5. SOFT COMPONENT (TECHNICAL ASSISTANCE) PLAN

1. Background

The Project for Introduction of Clean Energy by Solar Electricity Generation System will procure a Photovoltaic Generation system (hereafter referred to as “PV system) with 488 kW capacity, furnish it to Phum Prek Water Treatment Plant in Phnom Penh City, The Kingdome of Cambodia and supply the generated energy to the Plant for its power demand. The grid-connected PV system is the first case for Cambodia, although they have experience of independent off-grid PV systems. And staffs to be involved in operation and maintenance of the PV system at PPWSA have no experience and knowledge about PV system. Therefore, it is important to train those engineers/technicians who will be actually operating and maintain the PV system. At the same time, it is also important to offer the training program for officers in the MIME and EDC being involved in the project, in terms of support the national target to attain the village electrification of 100 % by 2020 by utilizing clean energy, such as PV system, biomass and mini-hydro and so on.

The contractor will be conducting an Operation Guidance for the purpose of furnishing the operators with practical method of operation and maintenance of the PV system. However, the basic knowledge underlying these methods is crucial in nurturing capabilities of judgment and decision making in various occasions of operating and maintaining the PV system, which is also useful in development and application thereto of future similar projects.

2. Target of Training Program

Based on the above background, the following targets are set in terms of production of effect and sustainability of the project.

- The installed PV system can work as planned.
- The installed PV system can be maintained in a sustainable manner.

3. Outcome of Training Program

Outcomes of the training program are as follows;

[For Operation and Maintenance Staff at the site]

- Staff can operate and maintain the PV system in the normal condition.
- Staff can take appropriate actions when troubles and malfunctions occur.
- Staff can replace minor consumable goods, and procure necessary spare parts and consumable goods by themselves.

[For Officers in MIME and Engineers in EDC]

- They can acquire the knowledge relating to the fundamental technology of a PV system.
- They can understand the necessary technical issues relating to the agreement accompanied by a grid-connected PV system.
- They can acquire the knowledge to train the manpower relating to the introduction of a PV system.

4. Outcome Confirmation and Evaluation

Outcome confirmation and evaluation will be conducted in the second training program because the training program will be conducted twice, at the commissioning and 4.5 months after commissioning.

[For Operation and Maintenance Staff at the site]

(1) Operation of the PV System

Operation performance record for the previous 4.5 months will be reviewed from the following viewpoint.

- Whether the PV system can work daily and generate electricity.
- Whether the electricity generation fluctuates within the range of ±20% in comparison with the expected monthly generation set at the planning stage as shown in Table 1.

If the actual electricity generation remains within the range of ±20%, it can be evaluated that the PV system works normally. If the actual electricity generation lowers than minus 20% or continuously declines, the PV system is supposed to be in some troubles. In this case, the operation and maintenance staff are requested to propose the estimated causes and their reasons in practical exercises. And their learning level will be confirmed in this practical exercise.

Table-1 Control Value for Monthly Generation Energy

(kWh/Month)	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
Expected Generation	57,793	56,659	63,825	61,048	57,793	49,941	51,865	48,699	48,387	50,171	51,713	54,881
Upper Limit	69,000	68,000	77,000	73,000	69,000	60,000	62,000	58,000	58,000	60,000	62,000	66,000
Lower Limit	46,000	45,000	51,000	49,000	46,000	40,000	41,000	39,000	39,000	40,000	41,000	44,000

(2) Maintenance of the PV System

Daily and periodical maintenance check sheets and malfunction & trouble recording sheets for the previous 4.5 months will be reviewed from the following viewpoints.

- Whether any troubles and/or any malfunctions occur, and whether appropriate actions were taken based on the Maintenance Manual when some troubles and/or malfunctions had occurred.
- Whether consumable goods were replaced with properly when they replaced consumable goods (including the confirmation at the site).
- Whether daily and periodical inspections have been carried out properly based on the daily and periodical check sheets.

Any malfunctions would not happen generally because of just 4.5 months after the commissioning. If some malfunctions had happened, the malfunction part ought to have been replaced by the Contractor without charge because 4.5 months is within one (1) year's guarantee period. If the replacement and/or necessary measures were done by the Contractor based on the claim by the owner, it can be evaluated that the installed PV system is appropriately maintained in sustainable manner due to their well acquirement of knowledge about the PV system.

If some consumable goods such as SPD and lighting in cubicles were replaced with by the maintenance staff, the proper replacement (to be confirmed at the site) is worth evaluation. If all inspection items had been checked based on the daily and periodical maintenance manual, the maintenance inspection is worth evaluation. If some inspection items had been skipped and/or daily and periodical inspections had not been conducted as planned, the maintenance staff is requested to state the reasons and propose more practical maintenance plan in practical exercise. And their learning level will be confirmed in this practical exercise.

Inquiry survey of the learning level relating to operation and maintenance will be conducted on the last day of the Training Program to evaluate results of Training Program.

[For Officers in MIME and Engineers in EDC]

The training program conducted at the commissioning will provide;

(a) Fundamental technical knowledge about a PV system,
(b) Introduction of FAQ,
(c) Introduction of examples of typical malfunctions and their measures, and
(d) How to utilize operation log sheets.

Their learning level will be evaluated in practical exercise to be conducted in the above

training courses.

In the training program conducted in 4.5 months after commissioning, their learning level will be evaluated in the same manner as for operation and maintenance staff as mentioned above.

5. Planning of Training Program

(1) Content

Training program is planned to consist of a series of lectures, practical exercises, and OJT led by Japanese consultants. The program is to be carried out in two separate periods; one during the commissioning of the PV system, and the other 4.5 months after the commissioning.

There will also be O&M training provided by the Contractor of the project. Therefore, the consultant will coordinate with the Contractor and plan the detail of his training program so that the necessary techniques and knowledge are effectively transferred to the participants of the program. Those training items with a symbol (*) below are the ones presumably provided by the Contractor. The consultants will provide additional information for such items, if necessary, to make them more relevant, not just “how to operate”, in the context of understanding of PV system.

[Before Commissioning (Approximately two weeks before Commissioning)]

Lecture on basic knowledge

- Concept of Grid-connection and its planning
- Concept of reverse power flow
- Characteristics of PV power generation (difference between rated output and actual output)
- Required equipment and its electrical specification
- Dominant factors such as power consumption and load etc. in premises affecting the installed capacity of PV system
- Response of PV system to the grid troubles
- Shut down and start up of PV system

OJT Program

- Joint survey on wiring work
- Joint survey on final inspection before commissioning test
- Joint survey on commissioning test and adjustment (*)
- Start up, shut down and re-start up (*)
- Joint survey on completion inspection

[After Commissioning]

Training provided by the Contractor

- Daily inspection and maintenance (*)
- Periodical inspection and maintenance (*)
- Consumables and replacing work (*) (inc. exercises)
- Introduction of FAQ relating to operation and maintenance (*)
- Introduction of typical malfunctions and their measures (*) (inc. exercises)
- Work plan for O&M on the basis of Operation Manuals (inc. exercises)
- Preparation of operation log sheet form (inc. exercises)
- Preparation of daily and periodical check sheet (inc. exercises)
- Preparation of failures/accident record form (inc. exercises)
- Analysis of operation log sheet and manner of utilization (inc. exercises)

It is very often experienced, in Japan and in other countries as well, that initial setting of the equipment and/or the lack of familiarity of operation lead to malfunction or unsatisfying performance of the PV system. Therefore, it is necessary to carry out a follow-up training program a certain period after the commissioning. This follow-up training program is proposed to consider 4.5-month experience of actual operation and maintenance of PV system, operation issues unique in the implementation and in Cambodia circumstances, to discuss problems and questions arose, and to revise the operation and maintenance management plan. This process aims for the establishment of more pragmatic and steady method of operation.

[About 4.5-month after commissioning]

- Joint inspection on the equipment (*)
- Evaluation of maintenance performance and trouble shooting (*)
- Evaluation of operational performance based on the analysis of log sheets, and finding critical issues and their measures, if any (inc. exercises)
- Review of data log sheet form and check sheet form

The obligation of the following-up training by the Contractor shall be incorporated into the Tender Documents as well as the training by the Contractor at the commissioning.

(2) Participants

Fig.-1 shows the organization chart for PPWSA. Eleven (11) staff in Electric Section and an assistant under the Production and Distribution Department being in charge of maintenance of the electric equipment of three water treatment plants managed by PPWSA are to maintain the PV system. All staffs of the electric section and an assistant are bachelors (faculty of electrical engineering) and their technical skills seem to be excellent.

Table-2 shows the required role and experiences for operation and maintenance staff of the PV system.

PPWSA has intention to introduce a PV system to the other water treatment plants after evaluation of the PV system's effects. Therefore, the staff of Plan and Technical Department of PPWSA will be also objective personnel of the training program in terms of assistance to introduction of a PV system.

Addition to the PPWSA staffs, officers in Department of Energy Technique being in charge of PV system related in MIME and engineers in Distribution Department being in charge of grid-connection generation plants in EDC will be also objective personnel of the training program in terms of assistance to introduction of a grid-connected PV system in Cambodia.

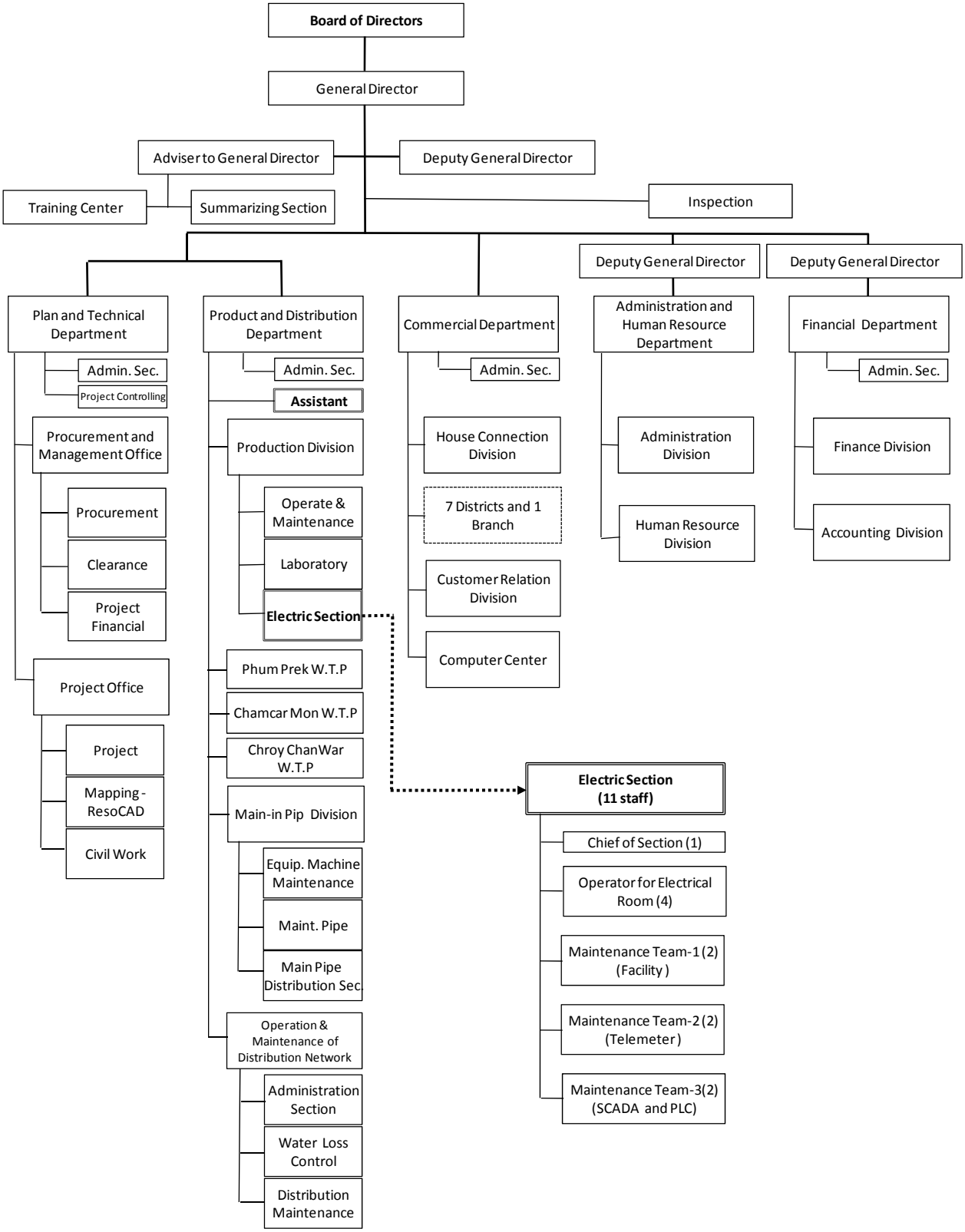

Fig.-1 Organization Chart of PPWSA

Table -2 Candidate Participants to the Training

Organization	Department	Training Purpose (a) and Required Qualification (b)
PPWSA	Electric Section in Production & Distribution Dept.	(a) Daily operation and maintenance of the PV system (b) Those in charge of maintenance of electric facilities at least 5 years
PPWSA	Plan and Technical Dept.	(a) Introduction of PV system to other water treatment plant in PPWSA (b) Bachelor of electrical engineering and his business experience at least 10 years
EDC	Distribution Dept.	(a) Finding critical issues and establishing measures (b) Bachelor of electrical engineering and his business experience at least 10 years
MIME	Dept. of Energy Technique	(a) Introduction of grid-connected PV system to Cambodia in future (b) Bachelor of electrical engineering and his business experience at least 10 yeas

The tentative programs applicable to candidate participants are shown in Table-3. And number of participants are set 3 ~ 5 personnel basically considering the possibility that participants may move to another section or department in future.

Table-3 Tentative Program Applicable to Participants

Contents of Program	PPWSA		EDC	MIME
	Electric Section	Plan and Technical Dept.	Distribution Dept.	Dept. of Energy Technique
	3~5 personnel	2 ~ 3 personnel	3 ~ 5 personnel	3 ~ 5 personnel
Before Commissioning				
Lecture on basic technology		○	○	○
OJT (Joint survey on wiring work)	○		○	
OJT (Joint survey on final inspection before commissioning)	○		○	
OJT (Start up, shut down and re-start up)	○		○	
OJT (Completion Inspection)	○	○	○	
After Commissioning				
Follow-up of operation guidance	○		○	
Work plan for operation and maintenance	○		○	
4.5 months after commissioning				
Joint inspection on the equipment	○	○	○	
Evaluation on maintenance performance and trouble shooting	○		○	
Evaluation of operational performance and improvement	○	○	○	○
Review of data log sheet and check sheet form	○			

(3) Schedule

The planned schedule for the above mentioned program is shown in Table-4.

Table -4 Training Schedule Before/After Commissioning

	Activities	-2nd week	-1st week	1week	2nd week
Contents of Activities	Preparatory Work				
	Lecture on basic knowledge				
	Joint survey on work & test (OJT)				
	Joint survey on completion inspection (OJT)				
	Operational Guidance (*)				
	Work plan for operation & Maintenance				
Participants	Electric Section in PPWSA				
	Plan and Technical Department				
	EDC Distribution Department				
	MIME Department of Energy Technique				
Lecturer	PV system Expert				
	Equipment & Electrical Expert				
	Interpreter				

Note: Bar chart expressed in dot line shows hourly base activities.

Table -5 Training Schedule 4.5 months after Commissioning

	Activities	1st week	2nd week
Contents of Activities	4.5 month inspection (*)		
	Evaluation of maintenance performance and trouble shooting (*)		
	Evaluation of operational performance and improvement measures		
	Review of data log sheet form and check sheet form		
Participants	Electric Section in PPWSA		
	Plan and Technical Department		
	EDC Distribution Department		
	MIME Department of Energy Technique		
Lecturer	PV system Expert		
	Equipment & Electrical Expert		
	Interpreter		

(4) Resource for the Training Program

As already mentioned, the PV system with grid interconnection is the first-ever experience in Cambodia. Therefore, Japanese consultants are assumed to undertake the implementation of the training program. Consultants to be assigned should have adequate experiences in planning of PV system with grid connection. There will be two Japanese consultants, one leader and one assistant, to be lecturers to the programs of both periods. National consultants are not considered as the recipient country does not have an experience in similar projects.

On the other hand, some of participants are supposed to be not good at English. Therefore, the program had better be done in local language as much as possible by employing an interpreter. An interpreter will be dispatched from Japan unless an interpreter can be available in Cambodia. Addition to the employment of an interpreter, texts, manuals and technical references to be distributed in the program are translated into English. And some of them which seem to be very important had better be translated to the local language as much as possible to achieve further effectiveness of the program

The work schedule of consultants is planned as below. The first period program takes thirty days, and the second fifteen days including two travel days from and to the Site.

Table -6 Work Schedule of Consultant

Program	Work Description	Duration
Preparation **3 days**	- Consultation and confirmation with PPWSA concerning Program Content and Participants - Confirmation with MIME and EDC concerning Program Content and Participants - Confirmation with Procurement Agent concerning Program Content - Preparation of distribution material	1 day 0.5 day 0.5 day 1 day
Before commissioning	**11days**	
Lecture on basic knowledge **6 days**	- Basic theory of photovoltaic generation - Utilization of photovoltaic generation - Grid-connection and its planning - Understanding surplus power and reverse power flow - Power supply to the water treatment plant from the grid - Power demand and loads in the plant (inc. practical exercise) - Workings of PV system during blackout of the system - Planning PV system (inc. practical exercise) - Arrangement between PV owner and power utility	↓ 1day ↓ 1day ↓ ↓ 1day 2days 1day
OJT program **5 days**	- Witnessing connection work and testing/inspection of the Contractor	5days
After commissioning	**14 days**	
Reinforcement of Contractors Guidance **6 days**	- Following Operation Guidance of the Contractor - Additional explanations given on workings of PV system in the facility, using Operation and Maintenance Manual and the training materials - Discussion on findings of participants	7days
Planning O&M works **7 days**	- Proposing daily activities needs and making daily check sheet/log sheet form - Listing periodical inspection items, activities necessary, to make check sheet - Listing long-term inspection items, activities necessary, to make inspection check sheet	7 days
4.5 months after commissioning	**13 days**	
4.5 months inspection **2 days**	- Visual inspection - Confirmation of PV system operation	1day 1day
Evaluation of maintenance performance and trouble shooting **2 Days**	- Review and evaluation of the previous 4.5 months experience of operation and maintenance - Trouble shooting (extracting problems and solutions, through enquiries and discussions	1day 1day
Evaluation of operation performance and measures **8 days**	- Evaluation of actual generation in comparison with planned through discussions - Discussion on how to utilize the log sheet - Individual presentation how to utilize the log sheet - Individual presentation relating to improvement measures for generation	2 days 2 days 2 days 2 days
Review and updating log and check sheets **1 day**	- Review and updating maintenance plan and log / check sheets	1day

(5) Schedule of Training Program

The work schedule for the training program is shown below, assuming that the agreement between the procurement agent and the Contractor will be concluded in August 2011.

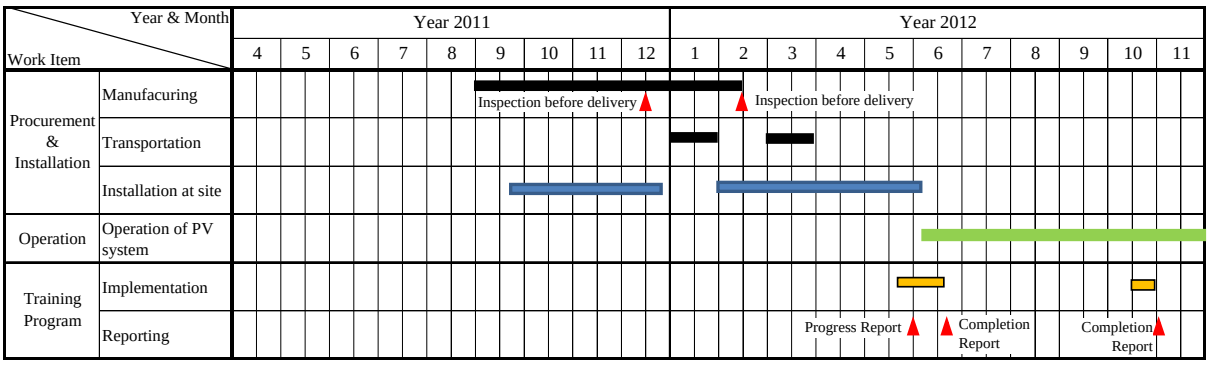

Fig. -2 Training Program Implementation Schedule

(6) Products of Training Program

Products of training program are outlined below.

- A training program textbook prepared by the Consultant
- Progress reports
- Completion reports (inc. evaluation of operation record and trouble shootings)
- Single line diagram prepared in the exercise and so on
- Visual record (DVD) of periodical inspection (4.5-month inspection)
- Work plan for operation and maintenance (with revision)
- Results of questionnaires

(7) Responsibility of Receipt Country

It is important that participants take part in the training in full for the achievement of the program objectives, which, however, requires the participants of being away from their work place for weeks. Therefore, there must be an official designation as a participant given by the section/department management who appreciates the usefulness of the program. It is also important that the government agencies appoint persons who will be in charge of PV and renewable energy in the future.

6. COLLECTED DATA AND DOCUMENTS

Appendix 6 List of Collecting Data and Documents

(1/2)

No.	Title	Form	Original/ Copy	Released by	Published Year
1	Electric Power Technical Standards of The Kingdom of Cambodia	Book (496 pages)	Original	EAC	August, 2007
2	National Strategic Development Plan 2006-2010	Book (130 pages)	Original	Ministry of Planning	June 23, 2006-
3	Statistical Yearbook of Cambodia 2008	CD	Original	Ministry of Planning	-
4	General Population Census of Cambodia 2008, National Report	CD	Original	Ministry of Planning	-
5	Consumer Price Index (October 2009)	Book	Original	Ministry of Planning	-
6	Company Brochure of IPM Cambodia Ltd.	Booklet	Print	IPM	-
7	Company Brochure of Khmer Solar Ltd.	Booklet	Copy	Khmer Solar	-
8	Company Brochure of Comin Khmere	Booklet	Copy	Comin Khmere	-
9	Daily Monitoring Record Sheet for Electrical Room (2009.11.9 – 11.15)	Print	Copy	PPWSA	-
10	One set of Design Drawings of Phum Prek Water Treatment Plant	AutoCAD	Copy	PPWSA	-
11	Cambodia Power Development Plans	Presentation Material	Copy	MIME	2009.8.19
12	The Current Status of Renewable Energy Development in Cambodia	Presentation Matrial	Copy	MIME	2009.10.8
13	National Renewable Energy Policy (Khmer)	E.D.	Copy	MIME	-
14	Rural Electrification Strategy by Renewable Energy	E.D.	Copy	MIME	?
15	Phonm Penh Water Supply Authority Financial Statement, for the year ended 31, December 2008	Print	Copy	PPWSA	2009.6.19
16	Electricite du Combodge Annual Report 2007	Print	Copy	EDC	2008.12
17	Investment Program for PPWSA from 1993 - 2009	Print	Copy	PPWSA	-
18	Kingdom of Cambodia Nation Religion King National Policy on Urban Water Supply and Sanitation and Rural Water Supply and Sanitation	Print	Copy	PPWSA	2003.2.7
19	PPWSA Annual Report 2008 (Khmer)	Print	Copy	PPWSA	
20	Power Tariff Monthly Invoice by EDC (Year 2007 andYear 2008)	Print (23 pages)	Copy	EDC	-

Appendix 6 List of Collecting Data and Documents

No.	Title	Form	Original/ Copy	Released by	Published Year
21	Application Letter by PPWSA(Khmer)	Print (1 sheet)	Copy	PPWSA	2009.7.8
22	Fuel consumption and fuel price in Phnom Penh EDC (Khmer)	Print	Copy	EDC	-
24	Phnom Penh Water Supply Authority Financial Statements for the year ended 31 December 2007	Print (33 pages)	Copy	PPWSA	2008.6.24
25	Rainfall Historical Data, 2007, 2008, 2009 Station: Pochentong	E. Data	Original	MWRM	-
26	Declaration on the Evaluation of EIA on Project (Khmer)	Print (10 pages)	Copy	MOE	2000
27	Annex of Sub-Decree No.72 ANRK.BK. Dated August 11, 1999, List of the Projects Require an IEIA or IEA	Print (3 pages)	Copy	MOE	1999.8.11
28	Annual Report 2007	E.Data (38 pages)	Copy	EDC	2008.12
29	Report on Power Sector of the Kingdome of Cambodia 2010 Edition	E.Data (110 pages)	Copy	EAC	-
30	Phum Prek Water Treatment Plant A Report (No.3 Clear Water Reservoir)	Print (292 pages)	Copy	TEC	2001.06

PPWSA	Phnom Penh Water Supply Authority
EAC	Electricity Authority of Cambodia
MIME	Ministry fo Industry, Mines and Energy
EDC	Electricite du Combodge
MOE	Ministry of Environment
MWRM	Ministry of Water Resources and Meteorology
TEC	Tokyo Engineering Consultants Co., Ltd
CD	Compact Disc
E. Data	Electronic Data

7. REFERENCES

NEWJEC

ENGINEERING CONSULTANTS
ISO 9001/14001 Accredited

NEWJEC Inc.
3-20, Honjo-Higashi 2-chome, Kita-ku, Osaka 531-0074, Japan
Tel. 81-6-6374-4059, Fax. 81-6-6374-5198
E-mail : overseas@newjec.co.jp

Supplemental Explanation
of
Request for Permission of use of Chemical Feeding Building for new PV System Installation Site

Concerning the PV system installation at the Phum Prek Water Treatment Plant, we are under preparation of cost estimate and designing based on the E/N dated March 18, 2010. At the moment, the install capacity of the PV system at the No.2 and No.3 Reservoir is amounted to 437 kWp, about 37 % increase in comparison with the original plan of 320 kWp due to the current market price decline of PV system, and we have to install another 50 kWp approximately to meet the E/N amount of 720 Million Japanese Yen.

For the above reason, we studied another candidate sites in the premises of the Phum Prek Water Treatment Plant because No.2 and No.3 Reservoirs have no space for additional installation anymore and we selected **the roof of the Chemical Feeding Building** (Fig.-1) as an additional candidate site, near the sediment basin consequently based on the following considerations;

1) Since the Chemical Feeding Building was constructed in 2003 by JICA Grant, CAD drawings such as plan view and cross section are available, which means we can make a layout of PV system sub-array on the roof not to interfere with the structural stability of the Chemical Feeding Building as well as No.2 and No.3 Reservoirs.
2) The roof of the Chemical Feeding Building has enough space to install another 50 KWp approximately.

In this connection, we much appreciate if you, PPWSA permit us to install another PV system on the roof of the Chemical Feeding Building.

Best Regards,

August 12, 2010

Y. Matsuda

Yasuharu Matsuda
Team Leader

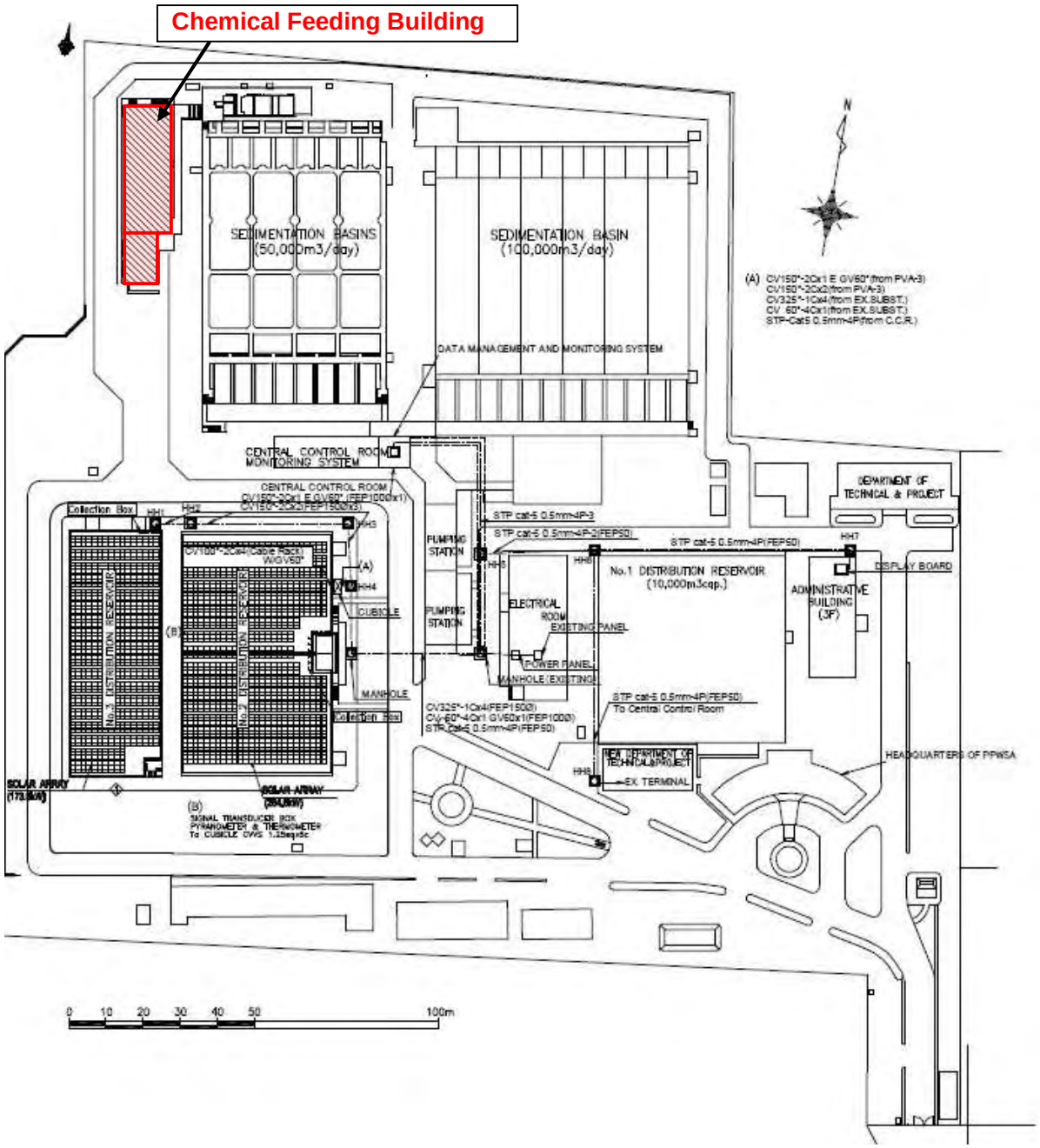

Fig.-1 Location of Chemical Feeding Building

KINGDOM OF CAMBODIA

NATION RELIGION KING

PHNOM PENH
WATER SUPPLY AUTHORITY

"PPWSA"

Nº 156 PPWSA

Date August 24 2010

To: JAPAN INTERNATIONAL COOPERATION AGENCY

CAMBODIA OFFICE

Attn.: Mr. SUZUKI YASUJIRO

Chief Representative

Subject: PPWSA position on the replacement of Water-Resistance Layers of the Proposed Locations of PV system Installation

Ref: Your letter dated August 18, 2010, JC22-428 endorsed the consultant team letter dated August 12, 2010.

NEWJEC letter dated August 12, 2010 concerning the request for permission of use of Chemical Feeding Building for new PV System Installation Site.

The Project for Introduction of Clean Energy by Solar Electricity Generation System

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Dear Sir,

With reference to the above mentioned subject and based on the comprehensive supplemental explanation made by the Consultant, NEWJEC Inc, dated August 12, 2010, we would like to confirm our approval and authorize to use the roof of the Chemical Feeding Building as per request.

Thank you for your kind support and cooperation.

Yours faithfully

Ek Sonn Chan

General Director, PPWSA

受付
25. AUG 2010
JICA CAMBODIA

ADDRESS : Nº45, Street 106, Sangkat Srah Chork, Khan Daun Penh, Tel : 855 (23) 724 046 Email: admin@ppwsa.com.kh

The Project for Introduction of Clean Energy by Solar Electricity Generation System in the Kingdome of Cambodia
Comments and Questions raised in the Meeting on October 19, 2010 at PPWSA Conference Room

Page	Subject	Comments and questions from PPWSA, MIME and EDC	Answer from NEWJEC	Questioner's Understanding
1. Draft Outline Design Study Report				
2-17	Table 2-2.6 Proposed Setting Values and Electric Power Technical Standards	Table 2-2.6 had better attach the remarks below the table to clarify which values are quoted from the Electric Standard and which values are proposed by the Consultant. (PPWSA)	The Consultant will attach the remarks as below: "Note: Nominal voltage, allowable voltage fluctuation, nominal frequency and allowable frequency fluctuation are quoted from Electric Power Technical Standards" prepared by EDC.	Understood
2-44	2-44 (1) Responsible Organization and Implementation Organization	(1) Portable Water Supply Department in MIME is not a regulatory authority to supervise PPWSA. Portable Water Supply Department in MIME is the regulatory authority for water supply in local provinces. Therefore, this sentence should be deleted. (PPWSA)	The Consultant will delete the relevant sentence.	Understood
		(2) Description regarding responsible organization which states " the responsible organization will supervise operation and maintenance of the project to be done by the implementation organization" is not appropriate expression considering PPWSA being the implementation organization. The word "supervise" should be replaced with "advise". (PPWSA)	The word of "supervise" will be replaced with "advise"	Understood
		(3) The current sentence of this section had better be separated by two paragraphs, such as implementation organization and responsible organization to easily understand of the roles and responsibilities. (PPWSA)	The sentence will be separated by paragraphs for implementation organization and responsible organization as below. " The implementation organization of the project is PPWSA. PPWSA takes responsibility for operation, maintenance, preparation of the budget and manpower required for the operation and maintenance of the system as the owner of the system." " The responsible organization of the project is MIME. MIME takes responsibility for coordination with the relevant organizations in Cambodia and Japan side until the completion of the project, and establishment of the Consultative Committee. Addition to the above role, MIME will advice operation and maintenance of the system to be done by the implementation organization."	Understood

The Project for Introduction of Clean Energy by Solar Electricity Generation System in the Kingdome of Cambodia
Comments and Questions raised in the Meeting on October 19, 2010 at PPWSA Conference Room

Page	Subject	Comments and questions from PPWSA, MIME and EDC	Answer from NEWJEC	Questioner's Understanding
2-46	(6) Policy for Procurement		"Tender evaluation will be done in Cambodia" is not correct. Please revise as " Tender evaluation will be done in Japan".	Understood
2-48	Table 2-4.3 Undertakings to be taken by Each Government.	(1) PPWSA will take responsibility for item 9-2), item 10, item 11, item 13, and item 14 instead of MIME. (PPWSA)	(1) The responsible organization for the relevant items is moved from MIME to PPWSA. (2) The table adds additional column as "Other organization" for item 8-b), "Payment of bank commission". Because the bank commission was/will be paid by the Cambodian National Bank".	Understood
2-57 ~ 58	2) Participants 3) Schedule	The name of department for MIME, " Department of Energy and Technique" is not correct. The correct name is "Department of Energy Technique". (MIME)	The Consultant will modify the name of department of MIME as pointed out.	Understood
3-1	Table 3-1 Undertakings required of the Recipient Country		The Consultant will modify the table based on the comments concerning Table 2-4.3 "Undertakings to be taken by Each Government"	Understood
4-5	Table 4-3.1 Organization Control for Long Term Maintenance	"Financial support" requested for MIME in terms of long tem maintenance should be changed to "Technical support" in response to the change of role in page 2-44, (1) Responsible Organization and Implementation Organization. (MIME)	The Consultant will change "Financial support" to "Technical support" in the table.	Understood
2. Draft Tender Document from Part IV to Part X				
VI-app-1	(b) Master List of Drawings and Documents	Addition to the Master of Drawings and Documents, The following two lists are required. (1) "List of permanent equipment to be imported in Cambodia" is required for exemption procedure of custom duties, which will require the approval of CDC. The timing of submittal will be as soon as after designing by the Contractor. (2) "List of temporary equipment" means the list of equipment for temporary facilities which the Contractor will brings in for the construction and bring out after construction. The Contractor shall deposit custom duties when he brings in and the Contractor can withdraw the deposit when he bring out. (PPWSA)	The Consultant will add two lists of equipment.	Understood

The Project for Introduction of Clean Energy by Solar Electricity Generation System in the Kingdome of Cambodia
Comments and Questions raised in the Meeting on October 19, 2010 at PPWSA Conference Room

Page	Subject	Comments and questions from PPWSA, MIME and EDC	Answer from NEWJEC	Questioner's Understanding
VII-6	2.9 Remote Monitoring Device	At the moment, remote monitoring device is planned to install at " Planning and Technical Department" in the PPWSA new building. However, the remote monitoring device better be installed at "Production and Distribution Department" which will move to the building under the renovation because Production and Distribution Department will in charge of operation and maintenance of the system. (PPWSA)	The Consultant will change the location of the remote monitoring device.	Understood
VII-6	2.1 Display Device	The water tariff payment room in the existing commercial building will move to a new commercial building with a three-story. The construction of new commercial building is expected to start in 1st Quarter 2011 and be completed in September 2011 at the moment. The location of the new commercial building is the south side of the No.2 Distribution Reservoir. The existing commercial building will be used for Public-relation Building. (PPWSA)	Thank you for your new information. If the completion of new commercial building is ready in time for installation of display device, there would be no problem, otherwise the display device will be installed in the public-relation building. The cost accompanied by the relocation of display device would not cause additional cost due to almost the same distance from the control room.	Understood
VII-13	4. Waterproof Treatment Work		(1) The necessity of waterproof treatment work for the roof of the Chemical Feeding Building will be studied in Japan. Once waterproof treatment work for the Chemical Feeding Building is determined, this cause will be modified accordingly. (2) In connection with the Chemical Feeding Building, the existing lightning rods on the roof should be removed by PPWSA before commencement of the work based on the item 2 " To clear, level and reclaim the site when needed urgently" in the Undertakings to be taken by each government.	(1) Understood. (2) PPWSA stated that the lightning rods and foundation blocks are removed by PPWSA during construction when needed because the removal would require only one or two working days.
3. Conclusion				
			If the Cambodian side has further comments and questions relating to the **Draft Outline Design Report** and the **Draft Tender Document**, please inform us by the middle of November via PPWSA. Mail address: haruhiro2826@yahoo.co.jp	Understood

Y. Matsuda 21 Oct 2010
Yasuharu MATSUDA, Team Leader, NEWJEC

21 Oct. 2010
SAMRETH SOVITHIA, Director of Planning and Technical Department, PPWSA

TOCH SOVANNA, Director, Department of Energy Technique, MIME

Attendance List

Subject: Explanation and Discussion on Draft Outline Design Study Report and Draft Tender Documents

Project: Introduction of Clean Energy by Solar Electricity Generation System in the Kingdome of Cambodia

Date: October 19, 2010

Place: Conference Room at PPWSA

No.	Name	Unit/Position	Signature
1.	Yoshie MURAMATSU	JICA, Tokyo HQs	
2.	Takashi Nakazawa	NEWJEC	
3.	Yasuharu HATSUDA	NEWJEC	
4.	Takumi MARUOKA	NEWJEC	
5.	Norihiro TAKASAWA	NEWJEC	
6.	Kazuki Takeuchi	JICS'	
7.	Nami Iihoshi	JICS	
8.	Seak Pengkeang	JICA Cambodia	
9.	Long Samnang	MIME	
10.	YEAP RUNTHA	PPWSA	
11.	LONG NARO	Deputy General Director (PPWSA)	
12.			
13.	SAMRETH SOVITHA	PPWSA	
14.	Khut Vuthiarith	PPWSA	
15.	Sok Sam An	PPWSA	
16.	OUK CHITRA	EDC	
17.	IV VISAL	EDC	

18.	YAMAKAWA HIROKATSU	JICA (EDC)	
19.	TOCH SOUANNA	Director/MIME	
20.			
21.			
22.			
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25.			


JICA