Fiscal Year 2006
Tsuruga Summer Institute on Nuclear Energy
-Training Report-

September 2006

1. Purpose

Based on the "Energy investigate development basic project" that was formulated by Fukui government in March, 2005, not only to improve understanding about nuclear power targeting university students of Fukui, and Kansai and Chukyo areas for one of plans to promote human resources, and to train bearers of future nuclear technology, but also to set up cooperation between universities and human relationship between foreign engineers and researchers.

2. Period : September 11th (Mon)～15th (Fri), 2006

3. Participation : Total 34 students

(University of Fukui・Graduate school: 19 students, Graduate school of Osaka University: 4 students, Graduate school of Kyoto University: 1 student, Kinki University: 3 students, Graduate school of Nagoya University: 1 student, Graduate school of Kanazawa University: 3 students, Graduate school of Shizuoka University: 2 students, and Graduate school of University of Tokyo Institute of Technology: 1 student)

4. –Contents

(1) "Special Lectures" 3 items (Other students excepting participating students: about 40 students and general attendance: 180 people)

・"Nuclear Energy Development toward the Future Society" (Lecturer: Dr. J. Bouchard, Special Advisor to the Chairman and CEO of the CEA)

・"Nuclear Energy Policy and Strategy in Japan" (Lecturer: Dr. S. Machi, Commissioner of the Nuclear Energy Council)

・"History of Nuclear Public Administration in Fukui Prefecture" (Lecture: Mr. K. Kuruba, Director of Energy Research and Development Centralization Office)

(2) "English Discussion" dealing with atomic energy

(3) "Lecture" 2 items

・ "Energy Compendium" (Lecture: Dr. T. Yamamoto, Vice Professor at Graduate School of Osaka University)

・ "Aiming at the Effective Use of Uranium Resources ~Nuclear Fuel Cycle~" (Lecturer: Mr. T. Kawata Executive Officer of JAEA)

(4) "Site Tour" 5 facilities

・Nuclear power station 3 facilities: Monju, Mihama NPP, and Tsuruga No.3 & 4 NPS of JAPCO(Under Construction)

・Research Center 2 facilities: The Wakasa Wan Energy Research Center, and INSS

(5)"Exercise" 2 items

・Simulation of FBR Operation (Monju operation training simulator)

・Experience for In-Service Inspection technology (ISI)

(6) "Special Lecture" 2 items (Participation of students and general attendance: about 50 people)

・"Personnel Development of Nuclear Engineers in France"

(Lecturer: Ms. P. Romanetti, Acting Deputy Director, International Contact Person of INSTN, CEA)

・"GEN- 4: Technological Developments for Sodium, Gas, Lead, Molten Salt Cooled Reactors"

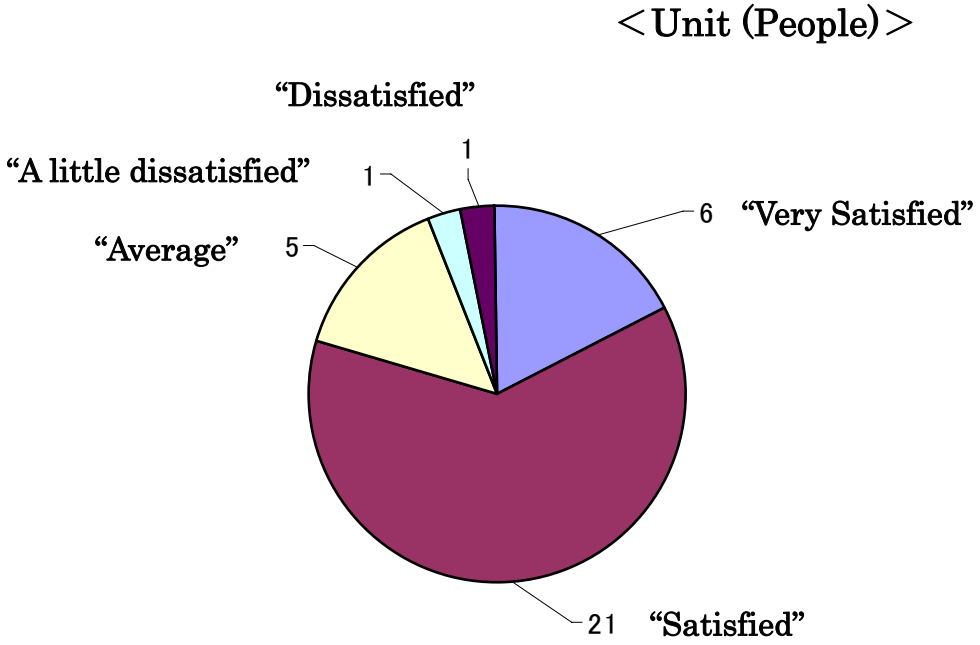
(Lecturer: Dr. C. Latge, Research Director, Cadarache Research Center, CEA)

(7) "Interactive Events" 3 items

5. Total Unification

The bottom figure shows result of questionnaire about total evaluation of this event. 80% out of all students express "Satisfaction", in putting together "very satisfied" and "satisfied". As a result, this program is recognized as a "very high satisfaction rating training" by students.

However, some students have express concern about overcrowded scheduling. We will consequently address the problem in the future.

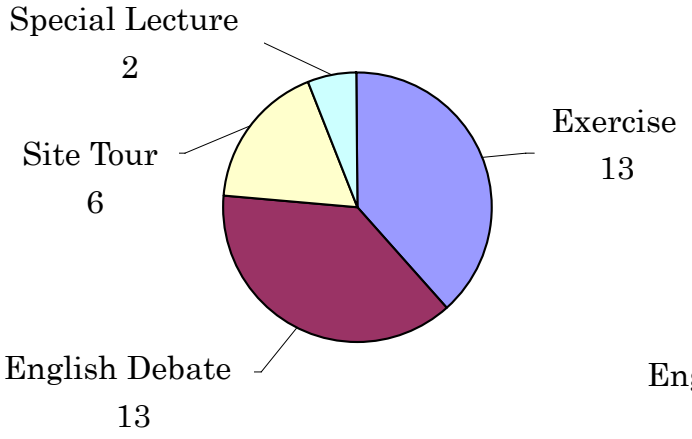


During this program, more than one student out of 3 state that “English Debate” was exciting in view to promote a status international nuclear specialist and researcher, and a lot of students relate “We recognized importance of communication skills in English” item as “the most impressive” and “the most beneficiate” one. Thus it appears that this item is worth being kept in future

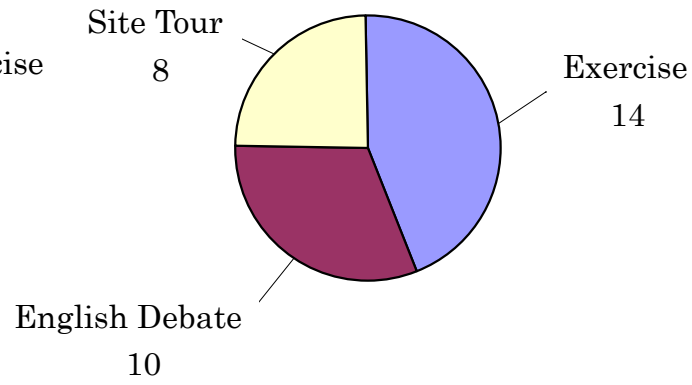
Besides this, almost one out of 2 students expressed interest for the “Exercise” item, and one out of 4 for the “Site Tour” one; this kind of experience is therefore appraised as a high value complement to the current academic cursus.

It is particularly true in the Reinan area centered on Tsuruga, where many operating nuclear installations are operated.

＜Unit (People)＞



【Your most impressive contents?】



【Your most valuable contents?】

Detail of operational contents and effect of questionnaire survey is analyzed hereafter (“Individual operational contents and result of inquiry survey”)

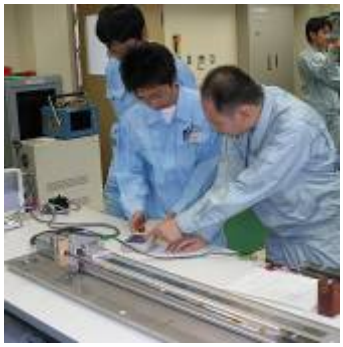
6. Training Scenery

【Special lecture (From the left; Dr. Bouchard, Dr. Machi, and Mr. Kuruba】

【Aspect of special lecture】

【English discussion session (discussion and rollout)】

【Lecture Course (left: Dr. Yamamoto and Dr. Kawata)】

【Training (left: simulator, right: ISI)】


【Special lecture (left: Ms. Romanetti, right: Dr. Latge)】


【Site Tours (left: The Wakasa wan Energy Research Center, right: Monju)】


【Interactive events】

【Commemorative group picture after completion ceremony】

－Individual operational contents and result of inquiry survey－

To distinguish and to represent the overview of each items and the effect of the questionnaire, a survey for every each items presented hereafter

1. Special Lectures

①Special lecture－1 "Nuclear Energy Development toward the Future Society"

Talk on the worldwide movement about nuclear energy, including energy consumption facts, the role of the nuclear energy in the modern society. and the place of the next generation type nuclear reactor development in the future society.

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	6 people	21 people	7 people	None	None
Benefits	6 people	17 people	9 people	2 people	None

②Special lecture-2 "Nuclear Energy Policy and strategy in Japan ~Nuclear Energy in Asia~"

Talk on the starting nuclear energy renaissance, expectation and evaluation-in the light of the always expanding energy consumption, in particular in Asia ; nuclear power policy outline in our country and enhancement of the nuclear power foundational;－

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	9 people	14 people	10 people	1 person	None
Benefits	5 people	17 people	9 people	2 people	1 person

③Special lecture-3 "History of Nuclear Public Administration in Fukui Prefecture"

Detail of the nuclear power locations in Fukui-prefecture and historical course of nuclear Public Administration in Fukui-prefecture through some nuclear accidents; in addition, energy research and development planned by

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	4 people	16 people	12 people	2 people	None
Benefits	3 people	11 people	8 people	1 person	1 person

2. Courses & Special Courses

①Course-1 "Energy Compendium"

Talk on energy consumption and security in our country and on the growing energy needs in the developing countries; problem of the depleting energy resources; correlation between the global warming phenomenon and the energy consumption;

current status of hydrogen energy. Including questions.

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	14 people	14 people	6 people	None	None
Benefits	7 people	17 people	10 people	None	None

②Couse-2 " Dealing with the Effective Use of Uranium Resources ~Nuclear Fuel Cycle~"

Talk of the beginning of the nuclear power, its peaceful utilization development in our country, the significance of nuclear fuel cycle in the modern times, and about the necessity of achieving a complete recycle by FBR in the future.

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	4 people	17 people	11 people	2 people	None
Benefits	13 people	15 people	5 people	1 person	None

③Special lecture-1 " Personnel Development of Nuclear Engineers in France"

Talk on education system, establishment and contents, etc. for nuclear energy engineers in France, largest country for the development of the nuclear power in the world.

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	5 people	14 people	13 people	1 person	1 person
Benefits	5 people	10 people	14 people	4 people	1 person

④Special lecture-2 "Development project of innovative Reactors (GEN-IV)" ～Latest Trend～

Talk on nuclear energy policy in France, mainly on the next generation SFR (Sodium Cooled Fast Reactor) and GCFR (Gas Cooled Fast Reactor) proposed by France in the framework of the worldwide "GEN－4 project";

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	9 people	20 people	4 people	None	None
Benefits	8 people	16 people	8 people	1 person	None

3. English Discussion Session

After choosing between the four proposed themes hereafter, discussions and verbal presentation in English in each group.

①Global Warming Problem and Devoting of Nuclear Energy

②Safety of Nuclear Energy

③Nuclear Fuel cycle

④Acceptance of Nuclear Energy

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	7 people	14 people	10 people	3 people	None
Benefits	9 people	19 people	5 people	1 person	None

4. Exercise

①Training-1 "Operation of Fast Reactor"

Experiencing operations in "Monju", like critical operations and normal start-up operation for power uprising, pump trip, operation in abnormal circumstances like sodium leakage, confirmation of the nuclear reactor protection using operation Training simulator system.

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	20 people	11 people	1 person	1 person	1 person

②Training－2 "Experience of ISI Devices Handling of Monju"

Experience in handling the nondestructive inspection systems: "Eddy Current Testing System" for Steam Generator Tube (SG-ECT) and "Inspection System Surroundings Reactor Vessel", specific advanced developments for "Monju".

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	8 people	21 people	4 people	1 person	None

5. Site Tours

①Prototype Fast-breeder Reactor "Monju"

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	8 people	17 people	8 people	1 person	None

②Mihama Nuclear Power plant (Kansai Electric Power Co., Inc.)

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	3 people	13 people	15 people	3 people	None

③Construction Site of Tsuruga No.3 and 4 NPS (Japan Atomic Power Company)

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"

Contents	6 people	14 people	13 people	1 person	None

④The Wakasa Wan Energy Research Center

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	3 people	7 people	17 people	7 people	None

⑤Institute of Nuclear Safety System Incorporated (INSS)

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
Contents	4 people	12 people	14 people	3 people	1 person

6. Collaboration Events

①Beginner's French Lessons (Wine Quiz)

	"Very satisfied"	"Satisfied"	"Average"	"A little dissatisfied"	"Dissatisfied"
contents	7 people	13 people	9 people	5 people	None

7. Comments and Opinions from students (Extract)

(1)Special Lecture

◇I understood actual and future states of nuclear energy after listening these lectures. I learned how difficult it is to discuss and to express my own opinion in English.

◇I was enjoyed by the whole set of lectures. It is meaningful and challenging for me to discuss in English and I enjoy it. The only two negative points were for me that I had already known about SEM and that explanations in facility tours was not easy to catch.

◇I could have chance to listen about energy situation in China. It was very useful for me.

◇I had usually learned about nuclear energy, so contents of special lecture were a little utter platitudes for me. The discussion was not helpful to study of nuclear power because our difficulties in English; in addition, it was not helpful to study in English because it was very short time. However, it was very good experience for me.

(2)English Discussion Session

◇It was good to give the students the possibility to discuss in English. I was satisfied to be able to express myself.

◇It became a harvest of the goodness to have so many opportunities to speak in English. I was an inexpert speaker, so I rehashed my opinion number of times;

however, I could acquaint my opinion and have good experience.

◇I felt fulfilled in reasonable schedule density. For me it was a good experience because of discussion in English. I recommend to keep continue this discussion in English in the future.

◇It was a good experience to speak with foreign people because I had not have enough chance before. However, I could not express my opinion or question enough because I did not have enough English ability. I restudy English again on this occasion, and I want to be able to speak with foreign people of many countries.

◇I realized to be not able to speak in English entirely. I reconfirmed that I have to study English more.

◇I thought we need the advance preparation to carry out discussion and presentation in English. Furthermore, we also need previous knowledge like this theme. "It is enough in easy English" seems not a relevant advice.

◇It is very difficult to discuss in English because I gave English a wide berth until now.

(3)Special Courses

◇"Energy outline" by Dr. Yamamoto was a coherent lecture sharply pointing out contradiction of hydrogen energy and I was very impressed by the relationship diagram between longevity and energy. I also understood how nuclear energy is important, especially in Japan and about the uranium resource recycling. Facility tour in "Monju" is a valuable opportunity for me because I actually went into the containment in Monju and received an explanation about it. In addition, I also very well experienced the visit of the nuclear power plants in Japan Atomic Power Co. and Kansai Electric Power Co.

(4)Site Tours

◇I could not understand what would be the use for me in the future of these facility tours. However, it is beneficial for me that I could talk with field engineer about cause of sodium leakage.

◇It was a very good experience for me to go into the containment in Monju.

◇I thought this program has a very tight time schedule, but was very good and productive.

◇About facility tours: I wanted to inspect where the pipe crashing accident occurred following a decrease thickness of secondary cooling pipe in Mihama nuclear power plant. I went to the place of the accident and was also given new information about Monju leakage accident in 1991. In addition, I had never visited in Japan Atomic Power Co., so it was a valuable experience to visit it.

◇I previously assumed greater dimensions for the equipments I visited for the first time in my life. If I am given the opportunity to visit others, I want to compare

them.

◇This program was very fulfilling and it was very easy understandable. However, I was tired because the schedule was a little tight. I recommend to have a less tight schedule.

◇I did not have enough time on the schedule. I paid visit to facilities related to nuclear power many times, so it was not relevant for me; however, I back the opinion that to visit so many facilities in half a day was too much for the beginners.

◇It was good that I could visit and observe a lot of facilities.

(5)Exercises

①Simulator exercise

◇I thought great that the simulator is able to reproduce the details of accidents.

◇I could have very substantial time because I could experience that putting up work of control rods of FBR and electric transmission. Moreover, I could experience condition of operation room as the leakage accident occurred in Monju.

◇I very well understood the mechanisms of Monju. The system was covering both human and automatism mistakes as well, trying adjusting the error to 0 as much as possible.

◇The explanation was very easy to understand, so I understood what we did and how to stop the reactor.

◇I reconfirmed that the operators could completely work actual operation after hard training.

②Exercise for ISI

◇To tell the truth, I did not think that inspection machine is still in a developmental stage. I appreciate that I could observe meaningful work. I understood that it spends so much time for ISI training and mechanism development.

◇I thought first explanation is a little difficult, but I understood how to investigate very well after training. Especially I was interested to operate inspection machine by simulator. I was also interesting in investigation experiment of electric heater.

◇I recognized high quality of technique which is applied to the nuclear reactor. I was very interesting that machine of investigation for reactor vessel was carried out with many kinds of trial and being able most to complete and to observe actually.

◇It was a very variable experience, but I did not have enough time.

◇I was interesting to learn about how to find defect of a steam pipe by using one part of equipment and to understand circumstances of actual maintenance.

(6)Special Lecture

◇I could have a great experience as it was the first time to have lecture in English. I would love to participate if there is a next time.

◇I could study nuclear energy of France. Special lecture was splendid as it was new for me.

◇Though I couldn't grasp all of the French education system, I suppose some parts could be worth to be introduced in the Japanese one.

◇I had a great experience to see both the research at INSS and the facility. Those were beneficial for me to know the French education in the nuclear field and efforts for the plant technologies in Gen-IV.

◇I tried to comprehend by myself but it was so hard to catch the lecture spoken in English.

◇They should talk about the nuclear education to the elderly, not for students. Though it was a good practice for listening English spoken by C. Latge

◇It was great experience to have special lecture by French instructor which we can not usually have.

(7)Collaboration Event

◇It was so enjoyable though I couldn't understand French….

◇It was a great fun to participate in the "wine tasting" in the French Lecture.

◇I could spend quality time, as we had enjoyable plan.

◇As I have no background I couldn't understand what they had talked. However, the collaboration event was so wonderful, and I had a great experience, except French lessons, it was too difficult to read.

◇I would have learned other phrase, not only for "wine testing".

◇It has been great visiting some actual facilities, Monju, Mihama power plant, and construction field of JAPCO. It was easily comprehensible as while looking the real. As wine tasting, it was difficult though I had a pleasant taste for the meal. So, I had fulfilling life through a day, but I am exhausted.