

Compliance Monitoring Program

Document History		
Issue No	Description	Date
1	Draft	

1. Table of Contents

2. Definition of Terms

3. Reference Documents

4. Introduction

5. Operating Philosophy

6. COMPLIANCE PROGRAM

Performance Standard/Rules/Code Provision	Testing and Monitoring Methodology	Compliance Criteria	Testing Frequency	Resp Person	Notes
Fault Level Contribution (under S5.1 in Engineering Report. Under S5.2.8 of the Rules)	<ul style="list-style-type: none"> i. Monitoring in-service performance during faults near the connection point. ii. Review and recalculation of fault levels iii. Routine testing of any relevant sub-systems iv. Obtain fault level contribution from network provider 	Fault level of 20kA NOT to be exceeded at point of connection	Review following any fault event or following any change to plant configuration	Electrical Engineer	Confirm with SAPN if an actual fault level value can be provided for connection point and compare to modelling data
Reactive Power Capability (under S5.2.1 in Engineering Report. Under S5.2.5.1 in the Rules)	At rated power output, adjust the reactive power at the connection point. Monitor using SCADA trends analysis Step response tests with unit unsynchronised	Achieve reactor power requirements of 700kVAr whilst connected to the network	Every 3 years and after plant or reactor change	Electrical Engineer	An agreed access standard required under the engineering report
	Exercise the over and under excitation limits either side of 570kW. Monitor using SCADA trends analysis	Achieve reactor power requirements of 700kVAr whilst connected to the network. Demonstrate reactor engages at 570kW at connection point.	Every 3 years and after plant or reactor change event	Electrical Engineer	
Steady State Voltage Rise (Under S6.2.1)	Continuous in-service monitoring and direct measurement through use of ION Power Quality Meter. SCADA trends of power factor adjustment	Demonstrate line voltage is within +/- 1% of nominal voltage. Demonstrate plant disconnects if voltage exceeds 11.3kV	6 Monthly and after plant change event (Capture 7 day cycle of trend data)	Electrical Engineer	Access standard values allocated by service provider SAPN. Recorded at point of common coupling. ION Meter to be on equipment calibration plan. SAPN provided the normal voltage set point

					of 11.15kV
Power Factor Requirements (Under S5.2 of Engineering Report)	Direct measurement and calculation of power factor at connection point	Power factor to be in permissible range at the connection point 0.95 Minimum Lagging and Unity Minimum Leading	Every year and after plant change event	Electrical Engineer	
Voltage Fluctuation and Flicker (Under S5.2.2 in Engineering Report. Under S5.2.5.4 of the Rules)	Continuous in-service monitoring and direct measurement through use of ION Power Quality Meter	Voltage disturbances not to be greater than those prescribed in AS61000.3.7 (Table 1). Voltage supply shall not vary by +/- 10% of the normal voltage continuously (NER 5.2.5.4).	Annual and after plant change event (Capture 7 day cycle of trend data)	Electrical Engineer	Access standard values allocated by service provider SAPN. Recorded at point of common coupling. ION Meter to be on equipment calibration plan. SAPN provided the normal voltage set point of 11.15kV
Harmonics (Under S5.2.3 in Engineering Report. Under S5.1.6 in the Rules)	Continuous in-service monitoring and direct measurement through use of ION Power Quality Meter	Voltage Distortion Limits NOT to exceed Individual Odd Harmonics 1.33% Individual Even Harmonics 0.67% Total Harmonic Distortion 1.67%	Annual and after plant change event (Capture 7 day cycle of trend data)	Electrical Engineer	Access standard values allocated by service provider SAPN. Recorded at point of common coupling. ION Meter to be on equipment calibration plan.
Voltage Unbalance (Under S5.2.4 in Engineering Report. Under S5.1.7 in the Rules)	Continuous in-service monitoring and direct measurement through use of ION Power Quality Meter	The Voltage Unbalance values must NOT exceed Rules 30 minute average period 1.3% 10 minute average period 2.0% 1 minute average period 2.5% SAPN Continuous 1.0%	Annual and after plant change event (Capture 7 day cycle of trend data)	Electrical Engineer	Access standard values allocated by service provider SAPN. Recorded at point of common coupling. ION Meter to be on equipment calibration plan.

		5 minute period 1.5% Instantaneous 3.0%			
Protection Requirements (Under S5.4 of Engineering Report)	Routine testing and / or calibration of protection systems including; i) CB Opening times ii) Protection relay injection testing to trip iii) Sub-system testing by secondary injection testing iv) Confirmation from fault recorder of actual performance	All protection relays covering Vector Shift, ROCOF, Under/Over Frequency, Under/Over Voltages, Over Current and Earth Fault to operate satisfactorily and to within tolerance of settings	Every 3 years and following every plant trip. At Major engine overhaul	Electrical Engineer	Directly measurable, Check against approved setting sheet provided to SAPN DEIF Loss of Mains relay for Vector shift and ROCOF. Multilin 850 for station protection, VIP protection relays for HV circuit breakers; Under/Over Voltages and Frequency
	Sub-system test for correct operation of over speed protection trips	Over speed protection operates to within acceptable tolerance of over speed trip setting	Every 3 years and after engine overhaul	Electrical Engineer	
Protection Equipment (Protection relays, Circuit Breakers & Earth Grid) As per AS2467	Performance monitored as part of in-service condition monitoring, inspection and maintenance schedules – Appendix A	Meets performance requirements and completed against maintenance schedule	As per schedule requirements listed in Appendix A	Electrical Engineer	External maintenance contract with authorised contractor. Critical spares to be stored on site.
Synchronising Checks (Under S5.4.5 of Engineering Report)	Test Auto Sync Relay and Dead Bus check operate correctly	Performance confirmed by the generator prevented from synchronising when internal network is de-energised or from forced fault event	Every 3 years and after plant change event. At major engine overhaul	Electrical Engineer	Performance is confirmed by the generating system remaining synchronised during power system disturbance conditions where required
Remote Monitoring (Under S5.2.6.1 of the Rules)	SCADA monitored values.	Achieve expected performance level for each recorded value and inter-trip functions correctly.	Every 3 years and after plant change event. At major engine	Controls Engineer	Confirmation at each end by both parties

			overhaul		
Communications Equipment (Under S5.3 of Engineering Report.)	Confirmation of the availability of communication I/O. Force communications link drop out. Controlled inter-trip test with network authority	All necessary permissive signalling to be fail-safe in the event of loss of communications for 60 seconds. Demonstrate generation disconnect from network through opening of FCB	Annually	Controls Engineer	Loss of communications should result in a 'Permission to Connect Denied' signal from SAPN
High Voltage Transformer and Reactor	Performance monitored as part of in-service condition monitoring, Testing and maintenance as per maint schedules – Appendix A	Meets performance requirements. Operating temperature below 60°C in service. Gas levels below set action limits	As per maintenance schedule or tested after transformer return to service	Maint Planner	Temperature and pressure monitored continuously
Metering (Under S5.8 of Engineering Report. Under S7.8 & 7.9 of the Rules)	Meter tested in accordance with regulations	Appointed Metering Provider inspects and tests meter installation on site is compliant and secure to regulations	Every 10 years	Authorised Metering Agent	Must be appointed and licensed Meter Provider
	Sub-system CT's and VT's tested and recertified on site by certified agent	Transformers to perform as per nameplate rating.	Every 10 years	Authorised Metering Agent	Replace CT's and VT's if any non-conformance
Inverter System Protection Requirements (Under S5.5 of the Engineering Report. In accordance with AS4777)	Routine testing and / or calibration of protection systems including; i) CB Opening times ii) Protection relay injection testing to trip iii) Sub-system testing by secondary injection testing Confirmation from fault recorder of actual In-service monitoring and alarms.	In accordance with grid connection requirements. Phase to earth voltage exceeds +/- 10% of nominal voltage for >2 seconds or if frequency exceeds -6% of nominal frequency for >2 seconds the inverter must dis-connect from the network. All protection relays covering Backup Under/Over Frequency and Under/Over Voltages to operate satisfactorily and to within tolerance of settings	Annually and following every significant plant trip	Electrical Engineer	Directly measurable Check against approved setting sheet provided to SAPN
Ramp Rate (Under S7.1.1 of the Engineering Report)	Performance monitored in-service on SCADA. Load and unload system to confirm ramp	Demonstrate ramp rate requirements do NOT exceed 350 kW per minute both loading and unloading cases. When	Every 3 years and after plant change event	Electrical Engineer	

	rate meets criteria.	shutting down load transfer between generation system and network to be <100kW			
--	----------------------	--	--	--	--