SCHEDULE 2

DESCRIPTION OF THE COMPLEX

1. INTRODUCTION

The Complex consists of 33 Wind Turbine Generator ("**WTG**") Units with the following design parameters:

WTG Make / Model:	[ ]
Name Plate Capacity of each WTG:	[ ]
Name-Plate Capacity of the Complex:	[ ]
Wake Losses:	[ ]
Auxiliary Consumption:	[ ]
Capacity (Net):	[ ]

2. SITE EVALUATION

2.1. Land and Topography

[ ]

Point	X (east)	Y (north)
1		
2		
3		
4		

3. WTG SYSTEM SPECIFICATIONS

3.1. Rotor

Diameter:	[ ]
Swept Area:	[ ]
Number of Blades:	[ ]
Blades Length:	[ ]
Airfoil:	[ ]
Blade Material:	[ ]
Rotor Speed:	[ ]
Aerodynamic Brake:	[ ]
Direction of Rotation:	[ ]

3.2. Blade

Type description:	[ ]
Blade length:	[ ]
Material:	[ ]
Type of rotor:	[ ]
Blade profiles:	[ ]

3.3. Hub

Type description : [ ]
Material : [ ]
Corrosion protection: [ ]

3.4. Gearbox

Type description : [ ]
Gear house material: [ ]
Ratio: [ ]
Mechanical power: [ ]
Shaft seals : [ ]

3.5. Yaw system

Type description : [ ]
Number of units : [ ]
Yaw speed : [ ]
Voltage : [ ]

3.6. Nacelle

[ ].

3.7. Tower

Material : [ ]
Corrosion protection : [ ]
Access conditions : [ ]

3.8. Generator

Type description: [ ]
Rated power: [ ]
Voltage (stator): [ ]
Frequency : [ ]
Number of poles : [ ]
Synchronous speed: [ ]
Speed at rated power: [ ]
Operation speed range: [ ]
Speed range for constant power: [ ]
Reference speed: [ ]
Max rotor slip: [ ]
Power factor: [ ]
Nominal current: [ ]
Winding connection stator: [ ]
Winding connection rotor : [ ]
Protection class (Generator): [ ]
Protection class (Slip ring-unit): [ ]
Thermal classification: [ ]

3.9. Controller

[ ]

4. COMPLEX DESCRIPTION

The Seller shall design, construct and commission outdoor switch yard which shall mainly comprise of the following:

4.1. HIGH VOLTAGE (HV) SUBSTATION (132kV)

[ ]

4.2. MEDIUM VOLTAGE (MV) SUBSTATION (22kV)

[ ]

4.3. CONTROL ROOM

The Seller shall design, construct and commission a Control Room which shall mainly comprise of the following:

[ ]

5. METERING ROOM FOR NTDC

[NTDC will provide their metering panels in the metering room constructed by the seller. The metering current transformer and voltage transformer, exclusive for NTDC, and its connections to the metering room will be provided by the Seller.]

6. WORKSHOP BUILDING

[A covered storage space for small and large electrical parts and small electrical parts will be provided.]

7. ENVIRONMENTAL STANDARDS

In accordance with the Provincial; Sindh Environmental Protection Agency standards.

8. WIND SPEED OPERATING PARAMETERS

Cut In Wind Speed: [ ]
Cut Out Wind Speed: [ ]
Survival Wind Speed: [ ]

9. MV COLLECTION SYSTEM

The Seller shall design, construct and commission MV Collection System which shall mainly comprise of the following:

9.1. [WTG Transformer (Generator Step up Transformer- GSU)

[

- LV Winding:

- MV Winding:

- Accessories:

9.2. Ring Main Unit (RMU)

10. MV CABLING NETWORK

11. HV/MV SUBSTATION

12. CONTROL BUILDING

13. EQUIPMENT DETAILS

13.1. **[Two 31.5/40/50 MVA, 132/22 kV Power Transformers]**

13.2. **132kV Circuit Breaker**

13.3. **132kV Dis-connectors / Isolators**

13.4. **132 kV Dis-connector with Earthing Switches (Line Isolators)**

13.5. **132kV Outdoor Surge Arresters**

13.6. **132kV Voltage Transformers**

13.7. **132kV Outdoor Coupling Capacitor Voltage Transformer**

.

13.8. **132kV Current Transformer**

13.9. **MV Switch Gear**

13.10. **Remote indications for NPCC**

Protection System

13.11. **DC Supplies**

13.12. **UPS**

13.13. **Auxiliary Transformer and Main Distribution Board**

14. GROUNDING SYSTEM

15. LIGHTNING PROTECTION

16. COMMUNICATION SYSTEM

17. Power Line Carrier (PLC)

18. Digital Signals

19. Analogue Signals

20. SCADA Signal

20.1. **LINE DISTANCE PROTECTION**

20.2. **LINE DIFFERENTIAL PROTECTION**

20.3. **OVER CURRENT AND EARTH FAULT PROTECTION**

20.4. **132kV Switchyard Bay (Generator Transformer Bay)**

20.5. **BUSBAR PROTECTION**

20.6. **BREAKER FAILURE PROTECTION FOR EACH BREAKER**

20.7. **AUTO RECLOSURE**

20.8. **PLC / TELECOM Alarms**

21. Purchaser's Monitoring System Requirements

22. WTG TOWER FOUNDATIONS

23. PROTECTION RELAY AND ANNUNCIATION SYSTEM

24. SCADA (INTEGRITY SYSTEM CHECKS, DATA PROCESSING, DATA PARAMETERS)

SCHEDULE 3

SELLER AND PURCHASER INTERCONNECTION FACILITIES; INTERCONNECTION POINT

1. Seller Interconnection Facilities (Design Data)

1.1. Protective Devices:
Seller interconnection facility shall be equipped with required protective devices as per prudent engineering practices. Protective relays, duly approved by the Power Purchaser, shall be in accordance with applicable IEC & NTDC standards.

1.2. Power Factor:
The power factor for the WTGs is [ ] leading and [ ] lagging. At point of interconnection with the grid at 132 kV level the power factor will be maintained at [ ] lagging/leading.

2. Interconnection and Transmission Facilities

2.1. The connection between the Complex substation and the Purchaser's Grid station shall be through a double circuit in/out arrangement of Jhamphir- Nooriabad existing single circuit 132 kV Line to be constructed by Power Purchaser. The transmission lines will terminate in the substation of the Complex, the location of which is shown on the attached Site plans. The circuits of the transmission lines will connect at gantries of the Complex substation provided by the Seller as shown on the attached substation layout drawing. The boundary of the responsibility between the Seller and the Purchaser will be at the top of the gantries of the Complex substation (the "**Interconnection Point**"). The Seller will provide the Purchaser with an earth connection from the earthing system of the Complex substation. The Purchaser will provide the Metering System which together with the transmission line(s) referred to above within the Site boundary shall comprise the "Interconnection Facilities." This equipment will be the property of the Purchaser and shall be commissioned, operated and maintained by the Purchaser.

2.2. Protection:
Tele-protection scheme at Complex substation owned by Seller and substations owned by the Purchaser will be in accordance with NTDC Standards and as follows;

i. Between Complex and Purchaser's Grid at Nooriabad through Digital PLC Link

ii. Between Complex and Purchaser's Grid at Jhampir through OPGW (Optical Ground Wire) or ADSS (All Dielectric Self Supporting Fiber Optic)

Differential Protection Relay(s) should have provision for direct connection with fibers of OPGW / ADSS cable.

3. Design Data

The Seller will provide before financial closing the Purchaser with the following Design Data to enable completion of the design of the Interconnection Facilities and the Transmission Facilities by the Purchaser:

3.1. Generator Design Data

i. Rating

Nominal Rated Capacity: [ ]
Power factor: [ ]
Number of phases: [ ]
Number of poles: [ ]
Frequency: [ ]
Rated speed: [ ]
Terminal voltage: [ ]
Short circuit ratio at rated MVA: N/A [not< 0.6]
Cooling system: [ ]

ii. Generator Parameters

a. Asynchronous data:

Rated voltage	Un		V
Winding connection	[S=1,D=2]		
Rated current	In		A
Rated impedance	Zn		Ω
Rated frequency	Fn		Hz
Magnetizing reactance	Xh		Ω
Stator resistance	R1		Ω
Rotor resistance	R'2 [operation]		Ω
Stator leakage reactance	X1S [operation]		Ω
Rotor leakage reactance	X'2S[operation]		Ω
Rotor resistance	R'2 [Start]		Ω
Stator leakage reactance	X1S [Start]		Ω
Rotor leakage reactance	X'2S[Start]		Ω
Stator reactance	X1		Ω
Rotor reactance	X'2		Ω
Leakage coefficient	σ		

b. Synchronous data:

Magnetizing reactance	xh		%	1.080	Ω
Stator resistance	r1		%	0.003	Ω
Rotor resistance	r'2		%	0.005	Ω
Stator leakage reactance	x1s		%	0.020	Ω
Rotor leakage reactance	x'2s		%	0.028	Ω
Stator reactance	x1		%	1.100	Ω
Rotor reactance	x'2		%	1.108	Ω

Magnetizing reactance	xhd		%	1.080	Ω
Magnetizing reactance	xhq		%	1.080	Ω
Direct-axis synchronous reactance	xd		%	1.100	Ω
Transient synchronous reactance	x'd		%	0.047	Ω
Subtransient synchronous reactance	x"d		%	0.047	Ω
Quadrature-axis synchronous reactance	xq		%	1.100	Ω
Transient synchronous reactance	x'q		%	0.047	Ω
Subtransient synchronous reactance	x"q		%	0.047	Ω
Open-circuit time constant	T'd0		S		
Direct-axis transient open-circuit time constant	T'd		S		
Direct-axis subtransient open-circuit time	T"d		S		
Quadrature-axis transient open-circuit time	T'q		S		
Quadrature-axis subtransient open-circuit time	T"q		S		
DC-declay time constant	Ta		S		

c. Inertia constant
Generator : [ ]

d. Generator Losses and Efficiencies
Efficiency: At full load = [ ]%
Losses: At full load: [ ] kW

3.2. Wind Generator Power Curves. (Attached as Annex-3.1)

3.3. Generator Step-Up Transformers (GSU)

Rating: [ ]
Rated voltage: [ ]
Maximum and minimum operating voltages: [ ]
Connection of winding: [ ]
Off Load Tap Changer
Taps of Winding: [ ]
Positive and zero sequence reactances
(% on rated kV & MVA base): [ ]

3.4. Substation

i. Power Transformers:

Type: [ ]
Design Standard: [ ]
Primary voltage: [ ]
Secondary voltage: [ ]
Vector Group: [ ]
Impedance: [ ]
Rating: [ ]

Cooling: [ ]
Rated insulation winding level: [ ]
[ ]
Type of Cooling Liquid: [ ]
At Max. Ambient Temperature: [ ]
Temperature Rise of Top Oil: [ ]
Temperature Rise of Winding: [ ]
System Highest Voltage HV: [ ]kV
Power Freq. Withstand Volt. HV: [ ]kV
Rating Impulse Voltage HV: [ ]v
Insulation Class: [ ]
Conductor Material HV & LV: [ ]
Application Standard: [ ]

ii. Circuit Breakers

Rated voltage: [ ]kV
Rated normal current: [ ]
Rated Symmetrical breaking current: [ ]
Rated out of phase breaking current: [ ]kA
Rated short-circuit making current: [ ]kA
Rated duration of short circuit: [ ]sec
Rated Operating sequence: [ ]
Total interruption time: [ ]cycles

iii. Current Transformers

Rated voltage: [ ]kV
Rated normal primary current:

- 1600:800:400 A (Line CTs)
- 1200:600:300 A (NTDC Metering CTs)

Rated secondary current: [ ] A
Accuracy Class for measuring core: [ ]
Continuous thermal rating: [ ]
Short time current rating: [ ]kA
Maximum Thermal burden: [ ]VA (for NTDC Metering CTs)
Impulse withstand voltage: [ ]kV peak
Power frequency withstand voltage of primary winding: [ ]kV
Power frequency withstand voltage of secondary winding: [ ]kV

iv. Voltage Transformers

Rated primary voltage phase to neutral: [ ]kV
Rated secondary voltage phase to neutral: [ ]kV
Rated Secondary output for measuring core: [ ]VA
Accuracy Class for measuring core: [ ]
Impulse withstand voltage: [ ]kV peak
Power frequency withstand voltage of primary winding: [ ]kV
Power frequency withstand voltage of secondary winding: [ ]kV

4. **Seller Interconnection Works:**
   As per details provided in Schedule 2

5. **Purchaser Interconnection Facilities (Design Data):**
   To be provided by NTDC

SCHEDULE 4

FORM OF CONSTRUCTION REPORTS; PROJECT PROGRESS REPORTING

Monthly progress reports shall be prepared consistent with the following general format and delivered to the Purchaser in accordance with the requirements of the Energy Purchase Agreement.

1. **Narrative**

1.1 Information

i. Project Information including Project Name, Location, Project Company, Capacity, Expected COD etc.
ii. Delays if any
iii. Issues if any
iv. Any other information

1.2 Engineering

1.3 Civil / Structural

i. Mechanical
ii. Electrical/Control
iii. Substation

(For each item above, identify when started, if continuing and when completed).

1.4 Construction

i. Civil / Building
ii. Electrical/control
iii. Grid connection / substation
iv. Production of WTG Components
v. Transport of WTG components
vi. Erection & commissioning of WTG components
vii. HSE
viii. QA/QC
ix. Site Services

(for each item above, identify when started, if continuing and when completed.)

2. Schedules

i. Monthly Completion vs. Targeted:
ii. Project Schedule Update:
iii. Engineering:
iv. Construction:
v. Start-Up:

3. Consents

Consents Applied for:
Consents Received:
Consents Outstanding:

Periodic Physical Inspection of Plant by the Purchaser

It is in the interest of the Parties that the plant and machinery is maintained in good running condition as per equipment manufacturer's recommendations, such that it continues to supply energy for the full operating life of 20 Years; therefore, the Purchaser, being an important stake holder, will also physically inspect the different components of the Plant atleast once every Year, during the Term of the EPA.

This inspection will be carried out at the Site and a timing of this inspection will be agreed between the Parties at least one (1) Month prior to the scheduled physical inspection. The agreed timeframe for the inspection can be altered upon mutual agreement of both the Parties. During the periodic physical inspection the representatives of the Purchaser may also review the maintenance logs of the components as maintained by the Seller.

SCHEDULE 5

TECHNICAL LIMITS and MINIMUM FUNCTIONAL REQUIREMENTS

1. TECHNICAL LIMITS

1.1. Design Limits

1.1.1. Wind Turbine Operating Limits (at Hub Level)

i. Cut-In Wind Speed: [ ]m/s at 10 minutes average
ii. Cut Out Wind Speed: [ ] m/s at 10 minutes average
iii. Survival Wind Speed: [ ] m/s at 10 minutes average
iv. Output at wind speeds: As per WTG power curve
v. Temperature Range: - [ ] ^{O}C to [ ] ^{O}C (Re-Cut In at [ ] ^{O}C)

1.1.2. Start-up of the Complex

WTGs will start whenever the ambient temperature and wind speed is within above mentioned range and provided Grid is available for excitation.

1.1.3. Complex Loading

i. The WTG loading will follow the attached complex power curve at varying wind speeds.

ii. The Complex can withstand a full load rejection and remain in a safe condition (maximum 20 times per year). Following Grid availability, the Complex will be subject to a full start up sequence. Restart time will be wind speed dependant.

1.1.4. Power Factor, Voltage and Frequency Limits

i. The Complex can operate with power factor in the range [ ]lagging/leading at Interconnection Point which range shall not be exceeded.

ii. The Complex can operate within the range ± [ ]% on the 132 kV high voltage system which range shall not be exceeded.

iii. The Complex can operate within the frequency range 48.5 Hertz to 51.5 Hertz which range shall not be exceeded.

iv. The Complex will be subject to tripping if voltage and/or frequency fluctuations outside the ranges stated in 1.1.4 (ii) and (iii) occur.

1.1.5. General

The Seller shall advise the Purchaser of any temporary operating constraints and limits which may from time to time apply to the Complex.

1.2. Design Maintenance Limits

1.2.1. The cycle of Schedule Maintenance Outages is set out in Table 1 below together with manufacturer's recommended durations for such inspections.

TABLE 1

[ ]

1.2.2. In order to achieve the optimum performance of the Wind Farm in accordance with prevailing site conditions, fine-tuning of Wind Turbines and their control software is required during first few months of commissioning / operation (normally three months). Therefore during this period the turbines require more maintenance outages thus reducing the availability up to 85 %.

2. MINIMUM FUNCTIONAL REQUIREMENT

2.1. General:

The Complex shall be of proven design, new, unused, latest model, build to appropriate internationally recognized standards, and shall comply with all the applicable codes and regulations. It shall be capable of operating in parallel with the other generators connected within the Grid System / Distribution System and achieve the levels of availability and reliability normally expected of a modern power plant of the same technology. The Complex shall be capable of operating within the temperature range of – [ ]^{o}C to + [ ]^{o}C.

2.2. Wind Turbine Generators:

Wind Turbine Generators shall be designed and manufactured in accordance with the IEC and / or equivalent International Standards. They shall have variable speed control and independent blade pitch system. The variable speed control shall continually adjust the rotor rpm level for optimum thrust at each wind speed. The tubular steel towers shall consist of sections and have hub-height 80 meters. Towers shall be equipped with service platforms. Each tower section shall have interior ladder. The Wind Turbine Generator Units shall be appropriately sited in order to capture the maximum amount of the energy from the Wind in the area.

The Wind Turbine Generator units would be started, synchronized, loaded and shutdown fully automatically from the control desk in the central control room of the Complex with

all operational commands and status being logged in the Complex Monitoring System. Automatic Cut In Wind Speed and Cut Out Wind Speed sequence based on the prevalent wind speed will include starting the Wind Turbine and starting of all auxiliary drives or connections required for proper functioning of the system.

Generators shall be rated to match the maximum output of the wind turbine and shall be designed and manufactured in accordance with the IEC and / or equivalent International standards. Winding insulation shall be non-hydroscopic and of class F. The generators shall be capable of supplying rated output within ±[ ]% of rated frequency i.e. 50 Hz and ±10% of nominal rated voltage within the power factor range of [ ] lagging/leading. (measured at the high-voltage busbar of the substation).

2.3. GSU Transformer:

A GSU Transformer for each wind turbine generator together with protection, and circuit breakers as required, shall be provided.

Transformers shall be rated to the full continuous output of the generator within the range of local ambient temperatures and equipped with off-load tap changer. The secondary voltage shall be [ ] kV. They shall be capable of operation at +/- [ ]% of the rated voltage.

2.4. Substation:

A complete substation with new and un-used equipment and materials shall be constructed at suitable location to facilitate cost-effective transmission of power to the Grid System. It shall comprise 132 kV switchgear with adequate number of line bays for interconnecting Purchaser's Grid System for complete dispersal of the plant output under normal and single contingency conditions. Through a properly designed collector system, the energy generated by each Wind Turbine Generator unit will be taken to the Substation and transformed to the high voltage conforming to that of the Grid System intended to be connected with. The power transformers shall be equipped with on-load tap changers. It shall be ensured that the power is delivered at standard, consistent voltage and frequency levels. All the substation equipment shall be capable of operation within the range between ±10% of the rated voltage under normal conditions.

2.5. Reactive Power Compensation:

The Complex shall be equipped with Reactive Power Compensation System, if required, to avoid any adverse effect on the Purchaser's Grid System. Complex will operate at +/- [ ] Power Factor at the point of interconnection.

2.6. Control, Protection and Supervision:

A control and monitoring system shall be provided for monitoring operation of the Complex and providing telecommunication and tele-metering to the Control Room. A complete and comprehensive protection system for the Complex and inter-tripping provisions between Seller's substation and the connected Grid Station shall be provided

by the Seller.

2.7. Metering System:

Metering System on the high voltage side of the Power Transformer(s) at the substation shall be provided by the Purchaser for export and import metering. Independent current transformers of accuracy class [ ] s and voltage transformers of accuracy class [ ] shall be provided at the Substation by the Seller for providing input to the Energy Meters. The Metering System shall have an overall measuring error within ±[ ] %. A separate air-conditioned room in the Complex's Substation shall be provided. All cabling between the Meters and associated Current Transformers and Voltage Transformers shall be laid as per prudent engineering practices.

2.8. Complex Monitoring System Functional Requirements

All functions of the wind turbine are monitored and controlled by a microprocessor-based control system operating with a multi-processor architecture. This is connected via optical fibers to a host of sensors.

Grid voltage, frequency and phasing, rotor and generator speed, diverse temperatures, oil pressure, cable twist as well as the meteorological conditions are monitored.

2.9. Environmental Requirements:

The Complex shall comply with the environmental requirements of the Sindh Environmental Protection Agency (SEPA). It shall be particularly ensured that the noise generated by the Wind Turbine Generator System is within the limits of the state-of-the-art technology.

2.10. Harmonics:

At present there is no issue of the feeding of harmonics from the Complex or the grid system of Purchaser. It is, however, mutually agreed that if an eventuality comes at a later stage when the harmonics impact the operation of the Wind Farm, the issue will be deliberated and resolved with mutual consent by the Seller & Purchaser.

SCHEDULE 6

METERING

1. Provision of Metering

The metering points to record the MWh and MVARh exchange between the Complex and the Purchaser's Grid System shall be at the HV Side (132kV) of the Power Transformer of the Complex. An exclusive set of current and voltage transformers (0.2s & 0.2 accuracy class respectively) to feed the current and voltage to the metering system shall be provided by the Seller. The meters owned by the Purchaser will be located within the substation in a separate room as detailed in Schedule 3. The Purchaser shall procure the Metering System with accuracy class of 0.2 and the Seller shall install the Metering System along with its own metering system with an accuracy class of 0.2 to act as back-up of the Metering System to be referred as "Back-up Metering System" thereafter.

The Metering System shall be according to the specifications as defined by NTDC.

2. Testing

2.1 The calibration of meters will be checked to ensure that the accuracy remains within the specified limits. The method of calibration and frequency of tests will be agreed between the Seller and the Purchaser based on knowledge of the performance and the design of the installed meters and the manufacturer's recommendations.

2.2 Compensation will be made for the errors of current and voltage transformers in the meter calibration or during computation of records. Current and voltage transformers will be tested for ratio and phase angle errors following manufacture at an accredited testing station in the presence of representatives from the Seller and the Purchaser. Test certificates issued by the testing station will be issued independently to both Parties.

2.3 Testing and calibration of the Metering System shall be carried out by the Purchaser after giving appropriate notice to the Seller in line with the agreed frequency of testing or in the event of either Party having reasonable cause to believe the meters are outside specified limits. During such tests and calibration the Seller shall have the right to have a representative present at all times.

SCHEDULE 7

COMMISSIONING AND RELIABILITY RUN TESTS

1. Complex Reliability Run Test

1.1. A reliability run test of the Complex will be carried out as part of the Commissioning tests and must be satisfied prior to the Complex being certified as "Commissioned" by the Engineer.

1.2. This test is to run the Complex continuously at maximum possible load, as per prevailing wind speed, for a period of seven (07) days (168 hours).

1.3. The purpose is to confirm that all individual equipment can operate continuously, within its Technical Limits, without exceeding any of its safe limits without being damaged.

1.4. The test shall have been satisfactorily completed only if it continues, without any interruption, for not less than 168 hours with 85% minimum availability.

1.5. Any interruption due to wind speed being out of the range from Cut-in to Cut-out speeds, ambient conditions and Grid Behavior outside Technical Limits will be ignored.

1.6. If a turbine goes "off line" due to low or high wind speeds, grid faults and ambient conditions being outside Technical Limits this time is included in the reliability period since the unit is "off line", but available for operation.

1.7. The 07 days (168 hrs) reliability test of the Complex shall be considered completed upon the successful commissioning of the last wind turbine.

1.8. Upon successful completion of Complex Reliability Run Test, a certificate for Complex Commissioning will be issued by the "Engineer".

SCHEDULE 8
INSURANCE

PART I: CONSTRUCTION PERIOD

1. Marine and Air Cargo

Cover:	All materials, equipment, machinery, spares and other items for incorporation in the Complex against all risks of physical loss or damage while in transit by sea or air from country of origin anywhere in the world to the Site in Pakistan, from the time of the insured items leaving warehouse or factory for shipment to the Site. Cover to institute Cargo Clauses (Air), institute War Clauses (Air), (Sendings By Post), institute Strikes Clause (Cargo, Air Cargo) or equivalent.
Sum insured:	An amount equal to cost and freight of any shipment
Deductible:	Not to exceed US$ 100,000 each loss.
Insured:	The Seller, the Contractors and suppliers to the Seller and to the Contractors.

2. Loss of Revenue Profits (following Marine incident)

Cover:	Against loss of revenue following delay in start of Commercial Operation as a direct result or physical loss or damage to the materials, equipment, machinery and other items in transit by sea or air to the Site, to the extent covered under the Marine Cargo insurance.
Sum insured:	An amount equal to the estimated continuing expenses, including debt servicing during the indemnity period.
Indemnity Period:	Not less than 12 Months.
Deductible:	Not to exceed 60 Days.
Insured:	The Seller and the Lenders.

3. Contractors' All Risks

Cover:	The contract Works executed and in the course of execution, materials and temporary works, while on the Site, against all risks of physical loss or damage other than war and kindred risks, nuclear risks, unexplained shortage, cost of replacing or repairing items which are defective in workmanship, material or design; penalties; consequential losses; cash; vehicles; vessels; aircraft. Cover shall provide the equivalent terms, conditions and perils/causes of loss provided under an Erection All Risks insurance policy.

Sum insured: The Contract Price.

Deductibles: In relation to Contract Works, Materials etc.

(a) arising during the Construction and Testing period:

(i)	from Storm, Tempest, Flood, Water Damage, Earthquake, Tsunami, Subsidence and Collapse	Not to exceed US$ 300,000
(ii)	from any other cause, other than in (a)(i) above	Not to exceed US$ 150,000

(b) arising out of operational testing or Commissioning:

(i)	of turbine generators	Not to exceed US$ 150,000
(ii)	of Complex other than turbine generators	Not to exceed US$ 150,000

Period of Cover: Actual construction, testing and Commissioning until expiry of the warranty period.

Insured: The Seller, the Contractors and all suppliers and consultants, GOP, Purchaser and the Lenders.

General: During the warranty period, cover shall be limited to the loss or damage for which the Construction Contractor is liable under the warranties of the Construction Contract. Cover shall include transit within Pakistan of locally procured materials. Cover shall cease, and be transferred to Operating Period insurance, on the day following the Commercial Operations Date.

4. Loss of Revenue (following C.A.R.)

Cover: Against loss of revenue following delay in start of Commercial Operation as a direct result of physical loss of or damage to the Works during construction or operational testing to the extent that such loss or damage is covered under the Contractors' All Risks policy.

Sum insured: An amount equal to the estimated continuing expenses, including debt servicing during the indemnity period.

Indemnity Period: Not less than 12 Months.

Insured: The Seller and Lenders.

Deductible: Not to exceed 60 Days.

Period of Cover: Actual Construction, testing and Commissioning periods of the Project from mobilization of the Contractors until the day following Commercial Operations Date.

5. Public Liability

Cover: Against legal liability to third parties for bodily injury or damage to property arising out of the construction, testing and Commissioning of the Complex in Pakistan.

Sum insured: For any one claim:

US$ 5,000,000.

Deductible: Not to exceed US$ 50,000 for each claim for damage to property. None for injury to persons

Insured: The Seller, Lenders, Contractors, all suppliers and consultants, GOP and Purchaser.

Period of Cover: The actual construction, testing and Commissioning of the Complex from mobilization of the Contractors until the day following Commercial Operations Date.

6. Miscellaneous

Other insurance as is customary, desirable, expedient or necessary for the smooth implementation/operation of the Complex and / or to comply with local or other requirements, such as Workmen Compensation Insurance in relation to all workmen employed in the construction of the Project and Motor Insurance on any vehicle.

PART II: OPERATING PERIOD

1. All Risks Insurance - Fixed Assets

Cover:	All building contents, machinery, stock, fixtures, fittings and all other personal property forming part of the Complex against "All Risks" of physical loss or damage, including (but not limited to) those resulting from fire, lightning, storm, tempest, flood, hurricane, water damage, riot, strikes, malicious damage including act of terrorism and sabotage, earthquake, tsunami, collapse.
Sum insured:	Full replacement value of the Complex.
Deductible:	Not to exceed US$ 250,000 each loss.
Insured:	The Seller, the O&M Contractor, GOP, Purchaser and the Lenders.

2. Consequential Loss Following All Risks

Cover:	Loss of revenue due to loss of capacity and/or loss of output as a direct consequence of loss of or damage to the Complex and caused by a peril insured under paragraph 1 above.
Sum insured:	An amount equal to the estimated continuing expenses, including debt servicing during the indemnity period.
Indemnity Period:	Not less than 12 Months.
Deductible:	Not to exceed 60 days .
Insured:	The Seller, the O&M Contractor and the Lenders.

3. Machinery Breakdown

Cover:	All machinery, Complex and ancillary equipment forming part of the Complex against sudden and unforeseen physical loss or damage resulting from mechanical and electrical breakdown or derangement, electrical short circuits, vibration, misalignment, excessive current or voltage, abnormal stresses, centrifugal forces, failure of protective or regulating devices, impact, collision and other similar causes.
Sum insured:	Full replacement value of all machinery, Complex etc.
Deductible:	Not to exceed US$ 300,000 each loss.
Insured:	The Seller, the Lenders, Purchaser and the O&M Contractor.

4. Consequential Loss following Machinery Breakdown

Cover:	Loss of revenue due to loss of capacity and/or loss of output as a direct consequence of loss or damage to the Complex caused by a peril insured under paragraph 3 above.
Sum insured:	An amount equal to the estimated continuing expenses, including debt servicing during the indemnity period.
Indemnity Period:	Not less than 12 Months.
Deductible:	Not to exceed 60 days\.
Insured:	The Seller, the O&M Contractor and the Lenders.

5. Public Liability:

Cover:	Legal liability of the insured for damage to property of third parties or bodily injury to third parties arising out of the ownership, operation and maintenance of the Complex.
Sum insured:	US$ 5,000,000 for any occurrence.
Deductible:	Not to exceed US$ 50,000 each claim for property. None for injury to persons.
Insured:	The Seller, the O&M Contractor, the Lenders, GOP and Purchaser.

6. Miscellaneous

Other insurance as are customary, desirable, expedient or necessary for the smooth implementation/operation of the Complex and / or to comply with local or other requirements, such as Workmen Compensation Insurance in relation to all workmen employed in the Complex or in connection with its operation and Motor Insurance on any vehicle.

7. Indexing of Limits

The coverage provided under Section 5 in Part I and Part II will be indexed in accordance with Schedule 1

SCHEDULE 9

FORM OF SELLER LETTER OF CREDIT

[ISSUED ON ISSUING BANK LETTERHEAD
SHOWING FULL NAME AND ADDRESS]

Date and Place of Issue:

Applicant

Name The _____ Power Seller, Limited
Address _____, Pakistan

Advising and Negotiating Bank

[name and address]
_____, Pakistan

Beneficiary

Purchaser
[address]
_____, Pakistan

Attention:

We hereby issue our documentary credit as follows:
Type of Credit:
Irrevocable

Letter of Credit Number:

Date and Place of Expiry:

Date -
Place - [Advising and Negotiating Bank name and address]

Amount
[figures]
[words]

Credit available with: [Advising and Negotiating Bank], by negotiation against presentation of the documents detailed herein and of your draft(s) at sight drawn on Issuing Bank accompanied by a certificate signed on your behalf by a person describing himself therein as your duly authorized officer stating that:

A. This drawing in the amount of [currency and amount] is being made pursuant to the Energy Purchase Agreement (Agreement) between the _____ Power Company, Limited ("Seller") and the Purchaser as a result of Seller's failure to perform in accordance with Article/Section _____ of the Agreement."

OR

B. "The Purchaser is making a drawing in the full available amount of [Issuing Bank] Letter of Credit No. _____ because the term of the Letter of Credit will expire within ten (10) business days of the date of this certificate and The _____ Power Company, Limited ("Seller") has failed to deliver a replacement or renewal Letter of Credit acceptable to the Purchaser, and security is still required under the terms of Article/Section _____ of the Energy Purchase Agreement between the Seller and the Power Purchaser, dated __ _____ 200_."

Presentation of the above certificate and all communications in writing with respect to this Letter of Credit shall be addressed to us at [Issuing Bank name and address] referencing Letter of Credit No. _____, Attention: _____, or at [Advising and Negotiating Bank name and address] referencing Letter of Credit No. _____, Attention: _____.

This Letter of Credit sets forth in full the terms of our undertaking and this undertaking shall not in any way be modified, amended, limited, or amplified by reference to any document, instrument, or agreement referred to herein, except only the certificates and draft referred to herein; and any such reference shall not be deemed to incorporate herein by reference any document, instrument, or agreement except for such certificates.

This Letter of Credit is transferable. Transfer may be effected only by Issuing Bank upon our receipt of an acceptable application for transfer accompanied by the original Letter of Credit and payment of our transfer commission in effect at the time of transfer.

Partial drawings are allowed.

Tested telex reimbursement is allowed.

Drafts drawn under this Letter of Credit must bear the clause:

"Drawn under [Issuing Bank] Letter of Credit No. _____, dated __ _____ 2008."

It is a condition of this Letter of Credit that it shall be automatically extended for an additional period of one year from the present and each future expiration date, unless, thirty (30) days prior to the then-current expiration date, we notify you by registered mail that this Letter of Credit will not be renewed for an additional period.

We hereby engage with you that drafts drawn strictly in compliance with the terms of this credit and amendments shall meet with due honor upon presentation. This credit is subject to "Uniform Customs and Practice for Documentary Credits" (1983 Revision), International Chamber of Commerce, Publication No. 600.

Authorised Signature

Authorised Signature

SCHEDULE 10

PROTOCOL FOR CALCULATION OF NON PROJECT MISSED VOLUME

"Non Project Missed Volume" or "NPMV" - The volume of Net Delivered Energy not delivered by the Complex which non delivery is due to a Non-Project Event(s) calculated as follows:

NPMV = $X * (TD_{npe} + SU_t)$

where,

X = C * 0.31 * 8760 / (8760*60)

X = The quantity of net electrical energy a WTG is capable of generation and delivery at the Interconnection Point expressed in kWh per min**;**

C = Rated capacity of each WTG expressed in kW

TD_{npe} = $\Sigma (T * A)$

where,

TD_{npe}= Total Duration of the Non Project Event's, which is the sum of the duration of each Non Project Event in a given Month (in minutes).

T = the duration of each Non Project Event in a given Month in minutes

A = the number of WTG's, on which the Non Project Event is applicable or which had to be curtailed due to each Non Project Event

SU_t = $\Sigma (T_{su} * A)$

where,

SU_t = Total Duration required for staggered start up of WTGs under each NPE in a given month (in minutes) for safe introduction to the Grid System.

T_{su} = 1 minute is the time required for staggered start up of a WTG under each NPE for safe introduction to the Grid System.

A = the number of WTG's, on which the Non Project Event is applicable or which had to be curtailed due to each Non Project Event

EXAMPLES

NPMV Calculation

Example # 1

Summary of Non Project Events during the Month:

1. First Non Project Events of the Month

Day 10, from 1430-1800 hrs,

T = 210 minutes, A=25,

2. Second Non Project Events of the Month

Day 30, from 1800- 1900 hrs

T = 60 minutes, A=20,

3. Rated Capacity of WTG

C = 2.0 MW

Calculation of Non Project Missed Volume for the Month

a) X = C * 0.31 * 8760 / (8760*60)

Where;
C = 2.0 MW = 2,000 kW

Therefore;

X = 2,000 * 0.31 * 8760 / (8760 * 60)
X = 10.33 kWh/min

b) TD_{npe}

TD_{npe} = Σ (T * A)
= (210 * 25) + (60 * 20)
= **6,450 minutes**

c) **SU_t**

SU_t = Σ (1 * A)
= (1 * 25) + (1*20)
= 45 **minutes**

NPMV = X * (TD_{npe} + SU_t)

= 10.33* (6,450 + 45)

NPMV = 67,093 kWh

Example # 2

Summary of Non Project Events during the Month:

1 First Non Project Events of the Month

Day 3, from 1200-1500 hrs,

T = 180 minutes, A=25,

2. Second Non Project Events of the Month

Day 10, from 0600- 1100 hrs

T = 300 minutes, A=10,

3. Third Non Project Event of the Month

Day 14, from 1800- 1800 hrs

T = 1,440 minutes, A=25

4. Fourth Non Project Event of the Month

Day 30, from 0100- 0200 hrs

T = 60 minutes, A=2

5. Rated Capacity of WTG

C = 2.0 MW

Calculation of Non Project Missed Volume for the Month

a) **X** **=** **C * 0.31 * 8760 / (8760*60)**

Where;

C = 2.0 MW = 2,000 kW

Therefore;

X = 2,000 * 0.31 * 8760 / (8760 * 60)

X = 10.33 kWh/min

d) **TD_{npe}**

TD_{npe} = Σ (T * A)

= (180 * 25) + (300 * 10) + (1,440 * 25) + (60 * 2)

= **43,620 minutes**

e) **SU_t**

SU_t = Σ (1 * A)

= (1 * 25) + (1*10) + (1*25) + (1*2)

= 62 **minutes**

NPMV = X * (TD_{npe} + SU_t)

= 10.33* (43,620 + 62)

NPMV = 451,235 kWh