§5. Research on History of Fusion and Plasma Research Devices

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Background and Purpose:

Plasma and fusion research in Japan has been started around 1950, almost the similar time as the systematic research was started in Europe, USSR at that time and the USA. Compared to other large-scale researches such as space research or nuclear fission research, the early start of research is one of special points of plasma and fusion researches in Japan. Fortunately, the present fusion research of Japan can be judged as one of leading forces of the world fusion research thanks to many efforts of research peoples during these 60 years.

These materials will be the proof how our research turned in one of the leading forces of the world which is very rare case in Japan. There is a big worry that those materials are being lost, particularly those before 1980.

This particular research focuses its work on the archiving of materials of the devices of plasma and fusion research and to make a set of summary documents for each device. Because those researches depend very much on devices, which means a special device needed to explore one research objective, the history of devices almost means the history of researches themselves.

The planned work here will make firm point data of devices which are basis to explore lines and planes of the history of plasma and fusion researches.

Contents and Results:

The selected items in the set of summary documents for each device are: 1.Name of the device, 2.Name of organization, 3.Figures of the device, 4.Photos of the device, 5.Explanation of operation, 6.Major parameters of produced plasmas, 7.Original purpose of the research and changes, 8.Time table of conceptual design to construction and operation, 9.Major results (within 5 lines), 10.List of papers and presentations, 11.Names of all contributed persons, 12.Special points to be noted, 13.Important experiences (Experience of failures are the most important.), 14.Sourse materials of above if any.

Most of devices have more than one name, and the popular name is usually different from the name on budgetary documents. Therefore, it is desirable that all of those names are shown and put on table of document search.

For name of organization, if name is changed, the new name will be shown in parenthesis. Scale is necessary in drawings. Drawings and photos after attaching diagnostics are also desirable.

Some details of the device operation for each of the operation mode when there are several of operation modes are desirable as well as the typical plasma parameters for each operation mode.

As for the major results and the timetable, it is asked to persons to fill the formats to select results and events to avoid the table become too detailed. It is also requested to report about ‘failures’ because those experiences of unexpected outcome and how they managed to attain new results are very important example to younger researchers.

The amount of the set of summary documents is expected to be about 10 pages. If people wish to learn more detail, then he/she is requested to refer to papers and documents on the list of items 10 and 14.

As the work of the first year, summary of two devices has been made which will be examples of this work after the next year. The devices are RFX-XX / RFC-XX-M of former Institute of Plasma Physics, Nagoya University and JFT-2a of former Japan Atomic Energy Research Institute. Filling of the formats is asked to persons directly worked in the device, and a format to make addition and/or changes is prepared for future needs.

Thanks to the progress of electronic machines such as computers and scanners, it is now easy to get drawings and photos converted to electronic files. Those files will be accessible through electronic grids like internet in the near future. Those files are made using popular softwares such as Words and JPEG and all materials are prepared to be printed out to A4 sized papers.

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