THE PROFESSIONALS IN FIRE SAFETY •

Warrington FIRE research
CONSULTANCY • TESTING

3M Coatings UK Plc
Customer Technical Centre
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RG12 1JE

21 March 1995

Dear Sir

INDICATIVE FIRE TEST

We have pleasure in enclosing the information obtained from the indicative fire test conducted on your behalf on the polyester film coated Georgian wired glass.

The information enclosed relates to an investigation which utilized the test methodology given in BS 476: Part 20: 1987, the full requirements of the Standard were not, however, complied with. The information is provided for the test sponsor's information only and should not be used to demonstrate performance against the Standard nor compliance with a regulatory requirement.

The test was not conducted under the requirements of NAMAS accreditation.

The purpose of the investigation was to provide an indication of the performance of polyester film coated Georgian wired glass when it is subjected on one face to the heating conditions specified in BS 476: Part 20: 1987.

The test construction comprised:-

6mm thick Georgian wired glass (1175mm x 1175mm) coated on the exposed face with 1 coat polyester film - 100um thick (1117mm x 1111mm).

The specimen was positioned such that it formed the front vertical face of a one metre cubed gas fired furnace chamber.

The following information relating to the test is enclosed.

Figure 1 - Graph of actual mean furnace temperature/BS476 curve.
Table 1 - Specified and actual furnace temperature rises and percentage tolerances.
Table 2 - Individual temperatures recorded on the unexposed surface of the glazing.
Figure 2 - Graph of furnace pressure.
Figure 3 - Graph of heat flux as measured by the water - cooled foil heat-fluxmeter.

Observations on the general behavior of the specimen during the test.

Photographs which show the specimen before, during and after the test.

We trust that the information obtained from the test will be useful to you.

Yours faithfully

E. Wyn-Thomas

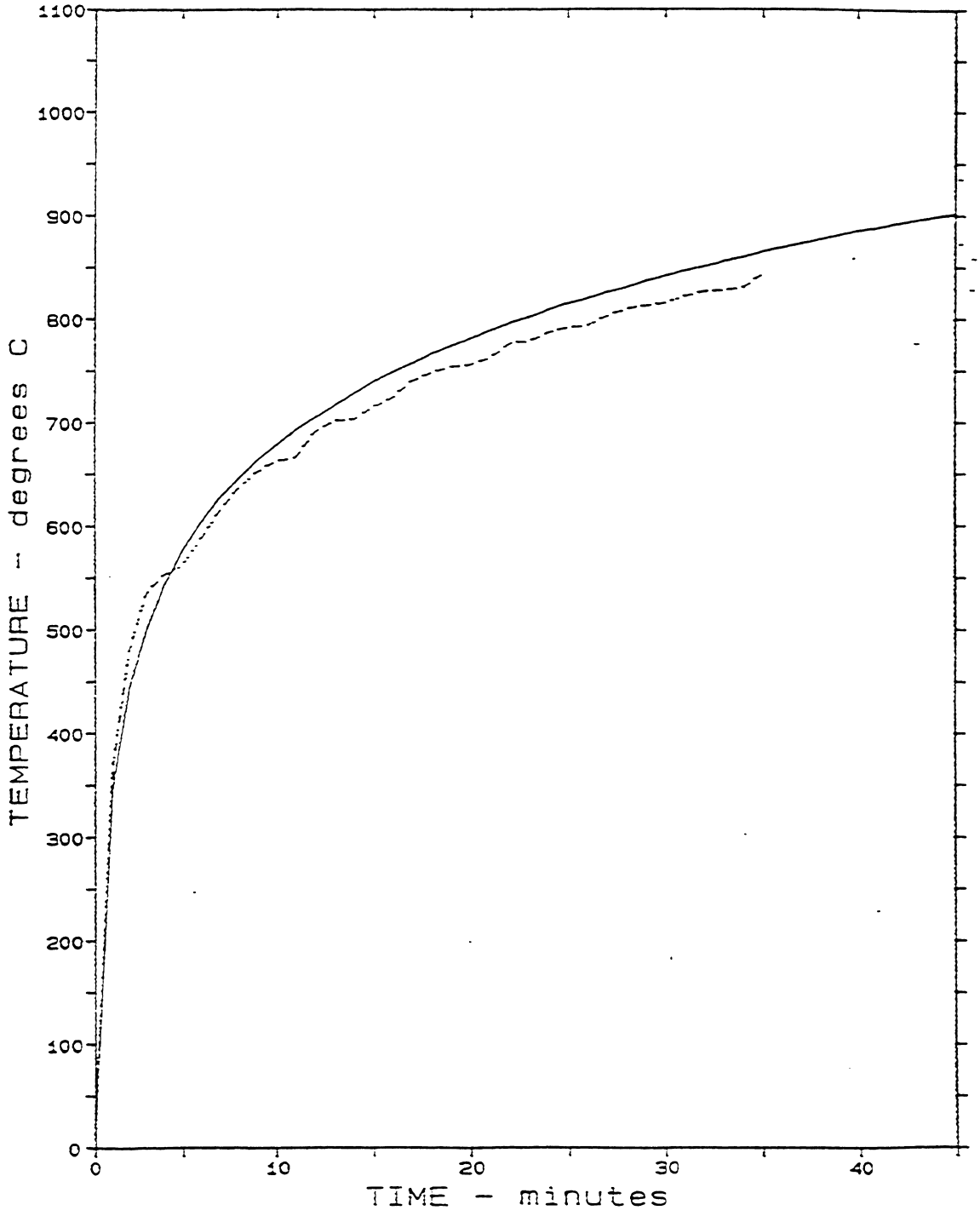
MISS E. WYN-THOMAS

ANNEX A

DATA RECORDED DURING THE TEST

FIGURE 1

FURNACE TEMPERATURE/TIME CURVES



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ANNEX A (Continued)

TABLE 1

Variation between specified and actual time temperature curve.

TIME mins	B.S.475 FURNACE TEMP. Deg C	ACTUAL FURNACE TEMP. Deg C	AREA UNDER STANDARD CURVE Deg C min	AREA UNDER ACTUAL CURVE Deg C min	PERCENTAGE DIFFERENCE	PERCENTAGE TOLERANCE + or -
0	20	13				
1	349	370				
2	445	481				
3	502	538				
4	544	554				
5	576	562				
6	603	587				
7	626	614				
8	645	635				
9	663	652				
10	678	663	5302	5332	0.5	15
12	705	692				
14	728	703				
16	748	723				
18	766	748				
20	781	756				
22	796	777				
24	809	787				
26	820	794				
28	831	810				
30	842	816	15488	15059	2.8	10
35	865	844	4268	4150	2.8	5

ANNEX A (Continued)

TABLE 2

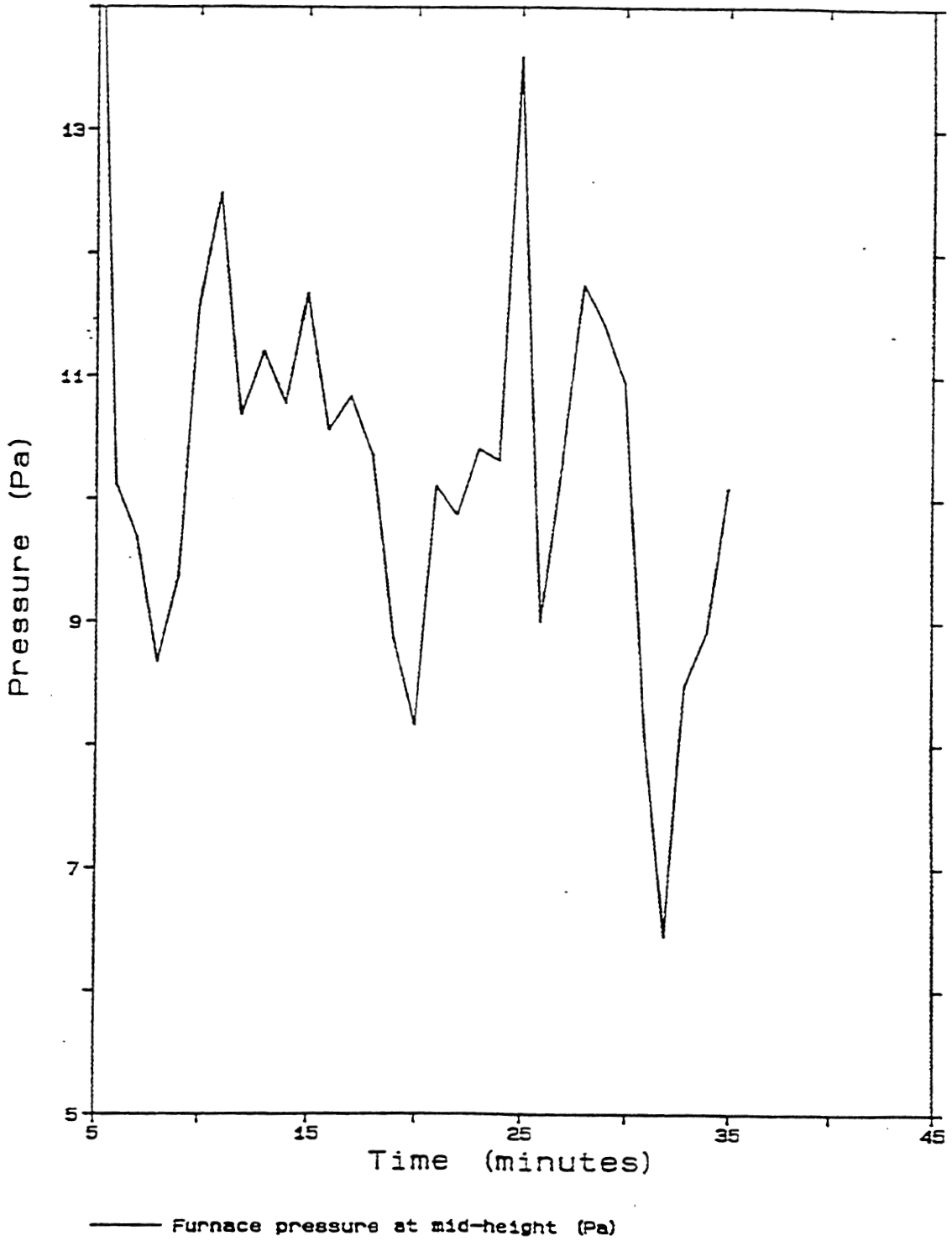
INDIVIDUAL TEMPERATURES RECORDED ON THE UNEXPOSED SURFACE OF THE GLAZING

TIME	CHAN 36	CHAN 37	CHAN 38	CHAN 39	CHAN 40
0.00	10	9	10	11	9
1.00	39	27	33	43	31
2.00	38	54	61	80	69
3.00	119	78	81	90	110
4.00	145	98	100	22	145
5.00	171	119	127	165	183
6.00	198	143	83	217	222
7.00	229	168	159	265	259
8.00	258	67	246	303	300
9.00	288	196	301	338	340
10.00	317	259	338	364	385
11.00	342	299	373	394	433
12.00	363	331	407	422	440
13.00	1389	359	426	432	440
14.00	414	384	432	442	451
15.00	424	406	441	453	462
16.00	432	423	450	464	474
17.00	442	430	462	477	488
18.00	451	437	472	489	501
19.00	462	445	483	501	512
20.00	470	454	490	509	522
21.00	479	463	498	517	530
22.00	489	472	506	526	538
23.00	498	482	513	535	548
24.00	508	490	522	543	556
25.00	515	497	527	550	562
26.00	521	503	533	557	568
27.00	527	509	539	563	574
28.00	532	515	548	570	581
29.00	540	521	553	577	587
30.00	547	527	561	585	593
31.00	554	534	566	592	600
32.00	562	539	573	598	605
33.00	568	545	579	603	609
34.00	574	549	583	607	612
35.00	582	555	591	614	620

ANNEX A (Continued)

FIGURE 2

FURNACE PRESSURE/TIME GRAPH



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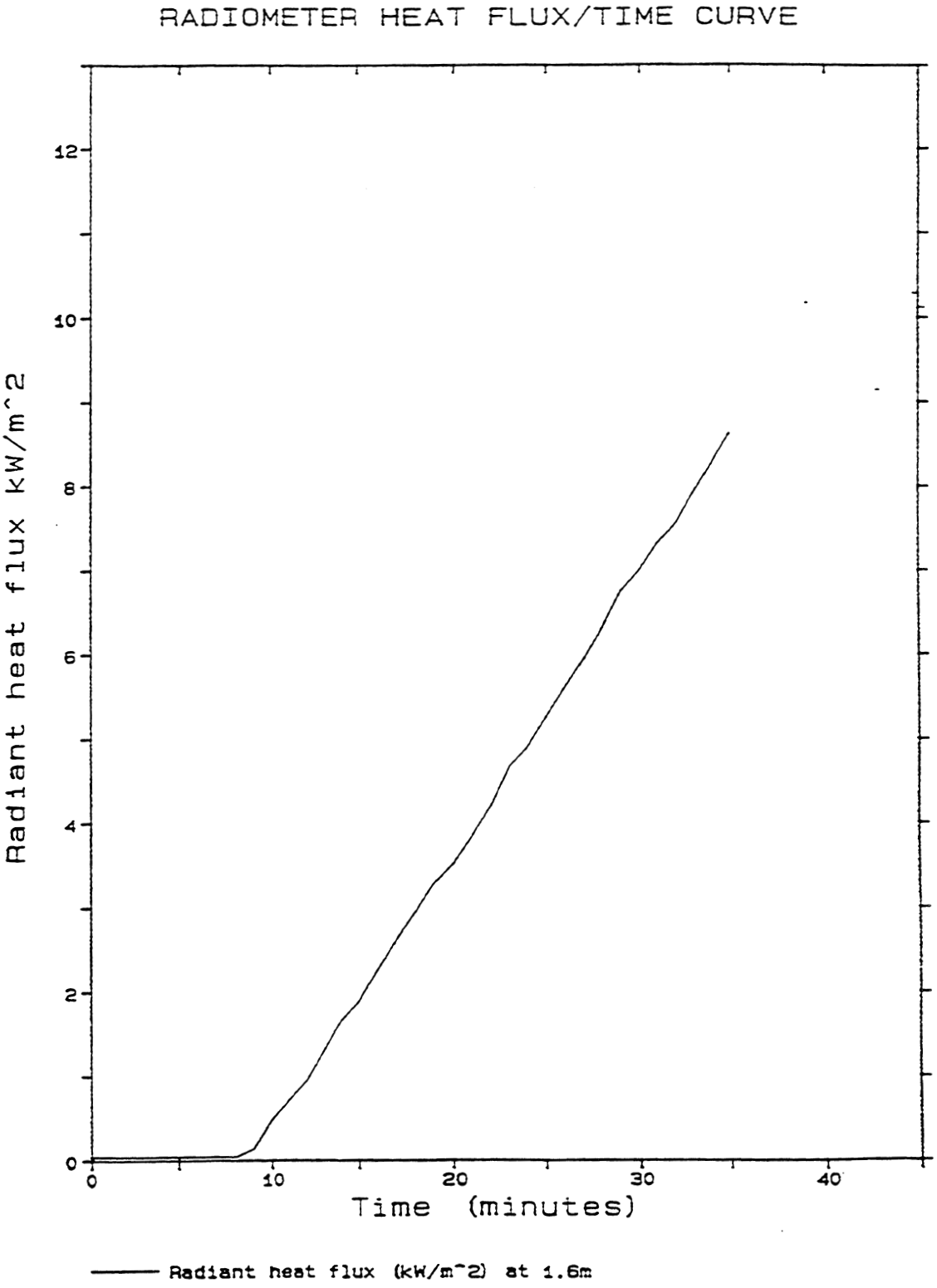
ANNEX A (Continued)

FIGURE 3



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ANNEX B

OBSERVATIONS MADE DURING THE TEST

The following observations were made during the test by Warrington Fire Research Centre

E - Observations from exposed side
U - Observations from unexposed side

Time mins	Time secs		
00	00		Test commences.
01	00	U	The glass cracked.
04	00	E	The polyester film on the exposed surface began to melt.
05	00	E	Discolouring of the film was observed.
07	00	E	The film began to run down the surface of the glass.
10	00	U	Chips of glass popped out from the top left of the glass.
12	00	U	A large diagonal crack appeared across the specimen.
14	00	U	A hole at the top left hand side of glazing appeared caused by cracking. of the glass
16	00	E	The film melted and began to flake off the exposed surface.
			The right hand side of the glazing was beginning to clear.
18	00	E	The film continued to flake off the exposed surface.
20	00	U	Slight bowing of the glazing into the furnace occurred.
22	00	E	The only charred remains of the film was evident only at the bottom left hand corner of the glazing.
24	00	U	Burnt remnants of film were being blown out of the gap created by the crack in the center of the glazing.
26	00	E	The glazing was almost totally clear of film.

ANNEX B (Continued)

Time mins	Time secs		
35	00	E	No evidence of the polyester film was left on the exposed surface of the glazing.
35	00		The test was terminated.

ANNEX C

PHOTOGRAPHS

Plate 1 - Unexposed face before the commencement of the test.

Plate 2 - Unexposed face 21 mins into the test.

Plate 3 - Unexposed face at the termination of the test.

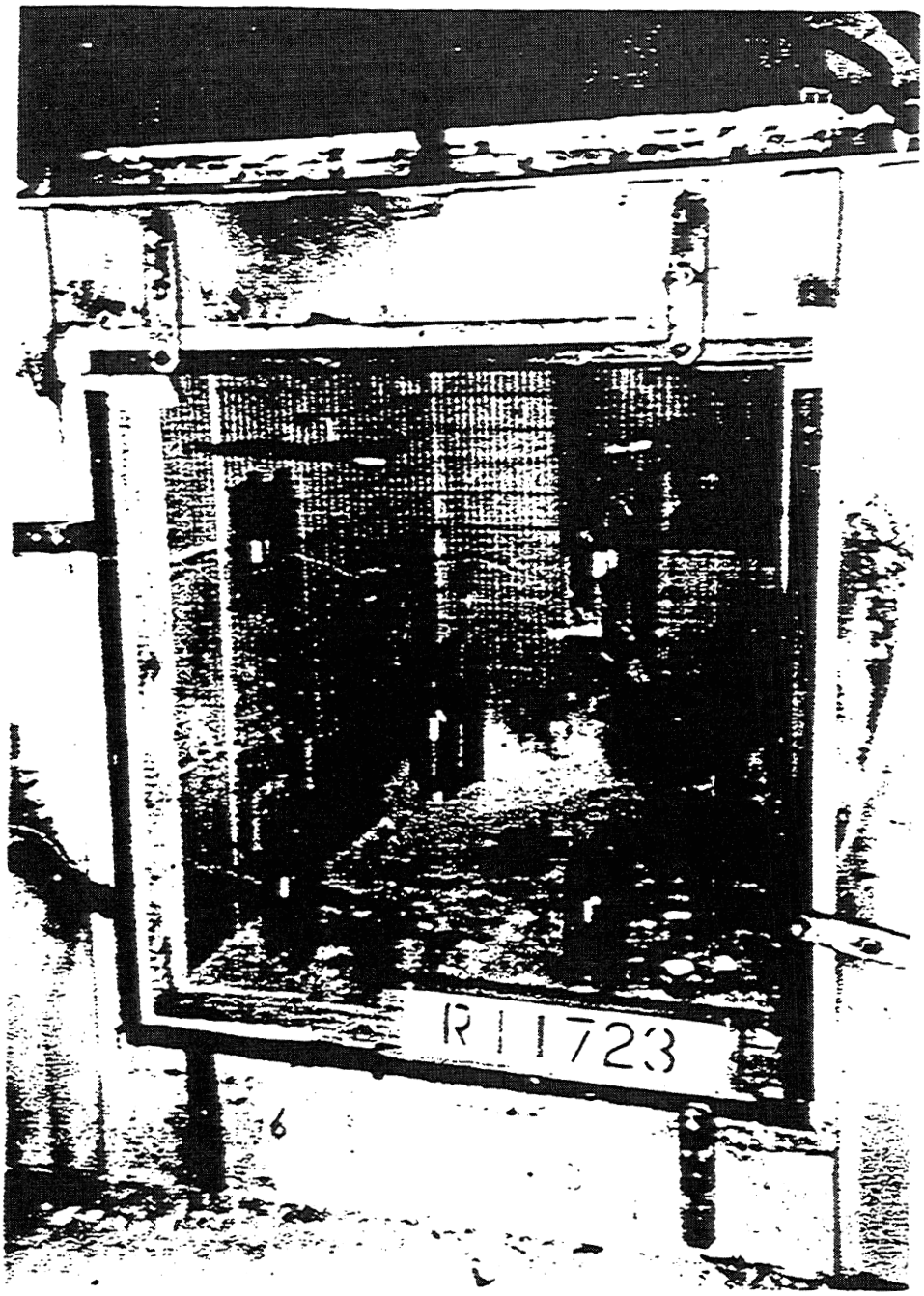

Plate 1

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Plate 2

Plate 3