

§4. Archival Studies on the Nuclear Fusion Research from Chronological Aspect

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Introduction

It is essential for archival study to establish the dates and time sequences of past events. Based on NIFS Fusion Science Archives, the historical records have been registered for the database of fusion science chronology. Since there have been a lot of people, institutes, authorities concerned, and international relations in nuclear fusion research, the idea of multi-dimensional chronology is useful to survey the events and/or activities of organizations in the order of their occurrence at a glance.

Compilation of Multi-dimensional Chronology

Multi-dimensional chronology is compiled by gathering historical records, which are requisite for the research subject in archival study, from the chronological database. The subjects of the multi-dimensional chronology compiled in 2006 were (1) "Nuclear fusion research in 1960s in Japan," (2) "The chronology of fusion researches in universities in comparison with industrial activities in 1950s," (3) "Fusion research development at universities in Japan and visiting staff to IPP Nagoya Univ. from US," and (4) "The chronology of the negotiation with the local residents on the site issue of NIFS to be founded." At the end of 1970s Nagoya University entered into a preliminary negotiation with Toki municipal assembly about the site issue. The negotiation lasted for ten years until it was concluded in 1989.

A brief multi-dimensional chronology table was presented for reference, also on the occasion of an oral history interview. Table I shows a part of the chronology used on the oral history interview with Prof. Yamamoto Kenzo. He was involved in fusion research in different organizations, that is, Nagoya Univ., JAERI, and Japan Atomic Industrial Forum. Besides the activities in these organizations, those in Science Council of Japan, Atomic Energy Commission of Japan are also described in the table.

At the US-Japan Workshop on Fusion Science Archives held on Dec. 12-13, 2005, the contributions through personal exchanges between US and Japan were reported. Table II shows a part of the multi-dimensional chronology of fusion researches in universities in US and Japan and US researchers who visited the Institute of Plasma Physics, Nagoya University, before the Agreement on Treaty of Cooperation on Science between US and Japan was settled in 1979. Since there are few official documents preserved before the treaty, the steering committee records of IPP in NIFS Fusion Science Archives were surveyed for finding out US researchers who visited IPP in early days of

fusion research. The contribution by Japanese researchers in fusion study in early days in US remained to be surveyed for the future archival study.

Table I. An example of multi-dimensional chronology

Date	Classification					Event	ID of NIFS Archives
	SCJ	STA	Ind.	MOE	JAEC		
1940						Yamamoto Kenzo, Assistant Professor of Nagoya Univ., Dept. of Engineering	075-06
1956.1.1					*	Atomic Energy Commission of Japan established, 3 Laws on Atomic Energy enforced	411-01
1956.3.1			*			Japan Atomic Industrial Forum, Inc. established	511-33
1956.5.19		*				Science and Technology Agency established	510-46
1956.6.15		*				Japan Atomic Energy Research Institute founded	512-32
1957.2.6					*	1 st <i>Kakuyugo Hannoh Kondankai</i> (by JAEC)	301-04-02
1957.4.1		*				JAERI Tokai Research Institute founded	504-10
1958.4				*		<i>Kakuyugo Kondankai</i> (by Fusion researchers group)	301-04-09
1958.5.19					*	1 st Nuclear Fusion Special Committee of AEC (President: Hideki Yukawa)	301-11-03
1958.1	*					27 General Assembly "On the Promotion of Nuclear Fusion Research" (Recommendation)	308-17
1959.2.14				*		Atomic Energy Society of Japan established	504-07
1959.2.20					*	Plan A and Plan B on Nuclear Fusion Research in future proposed by Nuclear Fusion Special Committee of AEC	301-01-06
1959.4.22		*				JAERI Nuclear Fusion Research Committee started (Plan B) Chairperson: Kenzo Yamamoto	302-07-01
1959.5.14	*					Symposium on "How to develop nuclear fusion research in Japan" held by <i>Genshiryoku Mondai Iinkai</i> and <i>Kakuyugo Tokubetsu Iinkai</i> of SCJ	301-11-04

Table II. Fusion Research in US and Japan in Early Days

year	International events, conf.	Research at univ. in Japan	Personal exchange	Research in US
1955	The 1st United Nations Conf. on the Peaceful Uses of Atomic Energy (Geneva)			
1957	Lawson criterion IAEA established	Osaka(Ultra high temp.) Nagoya (Toroidal pinch) Kyoto (Helical) Tokyo (Plasma β tron) Nihori(Mirror)		DCX Stellarator Astron
1958	2 nd Geneva Conf.			
1961	1 st IAEA conference (Salzburg) minimum B	IPP Nagoya Univ. QP Project, TP		
1962		Kyoto Univ., Heliotron B	A.L. Gardner (UC Livermore Laboratory), guest staff of IPP Nagoya, QP Project (sponsor:JSPS Japan Society for the Promotion of Science) (1962.04 - 1962.06)	
1963		Osaka Univ., Cusp Plasma IPP Nagoya Univ., BSG Osaka Univ., Laser,		
1964	3 rd Geneva Conf. T-3, DC Octopole	Nagoya, Torus (Mark II) Kyoto, Heliotron C	J.M.Dawson(Princeton Univ.), theory group of IPP (Fulbright,1964.09-1965.07)	
1965	2 nd Culham Conference			Multipole(Ohkawa) Spherator(Yoshikawa)
1966	Int. Torus Symp. (PPPL)		C.K.Birdsall, (UC Berkeley) computer physics (invited by Osaka Univ.,1966) R.T. Tausig, Columbia Univ. Theory group of IPP (sponsor:NSF,1966.10-1967.11) National Science Fund	