

§4. Studies on History of Nuclear Fusion Research at the Dawn Stage

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1. Background and Purpose

The studies on history of plasma physics and nuclear fusion research in Japan have been accomplished by historians of science, sociologists of science, and nuclear fusion researchers. In 1987, Satio Hayakawa and Kazue Kimura published three articles “Kakuyugo Kenkyu Kotohajime (the beginning of nuclear fusion research at the dawn stage in Japan) (1), (2), (3)” (NIFS FSA Archives ID: 301-26-02/301-26-03/301-26-04). Their articles discussed the historical facts in the 1960s in detail with the historical materials. Therefore, many papers and articles on history of nuclear fusion in Japan frequently cited several texts from Hayakawa and Kimura’s articles as secondary sources. However, there are a lot of historical facts which were not covered in previous studies.

In recent years, a lot of historical materials have been collected by NIFS Fusion Science Archives (FSA) and it becomes rather easy to retrieve new materials. This report summarized the results of our research on history of plasma physics and nuclear fusion research in the 1960s carried out by the joint research program of CST Nihon University and NIFS FSA.

2. Research Result: Kakuyugo Senmonbukai and the A-B plans dispute

In this fiscal year, our research was focused on the history of Kakuyugo Senmonbukai [the Special Panel on Nuclear Fusion Research] and the A-B plans dispute.

Japanese researchers who initiated nuclear fusion research were of the common view that “nuclear fusion research should start from basic research.” However, the A-plan (“developing and realizing new ideas”) and the B-plan (“building medium-sized devices”) proposed in March 1959 by Kakuyugo Senmonbukai (established in 1958) of the Japan Atomic Energy Commission under the auspices of the Prime Minister’s Office took a different view from the above-mentioned common view (NIFS FSA Archives ID: 301-01-13). These future plans led to an intense dispute that in later years was referred to as the A-B plans dispute.

A particular focus of the A-B plans dispute was put on the B-plan’s aim of building the type of medium-sized devices in Japan that had obtained some success in foreign countries. Many previous studies have emphasized the influence of the second United Nations Conference on the Peaceful Uses of Atomic Energy (also called Geneva Conference held in September 1958) on Kakuyugo Senmonbukai’s drafting of the B-plan; but in addition to this, domestic arguments also had a strong influence. Such arguments came from the results of questionnaires that Kakuyugo Kondankai [Nuclear Fusion Research Group] had carried out about how to proceed with nuclear fusion research (NIFS FSA Archives ID: 301-13-05/301-05-04), and from the insistence of some researchers, especially experimentalists, that the research of the B-plan should be carried out as “basic research of engineering” (NIFS FSA Archives ID: 301-04-07/302-08-09). However, most researchers insisted on “accumulating knowledge through basic research” and so did not agree with the B-plan. As a result, the B-plan was postponed.

Moreover, the A-plan was intended to establish Japan’s own ideas, and was premised on proceeding together with the B-plan. However, this idea was opposed as ignoring the situation at the time, and the A-plan was interpreted as being for “basic research and researcher training” in the final report submitted by Kakuyugo Senmonbukai (NIFS FSA Archives ID: 301-01-18). It is considered that it was on the basis of this concept in the A-plan that the Institute of Plasma Physics, Nagoya University (IPP), founded in 1961, decided on a research policy of “basic research and researcher training.”

3. Summary and Future Planning

As a result of this collaborative research in this fiscal year, new historical interpretations of the A-B plans dispute were found by historical documents that are filed in NIFS FSA.

The following studies are planned in next fiscal year: (1) On the discussion of establishment of IPP in Kakuyugo Tokubetsu Iinkai [the Special Committee for Nuclear Fusion], (2) The Effects of the second Geneva Conference on the Development of Nuclear Fusion Research in Japan and (3) Comparison of nuclear fusion research policy among the Japan Atomic Energy Research Institute (JAERI), the Electrotechnical Laboratory (ETL) and the Institute of Physical and Chemical Research (RIKEN) at the dawn stage.

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