CDM Monitoring Report of Poechos I Project
(The Project)

ERs MONITORING REPORT

Poechos I Project
Ref. Number 0086.

COVERING April 1st, 2009-March 31st, 2010.

Version 1, April 15th, 2010

ANNUAL REPORT OF THE MONITORING PROGRAM

PERIOD: APRIL 2009 – MARCH 2010

PROJECT NAME	POECHOS I PROJECT
INSTALLED CAPACITY	15.2 MW
PARTICIPANTS	**SINERSA** - Operator **World Bank** – Netherlands CDM Facility (NDCMF),
TECHNICAL DESCRIPTION OF THE PROJECT	
Project Location	Department of Piura, Peru
Region / State / Province	Department of Piura / Province of Sullana / District of Lancones
Classification of Project Activity	Hydroelectric power production
Number of Area of Responsibility	1
Area of Responsibility	Renewable Power
Project Activity	Generation of Renewable Energy from Hydropower plant connected to national grid. Additional energy production from hydropower plant, using existing reservoir, without increase of reservoir volume
Technology used	Used technology is based on 2 Kaplan standard turbines and 2 Generators, connected by vertical shaft.
Implementation Status	In operation since April 2004

PERFORMANCE OF THE PROJECT IN THE VERIFIED PERIOD APRIL 1ST, 2009 – MARCH 31ST, 2010

Comparison of the projection CERs and real CERs April 1st, 2009 – March 31st, 2010

Year	ERs (tCO2e) Projection in PDD	ERs(tC02e) Real to March 31,2010
1st April 2005	31,463	19,178
1st April 2006	31,463	32,102
1st April 2007	31,463	29,933
1st April 2008	31,463	39.359
1st April 2009	31,463	57,767
1st April 2010	31,463	40,643
TOTAL	**188,778**	**218,982**

For the project, the main parameter that defines annual energy production and consequently reduction of the emission of CO2, is hydrology. HPP Poechos 1 could produce up to 133 GWh/year, if it operates during the whole year with maximum required volume of water and in that way establishing conditions for the maximum theoretical production of the plant.

The PDD has used an annual production close to 58 GWh/year. From the above presented data it is noticeable that each year for the hydrology of the Chira River varies widely, where for example the first year of operation was a very dry one, while the latest two were with annual inflows considerable over average values. Therefore, the total energy production for the verification period April 1st, 2009 – March 31st, 2010 was more than average, which directly resulted in increase of the corresponding reduction of CO2 emissions.

We can notice that for the period April 1st, 2009-March 31st, 2010 verified the plant load factor was 67%, which is normal and usual for a hydropower plant with available water for energy production.

Anyhow, for the whole period of 6 years, the total difference between real and estimated data within PDD is only 16% which could be treated as reasonable.

DESCRIPTION OF METHODOLOGY USED

Total quantity of tCO2, as a reduction of CO2 emission, due to hydropower plant operation, has been calculated using Combined Margin (CM). ACM0002

CM is simple average of Operational Margin (OM) and Build Margin (BM), applying the following formula:

$$CM = 0.5(OM) + 0.5(BM)$$

Corresponding calculation procedure, in accordance with Monitoring Plan, is presented in Annex 2.

STEP 1 - CALCULATION OF OPERATING MARGIN

Using methodology of analysis of Dispatch data, the following formula has been applied

DDA-OM = E_OMy/EGy

a) During the first step of analysis, dispatch data from COES has been received and analyzed, related to operation of the national electric system for each 15 minutes that have been converted to data covering each hour of system operation.

b) Data related to marginal costs have been also received from COES, providing conditions for determination of Order of Merits for each power plant, in function of corresponding operational costs of each unit and comparison with corresponding operation costs of Santa Rosa substation (as a unit measure for

the whole Peruvian energy system), for the operation during peak load hours. Details of the procedure applied are presented in Annex 2.

c) Using this Merit Order all thermal power plants of the national energy system has been compared and ordered in columns.

d) Resulting data has been introduced in sheets from #3 to #14 of the document: Poechos DDA-OM.xls (for details see Monitoring Plan)

e) Corresponding HPP Poechos 1 production, for each hour, has been also introduced in the same document, in column EE or corresponding column. This information has been introduced according to official data obtained by ENOSA, local distribution company that acquires total HPP Poechos 1 energy production (for details see Annex 3).

f) For the period of analysis (April 2009 – March 2010), the new power plants to enter into operation within national energy system are HPP Santa Cruz G4 (MDL Project), TPP Kallpa G2, TPP Emergcency Trujillo, TPP Chilca1 G3, TPP Santa Rosa TG8, HPP La Joya (MDL Project), TPP Paramonga (Project MDL), according to corresponding COES information.

g) For this period of analysis has been used the NECs corresponding to "Statistical Report 2009" of COES.

Results obtained are presented in continuation.

Period April 2009 – March 2010

E_OMy:	**SUM Egh*EF_DDh**	49,405	88,811.30	**:EGy**
EOMy/Egy:	**Operating Margin**	**DDA_OM**	**0.55629**	**:EF_OMy DD (TCO2/MWh)**

STEP 2 – CALCULATION OF BUILD MARGIN

a) For this group of calculations sheet Poechos BM2.xls, from Monitoring Plan, has been used

b) COES reported that for the period April 2004 - March 2005, no new power plant entered into operation.

c) COES reported that for the period April 2005 - March 2006, new power plants that entered into operation are Hydropower plant Yuncan and Thermal plant Santa Rosa.

d) COES reported that for the period April 2006 - March 2007, Thermal plant Chilca 1. entered into operation

e) COES reported that for the period April 2007 - March 2008, Thermal plant Kallpa entered into operation

f) COES reported that for the period April 2008 - March 2009, Thermal plant Oquendo and Hidraulic Plants Caña Brava, Santa Cruz and Carhuaquero G4 entered into operation

g) COES reported that for the period April 2009 – March 2010, HPP Santa Cruz G4 (MDL Project), TPP Kallpa G2, TPP Emergcency Trujillo, TPP Chilca1 G3, TPP Santa Rosa TG8, HPP La Joya (MDL Project), TPP Paramonga (Project MDL),

h) Corresponding energy production for the period April 2009 – March 2010, for the new power plants, has been introduced, including classification according to technology applied for each power plant.

i) CDM projects production has not been introduced.

The following results were obtained:

Period April 2009 – March 2010

CALCULATION OF BM:

Technologies in Selected Sample	Most Recent Year Gen (GWh)	% per technology	APFR	C	O	44/12	CO2 Emissions(tCO2)
Coal	125.35	2%	1,122.58	25.80	0.980	3.67	104,072
d2	9.52	0%	115.77	20.20	0.990	3.67	8,489
r6	30.69	0%	277.14	21.10	0.990	3.67	21,227
r500	0.00	0%	0.00	21.10	0.990	3.67	0
Dry Gas	3,565.92	55%	38,481.20	15.30	0.995	3.67	2,148,002
Pure Methane Gas	74.99	1%	1,007.36	14.50	0.995	3.67	53,290
Dry Gas CC	0.00	0%	0.00	15.30	0.995	3.67	0
Hydro	2,698.57	41%	0.00	0.00	0.000	0.00	0
Total	6,505.05	100%					2,335,079

BM2= **0.35896 tCO2//MWh**

CALCULATION OF CM

DDA-OM=	0.55629
BM2=	0.35896
CM= 0,5*(DDA-OM + BM2)	0.45763

STEP 3 - PROJECT PRODUCTION FOR THE ASSESSMENT PERIOD

MONTH	MWh
Apr-09	10,545.915
May-09	11,518.263
Jun-09	10,726.797
Jul-09	9,440.743
Aug-09	6,016.125
Sep-09	5,148.668
Oct-09	5,755.265
Nov-09	4,912.477
Dic-09	3,945.829
Jan-10	2,812.195
Feb-10	7,912.674
Mar-10	10,076.349
TOTAL	**88,811.301**

This energy production is defined according to corresponding monthly invoices approved by ENOSA, for the whole period. Original monthly ENOSA data are resumed in Annex 3, while corresponding invoices for each month are also presented as a part of this report.

Monthly invoices has been defined and controlled by ENOSA using corresponding electric measuring system, with verification period of not less than five years. Enclosed find corresponding certificate.

Respect to verification of measurement accuracy, SINERSA has made this activity in July 2009.

STEP 4 – SUMMARIZED CERs CALCULATION

Period April 2009 – March 2010

Project	**Annual MWh**
Poechos I	**88,811.301**
Annual CERs (DDA-OM – BM2):	
Project	**Annual MWH*Combined Margin**
Poechos I	**40,643**
DDA-OM=	0.55629
BM2=	0.35896
CM= 0,5*(DDA-OM + BM2)	0.45763

QUALITY ASSURANCE CONTROL

Data:

The project hourly generation data is defined according to corresponding monthly invoices approved by ENOSA, for the whole period. Original monthly ENOSA data is resumed in Annex 3, while corresponding invoices for each month are also presented as a part of this report.

Monthly invoices have been defined and controlled by ENOSA using corresponding electric measuring system. Although no problems have been observed with operation of the neither measuring system nor ENOSA presented any claim related to measuring accuracy and instrument calibration, SINERSA carried out during 2009, relevant calibration of the measuring equipment, confirming that the equipment accuracy is totally within the established limits. Corresponding calibration certificate is presented at the end of this chapter.

As explained in DESCRIPTION OF METHODOLOGY USED, all relevant data of the Peruvian Energy System has been obtained from COES.

Quality of Data Processing:

All original data have been processed using the methodology explained above, as specified within ERCP of the PDD. For this activity the experience obtained during training and preparation of previous reports, have been used. Using corresponding monthly data, it was possible to calculate yearly consolidated C. Margin.

Quality of Data Storage:

For the corresponding calculation, actual and upgraded versions of the software have been used. All data from this period, as well as from previous periods are stored and available. All written annual reports are stored and kept within central company storage facility.

Quality of Data Delivery:

Corresponding input data from COES and ENOSA have been presented to Verifier as well as all calculations made for the specified period.

Certificates of Calibration*:*

In Peru, there is no regulation about any frequency for calibration of the equipment, such as used for measurement of energy supplied from SINERSA to ENOSA. However the PE has performed a calibration in July 10th, 2009 and plans to calibrate its meters periodically as stated in the PDD. It is necessary to mention that corresponding energy meter was also calibrated in factory prior to start of HPP Poechos 1 operation, from April 1st, 2004. As it could be observed from the corresponding certificate of the 2009 calibration, it was found that equipment operates totally within established technical limits, confirming that all measurements made up to calibration date, have been correct and accurate. Therefore it is concluded that the project is in line with the local regulation and the PDD for the verified period 2009 – 2010.

Calibration Certificates

Sindicato Energético S.A. — E&P TECNOLOGIA S.A.C.

PROTOCOLO DE PRUEBAS DE CALIBRACIÓN EN CAMPO

1. DATOS GENERALES

Subestación	CH. POECHOS	Circuito/Linea	Salida a Linea L6668- 60kV(A Sullana)
Cod. de suministro			
Nivel de tensión	60 KV	Temperatura	24° C
Fecha de prueba	10 Julio 2009	Hora	10:49 AM

2. DATOS DEL MEDIDOR

Marca	Power Measurement	Tipo	Multifunción	Modelo	ION 7600
N° Serie	PL-0303A133-01	Propiedad	Sindicato Energético		
I Nom	3 x 1-5 A	V Nom	3 x 57.7/100 V	Precisión	0.2S
N° elementos	3	N° Hilos	4		
Kh (Wh/Imp)	0,15	Kt		Ke	
R.T. Tensión	60000/100	R.T. Corriente	300/5	Fact. Lectura	

3. DATOS DEL PATRÓN CONTRASTADOR

Marca	MTE-EMH	Modelo	PRS1.3	Precisión	0,05
N° Serie	26120	Certificacion	PTB-Alemania	Incertidumbre	0,01

4. DATOS DE LA FUENTE DE ALIMENTACIÓN

Marca		Modelo	
N° Serie		I min-max	V min-max

5. RESULTADOS: CARGA REAL

N° MUESTRA			N° PULSO	ERROR . % PROM
1		10	-0,0387	
2		10	-0,1006	
3		10	-0,1327	-0,076
4		10	-0,0289	
5		10	-0,0768	
6		10	-0,1628	
7	61.40 KV	10	-0,0961	
8	235 Amp	10	-0,1549	-0,118
9	0.99 FP Ind	10	-0,0768	
10	59.96 Hz	10	-0,1006	
11	24.55 MW	20	-0,1264	
12	3.40 MVAR	20	-0,1023	
13		20	-0,0846	-0,115
14		20	-0,1601	
15		20	-0,1023	
16		20	-0,1131	
17		20	-0,0060	
18		20	-0,1007	-0,087
19		20	-0,0978	
20		20	-0,1191	
Error Promedio			-0,0991	
Incertidumbre muestral			0,0092	
Incertidumbre de medición			0,0136	
Valor asegurado de la medición			0,1626	
Valor límite de precisión clase 0.2			0,35	

N° MUESTRA		N° PULSO	ERROR %	ERROR PROM.
21		40	-0,1158	
22		40	-0,1007	
23		40	-0,0960	-0,099
24		40	-0,0873	
25		40	-0,0976	
26		40	-0,1317	
27	61.40 KV	40	-0,0684	
28	235 Amp	40	-0,0749	-0,099
29	0.99 FP Ind	40	-0,1231	
30	59.96 Hz	40	-0,0983	
31	24.55 MW	80	-0,1039	
32	3.40 MVAR	80	-0,1030	
33		80	-0,0934	-0,099
34		80	-0,1071	
35		80	-0,0855	
36		80	-0,1006	
37		80	-0,0997	
38		80	-0,1114	-0,101
39		80	-0,1009	
40		80	-0,0921	
Error Promedio			-0,0996	
Incertidumbre muestral			0,0033	
Incertidumbre de medición			0,0105	
Valor asegurado de la medición			0,1101	
Valor límite de precisión clase 0.2			0,35	

6. OBSERVACIONES

Se realizaron pruebas de contraste con carga real del sistema

Los resultados de las pruebas indican que el medidor se encuentra dentro de su clase de precisión (Clase 0.2S)

Las pruebas se efectuaron entre las 10:50 hrs y 11:30 hrs.

7. REALIZADO / PARTICIPANTES

Por SINERSA : Ing. Redy Risco

Por E&P Tecnologia SAC : Ing. William Araujo

Por ENOSA : Ing. Benjamin Vasquez

Sindicato Energetico S.A. — E&P TECNOLOGIA S.A.C.

PROTOCOLO DE PRUEBAS DE CALIBRACIÓN EN CAMPO

1. DATOS GENERALES

Subestación	SE Sullana	Circuito/Linea	Llegada de L6668 (De Poechos)
Cod. de suministro			
Nivel de tensión	60 KV	Temperatura	24° C
Fecha de prueba	10 Julio 2009	Hora	01:30 p.m.

2. DATOS DEL MEDIDOR

Marca	Power Measurement	Tipo	Multifunción	Modelo	ION 7600
N° Serie	PL-0305A001-01	Propiedad	Sindicato Energético		
I Nom	3 x 1-5 A	V Nom	3 x 57.7/100 V	Precisión	0.2S
N° elementos	3	N° Hilos	4		
Kh (Wh/Imp)	0.15	Kt		Ke	
R.T. Tensión	60000/100	R.T. Corriente	300/5	Fact. Lectura	

3. DATOS DEL PATRÓN CONTRASTADOR

Marca	MTE-EMH	Modelo	PRS1.3	Precisión	0.05
N° Serie	26120	Certificacion	PTB-Alemania	Incertidumbre	0.01

4. DATOS DE LA FUENTE DE ALIMENTACIÓN

Marca		Modelo			
N° Serie		I min-max		V min-max	

5. RESULTADOS: CARGA REAL

N° MUESTRA			N° PULSO	ERROR % PROM
1		10	-0.1150	
2		10	-0.1148	
3		10	-0.0768	-0.082
4		10	-0.0073	
5		10	-0.0948	
6		10	-0.0271	
7	59.56 KV	10	-0.0220	
8	222 Amp	10	-0.0347	-0.068
9	0.99 FP Ind	10	-0.1569	
10	59.89 Hz	10	-0.1001	
11	22.90 MW	20	-0.0785	
12	0.44 MVAR	20	-0.0752	
13		20	-0.0446	-0.065
14		20	-0.0955	
15		20	-0.0322	
16		20	-0.0812	
17		20	-0.0586	
18		20	-0.0424	-0.071
19		20	-0.1091	
20		20	-0.0644	
Error Promedio			-0.0716	
Incertidumbre muestral			0.0086	
Incertidumbre de medición			0.0132	
Valor asegurado de la medición			0.1347	
Valor límite de precisión clase 0.2			0.35	

N° MUESTRA		N° PULSO	ERROR %	ERROR PROM.
21		40	-0.0666	
22		40	-0.0799	
23		40	-0.0556	-0.061
24		40	-0.0512	
25		40	-0.0525	
26		40	-0.0876	
27	59.56 KV	40	-0.0579	
28	222 Amp	40	-0.0638	-0.064
29	0.99 FP Ind	40	-0.0457	
30	59.89 Hz	40	-0.0663	
31	22.90 MW	80	-0.0625	
32	0.44 MVAR	80	-0.0741	
33		80	-0.0780	-0.072
34		80	-0.0625	
35		80	-0.0841	
36		80	-0.0113	
37		80	-0.0999	
38		80	-0.0646	-0.061
39		80	-0.0728	
40		80	-0.0569	
Error Promedio			-0.0647	
Incertidumbre muestral			0.0041	
Incertidumbre de medición			0.0108	
Valor asegurado de la medición			0.0766	
Valor límite de precisión clase 0.2			0.35	

6. OBSERVACIONES

Se realizaron pruebas de contraste con carga real del sistema

Los resultados de las pruebas indican que el medidor se encuentra dentro de su clase de precisión (Clase 0.2S)

Las pruebas se efectuaron entre las 13:30 hrs y 14:30 hrs.

7. REALIZADO / PARTICIPANTES

Por SINERSA : Ing. Redy Risco

Por E&P Tecnología SAC : Ing. William Araujo

Por ENOSA : Ing. Benjamin Vasquez

TRANSLATION

CALIBRATION PROTOCOL TEST

1. GENERAL INFORMATION

Substation	CH. POECHOS	**Circuit/Line**	Line L6668-60KV(to Sullana)
Code			
Voltage level	60 KV	**Temperature**	24° C
Test Date	July 10, 2009	**Time**	01:49 p.m

2. METER DATA

Make	Power Measurement	**Type**	Multlfuncion	**Model**	ION 7600
Series	PL-0303A133-01	**Owner**	Sindicato Energético		
I Nom	3 x 1-5 A	**V Nom**	3 x 57.7/100 V	**Accuracy**	0.2S
N' Elements	3	**N' Wire**	4		
Kh (Wh/Imp)	0,15	**Kt**		**Ke**	
R.T. Tension	60000/100	**R.T. Current**	300/5	**Fact.**	

3. TESTER DATA

Brand	MTE-EMH	**Model**	PRS1.3	**Precision**	0,05
N' Serie	26120	**Certification**	PTB-Alemania	**Uncertainty**	0,01

4. POWER SUPPLY DATA

Brand		**Model**			
N' Serie		**I min-max**		**V min-max**	

5. RESULTS:

REAL LOAD

Nº SAMPLE			N° PULSE	ERROR % PROM	Nº SAMPLE		N° PULSE	ERROR %	ERROR PROM.
1		*10*	-0,0387		*21*		40	-0,1158	
2		*10*	-0,1006		22		40	-0,1007	
3		*10*	-0,1327	-0,076	23		*40*	-0,0960	-0,061
4		*10*	-0,0289		*24*		40	-0,0873	
5		*10*	-0,0768		25		*40*	-0,0976	
6		*10*	-0,1628		26		40	-0,1317	
7	61.40KV	*10*	-0,0961		*27*	61.40 KV	*40*	-0,0684	
8	235Anp	*10*	-0,1549	-0,118	28	235 Amp	40	-0,0749	-0,064
9	0.99 FP Ind	*10*	-0,0768		29	0.99 FP Ind	40	-0,1231	
10	59.96 Hz	*10*	-0,1006		*30*	59.96 Hz	40	-0,0983	
11	24.55 MW	*20*	-0,1264		31	24.55 MW	80	-0,1039	
12	3.40 MVAR	*20*	-0,1023	-0,115	32	3.40 MVAR	*80*	-0,1030	-0,072
13		*20*	-0,0846		*33*		*80*	-0,0934	

14		*20*	-0,1601	
15		*20*	-0,1023	
16		*20*	-0,1131	
17		*20*	-0,0060	
18		*20*	-0,1007	-0,087
19		*20*	-0,0978	
20		*20*	-0,1191	
Average error			-0,0991	
Sample uncertainty			0.0092	
Uncertainty of measurement			0.0136	
Insured value of the measurement			0.1626	
Limiting value of accuracy class 0.2			**0.35**	

34		*80*	-0,1071	
35		*80*	-0,0855	
36		*80*	-0,1006	
37		*80*	-0,0997	
38		*80*	-0,1114	-0,061
39		*80*	-0,1009	
40		*80*	-0,0921	
Average error			-0,0996	
Incertldumbre muestral			0,0033	
Uncertainty of measurement			0,0105	
Insured value of the measurement			0,1101	
Limiting value of accuracy class 0.2			**0.35**	

6. OBSERVATIONS

Contrast tests were conducted with actual system load

The results of the tests indicate that the meter is within its class of accuracy (Class 0.2S)

The tests were performed between the 10:50 hrs and 11:30 hrs.

7. PARTICIPANTS

By SINERSA Eng. Redy Risco

By E&P Tecnologla SAC : Eng. William Araujo

By ENOSA : Eng. Benjamin Vasquez

CALIBRATION PROTOCOL TEST

1. GENERAL INFORMATION

Substation	SE Sullana	**Circuit/Line**	End L6668 (From Poechos)
Code			
Voltage level	60 KV	**Temperature**	24° C
Test Date	July 10, 2009	**Time**	01:30 p.m

2. METER DATA

Make	Power Measurement	**Type**	Multlfuncion	**Model**	ION 7600
Series	PL-0305AO01-01	**Owner**	Sindicato Enerébtico		
I Nom	3 x 1-5 A	**V Nom**	3 x 57.7/100 V	**Accuracy**	0.2S
N' Elements	3	**N' Wire**	4		
Kh (Wh/Imp)	0,15	**Kt**		**Ke**	
R.T. Tension	60000/100	**R.T. Current**	300/5	**Fact.**	

3. TESTER DATA

Brand	MTE-EMH	**Model**	PRS1.3	**Accuracy**	0,05
Series	26120	**Certification**	PTB-Alemania	**Uncertainty**	0,01

4. POWER SUPPLY DATA

Brand	**Model**	
Series	**I min-max**	**V min-max**

5. RESULTS:

REAL LOAD

Nº SAMPLE			Nº PULSE	ERROR % PROM
1		*10*	-0,1150	
2		*10*	-0,1148	
3		*10*	-0,0768	-0,082
4		*10*	-0,0073	
5		*10*	-0,0948	
6		*10*	-0,0271	
7	59.56 KV	*10*	-0,0220	
8	222 Amp	*10*	-0,0347	-0,068
9	0.99 FP Ind	*10*	-0,1569	
10	59.89 Hz	*10*	-0,1001	
11	22.90 MW	*20*	-0,0785	
12	0.44 MVAR	*20*	-0,0752	
13		*20*	-0,0446	-0,065
14		*20*	-0,0955	
15		*20*	-0,0322	
16		*20*	-0,0812	
17		*20*	-0,0588	-0,071
18		*20*	-0,0424	

Nº SAMPLE		Nº PULSE	ERROR %	ERROR PROM.
21		40	-0,0666	
22		40	-0,0799	
23		*40*	-0,0556	-0,061
24		40	-0,0512	
25		*40*	-0,0525	
26		40	-0,0876	
27	*59.56 KV*	*40*	-0,0579	
28	*222 Amp*	40	-0,0638	-0,064
29	*0.99 FP Ind*	40	-0,0457	
30	*59.89 Hz*	40	-0,066	
31	*22.90 MW*	80	-0,0625	
32	*0.44 MVAR*	*80*	-0,0741	
33		*80*	-0,0780	-0,072
34		*80*	-0,0625	
35		*80*	-0,0841	
36		*80*	-0,0113	
37		*80*	-0,0999	-0,061
38		*80*	-0,0646	

19		*20*	-0,1091		*39*		*80*	-0,073	
20		*20*	-0.0644		*40*		*80*	-0,057	
Average error			-0,0716		Average error			-0,065	
Sample uncertainty			0.0086		Incertldumbre muestral			0.0041	
Uncertainty of measurement			0.0132		Uncertainty of measurement			0.0108	
Insured value of the measurement			0.1347		Insured value of the measurement			0.0756	
Limit value of accuracy class 0,2			**0.35**		**Limiting value of accuracy class 0.2**			**0.35**	

6. COMMENTS

Contrast tests were conducted with actual system load

The results of the tests indicate that the meter is within its class of accuracy (Class 0.2S)

The tests were performed between the 13:30 hrs and 14:30 hrs.

7. PARTICIPANTS

By SINERSA : Eng. Redy Risco

By E&P Tecnologla SAC : Eng. William Araujo

By ENOSA : Eng. Benjamin Vasquez

SUSTAINABLE DEVELOPMENT MONITORING PLAN (SDMP)

Annual Term – Compliance Format

Objective 1: Environmental Sustainability		
Initiative	**Indicator**	**Annual Accumulated Program**
Soil quality improvement	Quantity of new trees within concession area	More than 30 within the area close to HPP Poechos 1 power house, from the completion of the construction activities. During lasts 12 months corresponding maintenance and irrigation has been provided. See Annex 4 for photos.
Responsibility	Number of education programs for local population (energy saving)	As informed in our previous report SINERSA presented a proposal to local energy distribution company ENOSA, to provide financial support for electrification of households of the local energy distribution system, PSE Sullana, that entered into operation three years ago, providing conditions for 28,000 local families to have, for the first time, access to energy, mainly due to construction and operation of the HPP Poechos 1. Unfortunately, since ENOSA is state owned distribution company, SINERSA has been informed that this type of cooperatives are not allowed, according

		to existing rules, and that ENOSA could not to receive donations from private companies. Therefore SINERSA made a decision to directly invest in improvement of electrification of households. For the year 2009, this program was executed in village San Antonio, where SINERSA changed and modified internal installations in more than 15 houses, that were executed by local population, in an inadequate and dangerous way. Details of initial conditions and corresponding adjustments after SINERSA intervention are presented on corresponding photos. The same group of activities has been used to explain to local population optimum and correct way of using electrical installations and electricity.

Objective 2: Social-Economic Sustainability		
Initiative	**Indicator**	**Annual Accumulated Program**
Improvement of education standards	Scholarships given to local students	First year : 4 Second year : 2+ 2 Third year: 1+2+4 Forth year: 1+2+3+3 Fifth year: 1+2+1+4+5 Sixth year: 1+2+1+1+2+5 Main problem to incorporate more students in the program (planned number is 5 each year) is low quality of students finishing secondary schools, that makes them very difficult to pass admission exams for Piura private University. In order to improve education conditions for students who enter into the program SINERSA scholarship, from 2009 has applied additional program of improve of primary and secondary education within project area, including 10 selected schools. Enclosed find detailed information about students that already form part of SINERSA scholarship program as well as Agreement between SINERSA and Piura Private University related to scholarship program (see Annex 5). Annual costs of this program are US$ 60,000.
Improvement of economic conditions	Number of employees from local population	All support personnel (19 persons) are from area close to the Project. For details see Annex 6.

	Purchase from local suppliers	From April 2009 to March 2010: **US$331.817,89**, has been purchased from local suppliers. For details see list of corresponding invoices - Annex 6
	Population connected to energy red due to construction and operation of HPP Poechos 1	PSE Sullana started commercial operation that provides conditions for about 28,000 local residents to connect to energy grid, thanks to construction and operation of the HPP Poechos 1 and of the transmission line from HPP Poechos 1 to Sullana substation (60 kV, 34 KM). For the moment about 7.700 families are connected to the red.

ANNEX 1.
PROCEDURE OF CALCULATION OF MONTHLY ORDER OF MERITS (APRIL 2009-MARCH 2010).

1. Documents received from COES with corresponding data are in the sheet:

   a. […]\Period 2009-2010\Procedure for obtains Order of merits\Data Originals COES.

In this directory each file is extracted the data relevant and necessary to paste only values in the spreadsheet shown in the next step.

2. With the data (only pasted values) it will be created the sheets "20XX-MM MMM 20XX OM.xls". P. example: "2009-04 ABR 2009 OM.xls".

3. This file is a table that in column N (Last of each table) shows the equivalent costs Barra Santa Rosa, each power plant for each period of days.

4. The first thing is to get the cost equivalent Barra Santa Rosa, monthly weighted average, for that, on the column O of the row on which it is indicated the period of each table , it is calculated the number of days that covers each period.

5. In the cell O2 it is estimated the number of days of the month in calculation.

6. In the cells in column R it is being calculated the weighted average of each plant.

7. Finally, in the columns T and Y it is copied the table and Plant Cost Eq. Santa Rosa, ordering from the low to the high cost which would be for his Order of Merit.

ANNEX 2. RESUME OF ENERGY PRODUCED BY HPP POECHOS 1 AND APPROVED BY ENOSA

Sindicato Energético S.A.

CUADRO RESUMEN DE ENERGÍA MENSUAL FACTURADA POR CH POECHOS I

	FACTURACION			
	ENERGÍA FACTURADA			
MES	ENERGIA HP kWh	ENERGIA HFP kWh	ENERGIA TOTAL kWh	ENERGIA TOTAL MWh
ABRIL - 2009	1 795 946.829	8 749 968.442	10 545 915.271	10 545.915
MAYO - 2009	2 018 299.213	9 499 963.837	11 518 263.050	11 518.263
JUNIO - 2009	1 888 821.185	8 837 976.238	10 726 797.424	10 726.797
JULIO - 2009	1 838 825.365	7 601 917.733	9 440 743.098	9 440.743
AGOSTO - 2009	1 795 928.333	4 220 196.911	6 016 125.244	6 016.125
SETIEMBRE - 2009	1 758 771.181	3 389 897.280	5 148 668.461	5 148.668
OCTUBRE - 2009	1 852 662.405	3 902 602.277	5 755 264.682	5 755.265
NOVIEMBRE - 2009	1 637 863.182	3 274 614.290	4 912 477.472	4 912.477
DICIEMBRE - 2009	1 350 658.414	2 595 170.960	3 945 829.374	3 945.829
ENERO - 2010	1 210 505.043	1 601 689.959	2 812 195.002	2 812.195
FEBRERO - 2010	1 605 577.206	6 307 096.403	7 912 673.609	7 912.674
MARZO - 2010	1 608 023.481	8 468 325.029	10 076 348.510	10 076.349
			88 811 301.197	88 811.301

Firman en señal de que cuadro corresponde a lo realmente facturado por CH Poechos I a ENOSA en el período indicado :

POR SINERSA :

Ing. Redy H. Risco Ramos
Gerente de O y M
SINERSA

POR ENOSA :

Ing. Mario Arroyo Sabogal
Gerente Comercial
ENOSA

Fecha : 15.04.2010

TRANSLATION
SUMMARY TABLE OF MONTHLY ENERGY INVOICED BY SINERSA TO ENOSA APRIL 1st, 2009 – MARCH 31st, 2010

MONTH	INVOICED ENERGY			
	ENERGY PH	ENERGY NPH	TOTAL ENERGY	TOTAL ENERGY
	kWh	kWh	kWh	MWh
April - 2009	1´795,946.829	8´749,968.442	10´545,915.271	10,545.915
May - 2009	2´018,299.213	9´499,963.837	11´518,263.050	11,518.263
June - 2009	1´888,821.185	8´837,976.238	10´726,797.424	10,726.797
July - 2009	1´838,825.365	7´601,917.733	9´440,743.098	9,440.743
August - 2009	1´795,928.333	4´220,196.911	6´016,125.244	6,016.125
September - 2009	1´758,771.181	3´389,897.280	5´148,668.461	5,148.668
October - 2009	1´852,662.405	3´902,602.277	5´755,264.682	5,755.265
November - 2009	1´637,863.182	3´274,614.290	4´912,477.472	4,912.477
December - 2009	1´350,658.414	2´595,170.960	3´945,829.374	3,945.829
January - 2010	1´210,505.043	1´601,689.959	2´812,195.002	2,812.195
February - 2010	1´605,577.206	6´307,096.403	7´912,673.609	7,912.674
March - 2010	1´608,023.481	8´468,325.029	10´076,348.510	10,076.349
			88´811,301.197	88,811.301

Sign in signal that the figures corresponding to real invoiced by HPP Poechos I in the mentioned period to ENOSA.

By SINERSA

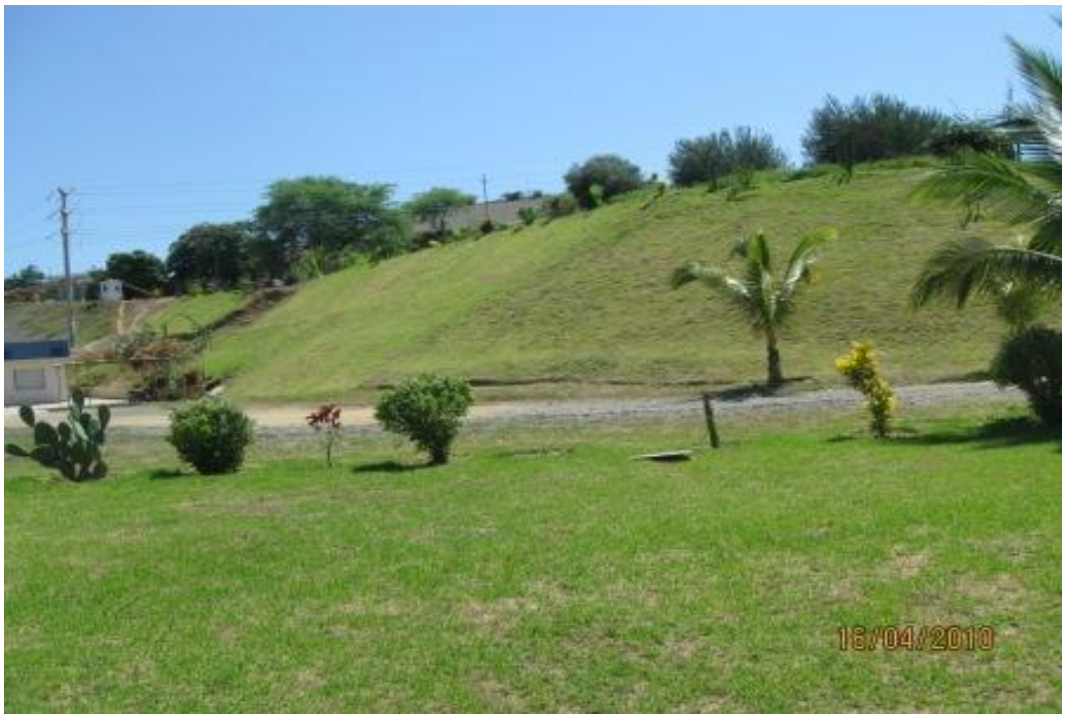
Eng. Redy Risco
Maintenance and Operation Manager
SINERSA

By ENOSA

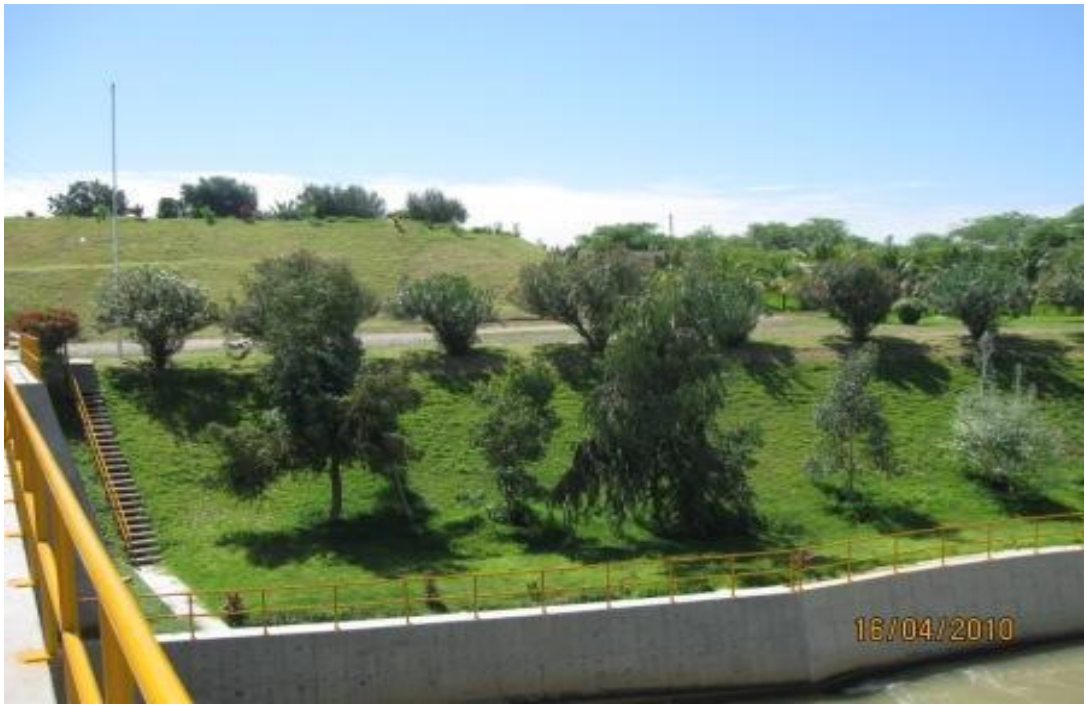
Eng. Mario Arroyo Sabogal
Commercial Manager
ENOSA

Date: 04/15/2010

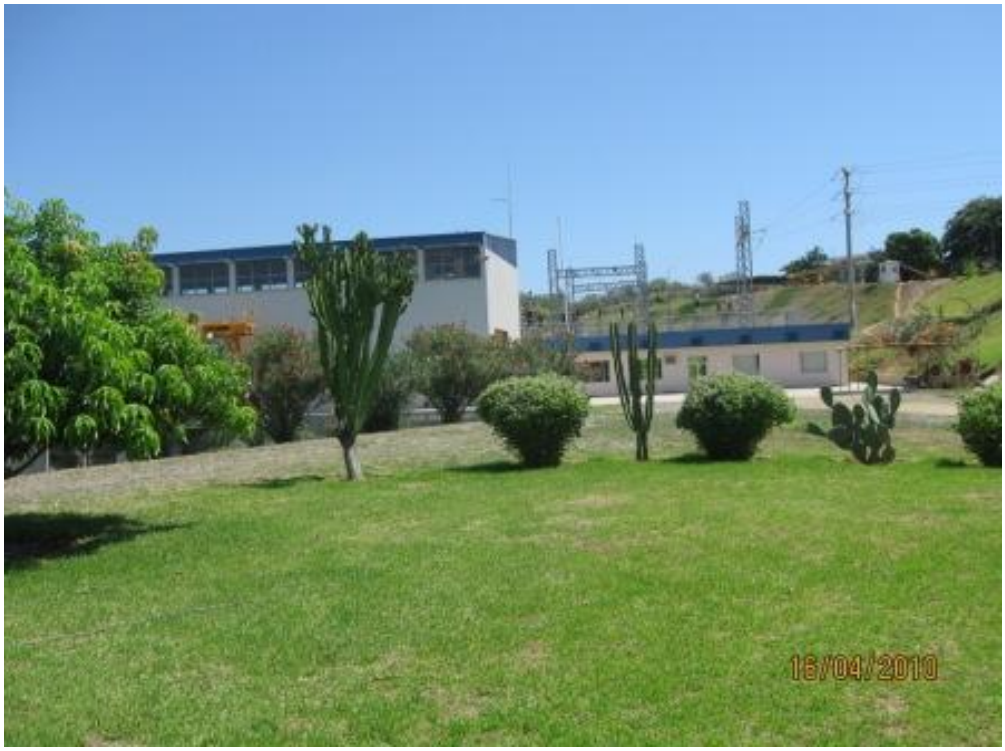
ANNEX 3. Photos




16/04/2010


16/04/2010


16/04/2010

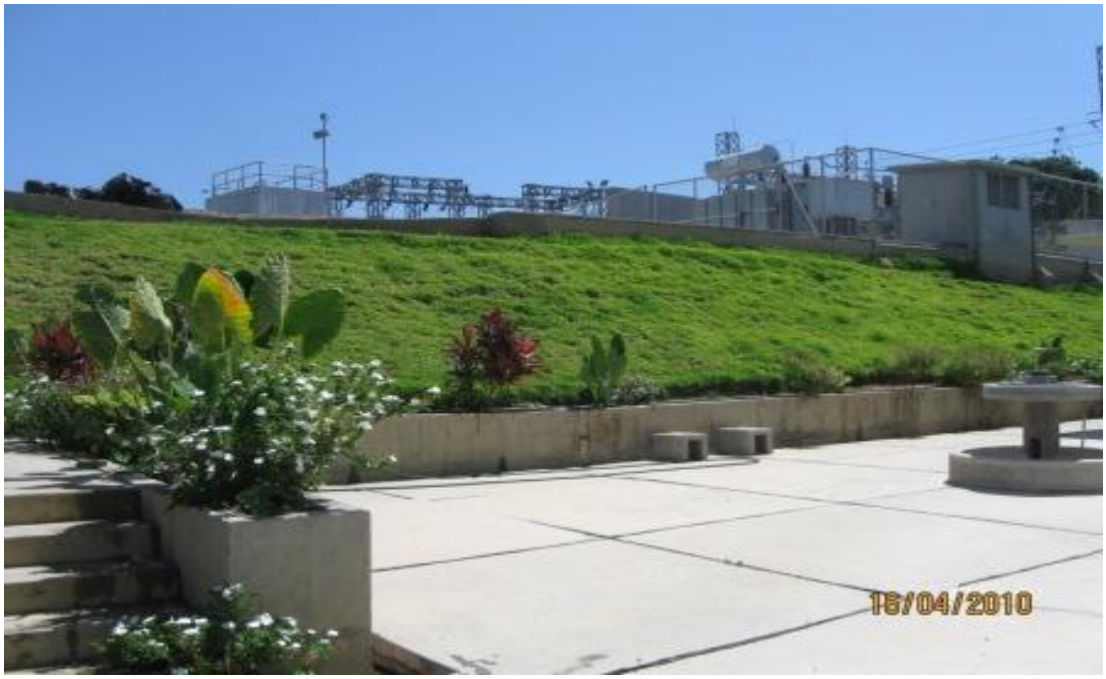

16/04/2010


16/04/2010

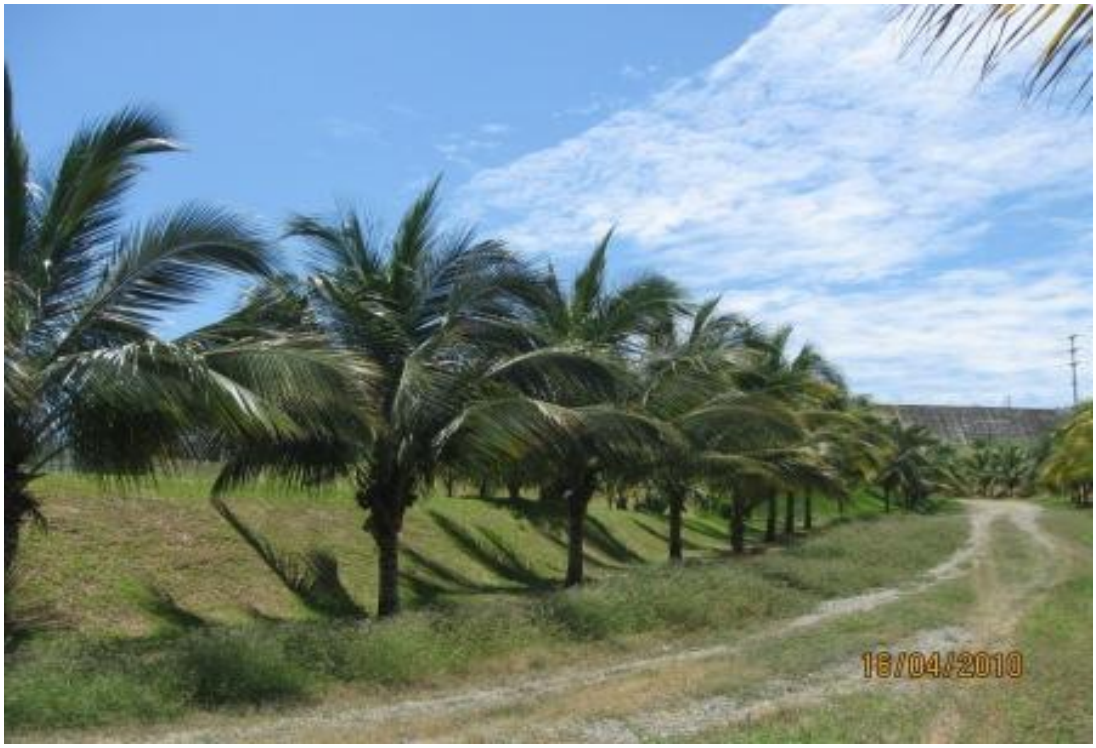

16/04/2010

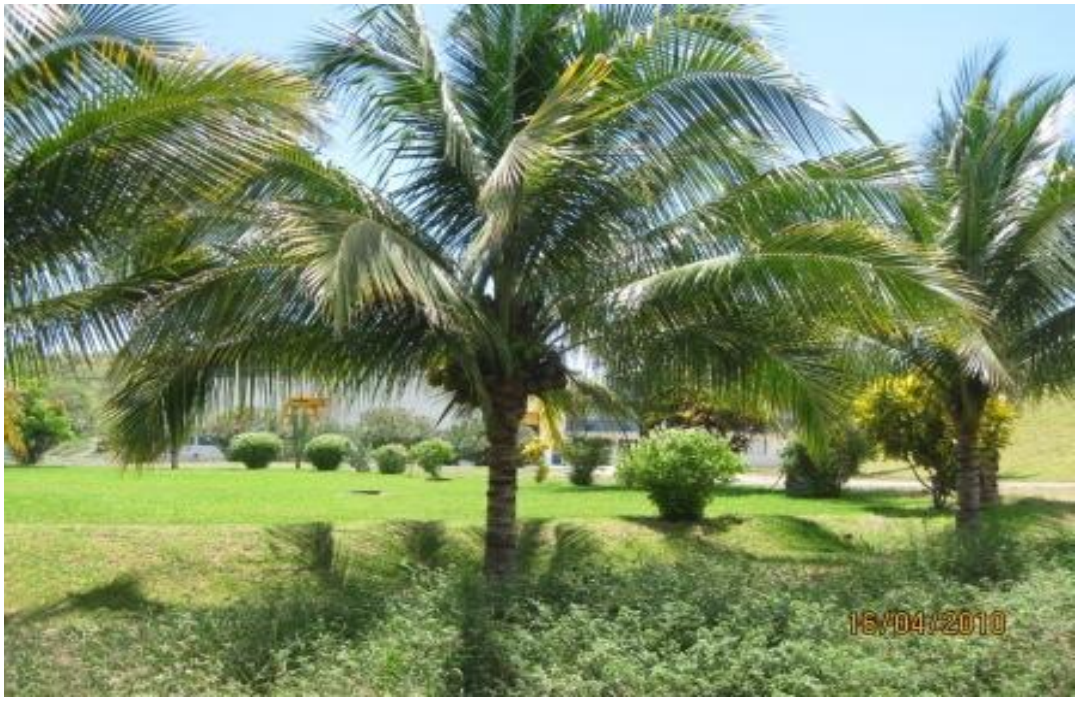

16/04/2010


16/04/2010


16/04/2010


16/04/2010


16/04/2010


16/04/2010

ANNEX 4. LOCAL EMPLOYEES LIST.

SINDICATO ENERGETICO S.A.

PERSONEL CH. POECHOS 1 – 2010

		Birthday			
Item	Name	day	month	Year	DNI Nº
	Operators				
1	Redy Risco Ramos	4	6	1970	03654709
2	Henry Ramos Arevalo	15	9	1974	02882567
3	Dantty Ramos Tene	28	04	1987	44427096
4	Manuel R. Senador Torres	19	4	1970	16628411
	Electrical Technicians				
5	Wilson Carreño	03	03	1973	03882790
6	Carlos Carmona	06	12	1981	41193504
7	Igor Rios	12	11	1971	00096884
8	Rafael García	28	3	1962	02608842
	Mechanical Technicians				
9	Roberto Chunga	8	4	1967	03692529
10	Hector Westraicher	11	7	1971	04330529
11	Guillermo Martinez	25	6	1956	02676652
12	Benito Juarez E.	23	1	1952	02785482
	Administrative Assistant				
13	Lesly Zapata	29	11	1977	02894114
	Drivers				
14	Juan Nole	17	7	1976	02898394
	Support personnel				
15	Rosa Jimenez de Flores	21	08	1959	03654550
16	Luis Alburqueque Arevalo	19	12	1975	03673543
17	Segundo Zapata Flores	14	12	1970	40826872
18	Felix Farfán Alburqueque	31	3	1956	03620149
19	Jorge Zapata Flores	22	5	1973	03670304

ANNEX 5. STUDENTS THAT FORM A PART OF SCHOLARSHIP PROGRAM

UNIVERSIDAD DE PIURA
Apartado Postal 353 Piura - Perú
(T) 51-73-284500 (F) 51-73-284510
www.udep.edu.pe

Piura, 15 de abril de 2010

Señores:
SINDICATO ENERGETICO S.A.
Ciudad.-

Estimados Señores:

Por medio de la presente les alcanzamos la relación de los 11 alumnos becados en el presente semestre 2010- I, a través del convenio que mantenemos con ustedes.

CARNE	APELLIDOS NOMBRES	FACULTAD	INGRESO
20053423	Castillo Rivas Juan Pablo	Ingeniería	2005
20062220	Cruz Vidal Tanisha Cristina	Comunicación	2006
20062204	Zapata Vega Dennis Gabriel	Comunicación	2006
20072220	Yovera Martínez Juan Manuel	Comunicación	2007
20086191	Benites Torres Pablo César	Ingeniería	2008
20093684	Antón Purizaca Edwin Raúl	Ingeniería	2009
20093694	García Chunga José Alfredo	Ingeniería	2009
20103417	Ayala Juarez Fernando	Ingeniería Ind.y Sistemas	2010
20101360	Albines Bayona Oscar Alberto	Adm.Empresas	2010
20102120	Castillo Rivas Katherine	Comunicación	2010
20103585	Castro Rivas Pedro Miguel	Ingeniería Ind.y Sistemas	2010
20105209	Vignolo Purizaca Juan Pablo	Derecho	2010

Quedamos a su disposición, si tuvieran alguna consulta adicional.

Atentamente,

Mgtr. Diana Jhong Aponte
Jefa de Pensiones y Admisiones
Universidad de Piura

ANNEX 6. LOCAL PURCHASE

Sindicato Energético S.A. - SINERSA
H.P.P. Poechos 1

PURCHASES FROM LOCAL SUPPLIERS: APRIL 2009 TO MARCH 2010
(US Dollars - US$)

MONTH	
1. Maintainance costs	**106,424.03**
1.1 Materials provision	35,050.08
1.2 Trucks maintainance	49,421.38
1.3 Fuel provision	21,952.56
2. Services	**224,926.35**
2.1 Office equipment	4,539.71
2.2 Cleaning & fumigation	9,971.88
2.3 Security service	59,194.48
2.4 Representation expences	199.09
2.5 Services of third parties	151,021.19
3. Hotel & lodging	**467.52**
TOTAL	**331,817.89**

ANNEX 7. INFORMATION ABOUT ACTUAL NUMBER OF PSE SULLANA CLIENTS

CARTA ENOSA - CLIENTES

Enosa

Piura, 15 ABR 2010

C -601 - 2010/ENOSA

Señor
Branislav Zdravkovic
Gerente General
Sindicato Energético S.A.
Piura.-

Asunto: Información de Clientes de Sistema Eléctrico Sullana II y III Etapa

Estimado Señor Zdravkovic:

Adjunto al presente sírvase encontrar el número de clientes del PSE Sullana II y III Etapa por localidades al 31 de Marzo de 2010.

Sin otro particular, quedamos de usted.

Atentamente,

ING. MARIO ARROYO SARGAL
Gerente Comercial (e)
ELECTRONOROESTE S.A.

Copia: Arch.
GC/

Empresa Regional de Servicios Público de Electricidad Electronoroeste S.A.
Una empresa del Grupo Distriluz
Jr. Callao 875 - Piura, PERU
T (073) 88 4030
F (073) 88 4030
Anx. 81 122
Anx. 81 009

Electronoroeste S.A.

Clientes por Localidad PSE Sullana II y III Etapa

Suma de clientes				
nom_dep	nom_pro	nom_dis	nom_loc	Total
20.-Piura	06.-Sullana	01.-Sullana	316.-EL CUCHO	243
			317.-HUANGALA	815
			318.-SAN VICENTE	444
			319.-CHALACALA	401
			320.-SOMATE BAJO	485
			321.-RIECITO	83
			323.-MONTENEGRO	37
			324.-SANTA ROSA PIEDRA RO	130
			325.-CHALACALA ALTA EL PO	36
			326.-CHALACALA ALTA	63
			327.-CENTRO SERVICIO SOMA	21
			328.-LOURDES	120
			366.-SANTA CRUZ	1
			756.-MARAN	2
		Total 01.-Sullana		2881
		04.-Lancones	256.-ALAMOR	108
			330.-HUAYPIRA	147
			331.-LANCONES	110
			332.-VENADOS	44
			333.-HUASIMAL DE LA SOLAN	78
			334.-DURAND	62
			335.-CHILACO SUR	50
			336.-CHILACO	152
			337.-PELADOS	42
			339.-NUEVA ESPERANZA	62
			340.-POECHOS	11
			341.-EL SAUCE	35
			342.-MARTINEZ	10
			343.-JERGUITAS	33
			344.-CABRERIA	16
			345.-CASAS QUEMADAS	12
			346.-CORRAL DE VACAS	25
			347.-SOLANA CENTRAL Y BAJ	41
			348.-ESTRADAS	26
			349.-LEONES	17
			350.-BOCANA DE ORQUETAS	25
			351.-JAGUAY NEGRO 1 (Los	14
			352.-JAGUAY NEGRO 2	9
			353.-QUEBRADA SECA	36
			354.-CHAPANGOS	34
			355.-HUASIMAL DE ENCUENTR	25
			356.-EL PAPAYO	21
			357.-LOS ENCUENTROS DE PI	78
			358.-JABONILLOS	26
			359.-ALTO EL TORO	32
			360.-PILARES	27
			361.-PITAYO	14
			367.-MARGARITA Y HUALTACA	1
		Total 04.-Lancones		1423
		05.-Marcavelica	329.-SAMAN GRANDE	384
			45.-Mallares	1
		Total 05.-Marcavelica		385
		07.-Querecotillo	320.-SOMATE BAJO	10
			324.-SANTA ROSA PIEDRA RO	1
			362.-LA PEÑA	264
			363.-LA HORCA	235
			364.-EL PORVENIR	62
			365.-PTE. DE LOS SERRANOS	229
			366.-SANTA CRUZ	553
			367.-MARGARITA Y HUALTACA	480
			368.-SAN FRANCISCO	504
			369.-CHOCAN	279
			370.-SANTA VICTORIA	109
			371.-PUEBLO NUEVO	32
			372.-SANTA ELENA ALTA	30
			373.-SANTA ELENA BAJA	56
			374.-SANTA ROSA	46
			375.-JAGUAY DE POECHOS	61
		Total 07.-Querecotillo		2951
	Total 06.-Sullana			7640
Total 20.-Piura				7640
Total general				7640

Electronoroeste S.A.

Clientes por Sector PSE Sullana II y III Etapa

Suma de clientes			
nom_uni	nom_zon	nom_sec	Total
05.-Sullana	035.-Sullana	10.-L : Sullana Caserios	2884
	Total 035.-Sullana		2884
	037.-Querecotillo	02.-F: Querecotillo	2946
	Total 037.-Querecotillo		2946
	039.-Marcavélica	02.-E: Marcavelica	385
	Total 039.-Marcavélica		385
	080.-Frontera	02.-FR: Lancones	1317
		04.-FR: Alamor	108
	Total 080.-Frontera		1425
Total 05.-Sullana			7640
Total general			7640