

**Appendix-5
Soft Component
(Technical Assistance)
Plan**

**THE PREPARATORY SURVEY
ON
THE PROJECT FOR INTRODUCTION OF CLEAN
ENERGY BY SOLAR ELECTRICITY
GENERATION SYSTEM
IN
THE ORIENTAL REPUBLIC OF URUGUAY**

Soft Component Plan

October 2010

Japan International Cooperation Agency

NIPPON KOEI CO., LTD.

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1. Background of the Soft Component Plan

“The Project for Introduction of Clean Energy by Solar Electricity Generation System in Uruguay” aims to introduce solar PV system with 480 kW capacity in the area of Delegación Uruguaya de la Comisión Técnica Mixta (DU-CTM) in Salto City. The generated power will be supplied to the existing power grid of UTE (La Administración Nacional de Usinas y Trasmisiones Eléctricas). This project is the first attempt towards the installation of a grid-connected solar PV system in Uruguay. Therefore, it is necessary to assist capacity improvement and basic technical training for engineers in the aspect of technical transfer.

(1) Current Condition

In Uruguay, national power generation depends heavily on hydraulic power generation. In the past, the operation of power generation was largely affected due to climate change, especially by drought. In recent years, Uruguay made agreements with its neighboring countries on power and natural gas in order to stabilize power supply and avoid the influence of fluctuating international oil prices. In the energy policy, the importance of reducing dependency on fossil fuel and stabilizing the power supply by adopting diverse energy resources are mentioned. As described above, the installation of renewable power generation is one of the best options considered for mitigating climate change.

(2) Need for Soft Component

This is the first attempt to introduce a grid-connected solar PV system in Uruguay. To secure smooth operation, it is necessary to introduce further technical information, documents and human resources on PV system as shown below.

- i. Lack of technical engineers who work on O&M and repair.
- ii. Lack of manuals on the training for O&M engineers.
- iii. Lack of human resources to act as guides to visitors of PV system and enable them to explain its effects.

Thus, following activities have to be conducted for (i) smooth operation in initial stage and (ii) secure the sustainability of project outcomes as soft component program.

- i. Training for O&M engineers.
- ii. Prepare and organize necessary manuals for O&M
- iii. Training for the person in charge of guiding visitors to the facility and explaining its effectiveness.

The details of activities to be implemented are explained below.

A. Operational Management / Monitoring

An appropriate management structure on solar PV system is necessary to secure sustainability of the project outcome. Therefore, the Ministry of Industrial, Energy and Mining (MIEM) and UTE have to confirm the activities by referring to O&M reports submitted by daily and periodic maintenance staff members of UTE Salto. In addition, it is necessary to collect data on power generation and the amount of CO₂ emission reduction for analysis.

B. Basic Technology / O&M / Troubleshooting

It is necessary to transfer appropriate O&M skills for sustainable use of solar PV system. It is desirable to conduct repair or replacement of faulty parts of the PV system locally. Therefore, in addition to O&M techniques, troubleshooting techniques have to be transferred. A troubleshooting table has to be prepared in the project. Moreover, it is necessary to maintain the manuals on O&M and troubleshooting, which will be utilized as materials for training technicians locally.

C. Education / Awareness-Raising

As for the PV system which was introduced in this project, a show case effect of the Japanese technical cooperation is expected. It is necessary to train the persons in charge of guiding visitors to the installed facility and explaining its effects. In the project, brochures have to be prepared as guide to those visiting the installed facility.

2. Objectives of Soft Component

The following objectives have to be accomplished within three months during and after installation of the PV system.

- Management of operation and monitoring of data can be conducted by MIEM and UTE staff.
- Daily and periodic inspection can be conducted by UTE Salto.
- Finding of malfunctioning parts and determining corresponding countermeasures can be conducted by UTE Salto.
- Visitors can be guided to by DU CTM personnels to see the PV system.

3. Output of Soft Component

A. Operational Management / Monitoring

Management of operation and monitoring data at the PV facility are conducted by MIEM and UTE. It is necessary to transfer the technology for confirming operational data such as power output, solar irradiation and the amount of reduction of CO₂ emission. In addition,

inspection reports written by O&M staff have to be confirmed and adequate countermeasures have to be carried out.

- Understanding of PV system, power conditioner, grid connection technology
- Understanding of preparation on inspection report and countermeasure of the troubles
- Analysis of monitored data (power output, irradiation, CO₂ emission reduction)
- Training system of O&M technicians

B. Basic Technology / O&M / Troubleshooting

The technical staffs of UTE Salto will understand the basic technology of solar PV to carry out O&M appropriately. In accordance with the prepared manual, periodical inspection has to be conducted by UTE Salto. The process of installation and O&M training will be filmed for use as technical training documents for dissemination and accession of transferred technologies. In addition, a troubleshooting table will be prepared to find malfunctioning parts and the corresponding countermeasure. The outputs through the above training are expected as shown below.

- Understanding of the PV system, power conditioning, and PV system technology
- Understanding of daily maintenance and confirmation of generating condition
- Acquisition of knowledge on maintenance check points such as operating panel, indicator panels, and protection instruments and detailed operational instruction for each facility and equipment
- Acquisition of knowledge on measurement device for maintenance, equipment adjustment device, special tool, machine proof, adjustment, etc.
- Acquisition of reporting skill for operation records, accidents, repairs and inspection
- Acquisition of knowledge on management of spare parts and tools
- Acquisition of knowledge on locating faulty parts and their corresponding replacement
- Acquisition of knowledge on forecast of the exchange period for parts, identification of faulty parts and the necessary countermeasures.

C. Education / Awareness-Raising

Using the installed solar PV system in DU CTM, explanation of installed system and the effectiveness will be conducted to visitors and concerned people. Brochures which introduce the installed facility will be prepared. Furthermore, a simulated seminar to raise awareness will be held using the developed brochure. The outputs through the above training are expected as shown below.

- Development of the person in charge of guiding visitors to the installed system
- Development of human resources who can explain the effectiveness of the installed system
- Brochures for the activities mentioned above are developed.

4. Confirmation Methods for Achievement

The confirmation method for achievement of the soft components will be prepared and the results will be reported in the final reports. The contents are as shown in Table -1.

Table-1 Confirmation Methods for Achievement

| Term of Technical Transfer | Confirmation Methods | Items to be Confirmed |
|---|---|---|
| Operational management / Monitoring | Conduct analysis and the Confirmation of the monitored data at the end of training. | Acquisition level of data analysis |
| Basic technology / O&M / Trouble shooting | <ul style="list-style-type: none"> • Comprehension test • Conduct inspection and maintenance services at the end of training • Conduct technical transfer using prepared manuals at the end of training • Conduct O&M simulation using troubleshooting table at the end of training | <ul style="list-style-type: none"> • Acquisition level of basic knowledge • O&M operation acquisition level • Training system for O&M engineer • Acquisition level for repair and replacement of faulty parts |
| Awareness-Raising | <ul style="list-style-type: none"> • At the end of training, the trainee organizes a simulation seminar | <ul style="list-style-type: none"> • To confirm contents of the simulation seminar |

(JICA Study Team)

5. Activity

5.1 Contents and Activities for the Soft Component

Two persons participate from each organization for soft component. Depending on the role of organization, required technologies to be transferred are different.

Table-2 shows the contents of activities, number of attendance and organization for the soft components. During the training at site, mainly practical methods will be conducted for UTE Salto regional staff.

As an implementation organization, the person in charge of the project in MIEM and UTE have to have knowledge on O&M for its management. Technical transfer will be conducted using prepared manuals and the troubleshooting table.

Tabel-2 Number of participants according to technical transfer

| | Technical transfer | No. of participants | Organization (no.) |
|---|--|---------------------|--------------------|
| A | Operational Management/Monitoring | 4 | UTE (2), MIEM (2) |
| B | Basic technology of PV system / O&M / Trouble Shooting | 2 | UTE Salto (2) |
| C | Education / Awareness-Raising | 2 | DU CTM (2) |

(JICA Study Team)

Details of the technology transfer work items are presented and discussed below.

A. Operational Management/Monitoring

Technical skills on operational management and monitoring will be transferred. After training, it is possible to confirm contents of the O&M report and monitoring data such as the power output. The table below shows the details of training.

Table-3 Operational Management/Monitoring

| | Item | Contents and Activities |
|----|--|--|
| 1. | Basics knowledge of Solar PV | Basic knowledge of solar PV |
| 2. | Operation and Maintenance | Contents of O&M reports based on daily and periodical maintenance; Understand necessary procedure for carrying out countermeasures against malfunctions. |
| 3. | Data Analysis / Operational Management | Confirm procedure for data collection and analysis in the PV system. |

(JICA Study Team)

B. Basic technology of PV system / O&M / Trouble shooting

The basic technology of a PV system is taught. At first, a comprehension test on basic knowledge of the PV system is conducted to grasp current knowledge level of the trainee. Training items and contents are shown in the table below.

Table-4 Basic Technology of PV System

| | Item | Contents and Activities |
|----|------------------------------|--|
| 1. | Comprehension test | Confirmation of the basic technical knowledge of trainee |
| 2. | Basics of the PV system | Actual system; international trend |
| 3. | PV system, Power conditioner | Specifications and details of the PV system and power conditioner |
| 4. | Grid connection | The principle of the grid-connected system, specifications and details |

(JICA Study Team)

Before and after completion of the trial operation, O&M training will be conducted with emphasis on the purpose of improvement of O&M and troubleshooting skills. The training will be conducted by a consultant and a qualified engineer on management and O&M. The important training activities will be filmed/recorded as training documents. Training items and contents are as shown in the following table.

Table-5 O&M and Troubleshooting Training Activities

| | Item | Contents and Activities |
|----|---|--|
| 1. | Daily maintenance | Confirmation of generation facilities, operational and surrounding conditions |
| 2. | Periodic inspection, maintenance | Periodic inspection, maintenance |
| 3. | Handling of measuring equipment and special tools | Handling of electrical and adjustment equipment |
| 4. | Reporting | Report writing related to O&M |
| 5. | Operating inspection | Operating inspection and testing Testing and confirmation of safety operation |
| 6. | Troubleshooting | Determining probable troubles/problems |
| 7. | Repair and replacement of faulty parts | Prepare table guide for troubleshooting |
| 8. | Manual and video document | Prepare manual and video documents as guide for installation and O&M |
| 9. | Confirmation of O&M | Confirmation of the results of soft component |

(JICA Study Team)

C. Education / Awareness-Raising

Brochures for introduction of the PV system and manuals on raising awareness will be developed. Consequently, each staff officer can guide the PV facility and explain the effectiveness. Training items and contents are shown in the table below.

Table-6 Awareness- Raising Activities

| | Item | Contents and Activities |
|----|---|---|
| 1. | Comprehension test | Confirmation of basic knowledge |
| 2. | Preparation of brochure for awareness-raising activity. | Preparation of brochure on solar PV and the project for dissemination to visitors. |
| 3. | Hold an awareness-raising simulation seminar | A simulation seminar for DU-CTM staff is conducted using the prepared manuals and brochure. |

(JICA Study Team)

5.2 Input Plan

(1) Operation Management and Maintenance for PV System (A, B)

(Japanese side)

- Necessary technology/ category of business : PV system / O&M Engineer
- Needed technical level :
 - A. Operational management / Monitoring
 - B. Periodic inspection of PV system and technical knowledge on spare parts
- Implementation measure :

Transfer basic technology of PV system and O&M for daily maintenance and periodic inspection. Prepare manual and video materials. Transfer the technology on troubleshooting
- Implementation resource :
 - Dispatched engineer: Solar Energy Engineer (1 person)
 - Dispatch period: 3.0 M/M
 - Local assistance: 1 person
 - Contract period: 3.0 M/M
- Implementation content

Table-7 Operational Management/Monitoring

| | Contents | M/M |
|----|------------------------------|-----|
| 1. | Basics knowledge of Solar PV | 0.1 |
| 2. | Operation and Maintenance | 0.2 |
| 3. | Data Analysis and Management | 0.2 |

(JICA Study Team)

Table-8 Basic Technology of PV system

| | Contents | M/M |
|----|---------------------------------|-----|
| 1. | Comprehension Test | 0.1 |
| 2. | Basics Information on PV system | 0.1 |
| 3. | PV System, Power Conditioner | 0.2 |
| 4. | Grid Connection | 0.2 |

(JICA Study Team)

Table -9 Operation and Maintenance/Troubleshooting

| | Contents | M/M |
|----|---|-----|
| 1. | Daily maintenance | 0.2 |
| 2. | Periodic inspection and maintenance | 0.2 |
| 3. | Handling of measuring equipment and special tools | 0.2 |
| 4. | Reporting skills | 0.2 |
| 5. | Operating inspection | 0.2 |
| 6. | Troubleshooting | 0.3 |
| 7. | Repair and replacement of malfunctioning parts | 0.3 |
| 8. | Preparation of manual and video materials | 0.2 |
| 9. | Confirmation of O&M knowledge | 0.1 |

(JICA Study Team)

(Uruguayan side)

- Necessary technology/ category of business :
Periodic inspection of PV system / Electrician
- Current technical level : O&M of power distribution equipment
- Needed technical level : Periodic inspection of PV system, technical skills on repair and replacement of malfunctioning parts
- Target person :
 - A. Operational management / Monitoring: MIEM, UTE
 - B. Basic technology / O&M / Troubleshooting: UTE Salto
- Implementation measure :
Using installed PV facility and prepared O&M manual
- Trainee Resource :
 - A. Operational management / Monitoring: MIEM, UTE / 4 persons (2 for each)
 - B. Basic technology / O&M / Troubleshooting: UTE Salto / 2 persons

(2) Education / Awareness- Raising

(Japanese side)

- Necessary technology/ category of business :
Environmental awareness-raising and education through reduction of GHG emission using PV system /consultant
- Needed technical level :
Environmental education concerning energy conservation or global warming
- Implementation measure :
Explanation and guidance using brochure and holding a simulation seminar
- Implementation resource :

| | |
|---------------------|-----------------------------------|
| Dispatched engineer | Environmental Educator (1 person) |
| Dispatched period | 0.8MM |
- Implementation contents

Table -10 Education / Awareness-Raising

| | Contents | M/M |
|----|---|-----|
| 1. | Comprehension test | 0.1 |
| 2. | Preparation of brochure for awareness-raising activity. | 0.4 |
| 3. | Hold an awareness-raising seminar activity | 0.3 |

(JICA Study Team)

(Uruguayan side)

- Necessary technology/ category of business :
Environment / Education / Awareness-raising / Environment and publication
- Current technical level : Knowledge on Environment/Awareness-raising
- Needed technical level : Providing guidance to those intending to visit the PV system
- Target person: DU CTM staff
- Implementation measure: Implementation of awareness-raising activities using prepared brochure
- Trainee Resource : 2 personnels

6. Procurement Method of Implementation Resource

In the soft component plan, the direct support method is applied since it is difficult to find any sub-contractor because it is the first attempt on PV system installation in Uruguay. Under the project, main components will be procured in Japan. Therefore, it is necessary to dispatch experts from Japan to transfer O&M technology.

7. Draft Implementation Schedule

A. Operational Management/Monitoring

Technical transfer will commence after the trial operation of solar PV facility.

B. Basic technology of PV system / O&M / Troubleshooting

Technical transfer on daily maintenance will commence after completion of the PV system installation. The training schedule for periodic inspection is planned to be overlapped with the installation period for deeper understanding on the PV system. The training on troubleshooting will be commenced after the installation and conducted in parallel with the field test, acceptance test and initial operation test term.

C. Awareness-raising

The training on awareness-raising has to coincide with the initial operation term since visitors are expected at that time. The soft component has to be completed within three months after completion of installation.

8. Output

Output documents

- Manual :
- Manual of daily and periodical O&M (Spanish)
 - Awareness-raising materials (Brochure, etc.) (Spanish)

| | | |
|------------------|--------------------|-----------|
| Progress Report: | Spanish | 10 copies |
| | English | 10 copies |
| | Japanese (Summary) | 10 copies |
| Final Report : | Spanish | 10 copies |
| | English | 10 copies |
| | Japanese (Summary) | 10 copies |

9. Responsibilities of Implementation Organization

Requirement :

The targets of the soft component are the O&M staff of MIEM and UTE Salto regional

technical staff. The responsibilities of the implementation organization are as follows:

- (1) Selection of candidate trainee considering sustainability;
- (2) Provide spaces for training and working; and
- (3) Training system for O&M technician in each organization

Disincentive :

- (1) Continuous O&M is not executed because of job changes and dislocation of trained staff.
- (2) In the soft component, language to be used is Spanish. Manuals and seminar materials have to be prepared in Spanish.

Necessity measure :

- (1) Technologies have to be transferred to several persons. The training manuals and system for O&M technicians have to be maintained in each organization
- (2) Spanish translator is required.

10. Implementation Schedule of Soft Component

The schedule for implementing the soft component is shown in Table-11.

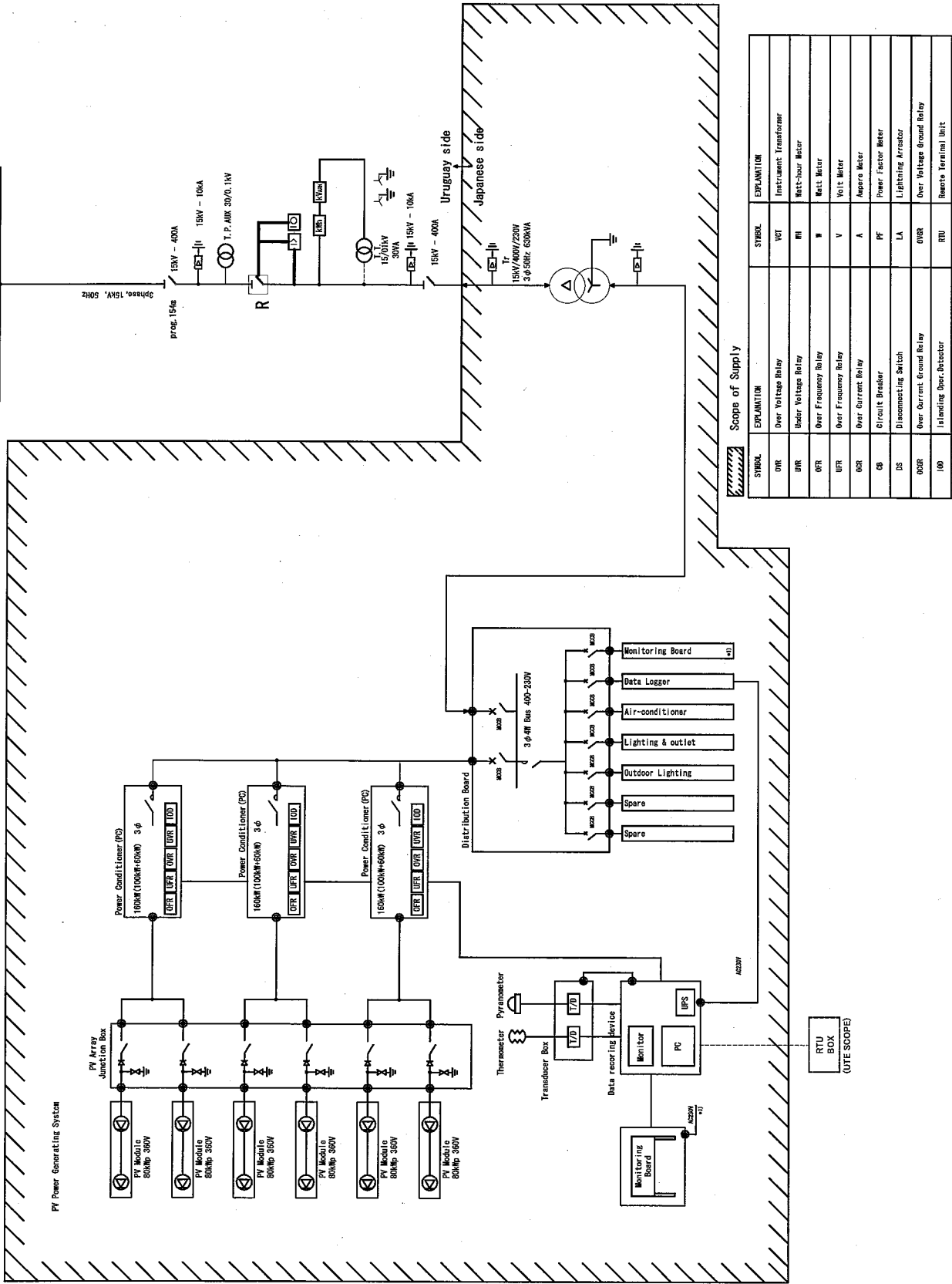
Table-11 Implementation Schedule of Soft Component

| Work Items | Months | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|--------|---|---|---|---|---|---|---|---|---|----|----|----|----|
| Contract with a Tenderer | | ▼ | | | | | | | | | | | | |
| Procurement of PV System | | | | | | | | | | | | | | |
| Design | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Manufacturing | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Pre-ship inspection and Transportation | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Construction of PV System | | | | | | | | | | | | | | |
| 1. Prepalation Works | | | | | | | | | | | | | | |
| (1) Preparation and Cleaning | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| (2) Procurement and Transportation | | | | | | | | | | | | | ■ | ■ |
| 2. Installation Works | | | | | | | | | | | | | | |
| (1)Foundation and Assembling of Mounting Structure | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| (2)Installation of PV module and Grid interconnection equipment | | | | | | | | | | | | | ■ | ■ |
| (3) Installation of Monitering Display Panel | | | | | | | | | | | | | ■ | ■ |
| 3. Adjustment and Test/Traial Operation and Training | | | | | | | | | | | | | ■ | ■ |
| 4. Completion | | | | | | | | | | | | | ■ | ■ |
| Soft Component | | | | | | | | | | | | | | |
| Basic Knowledge/O&M | | | | | | | | | | | | | ■ | ■ |
| Lecture/Lesson | | | | | | | | | | | | | ■ | ■ |
| Trouble Shooting | | | | | | | | | | | | | ■ | ■ |
| Final Report | | | | | | | | | | | | | ■ | ■ |
| Rising Awareness | | | | | | | | | | | | | ■ | ■ |
| Seminar/Preparation of Phanphlet | | | | | | | | | | | | | ■ | ■ |
| Activity | | | | | | | | | | | | | ■ | ■ |
| Final Report | | | | | | | | | | | | | ■ | ■ |

Appendix-6 Drawings

| No | Code | Figure Title |
|----|----------|---------------------------|
| 1 | UR-E-101 | SINGLE LINE DIAGRAM |
| 2 | UR-E-102 | PV SYSTEM ARRANGEMENT (1) |
| 3 | UR-E-103 | PV SYSTEM ARRANGEMENT (2) |

UTE 15kV Distribution Line (Grid)



Scope of Supply

| SYMBOL | EXPLANATION | SYMBOL | EXPLANATION |
|--------|---------------------------|--------|---------------------------|
| OTR | Over Voltage Relay | VCT | Instrument Transformer |
| ORV | Under Voltage Relay | MI | Watt-hour Meter |
| OFR | Over Frequency Relay | M | Mitt Meter |
| UFR | Over Frequency Relay | V | Volt Meter |
| OCR | Over Current Relay | A | Ampere Meter |
| CB | Circuit Breaker | PF | Power Factor Meter |
| DS | Disconnecting Switch | LA | Lightning Arrester |
| OSDR | Over Current Ground Relay | OWR | Over Voltage Ground Relay |
| IOU | In-landing Over-Detector | RTU | Remote Terminal Unit |

THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY BY SOLAR ELECTRICITY GENERATION SYSTEM

DRAWING TITLE
SALTO GRANDE
SINGLE LINE DIAGRAM

PREPARED BY
KUMASU

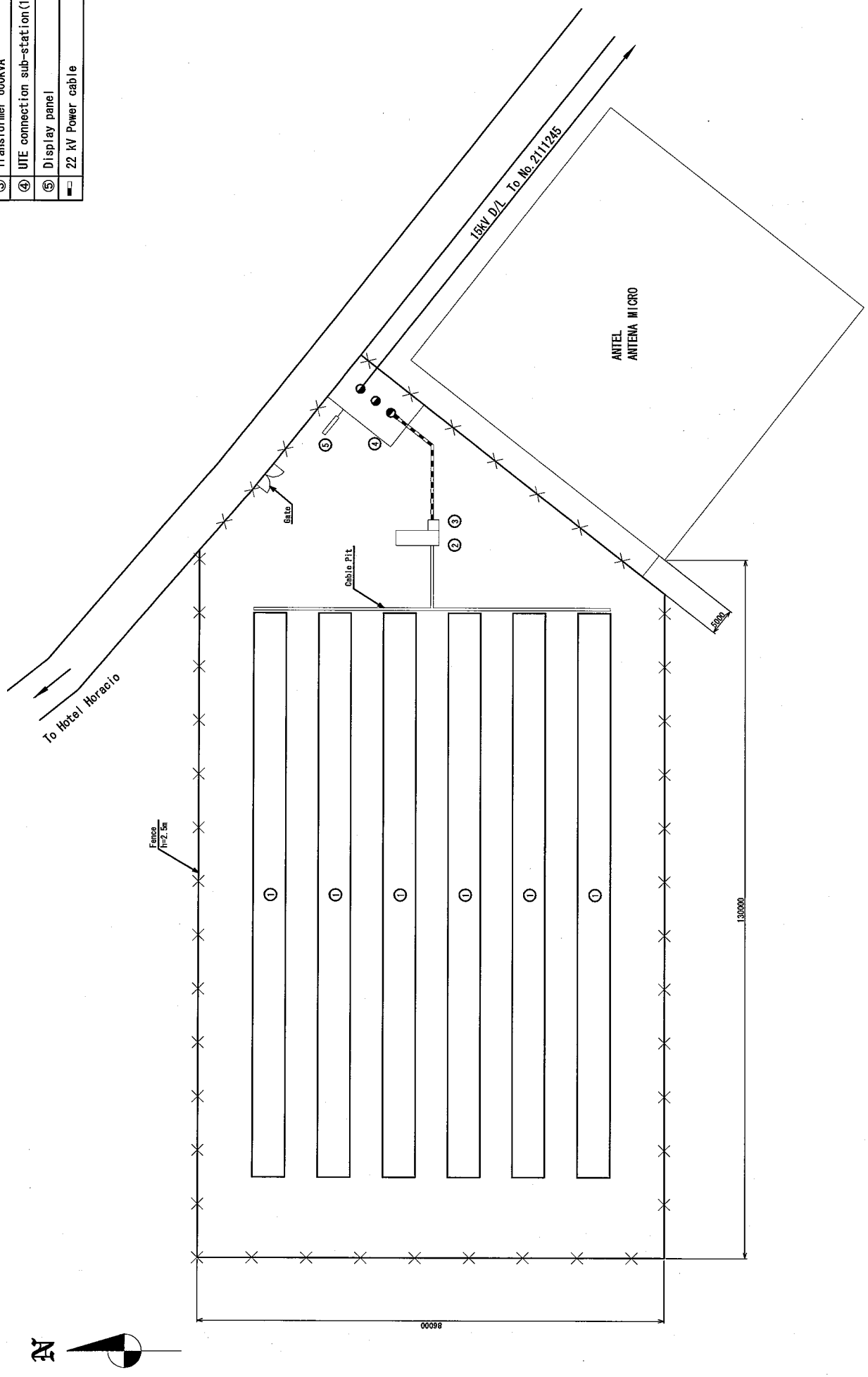
CHECKED BY
EGAWA

APPROVED BY
KOBAYASHI

DATE
Jun.-14, 2010

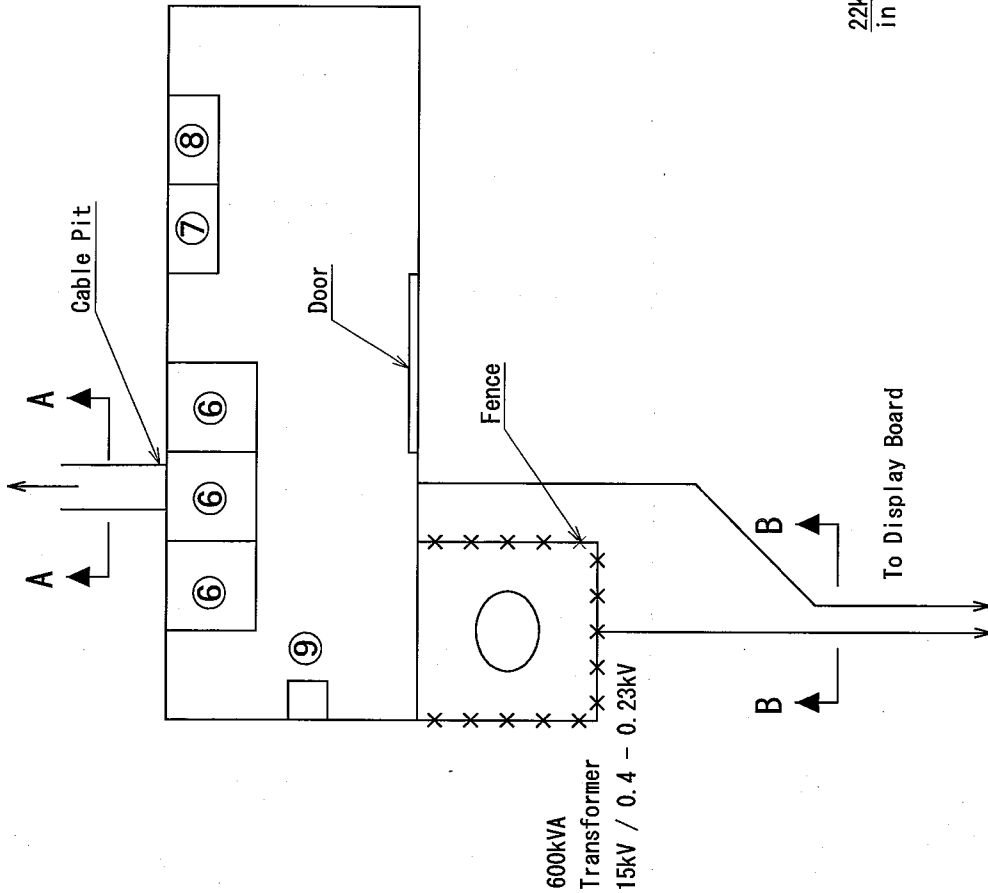
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| | |
|---|--|
| ① | PV Array 480kWh (80kWh x 6) |
| ② | Control House |
| ③ | Transformer 600kVA |
| ④ | UTE connection sub-station (15m x 10m) |
| ⑤ | Display panel |
| ■ | 22 kV Power cable |



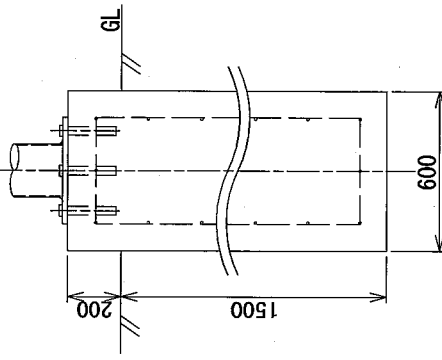
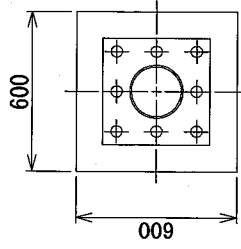
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| THE PROJECT FOR INTRODUCTION OF CLEAN ENERGY BY SOLAR ELECTRICITY GENERATION SYSTEM | DRAWING TITLE | | DRAW. NO. | PREPARED BY | KUMASU |
| | SALTO GRANDE PV SYSTEM ARRANGEMENT | | UR-E-102 | CHECKED BY | EGAWA |
| | | | | APPROVED BY | KOBAYASHI |
| | | | | DATE | Feb-19, 2010 |
| NIPPON KOEI CO., LTD. | | | | | |

To PV Array, Junction Box

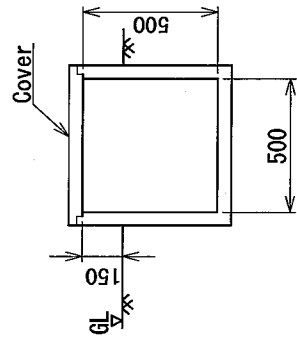


| | |
|---|--------------------|
| ⑥ | Power Conditioner |
| ⑦ | Data Logger |
| ⑧ | PC Console/Desk |
| ⑨ | Distribution Board |

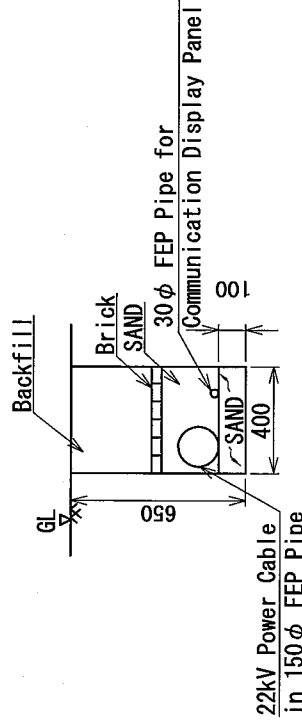
PV SYSTM Foundation
S=1/20



22kV Power Cable to UTE
Connection Sub-station



Section A-A
Cable Pit
S=1/20



Section B-B
S=1/20

THE PROJECT
FOR
INTRODUCTION OF CLEAN ENERGY
BY SOLAR ELECTRICITY GENERATION SYSTEM

DRAWING TITLE
SALTO GRANDE
CIVIL WORKS & PV SYSTEM FOUNDATION

DRAW. NO.
UR-E-103

PREPARED BY
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DATE
Feb-12, 2010



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Appendix-7 References



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SECRETARIA DE ESTADO

SE VASE CITAR

COMODATO

En la ciudad de Montevideo, República Oriental del Uruguay, a los 12 días del mes de agosto de dos mil nueve, entre, **POR UNA PARTE** : la Delegación del Uruguay en la Comisión Técnica Mixta de Salto Grande (en adelante la D del U o el comodante), con domicilio a los efectos de este contrato en la Comención 1343 10° piso, de la ciudad de Montevideo, representada en este acto por su Presidente, Ing. Enrique Topolansky y por su Delegado Ing. Gabriel Rodríguez; y **POR OTRA PARTE** : el Ministerio de Industria, Energía y Minería de la República Oriental del Uruguay, Dirección Nacional de Energía y Tecnología Nuclear (en adelante DNETN o el comodatario), con domicilio contractual en la calle Paysandú s/n esquina Av. Del Libertador, Edificio ANCAP, -° piso de la ciudad de Montevideo, República Oriental del Uruguay, representada en este acto por el Sr. Ministro, Ing. Daniel Martínez, conviene la celebración del siguiente contrato de comodato:

PRIMERO - (ANTECEDENTES): De acuerdo a lo establecido en el Decreto N° 522/991 de 20 de setiembre de 1991 la D del U en la CTM de SG tiene a su cargo la administración de diversos inmuebles, ubicados en la 2ª Sección Judicial de Salto, entre los que se incluye el referido en la cláusula segunda de este contrato. El artículo 2º del referido Decreto comete a la D del U en la CTM de SG la administración de tales inmuebles y en especial a realizar todo tipo de actos de disposición de los mismos, salvo el de enajenación, con las personas físicas o jurídicas, públicas o privadas que estime conveniente.

SEGUNDO - (PREDIO A ENTREGAR): La D del U entrega en comodato o préstamo de uso a la DNETN y éste toma en tal carácter, el predio padrón N° 3079

n/a ubicado en la 2ª Sección Judicial del departamento de São según croquis (o plano) adjunto, que firmado por las partes, se considera parte integrante de este contrato (Anexo).

TERCERO - (DESTINO): El destino a darle por la DNET al inmueble que recibe en comodato será el de realizar un emprendimiento para la producción de energía solar fotovoltaico.

CUARTO - (PLAZO): El plazo de este contrato comenzará con la firma del mismo y se extenderá hasta que el comodatario cese en la actividad y realice el desmantelamiento del emprendimiento. El desmantelamiento no podrá, en ningún caso, ir más allá de los seis (6) meses del cese de la actividad.

QUINTO - (OBLIGACION DEL COMODATARIO): El comodatario está obligado a velar como un buen padre de familia en la conservación de la cosa prestada, pudiendo cometer la administración y/o operación de la planta a terceros.

El comodatario no podrá servirse de ella sino para el uso convenido, salvo autorización expresa del comodante.

SEXTO: El comodante renuncia a ejercer el derecho establecido en el artículo 2234 del Código Civil, salvo que previamente se abonare al comodatario la indemnización por los daños que ello causare.

SÉPTIMO - (RESPONSABILIDAD DEL COMODATARIO): Será responsabilidad exclusiva del comodatario cualquier daño o perjuicio que se ocasionaren en la puesta en funcionamiento del emprendimiento especificado en la cláusula TERCERA.

Asimismo serán de su cargo todas las obligaciones de cualquier naturaleza que deriven de la instalación y funcionamiento del emprendimiento.



MIEM

MINISTERIO DE INDUSTRIA,
ENERGÍA Y MINERÍA

Paseo 1101 - 4º Piso - C.P. 11.000
Tel: (999 2) 900 0231 al 33
Correo: info@miem.gub.uy
Montevideo - Uruguay

SECRETARÍA DE ESTADO

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| ESPACIO CITA |
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Y para constancia se labran dos (2) ejemplares del mismo tipo en el lugar y fecha arriba indicados, que, previa lectura y ratificación forman las partes de conformidad.



MIEM
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SECRETARIA DE ESTADO

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GRATUITOUS BAILMENT

In the city of Montevideo, the Oriental Republic of Uruguay, on the twelfth day of August of the year 2009, between the Uruguayan Delegation of the Joint Technical Committee of Salto Grande (hereinafter the UD or the gratuitous bailer), domiciled for this purposes at Convención 1343, 10th floor, Montevideo, **PARTY OF THE FIRST PART**, represented in this act by its President, Eng. Enrique Topolansky and by its Delegate, Eng. Gabriel Rodríguez and, the Ministry of Industry, Energy and Mining of the Oriental Republic of Uruguay, National Directorate of Energy and Nuclear Technology, (hereinafter DNETN or the gratuitous bailee), domiciled for contractual purposes at Paysandú St. at the corner with Av. Del Libertador, ANCAP Building, 4th floor, Montevideo, the Oriental Republic of Uruguay, **PARTY OF THE SECOND PART**, represented in this act by Mr. Eng. Daniel Martínez, Minister, who agree to execute the following gratuitous bailment agreement:

FIRST – (BACKGROUND): In accordance to what is established in Decree No. 522/991 dated September 20th, 1991, the UD of the CTM of SG is in charge of the administration of several properties located at the 2nd Judicial District of Salto, among which the property mentioned in Clause 2 of this agreement is included. Section 2 of the aforementioned Decree states the UD of the CTM of SG is in charge of said properties and is specially in charge of performing any act of disposition regarding said properties, except for alienation, with the natural or legal persons, either public or private, it may deem proper.

SECOND – (PLOT OF LAND TO GIVE): The UD gives the plot of land registered under No. 3079 m/a located in the 2nd Judicial District of the

department of Salto as per enclosed sketch (or map) as gratuitous bailment or in loan of use to DNETN and DNETN takes it as such. The mentioned attached map, duly signed by the parties, is considered to be a part of this agreement (Annex).

THIRD – (USE): The use DNETN will give to the property received as gratuitous bailment will be an undertaking to produce photovoltaic solar energy.

FOURTH – (TERM): The term of this agreement will start upon its execution and will continue to be in force up to the moment when the gratuitous bailee stops performing said activity and dismantles the undertaking. Said dismantling shall not, in any case, be delayed for more than 6 (six) months once the cessation of activities has taken place.

FIFTH – (GRATUITOUS BAILEE OBLIGATION): The gratuitous bailee is obliged to ensure the good preservation, condition and state of the lent property, and may appoint the administration and/or operation of the plant to third parties. The gratuitous bailee shall not use it with purposes different to those agreed, except expressly authorised by the gratuitous bailer.

SIXTH: The gratuitous bailer hereby disclaims the right established under section 2234 of the Civil Code, except in the case the gratuitous bailee previously receives the corresponding compensation for the damages caused due to the exertion of said right.

SEVENTH – (GRATUITOUS BAILEE RESPONSIBILITY): Any damage caused through the launching of the operation of the undertaking specified in the THIRD clause shall be the exclusive responsibility of the gratuitous bailee.

Likewise, every obligation of any nature deriving from the installation and operation of the undertaking shall be borne by the gratuitous bailee.

And for this to be considered, 2 (two) copies of the same tenor of these presents are prepared and signed after being read and acknowledged by the parties.

**CARTA DE INTENCIÓN ENTRE
ADMINISTRACIÓN NACIONAL DE USINAS Y TRASMISIONES ELÉCTRICAS (UTE) Y
EL MINISTERIO DE INDUSTRIA, ENERGIA Y MINERIA**

La Administración Nacional de Usinas y Trasmisiones Eléctricas, representada por su Presidente, Ing. Beno Ruchansky, y el Ministerio de Industria, Energía y Minería de la República Oriental del Uruguay, representado por su Ministro, Ing. Daniel Martínez, reunidos en Montevideo el día 28 de agosto de 2009, por medio de esta Carta de Intención:

1. Manifiestan su intención de desarrollar todas las actividades necesarias a efecto de poder dar cumplimiento a todos los aspectos asignados a la contraparte uruguaya contenidos en el documento Minuta de Discusiones sobre el Estudio Preparatorio para el Proyecto de Promoción de Energía Limpia mediante el Uso del Sistema Solar Fotovoltaico.
2. Mediante el impulso de acciones de cooperación e intercambio en esa área de interés común, esperan asegurar el cumplimiento del objetivo principal del Proyecto, promoviendo la utilización de energías limpias, reduciendo las emisiones a través del uso del sistema fotovoltaico interconectado con la red nacional y evaluando la integración y el comportamiento de esta tecnología.
3. En particular, por este medio reafirman su voluntad de cooperar en la definición de cumplimiento a las tareas asignadas para cada institución en el punto 3 del referido documento. "Organización responsable y agencia ejecutora" por el cual se establece que *"La agencia ejecutora encargada de supervisar la implementación, del seguimiento del proyecto y de la futura operación y mantenimiento de las instalaciones es la Administración Nacional de Usinas y Trasmisiones Eléctricas (en adelante "UTE")"*.

Se buscará principalmente alcanzar los siguientes objetivos específicos:

1. Asegurar por parte de UTE los aspectos necesarios para la conexión al Sistema Interconectado Nacional en un plazo acorde a los requerimientos contenidos en la Minuta de Discusión anteriormente referida.
2. Cooperar en la etapa de montaje y puesta en marcha de las instalaciones.
3. Desarrollar los mecanismos tendientes a asegurar una adecuada operación y mantenimiento del equipamiento instalado.
4. Definir mecanismos que permitan solventar los costos operativos de las instalaciones.
5. Elaborar procedimientos necesarios para asegurar el conocimiento por ambas partes de la información relativa al desempeño de la Unidad.

6. Establecer criterios relacionados al acceso y uso con fines académicos o de difusión de la tecnología a las instalaciones.

Las autoridades responsables de implementar los objetivos de esta Carta de Intención son, en el caso de la Administración Nacional de Usinas y Trasmisiones Eléctricas (UTE), su Directorio; y en el caso del Ministerio de Industria Energía y Minería (MIEM) el Director Nacional Energía y Tecnología Nuclear.

Las autoridades responsables de cada institución podrán de común acuerdo convocar a las instituciones o agencias, públicas o privadas que estimen pertinentes, para participar en las actividades de cooperación definidas según corresponda.

Esta Carta de Intención dará lugar a reuniones periódicas entre las autoridades responsables y las instituciones respectivas, para redactar y aprobar un **“Contrato de usufructo, operación y mantenimiento de las instalaciones de la Planta Solar Fotovoltaica”**.

Firmada en Montevideo, Uruguay, a los 28 días de agosto de 2009, en duplicado, siendo ambas versiones igualmente auténticas.

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| <p>Por la Administración Nacional de Usinas y Trasmisiones Eléctricas (UTE)</p> <p>Ing. Beno Ruchansky</p> <p>Presidente</p> | <p>Por el Ministerio de Industria, Energía y Minería (MIEM)</p> <p>Ing. Daniel Martínez</p> <p>Ministro</p> |
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**LETTER OF INTENT BETWEEN
THE NATIONAL ADMINISTRATION OF POWER STATIONS AND ELECTRICAL TRANSMISSIONS
(UTE)
AND THE MINISTRY OF INDUSTRY, ENERGY AND MINING**

The National Administration of Power Stations and Electrical Transmissions, represented by its President, Eng. Beno Ruchansky, and the Ministry of Industry, Energy and Mining of the Oriental Republic of Uruguay, represented by its Minister, Eng. Daniel Martínez, gathered in Montevideo on the twenty-eighth day of August of the year 2009, by means of this Letter of Intent hereby:

1. Express their intention to develop all the necessary activities to comply with every aspect appointed to the Uruguayan counterpart included in the Minutes of Discussion regarding the Preparatory Survey on The Project for Clean Energy Promotion Using Solar Photovoltaic System.
2. Through the boosting of cooperation and exchange activities in this common interest area, they expect to guarantee the achievement of the main objective of the Project, promoting the use of clean forms of energy, reducing the emissions through the usage of a photovoltaic system interconnected with the national network and assessing the integration and behaviour of this technology.
3. Specially, through this means, the parties to this Letter strengthen their will to cooperate in the fulfilment of the tasks appointed to each institution of item 3 of the referred document. "Responsible organization and executing agency" through which it is established that *"The executing agency in charge of supervising the implementation, follow up and future operation and maintenance of the facilities is the National Administration of Power Stations and Electrical Transmissions (mentioned later as "UTE")."*

The goal will be mainly to achieve the following specific objectives:

1. To guarantee on the side of UTE, the necessary aspects for the connection to the National Interconnected System in a period of time in accordance with the requirements mentioned in the abovementioned Minutes of Discussion.
2. To cooperate in the assembling stage and implementation of the facilities.
3. To develop the mechanisms to ensure the adequate operation and maintenance of the installed equipment.
4. To define the mechanisms to pay for the operational costs of the facilities.
5. To prepare the necessary procedures to guarantee the knowledge of both parties regarding the information about the performance of the Unit.

6. To set the criteria related to the access and use with academic and diffusion purposes regarding the technology at the facilities.

The authorities responsible for implementing the objectives of this Letter of Intent are, in the case of the National Administration of Power Stations and Electrical Transmissions (UTE), its Board of Directors; and in the case of the Ministry of Industry, Energy and Mining (MIEM), the National Director of Energy and Nuclear Technology.

The authorities responsible for each institution may, by common consent, call the institutions or agencies, either public or private, that they may consider appropriate, to participate in the corresponding defined cooperation activities.

This Letter of Intent will give rise to periodic meetings between the responsible authorities and the corresponding institutions, in order to prepare and approve a **“Contract of use, operation and maintenance of the facilities of the Photovoltaic Solar Plant”**.

Document executed in Montevideo, Uruguay, on the twenty-eighth day of August of the year 2009, in two equally identical copies.

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| <p>NATIONAL ADMINISTRATION OF POWER STATIONS AND ELECTRICAL TRANSMISSIONS (UTE)</p> <p>By Eng. Beno Ruchansky President</p> | <p>Ministry of Industry, Energy and Mining (MIEM)</p> <p>By Eng. Daniel Martínez Minister</p> |
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