

Evaluation of FY2017 Operating Results for Japan Atomic Energy Agency

September 2018

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	FY2017	
	Mid to long-term objectives period	FY2015-FY2021(3rd term)	

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, Keiji Inoue
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, Satoshi Miura
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, Hiroshi Tsujihara
Evaluation and inspection dept.	Secretary-General's Secretariat, Secretariat of Nuclear Regulation Authority	Dept. and person in charge	Policy Planning and Coordination Division, Kazuhiro Ohkuma

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 9, 2018	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. 2 "R&D on countermeasures against the accidents at the TEPCO's Fukushima Daiichi Nuclear Power Station," Item No. 6 "R&D on Fast-Breeder Reactors (FBR)," Item No.7 "R&D of reprocessing related to the nuclear fuel cycle and treatment of fuel fabrication, and disposal of radioactive waste," and Item No. 8 "Enhancement of industry - academia - government collaboration and gaining trust from society." Hearing opinions from the president of JAEA was conducted.
July 19, 2018	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 20, 2018	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, 2018	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. 1 "Items concerning securing of safety and nuclear security," Item No.4 "R&D to improve nuclear safety and activities to contribute to nuclear non-proliferation and nuclear security," Item No. 9 "Streamlining and efficiency of operations," Item No. 10 "Budget (Including personnel expenses)/income and expenditure plan, and funding plan," and Item No. 11 "Establish an effective and efficient management system."
August 8, 2018	The Sub-Committee under NRA heard opinions concerning competent minister's evaluation on FY2017 operational results of JAEA regarding jurisdiction of the committee from document deliberation.

August 10, 2018	Head of the Sub-Committee under NRA reported contents of the resolution to the head of the council of the NRA.
August 22, 2018	The council under MEXT heard opinions concerning competent minister's evaluation on FY2017 operational results of JAEA.
August 31, 2018	The council under METI heard opinions concerning competent minister's evaluation on FY2017 operational results of JAEA.

(2) Field visit by Sub-Committee members

June 26, 2018	Field visit by Sub-Committee members of JAEA fast breeder prototype reactor “MONJU”
July 26, 2018	Field visit by Sub-Committee members of JAEA Oarai Research & Development Center

4. Important items and others relating to the evaluation

1. Overall evaluation									
Rating*1 (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				
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	
○	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.
○	In particular, we highly evaluate the following activities as we recognize the considerable and future achievements are created.
➤	“R&D on countermeasures against the accidents at the TEPCO's Fukushima Daiichi Nuclear Power Station” is highly evaluated because of the creations of the considerable and future achievements are recognized concerning R&D aiming at decommissioning the reactors and for environmental recovery, as well as building the basis of R&D.
➤	“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.

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.
○	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.
○	JAEA must make every effort to resume operation of “JOYO” and other reactors intended to be resumed as quickly as possible in close communication with regulatory ministries.
○	With regard to the vitrification of concentrated liquid waste at the Tokai Reprocessing Plant, it is important to proceed with the work according to the schedule, and promote efforts to reduce the degree of hazard.

4. Other items	
Main opinions of the council on research and development	<ul style="list-style-type: none"> ○ With regard to the research and development, which is the primary purpose of JAEA, it can be said that highly considerable achievements were obtained specifically in relation to the research on Fukushima Daiichi NPP, basic and fundamental nuclear research and safety improvement research. ○ Contribution to the restoration of Fukushima, excellent safety research and international leadership in nuclear security are highly noteworthy achievements. ○ There is room for improvement in the organizational capability for the response to troubles and accidents, advance preparation, and external correspondence, and continuous efforts are required to increase organizational power in the future. ○ Although there is much to be improved such as safety management and contract administration, achievements made by JAEA in its main subject, basic and fundamental nuclear research, can be evaluated to some extent. ○ As far as the safety is concerned, it is admitted that, in the event of radiation contamination and exposure incidents, the president and staff of JAEA have continuously strived to implement

	<p>various efforts for improving the organization including information sharing and horizontal deployment of policies with safety assurance as the first priority. In the future, JAEA is expected to sustain these efforts to realize a higher level of safety standard in an efficient way.</p> <ul style="list-style-type: none"> ○ With regard to the contamination incident at the Oarai Research & Development Center, it is deserved to acclaim that investigation into the cause has been conducted and countermeasures taken. In the future, JAEA is expected to keep these countermeasures working efficiently in every situation to prevent similar incidents. ○ The following should be noted in the description: It is not possible to determine whether or not the plan is accomplished without actual description of the initial annual plan (P in PDCA). The description should include not only the result (D and C in PDCA) but also improvements and innovations made in the process to reach the result. If you failed to produce any result regardless of organizational and process improvements, the result of attribution analysis and the state of reflecting the analytical result in the next annual plan should be included in the description (A in PDCA). ○ Because of the absence of a direct objectives-achievements list, it cannot be determined whether or not the “annual plan objectives were attained as planned.” The objectives of the plan should be clearly presented at the beginning of a new fiscal year. ○ With the emphasis on social implementation in the future research activities, joint research with private companies is required for improving safety in the existing nuclear facilities proactively using AI and IoT and creating new innovations focusing on the needs of the nuclear industry. ○ In many cases, JAEA acted as the main body to obtain achievements in the projects determined by the government. Voluntary projects are expected to JAEA. ○ JAEA has attained internationally recognizable research achievements, but in fact failed to present the value as a national research and development agency. It needs to enhance the management power.
Auditor’s special comments	<ul style="list-style-type: none"> ○ Even after decommissioning of “MONJU” is started, functional maintenance is required for many facilities. JAEA’s proactive efforts for educating maintenance staff to improve their technical strength are appraised, but the agency falls behind in simplification of inspection with a view to stop operation, and compliance with the rules determined by QMS. Improvements are required on these matters. ○ In June 2017, an internal exposure accident occurred at the Oarai Research & Development Center, and JAEA carried out measures for emergency situations while striving to grasp the actual state of safety management in handling nuclear fuel materials, and take measures for preventing recurrence. Activities in an attempt to raise the safety awareness of staff, such as the application of lessons learned from the accident to what is required in a section which does not handle nuclear fuel materials, are appraised. Meanwhile, the “Management Criteria for Handling Nuclear Fuel Materials” designated by the president was established, but this only provides basic matters for handling nuclear fuel materials. It must be integrated rules for handling nuclear fuel materials through JAEA. ○ Several injury accidents occurred in the construction of facilities in FY2017, in which cases the operation supervisor did not fulfill their role. In JAEA, a person with required ability (recognition of roles, basic knowledge of safety) is assigned to the operation supervisor in all sections except for part of the Nuclear Science Research Institute, part of Oarai Research & Development Center and “MONJU.” The operation supervisor is obligated to check work procedures provided by contractors, and participate in meetings with contractors prior to work. This system must be introduced in part of the Nuclear Science Research Institute, part of Oarai Research & Development Center and “MONJU.” ○ Troubles caused by human errors were also found throughout the agency in FY2017 following FY2016. Preparation of work instructions and routine finger pointing confirmation in every process are effective for preventing human errors. Confirmation of work procedures before starting work is the basic rule in the field work. Work instructions including commissioned work served by temporary staffers must be provided in sections where have not prepared work procedures on regular operations. The sections which are not accustomed to finger pointing confirmation are desired to take action to make finger pointing confirmation as a habit. ○ The organization of the agency was reviewed in FY2017 and restructured again in April 2018. Under the new organization, the sector head (board executive director) is responsible and authorized for management resources (personnel, things, money), and each laboratory belongs to a sector. The first organizational restructuring in FY2014 reinforced the governance of organization. More adequate business operation is expected in the future. ○ Small group activities, “Kaizen (Improvement) Activities” and “Diet Project,” have been continued and achieved some positive results in the efficiency in business operation. In addition, “Genki Kojo (Refreshment) Project” was launched in FY2017 with the aim of strengthening the power in worksite. Future efforts and consequences of this project are expected. ○ The seismic diagnosis up to FY2016 was completed for merely half of all buildings, but covered the rest of buildings in FY2017. This is highly appraised. JAEA will carry out the antiseismic reinforcement of buildings according to the plan. Research laboratories, etc. must separately discuss the integration of buildings based on the results of seismic diagnosis. Early demolition of the buildings decided to be demolished is desired in light of the economy of fixed asset taxes, etc.

* 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 with mid to long-term objectives due to 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.

National Research and Development Agency/FY Evaluation/Summary Table for Rating by Item

Mid to long-term objectives (Mid to long-term plan)	FY Ratings							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					2	
Technical support and safety research for nuclear safety regulation and administration	A	A	A					3	
R&D to improve nuclear safety and activities to contribute to nuclear non-proliferation and nuclear security	A	A	A					4	
Basic and fundamental nuclear research and human resource development	B	A	A					5	
R&D on Fast - Breeder Reactors (FBR)	C	C	B					6	
R&D on reprocessing related to the nuclear fuel cycle and treatment, fuel fabrication, and disposal of radioactive wastes	B	A	B					7	
R&D on nuclear fusion	A								
Activities to promote industry - academia - government collaboration and gain trust from society	B	B	B					8	

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

* The evaluation is based on the “Standards for Evaluation of Incorporated Administrative Agencies under the Jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology” (decided by the Minister of Education, Culture, Sports, Science and Technology on June 30, 2015. The details are as follows:
[Administrative work and projects related to research and development (I)]

Mid to long-term objectives (Mid to long-term plan)	FY Ratings							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					9	
III. Items regarding improvements in financial related matters									
Budget (Including personnel expenses)/ income and expenditure plan, and funding plan	B	B	B					10	
IV. Other items									
Items concerning securing of safety and nuclear security	C	C	B					1	
Establish an effective and efficient management system	B	B	B					11	

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 "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, 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 related to research and development (After II)]

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

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

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

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

D: Performance falls below the intended objectives in the medium-term plan, requiring drastic improvement of business including its abolition (in terms of quantitative indicators, less than 80% vis-à-vis planned medium-term values (or planned FY value), or it is recognized that the competent Minister is required to ask for improving business operations or taking other necessary measures).