Japan Atomic Energy Agency (JAEA) Mid to Long-term Objectives・Mid to Long-term Plan Comparative Table of Old and New Objectives

Document 15-2

3rd Mid to Long-term Objectives

Old	New	Viewpoint of Changes
I. Positioning and roles of the Agency in the policy framework In the Atomic Energy Basic Act (Act No. 186 of 1955), the fundamental nuclear policy of Japan, the Agency shall carry out activities such as basic research and applied research on nuclear energy, development of fast breeder reactors and necessary nuclear fuel materials for the purpose of establishing a nuclear fuel cycle, the development of technology for reprocessing etc. of nuclear fuel materials, as well as the dissemination of the results of such research and development, and is expected to support the technical infrastructure of nuclear power of Japan. In addition, processing of spent fuel that are generated with use of nuclear power and developing technology towards decommissioning of nuclear facilities are also significant operations to be implemented by the Agency, as the only comprehensive nuclear R&D institute in Japan, and as a nuclear power operator. Moreover, the Agency needs to work on dealing with the accident at Fukushima Daiichi Nuclear Power Station, improving the safety of nuclear power, promoting the atomic energy basic and generic research and developing human resources, implementing fast breeder reactor R&D and radioactive waste disposal related to the nuclear fuel cycle, based on the energy policies of science and technology policies of Japan including nuclear energy such as the Energy Basic Plan and the "Fourth Science and Technology Basic Plan" (Cabinet decision in August 2011; hereinafter referred to as the "Fourth Science and Technology Basic Plan"). To carry out this R&D, it is important for JAEA to contribute to maximize the results of R&D of nuclear science and technology from all over Japan through active collaboration with universities and the industrial world as well as work on the maximization of its own R&D achievements. Moreover, the Agency needs to play a critical role in the technical assistance necessary to properly enforce nuclear safety regulations based on "Safety Research in the Nuclear Regulatory Commission (NRA)" formulated by NRA.	I. Position and Role of JAEA under Policy System In the Atomic Energy Basic Act (Act No. 186 of 1955), the fundamental nuclear policy of Japan, the Agency shall carry out activities such as basic research and applied research on nuclear energy, development of fast breeder reactors and necessary nuclear fuel materials for the purpose of establishing a nuclear fuel cycle, the development of technology for reprocessing etc. of nuclear fuel materials, as well as the dissemination of the results of such research and development and is expected to support the technical infrastructure of nuclear power of Japan. In addition, processing of spent fuel that are generated with use of nuclear power and developing technology towards decommissioning of nuclear facilities are also significant operations to be implemented by the Agency, as the only comprehensive nuclear R&D institute in Japan and as a nuclear power operator. Moreover, the Agency needs to work on dealing with the accident at Fukushima Daiichi Nuclear Power Station, improving the safety of nuclear power, promoting the atomic energy basic and generic research and developing human resources, implementing fast breeder reactor R&D and radioactive waste disposal related to the nuclear fuel cycle, based on the energy policies of science and technology policies of Japan including nuclear energy such as the Energy Basic Plan and the "Fifth Science and Technology Basic Plan" (Cabinet decision in January 2016; hereinafter referred to as the "Fifth Science and Technology Basic Plan"). To carry out this R&D, it is important for JAEA to contribute to maximize the results of R&D of nuclear science and technology from all over Japan through active collaboration with universities and the industrial world as well as work on the maximization of its own R&D achievements. Moreover, the Agency needs to play a critical role in the technical assistance necessary to properly enforce nuclear safety regulations based on "Safety Research in the Nuclear Regulatory Commission (NRA)" formulated by NRA.	Update by time
III. Matters Concerning Administration of Operations, which put Utmost Priority on Safety 1. Matters concerning ensuring safety. Ensuring safety is the top priority for the administration of operations, and we recognize that our nuclear facilities potentially handle hazardous materials, and provide basic matters pertaining to safety management including legal compliance, actively promoting voluntary safety activities, and ensuring nuclear safety related to facilities and operations. In addition, we manage new regulatory standards in a well - planned and proper manner. In addition, we introduce instruments to promote prompt improvements at site level with a view to making each employee engaged in operations with thorough attention to safety and improving operational problems. Such efforts will ensure the safety of nuclear power R&D conducted by the Agency as well as build public and social trust in the Agency.	III. Matters Concerning Administration of Operations, which put Utmost Priority on Safety 1. Matters concerning ensuring safety Ensuring safety is the top priority for the administration of operations and we recognize that our nuclear facilities potentially handle hazardous materials and provide basic matters pertaining to safety management including legal compliance, actively promoting voluntary safety activities including "MONJU" and Tokai Reprocessing Plant, which are transiting to the decommissioning stage and ensuring nuclear safety related to facilities and operations. In addition, we manage new regulatory standards in a well-planned and proper manner. In addition, we introduce instruments to promote prompt improvements at site level with a view to making each employee engaged in operations with thorough attention to safety and improving operational problems. Such efforts will ensure the safety of nuclear power R&D conducted by the Agency as well as build public and social trust in the Agency.	
IV. Matters on maximizing R&D achievements and others related to improvement of the quality of the operations 4. Basic and fundamental research and human resource development for nuclear power (4) Development of nuclear human resources and promotion of service facility uses	IV. Matters Concerning to Maximization of the Achievements of R&D and the Improvement of Quality of Any Other Operations 4. Basic and fundamental research and human resource development for nuclear power (4) Development of nuclear human resources and promotion of service facility uses	Removal of records concerning JMTR

Based on the Basic Energy Plan, with human resources in a wide range of sectors as a target, the Agency shall develop researchers and engineers with a high problem - solving ability in the nuclear power sector in the R&D sites, human resources via training corresponding to the needs of industries, universities, government agencies etc., human resources who can be active both domestically and abroad, and human resources for nuclear power upon requests etc. from relevant administrative organizations. In particular, facilities such as JRR - 3 and the Japan Materials Testing Reactor (JMTR) etc., which have stopped their operations after the earthquake disaster, shall immediately restart the operations after receiving a certification of compliance with new the regulation standards.	In addition, the Agency shall maintain and manage its own infrastructure facilities such as engineering test reactor and radioactive substance treatment facilities, which are difficult for private business operators, universities etc., to maintain, in a well-planned and proper manner and based on user's needs, receive reasonable value and provide the facilities to many external users in a wide range of sectors domestically and abroad. In particular, facilities such as JRR-3 etc., which have stopped their operations after the earthquake disaster, shall immediately restart the operations after receiving a certification of compliance with new the regulation standards.	
5. R&D on Fast - Breeder Reactors (FBR) In the Basic Energy Plan, Fast - Breeder Reactors (FBR) are expected to undertake new roles, not only by using uranium resources effectively in a conventional way, but also by reducing the volume and toxicity of radioactive waste and technologies related to non - proliferation. The Agency shall contribute to solving these challenges of Japan and diversifying the future energy policy by promoting R&D on "MONJU" and R&D to establish verification technologies for Fast - Breeder Reactors (FBR). (1) R&D on "MONJU" Based on the Basic Energy Plan and the "MONJU Research Plan" (the Working Group on MONJU R&D Planning, the Nuclear Science and Technology Committee, the Subdivision on R&D Planning and Evaluation, the Council for Science and Technology, MEXT in September 2013; hereinafter referred to as the "MONJU Research Plan"), "MONJU" is positioned as a global research center to reduce the volume and toxify of waste and improve non - proliferation technologies. The Agency shall strive to reduce maintenance and management costs until the resumption of operation to summarize results of FBR technology development shown in the MONJU Research Plan, formulate a specific roadmap subject to resumption of operations as early as possible and aim at restarting operations by giving the highest priority to safety. Specifically, the Agency shall properly work on responding to orders on security measures received from NRA, confirming investigations of fracture zones at NPS sites, and responding properly to new regulation standards, and prompt resumption of operations and advance R&D after receiving confirmation of conformity to the new regulation standards and permission for amendment of the reactor installment license etc. At that time, based on the guidelines shown in the MONJU Research Plan, the Agency shall specifically and clearly show implementing methods, result contents and its time, and the utilization methods of individual R&D, state goals by fixing the term, and advance R&D to create results. In addition, we shall receive necessary evaluations depending on R&D progress, global R&D trends concerning FBR, and changes of social conditions etc., and constantly review ongoing R&D by focusing on or cancelling it etc., Moreover, the Agency shall work on advancement of safety, operation/maintenance management technology for plants, receive an intermediate evaluation from an external experts during the objectives period, and reflect it in future plans. In addition, it is essential to gain understanding of the public before the resumption of operation of "MONJU." The Agency shall disclose the efforts mentioned above including the process etc. before the resumption of operation and reasonable grounds in a manner that is easily understandable to the public.	5. R&D on Fast - Breeder Reactors (FBR) In the Basic Energy Plan, "the Fast - Breeder Reactors Development Policy" (Decision by the Council of Ministers Related to Nuclear Energy in December 2016), Fast - Breeder Reactors (FBR) are expected to undertake new roles, not only by using uranium resources effectively in a conventional way, but also by reducing the volume and toxicity of radioactive waste and technologies related to non-proliferation. The Agency shall contribute to solving these challenges of Japan and diversifying the future energy policy by promoting R&D to establish verification technologies for Fast - Breeder Reactors (FBR). In addition, as for "MONJU," efforts are made to implement safe and steady decommissioning based on the "Government's Policy on Handling of 'MONJU'" (Decision by the Council of Ministers Related to Nuclear Energy in December 2016). (1) Efforts to decommission "MONJU" The Agency shall establish a basic plan concerning decommissioning by April 2017, and improve the decommissioning system designed to gather knowledge in Japan and abroad. The Agency undertakes the necessary efforts, aiming to complete retrieval of fuel from a reactor core to a fuel pond (water pool) while safety is secured within about five and a half years since formulation of the basic plan concerning decommissioning. In addition, when advancing future efforts, the Agency shall prioritize ensuring safety and endeavor to enhance local and other citizens' understanding above all in accordance with NRA.	Review based on "Fast - Breeder Reactors Development Policy" and "MONJU Policy"

Furthermore, to advance R&D on “MONJU,” while each officer or staff works on his/her duty in a responsible way and reviews the system so that the highest priority can be given to safety in the operations management, the Agency shall establish and continuously use methods to improve issues in the field so that staff in sites can be surely aware of safety and improve operational problems. In addition, based on the collection of accident information and analysis results of the causes etc., the Agency shall continuously promote efforts in sites such as improvement of normal time and accident manuals.		
6. R&D of reprocessing related to the nuclear fuel cycle and treatment of fuel fabrication, and disposal of radioactive waste (1) Technology development for reprocessing spent fuel and fuel fabrication In addition, the Agency shall have stopped some facilities of Tokai Reprocessing Plant, which resolves and shears spent fuels, and plan to apply for a decommissioning plan, clarify the process and the period until decommissioning, re - organize the R&D system of spent fuel reprocessing technology after decommissioning, utilize of facilities for the time being, and formulate a decommissioning plan etc. after that, and contribute to the establishment of a technical system concerning prospected decommissioning of reprocessing facilities. Moreover, the Agency shall properly work on complying with new standards to safely manage stored spent fuel and waste and solidify and stabilize plutonium solution and high - level radioactive waste liquid in accordance to the plan to reduce causes for potential danger.	6. R&D of reprocessing related to the nuclear fuel cycle and treatment of fuel fabrication and disposal of radioactive waste (1) Technology development for reprocessing spent fuel and fuel fabrication In addition, the Agency shall have stopped some facilities of Tokai Reprocessing Plant, which resolves and shears spent fuels and plan to apply for a decommissioning plan, clarify the process and the period until decommissioning, re-organize the R&D system of spent fuel reprocessing technology after decommissioning, utilize of facilities for the time being and formulate a decommissioning plan etc. after that and contribute to the establishment of a technical system concerning prospected decommissioning of reprocessing facilities. Moreover, the Agency shall prioritize securing safety and reducing risks above all and properly work on improving safety based on new regulation standards to safely manage stored spent fuel and waste, and steadily implement the plan etc. to decommission the Tokai Reprocessing Plant, which was submitted under direction from NRA, to complete solidifying and stabilizing plutonium solution and high - level radioactive waste liquid in 2028 to reduce potential sources of danger.	Changes based on the “Review of a Plan to Decommission the Tokai Reprocessing Plant of the Japan Atomic Energy Agency (JAEA) (Report)”

3rd Mid to Long-term Plan

Old	New	Viewpoint of Changes
Preface As part of this, and from the viewpoint of affinity and potential of comprehensive R&D on quantum science research, the Agency decided to separate part of R&D on nuclear fusion and applied research on quantum beams from JAEA and integrate them into the National Institute of Radiological Sciences (NIRS) (A new national research and development agency, Japan Agency for Quantum and Radiological Science and Technology (QST) starts operation in April 2016). Specifically, JAEA shall focus on "responding to the accident at Fukushima Daiichi Nuclear Power Station," "improving the safety of nuclear power", "R&D on atomic fundamentals, generic research and developing human resources," "R&D on Fast - Breeder Reactors (FBR)" and "R&D on reprocessing related to the nuclear fuel cycle and treatment, fuel fabrication, and disposal of radioactive waste" based on the energy policies of Japan including nuclear energy and science and technology policies such as "the Basic Energy Plan" (Cabinet decision in April 2014, hereinafter referred to as the "Basic Energy Plan") and the "Fourth Science and Technology Basic Plan" (Cabinet decision in August 2011, hereinafter referred to as the "Fourth Science and Technology Basic Plan"). JAEA shall enhance management functions and distribute agile and flexible management resources to implement operations. In addition, we shall effectively operate governance and internal control in sectors and continuously improve our operational quality with a proper management control cycle. Moreover, we shall make efforts for organizational and operational reform including making reforms in JAEA take root. The Agency strives to coordinate and cooperate closely with the new agency to ensure that the separated R&D operation is not disrupted. We shall give the highest priority to safety and streamline it as well as actively continuously provide and release information and ensure trust from society and in siting areas. In addition, actions in regards to new regulation standards related to nuclear facilities shall be performed in a well - planned proper manner to safely and stably operate the owned facilities.	Preface JAEA shall consider results gained during the periods for the 1st and the 2nd medium-term objectives and remorse over defects of maintenance and management of "MONJU," and maximize R&D results while making its best effort to tackle challenges shown in the 3rd mid to long-term objectives to contribute to the development of nuclear science and technology. Specifically, JAEA shall focus on "responding to the accident at Fukushima Daiichi Nuclear Power Station," "improving the safety of nuclear power", "R&D on atomic fundamentals, generic research and developing human resources," "R&D on Fast - Breeder Reactors (FBR)" and "R&D on reprocessing related to the nuclear fuel cycle and treatment, fuel fabrication and disposal of radioactive waste" based on the energy policies of Japan including nuclear energy and science and technology policies such as "the Basic Energy Plan" (Cabinet decision in April 2014, hereinafter referred to as the "Basic Energy Plan") and the "Fifth Science and Technology Basic Plan" (Cabinet decision in January 2016, hereinafter referred to as the "Fifth Science and Technology Basic Plan"). JAEA shall enhance management functions and distribute agile and flexible management resources to implement operations. In addition, we shall effectively operate governance and internal control in sectors and continuously improve our operational quality with a proper management control cycle. Moreover, we shall make efforts for organizational and operational reform including making reforms in JAEA take root. Moreover, JAEA shall promote close coordination and cooperation with QST to implement the separated R&D operations smoothly and help create further R&D results. We shall give the highest priority to safety and streamline it as well as actively continuously provide and release information and ensure trust from society and in siting areas. Furthermore, the JAEA shall formulate a mid to long-term facility plan to maintain and develop R&D functions concerning nuclear power in future; under the basic premise of ensuring safety and intentionally enhance safety by concentrating and prioritizing the existing facility, decommissioning and disposing of radioactive waste, complying with new regulation standards for nuclear facilities, taking aging countermeasures and earthquake proofing method.	Update by time Changes concerning the mid to long-term facility plan
I. Measures to Be Taken for Achieving Objectives Concerning Administration of Operations, Which Put Utmost Priority on Safety 1. Matters concerning ensuring safety Ensuring safety is the top priority for the administration of operations, we stand on the recognition that our own nuclear facilities potentially handle hazardous materials. We shall provide basic items pertaining to safety management, actively promote voluntary safety activities and ensure nuclear safety related to facilities and projects.	I. Measures to Be Taken for Achieving Objectives Concerning Administration of Operations, Which Put Utmost Priority on Safety 1. Matters concerning ensuring safety Ensuring safety is the top priority for the administration of operations, we stand on the recognition that our own nuclear facilities potentially handle hazardous materials. We shall provide basic items pertaining to safety management, actively promote voluntary safety activities and ensure nuclear safety related to facilities and projects. In addition, we shall constantly strive to improve the nuclear safety of facilities, including "MONJU" and Tokai Reprocessing Plant, which are transiting to the decommissioning stage and projects and manage nuclear materials properly.	
II. Measures to Be Taken for Achieving the Objectives Concerning the Maximization of the Results of R&D and Improvement of the Quality of any Other Operations	II. Measures to Be Taken for Achieving the Objectives Concerning the Maximization of the Results of R&D and Improvement of the Quality of any Other Operations	Changes of records concerning JMTR

2. Technical support and safety research for nuclear safety regulation and administration (1) Technical support and safety research for nuclear safety regulation and administration 1) Safety research We shall improve thermal - hydraulic behavior of the nuclear power reactor system such as the Containment Integral Measurement Apparatus (CIGMA) by the middle of the objectives period, advance analysis code through experiments and research by using this and the Large Scale Test Facility (LSTF) and accurately evaluate the progress of accidents including severe accidents of light water reactors (LWRs) and the validity of safety measures etc. In addition, we shall get knowledge concerning fuel behavior from normal operation conditions to the condition exceeding a design basis accident by using the Nuclear Safety Research Reactor (NSRR) and the Reactor Fuel Examination Facility (RFEF), reflect it on a fuel behavior analysis code to improve the performance, and enable fuel safety to be evaluated. Moreover, we shall advance the material deterioration prediction evaluation method based on data etc. obtained by using the Japan Materials Testing Reactor (JMTR) and the structural integrity evaluation method by the probabilistic method from the normal operation condition to the phenomena beyond the assumptions in design, and enable the soundness of aged light water reactors (LWRs) to be evaluated.	2. Technical support and safety research for nuclear safety regulation and administration (1) Technical support and safety research for nuclear safety regulation and administration 1) Safety research We shall improve thermal-hydraulic behavior of the nuclear power reactor system such as the Containment Integral Measurement Apparatus (CIGMA) by the middle of the objectives period, advance analysis code through experiments and research by using this and the Large Scale Test Facility (LSTF) and accurately evaluate the progress of accidents including severe accidents of light water reactors (LWRs) and the validity of safety measures etc. In addition, we shall get knowledge concerning fuel behavior from normal operation conditions to the condition exceeding a design basis accident by using the Nuclear Safety Research Reactor (NSRR) and the Reactor Fuel Examination Facility (RFEF), reflect it on a fuel behavior analysis code to improve the performance and enable fuel safety to be evaluated. Moreover, we shall advance the material deterioration prediction evaluation method based on data etc. obtained by using neutron irradiation materials and the structural integrity evaluation method by the probabilistic method from the normal operation condition to the phenomena beyond the assumptions in design and enable the soundness of aged light water reactors (LWRs) to be evaluated.	
5. R&D on Fast - Breeder Reactors (FBR) In the Basic Energy Plan, fast - breeder reactors (FBR) are required not only to use uranium resources effectively in a conventional way but also are expected to play a new role of reducing the volume and toxicity of high - level radioactive waste and improving technologies related to non - proliferation. For this purpose, while giving the highest priority to safety and promoting international cooperation, we shall carry out R&D on the prototype fast - breeder reactor "MONJU" and R&D to establish verification technologies for FBR, and contribute to the formulation and realization of energy policies of Japan in the future. (1) R&D on "MONJU" MONJU shall be regarded as an international research center to reduce waste and toxicity and improve technologies related to nuclear non - proliferation, focus on promoting responses to new regulation standards and other issues to be overcome, and aim at putting together research results shown in the "MONJU research plan" (September 2013, MONJU Research Plan working group, the Nuclear Science and Technology Committee, the Subdivision on R&D Planning and Evaluation, the Council for Science and Technology; hereinafter, "MONJU Research Plan".) To this end, we shall try to reduce the maintenance and management costs until the resumption of operations, formulate a specific roadmap for each issue to restart performance tests, and restart operations prioritizing ensuring safety. Specifically, we shall properly work on responding to orders on security measures received from NRA, confirming investigations of fracture zones at the site, and respond to new regulation standards, and resume operations and restart performance tests	5. R&D on Fast - Breeder Reactors (FBR) In the Basic Energy Plan, "Fast - Breeder Reactors (FBR) Development Policy" (Decision by the Council of Ministers Related to Nuclear Energy in December 2016), fast - breeder reactors (FBR) are required not only to use uranium resources effectively in a conventional way but also are expected to play a new role of reducing the volume and toxicity of high - level radioactive waste and improving technologies related to non-proliferation. For this purpose, while giving the highest priority to safety and promoting international cooperation, we shall carry out R&D to establish verification technologies for FBR and contribute to the formulation and realization of energy policies of Japan in the future. In addition, as for "MONJU," efforts have been made to implement safe and steady decommissioning based on the Government's "Policy on Handling of 'MONJU'" (Decision by the Council of Ministers Related to Nuclear Energy in December 2016). (1) Efforts to decommission "MONJU" The following efforts shall be made to implement safe and steady decommissioning: [1] The Agency shall establish a basic plan by April 2017, improve the decommissioning system designed to gather knowledge in Japan and abroad, and then promptly apply for the decommissioning plan. [2] The Agency shall undertake the necessary efforts, aiming to complete retrieval of fuel from a reactor core to a fuel pond (water pool) while safety is secured within about five and a half years since formulation of the basic plan concerning decommissioning. [3] In advancing future efforts, the Agency shall prioritize ensuring safety and endeavor to enhance local and other citizens' understanding above all.	Review based on Fast - Breeder Reactor Development Policy" and "MONJU Policy"

after receiving confirmation of conformity to the new regulation standards and permission for amendment of the reactor installment license. After restarting the performance test, we shall make efforts to carry out international collaboration research to put together completions and results of the test and flexibly and effectively use plutonium (Pu) and MA in the FBR. Upon implementation, we shall specifically and clearly show implementing methods of individual R&D, details and the time of results, utilization methods etc., state goals by fixing the term, and advance R&D to create results. These efforts shall contribute to ensuring energy security in Japan and reduction of long - term risks of radioactive waste by contributing to verification of performance, reliability, and safety of FBR as the only sodium cooling fast reactor with power generation equipment in Japan and the establishment of technical infrastructure. Furthermore, we shall constantly focus on or cancel R&D etc., depending on national energy policies, R&D progress, global R&D trends concerning FBR and changes of social conditions etc. As for mixed oxides (MOX) fuel fabrication required for the operation of "MONJU," we shall carry out countermeasure construction to comply with new regulation standards and supply fuels in accordance with the operation plan of "MONJU." In addition, it is essential to gain understanding of the public before the resumption of the operation of "MONJU." We shall disclose the process up to the restart of performance testing, meaning and efforts of R&D and reasonable grounds for safety etc. in a manner easily understandable to the public. Furthermore, to advance R&D on "MONJU", we shall review the system so that it is most suitable for the progress of the project, and establish and continuously use methods to improve issues in the field so that staff on site can be surely aware of safety and improve operational problems. In addition, based on the collection of accident information and analysis results of the causes etc., we shall continuously promote efforts on site such as improvement of normal time and accident manuals. We shall continuously make the following efforts for the safety of plant and advancement of operation/maintenance and management technologies. We shall receive an intermediate evaluation on these efforts from an external expert by the midst of the objectives period and reflect it in a future plan. ・ We shall summarize safety improvement measures obtained through responses to new regulation standards and enhance the technical system to ensure safety in consideration of characteristics of sodium cooling fast reactors. ・ While accumulating knowledge learned through operations, we shall continuously reflect it in maintenance experiences, operation procedures, maintenance plans etc., and build the operation and FBR maintenance management technology system. ・ To form an international unique FBR R&D center around "MONJU," we shall carry out sodium handling tests to further improve the safe and stable operation of MONJU by using the sodium engineering research facility.		
(2) Global strategy planning aiming at the establishment of verification technologies for Fast - Breeder Reactor (FBR) and maximization of R&D results	(2) Global strategy planning aiming at the establishment of verification technologies for Fast-Breeder Reactor (FBR) and maximization of R&D results	

1) R&D aiming at the establishment of verification technologies for Fast - Breeder Reactors (FBR) To establish verification technologies for FBR, while using achievements gained in “MONJU” R&D such as equipment/system design technologies etc., and the breeder laboratory reactor “Joyo,” the irradiation field of fuels and materials (hereinafter, “Joyo”), we shall carry out FBR R&D through participation in international projects such as the ASTRID reactor in France, which is in the verification stage. As for “Joyo,” we shall restart it after receiving confirmation of conformity to the new regulation standards and gain data to improve fuel performance including irradiation data of fuel - cladding pipe material that is resistant to breaking.	1) R&D aiming at the establishment of verification technologies for Fast - Breeder Reactors (FBR) To establish verification technologies for FBR, while using achievements gained in “MONJU” R&D such as equipment/system design technologies etc. and the breeder laboratory reactor “Joyo,” the irradiation field of fuels and materials (hereinafter, “Joyo”), we shall carry out FBR R&D through participation in international projects such as the ASTRID reactor in France, which is in the verification stage. As for “Joyo,” we shall restart it after receiving confirmation of conformity to the new regulation standards and gain data to improve fuel performance including irradiation data of fuel-cladding pipe material that is resistant to breaking. As for the supply of mixed oxide fuel (MOX), we shall take the necessary measures to meet new regulation standards.	
6. R&D of reprocessing related to the nuclear fuel cycle and treatment of fuel fabrication, and disposal of radioactive waste (1) Technology development for reprocessing spent fuel and fuel fabrication We have stopped some facilities of Tokai Reprocessing Plant, which resolve and shear spent fuels, and shall clarify the process and the period until decommissioning, re - organize the R&D system of spent fuel reprocessing technology after decommissioning, utilize facilities for the time being, and create a decommissioning plan etc. after that as a preparation for the decommissioning, and systematically formulate a decommissioning plan. Moreover, to safely manage stored spent fuel and waste, we shall properly work on complying with new regulation standards and solidify and stabilize plutonium solutions and high - level radioactive waste liquid to reduce causes for potential danger. We shall contribute to the establishment of decommissioning technology systems including reprocessing facilities etc., with these efforts. 3) Tokai Reprocessing Plant We shall work on the Tokai Reprocessing Plant to comply with new regulation standards, continue the control of stored used fuel and waste and responses based on aging of facilities, and make the following efforts: We shall give the highest priority to safety securement, complete solidification and stabilization by MOX powderization, construct/maintain facilities in a well - planned manner, and ensure vitrification of high - level radioactive liquid waste. In addition, to manage high - level radioactive waste, we shall study storage methods of vitrified waste packages etc., and take proper measures. We shall design the recycling equipment test facility (RETF) to apply for permission as a facility to pack vitrified waste packages into containers to transport to a final waste disposal site. We shall also prepare for decommissioning of the Tokai Reprocessing Plant, apply for permission for the decommissioning plan, and start efforts to establish the decommissioning technology system of the reprocessing facility. As for high radioactive solid waste, we shall	6. R&D of reprocessing related to the nuclear fuel cycle and treatment of fuel fabrication and disposal of radioactive waste (1) Technology development for reprocessing spent fuel and fuel fabrication We have stopped some facilities of Tokai Reprocessing Plant, which resolve and shear spent fuels and shall clarify the process and the period until decommissioning, re-organize the R&D system of spent fuel reprocessing technology after decommissioning, utilize facilities for the time being and create a decommissioning plan etc. after that as a preparation for the decommissioning and systematically formulate a decommissioning plan. Moreover, we shall prioritize securing safety and reducing risks above all and work on improving safety based on new regulation standards to safely manage stored spent fuel and waste steadily implement a plan to decommission the Tokai Reprocessing Plant, which was submitted under the direction from NRA. We will also implement plans to reduce the risks related to high - level radioactive waste liquid storage and shorten the vitrification of high - level radioactive liquid waste to complete the process of solidifying and stabilizing plutonium solution and high - level radioactive waste liquid in 2028 to reduce potential sources of danger. We shall contribute to the establishment of decommissioning technology systems including reprocessing facilities etc., with these efforts. 3) Tokai Reprocessing Plant We shall work on the Tokai Reprocessing Plant by improving safety based on new regulation standards, continue the control of stored used fuel and waste and responses based on aging of facilities and make the following efforts: We shall prioritize securing safety and reducing risks above all, complete solidifying and stabilizing plutonium solution by MOX powderization, while constructing/maintaining facilities in a well-planned manner, and take all actions required, aiming to dispose of around 40% of high - level radioactive liquid waste and ensuring we implement a plan to decommission the Tokai Reprocessing Plant, which was submitted under the direction of NRA. We will also implement plans to reduce the risks related to high - level radioactive waste liquid storage and shorten the vitrification of high - level radioactive liquid waste to complete vitrification of high - level radioactive liquid waste by 2028. In addition, to manage high - level radioactive waste, we shall study storage methods of vitrified waste packages etc. and take proper measures.	Changes based on the “Review of a Plan to Decommission the Tokai Reprocessing Plant of the Japan Atomic Energy Agency (JAEA) (Report)”

develop technologies concerning remote extraction to contribute to proper storage management. As for the low - level radioactive waste treatment facility (LWTF), we shall steadily develop and maintain a cement solidification facility and a nitrate radical analysis facility to carry out construction improvements to the incineration facility and start operation within the objectives period.	We shall also prepare for decommissioning of the Tokai Reprocessing Plant, apply for permission for the decommissioning plan in the first half of 2017 and start efforts to establish the decommissioning technology system of the reprocessing facility. As for high radioactive solid waste, we shall develop technologies concerning remote extraction to contribute to proper storage management. As for the low-level radioactive waste treatment facility (LWTF), we shall steadily develop and maintain a cement solidification facility and a nitrate radical analysis facility to carry out construction improvements to the incineration facility and start operation within the objectives period. As for the recycle equipment test facility (RETF), we shall consider the facility's utilization.	Changes based on issues pointed out by the LDP reform committee and others
V. Other Important Matters Concerning the Administration of Operations 2. Plan concerning equipment and facilities We shall steadily develop decommissioning of facilities shown in JAEA reform. We shall verify if JAEA should possess an exhibition facility in an early stage, and if it no longer required, steadily dispose of it. We shall strictly verify whether JAEA is required to continuously possess asset holdings other than exhibition facilities, steadily promote disposals etc., under specific plans. In addition, we shall comprehensively consider future R&D needs and safety research needs to technically support nuclear regulatory administration, repair/maintenance costs etc., rapidly decommission unused facilities and equipment which have finished their roles to technically support, focus on existing facilities, and formulate and steadily deal with plans concerning decommissioning to increase work productivity. Furthermore, we shall focus on effectively upgrading and developing facilities and equipment required to perform operations and comply with earthquake resilience and new regulation standards in a well - planned proper manner.	V. Other Important Matters Concerning the Administration of Operations 2. Plan concerning equipment and facilities We shall steadily develop decommissioning of facilities shown in JAEA reform. We shall verify if JAEA should possess an exhibition facility in an early stage and if it no longer required, steadily dispose of it. We shall strictly verify whether JAEA is required to continuously possess asset holdings other than exhibition facilities, steadily promote disposals etc., under specific plans. In addition, we shall comprehensively consider future R&D needs and safety research needs to technically support nuclear regulatory administration, repair/maintenance costs etc., rapidly decommission unused facilities and equipment which have finished their roles to technically support, and formulate the mid to long-term facility plans for collecting, focusing on and decommissioning existing facilities and steadily implement the same. Furthermore, we shall focus on effectively upgrading and developing facilities and equipment required to perform operations and comply with earthquake resilience and new regulation standards in a well-planned proper manner,	Changes concerning the mid to long-term facility plan