

FIRE RESISTANCE TEST OF BUILDING ELEMENTS

TEST REPORT n° 07 - V - 203

Scope :

Two glazed assemblies with a timber frame

Framework : exotic red wood (Sipo or Ufile)

**Dimensions : Pyroguard Clear 11 mm (CGI)
I.G.U. Pyroguard Clear 27 mm (CGI)**

Overall dimensions : 604 x 2,104 mm and 610 x 2110 mm (w x h)

Applicant :

**C.G.I. INTERNATIONAL LTD. – INTERNATIONAL HOUSE
MILLFIELD LANE
HAYDOCK, MERSEYSIDE
WA11 9GA (GB)**

***This test report includes 23 sheets. Copies of this document are allowed only in full.
The approval of the Test department of the COFRAC certifies the competence of the test laboratories
only for the tests covered by the approval.***

1. SCOPE OF THIS TEST REPORT

Fire resistance, in conformity with the general requirements of standards NF EN 1363-1, with substitute or additional methods of standard NF EN 1363-2 and with the particular requirements of standard NF EN 1364-1 « Fire resistance tests of non load-bearing elements - Part 1 : Walls ».

2. TEST LABORATORY

Name : Efectis France
Address : Voie Romaine
F - 57280 MAIZIERES-Lès-METZ

3. FIRE RESISTANT TEST

No of the test : 07 - V - 203
Date of the test : July 11th 2007

4. REFERENCE AND MANUFACTURER OF THE TEST SPECIMEN**Framework :**

Material : Exotic red wood (called Sipo in France, Utile in G.-B.), dens.= 650 kg/m³
Manufacturer : Trade

Glazing :

Reference : Pyroguard Clear 11 mm and 27 mm IGU
Manufacturer : C.G.I., Haydock (GB)
Serial number : 0620 CC 06
Manuf. Date : 7th March 2006

To our knowledge, no approved body has identified this glazing.

5. DESCRIPTION OF THE TEST SPECIMEN**5.1 GENERAL**

See plates n° 1 to 5.

There are two glazed assemblies each of which consists of frameworks made of Utile wood which defines the openings (A and B). The first opening (A) is closed by 11mm thick Pyroguard Clear (C.G.I.) glazing and the second (B) is close by a 27mm thick insulating glass unit which includes 11mm thick Pyroguard Clear (C.G.I.) glazing.

Overall dimensions of each glazed element : 604 x 2104 mm (w x h).

5.2 PARTS LIST

As from the information supplied by the Applicant.
Dimensions are in mm.

Description	Reference	Material	Specifications	Supplier
Framework		Utile Dens = 650kg/m ³	95 x 42	Trade
Glazings	11mm Pyroguard Clear			C.G.I.
	11mm Pyroguard Clear / 12mm Air-space / 4mm Low E coated float			C.G.I
Glazing beads		Utile Dens = 650kg/m ³	25 x 28,5	Trade
Glazing Bead Screws		Steel	50 x 4 woodscrews	
Glazing Seal	Kerafix		6 x 15 6 x 20	GLUSKE
	Fireglaze			Sealmaster
Adhesive sealant	Fixband 715			UNIFRAX
Fillister Shims		Hard Wood	10 x 5 x 40 26 x 8 x 40	
Peripheral Sealing	Fiberfrax			UNIFRAX
Bolts	21106		Diam 10 mm	RAWLPLUG

th = thickness --densv = density

5.3 DETAIL DESCRIPTION OF THE SPECIMEN

Note : The drawings shown on plates n° 1 to 5 have been provided by the Applicant, checked by the Test Laboratory of Efectis France, and found in conformity with the test specimen.

5.3.1 Framework

The framework of each glazing assembly consist of Utile wooden elements (theoretical density = 650kg/m³), straight-cut and assembled with mortise and tenon joints.

The glazing assemblies are assembled within the standard rigid low-density supporting structure by means of ref. 21106 bolts (RAWLPLUG) every 450mm approximately. The peripheral sealing is achieved by stuffing with Fiberfrax (UNIFRAX). Plasterboard spacers are placed between the frame and the supporting construction at the fixing point only.

Each frame receives a peripheral seal 45 x 2 mm Palusol (ODICE).

5.3.2 Glazing

The opening in glazing assembly A is closed by Pyroguard Clear (C.G.I.) glazing (total thickness = 11mm – overall dimensions 500 x 2,000)

The opening in glazing assembly B is closed by an insulating glass unit made of:

- ☐ One Pyroguard Clear (C.G.I.) glazing (total thickness = 11mm)
- ☐ One steel spacer bar achieving a 12mm thick air-space
- ☐ One 4mm thick Low 'E' coated float glass

The 4mm thick Low 'E' coated float glass is exposed to fire.

The Pyroguard glazing in both assemblies consists of three 3mm thick float glass panes separated by two 1mm thick resin interlayers.

5.3.3 Glazing holding system

The glazing is held by a dual bead system made from Utile wood 25 x 28.5 mm for glazing B and 25 x 36,5 for glazing A.

The glazing beads are fixed onto the framework sections by means of 50 x 4 c/s woodscrews every 200mm.

On opening A the spacing between the glazing beads and glazing was achieved by 20 x 6mm Kerafix Tape (GLUSKE).

On opening B the unexposed glazing bead is associated to a Fixband 715 (UNIFRAX). The spacing between the beads and the glazing is achieved by 15 x 6mm Kerafix Tape (GLUSKE) on the unexposed side and with 20 x 6mm Kerafix Tape (GLUSKE) on the fire side.

The glazing on both openings is associated to the frame by Fireglaze (SEALMASTER).

The glazing on opening A is packed in the lower part with two 10 x 5 x 40mm hardwood setting blocks. The glazing on opening B is packed in the lower part with two 26 x 8 x 40mm hardwood setting blocks.

The fillister bottom clearance of A is 5 mm (with the Sealmaster liner) and B is 8 mm.
Edge cover of A is 18 mm and B is 15 mm.

5.4 CHECKING

The element used in the conditions described by the Test Laboratory may be regarded as representative of the present standard production.

6. TEST ASSEMBLY

6.1 DEFINITION OF THE TEST SPECIMEN

The choice and the definition of the test specimen were carried out by the Applicant in conformity with section 12 of standard NF EN 1363-1.

6.2 ASSEMBLY OF THE TEST SPECIMEN

The test specimen was assembled by the Applicant.

6.2.1 Supporting frame

The specimen was assembled within a reinforced concrete supporting frame supplied by the Test Laboratory.

- ♦ Drying time : over 28 days.
- ♦ Thickness of the frame : 200 mm.
- ♦ Dimensions of the opening : 3,000 x 3,000 mm (w x h).

A cellular concrete wall (standard supporting structure in conformity section 7.2.2.2 NF EN 1363-1), was built within the supporting frame, with two 650 x 2,150 mm (w x h) openings.

7. TEST METHOD

7.1 PREVIOUS CONDITIONING

In conformity with the requirements stated in Section 1, the stability of the test specimen was reached on the day of the test.

7.2 THERMAL PROGRAM

The temperature rise inside the furnace above the ambient temperature was controlled according to the **standard thermal program** represented by the following function :

$$T = 345 \log_{10} (8t+1) + 20$$

where : t = Time [min]
 T = Temperature inside the furnace at time t [°C]

7.3 DIRECTION OF FIRE

Indifferent for the framework.
Opposite to Pyroguard 11 mm for the I.G.U

8. FIRE TEST RESULTS

The locations of the sensors are shown on plate n° 6.
The readings are recorded on the plates mentioned hereafter.

8.1 TEMPERATURES MEASUREMENTS

8.1.1 Temperature inside the furnace

They were measured in conformity with standard NF EN 1363-1 by 6 plate pyrometers with their metal face towards the back of the furnace.

The respective readings are recorded on plates n° 7 et 8.

8.2 PRESSURE MEASUREMENTS

The pressure inside the furnace was continuously controlled throughout the whole test.

Taking into account the dimensions of the door-unit and the location of the sensor, the prescribed value was established at 15 Pa.

The readings are recorded on plate n° 11.

From 67th to 69th minute, the pressure was out of the limits because of the falling down of the element A.

8.3 DISTORSION MEASUREMENTS

In conformity with the requirements of standard NF EN 1364-1, the horizontal bending was measured and recorded by means of potentiometric sensors.

The readings are recorded on plate n° 9.

8.4 RADIATION MEASUREMENTS

In conformity with the requirements of standards NF EN 1364-1 et NF EN 1363-2, the radiation from the unexposed side of the element was measured by means of a radiometer positioned at the centre and at 1 m from the unexposed side of the element.

The readings are recorded on plate n° 10.

9. OBSERVATIONS

9.1 BEFORE THE TEST

Ambient temperature inside the furnace before the test : 28 °C.

9.2 DURING THE TEST

Time [min]	OBSERVATIONS
00	Commencement of test. See photo A.
30''	Cracking of the coated glass in glazing B.
1'	Cracking of the glazing A
2'20''	Falling down of the coated glass in glazing B.
3'	Cracking of the Pyroguard 11 mm in glazing B
5'	Reaction of the resin - glazing A
5'50''	Reaction of the resin - glazing B
6'	Heavy smoke release
60	<i>Nothing particular to report</i>
64	Flames greater than 10 seconds on glazing A
66	Set up of a blind panel on element A
83	Ø 25 et 6 mm gap gauges tests positives through an opening in the glazing B
84	Termination of test on request of the Applicant

9.3 AFTER TEST AND COOLING

The element went on burning after termination of the test and was totally destroyed. No observation was possible.

10. FIRE RESISTANCE CRITERIA

In conformity with the standards mentioned in section 1, the times during which the specimen meets the fire resistance criteria may be regarded as follows:

10.1 GLAZING A

10.1.1 fire integrity

10.1.1.1 Cotton-wool pad

Duration : **Not applicable**

Since the element does not provide any thermal insulation, the cotton-wool pad test is not required, in conformity with section 5.2.2.1 of NF EN 13501-2.

10.1.1.2 Gap gauge

Duration : **SIXTY SIX MINUTES - (66 min)**

Cause de limitation : **Set up of a blind panel**

10.1.1.3 Sustained lighting

Durée : **SIXTY FOUR MINUTES - (64 min)**

Cause de limitation : **Inflammation on the lowest transom**

10.1.2 Thermal insulation

The element did not provide any thermal insulation

10.1.3 Radiation

	HEAT FLUX A DISTANCE OF 1 METER (kW/m ²)				
	5	10	15	20	25
Reached t :	31 min	Not reached	Not reached	Not reached	Not reached

These results were achieved on the basis of maximum levels.

10.2 GLAZING B

10.2.1 fire integrity

10.2.1.1 Cotton-wool pad

Duration : **Not applicable**

Since the element does not provide any thermal insulation, the cotton-wool pad test is not required, in conformity with section 5.2.2.1 of NF EN 13501-2.

10.2.1.2 Gap gauge

Duration : **EIGHTY THREE MINUTES - (83 min)**

Cause de limitation : **Gap gauges Ø 25 et 6 mm positives**

10.2.1.3 Sustained lighting

Durée : **EIGHTY FOUR MINUTES - (84 min)**

Cause de limitation : **Termination of the fire test**

10.2.2 Thermal insulation

The element did not provide any thermal insulation

10.2.3 Radiation

	HEAT FLUX A DISTANCE OF 1 METER (kW/m ²)				
	5	10	15	20	25
Reached t :	44 min	Not reached	Not reached	Not reached	Not reached

These results were achieved on the basis of maximum levels.

11. FIELD OF DIRECT APPLICATION OF THE TEST RESULTS

The paragraphs with crossed-out characters do not apply to the element forming the object of this test report.

11.1 GENERAL

In conformity with section A.5.1. of standard NF EN 1364-1, these fire test results are directly applicable to similar structures when one or several of the following modifications have been carried out and if the structure is still in conformity with the corresponding design rules concerns its rigidity and stability.

Other modifications are not permitted.

- a) Reduction of the linear dimensions of the window panes ;
- b) Modification of the geometric ratio of the window panes, providing the largest dimension of the window pane and its area are not increased ;
- c) Reduction of the distance between the vertical studs or the horizontal rails ;
- d) Reduction of the c/c distance between attachments;
- e) Increase of the dimensions of the vertical studs of the frame ;
- ~~f) Glazing beads attached with screws, if glazing beads attached with staples were included in the test specimen;~~
- g) Expansion clearances if none was provided in the test specimen ;
- h) Modification of the installation angle by more than 10° from the vertical.

11.2 WIDTH EXTENSION

In conformity with section A.5.3. of standard NF EN 1364-1, the results of the fire resistance test recorded in section 10 of this test report shall only be valid for any element identical to that submitted to the test and with width not exceeding that of the test specimen, i.e. A 604 mm and B 610 mm maximum.

11.3 HEIGHT EXTENSION

In conformity with section A.5.2. of standard NF EN 1364-1, no height extension is allowed beyond the height of the test specimen, i.e. A 2,104 mm and B 2110 mm maximum.

11.4 SUPPORTING CONSTRUCTIONS

After submitting a non load bearing wall to a test in one of the standard supporting structures given in standard NF EN 1363-1, the fire test results are applicable to all other supporting structures of the rigid, low-density type with a greater fire resistance (greater thickness, higher density, as the case may be).

11.5 OTHER PERMITTED MODIFICATIONS

The cellular concrete breast wall, of max. 850 mm, may be suppressed.

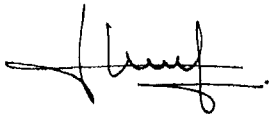
12. WARNING

'This report gives details about the construction methods, the testing conditions and the results achieved when the specific building element described was tested according to the procedure specified in standard NF EN 1363-1 and, where applicable, in standard NF EN 1363-2.

As concerns the dimensions, details, loading, stresses and boundary or end conditions, any significant deviation other than that which is not excluded within the field of direct application of the appropriate test procedure is not covered by this report.

Because of the nature of the fire tests and of the resulting difficulty in quantifying the uncertainty of the fire resistance assessment, it is impossible to establish any level of accuracy of the results'

Maizières-lès-Metz, 6 août 2007



Jean-Philippe KAYL
Engineer in charge of tests



Régis KORYLUK
Head of Section
Testing and Consultancy Section

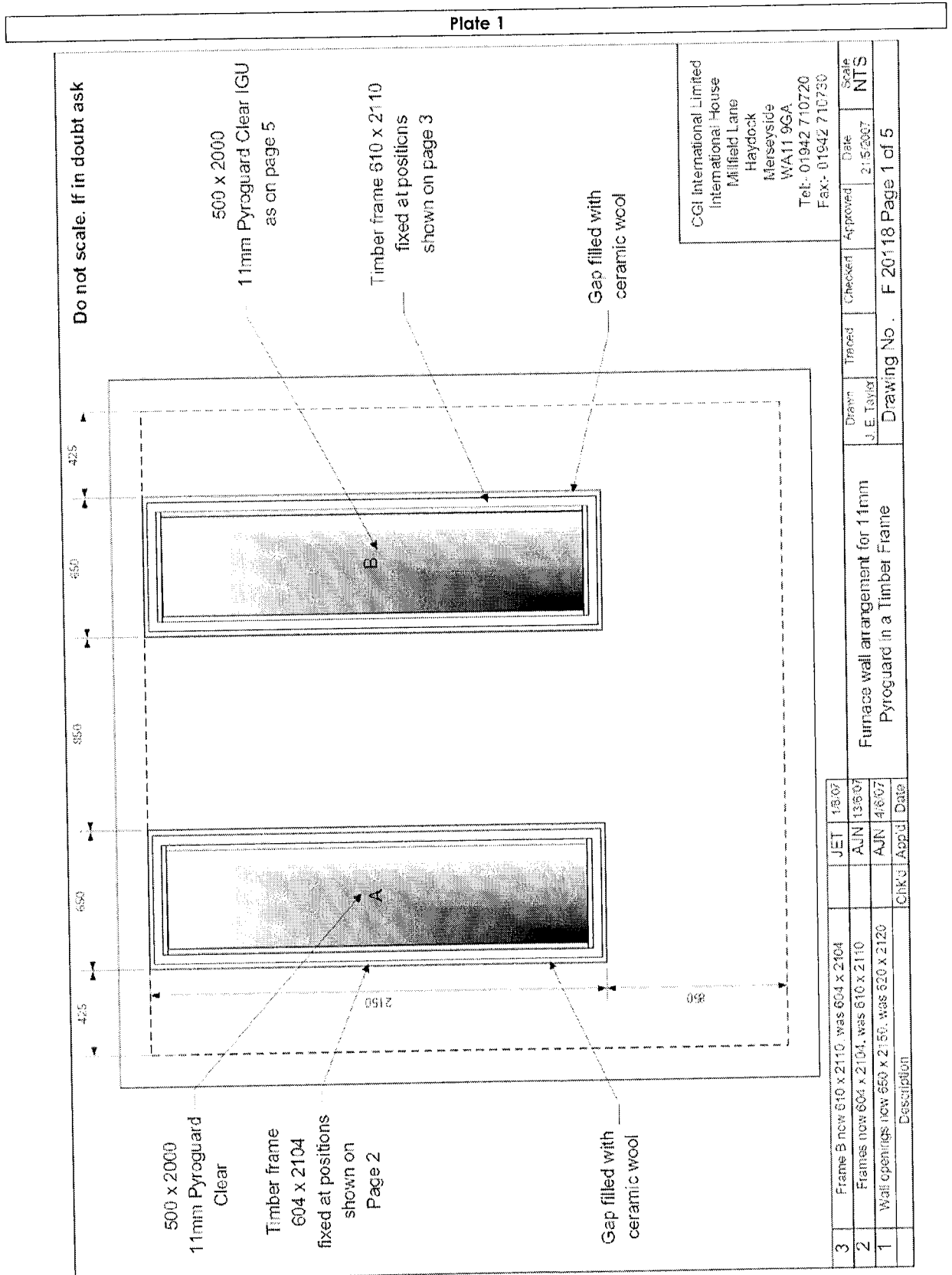
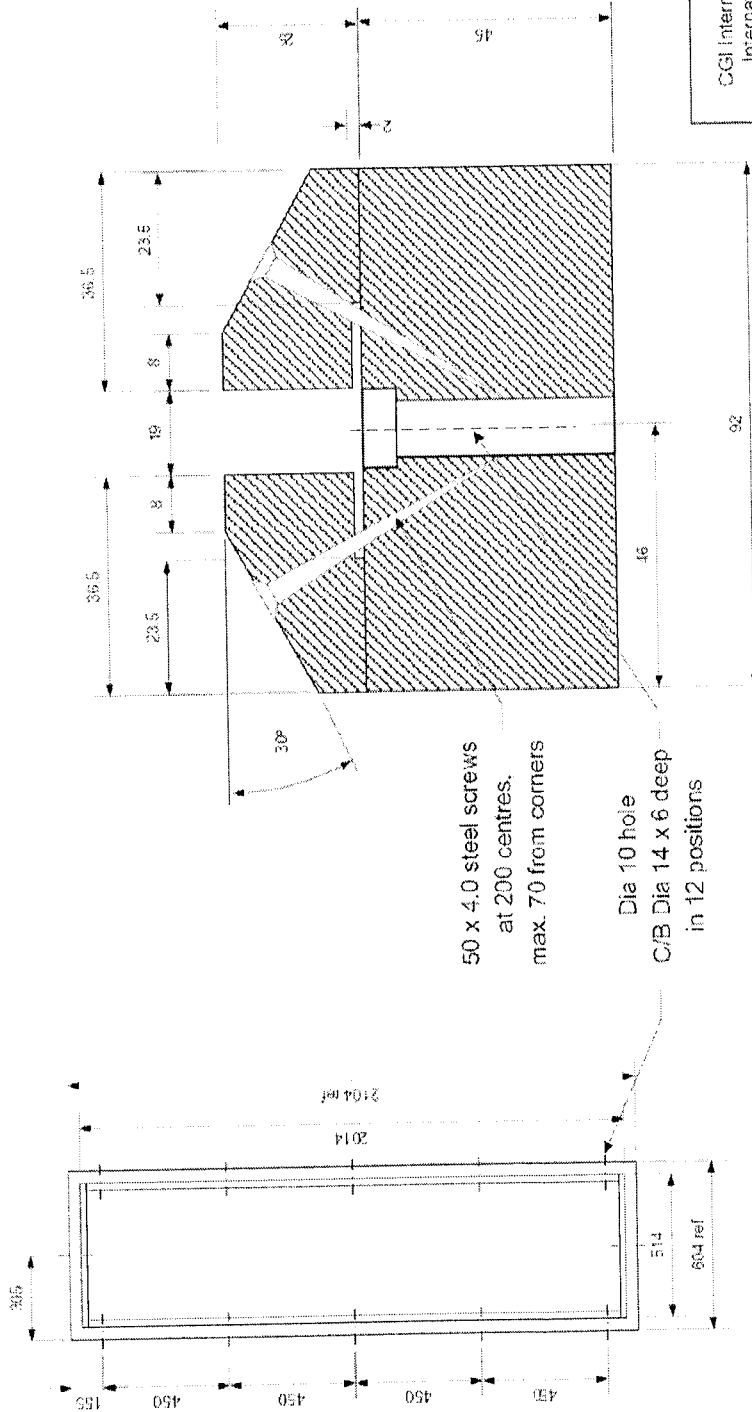


Plate 2

Do not scale. If in doubt ask



CGI International Limited
International House
Milfield Lane
Haydock
Merseyside
WA11 9GA
Tel: +44 1942 710720
Fax: +44 1942 710730

Material:
Frame and beads
in Utili
minimum density 650 kg/m³
Natural finish

Drawn	Checked	Traced	Approved	Date	Scale
J. E. Taylor				21/6/2007	NTS

Timber Frame (A) for
11 mm Pyroguard Clear

Drawing No F 201118 Page 2 of 5

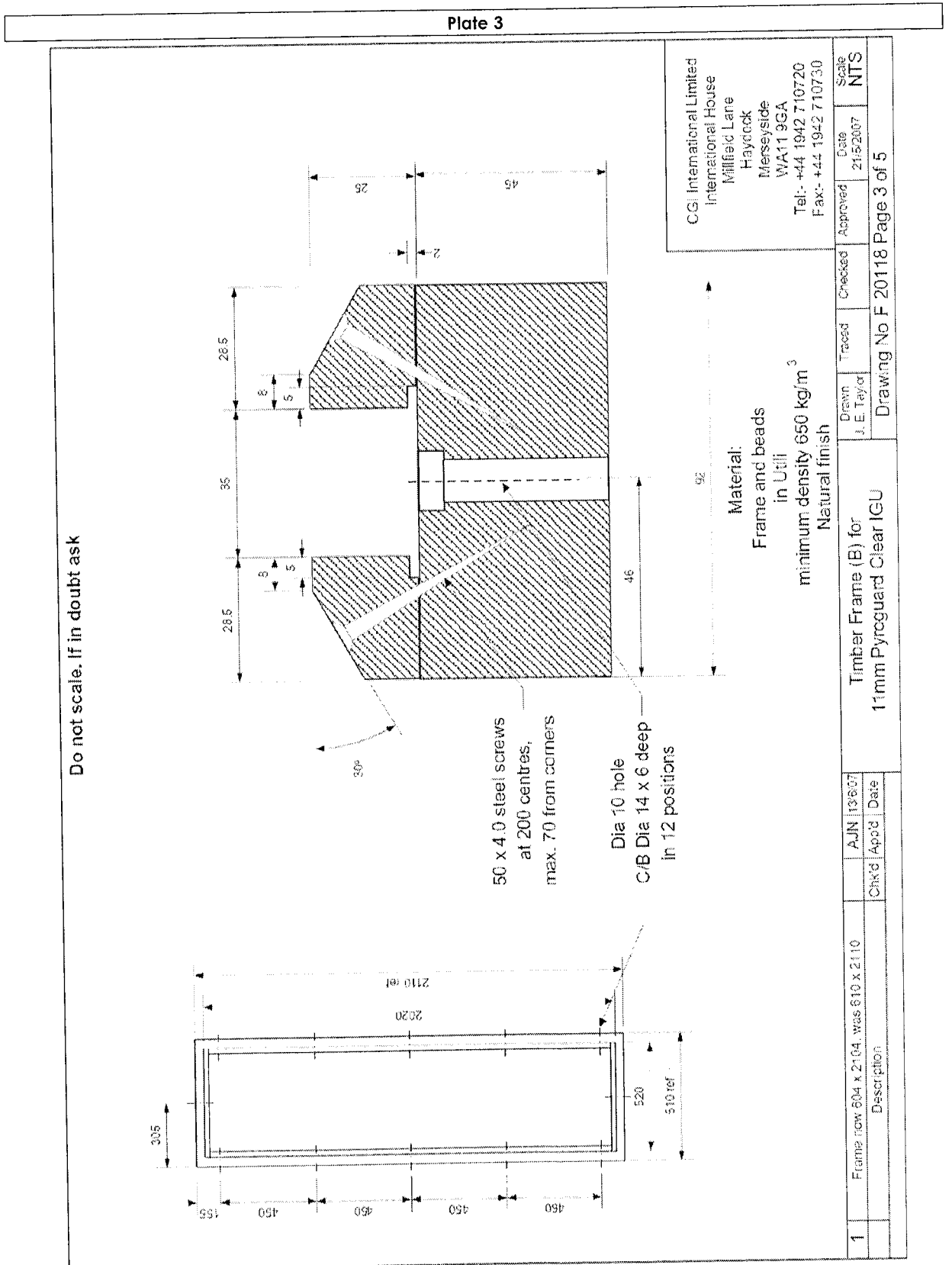


Plate 4

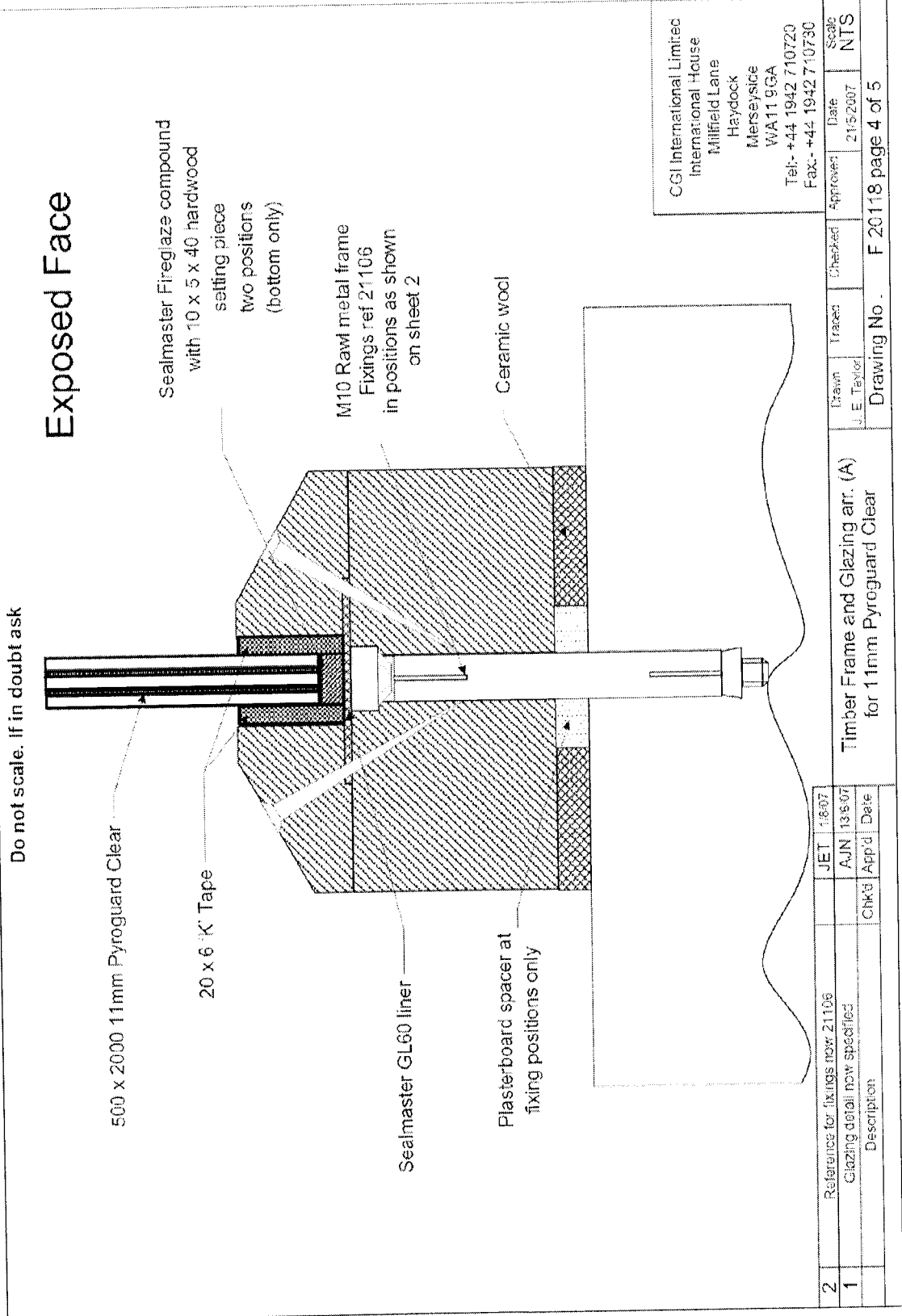
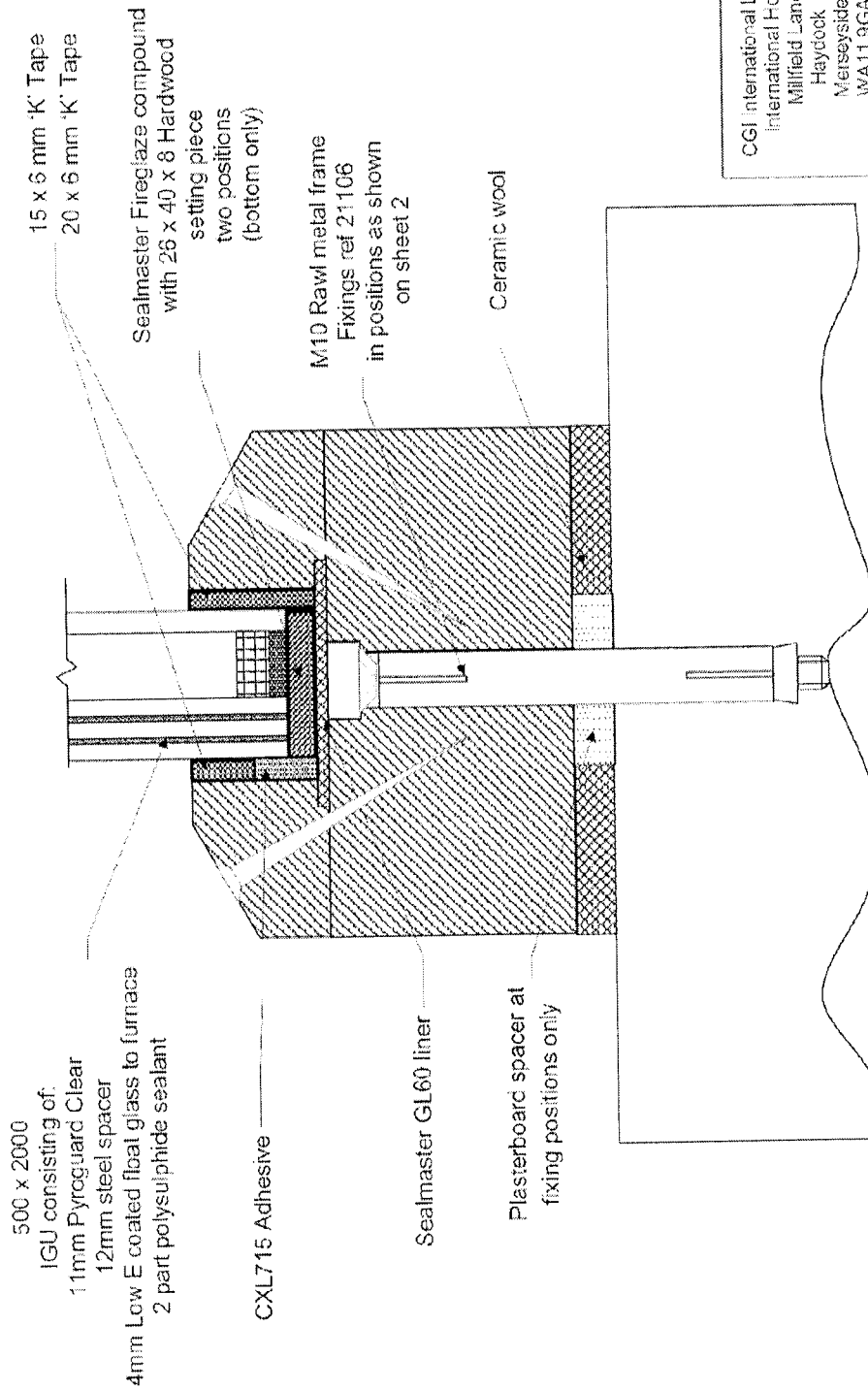


Plate 5

Exposed Face

Do not scale. If in doubt ask



CGI International Limited
International House
Millfield Lane
Haydock
Merseyside
WA11 9GA
Tel: +44 1942 710720
Fax: +44 1942 710730

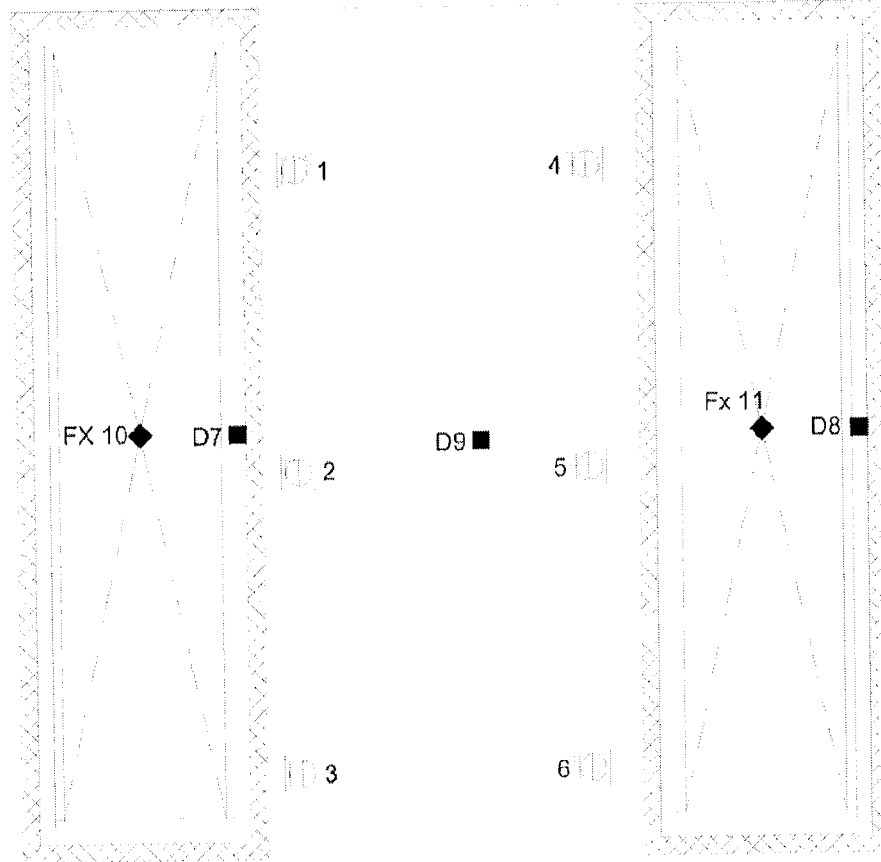
Scale	NTS
Date	21.5.2007
Approved	
Checked	
Traced	
Drawn	J.E. Taylor

Timber Frame and Glazing arr. (B)
for 11mm Pyroguard Clear IGU

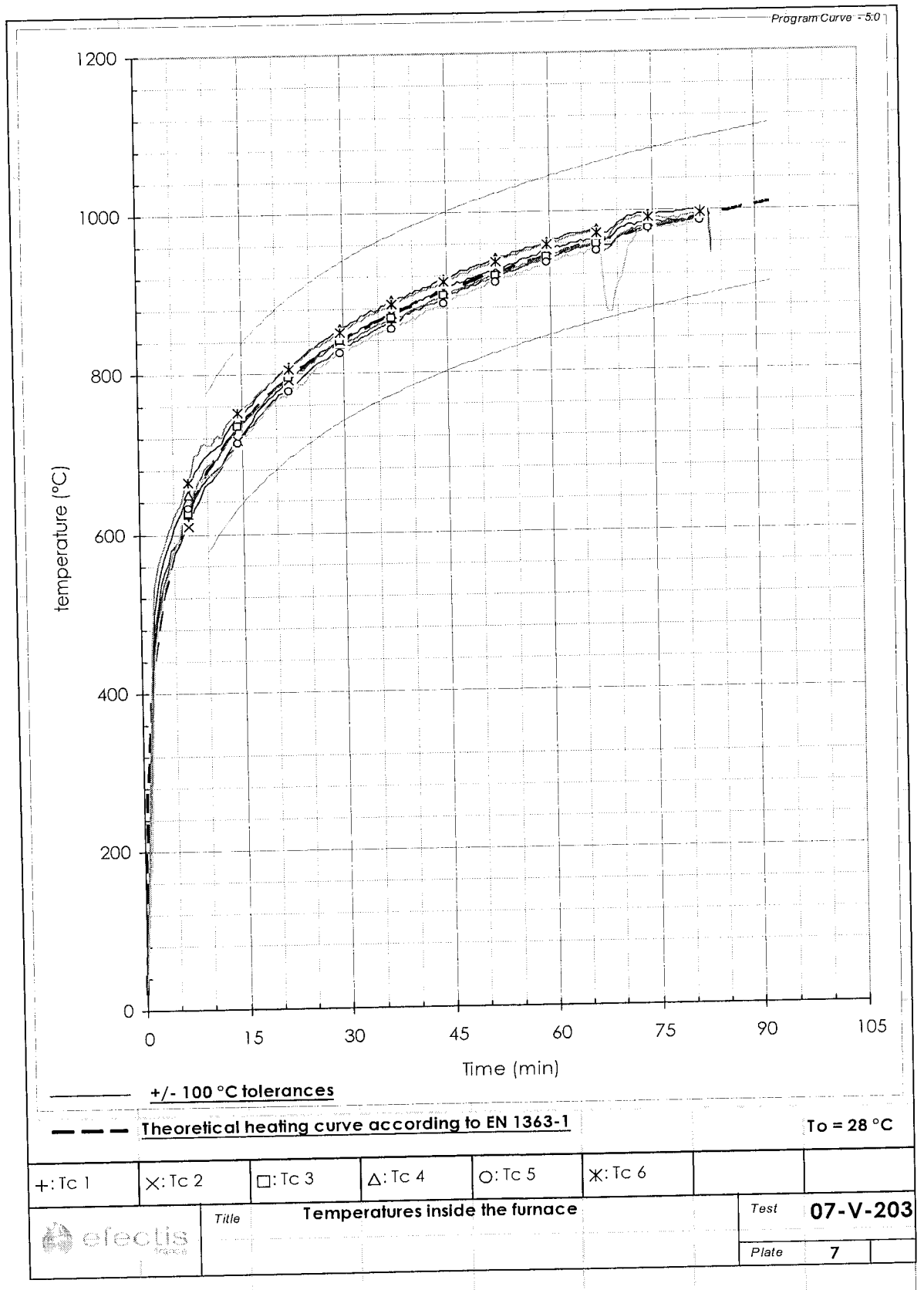
Drawing No. F 20118 page 5 of 5

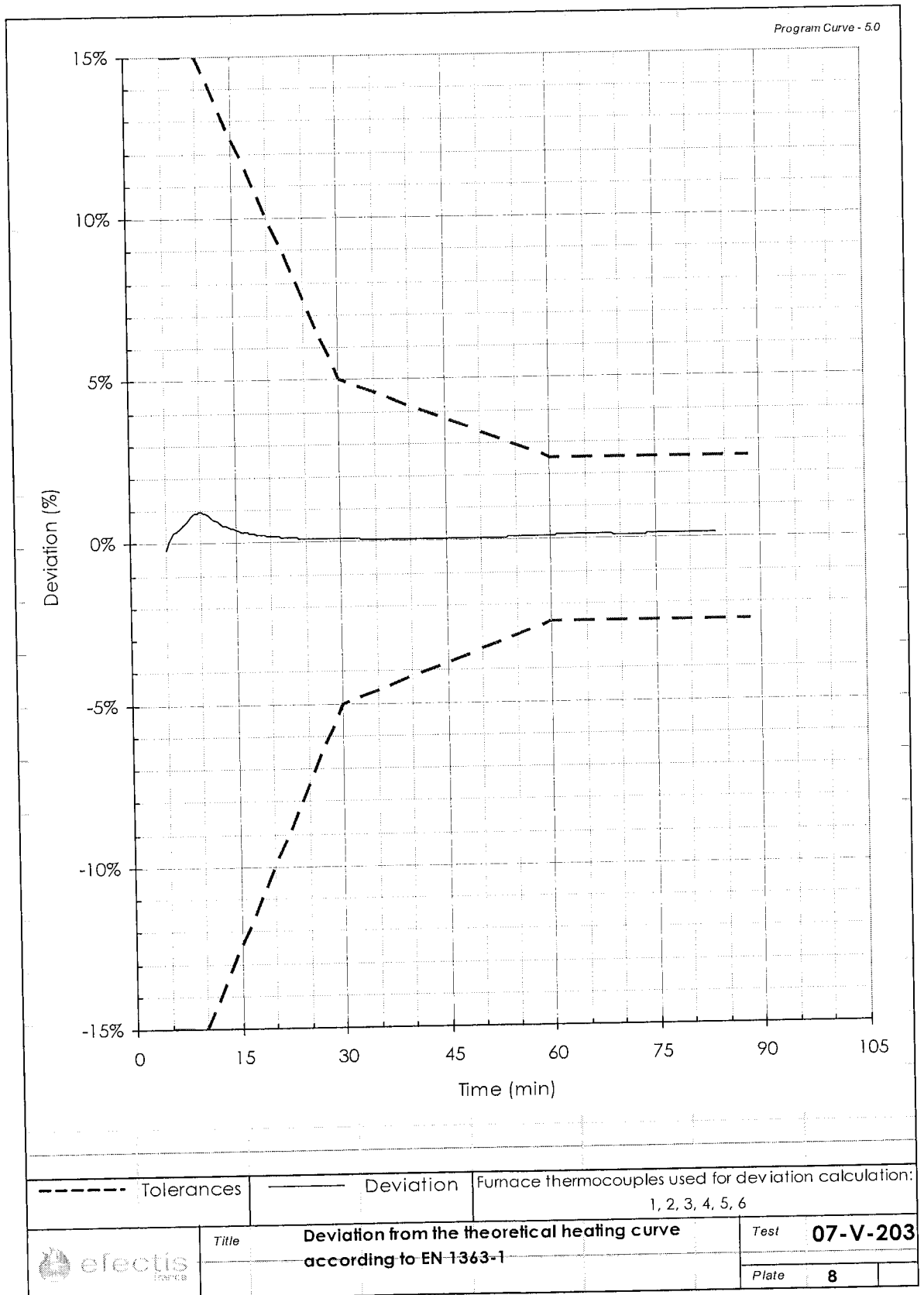
No	Description	Chk'd	App'd	Date
3	Setting block now 26x40x6 was 26x40x5	JET	JET	13/07
2	Reference for fixings now 21106	JET	JET	15/07
1	Glazing detail now specified	AUN	AUN	13/6/07

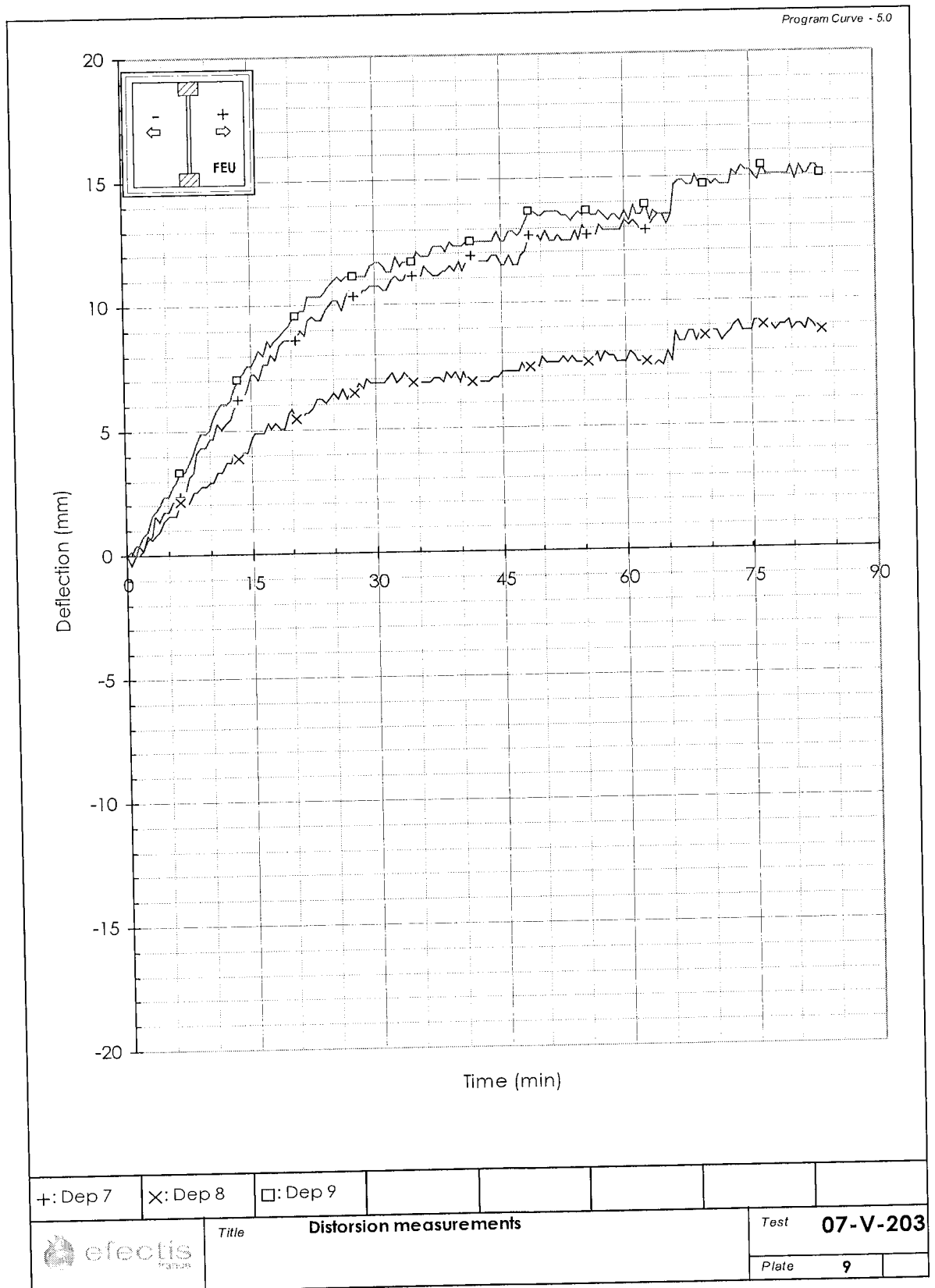
Plate 6 - Locations of sensors

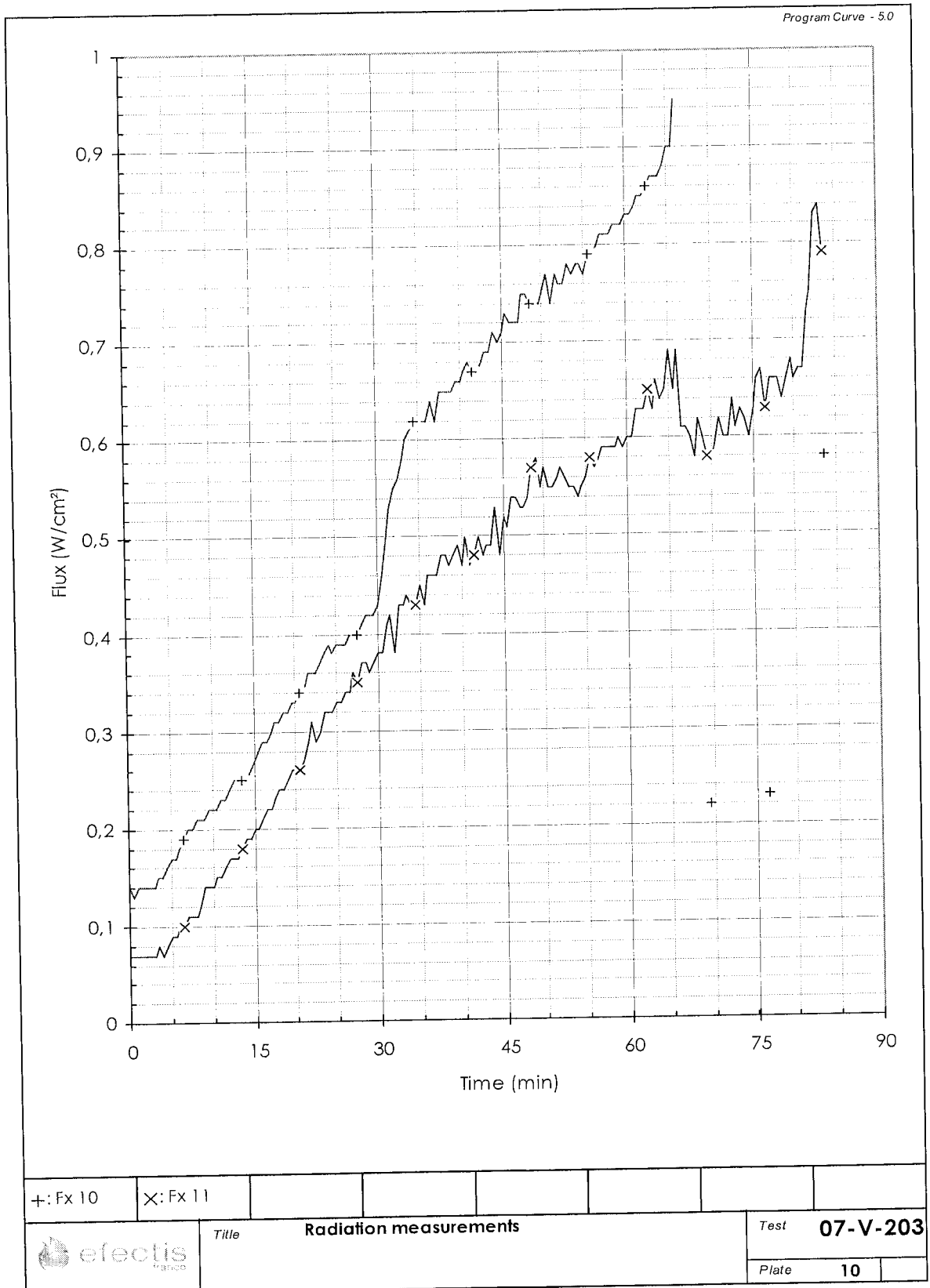


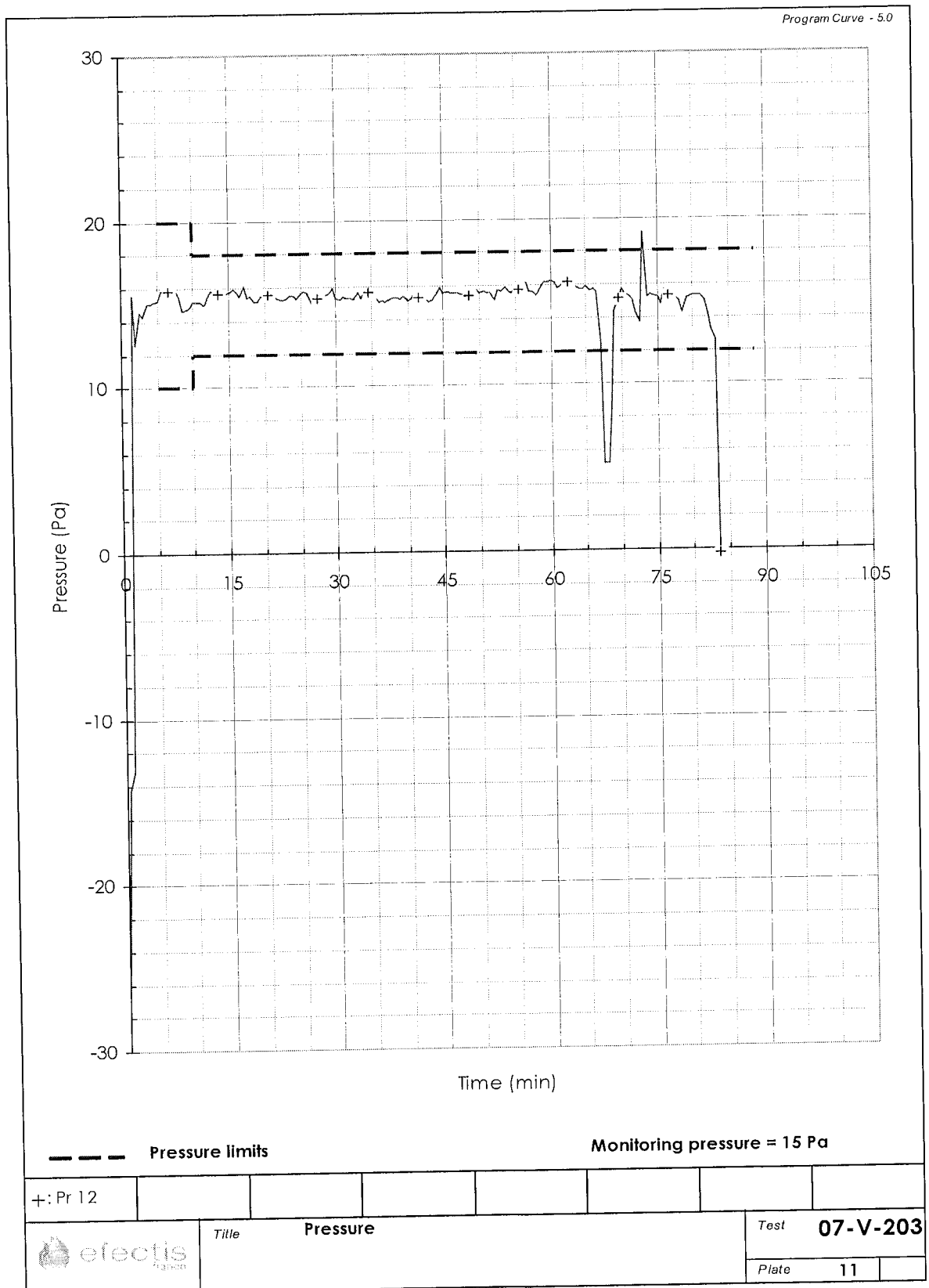
TC 1 to 6 : Temperature inside the furnace.
 D 7 to D 11 : Distortions.
 Pr 12 : Pressure.
 Fx 13 : Radiation.











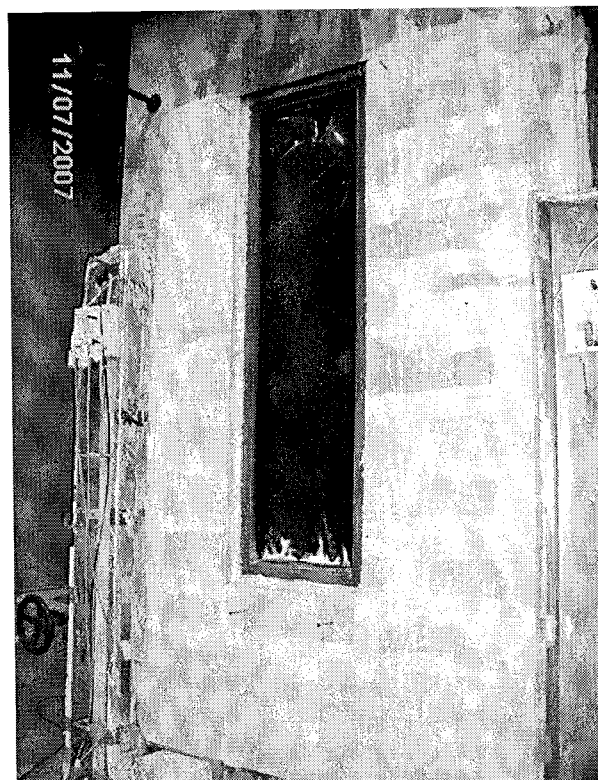
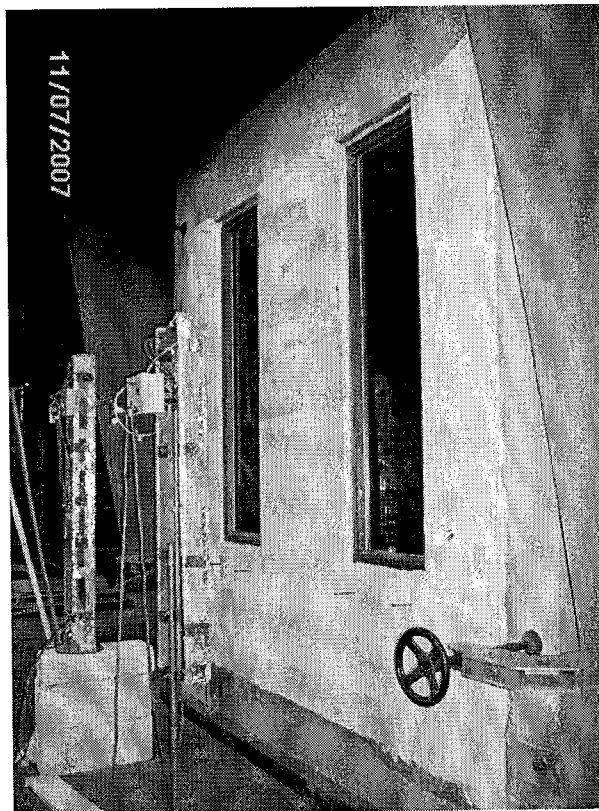


Photo A (top) Specimen at commencement of test

Photo B (bottom) Sustained flame on glazing A (64th minute)

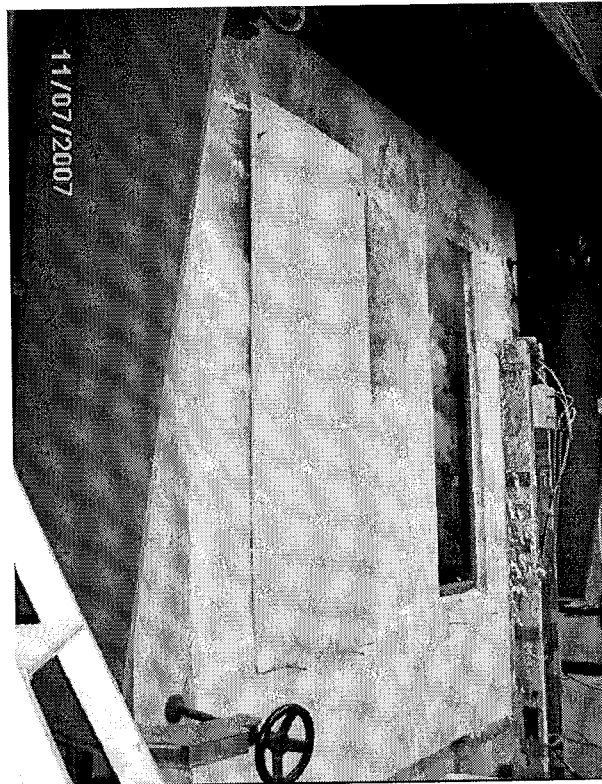


Photo C (top) Blind panel on glazing A