

§5. Investigation and Analysis of Historical Documents and Materials in the Planning Phase of the Fusion Energy Research Projects in Japan

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Based on the documents and materials which were given to JAERI/JAEA by Prof. K. Yamamoto and Dr. S. Mori, the following two themes have been investigated; by what kind of intention the project-oriented fusion energy research was initiated and by what kind of framework it was advanced in cooperation with the Fusion Science Archives in NIFS. In the above investigation, the selection of a tokamak type device as the promising fusion device and its deployment that begun from JFT-2/JFT-2a in the second half of the 1960s, and results in the experimental reactor ITER through JT-60/JT-60U are a key issue for the developmental research in Japan. And so are the initiation of studies for fusion technology and its deployment that started from the middle of the 1970s. Through analysis of these two issues, it is expected that the positioning of the above documents and materials will be clarified from a historical viewpoint of the developmental research as well as the academic one of the same period in Japan.

It was investigated when a systematic examination of the fusion reactor was originally started in JAERI. As a result, the fact was found out that the first meeting for examination of a fusion reactor was held in 1969 by Dr. S. Mori of the laboratory head at that time when the design of JFT-2 had been advanced in parallel. In the same year Dr. S. Mori attended the first international conference on fusion reactor technology at Culham and also in the following year “ENERGY 70” at Las Vegas held by Fusion Technology. Participating in these international conferences he came to be strongly conscious of the fusion as an energy source. In deed the further investigation of the documents and materials given by Prof. K. Yamamoto and Dr. S. Mori revealed that in 1970s the following research organizations and facilities which are relevant to a fusion reactor had been started one after another by Dr. S. Mori: auxiliary heating technology¹⁾, superconducting coil technology, fusion material development, irradiation facility using fusion neutron source and tritium processing facility. It is suggested from this fact that Dr. S. Mori intended to realize a fusion reactor. Along with such intention, he served as the chairperson of the INTOR project that designed a fusion reactor through the international cooperation under IAEA started from 1978 after that.

- 1) Matsuda, S., “The progress of fusion technology: the origin of negative ion beam at 40MW, and its archives”, Symposium on archives for natural science, NIFS, Dec. 3-4, 2015.



Fig. 1. The shelves which store the carton boxes containing Prof. K.Yamamoto's documents and materials (front row) and Dr. S.Mori's ones (rear row)



Fig. 2. The carton boxes containing Prof. K.Yamamoto's documents and materials



Fig. 3. The carton boxes containing Dr. S.Mori's documents and materials