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| Template change control details |
| Version | Date | Changes |
| 0.1 | 03/06/2014 | First Draft for industry comment |

**Test 54 Test Procedure**

**Demonstration of Shut Down Time**

**[Insert Unit Name] Unit (XX1)**

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# Document Revision History

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| --- | --- | --- | --- | --- |
| **Version** | **Date** | **Comment** | **Name** | **Company** |
| 0.1 | Xx/xx/xxxx | XX | User | User |
|  |  |  |  |  |
| 1.0 | Xx/xx/xxxx | Revised to Major version for onsite testing and signoff |  | EirGrid |

1. **Introduction**

The Unit must submit the latest version of this test procedure as published on the EirGrid website[[1]](#footnote-1).

All yellow sections must be filled in before the test procedure will be approved. All grey sections must be filled in during testing. If any test requirements or steps are unclear, or if there is an issue with meeting any requirements or carrying out any steps, please contact generator\_testing@eirgrid.com.

On the day of testing, suitably qualified technical personnel are required on site to assist in undertaking the tests. The personnel shall have the ability to

* Set up and disconnect the control system and instrumentation as required;
* Ability to fully understand the Unit’s function and its relationship to the System;
* Liaise with NCC as required.

NCC will determine:

1. If network conditions allow the testing to proceed;
2. Which tests will be carried out?
3. When the tests will be carried out.

The availability of personnel at NCC will be necessary in order to initiate the necessary instructions for the test.

On completion of this test, the following shall be submitted to generator\_testing@eirgrid.com:

|  |  |
| --- | --- |
| **Submission** | **Timeline** |
| A scanned copy of the test procedure, as completed and signed on site on the day of testing | 1 working day |
| Test data in CSV or Excel format | 1 working day |
| Test report | 10 working days |

# Abbreviations

Mvar Mega Volt Ampere – reactive

MW Mega Watt

NCC National Control Centre

TSO Transmission System Operator

EDIL Electronic Dispatch Instruction Logger

GCB Generator Circuit Breaker

# Unit DATA

|  |  |
| --- | --- |
| Unit Test Coordinator | Unit to Specify Name, Company and contact details. |
| Unit name | Unit to Specify |
| Unit connection point | Unit to Specify(*i.e.* T121 HV bushings) |
| Unit connection voltage | Unit to Specify |
| Registered Capacity | Unit to Specify |
| Contracted MEC | Unit to Specify |
| Installed Plant | Unit to Specify |
| Minimum Load | Unit to Specify |

# Grid Code references

|  |  |
| --- | --- |
| Grid Code Version:  | Unit to specify |

CC.7.3.1.1 Each **Generation Unit**, shall, as a minimum have the following capabilities:

|  |  |  |  |
| --- | --- | --- | --- |
| (t) (ii) Time to deload from **Minimum Load** to **De-Synchronising**  | Not greater than 40 minutes, except where agreed with the TSO |  |  |

CC.7.5.1.1 Each **Interconnector**, shall have the following minimum capabilities, for the avoidance of doubt, additional performance capabilities are required from **OC4-System Services**:

|  |  |
| --- | --- |
| (r) Time from **Interconnector Minimum Load** in either flow direction to off-line | Not greater than 30 minutes |

**Glossary:**

|  |  |
| --- | --- |
| Shutdown  | The condition of a **Generation Unit** where the generator rotor is at rest or on barring. |
| Minimum Load | Minimum **MW Output** a **Generator** can maintain on a continuous basis, whilst providing **System Services.** |
| De-Synchronise | The act of taking a **Generation Uni**t which is **Synchronised** to the **Transmission System** off the **Transmission System** to which it has been Synchronised and the term “**De-Synchronised**”, and other like terms shall be construed accordingly. |
| De-Synchronising | The act of taking a **Generating Unit** off the **Network**, to which it has been **Synchronised**, and like terms shall be construed accordingly. |
| Interconnector Minimum Import Load | Minimum **MW** output an **Interconnector** can import continuously from a remote network while maintaining stability.  |
| Interconnector Minimum Export Load | Minimum **MW** output an **Interconnector** can export continuously to a remote network while maintaining stability.  |
| Interconnector Minimum Load | Absolute sum of the **Interconnector Minimum Export Load** and **Interconnector Minimum Import Load** representing the minimum range of bi-directional power transfer.  |

Delete references to Interconnector or Generator as appropriate.

# site Safety requirements

The following is required for the EirGrid witness to attend site:

|  |  |
| --- | --- |
| Personal Protective Equipment Requirements1. Site Safety boots
2. Hard Hat with chin strap
3. Hi Vis
4. Arc Resistive clothing
5. Safety Glasses
6. Gloves
7. Safe Pass
 | 1. Yes / No
2. Yes / No
3. Yes / No
4. Yes / No
5. Yes / No
6. Yes / No
7. Yes / No
 |
| Site Induction requirements | Yes / No(If Yes, Unit to specify how and when the induction must carried out) |
| Any further information | Unit to specify |

# Test Description and Pre Conditions

## Purpose of the Test

This purpose of this test is to demonstrate the capability of the Unit to deload from minimum load and desynchronise within a time limit as required by the TSO.

## Pass Criteria

1. For a Generation Unit, the time to deload from Minimum Load to De-synchronising is not greater than 40 minutes.
2. For an Interconnector, the time to deload from Minimum Load to De-synchronising is not greater than 30 minutes.

Delete References to Interconnector or Generator as appropriate.

## Instrumentation and Onsite Data Trending

All of the following trends and screenshots must be recorded by the IPP during the test. Failure to provide any of these trends will result in test cancellation.

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Signal Name** | **Sample Rate** | **Source** |
| 1 | Active Power at Connection Point (MW) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 2 | Reactive Power at Connection Point (Mvar) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 3 | Active Power at Generator (MW) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 4 | Reactive Power at Generator (Mvar) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 6 | Generator Voltage (kV) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 7 | Turbine speed (rpm) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 8 | HP turbine inlet metal temperature (°C) | Unit to Specify (100ms or as agreed with TSO) | Unit to Specify  |
| 9 | Generator Circuit Breaker Position Indication (Open / Closed) | Unit to Specify  | Unit to Specify  |
| 10 | Alarm/Event page | Print out alarms / events for duration of the test. |
| 11 | Generator Overview Screen | Print out at appropriate milestones during the test i.e. Before, during at regular intervals and after test from generator overview page on DCS |
| 12 | EDIL instructions shall be printed separately | Print out as logged during the test. |

## Initial Conditions

Should “No” be answered to any of the following, contact the generator\_testing@eirgrid.com and agree next steps in advance of making any corrective actions.

|  |  |  |
| --- | --- | --- |
| **No.** | **Conditions** | **Check on day of test** |
| 1 | Test Profiles have been submitted and approved by neartime@eirgrid.com. | Yes/No |
| 2 | EDIL will be used for dispatch instructions to the Unit Control Room from NCC during the test. | Yes/No |
| 3 | Unit Fuel Type: Primary Fuel / Secondary Fuel, Gas / Distillate.Interconnector operation direction: Import / Export.Delete references to Interconnector or Generator as appropriate.  | Yes/No |
| 4 | Normal start up support auxiliary systems are aligned and in service. | Yes/No |
| 5 | Unit is operating at minimum load and the generator circuit breaker position indication is closed. | Yes/No(GCB PI Open / Closed Minimum Load\_\_\_\_ MW) |
| 7 | Required signals, as described in section 7.3 are available. | Yes/No |

# Test Steps

|  |  |  |  |
| --- | --- | --- | --- |
| **Step No.** | **Action** | **Time** | **Comment** |
| 1 | Unit begins data recording for all trends noted in Section 7.3. |  |  |
| 2 | Unit requests permission from NCC to proceed and requests dispatch Instruction via EDIL to shut down the Unit. |  |  |
| 3 | Unit control room issues shut down command to the Unit and records the exact time of the command. |  | Time of command \_\_:\_\_ |
| 4 | Unit records the exact time the unit de-synchronises i.e. timestamp when the Generator circuit breaker indication is Open. |  | Time Unit de-synchronises \_\_:\_\_ |
| 5 | Unit ends data recording. |  |  |
| 6 | Unit informs NCC that test is complete. |  |  |

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| --- |
| **Comments:**  |
| Unit Witness signoff that this test has been carried out according to the test procedure, above.Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date / Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| EirGrid Witness signoff that this test has been carried out according to the test procedure, above.Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date / Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

1. <http://www.eirgrid.com/operations/gridcode/compliancetesting> [↑](#footnote-ref-1)