

7. The authority shall normally meet on occasions decided by its chairman and, whenever the Minister, the chairman or not less than half of the appointed members of the authority require a meeting, the secretary of the authority shall, on being duly instructed, summon a meeting of the authority in such a manner that its members shall in normal circumstances receive notification of the meeting at least fortyeight hours before the time of the meeting.

Holding of meetings

(As amended by S.I. No. 157 of 1965)

8. (1) At every meeting of the authority, the chairman appointed by the Minister shall, if present at the meeting, be chairman of the meeting. If the chairman appointed by the Minister is absent from the meeting, a member appointed by the Minister to act as chairman or, failing such appointment by the Minister, elected by members present at the meeting, shall act as chairman.

Procedure at meetings

(2) All acts, matters or things authorised or required to be done by the authority shall be decided by resolution of a meeting at which a quorum is present.

(3) Every question for decision by the authority shall be decided by a majority of votes and, subject to the provisions of regulation 5, each member present at a meeting shall record his vote.

(4) If at any meeting of the authority the voting is equal on any matter for decision by the authority, the chairman or member acting as such shall have a casting vote in addition to his deliberative vote.

(5) Not less than half the members of the authority shall constitute a quorum of any meeting of the authority.

(6) The chairman or member acting as such shall declare the result of any decision of the authority and such declaration shall be final.

(As amended by S.I. No. 157 of 1965)

9. (1) Minutes shall be kept of the proceedings of every meeting of the authority. The minutes of the proceedings of a meeting of the authority shall be submitted at the next ensuing meeting and, if they are passed as correct, shall be signed by the chairman or the member acting as such, and the signed record of the proceedings of a meeting shall be *prima facie* evidence in all courts and circumstances that the proceedings as recorded were the proceedings of the meeting. Within fourteen days of their being signed, the chairman of the authority shall cause two copies of the signed minutes of each meeting to be sent to the Minister.

Minutes of meetings

(2) Any member of the authority who has recorded a minority vote may have it recorded in the minutes that he dissented from any resolution and also, briefly, his reasons for such dissent.

(3) No motion or discussion shall be allowed on the minutes except as to their accuracy.

(As amended by S.I. No. 157 of 1965)

SECTION 38-THE ELECTRICITY (INQUIRIES INTO ACCIDENTS) REGULATIONS

Regulations by the Minister

*Federal Government
Notice
109 of 1957
Government Notices
34 of 1964
497 of 1964
Statutory Instrument
157 of 1965
Act
13 of 1994*

1. These Regulations may be cited as the Electricity (Inquiries into Accidents) Regulations.***(4)** Title

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2. In these Regulations, unless the context otherwise requires- Interpretation

"assessor" means an assessor appointed in terms of regulation 3 (3);

"board" means a board of inquiry appointed in terms of regulation 3 (1).

3. (1) Whenever, in accordance with the provisions of section *thirtyfive* of the Act, the Minister has ordered an inquiry to be held into the circumstances of an accident of which notice has been sent to him in terms of section *thirtysix* of the Act, he may appoint a board of inquiry which he may direct to answer such specific or general questions in relation to the accident as he may think proper in the public interest. Appointment of boards of inquiry

(2) A board shall consist of such members as the Minister may appoint and, if it consists of more than one member, the Minister shall nominate one of the members as the chairman of the board.

(3) To assist a board, the Minister may appoint one or more assessors possessing special skill or knowledge relating to the questions to be investigated by the board.

(4) If any member of a board is, or becomes, unable or unwilling to act, or dies, the Minister may appoint another member in his place and, if such firstmentioned member was chairman, may nominate another member of the board as chairman.

The Laws of Zambia

4. A board shall sit at such times and at such places as it may fix and shall hold its inquiry in public except in so far as it is of the opinion that it is necessary, for any of the reasons set out in Article 18 (II) of the Constitution, that any part of the evidence given before it and any argument relating thereto should be heard *in camera*.

Sittings and procedure
Cap. 1

(As amended by S.I. No. 157 of 1965)

5. If the members of a board are in a any case equally divided on any question that arises during the proceedings of the board, the chairman of the board shall have a second or casting vote.

Chairman to have
casting vote

6. A board shall have power to inspect, or authorise any person to inspect, any electrical installations concerned in an accident which is the subject of its inquiry and to enter and inspect any premises of any undertaking, including any generating station or transmission line, where the entry and inspection thereof appears to the board to be necessary for the purpose of its inquiry.

Rights of entry and
inspection

7. If any person at any sitting of the board wilfully insults any member of the board or any assessor or wilfully interrupts the proceedings of the board or otherwise wilfully disturbs the peace or order of such proceedings, he shall be guilty of an offence and liable to a fine not exceeding one thousand five hundred penalty units or, in default of payment, to imprisonment for a period not exceeding six months.

Offences and
penalties

(As amended by Act No. 13 of 1994)

8. Any person who is in any way implicated or concerned in the matter under inquiry by a board shall be entitled to be represented by a legal practitioner at the whole of the inquiry, and any other person who may consider it desirable that he should be so represented may, by leave of the board, be represented in the manner aforesaid.

Legal representation

9. (1) The Minister may direct what remuneration, if any, shall be paid to the members of a board and any assessor and may direct the payment of any other expenses attendant upon the carrying out of the board's functions.

Remuneration of
members

(2) Any sums payable in terms of this regulation shall be paid out of moneys appropriated for the purpose by Parliament.

(As amended by G.N. No. 34 of 1964)

SECTION 38-THE ELECTRICITY (INQUIRIES INTO DISPUTES PROCEDURE) REGULATIONS

Regulations by the Minister

*Federal Government
Notice
141 of 1962
Government Notices
34 of 1964
497 of 1964
Statutory Instrument
157 of 1965
Act
13 of 1994*

1. These Regulations may be cited as the Electricity (Inquiries into Disputes Procedure) Regulations.***(5)** Title

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2. In these Regulations, unless the context otherwise requires- Interpretation

"board" means a board of inquiry appointed in terms of regulation 5;

"dispute" means a difference referred to in regulation 5 (2) of the Supply Regulations or in regulation 5 of the Wiring Regulations;

"inspector" means a person appointed in terms of regulation 5 for the purpose of inquiring into and determining a dispute;

"Supply Regulations" means the Electricity (Supply) Regulations;

"Wiring Regulations" means the Electricity (Wiring) Regulations.

3. Whenever in accordance with the provisions of section *thirty five* of the Act the Minister directs an inquiry to be held into a dispute, such inquiry shall be conducted in accordance with the provisions of these Regulations. Conduct of inquiry

4. An application for an inquiry shall- Application for inquiry

- (a) be made to the Minister in writing by one of the parties to the dispute; and
- (b) contain full details of the dispute which has arisen.

5. (1) If, after considering an application referred to in regulation 4, the Minister is of opinion that the dispute should be inquired into and determined, the Minister shall appoint- Appointment of inspector of board of inquiry

- (a) a person who is an electrical inspector as defined in the Supply Regulations; or
- (b) a board;

for the purpose of inquiring into and determining such dispute and the inspector or the board shall make such order determining the dispute as such inspector or board shall think fit.

(2) Subject to the provisions of sub-regulation (3), an order made by an inspector or a board in terms of sub-regulation (1) shall be final and binding on the parties to a dispute.

(3) Any party to a dispute who is dissatisfied with an order made in terms of sub-regulation (1) may, within twentyeight days from the making of such order, appeal to the Minister against such order and shall state in detail the grounds of his appeal.

(4) The Minister shall consider the appeal and all relevant circumstances relating thereto and shall make such order as he shall think fit which shall be final and binding on the parties to a dispute.

6. (1) An inspector or the members of a board and any assessors appointed to assist a board may enter premises owned or occupied by any party to a dispute and thereon inspect and test electrical works, installations and meters concerned in a dispute.

Rights of entry and inspection

(2) An undertaker involved in a dispute shall-

- (a) permit an inspector or the members of a board to use any testing equipment of his undertaking for the purpose of examining or testing any instrument or thing concerned in the dispute; and
- (b) produce to an inspector or the members of a board for examination all records, books and documents relating to a dispute.

7. (1) A board shall consist of not less than two or more than five members. The Minister shall nominate one of the members as chairman of the board and shall fix the number of members necessary to form a quorum at a meeting of the board.

Membership

(2) To assist a board the Minister may appoint one or more assessors possessing special skill and knowledge relating to the matters to be investigated by the board.

(3) If any member of a board is, or becomes, unable or unwilling to act, or dies, the Minister may appoint another member in his place and, if such firstmentioned member was chairman, may nominate another member of the board as chairman.

8. A board shall sit at such times and at such places as it may fix and shall hold its inquiry in public except in so far as it is of the opinion that it is necessary, for any of the reasons set out in Article 18 (eleven) of the Constitution, that any part of the evidence given before it and any argument relating thereto should be heard *in camera*.

Sittings and procedure
Cap. 1

(As amended by S.I. No. 157 of 1965)

9. If the members of a board are in any case equally divided on any question that arises during the proceedings of the board, the chairman of the board shall have a second or casting vote.

Chairman to have
casting vote

The Laws of Zambia

10. If any person at any sitting of the board wilfully insults any member of the board or any assessor or wilfully interrupts the proceedings of the board or otherwise wilfully disturbs the peace or order of such proceedings, he shall be guilty of an offence and liable to a fine not exceeding one thousand five hundred penalty units or, in default of payment, to imprisonment for a period not exceeding six months.

Offences and penalties

(As amended by Act No. 13 of 1994)

11. Any party to a dispute which is being investigated by a board shall be entitled to be represented by a legal practitioner at the whole of the inquiry, and any other person who may consider it desirable that he should be so represented may, by leave of the board, be represented in the aforesaid manner.

Legal representation

12. (1) The Minister may direct what remuneration, if any, shall be paid to the members of a board and any assessor and may direct the payment of any other expenses attendant upon the carrying out of the board's functions.

Remuneration of members

(2) Any sums payable in terms of this regulation shall be paid out of moneys appropriated for the purpose by Parliament.

(As amended by G.N. No. 34 of 1964)

SECTION 38-THE ELECTRICITY (LICENSING) REGULATIONS

Regulations by the Minister

*Federal Government Notice
117 of 1956
Government Notice
34 of 1964
Statutory Instrument
157 of 1965
Act
13 of 1994*

1. These Regulations may be cited as the Electricity (Licensing) Regulations.***(6)**

Title

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2)

2. In these Regulations, unless the context otherwise requires-

Interpretation

"applicant" means a person who has applied or is applying, in accordance with the provisions of the Act, for the issue or review of a licence, or an amended licence, or for the cession, transfer, surrender or substitution of a licence;

"licensee" means a person to whom a licence has been issued, or has been deemed to have been issued, in accordance with the provisions of the Act.

3. An application for a licence in terms of section *seven* of the Act, an application for the review of a licence in terms of paragraph (a), (b) or (c) of subsection (1) of section *nine* of the Act, and an application for the cession, transfer, surrender or substitution of a licence in terms of subsection (2) of section *nine* of the Act may be made at any time and shall be addressed to the Secretary of the Electricity Council.

Applications for licences

(As amended by G.N. No. 34 of 1964)

4. (1) An application made in terms of section *seven* of the Act or of paragraph (c) of subsection (1) of section *nine* of the Act or of subsection (2) of section *nine* of the Act shall be in Form 1 in the First Schedule and shall be accompanied by the appropriate fee as set out in the Second Schedule, and by a plan of the area of supply, and by particulars concerning the following matters where applicable:

Fees and particulars required

- (a) the situation and extent of the land which the applicant desires to use as sites for generating stations;
- (b) if the ownership of the site is not vested in the applicant, the name and address of the owner;
- (c) the source of the water supply and the usual quantity used or required;
- (d) full particulars of land or any rights over land which it is proposed to acquire either by agreement or in accordance with the provisions of the Act;
- (e) full particulars regarding the type of current, frequency and pressure to be used.
- (f) full particulars of the proposed undertaking, including the maximum quantity of electricity which will normally be generated and the maximum installed capacity of the plant;
- (g) the estimated cost of the undertaking;
- (h) the point or points at which it is proposed to receive any supply of electricity in bulk;
- (i) a schedule of charges; to be made to consumers;
- (j) an estimate of the number of probable consumers within the area of supply and their estimated consumption of electricity;
- (k) such further particulars and information as may be required by the Electricity Council or the Minister.

(2) In addition to the information required under sub-regulation (1), an applicant shall submit to the Electricity Council a draft advertisement containing the following particulars where appropriate:

- (a) the description and address of the applicant;
- (b) the object of the application;
- (c) the proposed area of supply;
- (d) the site and capacity of the proposed generating station;
- (e) any further particulars which the Electricity Council may require to be included;
- (f) a statement to the effect that plans and documents of the applicant's proposals, together with details of the tariffs which it proposes to charge, are available for view by the public at a suitable and convenient place within the area of supply;
- (g) a statement to the effect that any consumer or proposed consumer within the area covered by the application may object to the approval of the application in accordance with the provisions of regulation 6.

(3) An applicant who wishes to include in his area of supply all or part of the area under the jurisdiction of a local authority shall attach to his application a consent of such local authority or a decision of the Minister, as the case may be, given or made in terms of section *nineteen* of the Act.

(As amended by G.N. No. 34 of 1964)

5. On receipt of an application made in terms of regulation 4, the Electricity Council shall, if satisfied that the applicant has complied with the provisions of the Act and of these Regulations and that the draft advertisement contains the necessary particulars, cause the advertisement to be inserted at the applicant's expense in the *Gazette* and in a newspaper circulating in the proposed area of supply.

Advertisement of application

(As amended by G.N. No. 34 of 1964)

6. Any objection to the grant of an application which has been made in terms of regulation 4 shall be made in Form 2 in the First Schedule and shall be lodged with the Electricity Council within twentyone days of the appearance in the *Gazette* of the relevant advertisement published in terms of regulation 5. Any objection made against the granting of an application shall contain the reasons for the objection and copies of any objections so made shall be lodged with the applicant.

Notice of objection to grant of application

(As amended by G.N. No. 34 of 1964)

7. The Electricity Council shall arrange for the hearing of an application made in terms of regulation 4, and any objection thereto made in terms of regulation 6, at a suitable time and place and shall give notice of such hearing to the applicant and to every objector not less than ten days before the date fixed for the hearing:

Hearing of application

Provided that, if there are more than twenty objectors to any one application, the Electricity Council may, by advertisement in a newspaper circulating in the area of supply covered by the application, give notice of the hearing of the application and objections thereto, and the appearance of such advertisement shall be regarded as the giving of notice to every objector in terms of this regulation

(As amended by G.N. No. 34 of 1964)

8. When the Electricity Council has heard an application made in terms of regulation 4 and any objections thereto, it shall make its recommendations to the Minister on the application in accordance with the provisions of the Act, and its recommendations shall include the terms and conditions which should be described in the licence.

Electricity Council to make recommendations to Minister

9. If a number of consumers or a local authority wish the Minister to review a licence in terms of paragraph (a) or (b) of subsection (1) of section *nine* of the Act, they shall make application to the Electricity Council for the issue by the Minister of an amended licence to the licensee concerned and shall send a copy of such application to such licensee. An application made in terms of this regulation shall be in Form 3 in the First Schedule.

Application for review of licence

(As amended by G.N. No. 34 of 1964)

The Laws of Zambia

10. (1) A number of consumers seeking the review of a licence in terms of regulation 9 shall, at the time of making application, satisfy the Electricity Council that they represent the aggregate consumption required by paragraph (a) of subsection (1) of section *nine* of the Act, and the Electricity Council shall not consider any such application unless so satisfied.

Consumers to represent requisite consumption

(2) A licensee shall give to consumers who wish to seek the review of his licence in terms of regulation 9 such information as may be necessary for those consumers to satisfy the Electricity Council in accordance with the provisions of sub-regulation (1).

(As amended by G.N. No. 34 of 1964)

11. An application made in terms of regulation 9 shall contain the following information:

Particulars required

- (a) details of the amendments to the licence which the applicants seek;
- (b) the reasons for seeking the amendments;
- (c) any other information which may be required by the Electricity Council.

(As amended by G.N. No. 34 of 1964)

12. On receipt of an application made in terms of regulation 9, the Electricity Council shall arrange for the hearing of the application at a suitable time and place and shall give an opportunity to representatives of the licensee and of any other applicant concerned to appear and to lead evidence in accordance with the provisions of subsection (4) of section *nine* of the Act.

Hearing of application

(As amended by G.N. No. 34 of 1964)

13. Having heard the application made in terms of regulation 9, the Electricity Council shall make its recommendations to the Minister as to the provisions and conditions to be included in the licence.

Electricity Council to make recommendations to Minister

(As amended by G.N. No. 34 of 1964)

14. If the Electricity Council proposes to recommend in terms of paragraph (a) of subsection (1) of section *nine* of the Act that the Minister shall review a licence, it shall notify the licensee in writing of the alterations in the licence which it proposes to recommend.

Notification of licensee

15. On receipt of a recommendation from the Electricity Council made in terms of paragraph (a) of subsection (1) of section *nine* of the Act, the Minister shall insert in the *Gazette* and in a newspaper circulating in the licensed area an advertisement setting out the changes proposed in the licence, which shall include a statement to the effect that the licensee or any consumer or proposed consumer in the licensed area may lodge his objection with the Minister.

Advertisement of proposed changes in licence

(As amended by G.N. No. 34 of 1964)

16. Any objection made in terms of regulation 15 against the approval by the Minister of a recommendation received from the Electricity Council in terms of paragraph (a) of subsection (1) of section *nine* of the Act shall be made in Form 2 in the First Schedule and shall be lodged with the Minister within twentyone days of the appearance in the *Gazette* of the relevant advertisement published in terms of regulation 15. Any objection made against the approval of such a recommendation shall contain the reasons for the objections and copies of any objections so made shall be lodged with the Electricity Council and with the licensee.

Notice of objection

(As amended by G.N No. 34 of 1964 and S.I. No. 157 of 1965)

17. Before making a decision on any recommendation of the Electricity Council made in terms of paragraph (a) of subsection (1) of section *nine* of the Act, the Minister shall, if so requested by any objector or by the Electricity Council, arrange for a hearing of the recommendation to be conducted, *mutatis mutandis*, in accordance with the provisions of regulation 12

Hearing

(As amended by G.N. No. 34 of 1964)

18. (1) An application made in terms of these Regulations shall be accompanied by the appropriate fees set out in the Second Schedule. If by any reason of inquiries into the affairs of the licensee additional expense is necessarily incurred by the Minister or the Electricity Council as the result of an application made in terms of these Regulations, the Minister may direct that all or part of the additional expense so incurred shall be paid by the applicant, so, however, that in the case of an application made in terms of paragraph (a) or (b) of subsection (1) of section *nine* of the Act, no additional expenses shall be payable by the applicant if as the result of that application an amendment to the licence is made.

Fees

(2) The issue of a licence or of an amended licence, as the case may be, shall be conditional upon the payment of such amounts as may be payable by the applicant in terms of this regulation .

FIRST SCHEDULE

PRESCRIBED FORMS

NOTICE OF OBJECTION TO THE ISSUE OF A LICENCE OR OF AN
AMENDED LICENCE

To the Secretary,
*Electricity Council.
*The Permanent Secretary, Ministry of Power, Transport and Works.

Objection is hereby made to-
*the issue of a licence
*the issue of an amended licence.
*the cession/transfer/surrender/substitution of a licence in respect of the
..... undertaking in the
terms contained in Gazette Notice No. of 19 ..

The grounds for objection are

Dated this day of 19 ..

Signature of objector

Address

*Insert as appropriate.

(As amended by S.I. No. 157 of 1965)

APPLICATION FOR THE REVIEW OF A LICENCE

To the Secretary,
Electricity Council.

Application is hereby made to the Minister of Power, Transport and Works under the provisions of the Electricity Act, for the review of the licence issued to undertaking. Attached hereto are statements setting out details of the amendments to the licence for which application is made, and setting out the reasons for seeking those amendements. Also attached are the fees payable with this application in terms of the Regulations.

Dated this day of 19 ..
Signature of Applicants Addresses

.....
.....
.....

(As amended by S.I. No. 157 of 1965)

The Laws of Zambia
SECOND SCHEDULE
(Regulation 18)

FEES TO ACCOMPANY APPLICATIONS IN CONNECTION WITH LICENCES

Fee units							
With an application for the issue of a licence in accordance with the provisions of section 7 of the Act	..	..	..	..	..	..	1500
With an application for the review of a licence in accordance with the provisions of paragraph (a) of subsection (1) of section 9 of the Act	..	..	..	..	..	..	300
With an application for the review of a licence in accordance with the provisions of paragraph (b) of subsection (1) of section 9 of the Act	..	..	..	..	..	..	600
With an application for the review of a licence in accordance with the provisions of paragraph (c) of subsection (1) of section 9 of the Act	..	..	..	..	..	..	400
With an application for the cession or transfer of a licence in accordance with the provisions of subsection (2) of section 9 of the Act	..	..	..	..	..	..	750
With an application for the substitution of a licence in accordance with the provisions of subsection (2) of section 9 of the Act	..	..	..	..	..	..	150
With an application for the surrender of a licence in accordance with the provisions of subsection (2) of section 9 of the Act	..	..	..	..	..	..	Nil
(As amended by Act No. 13 of 1994)							

SECTION 38-THE ELECTRICITY (NON-STANDARD CHARGES) REGULATIONS

Regulations by the Minister

*Federal Government
Notice
312 of 1959
Government Notice
34 of 1964*

1. These Regulations may be cited as the Electricity (Non-Standard Charges) Regulations.***(7)** Title

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2. In these Regulations, unless the context otherwise requires- Interpretation

"applicant" means a consumer referred to in subsection (4) of section *twelve* of the Act, and "application" shall be construed accordingly;

"the right to appear and lead evidence" means the right to appear and lead evidence conferred by the provisions of subsection (6) of section *twelve* of the Act.

(As amended by G.N. No. 34 of 1964)

3. (1) An application shall be in writing. Particulars required

(2) In an application the applicant shall state-

- (a) the reasons for his application; and
- (b) whether or not he wishes to exercise the right to appear and lead evidence.

4. The applicant shall submit his application to the Electricity Council forwarding at the same time a copy of his application to the licensee.

Submission of application

(As amended by G.N. No. 34 of 1964)

5. (1) If the licensee wishes to object to the application, he shall lodge a notice of his objection in writing with the Electricity Council within thirty days of the receipt by him of the copy of the application forwarding at the same time a copy of his objection to the applicant.

Notice of objection

(2) A licensee who lodges a notice of objection referred to in sub-regulation (1) (hereinafter called an objector) shall state in the objection whether or not he wishes to exercise the right to appear and lead evidence.

6. (1) The Electricity Council may require an applicant or licensee, whether or not he is an objector, to furnish such information which in its opinion is relevant to the application and any objection thereto as it may consider necessary for the proper consideration of the application and any objection thereto.

Particulars of objection required

(2) The applicant and the licensee shall furnish such information as they may be required to furnish in terms of sub-regulation (1).

(3) The Electricity Council shall furnish the objector with copies of information obtained from the applicant and the applicant with copies of information obtained from the objector.

7. In addition to the power to require an applicant or licensee to furnish information conferred upon it by regulation 6, the Electricity Council may institute such inquiries and obtain such other information which in its opinion is relevant to the application and any objection thereto as it may consider necessary for the proper consideration of the application and any objection thereto.

Further inquiries

8. If an applicant or an objector wishes to exercise the right to appear and lead evidence, the Electricity Council shall arrange a suitable time and place for that purpose and give notice to him and the other party, if any, not less than ten days before the date so arranged.

Right to appear and lead evidence

The Laws of Zambia

SECTION 38-THE ELECTRICITY (PRIVATE UNDERTAKINGS' CONTRACTS) REGULATIONS

Regulations by the Minister

*Federal Government
Notice
122 of 1956
Government Notice
34 of 1964
Act
13 of 1994*

1. These Regulations may be cited as the Electricity (Private Undertakings' Contracts) Regulations.***(8)** Title

*These Regulation made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2. Any person operating a private undertaking who, in accordance with the provisions of section *eighteen* as read with subsection (3) of section *thirtynine* of the Act, requires the consent of the Minister before contracting to supply electricity to any other person shall submit his application for the Minister's consent to the Electricity Council. Submission of application

(As amended by G.N. No. 34 of 1964)

3. Every application submitted to the Electricity Council in terms of regulation 2 shall include the following information: Particulars required

- (a) the type, pressure and quantity of current to be supplied to any other person under the proposed contract;
- (b) the name and address of any person to whom it is proposed to supply electricity under the proposed contract;
- (c) the price to be charged under the proposed contract;
- (d) the provisions to be included in the proposed contract which relate to the termination of the agreement;
- (e) a copy of the proposed contract; and
- (f) any other information which the Electricity Council may require.

(As amended by G.N. No. 34 of 1964)

4. Having considered the application, the Electricity Council shall submit to the Minister full details of the application and its recommendation thereon. Recommendation of Electricity Council

5. The Minister shall thereupon notify his decision to the private undertaker and, if the Minister gives his consent in terms of section *eighteen* of the Act, the private undertaker shall lodge with the Electricity Council a copy of the signed contract. Minister's decision

(As amended by G.N. No. 34 of 1964)

6. The terms of a contract to which consent has been given by the Minister in terms of section *eighteen* of the Act shall not be varied by a private undertaker without the consent of the Minister. If a private undertaker wishes to obtain the consent of the Minister to a variation of contract already approved by him, he shall submit an application in accordance with the provisions of regulation 3 and thereafter the Electricity Council and the Minister, respectively, shall deal with such application in accordance with the provisions of regulations 4 and 5.

Variation of contract

(As amended by G.N. No. 34 of 1964)

SECTION 38-THE ELECTRICITY (REGISTRATION OF PRIVATE UNDERTAKINGS)
REGULATIONS

Federal Government
Notice
123 of 1956

Regulations by the Minister

1 These Regulations may be cited as the Electricity (Registration of Private Undertakings) Regulations.***(9)**

Title

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2. Every person who, on the 27th April, 1956, operated a private undertaking the plant of which is rated at the site where it is installed at a capacity of one hundred or more kilowatts, whether for his own use or for supply to other persons, either wholly or partly, shall before the 1st October, 1956, submit to the Minister the following particulars in respect of the plant and installation:

Particulars required in respect of existing undertakings

- (a) the name and address of the owner;
- (b) the place where it is operated;
- (c) the rated capacity, type of prime mover and current, systems, frequency and voltage; and
- (d) any further relevant particulars required by the Minister.

3. Every person who, after the 27th April, 1956, begins to operate a private undertaking as described in regulation 2 shall, within six months after so beginning to operate it, submit to the Minister the particulars set out in that regulation in respect of the plant and installation in question.

Particulars required in respect of new undertakings

4. Any person who fails to comply with the provisions of these Regulations shall be guilty of an offence and shall be liable to a fine not exceeding seven hundred and fifty penalty units.

Offences and penalties

(As amended by Act No. 13 of 1994)

THE ELECTRICITY (SUPPLY) REGULATIONS

ARRANGEMENT OF REGULATIONS

PART I
PRELIMINARY

Regulation

1. Title and commencement
2. Interpretation

PART II
ADMINISTRATION AND GENERAL

3. Chief Electrical Inspector and electrical inspectors
4. Application
5. Procedure as to settlement of disputes
6. Declared method of supply to new consumers
7. Declared method of supply to existing consumers
8. Undertaker to provide constant supply
9. Undertaker may lessen or discontinue supply
10. Undertaker shall not permanently connect
11. Undertaker not compelled to commence supply
12. Discontinuance of supply
13. Disconnection of works in certain circumstances
14. Connection of system with earth
15. Protection of telegraphs
16. Access to undertaker's works
17. Guidance and instructions
18. Inspections and tests
19. Availability of Regulations

PART III
CONSTRUCTION OF UNDERTAKERS' WORKS

The Laws of Zambia

20. Design and protection of works
21. Switchgear
22. Fuses
23. Automatic circuit-breakers

Regulation

24. Joints and connections
25. Isolating and protective devices
26. Switchboards
27. Buildings for electrical purposes
28. Outdoor substations
29. Earthing of metal-work
30. Earthing of consumer's installation
31. Earth electrodes
32. Leakage to earth
33. Arc suppression coils
34. Service lines on consumer's premises

PART IV

CABLES

35. Construction and installation of cables
36. Metallic protection for high-voltage cables
37. Identification and testing

PART V

OVERHEAD LINES

38. Application of Part V
39. Constructional requirements
40. Materials
41. Minimum heights and clearances
42. Overhead lines crossing railway tracks
43. Different voltages in proximity
44. Loading conditions and factors of safety
45. Periodic testing and inspecting
46. Warning notices
47. Unauthorised climbing

PART VI
PROTECTIVE MULTIPLE EARTHING

Regulation

48. Description
49. Consent
50. Limitations
51. Connections at transformer
52. Use of cables
53. Use of overhead lines
54. Use of cables and overhead lines
55. Overall resistance
56. Neutral to be unbroken
57. Consumer's earthing

PART VII
STANDARDS OF MEASUREMENT

58. Fundamental electrical units
59. Derived electrical units of energy
60. Measurement of electricity

PART VIII
OFFENCES AND PENALTIES

61. Offences and penalties
- FIRST SCHEDULE-Prescribed forms
- SECOND SCHEDULE-Section clearances
- THIRD SCHEDULE-Minimum heights of overhead lines
- FOURTH SCHEDULE-Minimum heights of overhead lines crossing railway tracks
- FIFTH SCHEDULE:
- Part I-Fundamental units
 - Part II-Denominations of standards
 - Part III-Limits of accuracy
 - Part IV-Derived electrical unit of energy

SECTION 38-THE ELECTRICITY (SUPPLY) REGULATIONS

Regulations by the Minister

*Federal Government
Notice
404 of 1961
Government Notice
34 of 1964
Statutory Instrument
157 of 1965
Act
13 of 1994*

PART I

PRELIMINARY

1. These Regulations may be cited as the Electricity (Supply) Regulations*(10) and shall be deemed to have come into operation-

Title and
commencement

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

- (a) in respect of Parts I, II, IV, V, VI, VII and VIII on the 1st December, 1961;
- (b) in respect of Part III on the 1st January, 1963.

2. In these Regulations, unless the context otherwise requires-

Interpretation

"bulk supply" means a supply of electricity to be used for the purposes of redistribution;

"cable" means an insulated conductor or an assemblage of such conductors enclosed within a common sheathing;

"conductor" means a bar, tube, wire or line used for conducting electricity;

"consumer" means a person, other than an undertaker, who is supplied or who has made application to be supplied with electricity by an undertaker;

"consumer's installation" means the consumer's electrical wiring together with any electricity consuming device connected with such installation;

"dead" means at or about earth potential or zero voltage and not connected to a live conductor or live part of a system;

"earthed" and "connected with earth" mean connected with the general mass of earth in such manner as will ensure at all times an immediate and efficient discharge of electricity, and cognate expressions shall be construed accordingly;

The Laws of Zambia

"electric line" means a cable, overhead line or other means used or intended to be used for the purpose of conveying, transmitting or distributing electricity together with any casing, coating, covering, tube, pipe or insulator enclosing, surrounding or supporting the same, or any part thereof, or any apparatus connected therewith for the purpose of conveying, transmitting or distributing electricity;

"electrical inspector" means a person referred to in regulation 3;

"failing load" means a load on a support which, if exceeded, will result in the conductor not being supported in accordance with these Regulations;

"form" means the appropriate form prescribed in the First Schedule;

"high voltage" means normal operating voltage exceeding 650 volts;

"insulated conductor" means a conductor covered with insulation suitable for the normal operating voltage;

"insulation" means non-conducting material enclosing, surrounding, or supporting a conductor or any part thereof;

"line conductor" means a conductor of an overhead line;

"Lines Protection Regulations" means the General Post Office (Lines Protection) Regulations;

Cap. 795 of the 1971
edition of the laws

"live" means electrically charged;

"low voltage" means normal operating voltage exceeding 30 volts alternating current or 50 volts direct current but not exceeding 250 volts;

"main" means an electric line through which electricity may be supplied or is intended to be supplied by the undertaker to a service line;

"medium voltage" means normal operating voltage exceeding 250 volts but not exceeding 650 volts;

"metal armouring" means metal wire or metal tape completely covering a cable and manufactured as an integral part of the cable;

"metal sheathing" means a continuous and watertight metal sleeve surrounding a cable manufactured as an integral part of the cable;

The Laws of Zambia

"metal-work" means any metal-work other than-

- (a) a conductor and its associated live parts; or
- (b) an earth conductor;

"overhead line" means a conductor erected above ground and in the open air and includes any pole-mounted substation associated therewith;

"pole-mounted substation" means transformer equipment, high-voltage switchgear or high-voltage apparatus mounted on a support and associated with the operation and control of an overhead line;

"service line" means an electric line through which electricity may be supplied or is intended to be supplied by the undertaker to a consumer either from a main or directly from the premises of the undertaker;

"supply terminals" means the end of a service line at which the supply of electricity is delivered from such line to the consumer;

"support" means a structure or pole for supporting an overhead line and includes any stay or strut associated therewith;

"telegraph" or "telegraph line" means a telegraph or telegraph line as defined in section two of the Posts and Telegraphs Act;

Cap. 795 of the 1971
edition of the laws

"undertaker" does not include a person operating a plant which is rated at the site where it is installed at a capacity of less than one hundred kilowatts for the generation and supply of electricity solely for his own use or for use on his own premises;

"voltage" means the electro-motive force existing between any pair of live conductors forming part of a common supply of electricity or between any part of either of such conductors and earth and, in the case of alternating current, means the virtual voltage or root-mean-square value as determined by the square-root of the mean or average value of the squares of the instantaneous values of the voltage during one complete cycle;

"Wiring Regulations" means the Electricity (Wiring) Regulations.

PART II

ADMINISTRATION AND GENERAL

The Laws of Zambia

3. (1) There shall be a Chief Electrical Inspector and such electrical inspectors as may be considered necessary.

Chief Electrical
Inspector and
electrical inspectors

(2) Subject to the directions of the Minister, the Chief Electrical Inspector shall administer these Regulations.

(3) No person shall be appointed-

- (a) as the Chief Electrical Inspector unless he is a Chartered Electrical Engineer with experience in the electricity supply industry to the satisfaction of the Minister; or
- (b) as an electrical inspector unless he has had experience in the electricity supply industry to the satisfaction of the Minister.

(As amended by G.N. No. 34 of 1964)

4. (1) Subject to the provisions of sub-regulations (2) and (3), these Regulations shall apply to every undertaker.

Application

(2) Parts III, IV and V shall not apply-

- (a) to the construction, installation, quality, alteration, operation, control, protection, inspection and testing of the parts of an undertaker's works which are used exclusively for mining or factory purposes at a mine or factory where such parts comply with the electrical provisions of any written law or regulations relating to such construction, installation, quality, alteration, operation, control, protection, inspection and testing at a mine or factory;
- (b) to the construction, installation and quality of an undertaker's works, or any part thereof, installed or erected, or for the installation or erection of which an agreement was entered into, before the commencement of Part III or Parts IV and V, as the case may be, until such works or part thereof are altered or replaced after such commencement.

(3) Regulation 27 shall not apply to the construction of a building by an undertaker for the accommodation, of any of his works where such building complies with any written law or by-law relating to its construction.

(As amended by G.N. No. 34 of 1964 and S.I. No. 157 of 1965)

5. (1) Where an undertaker in pursuance of these Regulations declines-

Procedure as to
settlement of disputes

- (a) to connect a consumer's installation or any part thereof with the undertaker's electric lines; or
- (b) to give or continue to give a supply of electricity; or
- (c) to recommence a supply of electricity after it has been disconnected;

Copyright Ministry of Legal Affairs, Government of the Republic of Zambia

the undertaker shall give notice to the consumer On Form No I stating the reasons for so declining.

(2) Where a difference arises-

- (a) between a consumer and an undertaker-
 - (i) with reference to a notice given in terms of sub-regulation (1) or (2) of regulation 11; or
 - (ii) with reference to a consumer's installation to which the provisions of regulation 10 apply; or
 - (iii) concerning the measurement of electricity; or
 - (iv) in the application of these Regulations generally;
or
- (b) between one undertaker and another in connection with these Regulations;

the Minister may order an inquiry to be held in terms of section *thirtyfive* of the Act.

6. (1) Subject to the provisions of sub-regulation (4), before giving a supply of electricity to a consumer the undertaker shall declare in writing to that consumer the standard type of current and number of phases, the standard frequency and the standard voltage at which the undertaker proposes to deliver the electricity to the supply terminals.

Declared method of
supply to new
consumers

(2) Subject to the provisions of sub-regulation (4), for the purposes of sub-regulation (1)-

- (a) the standard type of current and number of phases shall be alternating current, one or three phases;
- (b) the standard frequency shall be fifty cycles per second;
- (c) the standard voltage shall be-
 - (i) 225 volts phase to neutral for a single-phase supply; or
 - (ii) 390 volts phase to phase for a three-phase supply.

The Laws of Zambia

(3) Subject to the provisions of sub-regulation (4), the standards referred to in paragraphs (a), (b) and (c) of sub-regulation (2) shall be constantly maintained subject to a permissible variation-

- (a) of frequency, between a lower limit of 48.75 cycles per second and an upper limit of 51.25 cycles per second
- (b) of voltage-
 - (i) between a lower limit of 210 volts phase to neutral and an upper limit of 240 volts phase to neutral in the case of a single-phase supply;
 - (ii) between a lower limit of 365 volts phase to phase and an upper limit of 415 volts phase to phase in the case of a three-phase supply.

(4) Departures from the provisions of sub-regulation (1), (2) or (3) may be made by an undertaker-

- (a) by agreement with a consumer to whom it is intended to give an individual supply of electricity from a distributing main to be used solely for the purposes of that one consumer; or
- (b) by agreement with each consumer in a group of consumers to whom it is intended to give a supply of electricity from a common distributing main for the group; or
- (c) in giving a supply of electricity at high voltage in terms of a published tariff; or
- (d) in giving a special supply of electricity for purposes outside the terms of the undertaker's published tariffs:

Provided that a departure made in terms of this sub-regulation to a consumer shall not adversely affect any other consumer.

(5) Before giving a supply of electricity to a consumer in accordance with the provisions of sub-regulation (4), the undertaker shall declare in writing to that consumer the type of current and, if alternating current, the number of phases and frequency and the voltage at which the undertaker proposes to deliver the electricity to the supply terminals.

(6) Where a supply of electricity is given in terms of sub-regulation (4), it shall be constantly maintained as declared in sub-regulation (5) subject to a permissible variation-

- (a) of frequency, if alternating current, not exceeding two and one-half per centum above or below the declared frequency;
- (b) of voltage, not exceeding ten per centum above or below the declared voltage except where the special agreement for the supply stipulates a different permissible voltage variation.

(7) Before giving a bulk supply of electricity to another undertaker for redistribution, the supplying undertaker shall declare in writing to the receiving undertaker the type of current and, if alternating current, the number of phases and frequency and the voltage at which it is proposed to deliver the electricity:

Provided that where the bulk supply is alternating current intended for redistribution to consumers to whom the provisions of sub-regulations (1), (2) and (3) apply-

- (i) the declared frequency shall be fifty cycles per second;
- (ii) such frequency shall be constantly maintained subject to the permissible variations set out in paragraph (a) of sub-regulation (3);
- (iii) any limits to voltage variation agreed between the two undertakers shall be such as will not adversely affect any consumer in respect of the provisions of paragraph (b) of sub-regulation (3).

(8) Except for causes beyond the control of the undertaker and subject to the provisions of regulation 8-

- (a) any permissible variation provided for in this regulation to a declared frequency of fifty cycles per second shall be compensatorily adjusted to give a mean frequency of fifty cycles per second as far as practicable in each continuous period of twenty-four hours;
- (b) any permissible variation provided for in this regulation to a declared voltage may be exceeded during control operations on the system for a period not longer than ten consecutive minutes.

(9) Subject to the terms and conditions of a contract of supply between an undertaker and a consumer entered into on or after the 1st December, 1961, nothing in this regulation provided shall prevent such undertaker and consumer by agreement terminating the contract of supply made in terms of sub-regulations (1), (2) and (3) and substituting therefor a new contract of supply made in terms of sub-regulations (4), (5) and (6), or *vice versa*, provided that no other consumer is adversely affected thereby.

7. (1) Where an undertaker continues to give a supply of electricity to a consumer on and after the 1st December, 1961, in accordance with a contract or verbal agreement to supply existing at but made before such date, the provisions of this regulation shall apply to the declared method of supply.

Declared method of supply to existing consumers

(2) The supply of electricity under an existing contract or verbal agreement which requires the undertaker to deliver the electricity to the supply terminals-

- (a) as alternating current, one or three phases;
- (b) at a frequency of fifty cycles per second;
- (c) at a voltage of-
 - (i) 220 volts or 230 volts phase to neutral for a single-phase supply; or
 - (ii) 380 volts or 400 volts phase to phase for a three-phase supply;

shall, in the absence of an agreement to the contrary, be constantly maintained subject to the permissible variations set out in sub-regulation (4) and shall continue to be the declared method of supply for such period of time as is determined by sub-regulation (6).

(3) The supply of electricity under an existing contract or verbal agreement which requires the undertaker to deliver the electricity to the supply terminals at values differing from those set out in paragraphs (a), (b) and (c) of sub-regulation (2) shall be constantly maintained subject to the permissible variations set out in sub-regulation (5) and shall continue to be the declared method of supply for such period as is determined in the manner set out in sub-regulation (7).

(4) There shall be a permissible variation for the purposes of sub-regulation (2)-

- (a) of frequency, between a lower limit of 48.75 cycles per second and an upper limit of 51.25 cycles per second;
- (b) of voltage-
 - (i) between a lower limit of 210 volts phase to neutral and an upper limit of 240 volts phase to neutral in the case of either a 220 volts or a 230 volts single-phase supply;
 - (ii) between a lower limit of 365 volts phase to phase and an upper limit of 415 volts phase to phase in the case of either a 380 volts or 400 volts three-phase supply.

(5) Except where the existing contract or verbal agreement to supply includes specific terms for permissible variations which shall prevail during the continuation of the contract or verbal agreement, there shall be a permissible variation for the purposes of sub-regulation (3)-

- (a) of frequency, if alternating current, not exceeding two and one-half per centum above or below the normal frequency;
- (b) of low voltage or medium voltage, not exceeding six per centum above or below the normal voltage;
- (c) of high voltage, not exceeding ten per centum above or below the normal voltage.

(6) The declared method of supply to a consumer set out in sub-regulation (2) shall continue in force until-

- (a) termination of the existing contract or verbal agreement to supply or permanent discontinuance of supply to that consumer; or
- (b) there is an agreement made between the undertaker and the consumer to terminate the existing contract or verbal agreement to supply and to substitute therefor a new contract of supply which shall be subject to the provisions of regulation 6; or
- (c) the 1st December, 1966;

whichever is the earliest.

(7) The declared method of supply to a consumer set out in sub-regulation (3) shall continue in force until-

- (a) termination of the existing contract or verbal agreement to supply or permanent discontinuance of supply to that consumer; or
- (b) there is an agreement made between the undertaker and the consumer to terminate the existing contract or verbal agreement to supply and to substitute therefor a new contract of supply which shall be subject to the provisions of regulation 6;

whichever is the earlier.

(8) Before the date referred to in paragraph (c) of sub-regulation (6), except where there has been a prior termination of the existing contract or verbal agreement in terms of paragraph (a) or (b) of that sub-regulation, the undertaker-

- (a) shall serve on each consumer affected by the provisions of that sub-regulation a notice declaring the new method of supply; or
- (b) shall declare the new method by publication in a newspaper circulating in the area affected.

(9) On and after the date referred to in paragraph (c) of sub-regulation (6), except where there has been a prior termination of the existing contract or verbal agreement in terms of paragraph (a) or (b) of that sub-regulation, each consumer affected by the provisions of that sub-regulation and of sub-regulation (8) shall be deemed to be a consumer to whom the provisions of regulation 6 apply:

Provided that the permissible variation referred to in sub-regulation (3) of regulation 6 shall only apply in the absence of an agreement to the contrary.

(10) Subject to any terms of a contract of supply between the undertaker and another undertaker existing at but made before the 1st December, 1961, the provisions of sub-regulation (7) of regulation 6 shall apply, *mutatis mutandis*, to such existing contract during its continuation.

(11) The provisions of sub-regulation (8) of regulation 6 shall apply, *mutatis mutandis*, to permissible variations of frequency and voltages referred to in this regulation.

8. (1) Subject to the provisions of sub-regulation (2), from the time an undertaker begins to supply electricity through a distributing main or service line, he shall maintain a supply of electricity in terms of the agreement sufficient for the use of each consumer entitled for the time being to be supplied therefrom and that supply shall be constantly maintained to each consumer without change-

Undertaker to provide constant supply

- (a) in the declared method of supply set out in regulation 6 or 7 except as provided for therein;
- (b) in the relationship between the neutral conductor and earth or between the neutral conductor and any phase conductor;
- (c) in the phase rotation;

except by agreement in writing between an undertaker and a consumer provided that no other consumer is adversely affected thereby.

(2) An undertaker shall not lessen or discontinue a supply which is required to be constantly maintained in terms of sub-regulation (1) except-

- (a) where permitted by the provisions of section *fourteen* of the Act; or
- (b) where required or permitted by the provisions of these Regulations.

9. (1) An undertaker may temporarily lessen or discontinue a supply of electricity referred to in regulation 8-

Undertaker may lessen or discontinue supply

- (a) without prior notice to a consumer likely to be affected-
 - (i) where such action is necessary to prevent danger to life or damage to property; or
 - (ii) in an emergency, from whatsoever cause arising including any political cause, to ensure the proper working of the undertaking or of any other undertaking with which it is interconnected; or
 - (iii) by the automatic operation of a protective device installed to disconnect a supply of electricity in fault conditions; or
 - (iv) by the automatic or hand operation of a device installed to disconnect a supply of electricity in terms of the conditions or agreement to supply; or
- (b) on giving not less than twentyfour hours' notice-
 - (i) for the purposes of making alterations or additions to a system; or
 - (ii) for normal maintenance work; or

- (iii) for testing a device referred to in subparagraph (iii) or (iv) of paragraph (a).

(2) The normal supply of electricity shall be resumed as soon as it is safe and expedient to do so after a temporary lessening or discontinuance referred to in sub-regulation (1).

(3) The notice required in terms of paragraph (b) of sub-regulation (1) shall state the period during which the supply may be affected and shall-

- (a) be served in accordance with the provisions of section *thirtyseven* of the Act; or
- (b) be published in a newspaper circulating in the area affected.

(4) In temporarily lessening or discontinuing a supply of electricity in the circumstances set out in sub-paragraph (ii) of paragraph (a) of sub-regulation (1), the undertaker, unless all his consumers are affected thereby, may select which consumer or group of consumers shall have a supply so lessened or discontinued.

10. (1) An undertaker shall not permanently connect a consumer's installation or part thereof with his low-voltage or medium-voltage electric lines if he or a person authorised by him is aware that the connection, if made, would cause a dangerous leakage of electricity from such installation or part thereof.

Undertaker shall not permanently connect

(2) An undertaker shall not permanently connect a consumer's installation or part thereof with his high-voltage electric lines unless he or a person authorised by him is satisfied that the high-voltage portion of the consumer's installation is of a standard of construction and safety not less than that required for an undertaker's high-voltage works in terms of these Regulations.

(3) Where an undertaker does not permanently connect a consumer's installation or part thereof under the provisions of sub-regulation (1) or (2), he shall give immediate notice to the consumer on Form No. 1 stating the reasons therefor.

11. (1) An undertaker may refuse to give or, subject to the provisions of regulation 12, to continue to give a supply of electricity to a consumer's installation or part thereof unless the undertaker or a person authorised by him is reasonably satisfied that such installation or part thereof-

Undertaker not compelled to commence supply

- (a) complies with the Wiring Regulations; or
- (b) in the case of an installation used for mining purposes, has been subjected to an insulation resistance test and the undertaker or a person authorised by him is satisfied with the result of such test; or
- (c) had been connected with the undertaker's lines and had been supplied with electricity before the 1st December, 1961, and-

The Laws of Zambia

- (i) such installation had continued to function satisfactorily up to the present time;
- (ii) the installation is to be or is being continued in use only within the limits of the maximum power for which it was originally intended;
- (iii) there are no grounds for supposing that the installation will fail to continue to function satisfactorily for a further reasonable period without risk of danger.

(2) Where an undertaker does not give or continue to give a supply of electricity under the provisions of sub-regulation (1), he shall give immediate notice to the consumer on Form No. 1. stating the reasons therefor.

12. (1) Where an undertaker in giving a supply of electricity has reasonable grounds for supposing that a consumer's installation or part thereof-

Discontinuance of supply

- (a) does not comply with the provisions of sub-regulation (1) or (2) of regulation 10; or
- (b) does not comply with the provisions of paragraph (a), (b) or (c) of sub-regulation (1) of regulation 11; or
- (c) is being operated in such a way as to endanger any person or as to cause or as is likely to cause damage to property; or
- (d) is interfering with or is likely to interfere with the efficient supply of electricity to any other consumer;

the provisions of this regulation shall apply.

(2) Where the undertaker is satisfied that immediate action is justified in the consumer's interests or in the public interest as a result of any of the circumstances set out in paragraphs (a), (b), (c) and (d) of sub-regulation (1), he may forthwith discontinue the supply of electricity without prior notice.

(3) Where an undertaker has discontinued a supply of electricity in terms of sub-regulation (2), he shall give immediate notice to the consumer on Form No. 1 stating the reasons therefor.

(4) Where the undertaker is not satisfied that immediate action is justified in terms of sub-regulation (2), he may arrange to make a detailed inspection and test of the consumer's installation either-

- (a) by verbal agreement with the consumer; or
- (b) where verbal agreement is impossible, by serving written notice on the consumer requiring the consumer to permit the undertaker or a person authorised by him to make such inspection and test.

(5) Where the undertaker-

- (a) makes the inspection and test referred to in sub-regulation (4) and is satisfied that the provisions of paragraph (a), (b), (c) or (d) of sub-regulation (1) apply to the consumer's installation or part thereof; or
- (b) is unable to make such inspection and test because of the failure or refusal of the consumer to permit such inspection and test;

the undertaker shall, unless he has to take immediate action in terms of sub-regulation (2), give notice to the consumer on Form No. 1 specifying the defect or default.

(6) Where the consumer fails to remedy a defect or default within seven days of receiving the notice referred to in sub-regulation (5), the undertaker may discontinue the supply of electricity forthwith on giving notice to the consumer on Form No. 1 stating the reasons for such discontinuance.

(7) The undertaker may restrict any discontinuance in the supply of electricity made in terms of this regulation to that portion of the consumer's installation which the undertaker considers to be defective, provided that the sound portion of the consumer's installation has been segregated therefrom and is capable of operating safely.

(8) Subject to the settlement of the dispute in terms of regulation 5, an undertaker shall not recommence a supply of electricity to a consumer's installation or part thereof which has previously been discontinued under the provisions of this regulation until the defect or default which led to the discontinuance has been remedied to the undertaker's satisfaction and in accordance with the requirements of regulation 10.

13. (1) Every section of an undertaker's works, including cables and overhead lines, which is in such a faulty condition as to have caused or as to be likely to cause death or injury to any person or damage to any property shall, on such condition becoming known to the undertaker or to a person authorised by him to operate the section, be disconnected from the supply of electricity forthwith and shall not be reconnected until the faulty condition of the section has been remedied.

Disconnection of works in certain circumstances

(2) Every section of an undertaker's works, including cables and overhead lines, which, because of a faulty condition, is causing interference with the use of a telegraph line shall, on the faulty condition becoming known to the undertaker or to a person authorised by him to operate the section, be disconnected from the supply of electricity and shall not be reconnected until the faulty condition of the section has been remedied.

(3) Nothing in sub-regulation (1) or (2) provided shall prevent the temporary reconnection of a section referred to therein to a supply of electricity for testing purposes where such temporary reconnection can be made without risk to life or property.

14. (1) No undertaker shall, without the consent in writing of the Postmaster-General given in terms of regulation 11 of the Lines Protection Regulations-

Connection of system with earth. Cap. 795 of the 1971 Edition of the Laws

- (a) except in the case of a conductor used solely for earthing purposes, connect with earth a conductor of an electric line which is connected to an alternating current system:

Provided that-

- (i) the star or neutral point of a generator or transformer; or
- (ii) one pole of a generator or transformer directly connected to a single-phase, two-wire, low-voltage or medium-voltage electricity supply line;

may, without such consent, be connected with earth at the point of generation or transformation; or

- (b) connect with earth a conductor of an electric line which is connected to a direct-current system; or
- (c) use the general mass of earth as part of the return of a circuit connected to an electric line, other than the return necessary to operate protective devices on that line.

(2) On a single-phase two-wire or three-phase four-wire distribution system operating at low voltage or medium voltage, at least one generator or transformer winding directly supplying that voltage shall have one pole or its neutral point if single phase or its neutral point if three-phase earthed:

Provided that where precautions are taken against a breakdown of insulation, the neutral point need not be earthed on a low-voltage or medium-voltage system used in an undertaker's works where such system does not supply a consumer.

(3) Where a high-voltage system is designed for operating with an earthed neutral, the neutral of the generator or transformer winding shall be earthed at the point of generation or transformation:

Provided that where the generator or transformer feeds a remote transformer, *via* a transmission line, the neutral of the generator or transformer need not be earthed if the neutral of the remote transformer is earthed at the point of the remote transformation.

(4) On a high-voltage system designed for operating with an insulated neutral-

- (a) provision shall be made to indicate a displaced neutral;
- (b) precautions shall be taken against a breakdown of insulation.

(5) Save for operational purposes on a high-voltage system, a conductor which is connected to earth in terms of this regulation shall be uninterrupted by a fuse, switch, circuit breaker, link or other means whilst any phase conductor of the system remains live.

(6) Where an electrode boiler is installed, the provisions of the Wiring Regulations relating to the earthing of electrode boilers shall apply.

15. An undertaker shall comply with the provisions of the Lines Protection Regulations where- Protection of telegraphs

- (a) a cable laid by him crosses or is in close proximity to an underground telegraph line; or
- (b) an overhead line installed by him crosses or is in close proximity to an overhead telegraph line.

16. Subject to the provisions of section *thirty-two* of the Act, an undertaker shall restrict access to his works to himself and to persons authorised to have access to such works. Access to undertaker's works

17. (1) For the guidance of a person authorised by the undertaker to operate, control or work on the undertaker's works, whether under supervision or otherwise, where high voltage may be present the undertaker shall issue general instructions regarding the working procedure to be followed to ensure maximum safety. Guidance and instructions

(2) The general instructions referred to in sub-regulation (1) shall, where the person is engaged in inspections, tests, cleaning, repairs, painting or maintenance work near live high-voltage conductors or live high-voltage parts, require that person to observe the section clearances set out in the Second Schedule.

18. (1) A consumer shall not be relieved of any liability or responsibility for inspecting, testing or maintaining in a safe condition his own installation by virtue of any obligation to inspect or test placed on an undertaker, a person authorised by him or an electrical inspector by these Regulations. Inspections and tests

(2) For the purposes of sub-regulation (2) of regulation 10 or sub-regulation (1) of regulation 11, the undertaker may, in lieu of an inspection or test by himself or by a person authorised by him, accept from a consumer a certificate on Form No. 2 given on behalf of the consumer by some other person whom the undertaker considers competent to make such statement that the consumer's installation or part thereof has been inspected and tested in a manner approved by, and with results satisfactory to, the undertaker.

19. An undertaker shall retain a copy of these Regulations at each office, depot or service centre attached to his undertaking. Availability of Regulations

PART III

CONSTRUCTION OF UNDERTAKERS' WORKS

20. (1) The undertaker's works shall-

Design and protection
of works

- (a) be sufficient in size and rating to perform their intended functions;
- (b) be designed, constructed, installed, protected where necessary and of such quality to prevent danger;
- (c) be specially designed and constructed or additionally protected where exposed to-
 - (i) the weather; or
 - (ii) wet conditions; or
 - (iii) vermin; or
 - (iv) corrosion; or
 - (v) inflammable surroundings; or
 - (vi) dust; or
 - (vii) explosive atmosphere;

so as to prevent danger from such exposure.

(2) Conductors and live parts, except as otherwise provided for in Part IV or V, shall-

- (a) be fully insulated and mechanically protected where necessary to prevent danger; or
- (b) be so placed and safeguarded as to prevent danger.

(3) High-voltage conductors and high-voltage live parts, unless completely surrounded and protected by earthed metal, shall have the minimum section clearances set out in the Second Schedule or shall be so guarded by a protective barrier as to prevent inadvertent touching or dangerous approach by a person standing on any floor-level, walkway, stairway or working platform.

- 21.** A switch, fuseswitch, circuit-breaker or isolating link shall- Switchgear
- (a) be accurately adjusted to make and maintain good contact;
 - (b) be provided with an operating handle which shall be insulated from the electrical conductors;
 - (c) be arranged so that it cannot accidentally reclose from the open position;
 - (d) be arranged to make and break all live poles of the supply simultaneously except in the case of fuses or where an isolating link is intended for use on a circuit not carrying load;
 - (e) be designed or constructed so that in breaking a live circuit an arc is not maintained.
- 22.** A fuse shall be designed, constructed, installed and protected in such a manner that- Fuses
- (a) it effectively interrupts the circuit current under fault or abnormal overload conditions;
 - (b) the fusible portion may be readily removed or replaced without danger.
- 23.** An automatic circuit-breaker shall be designed, constructed, installed and protected in such a manner that- Automatic circuit-breakers
- (a) it effectively interrupts the circuit current under fault or abnormal overload conditions;
 - (b) there is no danger from overheating or arcing or the scattering of hot oil when it operates;
 - (c) where arranged for manual closing, the operating mechanism provides trip-free operation.
- 24.** An electrical joint or connection shall be designed, constructed, installed and protected in such a manner that- Joints and connections
- (a) electrical conductivity is maintained satisfactorily;
 - (b) its insulation, where insulation is necessary, is suitable for the normal operating voltage;
 - (c) its mechanical strength is suited to its location and environment.
- 25.** (1) Isolating and protective devices- Isolating and protective devices
- (a) for disconnecting all voltages from any part of a system;
 - (b) for starting and stopping every motor;
- shall be provided to prevent danger.
- (2) Every part of a system shall be protected from excess current except a control or other circuit where such protection may be undesirable or unnecessary.

26. (1) A switchboard shall be designed, constructed, installed and placed in such a manner that- Switchboards

- (a) parts which have to be handled or adjusted are readily accessible from the working platform;
- (b) measuring instruments and indicators are observable from such platform:

Provided that where such handling, adjustment or observation is made from another position, such additional precautions as are necessary to prevent danger shall be taken.

(2) A low-voltage or medium-voltage switchboard which has bare conductors normally so exposed that they can be touched shall-

- (a) be located in an area specially provided or be suitably fenced or enclosed; or
- (b) have a working platform or passageway that has-
 - (i) a firm and even floor;
 - (ii) adequate means of access free from danger;
 - (iii) a clear headroom of not less than 2.1336 metres;
 - (iv) a clear width of not less than 1.2192 metres measured from any bare conductor or a clear width of 2.4384 metres between bare conductors arranged in switchboards on opposite sides of the same passageway.

27. (1) A building constructed by an undertaker for the accommodation of any of his works shall- Buildings for electrical purposes

- (a) be substantially constructed and designed for its intended purposes;
- (b) be so arranged as to prevent as far as practicable access thereto except by a doorway or gateway;
- (c) enclose such works in such a manner that they cannot readily be interfered with from outside;
- (d) be ventilated, kept dry and made vermin-proof as far as practicable;
- (e) have fixed outside each entrance a notice of durable material inscribed with the word "DANGER" in red letters at least 3.175 centimetres in height together with a red danger-symbol all on a white background;
- (f) have fixed inside printed instructions as to the proper first-aid treatment of persons suffering from electric shock.

(2) A building referred to in sub-regulation (1) below ground level shall-

- (a) have adequate means of access by a door or trapdoor with a staircase or ladder securely fixed and so placed that no live part of a system or conductor shall be within reach of a person thereon; or
- (b) where a person is to be regularly employed therein and high voltage is present, have the access referred to in paragraph (a) by door and staircase only.

28. (1) Any part of the undertaker's works for the transformation, control, regulation or switching of electricity in the open air shall, except as otherwise provided for in Part IV or V-

Outdoor substations

- (a) be completely enclosed in a metal casing connected with earth at all points below a height of 3.048 metres from the ground; or
- (b) be mounted on the supports of an overhead line; or
- (c) be enclosed by a fence not less than 1.8288 metres in height fitted with a suitable anticlimbing device for the purpose of preventing access not authorised by the undertaker.

(2) A notice of durable material inscribed with the word "DANGER" in red letters at least one and a 3.175 centimetres in height together with a red danger-symbol all on a white background shall be fixed to the metal casing, supports or fence referred to in paragraph (a), (b) or (c) of sub-regulation (1).

29. (1) Metal-work attached to or forming part of a metal or reinforced concrete support and a metal transformer case or metal switch handle mounted thereon shall be connected with earth.

Earthing of metal-work

(2) Metal-work attached to or forming part of a wooden support which is liable to become dangerous because of leakage across or failure of the insulation shall-

- (a) be connected with earth if the metal-work is within 3.048 metres of the ground; or
- (b) where the metal-work is not connected with earth and is more than 3.048 metres above the ground, have effective secondary insulation sufficient to withstand the voltage to earth.

(3) Notwithstanding the provisions of sub-regulation (2), where mounted on a wooden support-

- (a) a metal transformer case together with its associated metal-work and a metal switch handle shall be connected with earth;
- (b) a high-voltage switch shall have inserted in the operating rod between the switch handle and the switch an insulator capable of withstanding the normal operating voltage where such switch handle is within 3.048 metres of the ground.

(4) A metal cradle or a stay-wire shall-

- (a) be connected with earth; or
- (b) have inserted insulation capable of withstanding the normal operating voltage.

(5) Metal armouring or metal sheathing, except sheathing intended for use as a concentric neutral conductor at earth potential, shall-

- (a) be connected with earth;
- (b) have earth continuity maintained by a separate earth conductor across any joint-box or terminal enclosure associated with the cable;
- (c) where the joint-box or enclosure referred to in paragraph (b) is of metal, be bonded thereto.

(6) Save as is otherwise provided in these Regulations, any metal-work associated with or forming part of the undertaker's works, unless isolated from and not likely to come into contact with live parts or with earthed metal-work, shall be connected with earth.

30. (1) Where an undertaker provides protective multiple earthing in accordance with the provisions of Part VI, he shall, before supplying a consumer with electricity therefrom, interconnect with his own earthing arrangements the main earthing conductor of the consumer's installation.

Earthing of consumer's installation

(2) In a case other than that set out in sub-regulation (1), the undertaker may, before supplying a consumer with electricity, permit an interconnection between his own earthing arrangements and the main earthing conductor of the consumer's installation, subject to such conditions as the undertaker considers necessary.

31. An earth electrode of the undertaker shall be so installed that no voltage gradient shall be maintained at ground-level which may cause danger to life.

Earth electrodes

32. Where metal-work is earthed, the associated earthing system shall be so designed, constructed and maintained that the leakage resulting from contact of negligible resistance between a live conductor or live part and any metal-work connected with earth shall be sufficient to operate the protective device which shall be installed to make that conductor or part dead.

Leakage to earth

33. Nothing in regulation 32 provided shall prevent the use of an arc-suppression coil inserted between the transformer or generator neutral and earth in such a manner as to ensure that in the event of a live conductor or live part coming into contact with earth or with any metal-work connected with earth an arc between that conductor or part and earth shall be immediately suppressed and the voltage of that conductor or part shall be so reduced as to prevent as far as reasonably practicable the risk of accident therefrom.

Arc-suppression coils

34. (1) A service line shall have a suitable fusible cut-out or circuit-breaker as a protective device placed as near as practicable to the supply terminals on the consumer's premises. Service lines on consumer's premises

(2) A protective device referred to in sub-regulation (1) shall-

- (a) be supplied and installed by the undertaker or, in the event of agreement between him and the consumer, by the consumer;
- (b) be of adequate rupturing capacity, suitably enclosed and of fire-resisting construction;
- (c) be placed at a position to be selected by the undertaker after consultation with the consumer;
- (d) be inserted in each live conductor and not in any neutral conductor permanently connected with earth.

(3) Where a supply of electricity is to be provided at high voltage, provision shall be made whereby-

- (a) the protective device referred to in sub-regulation (1) can be isolated from the service line;
- (b) the consumer can cut off all voltage at or after the supply terminals without danger.

(4) Where the consumer installs an unmetered service line or service main on his premises or where a part of the consumer's installation is to be solely operated and controlled by the undertaker, the undertaker shall ensure that such service line, or service main or such part of the installation-

- (a) is suitable for its intended purpose;
- (b) is installed to prevent as far as practicable leakage of electricity to adjacent metal.

(5) A line, main or part referred to in sub-regulation (4) shall be subject to the provisions of regulations 10, 11, 12, 13 and 32 and the undertaker shall-

- (a) provide for any disconnection required thereunder;
- (b) advise the consumer of any remedial measures necessary to correct any defect, deficiency, or faulty condition which may exist.

PART IV

CABLES

35. (1) A cable shall be fully insulated for the normal operating voltage and shall be of a type and construction and shall be laid or installed in a manner suited to its particular environment and having regard to-

Construction and installation of cables

- (a) the provisions of paragraphs (a), (b) and (c) of sub-regulation (1) of regulation 20;
- (b) the normal usage of the ground in which any part of it is to be laid;
- (c) foreseeable risk of damage to the cable and danger to persons, property and to other electrical services, water, gas, sewerage and telegraph services, railways and constructional works at or below ground-level.

(2) A component used with a cable shall be of a type and construction and shall be laid or installed in a manner suited to that cable and having regard to the provisions of-

- (a) sub-regulation (1);
- (b) regulation 24 where a joint or connection is necessary.

36. (1) A high-voltage cable shall be so laid or installed that it is completely surrounded and protected by earthed metal as provided-

Metallic protection for high-voltage cables

- (a) by its own metal sheathing or metal armouring; or
- (b) by an extraneous metallic covering.

(2) A joint, connection or termination of a high-voltage cable shall be surrounded and protected by earthed metal.

(3) Notwithstanding the provisions of sub-regulation (1) or (2), the surrounding and protecting by earthed metal referred to therein may be omitted in a power station, substation, switch-room or similar premises designed for electrical purposes, provided that where it is omitted, the high-voltage cable, joint, connection and termination shall-

- (a) have the section clearances required in terms of sub-regulations (3) and (4) of regulation 20; or
- (b) be so guarded by a protective barrier as to prevent inadvertent touching or dangerous approach by a person standing on a normal floor-level, walkway, stairway or working platform.

37. (1) A neutral conductor of a cable shall, at its termination, be permanently identified so that it is readily and uniformly distinguishable from other conductors.

Identification and testing

(2) Where two or more cables forming part of different circuits terminate at adjacent positions, each circuit shall-

- (a) be permanently labelled on its exterior or on its terminating box or component; or
- (b) have other means of identification;

so that it is readily distinguishable from other circuits.

(3) A cable shall be subjected to an insulation test after being laid or installed before being connected to a supply of electricity but it shall not be so connected if the connection would result in an electrical leakage which might be a danger to persons or property.

(4) No cable shall be permanently connected to a supply of electricity unless tests have been made-

- (a) to ensure compliance with the provisions of these Regulations;
- (b) to establish electrical continuity of conductors.

PART V

OVERHEAD LINES

38. The provisions of this Part shall apply to overhead lines other than-

Application of Part V

- (a) an overhead crane wire or trolley wire;
- (b) an overhead line consisting entirely of insulated conductors enclosed in earthed metal sheathing or earthed metal armouring;
- (c) a conductor used above ground and in the open air as a fence specially designed for the control of movement of animals;
- (d) an overhead telegraph line;
- (e) an overhead line and pole-mounted or other substation within a fenced enclosure specially erected by the undertaker operating such line and substation for the purpose of prohibiting entry not authorised by him where such fence is not less than 1.8288 metres in height and is fitted with a suitable anti-climbing device.

39. The constructional requirements of an overhead line shall comply with-

Constructional requirements

- (a) the provisions of sub-regulation (1) of regulation 20;
- (b) any specific provisions of this Part.

40. (1) Line conductors and earth conductors shall be of copper, cadmium copper, steel-cored copper, aluminium, steel-cored aluminium, aluminium alloy, copper-clad steel, galvanised steel, stainless steel or any compatible combination of these materials.

Materials

(2) Cradle supporting wires and stay-wires shall be of stranded galvanised steel or be of material of not less than equivalent strength and durability.

(3) A support shall be of wood, metal or reinforced concrete or a combination of these materials and where wood or metal is used in the construction of a support, such wood or metal shall be protected against decay or corrosion as far as is reasonably practicable. The diameter of a wooden support at a point 1.524 metres from the butt shall be not less than 15.24 centimetres.

(4) Supports and the foundations thereof shall be constructed and placed having regard to the characteristics of the ground in which they are embedded and to the load which they are to carry.

(5) Insulators shall-

- (a) be of durable materials;
- (b) be designed to withstand the mechanical loading and electrical stresses of normal operating conditions.

41. (1) A line conductor near a building or other permanently raised position existing at the time of erection of the line shall-

Minimum heights and clearances

- (a) if operating at low voltage or medium voltage, be insulated at all places within a distance of 2.088 metres from any part of such building or raised position; or
- (b) if operating at high voltage, unless completely surrounded and protected by earthed metal, shall have the section clearance or protective barrier referred to in sub-regulation (3) of regulation 20 between it and any part of such building or raised position.

(2) Service lines in the terminal span of a connection between an overhead line and a building or in a span between one building and another building shall be insulated conductors.

(3) The point of attachment of a service line shall-

- (a) where connected to an overhead line, be at a support except for vertical service connections not exceeding 3.048 metres in length;
- (b) where connected to a building, be at a terminating device securely fixed to the building.

(4) Subject to the provisions of regulations 15, 20 and 42, the height above ground of a line conductor shall be not less than the appropriate height set out in the Third Schedule:

Provided that the height above ground of a low-voltage or medium-voltage insulated line conductor shall be not less than-

- (i) where a service line is used in the terminal span of a connection between an overhead line and a building or in a span between one building and another building, 3.048 metres at any point up to and including the point of attachment to the building where the line does not cross over a road normally accessible to vehicular traffic;
- (ii) where the line does cross over a road normally accessible to vehicular traffic, 4.2672 metres.

(5) Subject to the provisions of regulations 15, 20 and 42, the height above a road surface of earth conductors, stay-wires and cradles fitted between supports shall be not less than 5.4864 metres over roads normally accessible to vehicular traffic.

(6) The minimum height or clearance required by these Regulations shall be maintained under any conditions of loading and temperature likely to occur in the area concerned.

(7) A conductor, other than an earth conductor, leading to or from a transformer or other apparatus at a pole-mounted substation shall, at all points below a height of 3.6576 metres from the ground, be insulated and, in the case of a high-voltage conductor, shall have earthed metal sheathing or screening.

42. Where an overhead line crosses a permanent railway track having a gauge of not less than 9.144 centimetres, the following conditions shall apply:

Overhead lines
crossing railway tracks

- (a) the height above the rail of an earth conductor, stay-wire or cradle shall be not less than 7.0104 metres and of a line conductor shall be not less than the appropriate height set out in the Fourth Schedule;
- (b) there shall be no joints in the crossing span;
- (c) a crossing shall be made at right angles or as near thereto as practicable:

Provided that where the angle of crossing is less than 70 degrees, such crossing shall be the subject of a special agreement with the authority responsible for the operation of the railway;

- (d) the length of span at a crossing shall be as short as is reasonably practicable;
- (e) notwithstanding the provisions of sub-regulation (4) of regulation 44, conductors used at a crossing shall be stranded and be not less than 0.1613 square centimetres cross-sectional area copper or its equivalent conductivity.

43. (1) Where a high-voltage overhead line crosses a low-voltage or medium-voltage overhead line or where line conductors forming part of such different systems are erected on the same supports, provision shall be made to guard against the lower voltage system being charged above its normal voltage by the higher voltage system.

Different voltages in
proximity

(2) Where a pilot circuit is installed and operated as part of an overhead line system, the provisions of sub-regulation (1) shall apply and such pilot circuit shall be installed and operated with due regard to any dangers which may arise from its use.

44. (1) In calculating the strength of the various constituent parts, including supports, of an overhead line, the following basic design conditions shall be assumed:

Loading conditions
and factors of safety

- (a) a minimum temperature of 30 degrees Fahrenheit;
- (b) the wind pressure acting on the projected area of line conductors and supports not exceeding 12.192 metres in height shall be not less than 5.4 kilograms per square metre and of those exceeding 12.192 metres but not exceeding 36.576 metres in height shall be not less than 6.75 kilograms per square metre. In the case of conductors, earthwires and round, elliptical or hexagonal poles used as supports, the area on which the pressure acts shall be taken as 60 per centum of the projected area and in the case of lattice or composite structures as one and a half times the projected area of the constituent parts on one side. In the design of spans of over 121.192 metres, the assumed wind load on conductors and earthwires may be reduced to 70 per centum of the calculated load. In the design of conductor spans, due regard shall be given to the possibility of injurious conductor vibration by wind effects.

(2) A support shall be designed so that the failing load under operating conditions shall be not less than the resultant of simultaneous horizontal and vertical loads calculated in accordance with these Regulations, multiplied by the following factors:

- (a) where the support is of metal, 2.5;
- (b) where the support is of concrete, 2.5;
- (c) where the support is of wood, 3.5.

(3) The load in a line conductor, earth conductor, insulator, joint or cradle component or an associated fitting under operating conditions shall not exceed 50 per centum of its ultimate breaking load.

(4) Notwithstanding the provisions of this regulation, the minimum permissible size for a single line conductor shall be such as to have an ultimate breaking load of not less than 359.55 kilograms and shall be not less in gauge than No. 10 British Standard Wire Gauge.

45. (1) Where a protective device is installed in terms of regulation 32 to make a line conductor dead, the earthing system of the overhead line with which the system is associated shall be tested at at least one point by the undertaker or by a person authorised by him-

Periodic testing and
inspecting

- (a) before commissioning such overhead line;
- (b) thereafter at intervals of not more than six years;

and repaired if necessary.

(2) The purpose of a test made in terms of sub-regulation (1) shall be to ensure that the leakage resulting from contact of negligible resistance between a line conductor and any metal-work connected with earth is sufficient to operate the protective device.

(3) An overhead line, pole-mounted substation, outdoor substation and support shall be inspected from ground level or above by the undertaker or by a person authorised by him-

- (a) within six years after the 1st December, 1961, if erected before that date;
- (b) before commissioning, if erected on or after that date;
- (c) in all cases thereafter at intervals not exceeding six years after the date of inspection referred to in paragraph (a) or (b);

and repaired if necessary.

(4) A test or inspection made in terms of this regulation shall be recorded by the person making the test or inspection and such record shall be retained by the undertaker until the next test or inspection is made.

46. There shall be fixed in a prominent position at every pole-mounted substation a notice of durable material inscribed with the word "DANGER" in red letters at least 3.175 centimetres in height, together with a red danger-symbol all on a white background.

Warning notices

47. In order to prevent as far as is reasonably practicable climbing which has not been authorised by the undertaker, an anti-climbing device shall be fitted-

Unauthorised climbing

- (a) at every support for a pole-mounted substation;
- (b) at every support which has broken surfaces within 3.048 metres of the ground.

PART VI

PROTECTIVE MULTIPLE EARTHING

48. On any part of his system where an undertaker is satisfied that more than one connection with earth of a pole or neutral point referred to in sub-regulation (2) of regulation 14 is necessary in order to improve the general factor of safety in relation to earthing of metal-work, the method of providing any additional connections shall-

Description

- (a) be in accordance with the provisions of this Part;
- (b) be known as protective multiple earthing or P.M.E.

49. Before providing protective multiple earthing, an undertaker shall obtain the consent in writing of the Postmaster-General in terms of regulation 11 of the Lines Protection Regulations.

Consent Cap. 795 of the 1971 edition

- 50.** Protective multiple earthing shall- Limitations
- (a) only be applied to mains and associated service lines operating at low voltage or medium voltage;
 - (b) when so applied, extend to every such main and line of a group supplied with electricity from a common transformer at the said voltage:
- Provided that no such main, line or group shall be directly interconnected in a permanent manner with any other main, service line or group supplied with electricity from any part of another system not similarly earthed.
- 51.** A transformer which is to supply the low voltage or medium voltage to a main or service line provided with protective multiple earthing shall be so arranged that- Connections at transformer
- (a) an earthing connection is taken from the metal core or metal-work closely associated with the higher voltage winding to an earth electrode;
 - (b) another earthing connection is taken from the neutral point on the low-voltage or medium-voltage winding to the same earth electrode or to another earth electrode with its own resistance area.
- 52.** (1) Where a cable is used in a main or service line provided with protective multiple earthing and is laid underground, such cable shall- Use of cables
- (a) have a neutral conductor of the same material as, and be of a cross-sectional area not less than, any phase conductor;
 - (b) have metal sheathing or metal armouring.
- (2) The metal sheathing or metal armouring or, if the cable has both metal sheathing and metal armouring, the metal sheathing and the metal armouring and the neutral conductor referred to in sub-regulation (1) shall be bonded together and also bonded to-
- (a) the earthing connection referred to in paragraph (b) of regulation 51 at the transformer position;
 - (b) an earth electrode installed-
 - (i) by the undertaker at points at or near the end of each distributing main or service line; or
 - (ii) by the consumer at or on his premises by arrangement with and to the satisfaction of the undertaker; or
 - (iii) by the undertaker and the consumer in accordance with the provisions of sub-paragraphs (i) and (ii).

53. (1) Where an overhead line is used in a distributing main or service line provided with protective multiple earthing, such line shall- Use of overhead lines

- (a) have a neutral conductor of the same material as, and of a cross-sectional area not less than, any phase conductor; or
- (b) have two neutral conductors of the same material as, and each of a cross-sectional area not less than one-half, that of any phase conductor.

(2) The neutral conductor or the two neutral conductors referred to in paragraph (a) or (b) of sub-regulation (1) shall be bonded to-

- (a) the earthing connection referred to in paragraph (b) of regulation 51 at the transformer position;
- (b) earth electrodes installed-
 - (i) by the undertaker at regular intervals as far as practicable along the route of the line, at branching points and at the final pole of each main or service line remote from the supply transformer; or
 - (ii) by the consumer at or on his premises by arrangement with and to the satisfaction of the undertaker; or
 - (iii) by the undertaker and the consumer in accordance with the provisions of sub-paragraphs (i) and (ii).

54. (1) Where an underground cable and an overhead line are used in association with each other in a main or service line provided with protective multiple earthing, the provisions of regulations 52 and 53 shall apply respectively to such cable and line except that the bonding to the earth connection at the transformer position referred to in paragraph (a) of sub-regulation (2) of regulations 52 and 53 may be omitted in the case of- Use of cables and overhead lines

- (a) an underground cable which starts at a position remote from the transformer if such cable is fed from an overhead line; or
- (b) an overhead line which starts at a position remote from the transformer if such line is fed from an underground cable:

Provided that the overhead line referred to in paragraph (a) or the underground cable referred to in paragraph (b) has such bonding to the earth connection at the transformer position.

(2) At every point where an underground cable and an overhead line referred to in sub-regulation (1) are connected with each other, each neutral conductor of the said cable and line and the metal sheathing or metal armouring of the cable shall be bonded together.

55. The provisions of regulation 51, 52, 53 or 54 shall not have been complied with until it has been established that the overall resistance to earth of a neutral conductor-

Overall resistance

- (a) is such that the fuse, circuit-breaker or other protective device on the high-voltage side of the transformer will operate safely in the event of a breakdown between the transformer windings;
- (b) does not exceed ten ohms;
- (c) is such that the provisions of regulation 32 relating to electrical leakage or of regulation 33 relating to arc-suppression coils where applicable can be complied with efficiently.

56. No fuse, switch, circuit-breaker, link or other means for interrupting continuity, other than a bolted link, shall be inserted in a neutral or earth conductor used for protective multiple earthing purposes.

Neutral to be unbroken

57. In complying with the provisions of sub-regulation (1) of regulation 30 and subject to the provisions of regulation 18, the undertaker shall first satisfy himself in regard to the consumer's installation that-

Consumer's earthing

- (a) metal-work enclosing, supporting, or in proximity to or likely to come into contact with the electrical wiring is bonded together by one or more earth-continuity conductors;
- (b) the overall resistance to earth of the consumer's earthing system and the associated earthing system is such that the provisions of regulation 32 relating to earth leakage can be complied with efficiently;
- (c) the provisions of regulation 56 have been complied with on the consumer's side of the supply terminals.

PART VII

STANDARDS OF MEASUREMENT

58. (1) The fundamental electrical units of measurement shall be-

Fundamental electrical units

- (a) the ohm;
- (b) the ampere;
- (c) the volt;

and the value of each shall be as set out in Part I of the Fifth Schedule.

(2) Denominations of standards for the fundamental electrical units referred to in sub-regulation (1) shall be as set out in Part II of the Fifth Schedule.

(3) Limits of accuracy attainable in the use of standards denominated in sub-regulation (2) shall be as set out in Part III of the Fifth Schedule.

The Laws of Zambia

59. The electrical unit for the measurement of electricity shall be the kilowatt-hour and the value of such unit shall be derived from the fundamental units referred to in regulation 58 and shall be as set out in Part IV of the Fifth Schedule. Derived electrical units of energy

60. (1) The amount of electricity supplied by the undertaker shall, except where otherwise agreed between the consumer and the undertaker, be ascertained by means of an appropriate meter or meters to be supplied by the undertaker. Measurement of electricity

(2) In addition to a meter which may be placed upon the premises of a consumer to ascertain the amount of the supply, the undertaker may place upon those premises such meter or other apparatus as he may desire for the purpose of ascertaining or regulating the amount of electricity supplied to the consumer, the number of hours during which the supply is taken, the maximum rate of supply taken by the consumer or any other quantity or time connected with the supply.

(3) A meter used by an undertaker for measuring a supply to a consumer of electricity in kilowatt-hours shall have permissible limits of error in registration not exceeding three per centum above nor three per centum below a true and precise registration of kilowatt-hours.

(4) If a dispute arises between a consumer and the undertaker with reference to the measurement of electricity, the provisions of regulation 5 shall apply to such dispute.

PART VIII

OFFENCES AND PENALTIES

61. (1) Subject to the provisions of paragraphs (a) and (b) of sub-regulation (2) of regulation 4 and of sub-regulation (3) of that regulation, an undertaker or a person authorised by him who erects or operates electrical works for or in connection with the generation, transmission, distribution, connection, installation and use of electricity, whether on the premises of the undertaker or the consumer or elsewhere, where such works are constructed, operated, maintained, repaired, tested or inspected otherwise than in accordance with the provisions of these Regulations shall be guilty of an offence. Offences and penalties

(2) Any person who is guilty of an offence in terms of sub-regulation (1) shall be liable to a fine not exceeding three thousand penalty units or, in default of payment, to imprisonment for a period not exceeding twelve months.

(As amended by Act No. 13 of 1994)

FIRST SCHEDULE
(Regulation 2)
PRESCRIBED FORMS

The Laws of Zambia

THE ELECTRICITY ACT
NOTICE FROM UNDERTAKER TO CONSUMER

Notice to a consumer from an undertaker declining a supply of electricity.

From (1)

To (2)
.....
(1) Here state full name and address of undertaker

IT is hereby declared that a supply of electricity to your premises at-

(3)

(3) Here state relevant address

- (a) was not permanently connected;
- (b) was not commenced;
- (c) was discontinued;
- (d) will be discontinued;
- (a), (b), (c), (d) *Delete the words which are not appropriate.*
- (i) to the whole of;
- (ii) to a part of;
- (i), (ii) *Delete the words which are not appropriate.*

your electrical installation, in terms of section 14 of the Act, and of (e) regulations

..... of the Electricity (Supply) Regulations, because-

(4)
.....
(e) Add number of regulation

(4) Here state full reasons

It is recommended that-

(5)

(5) Here state recommendations

The supply of electricity will not be connected or resumed until the defects have been safely remedied.

(6) Signed

(6) To be signed and dated by a responsible officer

at Date

for and on behalf of

(7)

(7) Here state name of undertaker

The Laws of Zambia

Notice to an undertaker from a consumer certifying the condition of the consumer's electrical installation.

From
(Name and address of consumer)

To
(Name and address of undertaker)

I attach hereto a certificate in respect of the condition of my electrical installation .

Signed Date
(Consumer's signature)

I
(Name and address of certifier)

of
(Name and address of firm or company)

am a/an
(Occupation, trade or profession)

and I hereby declare that I am competent to make and sign this certificate and do hereby certify as follows:

1. That the electrical installation in entirety/in part comprising
(Description of part)

at
(Address of premises)

(a) was installed by me/by; and
(Name and address of contractor or other person)

(b) was inspected and tested by me;

fully in accordance with the recommendations contained in an edition current at the date of this certificate of the Safety Code for the electrical wiring of premises issued by the Standards Association of Zambia in respect of those sections of the installation falling within the scope of the Safety Code.

2. That to the best of my knowledge and belief the said electrical installation in entirety/in respect of the part described-

(a) complies with the Wiring Regulations;

(b) is in a fit and proper condition to operate safely if connected to the intended supply of electricity;

(c) can be so connected without risk of a dangerous electrical leakage occurring,

.....
Signature of Certifier

.....
Witness

Date at on 19.....

The Laws of Zambia
SECOND SCHEDULE
(Regulations 17 and 20)

SECTION CLEARANCES

*Normal operating voltage
between bare line conductors*

*Minimum clearance from any point on
or about the permanent equipment
where a man may be required to stand
(measured from the position of the
feet)-*

	<i>To the nearest unscreened live conductor in air</i>	<i>To the nearest part not at earth potential of an insulator supporting a live conductor</i>
	metres	metres
1. Not exceeding 15,000 volts . .	2.62128	2.4384
2. Exceeding 15,000 volts but not exceeding 33,000 volts . .	2.7432	2.4384
3. Exceeding 33,000 volts but not exceeding 44,000 volts . .	2.92608	2.4384
4. Exceeding 44,000 volts but not exceeding 66,000 volts . .	3.048	2.4384
5. Exceeding 66,000 volts but not exceeding 88,000 volts . .	3.23088	2.4384
6. Exceeding 88,000 volts but not exceeding 110,000 volts . .	3.3528	2.4384
7. Exceeding 110,000 volts but not exceeding 132,000 volts . .	3.53568	2.4384
8. Exceeding 132,000 volts but not exceeding 165,000 volts . .	3.84048	2.4384
9. Exceeding 165,000 volts but not exceeding 220,000 volts . .	4.2672	2.4384
10. Exceeding 220,000 volts but not exceeding 275,000 volts . .	4.572	2.4384
11. Exceeding 275,000 volts but not exceeding 330,000 volts . .	5.1816	2.4384

NOTES

(a) The above provisions concern the means of access for works which are permanently available, such as fixed ladders or platforms attached to structures. The means of access shall also comprise the structures themselves and the tops of circuit breakers or transformers if a man is required to stand on them to carry out work. The provisions do not apply to portable ladders, cradles or similar equipment, the use of which is governed by the general instructions issued by the undertaker in terms of regulation 17.

(b) Portable ladders and platforms specially designed for specific maintenance work, and so arranged that they cannot readily be employed in any way other than that intended, shall be considered as permanent means of access for the purpose of safety clearances.

THIRD SCHEDULE
(Regulation 41)

The Laws of Zambia

MINIMUM HEIGHTS OF OVERHEAD LINES

<i>Normal operating voltage between line conductors</i>	<i>Over roads normally accessible to vehicular traffic</i>	<i>In any position except where otherwise specified in these Regulations</i>
1. Not exceeding 650 volts ..	5.4864 metres	4.8768 metres
2. Exceeding 650 volts but not exceeding 33,000 volts ..	5.7912 metres	5.1816 metres
3. Exceeding 33,000 volts but not exceeding 88,000 volts ..	6.096 metres	6.096 metres
4. Exceeding 88,000 volts but not exceeding 132,000 volts ..	6.7056 metres	6.7056 metres
5. Exceeding 132,000 volts but not exceeding 275,000 volts ..	7.0104 metres	7.0104 metres
6. Exceeding 275,000 volts ..	7.3152 metres	7.3152 metres

FOURTH SCHEDULE
(Regulation 42)

MINIMUM HEIGHTS OF OVERHEAD LINES CROSSING RAILWAY TRACKS

<i>Normal operating voltage between line conductors</i>	<i>Minimum height above rail</i>
1. Not exceeding 33,000 volts.	7.62 metres
2. Exceeding 33,000 volts but not exceeding 88,000 volts	7.9248 metres
3. Exceeding 88,000 volts but not exceeding 132,000 volts	8.5344 metres
4. Exceeding 132,000 volts but not exceeding 275,000 volts	8.8392 metres
5. Exceeding 275,000 volts	9.144 metres

FIFTH SCHEDULE
(Regulations 58 and 59)

PART I
FUNDAMENTAL UNITS

The fundamental electrical units are the units agreed as such at an international conference on electrical units and standards held in London in October, 1908 (the magnitude thereof being determined on the electromagnetic system of measurement, with reference to the centimetre as the unit of length, the gram as the unit of mass and the second as the unit of time), and comprising-

(a) the ohm, the unit of electrical resistance, the value thereof being one thousand million in terms of the centimetre and the second;

(b) the ampere, the unit of electrical current, the value thereof being onetenth in terms of the centimetre, the gram and the second;

(c) the volt, the unit of electromotive force, the value thereof being one hundred million in terms of the centimetre, the gram and the second.

The Laws of Zambia
PART II
DENOMINATIONS OF STANDARDS

1. *Electrical Resistance.* A standard of electrical resistance denominated one ohm, agreeing in value with the limits of accuracy specified in Part III with that of the fundamental unit in paragraph (a) of Part I, and being the resistance between the copper terminals of the instrument marked "Board of Trade Ohm Standard Verified 1894 and 1909" to the passage of an unvarying electrical current, when the coil of insulated wire forming part of the instrument aforesaid is in all parts at a temperature of fourteen decimal nine degrees centigrade.

2. *Electrical Current.* A standard of electrical current denominated one ampere, agreeing in value within the limits aforesaid with that of the fundamental unit in paragraph (b) of Part I, and being the current which is passing in and through the coils of wire forming part of the instrument marked "Board of Trade Ampere Standard Verified 1894 and 1909" when, on reversing the current in the fixed coils, the change in the forces acting on the suspended coil in its sighted position is exactly balanced by the force exerted by gravity in Teddington in the United Kingdom upon the iridioplatinum weight marked A and forming part of the said instrument.

3. *Electrical Pressure.* A standard of electrical pressure denominated one volt, agreeing in value within the limits aforesaid with that of the fundamental unit in paragraph (c) of Part I, and being onehundredth part of the pressure which, when applied between the terminals forming part of the instrument marked "Board of Trade Volt Standard Verified 1894 and 1909 and 1948", causes that rotation of the suspended portion of the instrument which is exactly measured by the coincidence of the sighting wire with the image of the fiducial mark A before and after the application of the pressure, and with that of the fiducial mark B during the application of the pressure, these images being produced by the suspended mirror and observed by means of the eyepiece.

4. The coils and instruments referred to herein are deposited at the National Physical Laboratory at Teddington, Middlesex, in the United Kingdom.

PART III
LIMITS OF ACCURACY

The limits of accuracy attainable in the use of the standards denominated in Part II are-

- (a) for the ohm, within onehundredth part of one per centum;
- (b) for the ampere, within onetenth part of one per centum;
- (c) for the volt, within onetenth part of one per centum.

PART IV
DERIVED ELECTRICAL UNIT OF ENERGY

The derivation of the kilowatthour as the lawful electrical unit for the measurement of electricity shall be from the fundamental units described in Part I. Thus one watt (the practical unit of power) shall be equal to the amount of energy expended per second by an unvarying current of one ampere with a steady applied voltage of one volt. For the purpose of expressing watts in terms of voltage and resistance, or current and resistance, the steady voltage applied to a constant resistance shall be equal to the unvarying current in amperes multiplied by the value of the resistance in ohms.

In an alternating-current circuit the product of the instantaneous value of the amperes and the volts represents the instantaneous value of the power and the algebraic mean value of the instantaneous values over one second shall be the power in watts provided that the frequency is fifty cycles per second. One watt-hour shall be equal to the energy expended in one hour when the power is one watt, and a kilowatt-hour shall be equal to one thousand watt-hours.

THE ELECTRICITY (WIRING) REGULATIONS

ARRANGEMENT OF REGULATIONS

The Laws of Zambia

PART I

PRELIMINARY

Regulation

1. Title and commencement
2. Interpretation

PART II

GENERAL

3. Administration
4. Application
5. Procedure as to settlement of disputes
6. Prior notification to undertaker
7. Accommodation to be provided
8. Meter panels and connections
9. Custody of undertaker s property
10. Disconnection in certain circumstances
11. Connection of neutral with earth
12. Protection of telegraphs
13. Guidance and instructions
14. Certificate of inspection and test

PART III

CONSTRUCTION OF CONSUMERS' INSTALLATIONS

15. Design and mechanical protection
16. Electrical protection
17. Isolation and control position
18. Earthing of metal-work
19. Protection against earth leakage
20. Arc-suppression coils
21. Earthing of installation
22. Electrode boilers

Regulation

23. Auto-transformers
24. Capacitors
25. Substations
26. Outdoor substations

PART IV

UNDERGROUND CABLES

27. Construction and installation
28. Joints and connections
29. Metallic protection for high voltage cables
30. Identification and testing

PART V

OVERHEAD LINES

31. Application of Part V
32. Constructional requirements
33. Minimum heights and insulation
34. Unmetered service lines
35. Overhead lines crossing railway tracks
36. Different voltages in proximity
37. Loading conditions and factors of safety
38. Periodic testing and inspecting
39. Danger notices
40. Unauthorised climbing of supports

PART VI

PROTECTIVE MULTIPLE EARTHING

41. Provision of protective multiple earthing
42. Consent of Postmaster-General
43. Limitations
44. Connections at transformer
45. Use of cables
46. Use of overhead lines

Regulation

47. Use of cables and overhead lines
48. Overall resistance
49. Neutral to be unbroken
50. Separate installation

PART VII

PRIVATE GENERATION AND SUPPLY

51. Private ownership
52. Protection of generators
53. Fire precautions
54. Plant rooms
55. Protection of batteries
56. Installation of batteries
57. Labelling
58. Interconnection

PART VIII

OFFENCES AND PENALTIES

59. Offences and penalties

FIRST SCHEDULE-Minimum section clearances

SECOND SCHEDULE-Certificate of inspection and test

THIRD SCHEDULE-Minimum heights of overhead lines

FOURTH SCHEDULE-Minimum heights of overhead lines crossing railway tracks

FIFTH SCHEDULE-Minimum requirements for protection of private generators

SECTION 38-THE ELECTRICITY (WIRING) REGULATIONS

Regulations by the Minister

*Federal Government
Notice
405 of 1961
Statutory Instrument
157 of 1965
Act
13 of 1994*

PART I

PRELIMINARY

1. These Regulations may be cited as the Electricity (Wiring) Regulations*(11) and shall be deemed to have come into operation on the 1st December, 1961. Title and commencement

* These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2. In these Regulations, unless the context otherwise requires- Interpretation

"cable" means an insulated conductor or an assemblage of such conductors enclosed within a common sheathing;

"conductor" means a bar, tube, wire or line used for conducting electricity;

"consumer" means a person, other than an undertaker, who is supplied or who has made application to be supplied with electricity by an undertaker;

"consumer's installation" means the consumer's electrical wiring together with any electricity consuming device connected with such installation;

"danger notice" means a notice of durable material inscribed with the word "DANGER" in red letters at least one and one-quarter inches in height together with a red symbol illustrating a skull and crossbones all on a white background;

"earthed" and "connected with earth" mean connected with the general mass of earth in such manner as will ensure at all times an immediate and efficient discharge of electricity, and cognate expressions shall be construed accordingly;

"electric line" means a cable, overhead line or other means used or intended to be used for the purpose of conveying, transmitting or distributing electricity together with any casing, coating, covering, tube, pipe or insulator enclosing, surrounding or supporting the same, or any part thereof, or any apparatus connected therewith for the purpose of conveying, transmitting or distributing electricity;

The Laws of Zambia

"electrical inspector" means a person referred to in regulation 3 of the Supply Regulations;

"extra-low voltage" means normal operating voltage not exceeding 30 volts alternating current or 50 volts direct current;

"failing load" means a load on a support which, if exceeded, will result in the conductor not being supported in accordance with these Regulations;

"high voltage" means normal operating voltage exceeding 650 volts;

"insulated conductor" means a conductor covered with insulation suitable for the normal operating voltage;

"insulation" means nonconducting material enclosing, surrounding, or supporting a conductor or any part thereof;

"line conductor" means a conductor of an overhead line;

"Lines Protection Regulations" means the General Post Office (Lines Protection) Regulations; Cap. 795 of the 1971 Edition

"live" means electrically charged;

"low voltage" means normal operating voltage exceeding 30 volts alternating current or 50 volts direct current but not exceeding 250 volts;

"main" means an electric line through which electricity may be supplied or is intended to be supplied by the undertaker to a service line;

"medium voltage" means normal operating voltage exceeding 250 volts but not exceeding 650 volts;

"metal armouring" means metal wire or metal tape completely covering a cable and manufactured as an integral part of the cable;

"metal sheathing" means a continuous and watertight metal sleeve surrounding a cable and manufactured as an integral part of the cable;

"metal-work" means any metal-work other than-

- (a) a conductor and its associated live parts; or

The Laws of Zambia

(b) an earth conductor;

"overhead line" means a conductor erected above ground and in the open air and includes any pole-mounted substation associated therewith;

"pole-mounted substation" means transformer equipment, high-voltage switchgear or high-voltage apparatus mounted on a support and associated with the operation and control of an overhead line;

"private owner" means a person operating a plant which is rated at the site where it is installed at a capacity of less than one hundred kilowatts for the generation and supply of electricity at a voltage in excess of extra-low voltage solely for his own use or for use on his own premises;

"protective multiple earthing" means more than one connection with earth of the pole or neutral point earthed in terms of sub-regulation (2) of regulation 11;

"service line" means an electric line through which electricity may be supplied or is intended to be supplied by the undertaker to a consumer either from a main or directly from the premises of the undertaker;

"Supply Regulations" means the Electricity (Supply) Regulations;

"supply terminals" means the end of a service line at which the supply of electricity is delivered from such line to the consumer;

"support" means a structure or pole for supporting an overhead line and includes any stay or strut associated therewith;

"telegraph" or "telegraph line" means a telegraph or telegraph line, as the case may be, as defined in section two of the Posts and Telegraphs Act;

Cap. 795 of the 1971
Edition

"voltage" means the electro-motive force existing between any pair of live conductors forming part of the common supply of electricity or between any part of either of such conductors and earth and, in the case of alternating current, means the virtual voltage or root-mean-square value as determined by the square-root of the mean or average value of the squares of the instantaneous values of the voltage during one complete cycle.

PART II

GENERAL

3. Subject to the directions of the Minister, the Chief Electrical Inspector referred to in regulation 3 of the Supply Regulations shall administer these Regulations. Administration

4. (1) Subject to the provisions of sub-regulations (2) and (3) and of regulation 51, the provisions of these Regulations shall apply to every consumer and every private owner. Application

(2) The provisions of Parts III, IV and V shall not apply to-

- (a) the construction, installation, quality, alteration, operation, control, protection, inspection and testing of the parts of a consumer's or private owner's installation which are used exclusively for mining or factory purposes at a mine or factory where such parts comply with the electrical provisions of any written law or regulations relating to such construction, installation, quality, alteration, operation, control, protection, inspection and testing at a mine or factory;
- (b) the construction, installation and quality of a consumer's or private owner's installation, or any part thereof, installed or erected, or for the installation or erection of which an agreement was entered into, before the 1st December, 1961, until such installation or part thereof is altered or replaced after that date.

(3) The provisions of regulation 25 shall not apply to the construction of a substation by a consumer or private owner for the accommodation of a high-voltage part of his installation where such substation complies with any written law or by-law relating to its construction.

(As amended by S.I. No. 157 of 1965)

5. Where a difference arises between a consumer and an undertaker in the application of these Regulations, the Minister may order an inquiry to be held in terms of section *thirty-five* of the Act. Procedure as to settlement of disputes

6. (1) Before any work is commenced on a new installation or on any alteration or extension to an existing installation, the consumer or the prospective consumer, as the case may be, shall- Prior notification to undertaker

- (a) advise the undertaker in writing with reference to-
 - (i) the purpose, type and extent of the proposed work;
 - (ii) the electrical loading of equipment for which the supply or additional supply, as the case may be, of electricity is required;
- (b) obtain from the undertaker in writing details of-
 - (i) the type of current, number of phases and frequency, if alternating current, and voltage, at which the undertaker proposes to deliver electricity to the supply terminals;

The Laws of Zambia

- (ii) the undertaker's property which is to be accommodated in terms of regulation 7;
- (iii) the meter panel and connections required in terms of regulation 8;
- (iv) any omission of the consumer's main fuse or circuit-breaker;
- (v) earthing requirements;
- (vi) proposed tariff arrangements.

(2) Where the work referred to in sub-regulation (1) is commenced-

- (a) it shall not thereafter be changed in relation to its purpose, type, extent and electrical loading except as may be agreed with the undertaker;
- (b) it shall be executed to suit the undertaker's stated details referred to in paragraph (b) of sub-regulation (1).

7. (1) A consumer requiring a supply of electricity, or a consumer receiving a supply of electricity who requires an alteration in the terms of his original electricity supply agreement involving a change in the undertaker's metering arrangements, shall, unless otherwise agreed in writing with the undertaker, provide all necessary accommodation on his premises for such of the undertaker's property as is necessary to provide the said supply or change in metering arrangements, as the case may be.

Accommodation to be provided

(2) Accommodation referred to in sub-regulation (1) shall be located at a position to be agreed between consumer and undertaker and be of a type, design and size required by the undertaker.

(3) Where the accommodation referred to in sub-regulation (1) is not inside a building, it shall be fully weatherproof and have no means of access other than a lockable door.

(4) Where the accommodation referred to in sub-regulation (1) is located in a substation, switchroom or similar compartment designed solely for electrical purposes, such place shall have a lockable door and shall not be used for purposes other than accommodating the undertaker's property.

(5) Where a group of shops, offices, flats, tenements or workshops is to be erected for occupation by separate tenants or a building is to be converted for such use, and it is intended that each tenant shall have an individually metered supply of electricity, the owner of the building shall-

- (a) provide such accommodation at one or more places as may be required by the undertaker for his meters and other property; and
- (b) ensure that each tenant has-
 - (i) free access to the meter registering the tenant's supply of electricity for checking and inspecting purposes; and
 - (ii) a main switch and fuses or a circuit-breaker necessary for controlling the tenant's supply of electricity situated in that part of the building occupied by the tenant.

8. Unless otherwise agreed in writing with the undertaker, a consumer providing accommodation in terms of regulation 7 shall-

Meter panels and connections

- (a) supply and fix in a manner and at a position to be agreed between consumer and undertaker a meter panel of the size, type, design and construction required by the undertaker;
- (b) supply and fix such additional component parts as may be required for the operation of transformer metering where such metering is to be used;
- (c) supply all necessary meter loops and line and load connections;
- (d) where the service line to be used is an overhead line, supply and fix at a position to be agreed between consumer and undertaker internal service mains and roof shackles.

9. (1) A consumer shall take all reasonable steps necessary to ensure the safe custody of the undertaker's property installed on the consumer's premises for or incidental to the supply of electricity.

Custody of undertaker's property

(2) Accommodation provided by a consumer under the provisions of these Regulations for the undertaker's property shall be maintained by the consumer in a fit and proper state.

(3) A consumer on whose premises is situate property belonging to an undertaker for or incidental to the supply of electricity shall not, in relation to the said property-

- (a) permit access thereto to a person other than-
 - (i) the undertaker;
 - (ii) a person authorised by the undertaker;

The Laws of Zambia

- (iii) an electrical inspector;
- (b) unless permitted by the undertaker-
 - (i) remove or attempt to remove the property from its position;
 - (ii) remove or attempt to remove any lock or seal attached to the property;
 - (iii) connect thereto or disconnect therefrom a consumer's installation or other electrical circuit;
 - (iv) alter, adjust, handle, operate, tamper or interfere with the property in any way.

10. (1) Any part of a consumer's installation which is in such a faulty condition as to have caused, or as to be likely to cause, death or injury to any person or damage to any property shall, on such condition becoming known to the consumer or to a person authorised by him to operate the installation-

Disconnection in certain circumstances

- (a) subject to the provisions of sub-regulation (2) of regulation 34, be immediately disconnected by that consumer or person from the supply of electricity; and
- (b) subject to the provisions of sub-regulation (3), not be reconnected until the faulty condition of the said part has been remedied.

(2) Any part of a consumer's installation which due to a faulty condition is causing interference with the use of a telegraph line shall, on the faulty condition becoming known to the consumer or to a person authorised by him to operate the installation-

- (a) subject to the provisions of sub-regulation (2) of regulation 34, be disconnected by that consumer or person from the supply of electricity; and
- (b) subject to the provisions of sub-regulation (3), not be reconnected until the faulty condition of the said part has been remedied.

(3) Any part of an installation disconnected in terms of sub-regulation (1) or (2) may be reconnected to a supply of electricity for testing purposes where such temporary reconnection can be made without risk to life or property.

11. (1) No consumer shall, without the consent in writing of the Postmaster-General in terms of regulation 11 of the Lines Protection Regulations-

Connection of neutral with earth.
Cap. 795 of the 1971 Edition

- (a) except in the case of a conductor used solely for earthing purposes, connect with earth a conductor of an electric line which is connected to an alternating current system:

Provided that-

- (i) the star or neutral point of a generator or transformer; or

- (ii) one pole of a generator or transformer directly connected to a single-phase two-wire low-voltage or medium-voltage electricity supply line;

may, without such consent, be connected with earth at the point of generation or transformation; or

- (b) connect with earth a conductor of an electric line which is connected to a directcurrent system; or
- (c) use the general mass of earth as part of the return of a circuit connected to an electric line, other than the return necessary to operate protective devices on that line.

(2) On a single-phase twowire or three-phase four-wire consumer's installation operating at low voltage or medium voltage supplied from the consumer's own generator or transformer, one generator or transformer winding directly supplying that voltage shall have-

- (a) if single-phase, one pole or its neutral point earthed;
- (b) if three-phase, its neutral point earthed.

(3) Where a consumer's installation operates at a high voltage and is designed for operating with an earthed neutral, the neutral of the generator or transformer winding shall be earthed at the point of generation or transformation:

Provided that where the generator or transformer feeds a remote transformer, via a transmission line, the neutral of the generator or transformer need not be earthed if the neutral of the remote transformer is earthed at the point of the remote transformation.

(4) On a consumer's installation which is high voltage and designed for operating with an insulated neutral-

- (a) provision shall be made to indicate a displaced neutral;
- (b) precautions shall be taken against a breakdown of insulation.

(5) Save for operational purposes on a consumer's high-voltage installation, a conductor which is connected to earth in terms of this regulation shall be uninterrupted by a fuse, switch, circuit-breaker, link or other means whilst any phase conductor of the installation remains live.

12. A consumer shall comply with the provisions of the Lines Protection Regulations where-

Protection of telegraphs

- (a) a cable laid by him crosses or is in close proximity to an underground telegraph line; or
- (b) an overhead line installed by him crosses or is in close proximity to an overhead telegraph line.

13. (1) For the guidance of a person authorised by the consumer to operate, control or work on or near the consumer's installation, whether under supervision or otherwise, where high voltage may be present the consumer shall issue instructions regarding the working procedure to be followed to ensure maximum safety.

Guidance and instructions

(2) The instructions referred to in sub-regulation (1) shall, where the person is engaged in inspection, testing, cleaning, repairs, painting or constructional or general maintenance work in proximity to live high-voltage conductors, require that person to observe the minimum section clearances set out in the First Schedule.

14. A consumer who wishes to supply a certificate for the purposes of sub-regulation (2) of regulation 10 or sub-regulation (1) of regulation 11 of the Supply Regulations, as read with sub-regulation (2) of regulation 18 of those Regulations, that his installation or part thereof has been inspected and tested shall furnish such certificate in the form set out in the Second Schedule.

Certificate of inspection and test

PART III

CONSTRUCTION OF CONSUMERS' INSTALLATIONS

15. (1) The consumer's installation-

Design and mechanical protection

(a) shall have conductors-

- (i) sufficient in size and power for the purposes for which the supply of electricity is to be used;
- (ii) constructed, installed and protected so as to prevent, so far as is reasonably practicable, danger to person or property;

(b) shall not be temporarily or permanently added to unless-

- (i) it has been ascertained that the current rating and condition of the existing installation which will have to carry the additional load and the earthing arrangements are adequate for the increased loading;
- (ii) the provisions of regulation 6 have been complied with.

(2) Where the consumer's installation or any part thereof is exposed to weather, corrosive atmosphere or other adverse conditions, the installation or that part shall be so constructed and, additionally or alternatively, protected as to prevent danger to person or property arising from such exposure:

Provided that, where the conditions comprise exposure to inflammable surroundings or an explosive atmosphere, the consumer's installation shall be-

- (i) protected by a flameproof enclosure of an appropriate standard of construction; or
- (ii) be of such construction as to prevent danger; or
- (iii) have intrinsically safe characteristics as to prevent danger to person or property.

(3) Conductors and live parts of a consumer's installation shall be-

- (a) insulated and further effectively protected where necessary; or
- (b) so placed and safeguarded;

as to prevent, so far as is reasonably practicable, danger to person or property.

(4) Medium-voltage conductors and medium-voltage live parts of a consumer's installation shall be-

- (a) completely enclosed in earthed metal which is electrically continuous and adequately protected against mechanical damage; or
- (b) so constructed, installed and protected as to prevent, so far as is reasonably practicable, danger to person or property.

(5) Subject to the provisions of regulation 29, high-voltage conductors and high-voltage live parts of a consumer's installation shall-

- (a) be completely surrounded and protected by earthed metal; or
- (b) have the minimum section clearances set out in the First Schedule; or
- (c) be so guarded by a protective barrier as to prevent inadvertent touching or dangerous approach by a person standing at floor-level or on a walkway, stairway or working platform.

16. (1) Every distinct circuit of a consumer's installation shall be protected against excess current by means of a suitable fuse or automatic circuit-breaker- Electrical protection

- (a) of adequate breaking capacity; and
- (b) suitably located and of such construction as to-

- (i) prevent danger from overheating, arcing or the scattering of hot metal when it comes into operation;
- (ii) permit the ready renewal of the fusible metal without danger to person or property.

(2) No fuse, non-linked switch or non-linked circuit-breaker shall be inserted in a conductor connected with earth.

(3) A single-pole switch may only be inserted in a live conductor.

17. (1) Except in the case of an unmetered service line, effective means suitably placed for ready operation shall be provided so that all voltage may be cut off from every part of a consumer's installation as may be necessary to prevent danger, and such means shall include a fireman's emergency switch on the exterior of a building where necessary to disconnect a high-voltage discharge-lamp installation or an electrified barrier.

Isolation and control position

(2) An electricity consuming device which requires operation or attention in normal use shall be so installed that adequate means of access and working space are afforded for such operation or attention.

(3) An electric motor shall be controlled by an efficient switch or switches for starting and stopping and the said switch or switches shall be so placed as to be readily accessible to and easily operated by the person in charge of the motor.

18. (1) Metal-work of a consumer's installation enclosing, supporting or otherwise associated with conductors operating at a voltage in excess of extra-low voltage shall, where necessary to prevent danger, be connected with earth.

Earthing of metal-work

(2) Metal-work attached to or forming part of a metal or reinforced concrete support and any metal transformer case or metal switch handle mounted thereon shall be connected with earth.

(3) Subject to the provisions of sub-regulation (4), metal-work attached to or forming part of a wooden support which is liable to become dangerous because of leakage across or failure of the insulation shall-

- (a) if the metal-work is not more than 3.048 metres above the ground, be connected with earth;
- (b) where the metal-work is more than 3.048 metres above the ground, be connected with earth or have effective secondary insulation sufficient to withstand the voltage to earth.

(4) Where mounted on a wooden support-

- (a) a metal transformer-case together with its associated metal-work and any metal switch handle shall be connected with earth;
- (b) a high-voltage switch with a switch handle not more than 3.048 metres above the ground shall have inserted in the operating rod between the switch handle and the switch an insulator capable of withstanding the normal operating voltage.

(5) A metal cradle or stay-wire shall-

- (a) be connected with earth; or
- (b) have inserted insulation capable of withstanding the normal operating voltage.

(6) Metal armouring or metal sheathing, except sheathing intended for use as a concentric neutral conductor at earth potential, shall-

- (a) be connected with earth;
- (b) have earth continuity maintained by a separate earth conductor across any joint-box or terminal enclosure associated with the cable;
- (c) where the joint-box or enclosure referred to in paragraph (b) is of metal, be bonded thereto.

(7) Save as is otherwise provided in these Regulations, any metal-work associated with or forming part of the consumer's installation shall, unless isolated from and not likely to come into contact with live parts or with earthed metal-work, be connected with earth.

19. (1) Every circuit of a consumer's installation shall be protected against the persistence of earth leakage currents liable to be a danger to person or property.

Protection against earth leakage

(2) Where metal-work is earthed in accordance with the provisions of these Regulations, the associated earthing system shall-

- (a) incorporate a protective device which makes any live conductor or live part dead when there is leakage such as is referred to in sub-regulation (1) between that live conductor or live part and any metal-work connected with earth; and
- (b) be so designed, constructed and maintained that the leakage referred to in paragraph (a) is sufficient to operate the protective device.

20. In addition to the protective device referred to in paragraph (a) of sub-regulation (2) of regulation 19, an arc-suppression coil may be inserted between the transformer or generator neutral and earth in such a manner as to ensure that, in the event of a live conductor or live part coming into contact with earth or with any metal-work connected with earth, an arc between that conductor or part and earth shall be immediately suppressed and the voltage of that conductor or part shall be so reduced as to prevent, as far as reasonably practicable, danger to person or property.

Arc-suppression coils

21. (1) Where an undertaker operates a protective multiple earthing system in accordance with the provisions of Part VI of the Supply Regulations and interconnects with his own earthing arrangements the main earthing conductor of the consumer's installation, before supplying a consumer with electricity therefrom an earth electrode or electrodes shall be installed by the consumer at or on his premises by arrangement with and to the satisfaction of the undertaker and shall also be interconnected with the said earthing arrangements.

Earthing of installation

(2) Save as is provided in sub-regulation (1), where there is an interconnection between the earthing arrangements of the undertaker and the main earthing conductor of the consumer's installation, the consumer shall comply with the conditions considered necessary by the undertaker in terms of sub-regulation (2) of regulation 30 of the Supply Regulations.

(3) Where there is no interconnection between the earthing arrangements of the undertaker and the main earthing conductor of the consumer's installation, the consumer shall provide and install his own earthing arrangements to ensure compliance with the provisions of these Regulations.

(4) An earth electrode of a consumer shall be so installed that no voltage gradient is maintained at ground level which may cause danger to life.

22. (1) In this regulation-

Electrode boilers

"electrode boiler" includes an electrode type waterheater.

(2) Before connecting an electrode boiler to a supply of electricity, the consumer shall obtain the consent in writing of the Postmaster-General in terms of regulation 11 of the Lines Protection Regulations.

Cap. 795 of the 1971
Edition

(3) An electrode boiler shall-

- (a) be used only on alternating current;
- (b) have an isolating and protecting circuit-breaker.

(4) The circuit-breaker referred to in paragraph (b) of sub-regulation (3) shall-

- (a) be of the multi-pole linked type arranged to disconnect the supply from all electrodes simultaneously;
- (b) have an over-current protective device for each electrode;
- (c) have a locking-off device to prevent the electrode boiler inadvertently being made live whilst a person is working thereon;
- (d) if arranged for direct hand operation from a position near to the boiler, be readily accessible and visible to a person using the boiler;
- (e) if not arranged for direct hand operation from a position near to the boiler, have remote control by a hand-operated switch or pushbutton-
 - (i) with a lamp or other instrument to provide visual indication of the "ON" and "OFF" condition of the electricity supply fixed at or near the boiler; and

The Laws of Zambia

- (ii) readily accessible and visible to a person using the boiler;
- (f) where the boiler is to be operated at high voltage, have automatic tripping in the event of phase currents becoming unbalanced to the extent of ten per centum of the full load current of the boiler:

Provided that-

- (i) the margin may be increased to fifteen per centum where the higher setting is essential to ensure operational stability;
- (ii) an inverse time-element device may be associated with the automatic tripping to prevent unnecessary tripping where the unbalance is momentary or of short duration.

(5) The earthing system of an electrode boiler shall, in addition to complying with the provisions of regulations 18 and 19, include-

- (a) the bonding together of-
 - (i) the metallic shell and other metal-work of the boiler;
 - (ii) any water pipes or steam pipes of metal in metallic contact with the said shell or other metal-work;
 - (iii) any metal armouring or metal sheathing of a cable providing a supply of electricity to the said boiler;
- (b) the connection of bonded metal-work referred to in paragraph (a) to the neutral conductor and to the main earthing terminal of the consumer's installation.

(6) In the case of an electrode boiler the neutral conductor, main earthing conductor and bonding and the connections to such bonding shall have a current-carrying capacity not less than that of any live or phase conductor at all points except in a subsidiary tripping-circuit where the current-carrying capacity shall be in accordance with the designed tripping-circuit current.

(7) An electrode boiler of a type other than a three-phase three-electrode balanced-load type shall not be connected to a supply of electricity otherwise than by means of a double-wound transformer situated within the same building as the said boiler or as close thereto as is practicable and on the same premises.

23. (1) An auto-transformer shall not be fed from a circuit operating at a voltage exceeding low voltage unless such auto-transformer is used- Auto- transformers

- (a) in motor starting or control-gear; or
- (b) in conjunction with and installed adjacent to a capacitor which is employed for improving the power factor; or
- (c) in a high-voltage discharge-lighting circuit.

(2) An auto-transformer shall not be used to supply-

- (a) a socket-outlet;
- (b) a portable appliance unless the auto-transformer is contained therein;
- (c) an electric toy or model;
- (d) earthed concentric wiring;
- (e) an extra-low-voltage circuit.

(3) An auto-transformer shall-

- (a) if used for step-up purposes-
 - (i) be supplied only from a system in which the neutral conductor is earthed;
 - (ii) have the neutral conductor connected to the common pole of the primary and secondary windings;
- (b) if used for step-down purposes, have the secondary winding insulated for the maximum voltage likely to be applied to the primary winding.

(4) Where an auto-transformer is used for step-up purposes means of isolation required in terms of regulation 17 shall be arranged to disconnect all primary supply conductors simultaneously.

24. Save in the case of a capacitor-

Capacitors

- (a) incorporated in apparatus for the sole purpose of radio interference suppression; or
- (b) so small that no risk of electric shock can arise therefrom;

a capacitor shall have a high resistance leak or other means for the prompt and automatic discharge of electricity immediately the supply thereto is disconnected.

25. (1) Subject to the provisions of sub-regulation (3) of regulation 4, a substation constructed by a consumer for the accommodation of a high-voltage part of his installation shall-

Substations

- (a) be substantially constructed and designed specifically for its intended purposes;
- (b) be so arranged-
 - (i) as to prevent, as far as practicable, access thereto except by a doorway or gateway;
 - (ii) that no hinged door opens inwards;
- (c) enclose the said part of the installation in such a manner that it cannot readily be interfered with from outside;
- (d) be ventilated, kept dry and made vermin-proof, as far as practicable;
- (e) have fixed outside each entrance a danger notice;
- (f) have prominently displayed inside printed instructions as to the proper first-aid treatment of persons suffering from electric shock.

(2) Subject to the provisions of sub-regulation (3) of regulation 4, a substation referred to in sub-regulation (1) constructed below ground level shall-

- (a) have adequate means of access by a door or trap door with a staircase or ladder securely fixed and so placed that no live part of a system or conductor is within reach of a person thereon; or
- (b) where a person is to be regularly employed therein, have the access referred to in paragraph (a) by door and staircase only.

26. (1) Any part of the consumer's installation for the transformation, control, regulation or switching of electricity in the open air shall, save as is otherwise provided for in Part IV or V-

Outdoor substations

- (a) be mounted on the supports of an overhead line; or
- (b) be enclosed by a fence not less than six feet in height fitted with a suitable anti-climbing device for the purpose of preventing access not authorised by the consumer; or
- (c) where the provisions of paragraph (a) or (b) are not complied with, have all parts below the height of ten feet from the ground completely enclosed in a metal casing.

(2) A danger notice shall be fixed to the supports, fence or metal casing, as the case may be, referred to in paragraph (a), (b) or (c) of sub-regulation (1).

PART IV

UNDERGROUND CABLES

27. (1) An underground cable shall be fully insulated for the normal operating voltage and shall be of a type and construction and shall be laid or installed in a manner suited to its particular environment and having regard to-

Construction and installation

- (a) the provisions of regulation 15;
- (b) the normal usage of the ground in which any part of it is to be laid;
- (c) foreseeable risk of damage to the cable and danger to persons, property and to other electrical services, water, gas, sewerage and telegraph services, railways and constructional works at or below ground level.

(2) A component used with an underground cable shall be of a type and construction and shall be laid or installed in a manner suited to that cable and having regard to the provisions.

- (a) sub-regulation (1);
- (b) regulation 28 in circumstances whenever a cable joint or connection is necessary.

28. An electrical joint or connection associated with an underground cable shall be designed, constructed, installed and protected in such a manner that-

Joints and connections

- (a) electrical conductivity is maintained satisfactorily;
- (b) its insulation, where insulation is necessary, is suitable for the normal operating voltage;
- (c) its mechanical strength is suited to its location and environment.

29. (1) Subject to the provisions of sub-regulation (3), a high-voltage underground cable shall be so laid or installed that it is completely surrounded and protected by earthed metal as provided by-

Metallic protection for high-voltage cables

- (a) its own metal sheathing or metal armouring; or
- (b) an extraneous metallic covering.

(2) Subject to the provisions of sub-regulation (3), a joint, connection or termination of a high-voltage underground cable shall be completely surrounded and protected by earthed metal.

(3) In a power station, substation, switchroom or similar premises designed for electrical purposes, it shall not be necessary for a high-voltage cable, joint, connection or termination to be completely surrounded and protected by earthed metal where the cable, joint, connection or termination has the minimum section clearances or is guarded by the protective barrier required in terms of sub-regulation (5) of regulation 15.

30. (1) A neutral conductor of an underground cable shall, at its termination, be permanently identified so that it is readily and uniformly distinguishable from other conductors. Identification and testing

(2) Where two or more underground cables forming part of different circuits terminate at adjacent positions, each circuit shall-

- (a) be permanently labelled on its exterior or on its terminating box or component; or
- (b) have other means of identification; so that it is readily distinguishable from other circuits.

(3) An underground cable shall be subjected to an insulation test after being laid or installed and before being connected to a supply of electricity, and it shall not be so connected if the connection would result in an electrical leakage which might be a danger to person or property.

(4) No underground cable shall be permanently connected to a supply of electricity unless tests have been made-

- (a) to ensure compliance with the provisions of these Regulations and in particular of sub-regulations (1) and (2) and of regulation 19; and
- (b) to establish that there is electrical continuity of conductors.

PART V

OVERHEAD LINES

31. The provisions of this Part shall apply to overhead lines other than- Application of Part V

- (a) an overhead crane wire or trolley wire;
- (b) an overhead line consisting entirely of insulated conductors enclosed in earthed metal sheathing or earthed metal armouring;
- (c) a conductor used above ground and in the open air as a fence specially designed for the control of the movement of animals;
- (d) an overhead telegraph line;
- (e) an overhead line and substation within a fenced enclosure specially erected by the consumer operating such line and substation for the purpose of prohibiting entry not authorised by him where such fence is not less than 1.8288 metres in height and is fitted with a suitable anti-climbing device.

32. (1) Line conductors and earth conductors shall be of copper, cadmium copper, steel-cored copper, aluminium, steel-cored aluminium, aluminium alloy, copper-clad steel, galvanised steel, stainless-steel or any compatible combination of these materials. Constructional requirements

(2) Cradle supporting wires and stay-wires shall be of stranded galvanised steel or a material of a strength and durability not less than that of stranded galvanised steel.

(3) A support shall be of wood, metal or reinforced concrete or a combination of these materials and, where wood or metal is used in the construction of a support, such wood or metal shall be protected, as far as is reasonably practicable, against decay or corrosion.

(4) The diameter of a wooden support at a point 1.524 metres from the butt shall be not less than 15.24 centimetres.

(5) Supports and the foundations thereof shall be constructed and placed having regard to the characteristics of the ground in which they are embedded and to the load which they are to carry.

(6) Insulators shall-

- (a) be of durable materials;
- (b) be designed to withstand the mechanical loading and electrical stresses of normal operating conditions.

33. (1) A line conductor near a building or other permanently raised position existing at the time of erection of the line shall-

Minimum heights and insulation

- (a) if operating at extra-low voltage, low voltage or medium voltage, be insulated at all places within a distance of 1.8288 metres from any part of such building or raised position;
- (b) if operating at high voltage, be completely surrounded and protected by earthed metal or have the minimum section clearances or protective barrier required in terms of sub-regulation (5) of regulation 15 between it and any part of such building or raised position.

(2) Service lines in the terminal span of a connection between an overhead line and a building or in a span between one building and another building shall be insulated conductors.

(3) The point of attachment of a service line shall-

- (a) where connected to an overhead line, be at a support:
Provided that a vertical service connection may be made elsewhere if it does not exceed 3.048 metres in length;
- (b) where connected to a building, be at a terminating device securely fixed to the building.

(4) A conductor, other than an earth conductor, leading to or from a transformer or other apparatus at a pole-mounted substation shall, at all points below a height of 3.6576 metres from the ground, be insulated and, in the case of a high-voltage conductor, shall have earthed metal sheathing or earthed screening.

(5) The height above ground of a line conductor, other than an extra-low-voltage, low-voltage or medium-voltage insulated line conductor, shall be not less than the appropriate height specified in the Third Schedule or such greater height as may be required either for compliance with regulation 12 or 15 or in terms of regulation 35.

(6) Subject to the provisions of regulation 35, the height above ground of an extra-low-voltage, low-voltage or medium-voltage insulated line conductor shall be not less than-

- (a) where the line is above a road normally accessible to vehicular traffic, 5.4864 metres;
- (b) save as is provided in paragraph (c), where the line is not above a road normally accessible to vehicular traffic, 4.2672 metres;
- (c) in the case of a service line in the terminal span of a connection between an overhead line and a building or in a span between one building and another building, ten feet at any point where the line is not above a road normally accessible to vehicular traffic.

(7) Where an earth conductor, stay-wire or cradle fitted between supports crosses a road normally accessible to vehicular traffic, the height thereof above the road surface shall be not less than 5.4864 metres.

(8) Any minimum height or clearance required by these Regulations shall be maintained under any conditions of loading and temperature likely to occur in the area concerned.

34. (1) Where a consumer installs an unmetered service line on his premises or where a part of the consumer's installation is to be solely operated and controlled by the undertaker, and where the undertaker in terms of the Supply Regulations is required to ensure that such service line or such part of the installation-

Unmetered service lines

- (a) is suitable for its intended purpose; and
- (b) is installed to prevent, as far as practicable, leakage of electricity to adjacent metal;

the consumer shall comply with the directions of the undertaker in relation to the design and construction of such line or part.

(2) Where the consumer has no effective means of cutting off the voltage to a line or part referred to in sub-regulation (1), he shall, if a disconnection is required, immediately notify the undertaker that it is required.

(3) Where an undertaker has advised the consumer of any remedial measures necessary to correct any defect, deficiency or faulty condition which may exist in a line or part referred to in sub-regulation (1), the consumer shall take such measures to the satisfaction of the undertaker after the said line or part has been disconnected from the supply of electricity for the purpose.

35. Where an overhead line crosses a permanent railway track having a gauge of not less than 15.24 centimetres, the following conditions shall apply:

Overhead lines
crossing railway tracks

- (a) the height above the rail of-
 - (i) a line conductor, shall be not less than the appropriate height specified in the Fourth Schedule;
 - (ii) an earth conductor, stay-wire or cradle fitted between supports, shall be not less than 7.0104 metres;
- (b) there shall be no joints in the crossing span;
- (c) the crossing shall be made at right angles or as near thereto as practicable and shall be not less than 70 degrees unless permission in writing therefor has been obtained from the authority responsible for the operation of the railway;
- (d) the length of span at the crossing shall be as short as is reasonably practicable;
- (e) notwithstanding the provisions of sub-regulation (6) of regulation 37, line conductors used at the crossing shall be stranded with not less than 0.1613 square metres cross-sectional area copper or its equivalent conductivity.

36. (l) Where a high-voltage overhead line crosses an extra-low-voltage, low-voltage or medium-voltage overhead line or where line conductors forming part of such differing systems are erected on the same supports, provision shall be made to guard against the extra-low-voltage, low-voltage or medium-voltage system being charged above its normal voltage.

Different voltages in
proximity

(2) Where a pilot circuit is installed and operated as part of an overhead line system, the provisions of sub-regulation (1) shall apply thereto and such pilot circuit shall be installed and operated with due regard to any dangers which may arise from its use.

37. (1) In calculating the strength of the various constituent parts, including supports, of an overhead line, the following basic conditions shall be assumed:

Loading conditions
and factors of safety

- (a) a minimum temperature of 30 degrees Fahrenheit;
- (b) the wind pressure acting on the projected area of line conductors and supports not exceeding 12.192 metres in height shall be not less than 5.4 kilograms per square metre and of those exceeding 12.192 metres but not exceeding 36.576 metres in height shall be not less than 6.75 kilograms per square metre;
- (c) in the case of conductors, earth wires and round, elliptical or hexagonal poles used as supports, the area on which the pressure acts shall be taken as 60 per centum of the projected area and in the case of lattice or composite structures as one and one-half times the projected area of the constituent parts on one side.

(2) In the design of spans of over 121.92 metres, the assumed wind load on conductors and earth wires may be reduced to 70 per centum of the calculated load.

(3) In the design of spans, due regard shall be given to the possibility of injurious conductor vibration by wind effects.

(4) A support shall be designed so that the failing load under operating conditions shall be not less than the resultant of simultaneous horizontal and vertical loads calculated in accordance with the provisions of this regulation multiplied by the following factors:

- (a) where the support is of metal or concrete, 2.5;
- (b) where the support is of wood, 3.5.

(5) Subject to the provisions of sub-regulation (6), the load in a line conductor, earth conductor, insulator, joint or cradle component or an associated fitting under operating conditions shall not exceed 50 per centum of its ultimate breaking load.

(6) The minimum permissible size for a single line conductor shall be such as to have an ultimate breaking load of not less than 359.55 kilograms and shall be not less in gauge than No. 10 British Standard Wire Gauge.

38. (1) Where metal-work is required to be earthed in accordance with the provisions of regulation 18, the earthing system of the overhead line with which it is associated shall be tested at at least one point by the consumer or by a person authorised by him-

Periodic testing and
inspecting

- (a) before commissioning such overhead line;
- (b) and thereafter, at intervals of not more than six years;

and repaired if necessary.

(2) The purpose of a test made in terms of sub-regulation (1) shall be to ensure that the leakage resulting from contact of negligible resistance between a line conductor and any metal-work connected with earth is sufficient to operate the protective device installed in terms of regulation 19 to make that line conductor dead.

(3) An overhead line and its supports and any outdoor substation shall be inspected from ground level or above by the consumer or by a person authorised by him-

- (a) if erected before the 1st December, 1961, within six years of that date;
- (b) if erected on or after the 1st December, 1961, before commissioning;
- (c) and thereafter, at intervals not exceeding six years after the date of inspection referred to in paragraph (a) or (b), as the case may be;

and repaired if necessary.

(4) A test or inspection made in terms of this regulation shall be recorded by the person making the test or inspection and such record shall be retained by the consumer until the next test or inspection is made.

39. There shall be fixed in a prominent position at every pole-mounted substation a danger notice. Danger notices

40. In order to prevent, as far as is reasonably practicable, climbing which has not been authorised by the consumer, an anti-climbing device shall be fitted- Unauthorised climbing of supports

- (a) at every support for a pole-mounted substation;
- (b) at every support which has broken surfaces within 3.048 metres of the ground.

PART VII

PROTECTIVE MULTIPLE EARTHING

41. Where a consumer operates or is about to operate a transformer supplying low voltage or medium voltage to a single-phase two-wire or three-phase four-wire installation and is satisfied that protective multiple earthing is necessary in order to improve the general factor of safety in relation to earthing of metal-work, he may provide protective multiple earthing in accordance with the provisions of this Part. Provision of protective multiple earthing

42. Before providing protective multiple earthing, a consumer shall obtain the consent in writing of the Postmaster-General in terms of regulation 11 of the Lines Protection Regulations. Consent of Postmaster-General. Cap. 795 of the 1971 Edition

43. Protective multiple earthing shall-

Limitations

- (a) only be applied to the consumer's electric lines operating at low voltage or medium voltage;
- (b) when so applied, extend to every such line of a group supplied with electricity from a common transformer at the said voltage:

Provided that no such line shall be directly interconnected in a permanent manner with any other line supplied with electricity from any part of another system not similarly earthed.

44. A transformer which is to supply the low voltage or medium voltage to an electric line provided with protective multiple earthing shall be so arranged that-

Connections at transformer

- (a) an earthing connection is taken from the metal-core or metal-work closely associated with the higher voltage winding to an earth electrode;
- (b) another earthing connection is taken from the neutral point on the low-voltage or medium-voltage winding to the same earth electrode or to another earth electrode with its own resistance area.

45. (1) Where a cable is used as an electric line provided with protective multiple earthing and is laid underground, such cable shall-

Use of cables

- (a) have a neutral conductor of the same material as, and be of a cross-sectional area not less than, any phase conductor; and
- (b) have metal sheathing or metal armouring.

(2) The metal sheathing or metal armouring or, if the cable has both metal sheathing and metal armouring, the metal sheathing and metal armouring and the neutral conductor referred to in sub-regulation (1) shall be bonded together and also bonded to-

- (a) the earthing connection referred to in paragraph (b) of regulation 44 at the transformer position; and
- (b) an earth electrode or electrodes installed at points at or near the end of each line.

46. (1) Where an overhead line is used as an electric line provided with protective multiple earthing, such line shall-

Use of overhead lines

- (a) have a neutral conductor of the same material as, and of a cross-sectional area not less than, any phase conductor; or
- (b) have two neutral conductors of the same material as, and each of a cross-sectional area not less than one half that of, any phase conductor.

(2) The neutral conductor or the two neutral conductors referred to in paragraph (a) or (b) of sub-regulation (l) shall be bonded to-

- (a) the earthing connection referred to in paragraph (b) of regulation 44 at the transformer position; and
- (b) earth electrodes installed at regular intervals, as far as practicable, along the route of the line, at branching points and at the final pole of each line.

47. (1) Where an underground cable and an overhead line are used in association with each other as an electric line provided with protective multiple earthing, the provisions of regulations 45 and 46 shall apply respectively to the cable and the overhead line except that the bonding to the earth connection at the transformer position referred to in paragraph (a) of sub-regulation (2) of regulation 45 or 46, as the case may be, may be omitted in the case of-

Use of cables and overhead lines

- (a) an underground cable which starts at a position remote from the transformer if that cable is fed from an overhead line which has such bonding to the earth connection at the transformer position;
- (b) an overhead line which starts at a position remote from the transformer if that line is fed from an underground cable which has such bonding to the earth connection at the transformer position.

(2) At every point where an underground cable and an overhead line referred to in sub-regulation (1) are connected with each other, each neutral conductor of the said cable and line and the metal sheathing or metal armouring of the cable shall be bonded together.

48. The provisions of regulation 44, 45, 46 or 47 shall not have been complied with until it has been established that the overall resistance to earth of a neutral conductor-

Overall resistance

- (a) is such that the fuse, circuit-breaker or other protective device on the high-voltage side of the transformer will operate safely in the event of a breakdown between the transformer windings;
- (b) does not exceed ten ohms;
- (c) is such that the provisions of regulation 19, and of regulation 20 where applicable, can be complied with efficiently.

49. No fuse, switch, circuit-breaker, link or device, other than a bolted link, for interrupting continuity shall be inserted in a neutral or earth conductor used for protective multiple earthing purposes.

Neutral to be unbroken

50. Where a supply of electricity is delivered from an electric line provided with protective multiple earthing to a separate installation, and whether such installation is to be operated and used by the consumer or by another person, the consumer, before providing an earth connection thereto, shall satisfy himself in regard to the separate installation that-

Separate installation

- (a) metal-work enclosing, supporting or in proximity to, or likely to come into contact with, any live conductor or live part is bonded together by one or more earth-continuity conductors; and
- (b) the overall resistance to earth of the earthing system is such that the provisions of regulation 19 can be complied with efficiently; and
- (c) the provisions of regulation 49 have been complied with.

PART VII

PRIVATE GENERATION AND SUPPLY

51. (1) Subject to the provisions of sub-regulation (2) of regulation 4, the provisions of this Part shall apply to every private owner.

Private ownership

(2) The provisions of Parts II, III, IV, V, VI and VIII shall, *mutatis mutandis*, apply to a private owner and to his electrical installation as they apply to a consumer and a consumer's installation.

52. (1) A private owner shall erect and maintain a switchboard for each generator to control supply therefrom and shall fit to each switchboard, as a minimum requirement-

Protection of generators

- (a) the appropriate supply controls and protective apparatus specified in Part I of the Fifth Schedule;
- (b) where two or more private generators are to be operated in parallel-
 - (i) if it is a two-wire system, a reverse-current trip in series with the live conductor of each generator;
 - (ii) if it is a three-wire system, a reverse-current trip in series with each outer conductor of each generator;
 - (iii) if they are compound generators, an equaliser connection by means of-
 - A. a single-pole switch from each generator to an equaliser bus-bar so arranged that each switch is interlocked so that it must be closed before the main switch is closed and opened after the main switch is opened; or

The Laws of Zambia

- B. a multi-pole linked-switch arranged and interlocked to perform the same sequence of operations as described for single-pole switches;

with the operating coil of a circuit-breaker connected to a pole other than that to which the equaliser connection is made;

- (c) where a direct-current generator is connected in parallel with a secondary battery-
- (i) a reverse-current trip, which may be of the cut-out type, connected between the generator and the battery;
 - (ii) safe means for isolating the battery from the generator;
 - (iii) protection for the battery by means of a fuse or circuit-breaker against excessive charge or discharge currents;
 - (iv) an ammeter to measure the current supplied by the generator;
 - (v) an ammeter with a mid-point zero or so switched as to measure separately the charge and discharge currents of the battery;
 - (vi) a voltmeter arranged to measure separately the voltage of the generator and of the battery;
- (d) where compound generators are operated in parallel, an ammeter connected to the pole other than that to which the equaliser connection is made;
- (e) where a direct-current generator operates a three-wire system, an arrangement to prevent the balancer being disconnected whilst the outer conductors are live;
- (f) the appropriate instruments specified in Part II of the Fifth Schedule;
- (g) where an alternating-current generator is operated-
- (i) a speed indicator for the prime-mover, or a frequency indicator;
 - (ii) if two or more generators are to be operated in parallel, a synchronising device.

(2) Where an instrument fitted to the switchboard in terms of sub-regulation (1) is required to make more than one measurement, provision for this shall be made by a suitable switch or plug.

(3) If the generator of a private owner is arranged for automatic starting or for remote control, the prime-mover shall have local over-riding control for stopping the prime-mover and for preventing automatic starting-

- (a) fixed nearby; and
- (b) indelibly labelled with operating instructions.

53. A private owner shall-

Fire precautions

- (a) where liquid or gaseous fuel for the generating plant is piped from outside the plant room, provide a quick-acting valve to cut off the supply of fuel with the valve-
 - (i) fixed near the door to the plant room in a conspicuous position; and
 - (ii) indelibly labelled with operating instructions;
- (b) arrange to trap or drain and disperse safely any leaking or surplus fuel and ensure that none is permitted to enter any sewer.

54. (1) A private owner shall ensure that any room in which his generating plant is to be erected and maintained-

Plant rooms

- (a) is of such size that the plant can be easily and adequately serviced and maintained;
- (b) is adequately ventilated;
- (c) is provided with the exhaust pipes or ducts necessary to discharge exhaust fumes from the room to the outside air and clear of any window, door or fresh air intake of any building.

(2) A plant room described in sub-regulation (1) shall have adequate artificial lighting in addition to any natural lighting, and discharge-lighting shall not be used in a position where it may cause rotating machines to appear to be stationary.

55. (1) A private owner whose generator is connected with a secondary battery installation shall erect and maintain a switchboard for that installation and shall fit to the switchboard, as a minimum, requirement-

Protection of batteries

- (a) safe means-
 - (i) for isolating the battery from the load or from the charging circuit or simultaneously from both;
 - (ii) where the charging circuit is arranged to share the load, for isolating the charging circuit from the battery and from the load;
- (b) a suitable fuse or circuit-breaker with overload trip to protect-

The Laws of Zambia

- (i) the battery from excess charge and discharge currents;
- (ii) the charge circuit from excess charge currents;
- (c) where the circuit is not a rectifier circuit which prevents a reversal of current, a reverse-current trip, which may be of the cut-out type, connected between the charging circuit and the battery;
- (d) an ammeter with a mid-point zero or so switched as to measure separately the charge and discharge currents;
- (e) a voltmeter with an "off" position to prevent continuous discharge and to indicate-
 - (i) battery terminal voltage;
 - (ii) where the charging circuit has no cut-out, the voltage of the charging circuit separately from the battery terminal voltage;
 - (f) where the charging circuit shares the load with the battery, an ammeter to measure the current output of the charging circuit.

56. (1) A battery in a battery installation connected with the generator of a private owner shall- Installation of batteries

- (a) have insulated supports for each cell of glass or vitreous-porcelain which is part of the container;
- (b) have insulated battery stands;
- (c) have connecting bolts-
 - (i) of a non-corrosive type; or
 - (ii) coated with petroleum jelly;
- (d) have spray arresters on open cells;
- (e) if not portable, contain no celluloid in its construction;
- (f) if portable and with celluloid in its construction, have suitable safeguards at the charging location to prevent ignition of the celluloid and the spread of fire.

(2) A room containing a battery in a battery installation connected with the generator of a private owner shall-

- (a) be adequately ventilated to the outside air;
- (b) where sulphuric acid is used as an electrolyte, have its construction and fittings-
 - (i) of non-corrosive material; or
 - (ii) painted with acid-resisting paint.

57. All machinery, switchgear and instruments associated with the generation and supply of electricity of a private owner shall be indelibly labelled so as to indicate their functions and ratings. Labelling

58. The plant of a private owner shall not be interconnected, either directly or indirectly, with the electrical works, lines or cables of an undertaker or other person unless- Inter-connection

- (a) there is an agreement in writing for such interconnection between the private owner and the owner of the said works, lines or cables; and
- (b) adequate safeguards are installed to prevent accidental or uncontrolled interconnection.

PART VIII

OFFENCES AND PENALTIES

59. (1) Subject to the provisions of sub-regulations (2) and (3) of regulation 4, a consumer or a private owner who erects or operates an electrical installation for or in connection with the generation, transmission, distribution, connection, installation and use of electricity, whether on his premises or elsewhere, where such installation is constructed, operated, maintained, repaired, tested or inspected otherwise than in accordance with the provisions of these Regulations shall be guilty of an offence. Offences and penalties

(2) Any person who is guilty of an offence in terms of sub-regulation (1) shall be liable to a fine not exceeding three thousand penalty units or, in default of payment, to imprisonment for a period not exceeding twelve months.

(As amended by Act No. 13 of 1994)

FIRST SCHEDULE (Regulations 13 and 15)

MINIMUM SECTION CLEARANCES

The Laws of Zambia

*Normal operating voltage
between bare line conductors*

*Minimum clearance from any point on
or about the permanent equipment
where a man may be required to stand
(measured from the position of the
feet)-*

	<i>To the nearest unscreened live conductor in air</i>	<i>To the nearest part not at earth potential of an insulator supporting a live conductor</i>
	<i>metres</i>	<i>metres</i>
1. Not exceeding 15,000 volts	2.62128	2.4384
2. Exceeding 15,000 volts but not exceeding 33,000 volts	2.7432	2.4384
3. Exceeding 33,000 volts but not exceeding 44,000 volts	2.92608	2.4384
4. Exceeding 44,000 volts but not exceeding 66,000 volts	3.048	2.4384
5. Exceeding 66,000 volts but not exceeding 88,000 volts	3.23088	2.4384
6. Exceeding 88,000 volts but not exceeding 110,000 volts	3.3528	2.4384
7. Exceeding 110,000 volts but not exceeding 132,000 volts	3.53568	2.4384
8. Exceeding 132,000 volts but not exceeding 165,000 volts	3.84048	2.4384
9. Exceeding 165,000 volts but not exceeding 220,000 volts	4.2672	2.4384
10. Exceeding 220,000 volts but not exceeding 275,000 volts	4.572	2.4384
11. Exceeding 275,000 volts but not exceeding 330,000 volts	5.1816	2.4384

For the purposes of this Schedule-

- (a) the above provisions concern the means of access for works which are permanently available, such as fixed ladders or platforms attached to structures. The means of access shall also comprise the structures themselves and the tops of circuit-breakers or transformers if a man is required to stand on them to carry out work. Subject to the provisions of paragraph (b), the provisions do not apply to portables ladders, cradles or similar equipment, the use of which is governed by the general instructions issued by the consumer in terms of regulation 13;
- (b) portable ladders and platforms specially designed for specific maintenance work, and so arranged that they cannot readily be employed in any way other than that intended, shall be considered as permanent means of access for the purpose of safety clearances.

SECOND SCHEDULE
(Regulation 14)

THE ELECTRICITY ACT

CERTIFICATE OF INSPECTION AND TEST

The Laws of Zambia

Notice to an undertaker from a consumer certifying the condition of the consumer's electrical installation.
 From.....
 (Name and address of consumer)

To.....
 (Name and address of undertaker)

I attach hereto a certificate in respect of the condition of my electrical installation.
 Signed..... Date
 (Consumer's signature)

I.....
 (Name and address of certifier)
 of.....
 (Name and address of firm or company)
 am a/an.....
 (Occupation, trade or profession)

and I hereby declare that I am competent to make and sign this certificate and do hereby certify as follows:

1. That the electrical installation in entirety/in part comprising

 (Description of part)
 at.....
 (Address of premises)
 (a) was installed by me/by.....
 (Name and address of contractor or other person)

and
 (b) was inspected and tested by me;

fully in accordance with the recommendations contained in an edition current at the date of this certificate of the Safety Code for the electrical wiring of premises issued by the Standards Association of Zambia in respect of those sections of the installation falling within the scope of the Safety Code.

2. That to the best of my knowledge and belief the said electrical installation in entirety/in respect of the part described-
 (a) complies with the Wiring Regulations; and
 (b) is in a fit and proper condition to operate safely if connected to the intended supply of electricity; and
 (c) can be so connected without risk of a dangerous electrical leakage occurring.

..... Signature of Certifier
 Witness
 Dated at on, 19

THIRD SCHEDULE
 (Regulation 52)
 MINIMUM HEIGHTS OF OVERHEAD LINES

Normal operating voltage between line conductors	Over roads normally accessible to vehicular traffic	In any position except where otherwise specified in these Regulations
1. Not exceeding 650 volts ..	5.4864 metres	4.8768 metres
2. Exceeding 650 volts but not exceeding 33,000 volts ..	5.7912 metres	5.1816 metres
3. Exceeding 33,000 volts but not exceeding 88,000 volts ..	6.096 metres	6.096 metres
4. Exceeding 88,000 volts but not exceeding 132,000 volts ..	6.7056 metres	6.7056 metres
5. Exceeding 132,000 volts but not exceeding 275,000 volts ..	7.0104 metres	7.0104 metres
6. Exceeding 275,000 volts ..	7.3152 metres	7.3152 metres

The Laws of Zambia
FOURTH SCHEDULE
(Regulation 35)
MINIMUM HEIGHTS OF OVERHEAD LINES CROSSING RAILWAY TRACKS

<i>Normal operating voltage between line conductors</i>	<i>Minimum height above rail</i>
1. Not exceeding 33,000 volts	7.62 metres
2. Exceeding 33,000 volts but not exceeding 88,000 volts	7.9248 metres
3. Exceeding 88,000 volts but not exceeding 132,000 volts	8.5344 metres
4. Exceeding 132,000 volts but not exceeding 275,000 volts	8.8392 metres
5. Exceeding 275,000 volts	9.144 metres

FIFTH SCHEDULE
(Regulation 52)
MINIMUM REQUIREMENTS FOR PROTECTION OF PRIVATE GENERATORS

The Laws of Zambia

PART I
SWITCHBOARD SUPPLY CONTROLS AND PROTECTIVE APPARATUS

<i>System of supply</i>	<i>Number of poles to be broken by circuit-breaker or switch</i>	<i>Position of circuit-breaker or fuse</i>
1. Two-wire alternating current or direct current, earthed at either pole.	1	In non-earthed conductor.
2. Two-wire, alternating current or direct current, not earthed at either pole.	2	In each conductor.
3. Three-wire, single-phase, alternating current or direct current.	2	In each outer conductor
4. Three-wire, three-phase, alternating current or four-wire, three-phase, alternating current.	3	In each non-earthed conductor.

PART II

INSTRUMENTS FOR A SWITCHBOARD

<i>Type of system</i>	<i>One generator only</i>	<i>More than one generator</i>
1. Two-wire, alternating current or direct current	(a) an ammeter; and	(i) an ammeter for each generator; and
	(b) a voltmeter	(ii) a voltmeter to measure the voltage of any generator; and
		(iii) if generators are paralleled, a voltmeter to measure the bus-bar voltage.
2. Three-wire, single-phase, alternating current or direct current	(a) an ammeter to measure the current in each outer conductor; and	(i) an ammeter for each generator to measure the current in each outer conductor; and
	(b) two voltmeters each connected between an outer conductor and neutral	(ii) two voltmeters each connected between an outer conductor and neutral of the bus-bars; and
		(iii) if generators are paralleled two voltmeters, each connected between an outer conductor and neutral, to measure the voltage of any generator.
3. Three-wire, three-phase, alternating current or four-wire, three-phase alternating current	(a) an ammeter to measure the current in each phase; and	(i) an ammeter for each generator to measure the current in each phase; and
	(b) a voltmeter to measure the line voltage	(ii) a voltmeter to measure the line voltage of each generator; and
		(iii) if generators are paralleled, a voltmeter to measure the bus-bar voltage.

Endnotes

1 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

2 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

3 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

4 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

5 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

6 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2)

7 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

8 (Popup - Popup)

*These Regulation made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

9 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

10 (Popup - Popup)

*These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).

11 (Popup - Popup)

These Regulations made under the repealed Act are continued in operation by section fifteen of the Interpretation and General Provisions Act (Cap. 2).