



TRAINING AND DIALOGUE PROGRAMS

GENERAL INFORMATION ON

Thermal Power Engineering Course for Gas Turbine and Coal Fired Steam Turbine

– Improvement of Maintenance Skill for Stable Power Supply –

集団研修「ガスタービン・石炭火力発電
- 安定電力供給のためのメンテナンス技術向上 -」
JFY 2011

<Type: Trainers Training / 類型:人材育成普及型 >

NO. J11-00617/ ID. 1180578

From April 2011 to September 2011

Phases in Japan: From May 17, 2011 to June 29, 2011

This information pertains to one of the Training and Dialogue Programs of the Japan International Cooperation Agency (JICA), which shall be implemented as part of the Official Development Assistance of the Government of Japan based on bilateral agreement between both Governments.

Executive Summary of the General Information

Title	Thermal Power Engineering Course for Gas Turbine and Coal Fired Steam Turbine – Improvement of Maintenance Skill for Stable Power Supply – (J11-00617)	
Program Objective	Knowledge and skills for management, operations, maintenance and environmental conservation are acquired and will be shared and promoted among his/her organization.	
Period	From May 17, 2011 to June 29, 2011 (Phases in Japan)	
Target Organization	Operational management/ maintenance section at a gas turbine/coal fired steam turbine power plant	
Target Countries	Bangladesh (2), Bosnia/Herzegovina (1), Botswana (2), Egypt (1), Indonesia (1), Iraq (2), Mongolia (1), Syria (1), Tanzania (1) and Uzbekistan (1)	
Total No. of Participants	Twelve (12) participants	
Nominee Qualifications	<p>Essential Qualifications;</p> <p>1) Current Duties: be senior mechanical engineers and currently involved in the operational management and maintenance of gas turbine power plants.</p> <p>2) Academic Background: be university/college graduates or with equivalent academic backgrounds</p> <p>3) Language: have a sufficient command of English for listening to the lectures, reading the textbooks, discussing and writing in the above field</p> <p>4) Health: be in good health, both physically and mentally, to undergo the course of training</p> <p>5) Must not be serving any form of military service</p>	
Required Documents & Deadline	Application Form	March 31, 2011
	Job / Country Report Issue Analysis Sheet	
	Assignments for the Accepted Participants	Preparation for Presentation of Job /Country Report (Making the presentation material using Microsoft Power Point based on the Job/Country Report which is submitted at the application) Submission Dead Line : Before/On arriving Japan
Notice of Acceptance	April 8, 2011	
JICA Center in Charge	JICA Chugoku International Center Ms. Eriko KOBAYASHI (cicttp@jica.go.jp)	

I. Concept

Background

Stable electric power supplies are an essential condition for the industrial and economic advancement of developing countries and for improving the standard of living of their populations. With electricity consumption still increasing, it is necessary to create an infrastructure capable of coping with the growing demand for electric power in order for developing countries' economies to grow, and living standards to improve, in a sustainable manner.

In this connection, this course was launched in 1963 and has been renewed several times. From 2007, this course was revised to be a trainers training and added dissemination stage was added as a finalization phase in participants' country after the core stage in Japan.

For what?

This program aims to provide knowledge and skills for management, operations, maintenance and environmental conservation which will be shared and promoted among his/her organizations.

For whom?

This program is offered to engineers who are in charge of management, operation and maintenance at gas turbine / coal fired steam turbine power plant.

How?

This program is implemented by Japan Electric Power Information Center, Inc. (JEPIC) and Power Engineering & Training Services, Inc. (PET).

Japan Electric Power Information Center, Inc. (JEPIC) was established as an association of Japan's major electric power companies. The purpose of the Center is to facilitate information exchange on activities of electric utilities with foreign counterparts and also to promote technical cooperation with developing countries.

Power Engineering & Training Services Inc. (PET) was established in April 1, 2002 as an affiliate company of the Chugoku Electric Power Co., Inc. (CEPCO). CEPCO, one of Japan's ten regional electric power companies, supplies reliable and stable electricity to meet the demands of its more than 5.2 million customers in Chugoku, the south-west region of Japan's main island.

II. Description

1. Title (J-No.):

Thermal Power Engineering Course for Gas Turbine and Coal Fired Steam Turbine – Improvement of Maintenance Skill for Stable Power Supply – (J11-00617)

2. Period of program:

Duration of whole program:	April 2011 to September 2011
Preliminary Phase: (in a participant's home country)	April 2011 to May 2011
Core Phase in Japan:	May 17 2011 to June 29, 2011
Finalization Phase: (in a participant's home country)	July 2011 to September 2011

3. Target Regions or Countries:

Bangladesh (2), Bosnia/Herzegovina (1), Botswana (2), Egypt (1), Indonesia (1), Iraq (2), Mongolia (1), Syria (1), Tanzania (1) and Uzbekistan (1)

4. Eligible / Target Organization:

Operational management/ maintenance section at a gas turbine/coal fired steam turbine power plant

5. Total Number of Participants: 12 participants

6. Language to be used in this program: English

7. Program Objective:

Knowledge and skills for management, operation, maintenance and environmental conservation are acquired and will be shared and promoted among his/her organization.

8. Overall Goal:

Stable power supply will be achieved with appropriate measures for environmental conservation, through the improved operation and maintenance program at his/ her organization.

9. Expected Outputs and Contents:

In this program, participants are expected to achieve these six (6) outputs through three (3) phases;

- (1) Participants will make a job report of their organizations by the end of preliminary phase.
- (2) Participants will be able to analyze and assess similarities and/or

- differences between electric power industry in Japan and in their country.
- (3) Participants will be able to analyze knowledge and information on effective techniques of operation, maintenance and troubleshooting, advanced technologies for environmental conservation for thermal power plants.
 - (4) Participants will make an action plan on how to share and utilize the skills and knowledge gained from the training program in Japan.
 - (5) The action plans made by the participants will be shared in their organizations, after returning to the respective home country.
 - (6) The action plans will be discussed and promoted in their organizations.

Details on each phase are given below:

Preliminary Phase in a participant's home country (April 2011 to May 2011) <i>Participating organizations make required preparation for the Program in the respective country.</i>	
Expected Output	Activities
Job/Country Report	Formulation and submission of Job/Country Report

Core Phase in Japan (May 17 to June 29, 2011) <i>Participants dispatched by the organizations attend the Program implemented in Japan. For 3. (2), (3) and (4), participants will be divided into 2 groups (gas turbine/coal fired steam turbine) for some programs.</i>			
Units	Subjects	Aims	Time Allocation (days)
1. Program Orientation		To understand overall course objectives, goals, flows, and contents of each unit/subject.	0.5
2. Presentation of Job/Country Reports		To clarify the problems and difficulties of each participant's country. To understand the problems/subjects and circumstances in the power sector of other countries.	1.5
3. Technical Training			
(1) Outline of the Electric Power Industry in Japan	-Outline of the Electric Power Industry in Japan - Total Quality Management (TQM) activities - Policy for Saving Energy and its promotion - Visit Electric Power Historical Museum	To enable the participants to gain an understanding of the organization and legal system regulating Japan's electric utility industry, as well as an understanding of electric power supply and power source development plans.	2.5

(2)Acquisition of operation and management techniques for thermal power plants	<ul style="list-style-type: none"> · Organizational structure of an electric power company · Comprehensive management of affiliated companies · Training system and method 	As an introduction to on-site training, to explain about management techniques common to individual power plants.	0.5
	<ul style="list-style-type: none"> · Remaining life assessment and life extension measures 	To assess remaining life of machine and equipment and deepen understanding of sustaining and extending their life.	1.0
	<ul style="list-style-type: none"> · Safety measures 	To introduce various methods of specific safety based on the actual work condition in Japan and in the Chugoku Electric Power Company., Inc. After the lecture, facility observation is to be conducted in order to deepen understanding.	0.5
	<ul style="list-style-type: none"> · Water quality management · Performance management 	To introduce check items such as boiler water and generating efficiency and their sampling methods.	1.0
	<ul style="list-style-type: none"> · Facilities training for a coal-fired power plant · Facilities training for a gas-combined cycle power plant · Operation management 	To learn about the rationale for setting control values and responses to abnormal condition for items related to facilities maintenance. Operating methods of various environmental facilities are also to be learnt.	ST:2.0 GT:1.5
	<ul style="list-style-type: none"> · Observation of power plants 	<ul style="list-style-type: none"> · Misumi Power Plant (Supercritical pressure power generating facilities) 	1.0
(3)Acquisition of maintenance techniques for a thermal power plant	<ul style="list-style-type: none"> · Periodic and daily inspections 	To introduce cycle, items, contents of periodic inspection and their reasons as the base for the maintenance, and to learn them through comparison with those of participants' countries.	ST: GT: 0.5
	<ul style="list-style-type: none"> · Cases of troubleshooting and remedies 	To introduce actual cases of problems and remedies as a reference for construction and maintenance in participants' countries.	ST: GT: 1.0
	<ul style="list-style-type: none"> · PT (Penetrate Testing) · MT (Magnetic Testing) 	As non-destructive inspection techniques, to learn the basic knowledge and to acquire skills of PT (penetrate testing) and MT (magnetic testing) through practice.	1.5
	<ul style="list-style-type: none"> · Basic knowledge of vibration · Balancing techniques 	As vibration techniques, to learn the basic knowledge and to acquire skills of balancing through practice.	4.0
(4)Acquisition of manufacturing techniques for a thermal power plant	<ul style="list-style-type: none"> · Observation of power plant manufacturing plant · Lecture on new manufacturing technology 	To improve maintenance and operation techniques by obtaining architecture and technical skills of plant facilities.	ST: GT: 2.0

(5)Acquisition of environmental conservation technologies for thermal power plants	<ul style="list-style-type: none"> · Environmental situation and efforts in Japan · Environmental measures taken by a power company · Legal structure for environment · Facilities for environmental protection · Observation of a Waste Disposal Plant in UBE 	To learn what environmental measures have been taken by the national government and by a power company and to increase awareness about environmental conservation.	2.0
4. Preparation and Presentation of Action Plan		At the end of this program, participants will make an action plan on how to share and promote skills and knowledge gained from this program. Through this program, participants are expected not only to understand the experiences of Japan but also to implement the skills and knowledge gained in Japan after returning home.	3.0

The curriculum may be subject to minor change.

ST: Coal Fired Steam Turbine, GT: Gas Turbine

*CEPCO has one (1) combined cycle power station in Yanai city, which will be used as an example of gas turbine power station during this course.

<p>Finalization Phase in a participant's home country (July 2011 to September 2011) <i>Participating organizations produce final outputs by making use of results brought back by participants. This phase marks the end of the Program.</i></p>	
Expected Output	Activities
To implement an action plan (progress report)	Participants are to implement the relevant activities based on the action plan which was made during the program. Also, participants must submit the progress report to JICA within 3 months (by the end of September 2011).

III. Conditions and Procedures for Application

1. Expectations for the Participating Organizations:

- (1) This program is designed primarily for organizations that intend to address specific issues or problems identified in their operation. Participating organizations are expected to use this program for those specific purposes.
- (2) This program is enriched with contents and facilitation schemes specially developed in collaboration with relevant prominent organizations in Japan, which enables this program to meet specific requirements of applying organizations and effectively facilitate them toward solutions for the issues and problems.
- (3) As this program is designed to facilitate organizations to come up with concrete solutions for their issues, participating organizations are expected to make due preparation before dispatching their participants to Japan by carrying out the activities of the Preliminary Phase described in section -9 .
- (4) Participating organizations are also expected to make the best use of the results achieved by their participants in Japan by carrying out the activities of the Finalization Phase described in section -9.

2. Nominee Qualifications:

Applying Organizations are expected to select nominees who meet the following qualifications.

(1) Essential Qualifications

- 1) Those nominated by their government in accordance with the proper application procedure;
- 2) Those who are senior mechanical engineers and currently involved in the operational management and maintenance of gas turbine power plants.
- 3) Those who are university/college graduates or with equivalent academic backgrounds;
- 4) Those who have a sufficient command of English for listening to the lectures, reading the textbooks, discussing and writing in the above field;
- 5) Those who are in good health, both mentally and physically; and
Pregnancy : Pregnant participants are strictly requested to complete the required procedures before departure in order to minimize the risk for their health. The procedures include letter of the participant's consent to bear economic and physical risks letter of consent from

the participant's supervisor letter of consent from your Embassy in Japan, medical certificate. Please ask the Staffs in JICA office for the details.

6) Those who are not serving in the military.

(2) Recommendable Qualifications

- 1) Age: Under fifty (50) in principal
- 2) Those who have practical job experiences of approximately three (3) years in the above field;

3. Required Documents for Application

(1) Application Form: The Application Form is available at the respective country's JICA office or the Embassy of Japan.

(2) Job/Country Report: These documents will be used both during selection process and the training period. The forms are attached to this General Information as ANNEX. Please fill out and submit them together with the Application Form mentioned above.

Job/Country Report should be discussed among and authorized by the concerned officials in your organization prior to the submission, in order for the participant to prepare a feasible action plan as an output of the training program based on these documents.

4. Procedure for Application and Selection :

(1) Submitting the Application Documents:

Closing date for application to the JICA Center in JAPAN: **March 31, 2011.**

Note: Please confirm the closing date set by the respective country's JICA office or Embassy of Japan of your country to meet the final date in Japan.

(2) Selection:

After receiving the document(s) through due administrative procedures in the respective government, the respective country's JICA office (or Japanese Embassy) shall conduct screenings, and send the documents to the JICA Center in charge in Japan, which organizes this program. Selection shall be made by the JICA Center in consultation with the organizations concerned in Japan based on submitted documents according to qualifications. **The organization with intention to utilize the opportunity of this program will be highly valued in the selection.**

(3) Notice of Acceptance:

Notification of results shall be made by the respective country's JICA

office (or Embassy of Japan) to the respective Government by **not later than April 8, 2011**.

5. Conditions for Attendance:

- (1) to observe the schedule of the program,
- (2) not to change the program subjects or extend the period of stay in Japan,
- (3) not to bring any members of their family,
- (4) to return to their home countries at the end of the program in Japan according to the travel schedule designated by JICA,
- (5) to refrain from engaging in political activities, or any form of employment for profit or gain,
- (6) to observe the rules and regulations of their place of accommodation and not to change the accommodation designated by JICA, and
- (7) to participate the whole program including a preparatory phase prior to the program in Japan. Applying organizations, after receiving notice of acceptance for their nominees, are expected to carry out the actions described in section -9 and section -4.

IV. Administrative Arrangements

1. Organizer:

(1) **Name:** JICA Chugoku (JICA Chugoku International Center)

"Chugoku" is the name of the region in western part of Japan's main island. It is consisted of 5 prefectures and JICA Chugoku is in charge of the 5 prefectures

(2) **Contact:** Ms. Eriko KOBAYASHI (cicttp@jica.go.jp)

2. Implementing Partner:

(1) **Name:** Japan Electric Power Information Center, Inc. (JEPIC),
Power Engineering & Training Services, Inc. (PET).

(2) **URL:** <http://www.jepic.or.jp/english/index.html>

URL: http://www.energia-pet.co.jp/pet_index_e.htm

3. Travel to Japan:

(1) **Air Ticket:** The cost of a round-trip ticket between an international airport designated by JICA and Japan will be borne by JICA.

(2) **Travel Insurance:** Term of Insurance: From arrival to departure in Japan.
*the traveling time outside Japan shall not be covered.

4. Accommodation in Japan:

JICA will arrange the following accommodations for the participants in Japan ;

At HIROSHIMA

JICA Chugoku International Center (JICA CHUGOKU, CIC)

Address: 3-3-1 Kagamiyama, Higashihiroshima, Hiroshima
739-0046 Japan

TEL: 81-82-421-5800 FAX: 81-82-420-8082

(where "81" is the country code for Japan, and "82" is the local area code)

At UBE (where most of the technical training will be organized)

International Hotel UBE

Address: 1-7-1 Shima, Ube, Yamaguchi
755-0047 Japan

TEL: 81-836-32-2323 FAX: 81-836-32-2316

(where "81" is the country code for Japan, and "836" is the local area code)

If there is no vacancy at the above accommodations, we arrange alternative

accommodations for the participants.

5. Expenses:

The following expenses will be provided for the participants by JICA:

- (1) Allowances for accommodation, living expenses, outfit, and shipping
- (2) Expenses for study tours (basically in the form of train tickets.
- (3) Free medical care for participants who become ill after arriving in Japan (costs related to pre-existing illness, pregnancy, or dental treatment are not included)
- (4) Expenses for program implementation, including materials
For more details, please see p. 9-16 of the brochure for participants titled "KENSU-IN GUIDE BOOK," which will be given to the selected participants before (or at the time of) the pre-departure orientation.

6. Pre-departure Orientation:

A pre-departure orientation will be held at the respective country's JICA office (or Japanese Embassy), to provide participants with details on travel to Japan, conditions of the training program, and other matters.

V. Other Information

1. Presentation of Job/Country Report

Participants are scheduled to make a presentation based on the Job/Country Report (which are supposed to be submitted by March 31) at the beginning of the training program. The main purpose of the presentation is to inform the Japanese lecturers of your needs and issues, which could be the basic information for the training. Therefore, the submission and presentation of these documents are regarded as the most important for inception of the training program.

2. Other materials to supplement the reports

It would be appreciated if participants could bring materials, in addition to the reports, that show the situation of thermal electric power engineering in their countries such as annual report. These are expected to be used as materials for presentation and discussions during the course period.

3. Action Plan and Progress Report

Participants are supposed to make a presentation at the end of the training program based on an action plan which describes how to share and promote the skills and knowledge gained from the training program in Japan. Furthermore, the program requires the participants to submit the progress report within 3 months after the program in Japan, which shows the progress of your action plan at your home country.

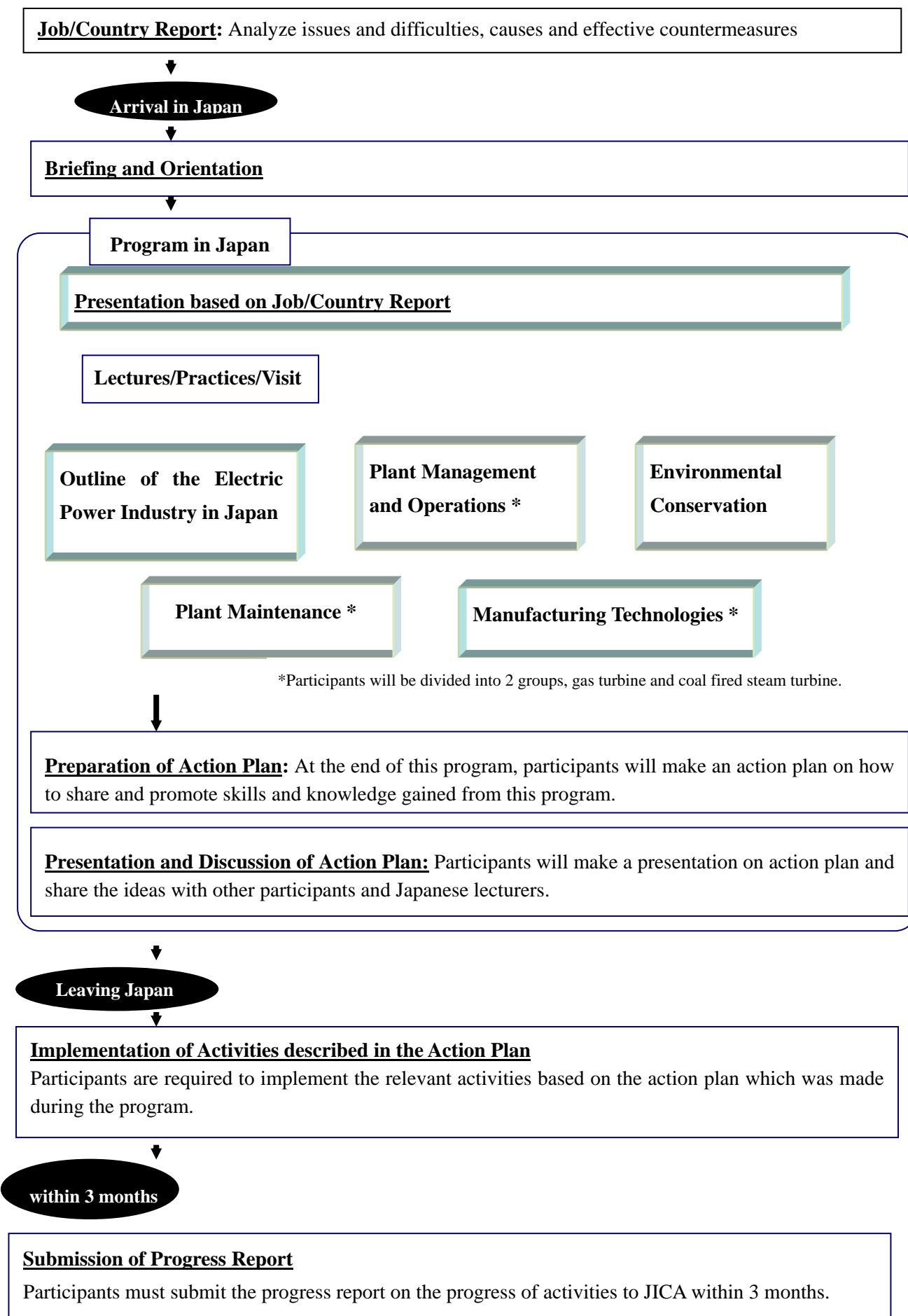
Tentative Schedule for the Training Program
"Thermal Power Engineering Course for Gas Turbine and Coal Fired Steam Turbine 2011"

Date	Day	Time	Unit	Coal Fired Steam Turbine Course				Gas Turbine Course			
				Subject	Institute	Place	Hotel	Subject	Institute	Place	Hotel
5/17	Tue		Arrival in Japan							HIP	Same as Coal Fired Steam Turbine Course
5/18	Wed		Briefing				JICA	Higashi-Hiroshima		HIP	
5/19	Thu		Orientation				JICA	Higashi-Hiroshima		HIP	
5/20	Fri		Orientation				JICA	Higashi-Hiroshima		HIP	
5/21	Sat									HIP	
5/22	Sun		Travel (Higashi-Hiroshima Ube)							HIP	
5/23	Mon	AM	Opening Ceremony, Orientation by PET				PET	Ube		Intl Hotel Ube	
		PM	Presentation of Job/Country Report								
5/24	Tue	AM	Presentation of Job/Country Report				PET	Ube		Intl Hotel Ube	
		PM	Presentation of Job/Country Report								
5/25	Wed	AM	Travel (Ube Tokyo)				JEPIC	Tokyo		Tokyo	
		PM	Visit Electric Power Historical Museum								
5/26	Thu	AM	Outline of the Electric Power Industry in Japan	·Outline of the Electric Power Industry in Japan		JEPIC	Tokyo		Tokyo		
		PM		·Promotion of Energy Conservation in Japan							
5/27	Fri	AM	Outline of the Electric Power Industry in Japan	·Total Quality Management Activities in Japan		JEPIC	Tokyo		Tokyo		
		PM		·Total Quality Management Activities in Japan							
5/28	Sat		Report making							Tokyo	
5/29	Sun		Travel (Tokyo Ube)							Intl Hotel Ube	
5/30	Mon	AM	Operation and Management Technology	·Organization of Thermal Power Department ·General Management of Associated Companies ·Training System/Method		PET	Ube		Intl Hotel Ube		
		PM		·Environmental Efforts and Situation in Japan ·Legal Structure for Environment							
5/31	Tue	AM	Environmental Conservation Technology	·Air (De-Nox, De-Sox, ESP)		PET	Ube		Intl Hotel Ube		
		PM		·Water Quality, Noise, Waste Material							
6/1	Wed	AM	Environmental Conservation Technology	*Observation of Environmental Preservation Center		PET	Ube		Intl Hotel Ube		
		PM		·Operation and Management Technology ·Water Quality Control							
6/2	Thu	AM	Operation and Management Technology	·Performance Management		PET	Ube		Intl Hotel Ube		
		PM		Maintenance Technology Practice ·Non-Destructive Testing							
6/3	Fri	AM	Maintenance Technology Practice	·Non-Destructive Testing		PET	Ube		Intl Hotel Ube		
6/3	Fri	PM		·Non-Destructive Testing							
6/4	Sat									Intl Hotel Ube	
6/5	Sun									Intl Hotel Ube	
6/6	Mon	AM		·Remaining Life Assessment and Life Extension Measures		PET	Ube		Intl Hotel Ube		
		PM		·Safety Procedures							
6/7	Tue	AM	Operation and Management Technology	·Shin-Onoda Thermal Power Plant Facility Training		PET	Shin-Onoda PS		Intl Hotel Ube		
		PM		·Shin-Onoda Thermal Power Plant Facility Training							
6/8	Wed	AM	Operation and Management Technology	·Shin-Onoda Thermal Power Plant Facility Training		PET	Shin-Onoda PS		Intl Hotel Ube		
		PM		·Shin-Onoda Thermal Power Plant Facility Training							
6/9	Thu	AM	Operation and Management Technology	·Operation Management		PET	Ube		Intl Hotel Ube		
		PM		Maintenance Technology Practice ·Daily/Periodical Inspections							
6/10	Fri	AM	Maintenance Technology Practice	·Daily/Periodical Inspections		PET	Ube		Intl Hotel Ube		
		PM		·Troubleshooting Examples							
6/11	Sat									Intl Hotel Ube	
6/12	Sun									Intl Hotel Ube	
6/13	Mon	AM		·Basics of Vibration		PET	Ube		Intl Hotel Ube		

Date	Day	Time	Unit	Coal Fired Steam Turbine Course				Gas Turbine Course						
				Subject	Institute	Place	Hotel	Subject	Institute	Place	Hotel			
6/14	Tue	AM PM	Maintenance Technology Practice	Basics of Vibration	PET	Ube	Intl Hotel Ube	Same as Coal Fired Steam Turbine Course						
6/15	Wed	AM PM		Basics of Vibration	PET	Ube	Intl Hotel Ube							
6/16	Thu	AM PM		Basics of Vibration	PET	Ube	Intl Hotel Ube							
6/17	Fri	AM PM	Summary	Questions and Answers Comments on Draft Action Plan	JICA/JEP IC/PET	Ube	Intl Hotel Ube							
6/18	Sat		Travel (Ube Nagasaki) by JR						JR Kyushu Hotel Nagasaki	Travel (Ube Takasago) by JR				Kakogawa Plaza Hotel
6/19	Sun								JR Kyushu Hotel Nagasaki					Kakogawa Plaza Hotel
6/20	Mon	AM PM	Manufacturing Technology	Steam Turbine Production Technology *Observation of Mitsubishi Heavy Industries, Nagasaki/Lecture	MHI, Nagasaki	Nagasaki	JR Kyushu Hotel Nagasaki	Gas Turbine Production Technology *Observation of Mitsubishi Heavy Industries, Takasago/Lecture	MHI, Takasago	Takasago	Kakogawa Plaza Hotel			
6/21	Tue	AM PM	Manufacturing Technology	Steam Turbine Production Technology *Observation of Mitsubishi Heavy Industries, Nagasaki/Lecture	MHI, Nagasaki	Nagasaki	JR Kyushu Hotel Nagasaki	Gas Turbine Production Technology *Observation of Mitsubishi Heavy Industries, Takasago/Lecture	MHI, Takasago	Takasago	Kakogawa Plaza Hotel			
6/22	Wed		Travel (Nagasaki Higashi-Hiroshima) by JR						HIP	Travel (Kakogawa Higashi-Hiroshima) by JR				HIP
6/23	Thu	AM PM	Operation and Management Technology	*Observation of Supercritical Steam Power Plant	Misumi PS	Misumi	HIP	Same as Coal Fired Steam Turbine Course						
6/24	Fri	AM PM	Summary	Preparation of Action Plan	PET JICA	Higashi- Hiroshima	HIP							
6/25	Sat												HIP	
6/26	Sun												HIP	
6/27	Mon	AM PM	Conclusion	Presentation of Action Plan	JICA/JEP IC/PET	Ube	HIP							
		AM		Evaluation Meeting/ Closing Ceremony	JICA/JEP IC/PET	Ube	HIP							
6/28	Tue	PM	Preparation for Departure						HIP					
6/29	Wed		Travel (Hiroshima Tokyo), Leave Japan											

HIP: Hiroshima International Plaza (JICA Chugoku)

Flow of the program



JOB REPORT (Part-1)

All applicants must submit the Job Report along with the application form when applying for the program. This document shall be used to select applicants in a series of screening procedures. Please make sure that the documents are prepared according to instructions and are typewritten in English.

1. Applicant's Information

1. Full Name	[Family]	[First]	[Middle]
2. Country			
3. Tel/Fax	Tel.	Fax.	
4. Email address			
5. Title of your present Job			
6. Missions and works of your organization (Summarize in items)			
7. Works that you are in charge of in your organization. (Summarize in items)			
8. Title and detailed contents of Project; *To be filled up by only those who are involved in ongoing or prospect Japanese ODA financed thermal power projects and/or in power plants associated with JICA technical cooperation project			

9. Choose either “Gas Turbine Course” or “ Coal Fired Steam Turbine Course”	Enter a ○ mark in the blank for the course you would like to take. If you would like to take both courses, write the order of priority.	
	Gas Turbine Course	Coal Fired Steam Turbine Course
8. Organizational chart	* Please attach the chart and circle where you belong.	

2. Accidents, Problems, and Measures already taken to solve them

Describe cases of accidents, current problems, and countermeasures that have been already taken at your department and/or plant (regarding planning, design, operation and maintenance of thermal power plants mainly)

Problems		Causes	Measures taken to solve the problems
	<i>(Example) Condenser tube failure</i>	<i>Polluted cooling water</i>	<i>Clean cooling water drawn from deep sea</i>
1			
2			
3			
4			
5			

3. Participants' requests for the training topics

Describe subjects which you have particular interests in the thermal power sector, and you would like to study through the training **in the order of priority**.

Priority	Subject which you are interested in	Contents (Please write in detail.)
	<i>(Example)</i> <i>Efficiency related technology</i>	<i>How to monitor the efficiency related parameters, analyzing the data and action requires to get the optimum efficiency of the generating units.</i>
1		
2		
3		
4		
5		

JOB REPORT (Part-2) : Gas Turbine Course

*If you can bring any brochures or relevant documents which include the data, you do not need to fill out the following tables.

Information related to your gas turbine plant

(1) Gas turbine specifications of your power plant or a typical plant

1) Type	
2) Capacity (kW)	
3) Duration of operation (number of years)	
4) Gas pressure at the turbine outlet (Pa)	
5) Gas temperature at the turbine outlet (C)	
6) Number of turbine stages	
7) Kind of fuel	
8) Gas combustion temperature (C)	
9) Type of combustor (Unit system or header system)	
10) Presence of water/steam injection system	
11) Number of air compression stages	
12) Air pressure at the air compressor outlet (Pa)	
13) Installed site (indoor or outdoor)	
14) Heat efficiency (%)	
15) Main steam pressure (Pa) (In case of combined type)	
16) Main steam temperature (C) (In case of combined type)	
17) Manufacturer	

(2) Generator specification

1) Capacity (kVA)	
2) Voltage (kV)	
3) Frequency (Hz)	
4) Manufacturer	

(3) Environmental equipment (Specify if provided or planned, and type)

1) Desulfurization system	
2) Denitration system	
3) Electric dust collector	
4) Wastewater treatment system	
5) Water purifier	
6) Other environmental facilities	

JOB REPORT (Part-2) : Coal Fired Steam Turbine Course

*If you can bring any brochures or relevant documents which include the data, you do not need to fill out the following tables.

Information related to your coal fired steam turbine plant

(1) Turbine system of your power plant or a typical plant

1) Type	
2) Capacity (kW)	
3) Duration of operation (number of years)	
4) Pressure (Pa)	
5) Temperature (C)	
6) Speed (rpm)	
7) Installed site (indoor or outdoor)	
8) Cooling method (air-cooling or water-cooling) + vacuum (mmHg)	
9) Turbine efficiency (%)	
10) Manufacturer	

(2) Boiler specification

1) Type	
2) Capacity (t/h)	
3) Duration of operation(number of years)	
4) Pressure (Pa)	
5) Temperature (C)	
6) Heating area (m ²)	
7) Fuel used (kind, calorie)	
8) Kind of burner (combustion method)	
9) Installed site (indoor or outdoor)	
10) Boiler efficiency (%)	
11) Manufacturer	

(3) Generator specification

1) Capacity (kVA)	
2) Voltage (kV)	
3) Frequency (Hz)	
4) Manufacturer	

(4) Environmental equipment (Specify if provided or planned, and type)

1) Desulfurization system	
2) Denitration system	
3) Electric dust collector	
4) Wastewater treatment system	
5) Water purifier	
6) Other environmental facilities	

Country Report

*If you can bring any annual reports or statistics papers that include the data, you do not need to fill out tables as follows.

Outline of electric power sector in your country (Year: _____)

Generating Facilities	Generating Capacity [Installed] (MW) *1	Hydro	
		Thermal	
		Nuclear	
		Others *2	
		Total	
	Thermal Efficiency of Coal based Power plants (Gross) (%)		
Generating Facilities	Generating Capacity [Planned] (MW)	Year	
		Hydro	
		Thermal	
		Nuclear	
		Others *2	
		Total	
Demand & Supply	Gross Electric Power Production (GWh) *3	Hydro	
		Thermal	
		Nuclear	
		Others *2	
		Total	
	Electric Power Sales (GWh)	Residential	
		Commercial	
		Industrial	
		Others	
		Total	
Peak Load (MW) *4			
Growth Rates of Peak Load (%)			
Interchange of Electricity (GWh) *5	Export		
	Import		
T&D Facilities	Transmission Line Route Length (km)	200kV or over	
		under 200kV	
		Total	
	Distribution Line Route Length (km)	High Voltage	
		Low Voltage	
Total			
Transmission & Distribution Loss (%) *6			
Others	Total Minutes of Outage per Customer *7		
	Electricity Rates (nat.cur./kWh) *8		
	Electrification Ratio (%) *9		

*1 Includes major electric power utilities and IPP's, excludes industry owned power.

*2 Geothermal ,New and Renewable Energy.

*3 Major electric power utilities and IPP's.

*4 Day's highest daily loads.

*5 Interchange electricity through transmission line only.

*6 Includes Non-Technical Loss.

*7 Total minutes of scheduled and unplanned outages per low-voltage customer.

*8 Calculated by (Power Sales Revenue / Electric Power Sales).

*9 Calculated by (the number of customer / the number of household).

For Your Reference

JICA and Capacity Development

The key concept underpinning JICA operations since its establishment in 1974 has been the conviction that “capacity development” is central to the socioeconomic development of any country, regardless of the specific operational scheme one may be undertaking, i.e. expert assignments, development projects, development study projects, training programs, JOCV programs, etc.

Within this wide range of programs, Training Programs have long occupied an important place in JICA operations. Conducted in Japan, they provide partner countries with opportunities to acquire practical knowledge accumulated in Japanese society. Participants dispatched by partner countries might find useful knowledge and re-create their own knowledge for enhancement of their own capacity or that of the organization and society to which they belong.

About 460 pre-organized programs cover a wide range of professional fields, ranging from education, health, infrastructure, energy, trade and finance, to agriculture, rural development, gender mainstreaming, and environmental protection. A variety of programs are being customized to address the specific needs of different target organizations, such as policy-making organizations, service provision organizations, as well as research and academic institutions. Some programs are organized to target a certain group of countries with similar developmental challenges.

Japanese Development Experience

Japan was the first non-Western country to successfully modernize its society and industrialize its economy. At the core of this process, which started more than 140 years ago, was the “*adopt and adapt*” concept by which a wide range of appropriate skills and knowledge have been imported from developed countries; these skills and knowledge have been adapted and/or improved using local skills, knowledge and initiatives. They finally became internalized in Japanese society to suit its local needs and conditions.

From engineering technology to production management methods, most of the know-how that has enabled Japan to become what it is today has emanated from this “*adoption and adaptation*” process, which, of course, has been accompanied by countless failures and errors behind the success stories. We presume that such experiences, both successful and unsuccessful, will be useful to our partners who are trying to address the challenges currently faced by developing countries.

However, it is rather challenging to share with our partners this whole body of Japan’s developmental experience. This difficulty has to do, in part, with the challenge of explaining a body of “tacit knowledge,” a type of knowledge that cannot fully be expressed in words or numbers. Adding to this difficulty are the social and cultural systems of Japan that vastly differ from those of other Western industrialized countries, and hence still remain unfamiliar to many partner countries. Simply stated, coming to Japan might be one way of overcoming such a cultural gap.

JICA, therefore, would like to invite as many leaders of partner countries as possible to come and visit us, to mingle with the Japanese people, and witness the advantages as well as the disadvantages of Japanese systems, so that integration of their findings might help them reach their developmental objectives.



CORRESPONDENCE

For enquiries and further information, please contact the JICA office or the Embassy of Japan. Further, address correspondence to:

JICA Chugoku International Center (JICA CHUGOKU)
Address: 3-3-1 Kagamiyama, Higashihiroshima, Hiroshima, 739-0046 Japan
TEL: 81-82-421-5800 FAX: 81-82-420-8082