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Montecristo Hydroelectric Project

Answers to Clarifications Required
Reference No. UNFCCC 1077
Date: August 22, 2007

Montecristo Hydroelectric Project
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Request No. 1:

Clarification is required how 13.6% has been justified as the hurdle rate as the PDD only states, "the hurdle rate reflects a creation of value in excess of the cost of equity of 2%". The benchmark analysis uses a spot market electricity tariff, which fluctuates over time. Further information should be included how the fixed electricity price has been used in the IRR calculations. Additional explanation should be provided on how the sensitivity analysis has been conducted.

Attached is sent additional information to explain the 13.6% value choice. This value includes a plus risk value due to directives coming from ENEL Italy for Guatemala which is required in our IRR analysis to accomplish with the requirements coming from the document of approval of the Board ENEL ITALY. Therefore, it is unavoidable for us to include that plus value (See the document of approval of the Board ENEL ITALY in page 6 of this document).

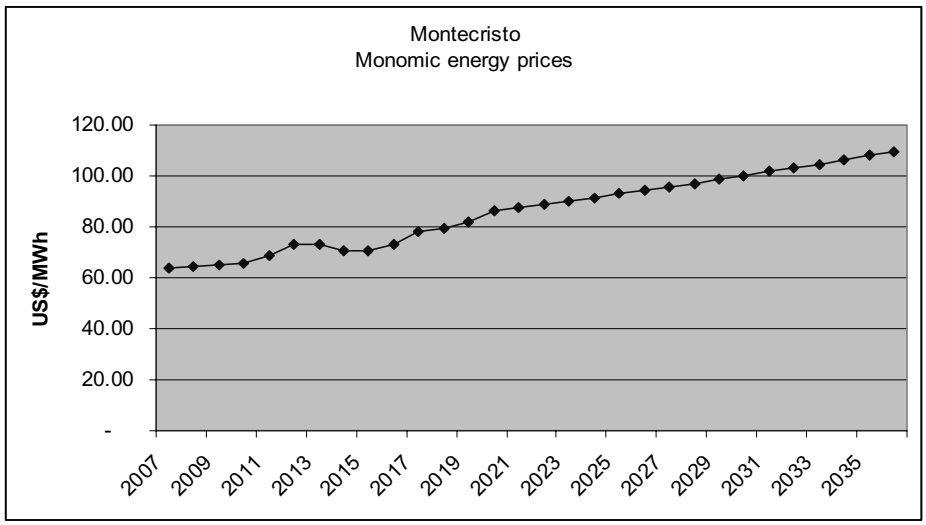
The cost of equity for Montecristo stated in the PDD is 11.6%; this was composed by a set of assumptions sent by corporate as follows:

- Risk Free Rate 4.43% (Avg 6M Treasury Bond US 10y as of September 27, 2004)
- Guatemala country risk spread 350 bps (International Guatemala Government Bond in USD 10y Spread vrs US 10y Treasury Bond as of September 20, 2004)
- Market Risk Premium 5% (as a corporate requirement for the Latinamerica portfolio)
- Beta unlevered of 0.75

At the time, it was a mandatory corporate requirement for the approval of foreign investments to have a Hurdle rate equal to the discount factor plus a spread to reflect the compensation for any contingent risk as well as a measure for value creation, the given spread was 200 bps; therefore, in order to obtain corporate approval for Montecristo, the IRR for the shareholders investment must be equal or higher than 13.6%.

Energy prices forecasted in the valuation of Montecristo are according to the market study. Following the curve with the monomic prices projected[1]:

[1] The monomic price includes the price for energy and power sales.



No fixed electricity price was used in the IRR calculations.

Sensitivity analysis:

Eight different scenarios were evaluated for Montecristo (without CER's revenues):

1. Full Equity: The difference from the base case is that it not considers shareholder or third party loans.

    - IRR: 10.05% NPV: -2,896 k USD (@ 11.60%)

2. Levered: The difference from the base case is that it considers a 10 M USD loan under the following conditions:

a.	Lender name:	IFC (potential lender)
b.	Loan amount:	$10M
c.	Interest rate:	8% (full spread)
d.	Lenders fee:	1.25% & 2.25%
e.	Commitment fee:	0.5%
f.	Term of loan:	10 & 8 Years
g.	Profile type:	Annuity (Mortgage style repayment)
h.	Grace period:	0 year
i.	Debt service cover ratio (DSCR):	1.2
j.	DSRA	
k.	Target funding requirement:	none
l.	Currency:	dollars
m.	Amount out of LT sources:	0 dollars
n.	Fixed rate:	LIBOR

The basis of the financial debt assumptions loan was a draft mandate letter submitted by IFC to Enel Latin America in September 2004.

- IRR: 12.40% NPV: 0,132 k USD (@ 12.3%)

3. Capex - 5%: The difference from the base case is that it considers a reduction of 5% in Capital Expenditures.

   - IRR: 12.60% NPV: 1,707 k USD (@ 11.60%)

4. Capex + 5%: The difference from the base case is that it considers an addition of 5% in Capital Expenditures.

   - IRR: 11.46% NPV: -0,262 k USD (@ 11.60%)

5. Prices - 5%: The difference from the base case is that it considers a reduction of 5% in the monomic price.

   - IRR: 11.30% NPV: -0,521 k USD (@ 11.60%)

6. Dispatch factor - 2%: The difference from the base case is that it considers a reduction of 2% in Dispatch factor.

   - IRR: 11.40% NPV: -0, 351 k USD (@ 11.60%)

7. Interest & Indices +1%: The difference from the base case is that it considers a change in the local and foreign CPI and interest rates of + 1%.

   - IRR: 13.26% NPV: 3,192 k USD (@ 11.60%)

8. Opex +20%: The difference from the base case is that it considers an increase of 20% in operating expenses.

   - IRR: 11.52% NPV: -0,147 k USD (@ 11.60%)

Summary of sensitivity analysis:

Sensitivity parameter	IRR (without CER's)
Full equity	10.05 %
Levered	12.40 %
Capex -5%	12.60 %
Capex +5%	11.46 %
Prices -5%	11.30 %
Dispatch factor -2%	11.40 %
Interest & indices +1%	13.26 %
Opex +20%	11.52 %

In conclusion, the project IRR is lower than the cost of equity (11.6%) and hurdle (13.6%) when:

The electricity price decrease -5% under the monomic prices projected.
The energy production (dispatch factor) decreases -2%.
The operation and maintenance cost have an increment of +20%.

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SCHEDA PROGETTO

Si richiede approvazione strategica e autorizzazione alla spesa del progetto "Impianto Idroelettrico Montecristo"

IMPIANTO: Montecristo	SOCIETA': Enel Latin America
PAESE: Guatemala	

Tipologia Impianto	Idroelettrico	Inizio lavori	Febbraio 2005
Finalità	Nuovo impianto	Entrata in esercizio	Luglio 2006

COSTO TOTALE INVESTIMENTO: 23,0 $mn comprensivi di una contingency pari al 5% e dei costi già sostenuti per le attività di studio preliminari (468.000 $); il progetto prevede inoltre il pagamento a favore di Montecristo di una connection fee (1,25 $mn) da parte di un developer per la costruzione di un altro impianto a valle

DESCRIZIONE PROGETTO: Realizzazione di un nuovo impianto idroelettrico con capacità installata di 12,9 MW situato sul fiume Samala in Guatemala. L'impianto verrà realizzato a valle del canale di scarico dell'impianto idroelettrico El Canada (40MW di capacità installata di proprietà di ELA). La concessione del sito ha una durata di 50 anni dall'entrata in funzione dell'impianto.

FASE REALIZZATIVA: Il project Management di Montecristo sarà simile a quello di El Canada.

PRINCIPALI BENEFICI ATTESI/MOTIVAZIONI: Il progetto presenta, rispetto ad altri greenfield in America Latina, un profilo di rischio inferiore sia in termini di *location* (Guatemala) che di caratteristiche tecniche. L'impianto potrà sfruttare le opportunità offerte da un mercato in crescita beneficiando anche delle sinergie con El Canada.

RISULTATO ANALISI COSTI/BENEFICI

NPV Azionista	IRR Azionista	PBP
3,3 $mn	13,6%	7 anni

Periodo di valutazione	50 anni

Ke(U)	11,6%
Hurdle Rate	13,6%

PROGRAMMA DI SPESA ($mn)

2004	2005	2006	Totale
0,5	17,0	5,5	23,0

Previsione in budget		Si

Parametri di riautorizzazione:
Capex +5% (1,2 $mn)
IRR < 11,6%

Responsabile Progetto

Responsabile Progetto	Responsabile Valorizzazione	Controller Progetto	Country Manager Guatemala	Responsabile P&C Int.
COO GEM	(Antonello Cammarota)	(Mino Sabiemo)	(J.C. Mendez)	(Pedro Bonati)

Data autorizzazione: (Valerio Cecchi - Country Manager ELA) 12/2004

Request No. 2:

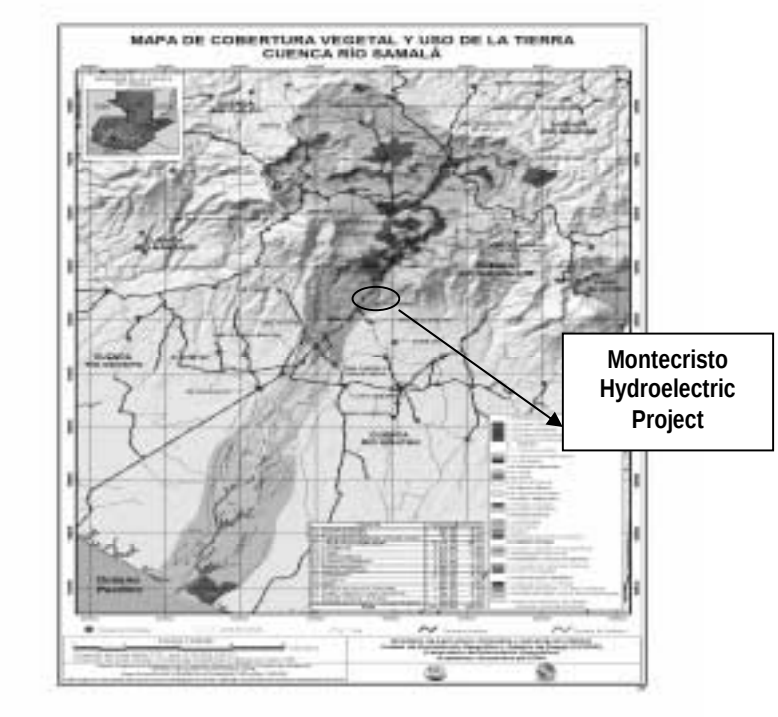
It is unclear how technological barriers described in the PDD (varying hydrologic cycles as a result of el niño"or "la niña and local deforestation) would prevent this project activity from being implemented, considering other hydro plants have been built on the same river.

The existence of the climate agents and the river basin deforestation mentioned in the PDD is a source of uncertainty in the cash flow of our IRR analysis. We did not detailed more the effects of this barrier in the PDD because are included in our IRR analysis.

The climate phenomenon and the variation of the stream flows due to loss of forest lands in the catchment area use to agricultural sowing are reflected in the financial model as a variation of -2% on energy production. The increment of O&M costs due technical barriers is modeled in the sensitivity analysis too.

However, the technical barrier could be explained as follow:

The Samalá River Basin, where Montecristo is built, has an extension of 1,500 km^2. Most area of the basin is human disturbed and the forestal cover has been eliminated. The following map shows the described situation, where it could be observed that the high catchment area is totally deforested for annual crops[2].



[2] http://200.12.49.237/imagenes/Mapas/CUENCA/usotierra/map_usot_31_samala.jpg

The practice shows that deforestation has a direct effect on the quality of water. Water draining from deforested watersheds, as Samalá River Basin, produce high sediment yield compared to undisturbed forested watersheds. As result of these conditions, the operational costs of hydroelectric plants are higher when the quality of the water decreases.

There other two hydroelectric plants on the Samalá River, El Canada and Santa Maria. Santa María is owned by a state company and was constructed in 1927 before Electricity Law enhancement. El Canadá was constructed in 2003 under similar conditions than Montecristo, and by this reason only El Canadá is a comparable project.

El Canadá as Montecristo has to face the same technical barriers. At the present, El Canadá has to carry out several actions to operate efficiently with a bad water quality, for example: El Canadá has to drag in average 858 m^3 of sediments daily from the water reservoir[3] and it has changed one of the turbine runners with only 14,275 of working hours, which has a direct impact on O&M costs.

El Canadá was registered as a CDM project and by means of CER's income is overcoming partially the barriers described before.

Generadora Montecristo, S.A, by means of CER's income, aware to overcome the barriers and to enhance the local synergies to protect the Samalá River Basin. In the PDD is indicated that Montecristo shall contribute to carry out a solid waste management project.

Samalá River is the second polluted river in Guatemala; because residual water and solid wastes from the towns of Quetzaltenango an other villages are dumped directly into the river. Plastic wastes are inconvenient to the efficient operation of the hydroelectric, because the extraction of wastes increase maintenance costs too.

Additionally, it is expected that turbine maintenance cost could be higher for Montecristo than for El Canadá, because Montecristo is equipped with Francis Turbine and El Canadá with Pelton turbines.

However, Generadora Montecristo, S.A. has as a priority the social welfare and the service to local populations. With the help of CER's generated by the Project construction we can offer better service to our inhabitants.

EL CANADA SEDIMENT REPORT

REPORT No.	DATE OF REPORT	PERIODS OF DREDGING			WORK DAYS	SECTION A-A M^3	SECTION B-B M^3	SECTION C-C M^3	TOTAL DREDGED (M^3)	ACCUMULATED M^3
1	08-Jan-07	13-Dec-06	to	08-Jan-07	24	16,480.00	18,686.00	9,880.00	45,046.00	**45,046.00**
2	26-Jan-07	09-Jan-07	to	26-Jan-07	15	5,166.00	9,436.00	2,340.00	16,942.00	**61,988.00**
3	09-Feb-07	27-Jan-07	to	09-Feb-07	13	8,720.00	8,720.00	-	17,440.00	**79,428.00**
4	23-Feb-07	10-Feb-07	to	23-Feb-07	14	5,000.00	3,000.00	-	8,000.00	**87,428.00**
5	09-Mar-07	24-Feb-07	to	09-Mar-07	14	3,500.00	2,500.00	-	6,000.00	**93,428.00**
6	25-Mar-07	10-Mar-07	to	25-Mar-07	16	5,100.00	1,200.00	1,000.00	7,300.00	**100,728.00**
8	06-May-07	16-Apr-07	to	06-May-07	19	4,160.00	4,320.00	1,920.00	10,400.00	**111,128.00**
9	24-May-07	07-May-07	to	23-May-07	17	-	1,600.00	480.00	2,080.00	**113,208.00**

[3] Please, see El Canada Sediment Report.

Request No. 3:

The PDD presents the short-term PPA and spot market tariff as market barriers, and argues that the CDM revenue could stabilize the income flow. However, the variations of these parameters are not clearly presented in the current IRR calculations. Further, an analysis of the project IRR without CDM revenues has not been presented to justify the effect of these barriers would be overcome by CDM revenues.

When we made the IRR analysis, we considered that the IRR analysis without CER's was developed applying the same calculations procedure, the same variation of parameters and the same sensitivity analysis. As a result, we obtained a 12.01% value which is a lower value than 13.6%.

In following table, we can observe that in the base scenario, the IRR value is higher than the hurdle rate (13.6%) when the project has the CER's revenues (according to the information provided in the PDD the value of CER is 8 US$/ton).

	IRR (without CER's)	IRR (with CER's)
Base Case	12.01 %	13.62 %

The following table shows that the project needs the CDM financing to overcome the barriers. The sensitivity analysis indicates that CER's revenues are required to the IRR value be higher than the equity cost (11.6%).

Sensitivity parameter	IIR (without CER's)	IIR (with CER's)
Full equity	10.05 %	10.89 %
Levered	12.40 %	13.59 %
Capex -5%	12.60 %	13.56 %
Capex +5%	11.46 %	12.32 %
Prices -5%	11.30 %	12.14 %
Dispatch factor -2%	11.40 %	12.27%
Interest & indices +1%	13.26 %	14.17 %
Opex +20%	11.52 %	12.40 %

The following table shows that the CDM revenues represent 7-9% of the total income flow for the company; the CDM revenue is an income that is stable all the time compare to the revenues from energy that change in the time, because of this, the CDM revenues is an income that stabilize the income flow for the company in 7-9%.

	Capacity	Energy	US$	US$	US$	US$
Year	MW	MWh	Capacity	Energy	CER's	Total
2007	12.90	52,360	$657,900.00	$2,664,941	$297,405	$3,620,246
2008	12.90	52,360	$657,900.00	$2,702,778	$297,405	$3,658,082
2009	12.90	52,360	$657,900.00	$2,754,018	$297,405	$3,709,323
2010	12.90	52,360	$657,900.00	$2,784,818	$297,405	$3,740,122
2011	12.90	52,360	$657,900.00	$2,949,963	$297,405	$3,905,268
2012	12.90	52,360	$657,900.00	$3,180,005	$297,405	$4,135,309
2013	12.90	52,360	$657,900.00	$3,165,248	$297,405	$4,120,553
2014	12.90	52,360	$657,900.00	$3,048,544	$297,405	$4,003,849
2015	12.90	52,360	$657,900.00	$3,041,914	$297,405	$3,997,219
2016	12.90	52,360	$657,900.00	$3,163,893	$297,405	$4,119,198
2017	12.90	52,360	$657,900.00	$3,421,290	$0	$4,079,190
2018	12.90	52,360	$657,900.00	$3,498,017	$0	$4,155,917
2019	12.90	52,360	$657,900.00	$3,635,324	$0	$4,293,224
2020	12.90	52,360	$657,900.00	$3,858,373	$0	$4,516,273
2021	12.90	52,360	$657,900.00	$3,925,990	$0	$4,583,890
2022	12.90	52,360	$657,900.00	$3,994,749	$0	$4,652,649
2023	12.90	52,360	$657,900.00	$4,064,538	$0	$4,722,438
2024	12.90	52,360	$657,900.00	$4,135,375	$0	$4,793,275
2025	12.90	52,360	$657,900.00	$4,207,274	$0	$4,865,174
2026	12.90	52,360	$657,900.00	$4,280,252	$0	$4,938,152
2027	12.90	52,360	$657,900.00	$4,354,324	$0	$5,012,224
2028	12.90	52,360	$657,900.00	$4,429,507	$0	$5,087,407
2029	12.90	52,360	$657,900.00	$4,505,819	$0	$5,163,719
2030	12.90	52,360	$657,900.00	$4,583,274	$0	$5,241,174
2031	12.90	52,360	$657,900.00	$4,661,892	$0	$5,319,792
2032	12.90	52,360	$657,900.00	$4,741,689	$0	$5,399,589
2033	12.90	52,360	$657,900.00	$4,822,683	$0	$5,480,583
2034	12.90	52,360	$657,900.00	$4,904,891	$0	$5,562,791
2035	12.90	52,360	$657,900.00	$4,988,333	$0	$5,646,233
2036	12.90	52,360	$657,900.00	$5,073,027	$0	$5,730,927

Request No. 4:

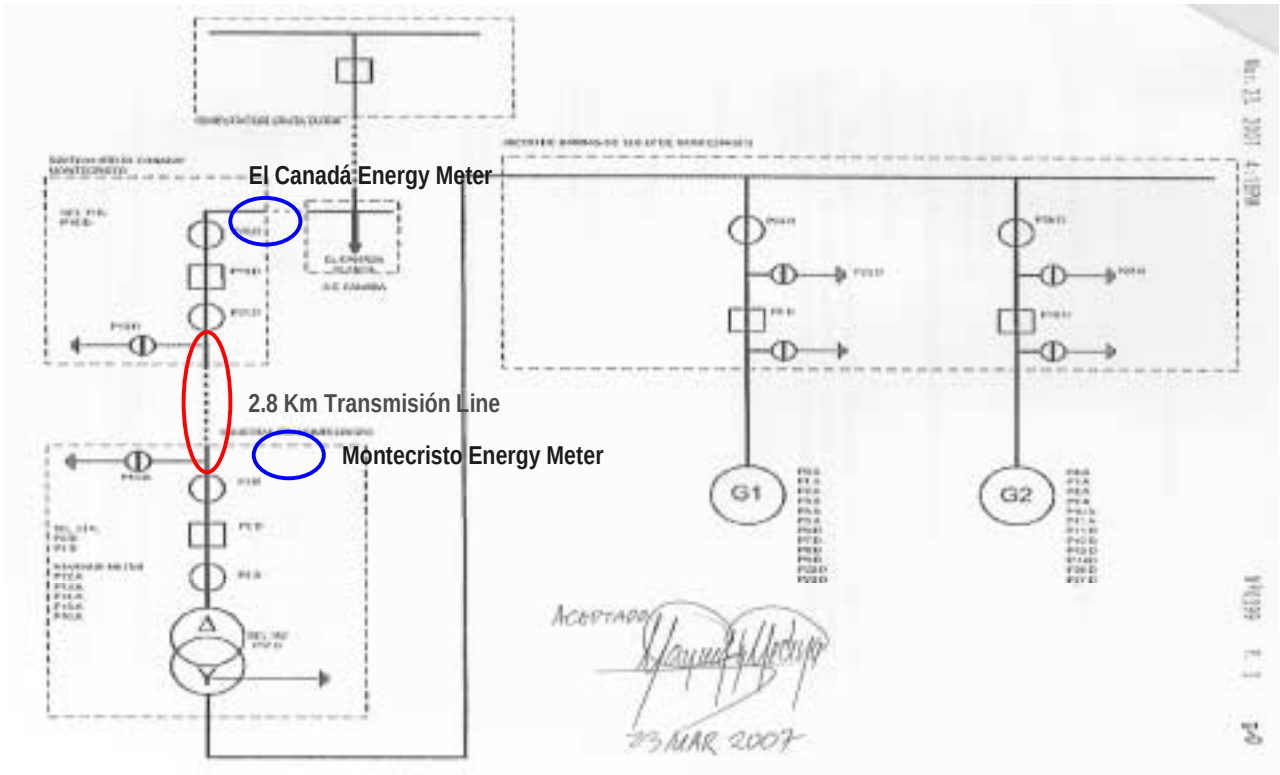
Since Montecristo plant is supplying the electricity to the grid via a 2.8 km transmission line in 69 kV to El Canada substation (registered CDM project 0606), the PDD needs to clearly describe the boundary and state how the energy exported by both project activities would be monitored and accounted separately.

The Type I Renewable energy projects, Category I.D. renewable electricity generation for a grid states that can be considered different projects those separated at least 1 km from each other.

As it is stated in the PDD (p.7), El Canadá Hydroelectric plant is located 2 km upstream from Montecristo powerhouse. The validation team verified that distance during the on site visit, making possible the consideration of Montecristo and El Canadá two different projects.

The electricity produced by the Montecristo Hydroelectric plant is transformed from 13.8 kV to 69 kV in an own substation and then is delivered to the 69 kV busbar of El Canadá Substation, through a 69 kV line, whose length is of 2.8 km.

The graph unifilar approved by the Wholesale Market Administrator (AMM) clearly demonstrates the 2.8 km of transmission line that goes from the substation Montecristo to the substation El Canadá. During the on site visit, the length of the transmission line was checked.



The reason of the connection of Montecristo power plant to the grid, through El Canadá substation, was to reduce investment costs using the same line to export the electricity from El Canadá substation to the grid, and to reduce the environmental impacts.

The following figure shows Montecristo power house and its 13.8/69 kV substation.

Figure 1. Montecristo power house and substation.

El Canadá electric substation is located next to the power house of El Canadá powerhouse. This substation transforms the voltage of the electricity produced from 13.8 kV to 69 kV, furthermore connects the plant to the grid.

The following figure shows El Canadá power house and the electrical substation.

Figure 2. El Canadá power house and substation.

Each power plant has its own electricity meter, El Canadá Electricity Meter is located in the 69 kV busbar of El Canadá Substation and the Montecristo Electricity Meter is located in the 69 kV busbar of Montecristo Substation. The 69 kV busbar of El Canadá Substation was chosen as the sale busbar for both plants, but the electricity produced by each plant is commercialized separately and in different way in the electricity market.

According to Commercial and Operation Norms No. 14 of the Electricity Wholesale Market Administrator[4] (*Normas de Coordinación Comercial y Operativa, No. 14, Administrador del Mercado Mayorista*), each generating unit has to have its own metering equipment; according to this norm each power plant has his own metering equipment.

Additional the letters provided by the Wholesale Market Administrator (AMM) are attached where is indicated the date of commercial fitting out of the electricity meter of each plant, indicating the following information:

- Fitting Out of the electricity meter of El Canadá Plant – November 20, 2003
- Fitting Out of the electricity meter of Montecristo Plant – May 28, 2006

[4] http://www.amm.org.gt/pdfs/normas/ncc-14.pdf

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Administrador del Mercado Mayorista

ME-131-2007

Guatemala, 03 de Agosto de 2007

Enel Guatemala, S.A.
03 AGO. 2007
RECIBIDO

Ing.
Juan Carlos Mendez
Mandatario General con Representación
Generadora de Occidente, Ltda.
Pte

Estimado Ing. Mendez:

Con base a su solicitud relacionada con la habilitación comercial de la Central Hidroelectrica Hidrocanadá, por este medio le informo que dicha planta quedó habilitada comercialmente en el Mercado Mayorista a partir del 20 de Noviembre de 2003, a la vez le adjunto copia del certificado de verificación del punto de medición comercial extendido por la empresa VELCA, S.A.

Sin otro particular, atentamente,

Ing. Omar E. Maldonado Arévalo
Coordinador Departamento Medición –AMM-

Diagonal 6, 10-65 zona 10. Centro Gerencial Las Margaritas, Torre 1, Nivel 13
Teléfono 332-7901 Fax: 331-7148. E-Mail: amm@amm.org.gt

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VELCA

No. CERTIFICADO: 107-2007

CERTIFICADO DE VERIFICACION DE PUNTO DE MEDICION
AMM, Sistema de Medición Comercial

DATOS GENERALES:

TIPO DE INSPECCION:	Verificación de medición
LEGISLACION APLICABLE:	NCC14
CODIGO DE PUNTO DE MEDICION:	QUE01047
PUNTO DE MEDICION:	HIDROELECTRICA CANADA
UBICACIÓN	KM. 197 CARRETERA A ZUNIL , QUETZALTENANGO
RESPONSABLE	GEN/CANADA
FECHA DE VERIFICACIÓN:	26-Abril-07
PORCENTAJE DE ERROR DE LA MEDICION	0.0227%
PORCENTAJE DE REGISTRO DE LA MEDICION	100.022%
MEDICION DE CONEXIÓN A TIERRA	0,115 Ohms

RESULTADOS

DE LOS DATOS OBTENIDOS EN LA VERIFICACION REALIZADA EN EL PUNTO DESCRITO INFORMAMOS QUE EL PUNTO:

[X] CUMPLE

[ ] INCUMPLE,

CON LOS PARAMETROS ESTABLECIDOS EN LA LEGISLACION APLICABLE A LAS VERIFICACIONES ELECTRICAS

25 de mayo 2007

INSPECTOR	SUPERVISOR
TONY BRAN FINO	ING. OTTO RAUL CASTAÑEDA FLORES
FIRMA:	FIRMA:

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Administrador del Mercado Mayorista

ME-132-2007

Guatemala, 03 de Agosto de 2007

Enel Guatemala, S.A.
03 AGO. 2007
RECIBIDO

Ing.
Juan Carlos Mendez
Mandatario General con Representación
Generadora Montecristo, S.A.
Pte

Estimado Ing. Mendez:

Con base a su solicitud relacionada con la habilitación comercial de la Central Hidroelectrica Montecristo, por este medio le informo que dicha planta quedó habilitada comercialmente en el Mercado Mayorista a partir del 28 de Mayo de 2006, a la vez le adjunto copia del certificado de verificación del punto de medición comercial extendido por la empresa VELCA, S.A.

Sin otro particular, atentamente,

Ing. Omar E. Maldonado Arévalo
Coordinador Departamento Medición –AMM-

Diagonal 6, 10-65 zona 10. Centro Gerencial Las Margaritas, Torre I, Nivel 15
Teléfono 332-7901 Fax: 331-7148. E-Mail: amm@amm.org.gt

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VELCA

No. CERTIFICADO: 132-2007

CERTIFICADO DE VERIFICACION DE PUNTO DE MEDICION
AMM, Sistema de Medición Comercial

DATOS GENERALES:

TIPO DE INSPECCION:	Verificación de medición
LEGISLACION APLICABLE:	NCC14
CODIGO DE PUNTO DE MEDICION:	QUE000
PUNTO DE MEDICION:	HIDROELECTRICA MONTECRISTO
UBICACIÓN	KM 197 CARRETERA A ZUNIL, QUETZALTENANGO
RESPONSABLE	GEN/MONTECRISTO
FECHA DE VERIFICACIÓN:	19-Jul-07
PORCENTAJE DE ERROR DE LA MEDICION	0.0430%
PORCENTAJE DE REGISTRO DE LA MEDICION	100.044%
MEDICION DE CONEXIÓN A TIERRA	2.83 Ohms

RESULTADOS

DE LOS DATOS OBTENIDOS EN LA VERIFICACION REALIZADA EN EL PUNTO DESCRITO INFORMAMOS QUE EL PUNTO:

[X] CUMPLE

[ ] INCUMPLE,

CON LOS PARAMETROS ESTABLECIDOS EN LA LEGISLACION APLICABLE A LAS VERIFICACIONES ELECTRICAS

19 DE JULIO DE 2007

INSPECTOR	SUPERVISOR
TONY BRAN FINO	ING. OTTO RAUL CASTAÑEDA FLORES
FIRMA:	FIRMA: