall mean an accident, which may occur, but it is not considered in the design basis of a nuclear facility, because of its very low probability of occurrence. It includes design extension conditions and severe accidents.

18. Normal operation shall mean operation within the operational conditions and limits;

19. Incident shall mean an undesirable condition with consequences, which are not negligible from radiation protection or nuclear safety point of view. Incident can be caused by improper human action or a system or component failure. Incident requires identification

of the error and its remedying or corrective action;

20. Internal irradiation shall mean irradiation effects of ionising radiation on the organism in the case the radiation source is inside the body due to intake or activation;

21. Periodic Safety Review shall mean systematic verification of safety of radiation or nuclear facilities undertaken periodically (in regular time intervals) in order to establish cumulative effects of ageing, modifications to the facility, operational experiences and technical progress and changes at the facility site and thereby to ensure a high level of safety throughout the radiation or nuclear facility service life. A Periodic Safety Review is a tool to supplement continuous safety verification intended for integral verification of the level

of safety of a radiation or nuclear facility and for the demonstration of its capacity to operate safely in the next period;

22. Defence in depth shall mean the design principle according to which a protection purpose (e.g. the prevention of radioactive material releases) should be achieved by combining, in the design and operation phases, several safety measures to ensure the achievement of the purpose even in the event of a failure of one of the safety measures;

23. Operational indicator shall mean a measurable parameter that allows the monitoring of the current efficiency of a process or the monitoring of efficiency of a process over an extended time period;

24. Operational conditions and limits shall mean the set of rules, set out in the safety analysis report, that lay down limits for parameters, capabilities and performance of equipment

and of personnel actions to ensure safe operation of a radiation or nuclear facility;

25. Operation shall mean all the activities carried out to realise the intended purpose of a radiation or nuclear facility, including maintenance, refuelling (in the case of a nuclear power plant or a research reactor), in-service inspection, keeping, storage, disposal of mining or hydrometallurgical tailings, radioactive waste or spent fuel and other associated activities;

26. Loading cycle shall mean a complete sequence of occurrences including the transition from initial to new process conditions, operation or keeping in such new conditions for any time period and restoration of the initial conditions. A loading cycle may include one or more loading cycles of minor intensities of variations of process conditions;

27. Operability shall mean the condition of an SSC in which its capability to operate or perform its tasks in conformance with operational conditions and limits is maintained. Furthermore, operability shall also be maintained for those SSCs that ensure, through ancillary functions (e.g. power supply, cooling, lubrication, etc.), the operability of the SSC in question in conformance with operational conditions and limits;

28. Operator shall mean a qualified person with a licence to control or provide instructions for control of a radiation or nuclear facility;

29. Operational support centre shall mean a preallocated area within the radiation or nuclear facility site with communication and organisational arrangements to provide for the accommodation of emergency workers and their dispatch to intervention actions during an emergency;

30. Written procedures shall mean approved procedures and instructions for the execution of activities and works. They shall cover all normal states, deviations and irregularities with respect to normal and emergency states of the radiation or nuclear facility;

31. Environmental conditions shall mean the conditions in which a selected SSC, equipment or instrument shall be operable and include, inter alia, temperature, pressure, radiation, relative humidity, chemical environment, exposure to flood, earthquake, etc.;

32. Core damage frequency shall mean a risk criterion which indicates the anticipated level of probability of overheating and damaging of the reactor core in a unit of time;

33. Large early release frequency shall mean a risk criterion which indicates the anticipated number of large early releases in a unit time period;

34. Corrective action shall mean action to prevent a recurrence of the event or undesirable situation SSC or facility. It may cover repair or change on SSC, changing the maintenance or testing, special check of SSC, change of the operation process of a facility or activity related to education or training of personnel;

35. Emergency operating procedures shall mean procedures provided for management of design basis events and include procedures to restore the facility to a safe condition. For nuclear facilities these procedures also include management of design extension conditions category A, which are not included in the design basis of the facility;

36. Core damage shall mean core uncovery and overheating up to a level where increased oxidation and severe damage of a major part of the core can be expected;

37. Postulated initiating event shall mean an event that is recognized as a part of design bases, and that may trigger anticipated operational occurrence or an accident;

38. SSC inspection shall mean a systematic inspection of an SSC conformance, undertaken, as a rule, in pre-specified time intervals. It may either involve all similar components or a selection of components, to assess conformity of materials and operability by means of inspection, measurement or testing. Conformity of other components can then be assessed based on the conformity of the selected sample of components. The initial inspection sample may be extended to ensure a more realistic assessment of the condition;

39. Transient shall mean a set of developments through which a system transfers from one stable state to another;

40. Testing shall mean an activity planned in advance to check the operability of an SSC and shall be carried out following maintenance operations on or modifications of an SSC. Periodic testing laid down in operational limits and conditions is surveillance testing;

41. The order of priority for corrective action shall mean the determined urgency of its implementation according to the importance of the activities for radiation or nuclear safety;

42. Emergency preparedness shall mean activities, planned and maintained in advance, and the organisational, human, material and other factors providing for the implementation of operational technical measures as well as protection and rescue measures required for integral and efficient management of an emergency in a radiation or nuclear facility and for coordinated management of the consequences of the emergency in the environment;

43. Contributing cause shall mean a cause which contributes to the probability of an event, although it does not cause the event by itself;

44. Process conditions shall mean technological conditions, under which an SSC performs its task, such as mechanical load, pressure, temperature etc.;

45. Programmes are documents that define the processes or activities, and combine methods and rules governing a particular process or activity;

46. Design basis of an SSC consist of information specifying the purpose of the SSC and specific values or ranges of values to be achieved by the SSC. These values mean limits established based on generally accepted engineering practice concerning fulfilment of functional requirements, or requirements based on analysis (applying either calculation or

experimental methods) of the consequences of a postulated initiating event in which an

SSC must perform its function;

47. Design basis event shall mean an event that leads to design basis accident for which the facility is designed in accordance with established design criteria and conservative methodology;

48. Radiological emergency shall mean any condition that causes or may cause a significant release of radioactive substances into the environment;

49. Design extension conditions event shall mean an event or combination of events with extremely low probability and more severe consequences than design bases events. It can also include multiple failures of SSC in contrast to single failure postulated in the design basis of the nuclear facility. There are two categories of design extension conditions events:

- Design extension conditions category A, for which prevention of severe fuel damage in the reactor or spent fuel storage can be achieved;

- Design extension conditions category B with postulated severe fuel damage, exceeding the design basis fuel damage;

50. Reference documents shall mean the documents referred to in the contents of the safety analysis report or that have been applied in any other way as a basis in the process of granting the consent to construction or granting an operating licence, a permit to terminate operation, or a permit to decommission a radiation or nuclear facility, and in the case of a disposal facility also for closure;

51. Outage shall mean an interruption of the production process of a radiation or nuclear facility for the purposes of refuelling, repairs and/or maintenance works. An outage of a nuclear power plant starts with suspension of the supply of electrical power to the grid and ends with the resumption of the supply;

52. Scenario shall mean an assumed course of events in a radiation or nuclear facility (starting with the initiating event, through equipment failures and personnel actions, to the final stable state of the facility);

53. Simulator shall mean a device which responds to the operator’s action in the same way as the real system. A nuclear power plant simulator usually includes the control room in the scale equal to the scale of the real control room, while the simulator' software must include normal operation, abnormal operation and accidents;

54. The spent fuel storage is a place or facility where spent nuclear fuel is temporarily stored;

55. Severe accident management guidelines shall mean written procedures including guidelines for operators on managing the consequences of such accidents;

56. General emergency shall mean an accident involving actual or imminent major core damage, or its meltdown combined with the risk of loss of containment integrity. It is envisaged that due to radioactive releases the safety measures are needed to avoid or reduce exposure to doses of the general public even in the regions distant from the facility site;

57. Modification of a radiation or nuclear facility shall mean any proposed modification in relation to the facility or to the method of its control or operation, including maintenance works, inspections, testing, or implementation of any technical, organisational or other change in relation to such works;

58. SSC shall be abbreviation for a set of structures, systems and components. Structures mean passive elements such as buildings and shields. A system means a set of components combined so as to perform an (active) function. The term SSC includes instrumentation and control software. In the case of radioactive waste storage or disposal facility, the term SSC includes the radioactive waste package;

59. SSC important to safety shall ensure that the anticipated operational occurrences and design basis events do not lead to the exceedance of the limits specified in the design

bases, and whose failure or malfunction can lead to undue radiation exposure or contamination of humans or the environment;

60. Facility state shall mean the operational states of a radiation or nuclear facility or accident conditions. The operational states are divided into normal operation of a radiation or nuclear facility, when there are no equipment failures or violation of operating procedures and abnormal operation when there is a failure or violation of procedures, but the nuclear and radiation safety are not threatened. During the accident conditions the nuclear and radiation safety are threatened.

61. Stochastic effects of radiation shall mean damages due to changes in the properties of irradiated cells capable of reproduction, that can be determined statistically. Stochastic effects, such as occurrence of malignant cancer or hereditary impacts on genes, do not depend on the dose and are not subject to threshold levels, yet, the probability of their emergence increases with the dose;

62. Graded approach shall mean the processes for ensuring that the level of analysis, documentation and actions used to comply with a requirement in this part are commensurate with:

- the relative importance to safety, safeguards and security;

- the magnitude of any hazard involved;

- the life cycle stage of a facility;

- the programmatic mission of a facility;

- particular characteristic of a facility;

- the relative importance of radiological and nonradiological hazards and any other relevant factor;

63. Technical support centre shall mean rooms and corresponding support equipment on site or near to the facility site available to personnel to provide technical support to operators and professional personnel and to allow the management of emergencies within the facility site;

64. Root cause shall mean the primary cause of an event, the elimination of which ensures that such event will not recur;

65. Severe accident shall mean an accident in a nuclear power plant, research reactor or spent fuel storage, the consequences of which exceed a design extension conditions category A event and leads to meltdown of core or spent fuel and endangering of the environment or may cause irradiation or contamination of people or environment. Severe accidents can occur due to multiple failures, such as loss of all trains of safety systems, or due to the extremely unlikely event, for which the plant is not designed;

66. The pressure boundary shall mean a physical barrier separating the two technological systems functioning under different operating pressures. It usually consists of pressure vessels, pipes, valves, piping and instrumentation connections;

67. Risk shall mean the product of the anticipated frequency of an event and its consequences;

68. Safe state shall mean any state of the facility (e.g. shutdown state, operation or safe enclosure mode), in which all safety functions are provided;

69. Validation shall mean demonstration, through material evidence, of compliance with the requirements for the intended use;

70. Safety function shall mean a purpose that must be achieved or an action that must be performed in order to ensure radiation or nuclear safety. Safety functions for a nuclear reactor are the following:

- control of reactivity of the nuclear fuel;

- heat removal from the reactor core and the spent fuel storage;

- confinement of radioactive materials and prevention of their uncontrolled release into the environment;

71. Safety evaluation shall mean a procedure, which evaluates in detail the effects of a planned modification on the radiation or nuclear safety of a facility;

72. Safety barrier shall mean a physical barrier to restrict or prevent movement of people, radioactive substances or other phenomena (e.g. fire, flood, missiles equipment) or to protect against ionising radiation in a radiation or nuclear facility;

73. Safety evaluation screening shall mean a process of initial assessment of the effects of an intended modification on the radiation or nuclear safety of a facility;

74. Safety margin shall mean the difference between the limit value of a parameter that leads to an SSC failure, and the value of the parameter authorised by the Administration as

part of the procedure for issuing consents and permits to radiation and nuclear facilities;

75. Safety analysis report shall mean a document or set of documents providing key information on a radiation or nuclear facility, its operational limits and conditions, its impacts on the environment, the description of the design, analysis of possible accidents and measures necessary to prevent or mitigate threats to the environment, population and facility personnel;

76. Large early release shall mean a rapid, unchecked release of fission products from the containment into the atmosphere, which takes place prior to the implementation of effective measures to mitigate the consequences of an emergency and poses a potential threat to environment and human health;

77. Probabilistic safety analyses shall mean safety analyses of the reliability of a radiation or nuclear facility systems, which, applying probabilistic methods, identify and assess the extent of possible influences on radiation or nuclear safety, such as component failures, component loss of availability, human errors, undesired impacts from the environment, fires, floods, and earthquakes. Probabilistic safety analyses are classified into three levels:

- probabilistic safety analyses of the first level determine the sequences of events that may lead to reactor core damages, estimate the anticipated frequency of core damage of this kind and identify weaknesses and advantages of safety systems and procedures to avoid such damage;

- probabilistic safety analyses of the second level determine the ways in which radioactive releases from a radiation or nuclear facility may reach the environment, evaluate the extent of such releases and their anticipated frequency, and assess the relative importance of measures to prevent or mitigate such releases;

- probabilistic safety analyses of the third level identify and evaluate the consequences of radioactive releases for the environment and human health;

78. Management shall mean an individual or a group of individuals authorised to manage the overall radiation or nuclear facility or an organisational unit thereof;

79. Maintenance shall mean a planned process of regenerating SSCs in order to preserve their functionality throughout their service life. Maintenance may either be predictive or periodic. Predictive maintenance is carried out continuously or periodically based on the monitoring of an SSC condition and on the analysis, which predicts SSC failure from the trend of its degradation. Periodic maintenance consists of replacement of components, surveillance and testing according to a programme planned in advance (specified cycles, time intervals, operating times etc.) and may be based on the equipment manufacturer recommendations. In the case of detected deviations or failures of s SSC, appropriate corrective measures are undertaken in the scope of maintenance;

80. Temporary modification of a radiation or nuclear facility shall mean any modification implemented for a limited time period. It may be implemented in cases where a permanent modification is not necessary or as a provisional step in the scope of a permanent modification;

81. Protective measure shall mean a measure to avoid deterministic effects of radiation and to reduce risks of stochastic effects of radiation;

82. Off-site support centre shall mean an area outside the radiation or nuclear facility site, allocated in advance, fitted with equipment, data links, communication links, documentation and organisational arrangements to allow engineering, technical and logistical support to emergency workers on site during an emergency, coordination with institutions and support organisations in the environment, assessment of radiological impacts of the emergency, recommendations concerning immediate remedial measures for the threatened population and informing on the emergency status in the facility site region.

2. FACILITY OPERATIONAL SAFETY

2.1. FACILITY MANAGEMENT Article 3

(Application of operational limits and conditions)

(1) The operator of a radiation or nuclear facility shall establish and implement an appropriate programme of operation, maintenance, testing and inspection of SSCs to ensure the compliance with the requirements of operational limits and conditions, appropriate evaluation and documentation of surveillance results.

(2) Personnel licenced to operate and monitor the technological process in a radiation or nuclear facility shall be highly knowledgeable on the contents, purposes and technical bases of the operational limits and conditions. Personnel involved in tasks related to the control of the facility operation shall be aware of the significance of operational limits and conditions for the safety of the facility.

(3) Information on the operational limits and conditions shall be accessible to all personnel involved in operating the facility. In the facilities fitted with a control room, such information shall be available in the control room.

(4) Operational limits and conditions shall be reviewed and kept updated as appropriate in accordance with operational experience, progress in science and technology and upon any modification to the facility that warrants or requires such updates.

Article 4 (Unconditional measures)

(1) The operator of a radiation or nuclear facility shall, without delay, undertake measures to bring the facility to a safe state as set out in the operational limits and conditions, in the following cases:

1. a deviation from operational limits and conditions is detected;

2. the operating personnel is in any doubt whether the actual operation is within the ranges specified in operational limits and conditions;

3. the facility behaves in an unexpected way.

(2) If the measures referred to in the previous paragraph result in a shutdown of the radiation or nuclear facility (in a nuclear power plant or research reactor: shutdown of nuclear chain reaction), the facility operator shall, prior to return to operation:

1. identify the cause of the circumstances that led to the deviation from the operational limits and conditions;

2. determine immediate and long-term corrective measures to prevent recurrence of such an event in the future, and

3. implement immediate measures referred to in the previous point and complete all requirements from the operational limits and conditions for return to operation.

Article 5

(Written procedures for the operation or decommissioning of a radiation or nuclear facility)

(1) The operator of a radiation or nuclear facility shall develop and implement written procedures for the facility operation or its trial operation, termination of operation or decommissioning, which shall cover all the states of the facility envisaged in the safety analysis report, and in particular the following:

1. operating conditions, including:

- startup of the systems;

- facility operation;

- operational shutdown;

- emergency measures;

2. accidents, including:

- identification of an accident;

- prevention of propagation and remedying of an accident;

- mitigation of accident consequences;

3. maintenance, monitoring and other tasks important for radiation and nuclear safety, safety of personnel and reliability of the power plant, including:

- tasks involved in maintenance, corrective measures, inspection and technical monitoring of equipment;

- tasks involved in radioactive waste management;

- radiation survey in the facility and in its environment;

- radiation protection organisational setup, operation and measures;

- fire protection organisational setup, operation and measures.

(2) The operator of a radiation or nuclear facility shall regularly review and update written procedures referred in the previous paragraph to ensure they correspond to the state of the facility and take into account operating experience, the progress of science and technology and changes in legislation, standards and guidelines.

2.2. OPERATIONAL EXPERIENCE FEEDBACK Article 6

(Operational experience feedback)

(1) The operator of a radiation or nuclear facility shall monitor in-house and international operational experiences, new findings of scientific and development progress, amendments to regulations and standards, instructions issued by manufacturers or their associations and international organisations and shall systematically evaluate and apply them.

(2) The operator of a radiation or nuclear facility shall designate personnel for carrying out the monitoring of operational experience and provide such personnel with adequate resources, training and support from the management.

(3) The operator of a radiation or nuclear facility shall ensure the following outcomes of the monitoring of operational experience referred to in the first paragraph of this Article:

- obtain operating experience data and results of corresponding analyses;

- conclusions are drawn;

- good practices are considered;

- appropriate corrective actions are implemented to prevent recurrence and to counteract developments adverse to safety.

Article 7

(Operational experience feedback programme)

(1) The operator of a radiation or nuclear facility shall establish and conduct a programme to collect, screen, analyse, and document operational experience, which shall include, as a minimum:

1. the type, scope and criteria of collecting information on in-house and international operational experience;

2. the method of collecting and keeping information on in-house and international operational experience;

3. the method of evaluation of the collected information;

4. the method of analysing of the collected information;

5. the methods of implementing preventive and corrective measures derived from the findings of the analyses in order to prevent the degradation of SSCs or to prevent the occurrence or recurrence of similar events in the facility, and

6. requirements concerning the informing of the personnel and the management of the radiation or nuclear facility on operational experience important to safety.

(2) The operator of a radiation or nuclear facility shall develop written procedures for the implementation of the operational experience feedback programme.

(3) The operator of a radiation or nuclear facility or the investor shall in all the facility lifecycle phases (siting, design, construction, trial operation, operation, deactivation period, decommissioning, closure of a disposal facility, completion of any mining works or long- term surveillance of a disposal facility) provide documenting and keeping of operational experience gathered from normal and abnormal operation, analysis of operating experience, corrective actions, feedback information on corrective actions and other important information related to radiation or nuclear safety, with due consideration of the aspects of accessibility, systematic searching, transparency and clear presentation to the personnel involved in monitoring operational experience.

(4) The operator of a radiation or nuclear facility shall, through self-assessment or peer reviews, in regular time intervals not exceeding the intervals of Periodic Safety Reviews, review and update the appropriateness of the operational experience feedback programme referred to in the first paragraph of this Article, also considering previous operational experience. Any modifications to the operational experience feedback programme shall be implemented in accordance with Articles 34, 35 and 36 of these Rules.

Article 8

(Dissemination of operational experience)

(1) The operational experience feedback programme shall require the personnel to report on all the events and encourage them to report on minor events and internal near misses, the potential problems associated with equipment failures, shortcomings in human behaviour, shortcomings in the procedures or the inconsistencies in the documentation. The personnel shall not be exposed to risks of sanctions due to such reporting.

(2) Information resulting from operational experience shall be disseminated to personnel involved in the processes of maintenance, operation, technical support, management system, professional training, emergency preparedness and physical protection of the radiation or nuclear facility.

(3) The operator of a radiation or nuclear facility shall ensure the sharing of information resulting from operational experience with relevant international organisations and with national and foreign radiation or nuclear facilities. The facility operator shall maintain liaison as appropriate with designers, suppliers and research organisations involved in the design and construction of the facility, with the aim of feeding back information on operational experience and obtaining advice, if necessary, in cases of SSC failures or degradation or abnormal events. It shall consider relevant experience from other industries.

Article 9

(Monitoring and analysing events in a radiation or nuclear facility)

(1) The operational experience feedback programme shall ensure systematic monitoring and analyses of events in a radiation or nuclear facility. It shall include the criteria for evaluation of events according to their significance. The operational experience feedback programme shall also lay down the time schedule for analysis consistent with the significance of events.

(2) Operational experience important for radiation or nuclear safety referred to in the previous paragraph shall be assessed without delay in order to promptly implement urgent corrective actions.

(3) The operational experience feedback programme at the plant shall ensure identification of any events with latent consequences regarding radiation or nuclear safety, potential precursors and possible tendencies towards degraded safety performance or reduction in safety margin.

(4) The operational experience feedback programme shall also include monitoring of experience on important incidents which resulted or could lead to the exposure or unplanned radiation exposure.

(5) The analysis referred to in the first paragraph of this Article shall consider the importance of the event in relation to radiation or nuclear safety of the facility, including possible consequences. This analysis shall:

1. describe the state of the facility before the event;

2. review of facility’s own and of international operational experience relevant for a particular event;

3. establish the complete time sequence of an event;

4. determine deviations from the anticipated response or action;

5. include the analysis of contributing, direct and root causes, and

6. identify corrective actions and set the time schedule for their implementation.

(6) For operating experience relevant for safety, the operator of a radiation or nuclear facility shall perform root cause analysis. To select the method of such analysis facility operator shall take into account the characteristics of the event. The facility operator shall have written procedures specifying appropriate investigation methods, including root cause analysis methods and the methods to analyse human performance and safety culture.

(7) In the case of nuclear power plants and research reactors, data obtained in analyses of events referred to in the first paragraph of this Articleshall be properly evaluated and considered in probabilistic safety analyses models. In addition to the importance of events, the monitoring shall include their frequency and this aspect shall be taken into account in input data collections for probabilistic safety analyses.

(8) Corrective measures resulting from the findings of the analyses referred to in the first paragraph of this Article shall be proposed, approved and implemented as soon as possible. They shall eliminate the causes and improve the weakened or broken safety

barrier, which did not prevent the occurrence of an event. Management must continually monitor the list of measures and changes as well as deadlines for their execution. In the case of simultaneous multiple corrective measures, their priority according to the importance of the degraded SSCs for safety shall be taken into account.

(9) Corrective actions indicated by the analysis referred to in the first paragraph of this Article, can have various forms, which include technical modifications, changes in procedures and programs, administrative measures, personnel training or activities in the field of SSC maintenance, testing and inspection, etc. Corrective actions shall be implemented in a timely manner and properly to decrease the probability of recurrence of the same or similar events and to improve radiation or nuclear safety of the facility. The operability of the SSC shall be verified by the appropriate testing and inspection after completion of corrective action. Verification of the effectiveness of corrective measures has to be ensured.

(10) The provision of the seventh paragraph of this Article shall not apply to the TRIGA Mark II Research Reactor.

Article 10

(Monitoring and analysing operational experience in other radiation or nuclear facilities)

(1) The operational experience feedback programme shall provide for systematic monitoring, analysing and for taking into consideration relevant operational experience in other radiation or nuclear facilities, other industries and recommendations compiled on the basis of such experience, with application of different sources of information.

(2) Based on preliminary review of different reports on operational experience and recommendations referred to in the previous paragraph the selection shall be made of those occurrences likely to arise in the facility or having arisen in similar radiation or nuclear facilities or information which would be useful in improving nuclear and radiation safety.

(3) For the selected events, additional input information, experience and feedback information shall be obtained. Selected events shall be analysed in detail and appropriate preventive measures shall be determined for the facility.

(4) The operator of a radiation or nuclear facility shall keep records of all the reviewed and analysed operational experience referred to in the previous paragraph. The records shall include known measures implemented in similar radiation or nuclear facilities to avoid recurrence of events.

Article 11

(Monitoring of operational indicators)

(1) The operator of a radiation or nuclear facility shall have a programme of monitoring of operational indicators which show the safety and performance of the facility. Each indicator shall be defined and shall be provided with an evaluation procedure, taking into account international experience.

(2) In the case of nuclear facilities, the indicators referred to in the previous paragraph shall cover, as a minimum, the following fields:

1. nuclear safety, including events, availability of safety systems, integrity of safety barriers, qualifications of the personnel, emergency preparedness and risk indicators;

2. radiation protection, including the exposure of personnel and the public to irradiation and contamination of the environment;

3. safety at work, including fire safety;

4. overall performance of the facility in terms of stability and operational readiness;

5. safety culture;

6. operational experience monitoring;

7. maintenance, including the ageing management and modification and quality management and monitoring the effectiveness of maintenance;

8. physical protection.

(3) In the case of radiation facilities, the indicators referred to in the first paragraph of this

Article shall cover, as a minimum, the following fields:

1. radiological protection, including the exposure of personnel and the public to irradiation and contamination of the environment;

2. safety at work, including fire safety;

3. safety culture, including human performance, compliance with procedures, attitude to procedures, compliance with regulatory limitations and legislation;

4. physical protection.

(4) The operator of a radiation or nuclear facility shall, through self-evaluation or independent evaluation, in regular time intervals not exceeding the intervals of Periodic Safety Reviews, review and update the programme of monitoring operational indicators. Any modification of the programme shall be implemented in accordance with Articles 34, 35 and 36 of these Rules.

Article 12

(Independent safety monitoring group)

(1) For each nuclear facility, except for radioactive waste or spent fuel storages or disposal facility, its operator shall set up and maintain an independent group to monitor and asses radiation and nuclear safety (hereinafter: independent group) and shall provide access to all relevant information. The independent group shall be autonomous, in functional terms, from all other organisational units of the facility.

(2) The independent group shall be entitled to investigate, on its own initiative, any specific element of the management or operation of the facility referred to in the previous paragraph, or any other activity in the facility, including its maintenance, modifications and operational experience. The group purpose is to undertake independent verification of proper performance of all the activities in the facility and to minimise the extent of human errors. The independent group may, according to the findings of its investigations, propose corrective measures to the facility management.

(3) The independent group shall be provided with adequate resources and support by the management to carrying out its activity, including the necessary training.

(4) The independent group shall report its activities to the facility management at least once a month.

(5) In the case of a nuclear power plant, the independent group shall consist of at least five members, in cases of other nuclear facilities, the minimum number of members is three. The members of the independent group shall have, as a minimum, the master’s degree in engineering or natural science programme (2nd Bologna cycle) and at least two years of professional experience, of which at least one year in the nuclear field.

Article 13

(Reporting on the operational experience feedback programme)

The operator of a radiation or nuclear facility shall submit to the Administration:

- the operational experience feedback programme referred to in Article 7 of these Rules;

- the programme of the monitoring of operational indicators referred to in Article 11 of these Rules;

- any modification of or amendment to the programmes referred to in this Article not later than three months after the modification or amendment.

2.3. AGEING MANAGEMENT Article 14

(Ageing management)

(1) The operator of a radiation or nuclear facility shall assess the SSCs important to safety taking into account relevant ageing and wear-out mechanisms and potential age-related degradations, and continuously monitor and assess the condition of SSCs, through their maintenance, testing and inspection.

(2) The operator of a radiation or nuclear facility shall implement measures to timely detect the inception of ageing effects and to allow for preventive and remedial actions. The facility operator shall ensure that the requirements for the achievement of SSC safety functions throughout the service life of the facility are stated in the design bases.

Article 15

(Ageing management programme)

(1) The operator of a radiation or nuclear facility shall have an ageing management programme to identify all ageing mechanisms relevant for SSCs important to safety, determine the possible consequences of ageing, and determine necessary activities in order to maintain the operability and reliability of these SSCs. The ageing management programme shall include, as a minimum the following:

1. the criteria for the screening of SSCs to be included in the ageing management programme;

2. the selection of preventive activities to eliminate or mitigate the effects of ageing;

3. the monitoring of modifications of monitored parameters over extended periods of time to establish the time trends of SSC ageing;

4. the acceptance criteria for monitored effects of ageing;

5. the selection of corrective measures for those SSCs that do not fulfil the acceptance criteria;

6. control of the process of ageing management;

7. the instructions for the evaluation of in-house and international experience in the field of ageing;

8. verification that the preventive measures are adequate and that the appropriate corrective actions have been completed and are effective.

(2) The ageing management programme shall consider, as a minimum:

1. environmental conditions;

2. conditions of the technological process in which the SSC operates;

3. number of duty cycles;

4. the maintenance, testing and inspection programme, and

5. the envisaged operating lifetime of the facility.

(3) In the case of a nuclear power plant, the ageing management programme shall include the ageing management for mechanical, electrical and civil SSCs. In the case of a nuclear power plant, such programme shall include the monitoring of the entire primary system pressure boundary, in the case of a research reactor, at least the monitoring of the reactor

pressure vessel, if installed, with associated welds. As a minimum, the embrittlement of materials due to effects of neutron flux and of the material fatigue processes due to thermal and other stresses shall be monitored. The measured results shall be compared with predicted properties throughout the facility operating lifetime.

(4) The operator of a radiation or nuclear facility shall review and update the ageing management programme in regular time intervals not exceeding the intervals between Periodic Safety Reviews, to incorporate new information and knowledge as it becomes available and to use new methods as they become accessible and to assess the performance of the SSC maintenance, testing and inspection programme throughout the facility operating lifetime. Any possible modifications of the programme shall be implemented in accordance with Articles 34, 35 and 36 of these Rules.

Article 16

(Reporting on the ageing management)

The operator of a radiation or nuclear facility shall submit to the Administration the ageing management programme and any modification of the programme or amendment to the programme not later than three months after the modification or amendment.

2.4. SSC MAINTENANCE Article 17

(Basic concepts of SSC maintenance, testing and inspection)

(1) Throughout the facility operating lifetime, the decommissioning and, in the case of a disposal facility, throughout its long-term surveillance, the operator of a radiation or nuclear facility shall ensure the availability, reliability and operability of SSCs through maintenance, testing and inspection. The operability of SSCs important for safety shall comply with design bases.

(2) The operator of a radiation or nuclear facility shall analyse the results of SSC maintenance, testing and inspection.

(3) To maximise SSC reliability and availability, the operator of a radiation or nuclear facility shall implement appropriate activities or modifications based on feedback information on the past maintenance and on the findings of the SSC testing and inspection. The facility operator shall also take into account the scientific and technological progress.

(4) The operator of a radiation or nuclear facility shall ensure that any activity in the scope of maintenance, testing or inspection of SSCs important for safety carried out in full or in part by contractor is approved and surveilled by the authorised personnel of the facility operator.

Article 18

(Programme of SSC maintenance, testing and inspection)

(1) The operator of a radiation or nuclear facility shall prepare and implement a programme of SSC maintenance, testing and inspection, in order to determine whether the safe operation of the plant is ensured or whether any corrective measures are necessary. The programme of SSC maintenance, testing and inspection shall include, as a minimum the following content:

1. the guidelines for the screening of SSCs to be maintained, tested and inspected according to the programme;

2. the list of standards to be applied in SSC qualification, maintaining qualification and

SSC calibration;

3. the list of standards applied to determine the acceptance limits for SSC inspections;

4. the collection of information on completed works to allow the establishment of incipient or recurrent deviations;

5. the method of analysis of collected information, and

6. the specification of criteria for possible modification of the frequency and extent of SSC maintenance, testing and inspection, as well as for the undertaking of corrective measures according to the findings of the analysed information, in order to maintain SSC reliability, availability and functionality.

(2) The extent and frequency of SSC maintenance, testing and inspection under the programme referred to in the previous paragraph shall be determined based on systematic analysis that takes into account, as a minimum:

1. operational conditions and limits;

2. importance of tasks performed by the SSC to safety of the facility;

3. inherent SSC reliability;

4. frequency of operation and conditions in which an SSC operates;

5. findings of the monitoring of the SSC condition;

6. appropriate intervals between tests and inspections to allow timely detection of any deterioration prior to the loss of SSC operability;

7. potential for degradation as indicated by in-house and international operational experience and recommendations by equipment vendors and authorised experts on radiation and nuclear safety.

(3) The operator of a radiation or nuclear facility shall establish written procedures, in accordance with the SSC maintenance, testing and inspection programme, for all the tasks to be carried out during operation, planned outage or unplanned shutdown of the facility. The written procedures shall determine:

1. authorisations and responsibilities to carry out specific tasks;

2. approach to performing works;

3. appropriate methods and standards to carry out the works;

4. use of appropriate tools and measurement equipment;

5. measures for ensuring sufficient stock of spare parts and materials;

6. criteria and measures to ensure installation of equipment that meets valid standards, specifications or technical requirements;

7. acceptance criteria of successful SSC maintenance, testing and inspection;

8. actions to be taken in response to deviations from the acceptance criteria referred to in the previous subparagraph;

9. coordination of all tasks and personnel involved in the tasks, and

10. other details concerning the works in the scope of SSC maintenance, testing and inspection.

(4) The operator of a radiation or nuclear facility may, in the programme referred to in the first paragraph of this Article, provide for maintenance in operation. In the case of a nuclear power plant or a research reactor the facility operator shall comply with the provisions of Article 22 of these Rules; the operators of other facilities shall carry out maintenance in operation under compliance with Article 22 of these Rules by analogy.

(5) The operator of a radiation or nuclear facility shall provide for documenting and archiving of feedback information on SSC maintenance, testing and inspection results and of other information relevant for radiation or nuclear safety.

(6) The operator of a radiation or nuclear facility shall provide for systematic review of information referred to in the previous paragraph in order to identify recurring or premature

degradation of SSCs. Based on the identified degradations, predictive maintenance or corrective measures shall be undertaken. In such cases, the programme referred to in the first paragraph of this Article shall be reviewed.

(7) The operator of a radioactive waste or spent fuel disposal facility shall use the information referred in the fifth paragraph of this Article to review the appropriate design of the disposal facility, construction and its operation and identifying possible implications for the long- term surveillance period.

(8) The operator of a radiation or nuclear facility shall, in regular time intervals not exceeding the intervals of Periodic Safety Reviews, review the relevance and update the programme referred to in the first paragraph of this Article according to operational experience, taking into account in-house and international operational experience and scientific and technological progress. Any modification of the programme of SSC maintenance, testing and inspection shall be implemented in accordance with Articles 34, 35 and 36 of these Rules.

Article 19

(Planning of SSC maintenance, testing and inspection)

(1) The operator of a radiation or nuclear facility shall produce, prior to any SSC maintenance, testing or inspection, a detailed plan of the activity, in accordance with the programme of SSC maintenance, testing and inspection referred to in the first paragraph of the previous Article.

(2) Before a SSC is removed from or returned to operation, assessment of the proposed change of configuration, which will ensure the SSC operability through appropriate arrangement and setting of all components and software, shall be ensured by the operator of the radiation or nuclear facility, followed by a documented confirmation of its correct configuration. Where appropriate, the functionality of the new configuration shall be tested.

Article 20 (Implementation of SSC maintenance)

(1) Prior to any maintenance operation, the operator of the radiation or nuclear facility shall assess the potential impacts of the maintenance activities on the safety of the radiation or nuclear facility, and, upon the completion of maintenance activity, carry out a final assessment.

(2) Following any maintenance work, for which an assessment of impacts referred to in the previous paragraph has been made, the operator of the radiation or nuclear facility shall carry out testing to demonstrate the operability of the SSC being maintained. Where practicable, the modification of SSC configuration shall be followed by a functional test to ensure appropriate reinstallation and operability of the SSC.

(3) Any repairs to SSCs shall be devised, authorized, and carried out as promptly as practicable. Priorities shall be established with account taken first of the relative importance of the repairs that are of greater importance to the safety of the facility.

Article 21

(Implementation of SSC testing and inspection)

(1) The operator of a radiation or nuclear facility shall implement testing and inspection of

SSCs.

(2) The operator of a nuclear power plant or a research reactor shall carry out the following on the reactor coolant system:

1. leakage test prior to any restart of the reactor after an outage;

2. system pressure test in each inspection period referred to in item 6 of the second paragraph of Article 18 of these Rules.

(3) The operator of a nuclear power plant or a research reactor shall, in each inspection period referred to in item 6 of the second paragraph of Article 18 of these Rules, carry out a containment integrity examination, involving:

1. the leak rate test;

2. the test of penetration seals and closure devices, such as valves and airlocks at the containment entrance;

3. the functional test of closure devices, and

4. the inspection of containment structural integrity.

(4) When an SSC inspection detects a flaw or damage that exceeds inspection acceptance criteria set in the written procedures referred to in the third paragraph of Article 18 of these Rules, additional examinations shall be performed to investigate the specific problem area or components prone to analogous specific problems. The extent of further examination shall be decided with due regard for the number and nature of flaws or damage, degree to which they affect nuclear safety assessment and potential consequences.

(5) The SSC inspection shall be appropriately verified in accordance with the written procedures referred to in the third paragraph of Article 18 of these Rules:

1. in terms of the required inspection areas;

2. in terms of the methods of non-destructive material testing;

3. in terms of defects being sought, and

4. in terms of the required effectiveness and accuracy.

(6) For SSCs falling in the scope of operational limits and conditions, the scope of testing and inspection following a maintenance operation shall meet, as a minimum, the requirements laid down for surveillance testing specified for the SSC in the operating limits and conditions.

(7) All items of equipment used for SSC testing and inspection shall be qualified and calibrated before they are used. All equipment shall be properly identified in the calibration records. The validity of the calibration shall be regularly verified by the facility operator in accordance with the requirements of the management system.

(8) Following any event due to which the safety functions and functional integrity of any SSC may have been challenged, the facility operator shall identify and revalidate the safety functions and carry out any necessary corrective actions, including SSC inspection, testing, maintenance or repair, as appropriate.

(9) The provision of paragraphs 2 and 3 of this Article shall not apply to the TRIGA Mark II Research Reactor.

Article 22

(Risk management during maintenance and testing of a facility in operation)

(1) The operator of a nuclear power station or a research reactor, who chooses to implement maintenance in operation according to the provisions of the fourth paragraph of Article 18 of these Rules, shall:

1. implement continuous assessment, surveillance and records of the impacts of the maintenance activities on the radiation and nuclear safety of the facility;

2. prior to any maintenance work, implement an assessment of the impacts of the maintenance of the facility in operation on safety risks;

3. observe the time limits for SSC inoperability laid down in operational limits and conditions as well as ensure that any SSC is inoperable due to maintenance or

testing for the shortest time period possible. In this respect, the overall increase of the core damage probability shall not exceed 5·10-7 per year and the overall increase of the large early release probability shall not exceed 1·10-8 per year;

4. avoid maintenance or testing that would cause several simultaneous inoperability SSCs and avoid excessive increase of risks due to such inoperability. Under any SSC configuration with components inoperable due to maintenance or testing, the core damage frequency shall not exceed 1·10-4 per year.

(2) The provision of the previous paragraph shall not apply to the TRIGA Mark II Research

Reactor.

(3) Without prejudice to the provision of item 3 of the first paragraph of this Article, in the case of the Krško Nuclear Power Plant, the overall increase of the core damage probability due to maintenance and testing of SSCs shall not exceed 4·10-6 per year and the overall increase of the large early release probability shall not exceed 2·10-7 per year.

(4) Without prejudice to the provision of item 4 of the first paragraph of this Article, in the case of the Krško Nuclear Power Plant, under any SSC configuration with components inoperable due to maintenance or testing, the core damage frequency shall not exceed

1·10-3 per year.

Article 23

(Reporting on the programme of SSC maintenance, testing and inspection)

The operator of a radiation or nuclear facility shall submit to the Administration the programme of SSC maintenance, testing and inspection and any modification or amendment of the programme, not later than three months after the modification or amendment.

3. REPORTING ON RADIATION AND NUCLEAR SAFETY Article 24

(Basic concepts of reporting)

(1) The operator of a radiation or nuclear facility shall report to the Administration on normal operation and operational experience feedback and additionally on events.

(2) Regular reports on operation include:

1. daily;

2. monthly;

3. quarterly;

4. annual reports, and

5. reports on outages.

(3) Special reports on events shall be made taking into account the importance of an event for radiation or nuclear safety.

(4) As a part of the consensus for trial operation of a radiation or nuclear facility, the Administration shall lay down the detailed scope and method of producing regular and special reports and the method of collection, transmission or accessibility of reports.

(5) The operator of a radiation or nuclear facility shall also report to the Administration in accordance with the requirements laid down in operational limits and conditions.

(6) The reports referred to in paragraphs 2 and 3 of this Article shall be transmitted to the Administration in electronic form. The electronic form of the reports shall allow further processing of information by the Administration.

(7) In the case the reports referred to in paragraphs 2 and 3 of this Article cannot be transmitted to the Administration in electronic form, the facility operator shall transmit them in writing.

Article 25 (Daily reporting)

Every day by 10 a.m., the operator of a nuclear power plant shall transmit to the Administration the report on the operation in the last 24 hours. As an exception, the information for non- working days may be transmitted on the first subsequent business day. The concept of a daily report is set out in Annex 1, which as Annex forms a constituent part of these Rules.

Article 26 (Monthly reporting)

By the fifteenth day of the month, the operator of a nuclear power plant shall transmit to the Administration the report on the operation in the previous month. The concept of a monthly report is set out in Annex 2, which as Annex forms a constituent part of these Rules.

Article 27 (Quarterly reporting)

(1) By the twentieth day of the first month in the quarter, the operator of a nuclear power plant shall transmit to the Administration the report on the operation in the previous quarter. The concept of a quarterly report is set out in Annex 3, which as Annex forms a constituent part of these Rules.

(2) The quarterly report shall be accompanied by the following:

1. programmes and procedures that were revised and that have become valid in the course of the previous quarter, and their later changes with dates of their validity; and

2. the list of the programmes and written procedures that have been abolished in the course of the previous quarter.

Article 28 (Annual reporting)

(1) By 28 February, the operator of a radiation or nuclear facility shall transmit to the Administration operating information concerning the previous year, in the form of an annual report.

(2) The concept of the report referred to in the previous paragraph is set out:

1. for a nuclear power plant in Annex 4, which as Annex forms a constituent part of these Rules;

2. for a research reactor in Annex 5, which as Annex forms a constituent part of these

Rules;

3. for other radiation or nuclear facilities as a part of the consensus for the start of trial operation and the procedure of issuing operating licence.

Article 29 (Reporting on outages)

(1) The operator of a nuclear power plant or a research reactor shall, at the latest 30 days before the start of the planned outage, transmit to the Administration the following information:

1. general outline of the outage activities and the plan of the shutdown;

2. the plan of implementation of all the SSC inspections in the scope of the outage;

3. the list of approved permanent and temporary modifications to be implemented in the scope of the outage; and

4. any activities already undertaken or planned in the scope of the outage based on proposals by authorised experts and listed in the expert assessments of the previous outages.

(2) Within 60 days from the completion of the outage, nuclear power plant or research reactor operator shall transmit to the Administration the following information:

1. written summary expert assessment by the authorised experts on nuclear safety, which have monitored or executed the outage activities;

2. report on the SSCs inspected during the outage;

3. the plan of remedying deficiencies identified during the outage;

4. the positions of the facility operator concerning the proposals and comments listed in the summary expert assessment referred to in item 1 of this paragraph;

5. realisation of the envisaged plan of the outage;

6. the assessment of the collective dose sustained in the course of the outage, distribution of dose and its comparison and analysis with respect to the plan; and

7. report on the transitions that have occurred during the last fuel cycle and are listed in the design bases.

(3) The Administration shall forward the assessment of the collective dose and its comparison and analysis to the Slovenian Radiation Protection Administration.

Article 30 (Reporting on events)

(1) The operator of a radiation or nuclear facility shall report to the Administration on the events in the facility in accordance with the national protection and rescue plan in case of nuclear accident.

(2) In addition to the reporting laid down in the previous paragraph, the operator of a nuclear power plant shall notify the Administration of any event listed in Annex 6, which is as Annex a constituent part of these Rules, within 24 hours from the occurrence or detection of the event. The report shall also be confirmed by phone.

(3) For other radiation or nuclear facilities, the Administration sets the list of reportable events within the operating licence or as part of the operational limits and conditions.

(4) Within 45 days from an event referred to in the three previous paragraphs, the operator of a radiation or nuclear facility shall transmit to the Administration a report on the undertaken analysis of the event. Such a report according to the importance of the event shall include:

1. a brief description of the event, including the state of the radiation or nuclear facility prior to and following the event;

2. a description of the condition of the facility prior to the event;

3. review of its own and international operational experience relevant to consider within the event analysis;

4. timeline of the event;

5. deviations from the predicted response or action;

6. the analysis of root cause and other causes;

7. description of the corrective actions and the timetable for their implementation;

8. in the case of a nuclear power plant and research reactor, findings of the probabilistic safety analysis of the event, if the analysis model supports such assessment;

9. any corrective actions already implemented and their assessment if available; and

10. the classification of the event according to the international nuclear and radiation event scale.

(5) The Administration may forward any information referred to in this Article to the Slovenian Radiation Protection Administration insofar such information is relevant for the protection of the public from harmful effects of ionising radiation.

(6) The operator of nuclear facility shall include in procedures instructions for event reporting. (7) The provision of the item 8 of the fourth paragraph of this Article shall not apply to the

TRIGA Mark II Research Reactor.

4. MANAGEMENT OF MODIFICATIONS IN A RADIATION OR NUCLEAR FACILITY

4.1. CLASSIFICATION AND ASSESSMENT OF MODIFICATIONS Article 31

(Mandatory implementation of safety improvements)

(1) The operator of a radiation or nuclear facility shall promptly elaborate the options for improvements in the cases where it becomes apparent that the safety of the facility can be improved through modifications of the design, operation, maintenance, testing, training or procedures, even if the facility already meets all the statutory safety requirements.

(2) The operator of a radiation or nuclear facility shall examine any new findings that may affect the radiation or nuclear safety of the facility in ways differing from those included in the safety analysis report and shall implement any necessary modifications of the facility or its operation.

(3) The operator of a radiation or nuclear facility shall implement the modifications referred to in the previous paragraphs provided that the costs of implementation are warranted by the benefits for the safety of the facility.

(4) The Administration shall request the operator of a radiation or nuclear facility to elaborate the improvements pursuant to paragraphs 1 and 2 of this Article if it finds out that the safety of the facility can be improved through modifications of the design, operation, maintenance, testing, training or procedures, even if the facility already meets all the statutory safety requirements.

Article 32

(Assessment and classification of modifications)

(1) The operator of a radiation or nuclear facility shall elaborate any modification of the facility with due consideration of its effects on the radiation or nuclear safety of the facility.

(2) The operator of a radiation or nuclear facility shall ensure that no modification to the facility degrades its ability to be operated safely, and that there will be no unacceptable impact to the facility after its closure in the case of a radioactive waste or a spent fuel disposal facility.

(3) The operator of a radiation or nuclear facility shall establish a process of modification management to ensure that all temporary or permanent modifications are timely and properly designed, reviewed, controlled and implemented and that all relevant safety requirements are met, with due account to in-house and international operational experience feedback as well as the progress of technical knowledge and progress and information gathered from the operation of other radiation or nuclear facilities.

(4) To justify the proposed modification the scope and quality of safety analyses (deterministic and probabilistic) undertaken shall be in accordance with the significance of the modification for radiation or nuclear safety and shall be based on information reflecting the actual condition of the facility as constructed, operated and maintained, with due consideration of operational experience.

Article 33

(Organisation of the implementation of modifications)

(1) The operator of a radiation or nuclear facility shall develop programme and procedures for modification management referred to in the third paragraph of the previous article, which shall cover, as a minimum:

1. the specification of the management steps necessary to continue with the implementation of the modification;

2. the monitoring of implemented modifications and the evaluation of feedback information with respect to the realisation of set objectives;

3. the method of informing the personnel of the implemented modifications.

(2) The modification management shall include, as a minimum the following:

1. the description of the reason for the modification and its justification;

2. the design of the modification, including the assessment of the expected collective dose of the personnel during of the implementation of the modification;

3. reviews and assessments of modifications and corrective actions undertaken in the past in the area of the elaborated object of modification;

4. categorisation of the modification in accordance with Article 35 of these Rules and safety evaluation screening and safety assessment if necessary, in accordance with Article 36 of these Rules;

5. approval by the Administration if necessary;

6. education and training of the personnel;

7. verification of the adequacy of the fire hazard analysis or proposal for its amendment;

8. fabrication, installation and testing following the implementation of the modification and updating of the documentation;

9. plan of the monitoring of implemented modification and the evaluation of feedback information;

10. the method of the final approval of the suitability of the implemented modification;

11. verification of compliance with the requirements for the physical protection.

(3) The operator of a radiation or nuclear facility shall provide independent personnel, which is not directly involved in the processes of the planning, design or implementation of the modification, to review the modification, its consequences and impact on radiation and nuclear safety, as well as its categorisation.

(4) The operator of a radiation or nuclear facility shall prepare and modify programme and procedures for modification management in accordance with Articles 34, 35 and 36 of these Rules. Any new revision of the programme or procedure for modification management shall be transmitted to the Administration.

(5) The operator of a radiation or nuclear facility shall provide for the documenting of the entire process of the preparation and implementation of modifications and of feedback information on the implemented modifications. The records shall be kept in full. The records shall be accessible to the personnel involved in the modification management, they shall allow systematic searches, the data presentation shall be transparent and clear.

(6) The operator of a radiation or nuclear facility shall, in regular time intervals not exceeding the intervals of Periodic Safety Reviews, review and update as necessary the modification management programme. Such updating shall take into account the findings of the reviews of the operational experience feedback programme.

Article 34 (Modification management)

The operator of a radiation or nuclear facility shall, in accordance with Annexes 7 and 8, which form constituent parts of these Rules and with respect to radiation and nuclear safety, elaborate any intended modification which:

1. directly affects the operation of the facility through:

- a modification of an SSC or process software;

- a modification of operational limits and conditions;

- a modification of written procedures;

- any combination of the modifications listed in bullets 1 to 3 of item 1 of this paragraph;

2. affects the operation of the facility through a change:

- of the method of knowledge management;

- of the organisational structure or personnel structure;

- of programmes; or

- of the modification management process in the facility.

Article 35

(Classification of modifications into categories)

The operator of a radiation or nuclear facility shall categorise any intended modification of the facility according to the assessment of its significance for the radiation or nuclear safety. The categories of modifications are as follows:

1. modification of category 1 is a minor modification which:

- does not have any implication on radiation or nuclear safety;

- is implemented on an element of no importance for radiation or nuclear safety and not referred to in the operating licence or;

- even in a case of errors in the design or implementation, does not contribute significantly to the probability of a design basis event;

2. modification of category 2 is a modification of little significance which:

- has minor impact on radiation or nuclear safety;

- does not involve significant modifications of the design bases according to which the operating licence has been granted; or

- does not involve modifications of the operating licence;

3. modification of category 3 is a significant modification which:

- has substantial impact on radiation or nuclear safety;

- involves substantial modifications of the design bases; or

- involves modifications of the operating licence.

Article 36 (Assessment of modifications)

(1) The operator of a radiation or nuclear facility shall, prior to undertaking a modification, carry out a safety evaluation screening to determine any consequences for radiation or

nuclear safety. The scope of the safety evaluation screening is laid down in Annex 7 to these Rules.

(2) Following the safety evaluation screening referred to in the previous paragraph, the operator of a radiation or nuclear facility shall carry out a safety assessment of those modifications which are classified as category 2 or 3 based on the safety evaluation screening. The safety assessment shall demonstrate the consideration of all the safety aspects of the modification and its compliance with relevant safety requirements and its compliance with the design bases of the involved SSCs. The scope of the safety assessment is laid down in Annex 8 to these Rules.

(3) A safety assessment is not required in the case of modifications, which are found, through the safety evaluation screening, necessary to remedy an obvious error, e.g. a typing error in a document or adaptation of equipment to parameters already covered in approved safety analyses. Such modifications shall be treated as modifications of category 1.

(4) Any change of operational limits and conditions shall be treated as a modification of category 3, except those changes of operational conditions and modifications, which fulfil the conditions of the previous paragraph.

(5) If during the operation of the facility sudden circumstances which would endanger a stable and safe operation of the facility occur, the facility operator may carry out an urgent temporary modification. Such a modification shall be treated as a modification of category

1, although the safety evaluation screening referred to in paragraph one of this Article and the safety assessment referred to in paragraph two of this Article classify it as modification

of category 2. The facility operator shall transmit the safety evaluation screening, safety

assessment, period of validity and notification of implementation of such modifications the next working day after the implementation of modification to the Administration. The

Administration shall declare its position to the modification in three working days at the

latest.

Article 37 (Temporary modifications)

(1) The operator of a radiation or nuclear facility shall keep the number of simultaneous temporary modifications of the facility to a minimum. The duration of a temporary modification shall be determined and documented.

(2) Any temporary modification shall be clearly designated as temporary in the proposal of modification and treated, assessed and categorised as a temporary modification in accordance with Articles 34, 35 and 36 of these Rules.

(3) Specific written procedures shall be developed for temporary modifications and shall determine, as a minimum:

1. the personnel that may initiate, approve, implement or remove a temporary modification;

2. the control of documentation which may be affected by the temporary modification;

3. the keeping of records and marking of equipment affected by the temporary modification;

4. the presentation of information to the operating personnel;

5. the period of validity and the method of prolongation of the temporary modification;

6. the verification of the SSC configuration and the informing of the operating personnel upon the removal of the temporary modification.

(4) At least once a year, the operator of a radiation or nuclear facility shall review all the outstanding temporary modifications. The review shall cover the conformity of written procedures, instructions to personnel and other documents with the approved temporary

modification. The review shall also involve the assessment of the need to retain the temporary modification or of the need to transform it into a permanent modification. The removal of a temporary modification or its transformation into a permanent modification shall comply with the programs and procedures for implementing the modification.

Article 38

(Extraordinary temporary violation of operational limits and conditions)

(1) In case of a threats to the health or safety of the general public or the facility personnel, the operator of a radiation or nuclear facility may apply to the Administration for a temporary violation of operational limits and conditions, not exceeding the safety margins, in the cases where the compliance with operational limits and conditions would most probably lead to:

- an unnecessary transient that might lead to an accident;

- in the case of a nuclear power plant, to a risk of an unplanned shutdown in unfavourable weather conditions or other conditions and to further deterioration of the poor condition of the electric power grid under such conditions.

(2) The application in the previous paragraph shall be accompanied by a brief explanation how shall the safety margins be provided. The application referred in the previous paragraph is transmitted in oral or written form for prompt resolution. The application shall be supplemented, within 48 hours, with appendices set out in Articles 42 and 43 of these Rules.

Article 39 (Implementation of modifications)

(1) Prior to undertaking any modification, the operator of a radiation or nuclear facility shall provide for the performance and approval, in full extent, of the safety evaluation screening and, if indicated by the findings of the safety evaluation screening, the safety assessment referred to in Article 36 of these Rules, as well as for the production of all the necessary support documents, prior to undertaking any modification.

(2) The operator of a radiation or nuclear facility shall develop and implement the procedure of implementation of the modification, its surveillance and testing, which shall cover an analysis of potential mechanisms of SSC failures or faults, the testing to detect such failures and a corrective programme for the cases of deviations from the design bases or failures.

(3) The operator of a radiation or nuclear facility shall ensure that any modification is implemented in compliance with operational limits and conditions, with the requirements of radiation protection, fire protection and occupational safety.

(4) The operator of a radiation or nuclear facility shall ensure that any modification is implemented and tested after implementation in compliance with the plan referred to in item 9 of paragraph 2 of Article 33 of these Rules and in compliance with written procedures for the testing relevant to the modification of SSCs.

(5) Based on the modifications of the equipment, the operator of a radiation or nuclear facility shall revise the contents of the written procedures concerning the equipment; such revisions shall enter into effect at the time of the implementation of the modification. Appropriate education or training of the personnel and any significant adjustments of the simulator, if provided for the facility, shall be implemented prior to the implementation of the modification.

(6) The operator of a radiation or nuclear facility shall ensure that any activity in the scope of modifications of SSCs important for safety carried out in full or in part by contractors is approved and surveilled by the authorised personnel of the facility operator.

4.2. APPLICATION OF PROBABILISTIC SAFETY ANALYSES IN ASSESSING MODIFICATIONS

Article 40

(Application of probabilistic safety analyses)

(1) The operator of a radiation or nuclear facility which safety analysis report includes probabilistic safety analyses shall apply these analyses in safety assessments of modifications of the facility in the extent specified by relevant standards and in accordance with the technical adequacy of these analyses in the specific cases. Probabilistic safety analyses shall supplement deterministic analysis approaches. They shall, in particular, ensure the maintenance of the defence-in-depth principle and adequate safety margins.

(2) By use of probabilistic safety analyses, the operator of a radiation or nuclear facility shall continuously monitor the cumulative facility risks arising from all the implemented modifications.

(3) In the use of probabilistic safety analyses and in decision making based on their findings, the following shall be considered:

1. the cumulative effects of the modifications of the facility, expressed as the changes in risks. In the case of a nuclear power plant, the changes of the core damage frequency or changes of the large early release frequency shall be considered;

2. the effects of the proposed modification on the complexity of operation, loads on the personnel and overall treatment regarding safety assurance;

3. the facility operator’s management in the scope of monitoring and limitation of operational risk increase, due to modifications of the facility, procedures or operational experience feedback.

Article 41

(Restrictions of the increases of risks due to modifications)

(1) No increase of risks due to modifications of the facility is allowed, except in exceptional cases in which the benefits substantially offset the consequences of the increase of the risks.

(2) Any modification leading to an increase of risks shall be treated as a modification of category 3.

(3) In the case of a nuclear power plant, the increase of risks may in no case exceed 5·10-7 per year as regards the core damage frequency and 1·10-8 per year as regards the large early release frequency.

(4) Without prejudice to the provision of the previous paragraph, in the case of the Krško Nuclear Power Plant, the increase of risks may in no case exceed 1·10-6 per year as regards the core damage frequency and 1·10-7 per year as regards the large early release frequency.

4.3. NOTIFICATION OF AND INFORMING ON MODIFICATIONS

Article 42

(Informing of the Administration)

(1) The operator of a radiation or nuclear facility shall transmit to the Administration a list of all implemented modifications of category 1, indicating the reason for modification, its brief description and the date of its implementation.

(2) At the latest 90 days prior to the planned implementation of a modification of category 2, the operator of a radiation or nuclear facility shall submit to the Administration the reports on safety evaluation screening and safety assessment with the following information:

1. the description of the modification, its effects on the operation and its compliance with the statutory provisions and design bases;

2. the description of the reason for the modification;

3. the list of SSCs affected by the modification;

4. the compliance of the modification with relevant standards;

5. the envisaged plan of implementation of the modification.

(3) At the latest 90 days prior to the planned implementation of a modification of category 3, the operator of a radiation or nuclear facility shall submit to the Administration an application for the approval of modification, with the following information:

1. reports on the safety evaluation screening and safety assessment;

2. the description of the reason for the modification;

3. the description of the modification, its effects on the operation and its compliance with the legislation and design bases;

4. additional documentation to support the proposed modification (analyses, standards, other documents) unless already submitted to the Administration;

5. the list of SSCs affected by the modification;

6. a copy of the valid safety analysis report indicating the proposals of modifications;

7. an expert opinion by an authorised expert on radiation and nuclear safety; and

8. the envisaged plan of monitoring the implementation of the modification referred to in item 9 of paragraph 2 of Article 33 of these Rules.

(4) For modifications of category 2 or 3, justified by probabilistic safety analyses, the operator of a radiation or nuclear facility in addition to the report referred to in the second paragraph of this Article and the application of the previous paragraph shall further submit:

1. a summary of calculated contributions to risks, including intermediate results and the interpretation of their meaning, which shall also indicate the impacts of the modification on the prevailing sequences of events with a particular emphasis on any new prevailing risk factors or increases to existing risks;

2. applied acceptance criteria and a comparison of the results with acceptance criteria.

(5) Within 30 days after the implementation of a category 3 modification, the operator of a radiation or nuclear facility shall report to the Administration. The report shall include the date of implementation and possible deviations from the modification proposal.

(6) For modifications of category 2 or 3, justified by probabilistic safety analyses, the operator of a radiation or nuclear facility shall keep:

1. an analysis of the sensitivity and uncertainties of the probabilistic safety analyses;

2. a survey of the modifications in the probabilistic safety analysis model introduced in the scope of assessing the proposed modification;

3. an evaluation of the assumptions and applied approximations and simplifications;

4. the description of SSCs, operator actions and operating characteristics of the facility taken into account in the application of the probabilistic safety analyses, and a description of their interactions;

5. a description of the identified risk factors;

6. evidence and final evaluation of the technical adequacy of the probabilistic safety analyses.

(7) On request, the operator of a radiation or nuclear facility shall make any document concerning the modification available to the Administration for inspection.

Article 43

(Reporting of the modification management procedure)

(1) The operator of a radiation or nuclear facility shall transmit to the Administration the new revision of the operational conditions and limits upon any modification referred to in paragraph four of Article 36 of these Rules, within 30 days from the reception of the decision or, in cases of modifications classified as category 1, from the implementation of the modification.

(2) If the modification referred to in the previous paragraph is implemented over a longer period or if due to other justified reasons the modification cannot be implemented within

30 days from the reception of the decision, the facility operator shall transmit a new revision of the operational limits and conditions to the Administration no later than 10 days

after the implementation of the modification.

(3) The modifications referred to in the previous paragraphs of this Article shall be clearly marked and traceable in the operational limits and conditions.

5. PERIODIC SAFETY REVIEW Article 44

(Requirements)

(1) The operator of a radiation or nuclear facility, except for mining and hydrometallurgical tailings disposal facility, for which the provisions of this chapter do not apply, shall:

1. by means of Periodic Safety Reviews, systematically verify overall impacts of ageing of the facility, effects of modifications of the facility, operational experiences, technical research and progress, changes at the site and other possible impacts on the radiation or nuclear safety of the facility;

2. in performing Periodic Safety Reviews, use an up to date, systematic, and documented methodology, based on deterministic as well as probabilistic approaches to analyses and assessment of radiation and nuclear safety;

3. with Periodic Safety Review confirm that the facility is at least as safe as intended during the design, and that it can be operated safely until the next execution of a periodic safety review;

4. with a Periodic Safety Review take notes of problems, which could jeopardize the safe operation in the future, and describe how to resolve them;

5. with Periodic Safety Review determine the compliance with current legislation, design bases based on which the operating licence was issued, with current international safety standards and international practice;

6. with Periodic Safety Review identify and evaluate the safety significance of deviations from applicable current safety standards and international best practice, taking into account operating experience, relevant research findings, and the current state of technology as well as management of other radiation or nuclear facilities;

7. prepare an overall assessment of the plant safety, which, based on expert methods, evaluates all positive and negative findings and their overall impact on safety and identifies and proposes further reasonable measures;

8. promptly resolve any deviations from the facility’s design identified by the Periodic Safety Review with due consideration of their importance for nuclear safety. Deviations that could jeopardize nuclear safety of the facility, shall be resolved without delay;

9. apply the Periodic Safety Review as a means of verification and arrangement of the knowledge of the facility and its processes, as well as to review the technical documentation;

10. take all measures indicated by the results of the Periodic Safety Review, in a timely manner;

11. complete the Periodic Safety Review by preparing a written assessment of the situation, documented and supported by appropriate analyses, for each topic of the review.

Article 45 (Procedure and deadlines)

(1) No later than three years prior to the deadline for the endorsement of a Periodic Safety Review report referred to in paragraph 5 of this Article, the operator of a radiation or nuclear facility shall submit an application for the approval of the contents, scope, methodology and time schedule of such review to the Administration, and the Administration shall grant its approval in the form of a decision.

(2) During a Periodic Safety Review, the operator of a radiation or nuclear facility shall send semi-annual reports to the Administration, to inform the Administration on the progress of the review activities.

(3) In addition to the progress reports referred to in the previous paragraph, in the course of a Periodic Safety Review, the operator of a radiation or nuclear facility shall send topical reports to the Administration, to inform the Administration on the reviews of particular topics. In the final version of these reports, the facility operator shall comply with the recommendations conveyed by the Administration. A topical report shall provide the description of applied review methods, of the course of review, all the findings of the review and the final written assessment. Furthermore, it shall clearly state and explain detected deficiencies and propose modifications and improvements to remedy deficiencies and comply with criteria specified in the disposition for the implementation of the Periodic Safety Review referred to in paragraph 1 of this Article and based on standards and international practice.

(4) The operator of a radiation or nuclear facility shall carry out a Periodic Safety Review of the radiation or nuclear facility so that the application for the approval of the report on the Periodic Safety Review is submitted to the Administration within nine years and six months from the issuing of the facility operating licence, in the case of the first Periodic Safety Review, or within nine years and six months from the approval of the report on the previous Periodic Safety Review report, in the case of subsequent Periodic Safety Reviews. The report on a Periodic Safety Review shall include summary descriptions of applied methods, the overall safety assessment based on topical reports, the implementation action plan of modifications and improvements in the facility with appropriate substantiations, and, as attachments, all the documents constituting parts of the Periodic Safety Review. An expert opinion on the report on implementation, application methodology, findings and conclusions of the periodic safety review and the impact of the proposed measures on radiation and nuclear safety of the facility shall be attached to the final report.

(5) The operator of a radiation or nuclear facility shall implement all the modifications and improvements indicated in the approved report on the Periodic Safety Review within five years from the approval of the report. This deadline may be extended, on an exceptional basis, to eight years from the approval of the report in cases of expensive and complex modifications.

(6) During the implementation of measures from the implementation action plan referred to in the paragraph 4 of this Article, the operator of a radiation or nuclear facility shall send semi-annual reports to the Administration about the status and progress of the implementation action plan, as well as descriptions of already implemented measures.

(7) The operator of a radiation or nuclear facility shall prepare a review report on the implementation of all the measures no later than six months after the deadline for implementing the measures.

Article 46

(Contents, scope and methodology of a Periodic Safety Review)

(1) The contents, scope and methodology of a Periodic Safety Review indicated in the application referred to in the first paragraph of the previous Article shall be clearly defined and justified. The scope shall be determined with due consideration of importance for safety.

(2) The contents, scope and methodology of a Periodic Safety Review shall be adjusted to the type of the facility and to the importance of different areas for radiation or nuclear safety, therefore, graded approach shall be applied in their formulation.

(3) The time schedule of the implementation of a Periodic Safety Review referred to in the first paragraph of the previous Article shall include deadlines for the completion of different topics of the review. For each topic, ways and deadlines for reporting on implementation of the review shall be proposed.

(4) The concept of the scope and content of the Periodic Safety Review of a radiation or nuclear facility is laid down in Annex 9, which as Annex forms a constituent part of these Rules.

(5) The concept of the scope and content of the Periodic Safety Review of a radioactive waste and spent fuel disposal facility is laid down in Annex 10, which as Annex forms a constituent part of these Rules.

Article 47 (Implementation action plan)

The implementation action plan, which in accordance with the fourth paragraph of Article 45 of these Rules forms a part of the report on the Periodic Safety Review, shall contain a detailed description and deadlines for all measures specifically. The plan shall clearly indicate for each measure, which finding or recommendation of the Periodic Safety Review it is based on.

Article 48 (Extraordinary safety review)

(1) The Administration shall order an extraordinary safety review in the following cases:

1. if it becomes apparent that safety barriers are deteriorated to a degree where their capacity to contain radioactive substances is reduced;

2. if the operational indicators deteriorate significantly or for an extended period;

3. if the frequency of events, important for safety, increases;

4. if the safety culture deteriorates to such an extent, where radiation or nuclear safety may be threatened;

5. if operational limits and conditions are breached on a recurrent basis;

6. if application of operational experience feedback from another radiation or nuclear facility or new knowledge of radiation or nuclear safety might have notable effects on the safety of the radiation or nuclear facility; or

7. if it acquires significant evidence of the challenged radiation or nuclear safety.

(2) In its decision ordering an extraordinary safety review referred to in the previous paragraph, the Administration shall lay down the contents, scope and deadlines for implementation and the ways of reporting. Furthermore, the Administration shall assess impacts on radiation or nuclear safety and enforce a temporary amendment of the operating licence of the radiation or nuclear facility.

6. PROBABILISTIC SAFETY ANALYSES Article 49

(Mandatory performance of probabilistic safety analyses)

The operator of a radiation or nuclear facility with probabilistic safety analyses included in the safety analysis report shall provide the Administration with all the means necessary to allow the Administration to undertake autonomous analyses. It shall also deliver to the Administration any modification or update of the model, database or computer software.

Article 50

(Scope of probabilistic safety analyses)

(1) A probabilistic safety analysis shall contain, as a minimum:

1. a detailed description of the applied mathematical model;

2. the database complete with description;

3. the descriptions of all analyses and assumptions;

4. the results, findings and conclusions of the analysis;

5. the model and the software applied for the modelling, which shall allow any repetition of calculations.

(2) The analysis referred to in the previous paragraph shall be based on a realistic modelling of the response of the radiation or nuclear facility to postulated initiating events and shall use data relevant for the actual design and written procedures for the operation of the facility, with due consideration of human action. Mission times (times in which the safety systems need to operate in order for the facility to reach a safe shutdown state, in which the reactor is subcritical and residual heat removal is ensured, and measures to maintain this state can be carried out) shall be justified and determined within the acceptance criteria for the implementation of the action.

(3) A probabilistic safety analysis shall cover:

1. all the relevant operational modes of the facility; in the case of a nuclear power plant, these operational modes include, in particular, modes ranging from refuelling and operation at low power levels up to the full power operation;

2. all the relevant and reasonable events, initiating events, internal and external hazards shall be included in the level 1, where appropriate and reasonable also in level 2. The event, of which inclusion in level 1 and level 2 probabilistic safety assessment is not feasible, yet there is non-negligible frequency of such an event, or an event is less frequent but has more severe consequences, shall be treated with other methods;

3. the fuel in the reactor and the spent fuel storage;

4. all the relevant dependencies, including functional dependencies based on the physical location of components and common cause dependencies;

5. an analysis of uncertainties and sensitivity analyses of a level 1 probabilistic safety analysis, and a sensitivity or uncertainty analyses of a level 2 probabilistic safety analysis;

6. analyses of human reliability, taking into account the factors which can influence the performance of the operators and other personnel in all the analysed plant operational modes.

Article 51

(Quality of probabilistic safety analyses)

The operator of a radiation or nuclear facility shall, as concerns the probabilistic safety analyses referred to in paragraph 1 of the previous Article:

1. perform, document and maintain the analyses in accordance with the requirements of the management system;

2. at each application, identify, understand and consider its limitations;

3. perform and maintain the analyses in accordance with current internationally recognised standards and guidelines and with the best international practice;

4. continually amend the analyses to reflect the actual condition of the facility and information on operational experience;

5. amend the analyses in the cases of changes in the design or written procedures for facility operation or when any new significant risk factor, not yet covered by the model, becomes known to the facility operator;

6. support the analyses by keeping the database on the component reliabilities and availabilities, on the frequencies of initiating events and on the probabilities of human errors.

Article 52

(Way of application of probabilistic safety analyses)

(1) At each application of probabilistic safety analyses, the operator of a radiation or nuclear facility shall understand, recognise and take into account their limitations. The adequacy of a particular probabilistic safety analysis application shall always be checked with respect to these limitations.

(2) When probabilistic safety analyses are used for verification or evaluation of modifications of surveillance inspections and testing and allowed outage times of SSCs, the operator of a radiation or nuclear facility shall include in the analyses all possible influences and conditions, including the states and safety functions of SSCs

(3) In addition to the results of probabilistic safety analyses, the following shall be taken into account:

1. maintenance of the defence-in-depth principle;

2. maintenance of adequate safety margins, and

3. uncertainties of the said results.

Article 53

(Mandatory use of probabilistic safety analyses)

(1) The operator of a nuclear power plant shall use probabilistic safety analyses:

1. in working processes relevant to radiation or nuclear safety. The facility operator shall define the role of these analyses in all the decision-making processes relevant to safety;

2. to identify needs for modifications to the facility and written procedures for its operation, including the needs for severe accident management measures. In this way, risks due to the facility operation shall be reduced;

3. in assessing risks involved in the facility operation, in order to identify and demonstrate:

- balance and compliance of the design bases with design principles;

- stability and predictability of the facility response to small deviations in the facility parameters in the way that prevents uncontrolled response of the facility or its systems to such minor deviations;

- adequacy of facility modifications with respect to the changes in risks they entail;

- justification of changes to operational limits and conditions;

- justification of changes of written procedures for the facility operation;

- safety significance of events.

(2) In nuclear power plants, the results of probabilistic safety analyses shall be used in:

1. the verification of the contents of the SSC maintenance, testing and inspection programmes referred to in Article 18 of these Rules, which shall cover all the significant risk factors;

2. the development and validation of the professional training programme for the personnel, including the training of the control room operators on the nuclear power plant simulator.

7. EMERGENCY MANAGEMENT

7.1. EMERGENCY OPERATING PROCEDURES AND SEVERE ACCIDENT MANAGEMENT GUIDELINES

Article 54

(Obligation to making emergency operating procedures and severe accident management guidelines)

The operator of a nuclear facility shall prepare a comprehensive set of procedures and guidelines for accident management covering accidents initiated during all operational states. It shall contain at least the emergency operating procedures and severe accident management guidelines.

Article 55

(Scope of emergency operating procedures and severe accident management guidelines)

(1) Emergency operating procedures shall be provided to cover design basis accidents.

These emergency operating procedures shall provide instructions for recovering the plant state to a safe condition.

(2) Emergency operating procedures with other specific procedures or guidelines, when applicable, shall be provided to cover design extension conditions category A. The aim shall be to re-establish or compensate for lost safety functions and to set out actions to prevent severe fuel damage in the core or in the spent fuel storage in nuclear power plant or research reactor.

(3) Emergency operating procedures for design basis accidents shall be based on symptoms or combination of symptoms and identified events. Emergency operating procedures for design extension conditions category A shall be symptom based unless an event-based approach can be justified.

(4) Severe accident management guidelines with other specific procedures or guidelines when applicable, shall be provided to mitigate the consequences of severe accidents for the cases where the response to events including the measures provided by emergency operating procedures have not been successful in the prevention of severe fuel damage.

(5) The set of procedures and guidelines shall be suitable to manage accident conditions that simultaneously affect the reactor and spent fuel storages and shall take potential interactions between reactor and spent fuel storages into account.

(6) Possibilities for one unit, without compromising its safety, supporting another unit on the site shall be covered by the set of procedures and guidelines.

(7) The set of procedures and guidelines shall be such that they are able to be implemented even if all nuclear installations on a site are under accident conditions, taking into account the dependencies between the systems and common resources.

Article 56

(Form and contents of the severe accident management guidelines)

(1) Emergency operating procedures shall be developed in a systematic way and shall be supported by realistic and plant specific analysis performed for this purpose. Emergency operating procedures shall be consistent with other operational procedures and severe accident management guidelines.

(2) Emergency operating procedures shall enable the operator to recognise quickly the accident condition to which it applies. Entry and exit conditions shall be defined in the emergency operating procedures to enable operators to select the appropriate emergency operating procedure, to navigate among emergency operating procedures and to proceed from emergency operating procedures to severe accident management guidelines.

(3) Severe accident management guidelines shall address strategies to cope with scenarios identified by the severe accident analyses. These analyses are designed to identify the plant vulnerabilities to severe accident phenomena, assessment of plant capabilities and development of accident management measures, including containment protection.

(4) Emergency operating procedures for design basis accidents shall rely on adequately qualified equipment and instrumentation.

(5) Emergency operating procedures for design extension conditions category A and severe accident management guidelines shall primarily rely on adequately qualified equipment as required in Rules regulating the radiation and nuclear safety factors.

(6) The set of procedures and guidelines shall consider the anticipated on-site conditions, including radiological conditions, associated with the accident conditions they are addressing and the initiating event or hazard that might have caused it.

Article 57

(Validation and update of emergency operating procedures and severe accident management guidelines)

(1) The set of procedures and guidelines referred to in Article 55 of these Rules shall be verified and validated in the form in which they will be used in the field, as far as practicable, to ensure that they are administratively and technically correct for the plant

and are compatible with the environment in which they will be used. It shall consider expected manual operation of equipment and the minimum of human resources available.

(2) The approach used for plant-specific validation and verification shall be documented. The effectiveness of incorporating human factors engineering principles in procedures and guidelines shall be judged when validating them. The validation shall be based on representative simulations, using a simulator, where appropriate.

(3) The operator of a nuclear facility shall at regular intervals shorter than the period between periodic safety inspections, review and update emergency operating procedures and severe accident guidelines to ensure that they remain fit for their purpose. It shall also take into account lessons learned from exercises, training and accidents.

Article 58

(Training and exercises for the use of emergency operating procedures and severe accident management guidelines)

(1) Control room staff shall be regularly trained and exercised, using full-scope simulators for the emergency operating procedures and for the severe accident management guidelines.

(2) Emergency workers shall be regularly trained and exercised, commensurate with their expected role in managing an emergency, for situations and conditions covered by the set of procedures and guidelines.

(3) The transition from emergency operating procedures to severe accident management guidelines for management of severe accidents shall be regularly exercised at nuclear power plants.

(4) Interventions called for in the set of procedures and guidelines and needed to restore necessary safety functions, including those which may rely on mobile or off-site equipment, shall be planned for and regularly exercised. The potential unavailability of instruments, lighting and power and the use of protective equipment shall be considered.

7.2. EMERGENCY PREPAREDNESS Article 59

(Maintenance of preparedness)

(1) The operator of a radiation or nuclear facility shall ensure the planning and maintaining of the facility emergency preparedness, which shall include:

1. an on-site emergency plan including implementation procedures;

2. the emergency management organisation;

3. the premises and equipment for emergency management, including communication means;

4. the training for emergency management and the testing of preparedness;

5. informing personnel and the general public.

(2) The operator of a radiation or nuclear facility shall provide arrangements for responding effectively to events requiring protective measures at the facility's site for:

1. controlling an emergency situation arising at the site, following any reasonably foreseeable event, including events related to combinations of hazards as well as events involving all nuclear installations and facilities on the site;;

2. preventing and mitigating the consequences of events referred to in the previous subparagraph;

3. cooperation with external emergency response organisations in preventing adverse health effects to workers and the public.

(3) The operator of a radioactive waste or spent fuel disposal facility shall ensure that the measures referred to in paragraphs 1 and 2 of this Article, have no unacceptable effect on the safety of the facility during the period of operation and after its closure.

Article 60 (Emergency plan of the facility)

(1) The operator of a radiation or nuclear facility shall prepare an on-site emergency plan of the facility and ensure the necessary organizational structure for clear allocation of responsibilities, authorities and arrangements to emergency workers (hereinafter: organisation for emergency management). The facility operator shall take all necessary measures to ensure coordination of on-site and off-site actions in a timely manner and throughout all phases of an emergency.

(2) The emergency plan of the facility referred to in the previous paragraph shall be prepared in advance and based on threat assessment. It includes reasonably foreseeable events and other situations that may require protective measures on the location or off-site and include the exposure of workers and the general public.

(3) The emergency plan of the facility referred to in paragraph 1 of this Article shall:

1. consider all kinds of emergency events, including severe accidents for nuclear power plants, for which the emergency preparedness planning is still reasonable;

2. address long-lasting situations;

3. clarify how material and human resources of the facility or operator common to several installations are used;

4. be harmonized with operator’s internal documentation and other plans of the radiation or nuclear facility (e.g. physical protection plans, fire safety plans etc.);

5. be capable of extension if, during an emergency event, a more severe event should occur.

Article 61 (Contents of the plan)

(1) In addition to the compliance with the requirements of legal provisions governing protection against natural and other disasters, the on-site emergency plan of the facility referred to in the previous Article shall ensure:

1. prompt recognition and classification of emergencies, consistent with the criteria set for alerting the appropriate authorities;

2. appropriate response organisation, with clearly allocated responsibilities and competencies of the emergency workers;

3. timely notification and alerting of emergency workers;

4. ensuring the safety of all persons present on the site, including the protection of the emergency workers;

5. informing the authorities and the public, including timely notification and subsequent provision of information as required. In the case of an emergency, the Admistration, Regional notification center and Center for information of the Republic of Slovenia shall be immediately informed;

6. the assessment of current and foreseeable technical condition of the facility and of radiological conditions on-site and off-site;

7. provision of data for the calculation of action levels;

8. proposing of urgent off-site protection actions required due to the consequences of the emergency;

9. monitoring of radioactive releases;

10. treatment of and first aid to any contaminated or over-exposed workers and other persons coming from the radiation or nuclear facility site;

11. facility management, control and implementation of intervention measures including firefighting and implementation of corrective actions;

12. the guarantees by external organisations with which the operator of a radiation or nuclear facility has arranged contracts to perform emergency management tasks on-site of a radiation or nuclear facility to provide support and assistance to the radiation or nuclear facility operator in managing the emergency;

13. provision of assistance of the radiation or nuclear facility operator in implementing the measures off-site the facility.

(2) The emergency plan shall contain the following:

1. concept of the emergency plan for all types of emergencies, harmonised with

National Emergency Response Plan for Nuclear and Radiological Accidents;

2. preestablished general criteria for protective measures;

3. action levels;

4. provisions for the inspection and auditing of the emergency plan on the basis of modifications and experience with exercises and events;

5. criteria for the transition from existing intervention dose limits to existing regular administrative dose limits;

6. preprepared set of measures for adjustment to the circumstances prevailing during an emergency;

7. ensuring compliance with the measures for the safeguards.

Article 62

(Organisation for emergency management)

(1) The operator of a radiation or nuclear facility shall ensure:

1. continuous presence on site, or, in the case of facilities other than a nuclear power plant, continuous accessibility of the personnel with the authority and responsibility to classify and declare an emergency and to promptly initiate the implementation of the emergency plan of the facility;

2. sufficient number of qualified personnel for staffing appropriate positions in the emergency management organisation promptly following the declaration of the emergency. Arrangements shall be established to ensure that sufficiently qualified personnel can staff appropriate emergency positions in long-lasting situations;

3. adequate technical assistance to operating personnel;

4. availability of appropriate services to mitigate the consequences of an emergency, e.g. radiation protection service, maintenance personnel, firefighting service and others;

5. transmission of the initial and subsequent messages about the event to the notification centres and SNSA;

6. establishment of reliable, efficient and adequate communication channels for coordination and cooperation on-site and off-site, if necessary;

7. health protection of emergency workers, which could be exposed to radiation, and medical care of affected persons, if necessary;

8. system of measurement or evaluation of personal doses for emergency workers

that may be exposed to radiation, and a system for recording such doses;

9. comparison of doses with respect to the reference level, focusing on groups whose doses exceed the reference level;

10. cooperation in informing the public and issuing of recommendations concerning public protection measures as required;

11. arrangements to support on-site actions are in place with considerations for large- scale destruction of infrastructure in the vicinity of the site due to external hazards;

12. evaluation of effectiveness of measures of protection, rescue and aid of a radiation or nuclear facility operator for all kinds of emergencies and its adapting to the emergency situation;

13. implementation of measures to mitigate the consequences of an emergency, if required by the situation after the emergency and on the basis of available information;

14. transition between the emergency and the situation thereafter, including the restoration and rehabilitation.

(2) The operator of a radiation or nuclear facility shall appoint, by name, leading and other personnel and specify their competencies in all the organisations and services involved in the implementation of all tasks in the scope of the facility emergency plan.

(3) During an emergency the operator of a radiation or nuclear facility may perform a reasonable measure, which represents a deviation from the operational limits and conditions, if such a measure is immediately necessary to protect the population and the environment and there are no appropriate measures in accordance with the operational limits and conditions, which could provide sufficient or equivalent protection.

(4) If the measures referred to in the previous paragraph would result in a controlled release of radioactive material into the environment, the operator shall notify the Administration in advance the foreseen time window within which the release should be carried out, and shall harmonize with the Administration the exact timing of the actual release within the proposed time window. If the Administration is not available or does not respond within the required time window, the operator of the facility determines the release time on its own assessment.

Article 63

(Facilities and equipment for emergency management)

(1) In addition to fulfilment of the requirements of the previous Article, the operator of a nuclear power plant shall ensure:

1. appropriate capabilities, including an offsite support centre intended for the management of the integrated emergency response of the operator of the nuclear power plant. Such centre shall provide facilities for coordination of off-site radiation monitoring, assessment of the condition in the vicinity of the power plant, issuing recommendations for protective measures and coordination of activities with external organisations;

2. a technical support centre for the personnel involved in the emergency management. Such centre shall be separated from the main control room and shall have access to all important information on the condition of the power plant and on the radiological conditions on and around the site. It shall have the means of communicating with the control room and supplementary control room, and with other important points in the nuclear power plant, as well as with organization for emergency management and external organisations;

3. premises for use in the implementation of the emergency plan of the facility. These premises shall be suitably located, designed and protected to remain operational during the accident condition, including the design extension conditions accidents, which shall be controlled from those premises. They shall provide radiation

protection and control of radiation exposure of emergency workers. Appropriate measures shall be taken to protect those occupying emergency facilities for a protracted time from hazards resulting from accident conditions. These measures are mainly such placement of these premises that the staff can reach and work throughout an extended emergency with minimum risk to health. These premises shall be placed away from the areas that are likely to be damaged or affected by radiation fields. The premises shall have provisions of recirculatory air conditioning and continuous radiation monitoring systems;

4. instruments, tools, equipment, documentation and communication systems for use in an emergency including the necessary mobile equipment and consumables. All of the above shall be:

- always available, regardless of whether it is located on site or off site of the facility;

- properly stored, regularly tested, inspected and maintained, in order to maintain its operability, including appropriate supporting documents;

- operational during design basis accidents and design extended conditions;

- stored in such a way that any accident would not have any adverse impact on it;

- access to these storage locations shall be possible even in case of extensive infrastructure damage.

(2) The operator of a radiation or nuclear facility other than a nuclear power plant shall, in emergency plan of its facility, provide for the fulfilment of requirements similar, by analogy, to the ones laid down in the previous paragraph, adapted to the characteristics and hazards of the facility with consideration of graded approach.

Article 64

(Training for emergency management)

(1) The operator of a radiation or nuclear facility shall make arrangements to identify the knowledge, skills and abilities needed for emergency workers and contractors to perform their functions in response to an emergency management in the site of radiation or nuclear facility.

(2) The training of the emergency workers shall include basic emergency training and ongoing refresher training on an appropriate schedule to maintain the required level of knowledge. The operator of a radiation or nuclear facility shall ensure the implementation of the planned training for emergency workersand contractors with which the operator of a radiation or nuclear facility perform their functions in response to an emergency management in the site of radiation or nuclear facility.

(3) The site emergency plan shall be regularly exercised at least annually. Exercises shall be integrated to include as many of the off-site organizations concerned as possible. For sites with multiple nuclear installations, some exercises shall address situations affecting multiple facilities on the site. Exercises shall also include the use and connection of mobile equipment, if any.

(4) The operator of a radiation or nuclear facility other than a nuclear power plant shall verify its emergency plan through regular exercises in compliance, by analogy, with the provision of the previous paragraph, with the frequency adapted to the characteristics and hazards of the facility, but at least once every three years for a research reactor, disposal facility and storage of radioactive waste, and at least once every five years for other facilities.

(5) Exercises in emergency management shall be systematically evaluated. The experience gained shall be applied in the review and updating of the emergency plan of the facility.

Article 65

(Advance notification and information of the general public in an event of emergency)

(1) The operator of a radiation or nuclear facility shall provide advance information to the members of the general population, for whom the emergency plan warrants protective actions, on the health and protective measures that concern them and on the appropriate conduct in such cases.

(2) The information shall include, as a minimum:

1. basic facts about radioactivity and its effects on human beings and on the environment;

2. description of various types of emergency events and their consequences for general public and the environment;

3. description of the emergency measures provided to alert, protect and assist the general public in an event of emergency;

4. appropriate information on action to be taken by general public in an event of emergency.

(3) The information referred to in paragraph 2 of this Article shall be updated at least once every three years and in cases of any significant changes concerning the warranted measures. This information shall be available to the general public at all times.

Article 66

(Informing of emergency workersoutside the facility)

(1) The operator of a radiation or nuclear facility shall provide to emergency workers, which are not members of the facility personnel or involved in the activities of the facility, but might be involved in the organisation for emergency management, appropriate and updated information on the risks for their health involved in intervention and on the necessary protective measures. This information shall cover a range of possible cases of emergency events and measures.

(2) Immediately upon the formation of an emergency, information referred to in the previous paragraph shall be appropriately amended in accordance with the specific circumstances of the emergency.

(3) The operator of a radiation or nuclear facility shall provide prior notification of emergency workers and other people on the site, on the activities that would be carried out in case of emergency. This should be included in the exercises from the Article 64 of these Rules.

8. TRANSITIONAL AND FINAL PROVISIONS Article 67

(Alignment)

The operator of a radiation or nuclear facility shall align the operation of its facility with these

Rules within 12 months from the date of entry of these Rules into force.

Article 68 (Facilities in place)

Without prejudice to the provision of the previous article, the operator of the Krško Nuclear Power Plant shall align its probabilistic safety analyses with the provisions of the subparagraphs 2 and 5 of paragraph 3 of Article 50 of these Rules, no later than 1 January

2023.

Article 69

(Repeals of legal provisions)

On the date of entry into force of these Rules, the Rules on Operational Safety of Radiation or

Nuclear Facilities (Official Gazette of the Republic of Slovenia No. 85/09, 9/10 – corr., and

87/11) shall be repealed.

Article 70 (Entry into force)

These Rules shall enter into force on the fifteenth day after their publication in the Official

Gazette of the Republic of Slovenia.

No. 007-503/2015

Ljubljana, on 14 November 2016

EVA 2015-2550-0192

Irena Majcen

Minister

of the Environment and Spatial Planning

Annex 1: Concept daily report on the operation of a nuclear power plant

(The concept report is adapted to the Krško Nuclear Power Plant. For any other nuclear power plant, the Administration shall specify the concept report by analogy.)

Nuclear power plant: Date:

Report compiled by:

1. BASIC OPERATIONAL DATA

State at ... o’clock:

a. reactor power (%),

b. electric power, generator/net (MW),

c. boron concentration in the primary coolant (ppm), d. group D control rod position (no. of steps),

e. primary coolant activity.

Average recorded primary coolant leakage rate, 72 hours:

a. identified primary coolant leakage rate (m3/day),

b. unidentified primary coolant leakage rate (m3/day), c. total primary coolant leakage rate (m3/day).

2. ENVISAGED RADIOLOGICAL RELEASES

Envisaged releases of the containment and gas decay tank gases, at least 8 hours in advance:

- date and time of the start of the release,

- duration of the release,

- rate of the release (m3/h),

- radionuclide,

- activity (Bq).

3. SPECIFIC FACTORS THAT MAY IN ANY WAY AFFECT THE STATE OR OPERATION OF THE NUCLEAR POWER PLANT

Annex 2: Concept monthly report on the operation of a nuclear power plant

(The concept report is adapted to the Krško Nuclear Power Plant. For any other nuclear power plant, the Administration shall specify the concept report by analogy.)

Nuclear power plant: Date:

Report compiled by:

1. ON-LINE MAINTENANCE OF SSCs COVERED BY OPERATIONAL LIMITS AND CONDITIONS

a. On-line maintenance

- code of the system/component,

- start of maintenance (date, time),

- end of maintenance (date, time),

- change of the core damage probability. b. On-line corrective maintenance

- code of the system/component,

- start of maintenance (date, time),

- end of maintenance (date, time),

- change of the core damage probability.

2. WORK ORDERS

List of work orders with indications of:

- code of the SSC and system,

- activity,

- start (date, time),

- end/envisaged end (date, hour),

- work order number.

3. INOPERABLE SSCs

Inoperable SSCs covered by operational conditions and limits

- designation of the operational condition or limit,

- start of inoperability (date, time),

- end of inoperability (date, time),

- brief description.

4. FUEL RELIABILITY

Safety indicator - fuel reliability indicator, defined as 131I activity in stationary state, corrected for the contribution by 134I from Uranium dispersed in the primary coolant system and normalised to the normal primary coolant purge rate.

5. REPORT ON RADIOLOGICAL RELEASES

a. Liquid releases (tritium 3H/other beta or gamma emitters / alpha emitters)

- time and duration of the release,

- location of the release,

- volume (m3),

- radionuclide,

- activity (Bq).

b. Gaseous releases (tritium 3H and its physical-chemical form/carbon 14C and its physical- chemical form/iodine isotopes and their physical-chemical form/noble gases/other beta or gamma emitters emitters)

- time and duration of the release,

- location of the release,

- rate of the release (m3/s),

- radionuclide,

- activity (Bq),

- concentration at the site fence (Bq/m3).

Annex 3: Concept quarterly report on the operation of a nuclear power plant

(The concept report is adapted to the Krško Nuclear Power Plant. For any other nuclear power plant, the Administration shall specify the concept report by analogy.)

Nuclear power plant: Date:

Report compiled by:

1. SYSTEM AND PERSONNEL AVAILABILITY

a. Report on the condition of systems:

- review of the condition of systems and assessment of threats,

- new problems in the latest period,

- action plan to improve condition of systems,

- evaluation of actions already undertaken.

b. Availability of personnel for the event or exercise based on the nuclear facility emergency plan

- number of emergency workers appearing at the specified posts within 1 hour from the activation of the alarm,

- number of emergency workers appearing at the specified posts later than within 1 hour from the activation of the alarm,

- required number of emergency workers according to the declared danger level,

2. UNPLANNED EXPOSURE TO CONTAMINATION AND IRRADIATION

a. The number of contaminations of the human body exceeding limits, detected at the exit from the radiation surveillance area,

b. The number of internal contaminations exceeding limits, detected by the whole-body counter,

c. The number of unplanned exposures to irradiation exceeding dose constraints specified by the radiation protection assessment.

Annex 4: Concept annual report on the operation of a nuclear power plant

(The concept report is adapted to the Krško Nuclear Power Plant. For any other nuclear power plant, the Administration shall specify the concept report by analogy.)

Nuclear power plant: Date:

1. OPERATION, POWER REDUCTIONS AND SHUTDOWNS

Report on the operation, which includes a diagram of annual operation, the value of the total energy produced (net and gross) capacity and availability factor.

Date and duration of the shutdown or a reduction of power exceeding 10%, percent of power reduction and cause.

A summary report on maintenance interventions including data and an integral assessment of the effects of the on-line maintenance on risks and nuclear safety.

2. NUCLEAR FUEL INTEGRITY

Annual report on the fuel cycle.

Report on the fuel element inspection. Fuel modifications.

Number of failed fuel elements.

Analysis of causes of fuel failures, if any.

3. PROGRAMME OF REGULAR TRAINING OF PERSONNEL ASSOCIATED WITH RADIATION OR NUCLEAR SAFETY

Scope and contents of training, numbers of participants by organisational units or external contractors, arranged by the facility operator, date/duration of:

- supplementary professional training of operating personnel,

- supplementary professional training of other technical personnel,

- continual professional training of operating personnel,

- continual professional training of other technical personnel.

Number of personnel present at the training for emergency management

Number of personnel due to be present at the training for emergency management

4. COMPLIANCE WITH OPERATIONAL LIMITS AND CONDITIONS

List of violations of operational limits and conditions

- designation of the operational condition or limit,

- designation of the requirement concerning SSC monitoring, inspection and testing,

- date,

- cause,

- change of the core damage probability (ΔCDP).

5. COLLECTIVE DOSES

Number of personnel having sustained a dose from 0 to 0.5 mSv Number of personnel having sustained a dose from 0.5 to 1 mSv Number of personnel having sustained a dose from 1 to 5 mSv Number of personnel having sustained a dose from 5 to 10 mSv

Number of personnel having sustained a dose from 10 to 15 mSv Number of personnel having sustained a dose from 15 to 20 mSv Number of personnel having sustained a dose exceeding 20 mSv Collective dose of all personnel

Estimated dose per member of the general public

6. FIRE SAFETY

Number of fires in the facility

Number of events at the facility in which a person had to intervene to prevent the spread of the initial fire

Number of warranted fire alarms

Number of false fire alarms

7. STATUS OF PERMANENT AND TEMPORARY MODIFICATIONS

List of modifications, including:

- designation of the modification package,

- brief description of the modification,

- date of approval of safety evaluation screening,

- date of implementation of the modification and potential discrepancies from modification proposal,

- reasons, why the proposed modification of category 2 has not yet been implemented, and when the modification will be implemented,

For temporary modifications, lasting more than one year, the list shall also contain a description of the proposal of modification completion and explanation of the time of its duration.

8. CHANGES IN THE ORGANISATIONAL STRUCTURE

Educational structure of the personnel. Age structure of the personnel.

Period of employment in the nuclear facility, with regard to educational structure. Changes of employment.

9. REPORT ON THE OPERATIONAL EXPERIENCE MONITORING

Summary of events, which a nuclear power plant reported under Article 30 of these Rules with focus on the status of corrective actions.

Report on the implementation of the operational experience collection and analysis programme, including:

- a summary of important measures taken in the power plant based on in-house and international operational experience,

- number of events per category of importance and number of near misses,

- number of examined in-house operational experiences,

- number of examined foreign operational experiences,

- number of undertaken analyses of root causes,

- number of events due to improper procedures,

- number of events due to human error.

10. REPORT ON THE IMPLEMENTATION OF THE AGEING MANAGEMENT PROGRAMME

Summary of the activities of implementation individual ageing management programs Operating experience associated with aging in the nuclear power plant (domestic) and other power plants

11. REPORT ON THE SSC INSPECTIONS

Summary of the SSC inspections undertaken pursuant to the facility programme of inspections.

12. REPORT ON THE OPERATIONAL INDICATORS

Title of the indicator

- presentation of values throughout the indicator monitoring period, in a table and diagram form,

- comment on the indicator values,

- comment on the long-term variation of the indicator,

- proposal of any action according to the results of indicator monitoring,

- report on any actions already undertaken according to the results of indicator monitoring.

Annex 5: Concept annual report on the operation of a research reactor

Research reactor: Date:

1. OPERATIONAL DATA

Time diagram of the reactor operation

2. FORCED REACTOR SHUTDOWNS

Date of reactor shutdown, cause of the shutdown and corrective measures to avoid any recurrence of the event

3. CONDITION OF THE NUCLEAR FUEL

Description of the condition of nuclear fuel in the reactor

Description of the condition of nuclear fuel in the spent fuel storage pool

Number of failed fuel elements

Analysis of causes of fuel failures, if any

4. PROGRAMME OF REGULAR TRAINING OF PERSONNEL ASSOCIATED WITH RADIATION OR NUCLEAR SAFETY

Scope and contents of training

Number of participants

5. COMPLIANCE WITH OPERATIONAL LIMITS AND CONDITIONS

Description of breaches of operational limits and conditions

Cause

Date

6. FIRE AND PHYSICAL SAFETY

Number of fires in the facility Number of warranted fire alarms Number of false fire alarms

Report on the physical protection of the facility

7. SUMMARY OF REPORTING ON EVENTS PURSUANT TO ARTICLE 30 OF THESE RULES

8. STATUS OF PERMANENT AND TEMPORARY MODIFICATIONS

Title of the modification

Designation of the modification package

Brief description of the modification

Date of approval of safety evaluation screening

Date of implementation of the modification, if completed

Description of proposal for completion and explanation of the duration of the temporary modification lasting more than one year

Description of reasons, why the proposed modification of category 2 has not yet been implemented and when will it be implemented

9. REPORT ON THE SSC INSPECTIONS

Summary of the SSC inspections undertaken pursuant to the facility programme of inspections.

10. REPORT ON THE OPERATIONAL INDICATORS

Title of the indicator:

- presentation of values throughout the indicator monitoring period, in a table and diagram form;

- comment on the indicator values;

- comment on the long-term variation of the indicator;

- proposal of any action according to the results of indicator monitoring;

- report on any actions already undertaken according to the results of indicator monitoring.

Annex 6: List of events requiring a special report by the operator of a nuclear power plant

1. Any event that causes a reactor shutdown.

2. Any unexpected irregularity in the core reactivity, exceeding 1% ∆K/K, or any uncontrolled change of power exceeding 10% of the rated thermal power.

3. Any event that causes a reduction of power in order to comply with operational limits and conditions but does not require a submission of the report on the undertaken analysis of the event pursuant to paragraph 4 of Article 30 of these Rules.

4. Any operation of the facility beyond the operational limits and conditions:

- operation beyond the operational limits and conditions also includes if prescribed measures were not implemented within the prescribed time and were different than prescribed,

- operator shall also report for when the operation beyond the requirements was detected after the prescribed time and deviation has been eliminated immediately after discovery.

5. Any event that actuates or should actuate:

- the reactor protection system;

- components of the containment system, as follows:

- containment spray system;

- containment isolation or actuation of at least one isolation valve;

- containment recirculation system.

- emergency core cooling system;

- residual heat removal system;

- auxiliary feedwater system;

- diesel generator system.

6. Any event:

- which might prevent the fulfilment of a safety function,

- in which a single common cause causes unavailability of at least two independent trains or channels in multiple systems (at least one per system), or two or more independent trains or channels in a single system. The following systems are considered:

- the reactor protection system;

- components of the containment system, as follows:

- containment spray system,

- containment isolation or actuation of at least one isolation valve,

- containment recirculation system,

- containment depressurisation system,

- containment integrity.

- emergency core cooling system,

- residual heat removal system,

- auxiliary feedwater system,

- diesel generator system,

- essential service water system,

- component cooling system,

- chilled water system,

- fire protection systems,

- system to remove heat from the spent fuel pool.

7. Any event that causes serious reduction of the radiation or nuclear safety of the plant or degradation of the major safety barriers.

8. Any event that has seriously impeded the workers, including fires and releases of toxic gases or radioactive materials.

9. Any event that causes exposure of an individual above limits prescribed in the operational limits and conditions, and relate to occupational or public exposure.

10. Any natural threat or external event that might significantly affect the safety of the plant or significantly interfere with personnel tasks.

11. Any event that causes a release of radioactive substances into the plant-controlled area or environment in excess of statutory limits for the plant personnel or general public.

12. Any newly discovered fact with negative influence on safety analysis, plant design or the facility operation or can lead to exceedance of design bases.

13. Any event that causes any serious work accident or accident with casualties.

14. Any event that causes the loss of subcriticality in the spent fuel pool.

15. The fall of a heavy object, which would result in:

- damage of fuel assembly;

- leakage of the fuel assemblies’ coolant.

16. Leak or damage, especially crack, deformation or thinning of the pipe wall, vessel or pool, which could compromise the safety functions or systems containing the fuel assemblies’ coolant.

17. Any discovery of counterfeit items installed in SSC in a nuclear facility, which could affect or threaten nuclear safety.

18. Any event during shutdown, which results in a reduction of nuclear safety.

Annex 7: Safety evaluation screening and classification of a modification in category 1

Safety evaluation screening shall provide answers to the following four questions:

1. Does the description of the facility change, compared to the one in the safety analysis report or reference documentation?

2. Does the assessment or the method of assessment change, compared to the one in the safety analysis report or reference documentation?

3. Does the description of a procedure change, compared to the one in the safety analysis report or reference documentation?

4. Is there a new test or experiment introduced, not included in the safety analysis report or reference documentation?

If the answers to all the four questions above are negative, no further safety assessment is necessary, and the planned modification is a category 1 modification.

If any of the answers is positive, safety assessment is necessary.

Annex 8: Safety assessment and classification of a modification in categories 2 or 3

Safety assessment shall be made for all those modifications, for which any one of the questions under safety evaluation screening has a positive answer. Safety assessment shall provide answers to the following eight questions:

1. Does the planned modification increase the risk of any accident, evaluated in the safety analysis report or reference documentation, by more than a minimal amount?

2. Does the planned modification increase the probability of any incorrect operation of SSCs, important for radiation or nuclear safety, evaluated in the safety analysis report or reference documentation, by more than a minimal amount?

3. Does the planned modification aggravate the consequences of an accident, evaluated in the safety analysis report or reference documentation, by more than a minimal degree?

4. Does the planned modification aggravate the consequences of incorrect operation of SSCs, important for radiation or nuclear safety, evaluated in the safety analysis report or reference documentation, by more than a minimal degree?

5. Does the planned modification introduce a risk of occurrence of any new accident, not yet evaluated in the safety analysis report or reference documentation?

6. Does the planned modification introduce any new way of incorrect operation of SSCs, important for nuclear safety, not yet described in the safety analysis report or reference documentation?

7. Does the planned modification exceed or change design limits of the radiological safety barriers, specified in the safety analysis report or reference documentation?

8. Does the planned modification entail the application of any other methodology than those listed in the safety analysis report and applied in the design or safety analyses?

If the answers to all the eight questions above are negative, the planned modification is a category 2 modification.

If the answer to any one of the eight questions above is positive, the planned modification is a category 3 modification.

Annex 9: Concept scope and content of the Periodic Safety Review of a radiation or nuclear facility

The concept is adapted to the scope and contents of the Periodic Safety Review of a nuclear power plant. In cases of other types of radiation or nuclear facilities, the scope and contents shall be accommodated or extended by analogy, considering importance of different topics for the safety of the facility, international practice and graded approach.

Scope and contents

Safety factors defining the scope and contents of a Periodic Safety Review include the following:

Facility

1. Facility design

2. Actual condition of SSCs

3. Equipment qualification

4. Facility ageing

Safety analyses

5. Deterministic safety analyses of the facility

6. Probabilistic safety analyses of the facility

7. Hazard and risk analyses regarding radiation or nuclear safety

Operation and application of operational experience feedback

8. Operational experience and operational indicators of the facility

9. Operational experience from other facilities and new results of scientific and technological development during the review period

Management

10. Management systems and organisational arrangements of the facility operator

11. Safety culture

12. Facility operator’s written procedures

13. Impacts of the personnel actions - human factor

14. Emergency preparedness plan

Environment

15. Radiation impacts on the environment

16. Radioactive waste and spent nuclear fuel

Safeguards

17. Safeguards

Radiation Protection

18. Radiation Protection

Annex 10: Concept scope and content of the Periodic Safety Review of a radioactive waste and spend fuel disposal facilities

Taking into account modifications to the structures, systems and components (SSC) and layout of the facility, to the procedures, and to the organization, and lessons learnt from R&D, monitoring, maintenance, testing, inspection and ageing‐management programs, the Periodic Safety Review should, as a minimum:

1. Review and analyse the operational experience accumulated with equipment, structures, systems and components, including their maintenance, inspection and control; any operational occurrences or accidents that have happened, their root cause analysis and the corrective actions taken; and any modifications of the facility, of the operational procedures and of the organization.

2. Review the waste acceptance criteria, taking into account the current state of knowledge and experience in physio‐chemical and radiological characterisation; review the waste acceptance process, including how waste production is controlled and how compliance with waste acceptance criteria is confirmed; and assess the overall impact on safety of deviating waste accepted for disposal.

3. Review the operating experience in radiological protection aspects for workers and the public, including the control of emissions/release/discharges and the assessment of the radiological impact on the environment.

4. Review the knowledge and experience of aspects affecting post‐closure safety, including an analysis of the performance and potential evolution of barriers, the site and the biosphere. Review the assumptions made in the safety case to confirm that they are still valid.

5. Review compliance with current regulatory requirements (national and international).

- Identify any significant deviations from applicable current standards and good practice and evaluate their significance for safety.

- Identify any conflicting requirements between different regulatory regimes.

6. Review whether the objectives for operation, closure and post‐closure remain achievable.