

August 25, 2017

Dear Members of the Committee for a Strategic Plan for U.S. Burning Plasma Research set up by the National Academies of Sciences, Engineering, and Medicine,

I respect your enthusiasm for and devotion to the study on burning plasma research. I also appreciate your broadmindedness in accepting community input from both inside and outside the U.S. during the study. Let me take this opportunity to give my personal view, as the officer responsible for fusion energy policy in Japan.

The U.S and Japan have achieved a great deal and turned out many talented people in the field of fusion energy close cooperation under a government-level bilateral framework. As you know, this cooperation has a long history. Fusion was made a priority area of cooperation under the Agreement between the U.S. and Japan on Cooperation in Research and Development Agreement in Energy and Related Fields signed in 1979. Collaboration using DIII-D begun shortly after the conclusion of the Agreement has achieved excellent results. It would not be an exaggeration to say that many important achievements derived mainly from U.S.-Japan cooperation.

For example:

- Cooperative research on fusion structural materials using the High Flux Isotope Reactor (HFIR) at the Oak Ridge National Laboratory has for more than three decades accumulated irradiation data on structural materials such as reduced activation ferritic steel, which is a candidate material for future DEMO reactors.
- Comparative testing, joint analysis, and joint development of theoretical simulation code since the late 1980's used the Japan Torus-60 (JT-60) in Japan; as well as facilities in the U.S. such as the Tokamak Fusion Test Reactor (TFTR), the National Spherical Torus Experiment (NSTX) in Princeton, the Alcator-C in Massachusetts, and General Atomics's DIII-D. U.S. researchers developed plasma diagnostic devices using the JT-60.
- Exchange of testing technology through short- and long-term placement of staff at institutions such as the DIII-D in the U.S. and the National Institute of Fusion Science (NIFS) in Japan have provided professional development to young researchers.

I am proud of these extraordinary achievements.

These achievements go beyond those derived just from bilateral cooperation. They

contribute greatly to multilateral cooperation, such as the ITER Project, and it goes without saying that continued contribution from the U.S. and Japan is indispensable for the realization of fusion energy.

The ITER Project has faced schedule delays and cost increases due to managerial issues, prematurity of the design and other problems. I believe the Project has finally gotten back on track thanks to recent dedicated efforts and constructive discussion on finding solutions by the U.S. and other ITER Members. It goes without saying that since the Director General Bernard Bigot took office in 2015, strong support from all Members for his reform policies is pushing the Project's success. The realization of fusion energy is almost impossible without international cooperation to gather knowledge from around the world. I expect the U.S., an early advocate of the ITER Project that has played a major role since the conceptual and engineering design activities, will continue to contribute proactively to the project's success.

In light of the above, leaving the ITER may not be a wise move for the U.S. Let me note that should the U.S. decide to leave, Japan would need to reconsider its cooperative relationship with the U.S. due to concerns that the two countries will be unable to share common goals and processes for the realization of fusion energy. Establishing the technical foundation for developing a DEMO reactor and researching scenarios that might contribute to ITER's smooth operation are the objectives of the EU-Japan's joint JT-60SA superconducting tokamak, considered the satellite tokamak to the ITER. It goes without saying that we would have interest in international cooperation that does contribute to these objectives. On the contrary, I strongly believe it has more advantages of the U.S strategy of burning plasma research that the U.S. stays in the ITER Project and maintains her strong influence on the JT-60SA and other Asian projects in China and Korea as one of the ITER Members.

Finally, I hope you can use the above opinions as a reference when studying a strategic plan for U.S. burning plasma research.

Sincerely yours



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