

Evaluation of FY2018 Operating Results for Japan Atomic Energy Agency

October 2019

Minister of Education, Culture, Sports, Science and Technology,
Minister of Economy, Trade and Industry, Nuclear Regulation Authority

1. Items related to the evaluation			
Agency	Japan Atomic Energy Agency		
FY for evaluation	FY evaluation	FY2018(3rd term)	
	Mid to long-term objectives period	FY2015-FY2021	

2. Items related to the assessor				
The Competent Minister		Minister of Education, Culture, Sports, Science and Technology		
Incorporated jurisdiction dept.	Research and Development Bureau	Dept. and person in charge	Atomic Energy Division, Takashi Kiyoura	
	Evaluation and inspection dept.	Science and Technology Policy Bureau	Dept. and person in charge	Planning and Evaluation Division, Masao Yokoi
The Competent Minister		Minister of Economy, Trade and Industry		
Incorporated jurisdiction dept.	Electricity and Gas Industry Department, Agency for Natural Resources and Energy	Dept. and person in charge	Nuclear Energy Policy Planning Division, Daisuke Matsuno	
	Evaluation and inspection dept.	Minister's Secretariat	Dept. and person in charge	Policy Coordination/Evaluation and Public Relations Division, Naohiko Yokoshima
The Competent Minister		Nuclear Regulation Authority		
Incorporated jurisdiction dept.	Secretary-General's Secretariat, Regulatory Standard and Research Department, Secretariat of Nuclear Regulation Authority	Dept. and person in charge	Regulatory Standard and Research Division, Shin Tohyama, Fumihisa Nagase	
	Evaluation and inspection dept.	Secretary-General's Secretariat, Secretariat of Nuclear Regulation Authority	Dept. and person in charge	Policy Planning and Coordination Division, Yohei Kojima

3. Items regarding implementation of evaluation	
(1) Listening to opinions and hearings from the National Research and Development Agency Council (hereinafter referred to as the "Council").	
As mentioned below, at the time of an evaluation by the competent minister, we heard opinions from the Councils of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Economy, Trade and Industry (METI), and the Nuclear Regulation Authority (NRA).	
July 4, 2019	The Sub-Committee on Japan Atomic Energy Agency (JAEA) under MEXT and METI (hereinafter referred to as the "Sub-Committee") held hearings with JAEA about business performance and self-evaluation and heard opinions from sub-committee members concerning Item No. 1 "Item on security assurance and nuclear security" Item No. 2 "R&D on countermeasures against the accidents at the TEPCO's Fukushima Daiichi Nuclear Power Station," Item No.4 "Activities towards nuclear disarmament and nuclear security, and research and development to improve the safety of nuclear power" Item No. 6 "R&D on Fast-Breeder Reactors (FBR)," and Item No. 11 "Establishment of an effective and efficient management structure" Hearing opinions from the president of JAEA was conducted.
July 12, 2019	The Sub-Committee under MEXT held hearings with JAEA about business performance and self-evaluation and heard opinions from sub-committee members concerning Item No. 3 "Technical support and safety research for nuclear safety regulation and administration" and Item No. 5 "Basic and fundamental nuclear research and human resource development."
July 22, 2019	The Sub-Committee under MEXT/METI held hearings with JAEA about business performance and self-evaluation and heard opinions from sub-committee members concerning Item No. 7 "Reprocessing of nuclear fuel cycle and research and development for processing and disposal of radioactive waste and fuel production" Item No. 8 "Activities to ensure public trust from society and reinforcement of cooperations with industry, academia, and government," Item No. 9 "Streamlining and efficiency of operations," and Item No. 10 "Budget (Including personnel expenses)/income and expenditure plan, and funding plan".
July 24, 2019	The Sub-Committee under NRA held hearings with JAEA about business performance and self-evaluation and heard opinions from sub-committee members concerning Item No. 3 "Technical support and safety research for nuclear safety regulation and administration."
August 6, 2019	The council under MEXT heard opinions concerning competent minister's evaluation on FY2018 operational results of JAEA.

August 8, 2019	The Sub-Committee under NRA heard opinions concerning competent minister's evaluation on FY2018 operational results of JAEA regarding jurisdiction of the committee from document deliberation.
August 14, 2019	Head of the Sub-Committee under NRA reported contents of the resolution to the head of the council of the NRA.
August 22, 2019	The council under METI heard opinions concerning competent minister's evaluation on FY2018 operational results of JAEA.
(2) Field visit by Sub-Committee members	
June 18, 2019	Field visit was made by JAEA Sector of Nuclear Science Research and Sector of Nuclear Fuel Cycling Science

4. Important items and others relating to the evaluation

March 19, 2019 The 3rd Term: Guidance to Revise Mid to Long-Term Objectives
 April 3, 2019 The 4th Term: Approval to Revise Mid to Long-Term Plan

1. Overall evaluation									
Rating (S, A, B, C, D)	B	(Reference) Overall rating in the past fiscal years in this mid to long-term objective period							
			FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
		Overall rating	B	B	B	B			
Reasons for rating	As shown in the overall evaluation of the agency as a whole, the creation of achievements and anticipated creation of achievements in the future and so on were recognized as a result of comprehensive consideration based on circumstances surrounding the agency's business achievements, efforts and so on through its activities and with the national research and development agency's mid to long-term objectives taken into account, and steady business operations have been also recognized.								

2. Evaluation of the whole agency	
<p>As the only comprehensive research and development institute on the atomic energy in Japan, we recognize that, in general, JAEA steadily implemented successful operations according to the stipulations set forth in the mid to long-term plan and annual plan to maximize R&D achievements on the whole.</p> <p>In particular, we highly evaluate the following activities as we recognize the considerable and future achievements are created.</p> <ul style="list-style-type: none"> ○ With regard to research and development for responding to the event at TEPCO Fukushima Daiichi Nuclear Power Station, we give high marks to the research and development towards decommissioning, the research and development towards recovery of our environment, and the establishment of a research and development platform as we recognize the creation of significant achievements and the creation of achievements for our future. ○ “Technical support and safety research for nuclear safety regulation and administration” is highly evaluated because the creations of the considerable and future achievements which are recognized concerning the technical support for the administration of nuclear safety regulation and research on safety and technical support for nuclear power disaster prevention, etc. ○ “R&D to improve nuclear safety and activities to contribute to nuclear non-proliferation and nuclear security” is highly evaluated as the creations of the considerable and future achievements are recognized concerning R&D etc. on improvement of nuclear safety and activities conducive to nuclear non-proliferation and nuclear security. ○ “Basic and fundamental nuclear research and human resource development” is evaluated, because the development of nuclear human resources and promotion of service facility uses were steadily worked on. At the same time, it is highly evaluated because the creations of the considerable and future achievements are recognized concerning the promotion of basic and fundamental research and advanced nuclear science research that underpin nuclear power, R&D on high-temperature gas reactors and associated heat utilization technologies and the promotion of public utilization of the specific large research facilities. We give high marks to “Basic and fundamental research into nuclear power and human resource education and training”, as we have recognized in particular the creation of significant achievements and the creation of special achievements in our future, concerning the education and training of human resource on nuclear power and advancements in the usage of shared facilities, the advancements on sharing certain large-scale research facilities, the research and development of a high-temperature gas-cooled reactor and reactor technologies for thermal utilization, and the advancements in areas including neutron utilization research and research into the innovative nuclear power sciences. ○ With regard to “Research and development of reprocessing of nuclear fuel cycle and research and development for processing and disposal of radioactive waste and fuel production”, we give high marks to the reprocessing of use fuel, the development of technology for fuel production, the research and development towards volume reduction and hazard level reduction of radioactive waste, and the research and development into and scheduled performance of processing and disposal of radioactive waste and decommissioning works for the nuclear power facilities, as we can recognize the creation of significant achievements and the creation of achievements for our future. ○ With regard to “Activities to ensure public trust from society and reinforcement of cooperations with industry, academia, and government”, we give high marks to the work towards creation of innovation, the support to nuclear fuel cycling businesses of nuclear power vendors in the private sector, the advancements in international cooperation, and the work towards ensuring public trust from society and regions where such facilities are erected, as we can recognize the creation of significant achievements and the creation of achievements for our future. <p>Relatedly, on the points below, we expect more creativity and applications, and improvements.</p> <ul style="list-style-type: none"> ○ In regard to “Item on security assurance and nuclear security”, in particular with regard to nuclear security and such, business operations are mostly steadily moving forwards; however, with regard to work into security assurance which impacts society widely, we need further improvements, as there has been continuous issues; eg, the contamination and exposure event at the fuel research building of Oarai Research and Development Center in June 2017; the contamination event at Sector of Nuclear Fuel Cycling Science in the fuel technology development center's plutonium fuel development laboratory no 2 inside their control zone in January 2019. 	

3. Issues to be solved and /or improved for each subject

- With regard to the internal exposure accident at the Oarai Research & Development Center in FY2017, JAEA is required to take thorough measures to prevent recurrence based on the analysis of causes of the accident. JAEA must also review its responses after the occurrence of the accident to identify what to be improved for applying the result to the future activities. We recognize that improvement activities were performed based on the plan, including lateral deployments and reinforcements in the security controls system, for the contamination and exposure event concerning radioactive matter in June 2017 at the Fuel Research Building of Oarai Research and Development Center, and they are working on the prevention of reoccurrence of events and so on. With that said, in January 2019 there was a contamination event inside a controlled zone of Sector of Nuclear Fuel Cycling Science in the Fuel Technology Development Center's Plutonium Fuel Development Laboratory No 2. As such, we require further improvements in areas including the mechanism of lateral deployment of safety measures.
- In view of repeated events and problems at JAEA, a Ministry of Education, Culture, Sports, Science and Education Minister Guidance was issued in April 2019 to the effect that JAEA must suss out the fundamental cause of why a lesson is not learned from prior events and consider an action plan. As such, the immediate issue at JAEA is to implement improvements with regard to their work on security assurance.
- Decommissioning of "MONJU" must be proceeded safely and steadily according to the plan, with sufficient consideration for the high public concern. JAEA is required to continually discuss what to be done on what grounds to achieve highly efficient decommissioning measures, which is one of the objectives of JAEA. With regard to "Monju", we require further improvements as the processing of fuel bodies could not be performed according to the plan. We need to be continually fully aware of the high level of our society's interest in Monju, and move forwards decommissioning measures on schedule and according to the plan.

4. Other items	
Main opinions of the council on research and development	<ul style="list-style-type: none"> ○ With regard to research and development, we see significant achievements particularly on the "Basic and fundamental research into nuclear power and human resource education and training" item in particular, and significant achievements in "Research and development into countermeasures and responses for TEPCO's Fukushima Daiichi Nuclear Power Station", "Research and development into fast breeder reactors", and "Reprocessing of nuclear fuel cycle and research and development for processing and disposal of radioactive waste and fuel production". Based on this, we can give high marks to the point on maximization of achievements in research and development. Furthermore, with regard to the business including the improved rationalization and efficiency of businesses and the establishment of an effective and efficient management system, businesses are performed on schedule under the leadership of the President. ○ We believe that we can give high marks to the works including the contribution to responses to the Fukushima Daiichi event, the good achievements in safety research and basic research, and the international contributions and high marks from overseas with regard to the field of nuclear security. ○ We wish to give good marks this year to also the many items that are making contributions to our actual work. However, it is very regretful that, with regard to safety, the number of issues was not zero. We are fully aware that JAMSTEC is making the efforts; however, perhaps due to the weighting of risks on the job of JAMSTEC, what we wish in view of public sentiments is that another step forwards in creativity and application is sought on safety. ○ With regard to research and development, achievements are being recorded in individual matters, and the number of publications and presentations have already surpassed targets. Furthermore, we are being covered by newspapers on more occasions and announcements of achievements (press release) are being made in a timely manner; and efforts are being made on application of technologies to the industry, by planning and holding the JAEA Technology Forum. ○ We can give high marks to the achievements in research; however, what is still inadequate is the activities to ensure safety and public trust. We expect further achievements moving forwards, as there is a new framework for the current fiscal year, which was started. ○ There is significant work that was performed including various achievements in research; however, to regain public trust from society, there is a need to do work with safety held as the most important item. With regard to security assurance, while improvements were made, many issues still remain including in senior management and in specifics of the work. ○ Management is responding top-down, including an interview of the President; however, problems have not ceased, and we expect a bottom-top reinforcement in the activities, starting with staffs working on the floors. ○ While outstanding work is seen in safety research, there is a need for improvements to areas including the work floors, as events and problems are seen in reality, such as the contamination issue at the Sector of Nuclear Fuel Cycling Science.
Auditor's special comments	<ul style="list-style-type: none"> ○ The organization was restructured in April 2018, and the scope of responsibilities has become clearer by centralizing responsibilities and authorities over management resources (people, things, money) of a unit to its unit head (director), which reinforces governance and safety. To make the organization's restructuring viable, what is most important is leadership of the unit's head, and what is needed is deeper involvement by management. ○ Risk management has been in place for 5 years and its usage is becoming familiar. However, the research laboratory's check (of progress and of assessments) onsite, that is, at the unit and center levels, is weak. What is needed is continuous activities on improvements, that is, not to perform a check of risks only once a year but conduct regular checks at a frequency that suits the importance of the individual risks. Furthermore, with regard to the units, what is important is that risk management, including safety, for all units is performed by, for example, the planning and coordination office. ○ Outsourcing work is believed to be a way to perform business operations effectively when management resources are limited; however, JAMSTEC would still carry a management

	<p>responsibility. When work is outsourced, what is important is to confirm that this business will be in a condition where it can fully be managed by JAMSTEC.</p> <ul style="list-style-type: none"> ○ In January 2019, there was a problem at Plutonium Fuel Development Laboratory No 2 in Sector of Nuclear Fuel Cycling Science where there was air contamination from a radioactive matter. In June 2017 there was an event where a worker was exposed to radioactive matter at the Fuel Research Building of Oarai Research and Development Center, and we can give good marks to the fact that there were no workers who were exposed to radioactive matter because measures were implemented including half face respirator mask from a lesson learned earlier. On the other hand, improvements are needed, with regard to management of permanent and temporary workers which caused the problem and with regard to emergency response in the event of contamination. Furthermore, there is a need to implement countermeasures organization-wide at JAMSTEC as similar problem may occur at other sites. ○ In fiscal 2017 there was an event during a facility work that resulted in injury to a person due to inadequate role execution by a work supervisor at JAMSTEC. In fiscal 2018 however, we can give good marks to the work towards implementation of a certification system for job managers and a system for safety leaders at the guidance of safety and nuclear security administration department under a unified thinking at JAMSTEC organization-wide. However, the certification rules are just one method to inform staffs, such as the managers of a work task, of their role; and, as its purpose is not certification, there is a need to perform viable operations. Furthermore, there is a need to perform some minor corrections to the certification rules as there is a big difference in, for example, the size and location of JAMSTEC's research centers. ○ The immediate supervisors need to perform workhours management of staffs as this is not properly done in some areas, and as such there is a need to grasp this for all of JAMSTEC. Furthermore, the current workhours management system is unable to output overtime hours as defined under the Labor Standards Act. The Act on Reform to Working Lifestyle which was enacted in April 2019, a penalty provision was placed on upper limit of overtime workhours, and as such, to perform an appropriate management of workhours, there is a need to upgrade the system at the soonest. ○ An antiseismic survey of the building was completed in fiscal 2017. We can therefore give good marks to their completing a readiness with regard to materials, equipment, and supplies and an earthquake readiness manual, at the guidance of Buildings Department in fiscal 2018. Furthermore, antiseismic reinforcements work was also performed for the general facilities; however, what is important is that such works will be moved forward as a plan and that a budget is secured for this each year.
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* Evaluation categories are as follows:

- S: Based on the National Research and Development Agency's aims, businesses with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency's business achievements, and efforts through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward "maximization of R&D achievements" under the conditions of appropriate, effective and efficient operations are recognized.
- A: Based on the National Research and Development Agency's aims, businesses with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency's business achievements, and efforts through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward "maximization of R&D achievements" under the conditions of appropriate, effective and efficient operations are recognized.
- B: Based on the National Research and Development Agency's aims, business with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency's business achievement, and efforts through its activities, a certain degree of expectation for the creation of achievement and creation of achievement in the future toward "maximization of R&D achievements" were recognized, and steady business operations have been also recognized.
- C: Based on the National Research and Development Agency's aims, businesses with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency's business achievements, and efforts through its activities, the creation of achievements, further drastic efforts and improvements toward "maximization of R&D achievements" or "appropriate, effective and efficient operations" are anticipated.
- D: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on, through its activities, special efforts and improvements including a fundamental drastic review, toward "maximization of R&D achievements" or "the appropriate, effective and efficient operations" are required.

Mid to long-term objectives (Mid to long-term plan)	FY evaluation							Itemized evaluation document No	Remarks	
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021			
I. Maximization of R&D achievements and quality improvement of the other operations										
R&D in response to the accident at Fukushima Daiichi Nuclear Power Station	A	A	A	A				2		
Technical support and safety research for nuclear safety regulation and administration	A	A	A	A				3		
R&D to improve nuclear safety and activities to contribute to nuclear non-proliferation and nuclear security	A	A	A	A				4		
Basic and fundamental nuclear research and human resource development	B	A	A	S				5		
R&D on Fast Breeder Reactors (FBR)	C	C	B	B				6		
R&D on reprocessing related to the nuclear fuel cycle and treatment, fuel fabrication, and disposal of radioactive wastes	B	A	B	A				7		
R&D on nuclear fusion	A									
Activities to promote industry-academia-government collaboration and gain trust from society	B	B	B	A				8		

Mid to long-term objectives (Mid to long-term plan)	FY evaluation							Itemized evaluation document No	Remarks
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021		
II. Items regarding the efficiency of business operations									
Streamlining and efficiency of operations	B	B	B	B				9	
III. Items regarding improvements in financial related matters									
Budget (Including personnel expenses)/ income and expenditure plan, and funding plan	B	B	B	B				10	
IV. Other items									
Items concerning securing of safety and nuclear security	C	C	B	C				1	
Establish an effective and efficient management system	B	B	B	B				11	

*1 For items that are set to “high” level of importance, a “circle” shall be marked next to each comment.

*2 For items that are set to “high” level of difficulty, each comment shall be underlined.

*3 For items that were selected for reinforcement shall be marked with “Target” next to each criterion.

*4 In the “Itemized Evaluation Document No” column, the itemized document no in the itemized evaluation document for fiscal 2018 shall be entered.

*5 Evaluation categories are as follows:

[Administrative and projects related to research and development (I)]

S: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward "maximization of R&D achievements" under the conditions of appropriate, effective, and efficient operations are recognized.

A: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, the creation of considerable achievements, anticipated creation of achievements in the future and so on toward "maximization of R&D achievements" under the conditions of appropriate, effective, and efficient operations are recognized.

B: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievement, efforts and so on through its activities, a certain degree of expectation for the creation of achievement and creation of achievement in the future toward "maximizing the achievements of R&D achievements" were recognized, and steady business operations have been also recognized.

C: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on through its activities, the creation of achievements, further drastic efforts and improvements toward "maximization of R&D achievements" or the "appropriate, effective, and efficient operations" are anticipated.

D: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts through its activities, special efforts and improvements including a fundamental drastic review, toward "maximization of R&D achievements" or the "appropriate, effective, and efficient operations" are required.

[Other than administrative work and projects regarding research and development (After II)]

S: Based on the activities of a corporation, remarkable performance exceeding the intended objectives is recognized quantitatively and qualitatively in the mid- to long- objective plan (in terms of quantitative indicators, 120% or more vis-à-vis planned mid to long-term objective value (or planned FY value), and remarkable performance is also recognized qualitatively)

A: Based on the activities of a corporation, remarkable performance exceeding the intended objectives is recognized in the mid to long- term objective plan (in terms of quantitative indicators, 120% or more vis-à-vis planned mid to long-term objective value (or planned FY value).

B: Performance exceeding the intended objectives is recognized in the mid to long- term objective plan (in terms of quantitative indicators, 100% or more but less than 120% vis-à-vis planned mid to long- term objective value (or planned FY value).

C: Performance falls below the intended objectives in the mid to long- term objective plan, requiring improved performance (in terms of quantitative indicators, 80% or more but less than 100% vis-à-vis planned mid to long- term objective value (or planned FY value).

D: Performance falls below the intended objectives in the mid to long-term objectives, requiring drastic improvement of business including its abolishment (in terms of quantitative indicators, less than 80% vis-à-vis the planned mid to long-term values (or values on prior fiscal year), or it is recognized that the competent Minister is required to make an order for improving business operation or taking other necessary measures).

The following grades are to be assigned when one is forced to raise an evaluation based on qualitative indicators such as evaluation of internal controls, and when operations performance is difficult to measure such as when meeting certain conditions is set as the target.

S:—

A: The agency reached the target level, for targets whose difficulty grade were set high.

B: The agency reached the target level(This excludes items that correspond to "A").

C: The agency couldn't reach the target level(This excludes items that corresponding to "D").

D: A fundamental review of operations is needed because the agency couldn't reach the target level, and this includes when the Minister in charge finds that the Minister needs to order improvements in operations management and order other necessary actions.