ELECTRICITY SYSTEM CODE

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PART 1 INTRODUCTION

1 INTERPRETATION

1.1 Glossary

In this Code, unless the context otherwise requires, a word or expression set out in the first column of the glossary in Attachment 1 has the meaning set out in the second column of the glossary opposite the word or expression.

1.2 Rules of interpretation

This Code must be interpreted in accordance with the rules set out in Attachment 2, unless the context otherwise requires.

10 STATEMENT OF PURPOSE

10.1 Introduction

10.1.1 The purpose of this code is to regulate the following activities so that they are undertaken in a safe, efficient and reliable manner:

(a) the provision of shared ***transmission network*** services by ***transmitter*s**;

(b) the connection of distributors and EHV consumers to the transmission network;

(c) the connection of generating ***Units*** to the ***transmission network***; and

(d) the transfer of electricity between ***transmission networks***.

10.1.2 (clause deleted)

10.2 To Whom And How This Code Applies

10.2.1 This Code applies to:

(a) ***VENCorp*** under its ***Transmission Licence***;

(b) ***transmitters*** under their ***Transmission Licences***;

(c) ***distributors*** under their ***Distribution Licences***;

(d) ***generators*** under their ***Generation Licences***;

(e) ***retailers*** under their ***Retail Licences***; and

(f) ***EHV consumers*** to the extent that their ***Connection Agreement*** or ***Use of System Agreement*** so provides; and

(g) ***traders*** under their ***Trader Licences***.

10.2.2 A person exempted from holding a ***transmission licence***; ***distribution licence*** or ***generation licence*** must comply with this code if a condition of the exemption requires the person to do so.

10.3 Date of effect

This Code replaces the System Code amendment 10 published on 27 October 1998 with effect from 27 October 2000.

11 ASSET MANAGEMENT

11.1 A ***transmitter or VENCorp*** must use its best endeavours, to the extent that it has powers to do so under its licence, to:

(a) assess and record the nature, location, condition and performance of its ***transmission network*** assets;

(b) develop and implement plans for the acquisition, creation, replacement, maintenance, operation, refurbishment, repair, retirement and disposal of ***transmission network*** assets to, economically:

- meet reasonable ***customer*** expectations of transmission services;
- comply with the laws and other performance obligations which apply to the provision of transmission services; and
- maintain ***transmission network*** service performance so as to minimise the risks associated with the failure of assets; and

(c) develop, test or simulate and implement contingency plans to deal with events which have a low probability of occurring, but are realistic and would have a substantial impact on ***customer*****s** and ***generators*** connected to the licensee's ***transmission network***.

11.2 A ***system participant*** must use best endeavours to ensure that:

(a) the ***system participant's*** network or electrical installation connected to the ***transmission network*** complies with this code; and

(b) the reliability and quality of transmission services to other ***system participants*** are not adversely affected by the ***system participant's*** actions or equipment.

PART 2 SYSTEM SECURITY

20 - 60 (clauses deleted)

80 EMERGENCY DEMAND REDUCTION

80.1 (clause deleted)

80.2 Emergency Demand Reduction Procedures

80.2.1 This clause 80.2 applies to ***VENCorp***, provided ***VENCorp*** is appointed as the Jurisdictional Co-ordinator for the purposes of ***NEC*** clause 4.3.2 (e).

80.2.2 ***VENCorp*** must promptly advise ***NEMMCO*** of the ***Emergency Demand Reduction Procedures***, and any changes to those procedures. The initial ***Emergency Demand Reduction Procedures*** which apply from the time this Code takes effect are those set out in the document identified by the ***Office*** as being the ***Emergency Demand Reduction Procedures***.

80.2.3 ***VENCorp*** must convene in consultation with other industry participants a committee (called "***Demand Reduction Committee***") consisting of:

(a) 1 ***representative*** of ***VENCorp*** appointed by ***VENCorp***; and

(b) not more than 5 ***representatives*** appointed by the ***distributors***.

80.2.4 The ***Demand Reduction Committee*** may appoint other members to the committee.

80.2.5 The ***Demand Reduction Committee*** must regularly review and amend as necessary the ***Emergency Demand Reduction Procedures***.

80.2.6 The ***Demand Reduction Committee*** may by resolution adopt rules governing the manner in which it conducts its business.

80.2.7 If the members of a class of persons entitled to appoint a ***representative*** to the Demand Reduction Committee have not agreed who the ***representative*** of that class will be within 20 ***business days*** of ***VENCorp*** requesting them to do so, then ***VENCorp*** may appoint the ***representative*** of that class after consultation with the members of that class.

81 DISTRIBUTOR OPERATIONS

81.1 (clause deleted)

81.2 Automatic Reclose Equipment

81.2.1 A ***transmitter*** must ensure that a ***feeder*** connecting its ***transmission network*** to a ***distribution network*** is capable of automatic reclosure if requested to do so by the relevant ***distributor*** unless:

(a) the relevant equipment is not compatible with automatic reclosure; or

(b) ***VENCorp*** determines that automatic reclosure in respect of that ***feeder*** could pose a ***Threat to Secure System***.

81.2.2 A ***distributor*** must forward a copy of a request under clause 81.2.1 to ***VENCorp*** at the time the request is made.

81.2.3 ***Automatic Reclose Equipment*** installed on a ***feeder*** connecting a ***transmission network*** to a ***distribution network*** must be as agreed in the relevant ***Connection Agreement*** between the relevant ***transmitter*** and ***distributor***.

81.2.4 (clauses deleted)

81.2.5 (clauses deleted)

81.2.6 ***VENCorp*** and the relevant ***transmitter*** are not responsible for the consequences of automatic reclosure in relation to a ***feeder***.

82 (clause deleted)

PART 3 CONNECTION TO SYSTEM

90 CONNECTION POINTS

90.1 (clause deleted)

90.2 General principles for Points of Connection between Distribution Networks and Transmission Networks

Unless otherwise agreed, the general principles to be applied in determining the location of a particular ***point of connection*** between a ***transmission network*** and a ***distribution network*** to be set out in a ***Connection Agreement*** are as follows:

(a) for ***subtransmission feeders*** from ***Terminal Stations*** - the ***point of connection*** will generally be on the first pole or structure at or inside the relevant ***Terminal Station*** boundary fence; and

(b) for ***distribution feeders*** from ***Terminal Station***s - the ***point of connection*** will generally be the isolators between the busbars and the relevant ***distribution feeder*** circuit breakers. (The isolator will be on the relevant ***transmitters*** side of the relevant ***point of connection***.)

90.3 General principles for Points of Connection between EHV Consumer's Substations and Transmission Networks

The ***point of connection*** between a ***transmission network*** and an ***EHV consumer's substation*** to be set out in a ***Connection Agreement*** will generally be the termination of the relevant Transmission lines within the ***EHV consumer's substation*** or, where the ***EHV consumer*** provides the Transmission lines connecting its ***substation*** with the relevant ***Terminal Station***, the point where those lines terminate within the relevant ***Terminal Station***.

90.4 General Principles for Points of Connection between Generator Units and Transmission Networks

The ***point of connection*** between a ***transmission network*** and a ***Unit*** to be set out in a ***Connection Agreement*** will generally be the connection to the high voltage terminals of the ***Unit's*** generator transformer. Earthing switches, surge suppression equipment and voltage transformers that may also connect to the high voltage terminals of the generator transformer will generally be on the ***Unit's*** side of the ***point of connection***.

90.5 General principles for Points of Connection between Transmitters' Transmission Networks

The ***point of connection*** between two ***transmission networks*** to be set out in a ***Connection Agreement*** will generally be the termination of the relevant Transmission lines within the relevant ***Terminal Station***.

100 CONNECTION RELATED OBLIGATIONS OF TRANSMITTERS AND OTHER PARTICIPANTS

100.1 Automatic Reclose

100.1.1 (clause deleted)

100.1.2 A ***transmitter*** must ensure that all transmission lines forming part of its ***transmission network*** installed after 3 October 1994 have ***Automatic Reclose Equipment*** unless the relevant ***transmitter*** and ***VENCorp*** agree otherwise.

100.1.3 When enabled, ***Automatic Reclose Equipment*** installed on a Transmission line must operate so as to reclose the circuit breakers of the Transmission line at the relevant ***Terminal Station***s following their opening as a result of a Transmission line fault within the time set out in the relevant ***Network Agreement*** between ***VENCorp*** and the relevant ***transmitter***.

100.2 EHV Protection

100.2.1 From time to time, ***VENCorp*** may nominate the performance requirements for the protection systems forming part of ***EHV Protection Equipment*** at a ***point of connection*** (other than a ***generator's point of connection***) by notice in writing to the relevant ***EHV participant*** and ***transmitter*** or the relevant ***transmitters***.

100.2.2 A ***transmitter*** must provide and maintain ***EHV Protection Equipment*** in relation to its ***transmission network*** consistent with the performance requirements nominated by ***VENCorp*** under clause 100.2.1.

100.2.3 An ***EHV consumer*** must provide and maintain ***EHV Protection Equipment*** in relation to its ***points of connection*** to a ***transmission network*** consistent with the performance requirements nominated by ***VENCorp*** under clause 100.2.1.

100.2.4 (clause deleted)

100.2.5 An ***EHV participant*** must use reasonable endeavours to operate and maintain its ***EHV Protection Equipment*** in accordance with Good Electricity Industry Practice.

100.2.6 A ***generator***, an ***EHV participant*** or a ***transmitter*** proposing to install ***EHV Protection Equipment*** in respect of a ***point of connection*** to a ***transmission network*** and the ***transmitter*** in respect of that ***transmission network*** must co-operate in the design of the ***EHV Protection Equipment*** (including back up protection) and ensure that:

(a) the design is co-ordinated across the relevant ***point of connection***; and

(b) the overall design of the ***EHV Protection Equipment*** at the relevant ***point of connection*** complies with the requirements of this Code.

100.2.7 The relevant ***generator*** or ***EHV participant*** and the relevant ***transmitter*** (or the relevant ***transmitters***) must:

(a) co-operate in the application of the settings of the protection relays forming part of the ***EHV Protection Equipment*** (including back-up protection) at a ***point of connection***; and

(b) ensure that those settings are:

(1) in the case of a ***generator's point of connection***, those determined for that equipment under clause 170.1; or

(2) in the case of any other ***point of connection***, in accordance with the performance requirements nominated by ***VENCorp*** under clause 100.2.1.

100.2.8 If ***VENCorp*** nominates performance requirements for the protection relays forming part of ***EHV Protection Equipment*** at a ***point of connection*** under clause 100.2.1 and:

(a) the nominated performance requirements are not consistent with the existing design of the ***EHV Protection Equipment*** at the ***point of connection***, then ***VENCorp*** must reimburse each of the relevant ***connected participants*** for the reasonable costs and expenses incurred by it as a direct result of complying with the nominated performance requirements; or

(b) paragraph (a) does not apply but the settings of the protection relays forming part of the ***EHV Protection Equipment*** must be changed to reflect the nominated performance requirements, then ***VENCorp*** must reimburse each of the relevant ***connected participants*** for the reasonable costs and expenses incurred by it as a direct result of changing those settings and conducting the associated test required under clause 100.2.14.

100.2.9 An ***EHV participant*** must ensure that the settings of the ***EHV Protection Equipment*** relating to any of its ***substations*** are not changed without the prior written approval of ***VENCorp***.

100.2.10 A ***transmitter*** must ensure that the settings of the ***EHV Protection Equipment*** forming part of its ***transmission network*** are not changed without the prior approval of ***VENCorp***.

100.2.11 A ***transmitter*** or ***EHV participant*** must not make any change or modification to ***EHV Protection Equipment*** without the prior approval of ***VENCorp***.

100.2.11A Clauses 100.2.10 and 100.2.11 shall not apply during emergency conditions where changes are required to avoid damage to plant or equipment or to maintain a ***secure system***. ***VENCorp*** must be notified of changes on the first working day after the change has been made.

100.2.12 A ***transmitter***, ***generator*** or ***EHV participant*** must ensure that any ***EHV Protection Equipment*** in its premises is not interfered with, modified, changed or altered in any way that would affect transmission network performance without the prior approval of ***VENCorp***.

100.2.13 If any change in the settings of the ***EHV Protection Equipment*** or any change, modification or alteration to the ***EHV Protection Equipment*** in respect of a ***point of connection*** is required by ***VENCorp*** or a ***connected participant***, then the ***connected participants*** must agree on the change, modification or alteration and the timing of its implementation and associated testing. Such test must be carried out promptly after any change or modification.

100.2.14 The ***connected participants*** in respect of a ***point of connection*** to the ***transmission network*** must co-operate to test that ***EHV Protection Equipment*** relating to that ***point of connection*** is operating correctly. Such tests must be conducted:

(a) prior to the relevant ***point of connection*** being placed in service; and

(b) promptly after:

(1) any change in the settings of the ***EHV Protection Equipment*** at the relevant ***point of connection***; or

(2) any change, modification, or alteration to, or any interference with, the ***EHV Protection Equipment*** at the relevant ***point of connection***, resulting from a nomination by ***VENCorp*** under clause 100.2.1; and

(c) at least once in every three ***Financial Years*** (or such different period as may be agreed between ***VENCorp*** and the ***connected participants***) thereafter.

100.2.15 A ***connected participant*** in respect of a ***point of connection*** may, at reasonable intervals, require additional testing of the ***EHV Protection Equipment*** relating to that ***point of connection*** by notice to ***VENCorp*** and the other ***connected participants***. If a notice is given under this clause, then the relevant test is to be conducted at a time agreed between the ***connected participants*** and ***VENCorp***. ***VENCorp*** and the relevant ***connected participant*** must co-operate to conduct such tests. The ***connected participant*** requesting a test under this clause must reimburse each of the other ***connected participants*** the reasonable costs and expenses incurred by the other ***connected participant*** as a direct result of conducting the test.

100.2.16 If ***VENCorp*** reasonably believes that the ***EHV Protection Equipment*** in respect of a ***point of connection*** to the ***transmission network*** is not operating correctly, then ***VENCorp*** may instruct the ***connected participants*** in respect of the ***point of connection*** to test the operation of the ***EHV Protection Equipment*** relating to that ***point of connection*** by notice in writing to the ***connected participants***. If ***VENCorp*** gives a notice under this clause, the ***connected participants*** must conduct the relevant test at a time agreed between the ***connected participants*** and ***VENCorp***. ***VENCorp*** and the relevant ***connected participants*** must co-operate to conduct such tests. If a test conducted under this clause establishes that the relevant ***EHV Protection Equipment*** is operating correctly, then ***VENCorp*** must reimburse each of the ***connected participants*** the reasonable costs and expenses incurred by the ***connected participant*** as a direct result of conducting the test.

100.2.17 Tests conducted in respect of a ***point of connection*** under this clause 100.2 (in this clause 100.2 called "**Protection Tests**") must be conducted using test procedures agreed between the relevant ***connected participants*** (which agreement must not be unreasonably withheld or delayed).

100.2.18 The ***connected participants*** in respect of a ***point of connection*** must ensure that Protection Tests conducted in relation to that ***point of connection*** are conducted by appropriately qualified persons.

100.2.19 A ***transmitter*** must give ***VENCorp*** at least 5 ***business days*** (or, in the case of an emergency, such shorter period as is reasonably practicable) prior notice of its intention to conduct a Protection Test in respect of a ***point of connection*** for which it is a ***connected participant***.

100.2.20 ***VENCorp*** may appoint a ***Representative*** to witness a Protection Test by notice in writing to the relevant ***connected participants***. The relevant ***connected participants*** must permit a ***Representative*** appointed under this clause to be present while the relevant test is being conducted. ***VENCorp*** must use best endeavours to ensure that a person appointed by it under this clause does not interfere with the conduct of a Protection Test.

100.2.21 A ***transmitter*** must submit to ***VENCorp*** the test results of a Protection Test in respect of a ***point of connection*** for which it is a ***connected participant*** within 60 ***business days*** of the completion of the relevant test.

100.2.22 Prior to ***VENCorp*** nominating performance requirements under clause 100.2.1 for protection relays forming part of ***EHV Protection Equipment*** at a ***point of connection***, the ***connected participants*** will be deemed to be complying with their obligations under clauses 100.2.2 and 100.2.3 if the settings of the protection relays forming part of ***EHV Protection Equipment*** at that ***point of connection*** are the same as they were as at 3 October 1994.

100.3 HV Protection

100.3.1 Except in respect of ***distribution feeders***, a ***transmitter*** must provide appropriate ***HV Protection Equipment*** for each ***point of connection*** to its ***transmission network*** with a nominal supply voltage of 66kV or less.

100.3.2 (clause deleted)

100.3.3 A ***transmitter*** must ensure that the protection settings on ***feeders*** connected to its ***transmission network*** are appropriately co-ordinated with the protection settings on the relevant ***transmitter's*** primary equipment at the relevant ***Terminal Station***.

100.3.4 The settings of such ***HV Protection Equipment*** must be agreed between the relevant ***distributor*** and ***transmitter*** and will be set out in the relevant ***Connection Agreement***.

100.3.5 A ***distributor*** must advise the relevant ***transmitter*** of its performance requirements for the protection of a ***feeder*** connecting the ***distributor's distribution network*** to that ***transmitter's transmission network*** prior to initial connection of the relevant ***feeder*** and from time to time thereafter.

100.3.6 A ***transmitter*** must use best endeavours to comply with the requirements notified to it under clause 100.3.5 unless those requirements are not consistent with ***Secure System*** requirements or equipment capability. If a ***transmitter*** cannot comply with those requirements, then it must notify the relevant ***distributor***.

100.3.7 The relevant ***transmitter*** and ***distributor***, in respect of a ***point of connection*** to the ***transmission network*** with a nominal voltage of 66kV or less, must co-operate to test the ***HV Protection Equipment*** relating to that ***point of connection*** is operating correctly. Such tests must be conducted:

(a) prior to the relevant ***point of connection*** being placed in service;

(b) promptly after any change in the settings of the ***HV Protection Equipment*** at the relevant ***point of connection*** or any change, modification or alteration to, or any interference with, the ***HV Protection Equipment*** at the relevant ***point of connection***; and

(c) at least once in every three ***Financial Years*** (or such different period as may be agreed between ***VENCorp*** and the ***connected participants***) thereafter.

100.3.8 The relevant ***transmitter*** or ***distributor*** may, at reasonable intervals, require additional testing of ***HV Protection Equipment*** in respect of a ***point of***

connection to the ***transmission network*** with a nominal voltage of 66kV or less by notice to ***VENCorp*** and the other ***connected participants***. If a notice is given under this clause the relevant test is to be conducted at a time agreed between the ***connected participants*** and ***VENCorp***. ***VENCorp*** and the relevant ***connected participants*** must co-operate to conduct such tests. The person requesting a test under this clause must reimburse each of the other ***connected participants*** the reasonable costs and expenses incurred by the other ***connected participant*** as a direct result of conducting the test.

100.3.9 Clauses 100.2.17 to 100.2.21 apply to tests conducted under this clause 100.3 (with any necessary changes).

100.4 HV Protection Sub-code

100.4.1 ***Transmitters*** and ***distributors*** must comply with the ***HV Protection Sub-code*** in relation to their ***HV Protection Equipment***.

100.4.2 The initial ***HV Protection Sub-code*** must be agreed by the ***distributors*** who hold a ***Distribution Licence***, the ***transmitters*** who hold a ***Transmission Licence***, and ***VENCorp***.

100.4.3 The initial ***HV Protection Sub-code*** will take effect from the time the document with this title is identified by the ***Office*** as the ***HV Protection Sub-code***.

100.4.4 ***VENCorp*** must establish in conjunction with other industry participants, a committee (called the "***HV Protection Committee***") consisting of:

(a) 2 representatives of distributors appointed by the distributors;

(b) 2 representatives of transmitters appointed by the transmitters; and

(c) 1 representative of VENCorp appointed by VENCorp.

100.4.5 The ***HV Protection Committee*** must develop and regularly review the ***HV Protection Sub-code***.

100.4.6 The ***HV Protection Committee*** may by resolution adopt rules governing the manner in which it conducts its business.

100.4.7 If the members of a class of persons entitled to appoint a ***representative*** to the ***HV Protection Committee*** have not agreed who the ***representative*** of that class will be within 20 ***business days*** of ***VENCorp*** requesting them to do so, then ***VENCorp*** may appoint the ***representative*** of that class after consultation with the members of that class.

100.5 Transmitter's benchmark performance standards

100.5.1 A ***transmitter*** must use best endeavours to ensure that the performance of its ***transmission network*** and its protection systems is consistent with the benchmark performance standards set out in Attachment 11.

100.5.2 On or before 31 July in each year, a ***transmitter*** must give to the ***Office***, ***VENCorp*** and each ***distributor***, ***generator*** and ***EHV consumer*** with a ***point of connection*** to the ***transmitter's transmission network*** a report of the ***transmitter's*** performance during the last ***Financial Year*** against the benchmark performance standards set out in Attachment 11.

110 CONNECTION RELATED OBLIGATIONS OF VENCORP AND TRANSMITTERS

110.1 Fault level

110.1.1 ***VENCorp*** must use best endeavours to plan the ***shared transmission network*** to ensure that the fault level (i.e. amount of current that can flow) at a ***point of connection*** as a result of a short circuit at the relevant ***point of connection*** does not exceed the limits set out below, unless otherwise set out in the relevant ***Use of System Agreement***.

110.1.2 In accordance with the ***NEC*** clause 4.6, ***VENCorp*** must provide the relevant information on fault levels and associated operational constraints if any, to ***NEMMCO*** and the relevant ***transmitter*** and ***distributor*** to enable them to operate the system so that the actual fault levels on the ***transmission network*** do not exceed the rated short circuit current ratings of the circuit breakers.

FAULT LEVEL TABLE

NOMINAL VOLTAGE AT POINT OF CONNECTION	THREE AND SINGLE PHASE DESIGN FAULT LEVEL
500kV	
Metro	50.0 kA
Latrobe Valley	63.0 kA
Country	40.0 kA
330kV	40.0 kA
220 kV	
Metro	40.0 kA
Latrobe Valley	40.0 kA
Country	26.2 kA
66kV	21.9 kA
22 kV	26.2 kA

110.2 Supply Quality

110.2.1 Normal voltage levels below 100kV

(a) A ***transmitter*** must use best endeavours to maintain normal voltage levels at each ***point of supply*** with a nominal voltage below 100kV within a range of plus or minus 5% of the target voltage level advised by ***VENCorp*** for each ***point of supply*** .

(b) ***VENCorp*** is responsible for defining target voltage levels at the normal voltage levels below 100kV. ***VENCorp*** should advise ***NEMMCO***, ***transmitters*** and ***distributors*** of the defined target voltage levels. The target voltage level is determined in accordance with the following process:

(1) On or before 15 May each year, each ***distributor*** must advise ***VENCorp*** and the relevant ***transmitter*** of its desired target voltage level for each ***point of supply*** at which electricity is to be Supplied to the ***distributor*** for the following ***Financial Year*** (together with details of any desired line drop compensation or transformer on-load tap-change time delays for each such ***point of supply***).

(2) On or before 15 June each year, ***VENCorp*** must advise the relevant ***transmitter*** of the target voltage levels required at each ***point of supply*** for the next ***Financial Year***, taking into account desired target voltage levels advised by each ***distributor***, pursuant to paragraph (1).

(3) Where more than one ***distributor*** is supplied from a ***point of supply***, the relevant ***distributors*** must negotiate to determine a target voltage level for that ***point of supply*** (together with details of any desired line drop compensation or transformer on-load tap-change time delays for that ***point of supply***). If agreement cannot be reached on or before 15 May in a particular year, then each of the ***distributors*** concerned must advise ***VENCorp*** of its desired target voltage level for the relevant ***point of supply*** (together with details of any desired line drop compensation or transformer on-load tap-change time delays for that ***point of supply***) and the average of the required target voltages levels and other parameters so nominated will be taken as the desired target voltage level, line drop compensation and transformer on-load tap-change time delays (in this clause 110.2.1 called "**parameters**") for that ***point of supply*** for all of the relevant ***distributors***.

(4) Following consultation with the relevant ***transmitter***, if ***VENCorp*** believes that one or more of the desired parameters for a ***point of supply*** is inconsistent with equipment or ***System*** capability, then it may notify the relevant ***distributor*** or ***distributors***. If ***VENCorp*** gives a notice under this paragraph, then ***VENCorp*** and the relevant ***distributor*** or ***distributors*** will negotiate with a view to agreeing the parameters for the relevant ***point of supply*** for the following ***Financial Year***.

(5) Where agreement cannot be reached as to one or more of the parameters for the relevant ***point of supply*** for a ***Financial Year*** on or before 1 June in the preceding ***Financial Year***, then ***VENCorp*** (following consultation with the relevant ***transmitter***) will nominate the relevant parameter for the relevant ***point of supply*** for the relevant ***Financial Year***. The nominated parameter must be as close to the ***distributor's*** desired parameter as it is practicable to achieve within equipment and System capability.

(6) To avoid any doubt, it is the responsibility of ***distributors*** to plan voltage levels ***at points of connection*** to the ***transmission network*** and it is the responsibility of ***transmitter***s to provide equipment for regulation of voltage at ***points of connection*** to the ***transmission network***.

(c) The relevant ***transmitter*** is not in breach of its obligations under paragraph (a) in the case of a voltage excursion outside the range set out in paragraph (a) provided that the duration of that voltage excursion is less than the time within which the relevant transformer automatic voltage control action could reasonably be expected to correct the excursion.

110.2.2 Normal voltage levels at or above 100kV

(a) A ***transmitter*** must use best endeavours to maintain the normal voltage level at each ***point of supply*** with a nominal voltage at or above 100kV within a range of plus or minus 10% of the voltage level nominated by ***VENCorp*** from time to time to the relevant ***transmitter*** and the relevant Participants which are supplied at that ***point of supply***.

(b) ***VENCorp*** must advise the relevant ***transmitter*** of any change to the nominated voltage level advised to the relevant Participant in paragraph (a), before that change takes effect.

(c) A ***transmitter*** is not in breach of its obligations under paragraph (a) in the case of a voltage excursion outside the range set out in paragraph (a) provided that the duration of that voltage excursion is less than the time within which automatic voltage control action on the ***transmission networks*** could reasonably be expected to correct the excursion.

110.2.3 Voltage Fluctuations

(a) ***VENCorp*** must use best endeavours to maintain voltage fluctuations at ***points of supply*** within the limits specified in S5.1.5 of the ***NEC***.

(b) ***VENCorp*** is not in breach of its obligations under paragraph (a) to the extent that ***VENCorp's*** non-compliance is due to a ***distributor's*** or ***EHV consumer's*** failure to comply with its obligations under clause 120.3.1.

110.2.4 Negative Sequence Voltage levels

(a) ***VENCorp*** will use best endeavours to maintain the ***Negative Sequence Voltage*** at each ***point of supply*** at less than or equal to the continuous limits set out in S5.1.7 of ***NEC***.

(b) ***VENCorp*** is not in breach of its obligations under paragraph (a):

(1) if the ***Negative Sequence Voltage*** level at the relevant ***point of supply*** is above the continuous level set out in the table S5.1.1 of the ***NEC*** for the applicable nominal supply voltage but below the single contingency level set out in the table for the applicable nominal supply voltage for a cumulative duration of not more than 5 minutes in every 30 minutes;

(2) to the extent that ***VENCorp's*** non-compliance is caused by a ***distributor's*** or ***EHV consumer's*** failure to comply with its obligations under clause 120.2.1; or

(3) in the case of non-compliance for a short period resulting from a fault, single pole interruption, line switching, transformer energisation, capacitor bank energisation or reactor energisation within the ***System***.

110.2.5 Harmonic Distortion Levels

(a) ***VENCorp*** must use best endeavours to keep the harmonic distortion levels in the supply voltage at each ***point of supply*** less than or equal to the limit set out in S5.1.6 of ***NEC***.

(b) ***VENCorp*** is not in breach of its obligations under paragraph (a):

(1) to the extent that ***VENCorp's*** non-compliance is caused by a failure of a ***distributor*** or ***EHV consumer*** to comply with its obligations under clause 120.5; or

(2) in the case of a short duration excursion resulting from a fault, single pole interruption, line switching, transformer energisation, capacitor bank energisation or reactor energisation within the ***System***.

110.2.6 (clause deleted)

110.2.7 General exception

VENCorp or ***transmitter*** is not in breach of its obligations under clauses 110.2.1 and 110.2.2, in relation to a particular ***distributor*** or ***EHV consumer*** at a particular ***point of supply*** during any period when the relevant ***distributor*** or ***EHV consumer*** is not being Supplied at any of its ***points of connection*** associated with that ***point of supply***.

110.3 Data Provision by VENCorp And Transmitters

110.3.1 ***VENCorp*** must provide to a ***connected participant*** in respect of a ***point of connection*** such information relating to equivalent impedances at that ***point of connection*** and the higher voltage bus related to that ***point of connection*** as may be reasonably requested by that Participant to model and analyse the quality of ***supply*** performance at the relevant ***point of supply***.

110.3.2 ***VENCorp*** must provide to a ***generator*** such data as may be reasonably requested by that ***generator*** to enable the ***generator*** to assess the dynamic performance of its ***Units***.

120 CONNECTION RELATED OBLIGATIONS OF DISTRIBUTORS AND EHV CONSUMERS

120.1 Power Factor requirements

120.1.1 Permissible range

Supply Voltage (nominal)	Permissible Range of Aggregate Power Factor at the Aggregate connection.	Factor (F)[a]
500 kV	0.98 lagging to unity	0.2031
330 kV	0.96 lagging to unity	0.2917
220 kV	0.95 lagging to unity	0.3287
66 kV	0.90 lagging to unity	0.4843
22 kV	0.80 lagging to unity	0.7500

a Factor(F) is equal to tan(acos(power factor))

The relevant ***distributor*** or ***EHV consumer*** must use best endeavours to ensure that the Aggregate ***Power Factor*** at an ***Aggregate Connection*** falls inside the permissible range determined in accordance with the table set out above.

120.1.2 Aggregate Power Factor

The Aggregate ***Power Factor*** for a ***distributor*** or ***EHV consumer*** at an ***Aggregate Connection*** is given by:

$$APF = \frac{Sum\ P}{((Sum\ P)^2 + (Sum\ Q)^2)^{0.5}}$$

where:

APF is the Aggregate ***Power Factor*** for the ***distributor*** or ***EHV consumer*** at the ***Aggregate Connection***;

Sum P is the coincident summated Active Energy at the ***Aggregate Connection*** for 15 minutes 'i'; and

Sum Q is the coincident summated ***Reactive Energy*** at the ***Aggregate Connection*** for the same 15 minutes 'i' during which the active energy is measured.

120.1.3 Charges for excess consumption of Reactive Power

The relevant ***distributor*** or ***EHV Consumer*** must pay ***VENCorp*** an excess reactive charge calculated by applying an excess reactive demand price to the excess reactive demands calculated as follows:

(a) ***VENCorp*** is to determine the dates and times of the top five daily Victorian system demands in MW recorded during summer (i.e. November to March), and the top five daily Victorian system demands in MW recorded during winter (i.e. June to August);

(b) For each of the ten times determined in step (a), the excess reactive demand for each ***distributor*** and ***EHV Consumer*** at each voltage at each transmission ***supply*** point, is calculated by:

$$4 \times (SumQ - (F \times SumP))$$

where SumQ and Sum P have the meanings in clause 120.1.2 and are 15 minute readings, and F is a factor for each ***supply*** point based on the value given in the table in clause 120.1.1.

(c) The maximum excess reactive demand is the maximum of the values calculated in step (b) for each ***distributor*** and ***EHV Consumer*** at each voltage at each transmission ***supply*** point.

(d) Where a ***distributor*** takes ***supply*** at a ***terminal station*** at 2 different voltages, the excess reactive demand for each voltage level is calculated separately and the resulting coincident summed value per ***customer*** per ***terminal station*** is used for the calculation of excess reactive demand charges.

120.1.4 Power Factor and Excess Reactive Demand measurement

The values of ***Energy*** and ***Reactive Energy*** for the ***points of connection*** used to determine the ***Power Factor*** at an ***Aggregate Connection***, and the Excess Reactive Demand for the purposes of this clause are those determined in accordance with clause 7.9 of the National Electricity Code.

120.2 Load Balance

120.2.1 A ***distributor*** or ***EHV consumer*** must ensure that they comply with S5.3.6 of ***NEC***.

120.2.2 (clause deleted)

120.3 Disturbing Loads

120.3.1 Each ***distributor*** or ***EHV consumer*** must ensure that variations in current at each of its ***points of connection*** (including variations in current arising from the energisation, de-energisation or operation of any equipment within or ***supplied*** from the ***distribution network*** or ***EHV consumer's substation***) are within the limits specified in S5.3.7 of ***NEC***.

120.3.2 (clause deleted)

120.4 (clause deleted)

120.5 Current Harmonics and voltage notching

120.5.1 Each ***distributor*** and ***EHV consumer*** must ensure that the level of harmonic current at each of its ***points of connection*** resulting from non-linearity or other effects within the ***distribution network*** (or from supplies drawn from the ***distribution network***) or ***EHV consumer's substation*** do not cause the ***distributor's*** or ***EHV consumer's*** contribution to the level of harmonic voltage at the relevant ***point of supply*** to exceed the limits specified in S5.3.8 of ***NEC***.

120.5.2 (clause deleted)

120.6 Data provision by distributors and EHV Consumers

120.6.1 A ***distributor*** or ***EHV consumer*** must provide to ***VENCorp*** or a ***transmitter*** such information relating to:

(a) the characteristics of its load to allow analytic models to be developed for use in ***System*** performance analysis;

(b) details of the ability to transfer loading between ***Terminal Stations*** through the ***distribution network***; and

(c) where ties may be established between ***Terminal Station***s, with details of the tie capacity, load supplied by the tie and the electrical parameters of the tie, as ***VENCorp*** or the relevant ***transmitter*** (as the case may be) reasonably requests.

120.6.2 A ***distributor*** or ***EHV consumer*** installing compensation equipment on its ***distribution network*** (for example harmonic filters, voltage control devices or load balancing equipment) or in its plant (as the case may be) must:

(a) advise ***VENCorp*** in writing prior to the installation of such equipment; and

(b) provide ***VENCorp*** with such design details of that equipment as are reasonably required by ***VENCorp*** for ***System*** performance analysis.

120.7 Embedded generation

120.7.1 A ***distributor*** must advise ***VENCorp*** of any new Embedded ***Units*** and any material expansion to an Embedded ***Unit*** connected to its ***distribution network*** and give details of the contribution of each such Embedded ***Unit*** to three phase and single phase fault levels at each of that ***distributor's points of connection***. Such advice must be provided not less than 6 months prior to the initial connection of the relevant Embedded ***Unit*** to the ***distributor's distribution network*** or a material expansion of the relevant Embedded ***Unit***.

120.7.2 A ***distributor*** must submit to ***VENCorp*** a complete list of all Embedded ***Units*** connected to its ***distribution network*** prior to the start of each ***Financial Year*** and the installed capacity of each such Embedded ***Unit***.

120.7.3 A ***distributor*** must use best endeavours to ensure that if all of its ***points of connection*** in relation to an Embedded ***Unit*** are open, then each affected Embedded ***Unit*** connected to its ***distribution network*** is automatically ***disconnected*** from the ***System***. A ***distributor*** must ensure that any equipment installed for this purpose after 30 April 1998 is approved by ***VENCorp*** prior to its installation .

120.7.4 Where ***Automatic Reclose Equipment*** is installed on a ***distribution feeder*** or ***subtransmission feeder*** that connects an Embedded ***Unit*** to the ***System***, the ***distributor*** must use best endeavours to ensure that the relevant Embedded ***Unit*** is ***disconnected*** from the ***System*** prior to the reclose proceeding using appropriate interlock signals. The details of such interlock signals are to be agreed between the relevant ***transmitter*** and ***distributor***.

120.8 Compliance

120.8.1 If at any time ***VENCorp*** believes that:

(a) a ***distributor*** or ***EHV consumer*** is not complying with an obligation under this clause 120; or

(b) the voltage fluctuation levels, harmonic content, or negative sequence component at a ***point of supply*** are such as to adversely affect a ***transmission network*** or persons or equipment connected to a ***transmission network*** and a ***distributor's*** or ***EHV consumer's*** load is contributing to the situation, (in this clause 120.8 called a "**Breach**"),

then ***VENCorp*** may notify the relevant ***distributor*** or ***EHV consumer*** of the Breach and the basis for ***VENCorp's*** belief.

120.8.2 If the relevant ***distributor*** or ***EHV consumer*** believes that there is no Breach, then ***VENCorp*** and the relevant ***distributor*** or ***EHV consumer*** must promptly meet to resolve their difference. If the dispute is not resolved within 5 ***business days*** after ***VENCorp*** gives the relevant notice under clause 120.8.1, then either ***VENCorp*** or the relevant ***distributor*** or ***EHV consumer*** may refer the dispute for resolution in accordance with the relevant clause in the ***VENCorp's transmission licence***.

120.8.3 If the relevant ***distributor*** or ***EHV consumer*** accepts that, or it is determined in accordance with the relevant clause in the ***VENCorp's transmission licence*** that, there is a Breach, then the ***distributor*** or ***EHV consumer*** must, within 8 weeks after ***VENCorp*** gives the relevant notice under clause 120.8.1, advise ***VENCorp*** of the remedial action it proposes to take to ensure that:

(a) the relevant obligation is complied with in the future; or

(b) the relevant person or equipment is no longer adversely affected by its load, (as applicable) and the proposed timetable for implementing those steps.

120.8.4 ***VENCorp*** may notify the relevant ***distributor*** or ***EHV consumer*** that it disagrees with the proposed remedial action and/or the proposed timetable. If ***VENCorp*** gives a notice under this clause, then ***VENCorp*** and the relevant ***distributor*** or ***EHV consumer*** must promptly meet to resolve their difference. If the dispute is not resolved within 5 ***business days*** after ***VENCorp*** gives the notice under this clause, then either ***VENCorp*** or the relevant ***distributor*** or ***EHV consumer*** may refer the dispute for resolution in accordance with the relevant clause in the ***VENCorp's transmission licence***.

120.8.5 If ***VENCorp*** does not give a notice under clause 120.8.4 within 30 ***business days*** after receiving the notice under clause 120.8.3, then ***VENCorp*** will be deemed to have agreed to the proposed remedial steps and timetable set out in the notice.

120.8.6 After ***VENCorp*** and the relevant ***distributor*** or ***EHV consumer*** agree or are deemed to agree the remedial action and timetable, or the remedial action and timetable is determined under ***VENCorp's transmission licence***, then the relevant ***distributor*** or ***EHV consumer*** must:

(a) diligently take the agreed or determined remedial action in accordance with the agreed or determined timetable;

(b) report to ***VENCorp*** at least weekly on the progress of the remedial action; and

(c) after completing the remedial action, submit such evidence to ***VENCorp*** as ***VENCorp*** reasonably requires to demonstrate that:

(1) the relevant obligation will be complied with in the future; or

(2) the relevant person or equipment will no longer be adversely affected by the relevant ***distributor's*** or ***EHV consumer's*** load, (as applicable).

120.8.7 If ***VENCorp*** gives a notice to a ***distributor*** or ***EHV consumer*** under clause 120.8.1 and:

(a) complaints are received from persons connected to the ***transmission network*** which are being adversely affected by the matter the subject of the notice; or

(b) the ***transmission network*** or other equipment is being materially adversely affected by the matter the subject of the notice,

then ***VENCorp*** may direct the relevant ***distributor*** or ***EHV consumer*** to take such steps as ***VENCorp*** believes are necessary to eliminate or minimise the adverse

effect. These steps may include varying the load at the relevant ***point of connection***, installing appropriate equipment or limiting the hours of operation of any relevant equipment.

120.8.8 A ***distributor*** or ***EHV consumer*** must promptly comply with any reasonable direction given by ***VENCorp*** under clause 120.8.7. If a ***distributor*** or ***EHV consumer*** fails to do so, then ***VENCorp*** may direct the ***transmitter*** to ***disconnect*** the relevant ***points of connection.***

130 DESIGN REQUIREMENTS FOR EHV PARTICIPANTS & DISTRIBUTORS

130.1 (clause deleted)

130.2 Design requirements for EHV Participants' Substation

An ***EHV participant*** must comply with the following requirements in relation to design, station layout and choice of equipment for a ***substation***:

(1) switching procedures in a ***substation*** must be as simple as possible;

(2) any safety practices notified by the relevant *transmitter*;

(3) the applicable minimum station clearances for air to live apparatus must be as set out in Australian Standard No. AS 2067 (Switchgear Assemblies and Ancillary Equipment for Alternating Voltages above 1 kV);

(4) appropriate interfaces and accommodation for ***communication*** facilities, remote monitoring and control and protection of equipment which is to be installed in the ***substation*** must be incorporated;

(5) unless otherwise agreed in the relevant ***Use of System Agreement***, a ***substation*** must be capable of continuous uninterrupted operation in the event that the actual voltage at the relevant ***point of connection*** (in this paragraph (5) called "**Actual Voltage**") drops to zero for up to 0.35 seconds, provided that:

(A) during the 3 minute period immediately following the end of that 0.35 second period, the Actual Voltage remains in the range 80-110% of the nominal voltage of the ***point of connection*** (in this paragraph (5) called "**Nominal Voltage**"); and

(B) at the end of the 3 minute period referred to in paragraph (A), the Actual Voltage falls anywhere in the range 90-110% of the Nominal Voltage;

(6) a ***substation*** must be capable of continuous uninterrupted operation under the ***supply*** conditions outlined in Schedule 5.1 of the National Electricity Code.

(7) short circuit duty for circuit-breakers in a ***substation*** must be as set out in the relevant ***Connection Agreement***, and must be consistent with the table set out in clause 110.1 (or as otherwise set out in the relevant ***Use of System Agreement***);

(8) earthing of primary plant in relation to the ***point of connection*** of the ***substation*** must be in accordance with the Electricity Supply Association of Australia Safe Earthing Guide and must reduce step and touch potentials to safe levels; and

(9) any synchronising requirements set out in the relevant ***Connection Agreement*** or ***Use of System Agreement***.

130.3 Auxiliary Supplies

An ***EHV participant*** must ensure that appropriate and secure a.c. and d.c. electricity supplies are available at all times for equipment in its ***substation*** performing ***communication***, monitoring, control and protection functions. An ***EHV participant*** must also provide appropriate and secure d.c. electricity supplies for that equipment for at least 8 hours following total loss of ***supply*** at the relevant ***points of connection***.

130.4 (clause deleted)

130.5 EHV Participants' Protection equipment

The protection equipment required for a particular ***substation*** must be set out in the relevant ***Connection Agreement*** and would normally include protection schemes for individual items of equipment, back-up arrangements, auxiliary d.c. supplies, instrumentation transformers and equipment layout, wiring and cable practices.

130.6 Insulation co-ordination

130.6.1 An ***EHV participant*** must ensure that equipment in its ***substation*** co-ordinates with the insulation levels of the ***transmission network*** to which the ***substation*** is connected.

130.6.2 An ***EHV participant*** must provide and arrange installation, to the reasonable satisfaction of the relevant ***transmitter***, of co-ordinating rod gaps at the ***substation*** incoming EHV line entries which must be set to a value determined by the relevant ***transmitter***. An ***EHV participant*** must ensure that the setting of these rod gaps are not interfered with in any way without the prior written approval of the relevant ***transmitter***.

130.7 Communications

130.7.1 Unless otherwise agreed in the ***Connection Agreement***, an ***EHV participant*** must provide such space within its ***substation*** for such ***communication*** facilities as may be reasonably required by the relevant ***transmitter*** for protection, monitoring, control or speech transmission associated with the ***EHV consumer's substation*** and any signalling associated with the Transmission line in accordance with the relevant ***Connection Agreement***. The facilities referred to in this clause include line traps and associated equipment such as capacitor voltage transformers and their line matching units.

130.7.2 The commissioning and regular testing of the ***communication*** facilities referred to in clause 130.7.1 must be carried out in accordance with the relevant ***transmitter's*** reasonable requirements.

130.7.3 (clause deleted)

130.8 Control and Instrumentation

Unless otherwise agreed with the relevant ***transmitter***, an ***EHV consumer*** must;

(a) provide within its ***substation*** such remote monitoring and control equipment as the relevant ***transmitter*** reasonably requires to transfer information on equipment status, alarms and measured values to that ***transmitter's*** remote monitoring centre;

(b) comply with any requirements for status, alarm and measured value inputs and any control outputs, and any performance requirements on the interfacing and transducer equipment that the relevant ***transmitter*** reasonably nominates.

130.9 Design Requirement for distributors

A ***distributor*** must ensure that not less than 60% of the load of its ***distribution network*** remains connected in the event that the actual voltage at a ***point of connection*** (in this clause 130.9 called "**Actual Voltage**") drops to zero for up to 0.60 seconds, provided that:

(a) during the 3 minute period immediately following the end of that 0.60 second period the Actual Voltage remains in the range 80-110% of the nominal voltage of the ***point of connection*** (in this clause 130.9 called "**Nominal Voltage**"); and

(b) at the end of the 3 minute period referred to in paragraph (a), the Actual Voltage falls anywhere in the range 95-105% of the Nominal Voltage.

131 COMMISSIONING PROCESS RELATING TO NEW OR REPLACEMENT EHV PARTICIPANT EQUIPMENT

(clause deleted)

132 SUBSTATIONS

132.1 Maintenance

If an ***EHV participant*** conducts any maintenance on any equipment in any of its ***substations*** which could reasonably be expected to affect ***Secure System***, then the ***EHV participant*** must notify ***VENCorp*** promptly. The ***EHV participant*** must ensure that the maintenance is undertaken in such manner that the performance of the relevant equipment after the maintenance is completed is the same as it was before and, if reasonably required by the relevant ***transmitter or VENCorp***, must provide evidence that no change has occurred.

132.2 Operating times

An ***EHV participant*** must ensure that each set of duplicated protection relating to a ***point of connection*** between any of its ***substations*** and the ***transmission network*** operates in accordance with parameters notified from time to time by ***VENCorp*** to the relevant ***EHV participant*** to maintain a ***Secure System***.

132.3 Stability of Secondary Systems

132.3.1 (clause deleted)

132.3.2 An ***EHV participant*** must use best endeavours to ensure that at all times the ***Secondary Systems*** of its ***substations*** function correctly and in a stable manner.

132.3.3 If one or more ***Secondary Systems*** of a ***substation*** fails or malfunctions causing a ***Threat to Secure System***, then ***VENCorp*** may direct the relevant ***transmitter*** to ***disconnect*** the relevant ***point of connection*** until there is no longer a ***Threat to Secure System***.

132.4 Modification prohibition

132.4.1 An ***EHV participant*** must not change or modify any equipment in any of its ***substations*** in a manner which could adversely affect ***Secure System*** without the prior approval of ***VENCorp***.

If an ***EHV participant*** proposes to change or modify any equipment in any of its ***substations*** in a manner that could reasonably be expected to affect ***Secure System***, then that ***EHV participant*** must submit a proposal notice to ***VENCorp***, which must:

(a) contain detailed plans of the proposed change or modification;

(b) state when the ***EHV participant*** intends to make the proposed change or modification; and

(c) set out the proposed tests to confirm that the relevant equipment as changed or modified operates in the manner contemplated in the proposal and does not adversely affect ***Secure System***.

132.4.3 If ***VENCorp*** disagrees with a proposal submitted under clause 132.4.2, then it may notify the relevant ***EHV participant*** and ***VENCorp*** and the relevant ***EHV participant*** must promptly meet and discuss the matter in good faith in an endeavour to resolve the disagreement.

132.5 Implementing modifications

132.5.1 The relevant ***EHV participant*** must ensure that an approved change or modification to equipment in a ***substation*** is implemented in accordance with the relevant proposal approved by ***VENCorp***.

132.5.2 The relevant ***EHV participant*** must notify ***VENCorp*** promptly after an approved change or modification to equipment in a ***substation*** has been implemented.

132.6 Testing of modifications

132.6.1 The relevant ***EHV participant*** must confirm that a change or modification to equipment in a ***substation*** carried out in accordance with this clause 132 conforms with the relevant proposal approved by ***VENCorp*** by conducting the tests approved by ***VENCorp*** promptly after the proposal has been implemented.

132.6.2 The relevant ***EHV participant*** must give ***VENCorp*** and the relevant ***transmitter*** not less than 10 ***business days*** prior notice of the conduct of a test under clause 132.6.

132.6.3 Within 20 ***business days*** after any such test has been conducted, the relevant ***EHV participant*** must provide ***VENCorp*** with a report in relation to that test (including test results of that test, where appropriate).

132.7 Remote monitoring equipment

132.7.1 A relevant ***transmitter*** may require:

(a) the provision in a ***substation*** of equipment (called "***Substation RME***") to enable the relevant ***transmitter*** to remotely monitor performance of the load at that ***substation*** and of the equipment in that ***substation*** (including its dynamic performance); and

(b) any ***Substation RME*** already installed in a ***substation*** to be upgraded, modified or replaced, by notice in writing to the relevant ***EHV participant***.

132.7.2 The relevant ***transmitter*** must include in any notice under clause 132.7.1 the functional requirements in relation to the particular ***Substation RME***.

132.7.3 An ***EHV participant*** must comply with a notice under clause 132.7.1. Any ***Substation RME*** provided under this clause 132 must comply with the relevant functional requirements.

132.7.4 (clause deleted)

132.7.5 A ***substation*** which has ***Substation RME*** installed in it must keep that equipment in place and must comply with clauses 132.8 and 132.10 in relation to that equipment notwithstanding that the relevant ***transmitter*** has not given a notice under clause 132.7.1 in relation to the relevant equipment.

132.8 Associated equipment to be provided by an EHV Participant in connection with Substation RME

132.8.1 An ***EHV participant*** must provide appropriate and secure a.c. and d.c. electricity supplies for ***Substation RME*** installed in one of its ***substations***. An ***EHV participant*** must also ensure that appropriate and secure d.c. electricity supplies are available for ***Substation RME*** installed in one of its ***substations*** for at least 8 hours following total loss of ***supply*** at the relevant ***point of connection***.

132.8.2 An ***EHV participant*** must provide reliable transmission of signals between ***Substation RME*** installed in any of its ***substations*** to a physical interface at a location within the relevant ***substation*** agreed between the relevant ***transmitter*** and the relevant ***EHV participant***. An ***EHV participant*** must allow the relevant ***transmitter*** to arrange ***communication***s paths between that physical interface and the ***transmitter's*** site.

132.8.3 (clause deleted)

132.9 Testing of Substation RME

An ***EHV participant*** must ensure that any new or replacement ***Substation RME*** in any of its ***substations*** is tested prior to being placed in service in accordance with test procedures agreed with the relevant ***transmitter***.

132.10 Co-operation in relation to Substation RME

132.10.1 An ***EHV participant*** and the relevant ***transmitter*** must co-operate in relation to the installation, maintenance, testing, sourcing of faults, upgrading, modification or replacement of ***Substation RME*** and equipment required to be provided under clause 132.8.

132.10.2 An ***EHV participant*** must not, and must procure that its ***Representative***s do not, interfere with ***Substation RME***, the equipment the ***EHV participant*** is required to provide under clause 132.8 or any electrical connection or wiring relating thereto without the prior written approval of the relevant ***transmitter***.

PART 4 LARGE UNITS

140 (clause deleted)

150 GENERATOR TECHNICAL REQUIREMENTS

150.1 (clause deleted)

150.2 The requirements

The delivery performance requirements (called "**DPRs**") are now referred as Generator Technical Requirements (***GTR***s) and are given in Schedule S5.2.5 and S5.2.6 of the ***NEC***:

150.3 Monitoring of in service performance

150.3.1 A ***generator*** must monitor each of its ***Large Units*** during normal service to confirm ongoing compliance with the applicable ***GTR***s.

150.3.2 (clause deleted)

150.3.3 (clause deleted)

150.3.4 (clause deleted)

150.3.5 On or before 31 July each year, a ***generator*** must provide to ***VENCorp*** a report detailing the compliance by each of that ***generator's Large Units*** with ***GTRs*** S5.2.5.8 and S5.2.5.9 during the preceding ***Financial Year***.

150.3.6 A ***generator*** must provide to ***VENCorp*** such additional information as ***VENCorp*** reasonably requests in relation to compliance by one or more of that ***generator's Large Units*** with the applicable ***GTRs***.

150.4 GTR tests

General

150.4.1 A ***generator*** must conduct tests to demonstrate that each of:

(a) its ***Large Units*** complies with each of ***GTR***s S5.2.5.1, S5.2.5.3(a)(2), S5.2.5.7, S5.2.5.8, S5.2.5.9, S5.2.5.10, S5.2.5.11, S5.2.5.13, S5.2.6.4 and S5.2.6.5; and

(b) its ***Power Stations*** complies with ***GTR*** S5.2.5.3(a)(2),

(called "**Test *GTRs***") in accordance with this clause.

Benchmark Tests

150.4.2 A ***generator*** must conduct a test (called "***Benchmark Tests***") to demonstrate that:

(a) each of its ***Large Units*** able to be connected to the ***System*** at 30 April 1999 (called "**Existing Units**"); and

(b) each of its ***Large Units which*** are subsequently connected to the ***System*** (called "***New Units***"),

complies with each of the Test ***GTRs*** and that each of its ***Power Station***s in which an Existing ***Unit*** or a New ***Unit*** is located complies with ***GTR*** S5.2.5.3(a)(2).

150.4.3 To the extent that ***Benchmark Tests*** in relation to an Existing ***Unit*** and the ***Power Station*** in which an Existing ***Unit*** is located have not yet been completed, such ***Benchmark Tests*** must be completed on or before 30 December 1999 or by such later date as is agreed between ***VENCorp*** and the relevant ***generator***.

150.4.4 A ***generator*** will be deemed to have conducted a ***Benchmark Test*** which demonstrated that an Existing ***Unit*** complies with a particular Test ***GTR*** or a ***Power Station*** in which an Existing ***Unit*** is located complies with ***GTR*** S5.2.5.3(a)(2) where:

(a) the ***generator*** is able to demonstrate to ***VENCorp's*** reasonable satisfaction that the relevant ***Unit*** or ***Power Station*** complies with the relevant ***GTR*** using:

(1) the results of a test or tests conducted since 30 April 1996 using procedures which are equivalent to the test procedures which would be used for the relevant ***Benchmark Test***; or

(2) records of the day-to-day operation of the ***Unit*** or ***Power Station*** since 30 April 1996 in conditions which are equivalent to the test procedures which would be used for the relevant ***Benchmark Test***;

(b) the results or records referred to in paragraph (a) are suitable for use as a performance benchmark; and

(c) the ***generator*** and ***VENCorp*** agree test procedures that, for the purposes of this Code, will be deemed to be the agreed test procedures for the ***Benchmark Test*** which demonstrated compliance with the relevant ***GTR*** by the relevant ***Large Unit*** or ***Power Station*** (as applicable).

150.4.5 The ***Benchmark Tests*** in relation to a new ***Unit*** and the ***Power Station*** in which a New ***Unit*** is located must be completed prior to the ***Unit*** coming into commercial service.

150.4.6 ***Benchmark Tests*** must be conducted in accordance with agreed test procedures. The test procedures for a particular ***Benchmark Test*** must simulate, so far as is reasonably practicable, likely ***System*** operating conditions corresponding to the relevant ***GTR***. The test procedures for a particular ***Benchmark Test*** in relation to an Existing ***Unit*** or a ***Power Station*** in which an Existing ***Unit*** is located will not require:

(a) a ***point of connection*** to be suddenly ***disconnected*** whilst any of the ***Units*** directly connected to the ***transmission network*** or ***distribution network*** (as applicable) at that ***point of connection*** is Synchronised and has a ***Generated Output*** of greater than 5% of its name-plate rating; and

(b) the actual ***System*** voltage to drop to zero.

150.4.7 Not less than 90 ***business days*** before it proposes to conduct a ***Benchmark Test***, the relevant ***generator*** must submit to ***VENCorp*** proposed test procedures for the relevant test.

150.4.8 If ***VENCorp*** disagrees with proposed test procedures submitted under clause 150.4.7, then it may notify the relevant ***generator*** that it so disagrees, giving reasons for the disagreement. If ***VENCorp*** does not give a notice under this

clause within 60 ***business days*** after receiving a notice under clause 150.4.7, then ***VENCorp*** will be deemed to have agreed to the proposed test procedures for the relevant test.

150.4.9 If ***VENCorp*** gives a notice under clause 150.4.8, then ***VENCorp*** and the relevant ***generator*** will negotiate in good faith concerning the appropriate test procedures for the relevant ***Benchmark Test***. If ***VENCorp*** and the relevant ***generator*** have not agreed the test procedures for the relevant ***Benchmark Test*** within 20 ***business days*** after ***VENCorp*** gives the notice under clause 150.4.8, then either of them may refer the matter to be resolved under the dispute provisions of their licences.

Periodic Tests

150.4.10 A ***generator*** must also conduct a test (called "**Periodic Tests**") to demonstrate that each of its ***Large Units*** continues to comply with a Test ***GTR*** and each of its ***Power Station***s continues to comply with ***GTR*** S5.2.5.3(a)(2) within 3 years (or other period as is agreed between ***VENCorp*** and the relevant ***generator***) after the later of:

(a) the ***Benchmark Test*** which demonstrated that the ***Unit*** or ***Power Station*** (as applicable) complied with the relevant Test ***GTR***; or

(b) the most recent ***Periodic Test*** or test under clause 100.2, or 170.1.3 which demonstrated that the ***Unit*** or ***Power Station*** (as applicable) complied with the relevant Test ***GTR***.

150.4.11 ***Periodic Tests*** are to be conducted in accordance with the agreed test procedures for the ***Benchmark Test*** which demonstrated compliance with the relevant ***GTR*** by the relevant ***Large Unit*** or ***Power Station*** (as applicable), unless ***VENCorp*** and the relevant ***generator*** otherwise agree. The test procedures for a particular ***Periodic Test*** in relation to an Existing ***Unit*** or a ***Power Station*** in which an Existing ***Unit*** is located will not require:

(a) a ***point of connection*** to be suddenly ***disconnected*** whilst any of the ***Units*** directly connected to the ***transmission network*** or ***distribution network*** (as applicable) at that ***point of connection*** is Synchronised and has a Generated Output of greater than 5% of its name-plate rating; and

(b) the actual system voltage to drop to zero.

GTR Tests during normal operations.

150.4.12 If:

(a) during the day-to-day operation of a ***Large Unit*** or a ***Power Station*** conditions occur which are equivalent to the agreed test procedures for the ***Benchmark Test*** which demonstrated that the ***Unit*** or ***Power Station*** complied with a particular Test ***GTR***;

(b) the operation of the relevant ***Large Unit*** or ***Power Station*** in response to those conditions demonstrates that it continues to comply with the relevant Test ***GTR***; and

(c) the relevant ***generator*** submits a report in accordance with clause 150.4.18 of those conditions within 60 ***business days*** of their occurrence,

then a ***Periodic Test*** which demonstrated that the relevant ***Unit*** complied with the relevant Test ***GTR*** will be deemed to have been conducted for the purposes of clause 150.4.10.

GTR Test procedures

150.4.13 A ***generator*** must ensure that a ***Benchmark Test***, a ***Periodic Test*** or a test conducted under clause 160.3 or 170.1.3 (in this clause 150.4 called a "***GTR* Test**") conducted in relation to any of its ***Units*** or ***Power Station***s is conducted in accordance with the relevant agreed test procedures.

150.4.14 A ***generator*** must ensure that a ***GTR*** Test conducted in relation to any of its ***Units*** or ***Power Station***s is conducted by appropriately qualified persons.

150.4.15 A ***generator*** must give ***VENCorp*** at least 10 ***business days*** prior notice of its intention to conduct a ***GTR*** Test.

150.4.16 ***VENCorp*** may appoint a ***Representative*** to witness a ***GTR*** Test by notice in writing to the relevant ***generator***. The relevant ***generator*** must permit a person appointed under this clause to be present while the relevant test is being conducted.

150.4.17 ***VENCorp*** must use best endeavours to ensure that any such ***Representative*** does not interfere with the conduct of a ***GTR*** Test.

150.4.18 A ***generator*** must submit to ***VENCorp*** a report (including test results, where appropriate) of a ***GTR*** Test conducted in relation to one of its ***Units*** or ***Power Stations*** within 60 ***business days*** of the completion of the relevant test. Reports submitted under this clause must contain all data which is necessary to enable ***VENCorp*** to critically assess compliance by the relevant ***Large Unit*** or ***Power Station*** with the relevant ***GTR*** and must be in such format as ***VENCorp*** reasonably requires.

150.4.19 Each ***generator*** must maintain records (in written or electronic form) reasonably acceptable to ***VENCorp*** for each of its ***Large Units*** and ***Power Station***s setting out details of the results of all ***GTR*** Tests and tests under clause 100.2 conducted in relation to the relevant ***Unit*** or ***Power Station***.

150.5 (clause deleted)

150.6 GTR audits

150.6.1 ***VENCorp*** may audit during normal business hours on any ***business day*** any material in the possession or control of a ***generator*** relating to compliance by one or more of that ***generator's Large Units*** or ***Power Station***s with a ***GTR***. ***VENCorp*** may not carry out an audit under this clause within 6 months of the previous audit conducted under this clause in relation to the relevant ***Large Unit*** or ***Power Station***.

150.6.2 ***VENCorp*** must give a ***generator*** at least 5 ***business days'*** notice of its intention to carry out an audit under clause 150.6.1. A notice under this clause must include the following information:

(a) the nature of the audit;

(b) the name of the ***Representative*** appointed by ***VENCorp*** to conduct the audit; and

(c) the time or times at which the audit will commence.

150.6.3 The relevant ***generator*** must provide to a ***VENCorp Representative*** conducting an audit under clause 150.6.1 such access to all relevant documentation, data and records (including computer records or systems) as is reasonably necessary to conduct the audit.

150.6.4 The ***VENCorp Representative*** conducting an audit under clause 150.6.1 must be appropriately qualified to perform the relevant audit.

160 UNIT EXCITATION CONTROL SYSTEM AND GOVERNOR SYSTEM

160.1 (clause deleted)

160.2 (clause deleted)

160.3 Maintenance

If a ***generator*** conducts any maintenance on the ***Excitation Control System*** or the ***Governor System*** of any of its ***Large Units which*** could reasonably be expected to lead to changes in the dynamic performance or capability of the ***Unit*** then the ***generator*** must notify ***VENCorp*** promptly. ***VENCorp*** must notify ***NEMMCO*** promptly after being notified by the ***generator***. The ***generator*** must ensure that the maintenance is undertaken in such manner that the dynamic performance and capability of the ***Unit*** after the maintenance is completed is the same as it was before and, if reasonably required by ***VENCorp*** or ***NEMMCO***, must provide evidence that no change has occurred.

170 PROTECTION, CONTROL OR ALARM SYSTEMS

170.1 Settings of PCA Systems

170.1.1 No later than 6 months prior to a New ***Unit's*** expected first Synchronisation, the relevant ***generator*** must submit to ***VENCorp*** the settings the ***generator*** proposes for the ***PCA Systems*** of that ***Unit***.

170.1.2 A ***generator*** must ensure that only settings approved by ***VENCorp*** in writing are applied on the ***PCA Systems*** of its ***Large Units*** and must not change any of those settings without the prior written approval of ***VENCorp***.

170.1.3 ***VENCorp*** may, from time to time, subject to any limitation on the relevant equipment disclosed in the ***Registered Data*** for the relevant ***Unit***, require a ***generator*** to vary the settings for a ***PCA System*** of any of its ***Large Units*** and, thereafter, to conduct a test to demonstrate that the relevant ***Unit*** performs in accordance with the revised settings. The relevant ***generator*** must comply with a request under this clause. A test under this clause 170.1.3 must be conducted:

(a) where there is a Test ***GTR*** in relation to the relevant ***PCA System***, in accordance with the procedures for the ***Benchmark Test*** (if any) which demonstrated compliance with the Test ***GTR*** by the relevant ***Unit***; or

(b) if paragraph (a) does not apply, in accordance with such procedures as may be agreed between ***VENCorp*** and the relevant ***generator***,

and at a time agreed between ***VENCorp*** and the relevant ***generator***.

170.1.4 If a ***generator*** conducts any maintenance on a ***PCA System*** of any of its ***Large Units which*** could reasonably be expected to lead to changes in the performance of the ***Unit***, then the ***generator*** must notify ***VENCorp*** promptly. The ***generator*** must ensure that the maintenance is undertaken in such manner that the performance of the ***Unit*** after the maintenance is completed is the same as it was before and, if reasonably required by ***VENCorp***, must provide evidence that no change has occurred.

170.2 Operating times

170.2.1 A ***generator*** must ensure that each of the duplicated protections required under ***GTR*** S5.2.5.9 relating to each of its ***Large Units*** operates in accordance with the parameters specified in the relevant ***Use of System Agreement***, or, if not included in a ***Use of System Agreement*** as reasonably required by ***VENCorp***.

170.2.2 ***VENCorp*** must provide to a ***generator*** such ***System*** stability characteristics and any other relevant information reasonably requested by the relevant ***generator***, to enable the ***generator*** to apply and maintain protection settings.

170.3 Stability of PCA Systems

170.3.1 (clause deleted)

170.3.2 A ***generator*** must use best endeavours to ensure that at all times each of the ***PCA Systems*** of its ***Large Units*** function correctly and in a stable manner.

170.3.3 (clause deleted)

180 UNIT MODIFICATIONS

180.1 Modification prohibition

180.1.1 A ***generator*** must not change or modify any of its ***Large Units*** in a manner that could reasonably be expected to adversely affect that ***Unit's*** ability to comply with the applicable ***GTR***s, without the prior approval of ***VENCorp*** in accordance with this clause.

180.1.2 A ***generator*** must not change or modify a ***PCA System*** of any of its ***Large Units*** that could reasonably be expected to adversely affect ***Secure System*** without the prior approval of ***VENCorp*** in accordance with this clause.

180.2 Modification proposals

180.2.1 If a ***generator*** proposes to change or modify:

(a) any of its ***Large Units*** in a manner that could reasonably be expected to adversely affect that ***Unit's*** ability to comply with the applicable ***GTR***s; or

(b) all or any part of a ***PCA System*** of any of its ***Large Units*** in a manner that could reasonably be expected to affect ***Secure System***, then that ***generator*** must submit a proposal notice to ***VENCorp*** which must:

(i) contain detailed plans of the proposed change or modification;

(ii) state when the ***generator*** intends to make the proposed change or modification; and

(iii) set out the proposed tests to confirm that the relevant ***Unit*** as changed or modified operates in the manner contemplated in the proposal, can comply with the applicable DPRs and does not adversely affect ***Secure System***.

180.2.2 If ***VENCorp*** disagrees with the proposal submitted under clause 180.2.1, then it may notify the relevant ***generator***, and ***VENCorp*** and the relevant ***generator*** must promptly meet and discuss the matter in good faith in an endeavour to resolve the disagreement.

180.3 Implementing modifications

180.3.1 The relevant ***generator*** must ensure that an approved change or modification to a ***Unit*** or to a ***PCA System*** of a ***Unit*** is implemented in accordance with the relevant proposal approved by ***VENCorp***.

180.3.2 The relevant ***generator*** must notify ***VENCorp*** promptly after an approved change or modification to a ***Unit*** or to a ***PCA System*** of a ***Unit*** has been implemented.

180.4 Testing of modifications

180.4.1 The relevant ***generator*** must confirm that a change or modification to:

(a) any of its ***Large Units*** that could reasonably be expected to adversely affect that ***Unit's*** ability to comply with the applicable ***GTR***s; or

(b) a PCA ***System*** of any of its ***Large Units*** that could reasonably be expected to adversely affect ***Secure System***,

conforms with the relevant proposal approved by ***VENCorp*** by conducting the relevant tests approved by ***VENCorp*** promptly after the proposal has been implemented.

180.4.2 The relevant ***generator*** must give ***VENCorp*** not less than 10 ***business days*** prior notice of the conduct of a test under clause 180.4.1.

180.4.3 ***VENCorp*** may appoint a ***Representative*** to witness the conduct of a test under clause 180.4.1 by notice in writing to the relevant ***generator***. The relevant ***generator*** must permit a person appointed under this clause to be present while the relevant test is being conducted.

180.4.4 ***VENCorp*** must use best endeavours to ensure that any such ***Representative*** does not interfere with the conduct of a test.

180.4.5 Within 20 ***business days*** after any such test has been conducted, the relevant ***generator*** must provide ***VENCorp*** with a report in relation to that test (including test results of that test, where appropriate).

190 EARTHING SYSTEM

190.1 Neutral connection

A ***generator*** must ensure that each of the ***generator*** transformers forming part of any of its ***Large Units*** has a solidly earthed neutral and that such a neutral connection is not opened without the relevant ***transmitter's*** prior written consent.

190.2 Modifications

When modifying any plant or equipment, a ***generator*** must use best endeavours to ensure that ***generator*** transformer earthing system connections are not broken or put at risk by a reduction in the level of mechanical protection.

190.3 Advice of damage

If a ***generator*** becomes aware that an item forming part of the ***generator*** transformer earthing system of any of its ***Large Units*** is broken or damaged, then it must advise the relevant ***transmitter*** as soon as reasonably practicable thereafter.

190.4 Maintenance or repair

190.4.1 A ***generator*** must keep the relevant ***transmitter*** informed of any maintenance or repair activities undertaken in connection with the ***generator*** transformer earthing system of any of the ***generator's Large Units***.

190.4.2 The relevant ***transmitter*** must co-operate with a ***generator*** in the carrying out by that ***generator*** of any maintenance or repair activities in connection with the ***generator*** transformer earthing system of any of that ***generator's Large Units***.

200 REMOTE MONITORING AND CONTROL

200.1 Installation of remote monitoring and control equipment

200.1.1 The relevant ***transmitter*** may require:

(a) the provision in a ***CDU Power Station*** of equipment (called "***RME***") to enable the relevant ***transmitter*** to remotely monitor the performance parameters of each Centrally Dispatched ***Unit*** in that ***CDU Power Station***; and

(b) any ***RME*** already installed in a ***CDU Power Station*** to be upgraded, modified or replaced, by notice in writing to the relevant ***generator*** provided that the relevant equipment is consistent with the design capability of the relevant ***Unit***.

200.1.2 (clause deleted)

200.1.3 The relevant ***transmitter*** must include in any notice under clause 200.1.1 the functional requirements of the particular ***RME***.

200.1.4 If the relevant ***transmitter*** gives a notice under clause 200.1.1, then that ***transmitter*** and the relevant ***generator*** must negotiate in good faith in an endeavour to agree whether or not the relevant equipment is consistent with the design capability of the relevant ***Unit***.

200.1.5 If relevant ***transmitter*** and the relevant ***generator*** are unable to agree as to whether the relevant equipment is consistent with the design capability of the relevant ***Unit*** within 60 ***business days*** after the notice under clause 200.1.1 is given, then either the ***transmitter*** or the relevant ***generator*** may refer the matter to be resolved under the relevant ***transmitters transmission licence***.

200.1.6 A ***generator*** must comply with a notice under clause 200.1.1 unless the relevant ***transmitter*** agrees otherwise or it is determined pursuant to clause 200.1.5 that

the relevant equipment is inconsistent with the design capability of the relevant ***Unit***. Any ***RME*** installed under this clause 200 must comply with the relevant functional requirements.

200.1.7 (clause deleted)

200.1.8 (clause deleted)

200.1.9 (clause deleted)

200.2 Associated Equipment to be provided by a generator

200.2.1 A ***generator*** must provide appropriate and secure a.c. and d.c. electricity supplies for ***RME*** installed in relation to its Centrally Dispatched ***Units***. A ***generator*** must also ensure that appropriate and secure d.c. supplies are available for ***RME*** installed in relation to its Centrally Dispatched ***Units*** for at least 8 hours following total loss of ***supply*** at the ***points of connection*** for the relevant ***Unit***.

200.2.2 A ***generator*** must provide reliable transmission of signals between ***RME*** installed in any of its ***Power Station***s to a physical interface at a location within the relevant ***Power Station*** agreed by the relevant ***transmitter*** and the relevant ***generator***. A ***generator*** must allow the ***transmitter*** to arrange ***communication***s paths between that physical interface and a ***transmitter*** site.

200.2.3 (clause deleted)

200.3 Co-ordinated planning for power stations

200.3.1 A ***generator*** planning to:

upgrade, modify or replace any ***RME*** installed in one of its ***Power Station***s, must submit to the relevant ***transmitter*** a reasonable time prior to commencing the upgrade, modification or replacement, details of:

(a) the ***RME*** proposed to be installed in relation to the ***Unit*** or of the upgrading, modification or replacement proposed to occur; and

(b) the equipment which the ***generator*** is required to provide in relation to the ***Unit*** under clause 200.2, (including the manufacturer of the proposed equipment, the design of the proposed equipment, and any limits on the proposed equipment) (together in this clause 200.3 called the "**Design**"), which must comply with the functional requirements under clause 200.1.

200.3.2 A ***generator*** must provide such additional information in relation to the Design as the ***transmitter*** may reasonably request.

200.3.3 If the relevant ***transmitter*** believes that all or any part of the Design is inconsistent with the functional requirements under clause 200.1, then it may notify the relevant ***generator*** of that belief, giving reasons. If the ***transmitter*** does not give a notice under this clause in relation to a notice under clause 200.3.1 within 40 ***business days*** of receiving the relevant notice, then the ***transmitter*** will be deemed to have approved the Design set out in the relevant notice.

200.3.4 If the relevant ***transmitter*** gives a notice under clause 200.3.3, then the relevant ***generator*** and the relevant ***transmitter*** must negotiate in good faith concerning the Design. If the relevant ***generator*** and the relevant ***transmitter*** have not

agreed the Design within 30 ***business days*** after the relevant ***transmitter*** gives the notice under clause 200.3.3, then either the relevant ***transmitter*** or ***generator*** may refer the dispute to be resolved in accordance with the relevant clause in the relevant ***transmitter's transmission licence***.

200.3.5 A ***generator*** must ensure that any new or replacement ***RME*** in any of its ***Power Stations*** is tested prior to being placed in service in accordance with test procedures agreed with the relevant ***transmitter*** to ensure that it complies with the approved Design.

200.3.6 New or replacement ***RME*** must be installed at a time agreed between the relevant ***transmitter*** and the relevant ***generator***.

200.4 Co-operation

200.4.1 A ***generator*** and the relevant ***transmitter*** must co-operate in relation to the installation, maintenance, testing, sourcing of faults, upgrading, modification or replacement of ***RME*** and equipment required to be provided under clause 200.2.

200.4.2 A ***generator*** must not, and must procure that its ***Representative***s do not, interfere with ***RME***, the equipment the ***generator*** is required to provide under clause 200.2 or any electrical connections or wiring relating thereto without the prior written approval of the relevant ***transmitter***.

200.4.3 Where ***RME*** is installed at an existing ***power station*** as at 3 October 1994 which also allows the relevant ***transmitter*** to remotely monitor the performance of a ***transmitter's*** transmission facilities located within or adjacent to the ***power station***, the relevant ***generator*** must keep that equipment in place until the equipment requires material upgrading, modification or replacement and the relevant ***generator*** and ***transmitter*** and ***transmitter*** must co-operate in relation to the maintenance, testing, sourcing of faults, upgrading, modification or replacement of that equipment and associated ***transmitter*** equipment.

200.5 Existing power stations

200.5.1 Where:

the relevant ***transmitter*** requires ***RME*** already installed in a ***Power Station*** to be upgraded, modified or replaced, under clause 200.1, then the relevant ***transmitter*** must reimburse the relevant ***generator*** for the reasonable costs and expenses incurred by that ***generator*** as a direct result of installing or upgrading, modifying or replacing the relevant ***RME*** and associated equipment required for the purposes of clause 200.2.

200.5.2 If a ***generator's CDU Power Station*** has ***RME*** installed in it as at 3 October 1994, then the ***generator*** must keep that equipment in place and must comply with clauses 11, 200.2 and 200.4 in relation to that equipment notwithstanding that the relevant ***transmitter*** has not given a notice under clause 200.1.1 in relation to the relevant equipment.

210 DATA PROVISION BY GENERATORS

210.1 Analytic models

210.1.1 A ***generator*** must provide to ***VENCorp*** at its option either:

(a) analytic models of any of its ***Large Units*** (including its ***Excitation Control System*** and ***Governor System***) for use in System analysis; or

(b) such information as will enable ***VENCorp*** to develop such models,

as soon as practicable (but in any event within 60 ***business days***) after ***VENCorp*** requests the information.

210.1.2 A ***generator*** must provide to ***VENCorp*** such further information as ***VENCorp*** reasonably requests for the purpose of developing and using the analytic models referred to in clause 210.1.

210.2 (clause deleted)

210.3 Provision of modelling information to generators

VENCorp must provide to a ***generator*** such details of the analytic model referred to in clause 210.1 for any of that ***generator's Large Units*** as is reasonably requested by the ***generator***.

220 RELIABILITY DATA

220.1 On or before 31 July each year, a ***generator*** must provide to ***VENCorp*** the following information in relation to each of its ***Large Units*** for the ***Financial Year*** ending 30 June of that year:

(a) when and for how long forced out of service;

(b) when and for how long scheduled out of service;

(c) when, how long and by how much forced reduction in capability; and

(d) when, how long and by how much scheduled reduction in capability.

220.2 For the avoidance of doubt, information provided to ***VENCorp*** under clause 220.1 is ***Confidential Information*** of the ***generator*** providing it and clause 390 (Confidentiality) applies to it.

230 (clause deleted)

PART 5 SCHEDULING AND DISPATCH

240 (clause deleted)

241 DISPATCH INTENTIONS

241.1 Non-Centrally Dispatched Units

241.1.1 (clause deleted)

241.1.2 On or before 31 July each year, each ***distributor*** must submit to ***VENCorp*** a list of all Embedded ***Units*** directly connected to the ***distributor's distribution network***, together with the following information in respect of each such Embedded ***Unit***:

(a) (clause deleted)

(b) the aggregate amount of Energy generated by the ***Unit*** and exported at a ***point of connection*** to the ***distributor's distribution network***;

(c) (clause deleted)

during the preceding ***Financial Year***.

250 DISPATCH

250.1 (clause deleted)

250.2 (clause deleted)

250.3 (clause deleted)

250.4 Action Required from Generators

250.4.1 A ***system participant*** must comply with a ***Dispatch Instruction*** given to it by VNSC unless to do so would, in the ***system participant's*** reasonable opinion, be a hazard to the safety of persons or materially risk damaging equipment.

250.4.2 (clause deleted)

250.4.3 (clause deleted)

250.4.4 (clause deleted)

250.4.5 (clause deleted)

250.5 (clause deleted)

250.6 (clause deleted)

250.7 (clause deleted)

250.8 Network Support Services

250.8.1 ***VENCorp*** may enter into an agreement with a ***connected participant*** or ***retailer*** to provide network support services.

250.8.2 ***VENCorp*** must only issue an instruction to a ***connected participant*** or ***retailer*** to provide a network support service with the prior agreement of ***NEMMCO***.

PART 6 PLANNING

260 PLANNING INFORMATION FROM DISTRIBUTORS AND EHV CONSUMERS

260.1 Forecasts for Points of Connection

260.1.1 A ***distributor*** or ***EHV consumer*** must, before 1 June each year, provide ***VENCorp*** with the information referred to in Attachment 8 in relation to each of their ***points of connection***. If there is significant subsequent change of the forecasts affecting the planning functions, the ***distributor*** or ***EHV consumer*** must, before 1 December each year, advise ***VENCorp*** the change.

260.1.2 A ***distributor*** or ***EHV consumer*** must use best endeavours to provide accurate information under clause 260.1.1 (having regard in the case of a ***distributor***, to, amongst other things, the likely generation by Embedded Generators connected to its ***distribution network*** and the likely demand of ***retailers supplying*** to ***customers*** connected to its ***distribution network***).

260.1.3 On or before 30 September each year, ***VENCorp*** must prepare and make available to ***system participants*** aggregate forecasts of demand for ***Active Power*** and ***Reactive Power*** for each ***Terminal Station*** for each of the following 10 ***Financial Year***s.

260.2 (clause deleted)

270 MAINTENANCE FORECASTS

270.1 Generators

On or before 15 October each year, each ***generator*** must submit to ***VENCorp*** for each of its ***Large Units***:

(a) a ***Maintenance Program*** for the relevant ***Unit*** for the following ***Financial Year***;

(b) an indicative ***Maintenance Program*** for the relevant ***Unit*** for each of the 5 ***Financial Year*s** following the ***Financial Year*** to which the ***Maintenance Program*** submitted under paragraph (a) relates;

(c) estimated reliability data of the kind specified in clause 220.1 (a) to (d) for the relevant ***Unit*** for each of the following 6 ***Financial Year*s** for use in modelling studies; and

(d) anticipated aggregate Energy capability for the relevant ***Unit*** for each of the following 6 ***Financial Year*s**.

270.2 (clause deleted)

270.3 (clause deleted)

270.4 Good faith

Information provided under clause 270.1 must be prepared and given in good faith.

270.5 Changes

270.5.1 If a ***generator*** becomes aware of any material change to any information it provided under clause 270.1 or this clause 270.5, then the ***generator*** must promptly notify ***VENCorp*** in writing of that change.

270.5.2 (clause deleted)

270.6 (clause deleted)

280 ANNUAL PLANNING REVIEW

280.1 On or before 30 April in each year, ***VENCorp*** must publish a review (called the "***Annual Planning Review***") of the adequacy of the ***shared network*** to meet the long term requirements of Victorian electricity consumers.

280.2 In preparing the ***Annual Planning Review***, ***VENCorp*** must consider the following factors:

(a) the most recent information provided under clause 260.1 prior to the date of the ***Annual Planning Review***;

(b) the most recent information provided under clause 270.1 and 270.5 and the ***NEC*** prior to the date of the ***Annual Planning Review***;

(c) possible scenarios for growth in the demand of Victorian electricity consumers;

(d) possible scenarios for growth in generation available to meet that demand; and

(e) committed projects for additional generation or augmentation of a ***transmission network*** or a ***distribution network***.

280.3 ***VENCorp*** must provide or send a copy of the most recent ***Annual Planning Review*** to any person requesting it, and may impose a reasonable charge upon the person to recover its costs incurred in producing another copy of the ***Annual Planning Review*** and posting it to the person (except if the person is ***NEMMCO***, ***NECA***, a ***generator***, ***transmitter*** or ***distributor***).

281 TRANSMISSION CONNECTION PLANNING REPORT

281.1 The ***distributors*** must jointly publish an annual report called the "**Transmission Connection Planning Report**", in consultation with ***VENCorp*** and ***transmitters*** on how they economically and efficiently plan to meet the predicted demand of their ***distribution networks*** from connections to the ***transmission network*** over the following ten years. The report should include the following information:

(a) the historical and forecast demand from transmission connections;

(b) an assessment of the magnitude, probability and impact of loss of load at each transmission connection;

(c) each ***distributor's*** planning standards for transmission ***connection assets***;

(d) a description of feasible options for meeting forecast demand at each transmission connection, including the identification of opportunities for embedded generation and demand management; and

(e) for those transmission connections in respect of which a preferred option for meeting forecast demand has been identified, a description of that option, including its estimated cost, to a reasonable level of detail.

281.2 ***VENCorp*** and ***transmitters*** must comply with a request from a ***distributor*** for information, which the ***distributor*** reasonably requires to fulfil its obligations under clause 281.1.

281.3 Each ***distributor*** must publish the Transmission Connection Planning Report, and on request, provide a ***customer*** with a copy.

PART 7 REPORTING AND INFORMATION

290 REGISTERED DATA

290.1 Database

VENCorp must establish and maintain a computerised ***database*** (called the "**Database**") for recording information concerning equipment connected to the ***System***.

290.2 Registered Data

290.2.1 Each ***system participant*** must contribute information to the ***Database*** concerning that Participant's equipment in accordance with this clause.

290.2.2 The information required from:

(a) a ***generator*** in relation to each of its ***Large Units*** is identified in Attachment 9;

(b) a ***distributor*** in relation to its ***distribution network*** is identified in Attachment 9;

(c) an ***EHV consumer*** in relation to each of its ***points of connection*** to a ***transmission network*** is identified in Attachment 9;

(d) a ***transmitter*** in relation to its ***transmission network*** is identified in Attachment 9.

290.2.3 A ***system participant*** planning to connect its ***Large Unit***, ***distribution network***, ***substation*** or ***transmission network*** (as the case may be) to a ***transmission network*** at a new ***point of connection*** or by augmenting an existing ***point of connection*** must provide to ***VENCorp*** the relevant information referred to in clause 290.2.2 not less than 3 months prior to the ***point of connection*** or augmentation coming into service.

290.2.4 A ***system participant*** planning to connect a ***Large Unit*** to a ***distribution network*** at a new ***point of connection*** or by augmenting an existing ***point of connection*** must provide to ***VENCorp*** the relevant information referred to in clause 290.2.2 not less than 3 months prior to the ***point of connection*** or augmentation coming into service.

290.2.5 A ***transmitter*** must provide to ***VENCorp*** the information referred to in clause 290.2.2 in relation to an augmentation to its ***transmission network*** not less than 3 months prior to the augmentation coming into service.

290.2.6 If a ***system participant*** does not provide information required under clause 290.2.3, 290.2.4 or 290.2.5, then ***VENCorp*** may withhold permission for the ***system participant*** to connect to the ***transmission network*** or a ***distribution network***, or direct a ***transmitter*** that the relevant augmentation to a ***transmission network*** not be connected (as the case may be), until:

(a) the ***system participant*** has provided the relevant information to ***VENCorp***; and

(b) a period of 3 months has expired since the last of the relevant information was provided.

290.2.7 Attachment 9 may be amended so as to:

(a) add new categories of information required from a particular ***system participant*** or class of ***system participants***; or

(b) vary or delete an existing category of information required from a class of ***system participants***,

by agreement between ***VENCorp*** and the particular Participant or class of ***system participants***.

290.2.8 Information contributed to the ***Database*** under this clause must comply with ***VENCorp's*** reasonable requirements as to accuracy and format.

290.3 Updating Registered Data

290.3.1 A ***transmitter*** must notify ***VENCorp*** promptly after it becomes aware that any information included in the ***Database*** (called "***Registered Data***") relating to ***transmission network*** is incorrect, giving details of the change to the ***Registered Data*** required to ensure that the ***Database*** is correct.

290.3.2 A ***transmitter*** must review the ***Registered Data*** relating to its ***transmission network*** at least once every ***Financial Year*** to ensure it is accurate. A ***transmitter*** must notify ***VENCorp*** of any review conducted under this clause 290.3.2.

290.3.3 If a ***transmitter*** gives a notice under clause 290.3.1, then that ***transmitter*** must provide such information in relation to the proposed change to the ***Registered Data*** as ***VENCorp*** reasonably requires.

290.3.4 If a ***transmitter*** gives a notice under clause 290.3.1, then ***VENCorp*** must amend the ***Database*** so that it is consistent with the notice within 10 ***business days*** after receiving the notice.

290.3.5 ***VENCorp*** must not amend the ***Database*** so as to vary or delete any ***Registered Data*** relating to a ***transmitter's transmission network*** except:

(a) with the prior approval of that ***transmitter*** to the variation or deletion;

(b) under clause 290.3.8; or

(c) if, under clause 290.3.9 a disagreement is referred for resolution in accordance with clause 410, then in accordance with the determination of the disagreement.

290.3.6 If ***VENCorp*** believes that any ***Registered Data*** is incorrect, then it may request further information concerning the relevant equipment from the relevant ***transmitter***. ***VENCorp*** must include in any request under this clause a statement of the reason(s) for its belief. A ***transmitter*** must provide any information reasonably requested by ***VENCorp*** under this clause 290.3.6.

290.3.7 If ***VENCorp*** believes that any ***Registered Data*** is incorrect, then it may notify the relevant ***transmitter*** that it intends to vary or delete that ***Registered Data***. ***VENCorp*** must include in any notice under this clause a statement of the reason(s) for its belief.

290.3.8 If the relevant ***transmitter*** does not notify ***VENCorp*** that it disagrees with the variation or deletion of that ***Registered Data*** within 10 ***business days*** of ***VENCorp*** giving the notice under clause 290.3.7, then ***VENCorp*** may vary or delete that ***Registered Data*** in the manner specified in the notice under clause 290.3.7.

290.3.9 If the relevant ***transmitter*** gives a notice under clause 290.3.8, then ***VENCorp*** and the relevant ***transmitter*** must negotiate in good faith in an endeavour to resolve their disagreement. If ***VENCorp*** and the relevant ***transmitter*** have not resolved their disagreement within 20 ***business days*** after the relevant ***transmitter*** gave the notice under clause 290.3.8, then either ***VENCorp*** or the relevant ***transmitter*** may refer the disagreement for resolution in accordance with the provisions of their respective ***transmission licences***.

290.4 Use of Registered Data and access to Registered Data

290.4.1 ***Registered Data*** must only be used by ***VENCorp*** for the purposes of planning, modelling and performance assessment of the ***System***.

290.4.2 ***VENCorp*** must provide to a ***system participant*** any ***Registered Data*** relating to that Participant's ***Large Unit***, ***distribution network***, ***substation*** or ***transmission network*** (as the case may be) within 5 ***business days*** of being requested to do so by the relevant ***system participant***.

290.5 Backup information

290.5.1 A ***system participant*** must use best endeavours to keep records or copies of any information or documents used for the purposes of obtaining or deriving any ***Registered Data*** relating to that ***system participant's*** equipment.

290.5.2 The sorts of information which are referred to in clause 290.5.1 include specifications, test results, measurements, manufacturer's data and ratings data.

290.6 (clause deleted)

300 (clause deleted)

310 INFORMATION ON SYSTEM INCIDENTS

310.1 Information relating to System Incidents

A ***system participant*** must provide to ***VENCorp*** such information relating to the performance of its equipment during and after a particular ***System Incident*** as ***VENCorp*** reasonably requires for the purposes of analysing and/or reporting on that ***System Incident***.

310.2 Review of System Incidents

310.2.1 ***VENCorp*** may conduct a review of a particular ***System Incident*** in order to assess the adequacy of Victorian ***System*** performance in regards to the particular incident.

310.2.2 A ***system participant*** must co-operate with ***VENCorp*** in any review conducted by ***VENCorp*** under clause 310.2.1 (including making available to ***VENCorp*** relevant records and information).

310.3 Provision of information to System Participants

VENCorp must provide to a ***system participant*** such information or reports relating to the performance of that Participant's equipment during ***System Incidents*** as that ***system participant*** reasonably requests.

310.4 Other information

A ***system participant*** must provide to ***VENCorp*** on an annual basis such information relating to the performance of that ***system participant's*** equipment as is reasonably required by ***VENCorp*** for the purposes of preparing reports concerning the performance of the Victorian electricity industry required under the ***EIA*** or by the ***Office***.

PART 8 TESTING AND OTHER TECHNICAL REQUIREMENTS

(part 8 clauses deleted)

PART 9 GENERAL

341 (clause deleted)

350 (clause deleted)

360 (clause deleted)

370 (clause deleted)

380 (clause deleted)

390 CONFIDENTIALITY

390.1 General obligation or confidence

A ***system participant*** must keep ***Confidential Information*** confidential and use best endeavours to protect and preserve the confidential nature of the ***Confidential Information***.

390.2 Particular obligations

A ***system participant***:

(a) must not disclose Confidential Information to any person except as permitted by this Code;

(b) must only use or reproduce Confidential Information for the purpose for which it was disclosed or another purpose contemplated by a Code;

(c) must not permit unauthorised persons to have access to Confidential Information; and

(d) must use best endeavours to ensure that any person to which it has disclosed Confidential Information does not do or refrain from doing anything which if done or not done by that Participant would constitute a breach of paragraph (a), (b) or (c).

390.3 Exceptions

This clause does not prevent:

(a) **(public domain)**: the disclosure, use or reproduction of information if the relevant information is at the time generally and publicly available other than as a result of breach of confidence by the ***system participant*** wishing to disclose, use or reproduce the information or one of its ***Disclosees***;

(b) (employees and advisers): the disclosure of information by a *system participant* or a *system participant's Disclosees* to:

(1) an employee or officer of a ***system participant*** or a ***Related Body Corporate*** of a ***system participant***; or

(2) a legal or other professional adviser, auditor or other consultant (in this clause 390 called "Consultants") of a ***system participant***,

requiring the information for the purposes of a Code, or the effective operation of the Victorian electricity supply industry or for the purpose of advising the relevant ***system participant*** in relation thereto and the use or reproduction of information by any such ***Disclosee*** for those purposes;

(c) **(consent)**: the disclosure, use or reproduction of information with the consent of the person or persons who provided the relevant information;

(d) **(law)**: the disclosure, use or reproduction of information to the extent required by law or by a lawful requirement of:

(1) any government or governmental body, authority or agency having jurisdiction over a ***system participant*** or its Related Bodies Corporate; or

(2) any stock exchange having jurisdiction over a ***system participant*** or its Related Bodies Corporate;

(e) **(disputes)**: the disclosure, use or reproduction of information if required in connection with legal proceedings, arbitration, expert determination or other dispute resolution mechanism relating to a Code, or the Victorian electricity supply industry or for the purpose of advising a person in relation thereto;

(f) **(trivial)**: the disclosure, use or reproduction of information which is trivial in nature;

(g) **(safety)**: the disclosure of information if required to protect the safety of personnel or equipment;

(h) **(potential investment)**: the disclosure, use or reproduction of information by or on behalf of a ***system participant*** to the extent reasonably required in connection with the Participant's financing arrangements, investment in that ***system participant*** or a disposal of that ***system participant's*** assets;

(i) **(*Office*)**: the disclosure of information to the ***Office*** and the disclosure, use or reproduction of information by the ***Office***;

(j) **(reports)**:the disclosure, use or reproduction of information of an historical nature in connection with the preparation and giving of reports under this Code ;

(k) **(aggregate sum)**: the disclosure, use or reproduction of information as an unidentifiable component of an aggregate sum;

(l) **(interconnected system)**: the disclosure, use or reproduction of information relating to the dynamic modelling of the Eastern Australian interconnected power system by ***VENCorp*** and the use or reproduction of that information by any ***Disclosee***; or

(m) **(National Electricity Market)**: the disclosure, use or reproduction of information required by the National Electricity Code or the ***National Electricity Law*.**

390.4 Conditions

In the case of a disclosure under clause 390.3(b), 390.3(h) or 390.3(l), the ***system participant*** wishing to make the disclosure must inform the proposed recipient of the confidentiality of the information and must take customary precautions to ensure that the recipient keeps the information confidential.

390.5 VENCorp

For the purpose of this clause 390, "***system participant***" includes ***VENCorp***.

400 PAYMENTS

400.1 Contractual provisions to apply if possible

If an amount is payable under this Code and there is a ***Connection Agreement*** or ***Use of System Agreement*** between the person to which the amount is payable and the person by which the amount is payable, then the provisions of that agreement relating to the manner in which payments under that agreement are to be made also apply to payments under this Code (with any necessary changes).

400.2 Where there are no relevant contractual provisions

If clause 400.1 does not apply:

(a) a person to which an amount is payable under this Code in respect of a month may submit an invoice to the person liable to pay that amount at any time after the expiration of that month, setting out the amount payable and details of why it is payable and how it was calculated;

(b) subject to paragraph (c), a person liable to pay an amount under this Code must pay the person to which the amount is payable within 10 ***business days*** after receiving the relevant invoice;

(c) a party may deduct from an amount which it is required to pay to another party (in this clause 400.2 called "**Second Party**") under paragraph (b) in respect of a month an amount which the Second Party would otherwise be required to pay to it under paragraph (b) in respect of that month;

(d) all payments that are to be made under this Code must be:

(1) paid in Australian dollars in immediately available funds into a Victorian bank account designated in writing by the party to receive that payment or by such other means as may be agreed; and

(2) rounded to the nearest cent.

410 (clause deleted)

420 REVIEW OF SYSTEM CODE AND MODIFICATION TO SYSTEM CODE

420.1 Amendment by the Office

420.1.1 Subject to clause 420.1.2, this Code may be amended from time to time by the ***Office*** applying the ***Office's*** common seal to a document detailing the amendment.

420.1.2 Unless the ***Office*** is satisfied on reasonable grounds that an amendment is urgently required, the ***Office*** will not amend this Code unless and until:

(a) all ***distributors***, ***generators***, ***transmitters***, ***EHV participants***, ***retailers*** and other interested persons have been given a reasonable opportunity to make representations to the ***Office*** concerning the amendment; and

(b) those representations are taken into account.

420.1.3 (clause deleted)

420.1.4 (clause deleted)

420.2 Modifications to System Code

420.2.1 (clause deleted)

420.2.2 Where this Code provides that the manner in which a particular provision of the Code applies to a particular ***system participant*** may be modified or varied by agreement between that ***system participant*** and another person, and such an agreement is entered into, then the relevant provision applies to the relevant ***system participant*** as modified or varied by that agreement.

420.2.3 Where Attachment 12 of this Code provides that the manner in which a particular provision of the Code applies to a particular ***system participant*** is modified or varied, then the specified provision applies to the specified ***system participant*** as modified or varied by Attachment 12.

430 SUB-CODES

430.1 A ***Sub-code*** may only be amended by agreement between all persons which:

(a) pursuant to the terms of licences granted under section 162 of the ***EIA*** or a direction of the ***Office***, must comply with this Code (in this clause 430 called "**Licensees**"); and

(b) are directly affected by the amendment.

430.2 For the purposes of clause 430.1(b), ***VENCorp*** will be regarded as being directly affected by any amendment to a ***Sub-code***

430.3 Subject to clause 430.4, ***VENCorp*** must promptly notify the ***Office*** and each Licensee of an amendment to a ***Sub-code*** within 5 ***business days*** of the amendment.

430.4 If ***VENCorp*** is not a party to an agreement to amend a ***Sub-code***, then the parties to the agreement must notify ***VENCorp***, the ***Office*** and each Licensee of the amendment within 5 ***business days*** of the amendment.

440 NO WAIVER OF CODE REQUIREMENTS

Subject to clause 420.2.2, the fact that:

(a) ***VENCorp*** or a ***transmitter*** nominates or fails to nominate performance requirements, parameters, settings or any other matter as contemplated under this Code:

(b) ***VENCorp*** or a ***transmitter*** endorses, approves, authorises, agrees to, examines or comments upon or fails to endorse, approve, authorise, agree to, examine or comment upon any proposal, procedures, notice, design, program, test result, report or other information submitted to it by a ***system participant***; or

(c) ***VENCorp*** or a ***transmitter***, or any ***Representative*** of ***VENCorp*** or a ***transmitter***, attends any test, audit or other meeting or discussion,

does not relieve (and cannot be relied upon by a ***system participant*** to relieve) a ***system participant*** of any obligation or responsibility under this Code or

another Code or imply any acceptance or assumption by ***VENCorp*** or the ***transmitter*** of any obligation or responsibility of the ***system participant*** under this Code or another Code.

ATTACHMENT 1 SYSTEM CODE GLOSSARY (CLAUSE 1.1)

Terms	Meaning
Active power	Is the rate at which electrical ***Energy*** is generated or Supplied (as the case may be).
Aggregate connection	In relation to a ***distributor*** or ***EHV consumer*** means all the ***points of connection*** having the same nominal supply voltage normally connected to the same ***point of supply***. A ***distributor*** or ***EHV consumer*** may have more than one ***Aggregate Connection***, and more than one ***point of supply***, at a particular ***Terminal Station***.
Annual Planning Review	Has the meaning given in clause 280.1.
Apparent Energy	Means the time integral of the scalar product of the root mean square voltage and the root mean square current summated for all 3 phases.
Automatic Reclose Equipment	In relation to a ***feeder*** or Transmission line equipment is equipment which recloses the ***feeder's*** or Transmission line's circuit breakers at the relevant ***Terminal Station*** following their opening as a result of a ***feeder*** or Transmission line fault and unless otherwise agreed between: (a) in the case of a ***feeder***, the relevant ***distributor*** and ***transmitter***; and (b) in the case of a Transmission line, ***VENCorp*** and the relevant ***transmitter*** or ***transmitters***, is single shot three phase auto reclose.
Benchmark Test	Has the meaning given in clause 150.4.2.
Business Day	Means a day on which banks are open for general banking business in Melbourne, excluding a Saturday or Sunday.
CDU Power Station	In relation to a ***generator***, is a ***power station*** within which any of that ***generator's*** centrally dispatched ***units*** is located.
Codes	This Code, the ***Wholesale Metering Code*** (until revoked), the ***Distribution Code*** and the ***Retail Tariff Metering Code***.
Communication	Means any notice, agreement, consent, direction, representation, declaration, advice, statement or other communication required or given under or in accordance with this Code.
Confidential Information	In relation to a ***system participant*** means any information which is or has been provided to that

	system participant under or in connection with this Code and is of a confidential nature or information which is derived from any such information.
Connected Participants	In relation to a: (a) ***point of connection*** between 2 ***transmission networks*** means the ***transmitters*** which are licensed to use those ***transmission networks*** to ***transmit*** electricity under ***Transmission Licences***; and (b) ***point of connection*** to a ***transmission network*** means, subject to paragraph (a): (1) the ***transmitter*** which is licensed to use that ***transmission network*** to ***transmit*** electricity under a ***Transmission Licence***; and (2) the ***generator***, ***distributor*** or ***EHV consumer*** whose ***Unit***, ***distribution network*** or ***substation*** (as the case may be) is electrically connected to the ***transmission network*** at that ***point of connection***.
Connection Agreement	In relation to a ***point of connection*** to a ***transmission network*** is the agreement relating to that ***point of connection*** between the relevant ***transmitter*** and ***distributor***, ***generator***, ***EHV consumer*** or other ***transmitter*** whose ***distribution network***, ***Unit***, ***substation*** or ***transmission network*** (as the case may be) is connected to the relevant ***transmission network*** at that ***point of connection***.
Connection Assets	Those components of a ***transmission network*** which are used to provide connection services under a ***Connection Agreement***.
Customer	In relation to a ***distributor***, any ***EHV consumer*** or purchaser of electricity from a ***distributor*** or ***retailer***. In relation to a ***transmitter***, any ***distributor***, ***generator*** or ***VENCorp***.
Database	Has the meaning given in clause 290.1.
Demand Reduction Committee	The committee established under clause 80.2.3.
De-Synchronise	The act of electrically disconnecting a ***Unit*** from the ***System***.
Disclosee	In relation to a ***system participant*** means a person to which that ***system participant*** discloses ***Confidential Information***.
Disconnect	The operation of switching equipment so as to prevent the flow of electricity at a ***point of connection***.

Dispatch	The process of controlling the electrical output of a ***Unit***.
Dispatch Instruction	An instruction given by ***VENCorp*** under clause 250.1.1
Distributor	A holder of a ***Distribution Licence*** or a person who has been exempted from the requirement to obtain such a licence under section 160 of the ***EIA*** but which is required to comply with this Code by the exemption or a direction of the ***Office*** under section 26 of the ***ORG Act***.
Distribution Code	A code of that name certified by the ***Office*** .
Distribution Feeder	A power line, including underground cables, that forms part of a ***distribution network*** that directly Supplies a ***distribution network*** from a ***transmission network***.
Distribution Licence	A licence to distribute and ***supply*** electricity granted under section 162 of the ***EIA***.
Distribution Network	In relation to a ***distributor*** is a system of electric lines (generally at nominal voltage levels of 66kV or below) which that ***distributor*** is licensed to use to distribute electricity for ***supply*** under its ***Distribution Licence***.
EHV Consumer	A person which is supplied electricity across a ***point of connection*** to a ***transmission network*** (other than a ***distributor***) and includes a ***trader*** which is licensed under a ***trader*** Licence to sell electricity purchased in accordance with the Pool Rules to another person.
EHV Participant	An ***EHV consumer*** (other than a ***generator***), a ***transmitter*** or a ***distributor*** taking ***supply*** at a nominal supply voltage of greater than 66kV.
EHV Protection Equipment	Equipment used to protect: (a) ***points of connection*** to a ***transmission network*** with a nominal voltage of more than 66kV and equipment associated with such ***points of connection***; or (b) equipment forming part of the ***transmission network***.
EIA	Means the Electricity Industry Act 1993.
Embedded Unit	A ***Unit*** connected directly to a ***distribution network*** that has an installed capacity of more than 1 MW.
Emergency Demand Reduction Procedures	The procedures referred to in clause 80.2.
Energy	Electrical ***energy*** measured in ***MWh***.

Excitation Control System	In relation to a ***Unit*** means the automatic control system that provides the field excitation for the ***generator*** of the ***Unit*** (including excitation limiting devices and any power system stabiliser).
Existing Units	Has the meaning given in clause 150.4.2.
Facility	In relation to: (a) a ***generator***, is any of that ***generator's Power Station***s; and (b) in relation to a ***distributor*** or ***EHV consumer***, is any premises in which is located a ***point of connection*** at which that ***distributor's*** or ***EHV consumer's distribution network*** or ***substation*** (as the case may be) is connected to a ***transmission network*** or associated equipment.
Feeder	A ***distribution feeder*** or a ***subtransmission feeder***.
Financial Year	Means a period commencing on 1 July in one calendar year and terminating on 30 June in the following calendar year (except in relation to the ***Financial Year*** ending 30 June 1995 which commences on 3 October 1994).
Generator	A holder of a ***Generation Licence*** or a ***Trader Licence*** or a person who has been exempted from the requirement to obtain such a licence under section 160 of the ***EIA*** but which is required to comply with this Code by the exemption or a direction of the ***Office*** under section 26 of the ***ORG Act***.
Generated Output	In relation to a ***Unit*** at any time means the ***Active Power*** generated by a ***Unit*** at that time (measured at the relevant ***generator*** terminals).
Generation Licence	A licence to generate electricity for ***supply*** or sale granted under section 162 of the ***EIA***.
Governor System	The automatic control system which regulates ***energy*** input (for example, steam, gas or water) into the engine or turbine of a ***Unit***.
GTR	The Generator Technical Requirements referred to in clause 150.2.
HV Customer	Any user of electricity directly connected to the HV network or ***distribution network***
HV Protection Committee	The committee established under clause 100.4.4.
HV Protection Equipment	Equipment used to protect ***points of connection*** to a ***transmission network*** with a nominal supply voltage of 66kV and below and equipment associated with such ***points of connection***.

HV Protection Sub-code	Is the ***Sub-code*** referred to in clause 100.4.
Large Unit	In relation to a ***generator,*** is any of the ***generator's Units*** which: (a) is a Centrally Dispatched ***Unit***; or (b) is directly connected to a ***transmission network*** and has an installed capacity of 10 MW or more; or (c) is directly connected to a ***distribution network*** and: (1) has an installed capacity of 30 MW or more; or (2) is located in a ***power station*** and the ***Units*** located in that ***power station*** have in aggregate an installed capacity of 60 MW or more.
Load Shedding	Occurs when the load of one or more ***customers*** is interrupted otherwise than as a demand side bid in the ***NEM***.
Maintenance Program	In respect of equipment for a period means a program describing: (a) in general terms the planned maintenance work to be carried out on that equipment during that period; and (b) the duration and timing of planned ***Outages*** of more than 48 hours duration in respect of that equipment during that period.
Maximum Demand	In relation to a ***distributor*** or ***EHV consumer*** at a particular ***point of supply*** is the maximum coincident summated ***Energy*** supplied to that ***distributor*** or ***EHV consumer*** at ***points of connection*** associated with that ***point of supply*** for any half hour (or 15 minute intervals) that has been recorded up to the time the calculation is made.
MWh	Megawatt hours.
MVArh	Megavar hours.
NEC	the Code approved in accordance with section 6(1) of the ***National Electricity Law*** as amended from time to time;
NECA	the National Electricity Code Administrator Limited ACN 073 942 775.

National Electricity Law	the National Electricity (Victoria) Law which applies in Victoria as a result of the operation of section 6 of the National Electricity (Victoria) Act 1997 (as amended from time to time).
NEM	the market for wholesale trading in electricity operated by ***NEMMCO*** under the National Electricity Code.
NEM commencement date	the date upon which the market for wholesale trading in electricity operated by ***NEMMCO*** under the National Electricity Code commenced, being 00:00 hours on 13 December 1998.
NEMMCO	National Electricity Market Management Company Limited ACN 072 010 327.
Negative Sequence Voltage	Is a measure of phase-to-phase voltage unbalance and is defined in **Elements of Power System Analysis** by William D Stevenson Jr (McGraw Hill International, Fourth Edition, 1982).
Network Agreement	In relation to a ***transmission network*** is the agreement relating to that ***transmission network*** between ***VENCorp*** and the ***transmitter*** licensed to use that ***transmission network*** to ***transmit*** electricity under a ***Transmission Licence***, which agreement is entered into under the relevant ***Transmission Licence***.
New Units	Has the meaning given in clause 150.4.2.
Office	Means the Office of the Regulator-General established under the ***ORG Act***.
ORG Act	Office of the Regulator-General Act 1994.
Outage	Any full or partial unavailability of equipment.
PCA Systems	In relation to a ***Unit***, means such of the systems described in Attachment 6 which are installed in or in relation to the ***Unit***.
Periodic Tests	Has the meaning given in clause 150.4.10.
Point of Connection	In relation to: (a) a ***transmitter***, is the point at which its ***transmission network*** is electrically connected to another ***transmission network***, a ***distribution network*** or a ***substation***; (b) a ***generator***, is the point at which one or more of its ***Units*** or auxiliary equipment is electrically connected to a ***transmission network*** or a ***distribution network***; (c) a ***distributor***, is the point at which its ***distribution network*** is electrically connected to a ***transmission network***; and

(d) an ***EHV consumer***, is the point at which one of its ***substations*** is electrically connected to a ***transmission network***,

for the purposes of transferring electrical ***energy***, as set out in the relevant ***Connection Agreement***.

Point of Supply

In relation to a ***point of connection*** is the high voltage or extra high voltage bus in the ***supply Terminal Station*** electrically nearest the ***point of connection*** at which other ***points of connection*** are, or may be, supplied from the ***Terminal Station***.

Power Factor

For a 15 minute period is determined in accordance with the following formula:

$$\frac{\textit{MWh} \text{ delivered in the 15 minute period}}{\text{MVAh delivered in the 15 minute period}}$$

where:

MWh is the ***Energy*** delivered for the 15 minute period; and

MVAh is the ***Apparent Energy*** for the 15 minute period. The MVAh for a 15 minute period is determined in accordance with the following formula:

$$\text{MVAh} = (\textit{MWh} * \textit{MWh} + \textit{MVArh} * \textit{MVArh})^{0.5}$$

where ***MVArh*** is the ***Reactive Energy*** delivered in the same 15 minute period and ***MWh*** has the meaning given above.

Power Station

In relation to a ***generator***, is a ***power station*** within which any of that ***generator's Large Units*** is located.

Reactive Energy

Is the square root of the difference between the square of the ***Apparent Energy*** and the square of the ***Energy*** measured over the same period.

Reactive power

Is the rate at which ***Reactive Energy*** is generated or supplied (as the case may be).

Registered Data

Has the meaning given in clause 290.3.1.

Related Body Corporate

In relation to a body corporate, means a body corporate that is related to the first-mentioned body by virtue of section 50 of the Corporations Law.

Representative

In relation to a person, means any employee, agent or consultant of:

(a) that person; or

(b) a ***Related Body Corporate*** of that person; or

(c) a third party contractor to that person.

Retailer	A holder of a ***Retail Licence*** or a person who has been exempted from the requirement to obtain such a licence under section 160 of the ***EIA*** but which is required to comply with this Code by the exemption or a direction of the ***Office*** under section 26 of the ***ORG Act***.
Retail Licence	A licence granted under section 162 of the ***EIA*** to sell electricity otherwise than through the ***Pool*** (for the period up to ***NEM commencement date***) or the ***NEM*** (for the period from ***NEM commencement date)***.
Retail Tariff Metering Code	The code of that name approved by the ***Office***.
RME	Has the meaning given in clause 200.1.1.
Secondary Systems	In relation to a ***substation*** are the systems identified in Attachment 4.
Secure System	The ***System*** is in a secure operating state and has the meaning given in clause 4.2.4 of the ***NEC***.
Shared Transmission Network	A ***transmission network*** excluding ***connection assets.***
Sub-codes	The ***Emergency Demand Reduction Procedures*** and the ***HV Protection Sub-code***.
Substation	In relation to an ***EHV participant*** or an ***EHV consumer*** which is not an ***EHV participant***, is a ***facility*** for switching or transforming electricity supplied to that ***EHV participant*** or ***EHV consumer*** or to another person on behalf of that ***EHV participant*** or ***EHV consumer*** which is directly connected to a ***transmission network***.
Substation RME	Has the meaning given in clause 132.7.1.
Subtransmission Feeder	A power line from a ***Terminal Station*** which supplies a zone ***substation*** or a power line between zone ***substations***.
Supply	In relation to electricity, means the delivery of electricity.
System	The network for the generation, transmission, distribution and ***supply*** of electricity operated as an integrated power system (including ***Units***, ***distribution networks*** and ***transmission networks***).
System Incident	Means an incident that adversely affects: (a) the ***transmission network***; (b) ***Unit***; or (c) ***Secure System***.
System Operating Procedures	The procedures to be followed by ***system participants*** in carrying out operating, maintenance and testing activities on or in relation to primary and secondary equipment directly connected to or forming part of the ***transmission network*** or ***points of connection***.

System Participant	A ***transmitter***, ***distributor*** or ***EHV consumer*** or a ***generator*** with a ***Large Unit***.
Terminal Station	A ***facility*** used for transforming or switching electricity forming part of a ***transmission network*** and which is not a ***power station*** switchyard.
Threat to Secure System	A condition or situation which significantly reduces the ability of ***NEMMCO*** to maintain a ***Secure System***.
Trader	A holder of a ***Trader Licence***.
Trader Licence	A licence to sell electricity granted under section 162 of the ***EIA*** which is not a ***Generation Licence*** or a ***Retail Licence***.
Transmission Licence	A licence to ***transmit*** electricity granted under section 162 of the ***EIA***.
Transmission Network	In relation to a ***transmitter***, is an electricity transmission system in Victoria (generally at nominal voltage levels of 66kV or above), which that ***transmitter*** is licensed to use to ***transmit*** electricity under a ***Transmission Licence*** or the relevant ***transmitter*** may have an exemption to hold a ***Transmission Licence*** .
Transmit	In relation to electricity, means to transfer electricity in bulk.
Transmitter	A holder of a ***Transmission Licence*** or a person who has been exempted from the requirement to obtain such a licence under section 160 of the ***EIA*** but which is required to comply with this Code by the exemption or a direction of the ***Office*** under section 26 of the ***ORG Act***. For the purposes of this definition, ***VENCorp*** is not a ***transmitter***.
Unit	In relation to a ***generator***, an electricity ***generator*** and related equipment essential to the electricity ***generator's*** operation which together function as a single entity located within a licensed ***power station*** of that ***generator***. For the purposes of this definition, a licensed ***power station*** of a ***generator*** is: (a) if the ***generator*** is not a ***trader***, a ***power station*** at which the ***generator*** is licensed to generate electricity for ***supply*** and sale under a ***Generation Licence***; and (b) if the ***generator*** is a ***trader***, a ***power station*** at which the electricity which the ***generator*** is licensed to sell under a ***Trader Licence*** is generated.

	Where a ***generator*** which is a ***trader*** purchases the electricity which it is licensed to sell under a ***Trader Licence*** in accordance with the ***NEC***, that ***generator*** is deemed not to have a ***Unit***.
Use of System Agreement	In relation to a ***distributor***, ***EHV consumer*** or ***generator***, means the agreement between ***VENCorp*** and the relevant ***distributor***, ***EHV consumer***, ***retailer*** or ***generator*** relating to the operation and augmentation of the ***transmission networks***.
VENCorp	Victorian Energy Networks Corporation, the holder of the electricity ***transmission licence*** in relation to shared ***transmission network*** services.
Wholesale Metering Code	The code of that name certified by the ***Office***.

ATTACHMENT 2 RULES OF INTERPRETATION (CLAUSE 1.2)

1 **References to Code**: a reference to a clause, schedule, annexure or attachment is a reference to a clause of, or schedule, annexure or attachment to this Code and references to this Code include any schedule, annexure or attachment.

2 **Amendments of instruments**: a reference to:

(a) this Code, any other code, Australian Standard, guideline or instrument or any provision of any of them includes any variation, revision or replacement of that code, standard, guideline, instrument or provision; and

(b) a statute, ordinance, licence or other law includes regulations and other instruments under, and consolidations, amendments, re-enactments, extensions or replacements of that statute, ordinance, licence or law.

3 **Groups:** a reference to a thing (including, without limitation, an amount) is a reference to the whole and each part of it and a reference to a group of persons is a reference to any one or more of them.

4 **Persons:**

(a) the word "person" or "entity" include a natural person, firm, body corporate, partnership (whether limited or otherwise), joint venture, trust, an unincorporated association and an authority; and

(b) a reference to a person includes a reference to the person's executors, administrators, successors, substitutes (including, but not limited to, persons taking by novation) and assigns.

5 **Gender and plural**:

(a) a reference to one gender includes all genders; and

(b) the singular includes the plural and vice versa.

6&7 (clause deleted)

8 **Time references**: a reference to a fifteen minute period is a reference to any 15 minute period ending on the hour or on the quarter hour.

9 **Other forms of defined terms**: if a word or phrase is specifically defined in this Code, then other parts of speech and grammatical forms of that word or phrase have corresponding meanings.

10 **Hierarchy of Codes**: if a provision of this Code is inconsistent with a provision of another document which appears above this Code in the list below, the provision of that other document prevails to the extent of the inconsistency:

National Electricity Code
System Code
Wholesale Metering Code (until revoked)
Distribution Code
Retail Metering Code

11 **Status of Sub-codes:** if a provision of a ***Sub-code*** is inconsistent with a provision of this Code, the provision of this Code prevails to the extent of the inconsistency.

12 **Headings**: headings are inserted for convenience and do not affect the interpretation of this Code.

13 **Approval**: whenever in this Code the agreement, approval or consent of a person is required the agreement, approval or consent may be withheld at the person's sole discretion, delayed or subject to any condition.

14 **Including**: a reference to including means including without limitation.

15 **Units of measurement**: measurements are in Systeme Internationale (S.I.) units.

16 **Multiplication**: the symbol "*" requires a multiplication to be effected.

17 **Best endeavours:** In deciding whether a person has used their best endeavours, regard will be had to all relevant factors including whether the person has acted in good faith and has done what is reasonably necessary in the circumstances.

ATTACHMENT 3 (BLANK)

(blank)

ATTACHMENT 4 EHV PARTICIPANT SECONDARY SYSTEMS

(Clause 132.3 and definition of "Secondary Systems")

- ***EHV Protection Equipment,*** including equipment relating to ***points of connection*** and associated Transmission lines.
- ***Substation RME*** installed for remote monitoring.
- Any ***load shedding*** equipment.
- Any equipment provided for synchronising and remote synchronism check interlocks.
- Communication facilities associated with the above equipment.

ATTACHMENT 5 (BLANK)

(blank)

ATTACHMENT 6 PCA SYSTEMS

(Clauses 170 and 180 and the definition of "PCA Systems")

- ***Excitation Control System*** of the ***Unit***
- ***Governor System*** (including Remote Generation Control of the ***Unit***)
- ***EHV Protection Equipment*** in relation to ***points of connection*** in relation to the ***Unit***
- Generator, generator transformer, and ***Unit*** transformer protection systems of the ***Unit***, including those referred to in National Electricity Code Schedule 5.2.5 parts 8,9 and 10.
- Equipment in relation to the ***Unit*** with hard-wired interfaces to the ***transmission network*** or ***distribution network*** to which the ***Unit*** is directly connected including auto-synchronising and interlocks
- Communications facilities for the above
- ***RME*** installed in relation to the ***Unit***.

ATTACHMENT 7 (BLANK)

(Blank)

ATTACHMENT 8 DEMAND FORECAST INFORMATION TO BE PROVIDED BY DISTRIBUTORS AND EHV CONSUMERS FOR PLANNING PURPOSES

(Clause 260.1)

For each ***Terminal Station*** at which the ***distributor*** or ***EHV consumer*** has a ***point of connection*** or derives a ***supply*** for each of the next 11 ***Financial Year***s the ***distributor's*** or ***EHV consumer's*** aggregated:

(a) maximum summer 15 minute average MW and MVAr at time of maximum summer 15 minute MW;

(b) maximum winter 15 minute average MW and MVAr at time of maximum winter 15 minute MW;

(c) if maximum annual 15 minute ***energy*** does not occur in winter or summer, then maximum annual 15 minute average MW and MVAr at time of maximum annual 15 minute MW;

(d) the daily load curve on the day of the summer and winter maximum 15 minute MW in the next ***Financial Year***, showing 15 minute average MW and MVAr as a function of time of day; and

(e) the expected changes to the above daily load curve shape over the next 11 ***Financial Years***.

ATTACHMENT 9 REGISTERED DATA (CLAUSE 290)

INFORMATION REQUIRED FROM A GENERATOR IN RELATION TO LARGE UNITS

Generating Unit Design Data

Data Registration	**Units/Information format**
Station Technical Data:	
Voltage at connection to transmission network	kV
Total Station Capacity at generating plant capacity (sent out)	MW
Total Station capacity at minimum load (sent out)	MW
At point of connection:	
Maximum 3 phase short circuit infeed calculated by method of AS3851 (1991)	
• Symmetrical	kA
• Asymmetrical	kA
Min zero sequence impedance (resistance and reactance) of	% on 100MVA
Participant's system	
Min negative sequence impedance of Participant's system	% on 100MVA
Individual Generating Unit Data:	
Station name	Text
Unit number	Text
Rated apparent power	MVA
Rated power (sent out)	MW
Rated power (generated)	MW
Nominal Terminal Voltage	kV
Terminal Voltage adjustment range	KV
Auxiliary load at generating plant capacity	MW and MVAr

INFORMATION REQUIRED FROM A GENERATOR IN RELATION TO LARGE UNITS

Generating Unit Design Data (contd.)

Data Registration		Units/Information format
Minimum Operating Generation (sent out)		MW
Turbine-Generator Inertia Constant		MW sec/rated MVA
Short Circuit Ratio		
Rated Stator Current		A
Impedances (saturated and unsaturated):		
Direct Axis Synchronous Reactance	Xd	% on rating
Direct Axis Transient Reactance	Xd′	% on rating
Direct Axis Sub-Transient Reactance	Xd″	% on rating
Quad Axis Synch Reactance	Xq	% on rating
Quad Axis Transient Reactance	Xq′	% on rating
Quad Axis Sub-transient Reactance	Xq″	% on rating
Stator Resistance	Ra	% on rating
Stator Leakage Reactance	Xa	% on rating
Zero Sequence Reactance	Xo	% on rating
Negative Sequence Reactance	X2	% on rating
Potier Reactance	Xp	% on rating
Time Constants (saturated and unsaturated):		
Direct Axis Open Circuit Transient	Tdo′	sec
Direct Axis Short Circuit Transient	Td′	sec
Direct Axis Open Circuit Sub-transient	Tdo″	sec
Direct Axis Short Circuit Sub-transient	Td″	sec
Direct Axis Damper Leakage	Tkd	sec
Quad Axis Open Circuit Transient	Tqo′	sec

INFORMATION REQUIRED FROM A GENERATOR IN RELATION TO LARGE UNITS

Generating Unit Design Data (contd.)

Data Registration		Units/Information Format
Quad Axis Short Circuit Transient	Tq′	sec
Quad Axis Open Circuit Sub-transient	Tqo″	sec
Quad Axis Short Circuit Sub-transient	Tq″	sec
Charts:		
Capability Chart (showing full range of operating capability of the generator, including thermal limits and excitation limits)		diagram
Open Circuit Characteristic		graph
Short circuit characteristic		graph
Zero power factor curve		graph
Generator Transformer		
Nominal voltage ratio		kV/kV/kV
Number of windings		text
Rated current of each winding		Amps
Principal tap rated voltages		kV/kV
Positive Sequence Reactance (each wdg)		% on rating
Positive Sequence Resistance (each wdg)		% on rating
Zero Sequence Reactance (each wdg)		% on rating
Tapped Winding		text
Tap Change Range		kV-kV
Tap Change Step Size		%
Tap Change Type, On/Off load		On/Off
Vector Group		text

INFORMATION REQUIRED FROM A GENERATOR IN RELATION TO LARGE UNITS

Generating Unit Design Data (contd.)

Data Registration	Units/Information format
Earthing Arrangement (including neutral earthing resistance and reactance)	text
Core Construction (No of limbs, shell type, etc.)	text
Open-circuit characteristic	graph
Reactive Capability (at machine terminals)	
Lagging Reactive Power at rated load	MVAr export
Lagging Reactive Power at minimum load	MVAr export
Lagging Reactive Short Term Overload at rated load	MVAr (for ** minutes)
Excitation:	
DC Gain of Excitation Control Loop	volts/volt
Rotor Voltage at generator rated apparent power, rated power, terminal nominal voltage and rated speed	volts
Rotor current at generator rated apparent power, rated power, nominal terminal voltage and rated speed	Amps
Max rotor voltage	volts
Min rotor voltage	volts
Max rate of change of rotor voltages	rising V/Sec falling V/Sec
Generation and exciter Saturation Characteristics 50-120% V	diagram

INFORMATION REQUIRED FROM A GENERATOR IN RELATION TO LARGE UNITS

Generating Unit Design Data (contd.)

Data Registration	Units/Information format
Unit Load Controller:	
Maximum Droop	%
Normal Droop	%
Minimum Droop	%
Maximum Frequency Deadband	Hz
Normal Frequency Deadband	Hz
Minimum Frequency Deadband	Hz
MW Deadband	MW
Dynamic Characteristic of Governor & Control valves	text/block diagram
Dynamic Characteristics of Over Excitation Limiter	text/block diagram
Dynamic Characteristics of Under Excitation Limiter	text/block diagram
Dynamic Characteristic V/F Limiter Excitation Limiter	text/block diagram

INFORMATION REQUIRED FROM A GENERATOR IN RELATION TO LARGE UNITS

Generating Unit Setting Data

Data Registration	**Units/Information format**
Response Capability:	
Sustained response to frequency change	MW
Non-sustained response to frequency change	MW
Load Rejection Capability	MW
Protection Data:	
Settings of the following protections:	
Loss of field	text
Under excitation	text
Over excitation	text
Differential	text
V/F	text
Control Data:	
Details of Excitation Loop Described in Block Diagram Form Showing Transfer Functions of Individual Elements and measurement units & all limits	diagram
Settings of the following controls:	
Voltage regulation loop	text
Power System Stabilisation loop	text
Overexcitation limiter	text
Underexcitation limiter	text
Manual restrictive limiter (if fitted)	text
V/F limiter	text
Load drop compensation/VAr sharing	text
Dynamic model of turbine/generator shaft system in lumped element form showing component inertias, damping and shaft stiffness	diagram

INFORMATION REQUIRED FROM TRANSMITTER IN RELATION TO TRANSMISSION NETWORK AND AN EHV CONSUMER IN RELATION TO POINTS OF CONNECTION

Transmission Network and Plant Technical Data

Data Registration	Units/Information format
Network Configuration:	
Operation Diagrams showing the electricity circuitry of all existing and proposed transmission assets, including Terminal stations and switchyards, (complete with busbar arrangements, switching facilities and nominal voltages)	single line diagrams
Transmission lines and Cables:	
Nominal voltage	kV
Positive sequence impedance (resistance and reactance, including mutual coupling where appropriate)	% on 100MVA
Zero sequence impedance (resistance and reactance)	% on 100MVA
Susceptance	% on 100MVA
Continuous Rating (summer and winter)	Amps
Emergency Rating (summer and winter)	Amps
Temperature-time Laplace transform model (for nominated transmission lines)	block diagram
Length	km
Transformers:	
Nominal voltage ratio	kV/kV/kV
Maximum voltage on each winding	kV
Vector Group	
Positive sequence impedance for each winding (resistance and reactance)	% on 100MVA
Zero sequence impedance for each winding (resistance and reactance)	% on 100MVA
Nameplate Rating	Amps
Cyclic Rating (summer and winter)	Amps
Limited Cyclic Rating (summer and winter)	Amps
Temperature-time Laplace transform model (for nominated transformers)	block diagram
Tapping Range	$\pm$%
Tapping Range step size	$\pm$%
Active and reactive magnetizing losses	MW/MVAr

INFORMATION REQUIRED FROM TRANSMITTER IN RELATION TO TRANSMISSION NETWORK AND AN EHV CONSUMER IN RELATION TO POINTS OF CONNECTION

Transmission Network and Plant Technical Data (contd.)

Data Registration	Units/Information format
Saturation Curve (Voltage vs magnetizing current)	Graph
Earthing Arrangement (including neutral earthing resistance and reactance)	text
Core Construction (No of limbs, shell type, etc..)	text
Capacitor Banks, Reactors and Harmonic filters:	
Nominal voltage	kV
Maximum voltage	kV
Total Reactive Output	MVAr
Number of Reactive Output steps	MVAr
Size of Reactive Output steps	MVAr
Type of controls (eg., voltage automatic, reactive automatic, automatic time switch, manual)	Text
Settings of automatic controls (eg., switching times, voltage switching levels, reactive switching levels)	Text
Details of automatic control logic such that operating characteristics can be determined	Text
Component values	Text
Circuit Breakers:	
Nominal voltage	kV
Continuous current rating	kA
Fault current interruption capability	kA
Synchronous Compensators:	
Voltage, sequence impedances (synchronous, transient and sub-transient impedances for positive, negative and zero sequences, time constants, Rating, Excitation Control System data, earthing arrangement, as for synchronous generators.	
Reactive output Capability (both inductive and capacitive)	MVAr

INFORMATION REQUIRED FROM TRANSMITTER IN RELATION TO TRANSMISSION NETWORK AND AN EHV CONSUMER IN RELATION TO POINTS OF CONNECTION

Transmission Network and Plant Technical Data (contd.)

Data Registration	Units/Information format
Static Var Compensators:	
Voltage	kV
Reactive output Capability (both inductive and capacitive)	MVAr
Harmonic filter details (impedances of capacitors and reactors)	% on 100MVA
Transformer details as for transformers above	
AVR Laplace transform block diagram (including frequency stabilisation details and droop/reactive compensation details)	diagram
Neutral Reactors:	
Reactance	% on 100 MVA
Resistance	% on 100 MVA
Current-time rating (graph)	kA, sec
Other critical primary elements:	
Summer and winter ratings of any other primary plant that limits node to node capability (e.g. busbars, droppers, isolators, CTs, VTs)	Amps/kV
Protection Data:	
Details of all protections on transmission lines, transformers, busbars and cables	zone impedance diags., settings, etc.
Number of protections on each item	text
Total fault clearing times for near and remote faults	ms
Line reclosure sequence details	text

INFORMATION REQUIRED FROM A DISTRIBUTOR IN RELATION TO DISTRIBUTION NETWORK

Data Registration	Units/Information format
Circuitry forming a normally closed ties between terminal stations, and on ties between zone substations on a normally closed tie between terminal stations:	Single line diagrams
-All connecting lines/cables, etc.	
Voltage	kV
Positive sequence impedance (resistance and reactance, including mutual coupling where appropriate)	% on 100MVA
Zero sequence impedance (resistance and reactance)	% on 100MVA
Susceptance	% on 100MVA
Continuous Rating (summer and winter)	Amps
Emergency Rating (summer and winter)	Amps
Length	km
Zone Substation Capacitor Banks	
Total Reactive Output	MVAr
Number of Reactive Output steps	MVAr
Size of Reactive Output steps	MVAr
Type of Capacitor Bank controls (e.g. voltage automatic, reactive automatic, automatic time switch, manual)	Text
Settings of automatic Capacitor Bank controls (e.g. switching times, voltage switching levels, reactive switching levels)	Text

ATTACHMENT 10 (BLANK)

(blank)

ATTACHMENT 11 TRANSMITTER BENCHMARK PERFORMANCE STANDARDS

(Clause 100.5)

1. Sustained (greater than 1 minute) forced ***outage*** rate for all Transmission lines (nominal voltage 220kV to 500kV) is to be:

   (a) less than 1.0 incidents per annum per 100 circuit km for failure of primary or secondary equipment or ***transmitter*** operating error if there is less than 24 hours prior warning given; and

   (b) less than 0.5 incidents per annum per 100 circuit km for ***outages*** due to lightning and storms (excluding items covered by (a) above).

2. Mean duration of forced ***outages*** for all Transmission lines (220 kV to 500 kV) is to be less than 10 hours.

3. Successful autoreclose is to be achieved in greater than 75% of transient faults on Transmission lines.

4. Sustained (greater than 1 minute) forced ***outage*** rate for all transformers is to be less than 0.3 incidents per annum for failure of primary or secondary equipment or ***transmitter*** operating error if there is less than 24 hours prior warning given.

5. Mean duration of forced ***outages*** for all transformers to be less than 10 hours.

6. Availability of equipment forming part of the ***transmission network*** (including both forced and planned ***outages*** but excluding construction related ***outages***):

   - Circuits > 99.5%
   - Transformers > 99.7%
   - Static VAR compensators > 99.0%
   - Synchronous compensators > 91.0%
   - Capacitor banks > 99.3%
   - Protection systems > 99.8%

7. Percentage of incorrect protection system responses < 1%.

ATTACHMENT 12 DEROGATIONS

(Refer Clause 420.2.3 of this Code)

1 INTERPRETATION

1.1 In this Attachment, unless otherwise indicated:

(a) a reference to a clause is a reference to a clause in parts 1 to 9 of this Code,

(b) the word "(-)" appearing in column 3 or 4 of a table means that no words are to be deleted or inserted as the case requires,

(c) the word "(to)" appearing in column 3 of a table means all of the words appearing in the relevant clause between the words in the table preceding this word and the next occurrence of the words in the table following this word,

(d) the words "(as above)" appearing in column 3 or 4 of a table means that the words that apply to the preceding entry of the same column of this table apply, and

(e) words to be inserted replace the corresponding words to be deleted, or if no words are to be deleted, then the words to be inserted are appended to the relevant clause or paragraph.

2 DEROGATIONS

2.1 – 2.17 (clauses deleted)

2.18 For the period from 1st January 1998 to 31st December 2002, the application of clause 120.1.1of this Code to the ***EHV consumer*** specified in column 1 of the following table in respect of the ***Facility*** specified in column 2 of the table and the Supply Voltage (nominal) of 500kV is modified in the manner specified in columns 3 and 4 of the table.

(blank)

1	2	3	4
EHV Consumer	**Facility**	**Delete the words**	**Insert the words**
SECV as the Smelter Trader	Portland Smelter	0.98 lagging to unity	for demand above 640MW, 0.98 lagging to unity; and for demand up to and including 640MW, 0.98 lagging to unity as measured at the 220kV buses, except during (a) an outage of any reactive power compensation plant caused by a failure of the plant and the plant is less than 115MVAr in size; (b) a scheduled outage of reactive power compensation plant which is less than 115MVAr in size, provided that reasonable notice of the outage was given to VENCorp and the outage was at a time agreed between the EHV Consumer and VENCorp; or (c) a period when reactive power compensation plant was switched in or out of service in accordance with an instruction by VENCorp.

2.19 The application of clause 120.1.1of this Code to the ***EHV consumer*** specified in column 1 of the following table in respect of the ***Facility*** specified in column 2 of the table and the Supply Voltage (nominal) of 220kV is modified in the manner specified in columns 3 and 4 of the table.

1	2	3	4
EHV Consumer	**Facility**	**Delete the words**	**Insert the words**
SECV as the Smelter Trader	Point Henry Smelter	0.95	0.90

2.20 For the period from 1st January 1998 to 31st December 2002, the application of clause 120.2.1 of this Code to the ***EHV consumer*** specified in column 1 of the following table in respect of the ***Facility*** specified in column 2 of the table is modified in the manner specified in columns 3 and 4 of the table.

1	2	3	4
EHV Consumer	**Facility**	**Delete the words**	**Insert the words**
SECV as the Smelter Trader	Portland Smelter	(a) at each voltage level	(a) for demand above 640MW,
SECV as the Smelter Trader	Portland Smelter	(b) at each voltage level	(b) for demand above 640MW,
SECV as the Smelter Trader	Portland Smelter	(c) at each voltage level	(c) for demand above 640MW,
SECV as the Smelter Trader	Portland Smelter	and SumQB.	and SumQB; and
SECV as the Smelter Trader	Portland Smelter	[-]	(d) for demand up to and including 640MW, the negative sequence component of the total load current measured at the points of connection shall not exceed 4% of the positive sequence current at 520MW with a 0.98 lagging power factor at the 220kV buses.

2.21 The application of clause 120.2.1 of this Code to the ***EHV consumer*** specified in column 1 of the following table in respect of the ***Facility*** specified in column 2 of the table is modified in the manner specified in columns 3 and 4 of the table.

1	2	3	4
EHV Consumer	**Facility**	**Delete the words**	**Insert the words**
SECV as the Smelter Trader	Point Henry Smelter	must ensure that: (to) and SumQB.	must ensure that the negative sequence component of the total load current measured at the points of connection shall not exceed 4% of the positive sequence current.

2.22 (a) The ***EHV consumer*** described in column 2 of the following table and the relevant ***retailer*** are not in breach of clause 120.1.1 of the Code in respect of the ***facility*** described in columns 1 to 4 of the following table provided that the aggregate amount of ***Reactive Energy*** actually delivered from a ***transmission network*** at the ***point of connection*** in any half hour period during a billing month does not exceed the amount calculated in accordance with the following formula:

Qmaxlag = Sum P * F + ERP

where:

Qmaxlag is the maximum ***reactive energy*** actually delivered during any half hour period during a billing month.

Sum P has the same meaning given in clause 120.1.2 of this Code.

F is the value given in column 5 of the following table and is the ratio between ***Reactive Energy*** and Active Energy at a ***power factor*** of 0.95, calculated as

$$\frac{(1 - 0.95^2)^{1/2}}{0.95}$$

ERP is the excess ***reactive energy*** which is permitted to be consumed during any half an hour and is given in column 6 of the following table.

1	2	3	4	5	6
Transmitter	**EHV Consumer**	**Nominal Voltage**	**Facility**	**F**	**ERP for half an hour.**
GPU PowerNet	BHP Steel (JLA) Pty Ltd	220kV	Westernport Works	0.32868	20 MVARh

(b) Paragraph (a) of this clause has no application to the calculation of charges for excess consumption of ***Reactive Power*** under clause 120.1.3 of this Code.