SECTION 2

GENERAL INSTRUCTIONS

CONTENTS

1. Duties

2. Health and Hygiene

    2.1. General
    2.2. Basic Skin Hygiene
    2.3. Use of Gloves

        2.3.1. Chrome Leather Gloves
        2.3.2. PVC Gloves

    2.4. Protection of Eyes
    2.5. Additional Precautions When Using Potentially Hazardous Substances

        2.5.1. Degreasing Solution
        2.5.2. General Protection
        2.5.3. Mixing and Handling of Polyurethane Resins
        2.5.4. Fluxes
        2.5.5. Bitumen Compound
        2.5.6. Warming Up PVC Oversheath

    2.6. Clothing for Jointing
    2.7. Equipment
    2.8. Instruction of Personnel

3. Safety

4. Protection of the Public from Obstruction and Excavation

5. Safety Tools and Equipment

6. Precautions to be Taken with Plastic Pipes and Cables

7. Drawing Index

GENERAL

1. DUTIES

1.1 Work on the 33kV gas filled system shall be in accordance with written authorisation.

1.2 33kV gas filled cables.

No person other than:

(a) a jointer EHT or higher grade or

(b) a trainee jointer EHT undergoing authorised on job training;

shall carry out any work involving contact with the metal sheath or armouring of any 33kV gas filled cable prior to the effective connection of the Approved temporary bond.

2. HEALTH AND HYGIENE

2.1 General

The following precautions must be complied with in order to avoid any possible adverse effects on health.

2.1.1 No person should be asked to work with Aluminium Flux (EC1) or Resins, if that person has a skin disease or abnormality or is afflicted with asthma or recurrent bronchitis. In any case of doubt, medical advice should be sought. Similarly, sufferers from hay fever and other chest complaints should take medical advice before working with resins. Any person returning to work after pneumonia or bronchitis should not be asked to undertake aluminium fluxing or work with resins for a few weeks afterwards.

2.1.2 If anyone suspects that he is developing symptoms of chest trouble or a skin rash, he should immediately inform his Supervisor and also see his doctor.

2.2 Basic Skin Hygiene

2.2.1 Before starting work, the hands should be washed with soap and water. General purpose skin cleanser should be used if necessary. Paraffin or degreasing agents must not be used for cleaning the skin. The hands should be dried immediately with a clean towel or paper wipers.

2.2.2 Barrier cream should be smoothed over the hands and wrists, paying attention to the nail beds and between the fingers. This application is sufficient for a period of 2 hours, after which a further application must be made. In order to remove the barrier cream from the hands, it is necessary to use the general purpose skin cleaner.

2.2.3 When handling any materials which may irritate the skin or may be difficult to remove, gloves should be worn.

2.2.4 Before smoking, eating, drinking or any toilet purposes, the hands must be washed thoroughly with soap and water or skin cleaner.

2.3 Use of Gloves

Approved gloves to the following general descriptions must be worn for the applications given and whenever specified in other instructions.

2.3.1 Chrome Leather Gloves

These gloves should be worn when handling sharp metal objects (for instances when opening compound tins) and when handling containers of hot solder or compound, in order to avoid cuts and burns.

2.3.2 PVC Gloves

These gloves should be worn when handling other substances which could be harmful to the skin.

(a) For general purposes

Grey or green PVC gloves should be used, for example when handling or stripping cables.

(b) For handling of resins

A pair of grey or green PVC gloves must be kept separate for this purpose. These gloves must be worn during opening, mixing, pouring and disposal of resin containers. 12/8/99

(c) For aluminium Fluxing module 10 refers

A pair of grey or green PVC gloves must be kept separate for this purpose. The gloves should be washed with soap and water to remove any flux before taking them off. 12/8/99

2.3.3 Gloves should be replaced without delay if they become damaged or contaminated.

2.4 Protection of Eyes

The requirements of Code of Practice 70 'Protection of Eyes Regulations 1974' must be complied with.

ANY EYE PROTECTION USED MUST BE IN ACCORDANCE WITH BS EN 166:1996. 12/8/99

Examples of jointing operations when Approved Eye Protectors should be worn are:

(a)	Sweating	**Goggles.**
(b)	Plumbing	**Goggles or Safety Specs.**
(c)	During the use of cleaning solvents, e.g. paraffin.	**Goggles or Safety Specs.**
(d)	During the handling of bituminous compounds.	**Goggles or Safety Specs.**
(e)	During the use of hot solders including fluxing, tinning,	**Goggles or Safety Specs.**
(f)	During the use of hot oils, e.g. paper tape compound.	**Goggles or Safety Specs.**
(g)	When drilling or cutting brick, stone or concrete	**Goggles.**
(h)	When using resins	**Goggles.**
(i)	When using a LPG Blow torch	**Safety Specs.**

12/8/99 12/8/99

(j) When any other possibility that eye injury may occur **Goggles or Safety Specs.**

The correct type of approved eye protectors must be worn for the appropriate operation in cable jointing. The prefix which is stamped after the British standard number will indicate what application they can be used for.

The relevant grades are:

		Application
a)	Grade M (Molten metals)	Hot substances, solder compounds
b)	Grade C (Chemicals)	Paraffin, degreasants, resins and flux
c)	Grade 1 (Impact grade)	Drilling stone or brick

2.5. Additional Precautions When Using Potentially Hazardous Substances

Other substances used for jointing which require additional precautions to eliminate any possibility of injury.

2.5.1. Degreasing Solution

Pre-impregnated wipes are supplied in buckets and are pre-soaked in a solution that is classified as non hazardous. Care should be taken to keep the wipes away from naked flames as they are highly inflammable. The bucket lid should be kept closed at all times and the wipes removed through the centre dispenser provided.

2.5.2. General Protection

2.5.2.1. Skin Care

Contact of the degreasing solution with the skin should be minimised as it will remove the natural protective oils from the skin. Therefore the barrier cream should be applied to the hands and a pair of PVC gloves worn.

2.5.2.2. Protection of Eyes

Approved eye protectors should be worn when using the degreasing solution.

If any degreasing solution should enter an eye. It is preferable to wash the eye immediately and thoroughly for at least 10 minutes using clean running water, however if clean running water is not available then eye irrigation bottles may be used. Obtain medical attention immediately.

2.5.2.3. Avoidance of Vapour

12/8/99

It is important that the following are complied with:

(a) Ensure good ventilation.

(b) Do not smoke. Extinguish any naked flames in the vicinity (eg gas furnace if at side of joint hole).

(c) Used wipers containing degreasing solution should be removed from the working area and disposed of by the Approved method.

2.5.2.4. Accidental Swallowing

Splashes in the mouth should be washed out with water. If any is swallowed drink plenty of water and seek immediate medical attention.

2.5.3. Mixing and Handling of Polyurethane Resins

2.5.3.1. Introduction

Assessment has shown that materials for Polyurethane resin mixes are safe to handle providing reasonable care is taken. The hardener may produce irritation following contact with the skin, eyes or respiratory tract, and could be dangerous if swallowed.

2.5.3.2. General Precautions

Skin Care

Barrier Cream should be applied to the hands, and a pair of PVC gloves, kept separate for use with resin should be worn. If mixed resin or any component comes into contact with the skin, it must be removed immediately with a damp wiper, and skin washed thoroughly with soap and water.

If clothing becomes contaminated with a resin component or mixture, it should not be worn next to the skin. If clothing becomes contaminated with the hardener, it should be removed as soon as possible and the hardener sponged off with plenty of water.

Protection of Eyes

Approved eye protectors should be worn when opening resin containers, during mixing, stirring and pouring operations and when disposing of hardener containers.

If any hardener solution should enter an eye. It is preferable to wash the eye immediately and thoroughly for at least 10 minutes using clean running water, however if clean running water is not available then eye irrigation bottles may be used. Obtain medical attention immediately.

Avoidance of Vapour

Although with normal temperatures (below 40°C) and method of use, harmful levels of vapour are unlikely to occur it is important that the following are complied with:-

All places where work involves resins and their components must be well ventilated.

There must be no smoking near to resin during mixing, pouring or curing.

The resin or hardener must never be warmed, even in very cold weather.

The resin and hardener containers must be kept away from heat or direct sunlight and always in a dry place.

If irritation occurs, a Doctor should be seen, and informed that the hardener material contains an isocyanate known as “MDI”.

Accidental Swallowing

Resin components are poisonous, so splashes into the mouth should be washed out, using plenty of water. If any is swallowed drink plenty of water and seek immediate medical attention.

2.5.4. Fluxes

When handling fluxes, in addition to the basic health and hygiene precautions detailed in section 2.1 to 2.4 the following precautions must be complied with:

When jointing in confined spaces, adequate ventilation must be arranged, and forced ventilation used where necessary.

Avoid breathing the fume cloud, and stand so that the air movement carries the fumes away from the face.

Keep the mouth closed and hold your breath while the fume cloud is present.

It is better to ventilate the fumes than to use a filter respirator, but if it is decided to use a respirator, the Siebe Gorman Mark VIII or any improved version of this should be used.

Care should be taken to ensure that clothing is not contaminated by flux.

2.5.5. Bitumen Compound

2.5.5.1. Introduction

Bitumen compound is safe to handle providing care is taken along with all relevant health and hygiene precautions. Heated bitumen should be treated as flammable liquids.

General Precautions

Barrier cream should be applied to the hands, and a pair of chrome leather gauntlets should be worn in addition to the wearing of protective clothing and boots. Should an accident occur whereby hot compound gets on the skin the burned area should be wrapped up in a clean cloth or bandage and report to hospital immediately.

No attempt should be made to pull the compound from the skin otherwise the skin may pull off with the compound exposing the wound.

Removing the compound with paraffin or other solvents is not recommended due to the possibility of poisoning.

Protection of Eyes

Approved eye protectors should be worn when opening containers, during stirring and pouring operations.

Fire Precautions

Foam or dry powder may be used to fight a fire DO NOT USE WATER JETS, THIS COULD CAUSE BOIL OVER IF BITUMEN IS IN A CONTAINER, LEADING TO A POSSIBLE RUPTURE OF THE VESSEL, RESULTING IN SPREAD OF FIRE. Assistance of trained fire fighting personnel should be sought.

2.5.6. Warming up PVC oversheath

Where it is necessary to warm up the PVC oversheath of a cable to ease its removal the following precautions are to be taken in addition to the basic health and hygiene precautions detailed in section 2.1 to 2.4.

1. When jointing in confined spaces, adequate ventilation must be arranged and forced ventilation used where necessary.

2. Avoid breathing any smoke cloud and stand so that air movement carries the fumes away from the face.

2.6. Clothing for Jointing

Approved clothing must be worn at all times whilst jointing. Clothing containing man made fibres shall not be worn. Clothing shall have no metal fastenings or fittings. Sleeves must be rolled down at all times with the cuffs fastened.

2.7 Equipment

Each Jointing Team should be equipped with:

12/8/99

(a) Approved barrier cream (containers not exceeding 500g capacity)

(b) Approved skin cleanser (containers not exceeding 500g capacity)

(c) Soap

(d) Plastic water container 10 litre (2 gall)

(e) Galvanised steel or plastic bucket

(f) Towel, clean cloths or disposable paper wipers

(g) Approved chrome leather glove

(h) Approved PVC gloves coloured grey or green (one pair for resin, one pair for EC1 flux)

(i) Approved PVC gloves coloured grey or green (general purpose)

(j) Approved eye protectors

(k) Polythene bags for disposal of rubbish

(l) First Aid kit including eye irrigation bottles (3 x 300ml)

2.8. Instruction of Personnel

The Jointing Instructors are responsible for teaching the correct jointing methods and for seeing that they are fully observed during all courses.

Supervisors are responsible for ensuring the proper adoption of the Approved procedures.

3. SAFETY

When carrying out any jointing work, the current edition of the ELECTRICITY NORTH WEST's Safety Rules and all other relevant Approved Instructions must be complied with. 12/8/99

4. PROTECTION OF THE PUBLIC FROM OBSTRUCTIONS AND EXCAVATIONS

4.1 The Engineer in charge of the work is responsible for specifying the Approved general arrangements to be used for:

(a) Signing, guarding and lighting all obstructions and excavations at any works.

(b) Maintaining such signs, guarding, lights and other appropriate apparatus in effective order throughout the duration of the works.

(c) Ensuring that signs, guarding, lights and other apparatus are removed as soon as they are no longer required.

The Engineer shall ensure that the Approved arrangements are notified to all appropriate personnel and that such personnel are fully aware of their responsibilities.

4.2 The Supervisor is responsible, to the satisfaction of the Engineer for:

(a) Ensuring that all obstructions and excavations are signed, guarded and lit as specified.

(b) Implementing the specified arrangements to ensure that all such signs, guarding, lights and other apparatus are maintained in effective order throughout the duration of the works and removed when no longer required.

(c) Promptly reporting to the Engineer any matter which does not allow him to properly discharge his responsibilities.

4.3 The jointer is responsible for:

(a) Installing the Approved arrangements as instructed by the Engineer or Supervisor, or alternatively, ensuring that the Approved arrangements have been provided before he commences work.

(b) Ensuring that the Approved arrangements are maintained as specified during his work at the site.

(c) Removing the Approved arrangements from the site as previously instructed by the Engineer or Supervisor.

(d) Carrying out any modifications or adjustments to the Approved arrangements as required by the Engineer or Supervisor.

(e) Carrying out any temporary measures in an emergency to the best of his ability, in order to ensure public safety. In such event, he will be responsible for reporting the circumstances without delay to the Engineer or Supervisor.

(f) Promptly reporting to the Engineer or Supervisor any matter which does not allow him to properly discharge his responsibilities.

12/8/99

It is of paramount importance to work safely.

Individually, this means using the correct procedures, approved equipment/tools and personal protection, including approved high visibility jackets when necessary. For public safety it means the correct signing, lighting and guarding of the works area and vehicles etc.

The most important attributes towards safe working are awareness and anticipation, “what could happen - if!”.

New Road and Street Works Act (NRSWA) must be complied with at all times; there are three main aspects.

1. Correct lighting, signing and barriering of works and vehicles. See the small blue COP handbook “Safety at Street Works and Road Works”.

   A basic set of 5 collapsible 750mm signs shall be provided for when the jointer’s vehicle is parked. These should be replaced with steel signs when they arrive on site. The 750mm size will cover the majority of situations.

Before any digging starts the vehicles and works area must be correctly signed, barriered and lit. These are normally ordered from the depot via the Supervisor and as much notice as possible of what is required should be given. Often this can be organised the previous day.

2. Notice must be given to the Local Authority of any works or excavation in public highway. In general, street lighting faults can be regarded as "urgent". This means in non traffic sensitive areas notice must be given within 2 hours of work starting. In traffic sensitive areas 2 hours' notice in advance of work starting must be given.

   The "notice" should be produced by the local depot clerical section.

   If it is out of hours the notice should be given first thing the next working day.

   Information required is:-

   (a) Footpath, carriageway or verge

   (b) Type of surface, tarmac, flags etc.

   (c) Size and depth of hole

   (d) Exact location, e.g. outside No xx, road and town

3. Backfilling and reinstatement needs to be organised and Supervisor should be advised about any holes, with details, the same evening or first thing the next day.

   Holes should normally be left open (and barriered) etc. - but if conditions dictate otherwise (e.g. across a driveway) then interim reinstatement must still be to the required standard. In effect this means no spoil should go back in the hole - all backfill should be new and therefore the Supervisor needs as early as possible notice if reinstatement is required the same day. Avoid the use of plates if possible.

5. SAFETY TOOLS AND EQUIPMENT

A list of approved safety tools and equipment is detailed in Section 5 of this Code of Practice.

Testing of insulated tools and equipment shall be in accordance with Code of Practice 884.

It is the responsibility of the user to ensure, as far as practicable, that all equipment issued to him is safely stored, generally maintained in good condition and fit for use before commencing to use it.

6. PRECAUTIONS TO BE TAKEN WITH PLASTIC PIPES AND CABLES

EPD 172 'Precautions to be taken with plastic pipes and cables' must be complied with.

7. DRAWING INDEX

Drawing Number	Proc/ Mod No	Description
900000-53-090	P1	33kV gas filled cable straight joint - General arrangement
900000-53-093	P1	Straight through joint with insulated sleeve for 33kV 3 core aluminium sheathed G.F. cable (2 sheets)
900000-53-095	P1	Jointing diagram for 33kV gas filled cable straight joint
900000-53-185	P2	Preparation of cables for 33kV gas straight joint. (2 sheets)
900000-53-186	P2	Termination and application of screening tapes for 33kV gas straight joint
900000-53-187	P2	Completion of 33kV gas straight joint
900000-53-092	P3,M19	Trimming and taping diagram for 33kV 3 core straight joint
900000-53-119	P3,M27	Arrangement of straight through joint with insulated sleeve and intermediate sheath connections for 33kV 3 core aluminium sheathed gas filled cable. (2 sheets)
900000-53-183	P3	Arrangement of straight through joint with insulated sleeve and intermediate sheath connections for 33kV 3 core gas filled cable. (2 sheets)
900000-53-112	P4,M58	Part arrangement of 33kV terminating joint solid side
900000-53-114	P4	Jointing diagram for 33kV terminating joint. Max. gas filled cable size - 400mm^2 (0.6sq.in)
900000-53-120	P5	Jointing diagram for 33kV terminating joint. Max. gas filled cable size 400mm^2. (2 sheets)
900000-53-121	P5,M23,52, 54	Terminating joint for 33kV cables 3 core gas filled aluminium sheath 3 core cable to 3 single core solid cable. (2 sheets)
900000-53-122	P6	Jointing diagram for 33kV gas filled cable straight joint. Non gas entry reinforced lead sheath cable with rubber anti-corrosion sheath. Max. gas filled cable size 400mm^2 (0.6sq.in).
900000-53-226	P7,M60	Repair to lead sheathed, rubber served and aluminium sheathed rubber/PVC served cables – no sheath failure
900000-53-227	P7	Repair to lead sheathed, rubber served and aluminium sheathed rubber/PVC served cables – sheath failure
900000-53-228	P7	Arrangement of gas relief union
900000-53-229	P7	Diagram of glass/resin aluminium sheath repair
900000-53-230	P7	Standard PVC serving repair
900000-53-085	M3	Jointing bay (General arrangement)
900000-53-232	M7	Set up and cut cable for BICC terminating joint
900000-53-233	M7	Set up and cut cable for BICC gas straight joint
900000-53-234	M7	Set up and cut cable Electricity North West gas straight joint
900000-53-087	M17	33kV gas filled cable straight joint - sequence of operations
900000-53-088	M17	33kV gas filled cables – ferrule and conductor dimensions
HQ.A1.51.09-540	M19	Termination of metallized paper core screen
900000-53-096	M19	Correct methods for cutting insulation on solid side gas terminating joints

Drawing Number	Proc/ Mod No	Description
900000-53-110	M20	Diagrammatic arrangement of hand applied crepe paper insulation (2 sheets)
900000-53-231	M21	Part view showing split screen on joint type 'B'
900000-53-094	M22,24	Diagram showing the application of glass/resin reinforcement & fitting of PVC. tube for gas test - 33kV 3 core straight through joint
900000-53-116	M22	Application of glass/resin core reinforcement on terminating joint
900000-53-091	M23,25,27	Straight through joint with insulated sleeve for 33kV 3 core aluminium sheathed gas filled cable
900000-53-296	M24	Terminating joint - Testing
900000-53-113	M26,54,55	Fitting of resin reinforced & high impact P.V.C insulating sleeves (2 sheets)
900000-53-099	M44	Dimensions for the application of tapes to Glo sleeve for copper pipe entry
900000-53-235	M44	No-go gap gauge
900000-53-297	M44	Terminating wire armoured gas pipe
900000-53-117	M48	Core stripping diagram for gas terminating joint. Gas side
900000-53-118	M50	Construction of the stress cone
900000-53-123	M50	Application of right and left hand insulation
900000-53-111	M51	Arrangement of terminating joint for 33kV cables aluminium sheathed 3 core gas filled cable to 3 core solid type cable maximum gas filled cable 0.6 (2 sheets)
900000-53-098	M53	Dimensions for the application of tapes for the Glo sleeve
900000-53-089	M59	Sequence of tightening nuts on gas filled accessories