

| TABLE 3 - GENERATING UNIT TECHNICAL PARAMETERS | | | |
|---|---------------------------|----------------|-------------------------|
| To be completed by Market Participant (with initial and company stamp on every page) | | | |
| Description of Data Submission (): _____ | | | |
| <i>Generating Unit's main technical data</i> | | | |
| Name of Generating Unit: | | | |
| Unit Number: | | | |
| Manufacturer: | | | |
| Model: | | | |
| Rated Terminal Voltage: | | kV | |
| Rated MVA Capacity: | | MVA | |
| Rated Power Factor | | | |
| • Over-Excited (lag): | | | |
| • Under-Excited (lead): | | | |
| Short Circuit Ratio at Rated Voltage and Current: | | | |
| Direct Axis Short-Circuit Time Constants | | | |
| • Td': | | Seconds | |
| • Td'': | | Seconds | |
| Direct Axis Open-Circuit Time Constants | | | |
| • Tdo': | | Seconds | |
| • Tdo'': | | Seconds | |
| Quadrature Axis Open-Circuit Time Constants | | | |
| • Tqo': | | Seconds | |
| • Tqo'': | | Seconds | |
| Armature Winding Short-Circuit Time Constant (Ta): | | Seconds | |
| MVA base for all Impedance Data: | | MVA | |
| kV base for all Impedance Data: | | kV | |
| Direct Axis Synchronous Reactance (Xd) | | | |
| • Unsaturated: | | % | |
| Direct Axis Transient Reactance (Xd') | | | |
| • Unsaturated: | | % | |
| • Saturated: | | % | |
| Direct axis sub-transient reactance (Xd'') | | | |
| • Unsaturated: | | % | |
| • Saturated: | | % | |
| Quadrature Axis Synchronous Reactance (Xq) | | | |
| • Unsaturated: | | % | |
| Quadrature Axis Transient Reactance (Xq') | | | |
| • Unsaturated: | | % | |
| Quadrature Axis Sub-Transient Reactance (Xq'') | | | |
| • Unsaturated: | | % | |
| Potier Reactance (Xp): | | % | |
| Leakage Reactance (Xl): | | % | |
| Negative Sequence Reactance (X2) | | | |
| • Unsaturated: | | % | |
| • Saturated: | | % | |
| Zero Sequence Reactance (X0) | | | |
| • Unsaturated: | | % | |
| • Saturated: | | % | |
| Grounding Resistance (to provide Generator's Single Line Diagram): | | Ohm | |
| Grounding Reactance (to provide Generator's Single Line Diagram): | | Ohm | |
| Main Field Current at No-Load and Rated Voltage: | | Amp | |
| Main Field Current at Full-Load and Rated Voltage and Rated Power Factor Overexcited: | | Amp | |
| Short Circuit Current Contribution at the Point of Common Coupling and Basis of Computation: | | kA | |
| Resistance of Main Field Windings at Operating Temperature of 75 °C: | | Ohm | |
| Machine Damping Factor (K _D): | | | |
| "Turbine + Generator" Inertia Constant (H): | | MW*seconds/MVA | |
| Name of Applicant: | Designation of Applicant: | Company Name: | Signature of Applicant: |
| | | | |

TABLE 3 - GENERATING UNIT TECHNICAL PARAMETERS

To be completed by Market Participant (with initial and company stamp on every page)

Generator Transformer

| | | | |
|---|--------------|--------------------|----|
| Name of Transformer: | | | |
| Unit Number: | | | |
| Manufacturer & Country: | | | |
| Model: | | | |
| Winding Connection and Vector Group: | | | |
| Cooling Method: | | | |
| Rated Voltage: | Primary: | | kV |
| | Secondary: | | kV |
| Nominal Voltage: | Primary: | | kV |
| | Secondary: | | kV |
| Tap Changer: | Type: | | |
| | Tap Setting: | | |
| | Range: + | | % |
| | Range: - | | % |
| | Step Size: | | % |
| Rated Capacity: | | MVA | |
| MVA base for all Impedance Data: | | Rated MVA Capacity | |
| kV base for all Impedance Data: | | kV | |
| Positive Sequence Impedances (to provide derivation of Resistance and Reactance) | R | X | |
| • @ Maximum Tap: | % | % | |
| • @ Minimum Tap: | % | % | |
| • @ Nominal Tap: | % | % | |
| Zero Phase Sequence Impedance (to provide derivation of Resistance and Reactance) | % | % | |
| MVA base for all Impedance Data: | | 100MVA | |
| kV base for all Impedance Data: | | kV | |
| Positive Sequence Impedances | R | X | |
| • @ Maximum Tap: | % | % | |
| • @ Minimum Tap: | % | % | |
| • @ Nominal Tap: | % | % | |
| Zero Phase Sequence Impedance | % | % | |
| Shunt Susceptance: | | % | |
| Primary Side Neutral Grounded? | | | |
| If yes, Ground Resistance: | | Ohm | |
| Ground Reactance: | | Ohm | |
| Secondary Side Neutral Grounded? | | | |
| If yes, Ground Resistance: | | Ohm | |
| Ground Reactance: | | Ohm | |
| Magnetising Curve: to indicate references of submission | | | |
| Transformer Iron (Fixed) Loss: | | kW | |
| Magnetising Current: | | A | |
| Transformer Copper Losses: (to provide loss curve if available) | | | |
| • @ 25% rated capacity | | kW | |
| • @ 50% rated capacity | | kW | |
| • @ 75% rated capacity | | kW | |
| • @ 100% rated capacity: | | | |
| ➤ Maximum Tap: | | kW | |
| ➤ Minimum Tap: | | kW | |
| ➤ Nominal Tap: | | kW | |
| To be completed by PSO | | | |
| B1 – B2 – B3: | | | |
| From TA (B1 – B2 – B3): | | | |
| To TA (B1 – B2 – B3): | | | |
| Additional Information: | | ^ Denotes a space | |

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| TABLE 3 - GENERATING UNIT TECHNICAL PARAMETERS | | | |
|---|---------------------------|---------------|-------------------------|
| To be completed by Market Participant (with initial and company stamp on every page) | | | |
| Unit Transformer | | | |
| Name of Transformer: | | | |
| Manufacturer, Country: | | | |
| Model: | | | |
| Winding connection and Vector Group: | | | |
| Cooling Method: | | | |
| Rated Capacity: | MVA | | |
| Rated Voltage: | Primary: | kV | |
| | Secondary: | kV | |
| Nominal Voltage: | Primary: | kV | |
| | Secondary: | kV | |
| Tap Changer: | Type: | | |
| | Tap Setting: | | |
| | Range: + | % | |
| | Range: - | % | |
| | Step Size: | % | |
| Tap Side: | | | |
| Positive Sequence Impedance: | R: % | X: % | |
| Zero Sequence Impedance: | R: % | X: % | |
| Shunt Susceptance: | % | | |
| Primary Side Neutral Grounded? If yes, Ground Resistance: | | | Ohm |
| Secondary Side Neutral Grounded? If yes, Ground Resistance: | | | Ohm |
| To be completed by PSO | | | |
| Off-take Load B1 – B2 – B3: | | | |
| Additional Information: | ^ Denotes a space | | |
| Generator Excitation System | | | |
| Name of Generating Unit: | | | |
| Type: | | | |
| Voltage Regulator Model Name: | | | |
| Steam Turbine Unit | | | |
| Rated MW Capacity: | MW | | |
| Model: | | | |
| Manufacturer: | | | |
| Power Fraction (to submit heat balance diagram) | HP: | | |
| | IP: | | |
| | LP: | | |
| Gas Turbine Unit (Open Cycle & Closed Cycle) | | | |
| Rated MW Capacity: | MW | | |
| Model: | | | |
| Manufacturer: | | | |
| Steam Turbine Unit on Combined Cycle | | | |
| Rated MW Capacity: | MW | | |
| Model: | | | |
| Manufacturer: | | | |
| Power Fraction: (to submit heat balance diagram) | HP: | | |
| | IP: | | |
| | LP: | | |
| Name of Applicant: | Designation of Applicant: | Company Name: | Signature of Applicant: |
| | | | |

| TABLE 3 - GENERATING UNIT TECHNICAL PARAMETERS | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| To be completed by Market Participant (with initial and company stamp on every page) | | | | | | | | | | |
| Generating Unit /Generation Facility Protection | | | | | | | | | | |
| Functional description and settings of the following: | | | | | | | | | | |
| <ul style="list-style-type: none"> • Loss of excitation relays <ul style="list-style-type: none"> ➤ CT ratio: ➤ VT ratio: ➤ Setting: • Under-Frequency Relay Setting: _____ Hz Seconds • Over-Frequency Relay Setting: _____ Hz Seconds • Under-Voltage Relay Setting: _____ pu Seconds • Over-Voltage Relay Setting: _____ pu Seconds | | | | | | | | | | |
| Generation Facility Input/Output Data | | | | | | | | | | |
| Primary Fuel Type: _____ (If others, please state): _____ | | | | | | | | | | |
| Source: | | | | | | | | | | |
| | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| MW | | | | | | | | | | |
| HTRC – Input / Output curve of the generator (in step of 10% of rated capacity) | | | | | | | | | | |
| GJ/Hrs | | | | | | | | | | |
| IHRC –Incremental Heat Rate Curve (in step of 10% of rated capacity) | | | | | | | | | | |
| MJ/MWHrs | | | | | | | | | | |
| Alternate Fuel Type: _____ (If others, please state): _____ | | | | | | | | | | |
| Source: | | | | | | | | | | |
| | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |
| MW | | | | | | | | | | |
| HTRC – Input / Output curve of the generator (in step of 10% of rated capacity) | | | | | | | | | | |
| GJ/Hrs | | | | | | | | | | |
| IHRC –Incremental Heat Rate Curve (in step of 10% of rated capacity) | | | | | | | | | | |
| MJ/MWHrs | | | | | | | | | | |

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|--------------------|---------------------------|---------------|-------------------------|
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| TABLE 3A - GENERATING UNIT TEST REPORT SUBMISSION | | | |
|--|---------------------------|---------------|---------------------------------|
| To be completed by Market Participant (with initial and company stamp on every page) | | | |
| Description of Data Submission (): _____ | | | |
| Generating Unit Capability Curves | | | References Number of submission |
| <ul style="list-style-type: none"> Saturation curve: to indicate the corresponding field current values at 1.0 pu and 1.2 pu of terminal voltage on the air-gap and open circuit curves | | | |
| <ul style="list-style-type: none"> V-curve | | | |
| <ul style="list-style-type: none"> Reactive Power Capability Curve: to indicate lagging and leading rated power factors | | | |
| <ul style="list-style-type: none"> Factory acceptance test reports | | | |
| Generator transformer | | | |
| Factory acceptance test report: (to include loss curve) | | | |
| Generator Excitation System | | | |
| Functional description and block diagram showing transfer function of individual element of the excitation system and the Automatic Voltage Regulator | | | |
| The setting and block diagram showing transfer function of individual element of the minimum and maximum excitation limiters | | | |
| The setting of limiters is to be plotted on the Generator Reactive Power Capability Curve | | | |
| Exciter saturation data, if available (or applicable) | | | |
| Report on validation of excitation system including excitation system model in PSSE format (i.e. flecs source code format) if it is a user-defined model. | | | |
| Power System Stabiliser (PSS) | | | |
| Functional description and block diagram showing transfer function of individual element of the PSS | | | |
| Report on methodology in deriving the PSS setting, including simulation results and tuning procedures | | | |
| Report on validation of PSS including PSS model in PSSE format (i.e. flecs source code format) if it is a user-defined model. | | | |
| Steam Turbine Unit | | | |
| Heat balance diagram | | | |
| Control Design - Functional description and block diagram showing transfer function of individual element of the governor/turbine/boiler | | | |
| Test Data/report | | | |
| <ul style="list-style-type: none"> Control and intercept valve curves <ul style="list-style-type: none"> ➤ Position vs. signal ➤ Valve opening vs. signal ➤ Closing/opening speed tests Load rejection tests Frequency response tests | | | |
| General boiler control strategy | | | |
| <ul style="list-style-type: none"> State whether constant or variable pressure If constant pressure, boiler follow, turbine follow, or coordinated control If coordinated control, frequency and pressure biases If variable pressure, pressure and control valve position as a function of load level | | | |
| Gas Turbine Unit (Open Cycle & Closed Cycle) | | | |
| Performance data and curves operating on both Natural Gas and Diesel: | | | |
| <ul style="list-style-type: none"> Power vs. Fuel Consumption Exhaust Temperature vs. Fuel Consumption Power vs. Ambient Temperature Power vs. Speed Inlet Guide Vane Effects | | | |
| Control Design - Functional description and block diagram showing transfer function of individual element of gas turbines units (including effect of Ambient Temperature). | | | |
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| | | | |

| TABLE 3A - GENERATING UNIT TEST REPORT SUBMISSION | |
|--|--|
| To be completed by Market Participant (with initial and company stamp on every page) | |
| <i>Steam Turbine Unit on Combined Cycle</i> | |
| Control Design: | |
| <ul style="list-style-type: none"> Functional description and block diagram showing transfer function of individual element of the steam turbine unit. | |
| <ul style="list-style-type: none"> Control strategy following outages of one or more gas turbine units | |
| Performance data and Curves: Steam unit power vs. exhaust temperature, air flow and power of gas turbine units | |
| Test data/report: | |
| <ul style="list-style-type: none"> Change in steam turbine unit output for a sudden change in gas turbine unit output (including gas turbine unit outage) | |
| <i>Site commissioning test report</i> | |
| Excitation Tests: | |
| Load Rejection Tests: | |
| Load Swing Tests: | |
| Combustion Tests: | |
| Performance Tests (operating on both Primary and Alternate fuel): | |
| Load Runback Tests: | |
| HP/LP Heater Tests: | |
| Power System Stabiliser Tests: | |
| Vacuum Loss Runback Tests: | |
| Governor Valve Linearing Tests: | |
| Boiler Feedpump Runback Tests: | |
| FDF Runback Tests: | |
| Cold/Warm/Hot Start Tests: | |
| Shutdown Tests: | |
| Automatic Generation Control Tests: | |
| Spinning Reserves Capability Tests: | |
| Fuel Changeover Tests: | |
| Generator MVAR Tests: | |
| Generator Electrical Island Tests: | |
| Reliability Run Tests: | |
| Reliability Test: CCP Verification Tests for consideration as multiple independent generation facilities: | |
| Others: | |

| | | | |
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