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BS 6375-2&3:2009

Test of: FD30 Single Doorset with Winkhaus Lock

Performance of windows & doors - Part 2: Operation & strength & Part 3: Additional performance characteristics

A Report To:
Pacific Rim Wood Ltd
Ground Floor Suite, Block B, Old Kelways, Somerton Road, Langport, Somerset, TA10 9SJ

Document Reference:
WIL 418721

Date: 25/03/2020

Copy: 1

Issue No.: 1

Element Materials Technology Wednesbury Limited
Fire & Building Products
Registered in England & Wales
Registered Office: 10 Lower Grosvenor Place, London, SW1W 0EN, United Kingdom
Company Registration No: 11446650

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TEST CONCLUSIONS

Samples of:

Manufacturer	Pacific Rim Wood Ltd
Product	Doorset
Model	FD30 Single Doorset with Winkhaus Lock

have been tested in accordance with: BS6375-2:2009 & BS6375-3:2009 Annex A&C.
By Element Materials Technology, a UKAS accredited Testing Laboratory (No. 0621)

At Unit 3 Wednesbury One, Black Country New Road, Wednesbury, WS10 7NZ.
Results and comments as detailed below:

BS6375-2 Clause	Description	Compliance
6.1	**UK Category of Duty - Medium**	**YES**
6.2	Operating forces – Class 1	YES
6.3	Mechanical strength – Class 2	YES
6.3.1	Vertical load – Class 2	YES
6.3.2	Static torsion – Class 2	YES
6.3.3	Soft and heavy body impact – Class 2	YES
6.3.4	Hard body impact – Class 2	YES
6.4	Load bearing capacity of safety devices – 350N	N/A
6.5	Resistance to repeated opening and closing – Class 4	YES

BS6375-3 Clause	Description	Compliance
Annex A	**Basic security**	**YES**
Annex C	**Closure against obstruction**	**YES**

No inferences can be made regarding performance against other requirements of this standard

Tests marked " N/A" are not applicable to the sample under test.
Tests marked "N/T" were not applied to the sample under test

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AUTHORISATION

Tests performed by:	Chris Bryan, Senior Test Engineer Josh Ratcliffe, Test Engineer Macauley Buchan, Trainee Test Engineer

Report issued by: Josh Ratcliffe, Test Engineer

Signed 

Date 24th March 2020

For and on behalf of Element Materials Technology

Report authorised by: Mark Garfield, Door & Window Laboratory Manager

Signed 

Date 25/03/20 20

For and on behalf of Element Materials Technology

Report issued: 25 March 2020

UKAS TESTING
0621

NOTE.
Tests marked “Not UKAS Accredited” are not covered by the Laboratory UKAS accreditation schedule.

Tests marked NT were not tested
Tests marked NA are not applicable to the product on test.

The laboratory has tested the product supplied by the client as sampled in accordance with their own requirements

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TEST DETAILS

CLIENT DETAILS

Company name	Pacific Rim Wood Ltd
Address	Ground Floor Suite, Block B, Old Kelways, Somerton Road, Langport, Somerset, TA10 9SJ
Contact	Lisa McGee

ORDER DETAILS

Order number	PRW/Flamebreak/Pa24/Sep19
Dated	09/09/2019

SAMPLE DETAILS

Outer frame	995 x 2200 x 90mm
Opening leaves	925 x 2150 x 44mm
Configuration	Single doorset/ open-in
Material	Timber
Details of Hardware	
Hinges	4No. Union Hi Load Lift Off Hinges. Ref: JH605lolr-M-SSF
Lock	Winkhaus AV2-F 3-point lock. Ref: 2559895
Cylinder	Euro Profile Euro Cylinder. Ref: KIN 30/30 NAS
Handles	Era Fab & Fix Windsor Lever Handle. Ref: 1F302

TEST DETAILS

Test specification	BS 6375-2:2009 & BS 6375-3 :2009
Full test	Yes
Test to clauses	All
Test methods	BS EN 12046-2:2000 operating forces BS EN 947:1999 vertical load BS EN 948:1999 static torsion BS EN 949:1999 soft body impact BS EN 950:1999 hard body impact BS EN 948:1999 strength of safety devices BS EN 1191:2012 Annex H repeated opening & closing BS 6375-3:2009 Annex A basic security BS 6375-3:2009 Annex C closure against obstruction
Sample received	06/09/2019
Test started	09/09/2020
Test completed	04/02/2020
Special Test requirements	
Other reports to be used in conjunction with this report	

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TEST PROCEDURE

Introduction

This test report should be read in conjunction with the Standard BS 6375-2:2009 Performance of windows and doors – Part 2: Classification for operation and strength characteristics and guidance on selection & specification and Part 3: Classification for additional performance characteristics and guidance on seletion and specification.

The specimens were judged on their ability to comply with the performance criteria as required in BS 6375-2:2009 and BS6375-3:2009, with test methods BS EN 12046-2:2000, BS EN 947:1999, BS EN 948:1999, BS EN 949:1999, BS EN 950:1999, BS EN 1191:2012 Annex H and BS6375-3:2009 Annex A&C. classified in accordance with BS 6375-2:2009, BS EN 12217:2015, BS EN 1192:2000 & BS EN 12400:2002.

Instruction To Test

Initial requirement was for a UK category of use of medium duty as defined in BS6375-2, requiring a performance of Class 1 for operating forces, Class 2 for mechanical strength, a threshold value of 350N for load-bearing capacity of safety devices, and Class 5 for repeated opening and closing.

Test Specimen Construction

A description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimens and information supplied by the sponsor of the test.

Installation

The doorset was supplied mounted within a timber sub-frame of nominal section 75 x 100mm fitted flush with the exterior face, in accordance with the clients fitting instructions.

Sampling

The samples were not independently witnessed or selected and were provided direct from the test sponsor.

Test Climate

The sample was conditioned in the laboratory in the range 15-30 °C and 25-75% humidity.

The temperature and humidity in the lab was maintained in the range 18.8-19.1°C and 48.4-51.7% humidity for the duration of the test.

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INITIAL OBSERVATIONS

The external face of the sample

The internal face of the sample

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Sample Handle

Sample Cylinder

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Sample Locking

Sample Locking

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Sample Locking

Sample Keep

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Sample Keep

Sample Keep

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Sample internal face of hinge

Sample Hinge

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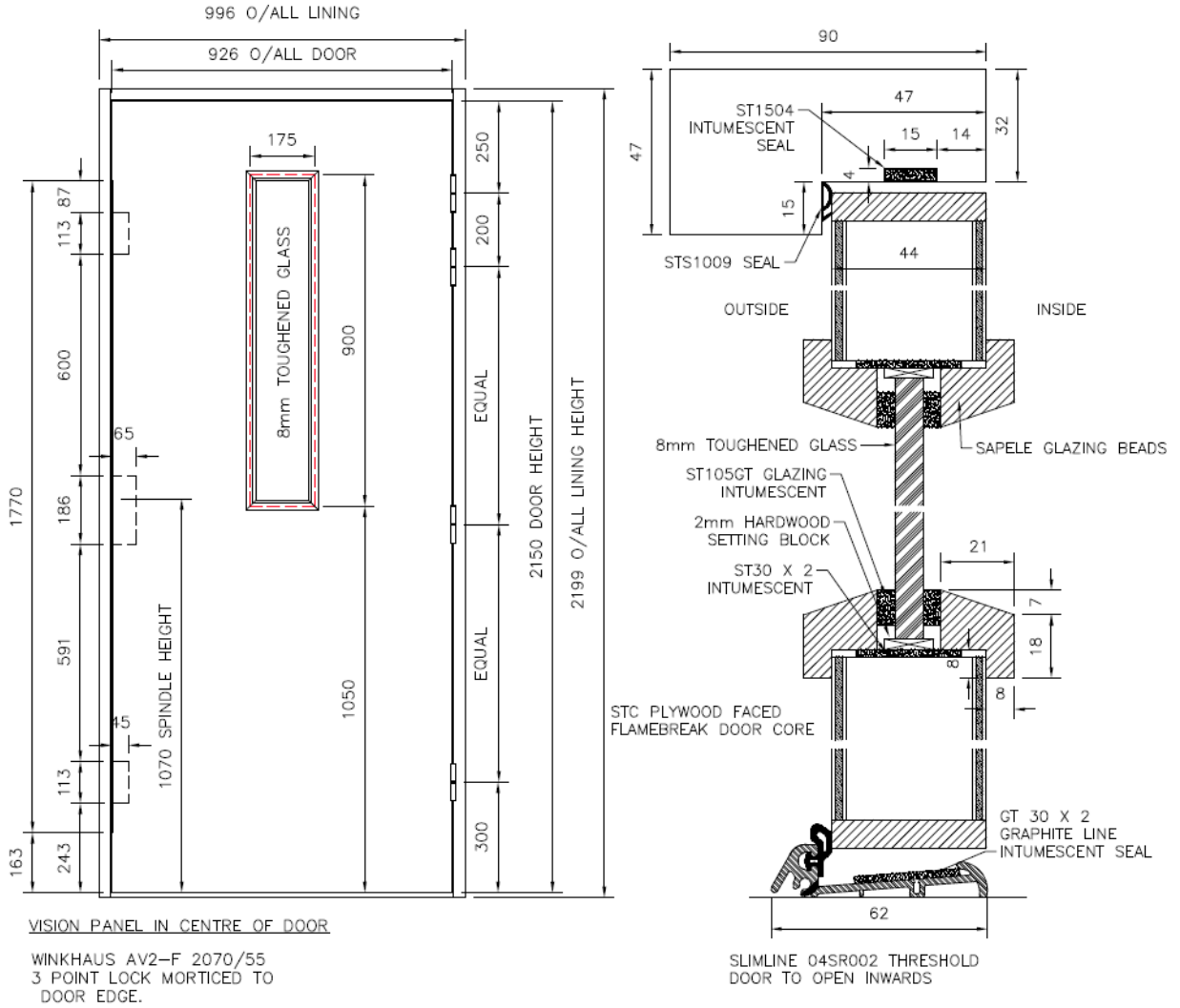
TEST SPECIMEN

Figure 1- General Elevation of Test Specimen (External Face)



Do not scale. All dimensions are in mm

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SCHEDULE OF COMPONENTS

(Refer to Figures 1 to 3)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

Variants

None

Item		Description
1. Door frame head		
Material	:	European Redwood
Density	:	> 450kg/m^3 (stated)
Section size	:	90 x 47mm
Rebate	:	15mm
Fixing jamb to head joints	:	Mortice & Tenon
Details of adhesive		PVA
2. Door frame jamb		
Reference	:	European Redwood
Material	:	>450kg/m^3 (stated)
Density	:	90 x 47mm
Section size	:	15mm
3. Door frame weather seals		
Description	:	Slimline 04 SR 002
Manufacturer	:	Stormguard
Reference	:	04SR002
Fixing method	:	Screw fixing to floor level
Position	:	Threshold – in between jambs
Continuity	:	Uninterrupted by hardware
4. Door frame intumescent seals		
Description	:	ST1504
Manufacturer	:	Sealed Tight solutions
Reference	:	ST1504
Fixing method	:	Connection bonded with instant adhesive
Position	:	Three edges – jambs and head
Continuity	:	Uninterrupted by hardware
5. Door frame smoke/acoustic seals		
Description	:	STS Perimeter Seal
Manufacturer	:	Sealed Tight Solutions
Reference	:	STS1009
Fixing method	:	Self-Adhesive
Position	:	Three edges (head & jambs)
Continuity	:	Uninterrupted by hardware

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Item		Description
6. Door leaf		
Supplier/manufacturer	:	Flamebreak Type 430 – Plywood faced
Overall leaf size	:	926 x 2150 x 44mm
7. Door leaf core		
Supplier/manufacturer	:	Flamebreak Type 430
Thickness	:	44mm
8. Door leaf lippings		
Position	:	Fitted to four edges
Material	:	Sapele
Density	:	>640
Section size	:	8mm
Details of adhesive	:	PUR glue, Tehcnomelt PUR Henkel
9. Door leaf weather seals		
Description	:	Slimline 04 SR 002
Manufacturer	:	Stormguard
Reference	:	04SR002
Fixing method	:	Screw fixing to floor level
Position	:	Threshold – in between jambs
Continuity	:	Uninterrupted by hardware
10. Door leaf glazed panel		
Supplier	:	AGC Pyrobelite
Thickness/configuration	:	8mm toughened glass
Overall size	:	900 x 175mm
Nominal edge clearance	:	11 overall
11. Glazing setting blocks		
Material	:	Sapele
Thickness	:	2mm
12. Glazing tape – Internal face		
Supplier	:	Sealed Tight Solutions
Reference	:	ST105 GT
Material	:	Silicone
Thickness	:	5mm
Overall size	:	10 x 5mm
Fixing method	:	Self-adhesive – then sealed with silicone on top
11a Glazing Liner		
Supplier	:	Sealed Tight Solutions
Reference	:	ST30 Graphite Liner x 2
Material	:	Graphite
Thickness	:	2mm
Overall size	:	30 x 2mm
Fixing method	:	Self-adhesive

Item		Description
13. Glazing tape – External face		
Supplier	:	Sealed Tight Solutions
Reference	:	ST105 GT
Material	:	Silicone
Thickness	:	5mm
Overall size	:	10 x 5mm
Fixing method	:	Self-adhesive – then sealed with silicone on top
14. Glazing beads		
Glazing method	:	Cassette beaded - cloak
Material	:	Sapele
Density	:	>640kg/m^3 (stated)
Section size	:	25 x 21mm
Fixing method	:	
i. type	:	Glazing pins
ii. size	:	50mm
15. Hinges		
Supplier/manufacturer	:	Union
Description	:	Hi Load Lift Off Hinges
Reference	:	JH605lolr-M-SSF
Primary material	:	Grade II steel
Size of knuckle	:	14mm
Size of blades	:	35 x 100mm
Quantity	:	4No.
Intumescent protection (if applicable)	:	
Position of hinges		
i. top hinge	:	204mm from top of door to top of hinge
ii. 2nd hinge		403mm from top of door to top of hinge
iii. 3rd hinge hinges	:	1102mm from top of door to top of hinge
iv. bottom hinge	:	1801mm from top of door to top of hinge
Fixing hinge to doorleaf		
i. type	:	Screws
ii. size	:	10 x 30mm
iii. quantity	:	10No.
Fixing hinge to frame		
i. type	:	Screws
ii. size	:	10 x 30mm
iii. quantity	:	10No.

Item		Description
16. Lock		
Supplier/manufacturer	:	Winkhaus
Description	:	AV2-F 3-point lock
Reference	:	2559895
Face plate size	:	20 x 1770 x 3mm
Intumescent protection (if applicable)	:	ST30 Graphite Lock Kit
Position	:	1070mm to centre of spindle/lock
Fixings		
i. type	:	Woodscrews
ii. size	:	12No.
iii. quantity	:	7 x 38mm
17. Lock Keeps		
Supplier/manufacturer	:	Winkhaus
Description	:	Keeps
Reference		
i. top & bottom keeps	:	F24-908 – single pocket keep
ii. centre keep	:	F24-908 Centre-keep
Material	:	
Intumescent protection (if applicable)	:	STS Graphite FS567 AV2 Kit
Overall size		
i. top & bottom keeps	:	24 x 235 2.5mm
Fixing keeps to frame		
i. type	:	Woodscrews
ii. size	:	2 x 25mm
iii. quantity	:	7No.
18. Cylinder		
Supplier/manufacturer	:	Euro Profile
Description	:	Euro Cylinder
TS007 certification ref (if applicable)	:	KM 561977
Reference	:	KIN 30/30 NAS
Overall size	:	72mm
Fixings		
i. type	:	Screw
ii. size	:	M5 x 55mm
iii. quantity	:	1No.
19. Lever handles		
Supplier/manufacturer	:	Era Fab & Fix
Description	:	Windsor Lever Handle
Reference	:	1F302
TS007 certification ref (if applicable)	:	
Material	:	Solid die cast zinc
Overall size	:	243 x 32mm
Lever length	:	17 x 120mm
Fixings		
i. type	:	M5
ii. size	:	55mm
iii. quantity	:	2No.

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Item		Description
20. Door closer		
Supplier/manufacturer	:	Eclipse
Description	:	Face fixed door closer
Reference	:	28730
Fixing device to doorleaf		
i. type	:	Screws
ii. size	:	M5 x 30mm
iii. quantity	:	4No.
Fixing device to frame		
i. type	:	Screws
ii. size	:	M5 x 28mm
iii. quantity	:	2No.

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PERFORMANCE CRITERIA & TEST RESULTS

Clause	Result	Pass/Fail
BS6375-2 6.2 Operating forces	The average force required to enable the sample to latch must not exceed those defined in table 1 of BS EN 12217, Class 1 (75N) for external doorsets & class 2 (50N) for internal doorsets. The average force or torque required to operate the hardware must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (100N or 10Nm) for external doorsets & class 2 (50N or 5Nm) for internal doorsets). The average force required to commence and maintain motion must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (75N) for external doorsets & Class 2 (50N) for internal doorsets The sample met the requirements of Class 2. An average force of 21.13N was required to latch the sample. An average force of 26.9N was required to disengage and 0N was required to engage the hardware. An average torque of 0.13Nm was required to lock and 0.11Nm was required to unlock the doorset. An average force of 9.17N was required to commence and maintain motion.	**PASS CLASS 2**
BS6375-2 6.3.1 Vertical load	The doorset was tested in accordance with EN 947, under a load of 600N as required by Class 2 of EN 1192, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 1mm, and the specimen should continue to operate normally. A load of 600N was applied, no damage was observed, and the doorset continued to operate normally. The sample met the requirements of Class 2. The deflection under full load was 1.23mm, and the residual deflection was 0.16mm.	**PASS CLASS 2**
BS6375-2 6.3.2 Static torsion	The doorset was tested in accordance with EN 948, under a load of 250N as required by Class 2 of EN 1192, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 2mm, and the specimen should continue to operate normally. A load of 250N was applied, no damage was observed, and the doorset continued to operate normally. The sample met the requirements of Class 2. The deflection under full load was 4.32mm, and the residual deflection was 1.23mm.	**PASS CLASS 2**
BS6375-2 6.3.3 Soft & heavy body impact	The doorset was tested in accordance with EN 949, a soft & heavy body impact of 60J was applied as required for Class 2. To achieve the requirements of the class the resultant residual deformation in flatness should not exceed 2mm, and the specimen shall continue to operate normally.	**PASS CLASS 2**

Clause	Result	Pass/Fail
	The sample met the requirements of Class 2, with a residual deformation of 0.1mm on the internal face, and a residual deformation of 0mm on the external face. No damage was observed during the test	
BS6375-2 6.3.4 Hard body impact	The doorleaf was tested in accordance with EN 950, hard body impacts of 3J were applied as required for class 2. To achieve the requirements of the class the mean value of the diameters of indentation should not exceed 20mm, and the mean values of the depths of indentation should not exceed 1.0mm, with the maximum depth not exceeding 1.5mm. The sample met the requirements of class 2. The mean value of the depth of indentation was 0.09mm. The maximum value of the depth of indentation was 0.14mm. The mean value of the diameter of indentation was 8.36mm. No damage was observed during the test.	**PASS CLASS 2**
BS6375-2 6.4 Load-bearing capacity of safety devices	This test was not carried out as no such device was fitted to the doorset.	**N/A**
BS6375-2 6.5 Resistance to repeated opening and closing	Prior to the cyclic operation test, when tested in accordance with EN 12046-2, the sample met the requirements for Class 2. An average force of 13.53N was required to latch the sample. An average force of 26.17N was required to disengage An average torque of 0.19Nm was required to lock and 0.2Nm was required to unlock the doorset. An average force of 10.77N was required to commence and maintain motion.	**PASS**
	The number of cycles completed by the doorset was 50,000, as required by Class 4 of the standard, for medium duty. The stroke of the doorleaf was 90 degrees. Observations and measurement were carried out at intervals of 25% of the total cycles. No lubrication or adjustment was specified by the client. The weight of the tested doorleaf was 35.22kg/pc, and the dead load applied on the leaf by the operating equipment was 0.5kg.	**PASS CLASS 4**
	Following the cyclic operation test, when tested in accordance with EN 12046-2, the sample continued to meet the requirements for Class 2.	**PASS**

Clause	Result	Pass/Fail
	An average force of 13.2N (V=-2%) was required to latch the sample. An average torque of 0.22Nm (V=12)% was required to lock and 0.2Nm (V=-2%) was required to unlock the doorset. An average force of 21.97N (V=104%) was required to commence and maintain motion.	
BS6375-3 Annex A Basic security	Testing was carried out on the doorset, the total attack time required was 3 minutes. Attacks were made with the craft knife to try and remove the timber from around the glazing and attempt to remove. Some of the timber was able to be removed, but not enough for the glazing to become loose. Total attack time was 3 minutes. Entry not achieved Entry was not gained and the test was deemed to pass.	**PASS**
BS6375-3 Annex C Closure against obstruction	Testing was carried out on the doorset. No visible damage was observed under the application of a 200N load with the bottom hinge corner obstructed from closing. Following testing the operating forces met the requirements of Class 2. An average force of 22.73N was required to latch the sample. An average force of 26.2N was required to disengage An average torque of 0.11Nm was required to lock and 0.12Nm was required to unlock the doorset. An average force of 9.6N was required to commence and maintain motion.	**PASS**

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CONCLUSIONS

Evaluation against objective	The sample as provided by the client was subjected to operational & strength testing in accordance with BS 6375-2:2009 and achieved the requirements for a UK category of use of medium duty. The sample was also subjected to closure against obstruction testing in accordance with BS 6375-3:2009 Annex A & Annex C and achieved the requirements
Observations & comments	

LIMITATIONS

Limitations	The results relate only to the behaviour of the specimens of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential performance of the element in use, nor do they reflect the actual behaviour in use.
Range of door assemblies covered by this report	It is our opinion that the range of door assemblies covered by this report are limited to the following ▪ Assemblies with identical hardware fitted no further apart than in the tested assembly ▪ Assemblies of the same or smaller overall dimensions to the tested assembly
Uncertainty of Measurement	The uncertainties of measurements calculated for a confidence level of 95% throughout these tests are within the limits of these tolerances. The standard specifies the following tolerances ▪ Forces: ±2% ▪ Distances: ±1mm for tape measures ± 0.01mm for dial gauges ▪ Times: ±5s

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REVISION HISTORY

This issue of the report replaces all previous issues that are now withdrawn.

Issue No :	**Re - Issue Date :**
Revised By:	**Approved By:**
Reason for Revision:	

END OF REPORT