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APPROVAL REPORT

FASTLOGS (STANDARD DUTY AND HEAVY DUTY) OPENING FLOOD BARRIERS

Prepared for:

**Presray Corporation
32 Nelson Hill Road
Wassaic NY 12592
USA**

Project: 3046851

Class: 2510

Date of Approval:

January 10, 2013

Supersedes Report Dated:

November 13, 2012

Authorized by:



Richard B. Dunne, Manager – Fire Protection Group

**FASTLOGS
(STANDARD DUTY AND HEAVY DUTY)
OPENING FLOOD BARRIERS**

from

**Presray Corporation
32 Nelson Hill Road
Wassaic NY 12592
USA**

I INTRODUCTION

- 1.1 Presray Corporation requested Approval of their FastLogs (Standard Duty and Heavy Duty) opening flood barriers for use as flood abatement equipment in riverine flood conditions.
- 1.2 This report may be freely reproduced only in its entirety and without modification.
- 1.3 This report supersedes the original report dated November 13, 2012. It was reissued at the request of the manufacturer to replace two erroneous drawing numbers listed in Section VIII.
- 1.4 **Standards**

The applicable portions of the following standard was used for the examination and evaluation of the equipment and applications in this report.

Title	Class Number	Date
FM Approvals Standard 2510, Flood Abatement Equipment	2510	December 2006

- 1.5 **Listing:** The product will appear in the Building Materials Division of the FM Approval Guide, an online publication, in the Flood Abatement Equipment, Opening Barriers (FM Approvals Class 2510) section, as shown in Appendix I.

II DESCRIPTION

- 2.1 The FastLogs opening flood barriers consist of several aluminum “FastLogs” and a frame assembly that are used for protecting a structural opening against riverine flood conditions up to 3 ft (0.91 m) high. They are considered contingent manual barriers since they require a pre-installation of the frame assembly but the “FastLogs” operate by manually deployment.
- 2.2 A “FastLog” is an aluminum extrusion with a gasket that runs along the bottom front edge. When multiple “FastLogs” are stacked together, the gasket creates a seal against the adjacent “FastLog.”

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- 2.3 The frame assembly includes two jamb extrusion that are pre-installed to the exterior face of a structural opening (i.e. Face Mount installation). Each jamb is equipped with;
- A jamb gasket, which when the barrier is deployed creates the vertical seal along the front face of the “FastLogs,”
 - A compression bracket for each “FastLog” which compresses the “FastLog” to the jamb gasket, and
 - A hold down bracket which compresses the gaskets located between the assembled “FastLogs” and the ground.
- 2.4 The maximum allowable structural opening for the Standard Duty FastLogs is 12.4 ft (3.8 m) and the Heavy Duty FastLogs is 20.4 ft (6.2 m).
- 2.5 The attached manufacturer’s Installation and Operation Manual (IM-FASTLOG) provides further information on the configuration of these barriers.

III EXAMINATIONS AND TESTS

3.1 *Examination – FM 2510, Section 4.1.1*

Presray Corporation provided sample barriers and components for the examination and testing as described for each of the following evaluations. All test samples were reviewed against the manufacturer’s drawings and specifications and judged to be adequately representative of their designs.

3.2 *Vibration Resistance – FM 2510, Section 4.1.8*

This test was successfully conducted under project ID 3040412 on a sample of the hold down bracket assembly, which was judged to be vulnerable to failure under vibration. The test assembly remained fastened during the vibration sequence and exhibited no loss of function subsequent to this test.

3.3 *Salt Spray Corrosion – Residue Build-Up – FM 2510, Section 4.1.9*

This test was successfully conducted under project ID 3040412 on a sample of the hold down bracket and the compression bracket assemblies. The test assemblies remained fully functional after this exposure.

3.4 *Environmental Corrosion Resistance – FM 2510, Section 4.1.10*

This test was successfully conducted under project ID 3040412 on a sample of the hold down bracket and the compression bracket assemblies. The test assemblies remained fully functional after this exposure.

3.5 *Air Oven Aging Test – FM 2510, Section 4.1.14*

This test was successfully conducted under project ID 3040412 on a sample of the compression turn knob. No cracking or crazing was observed as a result of this test.

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3.6 *Compression Set Test – FM 2510, Section 4.1.16*

Two ASTM D 395 Type I samples of the gasket material were successfully tested. The compression set average of the two samples was 8.9 percent, which is under the 15 percent allowable maximum.

3.7 *Opening Barriers – FM 2510, Section 4.3*

Prior to testing, the frame assembly including two jamb extrusion sections were pre-installed to the exterior face of a structural opening. The installation was compared and deemed representative of the Face Mount installation per the FastLogs Installation and Operational Manual (IM-FASTLOG).

The performance testing was conducted in a series that was designed to simulate riverine flood conditions. The details of each test is described per the following subsections.

These test were conducted on the maximum structural opening size for both the Standard Duty FastLogs and the Heavy Duty FastLogs barriers. The structural openings were measured as is listed in table 3.7.

Table 3.7 - Maximum Structural Opening Length Measurements

Model	Max Structural Opening Length
FastLogs (Standard Duty)	12.4 ft (3.8 m)
FastLogs (Heavy Duty)	20.4 ft (6.2 m)

3.8 *Initial Deployment – FM 2510, Section 4.3.1*

Each barrier was deployed three separate times during their performance test series, as detailed in Table 3.8. Each test was compared to the deployment procedure in Section 3.4 of the FastLogs Installation and Operational Manual (IM-FASTLOG). The deployment procedure in the manual was deemed accurate and complete.

In addition, the measured deployment times were all under the manufacturer’s listed time of 30 minutes, as shown in Table 3.8.

Table 3.8 - Deployment Test Results

Deployment Tests in Opening Barrier Performance Testing Series	Deployment Time (min:sec)	
	FastLogs (Standard Duty)	FastLogs (Heavy Duty)
Test #1 – Initial Deployment	11:27	24:48
Test #3 – Re-Deployment Prior to Dynamic Impact Test #1	19:59	25:06
Test #6 – Re-Deployment Prior to Dynamic Impact Test #2	25:59	25:10

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3.9 *Hydrostatic Load Test – FM 2510, Section 4.3.2*

Each barrier was hydrostatically loaded with a water level of 3.0 ft (0.9 m) at three separate times during their performance test series, as detailed in Table 3.9.

The leakage rates were measured in 15 minute increments. The maximum leakage rates for the Standard Duty FastLogs and the Heavy Duty FastLogs barriers were calculated to be 1.47 gal/hr (5.6 L/m) and 2.11 gal/hr (8.0 L/m), respectively. The results of these tests were deemed satisfactory since all of the measured leakage rates were under the maximum allowable, as shown in Table 3.9.

Table 3.9 – Hydrostatic Load Test Results

Hydrostatic Load Tests in Opening Barrier Performance Testing Series	Leakage Rate gal/hr (L/hr)	
	FastLogs (Standard Duty)	FastLogs (Heavy Duty)
Test #2 - Hydrostatic Load		
After Fill	0.44 (1.67)	0.08 (0.30)
1 Hour	0.08 (0.30)	N/A
15 Hours	N/A	0.07 (0.26)
22 Hours	0.00 (0.00)	0.00 (0.00)
Test #5 - Hydrostatic Load Post Dynamic Impact #1		
After Fill	0.42 (1.59)	N/A
20 mins After Fill*	N/A	0.38 (1.44)
1 Hour	0.27 (1.02)	0.38 (1.44)
Test #8 - Hydrostatic Load Post Dynamic Impact #2		
After Fill	1.44 (5.45)	0.44 (1.67)
1 Hour	1.06 (4.01)	0.29 (1.10)

* Leakage rate was measure after a minor repair to the bottom seal gasket.

A minor repair was required during the Heavy Duty FastLogs test. The edge of the gasket seal of the bottom log was and not seated properly in one location along the barrier. As a result water was leaking from that location. The issue was quickly resolved by sliding a putty knife under the seal and pulling the seal forward so that it laid flat in it's intended position. The repair was deemed acceptable since the repair could be easily duplicated by the end user should it occur in the field. The details for how to conduct this repair was added to the Presray FastLogs Installation and Operational Manual under Section 8.0 Troubleshooting.

3.10 *Dynamic Impact Load Test – FM 2510, Section 4.3.3*

Each barrier was impacted in two separate locations. Each impact was created by dropping a 111 lb (50.2 kg) log in a circular trajectory from a height of 4ft from the impact location. The impact created a 600 joule force on the barriers, simulating an impact from floating debris.

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The first impact for each barrier was located on the horizontal center of each barrier 29 inches up from the floor. The second impact for each barrier was located 29 inches up from the floor and positioned 5 inches from the edge of the “FastLogs.”

The permanent deflection of the barriers after the impact was measure, as shown in Table 3.10. The maximum allowable permanent deflection for the Standard Duty FastLogs and the Heavy Duty FastLogs barriers were calculated to be 1.2 in (3.2 cm) and 3.5 in (8.8 cm), respectively. The results of these tests were deemed satisfactory since the permanent deflections were under the maximum allowed.

Table 3.10 – Dynamic Impact Test Results

Dynamic Impact Tests in Opening Barrier Performance Testing Series	Measured Permanent Deflection in (m)	
	FastLogs (Standard Duty)	FastLogs (Heavy Duty)
Test #4 - Dynamic Impact Test #1	0.00 (0.00)	0.00 (0.00)
Test #7 - Dynamic Impact Test #2	0.00 (0.00)	0.00 (0.00)

3.11 No additional testing were deemed necessary.

IV MARKING

4.1 The following information appears on the barriers and meets Approval requirements:

- Manufacturer’s name and address.
- Production Date
- Serial Number
- Assembly Number
- Appropriate cautions
- The FM Approval Mark

V REMARKS

5.1 Applications of these barriers are subject to the limitations specified and are subject to FM Global acceptance of plans prior to installation at FM Global insured properties.

5.2 This equipment has been evaluated for use in resisting riverine flooding conditions at water depths not greater than 3 ft (0.9 m)

5.3 These barriers have been designed and manufactured to perform under the hydrostatic and dynamic loads described in Section III of this report. Building structure design and its capacity to accept loads transferred from these barriers require individual evaluation and are beyond the scope of this Approval evaluation.

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VI FACILITIES AND PROCEDURES AUDIT

6.1 The barriers described in this report are FM Approved only when manufactured at the following location:

Presray Corporation
32 Nelson Hill Road
Wassaic NY 12592
USA

6.2 The manufacturing facility listed above is subject to follow-up audit inspections. The facilities and quality control procedures in place have been determined to be sufficient to manufacture product identical to that examined and tested as detailed in this report.

VII MANUFACTURERS RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and listed in the Documentation File, Section VIII of this report. No changes of any nature shall be implemented unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

7.2 The manufacturer or assigned representative shall perform a documented system acceptance check and operational test in accordance with the barrier's "Design, Installation, Operations and Maintenance Manual." A copy of the results should be left on site and with the owner of the flood barrier, at a minimum.

7.3 Where part of the quality control has been subcontracted, the manufacturer shall, at a minimum, conduct sufficient oversight audits to verify the continued application of the required controls.

7.4 It is the manufacturer's responsibility to keep aware of all jurisdictional and FM Approvals requirements, and any changes thereto, which may affect the acceptance and use of these barriers

VIII DOCUMENTATION

The following documentation are considered critical documents for the FastLogs opening barriers. These documents include production drawings and the barrier's "Design, Installation, Operations and Maintenance Manual."

Critical Documents		
Document Number	Description	Revision
IM-FASTLOG	Installation and Operation Manual for a FASTLOG Flood Barrier System and Accessories	D
FL-HD-XXXXX-XX	FL-HD	B
FL-SD-XXXXX-XX	FL-SD	B
KN6C----F6XT-21	TURN KNOB	0
KN8C----F6-B-21	TURN KNOB	0
PPR34232	NEW FASTLOG BOTTOM SEAL	B

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Critical Documents		
Document Number	Description	Revision
PPR34311	SEAL EXTRUSION	C
PR33608	LOG EXTRUSION	A
PR33609	JAMB EXTRUSION	-
PR33904	HOLD DOWN BRACKET	-
PR33905	COMPRESSION CLIP	-
PR33906	SHROUD BAR	-
PR33907	SHROUD	G
PR34202	HD LOG EXTRUSION	A
TC-250206	SWIVEL ASSEMBLY	-

Note: The characters "XXXXX" in some document numbers indicate the customer work order number, which is unique to each customer.

IX CONCLUSION

The Presray Corporation FastLogs (Standard Duty and Heavy Duty) opening flood barriers meet FM Approvals requirements for use as flood abatement equipment. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

EXAMINATION AND TESTING BY:

Presray Corporation personnel and
FM Approvals personnel

PROJECT DATA RECORD:

PI 3046851

ATTACHMENTS:

Appendix 1 - Product Listing
IM- FASTLOG Rev D (15 pages)

REPORT BY:



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REPORT REVIEWED BY:



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Fire Protection Group

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Appendix 1
Approval Guide Listing

Product	Function (Permanent or Contingent)	Operation (Automatic or Manual)	Approved Pre- Installations	Max Approved Water Depth	Max Approved Structural Opening Length	Design, Installation, Maintenance, and Operation Manual
FastLogs (Standard Duty)	Contingent	Manual	Face Mount (exterior of structure)	3 ft (0.91 m)	12.4 ft (3.8 m)	IM-FASTLOG
FastLogs (Heavy Duty)	Contingent	Manual	Face Mount (exterior of structure)	3 ft (0.91 m)	20.4 ft (6.2 m)	IM-FASTLOG