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EASTMAN PERFORMANCE FILMS, LLC.
AIRBLAST LOADING TEST REPORT

SCOPE OF WORK
ASTM F1642, ASTM F2912, ISO 16933 TESTING ON BLAST WINDOWS

REPORT NUMBER
I4604.01-801-12 R0

TEST DATES
03/11/19 – 03/29/19

ISSUE DATE
05/22/19

RECORD RETENTION END DATE
03/29/23

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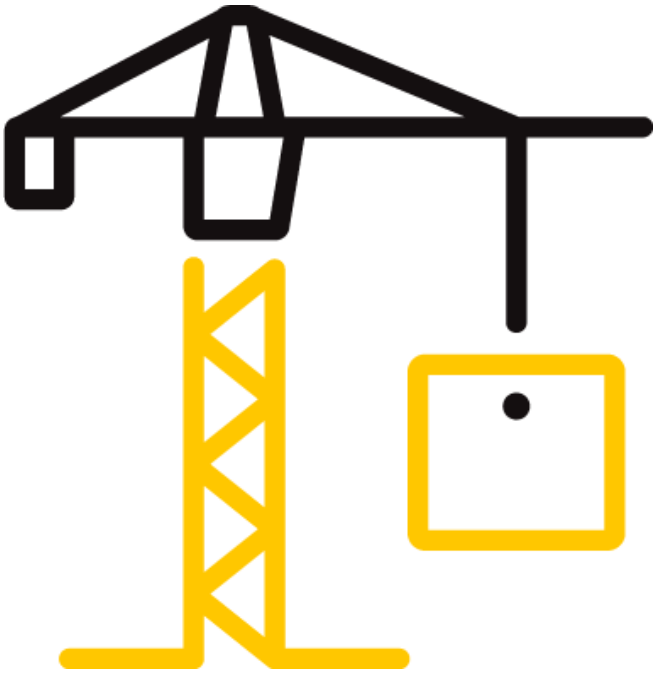

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Report No.: i4604.01-801-12 R0
Date: 05/22/19

REPORT ISSUED TO

Eastman Performance Films, LLC.
4210 The Great Road
Fieldale, VA 24089

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Eastman Performance Fillm, LLC., Fieldale, VA to perform airblast loading tests in accordance with ASTM F 2912, ASTM F1642, and ISO 16933 on LLumar SCL SR PS8 film in Blast Windows. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek B&C test facility in Brackettville, Texas.
This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

Product Type: Fixed Window
Series/Model Number: LLumar SCL SR PS8

TITLE	SPECIMEN #13	SPECIMEN #14	SPECIMEN #17	Overall rating for this glazing option
ASTM F2912 Hazard Rating	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard
ISO Performance Condition	E – Low Hazard	E – Low Hazard	E – Low Hazard	E – Low Hazard
Average Peak Reflected Pressure	9.34 psi	9.34 psi	9.34 psi	9.34 psi
Average Positive Phase Impulse	36 psi-msec	36 psi-msec	36 psi-msec	36 psi-msec
Average Positive Phase Duration	21.0 msec	21.0 msec	21.0 msec	21.0 msec
TITLE	**SPECIMEN #20**	**SPECIMEN #19**	**SPECIMEN #21**	**Overall rating for this glazing option**
ASTM F2912 Hazard Rating	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard
ISO Performance Condition	E – Low Hazard	E – Low Hazard	E – Low Hazard	E – Low Hazard
Average Peak Reflected Pressure	8.94 psi	8.94 psi	8.94 psi	8.94 psi
Average Positive Phase Impulse	36 psi-msec	36 psi-msec	36 psi-msec	36 psi-msec
Average Positive Phase Duration	21.0 msec	21.0 msec	21.0 msec	21.0 msec

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TITLE	SPECIMEN #23	SPECIMEN #24	SPECIMEN #22	Overall rating for this glazing option
ASTM F2912 Hazard Rating	H1 –No Hazard	H1 –No Hazard	H1 –No Hazard	H1 –No Hazard
ISO Performance Condition	B – No Hazard	B – No Hazard	B – No Hazard	B – No Hazard
Average Peak Reflected Pressure	7.94 psi	7.94 psi	7.94 psi	7.94 psi
Average Positive Phase Impulse	36 psi-msec	36 psi-msec	36 psi-msec	36 psi-msec
Average Positive Phase Duration	19 msec	19 msec	19 msec	19 msec
TITLE	**SPECIMEN #27**	**SPECIMEN #25**	**SPECIMEN #26**	**Overall rating for this glazing option**
ASTM F2912 Hazard Rating	H1 – No Break	H1- No Break	H1 – No Hazard	H1 – No Hazard
ISO Performance Condition	A – No Break	A – No Break	B – No Hazard	B – No Hazard
Average Peak Reflected Pressure	8.96 psi	8.96 psi	8.96 psi	8.96 psi
Average Positive Phase Impulse	38 psi-msec	38 psi-msec	38 psi-msec	38 psi-msec
Average Positive Phase Duration	19 msec	19 msec	19 msec	19 msec
TITLE	**SPECIMEN #15**	**SPECIMEN #16**	**SPECIMEN #18**	**Overall rating for this glazing option**
ASTM F2912 Hazard Rating	NA – High Hazard	NA – High Hazard	NA – High Hazard	NA – High Hazard
ISO Performance Condition	F – High Hazard	F – High Hazard	F – High Hazard	F – High Hazard
Average Peak Reflected Pressure	8.82 psi	8.13 psi	8.13 psi	8.13 psi
Average Positive Phase Impulse	34 psi-msec	43 psi-msec	43 psi-msec	34 psi-msec
Average Positive Phase Duration	19 msec	19 msec	19 msec	19 msec
TITLE	**SPECIMEN #NFA**	**SPECIMEN #NFT**	**Overall rating for this glazing option**	
ASTM F2912 Hazard Rating	NA – High Hazard	NA – High Hazard	NA – High Hazard	
ISO Performance Condition	F – High Hazard	F – High Hazard	F – High Hazard	
Average Peak Reflected Pressure	8.82 psi	8.82 psi	8.82 psi	
Average Positive Phase Impulse	34 psi-msec	34 psi-msec	34 psi-msec	
Average Positive Phase Duration	19 msec	19 msec	19 msec	

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For INTERTEK B&C:

COMPLETED BY:	Andy Cost	**REVIEWED BY:**	Lucio Munoz
TITLE:	Laboratory Manager	**TITLE:**	Project Manager
SIGNATURE:	 Digitally Signed by: Andy Cost	**SIGNATURE:**	 Digitally Signed by: Lucio Munoz
DATE:	05/22/19	**DATE:**	05/22/19

AC:cm

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SECTION 3
TEST METHOD(S)

The specimens were evaluated in accordance with the following:

ASTM F 2912-17, *Standard Specification for Glass and Glazing Systems Subject to Airblast Loadings*

ASTM F 1642-12, *Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings*

ISO 16933 – *Glass in Building – Explosion-resistant security glazing – Test and classification for arena air-blast loading*

SECTION 4
TEST FACILITY

Intertek B&C's blast arena is located near Brackettville, Texas. A photograph of the facility is provided in Figure #1. Intertek B&C's blast reaction chamber construction consists of wide flange steel beams, steel tubes, and steel skin that enclose the chamber. Architectural Testing also placed four (4) feet wide wing walls on the blast reaction chamber's top and sides to reduce clearing effects on the reflecting surface. The overall dimensions of the blast reaction chamber are twenty-eight (28) feet wide, sixteen (16) feet tall, and ten (10) feet deep. The blast reaction chamber encloses a volume that houses witness panels and structural members. The sealed surfaces of the blast reaction chamber prevent air blast pressure from wrapping around the test specimens so that the blast pressure loads only one side of the test specimens. Photographs of the arena arrangement are provided in Figure #1.

Figure #1
Arena Blast Test

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SECTION 5
TEST PROCEDURE

High explosive charge of 265 lbs ANFO at a standoff distance of 115 feet was placed in a manner to produce a desired peak positive phase reflected pressure, positive phase reflected impulse, and incident positive phase duration.

SECTION 6
MATERIAL SOURCE/INSTALLATION

The test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a steel test frame at the jambs, head, and sill. Installation of the tested product was performed by Intertek B&C according to the client's instructions.

LOCATION	ANCHOR DESCRIPTION	ANCHOR LOCATION
Full perimeter	1-1/2" angle iron stop with a neoprene gasket between the stop and the window frame.	Continuous at the interior and exterior perimeter of the window

SECTION 7
EQUIPMENT

In accordance with ASTM F1642, nine pressure transducers were utilized for data acquisition at a 1MHz sample rate. Two chambers were utilized. Each chamber contained one test frame labeled Test Frame A and Test Frame B. One reflective pressure transducer was located on each test frame 32 inches from the right side horizontal centerline (when viewed from the exterior). One reflective pressure transducer was located on each test frame 32 inches from the left side horizontal centerline (when viewed from the exterior). One reflective pressure transducer was located on each test frame at the top of the vertical centerline of the chamber within 6 inches of the top of the specimen (when viewed from the exterior). One reflective pressure transducer was located inside the witness chamber each test frame. One free field pressure transducer was located 25 feet to the right of chamber A (when viewed from the exterior). Test Frame B was located 25 feet to the left of test frame A (when viewed from the exterior). A sketch of the test frames and corresponding reflective pressure sensor locations is provided in Figure #2 and #3.

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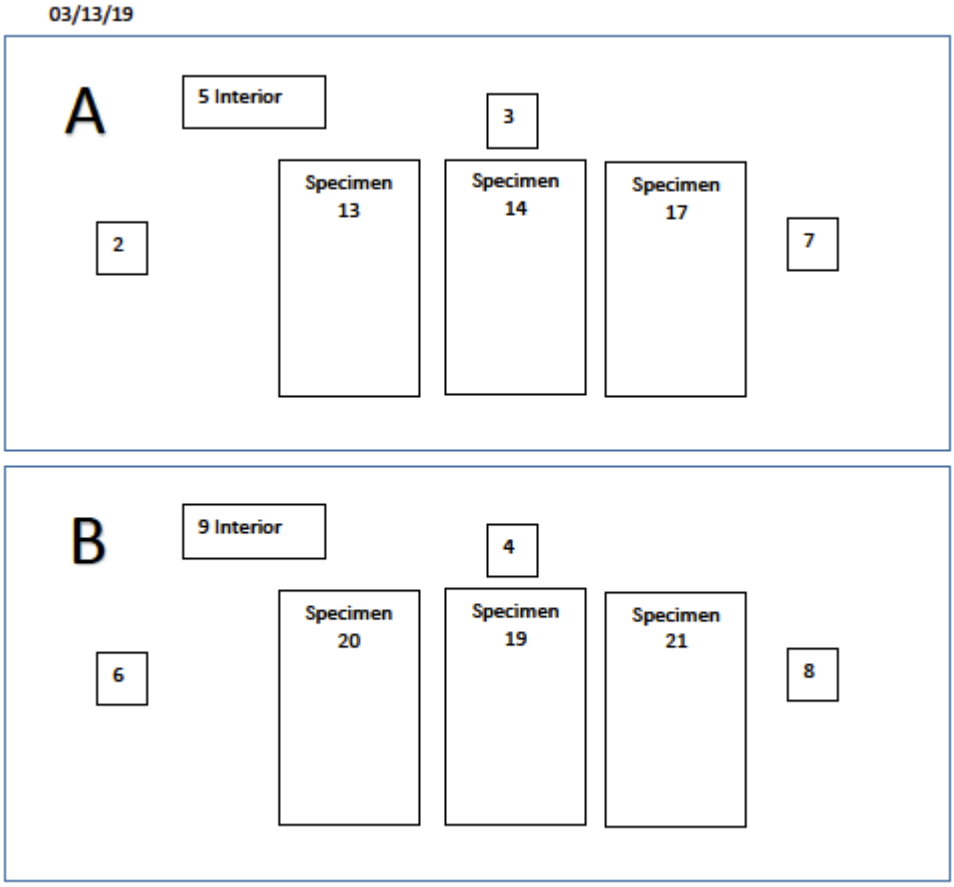

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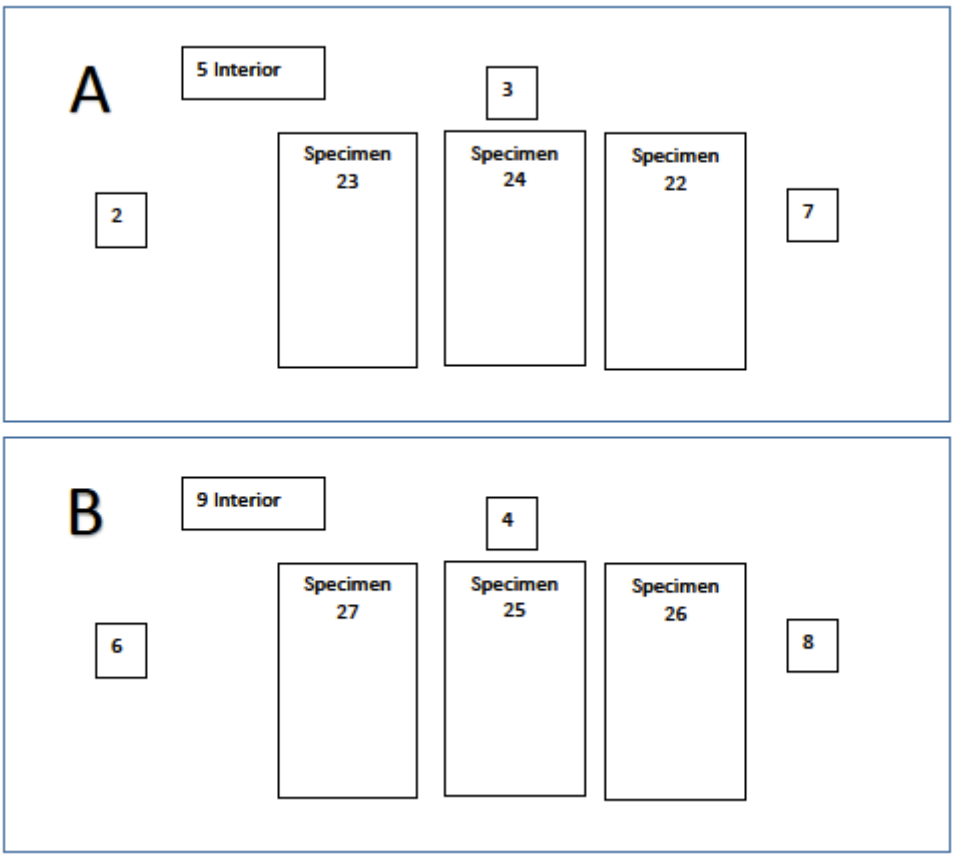

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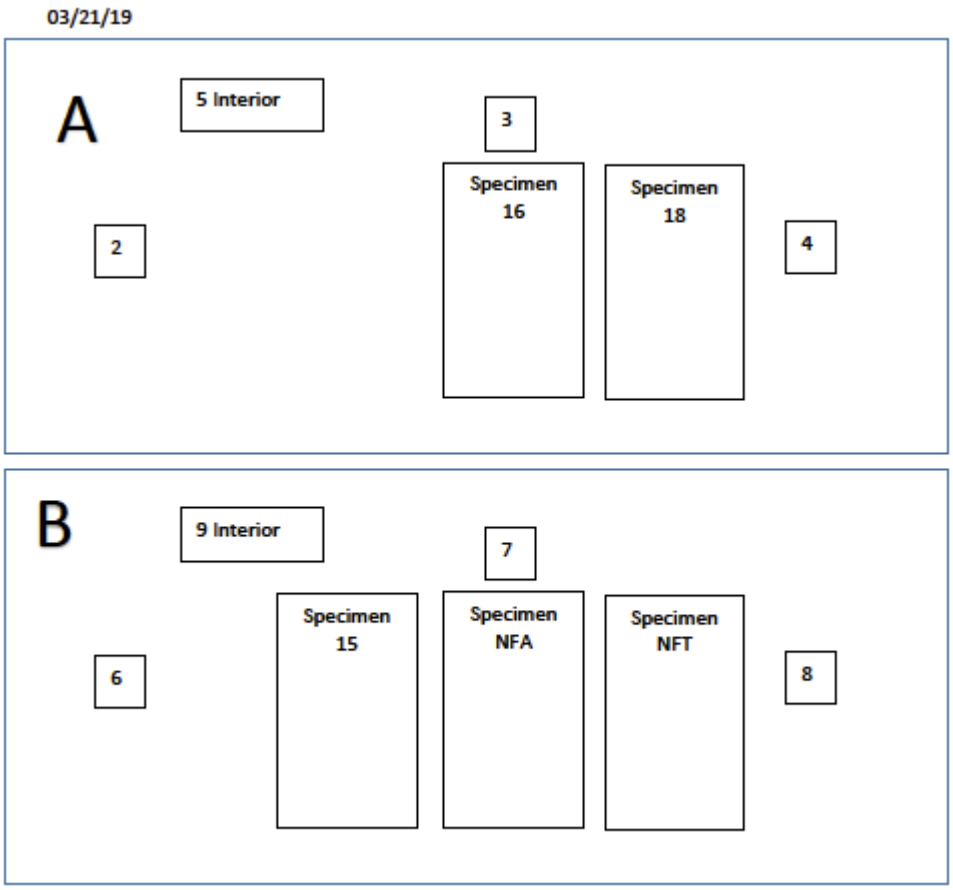

Figure #2
Pressure Sensor Locations

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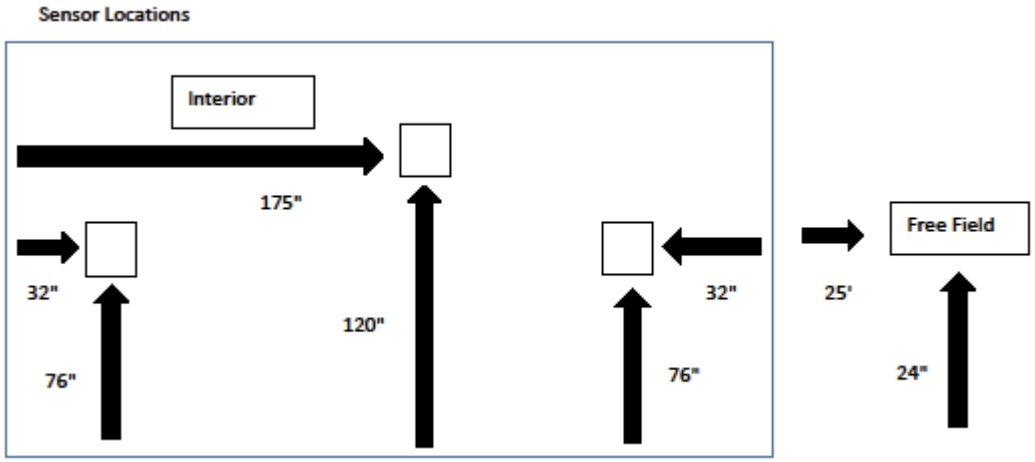

Figure #3
Pressure Sensor Locations

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SECTION 8
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Andy Cost	Intertek B&C
Fred Munoz	Intertek B&C

SECTION 9
TEST SPECIMEN DESCRIPTION

Product Type: Fixed Window
Series/Model Number: Blast Window

Product Type: Fixed Window (Dual Pane, Silicone Glazing Attachment)
Series/Model Number: LLumar SCL SR PS8

Product Sizes: specimens 22, 23, 24, 25, 26, 27

MEASURED DIMENSIONS	WIDTH (inches)	HEIGHT (inches)
Overall Size	48	66
Fixed Day Lite Opening	42-1/2	60-1/2

Product Sizes: specimens 13, 14, 17, 19, 20, 21, 15, 16, 18, No Film Tempered, No Film Annealed

MEASURED DIMENSIONS	WIDTH (inches)	HEIGHT (inches)
Overall Size	48	66
Fixed Day Lite Opening	42-1/2	61

Frame Construction

FRAME MEMBER	MATERIAL	DESCRIPTION
Head, Sill and jambs	Aluminum	Extruded, poured and debridged for thermal improvement
Glass Stop	Aluminum	Extruded, snaps into place on sill frame member to secure the glazing

LOCATION	JOINERY TYPE	DETAIL
All Corners	Square cut and butted	Secured using two #12 x 1 in long pan head screws

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Glazing: specimens 22, 23, 24

GLASS TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING BITE
1" IG	1/4" Annealed	1/4" Annealed	1/4"

Glazing: specimens 25, 26, 27

GLASS TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING BITE
1" IG	1/4" Tempered	1/4" Tempered	1/4"

Spacer: Aluminum; 1/2" air space.

Glazing: specimens 13, 14, 17, 15, 16, 18, No Film Annealed

GLASS TYPE	INTERIOR LITE	GLAZING BITE
1/4" Monolithic	1/4" Annealed	1/4"

Glazing: specimens 19, 20, 21, No Film Tempered

GLASS TYPE	INTERIOR LITE	GLAZING BITE
1/4" Monolithic	1/4" Tempered	1/4"

Glazing Method: The glass was channel glazed from the exterior and was secured in place with snap-fit extruded aluminum glazing stop at the sill and a flexible rubber gasket around the glazing perimeter at the exterior. At the interior on specimens with an attachment system there was no rubber gasket at the interior perimeter. On specimens without an attachment system there was a rubber gasket at the interior perimeter. In all but the no film specimens an 8 mil thick safety and security film was adhered to the interior lite (film applied on the room side).

Attachment System: Specimens 13, 14, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27
A bead of silicone was applied around the interior perimeter of the frame at the glazing edge. 3/4" onto the film and 3/4" onto the frame.

Hardware: No hardware was utilized.

Reinforcement: No reinforcement was utilized.

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SECTION 10

TEST RESULTS
Test Date: 03/13/19
Ambient Temperature: 80±5°F
Relative Humidity: 30%
The results are tabulated as follows. Pressure time plots are presented for each specimen. Pre-test and post-test photographs are provided in Section 12.
Test Specimens #13, 14, 17

DESCRIPTION	**RESULTS**
Ambient Temperature	80°F
Product Temperature	80°F
ASTM Damage Rating	**Low Hazard**
ASTM Hazard Level Category	**H4**
ISO Hazard Description	**Low Hazard**
ISO Hazard Rating	**E**
PEAK POSITIVE PRESSURE	
Top Pressure (3)	10.18 psi
Right Pressure (7)	8.49 psi
Left Pressure (2)	8.34 psi
Average Pressure	**9.34 psi**
Witness Chamber Pressure (5)	1.47 psi
Free Field Pressure (1)	3.57 psi
PEAK POSITIVE PHASE DURATION	
Top Duration (3)	13 msec
Right Duration (7)	17 msec
Left Duration (2)	15 msec
Average Duration	15 msec
Free Field Duration (1)	**16 msec**
PEAK POSITIVE PHASE IMPULSE	
Top Impulse (3)	36 psi*msec
Right Impulse (7)	34 psi*msec
Left Impulse (2)	39 psi*msec
Average Impulse	**36 psi*msec**
Free Field Impulse (1)	**21** psi*msec
Window/FRAME RESPONSE	
Frame	Bent
Glass	Pullout and tears over 50%
WITNESS CHAMBER RESULTS	
Fragments up to 3m from specimen and less than 10 perforations in witness panel each.	

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Test Specimens #19, 20, 21

DESCRIPTION	RESULTS
Ambient Temperature	80°F
Product Temperature	80°F
ASTM Damage Rating	**Low Hazard**
ASTM Hazard Level Category	**H4**
ISO Hazard Description	**Low Hazard**
ISO Hazard Rating	**E**
PEAK POSITIVE PRESSURE	
Top Pressure (4)	9.49 psi
Right Pressure (8)	9.79 psi
Left Pressure (6)	8.54 psi
Average Pressure	**8.94 psi**
Witness Chamber Pressure (9)	1.13 psi
Free Field Pressure (1)	3.57 psi
PEAK POSITIVE PHASE DURATION	
Top Duration (4)	14 msec
Right Duration (8)	13 msec
Left Duration (6)	17 msec
Average Duration	15 msec
Free Field Duration (1)	**16 msec**
PEAK POSITIVE PHASE IMPULSE	
Top Impulse (4)	39 psi*msec
Right Impulse (8)	38 psi*msec
Left Impulse (6)	35 psi*msec
Average Impulse	**38 psi*msec**
Free Field Impulse (1)	**21** psi*msec
Window/FRAME RESPONSE	
Frame	Bent
Glass	Pullout and tears over 50%
WITNESS CHAMBER RESULTS	
Fragments up to 3m from specimen and less than 10 perforations in witness panel each.	

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Test Date: 03/14/19
Ambient Temperature: 80±5°F
Relative Humidity: 30%
The results are tabulated as follows. Pressure time plots are presented for each specimen. Pre-test and post-test photographs are provided in Section 12.

Test Specimens #22, 23, 24

DESCRIPTION	**RESULTS**
Ambient Temperature	79°F
Product Temperature	79°F
ASTM Damage Rating	**No Hazard**
ASTM Hazard Level Category	**H1**
ISO Hazard Description	**No Hazard**
ISO Hazard Rating	**B**
PEAK POSITIVE PRESSURE	
Top Pressure (3)	8.07 psi
Right Pressure (7)	7.78 psi
Left Pressure (2)	7.97 psi
Average Pressure	**7.94 psi**
Witness Chamber Pressure (5)	1.37 psi
Free Field Pressure (1)	3.05 psi
PEAK POSITIVE PHASE DURATION	
Top Duration (3)	16 msec
Right Duration (7)	17 msec
Left Duration (2)	16 msec
Average Duration	16 msec
Free Field Duration (1)	**17 msec**
PEAK POSITIVE PHASE IMPULSE	
Top Impulse (3)	42 psi*msec
Right Impulse (7)	31 psi*msec
Left Impulse (2)	33 psi*msec
Average Impulse	**36 psi*msec**
Free Field Impulse (1)	**19** psi*msec
Window/FRAME RESPONSE	
Frame	Bent
Glass	Broke, No tears or pullout
WITNESS CHAMBER RESULTS	
No Fragments or Debris inside chamber	

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Test Specimens #25, 26, 27

DESCRIPTION	RESULTS
Ambient Temperature	80°F
Product Temperature	80°F
ASTM Damage Rating	**No Break (Specimens 27, 25)**
ASTM Hazard Level Category	**H1 (Specimens 27, 25)**
ISO Hazard Description	**No Break (Specimens 27, 25)**
ISO Hazard Rating	**B (Specimens 27, 25)**
ASTM Damage Rating	**No Hazard (Specimen 26)**
ASTM Hazard Level Category	**H1 (Specimen 26)**
ISO Hazard Description	**No Hazard (Specimen 26)**
ISO Hazard Rating	**B (Specimen 26)**
PEAK POSITIVE PRESSURE	
Top Pressure (4)	No Reading
Right Pressure (8)	9.28 psi
Left Pressure (6)	8.65 psi
Average Pressure	**8.96 psi**
Witness Chamber Pressure (9)	1.56 psi
Free Field Pressure (1)	3.05 psi
PEAK POSITIVE PHASE DURATION	
Top Duration (4)	No Reading
Right Duration (8)	15 msec
Left Duration (6)	15 msec
Average Duration	15 msec
Free Field Duration (1)	**17 msec**
PEAK POSITIVE PHASE IMPULSE	
Top Impulse (4)	No Reading
Right Impulse (8)	40 psi*msec
Left Impulse (6)	36 psi*msec
Average Impulse	**38 psi*msec**
Free Field Impulse (1)	**19** psi*msec
Window/FRAME RESPONSE	
Frame	Bent
Glass	No tears or pullout
WITNESS CHAMBER RESULTS	
No Fragments or Debris inside chamber	

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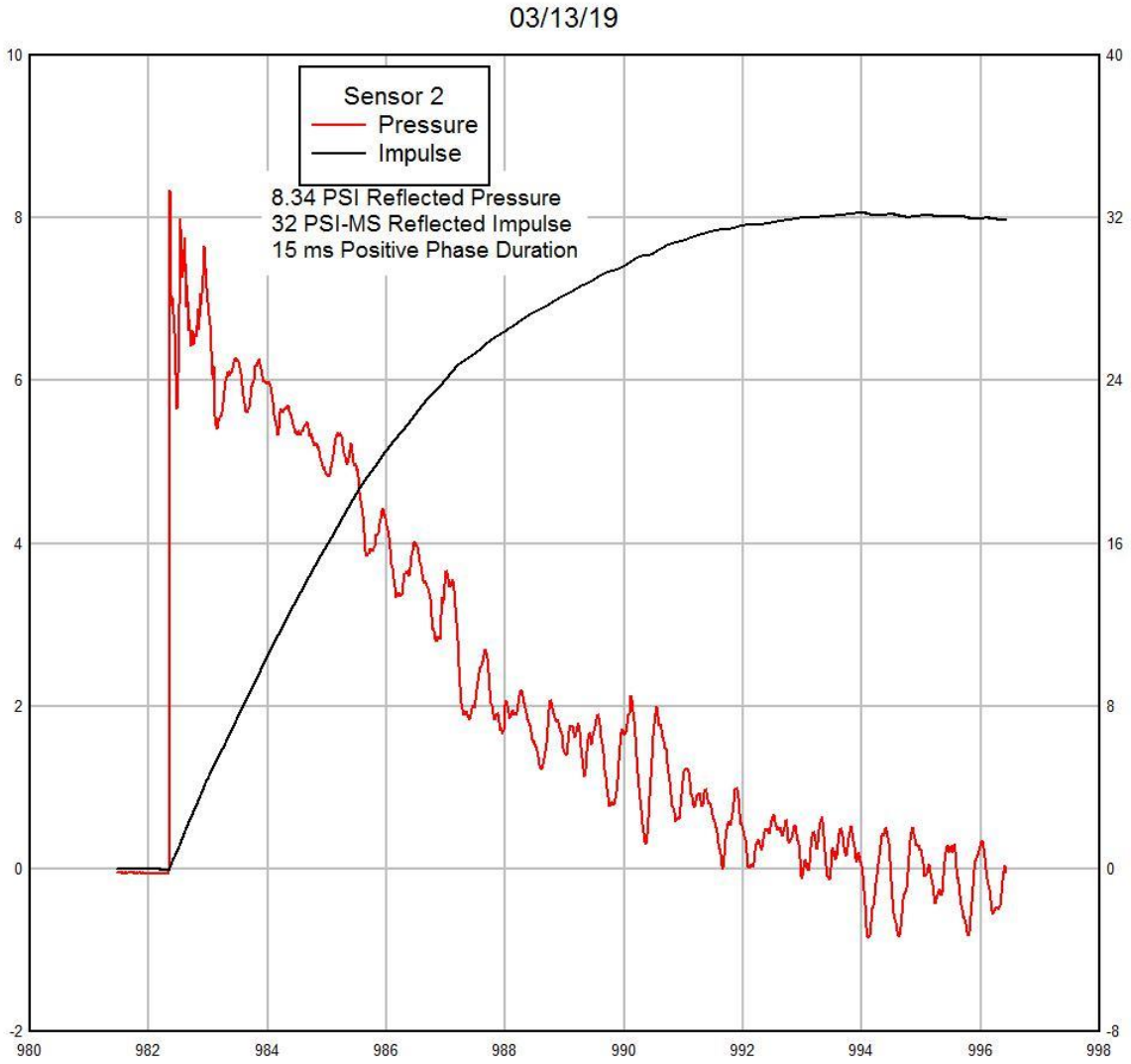
Test Specimen #13, 14, 17 – Chamber A Pressure Time Plots



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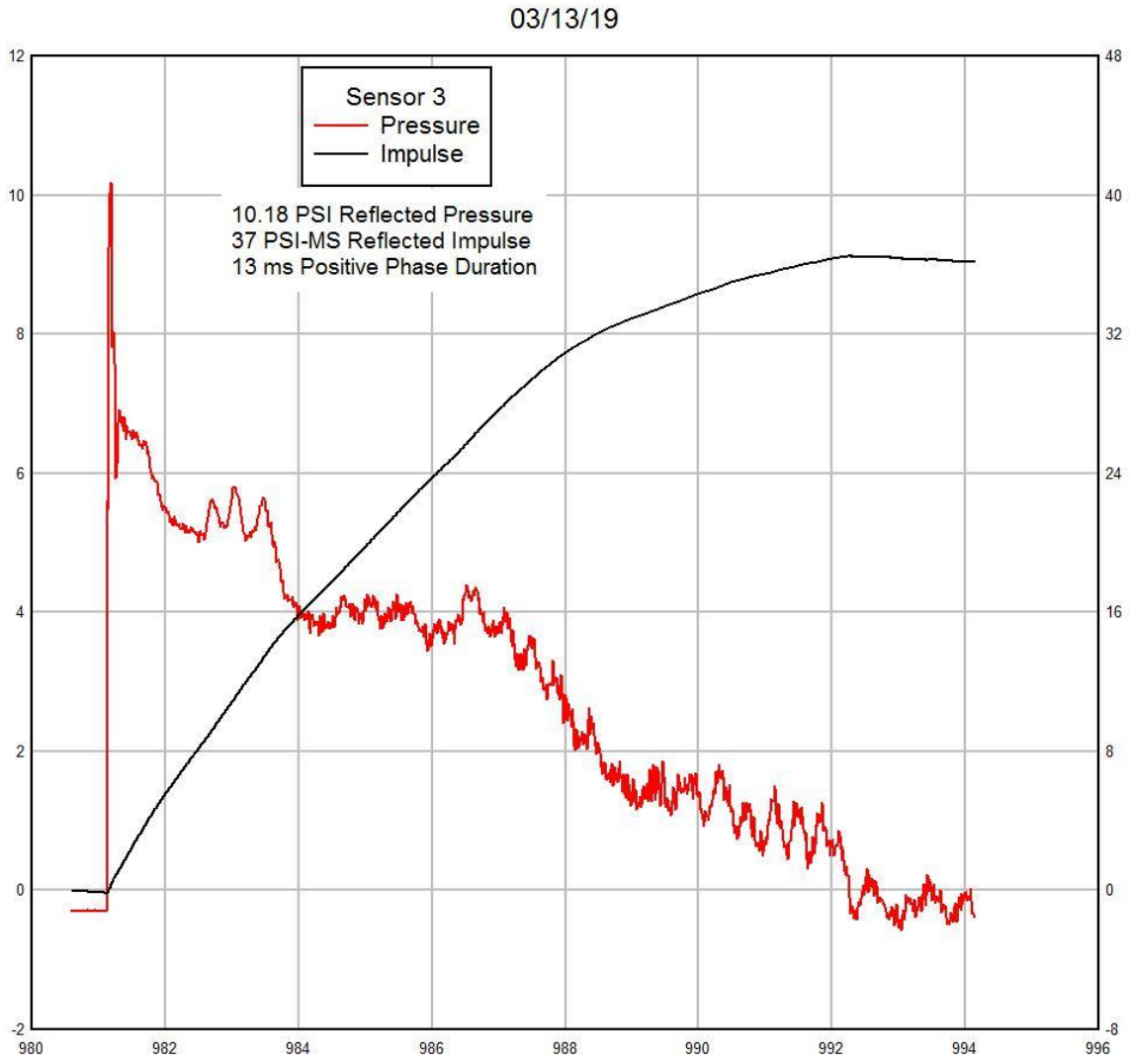

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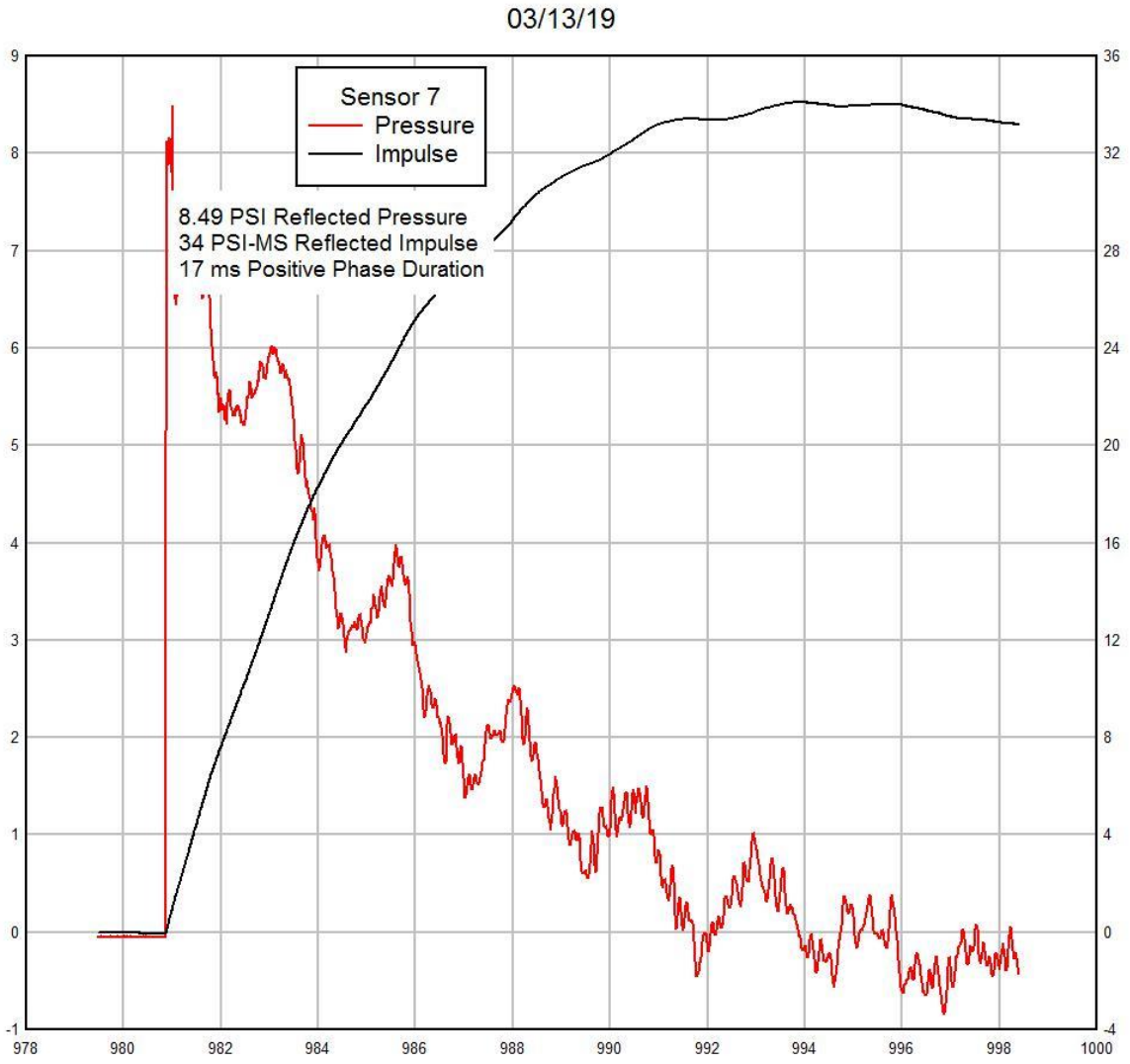

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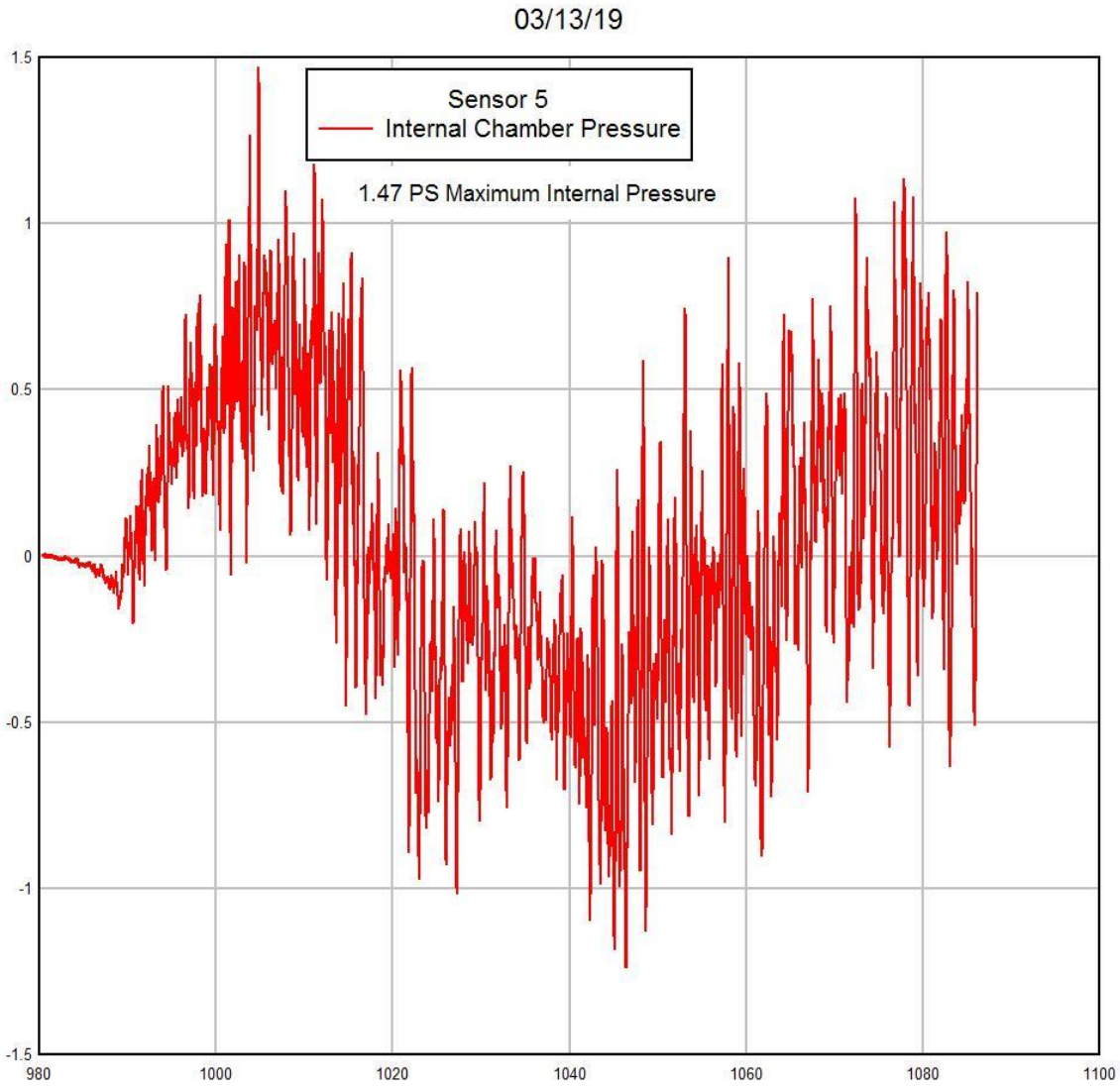

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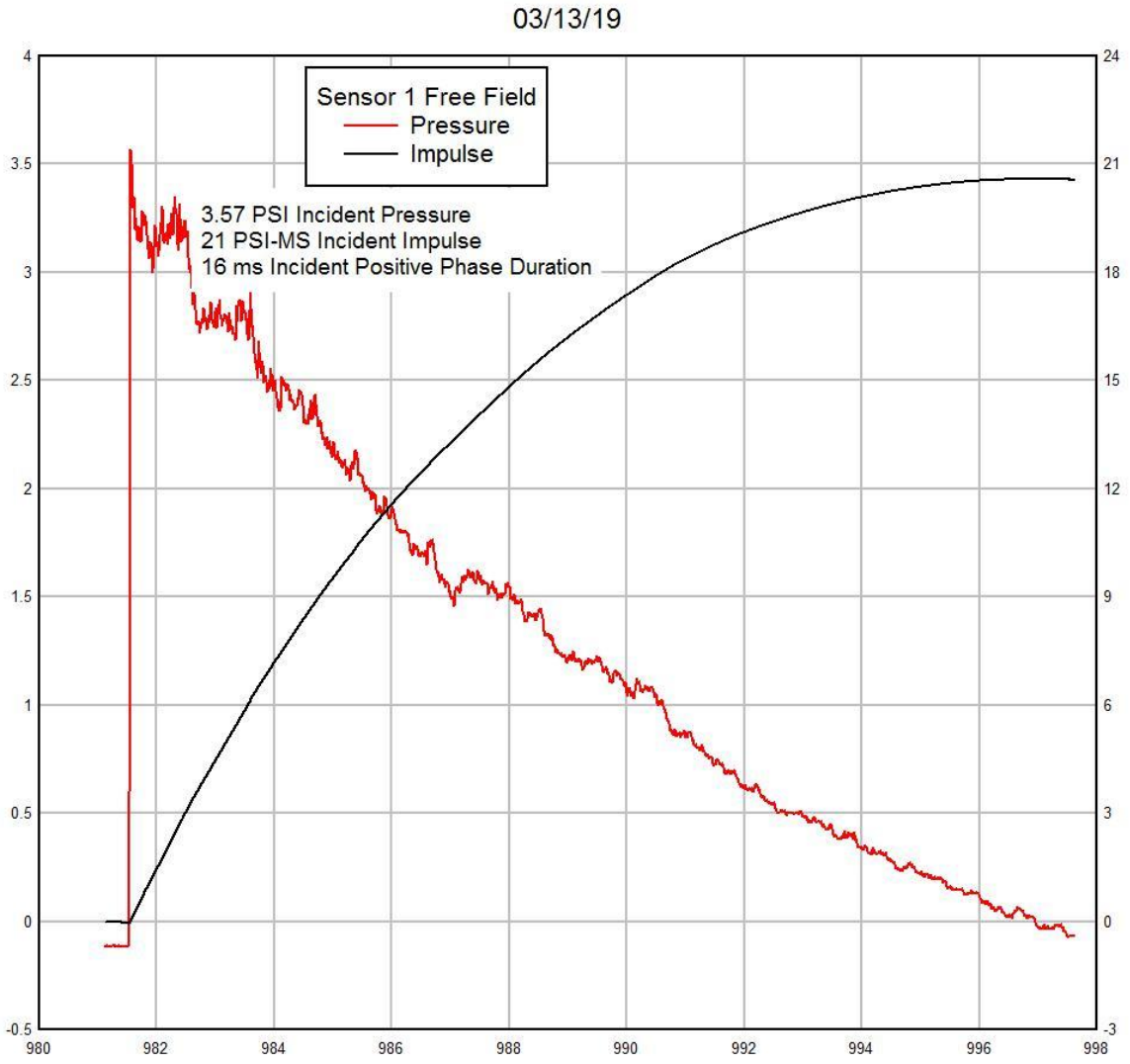

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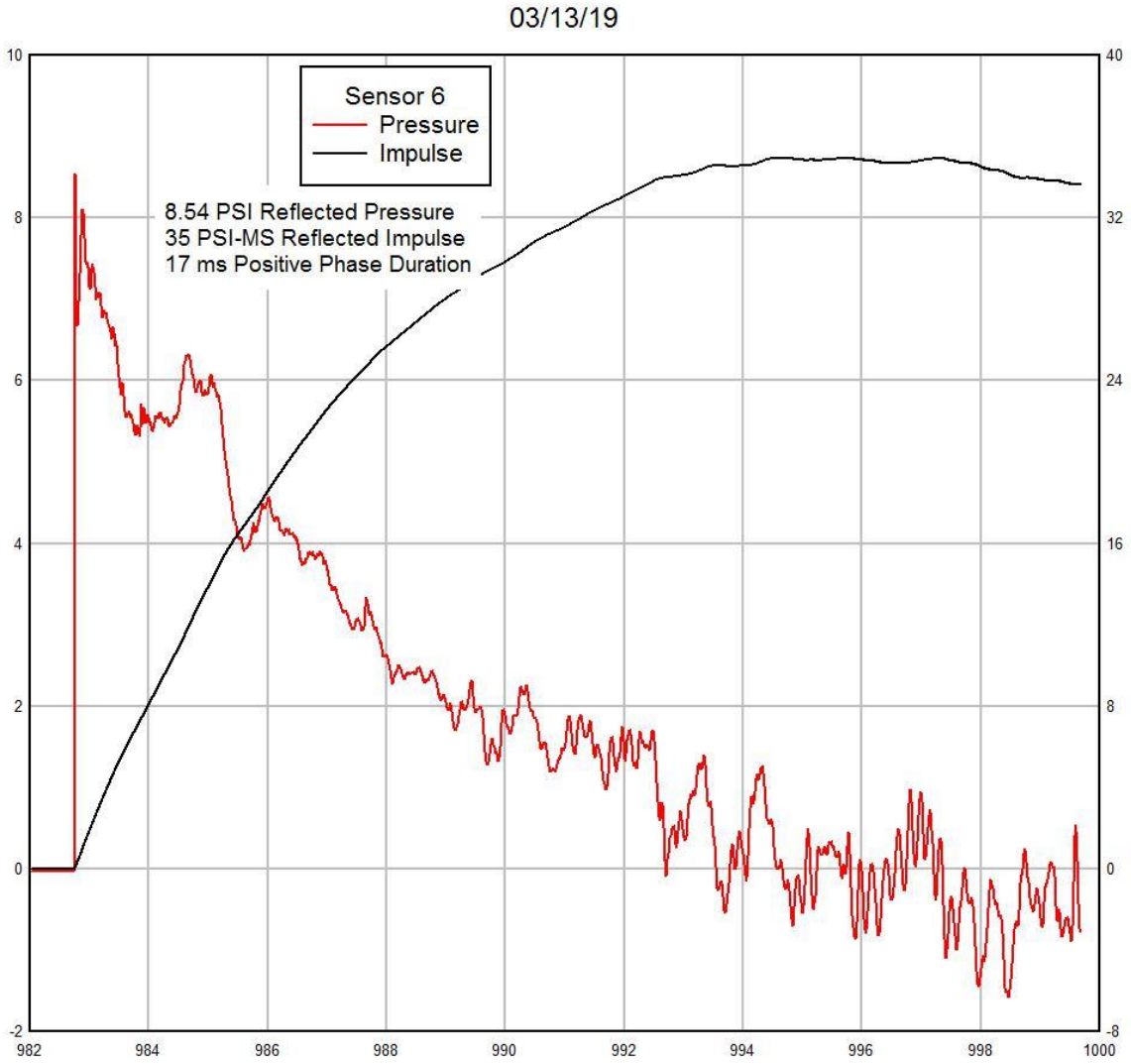
Test Specimen #19, 20, 21 – Chamber B Pressure Time Plots



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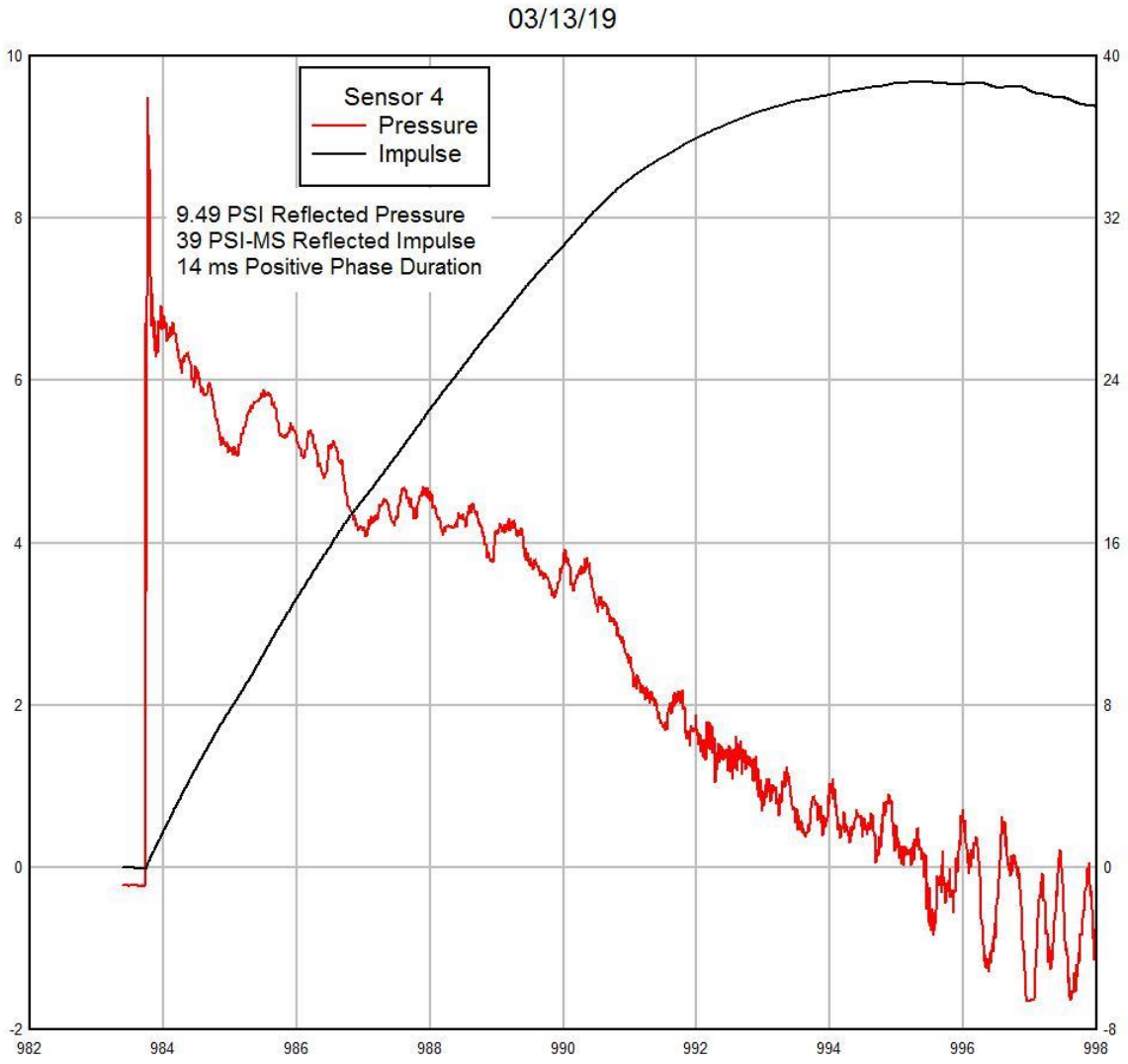

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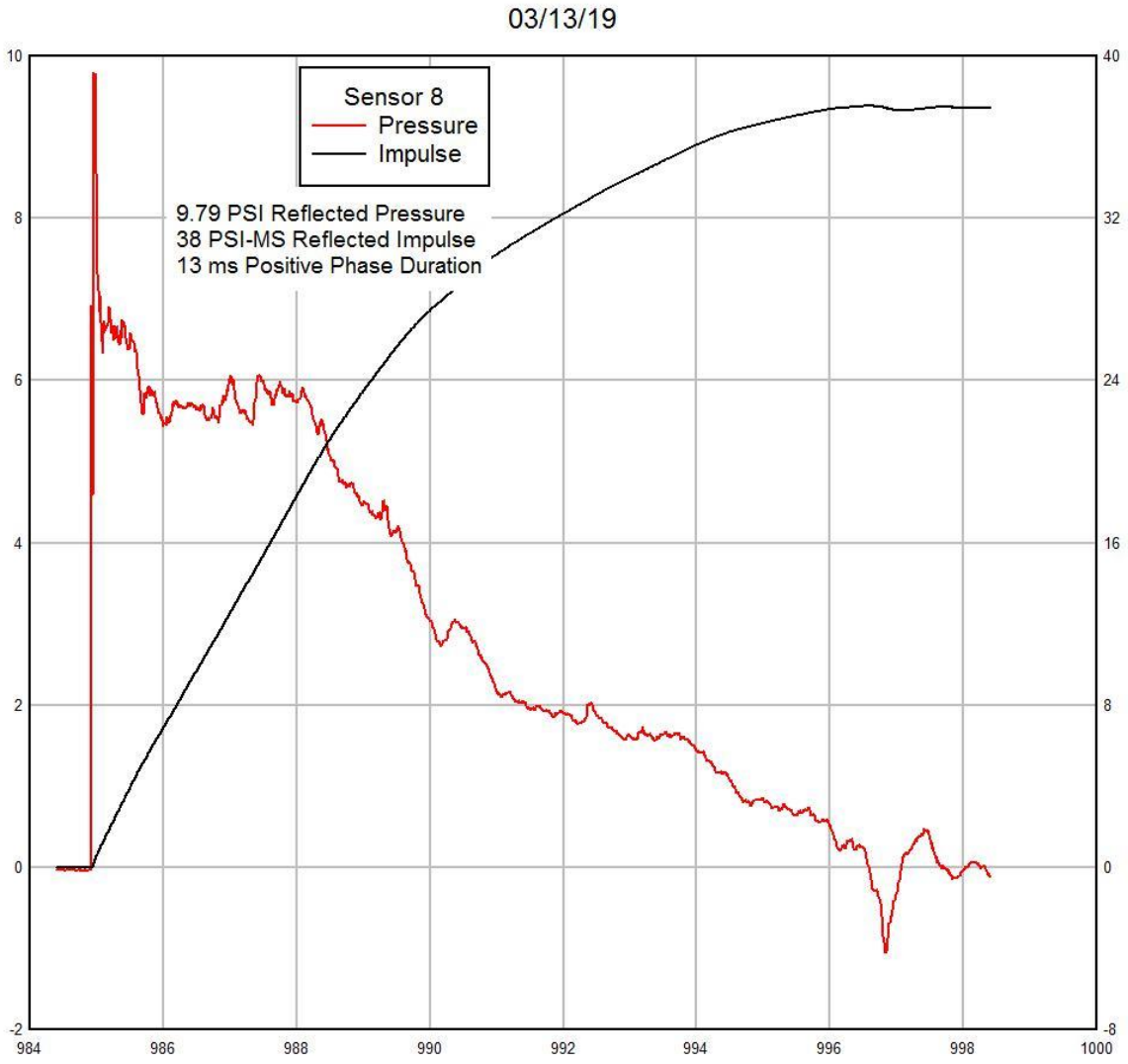

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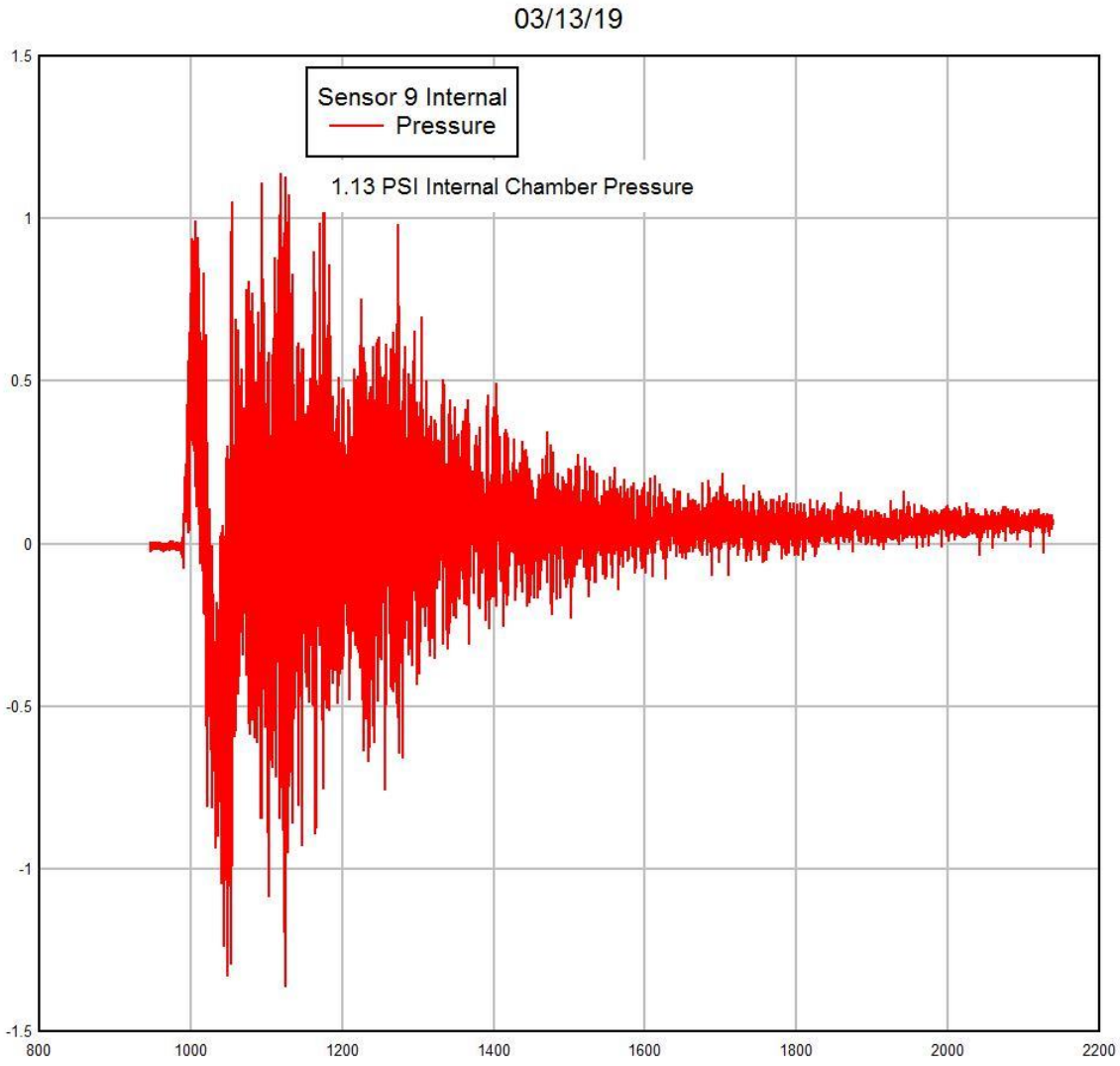

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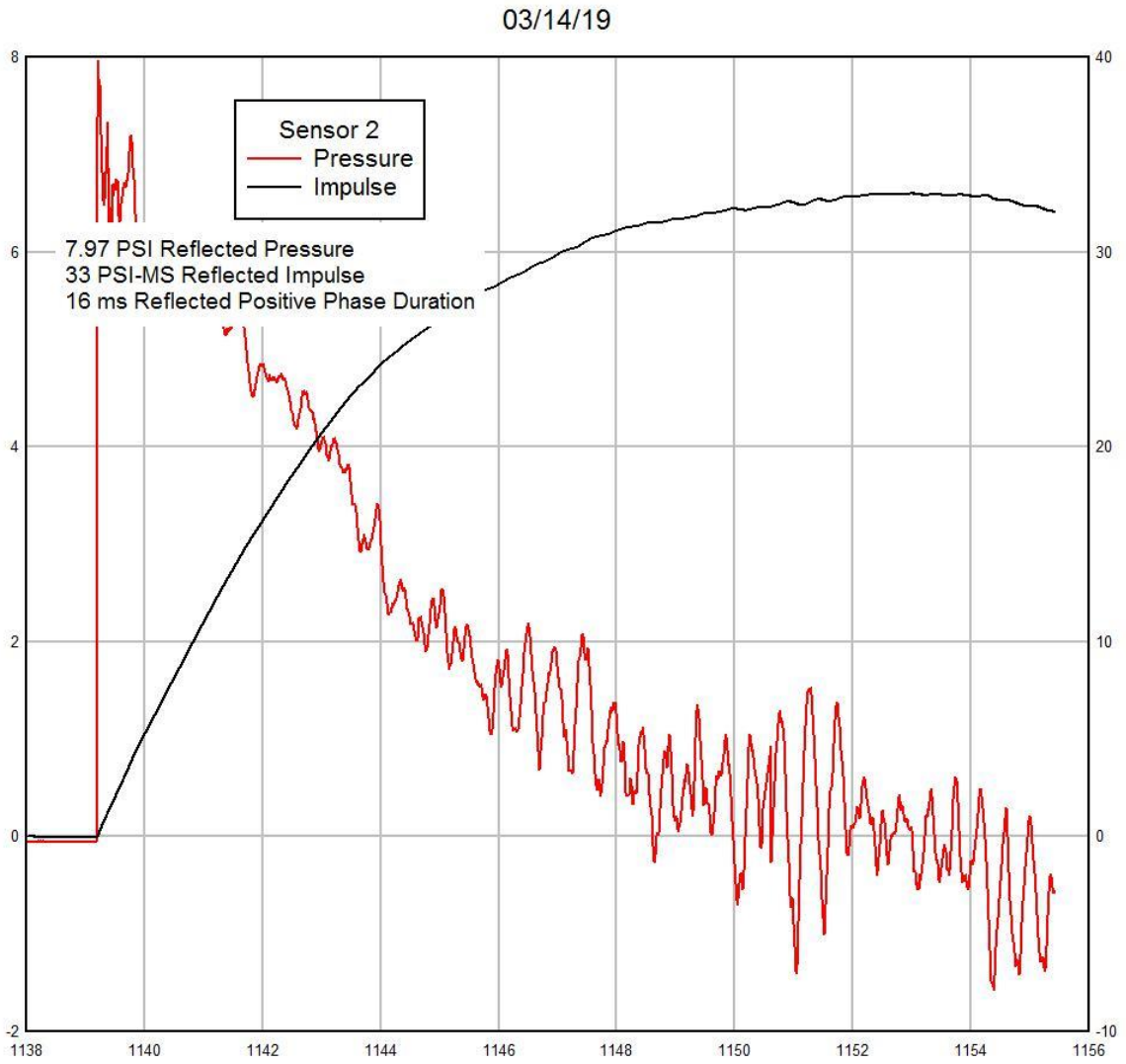
Test Specimen #22, 23, 24 – Chamber A Pressure Time Plots



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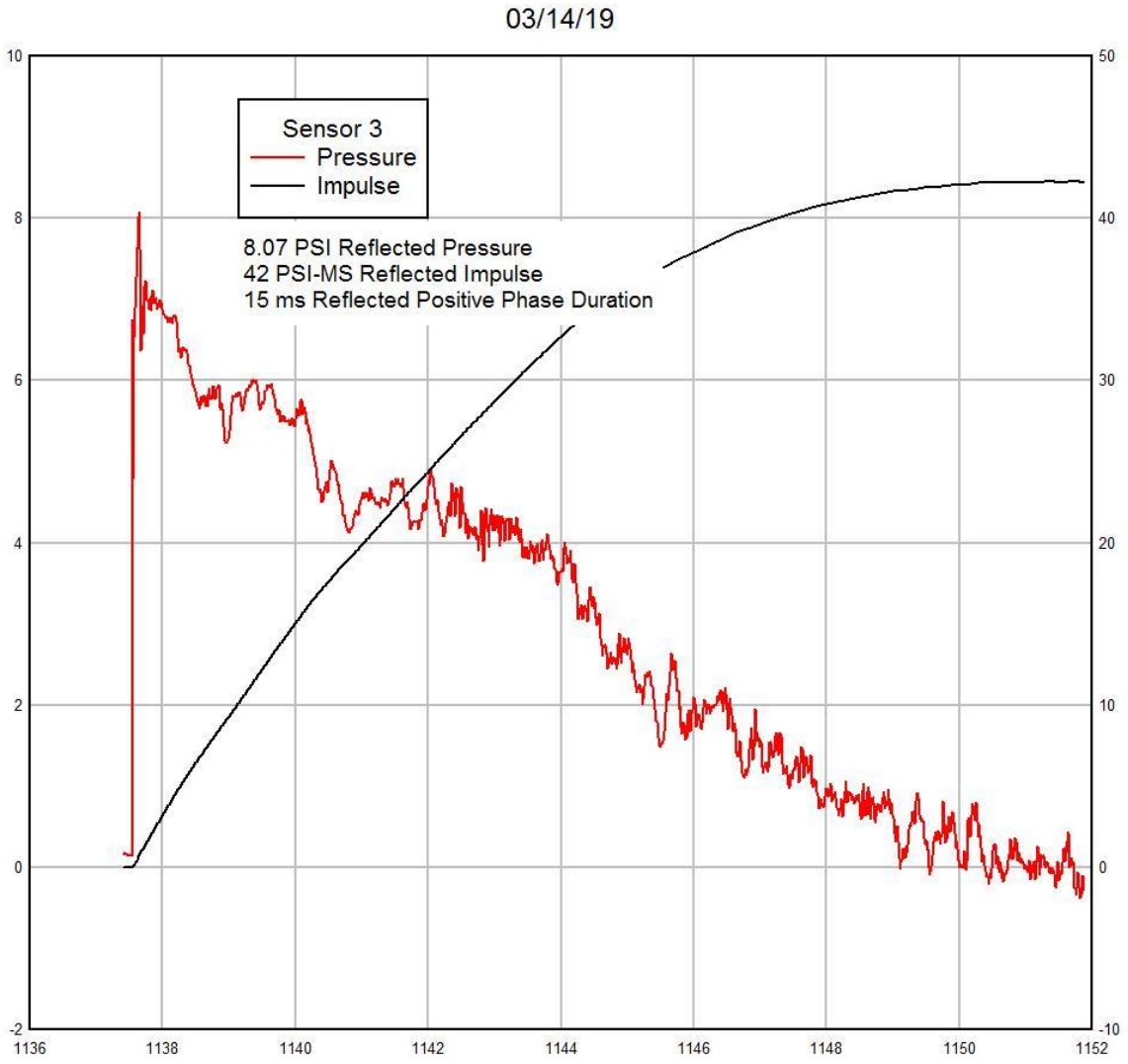

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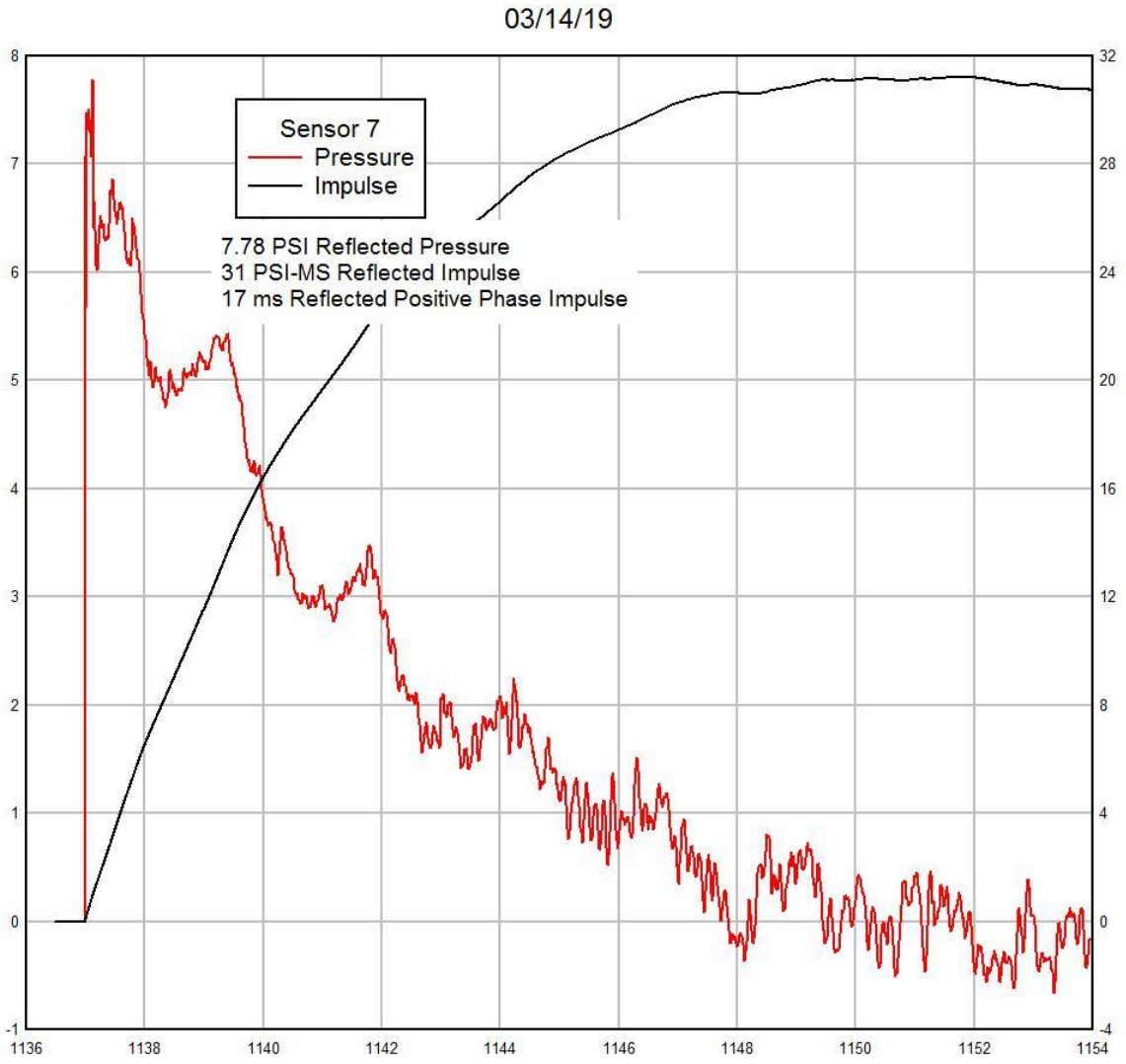

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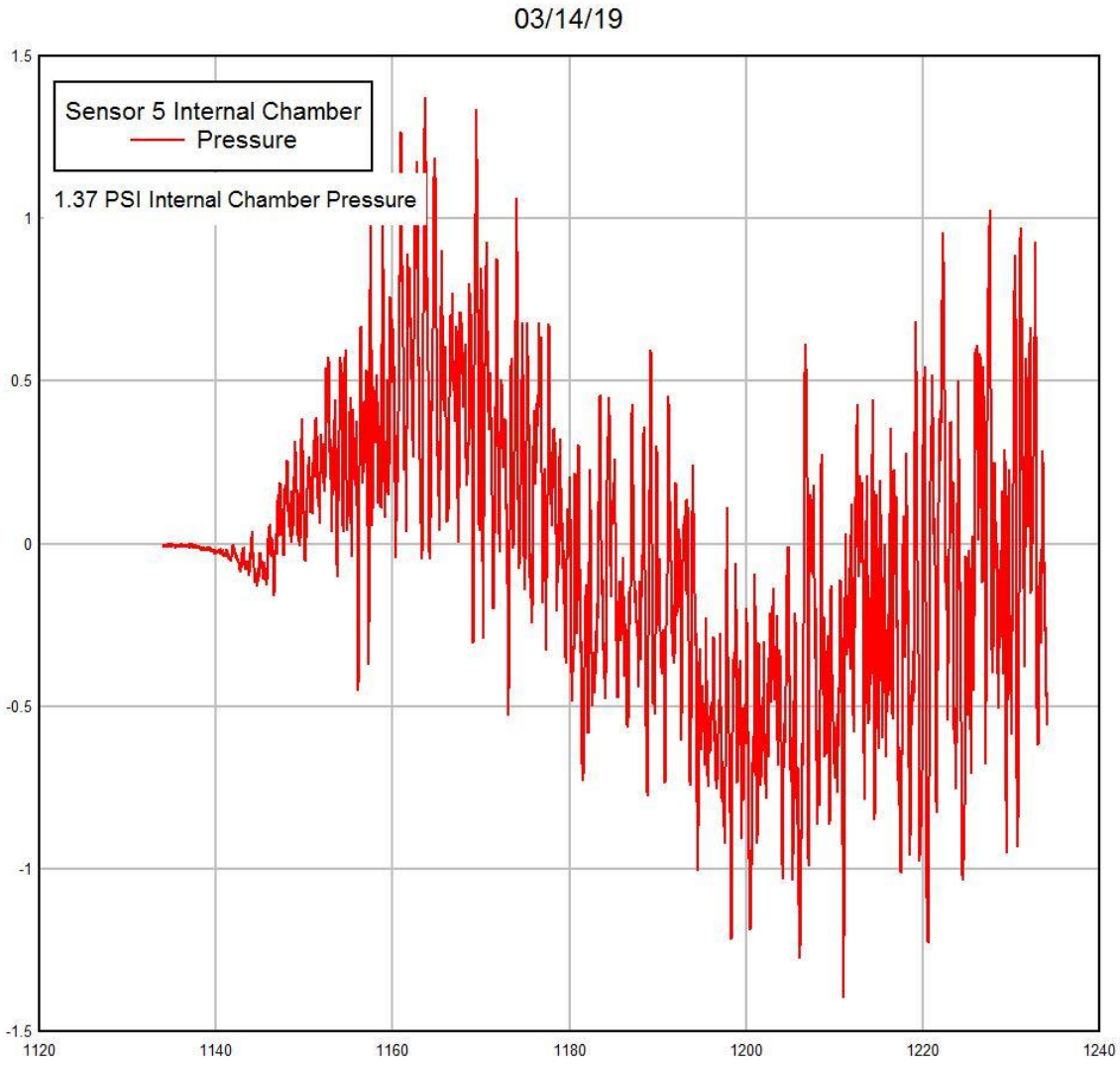

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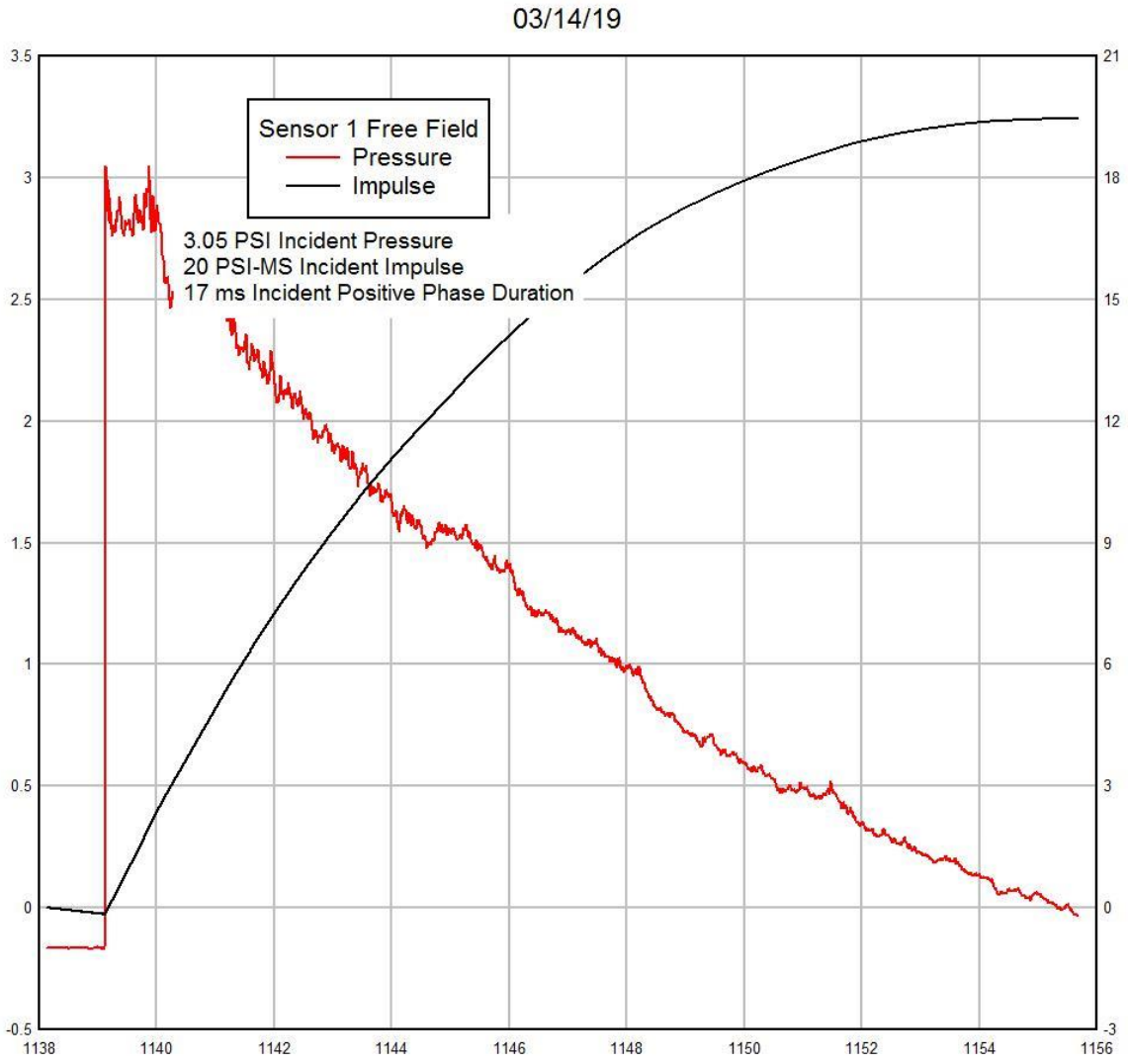

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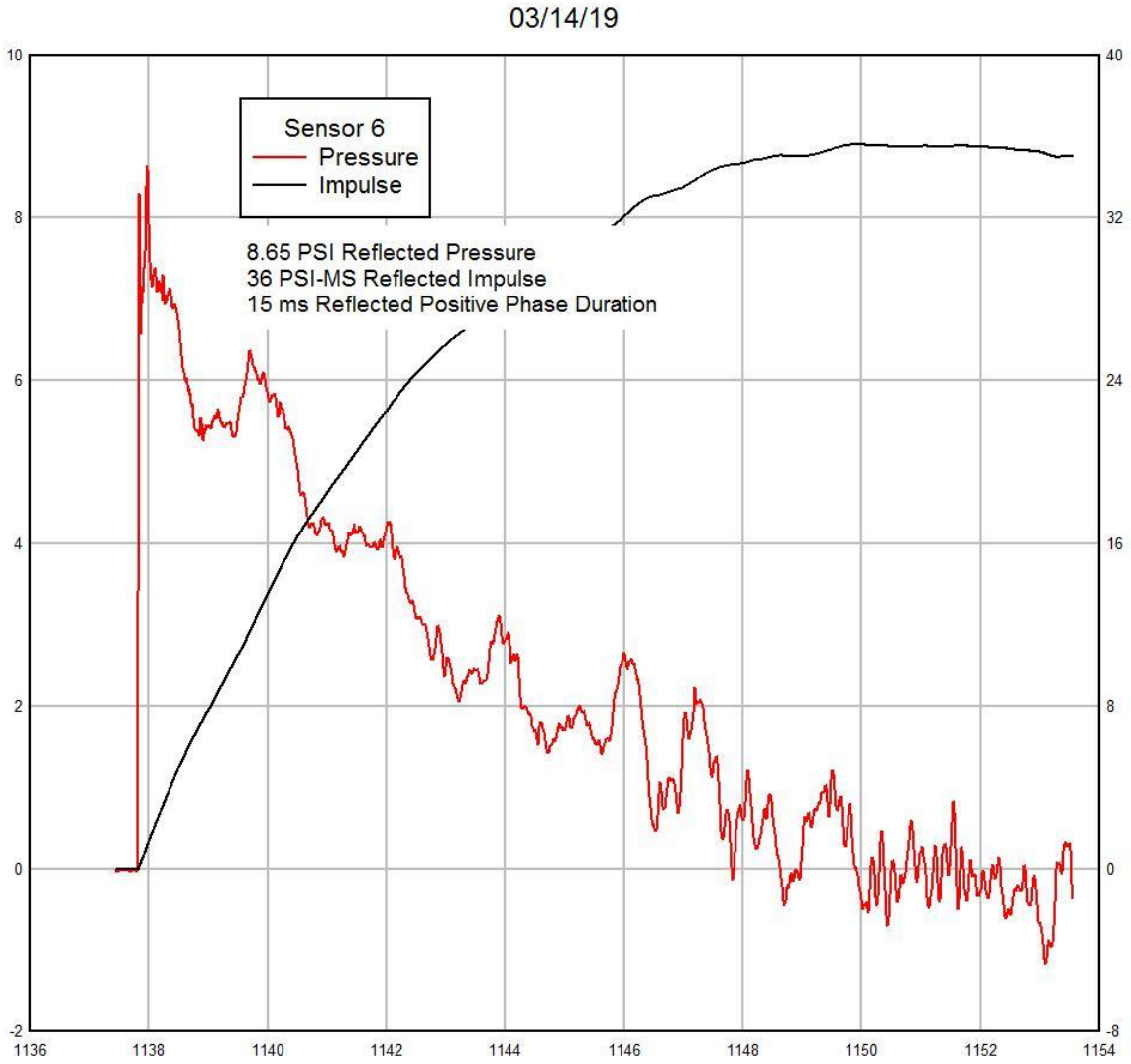
Test Specimen #25, 26, 27 – Chamber B Pressure Time Plots



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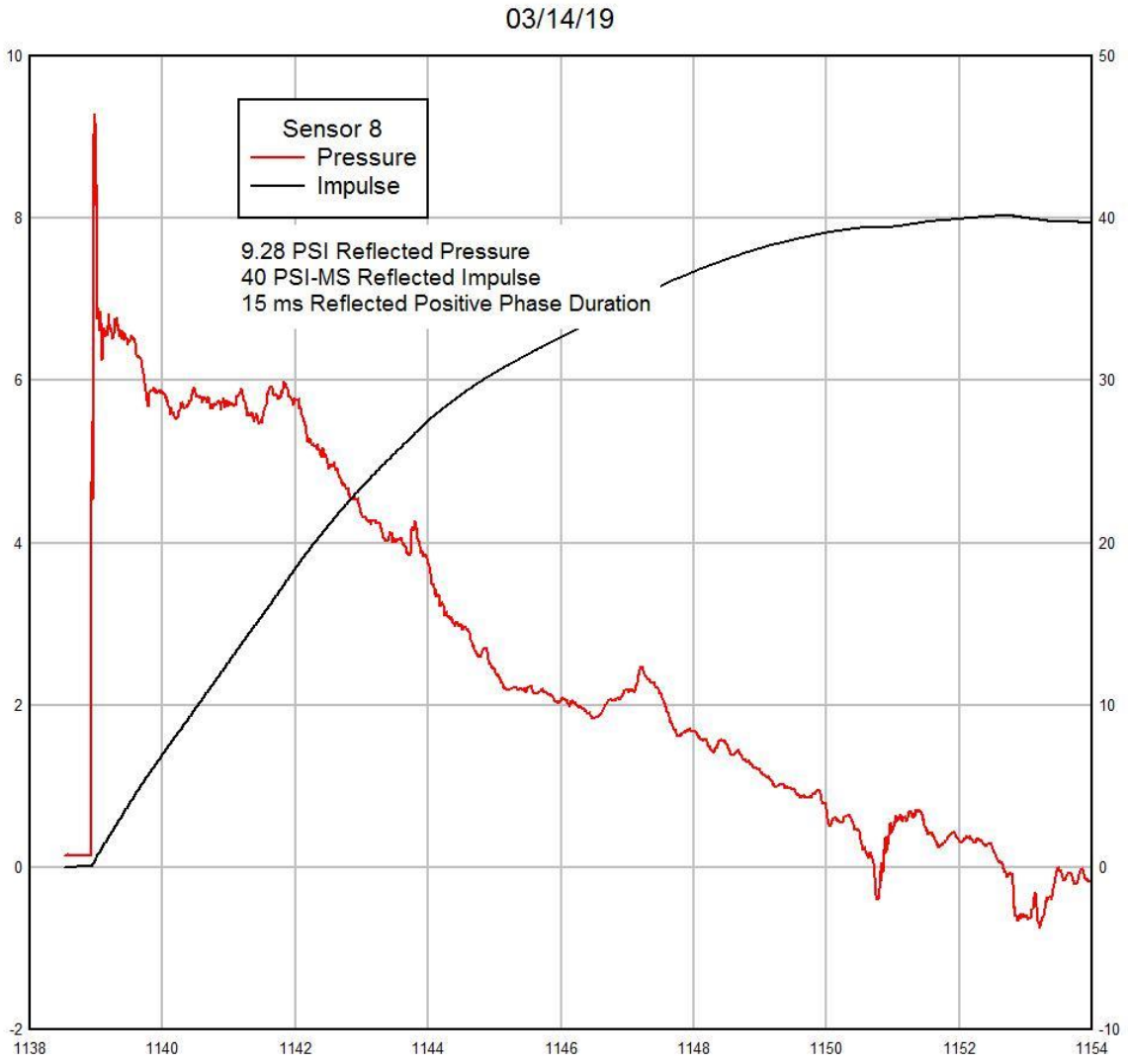

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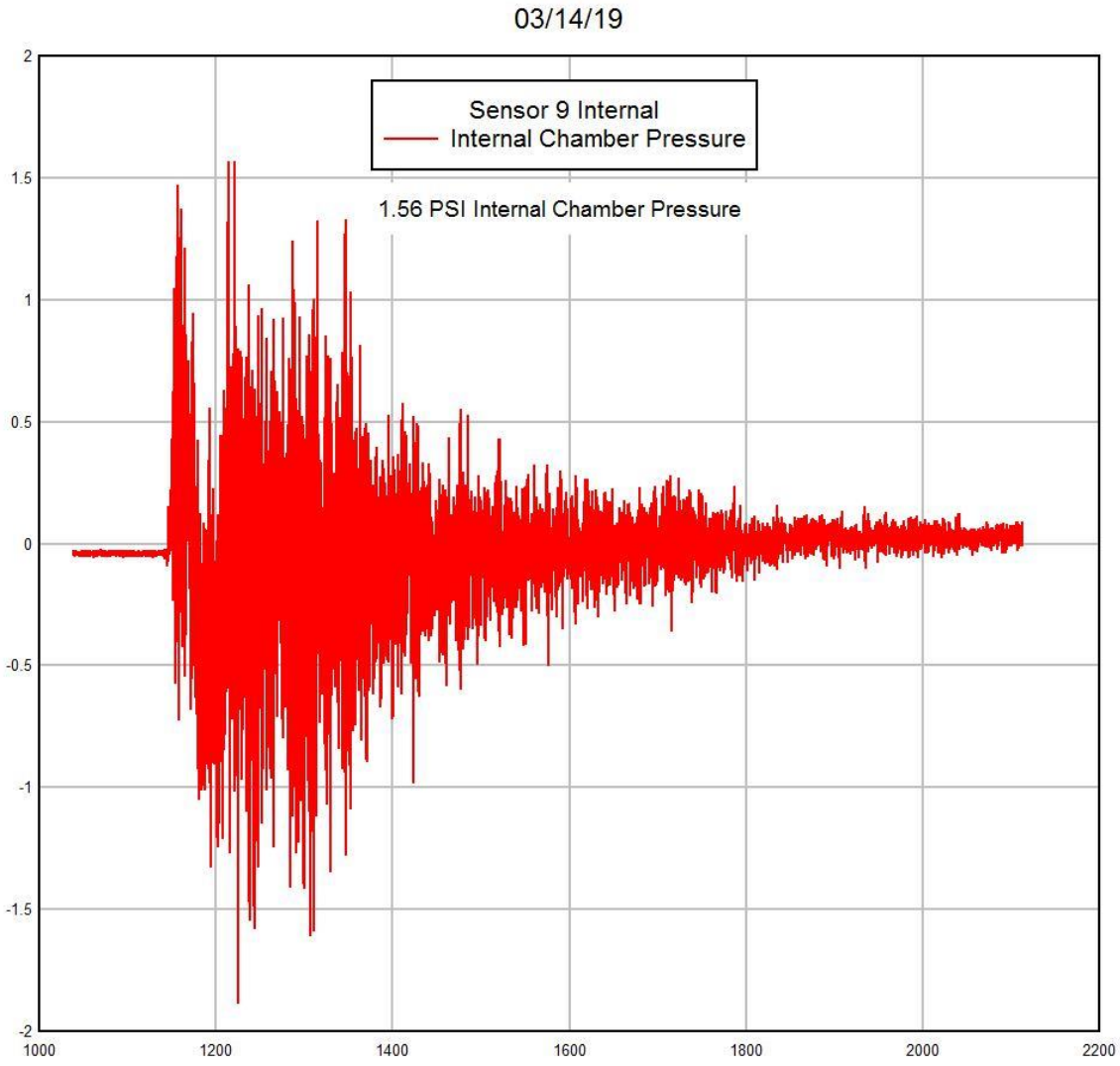

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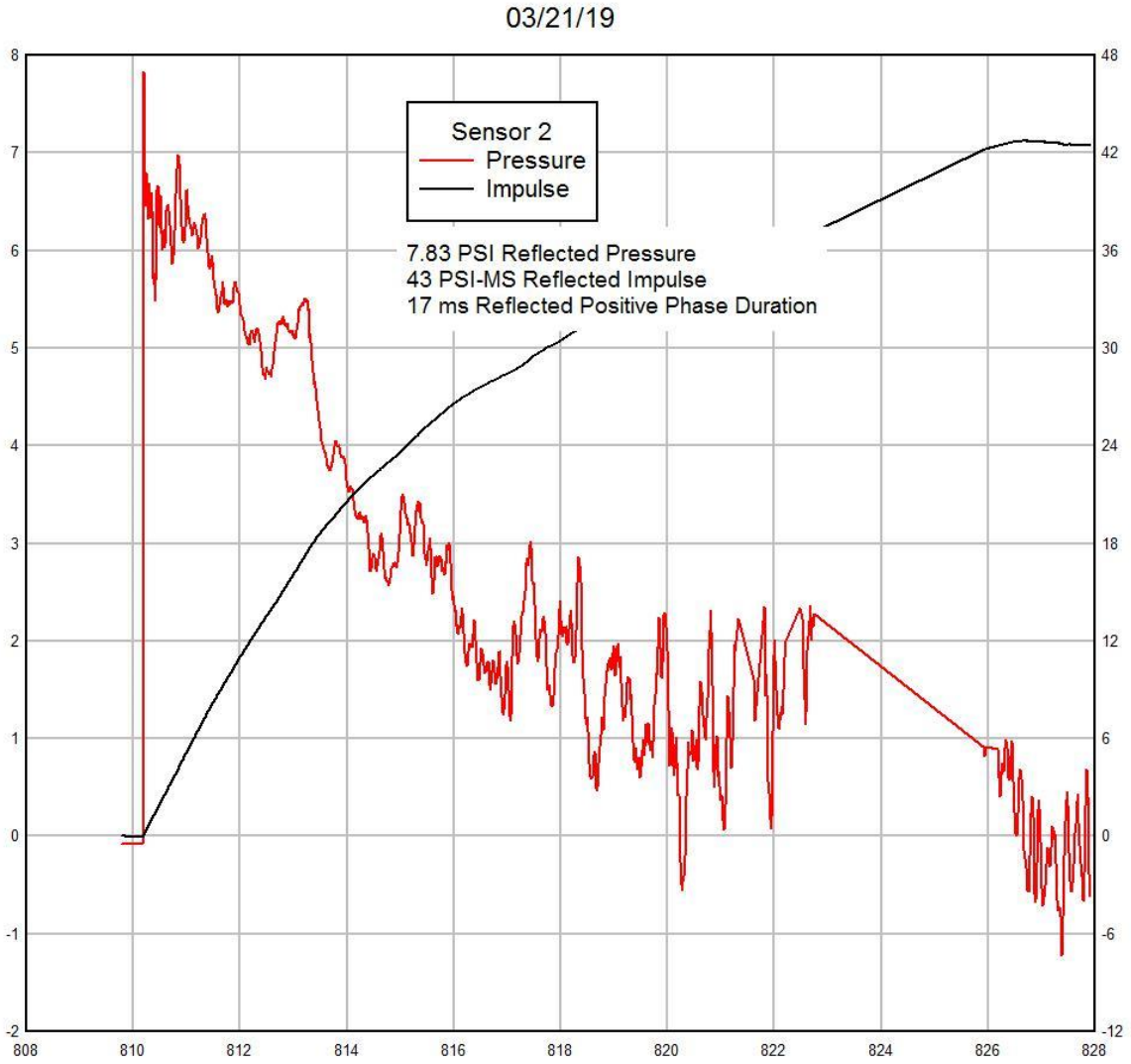
Test Specimen #16, 18 – Chamber A Pressure Time Plots



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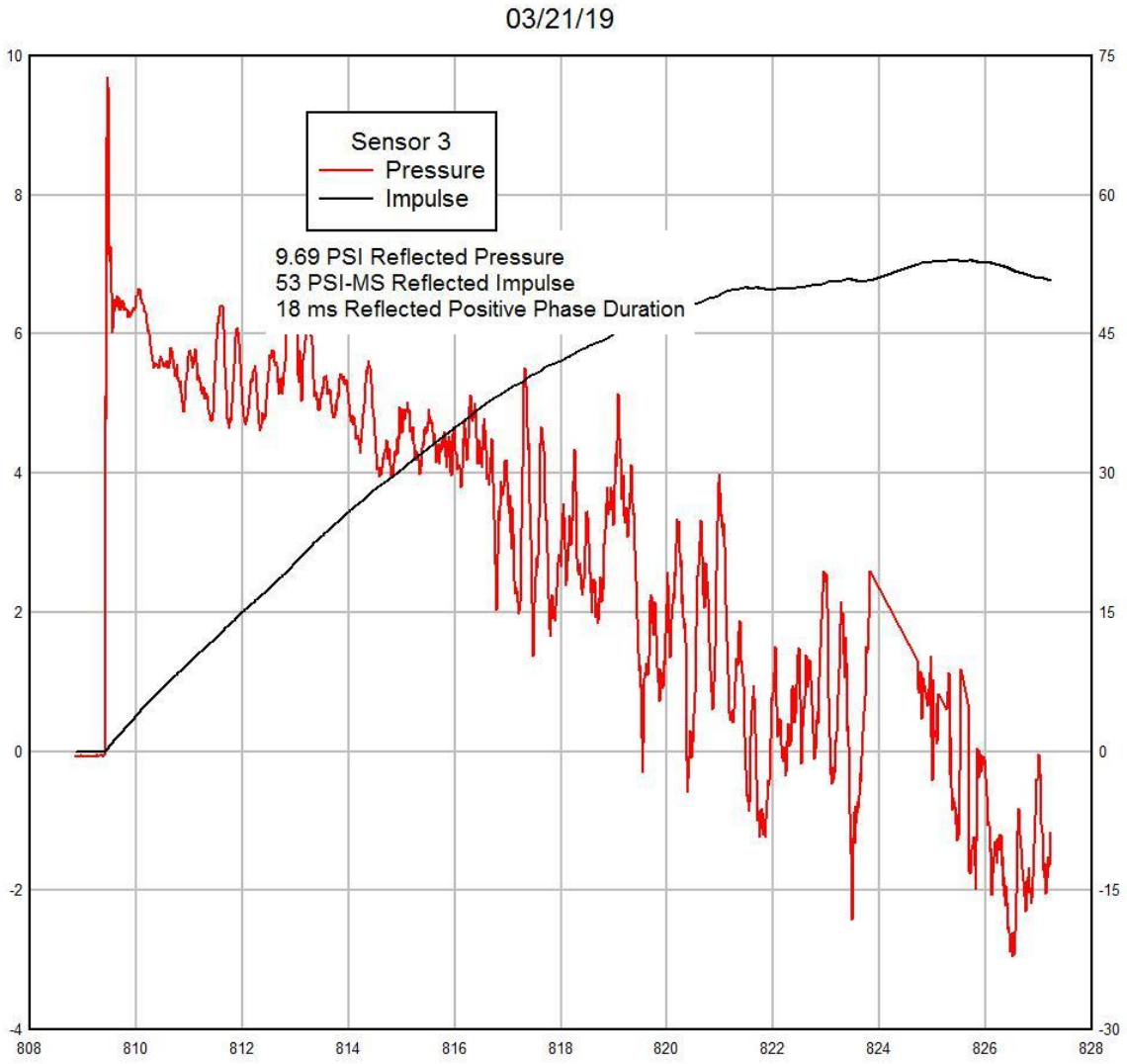

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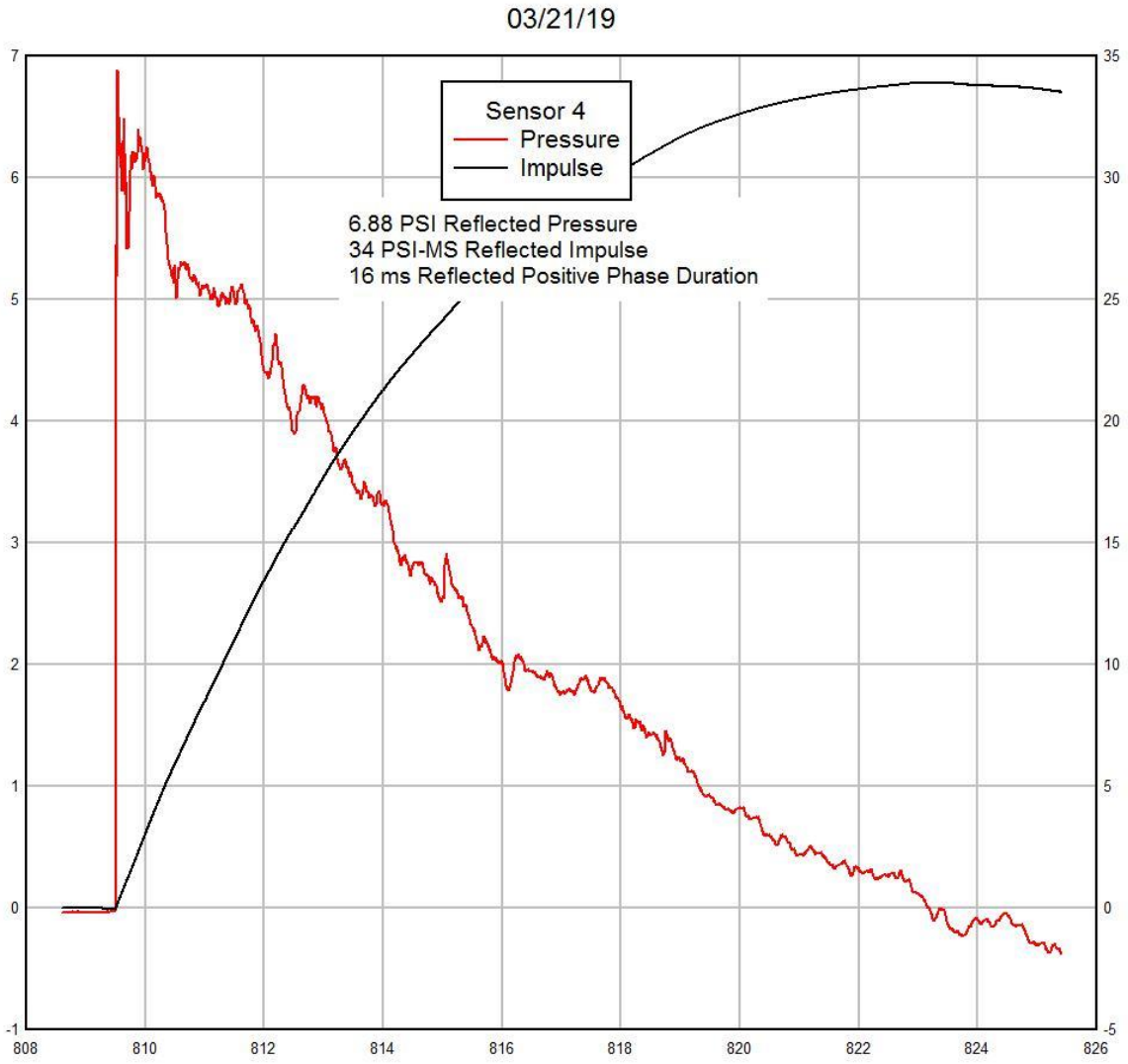

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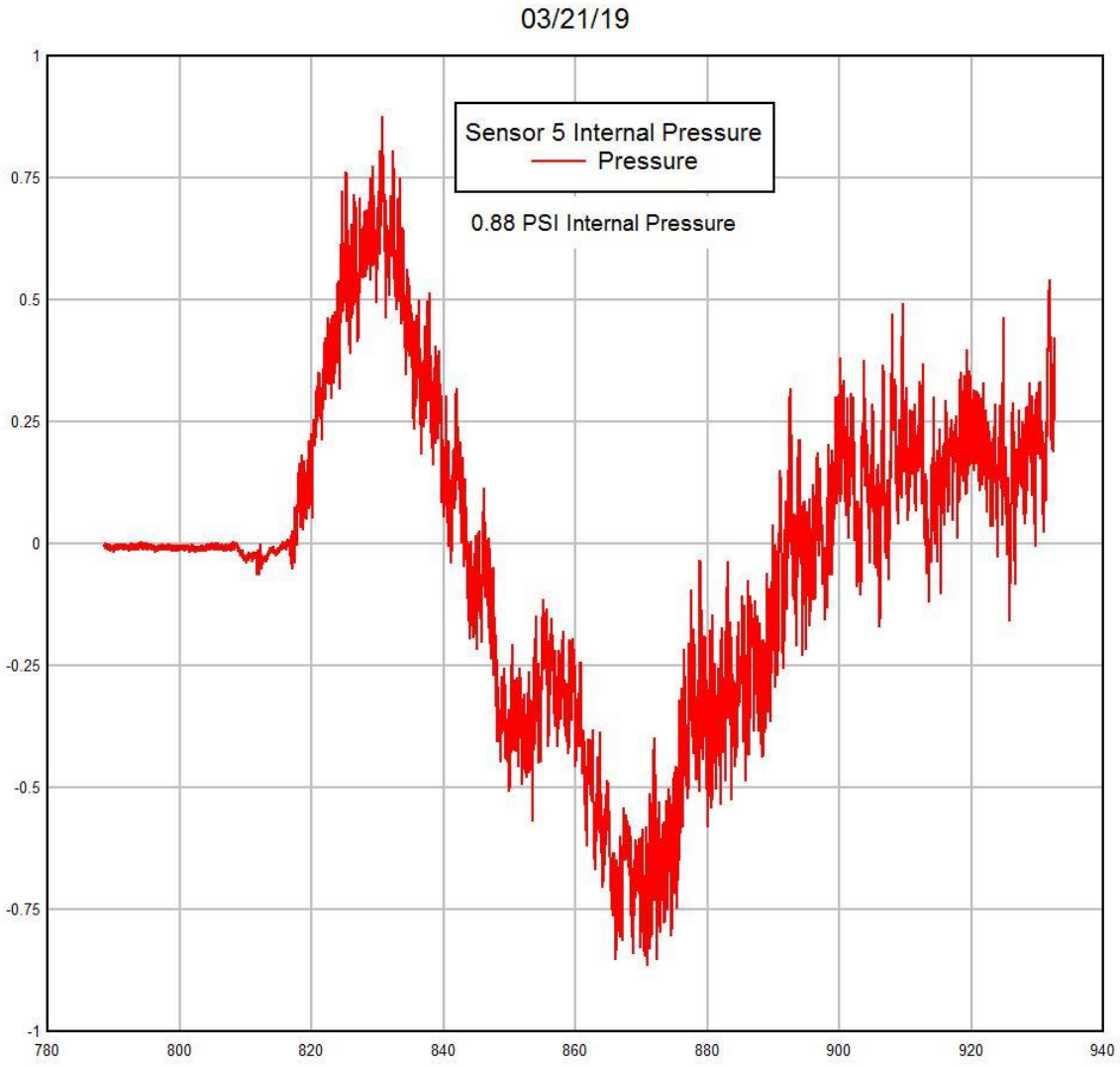

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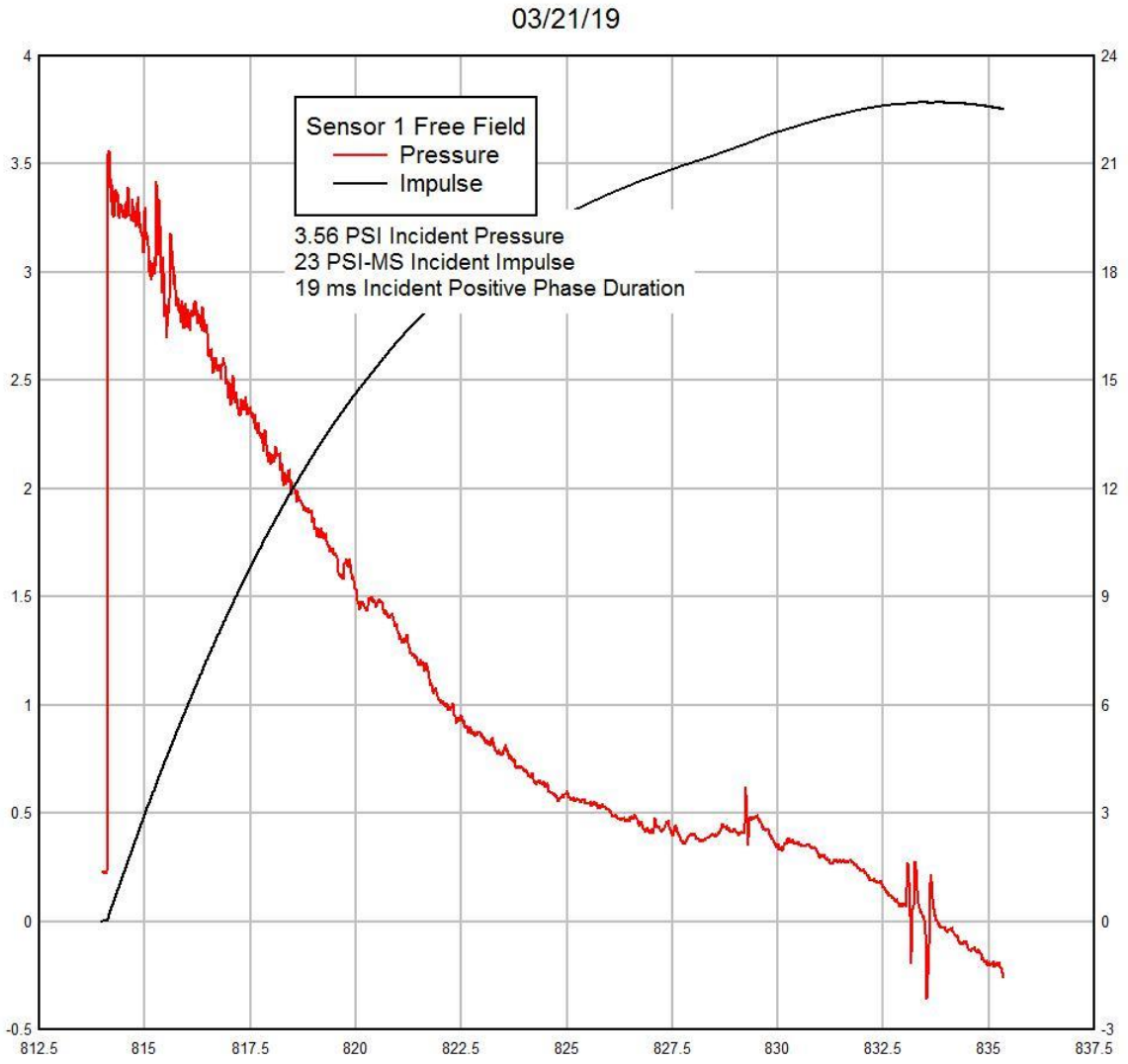

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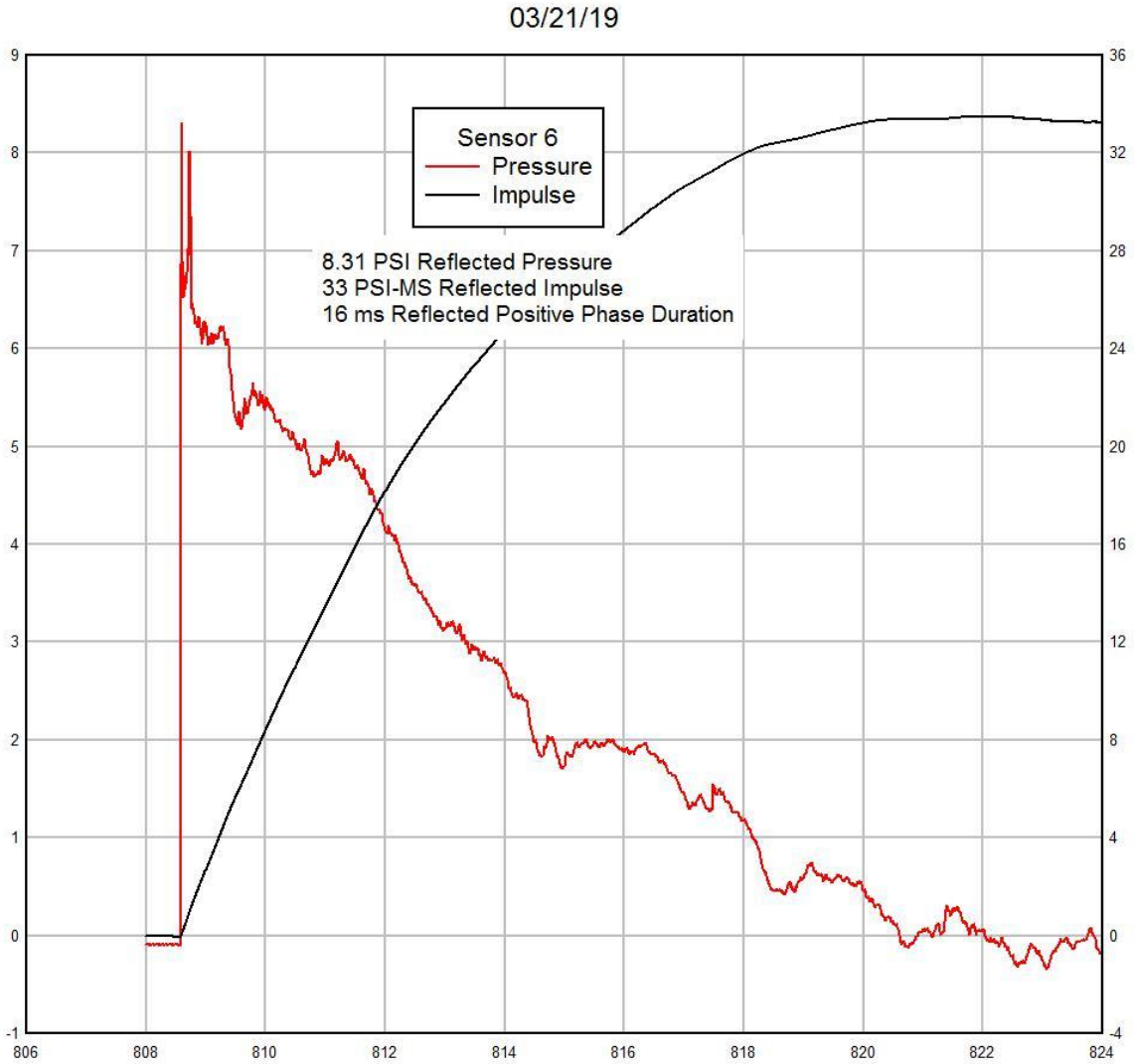
Test Specimen #15, No Film Annealed, No Film Tempered – Chamber B Pressure Time Plots



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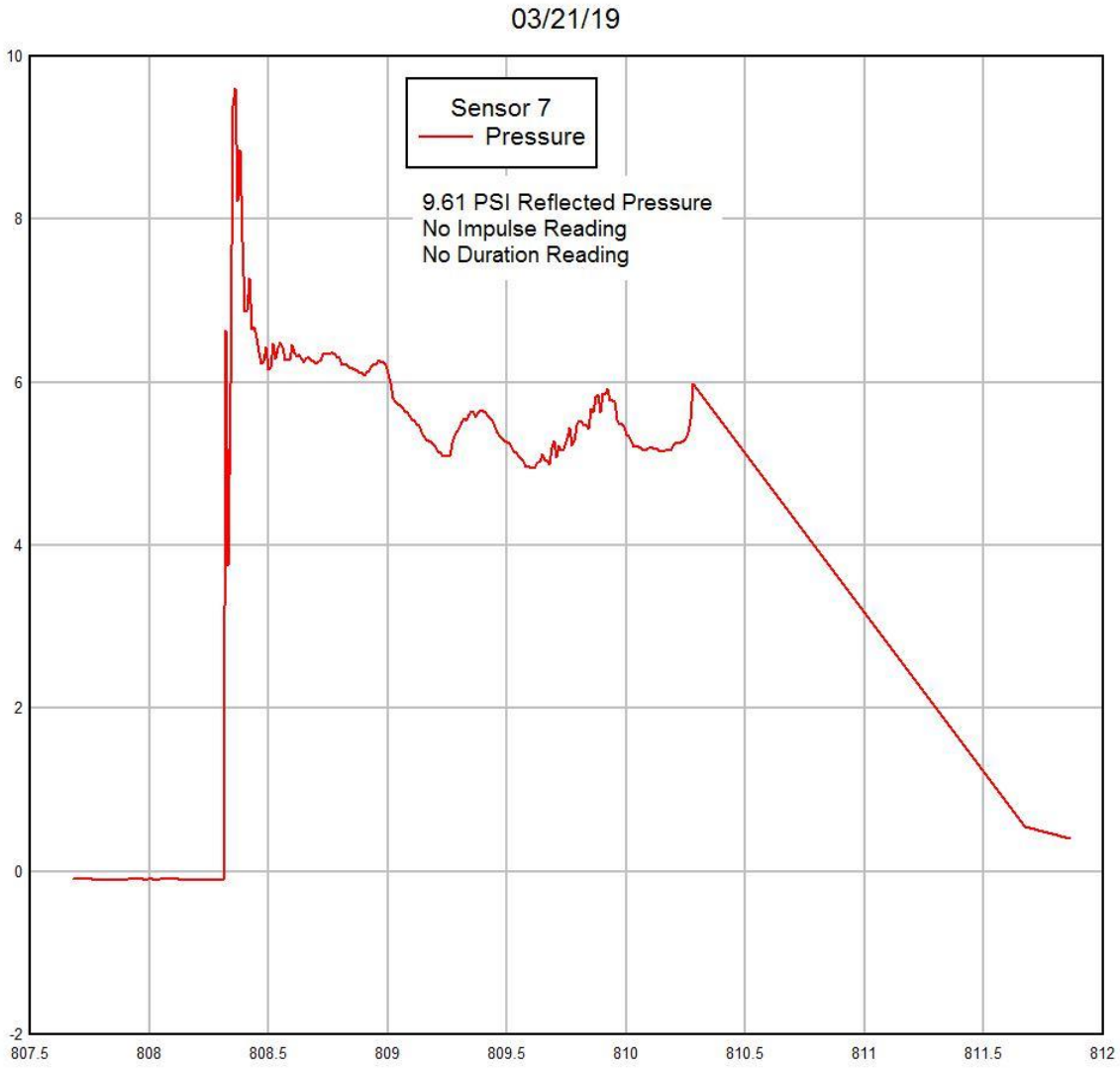

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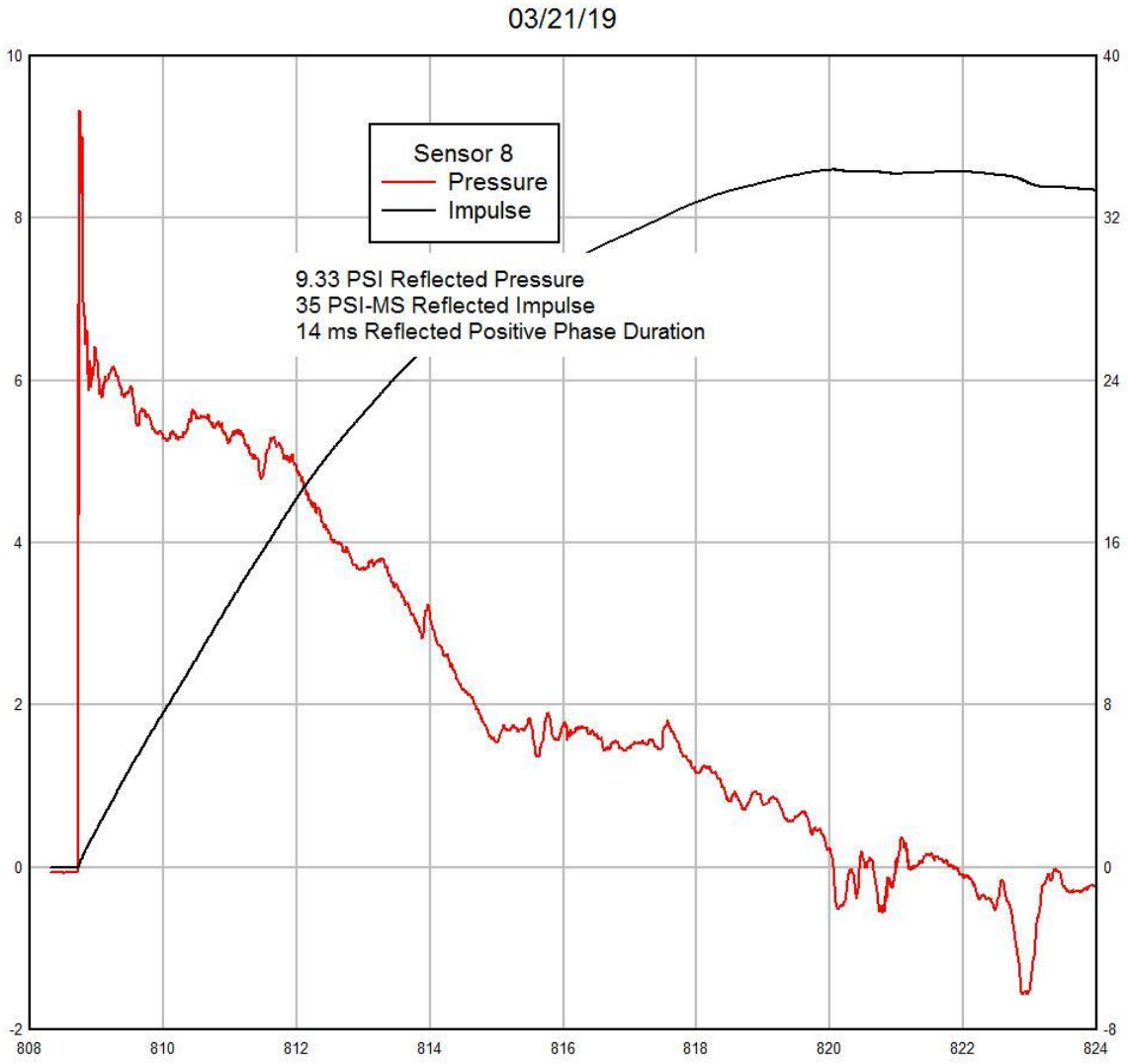

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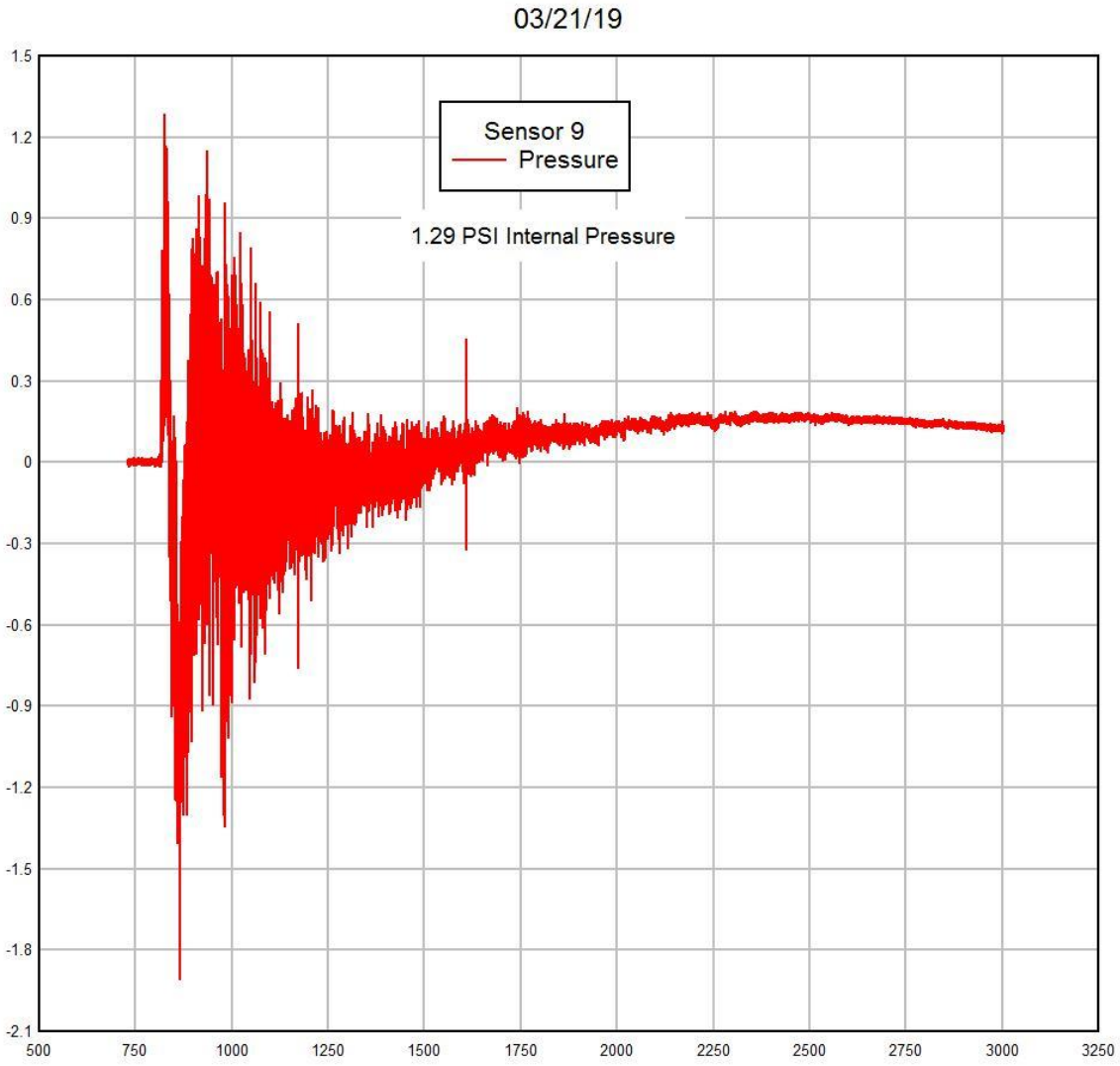

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SECTION 11
CONCLUSION

The test specimen(s) achieved the following ratings:

Product Type: Fixed Window
Series/Model Number: LLumar SCL SR PS8

TITLE	SPECIMEN #13	SPECIMEN #14	SPECIMEN #17	Overall rating for this glazing option
ASTM F2912 Hazard Rating	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard
ISO Performance Condition	E – Low Hazard	E – Low Hazard	E – Low Hazard	E – Low Hazard
Average Peak Reflected Pressure	9.34 psi	9.34 psi	9.34 psi	9.34 psi
Average Positive Phase Impulse	36 psi-msec	36 psi-msec	36 psi-msec	36 psi-msec
Average Positive Phase Duration	21.0 msec	21.0 msec	21.0 msec	21.0 msec
TITLE	**SPECIMEN #20**	**SPECIMEN #19**	**SPECIMEN #21**	**Overall rating for this glazing option**
ASTM F2912 Hazard Rating	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard	H4 – Low Hazard
ISO Performance Condition	E – Low Hazard	E – Low Hazard	E – Low Hazard	E – Low Hazard
Average Peak Reflected Pressure	8.94 psi	8.94 psi	8.94 psi	8.94 psi
Average Positive Phase Impulse	36 psi-msec	36 psi-msec	36 psi-msec	36 psi-msec
Average Positive Phase Duration	21.0 msec	21.0 msec	21.0 msec	21.0 msec

TITLE	SPECIMEN #23	SPECIMEN #24	SPECIMEN #22	Overall rating for this glazing option
ASTM F2912 Hazard Rating	H1 –No Hazard	H1 –No Hazard	H1 –No Hazard	H1 –No Hazard
ISO Performance Condition	B – No Hazard	B – No Hazard	B – No Hazard	B – No Hazard
Average Peak Reflected Pressure	7.94 psi	7.94 psi	7.94 psi	7.94 psi
Average Positive Phase Impulse	36 psi-msec	36 psi-msec	36 psi-msec	36 psi-msec
Average Positive Phase Duration	19 msec	19 msec	19 msec	19 msec
TITLE	**SPECIMEN #27**	**SPECIMEN #25**	**SPECIMEN #26**	**Overall rating for this glazing option**
ASTM F2912 Hazard Rating	H1 – No Break	H1- No Break	H1 – No Hazard	H1 – No Hazard
ISO Performance Condition	A – No Break	A – No Break	B – No Hazard	B – No Hazard
Average Peak Reflected Pressure	8.96 psi	8.96 psi	8.96 psi	8.96 psi
Average Positive Phase Impulse	38 psi-msec	38 psi-msec	38 psi-msec	38 psi-msec

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Average Positive Phase Duration	19 msec	19 msec	19 msec	19 msec

TITLE	SPECIMEN #15	SPECIMEN #16	SPECIMEN #18	Overall rating for this glazing option
ASTM F2912 Hazard Rating	NA – High Hazard	NA – High Hazard	NA – High Hazard	NA – High Hazard
ISO Performance Condition	F – High Hazard	F – High Hazard	F – High Hazard	F – High Hazard
Average Peak Reflected Pressure	8.82 psi	8.13 psi	8.13 psi	8.13 psi
Average Positive Phase Impulse	34 psi-msec	43 psi-msec	43 psi-msec	34 psi-msec
Average Positive Phase Duration	19 msec	19 msec	19 msec	19 msec

TITLE	SPECIMEN #NFA	SPECIMEN #NFT	Overall rating for this glazing option
ASTM F2912 Hazard Rating	NA – High Hazard	NA – High Hazard	NA – High Hazard
ISO Performance Condition	F – High Hazard	F – High Hazard	F – High Hazard
Average Peak Reflected Pressure	8.82 psi	8.82 psi	8.82 psi
Average Positive Phase Impulse	34 psi-msec	34 psi-msec	34 psi-msec
Average Positive Phase Duration	19 msec	19 msec	19 msec

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SECTION 12
PHOTOGRAPHS

Photo No. 1
Pre-test Specimen 13, 14, 17 exterior

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Photo No. 2
Post-test Specimen 13, 14, 17 exterior

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Photo No. 3
Pre-test Specimen 20, 19, 21 exterior

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Photo No. 4
Post-test Specimen 20, 19, 21 exterior

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Photo No. 5
Pre-test Specimen 23, 24, 22 exterior

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Photo No. 6
Post-test Specimen 23, 24, 22 exterior

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Photo No. 7
Pre-test Specimen 27, 25, 26 exterior

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Photo No. 8
Post-test Specimen 27, 25, 26 exterior

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Photo No. 9
Post-test Specimen 16 exterior

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Photo No. 10
Post-test Specimen 18 exterior

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Photo No. 11
Post-test Specimen 15 exterior

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Date: 05/22/19

Photo No. 12
Post-test Specimen Annealed No Film exterior

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Report No.: i4604.01-801-12 R0
Date: 05/22/19

Photo No. 12
Post-test Specimen Tempered No Film exterior

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SECTION 13
DRAWINGS

The test specimen drawings which follow have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

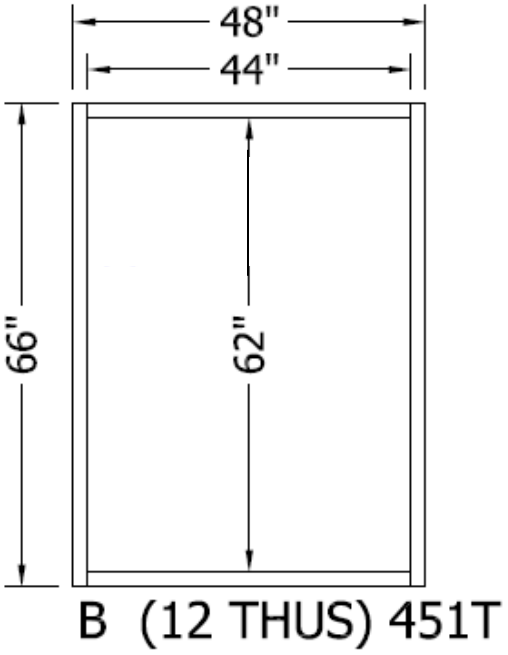
intertek Total Quality. Assured.	Report #:	i4604.01-801-12
	Date:	05/22/19
	Verified by:	A. Cost

Eastman Performance Films, LLC

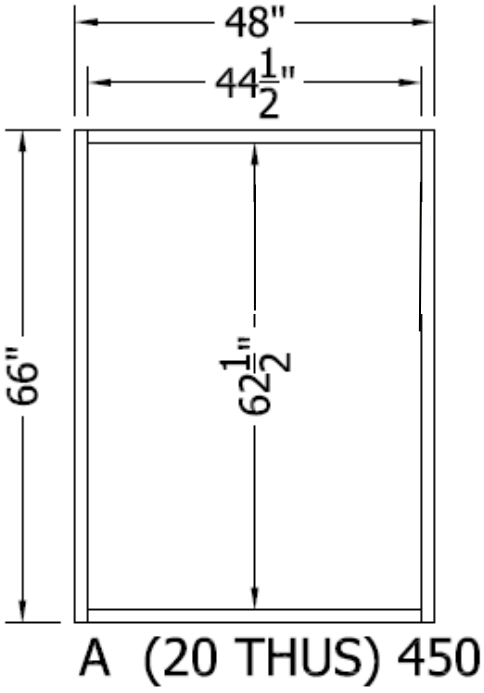
Intertek Quote 199533R1 Open-Air Blast Testing

Test Sample Details

Kawneer 451T (dual-pane windows) and 450 (single-pane windows) aluminum frames



B (12 THUS) 451T



A (20 THUS) 450

Dual-pane windows

Samples (22-27)

Single-pane windows

Samples (13,14,17, 19-21) w/film applied

Samples (15, 16, 18) no silicone attachment

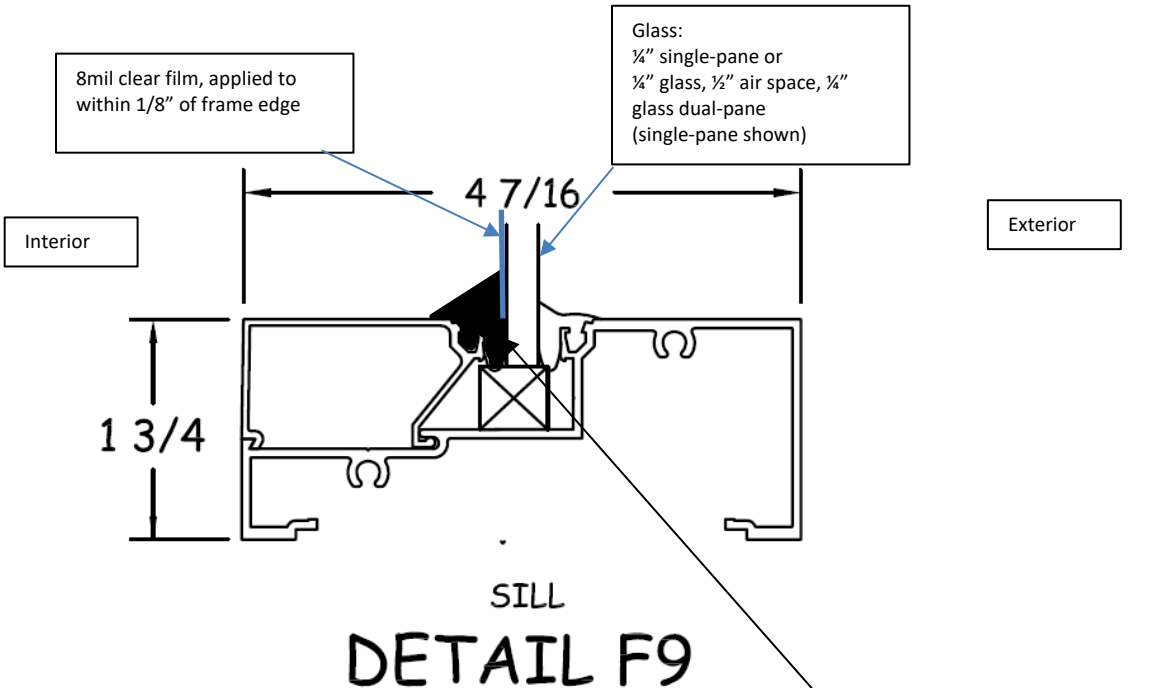
Two unmarked samples, one single-pane annealed, one single-pane tempered, no film applied

Sample Summary

Glass Type	Single or Dual Pane	Attachment System	# Samples	Sample ID Numbers
Annealed	Single	Yes	3	13,14,17
Tempered	Single	Yes	3	19, 20, 21
Annealed	Single	None	3	15,16,18
Annealed	Dual	Yes	3	22, 23, 24
Tempered	Dual	Yes	3	25, 26, 27
Annealed	Single	No Film	1	
Tempered	Single	No Film	1	

intertek
Total Quality Assured.

Report #:	i4604.01-801-12
Date:	05/22/19
Verified by:	A. Cost



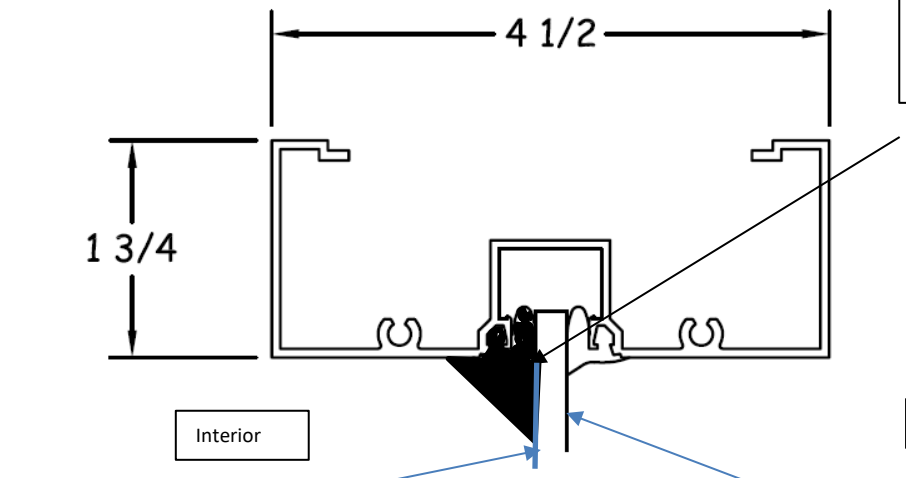
SILL

DETAIL F9

intertek Total Quality. Assured.		
	Report #:	i4604.01-801-12
	Date:	05/22/19
	Verified by:	A. Cost

Tremco Proglaze SSG or equiv. structural silicone caulking, 3/4” onto film, 3/4” onto frame and into framing groove where rubber gasket has been removed. Total bead width 1”

Silicone bead applied on all four sides to interior of window

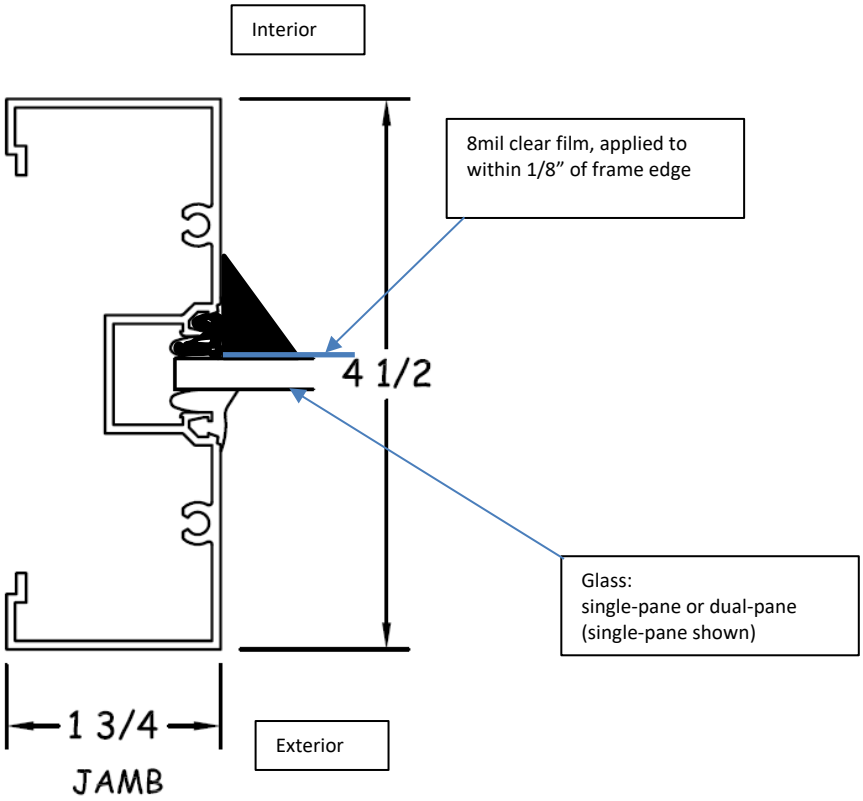


HEAD

DETAIL F12

8mil clear film, applied to within 1/8” of frame edge

Glass:
single-pane or dual-pane
(single-pane shown)



DETAIL F10

intertek Total Quality. Assured.	Report #:	i4604.01-801-12
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SECTION 14
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	05/22/19	N/A	Original Report Issue