

Grid Code Awareness Program: Operating Code No.11 – System Tests

By :

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**The Malaysian Grid Code Awareness Programme Funded by
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OC11: SYSTEM TEST

Introduction:

1. System Tests are tests that involve either a simulated or a controlled application of irregular, unusual or extreme conditions on the Grid System or User Systems.
2. System Tests also includes certain commissioning and acceptance tests.
3. System tests shall be subjected to central coordination and control by the GSO.
4. Testing of a minor nature, carried out on isolated systems or those facilitated by GSO and carried out by Users to assess performance or compliance of Users with their design, operating and connection requirements are covered under OC10.
5. System Tests as identified in OC11.4.1.5

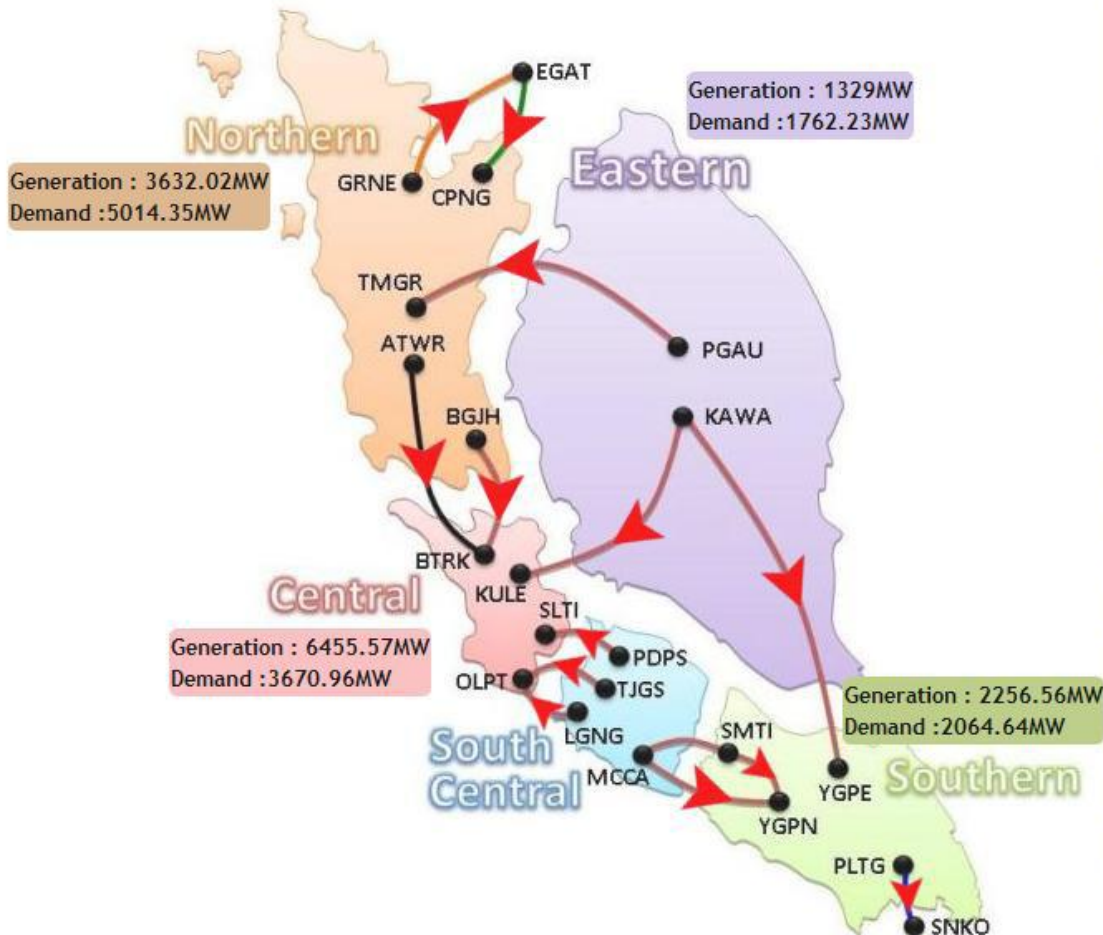
OC11: SYSTEM TEST

System Tests (Identified in OC11.4.1.5):

- Generator full load capability tests, including load acceptance tests, and re-commissioning tests.
- Var limiter tests.
- Main steam valve tests.
- Load rejection tests.
- On-load protection testing.
- Directional tests.
- Primary and Secondary Response tests.
 - (refer CCA3.4 for Testing Of Frequency Response Capability).
- Short-circuit generator terminal test.
- Special Protection Scheme tests.
- Tests involving changes in Transmission System impedances.

OC11: SYSTEM TEST – System Defense Scheme

<http://www.gso.org.my>



SYSTEM FREQUENCY DATA	
Date Time	Frequency
2013-04-11 11:27:59	49.99

REGIONAL POWER TRANSFER		
Interface Flow	TotalMW	TotalMVar
KAWA-YGPE	92	-113
KAWA-KULE	242	22
SMTI-YGPN	51	-26
MCCA-YGPN	0	1
LGNG-OLPT	248	137
OLPT-TJGS	359	-92
PDPS-SLTI	418	36
ATWR-BTRK	1401	146
BGJH-BTRK	194	-45
PGAU-TMGR	154	-83
HVDC	29	0
BKTR-SDAO	1	-1
PLTG-SNKO	55	64

Objectives:

1. To ensure that procedures for System Tests:
 - do not threaten the safety of personnel or members of the public.
 - minimize the possibility of damage to the Plant and Apparatus and/or Grid System.

2. To set out procedures for:
 - preparing and carrying out System Tests.
 - reporting of System Tests.

Scope:

System Tests are applicable to GSO and the following Users:

- All Generators with CDGUs.
- All generators with Generating Units **not subject** to Dispatch by the GSO, with on-site generating capacity not less than 30MW **where GSO considers it necessary**.
- Grid Owner.
- Distributors.
- Directly Connected Customers where GSO considers necessary.
- Interconnected Parties.

Procedure for System Tests:

1. System Tests with minimal effect on the Grid System or User Systems will not be subjected to the System Test procedure.

NOTE:

Minimal Effect - any distortion to voltage and frequency at Grid Supply Points does not exceed the License Standards and, the security of Grid System is not compromised.

2. User to determine whether System Test proposed by User will have minimal effect, and may consult the GSO.
3. GSO to determine whether the proposed System Test will have minimal effect on the Grid System & User System.

Test Proposal Notice (TPN):

1. TPN needs to be submitted >12 months prior to the test.
2. If System Test is needed but <12 months notice, then GSO to make an adjusted timetable to meet requirement in OC11.4.
3. User or Grid Owner need to submit TPN in writing to affected parties and GSO with sufficient & detailed information.
4. GSO to inform User / Grid Owner if TPN information is insufficient. GSO will also not be required to do anything under OC11 until it is satisfied with the required information / details in TPN.

Test Committee (TC):

1. GSO to form Test Committee < 30 days of TPN receipt subject to additional info request by GSO.
2. GSO to appoint Test Coordinator
3. Test Committee may comprise of affected Users and other experts deemed suitable by Test Coordinator.
4. Meeting to be held within 1 month of appointment of TC.
5. TC to consider:
 - details of proposed Test,
 - economic, operational & risk implications,
 - optimise operation planning, and
 - Implications on Scheduling & Dispatch of Generators.

Pre-System Test Arrangements (P-STa):

1. Once the System Tests is agreed to be carried out a programme namely "Test Programme" is submitted by Test Committee to identified Users, Test Proposer & GSO 1 month prior to the Test.
2. The test programme shall consists of :
 - switching sequence & proposed timings
 - list of staff involved in the Test
 - site safety responsible persons
3. Test Coordinator may amend or postpone the Test if any party involved informs in writing of problems with the System Test, prior to the day of Test.
4. Test Coordinator may postpone the Test if any party involved wishes to delay/ postpone start or continuance of Test due to system conditions, subject to agreement by all parties.

Post-System Test Report (P-STR):

1. Test Proposer shall be responsible for preparing a written report to be submitted to GSO & Test Committee members.
2. Preliminary Report to be submitted within 72hrs after the completion of the test.
3. Final report to be submitted within 60 days after the completion of the test.
4. The Final Report shall not be submitted to any person who is not a member of the Test Committee.
5. The Final Report shall include description of the plant and/or Apparatus tested, date of the test and description of the System Test carried out together with the results, conclusions and recommendations.



THANK YOU



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