

18/82

IN THE PRIVY COUNCIL

No.36 of 1979

O N A P P E A L
FROM THE SUPREME COURT OF MAURITIUS

B E T W E E N :

THE CENTRAL ELECTRICITY BOARD

Appellants
(Defendants)

- and -

BATA SHOE COMPANY (MAURITIUS) LIMITED

1st Respondents
(1st Plaintiffs)

- and -

EAST AFRICA BATA SHOE COMPANY LIMITED
(MAURITIUS DEPARTMENT)

2nd Respondents
(2nd Plaintiffs)

RECORD OF PROCEEDINGS

VOLUME

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Solicitors for the Appellants

Solicitors for the Respondents

O N A P P E A L

FROM THE SUPREME COURT OF MAURITIUS

B E T W E E N :

THE CENTRAL ELECTRICITY BOARD	<u>Appellants</u> (Defendants)
- and -	
BATA SHOE COMPANY (MAURITIUS) LIMITED	<u>1st Respondents</u> (1st Plaintiffs)
- and -	
EAST AFRICA BATA SHOE COMPANY LIMITED (MAURITIUS DEPARTMENT)	<u>2nd Respondents</u> (2nd Plaintiffs)

RECORD OF PROCEEDINGS

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Note: Where translations are given they have been agreed between the parties.

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EXHIBITS TRANSMITTED

Exhibit Mark	Description
I	A Fuse Box
II	Bits of Fuse Carriers
III	A Piece of Wire
IV	A Fuse Box
IV(a)	A Piece of Cable
V	A Yorkshire Fuse
VI	A Tin of Adhesive
VII	A phial of Dual Pact Cement
VIII	A roll of Electric Cable
IX	Bi-Metallic Connector
X	6 Fuses of Cable
XI, XIa, XIb	1 Sheath and 2 pieces of Cable
XII	Cable

Exhibit Mark

Description

XIII

6 Cables in a bi-metallic connector

XIV

A Henley Box with 3 Cables

FOR OTHER EXHIBITS SEE SEPARATE
VOLUME

O N A P P E A L
FROM THE SUPREME COURT OF MAURITIUS

B E T W E E N :

THE CENTRAL ELECTRICITY BOARD	<u>Appellants</u> (Defendants)
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- and -

BATA SHOE COMPANY (MAURITIUS) LIMITED	<u>First Respondents</u> (First Plaintiffs)
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10

- and -

EAST AFRICA BATA SHOE COMPANY LIMITED (MAURITIUS DEPARTMENT)	<u>Second Respondents</u> (Second Plaintiffs)
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R E C O R D O F P R O C E E D I N G S

No. 1

STATEMENT OF CLAIM

In the
Supreme
Court

No.1
Statement
of Claim
7th June
1974

1. Plaintiffs were prior to and on the 6th July 1972 the occupiers of an immovable property situate at Plaine Lauzun, Port Louis.

20

2. The said property was composed of several rooms which were used by the plaintiffs as store and warehouse.

3. The defendant is a corporate body constituted under the provisions of the Central Electricity Board Ordinance No.32 of 1963 in accordance with the provisions of which it is responsible for the control and development of the electricity supply generally in Mauritius.

30

4. On or about the month of April 1972 the defendant caused to be connected a Henly fuse service unit and all the electric cables and installations relating thereto in one of the rooms of the warehouse mentioned in para.2 above to take a provisional service to three of its consumers in adjacent factories.

5. The defendant had at all material times the

In the
Supreme
Court

No.1
Statement
of Claim

7th June
1974

(continued)

custody of the said Henly fused service unit and of all the electric cables and installations relating thereto.

6. On the 6th July 1972 a fire broke out in the warehouse mentioned in para.4 above.

7. Plaintiffs aver that the said fire broke out through the negligence (faute) of the defendant or of its 'preposes'

PARTICULARS OF NEGLIGENCE :

THE DEFENDANT

1. allowed loads to be imposed in excess of the design capacity of the Henly fuse box and/or failed to ensure that that equipment was of adequate capacity for its intended purpose.

2. made the temporary connections to the Henly fuse box omitting to install and protect them in the proper fashion including failing to provide 'bushes' on the outlet from the Henly fuse box.

3. employed fuse wires in excess of the design capacity of the fuse box.

4. failed to investigate the causes of and remedy all or any such defects despite repeated evidence, through faulting and over-heating, of such defects.

8. Alternatively, plaintiffs aver that the fire was caused by a "fait de la chose", namely, the said Henly fused service unit and all the electric cables and installations relating thereto, which were under the "garde" of the defendant.

9. As a result of the said fire plaintiffs' goods have been completely destroyed and plaintiff No.1 sustained damages valued at Rs890,996.52cs. and plaintiff No.2 sustained damages valued at Rs1,153,120.88cs. which damages the defendant is bound in law to make good.

10. The plaintiffs therefore pray for this Honourable Court for a judgment condemning and ordering the defendant to pay to plaintiff No.1 the said sum of Rs890,996.52cs. and to plaintiff No.2 the said sum of Rs1,153,120.88cs. as damages for the reasons above set forth.

11. Plaintiffs further aver that the defendant is also liable to indemnify them in respect of any claim against them, specially by their

landlord, arising out of the fire under reference, and they hereby expressly reserve their right to call the defendant in guarantee in respect of any such claim.

In the
Supreme
Court

WITH INTEREST AND COSTS

No.1
Statement
of Claim

7th June
1974

(continued)

10 You, the said defendant, are hereby required and summoned to cause an appearance to be entered for you in the Supreme Court of Mauritius by filing in the Registry thereof within FIVE (5) DAYS from service hereof upon you, a statement of defence in answer to the present statement of claim.

Under all legal reservations.

Dated at Port Louis this 7th day of June 1974.

(Sd.) Jacques Robert
of No.8 George Guibert Street,
Port Louis
Plaintiffs' attorney

20 N.B. If the above claims are admitted and the costs incurred up to now amounting to the sum of Rs2,000.00 (subject to taxation) be paid within FOUR (4) DAYS from service hereof upon you all further proceedings will be stayed.

Issued by the Plaintiffs abovenamed and styled during their legal domicile in the office of the abovenamed Attorney-at-Law

To: The defendant abovenamed and styled.

30 The foregoing statement of claim was duly served by me the undersigned usher upon the Central Electricity Board, acting by and through its Chairman Mr. Burrenchobay by leaving a true and certified copy thereof with Mr. Kenny assistant secretary found at the registered office situate at the Central Electricity Board (Head Office) Curepipe.

Dated this 10th day of June, 1974

Fees Rs5.65
Mileage 22.50
Rs.28.15

(Sd.) G.Manikam
Usher, Supreme Court.

Reg. - DH 387 No.4366

In the
Supreme
Court

No. 2

ANSWERS TO PARTICULARS

No.2
Answers to
Particulars

IN THE SUPREME COURT OF MAURITIUS

1st August
1975

In re:-

1. Bata Shoe Company (Mauritius) Limited
acting by and through its Board of Directors
and having its registered office at Plaine Lauzun,
Port Louis

2. East Africa Bata Shoe Company (Mauritius
Dept.) acting by and through its Board of Directors and having its registered office at
Plaine Lauzun, Port Louis 10

Plaintiffs

v/s

THE CENTRAL ELECTRICITY BOARD, the registered
office of which is situate at Royal Street,
Curepipe, acting by and through its Chairman
Mr. D.Murrenchobay

Defendant

ANSWER TO PARTICULARS SUPPLIED BY PLAINTIFFS AT
DEFENDANT'S REQUEST :- 20

Q.1. Under Paragraph 1 of the Statement of Claim
In what capacity was the plaintiff occupying
the property under reference? Please
communicate all documents.

A.1. The Plaintiffs were occupying the property
under reference as tenants of the Development
Bank of Mauritius

Q.2. Paragraph 2 of the Statement of Claim

Defendant moves for full and detailed particu-30
lars of the goods stored in the store and
warehouse stating which goods were being
stored in which room

A.2. This information appears from the annexed
list marked "A" and plan marked "B"

Q.3. Paragraph 4 of the Statement of Claim

i) Will the plaintiffs give full and detailed
particulars of the goods if any, that were
stored on the 6th July 1972 in the room
where the Henly fused service unit was
installed. 40

- ii) Will the plaintiffs state exactly the nature and type of :-
 - (a) the henly fused service unit;
 - (b) each electric cable
 - (c) each installation which is referred to in the paragraph under consideration.
- iii) Will the plaintiffs give the names of the three consumers.

In the
Supreme
Court

No.2
Answers to
Particulars
1st August
1975
(continued)

- 10 A.3. i) Please refer to the list and plan mentioned at A.2.
- ii) The Henly fused service unit, the cables and installations relating thereto were installed by the defendant within whose technical knowledge are the nature and type thereof
 - iii) The three consumers were known to the plaintiffs as Imprimerie Ideal, Diamond Company and Textile Industries.

20 Q.4. Under paragraph 5 of the Statement of Claim

- i) What are the dates and time which constitute "all material times".
- ii) In what way did the defendant have the custody of :-
 - (a) the henly fused service unit
 - (b) the electric cables, and
 - (c) the installation.

- 30 A.4. i) Since the installation of the Henly fused service unit in or about April 1972 up to and including the 6th July 1972.

ii) This is a matter of evidence

Q.5. Under paragraph 7 of the Statement of Claim

- i) What, according to the plaintiffs is
 - (a) the design capacity of the Henly fuse box
 - (b) the excess loads allegedly allowed by the defendant to be imposed
- ii) What, according to plaintiffs
 - (a) Should have been the adequate capacity of the equipment for its intended purpose;

40

In the
Supreme
Court

No.2
Answers to
Particulars
1st August
1975
(continued)

- (b) Was the actual capacity of the said equipment?
- iii) What, according to plaintiffs was the proper fashion to make the temporary connection to the Henly fuse box?
- iv) What, according to plaintiffs, was
- (a) the fuse wire which ought to have been used having regard to the design capacity of the fuse box;
- (b) the fuse wire actually used which, according to plaintiffs, was in excess of the design capacity of the fuse box? 10
- v) Will plaintiffs give full and detailed particulars (with dates and time) of faulting and overheating.
- A.5. i) (a) the Henly fuse box was owned and installed by the defendant and the design capacity of the same is within their knowledge but the plaintiffs understand the fuse box to have a design capacity of 60 amps phase. 20
- (b) "the excess loads allowed to be imposed on the Henly fuse box were in excess of 60 amps/phase and the potential excess loads allowed by the defendant to be imposed were in the order of 79 amps/phase"
- ii) (a) At least 79 amps/phase
- (b) 60 amps/phase 30
- iii) Insuring it so as not to cause a flow of current in excess of the capacity of the fuse box.
- iv) (a) Fuse wire which would have fused the system immediately the 60 amps capacity of the fuse box was exceeded.
- (b) Plaintiffs have it from defendant that they have used two number 18 S.W.G. fuse wire.
- v) On the 26th May 1972 - time has not yet been ascertained. 40
- On the 29th May 1972 at about 11 a.m. and noon
- On the 9th June 1972 at about 15.30 hours
- On the 28th June 1972 at about 9.15 and 10.30 a.m.

On the 5th July 1972 at about 14.30
and 16 hours

On the th July 1972 at about 7.45 a.m.

In the
Supreme
Court

No.2
Answers to
Particulars

1st August
1975

(continued)

Q.6. Under paragraph 9 of the Statement of Claim

Defendant moves for full and detailed
particulars of :-

- (a) How the sum of Rs.890,996.52 is
arrived at;
- (b) How the sum of Rs.1,153,120.88 is
arrived at;
- (c) The goods of plaintiff No.1 which were
allegedly destroyed;
- (d) The goods of Plaintiff No.2 which were
allegedly destroyed;

with communication of vouchers if any.

A.6. (a) (1) Stock of raw materials 397,274.93
Plus 8% increased costs 31,781.99

429,056.92

Less salvage 1,044.90

428,012.02

(2) Equipment 897.26

(3) Building improvement 10,492.74

(4) Fire equipment 12,589.00

(5) Loss of rent 4,687.50

(6) Loss of profits 346,620.00

(7) Police charges 1,800.00

(8) Rubbish clearing 1,236.00

Contingencies: Assessment
by auditors 10% on loss of
profits 34,662.00

TOTAL 840,996.52

Moral damages for trouble
annoyance and inconven-
ience 50,000.00

890,996.52

(b) (1) Stock of finished
goods 805,148.87

Plus 8% increased
costs 64,411.91

869,560.78

In the Supreme Court	B/fwd.	869,560.78	
	Less salvage	<u>13,652.90</u>	
No.2		855,907.88	
Answers to Particulars	(2) Equipment	54,125.00	
1st August 1975	(3) Loss of profits	171,559.00	
(continued)	(4) Police charges	1,800.00	
	(5) Rubbish clearing	2,574.00	
	(6) Contingencies: Assess- ment by auditors		
	10% on loss of profits	17,155.00	10
	TOTAL	1,103,120.88	
	Moral damages for trouble annoyance and inconvenience	<u>50,000.00</u>	
		<u>Rs.1,153,120.88</u>	

(c) & (d) Details with all documents and vouchers are at the disposal of defendant for inspection at the plaintiffs' attorney's office during office day and between office hours. 20

Q.7. Under paragraph 11 of the Statement of Claim

Has any claim been made against the plaintiffs up to this date?

A.7. Yes. A statement of claim has been entered by the Development Bank of Mauritius.

Under all legal reservations

Dated at Port Louis, this 1st day of August, 1975.

(Sd. Jacques Robert 30

of No.8, George Guibert Street,
Port Louis,

Plaintiffs' attorney

To/ The defendant abovenamed and styled, having its legal domicile elected in the office of Mr Attorney Guy Rivalland, situate in George Guibert Street, Port Louis.

I hereby acknowledge good and valid service of the foregoing 'Particulars' a true and certified copy whereof I have received this 1st day of August, 1975. 40

(Sd.) Guy Rivalland
Defendant's attorney

Reg: A393 No.7085

"A"

Materials in store when fire broke out

In the
Supreme
Court

Room 1

On Floor

No.2
Answers to
Particulars

Extrasim

Microcellular Rubber
sheets

1st August
1975

Canvas

Pale Crepe

(continued)

Rubber Unit Soles (ION)

Blanket D (Natural Rubber)

10 Polysar Synthetic Rubber

Cellular BL Rubber Chemicals

Silicone Solution

Pigment

Rubber Unit Soles Evasion

Latex (Natural)

Crepe Sheets

Toe Puff Thermoplastic

Rubber Unit Soles Rallye

Vanillin

20 Estasol Microcellular
Rubber Sheets

In Racks

PVC Foam Insoles

Leather

Polythene Bags

Plastic Cement

Cement Hardener

Ornaments & Bows

Shoe Boxes

PVC strappings

30 Thread

PVC tape and binding

Imported shoe components

PVC cloth

Elastic webbing

Laces

Compact PVC Insoles

Eyelets

Repair Pencils

PVC buckles

40 Rivets

In the
Supreme
Court
No.2
Answers to
Particulars
1st August
1975
(continued)

Paper labels
Rubber microcellular soles
Canvas
Cement primer
Winnofil
Sulphur
Coumarone resin
Vulcacit TMT
Suprex Clay
Titanium Dioxide
ISR CHJO (Rubber based
pigment)
Polywax
Captax MBT chemicals
Altax MBTS chemicals
Red Oxide pigment
Pale Crepe Natural Rubber
NIPOL 1502 (synthetic rubber)
Ultracil Filler
Stearic acid

Room 3

10

20

Room 4

Rubber unit soles
Rubber based pigment
Terflan - PVC cloth
Nubuck - Imported leather
Celemic Cap - Chemical
Masterbatch - PVC based pigment
Plastic colours - pigment (EVA)

Room 5

30

Rubber unit soles

"B"

Omitted

Reg: A393 No.7086

STATEMENT OF DEFENCE

In the
Supreme
Court

IN THE SUPREME COURT OF MAURITIUS

No.3
Statement of
Defence

In re:-

17th February
1976

1. Bata Shoe Company (Mauritius) Ltd.
acting by and through its Board of Directors
and having its registered office at Plaine
Lauzun, Port Louis

10 2. East Africa Bata Shoe Company Ltd.
(Mauritius Dept.) acting by and through its
Board of Directors and having its registered
office at Plaine, Lauzun, Port Louis

Plaintiffs

v/s

The Central Electricity Board the registered
office of which is situate at Royal Street,
Curepipe

Defendant

STATEMENT OF DEFENCE

20 1. The defendant admits the averments contained
in paragraphs 1 to 3 of the Statement of Claim.

2. i) The defendant denies the averments
contained in paragraph 4 of the Statement of Claim
in their form and tenor

ii) The defendant avers that a Henly fused
service unit had on June 68 been installed in
room 4 (on the plan marked B) to supply energy
to the occupiers of the said room but it was not
in fact used by plaintiffs.

30 iii) Defendant however admits that on March 72
electric cables were connected to said Henly fused
service unit to give a temporary supply of energy
to three consumers in adjacent factories.

3. The defendant denies the averments contained
in paragraphs 5 and 8 of the Statement of Claim
and puts the plaintiffs to the proof thereof.

40 The defendant avers that the plaintiffs had
the custody of the Henly fused service unit as
well as of the electric cables and installations
referred to in the Statement of Claim.

4. The defendant refuses to admit the averments
contained in paragraph 6 of the Statement of Claim
and puts the plaintiffs to the proof thereof.

In the
Supreme
Court

No.3
Statement of
Defence

17th February
1976

(continued)

5. As to the averments contained in paragraph 7 of the Statement of Claim the defendant denies that it or any of its preposes committed any negligence (faute) as particularised or at all and puts plaintiffs to the proof thereof.

6. The defendant denies the averments contained in paragraph 9 of the Statement of Claim and puts the plaintiffs to the proof thereof.

Defendant consequently moves that plaintiffs' action be dismissed with costs. 10

7. As to the averments contained in paragraph 11 of the Statement of Claim, defendant denies being in any way liable for the fire consequently denies that it may in any way be liable to indemnify plaintiffs.

Issued by the defendant abovenamed, having its legal domicile elected in the office of the undersigned attorney at law.

Under all legal reservations.

Dated at Port Louis, this 17th day of February, 1976. 20

(Sd) Guy Rivalland
of No.8, George Guibert Street,
Port Louis.
Defendant's attorney

To/

The plaintiffs abovenamed, having their legal domicile elected in the office of Mr Attorney Jacques Robert.

I hereby acknowledge good and valid service of the foregoing statement of defence, true and certified copies whereof I have received this 17th day of February 1976. 30

(Sd) Jacques Robert
Plaintiffs' Attorney

Reg: A398 No.491

IN THE SUPREME COURT OF MAURITIUS

In re:-

1. Bata Shoe Company (Mauritius) Limited acting by and through its Board of Directors and having its registered office at Plaine Lauzun, Port Louis

10 2. East Africa Bata Shoe Company (Mauritius Dept.) acting by and through its Board of Directors and having its registered office at Plaine Lauzun, Port Louis

Plaintiffs

v/s

The Central Electricity Board, the registered office of which is situate at Royal Street, Curepipe

Defendant

R E P L Y

20 1. Plaintiffs record the admissions contained in paragraph 1 of the statement of defence.

2. In answer to paragraph 2 of the statement of defence Plaintiffs:

(a) Maintain each and every averment contained in paragraph 4 of the statement of claim;

30 (b) Aver that the Henly fused service unit had been installed in June 68 by the defendant in room 4 (on the plan marked B) for the eventual supply of energy to unit No.6 of The Building Scheme of the Development Bank of Mauritius but was not required or used by the plaintiffs.

(c) Record the admission contained in subparagraph (iii).

3. In answer to paragraph 3 of the statement of defence plaintiffs deny the averments therein contained and maintain the averments contained in paragraphs 5 and 8 of the statement of claim.

40 4. In answer to paragraph 4 of the statement of defence plaintiffs maintain the averments contained in paragraph 6 of the statement of claim.

5. In answer to paragraphs 5, 6 and 7 of the

In the
Supreme
Court

statement of defence plaintiffs maintain each
and every averment contained in paragraphs, 7
9 and 11 of the statement of claim.

No.4
Reply

4th March
1976

(continued)

On the whole, plaintiffs maintain each and
every averment of the statement of claim that
have not been specifically admitted by defendant,
join issue with defendant and move for judgment
in terms of the statement of claim.

Under all legal reservations

Dated at Port Louis this 4th day of March 10
1976.

(Sd) Jacques Robert

of No.8 George Guibert Street,
Port Louis

Plaintiffs' attorney

To/

The defendant abovenamed and styled, having
its legal domicile elected in the office of
Mr Attorney Guy Rivalland, situate in George
Guibert Street, Port Louis.

I hereby acknowledge good and valid service 20
of the foregoing 'reply' a true and certified
copy whereof I have received this 4th day of
March 1976.

(Sd) Guy Rivalland

Defendant's attorney

Reg: A397 No.2927

No.5
Notice of
Facts by
Plaintiffs

28th December
1977

No. 5

NOTICE OF FACTS BY
PLAINTIFFS

IN THE SUPREME COURT OF MAURITIUS

In re:

30

1. Bata Shoe Company (Mauritius) Limited,
acting by and through its Board of Directors and
having its registered office at Plaine Lauzun,
Port Louis

2. East Africa Bata Shoe Company (Mauritius
Dept.) Limited, acting by and through its Board

of Directors and having its registered office at Plaine Lauzun, Port Louis

In the
Supreme
Court

Plaintiffs

v.

The Central Electricity Board, the registered office of which is situate at Royal Street, Curepipe, acting by and through its Chairman, Mr D. Burrenchobay

Defendant

No.5
Notice of
Facts by
Plaintiffs
28th December
1977
(continued)

10

NOTICE OF FACTS

TAKE NOTICE that the plaintiffs intend to prove by oral evidence at the hearing of the above matter the following facts unless the same be admitted by you in due course of law, viz :-

20

1. (a) that the Henly fused service unit had been installed in June 68 by the defendant in room 4 (on the plan marked B) for the eventual supply of energy to unit No.6 of The Building Scheme of the Development Bank of Mauritius but was not required or used by the plaintiffs;

(b) that on or about the month of April 1972 the defendant caused to be connected the Henly fused service unit and all electric cables and installations relating thereto to take a provisional service to three of its consumers in adjacent factories.

30

2. That the defendant had at all material times the custody of the said Henly fused service unit and of all the electric cables and installations relating thereto.

3. That on the 6th July 1972 a fire broke out in the warehouse room mentioned in paragraph 4 of the statement of claim.

4. That the said fire broke out through the negligence (faute) of the defendant or of its 'prepose'.

PARTICULARS OF NEGLIGENCE

40

THE DEFENDANT

1. allowed loads to be imposed in excess of the design capacity of the Henly fuse box and/or failed to ensure that that equipment was of adequate capacity for its intended purpose;

2. made the temporary connections to the Henly fuse

In the
Supreme
Court

No.5
Notice of
Facts by
Plaintiffs
28th December
1977
(continued)

box omitting to install and protect them in the proper fashion including failing to provide "bushes" on the outlet from the Henly fuse box;

3. employed fuse wire in excess of the design capacity of the fuse box;

4. failed to investigate the causes of and remedy all or any such defects despite repeated evidence through faulting and overheating of such defects.

5. That alternatively, the fire was caused by a "fait de la chose", namely, the said Henly fused service unit and all the electric cables and installations relating thereto, which were under the "garde" of the defendant.

6. That as a result of the said fire Plaintiffs' goods have been completely destroyed and Plaintiff No.1 sustained damages valued at Rs.890,996.52cs and Plaintiff No.2 sustained damages valued at Rs.1,153,120.88cs which damages the defendant is bound in law to make good.

TAKE FURTHER NOTICE that the witnesses whom the plaintiffs intend calling to prove the above facts and to disprove those intended to be proved by the abovenamed defendant are the following amongst other, viz :-

1. Plaintiffs' representatives;
2. Edward Bathfield, of Roches Noires;
3. Roger Bigaignon, of Cascadelle, Beau Bassin, a proprietor;
4. Roland Hardy, B.Sc., M.I.E.E., of Forges Tardieu, Port Louis;
5. Roger Cayeux, B.Sc., of R. & F. Cayeux Ltd. Phoenix;
6. Jean Marc Harel, of de Chazal du Mee & Co. Intend Street, Port Louis;
7. Rajen Dorsamy Lowtun, of Port Louis, a proprietor;
8. Rashid Mamdally, alias Said, of No.2 Gorah Issac Street, Port Louis;
9. Joseph Hiss, of Port Louis, a proprietor;
10. Ahmad Dauharry, of Port Louis, a proprietor;
11. B. Goder, of Beau Bassin, a proprietor;
12. The representatives of Messrs. Toplis and Harding, International adjusters, 10 Arthur Street, London, E.C.4R 9A.N. (including Mr Robert Cole);

13. The representatives of Messrs. Hill Kaplan Scott and Partners, Consulting Engineers (including Mr Davidson)
14. The representatives of Dr. J.H.Burgoyne and Partners, Consulting Scientists & Engineers, Drake House, 3/5 Dowgate Hill, London E.C.4 (including Mr H.R.Maisey);
15. The representatives of ERA (Electrical Research Association) Cleeve Road, Leatherhead, Surrey.

In the
Supreme Court
 No.5
 Notice of
 Facts by
 Plaintiffs
 28th
 December
 1977
 (continued)

10

Under all legal reservations, especially of calling other witnesses if need be.

Dated at Port Louis, this 28th day of December, 1977

(Sd) Jacques Robert
 of No.8, George Guibert Street,
 Port Louis
Plaintiffs' attorney

To/

20

The defendant abovenamed and styled having its legal domicile elected in the office of Mr Attorney G. Rivalland of Port Louis.

I hereby acknowledge good and valid service of the foregoing 'Notice of Facts' a true and certified copy whereof I have received this 28th day of December, 1977.

(Sd) Guy Rivalland
Defendant's attorney

Reg: A406 No. 4675

In the
Supreme
Court

No. 6

NOTICE OF FACTS BY
DEFENDANTS

No.6
Notice of
Facts by
Defendants

IN THE SUPREME COURT OF MAURITIUS

1st February
1978

In re:

1. Bata Shoe Company (Mauritius) Limited acting by and through its Board of Directors and having its registered office at Plaine Lauzun, Port Louis

2. East Africa Bata Shoe Company (Mauritius Dept.) Limited, acting by and through its Board of Directors and having its registered office at Plaine Lauzun, Port Louis 10

Plaintiffs

v/s

The Central Electricity Board, the registered office of which is situate at Royal Road, Curepipe, acting by and through its Chairman, Mr. D. Burranchobay

Defendant

20

NOTICE OF FACTS

TAKE NOTICE that the defendant intends to prove by oral evidence at the hearing of the above matter the following facts unless the same is admitted by you in due course of law, viz :-

1. That the Henly fused service unit had in June 1968 been installed in room No.4 (on the plan marked B) to supply energy to the occupiers of the said room but it was not in fact used by the plaintiffs. 30

2. That the plaintiffs had the custody of the Henly fused service unit as well as of the electric cables and installations referred to in the statement of claim.

TAKE FURTHER NOTICE that the witnesses whom the defendant intends calling to prove the above facts and to disprove those intended to be proved by the plaintiffs are the following amongst others, viz :-

1. defendant's representatives 40
2. Mr. Woodcock
3. Mr. Sharples
4. Mr. Roger Chung Chun Choy

Under all legal reservations, especially of calling other witnesses and of praying other facts

In the
Supreme
Court

Dated at Port Louis, this 1st day of February 1978.

No.6
Notice of
Facts by
Defendants

1st February
1978

(continued)

10

(Sd) Guy Rivalland
of No.8 George Guibert
Street, Port Louis
Defendant's attorney

To/

The Plaintiffs abovenamed having their legal domicile elected in the office of Mr Attorney Jacques Robert.

I, the undersigned, hereby acknowledge good and valid service of the foregoing notice of facts, a true and certified copy whereof I have received this 1st day of February, 1978.

20

(Sd) Jacques Robert
Plaintiffs' attorney.

Reg: A406 No. 5059

No. 7

EVIDENCE OF MOONOO MUNGUR

Plaintiffs'
Evidence

No.7
Moonoo Mungur
Examination

14th February
1978

David calls and examines:

Mr Moonoo Mungur (s.a.h.) District Clerk of Port Louis (2nd division)

30

Q. A judicial enquiry was held on the 2nd November, 1972, in respect of a fire that took place on the 6th July, 1972 in the warehouse of Bata Shoe Company at Plaine Lauzun?

A. Yes.

Q. In the course of that judicial enquiry there were produced certain exhibits which have remained in the custody of the court ever since and which you now put in?

A. Yes.

Q. They are the fuse box, bits of fuse carriers and a piece of wire?

A. Yes.

40

Exhibits put in

In the
Supreme
Court
Plaintiffs'
Evidence
No.7
Moonoo Mungur
Examination
14th February
1978
(continued)

- Q. Also in the course of the enquiry a booklet of 29 photos were produced?
- A. Yes.
- Q. Have you a certified copy of the photographs?
- A. No, My Lords, that document has been sent to the D.P.P.
- Q. So you are not in a position to put in that document?
- A. Yes.
- Q. The various exhibits have remained in the district court of Port Louis? 10
- A. Yes.
- Q. In the custody of the court?
- A. Yes.

NO CROSS EXAMINATION

Plaintiffs'
Evidence
No.8
C.Pillay
Ramasawmy
Examination
14th February
1978

No. 8

EVIDENCE OF C. PILLAY
RAMASAWMY

Mr. David calls and examines:

C.Pillay Ramasawmy, Police Inspector, (s.a.h.) 20

- Q. Inspector, on the 7th July, 1972, you went, with the late Assistant Superintendent of Police Servansingh and the then Inspector Bosquet to the locus in quo of the fire at Plaine Lauzun?
- A. Yes.
- Q. And there under the instructions of those police officers you took 29 photos?
- A. Yes.
- Q. At the judicial enquiry which took place into the cause of this fire on the 7th November 1972, before the district court of Port Louis, you put in a booklet showing enlarged prints of those photos? 30
- A. Yes.
- Q. You now put in a booklet containing prints of those same photos?
- A. Yes.

MR. DAVID: May I say, at this stage, My Lords, that in so far as any documents that may have to be

registered are concerned needful had not been done because we had thought until the last moment that the D.P.P. would have released the judicial enquiry documents but such is not the case and needful along that line will be done at the first opportunity. So may I put one unofficially.

No cross-examination

In the
Supreme
Court
Plaintiffs'
Evidence
No.8
C. Pillay
Ramasawmy
Examination
14th February
1978
(continued)

No. 9

10

EVIDENCE OF LOUIS CLEMENT
BOSQUET

David calls and examines:

Mr. Louis Clement Bosquet (sworn) Chief Inspector
of Police residing at Tombeau Bay

Plaintiffs'
Evidence
No.9
Louis Clement
Bosquet
Examination
14th February
1978

Q. You are now stationed at Line Barracks?

A. Yes.

Q. In July 1972, you were also stationed, as a Police Inspector, at Line Barracks?

A. Yes.

20

Q. On the 6th July 1972, there was a fire at Plaine Lauzun, in the warehouse of the Bata Shoe Company?

A. Yes.

Q. In the afternoon the police of your station attended thereto?

A. Yes.

Q. On the next day, that is, the 7th July, you went to the locus in quo with a superior officer?

30

A. Yes, with Mr. Servansingh, Assistant Superintendent of Police.

Q. Who is now dead?

A. Yes.

Q. When you arrived on the spot there were employees of the plaintiff company (Bata), amongst them was Mr Roger Bigaignon?

A. Yes.

Q. In a room, I am referring to room Z (plan shown

In the
Supreme
Court

Plaintiffs'
Evidence

No.9

Louis Clement
Bosquet

Examination

14th February
1978

(continued)

to witness), look at this. In that room,
did you see a fuse box that was still set in
on the wall?

- A. Yes.
- Q. You had a photo of it taken by Inspector
Ramasawmy?
- A. Yes.
- Q. Could you identify photo C5?
- A. Yes.
- Q. Will you look at room 4. When you went in 10
that room, on the wall, did you find any
fuse box?
- A. No, My Lords, there were two holes on the
wall.
- Q. You have photos taken of that wall?
- A. Yes.
- Q. They are photos C21 and C22 (shown to witness).
They show the place where originally there
was a fuse box. After photos had been taken
did you look for anything? 20
- A. Yes, I did look for the fuse box because
there were indications that there had been
a fuse box on the wall.
- Q. Did you look on the floor when you went in,
what did you find?
- A. There was nothing.
- Q. It was an empty room then?
- A. No, there were debris of raw materials.
- Q. So you searched among the debris what did
you find? 30
- A. We searched underneath the debris and at
some 2 feet underneath the debris we found
the box itself without cover.
- Q. Did you look further?
- A. Yes, we searched underneath again and at
some 2½ feet I saw the cover itself.
- Q. Was it underneath the box?
- A. Some 1½ feet away from the box.
- Q. So at some 1½ feet away from the box and
lower down than the box you found the lid 40
to the box?
- A. Yes.
- Q. How far off was it from the concrete floor?
- A. The lid was on the concrete floor.
- Q. You found the lid on the concrete floor itself
and the box how high off from the floor did
you find it?

	A. About 2 $\frac{1}{2}$ feet.	In the
	Q. These were secured?	Supreme
	A. Yes.	<u>Court</u>
	Q. Was there a government engineer present at the time?	Plaintiffs'
	A. There was Mr Fort Stevens of the Telecommunications Department.	Evidence
	Q. When you go to room Z you see that there is a cable which goes along the way from the box to the floor?	No.9
10	A. Yes.	Louis
	Q. Did you find that cable on the spot?	Clement
	A. In room 4, no.	Bosquet
	Q. Was there any cable attached to the fuse box when you found it?	Examination
	A. It was like this without any cable attached.	14th February
	Q. Did you see any sign of a cable on the wall?	1978
	A. As far as I remember, no.	(continued)
	Q. Would you look at photos 21 and 22, the wall was as bare as you could see, was there anything protruding along the wall from under the debris?	
20	A. When we searched, yes.	
	Q. What did you see?	
	A. A piece of wire, a cable.	
	Q. Where was it?	
	A. It was from the floor, it was about 1 $\frac{1}{2}$ feet high.	
	Q. You saw a piece of cable protruding from the concrete floor up to a height of 1 $\frac{1}{2}$ feet?	
30	A. Yes.	
	Q. Could you look at photos C21 and C22, there is something which protrudes here, does this suggest anything to you?	
	A. It seemed to me that it was like a cable, that is why I searched for the cable and the fuse box.	
	Q. Would that have been the cable that went down to the ground?	
40	A. Apparently.	
	Q. What was done to that remaining bit of cable?	
	A. As far as I remember I asked Mr. Bigaignon to tell his employee to have it kept. (cut)	
	Q. As far as you remember you asked Mr Bigaignon to have it kept cut by one of his employees, so the box, the lid and the piece of cable were	

In the
Supreme
Court
Plaintiffs'
Evidence
No.9
Louis Clement
Bosquet
Examination
14th February
1978
(continued)

taken where?

- A. To the police station, accompanied by Mr Port Stevens.
- Q. Where they remained?
- A. Yes.
- Q. Whilst they were there, were they examined?
- A. Yes.
- Q. By whom?
- A. By Mr Port Stevens, by experts from Bata - I don't remember their names - by the C.E.B. 10
- as far as I can remember it was by Mr Juste.
- Q. You had Inspector Ramasawmy take 29 photos showing the outside and the inside of that building as well as the inside of nearby industries?
- A. Yes.
- Q. When at the police station they were examined, no one interfered with those exhibits?
- A. No one interfered apart from the experts.
- Q. Apart from the box itself and lid, did you 20
find anything else?
- A. There were small pieces of fuse carriers, some remaining in the box, some around the box itself.
- Q. All these were secured by Mr Port Stevens in your presence?
- A. Yes.
- Q. You have said you found two holes in the wall, did you notice whether there was 30
anything in those holes?
- A. I can't remember if there was anything in the holes.

Cross-
examination

Cross-examined

Sir Raymond Hain cross-examines.

- Q. When you went to visit that room you were accompanied by some people?
- A. Yes, there were Mr Servansingh, Assistant Superintendent of Police, Mr Roger Bigaignon, and some employees of Bata, the Fire Brigade, Mr Tranquille, Mr Juste and as far 40
as I can remember, Mr Ah You of the Forensic Science Laboratory.
- Q. And Mr Jean?
- A. Yes.

COURT: Who is Mr Jean?

SIR RAYMOND: Mr Jean is the Commercial Superin-

tendent of the C.E.B.

Q. Could you make an idea of what materials there were among the debris, apart from those which you mentioned?

A. There were burnt pieces of rubber, canvas, plastic materials. I don't know exactly what there were.

Q. Are you referring to the materials which you found in the immediate neighbourhood of the box or in the whole room itself?

A. In the whole room itself.

Q. Any tins?

A. I believe there were some tins.

Q. Where? In the immediate neighbourhood?

A. Further away from the box. I mean the far end of the room.

Q. Were they secured?

A. No.

Q. May I ask why?

A. They were burnt and empty. I asked Mr Ah You of the Forensic Science Laboratory if this could help. He told me it could not help at all as they were burnt.

Q. So Mr Ah You told you they could not be of any use, that is why you did not secure any of them?

A. Yes.

Q. As a police officer, it did not occur to you that although the reading on the box may have gone, the size, the shape, the material, could have been of any use?

A. No, My Lords. I was acting under the instructions of an expert, Mr Ah You.

Q. I see. You are a police inspector but you were acting under the instructions of Mr Ah You?

COURT: Mr Ah You of the Forensic Science Laboratory is a police officer as well. He is not a private person, he is a member of the police force.

SIR RAYMOND: Were you in charge of the enquiry?

A. I was not in charge, it was Mr Servansingh who was in charge.

Q. He was present when you searched the room?

A. Yes.

Q. Unfortunately Mr Servansingh had died?

A. Yes.

Q. What else did you see apart from some burnt

In the
Supreme
Court

Plaintiffs'
Evidence

No.9
Louis Clement
Bosquet

Cross-
examination

14th February
1978

(continued)

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In the
Supreme
Court
Plaintiffs'
Evidence
No.9
Louis Clement
Bosquet
Cross-
examination
14th February
1978
(continued)

tins, plastic, rubber?

A. I can't remember what there were exactly.

Q. These materials that you have mentioned reached 2½ feet high?

A. At certain spots, yes, they were 2½ feet high.

Q. At others the floor was bare?

A. No, there were debris all over the place.

Q. The floor could at no place be exposed to view?

10

A. The floor was not exposed to view at any place in that room.

Q. Did you question Mr Dorsamy while you were in that building?

A. Yes, I did question Mr Dorsamy, one of the employees of Bata.

Q. If I remember rightly, he was the employee who mentioned hearing a noise before he saw smoke?

A. Yes.

20

COURT: It is Mr Rajen Dorsamy Lowtun?

MR. DAVID: Yes, My Lords.

SIR RAYMOND: Did you ask him any questions?

A. Yes, I did.

Q. Is it a fact that he replied to you that he heard a noise coming from that neighbourhood but that he could not say whether it was in the room or outside the room. Could you remember:

A. No, I can't remember.

30

Q. Did you remember asking him what sort of a noise it was?

A. I did ask him what sort of a noise it was.

Q. What did he say?

A. He told me it was 'ene eclatement'

Q. It could be a rubber tyre exploding outside the building. So he told you it was "ene eclatement", those were his words?

A. Yes.

Photos C21 and C22 shown to witness

40

Q. Were the photographs taken after you had searched for the various articles which you have seen in court or before?

A. The photographs were taken before the search.

SIR RAYMOND: My Lords, may we beg leave to reserve the rest of the cross-examination of this witness because we have not yet had the

opportunity to see the photos.

COURT: No objection.

In the
Supreme
Court

Plaintiffs'
Evidence

No.9
Louis
Clement
Bosquet

14th
February
1978

(continued)

No. 10

RAJEN DORSAMY LOWTUN

David calls and examines:

Mr. Rajen Dorsamy Lowtun (s.a.h.) of 8 Leclezio
Street, Port Louis.

Plaintiffs'
Evidence

No.10
Rajen
Dorsamy
Lowtun

Examination

14th
February
1978

10

I work in the export department. It is situated in the same building as the raw materials store and the finished goods store. At the side of the finished goods store there is the raw materials store. There are many rooms in that store. In one of these rooms is the fuse box. This situation was in 1972 before the fire. The room where the fuse box was was opposite to that of the export department but separated from the store of the finished goods and the raw materials store. There was light in the store where I was working. On the 6th July 1972, in the afternoon, I was at work. At a certain time something attracted my attention. I heard a boom. It came from right in front of the store in which I was working. The noise came from room No.2 in the store. In room No.2 there were materials and a fused box. The only fuse box I have seen in the section of raw materials was in room No.2. Five minutes after there was smoke.

20

BY COURT: There is no door leading to the outside, we must go round. To gain access outside from room No.2 you must borrow the corridor.

30

BY DAVID: On one side of room No.2 is room No.1 and on the other side is a room with wash basins and W.C. I saw smoke coming from the hard board partition which is situated opposite the fuse box. When I saw the smoke I warned the storekeeper Mr Goder. He was at the finished goods department.

In the
Supreme
Court

Plaintiffs'
Evidence

No.10
Rajen Dorsamy
Lowtun

Examination

14th February
1978

(continued)

Mr Goder went to the spot and I went to ring up the firemen. Mr Goder, on his return, talked to the firemen. I took the fire extinguishers and returned to the spot. All the employees of the store department came and returned to the spot. Mr Goder the storekeeper, phoned to the factory to tell them about what had happened. The factory is within one mile from the store. More than 20 minutes afterwards the firemen came. They did not succeed in putting out the fire in spite of their attempts. Later on the fire was put out. The following day I indicated spots to the police. No stranger could have access to that store. Anybody should first ask for the keys from the storekeeper and would go there in his company or that of his assistant. Smoking is not allowed in the store. One can smoke outside the stores.

10

Cross-
examination

Cross-examined

MOOLAN cross-examines:

20

We are three working in the export department. On that day one Narain Sanassee and one Barlen Natan were working with me. There is a large store divided into two parts, one part for the raw materials and one other part for the finished goods. There is a partition between the raw materials' section and that of the finished goods. The partition is made up of hard board. The partition starts near the door of the raw materials, goes inside to a corridor, then turns round and closes up at the ceiling. That partition is of hard board. The hard board starts from the floor and goes up to the ceiling. One cannot go out of the raw materials department because of that partition but also one cannot see across through. The store department is separated from the raw materials department by hard board and by a metallic partition from the retail department. The retail department is that of Mr Goder. I am not used to go roaming about in the raw materials store but would sometimes go there when in need of boxes because these were stored there. I cannot remember how long before the fire I last entered the raw materials department. It was not on the eve. I cannot say exactly how long. I do not remember. In the whole Bata organisation the raw materials department is completely separated from the export department and the finished goods department. It has a different storekeeper and personnel from those of the other departments. The employees of the finished goods department and those of the export department are not allowed in the raw materials department. I cannot go into the raw materials department for a stroll but I only go in there when I needed something. I go there for cardboard boxes, empty

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cardboard boxes. A stock of empty cardboard boxes are not always kept in the raw materials department because they only store those boxes obtained from the packing industry when there is no place for them at the factory. Some boxes are used in the factory and sometimes we use them at our department. Boxes for export are of the other type. There is light in the store where I work. We need light because sometimes we work overtime. There is no light in the raw materials store. I am not quite sure about the fact but I suppose it is so. I have never been inside at night. I went there during the day. We open the door everywhere and get sunlight. The only way to obtain light inside is by opening the doors everywhere. There is an opening in the room where there is a wash basin and above the door there is also an opening (imposte) I have been many times in the raw materials department, I cannot say exactly how many. I cannot say how many times. The boxes are handed over to me by the storekeeper or his assistant. They open the door and the boxes are by the side of the door. I have not been inside as the storekeeper or his assistant would take the boxes near the door and hand them over to me. There were many other employees at the department where Mr Goder was in charge. My section ends near the hardboard turns round to form the corridor. The section of Mr Goder ends with the partition ending the corridor. At all times on the 6th July, 1972, Narain and Barlen were working with me. They were packing shoes for export. I was doing the same job.

In the
Supreme
Court
Plaintiffs'
Evidence
No.10
Rajen
Dorsamy
Lowtun
Cross-
examination
14th
February
1978
(continued)

At 12.30 p.m. R E C E S S

AFTER RECESS:

Mr Moollan continues the cross-examination of Rajen Dorsamy Lowtun (still under solemn affirmation)

Cross-
examination
(continued)
(Translation)

Q. You said that you and another worker were engaged in that work, when did you start?

A. We started work since the morning.

Q. Had you been doing that same work when the fire started?

A. We were doing that work until the fire started.

Q. You say that, at a certain moment, you saw smoke. Where did the smoke come from to reach you where you were both working?

A. The smoke came up between the hard board sheets of the partition.

Q. You said the same thing at the Judicial Enquiry? That the smoke came from under the hard board sheets or did it pass between the hard board sheets?

In the
Supreme
Court

Plaintiffs'
Evidence

No.10
Rajen
Dorsamy
Lowtun

Cross-
examination
(Translation)

14th February
1978

(continued)

- A. The hard board partition is composed of sheets of a height of 12 feet, on top of that is another sheet of 3 feet high; the smoke came between those sheets.
- Q. You are now explaining why the smoke came from under the hardboard partition and between the hard board sheets. What sort of smoke did you see? Was it white or black, thick or just a trickle like cigarette smoke? 10
- A. It was not like a cigarette smoke, it was a white smoke.
- Q. A cloud of smoke?
- A. The smoke came first in whizz and then in puffs.
- Q. What drew your attention to that?
- A. I noticed the smoke when I went up to stack the boxes.
- Q. Did you smell smoke?
- A. I did not smell it before. 20
- Q. While you were working, were you facing the wall which gives on the outside, the racks which are on both sides of the fencing or the hard board partition between your section and the raw materials section?
- A. When I was working I was facing the hard board partition.
- Q. You say that at one time you heard a boom from that direction, from behind the hard board partition you were then facing. Can you say from where exactly behind the partition? 30
- A. In fact I heard a boom behind the hard board partition.
- Q. You know that it came from a direction behind the hardboard partition which you were facing, but from where exactly behind that partition, you can't say?
- A. It was just opposite the hard board partition I was facing while I was facing while I was working; that part was about 4 feet wide. 40
- Q. There are 2 rooms opposite the hard board?
- A. There are two rooms; there are rooms again behind and also buildings.
- Q. You actually heard a boom from that direction, but where exactly it came from you cannot say?
- A. It was exactly from room No.2.
- Q. There are 4 walls in Room No.4? 50

- A. Yes.
- Q. The wall on the left, the wall which gives onto the corridor, the one at the back. Could it be from the wall at the far end?
- A. I cannot say whether it came from the wall right opposite room No.2.
- Q. It is quite likely that the noise came from outside, from the direction of that room?
- 10 A. I cannot say in fact where the noise could come whether in that direction or from outside. I am not in a position to say where the noise came from, but I heard in the direction of that room.
- Q. In the finished goods department where you were working on that day, were the lights on or off?
- A. When I was working on that day light was on in the finished goods department.
- 20 Q. Did the lights go off at one time in your department?
- A. I did not notice any light that went out in my department as there was a window, there was sun and we had sunlight.
- Q. Up to the time you vacated the finished goods department, the store, you didn't notice whether the lights went off?
- A. I did not notice if the light had gone out by the time we have evacuated the finished goods department. I had taken the fire extinguisher to try to extinguish the fire.
- 30 Q. Do you know whether there is a fuse box in a room in the finished goods department?
- A. I am aware there is a fuse box in the room in the finished goods department.
- Q. Starting from the left when facing the main entrance, there are 3 rooms in your department?
- A. Coming in by the main gate, there are three rooms.
- Q. The first room on the left is the toilet room?
- 40 A. In the first room there are the toilets.
- Q. The second room and then the room of the other industries?
- A. On the right hand side there is another room, yes.
- Q. The fuse box is in one of those rooms?
- A. In the middle room.
- Q. BY COURT: Can you read on the plan whether the rooms are like what they are there?
- A. I cannot read the plan shown to me.

In the
Supreme
Court
Plaintiffs'
Evidence
No.10
Rajen
Dorsamy
Lowtun
Cross-
examination
(Translation)
14th February
1978
(continued)

In the
Supreme
Court

Plaintiffs'
Evidence
No.10
Rajen Dorsamy
Lowtur
Cross-
examination
(Translation)
14th February
1978
(continued)

MR. MOOLAN: Let's come back to that question
of fuse box, starting from the section
where you were.

- A. I do not understand it.
- Q. Look at that plan, see whether you can read it.
- A. Yes.
- Q. The plan gives the right picture, doesn't it?
- A. Yes.
- Q. Can you point out on the plan where the fuse box was situated, in your section there?
- A. I see on that plan that the fuse box in my department has been marked.

Plan put in, marked "D"
(A new plan is shown to the witness who agrees that it is the proper disposition of the room, that is, the place where he was working; the fuse was to be found in that room, called Y1)

- Q. You are familiar with that fuse box. Did you on the day of the fire have anything to do with that fuse box? 20
- A. On that day when the fire broke out I had nothing to do with that fuse box.
- Q. Look at photograph C5. Look on top of the fuse box. It would seem that there are 2 fuses on it. Do you see what I see?
- A. I can see two objects resembling fuses on the fuse box on photo C5.
- Q. This is a photograph taken by the police on the day after the fire. Were you present when the photograph was taken? 30
- A. I was present when photos were taken, but I was not there when photo C5 was taken.
- Q. If some people who were there were to say that there were 2 fuses on that box, could you say how they came to be there?
- A. I have no explanation to offer how the fuses came on that box.
- Q. Anyway, you are sure of one thing; you had nothing to do with those 2 fuses? 40
- A. I have nothing to do with the two fuse carriers on the box.
- Q. You never told anybody that you placed them there?
- A. At no time have I said to anybody that I placed them there.

No. 11
EVIDENCE OF BENJAMIN GODER

In the
Supreme
Court

Plaintiffs'
Evidence

No.11
Benjamin
Goder

Examination
(Translation)

14th February
1978

Mr. David calls and examines:
M. Benjamin Goder (sworn)

- 10 Q. Mr. Goder, at the time in 1972, you were the supervisor of the warehouse. Did you have to replace anybody on the 6th July 1972?
- A. Yes, Mr. Mootoosamy who was sick.
- 10 Q. What were his duties:
- A. He was responsible for the finished goods department.
- Q. So you replaced him on that day. You started work normally at what time?
- A. At 8 a.m.
- Q. Did you stay on the spot the whole day?
- A. Yes I did, the whole day.
- Q. At a certain moment, after 1 p.m. where were you?
- 20 A. I was still at the warehouse.
- Q. Where precisely?
- A. At my desk.
- Q. In which section?
- A. Close to the entrance door.
- Q. In the Sales and Retail Depot?
- A. Yes.
- Q. Near the entrance door of the finished goods department?
- A. Yes.
- 30 Q. Something happened at one time?
- A. Yes. Rajen Dorsamy Lowtun came to see me.
- Q. Did he tell you anything?
- A. Yes. He said that he had noticed smoke coming out.
- Q. Did you then go somewhere?
- A. Yes.
- Q. To which section?
- A. To the Export department.
- Q. Where Lowtun was working?
- 40 A. Yes.
- Q. What did you see?
- A. There was smoke coming out through the chinks

In the
Supreme
Court

Plaintiffs'
Evidence

No.11
Benjamin Goder

Examination
(Translation)

14th February
1978

(continued)

between the export department and the raw material department, the smoke was coming into the export department.

- Q. How big a smoke was coming out?
A. At the time it wasn't really very big, it was at the bottom, right on the floor.
Q. What did you do then?
A. I immediately got Rajen to ring up 999. I went for the fire extinguisher and with the workers I went to see what was happening.10
Q. Did you speak to anybody else?
A. I went to the phone.
Q. Had Rajen phoned anybody?
A. Yes. He had rung up Bigaignon and the Fire Station.
Q. Mr Bigaignon is the factory manager?
A. Yes.
Q. You took certain steps right on the spot. Did the Fire Brigade finally arrive?
A. Yes at twenty to two. 20
Q. Where did the firemen concentrate their efforts?
A. On the raw materials.
Q. Did anything happen after that? You were still in the finished goods store, did anything happen next?
A. We had taken certain precautions at that time, and at 2 or 2.05 the partition caught fire.
Q. The hard board partition? 30
A. Yes.
Q. It had caught fire. Could you and your employees stay inside?
A. We immediately used the extinguishers. After some time we could not stand it any more. We had to vacate.
Q. Was the store, the warehouse full of smoke?
A. No.
Q. Was it possible to enter the raw material section freely? 40
A. Surely not. We didn't have the keys.
Q. Can you say if the CEB employees went into that store?
A. Yes. Now and again, not always. I knew that at eight in the morning they were there.
Q. In which section?

	A. In the raw material department.	In the
	Q. You stated that they had had occasion to go in there. How often?	Supreme
	A. I know that at eight they were there.	<u>Court</u>
	Q. And the days before?	Plaintiffs'
	A. Sometimes 2 or 3 times a day.	Evidence
	Q. They had to come to the raw material store because there was something wrong?	No.11
	A. Yes.	Benjamin Goder
10	Q. Did this occur over a long period of time?	Examination
	A. For 3 months.	(Translation)
		14th February
		1978
		(continued)

Cross-examined

Xed by Mr Hein (Jr.)

Cross-examination
(Translation)

	Q. Mr. Goder, you were Mr Mootoosamy's assistant?
	A. No.
	Q. Don't you work under him?
	A. He works under me.
	Q. You were replacing him on that day?
20	A. Yes.
	Q. Where exactly is your desk (Ref.Doc."D")? Could you point out to the Court where on the plan is your desk? Is it where it is marked "desk"?
	A. Yes.
	Q. Besides you, were there other employees in that section?
	A. Yes - about 4 or 5.
	Q. Those employees had no desk?
30	A. No. They are labourers.
	Q. Were there any openings in the building where you were? Were they open and was the room ventilated?
	A. Yes.
	Q. So was the raw materials section?
	A. I can't remember.
	Q. Mr Rajen Lowtun stated that lights were on in your section?
	A. That is true.
40	Q. In that department there is a fuse box which controls the lighting?
	A. Which supplied electricity.
	Q. It is correct to say that the fuse box is

In the
Supreme
Court
Plaintiffs'
Evidence
No.11
Benjamin Goder
Cross-
examination
(Translation)
14th February
1978
(continued)

- situated in the room marked Y1 in pencil?
- A. Yes.
- Q. Can you assess the time which elapsed from the moment Lowtun told you that there was smoke to the moment you vacated the store?
- A. Some 50 minutes.
- Q. Were the lights on during all that time?
- A. The first thing I did was to switch off the fusebox in our department.
- Q. When did you do that? 10
- A. After Lowtun had told me that there was smoke coming out. I told him to go to the phone. I switched off the fuse box, then I went to the phone. He was talking on the phone then, we couldn't get a line.
- Q. How did you switch off the fuse box?
- A. There was a switch a lever.
- Q. Where was the switch?
- A. Against the wall in a box.
- Q. Where exactly in respect to the fuse box? 20
- A. It was quite a big box. The supply is cut off once the lever is lifted.
- Q. Would you say that the fuse box was of this size? (Exhibit 1)?
- A. Yes.
- Q. The switch was inside the box?
- A. It formed part of the box.
- Q. One had to open the box to see the switch?
- A. No it was outside.
- Q. Was the fuse box at the top or at the bottom? 30
- A. I can't remember.
- Q. Have a look at photograph C5 and tell us if that was the fuse box in room Y1?
- A. No, I don't think so.
- Q. If the police photographer were to say that it was in room Y1 and that it controlled the electric supply to Bata, he would be mistaken?
- A. Honestly, I can't say with any precision. I remember there was a box and one had to lift the lever. 40
- Q. Please look at photo C5. I see that on top of the fuse box there are 2 procelain fuse carriers?
- A. Yes.
- Q. How come they are on top, how did you

"remove" (Translator's note: "retire" - remove, take out).

In the
Supreme
Court

A. I "removed" by using a latch only.

Plaintiffs'
Evidence

Q. When you went to switch off, those carriers were not on top of the box?

A. I cannot say.

No.11
Benjamin Goder

Q. You stated that you worked from 8 in the morning until the afternoon. No lunch hour?

Cross-
examination
(Translation)

10 A. Yes from noon to one.

Q. The lights were on in the store until you put them off using that switch?

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1978

A. Yes.

(continued)

Q. So the work started at 8, a break for lunch from noon to one, and then you resume work?

A. Yes.

Q. Was the office closed during the lunch hour?

A. I normally take my lunch there.

Q. What about the men?

20 A. They go out for lunch.

Q. You were on your own for one hour?

A. Yes.

Q. From your office you could hear if people moved about in the raw materials section?

A. Yes sometimes, when parts or materials are removed, but not always.

Q. On that morning of the 6th July, was the raw material department completely closed since the morning?

30 A. When I arrived in the morning, the men were already there and working.

Q. Until what time?

A. I can't say precisely and I can't say what they were doing.

Q. You don't know how many people there were and how long it all lasted and when it was closed down?

A. No.

Q. Does the work resume at 1 p.m. exactly?

40 A. Yes, at 1 p.m. sharp.

Q. How long after Dorsamy had told you that something was wrong did Mr Bigaignon turn up?

A. Five minutes later.

Q. And the Fire Brigade?

A. 20 minutes later.

Q. When after the lunch hour, after 1 p.m. did

In the
Supreme Court
Plaintiffs'
Evidence
No.11
Benjamin Goder
Cross-
examination
(Translation)
14th February
1978
(continued)

Dorsamy warn you?

- A. At precisely 1.20.
- Q. Did you look at your watch?
- A. Yes.
- Q. Did Dorsamy come into your office to tell you that there was smoke?
- A. Yes. I hastened to see what was wrong.
- Q. From your desk, can you, at all times, see the men working in your department?
- A. There were partitions but I could still see them. 10
- Q. You are aware of those "no smoking" instructions, like those posted in cinema halls, but people don't heed them. Do the men ever smoke?
- A. I have never caught anyone in the act of smoking.
- Q. You say that the CEB people came on several occasions, sometimes 2 or 3 times daily, have you noted anything down? Can you be precise about that? 20
- A. No. I wouldn't be able to give precise dates.

Re-examination
(Translation)

Re-examined

Re-examined by Mr. David:

- Q. Was there a meter in your store?
- A. Yes.
- Q. Where was it?
- A. It's close to the fuse box.
- Q. Can you show the position of the meter on photograph C5? 30
- A. At the top.
- Q. Can we see anything where the meter was?
- A. Yes. There are 4 holes there.
- Q. You said that you pressed a lever. Where exactly was the lever?
- A. It was with the meter, it formed part of the meter.
- Q. Mr Hein asked you whether all that Ramen told you was that he had seen smoke. Did he tell you anything else? 40
- A. He said he heard a bang.

No. 12
EVIDENCE OF ROGER
BIGAIGNON

In the
Supreme
Court

Plaintiffs'
Evidence
No.12
Roger
Bigaignon
Examination
(Translation)
14th February
1978

Mr. David calls and examines Mr Roger
Bigaignon (sworn)

- 10 Q. Mr. Bigaignon you are the factory Manager
of Bata & Co. In 1972, you occupied that
same position?
A. Correct.
Q. The Bata factory is at Plaine Lauzun.
A. Yes.
Q. How far from your factory is the warehouse
which caught fire in 1972?
A. About a mile.
Q. On 6th July, 1972, after 1 p.m., where
were you?
A. I was at the Bata factory.
Q. Did you at a certain moment receive a
message?
20 A. Yes.
Q. Who spoke to you?
A. Mr Goder.
Q. What did you do?
A. I went to the building where Goder was
working. I mean the store.
Q. How did you go there?
A. In my car.
Q. Did you take anything with you when you
went there?
30 A. No. Personally I didn't.
Q. What did you do when you reached the store?
A. I had taken the keys of the store from Hamade
Dauhari.
Q. What did you open there?
A. I opened the main door of the store.
Q. Which opened onto the first room?
A. Yes.
Q. When you had opened that door, what happened?
40 A. There was smoke escaping. The room was full
of smoke.
Q. What colour of smoke?
A. Blackish.
Q. Apart from smoke, did you see anything else?

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No.12
Roger
Bigaignon

Examination
(Translation)

14th February
1978

(continued)

- A. No, only some materials near the door, which I tried to save, but there was nothing but smoke.
- Q. Did you notice any flames?
- A. No, not at that spot.
- Q. Seeing the smoke, what did you do?
- A. I closed the door and went to open another door.
- Q. A side door?
- A. Yes. 10
- Q. When you opened that side door, what did you notice?
- A. The same thing. Smoke.
- Q. Any flames?
- A. No.
- Q. What did you do?
- A. I closed the door. I went on top of the building, passing through another factory which is below the raw material store.
- Q. You climbed on to another factory, and where were you then? 20
- A. On top of the finished goods building. On a slab.
- Q. Is that slab on the same level as that of the store?
- A. No. It's on a lower level. The slab of the raw material store is on a higher level.
- Q. From that lower slab could you see anything?
- A. Only after I had broken the glass panes. Between the slab where I was standing and the one covering the rest of the building there are glass panes. After breaking those glass panes to use the extinguisher, it was then that I saw a glare. 30
- Q. Could you possibly say in which room was the glare?
- A. It was in a room adjoining the first room, just after the first room.
- (Document "E" put in)
- Q. On which slab were you exactly? 40
- (Witness points out the spot)
- Q. You say that after breaking the glass panes you could see, as you say, a glare in the room. Was there anything special in that room where there was a glare?
- A. Yes. The CEB fuse-box.
- Q. When you saw the glare did you try to do

- anything?
- A. Yes. Using the extinguisher, and with the help of some other people, I attempted to go inside. Unfortunately I couldn't.
- Q. What did you do next?
- A. I went back.
- Q. Did the Fire Brigade arrive in the meantime?
- A. By that time the Fire Brigade was already there.
- 10 Q. What did you do then?
- A. I had tried to put out the fire in the finished goods store, without success. We gave up and left it to the firemen to carry on.
- Q. The fire was mastered around 4.30 p.m.
- A. I can't remember. It was in the afternoon.
- Q. In the various rooms of the raw material store, there were an assortment of materials and articles?
- 20 A. Yes, There were quite a lot of articles.
- Q. Did you come back to the spot the next day? Did you meet police officers?
- A. Yes. Police Inspector Bosquet and other police officers.
- Q. Were the photographs taken in your presence?
- A. Yes.
- Q. Could you situate the room where the fuse-box was?
- A. Yes.
- 30 Re. Room No.4
- Q. Did you go inside that room the day after the fire?
- A. Yes, I did.
- Q. Did you see the fuse box in its usual place in that room?
- A. No. It wasn't.
- Q. What did you see in its place?
- A. There were holes in the wall and there were what we commonly call "ears".
- 40 Q. Those "ears" were still on the wall. How were they fixed to the wall?
- A. By means of rawl plugs.
- Q. Were searches made at that time?
- A. Yes. The debris were searched.
- Q. Was anything found?
- A. The fuse box.

In the
Supreme
Court
Plaintiffs'
Evidence
No.12
Roger
Bigaignon
Examination
(Translation)
14th February
1978
(continued)

- Q. Where was it?
A. Under the debris at a certain depth.
Q. Was the fuse box complete?
A. The fuse box was found. Further searches were made to recover the lid.
Q. How high on the wall was the fuse box when it was fixed there, approximately?
A. Some 4 feet from the floor.
Q. Is there normally a cable going from the concrete floor to the fuse-box? 10
A. Yes.
Q. When you arrived on the spot on the 7th July, the fuse box was found. Did you see the cable?
A. No. There was just a bit sticking out of the debris.
Q. How about the rest of it?
A. There wasn't anything.
Q. Besides police officers, was there an official from the Telecommunications Department? 20
A. I cannot say for sure.
Q. The Police took the various items, fuse-box etc. into their possession?
A. Yes. The police took charge of everything.
Q. How about the items, which had remained in the store after the fire, how were they?
A. They were completely destroyed.
Q. Is smoking allowed in the store?
A. No. 30
Q. We are now getting to talk about the raw material store in particular. The store has 4 rooms?
A. Yes.
Q. The 3 rooms at the back. The walls separating those rooms were made of what?
A. Of concrete blocks.
Q. Did the walls reach up to the ceiling?
A. No.
Q. Those 3 rooms had doors? 40
A. Yes. Each room had a door.
Q. Of what were the doors made?
A. As far as I remember, they were flush doors.
Q. When there was no business to do inside those rooms, how were the doors kept?

	A. As far as I know, they were locked.	In the Supreme Court
	Q. What about the outside doors of the store?	
	A. They were positively kept under lock and key.	Plaintiffs' Evidence
	Q. And who kept the keys?	No.12 Roger Bigaignon
	A. Amade Dauhari at the factory.	Examination (Translation)
	Q. Could anyone having anything to do in the store get inside it without first asking Amade Dauhari?	14th February 1978
10	A. No.	
	Q. Since when does Bata use those stores?	
	A. I can't remember. Anyway years before the fire broke out.	(continued)
	Q. When Bata started occupying that warehouse, how many fuse-boxes were there in the building?	
	A. There were two.	
	Q. One was at the spot you have indicated and where was the others?	
	A. In the finished goods store.	
20	Q. Did Bata have anything to do with the fuse box in the raw material store?	
	A. Not in the raw material store.	
	Q. For what purpose did Bata use current on the other fuse box?	
	A. For lighting the finished goods store.	
	Q. Was the raw material store lighted?	
	A. No. It wasn't.	
	Q. Were there lights in any of the two stores?	
30	A. No. Apart from lights there could have been a fan. There was no other electric supply.	
	Q. Did the CEB ever give any warning that they would connect the fuse-box that was inside the raw material store for some purposes or other?	
	A. No. Never.	
	Q. Let's talk about the various administrative positions in Bata, will you? Now, who is the General Manager?	
40	A. Mr Eddie Bathfield.	
	Q. And his assistant?	
	A. Mr. Felix Lubin. Whenever Mr Bathfield is away overseas, it's Mr Lubin who replaces him.	
	Q. Although you were not asked anything about a connection which is to be found in that fuse box, yet you knew that the CEB was making use of it?	

In the
Supreme
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Plaintiffs'
Evidence
No12
Roger
Bigaignon
Examination
(Translation)
14th February
1978
(continued)

- A. Yes.
- Q. Can you say if there had been something fishy or unusual in respect of that fuse-box?
- A. I was aware of that. I had received certain information.
- Q. About that fuse-box?
- A. Yes.
- Q. Are you personally aware of the calls made by the CEB employees? 10
- A. I haven't seen the CEB employees.
- Q. Amade Dauhari, the storekeeper kept you informed of certain things.
- A. Yes.

Cross-
examination
(Translation)

Cross-examined

Xed by Mr Nahaboo

- Q. As Factory Manager, you had nothing to do with the stores?
- A. No. I have nothing to do with the stores but I have been there to accompany people. 20
- Q. Stores are not your responsibility, are they?
- A. No.
- Q. It's Mr Dauhari who is directly responsible?
- A. Yes.
- Q. You say that when you got the phone call, you went there. What about Amade Dauhari?
- A. I had collected the keys from him and he joined me later.
- Q. So you didn't go together? 30
- A. No.
- Q. Why?
- A. I gave instructions to some people to take the fire extinguishers and to some others to join in fighting the fire.
- Q. Do you remember how many keys you took?
- A. No.
- Q. You indicated on the photograph that you had reached the spot where smoke was coming out? 40
- A. Yes. It's on the right of the photograph.
(Witness marks the spot on the photo)
- The building is angle shaped.
- Q. Where was the pane of glass on the photograph?

	(Witness marks the spot, a circle)	In the Supreme Court
	Q. Do you know when this photograph was taken?	<u>Plaintiff's Evidence</u>
	A. It was apparently taken after my arrival.	No. 12
	Q. What was there at the spot where smoke was coming out?	Roger Bigaignon
	A. The raw materials store.	Cross- examination (Translation)
10	Q. According to the plan, where would one be if one were to go down through the last window on the left where there was smoke?	14th February 1978
	A. In the wholesale and retain department, as shown on the plan.	(continued)
	Q. You were on your own there, at the factory?	
	A. I think I was alone.	
	Q. So you go directly into the finished goods store?	
	A. I couldn't go in there. I can't remember precisely.	
20	Q. The next day, did you go with the police, did you accompany the police officers to every spot where they took photographs?	
	A. Yes.	
	Q. You were in charge, weren't you? Mr Bathfield wasn't there?	
	A. No. In my view I was in charge.	
	Q. So you had to accompany those gentlemen everywhere they went.	
	A. I cannot say if I went everywhere with them but certainly somewhere.	
30	Q. You saw the bolts in their place?	
	A. Yes.	
	Q. What was done with them? Were they left in their place? Did you or the police remove them?	
	A. I don't know.	
40	Q. You tried to ascertain when the box was removed whether the bolts had been removed for some adjustment, to exhibit it. The photos were taken, then the fuse box was broken. Does it provide light in the finished goods store? You had seen it before, there was the fuse box, was there anything else, a meter, a switch?	
	A. I can't remember. I know that subsequently Bata employees were called in. I cannot say what there was.	
	Q. There was a meter?	
	A. I think so.	

In the
Supreme
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Plaintiffs'
Evidence

No.12
Roger
Bigaignon

Cross-
examination
(Translation)

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(continued)

- Q. While looking for the fuse box in the room where it was, you had gone to examine the fuse box which supplied electricity to Bata? Was the fuse box still there or was it not?
- A. I cannot remember in what circumstances I saw the box. It is only because I saw a fuse that I went to look in the raw material store, there was one in the finished goods store. 10
- Q. As far as you know it wasn't lighted?
- A. It was burned down, the cable leading from the floor to the fuse box was burned down.
- Q. Were the fuse holders there?
- A. I can't remember.
- Q. Had they been there, you couldn't have failed to notice them?
- A. I cannot say. Yes, perhaps.
- Q. Did you try to find out where the meter was? 20
- A. No.
- Q. Take a look at the two fuse carriers on the box (C22). Did you notice them?
- A. No, I didn't.
- Q. You say that you were not aware if the CEB had asked permission from Mr Bathfield or from Mr Amade Dauhari to have access to that fuse-box?
- A. I believe I must have been told about it.
- Q. When the very first connection was done? 30
- A. Yes.
- Q. For your approval for your consent or simply to enable you to take certain steps?
- A. Just for our information.
- Q. You would have been told that the CEB was proceeding to do some connections because it had been there too long?
- A. Yes.
- Q. No one told you anything?
- A. No. 40
- Q. When did you learn, for the first time, that connections had been made? On the day of the fire or a month earlier?
- A. Some weeks earlier perhaps, Mr Dauhari used to tell me that he was disturbed on every such occasion and that he had to go there to allow a CEB worker access to the store. I do not know when.

- | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| | Q. When you were told that the connections had been made, you had no reason to be anxious? | In the Supreme Court |
| | A. I was not anxious. | Plaintiffs' Evidence |
| | Q. Haven't you ever complained to Mr Bathfield that connections had been made? Have you ever complained to anybody? | No.12
Roger Bigaignon |
| | A. No. | Cross-Examination (Translation) |
| 10 | Q. It all seemed normal to you? | 14th February 1978 |
| | A. Yes. To me it was all normal. I had no idea that some authorisation was required. | (continued) |
| | Q. If Mr Dauhari had given the keys to the CEB people, to proceed with their job, it wasn't necessary to ask for your permission? | |
| | A. No. | |
| | Q. Did you notice if the meter, or that part which was fixed to the wall, had gone, in the finished goods section? | |
| 20 | A. I don't remember if there was something there. | |
| | Q. And did you notice if there was anything in the plugs? | |
| | A. One can see from the photograph that there was something. | |

Cross-examination reserved

No. 13

EVIDENCE OF RASHID MAMDALLY

- | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| | Mr David calls and examines Mr Rashid Mamdally (SAM) | Plaintiffs' Evidence |
| 30 | Q. You were in the employ of the Bata Company in 1972? | No.13
Rashid Mamdally |
| | A. In 1972 I was working in Bata Co. | Examination (Translation) |
| | Q. Were you given some orders or some other instructions on the 6th July 1972? Where were you on the day the fire broke out in the factory? | 14th February 1978 |
| | A. I was at the factory. | |
| | Q. Were you given some orders? And by whom? | |
| | A. Store Keeper Mr Dauharri. | |
| 40 | Q. Did you do anything then? | |
| | A. I was told to join the CEB people. I was given to understand that there were fuses that had blown off. | |

In the
Supreme
Court
Plaintiffs'
Evidence
No.13
Rashid
Mamdally
Examination
(Translation)
14th February
1978
(continued)

- Q. Where did you go?
A. I went to Bata Store at Plaine Lauzun.
Q. Which store?
A. I went to the raw material store.
Q. Did you go inside it?
A. I entered.
Q. How did you enter?
A. I had obtained the key from the storekeeper, I used it to open the door and went inside with the CEB workers. 10
Q. In which room did you go?
A. Entering the main entrance, I turn to the right, there is a room on the left where there is a fuse box. I went into that room.
Q. How did you proceed to enter that room?
A. I opened the door and went in with the CEB people.
Q. How many CEB workers were there?
A. There were two CEB workers. 20
Q. You say you opened the door to go inside. How did you open the door?
A. I opened the door with the key.
Q. What did the two CEB workers do in that room?
A. When I went in, the CEB workers removed two or three fuse carriers from the fuse box and placed them on top of the box.
Q. What did they do next?
A. There was a wire which went into the fuse box, that had become black the CEB people had it cut and replaced. When they touched that wire it flitter. 30
Q. The wire, was it under the box or on top of it?
A. The wire was on top of the fuse box.
Q. There was only one wire on top or more than one?
A. There were several wires on top of the fuse box; only one flittered. 40
Q. What length of wire, approximately?
A. They replaced the wire which was of about one foot.
Q. What did they do with the fuse?
A. When they replaced the wire the CEB men replaced the fuse carriers inside the box and closed it.

- | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| | Q. Could they easily close the box? | In the |
| | A. They did not succeed in closing the fuse box easily; when they came in that box was open. | Supreme Court |
| | Q. They tried to close it, they succeeded. What happened then? | <u>Plaintiffs' Evidence</u> |
| | A. The box is closed by two bolts; they succeeded in fastening the one at the top; they did not succeed with the one at the bottom. | No.13
Rashid Mamdally |
| 10 | Q. When you came in with the 2 workers, was the fuse box closed? | Examination (Translation) |
| | A. When I came in with the two workers the box was not closed. | 14th February 1978 |
| | Q. When the men saw that the box wasn't closed, what did they do? | (continued) |
| | A. When the men noticed that the door was not closed, they took hold of the wires, saw the one that was damaged and had it repaired. | |
| 20 | Q. When the work was over, the box was closed. What did you do then? | |
| | A. After the work had been done we went out, closed the door; we also closed the main door behind us and I handed over the keys to the store keeper who came then. | |

At this stage the case is adjourned to to-morrow Wednesday 15th February 1978, for continuation.

	Wednesday 15th February 1978 at 10.30 a.m.	15th February 1978
30	<u>Cross-examined</u>	Cross-examination
	Rashid Mamdally Xed by Mr Hein, Q.C.	
	By Hein :-	(continued)

I gave a statement to the Police concerning the fire but I didn't depone at the Judiciary Enquiry. What I have said in my statement to the police is true. I have no objection to my statement being produced in Court by the Police. On 6/7/72 the C.E.B. employees came to the office at about 8 a.m. They were two. The storekeeper handed over to me the keys and asked me to accompany the gentlemen. It was a bunch of keys containing 5 or 6 keys. I entered through the main entrance. Then I went to the room where the fuse box was. The door to that room was locked. The door to that room opens on the inside. It opens on its left towards the fuse box. There were reels in that room. I don't remember what other materials there were inside. It was rolls of 'maroquin'. They were

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No.13
Rashid
Mamdally

Cross-
examination

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1978

(continued)

(sic)

made of plastic as well as leather. There were some cardboard boxes also inside that room. All these materials were at the back of the room facing the door. There was an open space about three feet between the door and the materials stored on the whole length.

BY COURT:

The C.E.B. people themselves had asked us to clean the space.

BY HEIN:

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I stood on the doorstep while one of the C.E.B. workers went to the fuse box, the other one stayed by his side. The C.E.B. workers went near the fuse box and opened it. That fuse box was usually always closed but on that day when we came in, it was opened. The box was completely opened when we came in. The C.E.B. workers removed the three or four fuse carriers, the colour of which I do not remember and placed them on the cardboard boxes. Then 20 they held the black wire on top of the fuse box. I saw that wire crumbled. There were many wires on that box. Three or four I do not remember the exact number. I do not remember what wire they removed but it was not one on the side. It was the wire itself that crumbled down when it was held. They cut that wire and replaced another piece of wire. The piece of wire was placed at the end of the wire which had been cut. I cannot say how the repairs 30 were done, whether they twisted it or not, I could not see. They cut it with the help of a 'pincer'. They cut at the top and then at the bottom. They cut the wire up to the level of the fuse box near the bolt. I cannot say whether the wire was cut inside or outside the fuse box but I saw them cut it just near the bolt. They had not the piece of wire with them for the repairs, when the wire had been cut the C.E.B. employee went out to the C.E.B. van where 40 he took a piece of wire and he returned to the room for the repairs. They remained outside for less than five minutes.

They only took the wire and came back. When we went out, I stayed by the entrance and the C.E.B. men went to the van some three feet away to obtain the piece of wire needed. They went to the rear of the van and then came back with the piece of wire. I never lost sight of them when we were outside except for the time 50 they went in the rear of the van. Then we returned. I did not notice how the repairs were done. After the repairs they placed back the fuse carriers, closed the fuse box, fastened only one bolt because they had difficulty to

close the door with the second bolt. When we went out, I met the storekeeper and handed over the keys to him. I saw them holding the fuse carriers but I can't say what they did with them. I cannot say if they unscrewed something or changed the fuse. When we went out of the room I personally locked the door. I unlocked the doors where we passed through and then locked them back behind us. Then I handed back the keys to the storekeeper. I then saw the storekeeper not at the store but at the back door where he came to me. I have explained all that to the Police after the fire in my statement.

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examination

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(continued)

I gave my statement to the Police a few days after the fire but I cannot say exactly how many days after but it was not one month after. At the time all that I have said on record was still fresh in my recollection. I do not think that I have given all these details to the Police but now that I am being questioned by counsel I am answering. I told the Police about my going inside, the removal of the fuses, the door being opened, the wire being damaged, the going outside and the replacement and the return to the factory.

I also talked of the wire that had been changed. All I have said in my statement is true. My statement was read over to me by the Police and I signed it. I am positive that I told the Police that the wire was changed. I did not give details of it. I do not remember whether I said that the wire crumbled down, but I remembered having said that the wire was changed. I do not remember whether I said that the C.E.B. employees remained inside while I myself and another employee went outside. On that day at a certain time I went outside with the C.E.B. worker for the piece of wire and he came back without my losing sight of him while another worker remained inside the room.

BY COURT: Have you got an answer to your question on record Mr Hein? Was not the purport of your question whether the CEB people attended some other work?

BY HEIN: I do not remember if the two workers did any other work during the time they were in my company apart from the job I have said. I am positive that the wire was changed. It is possible that I had said that in my statement but I related everything that had happened in my statement. I just said I returned the keys to Mr Dauharry at the factory. I do not remember what I gave in the statement to the Police but I am saying what I still remember. I did not give all the details in the statement to the Police. It is possible that

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Mamdally

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examination

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(continued)

at that time I did not give in my statement something about the change of the piece of wire.

BY COURT: Not only in his statement but in his evidence.

BY HEIN: I did not handle any materials on that day at the request of Dauharry as I reached the main entrance.

"CEB workers removed fuses from the fuse box and kept the fuses". (Translation) 10

It is long ago now. I do not remember if I said to the Police that the CEB workers removed the fuse carriers and kept them with them. But if it is written in my statement I must have said so to the Police.

"They went out, they said they had to remove fuses from some other place, then they would return". (Translation)

I do not remember if I said that in my statement but if it is written in my signed statement, I must have said so. 20

"I also left the store and I locked it. I waited for the CEB workers in front of the store" (Translation)

I do not remember having said that to the Police. If it is contained in my statement I agree having said so to the Police. As I have said that to the Police, two or three days afterwards, it must be the truth.

"I did not notice anything unusual with the fuse removed by the CEB." (Translation) 30

I said that to the Police and it is true.

"And five minutes later the CEB workers came back, I opened the store, they replaced the fuse that they had removed in my presence". (Translation)

I do not remember having said that to the Police. If it has been written in my statement, I must have said and it is the truth.

It was not on that day that the CEB people asked me to remove the boxes. I think it was on the eve. If the Police has written down that I must have said this and it must be the truth. It was on the day before that I went to the store with the CEB people and had the boxes transferred. It was in the morning. It is possible that I have not said to the Police anything about the wire repairs but I saw it being done. I gave my statement to the Police at the factory. I do not remember how many police officers call. The Police asked me to say what I know about the fire, and what had occurred one or two days before it was then 40 50

I gave my statement. I do not remember if it was with all the details. I do not remember whether I did not say to the Police things like that the door of the fuse box remaining open and it is impossible to close it with the two bolts, the fuse being in good order and the wire being repaired. I cannot say whether it is possible that I have said all that to the Police and that the Police had written them down.

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THAT IS ALL MY LORDS

Re-examined

BY DAVID: After the fire I had given a statement to the Police at the factory. Apart from the policeman who questioned me about the fire there were persons at the Factory, I think they were from the Insurance who questioned me and asked me details about the fire.

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Q. So you spoke to those gentlemen, but did you, at that time, say all that you have said in Court to-day?

HEIN Sr: Does that question arise from cross-examination?

BY COURT: Yes, it seems to me quite clear, it does arise.

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BY DAVID: I have said all that I have deponed in Court yesterday and today to those people at the factory. I had a better opportunity to relate everything to them. The information was given in the presence of Mr E.Bathfield, manager of the Bata company. I am now delivering empty bottles to factories and also selling copper. It is nearly two years now that I am no longer working for the Bata Company.

THANK YOU MY LORDS.

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No.13
Rashid
Mamdally

Cross-
examination
(Translation)

15th
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(continued)

Re-
examination
(Translation)

In the
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Plaintiffs'
Evidence

No. 14

EVIDENCE OF JOSEPH HISS

No.14
Joseph Hiss
Examination
15th February
1978

BY DAVID: I drive a van for the transport of materials for the Bata company. As a van driver I have been to the store on several occasions. Smoking is forbidden in the store because there are highly inflammable materials. There should be authorisation of the storekeeper to enter the store. I remember the fire that happened at Bata on 6th July 1972. Fifteen days before, I was on sick leave. Two days after the fire I gave a statement to the Police. I do not remember if apart from the statement to the Police I was questioned by anybody at the Bata Company.

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I deponed at the judicial enquiry. I gave a statement at the factory in the presence of Mr Bathfield and an englishman. It was before the fire that Dauharry, the storekeeper, gave me instructions to go to the store with the CEB people as he himself was busy. I took the keys from the factory and opened the store. Two superiors and two electricians accompanied me inside the store. The two superiors were Mr Juste and Mr Jean. We went inside a large room before and then went inside the room in which was the fuse box. The fuse box is situated in the raw materials department. When the CEB went in to open the fuse box, removed the fuse carrier noticed that a fuse had blown up, replaced it but when they placed it back the fuse blew up again. The flash that came out when the fuse blew up could have burnt Mr Juste and Mr Jean who were close. I was some six feet away. Mr Juste and Mr Jean moved their hands to the side to avoid that flash as well as the two workers. Mr Juste asked me what the boxes contain. He told me that it was better to move them away and he helped me to do so. After the flash they removed the fuse carrier. When they looked at it, it was damaged. The bottom of the fuse carrier had melted out completely and part of the top as well.

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Document "F" produced.

The fuse carrier holder had also melted down.

Document "G" produced.

The gentlemen of the CEB sent the electricians to the van and they returned with the piece of the fuse carrier which was replaced. Mr Jean did not make any other comment to Mr Juste. The fuse box was in a room I do not

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remember if anybody made a remark concerning the location of the fuse box. It was so long ago that I do not remember if there was any conversation between the two superiors concerning that box.

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MR DAVID: I am giving warning of that question so that my learned friend should know whether to object.

No.14
Joseph Hiss
Examination
15th February
1978
(continued)

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Didn't Mr Jean make a suggestion to Mr Juste relating to the location of that fuse box?

MR MOOLLAN: I object to that question.

BY COURT: Objection is sustained.

Cross-examined

Cross-
examination

Xed by Mr Moollan, Q.C.

BY MR MOOLLAN:

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I have accompanied the CEB workers to that fuse box only once. I have never seen anybody before working on such a fuse box. When Mr Jean and Mr Juste and the two workers came in, it was the workers that opened the fuse box. I do not remember if the door to that room opened on the inside near where the fuse box is. The five of us were in the room. When the five of us were inside the room the door was open. We received light from apertures at the top of the room. One of the workers opened the box, removed the fuse carriers and checked them. What I remembered quite well is that he removed two fuse carriers. Both fuses have been blown up. The worker changed spare parts in one of them. They replaced one fuse first and placed back the fuse carrier. Nothing occurred after the replacement of that first fuse carrier. Then they replaced the fuse in the second one. It was a worker who replaced the fuse carrier holding it in his hands. He replaced the fuse carrier straight in not the bottom first. I saw that very well. I am positive that he placed it back straight. That other worker was at the right of the one who replaced the fuse carrier. Mr Jean was near the man replacing the fuse carrier on his left. Mr Juste was close to Mr Jean. I was in front of the fuse some six or seven feet from it. We had removed some boxes to facilitate the work of the CEB people as the boxes were about the same height as the fuse box. When we came in at first the boxes were levelled with the fuse box. There was room where boxes could be stored. There were five or six rows of boxes before that empty space. I was approximately in that space. Only one row of boxes had to be removed so that Messrs Juste and Jean and the workers could have

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Joseph Hiss
Cross-
examination
15th February
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(continued)

access to the fuse box. The boxes could be two feet by 1½ feet. We did not remove the whole row but only two piles in front of the fuse box so that the workmen could have access. There should be a space of four feet square around the fuse box in which four people have entered and I was behind. I could see in front of me inside the fuse box though there were four persons in that space. When the flash came out they moved their heads to one side. It was then that I could see. The fuse box was higher than four feet. The fuse box was at a man's height. They were standing up to repair it, if it were four feet height they would have had to sit down to carry out the repairs. Without any special movement I could see what was being done. When he placed back the fuse carrier nothing happened as he removed his hand then the fuse blew up. The flash resembled a light that came from a match that started burning. When a match is struck it produces a flame. I saw a flame from the box. I saw the flame coming out of the fuse box carrier. The flame came out in a straight line. I think that the flame came from the slits of the carrier holder. It extinguished right over. It was a worker who replaced the fuse carrier who removed it. He took it with his hands to remove it. It is the fuse at the top which he removed with his hands, the one that melted down was at the bottom. He removed the fuse carrier from the fuse box. It was the bottom part that melted completely when the flame had occurred Mr Juste asked me to help him to remove the boxes and placed them in the empty space. 10 20 30

It was then that I had the opportunity to see what had happened inside the fuse box. By 'melted' I mean that it was shorter than the original length. On the 'porcelaine' base there were traces of copper. It would have burnt out to 90%. The top part could have melted to 50%. The metal was no longer 'plane', it had taken all sorts of form. It looked like something which had started melting and then cooled down. I did not remember if the piece of metal had become one or in many pieces. I had seen at the bottom that much had melted down. I do not remember how many plates I saw in that part which had been melted down. Something has also melted down in the fuse base. The place where the fuse carrier was held had melted down. The part of the fuse base at the bottom had melted to the same extent as the fuse carrier that it fitted. It had not disappeared completely but had left traces which I could see. The top part also had melted down, half of it, as the fuse carrier. It was the top half that had melted 40 50

down. The part that had melted down at the bottom one could say a fairly width of copper but in such a way that it is not recognizable. The Police made an enquiry in that case. I had given a statement to the Police in that connection which had been written down and which I had signed. I used the word 'spark' in my statement but without making any difference between the spark and the flame which have been mentioned to me. I have said the truth in my statement, and I have no objection this being produced. Everything I have stated therein is true. I gave the statement two or three days after the fire. About one month after the incident I gave the statement. I do not remember stating to the Police that only one 'borne' melted out. If it is contained in my statement it must be true. What I called a fuse is comprised of the fuse base and the fuse carrier. I would call the fuse carrier a 'fusible' by 'porte fusible' I mean the part which holds the fuse carrier.

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Joseph Hiss
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15th February
1978
(continued)

R E C E S S

Wednesday 15th February, 1978

Bata Shoe Co. & Anor. v. Central Electricity Board

Cross-
examination
(Translation)
(continued)

AFTER RECESS:

Mr Moollan continues the cross-examination of Mr Joseph Hiss (still under oath)

30 Q. You told us this morning, Mr Hiss, when answering questions, that at one time, in what you describe as a fuse, there is the "male" part and the "female" counterpart. Both parts were damaged and had melted. You also said this morning that the whole fuse was replaced, do you mean both the "male" and the "female" parts?

A. I said this morning that the fuse was changed. I meant the fuse carrier as well as the fuse base.

40 Q. You saw in that room that the fuse had melted, that its terminal had melted. The "male" part had come out when the worker handled it, the "female" part still adhered to the box, can you explain how the "female" part was pulled out?

A. Mr Juste and Mr Jean gave instructions to the workers to go outside and to get the part replaced, the damaged fuse. They worked there for about 15 minutes, but went
50 somewhere after that outside in the van for

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Evidence

No.14
Joseph Hiss

Cross-
examination
(Translation)

15th February
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(continued)

- 15 minutes.
- Q. Did they pull out the "female" part to take it away with them?
- A. They did not remove the female to carry it along with them.
- Q. What happened then?
- A. When they returned with another fuse base, they removed the damaged one and changed it. They came back with a fuse box and a fuse carrier. 10
- Q. How did they go about it? Removing the "female" part from its box?
- A. They unscrewed it and removed the fuse base from the fuse box.
- Q. During those 15 minutes, did you, Mr Juste and Mr Jean stay in that room?
- A. Mr Jean and Mr Juste remained in that room
- Q. After fixing the "female" part, they fixed the "male" part? When it was in order they put it inside? 20
- A. When they repaired the fuse base and the fuse carrier they replace them in its place.
- Q. The box was then closed and everything was then in order?
- A. They closed the fuse box, everything was there normal and they left.
- Q. When they were leaving you walked with them to the door, they entered the van and went away? 30
- A. I accompanied them back to the main entrance. I took my van and went away. The van of the CEB people was parked on the outside of the store and I did not see them leave.
- Q. All the time, from your arrival with Mr Juste and Mr Jean to the door until you left them at that very door, the three of you stayed together?
- A. Since the time I came at the entrance with 40 Mr Juste and Mr Jean up to the time I left them at the entrance for them to go away, I was always in their company.
- Q. Is it possible that at one time either Mr Juste or Mr Jean left you to go to some other place?
- A. During the time they were with me, at no time did either Mr Juste or Mr Jean leave for another place.
- Q. Before the repairs, so to speak, before 50

the fuse was placed for the last time and the box was closed and so on, did you at any time hear Mr Juste or Mr Jean mention the fact that there was a fault at the diamond factory which had to be attended to?

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No.14
Joseph Hiss

Cross-
examination
(Translation)

15th February
1978

(continued)

A. At no time did I hear anybody say that there was a fault at the diamond factory and that it should be attended to.

10 Q. You didn't hear anybody say so on that day and Mr Juste and Mr Jean were always with you?

A. At no time did I hear that and at all time Mr Juste and Mr Jean were in my company.

Q. What if Mr Juste were to say that, on that day while the men were busy working, he had left for the diamond factory, had detected a fault there and came back to say so?

20 A. If Mr Juste said that while the people were at work he left for the diamond factory where he located the fault and then came back to tell those people, it would not be true.

Q. Two fuses had blown, they were replaced two men replaced them and repaired them?

A. All that I know is that two fuses had blown off, they were replaced, one blow up again, it was replaced. The repair work was over and the fuse box was closed.

30

Q. When the work was completed, what was done with the boxes which had been removed.

A. The boxes remained where they were after the repairs had been done.

Q. The boxes were stacked up to what height?

A. The boxes were stacked at a height of about 6 feet. At the rear the boxes were stacked in such a way that they could lean against the wall.

40

Q. In certain places the stacks were higher than 6 feet?

A. The lowest height was 6 feet.

Q. Didn't you tell the police that a terminal (borne) had melted?

A. I do not remember if I said to the police that one 'borne' was melted.

Q. If this has been taken down in your statement, it is true?

A. If I have said so to the police, it is true.

50

Q. Therefore when you say here that 2 terminals had melted, this is a mistake?

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No.14
Joseph Hiss

Cross-
examination
(Translation)

15th February
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(continued)

- A. It is possible that I made an error in my statement if I said that before. Fifteen days before I had been seriously ill.
- Q. The error, if any, is to be found in your statement. Your illness was in fact a head disease. You went to Brown Sequard Hospital*?
(Translator's note: A psychiatric Hospital)
- A. I did not go to Brown Sequard Hospital. It was general fatigue. 10
- Q. If in your statement you said that only one terminal melted, is your statement untrue?
- A. We were worried after the fire had broken out in the stores. We were in the likelihood of losing our job and as I gave my statement under those conditions to the police, it is possible that I made an error. 20
- Q. You did not take the police enquiry seriously, there was this big affair and it had affected you mentally, don't you remember?
- A. I was not as upset as counsel means.
- Q. In fact, wasn't one of those terminals simply blackened a bit?
- A. I can make the difference between something that is blackened and something that has melted. 30
- Q. Just as you can make the difference between terminal and two terminals. If Mr Juste and Mr Jean were to say that the "female terminal" was never replaced on that day, that as regards the "male terminal" only the fuse was replaced, that it was cleaned and put back, they would be lying?
- A. If Mr Juste and Mr Jean said that at no time the fuse base was replaced and that it was only the fuse that was blown off that was replaced after the terminal was cleaned and the fuse carrier replaced, it would not be true. 40

Re-examination
(Translation)

Re-examined

Re-examined by Mr David:

- Q. You said that there were boxes in that room. Were those boxes empty?
- A. The boxes in that room were full.
- Q. Apart from boxes, were there any other materials in that room? 50

A. I do not remember if there were other materials in that room apart from those boxes.

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(continued)

No. 15

EVIDENCE OF AHMED DAUHARRY

Plaintiff's
Evidence
No.15
Ahmed
Dauharry
Examination
(Translation)
15th February
1978

Mr David calls and examined Mr Ahmed Dauharry (SAM)

Q. Mr Dauharry, you are the storekeeper of Bata?

A. Yes.

10 Q. How long have you been their storekeeper?

A. For the past 15 years.

Q. In 1972 which store was under your control in the burnt warehouse?

A. The raw material section.

Q. There were several rooms to that section?

A. Yes.

Q. There was also a corridor in that store?

A. Yes.

Q. How many keys did you hold?

20 A. Four.

Q. Where were those keys kept?

A. In my store.

Q. Who had the control of those keys?

A. It's me, when I am present. Otherwise, it's my assistant, Mr Malepa, who had the custody of the keys.

Q. Anyone wishing to have access to the store would have to call on whom?

A. On me.

Q. Who normally accompanied the person who

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(continued)

- entered the store?
- A. Me or my assistant.
- Q. Did it happen that you entrusted the keys to someone else?
- A. Only to the storeman attached to the store.
- Q. Was smoking allowed in the store?
- A. No. Smoking is not allowed.
- Q. Do you smoke?
- A. I don't. 10
- Q. In the beginning, from 1968 to 1972, we know that there was a fuse box in the raw materials store?
- A. Yes.
- Q. Were those fuse boxes in use until 1972?
- A. Not as far as Bata is concerned.
- Q. How was the fuse box during all the time it was not in use? I mean how was it closed?
- A. It was sealed. 20
- Q. Did any one contact you in March or April 1972 about that fuse box?
- A. Yes. Mr Jean of the CEB.
- Q. He talked to you and what did you do as a result? Who opened the room to allow CEB workers to proceed with their installation?
- A. I did.
- Q. Mr Jean is a CEB employee. He came to see you in his official capacity and you then accompanied him and the other CEB workers? 30
- A. Yes.
- Q. When the seals were of course broken, the box was opened and what did you see inside?
- A. There were fuses inside.
- Q. The fuse carriers, were there fuse wires?
- A. No.
- Q. What did the CEB workers do then?
- A. They laid a cable from the fuse box along the wall through another room. 40
- Q. There was also an overhead line. Did the cable reach up the whole height of the building?
- A. Yes.
- Q. Then they fixed the installation and made

the connection?

A. Yes.

Q. Was all this done for Bata or for the CEB?

A. For the CEB.

Q. Did Bata at any time require that connection or use that connection?

A. No.

10 Q. Do you know what were the industries operating in that other building?

A. Ideal Printing and some 3 other industries.

Q. After completing the installation, did the CEB fix new fuse boxes?

A. They closed it as it was.

Q. Was that fuse box ever sealed again, from then on?

A. No.

20 Q. From the day they did that installation to the 6th July 1972 when the fire broke out, did the CEB do anything or have anything to do with that fuse box?

A. Yes. They came on several occasions.

Q. How many times? How frequently?

A. Two or three times a week, and they soon came more often. It got worse as time went on.

Q. How do you mean?

A. Two or three times a day.

Q. What was the purpose of their visits?

30 A. To see the fuse box, the fuses had blown.

Q. Did you accompany them?

A. Yes. Sometimes I did, other times it was my assistant.

Q. What did they do?

A. They repaired the fuses.

Q. Were the rooms inside in particular the room where the fuse box was, open or locked when not in use?

A. When not in use, they were locked.

40 Q. In that section of the raw material store, were there lights?

A. No.

Q. Of what material was the door of that room?

A. Of wood.

Q. Was it Bata which requested the CEB to come

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(Translation)
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(continued)

- and effect repairs at the rate you have just described?
- A. No. The other industries.
- Q. They are CEB customers?
- A. Yes.
- Q. Did the CEB call on the morning of the 5th July, 1972, the day before the fire?
- A. Yes.
- Q. Do you remember the time? Was there yet another fault? 10
- A. Yes.
- Q. Same place?
- A. Yes.
- Q. Who accompanied them?
- A. The day before it was me.
- Q. Was the store opened again from that time onwards?
- A. No.
- Q. So you accompanied them. Who had the keys?
- A. I had. 20
- Q. What was done with the lid, when the workers had completed their repairs on the morning of the 5th July?
- A. They closed it as they had done before.
- Q. When next, after the morning of the 5th July, was the room opened again?
- A. The morning after, the 6th July.
- Q. Did you accompany the CEB workers on the 6th?
- A. No. It wasn't me. It was Mr Mamdally who works in the store. 30
- Q. Do you remember at what time you gave instructions to Mr Mamdally?
- A. Around 8 to 8.15.
- Q. When did you get back the keys?
- A. I myself went there.
- Q. At what time?
- A. Some half hour or three-quarters of an hour later.
- Q. You went to the spot?
- A. Yes. 40
- Q. Were the CEB workers still at work?
- A. They had finished. They were preparing to leave the store.
- Q. What did you do with the keys?

- A. I had taken the keys. I caused the materials to be removed.
- Q. After you had done this, at what time did you leave the store?
- A. Around eleven or quarter past eleven.
- Q. The work was completed?
- A. Yes.
- Q. When you left, how was the store. In what state?
- 10 A. Normal.
- Q. Did you, as usual, close the various rooms, all the doors?
- A. Yes. All the doors.
- Q. From what time until the fire broke out, did the keys leave your possession?
- A. No.
- Q. Did anybody, whoever he may be, have anything to do in that room, in that store, did anybody enter there?
- 20 A. No. Nobody.
- Q. After 1 p.m., say 1.15 or 1.20 or 1.30, where were you?
- A. I was at the factory.
- Q. Did you at a certain moment get certain information?
- A. I had learned that there was a fire and that Mr Bigaignon had been there.
- Q. Where were the keys when Mr Bigaignon went there?
- 30 A. On the key board. He took them. He left before I did.
- Q. What did you do?
- A. I followed him in the van.
- Q. When you reached the spot, what did you do?
- A. The door was open. The materials were being removed in front of the door.
- Q. In which section was it?
- A. Room No.1
- 40 Q. How long after Mr Bigaignon did you arrive there?
- A. Some 10 or 15 mins. after.
- Q. Could you enter Room No.1?
- A. Yes. There were flames at that moment.
- Q. Could you remove materials from that room?
- A. Yes.

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(continued)

- Q. At the judicial Enquiry you produced a list of materials which you managed to save?
- A. Yes.
- Q. Were you able to salvage those materials for any length of time?
- A. Not for long because there were abundant flames.
- Q. Is this a copy of the list of materials and things you managed to salvage and which you produced at the Judicial Enquiry? 10
- A. Yes.

List put in - marked H

- Q. Where did you go after the salvage operation?
- A. I went to assist the firemen, then I went back to the factory. The police had arrived.
- Q. Did you go on the spot the next day?
- A. Yes, I did.
- Q. You gave a statement to the Police? 20
- A. Yes.
- Q. You did. But did you also give any information to other people?
- A. Yes. To the insurance people.
- Q. Was it in the presence of Mr Bathfield?
- A. Yes.
- Q. In which room did you enter on the day of the fire?
- A. Room No.1. I went to check whether the CEB had completed their work, afterwards I closed the door. 30
- Q. You entered by the main entrance and you also went to the room where the fuse box was?
- A. Yes.
- Q. There are two other rooms?
- A. Yes.
- Q. Can you say when anybody entered those rooms on the last occasion?
- A. A week before when we carried out the inventory. 40
- Q. Do you know the date?
- A. The 28th or the 29th of June.
- Q. In other words how were those two rooms left?
- A. They remained closed.
- Q. Closed how?

	A.	Under lock and key.	In the
	Q.	The room where the fuse box was, let's call it room No.4, were there materials in it on the morning of the 6th July?	Supreme Court
	A.	Yes.	Plaintiffs' Evidence
	Q.	Documents were put in. I see a 7 page list of materials. Do you confirm that list? How did you work out the list? Who made them out?	No.15 Ahmed Dauharry Examination (Translation)
10	A.	The accountant and myself.	15th February 1978
	Q.	You initialled it.	(continued)
	A.	Yes. So did he.	
	Q.	The list shows the materials which were in the store, the raw materials store?	
	A.	Yes.	
	Q.	I can see 26.	
	A.	We work on a fortnight basis that means the 26th week of the year 1972.	
20	Q.	One column contains the stock in hand for that week and the next column the materials?	
	A.	Yes.	
	Q.	In another column receipts during the 27th week are listed and you have even added a column indicating, at page 3, the items you managed to salvage?	
	A.	Yes.	
	Q.	You have written down what you have "recovered during the fire"?	
	A.	Yes.	
30	Q.	Thus showing what, in your opinion, has been lost in the fire and giving also their value?	
	A.	Yes.	
	Q.	Where did you obtain those information?	
	A.	From the books which I had kept.	
	Q.	Your stock book?	
	A.	Yes.	
	Q.	Your stock books are still available at the factory for perusal, if necessary?	
	A.	Yes.	
40	Q.	Can you tell the Court what were the materials in Room No.4? Are you in a position to give that information? I see that data have been collected to show what materials were found in the different places?	
	A.	I did that exercise.	
	Q.	You confirm the information contained in that	

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(continued)

document which now forms part of the
record?

A. Yes.

Q. When you speak of Room No.4 you mean
the room where the fuse box was?

A. Yes.

Q. To come back to Room No.1 in Room No.1
you mention "in racks". Where are those
racks to be found when you come into
the room by the main entrance?

10

A. On the right.

Q. Against the hardboard partition?

A. Yes.

Q. The hardboard partition runs up to the
corridor?

A. Yes.

Q. Does the rack run the whole length of
the hardboard partition?

A. Yes.

Q. How high were the racks? Up to the
ceiling?

20

A. No.

Q. Could you tell the Court the approximate
height of the racks?

A. 16 to 18 feet.

Q. How high was the ceiling?

A. At least 25 feet.

Q. What were there on the shelves of those
racks?

A. Materials placed lengthwise. In the
boxes there were several items.

30

Q. There were boxes, reels?

A. Materials of all kinds.

Q. More boxes or more materials of other
kinds?

A. I would say more reels.

Q. Less than 50% of boxes in those racks?

A. Yes.

Q. What were the racks made of?

A. Pipings on which planks had been placed.

40

Q. At the back?

A. There was nothing at the back.

Q. Only the hardboard partition?

A. Yes.

- | | | |
|----|------------------------------------------------|----------------|
| | Q. How wide was the corridor? | In the |
| | A. About 3 feet wide. | Supreme |
| | Q. Compared to that shelf over there? | <u>Court</u> |
| | A. Perhaps 4 or 5 feet. | Plaintiffs' |
| | Q. Were materials laid along that corridor? | Evidence |
| | A. Yes, packed in bags. | No.15 |
| | Q. Where were those bags in the corridor? | Ahmed Dauharry |
| | A. Against the hardboard. | Examination |
| | Q. Alongside the hardboard? The whole length | (Translation) |
| 10 | of the hardboard? | 15th February |
| | A. Yes. | 1978 |
| | Q. What type of bags? | (continued) |
| | A. Gunny bags. | |
| | Q. What were there in the bags? | |
| | A. Soles. | |
| | Q. Only soles? | |
| | A. Yes. | |
| | Q. How big was a bag when full of soles? | |
| | A. About 2 feet wide. | |
| 20 | Q. How high was a stack of bags? | |
| | A. Around 4 feet. | |
| | Q. At one place, the hardboard runs across | |
| | the corridor? | |
| | A. Yes. | |
| | Q. Right up to the toilets? | |
| | A. Yes. | |
| | Q. Were there bags stacked on this part of | |
| | the hardboard too? | |
| | A. No. | |
| 30 | Q. No bags at the end, along the width? | |
| | A. No. | |
| | Q. Did you go into the finished goods store on | |
| | that day during the fire? | |
| | A. No. | |

Cross-examined

XED BY MR HEIN (Senior)

Cross-
examination
(Translation)

- | | |
|----|-------------------------------------------------|
| | Q. You said that your office is in the factory? |
| | A. Yes. |
| 40 | Q. That you have the custody of the keys which |
| | are hung on a board and that there are 4 |
| | keys? |
| | A. Yes. |

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examination
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(continued)

Q. You yourself occasionally open the store and sometimes you send one of the storemen to open the store to allow the CEB workers in?

A. Yes.

Q. You also said that you don't smoke?

A. Yes.

Q. None of your men smokes?

A. The men do smoke. One of them who worked under me smoked. He had no right to smoke.

10

Q. And Mamdally? Do you know those who smoke?

A. Mamdally, even my assistant smoked. Perhaps 2 or 3.

Q. There is a man called France?

A. France does not work in my section.

Q. No smoking. That is the rule, isn't it?

A. Yes.

Q. Can you tell us why?

20

A. Because a cigarette can start a fire.

Q. Hence the "no smoking" rule in the store?

A. The store contains inflammable materials. Smoking is prohibited.

Q. What were there in the store?

A. Atex (?) (Translator's note: Latex, perhaps)

Q. The only inflammable material near the main door?

A. Yes.

30

Q. The door which you open?

A. Yes.

Q. Looking through the list which my friend has passed on to me, I see that a material does not appear on it. What is it?

(Witness goes over the list)

A. A glue.

Q. An inflammable glue.

A. I can't say.

40

Q. Since, at the time, it was borne on the list, it did exist therefore. It's plastifix. Where was it on that day? You do remember the place where all the items were. One of them is inflammable, I gather, and it's the only one you

haven't located. Where could it be on that day? Where is it normally kept?

A. On the racks.

Q. In which room?

A. Room No.1.

Q. That is to say very close to the entrance?

A. Yes.

Q. Are you quite positive about this? Or are you only guessing?

10 A. If it's glue, then it should be near the door.

Q. Was it inflammable?

A. Yes.

Q. I am only suggesting this to you: since plastifix, an inflammable substance, was near the door, can we deduce therefore that all inflammable materials could have been placed near the door?

A. Yes.

20 (Plan prepared by the witness is passed over to him)

Q. You drew up that plan, didn't you?

A. Just to guide the insurance. All the materials haven't been included in the plan.

Q. I am not saying that you included all the items. I said that you have attempted to locate them, and since, according to me, one hasn't been located, I am trying to sort this out. You told me that it was near the door?

30

A. Yes.

(Sketch put in - marked I)

Q. Was it you who drew up a list of materials which were in the store on that day, for Bata's counsel and solicitor? Were you asked a list of materials found in the store on the day of the fire?

A. Yes, for the insurers and the Police.

40

Q. If I were to tell you that in the particulars supplied to us in the course of this case, one item has been omitted? The plastifix has been omitted. It does not appear on the list?

A. Yes.

(Ref p.9 and 10 of the brief in which this particular article does not appear)

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MR HEIN: My Lords he admits that he drew it up, he admits that this particular article does not appear on the list, and now we have it from the witness that he prepared the list of articles which were in the store on the day of the fire, the list which he gave to the police and to the insurance company and he does me credit when I say that this article, once again, does not appear in his list. 10

MR HEIN: You have said that it was near the entrance door because it is inflammable. You were able to salvage items found very near the door and the plastifix doesn't appear on the list of salvaged items. Hasn't the plastifix been salvaged then?

A. It does not appear on the list.

Q. Mention is made of 145 litres. 20

A. Yes.

Q. Was it a liquid, then?

A. Yes.

COURT: As a rule, this material is received in boxes?

A. No. In 4.5 litre gallons, gallons made in tin.

MR HEIN: You have already stated that you yourself or one of your men accompanied the CEB workers when they asked for the keys. Did you yourself go with them on the morning of the 5th July? 30

A. Yes.

Q. The work was done and you took back the keys when you left?

A. Yes. I went back to the factory.

Q. In the afternoon of the 5th, around 4, again you were asked for the keys?

A. I was not there. They had come into the yard. I had already left. I had asked the gateman. 40

Q. I put it to you that what was how you felt; they are becoming a nuisance. Tell them that I have already gone.

A. No. The gatebook shows that I had already left.

Q. Mr Dauharri, like all Bata employees, you gave a statement to the Police on that day?

A. Yes.

- Q. You spoke the truth, the whole truth and nothing but the truth, as if you had been under oath.
- A. Yes.
- Q. You have no fear at all that your statement to the police be produced since it contains nothing but the truth?
- A. Yes.
- 10 Q. In your statement to the Police, I see something like the following: "The same day, at about 4.15 p.m. the gate keeper came to tell me that a CEB worker had again called to ask that the store be opened. I asked the gatekeeper to tell him that I had already left and to come back the next day". Is that correct?
- A. No.
- 20 Q. I wish to remind you that this has been taken down by the police who read over your statement to you and that you signed it?
- A. Yes.
- Q. You told me that if this is found in your statement, it means you spoke the truth to the Police. Is it not true then that you said: "Tell him that I have gone and to come back the next day"?
- A. It is not true.
- Q. On the 6th July, on the very day of the fire you were again asked for the keys?
- 30 A. In the morning, yes. They asked my assistant. He kept me informed, though.
- Q. "The same worker returned and asked me to open". Still a mistake?
- A. He asked my assistant. My assistant told me about it.
- Q. If the police noted down that the same man had called and had asked you, you yourself, to open, that is a mistake?
- 40 A. I was at the office, my assistant phoned me to say that CEB workers had called.
- Q. It's Mamdally who opened the store to let the CEB workers in and when you went there shortly after Mamdally was there and you saw the CEB workers still at work?
- A. Yes.
- Q. At what time did you go then? Could you give us a time?
- A. It was after 10.
- Q. I'll try to help you. In your statement to

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(continued)

the police you said it was 9.10. Well, the CEB workers had completed their repair work, and, to go by the Attendance Book of the CEB, they signed the book, they were back at 8.30. Of course, they must have finished before 8.30 and they had gone back. You told the police that you attended the store at about 9.10. To-day you are saying 10 a.m. Surely it was before 8.30, since the CEB workers were back by that time. The log book says they were back at 8.30 a.m. So?

10

A. They were there when I was at the store.

Q. So you were at the store before 8.30?

A. Perhaps.

Q. At what time were you there?

A. Between 9 and 10 a.m.

Q. You maintain what you say. You are positive, even though I am showing you that you are mistaken. The CEB workers go back and write down the time of their return as 8.30, that means that they had left the store before 8.30 and you say that you had met them?

20

A. It was between 9 and 10.

Q. What did you do until 11.25?

A. I had the materials removed to the factory.

Q. Which materials? How much of them? Surely you must have made an entry in the book?

A. Yes, in the Stock Book.

30

Q. You removed a lot of materials?

A. Not really.

Q. Enough to keep you busy from 9.10 to almost 11.29. How long did it take to remove the materials? Quarter of an hour?

A. We made two trips.

Q. You closed down, you went away and came back?

A. Yes.

40

Q. Just now you said that you stayed there until 11.55. You took certain materials, you went away and came back for more?

A. Yes.

COURT: Did you use a van, a lorry or what?

A. A van.

MR HEIN: You told us that you had gone at 11.25 and you say that you arrived around

10, but certainly not before 8.30. In other words, you stayed there from 10 to 11.25, if it is a fact that you reached there at 8.20, that you made two trips. It happened at noon. This is plenty of time to transport goods. Did you have workmen to open the cases?

A. Yes.

Q. You had a man called France with you?

10 A. France is not attached to my section. There were Mandally and other chaps who had left the company.

Q. If Mr Dorsamy were to say that you came with a man called France, that would not be true?

A. There's a man called France who works in the office. He is not attached to my section.

20 Q. He says that you came with someone called France?

A. France works for Bata, not with me.

Q. Did you come in a van?

A. Yes.

Q. Could you give us a list of the materials which you carried on that day?

A. Yes.

30 Q. I have mentioned 11.25 because in the statement you gave to the police you said you remained in the store until 11.25. Do you agree or don't you?

A. I do.

Q. You said just now that 11.25 is another mistake. Is 11.25 the correct time?

A. It's a long time. I don't remember.

Q. Your memory is probably failing you. The day after the fire you gave more precise details, they were still fresh in your memory. Is it not possible that what the police noted down is a more faithful account?

40 A. Yes.

Q. So the CEB workers couldn't enter the store. They left in the morning. We say 8.20. You say a bit later, before the fire?

A. Yes.

Q. The only people who had entered the store, up to the time of the fire, were you and the men from Bata?

A. Yes.

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Cross-
examination
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(continued)

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(continued)

Q. You also said that a week after the inventory had been carried out, nobody had entered in Room No.3 or Room No.2. Do you remember?

A. Yes.

Q. Since you gave the keys to your men who opened the store, you cannot swear to the fact that nobody had entered the room?

A. When I gave them the keys to open the store, those keys were all together (in one bunch). I gave key No.4. 10

Q. You are saying that you gave the whole bunch of 4 keys, yes or no? Each time you are asked the keys, that's what you always do?

A. Not to the CEB. No.

Q. You said that each time the CEB called you gave the keys?

A. I myself accompanied the men. 20

Q. You were asked if it were a bunch of keys. You answered: yes, there were 4 keys. What are those keys? Could you tell us? The keys to the doors and the key to the main door?

A. Yes.

Q. I am still talking about the 6th July, the day of the fire. You said that you met Mamdally on the spot. Mamdally who had preceded you there? 30

A. Yes.

Q. When you left at 11.25 did you close the store in the presence of Mamdally? And did Mamdally return with you to the factory?

A. Yes.

Re-examination
(Translation)

Re-examined

Re-examined by Mr David:

Q. Are you positive that on the morning of the 6th July, you removed the materials in two trips? 40

A. Yes.

Q. And in the Judicial Enquiry, when you deponed before the Magistrate, you said "on the 6th July, 1972, I visited the warehouse on two occasions before the fire broke out"?

A. Yes.

.....

At this state the case is adjourned to tomorrow Thursday 16th February 1978 for continuation

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Ahmed
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Re-
Examination
(Translation)

15th February
1978

(continued)

Cross-examined (continued)

On Thursday the 16th day of February, 1978 at 10.30 a.m.

Before the Honourable M.Rault, Acting Chief Justice

the Honourable P. de Ravel, Puisne Judge

Cross-
examination
(Translation)

(continued)

16th February
1978

10 Sir RAYMOND HEIN Q.C. continues the cross-examination of:

Mr Ahmed DAUHARRY (s.a.m.) Storekeeper, residing at F. de Valois Street, Port Louis

Q. You were asked yesterday whether you could produce the order forms showing the materials removed by you for the warehouse on the morning of the 6th?

A. Yes.

20 Q. I requested the order forms or order books, meaning the materials which you had instructions to remove from the store?

A. I have no order books for that purpose.

Q. Is it done by telephone?

A. I leave the factory to go and fetch them there.

Q. Do you make the decision yourself when you leave the factory to go and fetch those materials?

A. Yes.

30 Q. Does anyone tell you: we shall need such and such materials?

A. Normally, we are given a work plan. I study the plan and then I ascertain whether we have the materials in stock. If I need

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anything, I collect it from the
warehouse.

- Q. Do you check your stock daily?
- A. No.
- Q. Once a week?
- A. Yes, perhaps. Occasionally once or twice a week.
- Q. When you notice that the needed materials are not in stock in the factory, you decide yourself to go and get them yourself or to send someone for them. Do you go personally? 10
- A. Sometimes I go personally, sometimes it's my assistant.
- Q. Is it you who keep that book?
- A. Yes.
- Q. Where?
- A. At the factory.
- Q. Is it your handwriting?
- A. Yes. 20
- Q. I believe that the 3 marked pages, are the relevant pages?
- A. Yes. It's the list of materials which I removed on the 6.
- Q. I see on the first page that you removed 2 roll of 80 yards each. In the second column, I see 2 rolls 80 yards. You write English well - 8 rolls 356 yards. The second column shows the balance after deduction of the removed quantity? 30
- A. Yes.
- Q. Which shows that you removed only two rolls of 80 yards each?
- A. Yes.
- Q. Where were those rolls?
- A. Do you mean the 2 rolls of 40 yards each.
- Q. Yes, from some material to make shoes?
- A. Yes to make shoes, canvas soles.
- Q. Two rolls? They could be quite big?
- A. Yes. 40
- Q. Those rolls are 3 feet long?
- A. Yes, about 3 feet long.
- Q. 40 yards of that material, that could give a diameter of 12 inches?
- A. A bit more.

- Q. 15 inches?
A. It's doubled (Translator's note: perhaps also "it has a double lining").
Q. I see an entry which could read either a 5 or a 6 but I give you credit, Mr Dauharry. I see a 5 which means a 6, do you agree that it looks more a 5 than a 6?
A. It's 6.
Q. The 5 has been amended.
10 A. It's a 6. It has not been amended.
Q. It was always a 6, at no time it was a 5?
A. Yes.

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COURT:

In the balance column, the last line, I see 7.4.72. What does that represent?

- A. This is an entry made by the auditor. It means that the balance has been checked and found correct.

COURT:

20 How could he check on the 7th April, an entry made on the 5th July?

- A. May I have a look at the book, please, to sort this out.

COURT:

The auditor has written down 7th April?

- A. He checked the 239 sheets of the previous balance.

COURT:

30 What does the date, in red, appearing in the 4th column mean?

- A. It means that the previous balance has been checked and found correct.

COURT:

What does the date indicate?

- A. The date on which the check was effected.

COURT:

Not the balance remaining after you had taken whatever you required?

- A. At the top, it concerns the 239 sheets.

40 COURT:

I am asking you the meaning of the two ticks in red on the last line at the bottom.

- A. They were made by the auditors.

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examination
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(continued)

COURT:

They checked after you were supposed to have taken.....

- A. They were made by Mr Gillet, the head of the purchase department. It's his signature.

COURT:

It looks as if the check was carried out on the 7th April, while you took out the goods on 6th July.

10

- A. He made a mistake. He wrote the 7th at the bottom. He should have written it at the top near the balance of the 239 sheets.

COURT:

Mr Dauharry, try to be coherent when you answer. So far, your answers are lacking in cogency.

SIR RAYMOND HEIN:

The entry in red ink (7.4.72) is found on top of the 5th or the 6th July 1972?

20

- A. Yes.

- Q. I am prepared to grant you, for the purpose of your cross-examination only, that the gentleman made a mistake and wrote 7.4.72 instead of 4.7.72. However, it would have been more regular, if he carried out his check on the 7th, to write the date below the line, where there is a 5 or a 6, and not on top. It would appear that the entry was made after the entry in red ink, if the red ink in fact indicates an audit check. Will you agree with me that when entries are checked the normal procedure is to sign below the last line and not above? Let me put it another way: suppose you were asked to check a book, would you have signed above the last line or below it?

30

- A. I would have put my signature beside the line.

40

- Q. That's a very cunning answer Mr Dauharry. I thank you for it. So you would have signed beside the line? Where precisely?

- A. Against the remaining balance.

- Q. Show us where exactly you would have signed.

(Document J is shown to witness who indicates where the signature should appear)

- Q. Would you have signed after the entry

50

"239 sheets"

A. Yes.

Q. In other words, you are of the opinion that instead of putting his signature below the figure 5, he should have signed here (spot indicated by witness). Actually, since the materials had been removed one or two hours before the fire, no one had the opportunity to check what remained after the fire?

10 A. No.

Q. On that day you removed - again I see that something has been crossed out - 24 sheets. There again there was a figure 5 which has been amended to read 4. You removed 24 sheets of what material?

A. Estasol 5 mm wide.

Q. What is it?

A. They are rubber sheets for the manufacture of soles.

20 Q. And it's thickness?

A. 5 mm.

Q. That is half centimetre. How wide are the 24 sheets.

A. $1\frac{1}{2}$ metre wide.

Q. By?

A. 1 metre by 50 cms.

Q. Which gives 1 metre by 50 cms, so 24 sheets represent 12 cms, 24 times 5 mm, in other words nothing very big, very heavy?

30 A. If you say so.

Q. What do you mean "if you say so"? I am not saying anything. You are. I am putting it to you that if it measures 1 metre by 50 cms I am being generous, the more so as being 12 cms high, it can't be very heavy, and it can be carried under the arm?

A. It is possible if you carry one sheet at a time, but not the 24 sheets at one go under the arm.

40 Q. Let's say 2 trips would be enough to carry them to your van?

A. Perhaps 3 or 4.

Q. More than ever I should say "thank you" Mr Dauharry. Do you still have a few of those sheets?

A. No, they have all been destroyed.

Q. None left! What a pity really. They must have

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(continued)

been a particularly heavy rubber. So, you say that 3 or 4 trips would be needed to carry those 24 sheets?

A. Yes.

Q. We come to the wedge soles now. It's the last entry, what is it about?

A. They are rubber soles, in sheets.

Q. Sheets from which soles are cut?

A. Yes.

Q. How big are those sheets?

10

A. About 3 metres square.

Q. Of what material? Plastic? Rubber?

A. Rubber.

Q. How thick?

A. 4 or 5 cm.

Q. There are 25 of them, about the same thickness as the others but rather heavier, because they are 3 metres square as against 1 metre by 50 cms for the others. They would require at least 12 trips, wouldn't they?

20

A. They are packed in "palettes".

Q. Mr Dauharry, you'll get every opportunity to give explanations. Please answer my question. How many trips were necessary to carry those 25 sheets 3 metres square and 4 or 5 cms thick each? When I say carry, I mean from where they were in the store to some place we'll soon see, to the van?

30

A. Approximately 8 or 9 trips.

Q. I thank you, Mr Dauharry, you are increasing the figure each time. If I understand you well, you took 8 or 9 trips, if I work this out, we get 3 sheets per trip. So, because of the weight, only 3 sheets or rubber materials 3 metres square could be carried? Do you think you can be believed? Mr. Dauharry, do you seriously think you can be believed?

40

A. It wasn't me who carried the materials.

Q. Better still. It was probably a stronger man than you? You had a man with you, now who was this man? You gave his name to the police. Can you recall?

A. No, I don't.

Q. I'll help you. The man's name is France, is it not? You yourself said so. Not me.

You said that you took two trips on the day because the van could not take all the materials at one go. So you had to do it in 2 trips. To-day, however, we have seen that you carried a few rolls about that big materials 12 cms high and you required 2 trips by the van.

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(continued)

- 10 A. You know how it is. Sometimes when I am at the store the production department requests canvas, so.....
- Q. I am sorry to ask you to answer my question. I am asking you whether it was necessary to do 2 trips in the van to carry those few articles the volume of which we have just described. Is your answer yes?
- A. I had to take 2 trips because the materials couldn't be packed into the van.
- 20 Q. Mr Dauharry, you'll get every opportunity to give all your explanations. Yesterday you said that 2 trips were necessary because there were too much to carry. Now that we see that there were 3 small items which fit into a space that big, what do you say? You say that 9 trips were required. Why?
- A. The production department is asking for raw materials every hour. Sometimes it asks for canvas.
- 30 Q. I believe you said that you are the one who took the decisions and not "production", as you describe it production is most impersonal. You yourself decide what materials are required? Is that not so?
- A. If I get requests for canvas in the morning I check the stock. If there isn't any, well then I have to go and get it.
- 40 Q. You didn't say this yesterday nor a little while ago. Do you agree that you said yesterday that you were obliged to take 2 trips because there was too much to carry? This is when I asked you whether they are carried by car or by van and you answered: by van.
- A. Yes, by van.
- Q. So you were mistaken, then? The reason was not the quantity but because of the exigencies of production?
- A. Yes.
- 50 Q. I have helped you find your answer, haven't I? On that morning, when you arrived, it should have been between 9 and 10 - I can promise you that we shall establish that it was 8 - did you ask Mr Mamdally to help you carry the

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materials to the van?

A. Yes.

Q. Those materials were on the rack?

A. Yes.

Q. In which room was the rack?

A. In room No.1.

Q. At the entrance?

A. Yes.

Q. The van, I take it, was at a distance
of about the length of the Court room
from the door, not more?

10

A. Yes.

Q. You are saying that for those few
articles 8 or 9 trips were made, 3 or 4
for the other and how many for the third?

A. It was canvas. The crates had to be
broken open.

Q. Where were they? In which room?

A. Room No.1.

Q. Are you sure that, on that very day, there 20
were no crates already opened, and that
it was necessary to break open another
one?

A. Yes, there were, but not of the same colour.

Q. So there were open crates but the material
wasn't of the desired coloured?

A. Yes.

Q. Do you have any voucher to show that on
the morning of the 6th at such and such
time, you asked for say 25 sheets of
soles, 24 sheets of Estasol? Do you
have a paper or something?

30

A. No.

Q. You get no instructions. You yourself
make decisions?

A. Yes.

COURT: Do you mean to say that the storekeeper
works out how much materials are needed
for production?

A. It's the Production Manager who decides. 40

COURT: Stop being silly for a moment, will you?

SIR RAYMOND: In short, you don't hold any
paper, voucher or order for those materials?

A. No.

Q. The production manager ordered his
requirements from you?

A. He sends in his production plan, then I check the various items to see whether I have them on stock.....

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COURT: Come on, now let's be precise. You have two stocks under your control?

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A. Yes. There's one at the factory.

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10 COURT: So there is a stock at the factory and one at the store. Come on then, do make it clear, you are wasting the time of the Court. You have a certain stock and you are in presence of production requirements. If your stock can't meet the demands, you go and get more from Plaine Lauzun. That's your explanation, is it? Come on, then, say it and stop wasting the time of the Court.

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(continued)

SIR RAYMOND: You say that you opened a crate?

A. Yes.

Q. Who did that?

A. Mamdally.

20 Q. Are the crates big?

A. Yes.

Q. Did it take you 5 minutes or 10, to be generous, to open a crate?

A. Yes.

30 Q. It took you more than 5 minutes. What did you do? Did you just watch idly? You don't smoke, you watched people load the materials in the van and make 8 trips and then you left? How long did it take you? Note that it took you 2 trips the first time. How long did it take you? $\frac{3}{4}$ of an hour? Bear in mind that you gave various times to the Police.

A. One hour.

Q. One hour on the first occasion. How about the second time, 40 minutes? Yes or no?

A. I don't remember.

40 Q. I think that's a bit exaggerated. The first two times you had to take the materials from the rack and load them on the van - you made 3 or 4 trips, as many as you wish - it couldn't have taken you an hour. You said an hour, O.K. The other time you opened the crates. So you spent the whole morning getting those few materials.

A. Yes.

Q. You said yesterday that you had removed the materials lying at the entrance of room No.1. When you saw that there was a fire, you salvaged whatever things you could save?

50 A. Yes.

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- Q. You told the police that you removed the materials which were near the ION soles which you pointed out on the plan. Have a look at your small plan. You can see the main entrance in room No.1. The rack, you said, was on the right hand side and the canvas on the left. I think there were canvas, crepe white and.....
- A. ION sole.
- Q. So you told the police that you had removed materials which were near the ION sole, crepe white, canvas sole, and on the right hand side, there was the latex. You said that what we called plastifix was near the latex. Next after, in the plan, I see toepuffs. So you would have removed everything on this side. Everything except inflammable substances? 10
- A. I wasn't alone. I had other colleagues. We removed what we could. 20
- Q. You said: I came in with my extinguishers, I opened the door, it was still possible to go inside for some distance, I grabbed and salvaged whatever materials I could. I see from your list of salvaged materials that you recovered the latex, the crepe white, the toepuffs and even the toepuffs which were further down than the plastifix. You were reckless, Mr Dauharry. If there were inflammable substances, they should have been saved first. Or didn't you realise on the spur of the moment? 30
- A. I didn't realise.
- Q. Can you explain why you should have skipped the inflammable substances which were in cans and go for the toepuffs which were further inside?
- A. The toepuffs were on the floor.
- Q. You mean you recovered the toepuffs because they were on the floor rather than the inflammable substances which were on the rack? 40
- A. Yes.
- Q. Now I understand that what we have called plastifix are described as plastic cement in the particulars, is that right?
- A. Yes. It's plastic cement (liquid cement).
- Q. Are there plastic cements?
- A. Yes. 50

COURT: If I get you right, it is not really a cement, which is not inflammable, but rather a plastic substance used as a glue, as a binder?

A. Yes, in the manufacture of shoes.

SIR RAYMOND: And is it inflammable?

COURT: It is. It's made from plastic. It is not made of cement, it is made of plastic, it is used to fix, to glue or to melt certain materials to make them stick together in the form of soles or whatever it is, but I must say that I am not an expert, but from the practical point of view, I don't think there is any liquid cement.

SIR RAYMOND: So do I.

SIR RAYMOND: Mr Dauharry, you said yesterday that it is no longer used. Do you know why?

A. No.

Q. Actually those cans of plastic cement were much nearer the door than the crepe white and the ION sole?

A. They were on the rack.

Q. They were very close to the door with the latex while the other were further down on the left?

A. Yes.

Q. Mr Dauharry, please do get hold of your book and answer the questions I am going to ask you. I'll show you that each time the gentleman signs and checks your book - the entry in red ink - he puts his signature and the date on top of the last line checked. Have a good look at it. I think I made myself clear. Now, look at the pages in your book and tell us if it is a fact that the auditor uses red ink. What is the name of the gentleman?

A. It's either Mr Empeigne or Mr Gillet. This entry was made by Mr Empeigne.

Q. Each time Mr Empeigne checks your book, he ticks the last line checked in red ink and puts the date above that line?

A. Yes.

Q. So when Mr Empeigne writes 7.4.72, it's correct to say that he checked the entry referred to on the 7th April 1972?

A. Yes.

Q. How could he have checked an entry made on the 6th July 1972?

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- A. It's not Mr Empeigne, it's Mr Gillet.
- Q. So it's Mr Gillet. You agree that it was actually on the 7th April 1972 that he checked this page. How could he have checked on the 7th April an entry made on the 5th or the 6th July 1972?
- A. I can't say.
- Q. I am sorry, Mr Dauharry, but I am going to ask you a very embarrassing question. Please think well before answering. It's an important question. Take all your time. Think. I am suggesting, I think I am entitled to suggest it to you, that the entry of the 5.7.72 is in fact an entry made on the 5.7.71 which has been forged to read 72. The figure 71 has been changed to 72. This explains why Mr Empeigne or Mr Gillet has verified or checked the entry on the 7th April? 10
- A. I maintain it was 1972. 20
- Q. Hasn't the figure 1 been changed into a 2?
- A. No.
- COURT: Give the witness a sheet of paper and let him write the figure 2 several times.
Specimen filed of record as document K
- SIR RAYMOND: I am proceeding at random. I am now opening a page entitled "microcellular sheets". The last entry I read is dated 16.5.72. I see that Mr Gillet, I think it's him, carried out his check on 29.6. He hasn't written 6.29 but 29.6. above the last line checked? 30
- A. It's Mr Empeigne.
- Q. He has written down 29.6. He checked the last entry made on the 16th May. We are going to proceed the same way. I open another page at random. I see that Mr Empeigne, I think it's him, still writes 29.6. and not 6.29. He is still checking the last line. 40
- A. Yes.
- Q. Could you try to find out at least one entry where the date is permitted i.e. where the month precedes the date and where he would have signed above the line?
- A. I would have to check the sheets one by one.
- Q. Carry on, you handle this book daily. 50
(Witness indicates an entry)

- 10 Q. This is one of the pages we have already dealt with. You yourself showed us that at that page "new canvas, blue tokyo", Mr. Empeigne has written 29.6 above the date 27.6 and not below. So this page can't be of any help to you. It is precisely the page where you wrote an entry dated 6th July. Do you agree? He checked on the 29th June the last entry made on the 27th, he has put his tick (or date) above the last line?
- A. Yes.
- Q. This entry is of no use to you. I doubt if you can find one.
- A. I haven't found any.
- 20 Q. We appreciate that. So, therefore, there is no other entry except that which you say was made in 1972 and which we say was made in 1971, which would show that the auditors, Mr Empeigne or Mr Gillet, had signed above the line. There is also no entry where either of these gentlemen would have written 6.29 when they meant 29.6. The figures 29.6 appear all the time, which is more normal?
- A. Yes.

Book is produced and marked J

Re-examined (continued)

- 30 Mr David: The initials in the book are those of either Mr Gillet or Mr Empeigne?
- A. Yes.
- Q. What positions do these gentlemen hold in the Bata Company?
- A. Mr Gillet is the buyer and Mr Empeigne is the accountant.
- Q. How often did these gentlemen check your books?
- A. Sometimes every two months, sometimes every 6 months.
- 40 Q. Do you know what toepuff is made of?
- A. No.

MR. DAVID: My Lords, at this stage, I have no question to put to the witness. After having had an opportunity of subsequently going through this book, I might then call him back.

COURT: When was the last general inventory of goods in the store made?

In the
Supreme
Court

Plaintiffs'
Evidence
No.15
Ahmed
Dauharry
Cross-
examination
(Translation)
16th February
1978
(continued)

Re-
examination
(Translation)
(continued)

In the
Supreme
Court

Plaintiffs'
Evidence
No.15
Ahmed Dauharry
Re-examination
(Translation)
16th February
1978
(continued)

MR. DAVID: When he deponed yesterday, he
said it was on the 28th or 29th June,
as far as I remember.

COURT: When was the last inventory carried out?

A. The 28th or the 29th.

COURT: A yearly inventory?

A. Every fortnight, or every six months, it
varies.

COURT: Will you tell us whether when goods
are despatched from your store to the
production section, you do get a receipt
for the quality and the quantity of
materials issued? 10

A. No.

Q. Assuming that the production manager
receives 5 sheets and he writes 10 sheets,
how could you deny it?

A. There is his plan.

COURT: Do you keep that plan?

A. Yes. At the end of the fortnight a
summary of the accounts is made. 20

COURT: When is that done?

A. At the end of the fortnight.

MR. DAVID: This is all for the moment, My
Lords.

Plaintiffs'
Evidence

No.16
Edouard
Bathfield

No. 16

EVIDENCE OF EDOUARD
BATHFIELD

Examination
(Translation)
16th February
1978

Mr. d'Unienville calls and examines:

Edouard Bathfield (sworn) Manager Bata Co.
residing at Floreal 30

Q. On 6th July 1972, at the time of the
fire, you were the Manager of the Bata
Company?

A. Yes.

Q. Could you tell the Court what were the
relations between the CEB and Bata
concerning the fuse box in Room No.4
before the fire?

A. There were none between the CEB and
myself. I never knew that electric
current passed in their fuse box in Room
No.4, until the morning of the 6th of
July around about 8 or 8.30, when 40

Mr Dauharry told me so. He even asked me, I remember, to phone CEB to put a stop to their calls every 2 or 3 days, because very often he was obliged to leave his warehouse to go and unlock the Development Bank Warehouse to allow CEB workers to have access to their fuse box.

In the
Supreme
Court

Plaintiffs'
Evidence

No.16
Edouard
Bathfield

Examination
(Translation)

16th February
1978

(continued)

Q. What did you do after the fire to collect information about what had happened?

10 A. On the advice of Mr Heyburn and Mr Descombes of the Phoenix Insurance, I called into my office all those who had the charge of the store on the day of the fire. That was on the 9th or 10 July. I took down their statements, given in French, creole and English. I myself translated their statements into English.

Q. Do you remember taking down the statement of one Mamdally?

20 A. Yes. I did take his statement.

Q. When did Mr Mamdally stop working?

A. Mr Mamdally stopped work on the 9th November, 1976, because he was involved in a strike, an illegal strike in our view, along with some 116 workers, if my memory serves me right.

Q. He took part in an illegal strike and was dismissed by the company?

A. Yes.

30 Q. Has he done anything about it?

A. Yes. He is suing Bata Co. before the Industrial Court. The case is pending.

Q. What do you mean, in your own industrial jargon, when you speak about plastic cement?

A. We mean a sort of cement for sticking shoes with plastic tops and plastic soles.

Q. So it is a glue for sticking together the plastic parts of shoes?

A. Yes.

40 Q. Is it called plastifix?

A. Yes.

Q. Could you briefly describe the stock control system of Bata and also explain how stocks are transferred to the production unit?

A. The stock of raw materials is checked every fortnight by the officer in charge of the warehouse and the purchasing manager who is his immediate boss. He carries out spot checks on 15 or 20 items of raw materials in the store

In the
Supreme
Court
Plaintiffs'
Evidence
No.16
Edouard
Bathfield
Examination
(Translation)
16th February
1978
(continued)

in the presence of one of our accountants. As regards finished goods stocks, an inventory is also carried out every fortnight by our retail manager and our store manager. Removal of raw materials from the Development Bank warehouse to the factory is done according to a "production planning sheet" prepared by the production manager and the production foreman. A copy of the "planning sheet" is also passed on to the storekeeper of the raw materials store. So that whenever this latter requires materials to meet production needs he would draw them from the warehouse and supply them to the factory. 10

- Q. Which means that a certain quantity of raw materials remained in the factory?
- A. Yes. A certain amount remained in the factory, but most of the stock lies in the Development Bank warehouse. 20
- Q. Who was in charge of the stock of raw materials at the time?
- A. Mr Dauharry.

MR D'UNIENVILLE: On behalf of the two companies you pray the Court for a judgment in terms of the statement of claim for the damages sustained?

- A. I do.

Cross-
examination

Cross-examined

30

Sir Raymond Hein cross-examines:

- Q. As far as I remember, around the year 1968 an employee of Bata set fire to Bata, is that right?
- A. Yes that's right.
- Q. And he has been convicted?
- A. Yes.

SIR RAYMOND HEIN: No other questions.

NO RE-EXAMINATION

MR DAVID: My Lords, with my friends' consent, I should like to make a statement relating to certain discussions that have been taking place between the accountants on both sides. There is a possibility that both sides may be able to agree on a figure, on an amount as to quantum except moral damages. For the moment we would rather not embark on any discussion in Court relating to the question of quantum. 40

10 Apart from that I have six witnesses who were the managers of the various industries in the neighbourhood at the time and being given that my friends have kindly agreed to supply us with certain information respecting loads at the time, it will not be necessary to call those six witnesses, so that having short circuited those witnesses, we shall find ourselves with only the expert evidence in respect of those witnesses. By agreement with my friends we would rather not start introducing evidence, at this stage, until Monday if possible. In fact we have considerably shortened the case. Perhaps what could be done at this stage would be for my friends to introduce the statements of the various witnesses.

In the
Supreme
Court
Plaintiffs'
Evidence
No.16
Edouard
Bathfield
16th February
1978
(continued)

20 SIR RAYMOND HEIN: My Lords, may I call Mr Bosquet whose cross-examination was reserved.

No. 17

EVIDENCE OF LOUIS CLEMENT
BOSQUET (Continued)

Plaintiffs'
Evidence
No.17
Louis Clement
Bosquet

Mr Louis Clement Bosquet (sworn) Chief Inspector of Port Louis is called

Cross-
examination
(continued)
16th February
1978

30 Q. Have you been able to prepare for the sake of production in Court a certified copy of the statement given to the police by Rashid Mamdally?

A. I have not the certified copy I have the original. I have been asked by the DPP to produce the original of the statement provided there is no objection to its production.

COURT: What should have been the position had they objected

40 SIR RAYMOND: We would have had to inflict argument on the court and the court would have drawn conclusions from the objection.

A. I produce the statements of Rashid Mamdally, Joseph Hiss and Ahmad Dauharry.

Q. My Lords, need we ask the witness to read out the statement.

COURT: It is the normal practice.

SIR RAYMOND: I would only ask him whether it has been witnessed by him and signed by the maker.

In the
Supreme
Court

Plaintiffs'
Evidence

No.17
Louis Clement
Bosquet

Cross-
examination

16th February
1978

(continued)

(To the witness): All these statements
were read out to the deponents and they
signed?

A. Yes, they were recorded by Sergeant
Duval and witnessed by me.

STATEMENT OF AHMAD DAUHARRY
IS READ OUT

- R E C E S S -

Thursday 16th February 1978

Bata Shoe Co. & Anor v. The Central
Electricity Board

10

AFTER RECESS

MR HEIN (Jr) continues the cross-examination
of Inspector Bosquet (still under oath)

Statement of Said Mamdally put in
marked "M"

Statement of Hiss put in, marked "N"

Q. Mr. Bosquet, you went to visit the store
the day after the fire broke out?

A. I went on Thursday, on the day of the
fire and the next day I inspected the
building.

20

Q. When you went there the next day what
was the state of the floor, there was
plenty of water about?

A. Yes, there was water about and also
'debris'.

Q. Nobody wore boots?

A. Actually I did not wear boots.

Q. There was water all about the floor?

30

A. It was wet not flooded water.

Re-examination

Re-examined

MR DAVID: Mr Bosquet, apart from those persons
whose statements you have read and
produced, would you tell the court from
whom else statements were recorded in
connection with that fire?

A. Statements were recorded from Rajen
Dorsamy, a clerk of Bata; George
Benjamin Goder, retail manager of Bata;
Roger Bigaignon factory manager of Bata;
Edwin Bathfield, manager Bata firm;
Hahim (?) Tweng, trader of Overseas
Gloves Factory?; Sylvette Labonne,
Gloves Industry, the manager of the Glove

40

Industry. Louis Labonte of Overseas Industry; Xavier..... Manager Betex Industries.

In the Supreme Court

Q. In other words, no statement was recorded from Mr Fort Stevens?

Plaintiffs' Evidence

A. There was a report from Mr. Stevens.

No.17

Q. Was there a report from Mr Ah Yue?

Louis Clement Bosquet

A. It is not in the police file; there is no report from the index.

Re-examination

10 Q. Any report of statement from ASP Servansing?

16th February 1978

A. No.

(continued)

Q. Any statement or report by yourself?

A. No.

Q. Any statement from anyone from the CEB?

A. No.

Q. Any statement or report not even from Mr Regis Jean?

A. No.

20 Q. Did you see the CEB officials on the spot either on the 6th or the 7th July?

A. I remember they were there on the 7th July.

Q. Whom did you see there?

A. I remember having seen Mr Juste.

Q. You say that the fuse box which has been put in evidence was secured by the police?

A. Yes.

Q. What about the fuse box in the other room, the other fuse box?

A. It was not secured.

30 Q. Was any part of the police enquiry directed to that fuse box which was still standing?

A. No.

Q. Were you called at the Judicial enquiry?

A. No.

Q. Was ASP Servansing called at the Judicial enquiry?

A. I cannot say.

Q. Will you have a look at the Judicial enquiry; experts had access to that spot.

40 COURT: Did any expert make any report for the police?

A. Only Mr Stevens. Mr Servansing did not depone.

MR DAVID: The only officer who put in an appearance was Inspector Ramsamy to produce the photos?

In the
Supreme
Court

Plaintiffs'
Evidence

No.17
Louis Clement
Bosquet

Re-examination

16th February
1978

(continued)

- A. Yes.
Q. Sergeant Ameerun conducted the enquiry?
A. Yes, before the magistrate.

COURT: He called witnesses, he was merely
conducting the case to call witnesses?

- A. Yes.

Plaintiffs'
Evidence

No.18
Edouard
Bathfield

Examination

(continued)

16th February
1978

No. 18

EVIDENCE OF EDOUARD
BATHFIELD (continued)

Mr d'Unienville calls and examines Mr E. 10
Bathfield (still under oath)

Q. Mr Bathfield, you said this morning
that in 1968 Bata was the victim of
an arson? (Translation)

A. Yes.

Q. Where did the arson take place, in
which store?

A. The finished goods store opposite the
cold storage on Moka Street.

Q. Could you tell the Court whether witnesses 20
Hiss, Mamdally and Lowtun had anything
to do with that store at the time?

A. They had nothing to do with that store.

MR HEIN: No questions, My Lord.

EVIDENCE OF PHILIPPE HALWACHS

In the
Supreme
Court

Mr d'Unienville calls and examines Mr Philippe Halwachs (sworn)

Plaintiffs'
Evidence

Q. Mr Halwachs, on or about the 17th July, 1972 you proceeded to the burnt depot of Bata at Plaine Lauzun together with Mr. Cole.

No.19
Philippe
Halwachs

A. Yes.

Examination

Q. Under his instructions you have taken 50 sets of photographs of the burnt building and you are producing 50 of them?

16th February
1978

A. Yes.

Photos put in - marked "0" to "049"

At this stage the case is adjourned to Monday 20th February, 1978, for continuation.

EVIDENCE OF ROBERT COLE

Plaintiffs'
Evidence

No.20
Robert Cole

Monday 20th February, 1978 at 11 a.m.

Examination

Mr d'Unienville calls and examines Mr Robert Cole, adjuster

20th February
1978

Q. Mr. Cole you are a senior partner in the firm of Toplis & Harding Co?

A. I am

Q. What is the business in that firm?

A. It is the firm of international loss adjuster that yields on behalf of insurance companies which carry under insurance policies of various types anywhere in this world.

Q. What are your qualifications?

A. I am a fellow of the Chartered Institute of Loss Adjuster and an Associate of the Chartered Insurance Institute.

Q. And your experience as loss adjuster for how many years?

A. Approximately 22 years.

Q. Would you shortly describe to the Court what is your experience in fire cases?

A. I was supposed that I dealt with approximately

In the
Supreme
Court
Plaintiffs'
Evidence
No.20
Robert Cole

Examination
20th February
1978
(continued)

2,500 cases in that 22 years involving
the amounts of money up to £18,000,000.

Q. Now, tell the Court how you proceed to
inquire into this case as from 7 July
1972?

A. We received instructions, my Lord, in
London on mid-day on the 7th July. I
arrived in Mauritius mid-afternoon of
the 10th July. I proceeded directly from
the airport of the Bata Factory at Plaine 10
Lauzun duly for the purpose of making an
appreciation of the problem that was
in front of me. I started my principal
work the following day at approximately
nine o'clock in the morning and my
investigation would go into matters
affecting the liability and the policy
that would include, inter alia, the cause
of the loss. At the time that I visited
premises they were secured externally with 20
corrugated iron sheets over the windows'
opening, the door at the side entrance
was secured with a pad-lock bar. An
inspection of the interior of the premises
showed almost complete destruction. The
racking was in a crumbled state that is
metal racking and both the raw materials
and the stock in the finished goods store
was reduced a large part to ashes.
So far as the building section is 30
concerned there was heavy spalling of
concrete in certain areas. There was also
complete loss of integrity of the sound
non-load bearing members.

COURT: Would you please define loss of
integrity?

A. It means, my Lord, that the part of the
building no longer has any strength in
it. The finish to the walls and ceilings 40
had scorched over fairly large areas in
places. The combustible internal doors
and the cardboard partition had been
destroyed completely other than a few
remnants of the door in certain cases only.
The water piped had fractured and the
water was still being discharged therefrom.
There was water present in very large
quantities and I would estimate very
approximately a depth of two to three
inches in places. During that same day I 50
interviewed various parties including part
of representatives which would principally
include Mr Bathfield and Mr Bigaignon.
That interview would go across not only
the circumstances of the loss. I was
handed on that day that is 11th July a
statement from some employees. I received

further statement later. I took a number of photographs and I also examined in some details room number 4. At that time the fuse box and cable have been removed together with the cable running through room 4 through room 3 to the outside of the premises prior to connexion with the adjoining building. I also examined the remaining fuse box in the other room. In the evening I sent a telex to London Office, requesting information on the availability of an electrical engineer. On the 12th July, I would continue investigations. On the 13th July I arrived at the conclusion

In the
Supreme
Court
Plaintiffs'
evidence
No.20
Robert Cole
Examination
20th February
1978
(continued)

10
MR MOOLLAN: If the witness is to express opinion at the stage we propose to object

20
MR D'UNIENVILLE: The witness has been warned about refraining from giving his opinion at this stage. Will you please continue on the facts please?

A. On the 13th July having regards with the results of my investigation it appeared to me that the fire occurred in the vicinity of the rear of the building.

MR MOOLLAN: This is not a statement of fact, this is a conclusion of opinion.

Q. What did you see in order to reach that?

COURT: We shall have to tackle the problem sooner or later.

30
Q. Is it the proper time to tabulate my Lords, it's too soon

COURT: If you can

Q. Leave that conclusion alone. Just tell us what you did. Never mind what was noted.

40
A. On the evening of the 13th July I sent a telex to London, requesting for an engineer. Between the 14th and 17th July I would spend most of the time examining the consequent loss. The electrical engineer Mr Davidson arrived in the afternoon of the 17th July. I instructed him to determine whether the electrical installation was the originating source of the fire. From the 18th July to 20th July the date of my departure I would count upon Mr Davidson during the course of the investigation I would also have examined on the aspects. I also arranged during that time for a photograph to be taken by Mr Halwachs. As I previously said I departed late evening on the 20th July.

50
Q. In the course of your investigation on the spot, first of all, how long did you spend in the destroyed building?

A. I would say that I spent in the destroyed

In the
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Plaintiffs'
Evidence
No.20
Robert Cole

Examination
20th February
1978
(continued)

building at least 20 hours probably
closer to 30 hours.

Q. Now at the time you had photographs taken
did you also take measurements of the
building?

A. Yes. I found some difficulty hoping that
the configuration of the building at the
rear, the arrangement of the toilet where
..... an internal condition would
have subsequently proved an half hour an
architect's drawing. So I took a certain
amount of measurements at the rear of the
building to confirm the architect's drawing.

10

Q. Back to London

A. After my return to London I prepared my
report and handed it to my principal and
retained the authority to instruct Dr
Bermon of the Company to examine in detail
the forensic aspects of the case in
addition to call in support Mr Davidson
on the electrical aspect. I instructed
Dr Bermon of the Company on behalf of my
principal on the 21st November 1972. I
subsequently discussed the case with Mr
Masey from Dr Bermon's department.

20

Q. Now what did you do with the measurements?

A. The plan that you have in front of you
was prepared by a surveyor in my office
from the architect's drawing and from
the measurements that I have taken. I
cause the plan to identify individually,
the areas of the main store and the
individual building. I also requested the
surveyor to indicate on the plan a number
of which was then regarded as significant
photographs by the number and the direction
to which the photograph was taken.

30

Document "P" produced

COURT: The numbers correspond to the numbers
on the photographs taken by Mr Halwachs?

40

A. Yes my Lord. The numbers in circle, the
other numbers are the identified numbers.

Q. I must inform my Lords that the numbering
of the photographs in the record are
slightly different because the first one
is marked "0" and so photograph No.2 will
be "01" and so on. Now, would you
please refer to the photographs which you
think are most significant.

A. Photographs No.1, No.9, No.10, No.15 and
No.27.

50

Q. We start with photograph No.1

A. Photograph No.1 is taken along the front

of the building and you will see at the top of the photograph the principal roof beam. Examination of the beam running immediately parallel to the front door building, we show a very clean edge, on the left bottom side of the beam. The bottom right edge is not quite so clean. Comparing that information with the information in photograph 15 which is taken from the opposite corner of the room standing outside room No.3 and there you will see

In the
Supreme
Court

Plaintiffs'
Evidence
No.20
Robert Cole

Examination
20th February
1978
(continued)

10

COURT: It is not marked on the plan

A. It is standing in that corner outside room No.3 looking across with the finished goods store at the rear. The racking in the foreground is the racking of the raw materials store

20

COURT: Do you mean that No.15 is taken in the opposite direction from No.1?

A. Looking at the beam running parallel to the room at the rear store you will see there was heavy spalling to the concrete.

Q. Now let's come for the moment on the 3rd photograph please. No.1 where is the front door of the finished goods store.

30

A. At the far end on the left hand side in the mid fore ground you will look at the twisted metal racks of the finished goods store and the door to the raw materials store would be on the other side of that depot.

Q. I am asking you about the finished goods store.

A. The door on the left is the finished goods store.

Q. Now, what does that indicate this sort of damage?

A. It indicates that it

40

MR MOOLLAN: Are you being asked now the conclusion of the fact or still the conclusion from the observation?

MR D'UNIENVILLE: The witness is being asked what indicates as far as the trend of the fire is concerned.

Well, I reserved this point.

Well, looking at photograph No.1 and the beam to which you have drawn the Court's attention where is the greater damage to be found.

50

A. The greater damage on that beam is to the right photograph. We now look at photograph No.27. We are still in that corner outside room No.3 but this photograph is taken looking

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Supreme Court

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Evidence

No.20
Robert Cole

Examination

20th February
1978

(continued)

at room No.3, the door of which is shown on the extreme right of the photograph. You will see heavy spalling of the beams and columns forming the partition of separation between the raw materials store and room Number 3. The upper beam has sagged to a greater extent than the lower beam and that is reasonable since the heat from the fire can concentrate at the top of the space. Photograph No.9. 10
That photograph is taken from the door of room No.4. It looks across the room into room No.3. You will see on that dividing wall of partition that concrete beam, the horizontal beam has lost its strength completely and it is probably

- Q. And this is what you mean by loss of integrity?
- A. And it is probably reasonable to say having regard to 20
- Q. Mr. Cole, please do not give at this stage any opinion, give only the facts.
- A. The vertical members have also lost their integrity, the horizontal beam that has lost its integrity and is sitting on the lower principal beam.
- Q. Can you see the window that is found between rooms 3 and 4 on this photograph.
- A. The windows in fact would be the openings shown in the photograph that is on either side of the beam, let us say, the area to the left of that and the third area immediately underneath the sagged beam. There are in fact four windows: one approximately square on the top left hand corner, two longitudinal immediately to the right and the further longitudinal one immediately underneath. 30
- Q. What are your observations on the beam?
- A. Heavily spalled loss of integrity. 40
- Q. Even the roof beam?
- A. No that is just heavily spalled.
- Q. As far as the beams of the building are concerned did you find any other spot where the beam would be as heavily spalled as on this photograph?
- A. No.

The final photograph on this series is photograph No.10. This is taken from the door way of No.5. You will see on the top right hand side the window opening through which Bigaignon attacked the fire with the Fire Extinguisher. 50

COURT: Bigaignon said, I think the best way of putting it is that the window through which Bigaignon said he attacked the fire.

In the
Supreme
Court

10 A. On the left hand side is the partition wall separating room No.5 from room No.4. Running from left to right at the top of the photograph is the further roof beam and you will see that spalling concrete increases be moved away from the window to the extent that on the left hand side of the beam.

Plaintiffs'
Evidence

No.20
Robert Cole

Q. You had something to say about photograph No.11?

Examination
20th February
1978

A. Yes I would like to refer

(continued)

Q. One moment.

20 Now the witness will make a comparison between photograph 11 and photograph 3(c), my Lords. Nevertheless it would seem that the contents of the premises give a different appearance. This is explained by reason of the fact that the police photographs

MR MOOLLAN: When the photographs were put in, is to my recollection, no question was put to the Police to photograph 3(c) in so far as another photograph which is being given I take it that the witness is not giving an opinion or to give an explanation on matters of which

30 COURT: The witness is merely drawing the attention of the Court to some details on the photos

MR MOOLLAN: But it is that the witness has started by saying that the different appearance may be

COURT: Do you mean that those two photographs are not photographs of the same room taken more or less from the same direction at different distances?

40 MR MOOLLAN: Your Lordships will remember that I did not object to that question.

MR D'UNIENVILLE: What the witness is going to say now is that whilst the photograph of the Police was taken on the very near 7th, this photograph was taken on the 17th, 18th, 19th July and there is some slight difference in one of the beams.

50 At this stage, will you please point out the difference that exists between the two photographs?

A. The principal difference is that when I refer to photograph 11 the first beam coming from the right hand edge of the photograph from the

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Court
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Evidence
No.20
Robert Cole

Examination
20th February
1978
(continued)

back wall showing spalling on both edges. The Police photograph which is of the same beam does not show spalling on the right hand edge where it leads to the top of the photograph.

COURT: Would you show us the beam which shows spalling?

MR D'UNIENVILLE: Would you mark a ring round the spot?

A. My photograph is of a much larger area than your photograph. The beam is not in your photograph. 10

BOOKLET PRODUCED

COURT: The police photographs are not the same apparently. It varied from booklet to booklet.

Q. Now, the question I wish to put to the witness is from the various observations that you have made. What were the conclusions that you drew, what were the difference that you made therefrom. If you did not object to counsel, the witness is going to answer. 20

SIR RAYMOND HEIN: Your Lordships, at this stage we take objection to the witness deponing as an expert on matters of fire investigations. Before he can be admitted as an expert the Court has to be satisfied that he is an expert.

COURT: Perhaps you would like further information not merely the academical qualifications of the witness but also as the practical experience in the fire investigations. 30

MR D'UNIENVILLE: I hope we will prove this aspect a little further. Mr. Cole, you said you had investigated some 2,000 fires in the course of your experience, would you give to the Court the maximum information you can about the experience that you have derived from this inquiry, that you have acquired. 40

A. It is the experience of a practical nature and in arriving in situations where the practical knowledge is not sufficient we are able to make reference to technical sources of information e.g. reference books or in the ultimate if the problem is sufficiently difficult or involves a substantial sum of money we would appoint forensic expert. 50

Q. For instance would you tell the Court where does your own experience stop and preventing you from investigating further. At

what point would you call the forensic expert?

In the
Supreme
Court

A. If there is a critical problem involving liability on policy or involving a possible recovery action.

Plaintiffs'
Evidence

Q. Now in various countries you have visited in the course of your experience have you been to Court?

No.20
Robert Cole

A. No.

Examination

10 Q. This is your first experience?

20th February
1978

A. Yes it is my first time.

(continued)

Q. In the course of your investigations how do you proceed. You work on your own to start with?

A. Yes, depending on what the job involves e.g. if we are working in an oil refinery then I would be accompanied by engineers from the staff of the associate firm who are valuers, surveyors and engineers. If the loss involved the building I would be accompanied by a building surveyor but generally speaking the investigation itself is concerned I would first investigate calling upon any expert that I need if the problem involves technical aspects.

20

Q. When the experts arrived on the spot do you give up altogether or do you work in collaboration with them?

A. I did not give up altogether but I may release most responsibilities to the engineer or the expert.

30

Q. Now in the various cases you have dealt with or rather after acquiring, say, several years experience, are you now in a position to say whenever you inspect a fire where the fire originated from mere observations of the structural damage.

SIR RAYMOND HEIN: That is another question of opinion.

40

Q. I am asking the witness whether in practice does he or not

SIR RAYMOND HEIN: In his opinion

MR D'UNIENVILLE: His observations for his own purpose.

COURT: Besides whether he is an expert or not the Court wishes to know what he does or what he had done in the past.

Q. What we want to know, Mr. Cole, is whether in your reports after attending to the various fires, that you visited whether you always or not always draw an inference as to the spot where the fire starts.

50

In the
Supreme
Court

Plaintiffs'
Evidence

No.20
Robert Cole

Examination
20th February
1978

(continued)

Cross-
examination

- A. This is the principal point. It is extremely difficult to discover the cause of the fire until you know the location and provided you are able to identify the location, your task is relatively much simpler to identify the cause even in a complicated factory process and in my report in the majority of cases one is able to identify the probable cause in a substantial number of cases if you are able to identify all the probable location of the fire.

10

THAT IS ALL MY LORDS

Cross-examined

Xed by Sir Raymond:

- Q. Mr. Cole, in the majority of cases are you sure that there is a police inquiry?
- A. No. For example, in the United Kingdom there would not be a police inquiry unless a death or injury is involved. In Italy, for example, if there is a death as there was in a case in December the official authority enquiries.
- Q. I put to you that every case of fire may have at its bottom a case of arson.
- A. Not every case, one would look at every case.
- Q. Look, if someone has left a cigarette on this table nobody would suspect arson but if fire would break to the building with close doors, whose keys are in my possession, you would admit that I am to be suspected.
- A. I would admit.
- Q. Now there is such a branch of the forensic science which is called fire investigation.
- A. Yes.
- Q. As you have not given it in your qualifications I am sure that you had never had any training or courses in forensic science connected with fire investigation.
- A. That is correct, I had not had any special training. I have got my knowledge through practical experience.
- Q. You have told us on being questioned by my friend: I first investigate and call experts if the problem involves a recovery action.
- A. Yes.

20

30

40

Q. This is a very modest statement on your part I must agree but you state in so many words that if it involves a recovery action you call in the help of experts meaning that you consider that you are expert in the recovery action.

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Supreme
Court

Plaintiffs'
Evidence

A. Yes that is so, in the majority of cases unless the evidence is obvious.

No.20
Robert Cole

10

Q. You state that in your reports in the substantial number of cases you could identify the probable location of the fire?

Cross-
examination

20th February
1978

A. Yes.

(continued)

Q. That is, in the cases especially where you called in experts?

20

A. No. One can identify the location of the fire in a substantial number of cases. The location may be a comparatively small area, may be a large area. It would depend very much upon the size of the premises that has been destroyed. If we are talking of the factory 400 yards long, 100 yards wide that has been heavily damaged it would be more difficult to identify precisely the location of the fire.

30

Q. If a building caught fire and the fire was put out there would not be difficulty in investigating the location, in locating the source of the fire. It could not be on the adjoining room.

A. That is so.

Q. Now, this I take it as essentially a recovery action. The Insurance Company has paid the insurance and is dealing through Bata to recovery.

A. That is so though there are uninsured losses.

Q. In other words, they were not insured to the full amount.

40

A. Not entirely. They were not insured to the full amount.

THAT IS ALL FROM THE WITNESS
YOUR LORDSHIPS

In the
Supreme
Court

No. 21

ADDRESS BY SIR R. HEIN Q.C.
ON EVIDENCE OF MR. COLE

No.21
Sir R.Hein
Q.C.
Address
20th February
1978

SIR RAYMOND HEIN: Although we appreciate the full ability of Mr Cole as a claim adjuster, it has not been proved to the satisfaction of the Court that he has acquired expert knowledge either by following some courses of study specialised in placing for investigating the cause of the fire and even in location of the fire. We know that there is such a thing as far as investigation such a branch of forensic science which is known as fire investigation which I take it is exercised by persons highly qualified in that branch. Mr Cole has very fairly admitted that he, in number of cases, investigated on his own to find out if he could locate the sources of the fire that he has considerable experience for the last 20 years.

10

20

The question is: has experience so acquired been sufficient to qualify him to call himself an expert? No doubt, an expert is not necessarily the man who holds a certificate. It may be that some persons after considerable experience along one line can claim, for example, people who can read signatures. It has been held that a man cannot hold a diploma or certificate qualifying him as an expert in handwriting but whenever there is such a branch of science for which one can qualify I submit that a gentleman should not be treated as an expert unless he has followed that course or acquired that diploma.

30

Mr Cole has again admitted very clearly that it is the first instance where his evidence is to be offered in the Court of law as being that of an expert in fire investigation. If he had been considered as an expert in another Court, this Court would certainly not be bound by the other Court but still it might have been some intention that a judge somewhat in the world may have considered his experience. As it is we know that he has never been offered as an expert witness in this branch of science.

40

It has been held in some cases that

"a police officer who has a considerable experience of investigating traffic accidents is not to be considered as an expert for the purpose of reconstructing a particular motor accident."

50

I am quoting from Cross on Evidence, Library Edition, p.386 in the case of Nickisson v. The Queen, 1963, W.A.R. 114. Your Lordships will also find in Phipson on Evidence, Library Edition, paragraph 1312

In the
Supreme
Court

No.21
Sir R.Hein
Q.C.
Address

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1978

(continued)

10 ".....on a trial for arson, evidence of experiments, under similar conditions to those in question, made by an officer of the Fire Brigade since the commencement of the trial, is admissible to show the manner in which the building was probably ignited."

20 So, if a gentleman who practises the art of science gives us the result of his experience after a practical test that would be admissible but if a police officer who attached to the traffic branch investigates 2,000 cases in his career of motor-car accident he would not be called, in my submission, an expert who
30 tried to establish responsibilities for an accident. I therefore submit that Mr Cole again on past experience along in the circumstances he has described that is to say that the assistance of an architect or a surveyor or a job contractor, a valuer, an engineer or other experts. I would call your Lordships' attention to the part of the evidence of Mr Cole when he was asked to described in what
circumstances his experience was acquired he said: if the problem is sufficiently difficult or involves a substantial sum of money..... what is the substantial of money is, of course, a very disputable thing, but if it involves a substantial sum of money he would appoint a forensic expert, this is a recovery action. It involves, in our submission, of course a substantial sum of money and no sort of qualified forensic officer could, in our view, venture to express his opinion as an expert.

40 COURT: Thank you Mr Hein.

No. 22

REPLY BY MR. DAVID Q.C.

No.22
Mr David QC
Reply

20th
February
1978

50 Mr David, Q.C.: I have listened to my learned friend, Sir Raymond Hein with great interest. The very first observation I should like to state is that in accident cases we regularly have police officers who are asked to express an opinion as to the point of impact, that is something that we should keep in mind when your Lordships will have to consider the question of the competency of Mr Cole which is, of course,

In the
Supreme
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No.22

Mr David QC
Reply

20th February
1978

(continued)

a preliminary question for your Lordships to decide. In this respect, however, may I also refer your Lordships to Phipson, Library Edition, Note 1285 under Competency and Credit.

"The competency of the expert is a preliminary question for the judge and is one upon which in practice, considerable laxity prevails."

I must not be taken to be inviting the Court to adopt any measure of laxity but I just thought that, as my friend had already referred to your Lordships, Phipson, I would draw your Lordships' attention to this passage in Phipson.

10

"Though the expert be 'skilled' by special study or experience, the fact that he has not acquired his knowledge professionally goes merely to weight and not to admissibility".

So, in the present instance, my Lords, Mr Cole has explained how in the last 22 years he has been able to acquire experience not only in a practical way by himself but also from association with qualified experts whom he has had to call in difficult cases or in cases involving considerable amount of money. That is how therefore he has acquired his knowledge, his experience in the way of his own profession which is that of an insurance adjuster where the location of fires for instance in order to determine the cause of fire as Mr Cole has explained in the crux of the matter.

20

30

Therefore I leave my Lordships to give a ruling to that question.

No.23
Sir R.Hein
Q.C.
Reply

20th February
1978

No. 23

REPLY BY SIR R. HEIN Q.C.

Sir Raymond Hein: May I refer the Court to paragraph 1285. Reading it as my friend has is only to evade the question.

40

"The competency.....
.....
..... prevails".

Though the expert must be 'skilled' the expert, we must first find out that he is an expert. "Must be skilled by special study or experience", which to my mind means special study or special experience. The fact that he has not acquired his knowledge professionally,

10 that is to say, in the branch in which he is a professional would not discard his evidence, oh no, he never acquired it as an amateur. A person in spite of a qualification acquired special knowledge by special study and special experience of another part or branch of science, he could be considered as an expert. Before he goes to the weight to the admissibility, the Court must be satisfied that he is an expert or not. If it is just experience, working in collaboration with an expert which may allow one to call himself an expert, I submit that the solicitor's clerk who has been in the Chambers for something like 20 years or 22 years could be called an expert in laws.

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Supreme
Court

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Sir R. Hein
Q.C.
Reply
20th February
1978
(continued)

R E C E S S

No. 24

INTERLOCUTORY JUDGMENT

IN THE SUPREME COURT OF MAURITIUS

Record Nos: 19194 and 19640

No.24
Interlocutory
Judgment
20th February
1978

In the matter of:

- 1. Bata Shoe Company (Mauritius)Limited)
- 2. East Africa Bata Shoe Company Limited
(Mauritius Department)

Plaintiffs

v.

The Central Electricity Board

Defendant

AND

Overseas Glove Factory Limited

Plaintiff

v.

The Central Electricity Board

Defendant

.....

The mere fact that Mr Cole calls experts to advise or assist him in difficult or important cases does not debar him from setting himself up as an expert. Similarly, a general practitioner

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Supreme
Court

No.24
Interlocutory
Judgment

20th February
1978

(continued)

who calls in a specialist to advise him on a difficult diagnosis is not prevented from giving his own opinion as to the cause and nature of the disease. Nor is an academical qualification essential, if the witness has built up a fund of personal and practical knowledge which qualifies him to give a useful and informative opinion on the subject. In the present case, Mr Cole in a career covering 22 years has investigated about 2,000 fire cases. Further, he has had occasion to associate and collaborate with specialists, and from such association one may derive as much practical knowledge as from sitting on the benches of a university and taking a degree in the subject. Finally, the existence of a specialised body of fire investigators is not an objection: in many cases, persons who had acquired experience not directly connected with their profession have been admitted as experts. In our view, the lack of academical qualification of Mr Cole goes only to weight, and not to admissibility. We therefore rule that he is competent to give his opinion as to the point of origin and cause of the fire.

(Sd) M. RAULT
Acting Chief Justice

(Sd) P. de RAVEL
Judge

20th February, 1978

30

EVIDENCE OF ROBERT COLE
(continued)

In the
Supreme
Court

Plaintiffs'
Evidence

No.25
Robert Cole

Examination
(continued)

20th February
1978

Monday 20th February, 1978

Bata Shoe & Anor v. Central Electricity Board

AFTER RECESS

Mr d'Unienville continues the examination of
Mr. Robert Cole (still under oath)

10 Q. Mr Cole, I go back therefore to the point
which was agreed when you started drawing
inferences and making conclusions, or
observations. First of all could you tell
the court whether the conclusions you
reached, you reached them entirely on your
observations, or partly from your observa-
tions and partly from what other witnesses
have told you?

A. Partly from observations and partly from
information afforded to me.

20 Q. You have been sitting in court from the
beginning, will you please, when you are
going to depone, refer to the witnesses
on whom you base your conclusions at the
time. First of all you said that you
looked for the location as a matter of
practice.

30 A. Yes, this is the first procedure. I
arrived at the conclusion that the fire
originated in room No.4. The reasons why
I reached that conclusion were as follows:
the photograph in the structural frame we
saw this morning, photograph 15 clearly in
my opinion shows that the main fair area
was at the rear of the premises. Photograph
27(9) and (16) in my opinion show the site
of the fire into one of those three rooms,
3, 4 and 5 and in addition it shows that
the fire was probably in room 4; that is
so far as No.27 is concerned; it shows less
40 damage to the partition, the concrete
partition between room 3 and room 4. Photo-
graph 10 shows that the effects of the fire
up to the ceiling of room 5 diminished.
I conclude from that that the evidence shows
a clear probability that the seat of the
fire was in room No.4. Having examined that
position I regarded the inference that could
be obtained from the hard board partition
that separated the raw material store from
the finished goods store. The fire resistance
50 or spreading in a single faced hard board

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No.25
Robert Cole

Examination

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1978

(continued)

partition is a matter of minute according to the intensity of the fire; it is a matter of minute in the event of a reasonably serious fire even of small dimension.

The fact that the fire came through the hard board partition in accordance with the evidence of Mr Lowtun, that fire could not have been in area 6, that is, outside room No.3 and room No.4 inasmuch as the door was doubly resistant, that is double faced door. 10

This could have a fire resistance of about 30 minutes. In rooms 1 and 2 or the corridor outside room 4 the fire proceeded first through the hard board partition. The fire load in the premises was evenly distributed. There were cardboard boxes. In the raw material store in 1 and 2 you have a great variety of materials including 20 inflammable products and looking at the structure in the store there is no significant variation in the fire load in any particular area.

COURT: Will you please define the term fire load?

- A. It is the ability of the material to generate heat and spread fire. The evidence of Mr. Bigaignon is that he looked through the front entrance door, he also looked 30 through the side door and did not see any sign of fire, but only think black smoke. The evidence is that he then proceeded to the roof of the room adjoining room 5 and it is there that he saw, I believe the word was, a glare and it is there that he says that he saw fire.

If that evidence is accepted, in my opinion that would explode into a great fire in areas 1 and 2, 3 and 5. It was exploded 40 by reason of the fact that for the time he would have seen the fire, in a few minutes, and the action of opening the door, the area would have admitted oxygen which could accelerate a fire. It is dangerous in fact because when a fire is confined to a room, you open the door quickly, it generates the oxygen and helps the fire to generate.

The evidence of Mr Dauharry, if it is accepted, is that rooms 3 and 5 were not 50 entered for about one week prior to the fire. Therefore you have to situate that so far as 1 and 2 are concerned to the front area as any fire would have been seen from the front entrance.

By adding oxygen there is acceleration of the fire more and as it has been in close proximity of the door. If the fire had started there it would certainly have gone through the hard board partition between 2 and 7 and would not have travelled the round corner to come through between 6 and 7, that is, outside room 4. It is also possible to observe that the fire was noticed at 1.20 p.m., there are windows in the front premises and it is reasonable to make the observation that passers by during that period would have seen the fire without the door being open; even it was closed.

The same sort of observation can be made regarding room No.3 with the addition that in accordance with the evidence of Mr Dauharry the room had not been entered for one week prior to the fire. That would be area 6 and rooms 4 and 5. So far as 5 is concerned, that also has been the subject of previous evidence. The additional factor is that Mr Bigaignon, if it is accepted would not allow people to fight the fire from that position if it is immediately underneath the window through which he was looking at the fire, there would be the oxygen factor and excessive heat and the fire that could evidently arrive and serious fire, would be located underneath.

Mr d'Unienville: The observation you wanted to make this morning, when comparing photograph 11 with the police photograph C3 looking in different position?

A. The observation I wished to make is that the photograph was taken on the 7th July. My photographs were taken approximately or at least 10 days later. The mark here on the edge is clearly shown, whereas in my photograph that same edge is not so. The explanation of this is that the police photograph was taken shortly after the fire. The photographs indicate that the edge had been damaged in the fire; it has not in fact fallen into the fire and when the building was highly damaged that fractured surface which already existed at the time the photograph was taken had finally been more damaged.

The seat of the fire being there, seen from that beam and comparing it with photograph in rooms 3, 4 and 5, it is indicative that the fire on that beam had not been for such a long period.

The other observation on the photograph is

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that at the time Mr Halwachs took these photographs, number of days have elapsed and the appearance of the contents or debris is different from that shown from the police photograph. This is explained by the fact that the space between the gangway which has been cleaned out running to the left of photograph 11 probably for access may be for the draining of water. It would seem that this is so from the turning of debris whether by the Fire Brigade or by small outbreaks of fire continuing after the 6th July. There was something there, as it may have been disturbed for number of reasons. 10

- Q. You were going to say something on photograph 9 and I stopped you; please look at photograph 9 taken inside room 4. What do you infer from that?
- A. There was complete damage. If you compare it with the damages adjoining that room, it clearly indicates, in my opinion, that the fire was in close proximity to that beam. Relating that photograph to the photograph on the right and the photograph on the left, it comes to conclusion that it has moved on. The fire was intense there. The origin of the fire can be confusing if you have an occupancy with an extremely heavy fire. If you have heated iron in one room of concrete, the heat is very great and we must think that on the other side of the room there is the pile of fine timber, the fire can easily start here, run quickly, reach the timber and intensify itself and all that was left here is a pile of nylon very lightly damaged. The situation did not arise, there were obviously variations in the fire from one place to the other. Looking at the situation there was a sufficient extremely variety to confuse that situation. 20 30 40
- Q. The distribution was not even?
- A. I would not be able to help, concerning the load of the fire. You have rubber soles, you had leather and so on. The structure facilities were varied. There was one store for each category, they were varied and distributed. 50

Cross-
examination

Cross-examined

XED by Mr Moollan :

- Q. Mr Cole, if I get the gist of your conclusion, it is to the effect that the area

of rooms 3, 4 and 5 seems to have been subjected to the most intense heat?

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A. That is true.

Plaintiffs'
Evidence

Q. Which in turn leads to the fact, as you have shown, that the beam has been disintegrating looking at the structure and the appearance of the premises?

No.25

Robert Cole

A. Yes.

Cross-

examination

10

Q. I believe that you have also come to the conclusion that the intensity of the heat does not necessarily follow from the origin of the fire?

20th February
1978

A. The intensity of the heat does not necessarily coincide with the origin of the fire?

(continued)

Q. In fact that will depend solely on the substance which feeds the fire, the intensity?

20

A. The intensity of the fire will depend on the substance, yes.

Q. Mr Cole, the photographs taken by Mr Halwachs; will you please look at photograph No.19 and compare it with photograph C22?

A. I am sorry, the photographs cannot be compared.

30

Q. If you look at your photograph, you will see, by the opening of the bottom left hand corner which would represent a door leading to room No.4 and to the right of it would be the location of the fuse box plugs. Do you notice in your photograph that round the two plugs you have two black circle marks. On top of the plugs you can see four parallel strokes which we do not see at all in photograph C22. Do you have an idea who placed those markings on that wall?

A. No I cannot remember.

40

Q. You will notice that underneath those two plugs in photo C22 the wall has no marking in the police photograph, whereas in your photograph taken under your direction, you can find all sorts of black markings. Have you any idea which who placed them there?

A. I have no idea, I cannot remember.

50

Mr David puts in extracts from four log books of the CEB. The Poudriere *Section, records of electricity consumption, all declared connected loads in respect of other industries, and the relevant application forms.

Marked "Q", "R"

In the
Supreme
Court

No. 26

EVIDENCE OF HENRY WALTER
TURNER

Plaintiffs'
Evidence

No.26
Henry Walter
Turner

On Thursday the 23rd day of February, 1978
at 10.30 a.m.

Examination

Before the Honourable M.Rault, Acting Chief
Justice

23rd February
1978

the Honourable P.de Ravel, Puisne Judge

DAVID, Q.C. calls and examines:

Mr Henry Walter TURNER (sworn) Physicist and 10
Chemist, residing at Trou aux Riches.

Q. You have set out in a sheet of paper,
copy of which has been communicated to
my friends for the defence, all your
qualifications and experience.

A. Yes.

DOCUMENT S put in

Q. You are a B.Sc. in Physics, Chemistry
and Mathematics and a B.Sc (Special) 20
in Chemistry. You are a Fellow of the
Institute of Physics. You have experience
in Applied Industrial Scientific Research
at E.R.A. which means?

A. Electrical Research Association of the
United Kingdom.

Q. You have experience in teaching and at
E.M.I. which means?

A. Electrical and Musical Industries Limited.

Q. From 1958 onwards you have had experience
in switch and control gear department 30
becoming head of department in 1971 and
you were promoted to your present post
of Scientific Adviser Power Engineering
at E.R.A. You are an active Committee
member of the B.S.I.

A. British Standard Institute.

Q. And I.E.C. committee.

A. International Electrical and Technical
Commission.

Q. On fuses and switch gears since early 1960's. 40
You were the Chairman of the B.S.I. working
group concerned with amendments to BS3036.

A. BS3036 is the standard which applies to
fuses of the rewirable type which are
used in the device which we are discussing
today.

	Q.	You are experienced in research work on fires caused by electrical faults. You are the external examiner for the degree of doctor in philosophy in the field of fuses and have been invited to open one session and chair another session of the first international conference on fuses.	In the Supreme Court
	A.	Yes.	Plaintiffs' Evidence
10	Q.	You have published as co-author - in fact who was your co-author?	No.26 Henry Walter Turner
	A.	My wife, generally, Dr. Clara Turner.	Examination
	Q.	So you have published as co-author more than 100 technical papers and reports, many of which are directly related to the subject matter of the present case and which are based upon your own research. You are internationally reputed as an expert in the field of fuses, electric contacts and temperature rises.	23rd February 1978
			(continued)
20	A.	This is true.	
	Q.	You are the U.K. delegate to a number of international electro-technical committee working groups studying problems in these same fields. You are the present Chairman of the International Fuse Club which is a world group of specialists researching into the basic phenomena of fuse operation considering theoretical problems not yet properly understood.	
30	A.	That is correct.	
	Q.	You were requested by Messrs Burgogne and Partners in the person of Mr Maisey to carry out certain tests on a Henley fuse unit?	
	A.	Yes, this was in 1974.	
	Q.	You have brought with you the fuse box on which you carried out your test?	
	A.	Yes. I believe it is in Court.	
		Exhibit 4 put in	
40	Q.	As a result of your test you have written a report which has been communicated to the defence and which you now put in.	
		Document T put in	
	A.	I do.	
50	Q.	Turning to this report, perhaps I could ask you, first of all, briefly to explain to the Court the functioning of a fuse box and of the fuse wire and secondly, explain summarily the tests that you carried out before we proceed in greater detail to an analysis of the report?	

In the
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Plaintiffs'
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Henry Walter
Turner

Examination

23rd February
1978

(continued)

A. A fuse is a protective device which is designed to operate by means of the fusion, that is to say, the melting of one of the specially designed components, in this particular case, a fuse wire, to disconnect a circuit which is being loaded at a current in excess of the current limit which operates the fuse, that is to say, which causes the specially designed component, the fuse wire, to melt. This melting of the fuse wire is the means by which a circuit which is over-loaded is disconnected and it would be undesirable if it should do this at the current which the circuit is normally required to carry continuously and consequently a fuse is normally given what is called a fusing factor which is a multiple by which its rated current must be exceeded in order to cause actual fusion. 10

Court: And the accepted safety margin being 1.2 or something. 20

A. It varies with the type of fuse link, with a class p fuse link- I am talking of the British Standard reference - and perhaps it would be better to say that for one particular kind of fuse link a factor of 1.2 is possible. This is a special cartridge fuse and a normal cartridge fuse would have a fusing factor, between 1.2 and 1.6 times the rated current. the courser type of protection afforded by these wires is such that it is necessary to have a fusing factor of approximately between 1.5 and two times rated current and, I think, it will be clear from our discussion today that this particular unit normally began to fuse at very long times with currents exceeding 1.5 times its effective rating when overwires. I could say that the reason for the operation on overcurrent, that is, excess current, being rapid is that the heating produced in the fuse wire is proportional to the square of the current multiplied by the resistance of that wire. Let us say I is the current, R is the resistance and T is the time, then the quantity of heat generated is I^2RT . Consequently if the current is increased by a fraction, it is the square of that additional current to produce very much more than proportional heating and since the wire, if it is of copper, is 5 times the resistance when at the melting point than it is at room temperature, approximately, the power dissipated in watts in that element is much higher at the point of blowing than it would be at its rated current. As an illustration of that, we have calculated the watts dissipated in this fuse link when correctly wired. It is 30 40 50

10 approximately 6 watts and as it approaches
the point of blowing, when incorrectly
wires, it exceeds 20 watts. A similar
calculation for two strands of 18 gauge
fuse wire which were used in the incident
and in our experiments shows that when
approaching the point of blowing, the
dissipation is 40 watts instead of 6. If
I could conclude so as not to worry the
Court with too much technical detail, I
feel, however, I should make one more
point, that a fuse element or a fuse
element or a fuse wire, since it has to
melt due to the current passing through it,
it is necessary for this heat to be put
into it and it thus takes time to heat it
up to the melting point and at the same
time the heat is leaking away into the
20 apparatus. Consequently for a current
which only just exceeds the current which
would just make the wire blow, for that
current, a long time would be taken for
the fuse element to heat up to its melting
point, whereas with a high short circuit
current the square of the current is
correspondingly very much higher and the
fuse may operate in less than one thousand
a second, that is to say, while operating,
the wire may melt in less than a thousand
30 a second. The time, therefore, is very
short for high currents and very long for
a current just exceeding its minimum fusing
current.

Q. So if we take the present instance, the
information on which you have been working
would be that the fuses were of the
rewirable type?

A. They were.

40 Q. And should have been limited to how many
amps?

A. The fuse was wired with an element of maximum
rating of 60 amps which was achieved by the
use of a number 17 gauge wire size inserted
in the box.

Q. Do I understand that the recommended fuse
wire gauge was that of 17?

A. Yes, this is correct.

50 Q. If I understand you rightly, what you are
saying is that this gauge of wire is to
give protection. Could you explain a little
more to the Court the process of protection?

A. The process of protection is as follows -
The current flows in the circuit being
protected to the consumers who are using the
current. It also flows through this piece
of wire in the fuse box and if the consumer

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(continued)

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uses more than the fusing factor times the rated current for a sufficiently long time by overloading the circuit, then the fuse wire will blow and disconnect its circuit and will signify to the electrician who is required to replace the fuse that that particular circuit rated current of 60 amps has either been continuously overloaded in the way in which I have described or alternatively that the circuit has been subjected to a short circuit fault. 10

Q. Perhaps, at this stage, it would be the appropriate moment for you to tell us very shortly about a short circuit?

A. By a short circuit, in this context, I mean a connection between the live wires or between the live wires and earth which should result in a larger current flowing because of the fact that the connection is a direct connection between those two wires due to some fault or due to a person doing something of an incorrect nature such as having accidentally shortened two wires with a screw driver or some other action which creates a short circuit as I have described. A short circuit can also occur when insulation is faulty and breaks down so that the wires in the system touch one another or, if the insulation is faulty and one of the live wires touches earth, this causes what is known as an earth fault. In either of these cases should the current exceed the blowing current of the fuse, the fuse will blow and disconnect the circuit and the time taken for it to do so would depend upon the amount by which a short circuit current exceeds the blowing current of the fuse link. 20 30

Q. So what happens if a person responsible for the maintenance of the fuse box uses a wire in excess of the recommended capacity? 40

A. If a person does this he is misusing the fuse box because the manufacturer would have tested that box up to the maximum which he recommends; furthermore if the fuse box was correctly installed, the insertion of a thicker wire means that an overloading condition capable of damaging those circuits would be sustained without the fuse blowing indefinitely and so it would be malpractice to do such a thing. 50

Q. In another words, if you use a thicker fuse wire the current will go on flowing for a long time; more current would be allowed to flow until it reaches the high level that is thus permitted by the use of that thick wire?

A. That is correct. It is possible for a heavier current to flow indefinitely or alternatively, for a very heavy current to flow for a very much longer time because of the heavier fuse wire.

Court: Whenever you talk of wire are you talking about the fuse wire itself?

A. Yes, the element which melts and blows is generally the fuse wire.

10 Court: If there is overloading to the wire coming and going out it will melt as well.

A. If the fuse had been wired so thickly, that is, if the fuse wire was thicker than the other wire, then the other one would act as a fuse itself.

Mr David: You have just used the expression fuse wire permitted. There is the capacity of fuse wire which is recommended by the manufacturer. Could you make the distinction between the fuse wire recommended and the fuse wire that will possibly be permitted?

20 A. Will you repeat the question?

Q. If I understand you rightly the capacity of a fuse wire recommended for a rating of 60 amps is 17?

A. This is correct in this particular equipment.

Q. This is the recommended capacity?

A. Yes.

30 Q. Can that capacity be exceeded without misuse and, if so, is there any capacity which can be permitted.

A. No. It is undesirable to exceed the maximum gauge of fuse wire recommended by the manufacturer. A small gauge of wire may be used to obtain lower current rating and a table is provided with the equipment to connect it.

40 Q. In the particular instance with which we are dealing, we know that the recommended capacity gauge is 17, and evidence will be led to the effect that a two No.18 gauge fuse wire has been used. Number 18 is weaker than number 17?

A. Yes.

Q. What is the relative position between twice 18 and one 17?

A. In this particular unit, the 18 gauge fuse wire is mentioned as the appropriate element for connection in order to obtain a rating of 50 amps. To place a two No.18 gauge wire in parallel will give a current rating

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approaching 100 amps; therefore I say approaching because there will be some slight reduction on the 100 amps due to the mutual heating of the two wires put in together but it could be of that order.

Q. What you have been saying in respect of a thicker wire would apply to a greater number than one, by the total amounting to more than the capacity obtained by the use of a 17 gauge wire? 10

A. That is correct. In fact the unit becomes overwired when the area of the cross section of the wire in toto exceeds that of the recommended rating.

Q. By kind courtesy of my friends for the defence, I am going, at this stage of my examination to put in a copy of the report (Document V) which has been made showing the results of the tests made on their behalf by ASTA which stands for? 20

A. Association of Short Circuit Testing Authorities.

Q. It is Test report No.1056 on short circuit through fault test?

A. Yes, that is how it is described. This, in fact, determines the ability of the fuse to withstand the effects of a larger current, a larger short circuit current passing through it. The fuse should have, of course, extinguished that current very rapidly without any damage other than the blowing of the fuse wire. 30

Q. And the second Test report No.1057 (Document U) is the temperature rise tests. In one of those reports does one see the recommendation of the manufacturer in respect of the use of fuse in the photo?

A. Yes, it is photo 13958 (Document U). Inside the box can be seen the table of recommended fuse wires. If it is turned sideways there is a table inside the box showing the recommended sizes of fuse wires. 40

Court: It is 60 or 40.

A. And the size shows .056 which is the 17 gauge fuse wire.

Court: Where do you read that please?

A. In the table, the size of the wire is given in the first column. It is .056 which is the wire size, which is the dimension of the fuse wire that corresponds to No.17 gauge wire and the current rating corresponding to that is 60 amps and the blowing current 50

stated by the manufacturer is 122 amps but he does not state for what time he has measured that blowing current.

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Mr. David: As we are dealing with this photo could you explain to the Court the difference between the ratings 30-35 and 50-60 amps?

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A. Well, should the user of this box wish to fuse the circuit to a lower rating than the maximum permissible in this box, he is permitted to do so by using a smaller gauge of fuse wire. The box is designed for use at rated current between and including 30 amps and 60 amps and the electrician would then know from this table which fuse wire to insert when he knows the circuit rating of the installation, but you will notice that the highest rating tabulated is 60 amps.

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Q. If one uses the highest rating of 60 amps one would be using one SWG 17 which is of .056 diameter and the current, shall I say, would be 122 amps?

A. At the time at which the manufacturer made that measurement.

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Court: As we are in the same table, I see on the left, 60 amps capacity 250 volts, what does that mean. Does that mean that it can hold a short circuit up to 4000 amps?

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A. It means that the manufacturer would have tested this equipment up to 4000 amps short circuit and, of course, as I explained earlier, the fuse link blows very rapidly when subjected to a higher short circuit current and, in fact, the wire would, under these conditions, exhibit a phenomenon known as cut off. This is so called because as the current, being alternating current, is rising, the fuse melts before the current has achieved its peak value because it is heating so quickly that it has melted and before that peak value is reached, this means, therefore, that with the correct fuse wire in, the current will only have risen to, shall I say, 1000 amps - I have not calculated the exact value - before a cut off. Under these conditions when it does this the wire melts and an arc is created inside the tube, that is, in the asbestos tube, until the arc extinguishes. This is the mechanism by which a fuse link on short circuit carries out its duty. An arc is created when the element melts, the arc generates the voltage in opposition to the supply voltage, runs down the current, so

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the current ceases and the arc goes out. Should however a heavier fuse wire be inserted, the I^2T increases, the current square times the time required to melt the wire - this is the technical measure by which this heating effect is measured. It is also the technical measure by which the heating and damage effect on the circuit are measured. I^2T would be largely resulting in a longer time being taken for the fuse wire to melt and consequently a higher cut off nearer to the maximum possible short circuit level, and with 4000 amps, the maximum short circuit level of the peak current would be 1.414 times this level times any asymmetric character that the short circuit might have, due to the fact that the inductive circuit must have been blowing at the critical point - on wave and a higher current could be reached if the fuse links were overwired.

- Q. What is meant by the expression arcing, could you explain?
- A. In the popular mind there is great confusion between arcs and sparks and so it would perhaps be as well to explain the nature of an electric arc at this stage. When a pair of contacts are separated, an electric arc is set up between them, and if the electric light is switched on the wall you can frequently observe the flash as the switch is operated. This flash is not a fault in the switch, it is the real switching mechanism because it is the electric arc which provides an increasing resistance which helps to extinguish the electric current. The electric arc is a means by which electricity is conducted in the air space between those contacts during the period at which the current is coming down. It consists of a flow of current in the air spaces in which charged particles (ions and electrons) are moving between the two contacts. The state of the air when it is ionised is such that it is a conductor just in the same type of way that a piece of wire is a conductor except in that area where they are conducted by ions as well as electrons and while the air is at a very high temperature 1000 of degrees centigrade and if there are sufficient of these ions the electric arc will continue to glow. With alternating current the voltage oscillates between positive and negative and in so doing it passes through zero of voltage. During this time as this zero

is approached, the current will decrease and the heating produced by the current itself which produces extra ionization is also decreased. Also at the point of zero current, the movement of the charged particles ceases or slows down. At this point, therefore, it is necessary, if the arc is to re ignite, that the voltage must be sufficient to make it do so. If that space cools down sufficiently before the voltage has increased in the positive or negative direction by a sufficient amount, then the arc is extinguished and the circuit is disconnected. If, however, there is enough hot gas and ionised gas left when the voltage came on again, then the arc is re-established and more ionisation occurs and the current continues to flow and such a switch will continue to arc and burn out on the wall. In the fuse link it is exactly the same, except that the switching, in this case, is not the separation of contacts, but the melting of the fuse wire into little particles which produce a chain of arcs which extinguishes the current in exactly the same way as the switch.

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30 Q. In fact what you have been describing, perhaps in going through the ASTA report, I think, the short circuit report, there is something which you have been describing?

A. This is test reference 38JS02 and the second is 157602. The first sheet is the prospective current. It shows the current which is flowing into the circuit when short circuit is applied to it, but in the second oscillagram one can see the current and voltage when the fuse is in operation.

40 Q. My friend suggest that we should call the ASTA reports Nos.1056 and 1057 ASTA A and ASTA B. You may go on.

A. The way in which the fuse should operate is illustrated by the lower current trace. The first part of the lower current trace which is, at the very bottom, the dark trace that can be seen in the oscillagram, one can see how the current rises to a point at which arcing commences within the fuse, then decreases and the current stops. I am talking about the first part of the bottom trace. This is how the fuse should operate. Unfortunately during this test more arcs came out than could clearly be extinguished within the asbestos tube and the fuse was caused to ignite across other parts of the box as has been described in the report and one can see the current

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re-establishing itself on this bottom
oscillagram and melting here, and arcing
until it goes out at this point - I am now
talking of the nine loops, 3rd line - and
arcing can be seen before the current was
finally extinguished. This means that the
fuse would blow and at the first current
zero, the current went out, the arc started
against for another loop to obtain the
current zero, went out and started again;
it did this 9 times in succession. 10

Q. Is this phenomenon normal and to what is it
due?

A. The phenomenon that is observed here is
the phenomenon of flash over between live
metal within the box, between different
samples of live metals or between one or
other live parts to the case of the box.
This clash over is the transfer of the
arcing which should have been within the
asbestos tube on to other live parts within
the fuse box. 20

Q. Let us go to your report. Did you do
any short circuit test?

A. I was not asked to do so.

Q. You did the temperature rise test?

A. I carried out the temprature rise test.

Q. Could you summarily describe to the Court
what you did?

A. I received from Mr Maisey the box which
is shown in Court (Exhibit) and
following his information, I used twin
7064 PVC insulated sheathed cables passing
into this box to represent the outgoing
cables in the incident we have today
before the Court. I could not obtain the
exact wire which is described because it
was obsolete but could only obtain a type
of exactly the same cross section with an
additional 7/052 bare copper conductor
also included. This would tend to make
results low because heat was conducted
away by this copper conductor. Although I
do not anticipate this would make a very
significant effect, I passed electrical
current through the fuses with one fuse
at a time or with three fuses in its series
in order to determine any heating effects
which might be relevant to this present
case, in particular to answer the five
questions which you will find on the first
and second pages of my report (Document T). 30
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Q. Could you read them?

A. The first question is :

1. Whether the steel plates carrying this tapped hole would become heated by eddy currents due to the presence of the separate (un-neutralised) phase cables.

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The eddy currents are generated in the metal by the passage of current carrying conductor through them. Due to the magnetic field of that conductor carrying current it was thought that this might have an effect, but it was felt that this effect was negligible.

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2. Whether the cables would move relative to the sharp edges of the unbushed tapped holes due to the current flowing in the cables.

Some movement was detected but again it was felt that this was not something that would be significant in this case unless the insulation has become damaged or soft.

Q. While you are talking of damage to insulation and it becoming soft, in what sort of cases could this happen?

A. This could happen if the insulation has become overheated and an excess electric current flows for an excessive time. And the third question that was asked was -

3. What would be the temperature rise due to conduction from the fuse as well as the current flowing in the cables themselves of the outgoing twin 7064 cables when carrying the following current continuously - (a) 60 amps (b) 90 amps (c) the current which two 18 SWG fuse wire can carry continuously just short of melting.

As a result of those tests I was asked to assess -

4. Whether the cable insulation or any other insulation was likely to be damaged by temperature.

5. What would be the effect, on the temperature of the cables, of damage by arcing at one of the fuse carrier contacts between the contact blades and the retaining contacts in the fuse base.

These can be seen on photo No.2 marked A - the contacts can be seen marked A on photo No.2. Incidentally they consist of two units of springing conductor which spring into a socket contact in the fuse base.

Q. And photo No.3 shows?

A. It shows the fuse base. In fact you can see this unit, it is the base into which those

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fuse carriers are inserted in order to make contacts and those contacts marked B serve to retain the fuse holder in position and they are further held in position by the lid of the box which is firmly screwed up on top of them. Going back to photo 2 can be seen how the wire is fastened to the screw on the top right-hand corner of the photo and is taken through the asbestos tube in the centre over to the other side where it is fastened to the other contact. The asbestos tube is placed there in order to contain the arcing during the blowing of the fuse and to retain any molten metal.

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Q. You have mentioned in your report at page 2 just before describing the method of test what would happen if these contacts were burnt by arcing?

A. In fact I have answered Q.5 in that respect. 20
If the contacts are burnt by arcing that would clearly hamper both functions (a) of retaining the fuse properly and (b) of making good contact at that point.

Q. And you proceeded to your tests?

A. The tests were carried out in the following way - The temperatures were measured by thermocouple and Fig.1 is a diagrammatic representation of the way in which these tests were done. Fig. 1 is not to scale, it merely represents the way the tests were done. It can be seen on Fig. 1 that, for example, at point marked A, it is at the outgoing terminal of the lefthand fuse and thermocouple was placed at this point to measure the temperature. I should explain. Thermocouple consists of two pieces of dissimilar wires which produce a voltage, a tiny voltage proportional to the temperature difference between that particular junction of dissimilar metals and another one elsewhere in circuit. Consequently it is possible to measure the temperature at a point while attaching thermocouple to that point and measuring the tiny voltage. We use this method and measure at (a) (b) and (c) the temperatures of the outgoing terminals of the left fuse, middle fuse and right fuse respectively and (d) the temperature of the neutral link which is part of the metal used in the actual unit for the connection. We also had a roving thermocouple to measure temperatures externally and in the unit. By parts I mean the holes in the tube through which the cables were inserted. We used the roving thermocouple because we wished to find the highest temperature in

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10 this region. We measured the temperature of the exterior of the cable sheath near the exit on the right; we measured the highest exterior temperature of the fuse unit by moving the thermocouple about.... and similarly we measured the temperature of the air in the middle exit port and the neutral exit port. I would like to point out on this page 3, 2nd column at (b) Test at 160 amps - which should have been marked detached thermocouple. This meant that the temperature 102° which was the final temperature - all temperatures in the table are final ones as far as it was possible to measure - was lower than earlier temperatures when the thermocouple detached in the first measurement at 160 amps. Thermocouples were attached by solder and the solder melted in this particular case but we have recorded the final temperature from measurements made beforehand in this particular experiment, the middle fuse was not the highest temperature we had measured in the outgoing terminals in this particular case. The reason is we have taken as the maximum total temperature at 160 amps test of 222°C which will be seen to be so as follows: (a) 196°C plus the ambient temperature 26°C giving us a total temperature of 222°C. The figures in the table are temperature rises.

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30 Q. The total 222°C was made up of two components which are?

A. In the bulk of the table (a) (b) (c) (d) are recorded the temperature rises and the maximum one 160 amps marked at (a) 196°C above ambient but the ambient temperature can be seen at the bottom of the test marked 26°C, total 222°C. In the same way the figures are recorded in the following table. It is interesting to note that for a current of 140 amps a higher temperature 238° total was obtained on a day that was cooler.

40 Q. Is there a reason for this 140 amps to obtain higher temperature.

A. There are two reasons: the first is that the unit was capable of withstanding 140 amps much longer than it could with 160 amps and the second reason is that these were done in the order shown here and by the time they had completed 140 amps test the contacts in the equipment were beginning to show signs of oxidation in the last test done in the unit. If the unit is examined subsequent to my testimony, you will be able to observe the oxidation that was taking place into the contacts.

50 Q. Could you show us please?

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It is interesting to note how oxidation has taken place. The unit was examined when new, fresh from the manufacturer, and the contacts were found to be firmly gripping on all sides when we started the test, and quite clean, in new condition. We did not measure the contact force that was being exerted on each contact because no electrician would do that but he would ensure that the links were coming in smoothly and easily and gripping, firm enough to show good contact was made. At the conclusion of this test there was oxidation taking place and also some oxidation at the fuse link terminals as well, as a result of the temperature experienced during the test. 10

Court: Did you make the same interval between each test? 20

A. The tests were carried out mainly on different days, but I think I can tell from the temperatures that they were in the order shown, and although I have no record, I think it is clear that these tests were on three successive days or subsequent days, that is to say, the temperature is decreasing as time goes on. If they were done immediately afterwards the ambient would be expected to have rise, but we have no record of that which I apologize. 30

Court: The tests were not carried out immediately.

A. No there was a time interval between.

Mr David: You were referring to page 3 of the report.

A. I thought I had some more information from which I could confirm Your Lordships' question.

Q. Before you turn to another point you were just referring to the box on which you did the test, were there any effects in respect of temperature? 40

A. The contacts at the conclusion of the test, particularly on the middle fuse do not feel firm any more particularly on the bottom contact, middle fuse. This is varied from fuse link to fuse link but this is to be expected because the degree of deterioration that would occur would vary with the degree of contact at each contact blade. There is some variation in the manufacture. That means that one contact would deteriorate at a faster rate than another when overloaded. 50

Q. Briefly what would be the effect of deterioration in the contacts?

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10 A. To explain that I would go back to the heating I mentioned before, the I^2R , the square of the current times resistance, you will recollect this formula which I mentioned before. We are working in the same region of current and the heating according to current is proportional to the square of the current and that would be the same square but the resistance by which we multiply is at the contact, the contact resistance itself, and if the resistance of the contact is increasing, then the energy dissipated in that contact, that is to say, the watts that are going into that contact to overheat it, are increasing also proportionally to the resistance so that as the contact deteriorates so its resistance increases and it is heated more severely. Going from page 3 and 4, we know that some tests that were carried out - and these were actually carried out before the test on page 3 - these were tests to see the effect of using one or two fuse wires because the fact of using two fuse wires alone does not in itself create higher temperature. If the current is the same, in fact if you use two fuse wires at 90 amps, for example, you see that you get a lower temperature at 90 amps than you had for short time with one fuse wire, the reason being that the resistance of the two fuse wires is less. The problem is that it is possible to sustain some much higher currents with the double fuse wire, in fact, whereas the single fuse wire could sustain 100 amps for only two minutes and the double fuse wire would sustain 170 amps for 3 minutes. However the maximum temperature that the currents attained were slightly higher than the maximum temperature of the two wires with only one-phase energised, the maximum temperatures obtained are 225°C in bottom righthand corner of the table. It is about the same as that that was observed with a three-phase energy in the test in which this was done in that way so that clearly any overheating effect in this fuse box is primarily resulting from the heat generated in the fuse links and in the fuse wires themselves plus any contact heat at the contact where the fuse is pushed into position and the conclusion on page 5 is substantially what I have just said.

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Q. Your test lasted a few hours?

A. My tests were at the most, I believe, 145 minutes, we could have achieved longer

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higher temperature rises by longer duration but it was inappropriate to simulate heavy overloading lasting longer than that period in an industrial arrangement because the loading would probably vary in practice and overloading would probably last for two or three hours at the most.

- Q. If the tests had been carried on for a longer period what would have been the effects of the prolonged heating? 10
- A. If the heating had been prolonged for a longer time that is for an hour or so, the temperature would have risen higher, as I explained, but if however we had repeated these tests every day for several days, for example, then the effect of heating repeatedly would be that oxidation and other damage to the contact so produced would have been likely to cause deterioration of the contacts resulting in a higher contact resistance, $I^2 R$ in the contacts and higher temperatures than those which we have recorded there. 20
- Q. Any effects on insulation?
- A. The temperature attained here are considered too high to expose PVC insulation in fact to about 100° too high, it is too high for sustained exposure of PVC insulation. If the temperature were higher still then the insulation not only deteriorates, softens, but it would soften to such an extent that it would flow (photo 4). 30
- Court: Roughly speaking, PVC insulation is expected to stand what heat?
- A. It depends for what time, for a very long period 120°C . The IEE have debated temperatures for a long time of around 120°C , and for a very short period of less 5 seconds 160°C or 165°C . These temperatures were, of course, much lower than temperatures attained in this case. The Institute of Electrical Engineers in Great Britain recommends that the temperatures be kept below 115°C . Below this must be given a margin of safety because in the Wiring Regulations it is suggested that above this temperature the insulation would begin to deteriorate and produce corrosive gas which may attack apparatus. 40 50
- Mr David: You have just mentioned temperatures attained in this case, what do you mean?
- A. The temperatures attained in these experiments I should have said that, and also

the temperatures attained in the ASTA report test are of a similar order.

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Q. Would it be appropriate, at this stage, for you to compare notes with the ASTA report?

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10 A. It would be interesting because there was a remarkable degree of closeness in the result considering the fact that in the ASTA test the conditions were somewhat different possibly on the basis of different information they used cross section of outgoing conductors, they also did not use PVC insulated conductors as such but used solid conductors insulated. A comparison of the ASTA test shows the extent to which the crosses of the ASTA results expressed in terms of current and temperature corresponds to the current and the crosses and circles of the highest temperatures recorded in the test, and you will notice 80 amps ASTA test and 120 amps ASTA test, the line connecting those passes into the centre of the ERA results and because of the conditions the 150 amps ASTA fall below the results obtained in ERA and I think this can be explained.

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20 Q. First of all when the ASTA experts used a two SWG 18 wire, will you look at test No.3 (Document U) which I think lasted from 10.30 to 10.46?

30 A. This particular test was carried out with two strands of 18 gauge wire and the wire was found to have blown after 16 minutes at 10h.46, the temperature then retained was outgoing terminal temperature maximum 204°C. We can only compare outgoing temperatures because this was, as far as we are concerned, what I was asked to investigate on my test. The ASTA tests were also concerned with the incoming temperature, for that reason, filled the bottom of the unit with filling material and placing that form of capacity at the bottom, the outgoing temperatures were very similar to those attained in the ERA test. The reason that the 150 amps test is lower is that the particular samples of fuse wire taken for this test were, I would estimate, slightly on the lower side tolerance compared with our own fuse wire. It is possible that the 18 gauge fuse wire might have been slightly thicker than that of ASTA, for that reason the reading of 204°C means a temperature rise 176° attracting an ambient temperature of 28°C, that is why 176° is plotted in my graph.

40 50 Q. In fact, you have results after 15 minutes and 14 minutes, is that so?

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- A. My results at that time were lower, for the same reason so were the ASTA results when they used the 3-fuse wire. I think it is merely fortuitous that the ASTA final results with 3-fuse wire came out approximately the same as the results with 2-fuse wire.
- Q. Could you tell us something about the relative position in respect of the use of two-fuse wire and three-fuse wire? 10
- A. The ASTA measurement recorded on pages 15 and 16 shows that the temperature rises when 150 amps is maintained continuously.
- Q. In fact for a period of?
- A. From 9 a.m. until 15.30 that is, for a period of 6½ hours. I think without wishing to put words into symbols - it was probably done to establish the effect on the unit when running it at 150 amps continuously because we know, from our own tests, after a period, a little longer, after a period of time, shorter than the time used in ASTA test, the 150 amps will blow the strands of 18 gauge wire. If you wish to sustain the current longer you would have to use a thicker wire with the same current. However this would give a temperature rise at the contacts which is lower. 20
- Q. Could you explain that. 30
- A. The effect of the heating of the wires was explained earlier that the heating is I^2R , that is, square of the current times the resistance. When you have two wires in a fuse link, you have two resistance in parallel so that the resistance has a certain value. If you add another wire you add one more resistance in parallel but you are using the same current of 150 amps R square is the same but due to the loss of electrical resistance, three wires in parallel have only two-thirds of the resistance of the two wires in parallel. This means, therefore, that the heating produced in the fuse link by the 3 wires is only two-thirds of what it would be if you had fused two wires; the heating with three wires is initially only two thirds of what it would be if you use two wires. 40
- Q. Because of the proportional change. 50
- A. The lower resistance of three wires in parallel.
- Q. Initially what happens when the wire is heated?

- A. When the wire is heated up the resistance increases but because of the fact that the current is not so great within each individual wire of the three-wire unit, the final temperature is lower and where the final resistance is even lower than two-thirds of the final resistance of the two wires.....
- Q. In what proportion?
- 10 A. This is dependent on the relative temperature. Without measurement, I would not like to say, but it would definitely be lower than two-thirds of the resistance.
- Q. Which explains why ASTA experts have carried out the test with a three-wire giving in fact lower temperature?
- A. Yes. I have also plotted these temperatures in the two graphs (Documents X and Y) which illustrated the point which I have just mentioned. The graphs shows the heating temperature rise - ASTA Test with 3-fuse wire and ERA test with 2-fuse wire.
- 20 Court: You have 120 against 140?
- A. That is the other graph which shows a comparison of the ASTA 120 amps test or 140 amps test. This comparison is to show how rapidly in both cases the temperature rise will stop. I thought this would be of value because of the additional thermal capacity of the compound used in the ASTA test and it was plotted to show that this made little difference to the rate of rise in the temperature of the contacts.
- 30 Q. What conclusion do you draw from the results of the two tests, the ASTA and the ERA, in respect of temperatures?
- A. The conclusion which I draw is that with the conductors used to both tests, the use of two-18 gauge wire in the fuse holders results in the possibility of currents being sustained which would result in temperatures being achieved at the outgoing terminals which were higher than the cable insulation could stand.
- 40 Q. The temperature would certainly be on the high side?
- A. The temperature was in fact at that point 95°, too high.
- 50 Q. At which amps?
- A. At 140 amps the current would be maintained continuously from this particular unit.
- Q. With what result on the conductor itself, or on the cable?

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- A. In our test some deterioration of the cable is visible and can be seen in the photo but our test were only just for a few hours not for a prolonged period.
- Q. In actual use the deterioration would be likely to be worse?
- A. It is liable to get worse due to the deterioration of the contacts by over-heating.
- Q. Is there any indication from the history which has been given to you for you to refer to this amps usage of 140? 10
- A. The history that has been given to me is that the unit was wired with two strands of 18 gauge fuse wire. Our measurement shows that such a unit connected as we connected it which was, according to the information from Maisey, the wire which was connected in practice in terms of size, of conduct, we find, under these circumstances, that the unit was capable of withstanding 140 amps without blowing the fuse link for a time of 140 minutes. So I knew that this was a current that was capable of sustaining in the history of the faults which I was told, which I believe, there was a copy before the Court, it was clear that on a number of occasions the electricians have been called to replace the fuse links to replace them again with two strands of 18 gauge fuse wire. This means on repeated occasions those fuses were blown which means that the current 140 amps have been exceeded. 20 30

R E C E S S

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AFTER RECESS

- Mr David continues the examination in chief of Mr Walter Turner (still under oath) 40
- Q. Mr Turner, perhaps you might now have looked probably at the various reports, the effects of over loading in which the fuse did not work?
- A. In our own test the highest current which we sustain without blowing the fuse was 140 amperes and we reached a maximum temperature; the point at which we stopped the test duration was 140 minutes, maximum temperature of 238 degrees centigrade. 50
- Q. That is to be found at page 3 of the report?

A. Yes.

Q. At that stage the fuse had not blown?

A. The fuse had not blown at that stage. Turning to the ASTA report, the highest current at which measurements were made was 120 amperes per phase. I am referring to sheets 10 and 11 of the report 1057. Looking at the temperature of the outgoing connections we see that the first half hour the temperatures at numbers 8, 9 and 10 are 133, 131 and 135 and may continue to increase throughout those tests. We find the temperature to be 174.7, 173.9 and 175.6. This is on sheet number 11, all that time the cables were above 120 degrees.

Q. Incidentally, apart from overheating of cables, are there any other conclusion you can draw. What would, for instance, be the effect on the contacts proper. I could ask what is the condition?

A. They cause some oxidization which may continue to such an extent that temperature rises due to the additional heat being put in, due to the additional resistance and in turn the higher temperature causes a high rate of oxidization and so on, and the contacts get progressively hot.

Q. You have now established that if carried 140 amperes the wire would be seriously overheated; and even in the ASTA test, 120 amperes, continuously excessive temperature was observed. This is overloading?

A. This is overloading, yes.

Q. We have evidence of the fuses blowing more than once?

A. Yes.

Q. We have evidence from the Log book of the fuses in the box being blown more than once. What temperature would that be, would you say that it would be higher than 140 degrees, let us say 150 to 170?

A. There are details of tests done, it is stated in our report, in which the fuses were blown by these currents somewhat in excess of the current which the fuse would carry continuously. At 150 amperes on page 3, can be seen the total temperature rise. It is 231 degrees centigrade after 60 minutes. 160 amperes on another occasion took 95 minutes. When the fuse blew the temperature was then 222 degrees C. Turning to some other results in which only one fuse was there, on page 4, in this particular

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case the current was 170 amperes and it lasted only three minutes and the temperature was 225°C, it was obtained at the terminal and a similar test in which the fuse was blown in 100 minutes gave a temperature of 260 degrees. Those were the only cases.

Court: At page 4 you use an asteriz to show the time after which the fuse was blown; but I do not see any asteriz in the last or last but one column? 10

A. I beg your Lordships' pardon, it has been omitted.

Mr Hein: To make the question quite clear, may I ask my friend to be more precise. He puts it to the witness that according to the log book there is evidenceto show; my friend says that the fuse blew. I suggest that my friend would state whether it is for single wire or double wire, with the fuse. 20

Mr David: Mr Turner, when you were talking about the evidence of fuse blowing more than once, you were yourself referring to what?

A. I was referring to evidence as conveyed to me and taken from Mr Maisey's report from that log book.

Q. We find ourselves in a position where we have ourselves introduced that extract and we do not yet know all the explanations about those entries. Shall we start backwards Mr Turner, starting from the 6th July. Let us start with an entry, 28 June 1972, the first entry, we see consumers' names Imprimerie Ideale, address, Plaine Lauzun. Type of fault: fuse missing. There is the time. Then the details of fault attended to? 30

A. Section 2, 3 were blown. Rep.2/18. One fuse missing. It would mean that the fuse had blown or there have been some other methods of disconnection. Most likely the fuse was blown and as far as the customer was concerned he has lost supply on one phase because the supply came in three phase connections. 40

Court: For industrial purpose you need three phase electrical line. Only for lighting you use two phases. 50

A. In fact for lighting you use one phase.

Q. For the other one you use 3, for industrial purpose where you have a load coming?

A. Yes.

Mr David: 28th June, the first entry when returned 9.55. The next entry on the same day; fault reported 10 o'clock where we have an OD(?) fuse; then we have 1.7.72 Textile Industry, Plaine Lauzun, one fuse missing and on the right hand side we have control fuse replaced?

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10 A. When a fuse has been subjected to continuous overloading it will deteriorate in the same way as the content. This normally requires a very heavy overloading for a very long time. This oxidization then causes heat to blow and lose contact and since it is blown in this way there are the remains of the oxidized fuse to be found sometimes even the contact would deteriorate so badly that contact would be lost between the end of the wire and in that case also the current would be extinguished by the oxidising one.

20 Q. Then we see an entry on the 5th July Imprimerie Ideale and others, Plaine Lauzun, fault reported at 13.45; attended to between 13.50 and 14.20?

A. Yes, one fuse blown in cable box. Rep.

Q. This is one instance of fuse blowing?

A. This is an instance of one fuse blowing, but it does not precisely state which.

30 Q. Then we have the Diamond Industry; we have one fuse missing and that would be 16.15; the building was closed in that case. Then we have an entry on the 6th July, 1972, Imprimerie Ideale, no light, one fuse blown in cable box. Same fault for C.....(?) Industry. One fuse in that box would have been blown also?

A. Yes, this is what it appears.

40 Q. Let us go back to the 28th June, 1972, when we see here that Rep. meaning repaired or replaced, 2/18. It would mean what?

A. One fuse in the circuit, supply Imprimerie Ideale, was blown and replaced by 2 x 18 swg wires.

Q. The fuse previously existing in that fuse box would have been what, either 2 x 18 or something else, different?

A. If it has been there previously, the wire would have been 17 gauge wire.

50 Q. If it had been the correct maximum size wire it would have been what?

A. 1/17.

Q. But on that day whatever there may have been previously one fuse was rewired with

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2 x 18 gauge wire. Is that so?

- A. Yes, this is what appears from the fault log book.
- Q. I am asking you Mr Turner what temperatures you would obtain with currents higher than 140 amperes, say 150 to 170?
- A. The temperatures in my test have all exceeded 200 degrees centigrade; in the ASTA test due perhaps to a slightly lower diameter, 2 x 18 gauge wire used, the temperature obtained in the test of blowing the fuse wire was at 150 amperes which can be seen in the report on page 13. The outgoing connections show a maximum temperature of 204°C on the fuse link. It is interesting to note that from the reading made at 6 minutes at 10.36, the temperature was already about 120°, it was in fact 144, 126 and 130 and after 10.40, the temperature rose to about 160 degrees; that was approximately 4 to 5 minutes at temperatures exceeding 160 degrees.
- Q. What if there was a short circuit?
- A. On the short circuit conditions the fuse would blow very more quickly; but it would normally be more severe.
- Q. Could a short circuit cause a fire to start?
- A. Yes, it could do so if sparks and flames were emitted from the fuse during the short circuit, especially if it comes in contact with inflammable material. We know of a recent case in which we have established this particular way of creating the fire. The sparks which one sees in a device subjected to short circuit testing, these are actually small particles of molten metal or other incandescent materials which are ejected with the flames and become more incandescent, also gas from the arc going inside the box. These sparks or pieces of red hot metal can be projected some distance and in fact we were able to establish on one occasion that they could cause fire by falling into inflammable material which was several feet away from the box.
- Q. You have examined the ASTA report in respect of short circuit in the short circuit tests. How do they compare with the experiments you had in respect of the case you have mentioned?
- A. It is reported in the ASTA test that sparks and flames were seen emerging from the box under test. I refer the court to the actual report. It is report sheet No.4. In the

observation during the test S... ..
report, there is the report that there
has been a bang sound that you get when
the arc strikes between phases.

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Q. The S..... report mentions the bang that
would occur at what time?

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A. When the arc strikes across several phases
or between phases, this generates a bang.

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Court: Would you please repeat that?

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10 A. When the arc strikes across the phases or
between phases and the earth, there is a
bang due to the air expansion.

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Q. The arc depends on the current passing
through and the distance between the two
poles?

(continued)

20 A. And the voltage is generated. And also
if the voltage is sufficient at the
instance of arcing to create a rapid
suppression of the current. The current
does not rise very high. It does not
limit the current sufficiently; then the
current is passed at the time when there
is moderate voltage and the arc energy
is great consequently the noise is great.

Mr David: You were referring to the last column?

A. Yes.

30 Q. In respect of the test carried out by the
ASTA experts and the experiment you yourself
carried out in respect of that case you
mentioned, was there any other similarity?

A. In both cases the fuse was over-wired.

Q. What exactly do you mean?

A. The cross section of wire was greater than
recommended by the manufacturer.

Q. If you use twice as many wires of the size
recommended, what is the effect?

A. It would give approximately four times the
 I^2t

Q. Before the fuse blows?

40 A. Yes, this is a term used to represent it in
respect to time; it is a technical measure
of the type of energy which passes through
the circuit which produced heating of the
circuit. The higher the I^2t , the higher
the heat.

Q. If an overwired fuse blows, everything is hot?

A. That is correct.

Q. Would there be any other consequences?

50 A. The other consequence is that if the fuse is
overwired there is much more heated material

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vapour and much more ionised air and this current blows right from the arcing chamber in which it should be extinguished into the body of the fuse box and causes the arc to strike on to other live metal, and other live metal and earth inside the box thus causing arcing to be generated. In fact this is what happened in this particular test.

- Q. Which you mean you made? 10
- A. The test described in ASTA.
- Q. If the same tests were repeated, would the same results necessarily occur?
- A. Not necessarily exactly the same. In fact in this case probably not the same; the arc struck itself repeatedly for 9 times. There is no reason why it would have gone earlier or alternatively persisted for 9 times. In practice it goes out generally when the arc becomes unstable and can no longer restrike itself. This is a random matter once the arc extends beyond the arcing chamber that has been designed for it to be extinguished. 20
- Q. Is there any theoretical reason which would prevent the arc from burning indefinitely if the supply of electricity is maintained?
- A. No theoretical reason; in fact it would normally become unstable after a while.
- Q. Do I understand then that the arc could in fact emit more sparks and flames than were observed in the ASTA test? 30
- A. In the event of such a possible phenomenon, yes, this would occur. There is no reason why they should not occur.
- Court: Inside the box, the moment it is sufficiently ionised to create that atmosphere, the arcing going forward and backward, would it not be possible for me to connect a link with the other phase and another circuit in the box? 40
- A. Yes, I think that is what happened here, because the arcing cannot have been transferred from the higher terminal to the lower terminal.
- Q. You lose control altogether on the conducting of electricity then it goes mad?
- A. In fact you have the exact situation; as this situation has been reached, then it is beyond the breaking capacity of that box. If you wish to deal with that condition, with the type of device that you tested, you redesigned it to prevent it; once it cuts the run away condition. It is random. 50

Mr David: How do you describe the run
away conditions?

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10 A. In this case the heating by the arcing
produces more ionised gas which causes
restriking, which causes more ionised
gas which causes to restrike once more.
However that gas happens to get cool so
that the gas is cool enough in that
instance to cause the arc to be extin-
guished.

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Q. What would you say would be the connection
between over wiring and power hazards?

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A. I would suggest that in the case of this
fuse box in particular any over wiring
of this box will produce fire under any
condition which is liable to cause the
fuse to blow.

(continued)

20 Q. What would be the possible effects from
sustained arcing, what sort of effect it
would have on the fuse box?

30 A. If the arcing was stayed and this could
also occur the current goes to a lower
volume and the arcing continues then
the internal metal of the connection in
the box would become melted; parts of the
box would also become melted, burnt away
by the arc and the longer the arc persisted
the more damage would be to the box and to
the metal contents. The heated arc would
also tend to melt, the ceramic parts to
make the surface become glossy as has been
described in this report.

Q. Would you tell the court what you think,
as an expert, of the over wiring that
would have taken place in this particular
case?

40 A. I think the action of over wiring a fuse
link by a qualified and professional
electrician is either irresponsible or
ignorant.

Q. It constitutes a fire hazard under any
condition likely to lead to what?

A. Under any condition likely to bring the
fuse to blow.

Q. Is there any other point you would like to
bring up before I end my examination?

A. No, I think we have covered most of the
aspects of the case.

Cross-examined

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50 XED by Mr Hein :

Q. Mr Turner, you know Mr Mee of ASTA?

A. Yes.

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- Q. You have known him for how long?
- A. Many years.
- Q. You know ASTA as such?
- A. Yes.
- Q. You had occasion to work with Mr Mee?
- A. Yes, on a committee of manufacturers on which he sits and in which I appear as expert.
- Q. Can you help the court about the test report prepared by him? 10
- A. Yes.
- Q. Would you say that ASTA is a reliable organisation?
- A. I would go further and say that ASTA is a completely reliable organisation.
- Q. Would you say that Mr Mee is a very reliable engineer?
- A. I would agree that he is a reliable engineer.
- Q. Would you accept the observations which are set out in the two ASTA reports observed by him as a fair and thorough report? 20
- A. I would accept the reports of Mr Mee to be a fair and thorough report of what he had observed and I respect his opinion as expressed would be his considered opinion based on his experience.
- Q. You have mentioned that there is a remarkable degree of closeness between the two tests, what you did and that carried out by ASTA? 30
- A. Yes, making allowance for the different conditions.
- Q. I do not suppose that you are surprised by this?
- A. No, I am not surprised.
- Q. Do you accept that the factual results of the ASTA test observed and attested by Mr Mee before temperature for the short circuit, the tests are not inconsistent with the factual result? 40
- A. I would say that quite definitely for the result on the over load test. I have not carried out any short circuit test in this particular case. As I explained to Mr. David and to the court, the results were similar to those of short circuit tests on over wired fuse links which we have also carried out. 50

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- Q. Is there any reason for some other high temperatures you did not use before that?
- A. My instructions were to examine the temperature rise of the outgoing current connections because of the suspected effect on the outgoing conductors due to reported observations which came to me from Mr Maisey that it had been observed to be burnt after this occasion.
10 Subsequently I used cable of equivalent cross section whose temperature I did not measure. The effect of the outgoing terminal should be negligible. In fact the similarity between our results and the ASTA results demonstrates that this was so.
- Q. In other words, you were not trying to see the conditions in which the fuse box was in the Bata warehouse?
- 20 A. We were to simulate the size of cables used and simulate the conditions to give temperature rise at Bata warehouse at the outgoing terminal.
- Q. The fact that four paper insulated cables were not used, the fact that no compound was used in the cable box and that you had single phase current, whereas at Bata warehouse there was a different form of supply, that might perhaps explain the difference of high temperature recorded?
- 30 A. If there had been high temperature recorded, however, if their Lordships would care to examine the graph I give here the temperature rise at 150 amperes was somewhat lower in our case as in the case of the other graph, or comparing the given rise in temperature at 140 amperes with the ASTA measurement at 120 amperes, the initial rise of current was similar, so that the additional thermal capacity had no appreciable effect on the results.
- 40 Q. About the box in the Bata warehouse, the conditions there, would not the load in the box at Bata..... as has been a three phase load proximity balance between the phase..... with the consequence of a much lower or even some of the current in the neutral conductor?
- 50 A. There is a difference between the two types of measurement indeed which could have made some effect to the results. However, if the court would care to examine the temperature rise of neutral conductor, one can see how much lower it is than the temperature rise of the other wires. Temperature rise of the neutral link was 160 amperes, 69

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degrees; 150 amp. 85 degrees and 140 amp.
for 140 minutes 95 degrees. This is in
fact only at most 30 degrees hotter which
is the temperature of a neutral exit and
not much more than 'F' which is the maximum
temperature of the top plate of the unit,
so that there is little heating in fact in
the neutral wire.

Q. Being given that the test you have carried
out there is energy that flows from the
neutral, whereas at Bata warehouse there
is little or no current flowing from the
current, that would..... 10

A. It would either in the temperature
in the fuse box because the outgoing
terminal tended to deepen in the case in
which the fuse blew. It depended more on
the fact that the fuse had blown and gave
also temperatures at 231, 222 and 225 in
phases where the fuse had blown; it is 20
150, 160 and turning to page 4, 170 amperes.
The interesting point also is that it is
also possible that the fuses which blew
were on a load which was not balanced. In
fact that must have been to some extent the
case because one fuse blew. This would
mean single phase loads were perhaps
predominantly on more than one phase than
the other. I would suggest that there
would be some degree of in balance on the 30
loan to the three consumers because of the
extent of single phase loads, such as
lighting ordinarily 230 volts supplies all
of which would be placed as single phase
loads. However I would accept the point
that under these cases that we measured we
carried in neutral current exactly the same
as the phase current. The heating of the
neutral would have been more than in
practice. 40

Q. Did you know that in the case of Bata it
was a three phase supply?

A. I knew it was a three phase supply in the
case of Bata but the measurements that were
made of temperature rise of fuse boxes with
single phase energisation have not shown
great difference to the single phase.

Q. I take it that you personally carried out
the test?

A. I was present at the carrying out of the 50
test and carried out some of the tests
myself. The test was set up by the labora-
tory steward. I was present when the test
was carried out.

Q. The conclusions and the results of the test
as expressed in the ERA report are your
own?

A. The conclusions are my own.
Q. At page 2 of your report, middle of the page, under heading 'Method of Test' it is stated that 'the incoming cable was not blanded.....'; would you agree that the temperature was elevated..... away from the box?

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A. No, because I believe that this particular region to be effected with isolated wires from the top contact where we made the measurements. However, if we have measured the bottom contacts we would have put it, but we did not measure the temperature of the bottom content.

20

Q. Between the ceiling chamber at the bottom as shown in the curves there is a great delay in the heating up rate in the case of comparing the ASTA results at 120 amp. with the ERA result at 140 amp. It can be seen that the curves rise at the beginning of the measurement in both cases and there is a great should there have been that difference, that great margin of percentage, then the temperature would rise more gradually. It did not. It means that the thermal capacity located at the bottom of the chamber was not influencing the temperature rise of the.....

30

In each case could you tell us how long it took the fuse to go, in the case of 160 and 170?

A. In 160 amps. the fuse link took 100 minutes, in the case of single phase connection, 170 amp. it took 3 minutes; in fact it has gone so rapidly that it is not possible to make certain measurement.

40

Q. Would I be correct if I were to say that a single strain of No.18 SWG fuse were carrying 70 amp. with a given temperature rise and later replaced by two strength of No.18 without change in the current of 70 amp. to the fuse wires would be half.....?

A. This is true if the current is maintained at that lower level, the temperature rise would be lower. In fact it is shown in our table.

50

Q. Would you then explain that paragraph at page 5 reading: 'the temperature would have been higher..... ?

A. The experiments were carried out in each case with increasing current until we reach the current at which the fuse began to blow and that means therefore that although as I have just repeated to the court with two

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fuse wires the temperature would be lower at the same current. The mere fact of adding the two fuse wires does make the fuse much cooler, namely in this case at 60 amp. and if the consumers had kept the same current and had never blown any fuse, then the box would have remained cooler, but as it was, they increased the load until the fuses were blown and this means very big current and temperature rise much higher. In the case of ASTA test with the three wires, we observed there also that the temperatures recorded were lower than when I used two wires and I took hours to reach that load; but if you had reckon it with the test as ASTA, increasing the current until the fuse wires were blown, the three fuse wires would have caused much higher temperature. 10

Q. Of course, it has been passed on to you that the consumers increased the supplies? 20

A. I have heard that the consumers were building up their supplies as time went on.

Q. You have no indication that this is exact?

A. I would like to answer yes or no, I have not studied the consumers' supplies. My task was not to examine this particular consumers' supplies. My task was merely to find what would have happened in that box. I can say that there must have been an excess of current going on. 30

Q. If it had been a double wire, twice 18 SWG and not one 18 SWG?

A. No, our measurement show if there is only one 18 SWG then the temperatures would be within the limits permitted in the table. In fact the rating of that box would be 50 amp. according to the table inside the lid used in the ASTA test. 40

Q. Page 8 of the report, second sentence 'this temperature rise is 19 degrees fuse wire'. I take it that you have carried out this test?

A. The test that we carried out was carried out with one strand of 18 gauge wire which according to our information at the time of carrying out this test was the recommended volume of fusing for the application in which this unit was placed, namely, a 150 amp. I subsequently learnt that it is 60 amp. that was required; it corresponds to 17 SWG but the difference would not have been great. The wires that would be recommended were such as it would 50

fit in. Using the 50 amp. recommended wire we get a temperature rise which is 90 degrees less than using two 18 SWG. The result of the test to be found in this report was on a strand of 18 SWG, but there is no test of 17 SWG wiring. The one strand of 18 SWG is recommended for 50A rating.

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Q. Reading paragraph 3 page 8, it would appear that the highest total temperature rise, 143 degrees, that is 238 minus 95 was recorded?

20

A. Yes, that is recorded on page 4, 3rd column, the temperature rise was 105 degrees centigrade. There is 123 maximum total temperature. Actually the temperature rise was high. The total temperature was 123. The use of 2 18 SWG fuse wire at central fuse connection. This temperature rise, at 115 degrees is about the highest temperature rise observed.

Q. The other figure can be taken as correct?

A. Yes, as far as I am concerned.

Q. Would you tell us what is the effect when twisting two similar fuse wires together?

A. The effect if those two fuse wires are correct, the rated current of the combined twisted fuse wire would be somewhat less than double the rated current of one wire alone.

30

Q. What would be the effect in the fusing factor of twisting of similar fuse wire together?

40

Q. The fusing factor is a factor which is assigned by the manufacturer when stating his rating. This is done to allow the tolerance which has to be allowed. The fusing factor would not be affected by doing this, by producing the same type of material and the current would be approximately double or rather a little less than double. The rated current would be assessed, that would be appropriately lower. There is no difference if they are very close to each other and touching each other if they are twisted, however you may damage the wire which could affect the blowing of the wires. It is wiring of thickness 18 SWG, I do not think that the effect would be very great. The main effect of using two wires in any case is to double to cross section.

50

Court: If they were at some distance apart, would they burn one at a time, if they do not touch?

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- A. They do actually go one at a time, then the second one blown very quickly. If they were less spread, then the blowing current would be exactly double the blowing current of the wire and I would think probably the point of this question when they are very close, they are in close proximity, the blowing time is somewhat less.
- Q. The approved fuse wire was one No.17 SWG? 10
- A. Yes, for 60 amp. rated and for 50 amp. rating one 18 SWG.
- Mr. Hein:
- Q. What is the situation concerning the approved fuse wire No.17 at rated value current?
- A. At the rated value of current. This depends on the fuse wire that is inserted. If there were ten centimetres of fuse wire, the resistance at rated current, the dissipation of such an element was cut would be about 4 watts, and running at rated current, we assume that it is heating up to $1\frac{1}{2}$ times its resistance, probably around 6 watts. 20
- Q. What about the relief dissipation of energy of 2 18 SWG at the rated value current at similar conditions?
- A. Two 18 SWG at 60 amp. It depends on what you mean by similar conditions. 30
- Q. I mean at the rated current?
- A. In this case the dissipation would be greater because of the high current; it would not be directly proportional to the square of the current because the resistance is also less; but the alternate calculation would show the slight increase above this value for running two at the rated current. In order to make sure I calculate all losses at rated current. There it is necessary to make assumptions as to the temperature of the fuse wire at rated current because the resistance of the fuse wire increases by 4% for every 10 degrees rise in temperature and in fact when the fuse wire is on the point of melting the resistance of such a fuse wire is approximately 5 times its resistance at room temperature. So the calculation would be approximate. 40
- Q. The fusing current of two 18 SWG is.....
- A. It is in fact 150 amp. or less for this equipment. The problem is that neither I nor ASTA has performed any test with 17 SWG wires. We have separately performed tests 50

with 18 SWG wires with one and two
..... There is a table of fusing
currents in the cover of the device, but
it does not say at what time it is going
to melt. From the currents given the time
must be shorter than that which we use in
our table.

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(continued)

Court: Can it be worked out from the table?

10 A. The initial loss can be worked out by the
table; that is to say, the power in watts
dissipated in the element when the current
is first turned off while the element is
still cold and then you know that the
resistance power unit from the table. You
know I^2 and so it is calculated. What it
will be at high temperatures you cannot
know. The high temperatures, for conven-
ience sake, the figure of three times value
of resistance can be taken which is the
20 value of resistance which the wire gets to
time. It is getting close to its melting
point. The centre being higher than three
times its rated resistance. The size
nearer the ends are lower than three times
its rated resistance; the result of all
this is that an approximate figure of
three times the cold resistance can be
taken for the resistance of the wire when
30 it is near its melting point. You can
calculate the value of the power loss in
that fuse.

Mr Hein : 'With reference to ASTA short circuit
test.....than could have occurred at
Bata warehouse?

40 A. By the calculation made by one of my
colleagues I would say that this was more
substantial than the short circuit level
at the Bata warehouse, but I have not made
such calculation myself; but I would agree
with the calculation that I have seen,
that this would be probably 2,000 amp. or
higher.

Q. In the current of 4950 amp. it is approxi-
mately 25% greater than that for which the
box was designed?

A. The box on its inside stated 4,000 amp.

Q. You have seen the photograph in the ASTA
report, photograph taken after the test
was carried out?

50 A. Yes, I have seen the photograph.

Q. They do not indicate any serious damage to
the box, damage I mean which could not be
repaired?

A. Not in this particular test. If this has
been a test of this box for its suitability

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(continued)

for use, it would scarcely have been acceptable; if this happens in fact it would be evidence of an unsuitable box, for example 13933.

- Q. You say that it was not suitable? 10
- A. If that had been the result of a short circuit it would not have been a satisfactory result. For example, looking at the particular photograph, one can see that there has been arcing outside the fuse box itself between different parts. There are marks on the door where arcing has taken place and all the metal thrown on to the door. It is just blowing the piece of paper. If we turn to the photographs 13935, it would appear that the mark Y was broken and turning back to 13934 other damages can be observed on fuse bases. 10
- Q. When you say unsuitable for use, unsuitable when? 20
- A. At any time because the fuses are damaged to continue using the box it would be necessary to take out the fuse link and insert a new one.
- Q. Damage that could not be repaired or eliminated by replacement? 30
- A. Yes, these are the vital parts, the actual fuse holders, fuse base and fuse links themselves. 30
- Q. You referred to the description and observations of the ASTA short circuit report to the effect that sparks and flames were seen at the top of the cut out (?)? 40
- A. I think really this question would be better directed to those who witnessed this particular test because the only description in the report is that sparks and flames were observed. There is no doubt that arcing clearly took place on the top of the box; this would have contributed. However, the heavier arcing must have occurred at the base of the box because the fuse blew. If we look at the place where the circuit was connected there was a heavy wire coming from the short circuit supply which will represent about the four fingers of my hand, above that there were wires which were put together on the application of short circuit; there would be the touching of the and the carrying of the current through the top wires as well, resulting in blowing the fuses and then when the fuses are blown this top part of the box would be isolated by the blowing 50

fuses by the hot gas coming out; it would be between the incoming supply and other parts of the box and so those connections on the outside at that stage are disconnected and 9/10ths of the current flowed when the top part had been cut.

10 So I think undoubtedly when all the sparks were there they must have been coming from below and have been seen in that way. As I said, the various observations have been made by the witnesses. It would be interesting to hear their observations. I was not present at the time of the test.

AT THIS STAGE THE CASE IS ADJOURNED TO TOMORROW FOR CONTINUATION

(24th February, 1978)

In the
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No.26
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Cross-
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(continued)

20 No. 27
STATEMENT OF CYRILLE
D'ARIFAT

No.27
Cyrille
d'Arifat
Statement

FRIDAY 24th FEBRUARY 1978

24th
February
1978

Bata Shoe Co. & Anor. v. The CER

Mr Cyrille d'Arifat (DPP) states the following on the floor of the court:

May it please Your Lordships,

30 On the floor of the court I would like to make a statement. I am given to understand that the evidence recorded in the course of a judicial enquiry will be required in this matter and that both the court and counsel on both sides have no objection to the evidence being produced.

40 I have removed the conclusions of the learned magistrate and I have no objection to tender the original of the enquiry itself. I have not been in a position to make certified copies and I shall be grateful if it is returned as soon as the case is over and it is no longer required

RECORD PUT IN AND MARKED "Z"

In the
Supreme
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Evidence

No. 28

EVIDENCE OF HENRY WALTER
TURNER (continued)

No.28
Henry Walter
Turner
Cross-
examination
(continued)
24th February
1978

Mr. Hein continues the cross-examination of
Mr Turner (sworn)

Q. Mr Turner, you have explained in your report
that you have single phase current going
through the three fuses?

A. Yes.

Q. If you have a look at photograph 3 at the 10
box itself, we note that the centre phase
contacts show significant oxidisation after
your test..... was noticed. Would you
explain why this happens?

A. I know that as a result of the test carried
out the over heating had caused heat to
occur because the apparatus was checked
and found to be in good order. At the
conclusion of the test these particular
contacts had become weak. I can only 20
assume that this was due to the heating
for use at those contacts by the passage
of current through the fuses, through that
fuse itself and also the heat conducted to
the centre fuse by the two other ones.
If you look at my report, it will be
interesting to note that the temperature at
the centre fuse increased as the measure-
ment proceeded. I refer to the report, if 30
I may, the temperature of the centre fuse
as the test proceeded and in the first
test the thermal detached itself and there
is a load; and in the second test the
temperature of the centre fuse was 212
degrees which was 9 degrees higher than
the highest of the fuse, the thermal position
(a) which was the left hand fuse. Just to
make clear what I am saying, this is page 3
of my report, I am look at the figures on
the graph corresponding to (a), (b) and (c).40
Finally we have the test 140 amp. which was
the lowest test carried out before this
investigation stopped. The current in that
case was 140 amp.; the maximum temperature
was again on the centre fuse, this time
it is 220 degrees; whereas the highest
temperature of other fuse is 187 degrees.
By subtracting we see that the centre fuse,
the middle fuse terminal (b) is now 33
degrees hotter. I have not previously 50
pointed this to the court except in the
plan, that progressive overheating produced
deterioration of contact. These measure-
ments are clear evidence of this sort of
deterioration and what was happening

undoubtedly was that the other fuse was making the centre fuse slightly hotter and the contact deteriorated as can be seen from the box.

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(continued)

Q. If you compare the highest temperature as against (a) and (c), might not one of the reasons be that there was slackening in the contacts?

10 A. In (b), the slackening of the contacts resulted from the heating, contacts that rely on their own springiness to obtain the contact pressure when subjected to overheating tend to slacken.

A. I know the heat caused the slackness because when we commence to test there was no slackness.

20 Q. You cannot say by the condition you say in the case of the centre (1) the same condition does not occur in the other one?

30 A. This is an example of a run away condition. The problem is when a contact is being heated by an electric current it is heated in two ways; it is heated by heat that is conducted from other parts of the system which are dissipating heat, the fuse element giving heat to the contact and the cables from that particular contact which themselves generate some heat that goes to the upper contact; added to that heat is the heat which is generated within the contact itself due to the contact resistance. These contacts are quite substantial, they are larger than one square centimetre in area, but all electrical contacts actually have a very much smaller contact area than is the geometrical area that you can measure.

40 I should explain how this occurs. Any surface however well worked is not perfectly flat when contacts are brought together under contact pressure. The high points on the surface meet each other to make contact just as the points of my fist; and the contact falls, compressed, the contact material at the points of contact and crushes it to make a contact area. As everybody in court would realise, with the order of force which is available in contacts
50 such as these, the area of metal that could be crushed by that force is very small and so the actual physical contact area is very small indeed, in the event of heating the contact.

Therefore this very small area has its

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(continued)

own resistance which generates heat, extra heat into the system and that means at the actual point of contact in this very small area the temperature is higher than the temperature at the outgoing terminal. This implies that oxidization can occur around these contact points. Since it is at high temperature it will oxidize faster than at the outer surface. The excess of air is somewhat limited by the presence of the contact but the oxidization does not proceed if the contacts are hot, the hotter they are the faster they move. Once the oxidization stops to go at sufficient rate, the high rate oxidization creates a higher resistance which makes it hotter still, which makes it then oxidized further and so it runs away and at the same time it will tend to slacken. 10

Why it has occurred in that one instead of the other apart from that heating of the . The reason why that occurred in that one is because this is a random matter depending on whether that one happens to be the first one to start and so it will just as well have been in all the other contacts except that due to the heat from the nearby fuses; the centre fuse would be slightly more susceptible because the heat conducted from both sides whereas the other had been conducted only from the middle , fuse. 20 30

(The witness states the first assumption)

The second assumption that is made is that since at the point just before it melts the resistance of the solid is approximately five times the resistance at room temperature. As soon as it melts it becomes 10 times. But since it is hot its melting point is five times. I have taken for the fuse link which is running near at its melting point, the average between 5 and 1 times :- namely three times its resistance. I have used the same assumption in both calculations in 17 gauge wire and for the 2/18 gauge wire. I think without special measurement under special conditions it is not possible to get any closer to it. 40

It is slightly different as you get nearer the melting point because the two representations of the temperature rise in resistance..... resistance is sealed to resistance $R_0 (1 + T + T^2)$. 50

Court: You said that you had to make allowance, will you please repeat it.

- A. The first one was at rated current, the resistance at cool temperature at rated current, of the order of 100 to 150°C.
- Court: I have tried from a layman point of view to put on paper a summary of what I understood was the work of the fuse and what can happen inside that fuse independent of your experiment and your calculations. It is difficult to follow you, the experts. I have been trying to put down on paper what I gathered from the use of a fuse and what can happen if overheating takes place. Would you please tell me if I am correct. The fuse is a safety device designed to cut off the electricity supply resulting from overloading or overheating. The fuse for practical purpose as well as security is to be found in a fuse box with that lining of asbestos; the manufacturer recommends the fuse for some specific load of electricity; he also recommends the fusing wire, accordingly there is a maximum which should not be exceeded. The thicker the wire used the greater is the electricity load required to cut off the current by melting the fuse wire. The hotter the fuse wire gets the more resistance it offers; accordingly occasioning a rising temperature. The higher the temperature inside the fuse box the more is the air ionised inside it.
- A. This is true, but would have very little effect on the electrical conditions if there were no electric arc.
- Q. The higher the temperature inside the fuse box, to be ionised, the more likely will the electricity arc remain active after the melting of the fuse disconnecting the supply?
- A. Yes, the essence of this point is that whenever the fuse wire disconnects the supply there is an electric arc between the melted ends of the fuse wire.
- Q. And that is likely to create a connection between the wires, between themselves, the wire and the box?
- A. If the ionised gas within the fuse in the chamber for which it was intended..... unless the ionised gas escapes into the box, then it is likely to initiate a flash over between live parts. If however it is retained in the de-ionised chamber designed by the manufacturer whether asbestos tube or other de-ionising chamber de-ionised in that section, then there is no danger of a flash over.
- Q. If it does happen that the whole box is de-ionised there is no control over what may happen?

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(continued)

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(continued)

- A. No.
- Q. Anything may happen in the form of short circuit?
- A. Yes, in that part where ionised gas has escaped. The ionised gases are between two samples of live metal and cause an arc to strike across that region just as if connected with a conductor. At that instance the ionised gas stays in that position reinforced by the ionisation, that is to say, 10 ionised produced by the action that is going on at the electric arc and created an arc burning in that region and it may if the arc finds it easy to stay in that position it might stay in that position or if the arc finds it easier to move, it will move to another position. Whilst it is going on it can be located in that position to settle in one place or alternatively, if the arc finds it easier to burn in another 20 place, it can move and move quickly throughout the box and cause a flash between other live metal. So it is a random situation at that stage.
- Q. Oxidization and deterioration of contact cause overheating. But to the human being, if that reaction takes place inside the fuse box it would be evident by sparks, a noise, a flame?
- A. If the fuse box is completely sealed 30 arcing at a lower current would be heard as a noise rumbling inside the box and if it should start at a lower current and then find a position where the resistance was very much lower to produce a short circuit with very much higher current, at that stage there would be a loud bang or report heard and this will also be the case if the arc immediately struck over 40 between live terminals coming straight from the supply which when short circuited give a high current. There would be a sudden formation of an arc of high current, a big change in temperature of air inside and would make an explosion sound. It would be sufficient to blow the covers of the fuse box if they are not sufficiently secured.

Re-examination

Re-examined

- Mr. David: Mr Turner, does the blowing of one fuse inevitably result in the discontinuation of all the fuses? 50
- A. No not necessarily, if one fuse blows, and even if one fuse blows the carrier arcing in the way just described that arcing could

be located between that particular phase and earth and until it arcs across the other phases; then the remaining phases, the other two phases, would continue to supply power.

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(continued)

10 Q. You have, at my request, put down on paper a list of what possible methods of failure resulting in ignition base upon the conditions as given to you by Mr M..... as well as the conditions listed by ASTA?

A. Yes.

DOCUMENT PUT IN AND MARKED "AB"

No. 29

EVIDENCE OF RAYMOND
DAVIDSON

Plaintiffs'
Evidence

No.29
Raymond
Davidson

Examination

24th February
1978

Mr David calls and examines Mr Raymond Davidson (sworn)

20 Q. Mr Davidson, you have equally prepared a statement of your qualifications and experience which you put in and which has already been communicated to the other party?

A. Yes.

STATEMENT PUT IN AND MARKED "AC"

Q. You hold 'Higher National Certificate in electrical engineering'?

A. Yes.

30 Q. While you were working at Hill Kaplan Scott Partners, you were asked to investigate in the fire at Bata warehouse and you drew up a report which you put in?

A. Yes.

REPORT PUT IN AND MARKED "AD"

Q. You arrived in Mauritius in the evening of Monday 17th July, 1972 and you started your investigation immediately, it ended on the 20th July, 1972?

40 A. It is correct.

Q. Would you tell the court how you distributed your work?

A. I spent approximately 40% of my time at the Bata warehouse and the rest of the time I spent at the offices of the CEB and I

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(continued)

went to the other consumers.

- Q. From your visit of the site you gained a general impression which you have described at para.4 or 5 of your report p.2?
- A. Yes.
- Q. That is from the extent of the concrete spalling in and around room No.4. In the course of your investigation you interviewed persons, some of whom you have listed at para.3 of your report, page 1; these being Mr Labat, then deputy manager, Mr Desai, Mr Tranquille, Mr Jean and also among the personnel of Bata Mr Bigaignon, Mr Mamdally and Mr Hiss? 10
- A. That is correct.
- Q. You also at Line Barracks Police Station examined the exhibits which have been put in Court, that is the box, its lid and a piece of cable? 20
- A. That is correct.
- Q. Again back to the site you saw from what you say at para.501 there was no sign of any electrical wiring in the raw material store other than that you have seen.
- A. That is correct.
- Q. At para 502 you state that the aluminium cables which had survived the fire had already been dismantled and taken away, you say, by the CEB? 30
- A. Presumably by the CEB.
- Q. Did you have opportunity of talking to someone of the CEB about that?
- A. Yes, I spoke to Mr Tranquille and to Mr Jean and I requested permission to look at the aluminium cables and the associated fixings as I would like to inspect them and my request was refused on the grounds that they would be required for a judicial enquiry. 40
- Q. You considered that it was of importance for you to examine those cables on the one hand and on the other to determine their actual route and the method of fixing them to the walls?
- A. Yes, it was necessary in order to try to establish the violence of the fire in room 3.
- Q. There is also at para. 503 something where you deal with the other fuse box in the other room and you have described how you found that the 'incoming cables had been partially damaged by fire. The meter, 50

meter board, associated equipment and wiring had already been removed. I take it presumably by the CEB?

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A. Yes.

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Q. Because of the conversation you had with Mr Tranquille?

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A. Correct, when I did go on the 18th to visit Mr Tranquille and Mr Jean with it I did see some cables, aluminium cables and a rider associated with it, but I was not allowed to examine it.

Raymond
Davidson

Examination

10

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Q. You did, as you say, manage to talk to Mr Tranquille as well as to Mr Jean?

(continued)

A. It is correct.

Q. In the course of the conversation with them, certain information was given to you. We turn to the last two pages of the report. We have two pages that are marked (a) and (b). If we turn to section (a); when that section was drawn in what relative position were you and Mr Tranquille sitting?

20

A. I was sitting at that side and Mr Tranquille was sitting opposite, at the top. You have the handwriting there No.7/.064 PVC insulated and PVC sheathed.

Q. The box itself that is drawn is drawn by whom?

A. By Mr Tranquille.

30

Q. When looking at it from your point of view, it is a sort of reverse direction?

A. It is upside down. If I may describe at the top of the page of the box is the part representing the PILSCWA & 5 cable entering the service unit. In the lower half of the box there is a rectangle there which illustrates the fuse; from this rectangle to the other rectangle there are two lines and these lines are the two conductors in the 7/.064 cable. This second rectangle represents the bi-metallic connector and leaving it are two more lines representing 2 aluminium cables.

40

Q. To which you refer at page 2, para.6-0-2 'During the interview..... were only suitable for copper conductors", that is correct?

A. That is correct.

50

Q. You then give a comment saying that 'accordingly the length of cable between the bimetal..... E3866/2'. This was done by whom, where and when?

A. This was done in Cape Town after my return

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(continued)

from Mauritius.

- Q. On the information that you had received from whom?
- A. From Mr Tranquille.
- Q. Apart from that XEROX copy (b), the last one in your report. This one is situated where, who is at the bottom of the page and at the top of the page?
- A. It is the other way round, Mr Tranquille is at the bottom of the page and I was sitting at the top. 10
- Q. The fuse box which is sketched at the top right hand corner of the page was drawn by whom?
- A. That was drawn by me.
- Q. And all the other sketches on that page were drawn by whom?
- A. By Mr Tranquille.
- Q. I see writing facing Mr Tranquille, two times No.18 and something which looks like 20 20; that was written by whom?
- A. By Mr Tranquille.
- Q. The writing in the other direction is by whom 3OKW and so on?
- A. That is my writing.
- Q. The actual writing the top left hand is neither by you nor by Mr Tranquille?
- A. That is by Mr Cole who was present with me at the time.
- Q. When Mr Tranquille wrote on that page 2 times No.18, to what he was referring? 30
- A. He was referring to the size of the fuse wire.....
- Q. In fact on the left hand side opposite, in the middle all this must have been written by Mr Tranquille?
- A. Yes.
- Q. At para. 6-0-2(c) of your report, 'the CEB had confirmed during the interview protect the temporary service'. You spoke to Mr Tranquille on the 18th July and on the 20th July; did you send a letter to the CEB? 40
- A. I did.
- Q. Did you want either further information or confirmation of information you had already received?
- A. That is confirmation of what I had already received and also further information.

COPY OF LETTER PUT IN AND MARKED "AE"

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Q. Your headquarters were at?

A. At Blyth Brs.

Q. A reply to this letter was sent signed by the General Manager, Mr Roland Desmarais, addressed to Blyth Bros & Co. Ltd. of which you put in a photocopy.

A. Yes.

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(continued)

PHOTOCOPY PUT IN AND MARKED "AF"

10 Q. At page 3 of your report, para. 6-0-3 in the first few lines you make reference to information you had received from the Bata personnel relating to the position in which the exhibits have been found?

A. That is correct.

Q. Saying that the box had been found 'four feet from the..... directly on the concrete floor'?

A. Yes.

20 Q. At page 9 of the report, para.7/18 in the last but one line 'it to land about 1 foot further away from the position in which the fuse box was found'?

A. Yes.

Q. Thereafter during your investigation, according to your report 'the contents of the 'debris' lying on the floor of the raw material store, room No.4, were shifted..... additional evidence'; was that done in your presence?

30

A. Yes. They were actually taken away during the time I spent on the site.

Q. It was established that the first 12 inches of debris were in fact partially burnt soles?

A. That is correct.

Q. Para. 6-0-4 of your report, you refer to photographs 45 and 49. 'The top right hand part of the Henley fuse box' and so on?

40

A. If you look at the fuse box, these were the hinge pins, this is the cover retaining and this position would be the top. I made reference to the top right hand part of the cover.

Q. You say the edges are uneven as from uncontrolled electric arc cutting?

A. Yes.

50 Q. You examined the box itself and you explain at para. 6-0-5 that there was not evidence

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(continued)

or none.....side of the box'.
You have the four holes at the top
of the box?

- A. Yes.
- Q. The bushings would normally have been what and how situated?
- A. The external thermal of the bushing would have been screwed inside the hole. In the catalogue it is referred to a packing gland. It is in two parts, one part to screw into the hole and the other to clamp around the cable. The cable passes through this and when you screw the top piece into the lower part of the bushing, the packing gland holds the cable so that it cannot move. If we measure the holes on the exhibit you will find that they are approximately 5/8ths of an inch, the cable the twin 7/064 according to the BS standard 2004, the largest dimension, is 0.674 inch whilst the smaller dimension is 0.634 inch; if a packing gland had been used then the dimension of that hole would have been greater perhaps of the order of 3/4 of an inch to allow the cable to pass through. 10
- Q. You saw no evidence, if it had been there it could have been destroyed by the fire?
- A. Yes. 30
- Q. By measuring the diameter of the hole you reach the conclusion you have described and found in the report at para. 6-0-5. As you thought that could be of significance to this matter; you referred to somebody, to an expert in the matter to Mr Turner? (sic)
- A. Yes, I actually did not deal direct with Mr Turner. My correspondent was Mr Maisey and I gave him this information and in turn he passed this information on to Mr Turner. 40
- Q. Mr Turner has explained. Now para.606 'the middle part was continuous..... of Henley fuse box' and you referred to photograph 46. You mean to say what?
- A. The reason for that comment was that as I could not see any evidence of a non ferrous bushing or packing gland and because of the size of the holes I had to consider the possibility of the effects of eddy current heating and so I looked at the top of the box to see whether any work had been made to cut between the holes to provide an air gap which would 50

then reduce the effects of the magnetic field and prevent any eddy current heating.

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Q. This matter was also referred to Mr Turner?

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A. Mr Turner in his report did consider this, but the effects were negligible as he said.

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Q. Para. 6-0-7 of your report: 'The external fixing bugs of Henley fuse box..... found in the wall'. Then 6-0-8, you referred to the remains: 'fuse box, there was no..... was also recovered'. Those copper contacts and terminals, what would have happened to them?

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A. They would have melted in the fire from the temperature rise as described by Mr Turner.

(continued)

Q. Para.6-0-9. From your observations of the box you say that the 'body of the Henley fuse..... noticeably warped'. Could you draw the court's attention to this warping?

A. The warping had occurred to the cast iron body as well as to the mounting plate on top. 'On the left hand side the warping has resulted from considerable high temperature'. For steel the temperature would be 1300 to 1400 degrees centigrade, for cast iron it is higher.

Q. Of what metal is it?

A. The body is made of cast iron, the top place is made of mild steel.

Q. Para.6-10 and para. 6-11, you refer to statement, the evidence of Messrs. Mamdally and Hiss. In respect of Mamdally you refer to what happened on the very morning of the fire and you refer to 8 points in your report, to the door of the fuse box having been found opened on the visit of Mamdally, the CEB workers a cable in the fuse box that was black, the insulation had crumbled. This would suggest what? If one accepts the evidence of Mamdally on that point?

A. This shows evidence of considerable overheating of the conductor.

Q. The replacement of that piece of cable. At this stage perhaps you would like to refer to para.7-15 page 9:- 'To return to the evidence of Mamdally..... cause of the fire'. You say that they were joined together?

A. It is clear that the cable was cut. I could understand this, the deterioration was taking place due to overheating of the cable. The deterioration of the sheathe

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would be due to a heat of 120 degrees centigrade which would soften the conductor and the copper conductor starts to migrate. As you increase this temperature, that starts the PVC to flow and move. Probably what happened is that as the temperature was high, they were probably jammed in the hole and probably cut to enable them to remove them. They may have cut it away from the hole and they would have replaced the cable. It is difficult to imagine that a trained electrician would leave the piece that had been cut, still connected to the bimetallic connector and just join a new piece to that piece of cable and then connect into the fuse box. It is very difficult to say that this happened. But I did mention it because there was a question of how the cable was replaced, if it was cut. 10 20

Q. The logical thing would have to replace the whole cable from the box itself to the bimetallic connector?

A. Yes, I would just add, if in fact they had been twisted together and then taped up, it would have been a very irresponsible thing.

Q. We turn back to page 4, 6-10(e) 'The piece of cable replaced was not.....' this leads you to what inference? 30

A. The inference was that it was not the neutral cable.

Q. The neutral cable would be the one on the complete right?

A. Yes, if you look at the fuse box you will see the actual fuses on the left and on the right you will find the neutral block.

Q. Then you have (f), (g), (h). In respect of (g) and (h), is there any comment you want to make on the mechanism of the closing of the box? 40

A. Yes, the design of the fuse box. The cover design is done in such a way that when you close the cover it in fact holds in position the fuse carriers. The reason for it is that any movement of the fuse carriers is mechanically prevented by the proximity of the cover. It seems to me that if the lower bolt was not fixed, they could not get one of the fuses to fit in the fuse box contacts. 50

Q. In itself it is a safety device?

A. Yes, as designed by the manufacturers to prevent the fuse falling out.

Q. You then refer to the evidence of Hiss at para.6-11 'Hiss observed the time..... replacement of the fuse carrier'. What those persons did, if that evidence is accepted, would they have to go and investigate the causes or purely and simply do away with the symptoms?

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10 A. The first obligation would be to investigate the causes, to try and locate the fault and establish why the fuse blew.

Q. If the actual causes of this fault were not investigated and remedied, would that mean that symptoms would reoccur?

A. If you do not remove the cause, symptoms would reoccur and you will have current blowing the fuse. The whole system would become unstable and the fault condition will worsen.

20 Q. Para. 6-12 you refer to verbal information that 'there had been a number.....' Do you make reference here to the extract produced in court during the course of these proceedings? In 6-13 you refer to the evidence which has been led that the box has been in close proximity to the material such as cardboard boxes. Could you in that respect say when an installation of a fuse box is set up, does it have to be specially selected. What has to be taken care of?

30 A. When you select equipment for installation, you have to select it according to where it will be located, to the surroundings, to the people and to property. Concerning the design of the manufacturers, equipment, one of the features is to ensure that the surface temperature does not exceed a certain temperature. This is generally 60 degrees. It is of that order. The other point. They must take care and make sure that it does not constitute a fire hazard because of damage to property.

40 Q. We turn to page 5 of your report. Here is information communicated to the court by Mr Turner, but you yourself you saw these data of recommended fuse wire for use in 60 amp. Where did you actually see it?

A. I saw it in Mauritius Knitwear where there was similar equipment.

50 Q. Para. 6-15, we could read the first sub-paragraph and the last sub-paragraph 'Transformer earths in Mauritius..... fault circulation currents'?

A. It was during conversation at the CEB and I would add that generally in Tropical

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countries it is difficult to establish a good earth. This I know from personal experience when I was in West Africa and in Thailand.

- Q. You now proceed with some figures, first of all you have the statement to the effect that this in itself: for example the permissible.....the fuse ever blowing. Would you explain the calculation?
- A. The formula that I give there is a formula 10 that you use to calculate the maximum permissible earth fault resistance. The calculations that I made were based on one 18 SWG fuse wire to establish what was the maximum permissible earth resistance of the Henley fuse box. I have calculated 230 volts divided by 102; this is the fusing current as indicated by the manufacturers, for that particular size of fuse wire and you will see that we 20 have a resistance 2.25 ohms, similarly, I used 5 ohms; the resistance being higher would tend to indicate that unless you can obtain low resistances, in the case of a fault, you could have a current as high as 46 amp.
- Q. That would be 230 divided by 5?
- A. Yes, it carries a current of 46 amp. and this would flow without the fuse ever blowing and as I did raise the question with the CEB, they said yes, we did 30 experience fault circulation currents. This confirmed to me that this could be particularly so. I have not made any measurements.
- Q. The paragraph 6-16, you proceed to set down the current carrying capacity of the various relevant cables. You deal first of all with the 'main cable from the transformer.....electrical engineers'. Is there any comment you would like to make in respect of this situation from the point of view of proper installation? 40
- A. Before I comment, the current rating of 130 amp. for the 0.06/4 PILCSWA&S cable would have under defined conditions a rating of 150 amp. I omitted to put that in the report.
- Q. Rated item (d) 'the cable from the bimetallic..... of this 70 amp.' you say that this was given to you by the CEB? 50
- A. Yes.
- Q. Page 6 Note 2, at each phase bimetallic

connector.....aluminium cables were connected..... that were connected'. If we turn to sketch (a) is there anything on that sketch to indicate the explanation give to you?

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10 A. If you look at the line on the left hand side below the bimetallic connector you will find coming out from the aluminium conductor, a number of lines going to the left. This was to indicate to me how they connected up the concentric neutral. It is made up of a number of wires which transpose themselves (twisted together).

Q. These were made by whom?

A. By Mr Tranquille.

Q. Do you find any comment to make on this practice?

20 A. First is the way of doing it, it would lead to a possible deterioration or breakdown. The workmanship leaves much to be desired. I said further in my report that taking everything into consideration, the regulations provide that we must bear in mind the safety of the personnel. As to the size of the conductors I prefer to discuss that later.

Q. Para.6-17, you mention the fact that the way the aluminium cables were divided into two outgoing circuits?

30 A. That is correct. If we look further on, the point can be developed.

Q. Para.6-16. Then you have the declared connected loads taken from the application forms. These forms you have received from whom?

A. From the CEB.

40 Q. Southern Cross, the Imprimerie Ideale and Textile Industries make a total of 64.8 KWS. You said 'based on the information.....' Is there anything you would like to say about this?

A. I would like to say that the assessment of diversity is very difficult.

Q. What do you mean by diversity?

50 A. The total declared load of 64.8 kws. It would be the full load on the supply. It does not mean to say that the average demand would be of that figure. It will be something less. We apply diversity factors when designing an installation to arrive at the size of the cable and protective devices. I would say that the question of diversity is something that has been

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discussed at international level and there is no agreed table. It is established that this is one of engineering judgment based on experience and how to assess a connected load when being used by the consumer. This diversity factor would change from consumer to consumer. I think I would like to mention that I have, since coming to Mauritius, been given data of electricity consumption. I mention this because sometimes you can get an idea what the diversity factor was. It is very difficult to analyse the diversity factor. In this case I looked at the consumption during the month of June. If we assume that the number of working hours in the month is 200 and we divide the 200 into kilowatts hours for the month for each of these consumers, we can see that we have an average demand. For example, with Southern Cross Diamond, by dividing 200 into 2.092 we could see that the average demand is of the order of 10 kws. Declared connected load 16.5 Kw. For Imprimerie Ideale the declared connected load is 28,300 watts or 28.3 kws for the month of June we see 781 kws. By the same calculation we could see that the average demand is in the order of 4 Kws. Similarly for Textile Industries you would have the approximate demand of 12 kws. Textile Industries is composed of sewing machines with single phase meters, has a very poor power factor.

In my report I said 0.64 and for the other two consumers which have 3 phase motors generally one could expect a power factor of .8, may be a little more, may be a little less. Based on this I would have assessed the average power factor of 0.7 for the total connected of 64.8 kws; it is necessary for me to assess the power factor in order to arrive at the possible current that would flow.

I would then have a current of 57 amp. per phase. This is very close to 60 amp. rating of the fuse box. But in my opinion I have been assessing this high rate, this average demand so high, in fact there are number of days when the load would vary. I would assess the average demand 79 amp. per phase.

The machine load at the Textile Industries is composed of single phase machines. This would produce the possibility of unbalanced load. Therefore one phase would carry a higher load than the other two phases, this being felt at

the fuse box which we had located.

Court: You give an assessment in kws and then you give what would be the average demand? You make the connections?

10 A. Initially you work in kws. At some stage of the calculation you will transfer this to KVA. The reason for this is to ensure that you have adequate transformers to supply the load. The next stage in your calculation is to convert this to amperes and I have done this to illustrate in amperes so that you can compare it with the rating of the 60 amp. fuse. It may not give the correct comparison. In fact this is why an engineer converts KVA into amperes, so that you could select the correct equipment and equipment means here the fuse boxes, cables, etc.

Q. What is the equivalent of 64.8 kws?

20 A. I have in fact given that calculation on page 7.

Mr David: In their application forms those three people had asked for the supply of 134 amp?

30 A. In the application form at the CEB, it is said what each consumer wants in horse power. They would then convert that themselves into amperes per phase. It would not be incumbent upon the consumer to provide that in amperes. It is more convenient in fact to work initially in kws; the reason being that if I have a certain amount of single phase machines, I would automatically balance them across 3 phases.

Court: I would like to know whether they exceeded what they asked. This is worked out in amperes, had the load been what it should have been, what should have been the figure?

40 A. They will have to do that to size their cable. For Imprimerie Ideale, the declared load is 28.3 kws; I have the KVA of 35.4 kws and I have then calculated the total amperes as 51 amperes per phase. For Southern Cross, Diamond Co. a declared load of 16.5 kws. I have a result in KVA 20.6 and I have also the total amperes of 29 per phase. For Textile Industries, I have not worked on the figure of 20 kws. The information I have was that there were approximately 40
50 sewing machines used for training operations, consequently the load was 1.8×40 which can be 72 amp. That is single phase load. I must divide that by 3, that would give me 24 amp. per phase. The lighting load was approximately about 3 amp. per phase

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giving me 27 amp. per phase. I have
not done the calculation for the declared
connected load of 20 kws.

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Continue after recess

Mr David examines Mr Davidson

Q. Mr Davidson, have you been able to form
the calculations?

A. Yes my Lord. The figures for Textile 10
Industries based on a declared load of
20 kw, a probable power factor of 0.64
to the result in KVA of 31.25 would give
a total of 45 amps per phase.

Q. Making a total of

A. 125 amps.

Q. At paragraph 6.21 of your report page 6,
Mr.Davidson, do you understand that these
observations are from personal on what
you saw personally. 20

A. These, my Lord, are based on personal
observations.

Q. At page 6, the declared connected loads
is paragraph 6.19 based on the information
provided in paragraph 6.20 Imprimerie
Ideale is 6.21 and it is therefore reason-
able in 6.22. Is this correct?
So in 6.21 then you saw personally that
Imprimerie Ideale had installed also a
single phase 150 amp welder operating 30
off a 230 volt 30 amp supply.

A. That is correct my Lord.

Q. And in respect of Southern Cross Diamond
they had a 10 HP 3 Phase compressor which
had a full load of 15.6 amps.

A. That is correct.

Q. And you have already referred earlier
on this morning to the Textile Industries
that had been installed 2 sets of 63
sewing machines out of which 40 were being 40
used for training operations.
Now, I see you had observed that the
installed sewing machine load of 31.5 kw
thus being greater than the 20 kw load on
the application load. How did you reach
this figure of 31.5?

A. I have based the calculations on data
taken from the name plate on sewing
machines. I have said earlier on, that

the load was 250 watts. I multiply the 250 watts by 126 that is to say the two sets of 63 sewing machines thus arrived at a sewing machine load of 31.5.

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10 Q. Now, you would like, Mr Davidson, to draw attention to one of the pieces of information given by the CEB in the third sheet, first one being the consumption, the second one being the CEB consumption also it would be therefore the third page referring to the load for the consumer Textile Industries Ltd.

A. Yes my Lord.

Q. On the right hand side completely there is a column remarks which, so far as we can make out was as follows :-

New Accounts No. X 27/6/72

As for a, for b n/183290 - 5/6/72

20 loades 24 x 14 = 350, either 40 or 20 sewing machines 18,650 ten cutting machines 20,000 then underneath there is the F entry that the meter has been changed Meter changed with effect from 27/6/72 as per probable application to 201688 - 26/6/72 the interest entry is in respect of the meter being changed with effect from the 27 June 1972. Is that right?

30 A. This is correct my Lord. In the case that the declared load 20 kw was being exceeded and that the meters which had been installed to register the amount of electricity consumed was not sufficient to measure it and accordingly they had to change to a meter which could measure a higher load. It was the only conclusion I can draw from it.

40 Q. On 6.22 it is therefore reasonable to assume that during the month preceding the fire, there may have been peak demands in excess of the declared maximum load of 64.8 kw and that the average power factor was probably of the order of 0.7 leading you to the calculation of 134 amps.

A. That is correct my Lord.

50 Q. So now after setting down all those observations of pieces of information you proceed during your report to discuss certain matters. 7.01 - it is important to note Now you proceed to 7.02 which is the omission of non-ferrous bushings to which you have already referred. 7.03 - The purpose of these non ferrous bushings is

A. (a) To hold the cable firmly in position to avoid any undue force being exerted on the terminal of the fuse base contact.

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(b) To protect the sheath of the cable
from mechanical damage

(c) To avoid the ingress of moisture,
dust, insects and other matters
which could prove harmful to the
contacts within the fuse box.

Q. You then proceed to 7.04 - The resultant
contamination to the contacts would give
rise to temperature rises greater than
that which would be found with clean 10
contacts. In that case would there be
any resultant oxidation?

A. Yes my Lord. The contamination would give
rise to oxidation of contacts.

Q. You refer to 7.05 to the evidence of Mr
Mamdally and you are of the opinion that
it is indicative that severe temperature
rises at the Henley fuse box had taken
place and that the subsequent overheating
of the conductors had damaged the insula- 20
tion of the cable.

A. Yes my Lord.

Q. 7.06 has already been dealt with by Mr
Turner. It is in relation to overfusing.
We have already learnt that the 60 amps
Henley fuse-box was fused, thus giving
a total working fuse current. Is there
any observation you want to make?

A. Mr Turner has explained in great details
the power loss that takes place during 30
these conditions of overheating leading
to the excessive temperature rises within
the fuse box and leading to the overheating
of the cables. The point that it is rather
corroborative that in the faults log book
states that control fuse oxidized.

Q. When did you state that you got the
information of a 2 No.18 SWG fuse wire
from Mr Tranquille. When Mr Tranquille
gave you that information, was the inform- 40
ation relating to the whole fuse box or to
one fuse or what?

A. I understood that he referred to the 3
fuses in the Henley fuse box. That all
fuses had been wired with 2 No.18 SWG
fuse wires. There was no indication in
the conversation that they had been selec-
tive in overfusing only one.

Q. You said in 7.07 concerning the overfusing,
the first mention of this is the entry 50
for the 28th June 1972. Could we turn
once again, Mr Davidson, to
Now, in the extracts of the faults log book

Document "Q" produced

- Q. Mr Davidson, let us first of all look at the entry in the right hand side. We see - Jupin Felicite, then again Jupin Felicite, then Mungroo Karim, Periatamby Ramgoolam, Insp.Soobhany, Ah Kye, Bheekun & Shibuauth, Isnard Botte, Jupin Aliphon, James Auffray, Rosalba, Periatamby Reesaul Samy, Francois, Rosalba James Louise. This shows what?
- 10 A. This shows obviously that different electricians can go to the same fault.
- Q. What would be the possibility for the successive employees to be able to follow up?
- A. Electricians should be able to know the size of the fuse wire that had been previously installed.
- 20 Q. Is there a column that is reserved for that in that page? We find one column which is blank in fact - state size of fuse renewed if any and that column is left completely blank from top to bottom. The only relevant entry being on the 28th June where we have REP 2/18. We have the entry section fuse blows REP 2/18 so that apart from that one entry outside of that column there is absolutely no indication to the successive employees as to the state of the fuse wire.
- 30 A. From the faults log book it is quite impossible to tell what fuses have been installed. I cannot tell the size of the fuse that has been used to repair.
- Q. But how would you describe such omission Mr Davidson?
- A. I would describe it as regrettable.
- 40 Q. You proceed then at page 8 of your report to deal with some matters relating to temperature. You say at 7.08 - Conductors will start to decentralize in PVC at a temperature of 120°C if it is sustained. In event of a short duration short circuit, i.e. where the fault is interrupted by a protective device such as a fuse, PVC cables can withstand a temperature of 160°C before decentralizing. What would be the maximum time permissible at a temperature of 160°C?
- A. No more than 5 seconds.
- Q. I think Mr Turner referred to that this morning?
- 50 Court: Well, what did you mean by "decentralizing"?
- A. It's where a conductor moves out of centre. It does generally conductor insulation is also circular. When the PVC starts to soften

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it is possible that the conductors can move out from its central position even by virtue of its own weight.

- Q. 7.09 - you speak of the flow of current in a conductor will also give rise to heating in the cable and this factor added to the overheating at the contacts in the Henly fuse-box will help to increase the overall temperature rise in the cable as well as in the contact. Then you proceed to give an indication of temperatures reached in a twin 7/.064 PVC insulated when the cores are used in parallel for the same phase. Is there anything you want to say about this or it speaks for itself? 10
- A. The question of overheating has been very fully explained by my fellow expert Mr Turner. I have only given the facts just to illustrate temperatures which can be reached under certain conditions. I would also add that the recommended maximum operating temperature that is internationally is 70°C. 20
- Q. Yes. At 7.10 you speak of the moment as from which the PVC will start to deteriorate, i.e. flake off and crumble on touch within more or less 30 seconds when heat at a temperature of 250°C is applied to the sheath. It would therefore appear that the PVC cable that was replaced on the 6th July 1972 and which was seen to crumble must have been subjected to temperatures of at least 250°C. 30
- A. Yes.
- Q. Then you proceed in 7.11 to describe - there are known instances where a conductor has reached a temperature sufficiently high for the PVC insulation and sheathing to flow and drip on to materials whose ignition temperature enabled them to catch fire. By the way what did ignition temperature mean? 40
- A. The ignition temperature of PVC is between 400 and 450°C.
- Q. And of cardboard?
- A. Between 230 and 250°C.
- Q. So from the data given to you, you can imagine that a similar happening may have occurred in Room 4 and a detached fragment of hot PVC in the process of combustion then could have fallen on to a cardboard container or some other material lying on the floor beneath the Henley fuse box and caused it to catch fire. 50
- A. That my Lord is my opinion of a possible cause.

- 10 Q. Next is 7.12 we see the consideration of what happens from exposure of PVC cables to high temperatures, even for short periods, may cause the insulation to soften. This has already been explained by Mr Turner. Continuous exposure of PVC compounds to temperatures above 115°C may cause the formation of corrosive products which can attack conductors, contacts and other metal work.
- A. My Lord, I should say at this point the effect is not an immediate effect but it is an effect of the long term, in other words, it would take certainly some number of hours may be days to have this corrosive effect but the effect does start to show.
- 20 Court: That is as far as corrosion is concerned. The long period you are speaking of refers only to corrosion and not to the softening of insulation.
- A. Not the softening. The softening effect will give rise to corrosive gas and which has a corrosive nature.
- Q. Whereas the softening would result even to exposure for even short period that is the difference on which my Lord wants to be sure about.
- 30 Next one the 7.13 - Motor starting loads, now when you speak of motor starting loads you are thinking in terms of compressors.
- A. The compressors, the welder even the sewing machines. Most starting loads last a very short period of time less than a fraction of a second. There are some starting loads which take longer. The one I had in mind was to try to illustrate the extent of the starting load was such that as this energy system has to be dissipated and if you have a very heavily loaded system starting loads will disturb it and the fuses will blow.
- 40 Q. You say that the starting load will vary from between 5 to 10 times full load current during that fraction of a second.
- A. During that fraction of a second it would have that kind of situation. I have actually given a starting current here. It may happen of course that some compressors will have a star delta motor starter which is aimed at reducing the current but this is not usual in the lower horse power.
- 50 Q. And it is in this relation that you have drawn attention to the fact that there is no actual evidence to the fact that the return from lunch break is one o'clock. There is evidence that the return from lunch break is one o'clock at Bata Warehouse.

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7.15 - you have already dealt with in respect of Mr Mamdally. So you turn to 7.16 where you speak of the cyclic heating and cooling of the conductors that would have given rise to a force being exerted by conductors at the terminals due to expansion and contraction and this would have also led to a further increase in contact resistance. We have already dealt with this, this morning. 10

At 7.17 you have turned to another aspect. You mentioned about the overheating that would have taken place, it would have taken place through what?

- A. My Lord, the overheating of the box probably caused sustained arcing. It's the system of sustained arcing that has been fully explained by Mr Turner and if we have such a condition it would go on sufficiently long to heat the box up and cause the expansion of the box. I would just at this point say for a cast iron the expansion at 50°C is approximately .125 mm. At 500°C you have approximately 1½ mm and you had temperatures of fast degrees it would be 3 mm. 20
- Q. And from what you say finally undue stresses were probably felt at the fixing lugs.
- A. Yes at the fixing lugs, the fixing position eventually goes such a stress at the fixing lugs of the box to shear it off would prevent the expansion taking place if possible. 30
- Q. So Mr Davidson, then fixing lugs would then as a result suffer?
- A. Yes indeed due to this expansion and due to the fixing lugs being held in position and not being allowed to move.
- Q. When you say: it would appear that the heating of the box at the time of the fire must have been sufficiently high for the expansion to exert sufficient force for the lugs to shear off close to the raulbolts which fastened the Henley fuse box to the wall and in respect of the arcing which you just mentioned would the state of the lid which was underneath cut off have been relevant? 40
- A. Yes it is relevant. We have a condition of sustained arcing which could have taken the form of non control of electrical arcing. 50
- Q. In 7.18 you have tried to visualise what could have happened is that it? The Henley fuse box by virtue of its weight would tend to fall away from the wall and presumably

as it was still physically connected to the PILCSWAS cable, the fuse box described an arc when falling. It is assumed that the cover which by this time was only loosely sitting in position then fell forward when the fuse box started to move forward and the momentum caused it to land about 1 foot further away from the position in which the fuse box was found.

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Now, in respect of that, first of all, you say that by this time the cover was only loosely sitting in position what would your evidence give for that, from what would you draw such inference?

- A. The hinges that held the cover in position was of another material than cast iron and they would melt at approximately of a 1000°C. The bolts which fastened the cover of the box were also of a material which would melt before cast iron. Accordingly the material which is holding the cover in a position would have disappeared as is evidenced by the cover which we have. The cover could come away in two ways. I describe one way here which will the fixing lugs shear off and then the box would move forward and the lid would also go forward. The second possibility which I have not mentioned in my report but I think is one which should be considered is that when the sustained arcing is taking place it heated the box to such temperatures which would cause it by certain other metals to be melted it could have suddenly converted into a much larger arc the current thus causing an explosion blowing the cover and then the box coming off the wall could have been at some point in time afterwards.

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30

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- Q. Mr Davidson there has been evidence with effect that the lid was found on the concrete floor that is underneath the debris that some of the debris was found thereafter and on top of the debris was found the box. Would you draw any inference from the fact that the cover was found on the concrete floor?

- A. Certainly my Lord. I would draw the inference that the cover either came off at the outset of the fire or certainly very shortly after it started.

50

- Q. Which in the whole context would be very significant indeed?

Court: You would suggest that the main was blown off before the entire fuse box came off the wall.

- A. Yes my Lord this being due to sustained arcing which could take place. The arcing

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(continued)

cuts away at the corner of the lid, the heating going on in the box would have been sufficient to have melted the hinges of the box holding the cover on to the body.

- Q. You then at 7.19. You say the evidence of Mr Hiss substantiates the fact that the contacts in the fuse box were probably contaminated more than a month previous to the fire because Mr Hiss said that the accident took place about a month before the fire. The fault that took place following the replacement of the fuse wire we are talking of the flash that occurred after the fuse carrier had been placed in after repair? 10
- A. That's correct.
- Q. The fault that took place following the replacement of the fuse wire may well have been due to replacing the fuse during an on load condition as well as due to contacts that had deteriorated. Could you explain what you mean by on load condition? 20
- A. It may very well be that some of the machines had not been switched off and therefore when they replaced the fuse there was an immediate flow of current.
- Q. Will you read now 7.20 Mr Davidson?
- A. I was not able to ascertain the correct transformer size but from appearances, it would appear to be 150 Kva. The 150 Kva transformer fault level at the transformer terminals was probably 4500 amps. I arrived at this figure from a very simple calculation which is based on the transformer impedance of the order of 5%. Using this figure I am able to arrive at the level of approximately 4500 amps and at the Henley fuse box the level of course is lower due to the additional impedance of the cable from the transformer to the fuse box. I have not calculated this one actually but this was probably resulted in a reduced level between 1000 or less. The amps of the cable would be such that the fault level at the Henley fuse box would have been reduced to approximately 3,500 amps or even less. 30 40
- Q. You say that these figures are only given to indicate the level of short circuit current that could occur if for example the PVC insulation and sheathing of the cables passing through the threaded holes had become sufficiently damaged to allow a conductor to come into touch with the side of the threaded hole. An examination of the Henley fuse box in the company of Mr Maisey leads us to believe that there are 50

signs of arc roots adjacent to two of the threaded holes. These arc roots may have been the result of such a short circuit. Can you draw the attention of the Court?

- A. My Lord, we could show this to the expert, we believe that they are on the first hole and the second hole.

DEMONSTRATION SHOWN

10 Court: Do you think we can see anything or we must take your word for it?

- Q. At page 10 - 7.21 you refer to IEE Regulations for the Electrical Equipment of Buildings requires that each circuit shall be separately protected but in the case of the aluminium cables feeding the adjacent building, there were in fact 2 outgoing circuits each of 70 amps capacity. These 2 circuits were in fact protected by one protective device, i.e. the 60 amp Henley fuse box but which was now overfused at 100 amps. We have already 'en passant' this morning dealt with this but is there anything else you would have to add at this stage?

- 20
- 30 A. Yes, we could look at sketch E 3866/1. I can illustrate to you the point which I make there. The two little circles which you see on the right hand joined together indicates a fuse and this is the fuse of the fuse box in Raw Materials store Room No.4. You see that I indicated a single line going up to the bi-metallic connections but after that I have indicated two separate lines. One line is to the Diamond Industries, one leads to Textile Industries and Imprimerie Ideale. The two lines there are in fact two separate circuits but they are not protective individually. The rating of the circuit
- 40 of the cable is 70 amps which I have mentioned earlier in my report but the fuse that is protecting has been rated according to the information given to me as 100 amps. Now regulations which we follow when designing the installations of a building this includes the distribution through a building states that each conductor shall be protected by a device at is the point origin and here we have in fact two conductors protected by one and not by two protective devices.
- 50 The weak point in the system is the one fuse protecting the two circuits which is the bad installation practice. I would mention that in distribution of electricity the supply authorities of course do reduce the cross section area of the conductor and do not place a protective device at the origin of that

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reduced cross section area. The reason for this is that they are buried in the ground there it turns off and there is no harm to personnel or propriety. But we here are dealing in a building and another regulation should be observed and in my opinion these regulations have not been followed and in fact should we have had two sets of fuses the position would have been that much safer but I would also like to point out that the load and the circuit for the Textile Industries and the Imprimerie Ideale was loaded approximately to 98 amps and I am basing this on to figures which I have given to you previously. This means to say that the 70 amps cable was dealing with Textile Industries and Imprimerie Ideale was not sized correctly. In fact in my opinion it would have been very simple matter to have put in three sets of fuses and one three circuits, even although there is a temporary service. 10 20

Q. The IEE Regulations - I take it is the International Electrical Engineer?

A. No, I am here referring to the Institution of Electrical Engineers in the UK and which I believe are followed in Mauritius. I would also add that in the International World of Standards which have in fact already been published just recently publications and which in fact support the comments which I have made here. In fact I have copies with me. 30

Q. Is there any comment you would like to make, Mr Davidson, before we proceed to the conclusions?

A. No, no comment.

Q. So now we come to the conclusions that from the evidence obtained during the site investigation, the results of the ERA and ASTA reports, and subsequent evaluation it can be said that the fire was due to electrical causes. The fire was caused by an electrical fault associated with the Henley fused service unit. The precise cause is not known but probably arose from one or more of the following causes which you set down but I understand that in the correction that you may adopt you omitted to put the last one (k) which is sustained arcing in the fused box. So instead of just (j) you will have to add a further cause (k) which will be "Sustained arcing in the fuse box". Can you read out these conclusions Mr Davidson? 40 50

A. (a) the Henley fused service unit was called

upon to carry currents in excess of its design due to overfusing

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- (b) Contamination of contacts in the fuse base and fuse carrier
- (c) The absence of non-ferrous bushings
- (d) Severe overheating of one or more the outgoing cables from the Henley fuse box
- (e) The dripping of PVC onto cardboard cartons or other material
- 10 (f) Damage to the cables passing through the threaded conduit holes from mechanical pressure and/or migration of the copper conductors due to the softening of the PVC thus leading to a possible short-circuit
- 20 (g) The method of joining two pieces of PVC cable together when replacing the burnt piece of cable on the morning of the fire which led to subsequent breakdown at the joint
- (h) Damage to the fuse base terminals due to expansion and contraction of the outgoing copper conductors from overheating and thus leading to a high resistance fault condition
- 30 (i) Overheating of the contacts of the fuse base leading to a loss in temperature and thus reducing the amount of surface contact with the contacts of the fuse-carrier and resulting in further overheating
- (j) Overheating at the bi-metallic connectors
- (k) Sustained arcing in the fuse box.

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Court: The conclusion at (j) you have no evidence that there was actual replacement of the cable on the day of the fire.

Mr David: Hiss deponed to the fact that one month before the fire there was a flash, a spark but Mamdally has deponed to the effect that on the 6th of July in the morning.

Mr. Davidson, to conclude what in all that you have been able to see and that you can picture what would be the most significant in this case?

A. My Lord, undoubtedly the finding of the cover on the concrete floor.

THANK YOU

Xed by Mr Moollan

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- Q. Mr Davidson you have told us that you reached Mauritius on the evening of the 17th of July then from the index page of your report there is a sketch made by Mr Tranquille on the 18th July, was it the first time when you went to the CEB?
- A. That is correct my Lord.
- Q. Where did you meet Mr Tranquille on the 18th July? 10
- A. I met him in his office my Lord.
- Q. In which town?
- A. In Port Louis not in Curepipe.
- Q. The whole of the conversation with Mr Tranquille on the 18th July took place in Port Louis. Is that correct?
- A. Yes it is correct
- Q. And from the index page it produced a part from the other information sketch B. 20
- A. That is correct.
- Q. You left Mauritius in the afternoon of 20 July?
- A. Yes my Lord.
- Q. And presumably you met Mr Tranquille on the same day because he has given you a sketch on the same day?
- A. Yes my Lord in the morning.
- Q. Where did you meet him on the 20 July?
- A. The CEB offices in Curepipe. 30
- Q. There you obtained a further sketch A?
- A. Yes my Lord.
- Q. Well whom did you meet apart from Mr Tranquille on each of these two occasions?
- A. On the first occasion there was Mr Jean, on the second occasion I met Mr Desai, Mr Jean and Mr Labat.
- Q. At what point of time did you write the letter which you have produced this morning which was dated 20 July? 40
- A. I wrote it on the eve of 20 July.
- Q. Did you meet any other person at the CEB on any other of those two occasions, the 18th in Port Louis and the 20th in Curepipe?
- A. No I do not recall anybody else.
- Q. Or the same person on other occasions?

- | | | |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| A. | There was only two occasions which I met these people. | In the
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Court |
| Q. | I see that the CEB in fact gave you quite a lot of information about installation giving you sketches to make it clear? | Plaintiffs'
Evidence |
| 10
A. | They gave me information on the permanent service of the building at the Bata Shoe Factory Warehouse and they gave me some information on the distribution of cables to the three consumers on the adjacent building and they gave me information on the size of the type of that cable also the cable in the Raw Materials Store, the Henley fuse box, the bi-metallic connectors. They describe the connectors and how they had connected their neutrals and they also informed me of the size and number of the fuse wires. When they gave this sketch, they also indicated where their new substation was being built to feed the building where the three consumers were being fed on the temporary service. | No.29
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(continued) |
| 20
Q. | You have told us that according to you they would not let you examine the wire or is there any other information which they refused to give to you? | |
| 30
A. | I also asked for details of the load and I had a very minimum of information they gave to me at that time. They quoted the figure of 63 kw which is fairly close to the total of the declared loans. I also asked to look at the fault service log book. | |
| Q. | When did you ask for that particular information? | |
| A. | On my first visit. | |
| Q. | You drafted the letter which was produced on 19th July but you did not in fact sign it until the 20th July? | |
| 40
A. | That is correct my Lord. | |
| Q. | And you dispatched it by post? | |
| A. | I did not dispatch it personally. | |
| Q. | I see it was received on the 21st of July. You presumably wanted the answers to your questions by handwriting that is why you caused that letter to be written although you had a conversation with two members of the CEB in the morning and you're just wanted to confirmation of the information from the head office in the afternoon? | |
| 50
A. | The conversation in the morning yes. I did this in handwriting because there may have been some additional information. | |

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(continued)

- Q. Because in fact your conversation to these two meetings were conversations of a general nature which meet or do not meet to complete information. This is why you put it in writing?
- A. The conversation of a general nature by virtue of the fact that the CEB were reluctant at the discussions. They just gave me brief outlines but they did not wish to give me the details that I was looking for. 10
- Q. Reluctance which we see translated here in sketches A & B?
- A. Yes these are very brief sketches, they are not the full story. If I have been able to look at the cables this would have assisted me in my investigation. If I have been able to look at the application demand if I had had a copy of the consumption figures I think this would have helped considerably in my investigation. 20
- Q. We notice that in your letter you did not mention any of these three factors which you have just mentioned authorisation to inspect the cables, the communication of the application and communication of the consumption?
- A. As I have said before, the details of consumption is not very helpful but it would have been useful information. 30
- Q. You said reluctance is exemplified by their not giving you the actual applications but now we see that you did ask for the loads and they did give you an approximate figure which was very nearly and that you have asked for details of the load. You never asked for actual communication of the application.
- A. When I asked for details of the loads I would expect the supply authority to give me such information. 40
- Q. Give you a photo copy of the application?
- A. Yes or an extract in some way which I could then use in my calculations of the probable loads in the probable demands.
- Q. And I see also that they gave you information about the earth conditions in Mauritius?
- A. I mentioned that because they talked about the earth fault circulations current whether in fact in their investigations when they went to see faults what did they see, what did they find? 50
- Q. I am not speaking of the faults. I am speaking of the part you mentioned in your

letter here. You discussed things generally, in Mauritius we have problems all the information was given to you by the CEB?

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(continued)

A. Yes.

Q. I notice that in your letter you did not mention anything about the meters of which you have seen in the office of the CEB.

A. That's quite correct my Lord.

10 Q. You did not think it necessary to ask them in writing. I'd like to look at the meters etc.

A. No I did not feel it was necessary to look at them or inspect them because as they are established from photographs that the fire in that particular room was less severe and also that particular location was in the finished goods store and the fire did not take place in the finished goods store. So I was not interested.

20

Q. Now you actually saw those aluminium cables in the office in which you met Mr Tranquille on the 18th.

A. They were not in the office in which we met but as I said I believed that I saw them.

Q. I take it that you were taken in the room in which those cables were kept?

30 A. No we were not taken to the room in which they were. If my memory serves me right I believe that I saw these cables through the open door in another room. I do have the firm impression that I saw these cables.

Q. Did you actually handle those cables Mr Davidson?

A. No I did not handle them. I only saw them from a distance.

40

Q. Would it be correct to assume that the two single line diagrams which you have annexed to your report have in fact been made from information you had at those meetings and which are to be found in the diagrams A & B?

A. They were not put in first. Part of the sketch is done from visual observation on sight.

Q. The first sketch you mean?

A. The 3866/1.

50

Q. How did you visually expect the whole of that which is the overhead tension line and its annex to it.

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(continued)

- A. I observed it myself. I went out, walked along the building and I looked.
- Q. Starting from the overhead tension line we come to a pole on which were mounted the transformer that you indicated here.
- A. Yes the transformer was actually supported on frame work between two poles.
- Q. And the transformer when it starts the beginning with the fuse box at that level coming down underground and servicing 5 fuse boxes the last among them being the one we are concerned? 10
- A. That's correct my Lord.
- Q. Did you observe for yourself all these informations right up the points or only the point underground that is the whole of the left part ground?
- A. I was able to observe.
- Q. The rest of it came from information you received of the underground? 20
- A. Yes my Lord.
- Q. The line which comes up from the lead to the fuse box we have in mind starts with the Tee joints where the lines come up to two small circles which would be the Henley fuse box.
- A. That's correct.
- Q. From which the line goes up to the Bi Metal connections from which two lines go out one servicing Diamond Industries and the other one servicing Textile and Imprimerie Ideale? 30
- A. That's correct.
- Q. At one point the second line it branches out in order to provide these two services which you show here as a small downward form of that second line?
- A. Yes my Lord.
- Q. This information you obtained from the CEB on your visits on the 18th and the 20th? 40
- A. Whether it was a tee joint made on the cable I really do not know I was not informed of it. I do not believe that that is so important.
- Q. But what was given to you was that this line at one moment branches two lines one servicing textile and one servicing Imprimerie Ideale.
- A. That's correct my Lord.
- Q. And that each of those two three lines had a fuse box installed protecting them 50

which you indicate here as two round things just before this line ends?

A. That is the fuse box my Lord in the consumers installation. They are there to protect the installations.

Q. We know that after the services have been provided to the meter of supply the consumer and of the service staff and you get a fuse box. Those fuses you mentioned here on the sketch 3856/1 before the end of those lines are not that type of consumer fuse box you have in mind?

A. No I do not consider important to establish that particular type of box.

Q. Would we not agree that in fact those two boxes are CEB fuse boxes before they go into the meter?

A. Yes I have assumed that they are CEB protective fuses.

Q. And you did not consider that those two fuse boxes could be of sufficient importance for further investigation? Mr Davidson, if you turn to your sketch B you would find on the main sketch the rectangles being drawn at square lines at the entrance of those lines into the house on top of which these factories are, you can see representations of those fuses by three circles on the left and six circles parallel on the right. Those are the very same fuses which are reproduced here.

Court: You are speaking of?

Mr Moollan: We are speaking of B the large one.

Court: It's not his design.

Mr Moollan: You will notice those three circles which are reproduced in his design of the sketch in the same way by the three parallel circles at the end of the supply line.

A. I would think not my Lord. I was said that they represent the insulation.

Q. Mr Davidson you agree with me that in the whole of the sketch that it is the only insulators which are reproduced?

A. To me it was a very draft free hand sketch just to illustrate something with the minimum of details. I myself would be very surprised if the circles which the learned Counsel has referred are in fact the protective fuses for each installation because normally the protective fuse for a consumer supplied by a supplier to the main protective device of the consumer.

Q. But we'll come back to this particular

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practice. I would like you to compare your sketch No.1 again. Let us take your sketch No.1. Everywhere where you represented fuses or a cut out service you have represented that by two circles?

A. Yes my Lord.

Q. What sort of fuses cut out?

A. No I was not able to ascertain either the type or the size.

Q. And then you come to show at the bottom the Henley under consideration and everywhere fuses in the circles but in fact that in the technical form of expression of fuses this is an accepted practice as being cut?

10

A. No I did not say that is internationally accepted.

Q. It is the normal job?

A. It was a symbol that I used at that time but I did not think that the two circles together are the circles that you see on sketch B.

20

Q. Now would you agree that those circles are found in group of 3 which we found in the sketch B? There are three groups of 3.

A. Yes I would venture to say my Lord that at that point the two sets of three that are found there indicates that the CEB at that point had made a joint of the three conductors first to provide a separate circuit to Textile Printing and one to Ideal Printing.

30

Q. If that is so how do you explain those three circles from a certain cross of a separate service line. There is no joint necessary together.

A. As I have already said I don't think that these are fuses. I believe that they represent the insulators or a point of receiving cables.

40

Q. Be that as it may in your representation in single line diagram you put three sets of fuses at the end of the line.

A. If I may say my Lord I think the significance of circles on one sketch does not mean has the same meaning as it has on my sketch which I had done in Cape Town.

Q. In Cape Town before you put three sets of fuses connecting on the three lines, 3 sets of two circles one finds on sketch 1.

50

A. Yes my Lord.

	Q. And this can only be from information you received when you were in Mauritius?	In the Supreme Court
	A. I would say from observations.	
	Q. The fact remains that since you observed those fuses there can you give us some indication what type and what form of fuses there were?	Plaintiffs' Evidence
	A. No I can't tell you what type of fuses they were, I did not know.	No.29 Raymond Davidson
10	Q. If you had observed them?	Cross-examination
	A. Not necessarily one should bear in mind that the protective device of Textile Industries was of a different iron to the protective device that I saw in the other two consumers. It was of composite design and it supplied quite a number of outgoing circuits.	24th February 1978 (continued)
	Q. Have you heard of a form of fuse box which is known as Yorkshire cut out or fuse box?	
20	A. I may just mentioned this as we are referring to a manufacturer in UK I have not worked in UK since 1961 therefore I am not familiar with all manufacturers.	
	Q. Now we turn back to sketch B. It is of no significance at all to you that those nine circles are to be found on the outside of the building in which these lines are and not inside?	
30	A. At that time when I drew it they had no other significance that that they were formed to indicate insulators. I would bear in mind that I only had this very brief sketch which does not contain a great deal of information.	
	Q. But sufficient for you to prepare sketch E 3866/1?	
	A. Yes.	
	Q. Sketch 2 E 3866 you have said had been made in Cape Town on information received from the CEB, you confirm it?	
40	A. Yes.	
	Q. Now did you receive any further information from the CEB you confirm it?	
	A. Yes.	
	Q. Now did you receive any further information from the CEB which you made notes which did not contain on sketch A & B concerning the particular point in the service which you have reproduced in sketch ? E 3866?	
50	A. Do I understand that you question that any other additional information	

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- Q. You received information on A & B certain matters seemed to have not been fully explained and you came back to the fuse box, asked for an explanation and the sketch was redrawn. These were the aide-memoires which you used in Cape Town?
- A. Yes that's correct.
- Q. If we turn to your writing on Xeroscopy A, we find that we have 2 times 7/064 PVC insulated sheathed and in fact I can find that you produced on sketch 2, 4 notes of right hand side stranded copper of conductors twin 7/.064 PVC insulated and PVC sheathed flat conductor and I find here the word 'flat' which I don't see from Xeros A. Could you explain the word 'flat'?
- A. Yes my Lord, I had this morning explained that this particular type of conductors has a rectangular cross section with the corners rounded and the reason why I put flat to show that it has a flat appearance and not a circular appearance.
- Q. In fact from the information as we see in sketch A you referred that is necessary that flat type of twin PVC insulation 7/.064 conductor which was referred to and you made that you employed flat from the normal type, the usual type?
- A. Yes of a rectangular cross section.
- Q. Would you look surprised at the fact that at this particular case 7/.064 PVC conductor was not a rectangular one?
- A. I would be very surprised. I would like to know of what this material was made.
- Q. As a circular PVC conductor would that be a round PVC conductor of 7/.064?
- A. To one specification my Lord I would like a fuller description of it.
- I would just say my Lord that that particular information of the cable was not converged to me. I had been given to understand the PVC insulated and sheathed cable produced by the CEB was to the specification of VS 2004.
- Q. Since we are in those diagrams you have in your report at page 9 paragraph 7.20 that you were not able to ascertain to correct transformer size but from appearances, it would appear to be 150 kva. Is that correct?
- A. Yes it is.
- Q. You have not also been able to observe what fuse cut out that you mentioned there.

	What would you expect as a fuse cut out at that level?	In the Supreme Court
	A. I expect to say the fuse of HRC type.	<u>Plaintiffs' Evidence</u>
	Q. The HRC type.	No.29
	A. Yes.	Raymond Davidson
	Q. Would you like to tell us the amp HRC fuse? For that 150 KVA transformer which you saw?	Cross-examination
	A. I would be guessing but I don't know. I did not climb up the poles.	24th February 1978
10	Q. You said that you considered that it is important for you to inspect the aluminium cable rightly speaking for overheating of cables from the Bi-metallic connector right up to the consumer?	(continued)
	A. That is understood.	
	Q. Can you tell us in your view of what importance the inspection of that particular cable and what we expected to show or not to show?	
20	A. My Lord I would have expected to show signs of fire damage. I would like to have been able to ascertain how much of that cable was inside room 3 that has been recovered again. I would have liked to have been able to see the effect as you see the central room 3 to the exterior wall where penetration to the outside. It would be interesting to see the extension of damage to the machines, the insulation which would	
30	have been helpful and perhaps establishing the spread of the fire. Unfortunately I have not seen police photographs at least of the cable outside the building. There is nothing inside the room 3.	
	Q. But the inspection of the, say, aluminium cable from outside could be of lesser interest to you?	
40	A. It would be interesting to see any other damage to the cables and the insulations may have been running off and may have damaged the fixings it would have been interesting to have inspected it.	
	Q. What did you expect to see on inspection of that cable? What sort of characteristics you will find to look for whether it exists or does not exist?	
50	A. Well, faults on cables may have been a puncture of the insulations, a deterioration of the sheath, the sign of overheating in the conductors. At least it could have helped to have close of one avenue of the investigation. It was just to do that to contain one's investigation to the essential parts.	

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- Q. Now you have told us that you have examined the fuse box which was produced in Court at the Line Barracks?
- A. That is correct.
- Q. Would I be correct in assuming that when you examined that particular box at Line Barracks that it was between 17 July 1972, you did not see any of those signs of arc roots which you mentioned in paragraph 7.20 in your report. So in 1972 when you examined that box you did not see, you did not notice, observe these signs of arc roots which you referred to in paragraph 7.20?
- A. No that is quite correct.

10

THANK YOU MY LORDS

IN THE SUPREME COURT OF MAURITIUS

27th February
1978

On MONDAY, the 27th day of February, 1978, at 10.30 a.m.

Before the Honourable M.Rault, Acting Chief Justice

20

the Honourable P. de Ravel, Puisne Judge

.....

Mr David put in another copy of the Faults Log Book (Doc.Q)

Mr. Moollan resumes the cross-examination of: Mr Raymond Davidson (sworn) Electrical Engineer.

- Q. Mr Davidson, we caused to be sent to you a length of the round PVC cable as well as the Yorkshire fuse box. Had you had occasion to see them?
- A. My Lords, I had occasion to see the Yorkshire fuse box but I have not yet seen the sample length of the circular cable.

30

YORKSHIRE FUSE BOX PUT IN (EXHIBIT 5)

- Q. The fuse will start from that end and goes through the ridge, cut inside over to the other side. My information is that three of these were fixed to the line on the building where the Textile Industries, Southern Cross and Imprimerie Ideale were installed just before the supply went inside the building. There are three sets of three controlling each of the phases going inside the building.

40

Court: Are you making this as an assertion?

Mr Moollan: This is my information. I am asking Mr Davidson whether those are not in fact the fuses which are referred to as those round dots in Sketch 1.

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A. They could be the Yorkshire fuses such as the one you have in front of you.

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Court: When you say could be, are you assuming?

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10

A. I am now assuming that this is the significance of the circles on the drawing.

Cross-
examination

Mr Moollan: I understand the length of wire is in possession of Mr Jacques Robert. Would you like to examine it during recess or would you examine it now?

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(continued)

A. Let us have a preliminary look.

Court: This should be passed on to the witness out of Court.

20

Mr Moollan: I am referring now to para. 6.03 of your report, you have told us that you caused the contents of the debris lying on the floor of the raw materials store room No.4 to be sifted?

A. Yes that is correct.

Q. Have you made a list, or a report, of your findings as a result of the sifting of the debris?

30

A. No I did not. The first 12 inches of debris were in fact partially burnt soles and the rest of it was considerably burnt and a greater part was ash.

Q. When you speak of the first 12 inches of debris, do you mean the first 12 inches from the floor upwards or from the top downwards?

A. From the concrete floor upwards.

Q. So you are not in a position to tell us what else you found in the debris?

A. I am only bound by what I saw.

40

Q. You caused the contents of the debris to be sifted. Sifting, I take it, means passing it through some form of sieve, looking through, to analyse those debris. I am just wondering what did your analysis and your exercise reveal not only in relation to the first 12 inches of debris but in relation to the whole of the contents of that room?

50

A. I have not got into an accurate study of the debris because that was not part of my investigation into the cause of the fire. I was more interested in whether I might

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find any other piece of electrical equipment. The observation which I made about the first 12 inches of debris being burnt soles indicated to me that I made it because I happened to notice that the rest of the debris was considerably burnt and therefore did not contain any more information except that the fire had raged above the level of the box.

- Q. Can I take it then that you did not find anything else which in your view could be of any significance? 10
- A. In my view, as an electrical engineer, the answer to that is no.
- Q. You have mentioned in your report that the top part of the lid, the top right hand corner of the lid together with the fixing bolt had disappeared. Did you find that top part of the lid at all and if you found that would a matter of significance? 20
- A. No, I did not find it.
- Q. Did you find the top fixing bolt?
- A. I did not.
- Q. Can I take it that the bottom fixing bolt also has not been found?
- A. The bolt itself was not found.
- Q. Did you find any of the other pieces of porcelain which have not been produced in Court? 30
- A. No, I did not find any other pieces of porcelain.
- Q. Can you have any explanation why after sifting the contents of the debris of store room No.4 none of those pieces have been found?
- A. I don't have any real explanation.
- Q. At para. 6.04 you have said - "The top right hand part of the cover of the Henley fuse box including the top cover fixing bolt was missing". Next you have mentioned "The edges were uneven as from uncontrolled electric arc cutting". Have you yourself ever witnessed any metal being cut by an electric arc? 40
- A. Yes. You may recall from my curriculum vitae that I was working with a firm, Ateliers de Secheron, which manufacture special electrodes and also welding equipment. I have witnessed this. I have in fact done some welding myself, very well. I have experiment with it and I have witnessed demonstration of those 50

types of welding and cutting.

Q. And those cuttings and weldings which you have done have all been controlled?

A. Yes.

Q. Let us come to that bit of uncontrolled electric arc cutting. Do I understand by that that what you mean is that it is not controlled over a definite part pre-determined but there has been a cutting along an indefinite part?

A. Yes, as one would expect from any sustained arcing within the fuse box, that such arcing would wander until it had established a point on which it would grip.

Q. As a consequence, even though it is not controlled, when you speak of arc cutting you come to the conclusion that uncontrolled arc cutting would have for a long and undetermined part but eventually severed one part of the lid from the other?

A. Not necessarily so, the disintegration of the lid would have been progressive from one part of the lid to the other part and that the part that was missing would have dissolved in a shower of molten sparks.

Q. Do you mean that the arc has cut this unevenly or that the arc has caused the whole of that corner to dissolve?

Court: Of what lid?

Mr Moollan: I am speaking of the lid in cement.

Q. Mr Davidson, from reading your report at para. 6.04, I formed the impression that what you meant was instead of cutting a trace and instead of going to cut it along that particular path the arc formed itself and cut in a zigzag and uncontrolled way but eventually it cut along something about that path and those two pieces were severed one from the other. You seemed to suggest that what did happen is that the arc caused the whole of the part here to simply melt away and vanish?

A. Yes, my explanation is that I did not find the missing piece in the debris and if we had we might have been able to draw another conclusion from the effects of the uncontrolled arcing.

Q. In order to avoid any misinterpretation, arc cutting means what it says, cutting along a path with the aid of an arc from some sort of instrument, am I correct, and the effect of cutting is to sever one part from the other part?

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- A. That is correct.
- Q. In the light of your present explanation would you agree with me that the use of arc cutting in para. 6.04 of your report is unfortunate?
- A. I did not mean to convey the impression that there had been uncontrolled arc cutting to the edge of the lid but also leading to the other part of the lid to be found in one piece. 10
- Q. The expression arc cutting which in its normal analogy means severing one part from another is, in this case, not the case, therefore your expression of arc cutting is rather an unfortunate one?
- A. Yes, in this instance I can see it has conveyed the wrong impression but the effect of the arc has apparently been to cut away.
- Q. So by arc cutting you meant arc melting? 20
- A. I think that is a close technological expression.
- Court: We would even go further and say that cutting is done by melting.
- Mr Moollan: I can imagine circumstances in.....
- Court: Not circumstances, but the very idea of cutting by means of electrical arc is by melting the metal.
- Mr Moollan: Not along a defined part. 30
- Court: Yes. But the cutting is at least done by melting.
- Court: We can infer the meaning from Mr Davidson that the cutting was in fact uncontrolled and might be due to melting.
- Mr Moollan: So that what we get now is that the whole of whatever is missing on the top righthand corner of the box has melted away?
- A. Yes. 40
- Q. At what moment did you form the conclusion that this part had melted away as a result of the effect of arcing?
- A. I formed that opinion when I inspected the box in the police station and also from a subsequent study of the photographs which were sent.
- Q. The new lid (Exhibit 4) is in fact identical to that lid as it was before part of it melted and the whole lid was subjected to extreme heat. Would you say 50

whether the green lid is identical to that lid as it was originally?

A. Yes I would say.

Q. Would you explain how that part of it on which the fixing bolt is to be found would have melted away.

BOTH EXHIBITS ARE SHOWN TO THE WITNESS

10 I draw your attention particularly to two facts: first of all that part of it is to be found outside the interior aspect of the close box and the second thing is that the retaining part of that lug is still to be found intact on the other piece. How does your explanation fit with that part having melted away by the effect of arcing, controlled or otherwise?

20 A. It is always difficult to explain how these arc melting can take place from sustained arcs. We know from Mr Turner who had said that the sustained arcing takes a wandering time until such time as there are roots at any particular part of the case; it is therefore quite conceivable that if the covers had not been particularly well close and we know there was some difficulty to close the box, the lid, in the morning of the fire, then it is conceivable that this part as evidenced here would have been cut away.

30 Q. We agree to a point, but my point is you are no longer talking of cut away, you are talking of melted.

A. Yes.

Q. Another point is that that evidence, if believed, would be to the effect that the top part of the lid was closed, it is the bottom part of the lid that had difficulty in closing?

40 A. I am sorry I did not hear the last part of the question.

Q. The top part of the lid was properly secured, it is the bottom part of the lid which was not properly secured. Do you still maintain your explanation?

50 A. Yes, we are aware, in fact, by looking at the body of the box (Exhibit 4) that the box itself must have been heated to very high temperatures sufficiently high for the metal to start to flow. Therefore, the retaining fixing lugs and incidentally the hinges may very well have melted away. For example, we know that aluminium would melt at about 660°C. We are also aware of

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the fact that cast iron will melt approximately at 1375°C. Therefore, for the box to have reached that condition which we see now it must have been in a plastic condition if I can describe it, it was flowing. To do that, the temperature must have been 660°C and therefore the electric arc melting process took place here and it could have happened.

10

Q. If I understand you rightly, for the condition you describe as the melting away of the top righthand corner of that box to occur including the fixing lug, the fixing bolt must already have melted away. This is what I concluded from the explanation you have given?

A. Not necessarily so. It is difficult to make hypothesis of what in fact took place. We can only make assumption of what has been taking place.

20

Q. We can examine that assumption and the effect of this assumption if we go back slightly - You will remember the whole sequence of questions come in order to try and ascertain the methods in which, according to you, not only the part of the lid which is subjected to inside arcing is affected by and melted away, but, also according to you, that part of it which is outside it meaning the retaining lug has also melted away. If I understand you rightly, this could happen because the fixing bolt would already have melted by then. Am I correct?

30

A. I have not said that the sustained arcing took place it was after the melting of the fixing bolt; it must have started before to raise the body of the whole box to the temperature which it did. We are aware from the test experiments that arcing can start anywhere. It does not mean to say it will have to start at any particular edge; it could describe a random arcing. It is difficult to say with any degree of accuracy.

40

Q. We can say with almost near certainty that however uncontrolled that arcing would have been in the box it could not have affected from inside the box close to the retaining lugs?

50

A. I disagree.

Q. Do you mean to say that even before that box was open the arcing would have from the very outset affected first of all that

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retaining lug part of that lid?

A. No, I did not say that. What I did say was that arcs started in the top righthand corner, but at what point of time the arc melting process melted this corner, I don't know.

Q. It must necessarily have done so after the inside part of the lid would have melted?

10 A. Yes the arcs started internally.

Q. Can you explain how and why it melted that top part of the retaining lug without affecting the bottom part?

A. Do I understand counsel saying why this was not melted.

Q. I put it to you why this bit was melted while the lid of the case itself was not melted?

A. I don't have any real explanation for it.

20 Q. May I suggest one explanation. It is that if one is affected and other one is not affected, necessarily the process must have happened at a time when they were not fixed together?

Court: What part.

Mr Moollan: The top and bottom part of the retaining lug, the one on the lid part and the one on the base part.

30 A. Yes, it is quite possible. In fact I have suggested that the lid was coming away from the box, there was some gap.

Q. The other probability which you may agree is that whatever the reason one fact is clear: it is that the top part of the lid has been subjected to high temperature at a time when it was not in contact with the base?

40 A. No I was not saying that. I was saying that there was an electric arc melting process which could be quite independent or could happen simultaneously with the heating of the box.

Q. We do agree on one thing, that the present condition of that lid suggests the exposure to extreme heat will come to the source of the heat at another time?

A. Yes, it is quite clear. We do get heat from an electrical arc.

50 Q. I say independently of the source of the heat that top part suggests subjection to heat?

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- A. It is very difficult to say. I do believe that with the sustained arcing that was taking place the temperature was rising and the temperature was becoming heated up.
- Q. Do you think it would be difficult to agree that melting is a process of heating?
- A. Yes, but what we were talking to is how we are arriving at the creation of that heat. 10
- Q. We were not talking of the source of the heat. All I am saying is whether you agree that this lid arrived in the state in which it did arrive because it was subjected to extreme heat independently of how the heat came from it can be 10 different ways. Do you agree?
- A. I agree.
- Q. In your sifting of the debris you did not find particles of metal over those 12 inches starting from the floor of debris which you sifted? 20
- A. No I did not find any trace.
- Q. What happens to molten cast iron. Does it appear, vanish?
- A. I have actually suggested that the part of cover that is missing was given off in a shower of sparks.
- Q. The whole of that part? 30
- A. This is what I believe.
- Q. If it is a shower of sparks all that bit and the lug also will go. Would it be so?
- A. Would learned counsel put that question again.
- Q. The shower of sparks was coming from the whole of the bit which is missing including that retaining lug?
- A. It would not happen all at once; wherever the arc started to cut, to melt, the cover, it would give off sparks. 40
- Q. Let us give two facts: at what heat would that process, I mean the shower of sparks, actually take place?
- A. The shower of sparks is not related directly to the heat of the lid, but relates directly to the action of the arc.
- Q. We are speaking of that piece of the lid which is melting and flying about in a shower of sparks. That part of the lid 50

itself would be subjected to what temperature for this phenomenon to take place?

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A. Clearly an excess of 1375°C.

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Q. 1375°C is the melting point of cast iron?

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A. Yes.

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Q. What would be the sparking point of cast iron?

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10 A. I don't have that figure.

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Q. Do you suggest a much much higher degree of temperature than 1375.

A. Possibly.

(continued)

Court: Do you agree that normally you would require a higher temperature for the cast iron to disintegrate into sparks than merely to melt?

20 A. It is clear that when the arc cut the metal in this form, the temperature must have been higher than 1375 degrees but it would give off sparks. I mean if you consider a forge of a blacksmith beating a piece of hot iron it gives off sparks but that iron has not yet melted.

Court: Therefore the sparking point might be either higher or lower than the melting point?

30 A. It is possible. I don't know exactly. I would have to find that. I have not got that information.

Mr Moollan: I believe that last week you mentioned that the melting point of cast iron to be 1500°C.

A. That is correct, but I checked with our table and now.....

Q. You say that it is 1375°C.

A. We have a table with us. We can present those facts to the Court.

40 Q. You have said which part of that lid would have started sparking away like that: it was a gradual process. You say now that the heat would be in the region of 1375°, but how long would it take for this particular operation to continue not only to cut through little bits of that lid but to melt away the whole of the lid including the lug. How long would that process of arc melting which now has been arc cutting changed to arc melting, now we call it arc sparking, take to spark away the whole of the missing bit of the lid including the lug?

50

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A. The approximate weight of this box is say 20 lbs and taking the specific heat of cast iron not molten iron, one can calculate the number, the amount of KW minutes that would be required to heat all this up to a melting temperature but the whole thing would then melt.....

Q. Mr Davidson, I.....

Court: The answer is interesting and I want to have the rest of it. 10

A. I am saying this because this helps me to answer the question how long do I think this will take. The approximate figure is 112 KW minutes. If we consider a sustained arc of 30 amps and we consider that the arc is being struck between one of the phases and the earth case we arrive at a time of approximately 21 minutes to melt the whole of the box. By the same token if we consider the figure of 100 amps then the time would be 6½ minutes so if we consider this small piece here which I am sure will weigh considerably less than the 20th part may be the 40th part the weight of this bit it would be possible with 30 amps sustained arc, with this, to have taken 30 seconds or less, by this I imply that with a sustained arc the effect could occur within a matter of seconds. 20 30

Court: Mr Davidson, have you got that on a piece of paper?

A. Yes I have.

Court: Would you be kind enough to put it in (Document AG)

A. Yes, the last figure I mentioned I give it in KW seconds and in brackets are the KW minutes. I have done the calculation on 30 and 100 amps.

Mr Moollan: If I understand you rightly, if there was a 30 amps arc localised in that bit that would spark away into thin air within a matter of seconds? 40

A. Yes.

Q. You mentioned that this could be as a result of a phase to earth fault?

A. Yes, this type of fault has been described already by Mr Turner. If I remember correctly he made reference to the ASTA report indicating how the sustained arc will continue. In his report you will see how the actual sustained arc struck for 9 times. 50

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Q. It must be necessarily a phase to earth fault not a phase to phase fault?

A. It would have to be a phase to earth fault.

Q. It is that phase to earth fault which will eventually - I think you mentioned it in para. 6.15 of your report on page 5 - generate 46 amps. It reads : "Therefore with a resistance of say 5 ohms a fault current of 46 amps could blow without the fuse ever blowing". You have examined, with Mr Maisey, the whole of that box including the lid, for evidence of arc roots?

A. Yes.

Q. You have shown to the Court and to Mr Sharples, you have further marked all such matters which may be such evidence?

A. Yes.

Court: He has not yet shown in the drawing the arc roots.

Mr Moollan: I will show it to Mr Sharples so that he can mark it, my Lords.

Q. Mr Davidson, would that lid, subjected to other form of heating, not necessarily from an arc, also come to that aspect, the localised heat on that corner?

A. I have thought about this problem but it is difficult to envisage how else I could apply a localised form of heating as has just been described by learned counsel. I can't think of any other possibility.

Court: Have the experts or counsel a magnifying glass. I don't want it now, but we should like the experts and counsel to meet us just before we resume because we should like them to show us what Mr Davidson described as arc roots.

Mr Moollan: Mr Davidson, do I understand your answer to be that this is possible but in the case we are discussing you cannot visualise how it could have happened.

A. Yes it is always possible to create a situation where the heat, the rate of rise of the heating would be greater here than there - the heat would transfer across the whole cover.

Q. Since you have been calculating time in KW seconds, how long would it take for that box to go through the process you have mentioned in para. 7.7 to occur. I read: "The overheating that took place at the

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Henley fuse box would have eventually been transmitted to the box itself and undue stresses were probably felt at the fixing lugs. It would appear that the heating of the box at the time of the fire must have been sufficiently high for the expansion to exert sufficient force for the lugs to shear off".

- A. It is difficult to say. We could calculate this by making certain suppositions but if we had electric arc of 30 amps it would probably take 10 - 15 minutes before the stresses became felt at the lugs, then of course, if the sustained arc retained a major arc of 2000 - 3000 amps, it is conceivable that this heating would finally accelerate. I find it difficult at this point to give a reasonable answer to learned counsel's question how long would this take before the fixing lugs sheared. We could give any time rather than calculate. 10
- Q. From your answer in your memorandum you are suggesting that the arcing within the box itself caused the box to heat up to the point where the supporting lugs would shear off and the box would fall forward and downward. I think this is your suggestion? 20
- A. Yes. 30
- Q. First of all we have to examine two different things and correlate them at least one in relation to the other before coming to actual time. What would happen first in the process you are suggesting, that the top part of the lid to vanish in sparks or the box to fall away from the wall in the manner you have suggested?
- A. The first effect would be the shower of sparks coming away from and at some point of time later the effect of the heat on the top part of the box would lead to its expansion and force would be exerted at the lugs and they would therefore shear. I did indicate that about 500°C there was about 1½ mm of expansion that took place between the two fixing lugs. 40
- Q. In your view that would be enough, 1½ mm of expansion would be enough to cause the lugs to shear off or do you expect a much bigger expansion? 50
- A. It could happen. We must bear in mind the casting and the weak point of a casting would be at the lugs. I am not sure whether in fact that lug is in the original

cast. I understand that the experts for the defendants do have a manufacturer's drawing, they might very well explain how this manufacture took place but it is a weak point.

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10 Q. We know the correlation is first of all the top part and secondly the shearing off. Would you venture to figure as to the length of time which should elapse between the two?

20 A. If we go back to those calculations we see how many KW minutes it takes to heat the box. I cannot get the figures clear, they are on the table produced, it is 300 or 500 (DOCUMENT SHOWN TO WITNESS) Yes 500 degrees was the sustained arcing of 30 amps, the time interval would be $7\frac{1}{2}$ minutes and we could expect an expansion across the box, centre to centre, about $1\frac{1}{2}$ mm to take place. If the sustained arc was greater may be approaching say 45 amps, of course this will reduce the time to about 5 minutes or even less.

Q. You have mentioned a sustained arc at a lower amperage. When you say it may also develop at a higher amperage, what is the higher one you have in mind 30-45 or 30-4000?

30 A. I would say 30 and approximately 3000.

Q. How did you reach that figure 3000?

A. If you look at para. 7.20, page 9 of my report - the fault level at the transformer terminal was probably 4500 amps. I know there was some impedance on .06 P10 CSWS cable, there is approximately a drop in the fault level which would bring it down to 3000 amps, may be even less.

40 Q. At that level of around 3000 you have been mentioning the fuse at the transformer, HRC fuse which is to be found in your Sketch 1 would have melted?

A. Is counsel referring to the fuses on the transformer pole which protected the feeder cable .06 which fed a number of consumers including Bata.

Q. I say at that level they would have melted at 3000?

A. Yes they would have melted.

50 Q. In a fraction of a second one would have reached that level.

A. I don't know the characteristics of the fuse but it would certainly have been a fraction of a second.

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- Q. If it would have melted in a fraction of a second would you agree with me it would not have had time by itself, considering the high level amperage fault, by itself, causing the fuse to blow within a fraction of a second, it would not have had time to generate any fault in the feeder?
- A. If you have 3000 amps on a short circuit - we know from the little formula given by Mr Turner which is $I^2 T$ which is the measure of energy, if you square 3000 it would not have melted by a fraction of a second, there is a considerable amount of energy that has got to be dissipated. 10
- Q. By itself that energy lasted for such a short lapse of time, it has a completely negligible effect on the surrounding temperature?
- A. I don't agree, it has to dissipate. 20
- Court: The cohibition would be 9 million times T.
- A. Whatever T is we can calculate that
- Mr. Moollan: You might probably wish to have a look at Test No.3 of the ASTA Test at page 30.

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AFTER RECESS

- Xed by Mr Moollan, Q.C. 30
- Q. Mr Davidson, we had just finished that part where you were telling us that in your view the sequence of event would be the parting away of the top right hand corner of the lid and then the moving away of the box from the wall. There is one further phenomenon you mentioned, when examined by my learned friend, it was the melting away of the brass, hinge pins and screws bolts. Would you tell us in relation to those two other factors when would those have melted? 40
- A. That, my Lords, could have occurred during the time from either probably just for before around the electrical arcing placed on the top right hand corner or sometime when the body of the box was sufficiently apart from the expansion taken place and sheared from the raw bolts up to the wall. It would be somewhere in that time. 50
- Q. If I were to put three events of proper

sequence we have first the melting away of part of the lid then the melting away of the retaining parts of the lid to box and eventually the moving away of the box from the wall. That could have happened in that sequence?

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A. I think that would be a logical sequence of events.

10 Q. It would appear therefore that as soon as those two hinge pins and bolts have melted away there would be nothing to retain the lid to the box and the lid would fall on its own way?

A. I think there is another possibility my Lords. The way the box is designed. It is possible for the lid perhaps to sit in position without falling to the ground.

20 Q. You started your answer by saying I think there is another possibility that seems to indicate that the suggestion I made to you is a possible one and there is also another possibility. Normally the lid would fall on its own way, there is also the possibility that it sagged loosely on the box?

30 A. It could have done under certain circumstances have fallen down directly below the box, that's a possibility. The evidence states that instead of that, it landed some five feet away from the wall.

Q. You would remember that in the theory you are suggesting to the Court there would not only be no retaining pins or bolts on the lid to hold it to the box but part of that lid would have gone away including the bolt. And you still maintained that normally under those conditions, that lid would not fall clang on the concrete floor right beneath it?

40 A. What we don't know my Lords is the interval of time between all these events which have taken place. It is possible that at the time of the arcing the hinge pins were still in position holding the cover to the body of the box.

50 Q. I believe that what you said. You put in that sequence, first of all, part of the lid melting away; secondly, the hinge pins and the other bolts melting away and thirdly, moving away of the box from the wall. You did not want to change the decision now?

A. No, it is correct.

Q. Now we have the first sequence having taken

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place we are analysing the second event in the sequence which is the melting away of those pins. In the context of your theory we have this particular situation - one bolt gone away completely the top one, the second one the only the two hinge pins which hold that lid to the box if understood your demonstration that door would be slightly ajar because it cannot fit in properly therefore it's not a question of rubber thing holding on, sitting in, it is slightly ajar. It would appear to me that normally as soon as those two hinge pins which are the only factors which keep that lid on to the box melted away therefore no longer able to perform the duty of holding that lid to the box by its own way then it would fall? 10

A. Yes, I have not doubted that possibility at all but I have to face the fact that the evidence shows that it did not fall out. It was found about five feet away and my explanation would be that there were two possibilities and I did not mention this. One would say which I have described in my report that as the box came away from the wall the lid, the cover was some however still attached in a flimsy way to the body and as the body of the unit which was still attached to the cable described an arc and then the lid however fall that one's explanation. The other explanation is that it is possible that whilst the lid was held flimsily in position the sustained arc would have changed, developed into a short circuit, an arc, with greater force and blew the lid out and then shortly afterwards the box came away from the wall. There are only two possibilities I can suggest. 20 30 40

Q. The blowing away of the lid as you mentioned it, would require first of all a minor short circuit which is above 3,000 amps which would in turn automatically cause the cut out of the fuse box on the whole blow within a fraction of a second I gather?

A. A fraction of a second I don't know the characteristics of that period but I would think that the fuse would probably operate within three or five cycles that is to say the time interval just under the .1 of a second between .07 and .1 of a second. 50

Q. Well, I have been shown this particular chart to identify and I gather that from that chart one can read that 4a 160 amps fuse and 3,000 amps will blow in a fraction of a second?

Court: Will any evidence be adduced as to the fact the fuse and the cover was blown off?

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Mr Moollan: Evidence would be adduced my Lords.

Plaintiffs'
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A. My Lords, we would actually need to know what the level was actually at the box.

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Q. It was a question of 3,000 that's what you mentioned this morning?

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10 A. It was my rough rule of thumb calculations but it might be less.

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Q. Well, let's put it that way. On your statement in Court which is concerned by your considered opinion in paragraph 7.20 which both coincide between 3,000 and 3,500 it would be a fraction of a second?

(continued)

20 A. Yes, but, my Lords if we really want to discuss this we should calculate the impedance of the proper cable and we'll then have the more exact figure. At that moment we would have a much more accurate figure of what the fourth level was because if one does, drop the figure to 2,000 amps we find that in fact you are blowing possibly about .01, about .03 of a second, no more.

Q. .03 instead of .005 this is the order?

A. No, I did not say this.

30 Document "AH" produced

Q. And would expect that force which will blow away that lid some say 4 1/2 feet?

Now that force which would have blown that lid some 4 ft and 3 inches away would have been fairly considerable?

A. Yes I think it would.

40 Q. Considerable force to blow that lid then you expect that force also to shatter all the force which would be found inside the box?

A. There are two causes of shattering. One would be the effect of short circuit and then possibly the very act of a fault. I would say that a fault from a short circuit is quite considerable and it comes from within an enclosure that can go virtually one way forward.

50 Q. We are not looking at the fact we are trying to follow the effect of your theory and find out what happened. You say that such a force would shatter the porcelaine not only shatter a force sufficient to

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(continued)

fling that lid over four feet away
would also shatter those porcelaines
and force them to fly away?

A. We know they did not shatter completely
because there are some in the box.

Q. Now this is two things?

A. I have given up two possibilities.

Q. Now that we show that if one of the
possibilities would necessarily contain
shattering and casting away of the
porcelaine and we found it did not happen.
We purely and simply show that this theory
is not the valid one in the event?

10

A. My Lords, the fuse bases are considerably
damaged but the expression of shattering
is very misleading. One would say
shattering when they just disintegrated.
The short circuit probably did not
involve all three faces. We know from
the test that in fact only two of the
three blow and there was more damage on
two of them than on the third. I think
we should also bear in mind that these
fuse bases had been in this box for some
period of time and deterioration no doubt
would have taken place with the consider-
able overheating. I still believe that
there is one or two possibilities either
the lid came off due to the short circuit
or the lid fell forward at the time the
box came off the wall. It's very diffi-
cult to say which of those two possibili-
ties occurred. At this point of the time
I cannot think of a third possibility.

20

30

Q. Now you have assured for the purpose of
your report that there were boxes contain-
ing materials at some distance away from
the fuse box?

A. Yes.

Q. What distance is it in your assumption?

40

A. I would say sufficiently near that the
lid of the box in the trajectory may
have cast on the top of the boxes and
its momentum carried it a little further
forward on to the concrete floor.

Q. Yes, this is a description of your theory
but you have not given us the facts on
which your theory was based. You have
assumed that there were carton boxes
away from that Henley fuse box. All I
am asking you is a simple, straightforward
fact. What was that distance which you
assumed? Was it a matter of one foot,
2 feet, 3, 4, 5, 6, 10 feet? What was
the assumption you made?

50

	A.	Approximately two or three feet away from the wall.	In the Supreme Court
	Q.	You know that the evidence in this case shows that it was in the region of two feet. And I expect that your inquiries at the time in July, 1972 gave you about the same distance or it did give you different distance?	<u>Plaintiffs' Evidence</u>
	A.	No the same distance.	No.29 Raymond Davidson
10	Q.	So now the force of that particular matter was caused to blow away would have caused it to land on a box or then fall on the concrete floor or would have caused it to clear the box and fall on the concrete floor?	Cross-examination 27th February 1978
	A.	I suggest that it fell off the box then on to the floor.	(continued)
20	Q.	You have any special reason why you would prefer falling on the box then moving away rather than clearing the box onto the concrete floor?	
	A.	I think one has to be conservative in estimates of the possibilities when you assess the probable happenings and it is for that reason that's why I said it.	
	Q.	But it would also be possible in your theory that the force should have caused it to clear the boxes?	
30	A.	If the momentum was sufficient yes my Lord.	
	Q.	Now we are coming to two things Mr Davidson we are getting ourselves crossed We are speaking of the theory of the explosion not the theory of the momentum. You will remember about the thing one of the explosion, something occurred which caused it to fly, the second theory is the one of the momentum which is the one which moves the whole thing including the lid, moves off and then the lid fall out. I think this is quite clear the two things are quite distinct?	
40	A.	My Lords I find it difficult to separate them in this way. The moment the force is applied whether of explosion or whether the box moving away I find that the movement of trajectory of the lid is from the force, may be the momentum to give the rate through the air.	
50	Q.	Mr Davidson, you have mentioned two possibilities and it is my duty to see which of these two possibilities: one of them is this lid being ajar top lid being melted away, bottom lid never having been screwed the hinges melting away it falls	

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down. This one you say - well, I am not too sure, it does not fit with the evidence. The second one is that bearing in mind the sequence melting away of the top of the lid first, the melting away of hinges second and shearing off the bolts third. You have not changed that sequence you told as then the second effect in the sequence can be one of two. One that some force blows it away the second is that no force at all can blow it away but by the simple movement of the box moving away from the wall and the lid sitting loosely on that box by the momentum. They are two completely different things. We can't mix them. You agree?

10

A. Yes.

Q. In the examination of the theory about some force blowing it away you said then that this could have blown it away on to the box and to cause it then to roll further away from the box. This is what your theory is. I am asking you now why if you do discard from that theory the possibility that the same force caused it to blow away clear of the boxes completely? Why should it fall from the box?

20

A. If the cover was sitting loosely on the box there would be escape on the explosive forces around, the cover would not be subjected to fall it would tight fit then it would be more and I would expect them to be blown further but I do not consider in my mind the possibility that it was a tight fit but it was a loose fit.

30

Q. That still did not explain why it should fall 4 ft and then rolled another foot.

Court: The witness say is that it blows two or three feet to the top of the cardboard box and then tumble away further.

40

Mr Moollan: This is the particular theory which I am putting to the test and say why did it land at that particular spot why not clear on the box completely.

Court: But he has not rejected the second theory. You asked him some time before why didn't you choose this one, he said that he has to be more conservative when he has to assess possibility.

Mr Moollan: I am putting to the witness now that the one or the other theory is not possible.

50

Court: The witness has again answered that in view of the fact that as it was not a close fit and that in full force it would not be applied to it is rather considerably

more or even it would be thrown two or three and four feet. That is what he said.

Mr Davidson: That is correct my Lord.

Court: Perhaps you could ask him whether he rules out completely in the above alternative.

Mr Moollan: Have you heard the question Mr Davidson, do you?

Mr Davidson: I am sorry.

10 Court: The second alternative you do not rule it out altogether?

A. No I do not rule it at all. I think of both possibility. I think one has to consider both possibilities.

Mr Moollan: Thank you my Lord.

Q. Now, the cast iron is a material which can break if it hits something hard?

A. Yes I agree.

20 Q. Could you tell us something that I have been informed of, we are going to look at it. You remember that from your experiments you did last week, well I have been looking at that box during recess and it would appear to me that it just closes. Do you want to settle that for yourself?

30 A. Yes I think if you look at the box and you look at the level you will find that these handles of the fuse carriers almost project and the design of the cover is to hold it in place so that they do not come out of the fuse base due to any electrical mechanical force that are exerted during the blowing of the fuse.

Q. If we want to take the carrier off you try to show what happened?

A. Probably the same thing, I am doing the same action as I did before.

40 Q. So it is not in fact the pressure of that carrier on that lid which is causing some problem?

50 A. Not always you have the hinges there and you will find that you do have adjusting nuts here and you see my Lords that there are two nuts on either side and with which I can regulate the length of pins according to necessity, necessity being that this is a tight fit on the body because in fact it is a weather proof unit which can be mounted outside and it is to keep out the ingress of moisture.

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- Q. So that in effect there is or otherwise of fitting and adjusting a retaining bolt depends on the adjustment which has been done of the screen of the outside of the hinge.
- A. Yes.
- Q. You have just shown us that this in defending is the presence or the absence of the fuse carriers.
- Thank you Mr Davidson. 10
- You have told us that there must have been some fault between phase and earth to cause that low amp. arc. Now will you try to tell us which of these phases must have had fault and what was the nature?
- A. To my observation on the evidence would appear that there was a fault condition on one or two phases. I say this because in the evidence of Mr Mamdally he said that there was a cable which was not placed and this was not one of the outer cable. This would then agree for one or two fuses as you look at it either the middle fuse or the right hand fuse but it would be difficult to say which of those two. 20
- Q. At what level would the arc have started?
- A. I think we can be sure that it was of a low level probably around 30 to 40 amps may be even greater.
- Q. Let's put it in another way. What is the minimum level of which it could be? 30
- A. We recommend a safety of flow of current which should not be greater than 30 milli amps it's possibly from 30 to 40 amps.
- Q. Of course it is a possibility that this arc started at 30 milli amps in your theory?
- A. I think it would be much greater. It is very difficult to say what the minimum is.
- Q. Any special reason why it is so difficult to say? 40
- A. No, except that I really don't know what the minimum arc was when took place I have no way of assessing it only by experiment.
- Q. What would be the minimum arc in order to create a situation you have describing? What would be the minimum in order to create the condition which will lead to what you have explained?
- A. It could possibly be in the order of 9 to 10 amps. 50
- Q. Nine to ten amps would make the top right

	hand corner of that lid dissolving	In the
A.	No, you said to start with.	Supreme
Q.	You said to start with at 9 then what	Court
	happened?	<hr/>
A.	You asked me what could be the minimum	Plaintiffs'
	and I said 9 to 10 amp.	Evidence
Q.	I am assuming always for the purpose of	No.29
	the case under consideration?	Raymond
		Davidson
A.	I think my Lord we should bear in mind	Cross-
10	that the top right hand corner of the	examination
	lid is no longer there. We can only	27th February
	assume that it disappeared due to an	1978
	electric power arc that was sustained.	(continued)
	I am not quite clear in my mind why	
	learned counsel is asking the minimum	
	level.	
Q.	You yourself have suggested in the region	
	of 30 or about. I must find out whether	
20	30 is your bottom level or whether you	
	want to go further down to 30 a figure	
	which has been put by you not by me?	
A.	Yes it's an approximate figure.	
Q.	How approximate in the region of 30, 29,	
	28, 35, 30 milli amps. It is quite	
	completely out of that order. You have	
	agreed that it can be so I want to know	
	30 what in fact you have in mind is below	
	that of course?	
A.	Of 30 milli amp it is sufficient to kill	
30	a human being. Arcs can take place at all	
	levels. It is a question of the distance	
	with which you strike the arc.	
Q.	With what the minimum level must have	
	existed in order to create the damage	
	which you have described this morning that	
	is the dissolving away the top of the lid	
	by process of spark?	
A.	My Lords I regret I cannot honestly tell	
40	you what the low level could have been	
	or probably was. The 30 amps in my mind is	
	reasonable and it could be sustained and	
	could have created the condition that we	
	saw. There is obviously a tolerance and	
	the extent of that tolerance I could say 25	
	or 20 amps but there is a sort of going to	
	a limit through which I have no justification	
	of saying that it is the lower level.	
Q.	Is there a higher limit? The witness said	
50	it is the order of 40, 30, 35, he is not	
	prepared to venture an opinion. I am	
	asking whether there is a higher limit?	
A.	The higher limit would be determined by the	
	level of the reading of the fuse.	

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Q. But we have also I believe discarded that higher limit being obtainable in a phase to earth condition fault?

A. Not necessarily so I have given an indication of how 46 amps can flow if the transformer earth was a better earth than the transformer fuse would protect them. In other words, I could have a higher limit, a higher level is the value of the fuse of 160 amps fuse therefore the fault level could get up to 160 amp.

10

Q. Then we have a higher limit of 160 amps?

A. That is what I say.

Court: But you draw a conclusion because the answer of the witness is qualified on the existence of the earth if this is correct it is the answer if it is not correct it is something different it cannot be taken for granted that in any case it could be 160.

20

Mr Moollan: We are thinking about a phase to earth fault.

Court: Yes but the phase to earth I think is whether the earthing of the transformer is properly done or does not work according to local condition. So this answer is a very qualified one. You say 160 amps.

Mr Moollan : Well

Court: No, I am just saying this may avoid further confusion. It is so technical unless we can get involve, if I can say, otherwise they are so qualified those answers.

30

Mr Moollan: I have got to keep my feet

Court: All of us unfortunately.

Q. Mr Davidson under the best possible earth condition and everything being done properly the maximum fault level for a phase to earth fault would be a limit of that fuse which is 160, is this correct?

40

A. We should take into consideration the 160 amps fuse.

Q. Which is the HRC 1 on the transformer?

A. There is a factor of a certain load to be carried for a certain period of time before it blows, it could be 161, 162 amps which flow for two hours 175, 180 amps but that could be determined from the graphs. There are graphs which show the interval before the fuse would blow at a certain level of overload.

50

Court: It is a sort of degree of tolerance, we might call it.

	A. Yes.	In the Supreme Court
	Q. But that particular ceiling is conditioned by the fuse which is the HRC fuse which is to be found on the fuse box just between the transformer and where the fault is?	<u>Plaintiffs' Evidence</u>
	A. That's it.	No.29 Raymond Davidson
10	Q. And that particular condition can be determined by the graph which we have put in this morning?	Cross- examination
	A. I think my Lord I am not sure that those graphs are	27th February 1978
	Court: You mean this one	(continued)
	A. Yes at the top you'll find a point where a current in excess of 160 amps less than 170 would flow for quite a considerable period of time.	
	Court: I personally can't read that.	
	Well, what are the MJ, PJ and SJ?	
20	A. I think the fuse 1.5 because 20,000 seconds in time 160 amps fuse has a level well in excess of 200 amps. I can't read it clearly may be the experts of the defence would confirm this. Does this fuse carrier make a considerable overload for a very long time? The fuse factor was 1.5	
	Q. Which would give us 240 amps?	
	Court: Can you read that Mr Moollan?	
30	Mr Moollan: With the assistance of my expert, yes my Lord.	
	Court: We still don't know what the reference MJ, PJ and SJ mean?	
	Mr Moollan: I think these letters describe the side of the centres. It is the physical measurement.	
40	Court: So far we don't quite follow. Even you want to read the graphs as we were used to read graphs. If you take 160 amps. Now see where it cuts the black line it cuts just below 100 seconds what does it mean? I can't read anything.	
	Mr Moollan: Look at the current my Lord.	
	Court: 160 yes alright.	
50	Mr Moollan: I take it that each of those arrows refer. This is the line of that particular reading - 20 MJ is the first line, 600 SJ is the whole of the last line and then if you read from the current amp and you draw a line, the arrows in itself has no significance on the graphs.	

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We are dealing with the 160 MJ which is that line then we read 5 seconds along the graphs of that line. If we are looking at that line of 160 when we are at 150 amp. it no way cuts that line, this is about 20,000 seconds and you have got nearer and nearer over 2,000 and 1,000 to be able to see where it is going to work and to cut out in relation to the two factors.

- A. Yes that is how I read the graph. 10
- Court: Now I am beginning to follow.
- Q. So we come therefore that to the ceiling of that phase to earth fault being in the region of 240 amps.
- A. There is just one proviso my Lords. One should bear in mind that also passing through the same fuse is a current of a certain value to feed the consumers on that line. We are drawing 100 amps from 160, it depends on the load conditions for example with 200 fuse you will have more than 40 amps of load being drawn by the consumers then the maximum level will be 200 amps. Conversely these 200 amps being taken by your consumers then you would only have 40 amps for the system of arcing before the fuse would blow on the transformer fuse-box. 20
- Q. So at this level we have found there is an arc condition and an arcing between the phase and the earth. The earth you told us being represented by the box itself? 30
- A. Yes my Lord.
- Q. And you situate the probable area of the start of the arc from the right hand, the 2 extremes, the neutral one and the left hand phase?
- A. I agree that we exclude the neutral and the left hand phase. 40
- Q. Your evidence therefore excludes those two.
- A. Yes I am sorry to misunderstand.
- Q. Now this particular arc would probably go straight through the nearest part of the earth which is the metal box?
- A. No not necessarily this has been adequately explained this phenomenon by Mr Turner. It would eventually search out the shortest route it does mean to say that it could sustain that it depends where they are and this is done due to it finding its way through the air. 50

Q. I believe you say that you eventually settle down?

A. I eventually say it is possible that it do so but not necessarily that it will.

Court: Searches do find it?

A. It depends where the roots are.

Q. What are the factors which would stop it from finding the shortest route?

A. The way it would take place inside the box.

10 Q. What are the factors?

A. My Lords this has been very much better explained by Mr Turner. I think we are going into a field outside my experience. I would rather rest on the explanation given by Mr Turner.

Q. Mr Davidson when did you first consult Mr Turner?

A. The first time I have discussed this case with Mr Turner was when he arrived shortly after I did a few days ago.

20 Q. By which time you have already prepared your report. Your report is 20 February 1978 and by that time you sent it Mr Turner was in Mauritius?

A. That's correct.

Q. This is why I believe that you speak of uncontrolled electric arc cutting you speak about arcs that I can put questions, You had had occasion during recess to have a look at this black sample of Twin PVC 7/0641. What has been produced in the wire which came at the bottom?

30 A. There was no bushing because it would not fit.

Court: It seemed that the two boxes are not identical. This is supposed to be a kind of wire. Obviously the opening in the new box is wider than the other opening.

A. Those openings are 5/8 inch and the other one is $\frac{3}{4}$. That is the difference.

40 Q. You will agree that the wire of such description which Mr Turner gave which was used?

A. At the time I did not understand it to be a circular conductor. I understand it to be a flat conductor according to BS 2004.

Q. This wire of such description which Mr Turner gave you at your interview on the 18th July 1972?

50 A. In fact it does fit the description, it is quite correct.

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- Q. You have mentioned the condition of that box. Do you agree that these same condition will occur when heat is applied to that box independently whether the heat is applied from the inside or from the outside?
- A. It can reach the temperatures to which the box distorted came away from the wall.
- Q. Mr Davidson you have amended on the extract from the fault log book which has been indicated to the plaintiffs and which have been produced in Court? 10
- Document "Q" produced
- Q. Now would you appreciate that this sheet is merely beyond an extract and the book itself is copied in chronological order?
- A. I have assumed so.
- Q. And that there may be 15 and 20 pages intervening between. I put it to you that question. You seemed to mention the whole of the size being blank, the person who goes out in relation to any fault or called out to repair again must find out what happened the previous time, obviously the previous entry but that is kept in a book in a chronological order? 20
- A. I think the main thing to find out was what the nature of the fault which was sustained. On each page you will find this case. If you want to look back then we should be able to find what the reasons for the call out before. 30
- Q. You are suggesting that each time workmen are called to attend a fault they must see when was the last occasion this particular consumer called?
- A. I am not suggesting that the workmen themselves should do this. Therefore if there was some memory about it there would be some control supervision of what is taking place in the log book if only to establish whether in fact faults are repeated. 40
- Q. So now we agree in so far as workmen attending fault is concerned he is not to go over the pages to see whether it was last week or last ten years ago.
- A. I think that if you receive a telephone call let us say, ten o'clock there would not be very much time to go and search from the log book if there is a previous call out. 50
- Q. He is not obliged to even expect to do that particular exercise?

	A.	I don't know the discipline of the CEB on the call out service.	In the Supreme Court
	Q.	Let's try to keep to the question Mr Davidson. I am not speaking of somebody I am speaking of a specific person the workman going out for that fault. You said that you considered that he is not obliged to, he is not even expected to find the faults in the book?	<u>Plaintiffs' Evidence</u> No.29 Raymond Davidson
10	A.	I am not the CEB. I would not be taking myself to be an authority to tell how the CEB must carry out the work.	Cross-examination 27th February 1978
	Q.	You have also on the fact that different workmen want to attend to the same consumer?	(continued)
	A.	I would expect that quite a number of employees and it would depend on the work whether this one or another one.	
20	Q.	Precisely we have cleared out that particular misunderstanding from your examination? Do I take it Mr Davidson that when you prepared your report you did not consider at all the Yorkshire cut out at the consumer?	
	A.	Yes I have said so that I was not aware of the Yorkshire cut out.	
	Q.	Now that you know that there was a fusing system between the meter of the consumer and the Henley you have had occasion to re-read that fault log book?	
30	A.	Yes my Lord I have.	
	Q.	Do you appreciate that quite a few of the faults work at the level of the Yorkshire cut out?	
	A.	Yes I can appreciate that.	
	Q.	I dispose that due control fuse refers to the Yorkshire cut out also and the second fuse are the cable out its reference to the Henley.	
40		You have observed in relation to the evidence to Mr Hiss that if believe that evidence showed that the CEB merely prepared system did contain the causes. Should you find the cause?	
	A.	Yes my Lord.	
	Q.	You have looked at the paper by which the locations were made by the consumers to the CEB and you have noticed that certain from the first consumer which applied for service was provided with service from the fuse box. You do or you are not sure of that?	
50	A.	I do.	

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In the Supreme Court of Mauritius

On TUESDAY, the 28th day of February, at
10.30 a.m.

Before the Honourable M.Rault, Acting Chief
Justice

the Honourable P. de Ravel, Puisne Judge

MR MOOLLAN RESUMES THE CROSS-EXAMINATION OF
MR RAYMOND DAVIDSON (Sworn)

- Q. Mr Davidson, yesterday when we just started on the question of the Fault Log Book, I asked you if you were aware of when each of the different consumers of that Henley fuse box had their installations fixed in the supply connected. I had suggested that their application forms could help you? 10
- A. Yes.
- Q. Would you agree that the first person (Southern Cross Diamond) applied for a supply on the 16th March, 1972? 20
- A. Yes.
- Q. His supply was connected to the fuse box by means of one straight service line going by a piece of wire, like the one produced, to the connectors and then by the aluminium wire straight on to the service?
- A. I am sorry, I could not judge that. The implication there is that to me the 7/064 cable, the piece we have in evidence, was installed at that time between the henley fuse box and bi-metallic connectors and that the 3 cables, the aluminium cables, were then taken from those bi-metallic connectors through room 4 and room 3 and then across the road to the adjacent building and that is what I understand by the question put to me by learned counsel. 30
- Q. You are not in a position to confirm? 40
- A. No I am not.
- Q. Assuming that to be the position, let us go to the second person who made his application (Imprimerie Ideale) on the 13th April 1972 and whose supply was connected to the same box a few days later, in fact on the 17th April. Are you in a position to say whether a second service was then taken from those connectors (aluminium connectors) to that building 50

in which Imprimerie Ideale was situate?

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10 A. No, I am not in a position to say so, but I would assume that another service was installed. My reason for this would be that of the physical location of these two consumers, Southern Cross Diamond would be on one side of the building and Imprimerie Ideale would be on the other side and this could necessitate a second service or a second set of three aluminium conductors to be connected.

Q. At this stage we will have then two service lines running directly from the bi-metallic conductors to each of those consumers and protected by the Henley fuse box?

A. Yes.

20 Q. After the 17th April we reached the stage of the fault log book, what we would call the Hiss incident which took place on the 26th May, 1972, and evidence will be adduced to that effect. Would you agree that a short circuit condition in Southern Cross Diamond would blow a fuse in the Henley fuse box which was then wired with one single 18 SWG on each phase?

30 A. I would not have expected it because as we are being given to understand, there was a set of Yorkshire fuses.

Q. I told you to assume the service was connected directly to the consumer and protected by the Henley fuse because on the 25th and 26th there was no Yorkshire fuse?

A. In that case I would expect a short circuit condition to blow the fuses in the Henley fuse box.

40 Q. I understand that Mr Jean and Mr Juste and the workmen went to the Henley fuse box to see what was the matter and as soon as they found the two fuses had blown they put a second one and as soon as they put in a second one, that fuse blew as well with a spark. Would that be normal and expected if the short circuit condition had not been remedied at Southern Cross at the moment that a second fuse carrier was being put?

50

A. Yes, it indicated that the fault still persisted on the temporary service.

Q. Would it be normal. Don't you think that the proper thing to do at that stage

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- was to disconnect the supply to the consumer in whose installation there was a fault. Now that it has been ascertained that this fuse blows, investigation is made and it is found that there is a fault in the consumer's installation, the correct thing to do is to disconnect that supply to the consumer until the fault be remedied?
- A. The fuse blowing in the Henley fuse box indicates that there is a fault on the system; it does not tell you whether the fault was at Southern Cross Diamond or at Imprimerie Ideale. 10
- Q. We will come about it in two ways; first of all, you have to take it from evidence adduced to that effect that the investigation was made and the fault was found to be at Southern Cross and secondly, if that was the situation, it would be normal and expected that the supply be disconnected to that consumer until the fault be remedied? 20
- A. Yes.
- Q. Now, when the supply is disconnected and there is only one consumer left on that service and the same operation is gone through, the fuses are rewired and repute in the fuse box, this will indicate that in fact the source of the fault has probably been located and it cannot be Imprimerie Ideale? 30
- A. That would indicate the system was healthy.
- Q. A lesson one learns from that particular exercise is that by reason of a fault in Southern Cross, Imprimerie Ideale lost its supply because both of them were being protected by the Henley fuse box only? 40
- A. That is correct.
- Q. In para.7.21, page 10 of your report, you state that this is not quite right because each circuit should be separately protected. At that stage the right thing to do would be to provide a separate protection to each of those two consumers - Imprimerie Ideale and Southern Cross - by the installation of Yorkshire cut outs at their level. 50
- A. It would be correct to protect each consumer but the problem is not yet resolved. We still have a considerable length of cable between the Yorkshire

fuse cut outs and the Henley fuse box and the Henley fuse box as well as its meeting point is protecting two sets of outgoing circuits and this is not in accordance with good practice.

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Q. But would you agree that each consumer at each circuit would have been separately protected by the installation of the Yorkshire cut out?

10 A. Yes the CEB have provided protection for each consumer.

Q. In effect as from that moment onwards the Henley cut out is no longer a consumer cut out but in effect in the nature of a section fuse providing two consumers?

A. That is correct, we call it a section fuse cutout.

20 Q. Once the consumer for SouthernCross remedies the fault his supply is reconnected, this also would be the right and proper thing to do. The supply has been disconnected, there has been separate protection put between him and Imprimerie Ideale and once he remedies his fault the supply is reconnected. It is quite normal and in practice a correct practice to do?

30 A. Yes. If the CEB are satisfied that the fault has been corrected on the consumer's premises then they would be in order to reconnect the supply. If I might just add, at this point, one thing which is concerning me, the position of these Yorkshire fuses are adjacent to the consumers but nevertheless from the Henley fuse box to the position of the Yorkshire fuse box, there is a considerable length of cable of the same cross sectional area as that which goes from the Yorkshire fuses to the consumer. The object of the fuse protection, or protective device, is to protect it at the origin where you reduce the cross sectional area. In effect that reduction of cross sectional area has taken place in the vicinity of the Henley fuse box and therefore each of those outgoing circuits should have been adequately protected at that point.

50 Court: There is another thing that strikes me and perhaps this should be the proper time to make a remark. After all I don't know what would be your contention, but the installation of the Yorkshire fuse where it is installed there, that is, at the entry of the consumer, was it not to prevent the supply of one being disconnected through a

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fault of the other one instead of protecting the Henley fuse as I think the witness has said the Henley fuse should be protected against two outgoing circuits. Now, the fusing, as it is done by your company there, is indeed made to protect one consumer against the other, that is, if you have a fault at your place my light won't go out and if I have one at my place yours won't go out. It would seem from the questions you are putting perhaps this is another aspect of the case, I don't know. 10

Mr Moollan: We shall come to that aspect later My Lord.

Court: I don't know what is your contention yet but we might as well as the witness is here get that right. This strikes me now and it might not later.

Mr Moollan: If your Lordships will bear with me I would rather follow the line in a more chronological sequence. 20

Court: Before you proceed there are two points I would like to be enlightened: the first is what is the distance between the Henley fuse box and the Yorkshire cut out.

A. I would say of the order of a 100 feet.

Court: The second question is what was the date of installation of the Yorkshire cut outs? 30

Mr Moollan: Immediately after the 26th May.

Court: What do you mean immediately after?

Mr Moollan: Orders were given in the morning and immediately they were carried out.

Q. Mr Davidson, on the 1st June, a supply is connected to Textile Industries and this is done by way of branching off the supply line of Imprimerie Ideale to give it into Textile Industries and at the same time as this is done the Yorkshire cut out is put protecting the Textile Industries separately from Imprimerie Ideale, and that in fact would lead us to the situation which we find in Sketch 1 of your report? 40

A. Yes as is expressed in sketch 1.

Q. At that state the fuse wire used in what would be now 9 Yorkshire cut outs would be one 18 SWG - three in Southern Cross, three in Textile Industries and three in Imprimerie Ideale. There is one Yorkshire cut out on each phase. Mr Davidson has 50

done a very good sketch, my Lords, where each one of them represents three Yorkshire cut outs, the Henley fuse box is also fused with three single 19, that is, one single 18 per phase which makes three single 18.

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A. I take that that in each of the fuse carriers there is one strand of number 18 SWG fuse

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10 Q. On the 28th June 1972, a single 18 on the Henley cut out on one of the phases blew and that particular one was replaced by a double 18 and this fact is reported on the log books. So, at that stage the situation is as follows: there is one single 18 on each of the phases on the Yorkshire, one double 18 in the Henley and two single 18 in the Henley cut out.

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Mr David: It is quite clear.....

20 Mr Moollan: I am putting it to the witness and evidence will of course be adduced to that effect.

Court: We take it that he does not know.

Mr Moollan: He is just assuming.

Court: The shorthand writer should make this clear by saying - I am assuming on a suggestion by counsel that the facts are as follows.

30 Mr Moollan: You will see from the log book entry that on the 5th July 1972, a fuse blew in the Henley fuse box?

A. Yes, I understand the term cable box refers to the Henley fuse box.

Q. Evidence will be adduced to that effect that the fuse which blew was one of the remaining two single 18 in the box and that one too was replaced by a double 18.

Court: There is nothing on the log book to show this.

40 Mr Moollan: There is no specific note made on the fault log book but evidence will be adduced.

Court: To replace a single 18 by a double 18, in the first case there is a special entry to that effect but in the second case there is not.

50 Mr Moollan: My Lords, evidence will be adduced to the effect that the workmen as soon as he did reported that fact to his immediate superior Mr Jean, who then gave instructions each time that would occur to follow the same practice. On the same afternoon a fuse blew again on the Henley

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fuse box and it could not be attended to because the CEB workmen could not get access to the fuse box.

Court: These are two different occurrences, one fuse blowing in the box, whatever it is this is being repaired and this is being reported.

Mr Moollan: Your Lordships will see that this was reported at 13.45, the workmen went out at 13.50.

10

Court: Came back at 15.20.

Mr Moollan: Yes.

Court: And then

Mr Moollan: At 16 there was another report.

Court: That another fuse blew again.

Mr Moollan: And that would be the third single SWG - this is the evidence which should be adduced that one could not gain access to the building and that was attended to on the 6th in the morning and replaced by a two 18 SWG.

20

Mr Davidson, you have told us that PVC cables ignites at 400 to 450°C?

A. That is correct.

Q. Could you tell us what is your source of information for that particular statement?

A. From the Cable manufacturers. This particular figure I obtained when I was with Messrs Hill Kaplan, Scot & Partners Consulting Engineers, Cape Town.

30

Q. If we turn to page 6 of your report and more specially to para. 6.19, let us start at para. 6.18, you have told us "that the total connected load was approximately 63 kilowatts, there was no figure given for power factor but the sewing machines....!"

Court: What the witness says is the CEB saying but you put it to him that he is saying so.

40

Mr Moollan: Do you disagree with the statement "that the total connected load was approximately 63 kilowatts, there was no figure given for power factor but the sewing machines..... "

Court: What the witness says is the CEB saying but you put it to him that he is saying so.

Mr Moollan: Do you disagree with the statement that the total connected loan was approximately 63 KW?

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- A. If by what you mean of 63 KW is an approximate figure I don't disagree with that because the total of the declared connected loads came to 64.8 KW and the figure is near enough in our calculation.
- 10 Q. Your report states the following : "There was no figure given for power factor but the sewing machines in the Textile factory had a name plate rating of 250 watts at a full load current of 1.8 amps at 220 volts which would indicate a power factor of around 0.64"?
- A. Yes.
- Q. In that particular name plate was any mention made about whether there was some starting device, some condensing device or some condensers on those machines?
- 20 A. I don't recall from the name plate whether it refers to starting or condensing device.
- Q. You will agree that if there were any such device this will certainly affect the power factor?
- A. Of course the construction of any rotating plant determines the power factor which it operates.
- 30 Q. I don't know whether the question has been answered. I still don't have an answer. Mr Davidson, would the existence of a starting device or a condenser affect the power factor?
- A. The object of a condenser is to start the sewing machine, to enable it to start rotating.
- Court: Would it affect the power factor, this is the question.
- 40 A. In my opinion I don't think whether it would affect the power factor unless it was permanently connected in circuit during its running condition.
- Mr Moollan: When you investigated those machines did you look for such a device?
- 50 A. No I did not. I was concerned with the information on the name plate and the information that is given there one can calculate the approximate power factor by virtue of the fact that the output of the machines is given at 250 watts the input of the machine is given at 1.8 amps 220 volts. The difference between the output and the input is represented by the power factor in otherwords, I may put it simply: it is a measure of the electrical efficiency of the sewing machine.

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- Q. Para. 6.19 in effect is a statement of the information which has established that the loads were the connected loads as you have been able to verify from the application forms?
- A. Yes.
- Q. From then the exercise which you are going to do is to try and assess the average demand for the month of June?
- A. Yes. 10
- Q. For that purpose you have taken the consumption figures of the three consumers as has been submitted to the Court and if I understand you rightly, you have assumed that each of the industries has been working on an average of 200 hours per month about 25 days at 8 hours per day. Is that correct. Is that the process you have come to?
- A. I have approached the problem in two ways. 20
- Q. Is it one of the ways I am mentioning. Let us analyse that way, then we can go on to the second way?
- A. I understand we are using the information contained on the electricity consumption for the industries, this is one of the ways.
- Q. This is what you have said: "I have looked for the consumption for the month of June and I have assumed that the working hours is 200, I have divided in kilowatts hours so that we can say that we have an average demand"? 30
- A. Yes.
- Q. For Southern Cross dividing 2092 by 200 you come to approximately 10 kw?
- A. Yes.
- Q. This is the figure given by you. You put that in correlation of the demand of 16.5 kw. Is that correct?
- A. The declared load is 16.5, that is correct. 40
- Court: Perhaps you might correct that chart you have given us because it is written watts and the others are written kilowatts.
- Mr David: This is the figure given by the CER.
- Court: Produced by you.
- Mr David: Yes I shall ask my friend to have it corrected.
- Court: In one case it is the French system of decimal and in the other case you are using the English system. 50

Mr David: My friend would confirm that fact.

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Mr Moollan: So, for Southern Cross, the position is as follows - he made a demand for 16.5 kw and on an analysis of his consumption, we find that it is in the region of 10 kw for the month of June?

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10 A. That is correct.
Q. In so far as Imprimerie Ideale is concerned we find that they made a demand for 28.3 kw and by the same process of operation we find that their figures go down to 4 kw for the month of June?

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A. This is what I said. I wonder whether it might be helpful. I have produced a table which is more accurate than the figures which are given, which shows the analysis that is now being given.

(continued)

20 Q. I have not seen the table, I don't know. You may use the table to answer and I would follow, it is so confused with those figures. In so far as Textile Industries is concerned the demand is for 20 kw and the consumption is 12 kw approximately?

A. Correct.

Q. To reduce those 3 figures 10, 4 and 12 to amps demand one operation which is a bit arbitrary, that is, the assessment of a power factor?

30 A. That is correct.

Q. You have assumed a power factor of 0.7 for the purpose of your calculation as one can see in the top of page 7 of your report?

A. That is correct.

Q. Will you disagree with the proposition that this power factor may well be .8?

40 A. No, I would not disagree with that at all. The power factor would be a fluctuating figure depending on the load which is being supplied at that time, it depends on a number of sewing machines at say 0.64 or the number of 3 phase-machines on the other consumers at power factors of .8 or .85 and so you would have an average power factor that could approach .8.

50 Court: I understood that power factor to be a measure of efficiency of the sewing machines. Now you seem to say there is another factor to be considered, that is, the amount of emergy required by the machines?

A. Yes. If we consider the consumer as a whole. He requires a certain input and this we could

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measure in KVA. How this is being converted into kilowatts depends upon the individual power factor of the machinery which he is using and so this accounts why I made two power factors of the same machine, of the rotating machine, and then, suddenly I transferred that set of individual power factor to an overall power factor which appears in the system.

Mr Moollan: On a power factor of 7, the 10 kva consumed, the average demand of Southern Cross comes to 21 amps?

A. I have no comment. I accept that figure. I did not calculate the average demand in amps per phase for Southern Cross Diamond Co. with the figure of .7.

Q. You have calculated at .8?

A. I have actually calculated at .8.

Q. At .8 what would be the demand?

A. 19 amps per phase.

Q. For Imprimerie Ideale what would be the demand?

A. I would have allowed a power factor of .8 and with its average consumption per hour, the average demand would be 6.2 amps per phase.

Q. For Textile Industries?

A. Here I have taken a lower power factor of 0.64 and arrived at an average demand of 26.5 amps per phase.

Q. At .7 what would be the figure, it would be in the region of 24 or 25?

A. You will have to reduce that figure by one-tenth.

Q. It is 19, it is 6.2 and 26 it comes to?

A. It comes to 51.7 amps per phase and the total consumption or rather the total load based on this average consumption figure would be 25.6 Kva.

Q. This is the conversion of 51.7, the equivalent in kilowatts is 25.6. Is that correct?

A. That is correct - 25.6 Kw then converted into amps would be 51.7.

Q. It is the same thing expressed in two different terms?

A. That is correct.

Q. You had visited not only the Textile

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Industries but also Southern Cross
Diamond Factory and Imprimerie Ideale?

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A. That is correct.

Q. You would agree that in fact the
consumption of Imprimerie Ideale is
in no way surprising because that
particular industry was in the process
of installation?

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A. That is correct, it was starting up.

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10 Q. When you visited those industries you
ascertained that in fact they were on the
18th July being supplied from a trans-
former which had been erected for the
specific purpose of giving them a
permanent supply?

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A. That is correct.

Q. Because we know that the supply from the
Henley fuse was a temporary one and the
transformer had actually been put into
service when you visited those industries.

20

A. Yes.

Q. You also stated that you approached the
matter in another way. Would you like
to expand on it. I stopped you. Do
you want to add something else?

A. The reason why I approached the problem
in another way is that if we now still
inspect the electricity consumption and
we see that Imprimerie Ideale has only
consumed 781 kw hours and by doing this
average consumption based on 200 hour -
working monthly we have a figure of only
3.4 kw. By inspection of their application
demand, we find that much of their machinery
were well in excess of 3.4 kw. It is there-
fore logical to assume that this average
figure of 3.4 kw does not give you a very
accurate picture of what could have happened
at any given time, for example, the applica-
tion form shows a range of equipment up to
10½ horse power. If they are starting up
any of the larger machine it would certainly
draw current well in excess of 6.2 amps and
so this assessment based on an average
consumption of what the demand could possibly
be is not very accurate. It is just indica-
tive of one end of the scale. We have to
approach it by inspection of the equipment
which is installed to try and arrive at a
reasonable or a probable average demand.

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40

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Q. If I may interrupt you, Mr Davidson, at
this stage, are you aware of what are the
equipment which were installed in Imprimerie
Ideale on the 5th or 6th July, 1972?

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- A. I have not got a record of the exact machinery that was installed. I only have an impression of that machinery there.
- Q. You may proceed.
- A. I have approached the probable average demand by taking the declared load assessing a power factor arriving at a resultant KVA which is my input for the total demand, I would then assess a probable diversity factor in the operating of this plant and from that I arrive at what I consider to be an average demand in amps per phase which I have illustrated in para. 6.20, it gives me a total figure, a total probable average demand of 17 amps per phase. 10
- Q. What is the diversity factor you applied in this case for your calculation?
- A. For Southern Cross Diamond I applied the diversity factor of .75. For Textile Industries I applied a factor of .6 which is supported by the fact that there were 40 sewing machines being used at that time for training operations and by doing the calculation I can arrive at the same figure of 27 amps per phase. For Imprimerie Ideale I have allowed a diversity factor of .6. 20
- Q. And you reached the result we find in para. 6.20 of Ideal Printing 30, Southern Cross 22, and Textile Industries 27? 30
- A. That is correct.
- Q. Making a total of 79 amps per phase?
- A. That is correct.
- Q. In applying a diversity factor which you have mentioned in relation to that applied for loads by each of those three consumers?
- A. That is correct. 40
- Q. Which necessarily assumed that all the machines mentioned in the application form would actually have been installed and operating?
- A. I assume that they would either have been installed or were in the process of being installed which means that at some time one would test those machinery and so a demand would be made on the system.
- Q. Let us take the case of Imprimerie Ideale. He has applied for 28.3 kw listing the machines which will bring his application 50

to 28.3?

A. That is correct.

Q. You have taken 28.3 as the starting point of your calculation and you have used a diversity factor of .6 for the purpose of your calculation?

A. That is correct.

Court: You seem to be making a difference between diversity factor and power factor?

10 Mr Moollan: There is a difference. Mr Davidson, would you explain what is a diversity factor?

A. A diversity factor is an expression of the use of the machinery or plant in a consumer's premises. It is an averaging of the demand that would be called. It does not mean to say that the demand would not be exceeded, it is there to arrive at an average figure. The average figures are used in calculation calculating the size of protective devices further upstream towards the transformer and also in the sizing of the transformer. The closer you are to the piece of machinery which you are protecting the less the diversity factor, that is to say, approaches unity. As you go away from it by a law of averages of use, the diversity factor can be reduced to quite low loads, it depends upon the system.

30 Q. You have given us an idea of diversity factor but I don't think this is an accurate description. If I may put it in simple terms. When a consumer at a residence, at my residence, for instance, puts down a whole list of equipment installed - the lamps, the plugs, the heater, the washing machine, whatever there may be in a household, it is in fact normal to expect that not all those lamps and those machines will be in operation exactly at the same time; some will be in use, some will not be in use, some will be put out now, some will be put out later or at some other time and so the total amount of what we applied for is not in fact the amount we called upon at the given time and it is the correlation between those two that is the diversity factor?

40 A. I thought that my explanation in fact brought forth this point, there was the question of the usage of the equipment, for example, if I were to illustrate by your kitchen you could put outlets at very frequent intervals around the kitchen to serve many of your kitchen appliances. Regulations permit that these outlets can be connected to a 30 amps circuit single phase because it is difficult to imagine that you will consume more than

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6 kw of electricity in a kitchen from all these various outlets such as kettle, toasters, mixers, this is a question of diversity, but when you are dealing with a factory the problem is somewhat different.

Q. Your statement is that it is an engineering judgment based on experience and assessment?

A. That is correct.

Q. Let us go back to Imprimerie Ideale 28.3 being the total load of all the machines listed in his application form and it is when you apply a diversity of .6 to that total list that you reach the figure of 30 amps phase?

10

A. That is correct.

Q. If a machine is not even installed then necessarily the load of that machine must be reduced from 28.3 to reach the figure on the amps phase?

A. If, for example, the 10 HP machine has not been installed my calculation must acknowledge the fact that there is one piece of machinery which will call for almost a third of the declared load. If on the other hand there were machinery which were only calling 2 HP or 4 HP that were not installed or connected up, then we will have to reassess it in a different way. I must accept the fact that we have machinery which have very high loads and accordingly call for a higher current.

20

30

Q. You would agree that your final figure of amps per phase is to be calculated not on the machines listed on the application forms and therefore the power applied for but on the machines in fact installed?

A. I am sorry I can't accept that because if I am making an assessment in demand it is difficult to know at which point of time those machines will or will not be connected in the system.

40

Q. What you are saying is the following - when the demand is made one should expect that once all these machines are fully installed that would be the load per phase of those machines applying on the power factor you have mentioned?

A. I think there is no other way of calculating a diversity factor.

Q. There is another way of calculating an average demand. The other way has been that in fact if the machines listed in the application form have not been installed, then the average demand should fall by the

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effect of the installation of the machines?

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- A. Yes but it does not affect your calculation. Your calculation is based on the facts before you. The demand is obviously dictated by the machinery which is connected up and used.

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10 Court: What you really mean is that if you receive such a demand as an engineer you will make provision for it whether it is actually in use or not, you have to provide for it because it is going to be used at some time or other without any notice probably?

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- A. I must do that as an engineer, that is so.

20 Mr Moollan: In that case I would expect you to say so: on the application I must make provision for such a demand for the future, that is in effect the process of reasoning and the way of putting it is the expression in words of the process of reasoning.

- A. I am sorry I don't quite follow the question

30 Q. His Lordship has put it that an engineer when he receives an application look at it and says - this is the application, I apply my power factor, my diversity factor and this is the load I should cater for the future?

- A. Yes.

- Q. He would not say looking at it - this is the average demand of last month It is necessarily a process for the future?

- A. Of course.

40 Q. You will bear with me and look at para.6.20 of your report - "Based on the information provided by the CEB and a visit to each of the undermentioned consumers the average demand on the temporary service during the month of June (the month which was past) was probably as follows". You have applied a process of reasoning for the future to make a statement concerning the past. That is a mistake Mr Davidson?

50 A. Yes I understand what learned counsel is saying, but nevertheless my assessment of that demand and my figure of .6 was however assessed and is assessed as it is.

- Q. That is a mistake and in fact when we look at the actual consumption we see the mistake, we see those differences - for the past you

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look at actual consumption, for the future you make this theoretical. When you speak of service during the month of June was probably as follows, is it or is it not a mistake. Mr Davidson is it so difficult to say so if one does make a mistake?

A. The inference here is that because 781 kw hours were consumed that possibly there was about 4 kw of machinery installed and working, but I don't think that was the case. 10

Q. Let us look at your sentence again and if you want to change your definition, all right, but from your very definition which is if you have got to take 28.3 and applied a diversity factor of .6 to get 30 amps per phase, when you mentioned that as being the average demand on the temporary service during the month of June 1972, we are not speaking of 1973, must have been a mistake? 20

A. If I understand you are saying that I miscalculated the amount of machinery I saw as being not as high as I have indicated it in my assessment figures this is possible I could have made an error.

Q. In fact the best proof of this factor is what is actually used?

A. I am sorry I will come back again to this the 781 kw hours has not been to say that some of the larger machinery was not installed and connected up. I could have 10 HP machine there and I could have started testing the machine, I could have used the large press one or two hours carrying on not every day but every two or three days. This is how it happens and the very nature of starting up a factory. 30

Court: What you are saying is that the actual consumption for a month does not give us any accurate idea of what the consumption on any particular day might be? 40

A. Yes, on any particular day or at any particular hour.

Mr Moollan: My Lords, Mr Davidson has always assumed that the machine has been installed, and if it is not at all on the premises of that service.

A. I agree My Lords. I think I have said so. 50

Court: To cut your long story short. You had information from the CEB about the application form. You went there on the 18th and you saw what you saw and whatever you work is from these datas. Now if that thing

is not working at all, if no machine was installed, there was no call on any electricity at all?

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A. That is quite so, my Lords.

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10 Mr Moollan: Mr Davidson, those varied diversity factors you have mentioned, .6 for Imprimerie Ideale, .6 for Textile Industries and .75 for Southern Cross, is there any basis on which you have picked on those particular figures or is it just in your own judgment, you believe them to be a fair figure?

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(continued)

20 A. In my engineering judgment it has been a fair figure. I just wonder whether I might add something. Earlier on I had made reference to work that has been carried out in the International Electrotechnical Commission. I was privileged to be present during a meeting in Moscow last year of the Technical Committee No.64 which deals with electrical equipment of buildings and there these experts from many member countries - 32 member countries present - there were more than 90 people and they were not able to arrive at any method, exact method, as underlined, of calculating diversity factors. This matter has been under considerable discussion and I am only mentioning this to illustrate the problem of any two engineers arriving at the same diversity factor.

30

Q. In your calculation at the top of p.7 you have not applied any diversity factor at all?

A. That is correct. Here I have indicated what the peak demand would be if there had been a call for 64.8 KW.

40 Q. In fact what you have done is, you have taken the kilowatt applied for and converted it into amperage using a power factor of 0.7?

A. That is correct.

Q. You have told us that you saw a compressor on the premises of Southern Cross Diamond, the 10 HP three-phase compressor which had a full load of 15.6 amps?

A. Yes.

Q. Did you verify whether there was any starter at that compressor?

50

A. I did not verify the method of starting, that is to say, whether it was direct on line or star delta.

Q. You have already mentioned in chief the effect of a starter would have in certain circumstances, we will not go back again on

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that. Will you please look at the application form of Southern Cross Diamond where the total applied for load is 16.5 kw?

- A. Yes.
- Q. Did you find any mention of a 10 HP 3-phase compressor?
- A. Yes. It is the first one, it says motive power 3 phases No. HP 10. I cannot read very well the figure of watts. It seems to be just as a straight calculation. 10
- Q. In effect that compressor is actually included in the 16.5 kw total applied for. The point is that the 10 HP 3-phase compressor mentioned in para. 6.21 is already taken care of in the 16.5 kw mentioned in para. 6.19?
- A. Yes.
- Q. The 10 HP 3-phase is included?
- A. In the motive power, the first entry is for a 3 phase machine with a rating of 10 HP. 20
- Q. If we are to turn to Imprimerie Ideale you have mentioned that you have found installed 150 amps welder? You will, of course, agree with me that welders operate off a transformer?
- A. Yes.
- Q. Did you try and find out what transformer there was with a 150 amps welder? 30
- A. No.
- Q. Will you agree that this transformer will materially affect the load which this welder would put on the service-
- A. If I understand the question, the transformer is only there to produce a higher current at a lower voltage. The current being required for the electric arc welding processes through which it is being used, the voltage being sufficient for striking a voltage, therefore the load which you would find on the secondary side would be directly related to the load I am talking about in kwts than would be called for on the primary side of the transformer. 40
- Q. If we were to bring that down to a very simple factor, the statement contained in the first para. 6.21 is that there is a single phase 150 amps welder suggesting that there is a connected load of 150 amps on the service provided, is not it? 50
- A. It is not contended to imply there was any

misuse. We often refer to welders by the amperage, clearly there is a transformer between the welding apparatus and the supply from which it is connected to and the only thing that I was drawing your attention to was that when you do strike an arc there is an initial surge, the transformer would not dampen all that surge and some of that starting surge will be felt on the primary side, that is to say, on the 230 volts side of the transformer.

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10

Q. You have no idea of what was the transformer which was installed there?

A. No I did not.

Q. I think you have agreed that this transformer will materially affect the amperage on the system which you are investigating?

20

A. I have not said that. I have said that the 150 amps of that welding voltage, if we were to take the welding voltage at probably 60 volts and may be the load would be 50 volts, if we take 60 we would have 60 times 150 which would give us 9000 watts. In fact it is connected on to a 30 amps supplied 230 volts which has a maximum capacity of 6.9 kw or 6900 watts; it is therefore more probable that the voltage required was not 60 volts but probably 50 volts, but this is quite common.

30

Q. Which would reduce the amps with a 40 or 50 volt transformer, the demand of this machine would be in the nature of 30 amps?

A. Yes.

Q. We are dealing in para 6.18 as you originally put it on an investigation of the power which the service connected by the CEB had to sustain. This is the whole purpose of the exercise of 6.18 which has been broken down from 6.18 to 6.22?

40

A. Yes.

Q. And a difference from 150 amps to 31 amps to a person reading that particular document might mislead that person?

A. I would apologise to the Court but I have expressed that engineering terminology.

Q. A welder by the very nature of its user operates in a fraction of a second?

A. Yes.

50

Q. I am given to understand that operating at such a short interval it has got no significant effect on the heating of the cables or the contacts of the fuse box?

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- A. I would not say that.
- Q. What would you say?
- A. As I said before, My Lords, you still have to dissipate the energy and whether the welder during a period of striking the arc there is a surge and current is still drawn while you maintain the arc, that period of time depends on the method of welding but it is a short period of time.
- Q. So short in fact that in the normal operation of a welder it has got no significant effect? 10
- A. I still maintain that if I call for current, I still have energy to dissipate in assessing and I don't think we could call it negligible. It is there.
- Q. You have mentioned in the course of your examination in chief that you noticed that a meter had been changed in the Textile Industries and you have come to the opinion that this is evidence of overloading? 20
- A. The application form is not very clear, but I believe on your copies, it is clear. Yet it indicates that prior to the fire there was a change in the meter. I have assumed rightly or wrongly that this meter was to enable the CEB to measure the demand greater than that applied for.
- Q. I will put your mind at rest and say that your assumption is right. There was a new transformer being in the process of being connected in the next few days and a new service which was going to be given to that transformer and the equipment was being fitted in the service and the meter was being put in for that purpose in the light of the further application which Textile Industries made for an increase in the amount of machinery which was to be dealt with at that time? 30 40
- Court: I don't think the witness could possibly answer that question. He says the meter has been changed and he says my opinion is that it has been changed for the following reason.
- Mr Moollan: I don't know the reason for which the meter may be changed, the witness says in so many words, the witness wishes to qualify this, there is no objection, this indicates that the declared load was being exceeded that the meter was not sufficient. If the witness is prepared to withdraw that statement all right he may do so. 50

Court: You can take notice of the fact that there are many reasons for changing a meter.

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10 Mr Moollan: Mr Davidson, when you were speaking about phase to phase short circuit there may be, and bushings not existing in a continuous circuit being established at the top plate, I believe you mentioned something that there was no division between one phase and another. What sort of division did you have in mind to stop that continuous circuit?

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20 A. The division I was referring to is not the division in one phase to the other. The statement which learned counsel is referring is the one I have made that the electric path between the hole in the top of the Henley box was continuous. I have said at the time I put that in because this would then at least explain why Mr Maisey when instructing Mr Turner asked him to try and ascertain the effects of eddy current heating. It is often an installation practice and if one is in doubt one does cut the metal path to introduce an air gap to break the effect of any eddy current heating, but as Mr Turner has already explained, it was negligible.

30 Q. What is division. Division in fact is by an air gap. I mean a slit on the top plate through which air can be introduced which would bring insulation from one phase to the other, is that what you meant?

A. Yes.

Q. This is quite a recognised and admitted practice, this air gap you are introducing is because it is a recognised and normal practice?

40 A. It is done in practice, when you have a situation where we call phase conductors have not been neutralised.

Q. Would you censure people who do that practice?

50 A. I would advise people to take precaution. I realise, of course, that the effects of eddy current heating are less at 50 cycles than at 60 cycles, but I would explain that I had spent a certain part of my career engaged in design, in installation, in accordance with American practice and therefore I was exposed to the problem of eddy current heating.

Q. This practice which you don't censure would of necessity permit the ingress of moisture, dust, insects and other matters.

A. Yes it would, but then you would have to take a further precaution to ensure that there was

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some non ferrous plate underneath.

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BATA SHOE CO & ANOR v. THE CEB

AFTER RECESS

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Mr Moollan continues the cross-examination of:
Raymond Davidson (still under oath)

(continued)

- Q. Mr Davidson, if you are to turn to para. 6.15 of your report page 5, you are there referring to earth fault loop resistance in order to ascertain the current? 10
- A. That is correct.
- Q. You have not had any opportunity of doing any test or measurement to come to the figure you have quoted. What do you mean by earth fault loop?
- A. Perhaps it would be better if I explain. We talk of the earth as established in the transformer and the earth on the neutral point of the transformer. We talk of the earth system earth wire, earth conductor that would be taken or carried along with the supply cable, in this instance where the henley fuse box was found, in room 4 and the box itself connected to the earth and the return path through the mass of earth back to the earth which is established at the transformer and this is described a loop. The circuit through the mass of earth. 20 30
- Q. In this particular instance the loop would be formed starting from the box down to the sheath of the PILCSWA&S cable which goes down to earth, that itself through the earth to the plate of the base to the transformer, through the transformer along the base which joins back one of the phase line?
- A. The sheath of the cable and the armoury would be connected to the earth connection (terminal) externally at the transformer. That would be part of the return part. The other part is from the neutral point of the transformer which is then brought out to the earth and then through the mass of earth, through the earth point at the consumers' installation. 40
- Q. Then you get the circuit completed. In order to ascertain the current one has got to use a specific formula, voltage - 50

current times resistance, voltage to amperage?

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A. This is known as volts = amperes times resistance.

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Q. In this case we know the voltage was 240 and one has got to ascertain the amperes which the ohms which you have assumed as 5 ohms in para. 6.15 by dividing one by the other the voltage by the ohms you get the current?

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10

A. That is correct.

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Q. Mr Woodcock was requested to carry out test which you mentioned and he finds that at the cable is 58 ohms and at the plate of the transformer it is 9. Would I be correct to say that the total resistance would be $9 + 52 = 61$ volts?

(continued)

A. I am not sure whether the 52 applies to which part.

20

Q. Here it is said the lead sheath and armour not bonded to neutral at the sub station?

A. I must say I am astonished it seems extremely high.

Q. In fact in the test which was made by Mr Woodcock he found one to be 200 ohms. The question is for the purpose of ascertaining the resistance and ohms one has got to add the 52 to the 9 ohms bringing us a total of 61 and then we shall find the current to be $230 \div 61$. It is less than 4?

30

A. Yes, these figures are correct.

DOCUMENTS PUT IN MARKED AI AND AJ

Q. At that level of less than 4 ohms has been followed..... what type of arc would you expect?

A. I have just received this information I would like to have some time to consider the implications. The values are correct, and I am somewhat surprised I would like to consider the implication of that before I answer counsel. I am sorry.

40

Q. Assuming a home ampere follows current on a phase to earth fault; what sort of fire you might expect in that? What sort of fire you might expect in that arc which might result?

A. By applying the ohms law, there would be 4 amp.

Q. It is about the level of an electrical kettle?

50

A. Yes.

Q. What is the nature of the arc which one would expect resulting from the phase, the 4 amp

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is negligible?

A. No, it is not negligible. I think it could be explained by Mr Turner because he is the expert on the matter. I am not. I cannot reply to this question.

Q. What are the matters you would like to state in the test results we have put in. You have said that you would receive the information you would like to consider the matter more fully. The test results being accepted, the effect is a purely mathematical one. You said that in certain matters you would like to take some time to consider the matters?

10

A. I am not clear in my mind whether the implications are what have been suggested to me.

Q. In order to give a precise figure, I assume the figures in para. 6.15 tests would have had to be done?

20

A. I have to consider.

Mr Moollan: My Lord, in order that the witness be able to give a precise figure, assuming the figure if para. 6.15 tests would have had to be done. I understood the witness to have said he does not gainsay the appreciation of the test. I have consulted my learned colleague in this matter. This is a factual matter of what that figure is and nothing else. This is why I wonder whether from the factual aspect, what were the matters. The witness says that he wants time to assess in his mind the implications. I have no further questions to put to the witness.

30

Re-examination

Mr David: Mr Davidson, we have been receiving during your cross examination, certain information relating to the wiring of the fuse on various occasions. Could you at this stage say what does the putting of two No.18 SWG fuse in only one phase, as described by learned counsel for the other side suggest to you?

40

A. That would suggest to me, that there was an unbalance on the system. Let us say that one phase was more heavily overloaded than the others and accordingly the fuse blew on one phase, the fact that that was replaced by two No.18 would indicate this particular aspect.

50

Q. Coming to this cable that was put in during your cross examination, does that cable which has been produced in court, has an attempt been made to try to fit in both, the box put in by the police and the one

put in by Mr Turner. What is the look of that cable in relation to what we call box No.2, what does that suggest?

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A. That would suggest to me that the cable which would only fit into the hole that bushings could not have been used.....

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Q. Do you have any alteration of any kind to be made or to add to your evidence or to your opinion being given that it was a circular cable instead of a flat one?

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A. No.

(continued)

Q. We come to the aspect of Mamdally's evidence. The evidence of Mamdally stands that it has indicated a fault on one or two phases, that is the second. What has been the second or the third one; would a partial service be available to the consumer or not on the temporary service?

A. Yes there could be partial service on the temporary service.

Q. If we consider a short circuit between any two phases, would this necessarily mean that the fuse protecting the third phase would blow?

A. No my Lord.

Q. Do I understand that a partial supply would be available to the consumer on the temporary service?

A. Yes, the partial supply would be maintained on the temporary service.

Q. At this present stage, keeping in mind all the various questions that have been put to you in cross examination, how would you place the damaging of the lid of the fuse box in point of time; would it have occurred after it had left the box or before it has left the box?

A. Yes, to me it would have happened before it left the box.

Q. How the damage might have happened when the lid was on the floor?

A. I cannot say how it could have happened if it was on concrete floor. If it had been on concrete floor there would have been some concentrating. It applied to that part of the cover. I would have expected to have found some evidence of the molten metal.

Court: The damage to the lid may be explained by the sparks, but the damage cannot be explained that it was on the floor and causing the metal to melt?

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- A. If it was on the floor it would have suggested..... I would have imagined if there had been such a concentrated heat at the floor level, then I do not think that there would have been partial burn. It would have been quickly burnt.
- Q. Are you qualified or not to make a parallel between the heat which would have resulted on the floor as compared to the heat that would have resulted from the short circuit? 10
- A. I am not qualified to judge it from that place of the heat of the fire.
- Mr David: You have stated that there would need to be some concentrated heat on this lid in order to cause it to melt, do I remember rightly, you gave a figure of 1375 degrees?
- A. Yes, that being the melting temperature.
- Q. You are not in a position to tell the court that in a fire what would be the degree of heat that could be attained? 20
- A. I am sorry, I am not competent to talk about it.

(Subject to what Mr Davidson may have to come and say about the implication of the papers put to him, Mr David has no other question to put to the witness)

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No. 30

EVIDENCE OF HAROLD MAISEY

30

Mr David calls and examines: Mr Harold Maisey
(sworn)

Electrical Engineer

- Q. Mr Maisey, you put in your curriculum vitae?
- A. Yes.
- Q. You are a chartered engineer and a fellow of the institute of electrical engineers, you have 20 years experience in research due to fire and explosion and aspects of explosion prevention? 40
- A. Yes.
- Curriculum vitae put in, marked "AK"
- Q. In 1968 you merged your practice with that of Dr Bourgogne and the organisation became Dr. J.H. Bourgogne and Partners.
- A. That is correct.

Q. You put in a booklet showing the work of the partnership?

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A. Yes.

BOOKLET PUT IN MARKED "AL"

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Q. At the inside pages are set out the subjects on which investigations are made and advice given among which investigation of fires, arson etc. the sources of ignition and also your work in respect of electrical matters?

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10

A. Yes, as a partner until some 9 months ago when I retired, I am retired now and I am acting as consultant to them.

(continued)

Q. You have at the request of T..... made out a report on information which you have received from Mr Cole from the witnesses who have just deponed and given evidence in court, from Mr Davidson and from the photographs of the police and Mr Halwachs. You put in a copy of that report?

20

A. Yes.

REPORT PUT IN MARKED "AM"

Q. In paragraph 1 of your report, you set out certain information which you had about the time of the fire, the place and the history of faults associated with this unit. You have also had the opportunity of having a look at the extracts at the CEB faults record. In the second paragraph, consideration is given whether there was any material in the store which would have caused fire, whether the fire would have been deliberate or whether it would have resulted from the fault associated with the CEB. You then mention your points of reference. At page 2 you say figure 1; you are referring to 2 illustrations which you have made. Therefore the figure 1 is more or less a replica with one or two additional date of the plan which has been put in by Mr Cole?

30

40

A. That is correct. The only addition was to show the run of the CEB cable.

DOCUMENT PUT IN MARKED "AN"

Q. In that figure you put three cables when in fact there are only two separate figures?

A. That is correct, this was a misunderstanding.

Q. In the first paragraph of your report you set out again information which is already before the court; in the next paragraph you say: we have examined the list of material in the store and found no reason to

50

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suspect that there was anything present which could ignite spontaneously. In other rooms there was material which would burn in particular room 4 and room 5. There were inflammable material such as rubber soles, paper, cardboard. That was the indication you have at the moment?

A. Yes.

Q. You refer to police photo Y. What do you mean by the Photo Y? 10

A. Number 5.

Q. At page 3 you refer again to information which you have been given and evidence as to which has been led in court by witness Dauhari, that room 3 and 5 had not been entered for at least a week before the fire, which according to you suggested no reason that fire has commenced in either of these?

A. That is correct. 20

Q. You then refer to the history of fuse blowing and in particular you put cable or cables?

A. It was not clear to me whether it was one cable or more at the time of writing, so I put it in. It appears that there was one.

Q. You say "The CEB were aware..... was a fire hazard". You now refer to figure 2 in your document, marked illustration which shows how the three consumers of the CEB were supplied? 30

A. Yes.

Q. You show us the transformer, you then proceed to set down what according to you would have been the evidence "on the morning of the fire the Bata..... from the raw material store". Here again there is evidence that it may have come from underneath. Would that make any difference? 40

A. No difference.

Q. It was then recalled that there was a bang..... at about 1.35 p.m. That again is information that you have?

A. Yes.

Q. At page 4 "After the discovery of the fire witness..... when looking through the door". You draw the conclusion to the effect that the fire would not have been to any of those areas at that time? 50

A. That is correct.

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- Q. It is on the strength of the evidence of witness Bigaignon that you reach the conclusion?
- A. Yes.
- Q. "Bigaignon assisted by others..... to fight it as he did", it is because of the proximity and violence of the fire?
- 10 A. There would have been difficulty in fighting it there. The fire would be much nearer to them; it would be difficult to fight it.
- Q. There was no possible source of ignition, why?
- A. There was no electrical power available in room 5 nor any possible source of ignition that could be visualised.
- Q. Goder says "The hard board partition.... to room 4?"
- 20 A. Yes.
- Q. "At about 2 p.m..... got out of control". You had made certain statements, let us say by arrangement through me, which have been deleted so as to facilitate matters to put in this report of yours?
- A. That is correct.
- Q. At page 5 you deal with the evidence for location of the fire origin. "You have to decide the location of the fire". Any suggestion that the fire.....separated from room 4. From the observation of what?
- 30 A. Of photographs.
- Q. "There was rubber in both 4 and 5..... properly secured". You have it from the photos?
- A. Yes.
- Q. In respect of room 4, you refer to 9, 41, 39 and 19?
- 40 A. Yes.
- Q. Photo 9, you took through the doorway into room 4. In fact as indicated on your figure 1, there is the lavatory and the wall behind?
- A. It was intended to be a lavatory but was used as part of the store.
- Q. You want to refer to anything particular to that photo?
- 50 A. Looking at the heavily damaged window area

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which goes to room 3 one can see that the partition wall was damaged. The next photograph to look at is 41 which is a closer view of the heavily damaged reinforced concrete window from which separates rooms 4 and 3 and the concrete ceiling which has spalled, there was obviously very high temperature. The next photograph is No.39 which shows the partition wall between 4 and 5. The light in that photograph comes from the window through which Mr Bigaignon and others fought the fire. The ceiling of room 5 was less spalled than that in room 4. Then we come to photograph No.19. This is another view of room 4 and looking at the entrance door and to the right of the entrance door where the four marks were on the wall would have been the henley box. Again on the right of the photograph one can see heavy spalling of the concrete window frame, photographs 10 and 20 we can see what it looks like in room 5. Photograph 10 looks into room 5 from the doorway. It should be the part of the store behind the partition.

10

20

The window, top right, is the one from which Mr Bigaignon fought the fire, there is the spalling of the window frames but it is not really as heavily damaged as the window frames in room 4.

30

Photograph 20 is a view in the opposite direction to photo 10. It shows the door which gives access into the narrow corridor at 6 on the plan. This photograph was in the opposite direction to 10 and I think the only point to make here is that there is more plaster on this wall in room 5, than on the wall in room 4 which is a continuation of the wall seen in photograph 19.

40

Q. Photograph 7, 14, 40 and 17?

A. Yes, room 3, photograph 7 shows heavy spalling of the window frames between rooms 3 and 4. Photographs 44 and 40 show a closer view of the window frames from room 3 and that they were heavily spalled.

Photograph 17 looks out of the room 3 into the area 1 and 2 of the finished goods store. I should have said the raw materials store. In that photograph on the right one can see a double door which was to outside the building. Above, on the left hand side of that door near the ceiling, there is a black spot on the wall which I understand was where the two aluminium cables from room 4 made exit to the outside.

Looking at photograph 21, top right, are the windows outside room 5 and then looking from right to left the darker doorway on the right hand bottom was the doorway into room 9. The second light doorway was that into room 5, the next one into room 4 and then comes to the doorway into room 3 and the window into room 3.

10 Photograph 16 looks into room 3 from the area 1, 2 of the main entrance doors and finally photograph 1 looks towards area 1 and 2 from the finished goods store showing the practically undamaged ceiling in that area.

20 The overall impression after examining the top photos is the lessening of the damage in all directions away from room 4 which is consistent with a fire commencing in room 4 burning longest there and spreading from it. It is much more difficult to imagine the spread from room 1, 2 into 4.

Q. You turn to page 8, the consideration of electrical defects which could cause fire?

30 A. The electrical faults of which there is evidence and which caused numerous visits by the CEB service personnel are as follows: (1) overfusing, there is evidence of it in the log book, (2) damage to outgoing cable (3) damage to the fuse carrier and fuse base contacts observed by HISS, (4) the possibility that the lid was not properly closed from the evidence of Mamdally, (5) there is also evidence of the absence of outgoing cable glands on the henley box. I consider that (2) that is, damage to the outgoing cables would have been likely to result from overfusing and I asked the electrical research association that is, 40 Mr Turner, to undertake a series of tests to determine the effect of overfusing on the temperature of the fuse box outgoing terminals and the outgoing cable sheaths where they left the box. Mr Turner's report shows with the extent of overfusing of which there was evidence dangerous high temperature can be achieved before the fuses blew..... can be caused in this way. Singly or in combination the faults in 1 to 5 can have resulted in electrical fire arcing. I have 50 examined the remains of the henley box, there is equivocal evidence to show that it caused the fire. The debris after the fire had been taken into account in isolation from other things. In this case in the absence of any evidence of deliberate ignition the conclusion that the "defective temporary improvised electric installation was responsible appears..... or that it was due

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to any Bata activities."

Q. Relating to the heat that can be generated by a fire. Are you in a position to give the court an indication as to that?

A. The heat that could be generated in any fire yes. I am sure I can help the court on this point. Possibly the best way to look at this is to consider what the British and Americans call a standard fire. After many experiences a standard fire represents the most severe conditions that are likely to be met in a fire situation and the standard fire produces temperatures at particular times, produces a known rate of increase of temperature and one can see, looking at this curve, what temperatures would be reached at what time in the standard fire. I do not have copy of this curve with me, but I could produce one tomorrow. 10 20

Very roughly what it means is something like this: in five minutes one might expect to get a temperature of about 300 degrees centigrade. I am speaking from memory. It would require two hours or something of that order before to get to 1400 degrees centigrade which would be required to melt iron or steel. It is in fact usual in a fire that cast iron and steel have melted. One does reach the melting point of copper in fires, this about 1065 degrees centigrade but it is a high temperature. It is unusual. The temperature I am talking about and the times I am speaking about would only be reached in a freely burning fire. This is a fire where there is plenty of air available for combustion. In a fire of this kind I would not expect to approach the temperatures in the sort of time that I have mentioned. 30 40

Court: That is on account of oxygen supplied and the confinement of the fire?

A. Yes.

Mr David: Is there anything you would like to add on this point?

A. I wish to point to the window in room 4 where one of the reinforced beams has collapsed. It probably means that the reinforced concrete beam had reached such a temperature that the reinforcement could no longer withstand the weight of the beam. This would occur probably at 800°C which shows that the temperature at that point was not less than that. 50

- | | | |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Q. | You remember that questions were put to Mr Davidson about for instance if the lid was on a concrete floor about the possibility of its melting or out of existence? | In the
Supreme
Court |
| A. | Yes. | Plaintiffs'
Evidence |
| Q. | Is there anything you would like to add on this aspect of the matter? | No.30
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| 10 A. | I find it difficult to visualise that the lid got into the condition that we see it just as the result of the fire. I do not think that sort of temperature would have been reached in this fire low down and I feel that the only possible explanation for that, the fusing away, burning away, cutting away of that lid, is that it resulted from arc cutting. | Examination
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(continued) |
| 20 Q. | Is there any other aspect which you would like to point out to the court before we close our examination? | |
| A. | I have already drawn attention to signs of localised heating in the tapped holes in the henley box which I believe is evidence of arcing. This would be consistent with an earth fault occurring between the cables and the earthed box which of course is something that was demonstrated in the ASTA test though the damage in the ASTA test was more severe at these points. | |
| 30 Q. | You have heard Mr Davidson read out his report. Mr Davidson has referred to various possible matters, of failures resulting in a fire? | |
| A. | Yes. | |
| Q. | Do you subscribe to this statement or you have any comment to make? | |
| A. | I think I can say that I subscribed substantially to what he said. | |

Cross-examined

Cross-
examination

40 XED by Sir R. Hein

- | | |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Q. | I am referring to page 1 of your report. I read in the first paragraph "There was a history....." who gave you this history, where is the historian? |
| A. | There is the evidence in the log book and the evidence of Mamdally and Hiss. |
| Q. | Two oral evidence and one documentary evidence? |
| A. | Yes. |
| 50 Q. | If I start with the log book, do you agree with me, after looking at the first page of |

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(continued)

the log book with great attention, the history of the fault is connected not with the henley fuse unit but with the installation of the consumer which reflected on the henley box?

- A. There is, according to the log book, a history of fuse blowing associated with the fuses in the henley box.
- Q. Due to something occurring in the consumers' end and repercutated (sic) in the henley box. 10
The blowing of the fuse in the henley box is due to the consumers' installation?
- A. Yes.
- Q. In other words, I may try to make my meaning clear, the faults were not associated with the box itself in the way that they occurred in the box. The damages which occurred in the box are surely the result of something else outside the box?
- A. That is correct. 20
- Q. Of course you have mentioned the evidence of HISS and the evidence of Mamdally?
- A. Yes.
- Q. In your second paragraph you say you have given consideration to three possible fire" Your information on this point regarding the present or otherwise in the store of material which could have caused fire is gathered from the storekeeper's book? 30
- A. I obtained the information from a list of material which was in the store, it might be that it came from there.
- Q. The second consideration, whether the fire could have been deliberate. May I enquire in this respect what is the sort of enquiry that you carried out?
- A. I enquired whether there would have been any motive that could have been foreseen.
- Q. From whom? 40
- A. I discussed this with Mr Cole and Mr Bigaignon.
- Q. You enquired from Mr Bigaignon and from Mr Cole whether any motive could have prompted any fire to that particular part of the building. Did you or did you not think of the possibility of a fire being put to destroy traces of goods having disappeared?
- A. That was in my mind. 50
- Q. Did you enquire from the storekeeper?
- A. No.

	Q. Did you refer to the storekeeper's book which has been produced?	In the Supreme Court
	A. No I did not.	
	Q. Had you done so - it is an hypothesis on my part - and had you found something irregular in the storekeeper's book would that have raised some sort of suspicion in your mind?	Plaintiffs' Evidence
	A. It could have done, but I was satisfied from my discussion with Mr Bigaignon and Mr Cole that this was something which could be discounted.	No.30 Harold Maisey
10	Q. You did not enquire but you rested content with whatever conclusion Mr Cole would have made?	Cross-examination
	A. Mr Cole and Mr Bigaignon yes.	28th February 1978
	Q. Had you been told that the storekeeper on that morning when the fire broke out was in great difficulty to establish how he used his time between 8.20 and 11.30. Would that have raised some suspicion in your mind?	(continued)
20	A. It might have done in the first place, but after discussion of motive with Mr Cole and Mr Bigaignon, it would seem that it was something which could be discarded.	
	Q. Once again it would not be your opinion it would be the opinion expressed by Mr Cole and Mr Bigaignon?	
30	A. Yes.	
	Q. If you had been told that two van loads of goods had been removed from the store on that morning of the fire; but that no trace of those goods were to be found in the storekeeper's book, could that, in spite of the impression created on Mr Cole and Mr Bigaignon, have set you as enquirer to think over it, would that have raised any suspicion?	
40	A. If I had known that two van loads of goods had been taken from that store and could not be accounted for, this would have set me thinking, yes I think it would.	
	Q. Certainly an enquiry could have proceeded along the mileage of the van on that morning. Assuming that goods have been unaccounted for, that they were placed in the van on that morning, the verification of the mileage run could have helped towards ascertaining whether the van had gone direct from the factory to the warehouse and back again on two occasions?	
50	A. Yes.	

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- Q. Did you interview the storekeeper?
A. No.
Q. Or Mr Mamdally?
A. No.
Q. In fact, I take it, the only person you interviewed was Mr Bigaignon?
A. Yes.
Q. Mr Bigaignon at the time had not gone near the store on the day of the fire. On the morning of the fire Mr Bigaignon had never called to the store? 10
A. I accepted that.
Q. Your third possibility whether that was associated with the CEB before fourth possibility: You did not enquire about cigarette smoking and throwing it in the store?
A. I was told that no smoking was allowed in the store and I believed this was observed very strictly. 20
Q. You thought that they carried it for observing the rules?
A. Yes.
Q. In other words, you discarded from the conversation with Mr Cole and Mr Bigaignon every possibility, except that of fire having been put by the henley fuse. The whole enquiry was directed along that line and no other?
A. That is correct. 30
Q. At page 2 of your report, the 2nd paragraph. You have examined the list of material in the store. From which list the list given?
A. From a list which I was given earlier in association with this case?
Q. Once again not from the store book?
A. No.
Q. "In all the rooms there were material underneath that henley service unit". May I enquire from whom you had information that the materials were placed underneath the fuse box? 40
A. This information comes from a plan.
Q. Is the plan produced?
A. I do not know whether it is produced or not.
Q. This plan shows that some materials were placed but not only close to but underneath?

- A. They were not literally underneath, the plan shows that they were put on the right and the left of the fuse box and in front; there was a little space. None literally underneath, the box. The nearest material would probably be about one foot away.
- Q. We can stop your sentence, close to and cut out underneath.
- 10 A. By underneath I mean it was down, not right underneath.
- Q. I am going to put to you that hypothetical question. Assuming that you were a fraudulent storekeeper - I apologise for that in the first place - and that you had thought of setting fire to at least part of the building and destroy part of the goods, would you not have chosen room No.4 because there was an alibi?
- 20 A. I must say that I cannot see why I should choose room No.4.
- Q. Because there was an alternative source of fire which could have incriminated it?
- A. It depends how clever you are, perhaps with my knowledge of electrical causes of fire, I might have chosen room No.4.
- Q. Mr Cole has told us that the load of goods was evenly distributed throughout the room?
- 30 A. Yes.
- Q. You reached the conclusion that the fire started in room 4 because it burnt longest in room 4. May I suggest that it is not a matter of where it starts, but a matter of how much fuel there is to feed the fire to make it go longer. If it started in room 4 by few papers lying about it would have died down in a few minutes?
- 40 A. In considering fire origin, I prefer to look for the direction of the spread rather than to consider the length of burning. I think I did mention length of burning. I think the direction it spread is a more important indication where the fire commenced. It is more reliable on the whole.
- Q. You are satisfied in your observations, the photographs and so on, that the fire burnt more fiercely and perhaps longest in room 4 than in any other room?
- 50 A. There are usually anomalies which are difficult to explain. If one looks at the windows between 3 and 1, 2, those

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windows are pretty badly damaged, but there was material underneath the window which would burn quite fiercely and it is often difficult to have a clean picture when referring to spalling. Where flames go out of windows and doorways, you tend to get a concentration downwards.

Court: Wherever the fire goes, it will turn and burn quickly at the exit?

A. Yes.

10

Sir Raymond: If you consider room 4, would you say that the heat generated by rubber soles burning would have been sufficient violence to provoke that arcing of the beam at something like 15 or 18 feet high?

A. I think so, yes.

Q. You would not imagine that some more additional inflammable material would have been necessary to make it go longer and burn fiercer?

20

A. No.

Q. If it was inflammable material of another kind, I am referring not to rubber soles, to canvass shoes, but to inflammable substance which could have been introduced into that room on that morning?

A. Somebody would have to introduce very large amount of inflammable articles. If you think of petrol or something of this kind, then I do not think this would make any substantial difference.

30

Q. It would certainly help the fire to spread and would certainly make it last longer?

A. I do not see why it should make it last substantially longer.

Q. If I were to introduce into that room 145 litres of inflammable material, I might put them at different places, would not that cause the fire to burn and increase?

40

A. Such inflammable liquids would burn off pretty rapidly in the early stage of the fire.

AT THIS STAGE THE CASE IS ADJOURNED
TO WEDNESDAY 1ST MARCH 1978 FOR
CONTINUATION.

On Wednesday, the 1st day of March, 1978
at 10.30 a.m.

In the
Supreme
Court

Before Honourable M.Rault, Acting Chief
Justice
Honourable P. de Ravel, Puisne Judge

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Mr David states that according to information
received from Bata plastifix is no longer
being used.

Cross-
examination
1st March 1978

Sir Raymond Hein resumes the cross-examination
of Mr Harold Roberts Maisey (sworn)

(continued)

10

Q. Yesterday when we examined the first
part of the report we had just turned to
p.8 entitled "The evidence of Electrical
Defects which could cause fire". Do you
agree that the tests carried out showed
that a twin 18 SWG wire would blow within
3 minutes at 170 amps?

A. Yes, I accept that. I don't remember the
figure.

20

Q. If we use a fusing factor of two which,
I understand, is suggested by Mr Turner
himself, that would blow at a fuse rating
of 85 amps for the twin 18 SWG wire?

A. Yes.

Q. Our ASTA reports establish - I am referring
to test No.3 p.13 - that two twisted 18
gauge wire will fuse in 16 minutes at 150
amps. The test started at 10.30 and was
concluded at 10.46 when the fuse would blow?

A. Yes.

30

Q. If we used a fusing factor of two once more
this would point to a rating of 75 amps?

A. Yes.

Q. We find in the ERA report that the box is
very conservatively rated?

A. Yes.

40

Q. I am referring to this particular part of
the ERA report at p.7 "The measurement
indicated that the henley unit was conservatively
rated and constructed and that it would
perhaps have required a combination of
..... to produce a dangerous situa-
tion"?

A. Yes.

Q. Referring to page 8 of your report I read:
"I. Overfusing (IV CEB faults log book).
Overfusing in itself may be a cause but not
the result: overfusing in itself may be
something which is wrong in practice but
it is not a cause of fire".

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- A. Yes.
- Q. No.2 "Heat damage to the outgoing cables", may result from No.1 as you have already pointed out?
- A. Yes.
- Q. Being given that you referred to the faults in the log book we undertake to put in the log book. (Document AS)
- A. Yes.
- Q. No.3 "Damage to the fuse carrier and fuse base contacts observed by Hiss". This is based, I suggest to you, exclusively on the evidence of Mr Hiss? 10
- A. That is correct.
- Q. Did you remember that Mr Hiss, in his evidence, stated that the damage carrier had been replaced?
- A. Yes.
- Q. Did you remember also that he went further and said that it was not only the carrier which was changed but the actual base? 20
- A. Yes.
- Q. Coming to No.4 "The possibility that the lid was not properly closed". This is the evidence of Mr Mamdally?
- A. Yes.
- COURT: When you say "Overfusing (IV CEB faults log book) IV means Mr Davidson's report?
- A. That is correct.
- SIR RAYMOND: This, of course, as you rightly pointed out would be the result of the evidence of Mr Mamdally that the lid was not properly closed? 30
- A. Yes.
- Q. Did you note that part of the evidence of Mr Dauharry the storekeeper, when he said that when he left the store on the 5th after the fault had been repaired that the door was closed as usual. Did you note that or did that escape your notice? 40
- A. I think I noted it down.
- Q. He attended personally when the fault was dealt with on the 5th, date of the fire, and then he was asked about the door of the lid, we call it the door, and Mr Dauharry stated when he left the door had been closed as usual?
- A. Yes.
- Q. No.5 "The absence of outgoing cable glands

on the henley box". That as you explained is to give protection against a contact between the outgoing cable and the cable box?

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(continued)

A. May I refer to your last question, whether I was under the impression that Mr Dauharry had closed the door of the store. I thought that was what you were referring to

10

Q. I was referring to the little bit of evidence of Mr Dauharry when he was asked about the door of the box?

A. If that is what he says in evidence I must accept.

Q. I believe you pointed out two of these holes in the top plate of the box. I fully appreciate your statement that it is not unequivocal evidence of course but there are two places near those outgoing holes in the top plate which may indicate that there has been some arching?

20

A. Yes.

COURT: Arcing or arc roots?

SIR RAYMOND: Traces of arcing having occurred?

A. Yes.

Q. These would be traces of arcing between phase and neutral. Would this be an indication of arcing between phase and neutral?

A. Not necessarily but more likely between phase and earth case of the box.

30

Q. We are not going to jumble with words, it would be phase to earth?

A. Yes.

Q. But if there had been two arcings between phase to earth would not that have caused an arcing from phase to phase?

A. They don't necessarily have to occur at the same time but it would be unlikely that they would occur at the same time, one would occur before the other, one phase at least could be left live leaving that one to make a mark later.

40

Q. At the moment the second one occurred being given that the first one would not have moved from its position?

A. Not necessarily. One could have two phase to earth faults occurring at different times.

Q. Within a matter of seconds?

A. I don't know that. I cannot put a time on it but it is possible perhaps that one occurred as a result of heating that was

50

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(continued)

going inside the box, it is possible that the other could have occurred some time later, perhaps during the fire.

Q. If the two had caused a phase to phase fault that would have blown the HRC fuse at the transformer?

A. No, this would have blown a fuse of one or two fuses in the box but not the HRC fuse at the transformer at that stage.

Q. Even if there had been a phase to phase fault? 10

A. Even if there had been a phase to phase fault, if that phase to phase fault occurred to the outgoings side of these fuses or on the downstream side of these fuses, then it would affect the fuses in the box and would not necessarily affect the HRC fuses at the transformer.

Q. Therefore if the fuses blew that would have immediately stopped the arcing? 20

COURT: Which fuse are you referring to, on the transformer or in the box?

A. The fuse in the box. I understand that My Lords, that would stop arcing on the outgoing side of the fuses but of course one has to remember that there were overwired fuses and it would have been possible depending on the fault current for arcing to recommence when one or more of these rewirable fuses had blown, the result of the blowing might have been to cause arcing to start again this time on the upstream side of the fuses if the fuses had blown. 30

SIR RAYMOND: In this case I suggest that the HRC fuses would blow?

A. Depending on the fault current yes. If the fault current were sufficient then the HRC fuses on the transformer side would blow. 40

Q. If it was a phase to phase fault it would necessarily blow?

A. Depending on the current in the phase to phase fault. If this is sufficient then a fuse or more than one fuse could blow.

Q. Following your assumption that there would be a possibility of the two occurring at different times this would necessarily suggest that it would have been continuous arcing; either it was a continuous arcing or it was intermittent if, as you suggest, the two may have occurred at different times then it means that the arcing was not continuous. 50

- 10 A. That might be so, one could have arcing, occurring between the outgoing cable and the box, of short duration and one could have arcing of longer duration later.
- Q. And for the damage we have noted on the lid to have been caused by arcing, it will suggest that it must have been a continuous arcing?
- 10 A. It must have been either a very powerful arc of short duration or a continuous arc which was not so powerful. It is a matter of time and temperature, higher current little time and lower current a longer time, but it is difficult, as I said yesterday, to visualise how that could occur unless it was by arcing. One does not get that sort of damage in a fire, one might almost need an oxy-acetylene torch to do that sort of damage.
- 20 Q. If it was a very very high and very fast one, would you have expected it to melt not only this part - I say melt not cut because you mentioned cut in your report - would it melt not only the lid itself but the protruding part which supports the bolt which is outside the lid and outside the box?
- 30 A. Well the bolts which held the hinge side of the lid in position as well as the bolts which secured the lid on the right-hand side were made, I believe, of aluminium alloy which would have melted at a temperature of about 650°C. Those bolts are, I believe, aluminium alloy, certainly not steel.
- 40 Q. I was referring not to the bolts but to the round projecting part of the lid which is outside the lid and therefore outside the box which is, I believe, of the same metal as the box itself?
- A. Yes. I see and your question was - I have forgotten the question.
- Q. The question was: you suggested that it might be very fast and powerful arcing which may have done the damage to the box or it might have been a slow persisting arcing if I understand you rightly?
- A. I was talking about the lid, yes.
- 50 Q. And then being given that in his very careful search Mr Davidson after sifting the materials did not see that little protruding round part holding the bolt into position. I was asking you whether that would have been likely to melt as well?

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(continued)

- A. I think it is quite possible yes.
- Q. To melt?
- A. Yes.
- Q. Which would have melted at a temperature of how much?
- A. To melt that, of course, would require a temperature of at least 1300 to 1400°C, but temperatures are very much higher than that when one has had a powerful arc in operation, it is not only melting the metal 10 but it is vapourising it to some extent as well.
- Q. The very powerful arc that you are referring to would have been caused by an amperage of a given estimate?
- A. I think I would refer to Mr Turner's opinion on that because he knows very much more about the effect of electrical arcing than I do but I would have thought that it could have been done with 3000 or 4000 20 amps. something of this order.
- Q. We understand that this box is the very box that Mr Turner used for the test?
- A. Yes.
- Q. I seem to see that it does not close properly. Can you try that. May you come down and close the box?
- A. Yes, certainly.
- Q. It needs pressure?
Is it likely that Mr Turner would have used for the purpose of his test a box which 30 fitted so badly or would he not have adjusted the hinges?
- A. Are you suggesting that there is something wrong with this box. I don't think that there is anything wrong. To close that box requires considerable pressure and the use of a spanner. I can't do it with the finger. I think if this was done up with a spanner then you will probably find that it will close. 40
- Q. I am sure it would. This is precisely what I am asking you to do if you would kindly show us by adjusting that box?
- A. I am. I just look inside first and see if the fuses are properly in position. It seems to be. Now to close this box one has to compress this rubber seal so that it is not possible to close it properly without exerting considerable pressure which can only be done by the use of a 50 spanner. I think if we use a spanner we should be able to close it. I am closing it as much as I can first of all with my finger.

COURT: Surely, that question must have been put to Mr Newton.

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SIR RAYMOND: If the adjustment is done to the hinges then the box can close completely without any effort at all?

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(continued)

10

A. I think I have closed it now with my finger without using a spanner. I would not leave it like this if I was replacing fuses or whatever it is, it would be necessary to finish off the tightening with a spanner. I can manage it with a spanner. Those are properly tightened up and the box seems to me to be closed.

Q. If the hinges were properly adjusted you might have been able to close even without the use of a spanner?

A. I don't think that there is anything wrong with the adjustment of the hinges.

20

Q. Mr Davidson told us it was a matter of adjusting the hinges?

A. There it is. I seem to have succeeded in closing it satisfactorily.

Q. Thank you Mr Maisey. Won't you mind opening it again?

A. Yes.

Q. This box and the lid are in cast iron?

A. Yes.

30

Q. The fixing of one bolt would hold the whole in position?

COURT: I am not catching your question.

Q. The fact of fixing one bolt would keep the door in position. Can you think of any reason why the second one would not fit?

A. Yes, this being of aluminium alloy, it would be fairly easy to strip the thread, it is being rather soft.

40

Q. I am referring to the lid of the box. If you fit and screw one of the screws that would keep the box which is rigid in position and there is no reason why the second one would not fit. Supposing you fit the top one the box would be held in position in such a way that there is no reason why the second one would not fit?

50

A. I think I understand the question. Your question is if one bolt is properly secured, is properly tightened, then would the lid be firmly closed. Of course, the answer is yes, even if you don't do up the other bolt. I thought you were also asking me what would be the reason for not being able to do up the other bolt.

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(continued)

Q. By the way they are not of aluminium,
they are brass?

A. Yes.

COURT: I am sorry, although I am no expert, but
this is not brass, it could be anything but
not brass.

SIR RAYMOND: We can find out from the manufact-
urer's specification.

COURT: Perhaps they have changed what the
manufacturers put but this is not brass. 10

SIR RAYMOND: According to the manufacturers'
specification it should be brass.

COURT: Most of the engineers know the difference
between brass and some sort of alloy,
either aluminium or steel but this does
not look like brass.

SIR RAYMOND: If it is not, it should be because
it is the manufacturers' specification.

Q. Mr Maisey, I was asking you if you would
kindly turn to page 10 of Mr Davidson's 20
report. As originally drafted we have a,
b, c, d and I understand para. (a) of
the conclusions had been shifted up to the
opening part of No.8 Conclusions and then
(b) had become (a). So if you don't mind
we shall start with (a). The henley fuse
service unit was called upon to carry
currents in excess of its design due to
overfusing?

A. Yes. 30

Q. This is malpractice?

A. Yes.

Q. But not in itself per se a cause of fire
faults?

A. No.

Q. We see at (b) Contamination of contacts
in the fuse base and fuse carrier. I put
it to you there is no evidence at all that
we have heard showing that immediately
before the fire the contacts in the fuse 40
base and fuse carrier were contaminated?

A. No, there is no evidence. This is.....

Q. Surmised?

A. I was going to say this is what one would
expect if there is clearance between the
cable and the holes through which it passes.
Of course the other way in which contami-
nation could have occurred would have been
by the heating of the cable insulation
inside the box. 50

Q. When you say heating, do I take it to mean

all the heating?

A. Yes.

Q. (c) The absence of non ferrous bushings, if one might apologise being unexperienced in this matter, would not in itself have caused the fire, it would need something else to put the cable into contact within the box?

A. Yes, heat or abrasion.

10 Q. (d) Severe overheating of one or more of the outgoing cables from the henley fuse box. This is the evidence of Mr Mamdally, and we come to (e) the dripping of PVC into cardboard cartons or other material. I take dripping to mean the vertical drop?

A. That is the usual meaning.

20 Q. I am trying to give it its normal meaning. You have told us yesterday that - and there has been no evidence - there was no material beneath the box on which that dripping could drop. You had used the word underneath. I asked you if you could be more precise and you said - I agree with you - that there was no evidence of any material under the box but there was some materials away from the box?

30 A. Yes, that is correct. One can't of course eliminate the possibility that there was some paper or something to operate as a tinder if something hot fell which could have lit the tinder and gone on to light the cardboard boxes and whatever was there.

Q. I agree with you but being given that we have no evidence at all of any material, paper, cardboard or whatever it is under the box, my suggestion to you is that if there had been any drippings the dripping could have been on the bare floor?

A. Yes.

40 Q. The next para. (f) Damage to the cables passing through the threaded conduit holes from mechanical pressure of migration of the copper conductors. This is what you have just been telling us. The next one is (g). The method of joining two pieces of PVC cable together when replacing the burnt piece of cable on the morning of the fire which led to subsequent breakdown at the joint. This is the evidence of Mr Mamdally?

50 A. That the cable was cut.

Q. Mr Mamdally suggests if you will remember that this was the contact and bi-metallic connector and this was the box, this having been damaged, instead of changing it the

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(continued)

workmen cut it here, cut it there, put another piece just the same size between them and held it in position by means of tape. This is the piece of evidence that refers to this conclusion.

A. Yes.

Q. You must have heard Mr Davidson himself saying that it is very difficult to imagine what a workman would do in a matter like that.

10

A. I agree.

Q. And the next para. (h) Damage to the fuse base terminals due to expansion and contraction of the outgoing copper conductors from overheating and thus leading to a high resistance fault condition. That again refers to the overheating?

A. Yes.

Q. The following paragraph again deals with overheating (i) overheating of the contacts of the fuse base. And the final paragraph (j) overheating at the bi-metallic connectors?

20

A. Yes.

COURT: That is not the final paragraph, there is another one.

SIR RAYMOND: That is the last one given in the report of Mr Davidson to which he added that one. Mr Davidson's report is dated the 28.2, is not it?

30

A. Yes.

Q. In his evidence he told us that there might have been also sustained arcing in the fuse box which you have been just explaining to us a moment ago?

A. Yes.

Q. Thank you Mr Maisey.

Re-examination

Re-examined

Mr David re-examines:

Q. In respect of that box, would you indicate what would prevent the bottom bolt from being secured properly?

40

A. This could happen if the thread were stripped.

Q. What would be the effect if the fuse carrier or the fuse carriers were not fitted in properly?

A. This could lead to a high resistance contact between the fuse base and the fuse carrier and could lead to overheating.

50

Q.	If the top bolt is secured and the bottom one is not, you say that the lid will still fit?	In the Supreme Court
A.	Provided the top bolt is not just finger tight or just with the first few threads engaged, provided it is done up properly.	Plaintiffs' Evidence
Q.	If it is not done up properly?	No. 30 Harold Maisey
A.	Then there is the possibility that it could spring open if a fuse blew on a heavy fault.	Re-examination
10 Q.	This question of the PVC cable melting and dripping, if the dripping were to fall on the floor would it remain where it is?	1st March 1978 (continued)
A.	On the floor, yes.	
Q.	It would remain static?	
A.	Yes.	
Q.	If I understand rightly, we are talking about the PVC between the bi-metallic connector and the box?	
20 A.	Yes.	
Q.	If that were the drip where would it fall?	
A.	On the top of the box.	
Q.	That is the more likely thing?	
A.	Yes.	
Q.	Would it remain there?	
A.	It depends, I think, on how much came off. If it peels off instead of dripping in the normal way then one might have a sort of string hanging down from the top of the box.	
30 Q.	You have prepared as you promised yesterday a graph in respect of what you have called the Standard Test Fire and Moderately Severe Fire which you put in (Document AO). Could you explain what you have done?	
A.	I copied this curve from an American publication by the National Fire Protection Association and the standard test fire curve is one which was drawn up by agreement amongst a number of countries about 1918 and was supposed to represent the way in which temperature and time were related in a severe fire. The fire is supposed to be of a brick built building with a wooden interior and such a fire one can imagine would be a severe one and this is the standard by which one judges fire when materials of construction are tested. Most countries have a gas furnace which will reproduce this graph in terms of temperature and time. Now on the right hand side of the	
40	graph I have put the.....	
50		

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(continued)

COURT: As far as the graph is concerned it speaks for itself?

A. Yes.

Q. You have showed another line which you call Moderately Severe Fire. Would you say something about it?

A. This is an example of what the Americans call a moderately severe fire and it was one which would be expected to give the temperature and time that would be expected in a store containing wooden patterns, the store being entirely of concrete construction and I thought that was somewhere near the sort of condition we had in this fire.

10

COURT: After 90 minutes you get more less, in fact, the same temperature?

A. In this case you do.

MR DAVID: I put you in the witness box as amongst other things an expert on arson. Yesterday questions were put to you as if you might be an expert arsonist, so I shall put one question to you. If you were storekeeper who had been stealing, as has been put to you, two van loads of articles during the working hours and you had been in constant possession of the store keys, what sort of time would you choose to set fire to that store if you wanted to cover up?

20

A. In the evening or during the silent hours after closing time, at night or at the weekend.

30

Q. Why would you do that?

A. Because there would be less possibility of being discovered in the act of setting fire to it.

Q. Would this give more time for the fire to consume?

A. Of course, it would.

40

Q. Thank you.

COURT: Mr Maisey there is something I would like to know. So far we have been told, as far as your theory goes, the short circuit of the over loading caused the fuse to arc, to produce heat and to set fire to room 4. If there was a fire in room 4 through some other means would you expect to see the traces of arcing and every other thing you saw on that fuse box that were damaged or would there be something different. Would there be something which would lead us to one conclusion or to the other. We reverse

50

it, instead of saying that it was a fuse which set fire to the room, we say the room was set on fire by whatever means and as a result thereof the fuse was overheated, the wires were burnt, there was a whole mess there as a result of the fire not as a result of the short circuit or overloading. Can you help us.

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(continued)

- 10 A. Looking at the box alone, I would not be able to tell whether this has occurred as a result of the fire or whether it was initiated by an electrical failure. I don't think there is anything I can add to that.

COURT: Thank you.

- 20 SIR RAYMOND: My Lords, my friend has suggested to the witnesses that if he were to set fire having the key in his possession he would choose the time when there was nobody in the building. My question to the witness is: do you realise that after working hours there will be no load on the box at all, therefore the box could not be suspected of anything.

- 30 COURT: Mr Maisey, in the course of your career, you have occasion to inspect cases of fire, I presume in some of those cases, there were cases of arson, actual or suspected. Were there cases of arson in the cases of fire which you investigated?

- A. Yes.
- Q. From your experience, did you find some clues which would point to a criminal act in such cases?
- A. Sometimes one can, sometimes one is fortunate in finding evidence of a deliberate fire but, of course, it is very easy to start a fire by the application of a match which will leave no evidence behind. If devices are used, mechanical timing devices, then of course, one can very often find traces but not always by the degree of destruction.
- 40 Q. If you assume that 156 litres of inflammable material contained in about 13 tins were placed in room 4 would there be evidence after the fire of such a fact?
- A. Only the tins, My Lords, I think that would be the only thing which would make one suspect that deliberate fire had occurred if one found a number of tins in that room. Of course lighting a fire with petrol or something equivalent is a dangerous proceeding and a number of people have been injured while trying to do that kind of thing.
- 50

COURT: Thank you

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Supreme
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Plaintiffs'
Evidence

No. 31

EVIDENCE OF ROGER BIGAIGNON
(continued)

No. 31
Roger
Bigaignon
Examination
(Translation)
(continued)
1st March 1978

Mr Roger Bigaignon (sworn) is recalled

COURT: Have you brought any boxes which look like plastifix (boxes)?

A. Yes. I have brought one.

Q. You mentioned 4½ gallon boxes, what is its capacity?

A. It's a 4½ litre box. 10

Q. Is it a substance similar to plastifix?

A. It's a substitute for plastifix.

Q. Tell me, did you accompany the police to the spot of the accident the day following the fire? Did you inspect the place?

A. In a sense, yes.

Q. Did you make thorough inspection.

A. No, not a very detailed one.

Q. Did you find anything which could be the remains of such boxes? 20

A. No.

Q. No box at all?

A. Yes, there were boxes.

Q. In which room?

A. As far as I remember it was in Room No.1, the main room.

Q. In room No.4?

A. I don't remember. Now I do remember. Definitely, there were no such boxes in the room where the fuse box was. 30

MR DAVID: I want to refer the witness to photo C20.

Q. Mr Bigaignon, what were those boxes? What did they contain?

A. I think they were boxes which contained colourings for plastifix.

Q. Plastic colours?

A. Yes.

Q. Where do we see those boxes on this photograph? 40

A. In room No.4, in the lavatory.

COURT: What they call lavatory is at the rear of room No.4.

	MR David: That is right.	In the Supreme Court
	Q. Mr Bigaignon, are plastic colours a liquid or what?	<u>Plaintiffs'</u> Evidence
	A. They are granules basically made from plastic.	No.31 Roger Bigaignon
	Court: Do you know whether they are inflammable or not?	Examination (Translation)
	A. They are not inflammable; basically they are made of PVC plastic	1st March 1978
10	Court: Would you allow me to ask the witness to try to show us the lavatory on this plan (Document 4).	(continued)

Witness puts a mark on
the plan

Cross-Examined (continued)

	Sir Raymond: Mr Bigaignon, let's face it, all this took place some 6 years ago. When the Court asked you whether there were tin boxes, you looked towards the sky like this and you answered: Yes, I believe there were. Didn't you, Mr Bigaignon?	Cross- examination (Translation) (continued)
20	A. Yes.	
	Q. In other words, you racked your brains to try and remember. Mind you, I am not blaming you. My memory fails me too and to a larger extent I must say. Then the Court asked you whether the boxes that you saw were a bit like this one here, and again you made the same desperate effort to remember and you answered. Yes, I believe they were bigger than this one. Your memories, don't be afraid to admit it are very hazy?	
30	Court: The witness then added that the boxes you are referring to were in room No.1.	
	Sir Raymond: I understood Your Lordship to have asked him whether in room 4 there were any tins.	
40	Q. Mr Bigaignon, was it you who made enquiries after the fire to find out where such and such materials were lying?	
	A. I wasn't officially responsible for the enquiry.	
	Q. It was the police?	
	A. I accompanied Inspector Bosquet most of the time.	

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Plaintiffs'
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No. 32

EVIDENCE OF LOUIS CLEMENT
BOSQUET (continued)

No.32
Louis Clement
Bosquet
(continued)
1st March 1978

Inspector Louis Clement Bosquet (sworn)
is recalled

COURT: In the course of your evidence you
mentioned finding some tin boxes. Can
you remember where those tin boxes were?

A. I remember I said on the left hand side
and far end of room No.4. 10

Q. Do you remember what type of tin boxes
were there?

A. As far as I can remember, they were
rectangular, of that size.

Q. Will you please look at this photo
(Document 4)?

A. These were the tin boxes I saw.

Q. Did you see any other type of tin boxes?

A. No.

COURT: Thank you 20

MR DAVID: No question.

Cross-
examination
(continued)

Cross-examined (continued)

SIR RAYMOND: When I examined you on the last
occasion in this court, you will remember
that I asked you if you had seen any
boxes, any tins, after some hesitation
I put it to you, you replied: yes, I
believe I did. Is that so?

A. Yes.

Q. Then I asked you what sort of tins there
were and you said: I don't remember.
Do you remember saying so? 30

A. On the last occasion I remember having
said there were tin boxes on the far end.

Q. I remember asking you whether you could
say what sort of tins there were and you
replied: I did not remember. Is that a
fact or not?

COURT: As far as I remember, what the witness
said were that the tins which had been
destroyed by the fire were so damaged that
he could not identify them. 40

SIR RAYMOND: He also said, Your Lordship,
during his cross-examination, when I
asked him: do you or do you not remember
having told us that you could not remember

what sort of tins there were?

A. I remember you having said that if there were any materials apart from rubber. I have said there were other material but what sort of material I could not remember.

Q. Inspector your memory is at fault. I distinctly mentioned tins and you distinctly reply that you think you remember there were tins. Is it not a fact?

10 A. It is a fact there were tins.

Q. And that you could not remember what sort of tins there were?

A. No.

Q. Perhaps you could remember something else. I am appealing to the court at the same time. Do you remember my asking you why did you not secure some of them, did it not occur to you that they might have been helpful, we might have seen what they were made of, their size, their shape? Do you remember?

20 A. Yes.

Q. You remember you said that you could not remember?

COURT: As far as I remember he said he showed them to Mr Ah You, the government chemist who said they were of no evidential value.

30 SIR RAYMOND: I apologize to the court. My recollection was that the witness said they were so far destroyed, they were so far burnt, that he could not read anything. I asked him whether he could read anything written on the box, he said they were so far burnt that they could be of no use. He said I was not in charge of the enquiry, Mr Servansingh was. Then he says the Government chemist told him not to secure that because they were of no evidential value.

40 COURT: I read at p.15 of the official notes:

Q. Were they secured?

A. No.

Q. May I ask why?

A. They were burnt and empty. I asked Mr Ah You of the Forensic Science Laboratory if this could help. He told me it could not help at all as they were burnt.

SIR RAYMOND: I am reading from the official notes:

50 Q. As a police officer, it did not occur to you that although the reading on the box may have

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(continued)

gone, the size, the shape, the material, could have been of any use? You stated by saying you believe there were some tins. You remember saying that. Now you distinctly remember, your memory is improving.

A. I do remember now because I am looking at the photos that were produced.

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Evidence
No. 33
Raymond
Davidson
Examination
(continued)
1st March
1978

No. 33

EVIDENCE OF RAYMOND DAVIDSON
(continued)

10

Mr Davidson (sworn) is recalled

MR DAVID: Mr Davidson, you had requested yesterday that your further evidence on one aspect of the case be reserved so that you should have time to consider the paper that was put in by my friend for the defence. Would you now make any observation that you want?

A. My Lords, having studied and considered the information that was given to me yesterday, it is clear that the reading for the cable to earth and for the lead sheath and armour were made recently and we could probably say in February 1978. This cable presumably at the transformer pole was new and I believe was installed in 1968. The reading of the lead sheath and the armour would be quite different, for example, I have not got all facts with me but from the British Standard 3346, this is a specification for armoured PVC insulated cable, I was able to obtain the armour resistance for a cable that was slightly smaller .04. 20 30

Q. Instead of .06?

A. Yes. The figure given in this specification is 1.7 ohms per thousand yards of cable at 20°C, therefore the resistance over the short length, we consider the length to be as much as 100 yards and 1.7 of an ohm. As I did indicate in my report when calculating such things usually the resistance of the sheath and the armour is considered to be so small 40

you neglect them in your calculation. The value which is being given to earth..... is of the order of which I would expect it. It is clear that from 1968 to 1978 there has been a deterioration in the resistance values of the lead sheath and armour so one could expect

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10 COURT: You are assuming that you mean there was no replacement?

A. I am assuming there was no replacement of this cable during this time period. Therefore in 1972 one could expect an increase in the resistance values and if we took it as a straight line it could only be four-tenths of the value that has been recorded, thus giving a figure of 20 ohms. But I think it is reasonable to assume that the growth of resistance due to corrosion or whatever deterioration took place on the sheath and armouring was not of a straight line, in other words, it was much lower. There is just another factor I think I would like to mention, the earth resistance has been recorded in a drier time of the season. The earth resistance of the transformer in June/July 1972 was during winter when it is wetter and one would expect a better value or a reduced value of resistance. Therefore the conclusion that I would draw from this is that the value of the arc or any sustained arcing taking place due to a phase to earth fault would certainly be greater than that implied by the figure of 4 amps, it could be considerably more, in the order of 20 or 30 amps.

40 MR DAVID: On the strength of this, in view of this paper which was put to you while you were being cross-examined yesterday, and in view of the perhaps highly technical nature, did you do something?

A. Yes, I took the precaution of sending..... to Mr Turner requesting the values of the lead sheath and armour for this particular type of cable.

Q. Is he making any calculation?

A. He is at present making calculation.

Q. Will he be coming back to Mauritius?

50 A. Mr Turner has advised us that he will be returning to Mauritius on Sunday the 5th and he will be able to present his calculation in Court on Monday the 6th.

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Cross-examined (continued)

- MR MOOLLAN: The table you have read from related to what form of cable?
- A. Armoured PVC insulated cables (Document AP)
- Q. Would you please look at sketch 2 of your report, look at the very last reference to the cable which you make at the bottom, would you please read it
- A. It is 0.0225 four core shaped copper conductors paper insulated level sheath steel wire armoured and served overall. 10
- Q. So your information from the beginning on which you have put to the court was that this is, in fact, the cable we are discussing about, the sizing?
- A. This is a very short piece of cable.
- Q. Is it the cable we are talking about?
- A. It is not that bit.
- Q. This is not the bit which goes down to earth and towards the transformer? 20
- A. It does not go to the transformer, this little bit is actually jointed on to the point 0.6 cable and it is a short length of possibly 3 to 4 feet.
- Q. This one is definitely paper insulated?
- A. Yes.
- Q. Let us look at your sketch 1 again. Here you refer to the one that goes underground and which you have put just above the right angle leading to the dot up to the transformer? 30
- A. Yes.
- Q. What do you read there?
- A. 0.006/4 PILCSWA + S and it is abbreviated. It stands for paper insulated lead copper steel wire armoured and served.
- Q. Did you see any mention of the PVC anywhere in relation to this cable?
- A. No, the standard which I have handed in gives me the figures per armour, this was to help me in my appreciation last night so as to give you indicative figures of the value of the resistance of the armour. 40
- Q. Have you informed Mr Turner whether he has got to look for paper insulated or PVC insulated?
- A. I have informed him it is of paper. I have also told him the size of the cable and I have asked him for a value per thousand yards. 50

	Q.	What is the effect of age on that particular shape. Does it increase the resistance or reduce the resistance?	In the Supreme Court
	A.	What do you mean by age.	Plaintiffs' Evidence
	Q.	Age means the passage of time.	No. 33
	A.	I have still difficulty to answer that question because you can manufacture your cables, you can store them and the condition will deteriorate very very slowly but I think we are referring to it being installed and of course there would be some deterioration.	Raymond Davidson Cross-examination
10	Q.	Deterioration will lead to a greater resistance or to a lessening of resistance?	1st March 1978
	A.	To a greater resistance as I have demonstrated recently.	(continued)
	Q.	I think you will agree that this particular wire it is certainly a paper one, the serving you will agree hessian?	
20	A.	Yes, this in fact is a jute compound.	
	Q.	What happens to hessian, does it keep its way, does it rot away or does it disintegrate?	
	A.	Eventually it disintegrates depending upon the condition in which it finds itself.	
	Q.	That will have the effect of exposing to armouring it?	
	A.	Yes, that is correct.	
30	Q.	Which will then be that there is no barrier between armouring and earth?	
	A.	That part of the hessian which is deteriorated would expose the armouring to the mass of earth, yes. In this connection a greater part of the cable - the 4 inches dust is only a part of that armouring - would be in contact with the dust.	
	Q.	When the armouring is exposed to the earth then the resistance improves isn't it?	
40	A.	Yes, I would say there was some improvement but I would like to draw the Court's attention once more to my sketch 3866/1, we see that between the transformer and the joint directly beneath the henley fuse cut out in question we have four tee joints. At T6 we are making a joint of this nature because it is incumbent upon the jointer to ensure that it bonds across the armouring and the lead sheathing, this bonding should also deteriorate then there are the weak points and these you will find in the jointing pits. I cannot remember which joints but there is	
50			

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- a photograph which will illustrate the jointing pit below the floor level from which the .0225 was joined to .06. Perhaps my colleagues could identify the number. The point why I am making this is that there are the weak links in the chain if these bonding deteriorate no matter what improved resistance value we will get from contact between the exposed armouring and the mass of earth the cable and duct will not help the situation. 10
- Q. Shall we try to look at what happens normally. You do agree that the exposure of the armouring to earth will improve it and lessen its resistance as a rule?
- A. A thing which is bothering me here is the type of duct, I am not sure.....
- Q. Leave the duct let us say earth?
- A. I am sorry My Lords. I do have to come to the point of the type of duct we are talking about. We are talking about a duct which comes into contact whether it be a fibre duct or a porcelain duct, both of them I would say would not give very good contacts or good value. 20
- Q. You have talked five times of the duct. Is it your information that the duct went all the way up to the transformer because the greater part of it is in duct and part of it is not in duct? 30
- A. I would imagine that the duct would only go through a certain distance outside the building perimeter, it could be 2 to 4 feet, it could be longer depending on whether there is a path or a road round the building, at some point in its run it will leave the duct and it will go in the normal way, will rise up there and fixed to the pole.
- Q. In relation to that would you agree that the exposure of the armouring to earth will improve or lessen the earth resistance? 40
- A. Yes.
- Q. Let me come to the duct since duct there is. You spoke of two forms of ducting, and a third which is concrete ducting, isn't it concrete without any lining of porcelain or anything else?
- A. This duct is a circular duct. I don't think I have come across concrete ducts as small as 4 inches. I would imagine it from 9 to 12 inches. It is generally used in the sewage system. 50
- Q. Will you look at sketch B of your report; the duct on the left hand corner underneath we see what looks like a box something

going through it?

- 10 A. That to me represents the outline at the jointing pit, the dimension that seems to be given is 24 inches. I would say that this is more cross section area. I cannot read the figure very well but the duct will enter the jointing pit not at its bottom but at some distance above the bottom of the pit, this will be of course necessary.

R E C E S S

Wednesday 1st March, 1978

Bata Shoe Co. & Anor v. The C.E.B.

AFTER RECESS:

Mr Moollan continues the cross-examination of Mr R.Davidson (still under oath)

- 20 Q. Mr Davidson, at the invitation of the court all the experts have examined together the fixing parts of the fuse box and you have agreed that they are sheradized brass?
- A. That is correct.
- Q. We were talking about the ducting of the lid, 0.064, from the transformer to go to the duct. Are you in a position to say whether in fact that duct was just a concrete trench?
- A. I am just a bit confused, I am not sure that counsel was referring to the length
- 30 Q. We agreed that some distance away from the building to the building it is laid straight in the earth. From that point to the..... it goes into a box from which it is..... it is carried in a duct?
- A. That is correct.
- Q. You had mentioned in the course of the examination in chief that ducting may be of two materials, one porecelain and the other one asbestos. Do you know whether that ducting was in fact a concrete trench?
- 40 A. My recollection of this was that it was a circular duct.
- Q. By duct you mean not a concrete trench but some sort of circular pipe of a different material into which it goes?
- A. Certainly not a duct of rectangular cross

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section.

- Q. Assuming that it is concrete. Concrete for the purpose of earthing is earth for electric purpose?
- A. Yes, concrete is considered to be an earth.
- Q. And bad earth at that?
- A. It depends on the surface contact; whether a concrete becomes bad earth or good earth.
- Q. Concrete as a fire resistance than actually lying on the ground itself in so far as earth is concerned? 10
- A. In that application, yes; because it was in earth. The earth would be compressed around the cable, whereas if it is in a concrete trench it would be lying on it and the contact would be brought about by the earth.
- Q. If we consider asbestos or porcelain, would their resistance be still higher than concrete? 20
- A. Yes.

MR DAVID: In respect of this notes of evidence at page 25 My Lord, in respect of Mr Goder's evidence, when Mr Goder deponed in my recollection he located the load from the time at which the fire first attacked the hard board while he was in the finished goods store and he situated that part of the hard board which falls on to the corridor more or less opposite room 4, but I can see nothing of that in the record. I want to know whether my friend agrees to that. 30

MR HEIN: I am sure, we shall have no objection.

MR DAVID: There is at page 45, cross-examination of Mr Hiss by my friend Moollan, last but 15 lines when my friend Moollan was asking Mr Hiss whether fuse carrier had been placed or not, I see, replace, there is a not which is missing. 40

MR HEIN: We have one point, page 55, there is something as a matter of fact which does not appear in the official notes of evidence but in the notes or evidence taken by our shorthand writers. There was a question put in chief by my friend David: "Quand les hommes avaient termine de faire le travail.....de la porte ouverte". The answer: ils ont referme la porte comme d'habitude". It is one or two answers after the passage. 50

MR DAVID: Perhaps we can turn to page 54. Secondly, there is the question of quantum;

perhaps my friend would like to make a statement as to that.

MR HEIN: Your Lordships, we have agreed that in case liability is found against the defendant as far as plaintiff No.1 is concerned the amount of damages should be Rs.860,000- and plaintiff No. 2 Rs. 1,035,000

10 COURT: That concerns the first case. Does it include the claim for guarantee?

MR DAVID: No, in respect of paragraph 11, that would be as a direct consequence of the court's findings.

COURT: Parties are agreed that if liability is found then the defendant would be liable to the amount stated. What about the second case.

MR HEIN: We have not discussed it.

20 MR DAVID: Lastly, subject to the possibility of Mr Turner being allowed to give evidence as to the calculation he is now making at Mr Davidson's request, I close my case.

MR HEIN: No objection.

Case closed for the plaintiff with the reservation that Mr Turner can be recalled if need be.

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(continued)

O N A P P E A L
FROM THE SUPREME COURT OF MAURITIUS

B E T W E E N :

THE CENTRAL ELECTRICITY BOARD

Appellants
(Defendants)

- and -

BATA SHOE COMPANY (MAURITIUS) LIMITED

1st Respondents
(1st Plaintiffs)

- and -

EAST AFRICA BATA SHOE COMPANY LIMITED
(MAURITIUS DEPARTMENT)

2nd Respondents
(2nd Plaintiffs)

RECORD OF PROCEEDINGS

VOLUME I

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