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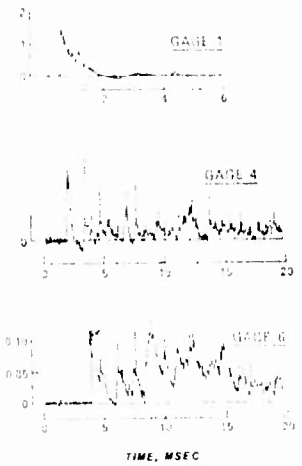

STRUCTURES LABORATORY

TECHNICAL REPORT SL-84-22

AIRBLAST ATTENUATION IN ENTRANCEWAYS AND OTHER TYPICAL COMPONENTS OF STRUCTURES

SMALL-SCALE TESTS DATA REPORT 1

by

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Airblast attenuation through entranceways into structural components was investigated in a small-scale explosive test series during 1981 and 1982. A total of 81 tests were performed with steel constructed models of round and square tunnel components in configurations typically found in field fortifications and personnel shelters.

The experimental program consisted of a series of spherical charges ranging from 113 to 907 g of composition C-4 explosive detonated outside and inside the

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entrance of tunnels of circular and square cross sections. The model structures were about 30 cm in diameter and from 4 to 24 tunnel diameters long. Both end-on and side-on burst configurations were used. Blast pressure was measured at locations ranging from 1/6 to 24 diameters from the entrance. Included in the program were tests of blast propagation in a long straight tunnel, blast reflection at the end of short tunnels, blast attenuation in side tunnels and "T" tunnels, blast propagation in 45 and 90 degree bends and blast suppression with a vented expansion chamber.

Pressure-time histories with corresponding impulse-time histories and tabulated peak values are presented.

PREFACE

This investigation was sponsored jointly by the Office, Chief of Engineers (OCE), U. S. Army, and by the Air Force Engineering and Services Center, Tyndall AFB, U. S. Air Force. The work was performed under OCE R&D Project 4A161102AT22, Task area BO, Work Unit 003.

The investigation was conducted during the periods July 1981 and January to April 1982 by personnel of the Structures Laboratory (SL), U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, MS. The field tests were conducted by J. R. Britt, R. Walters, S. B. Price, and D. Hale of the Explosion Effects Division (EED).

L. T. Watson and L. Sadler of the WES Instrumentation Services Division (ISD) provided field instrumentation support and instrument calibration, respectively.

Data processing was performed by J. T. Brogan and D. W. McAlpin, EED.

The investigation was under the general supervision of J. W. Brown, Chief, EED, and B. Mather, Chief, SL. COL Tilford C. Creel, CE, was Commander and Director and F. R. Brown was Technical Director of WES during the investigation.

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CONVERSION FACTORS, METRIC (SI) TO U. S. CUSTOMARY UNITS OF MEASUREMENT

Metric (SI) units of measurement used in this report can be converted to U. S. customary units as follows:

Multiply	By	To Obtain
Centimetres	0.3937	inches
Kilograms	2.205	pounds (mass)
Metres	3.281	feet
Metres per second	3.281	feet per second
Pascals	0.000145	pounds (force) per square inch

AIRBLAST ATTENUATION IN ENTRANCEWAYS AND OTHER TYPICAL COMPONENTS OF STRUCTURES: SMALL-SCALE TESTS DATA REPORT 1

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Many permanent shelters and field fortifications have openings into which airblast from near-miss conventional warhead explosions may propagate to produce damage and injury to the interior. A large amount of research has been conducted for long duration pulses simulating nuclear detonations (Reference 1). But before this test program only a small amount of information was available for high pressure, extremely short duration pulses produced by conventional weapons. Experimental data in this area are limited to a few shock tube tests (Reference 2), and limited small-scale high explosive tests (References 3 and 4). Important differences between these results and the nuclear blast simulations have been noted, and calculational techniques developed for the long duration pulses have often had poor success in predicting the attenuation of high pressure, short durations pulses.

This investigation was designed to obtain information needed to determine fundamental characteristics of short duration shock penetration into structures through openings.

1.2 OBJECTIVE

The objective of this investigation was to develop an experimental data base for the airblast produced by conventional high explosive

detonations which intrudes into structures through air entrainment systems, doors and other openings. This information will provide an experimental basis for the development of airblast prediction methods for the selection of blast doors and blast valves and the design of the geometrical configuration of personnel and air entrainment entranceways to suppress blast.

The objective of this report is to present the experimental data obtained in the small-scale explosive test program. The analysis of the measurements will be given in later reports.

This report describes the first phase of the experimental effort consisting of a comprehensive small-scale explosive test program conducted in the summer of 1981 and the winter of 1982.

1.3 SCOPE

The experimental program consisted of a series of spherical charges ranging from 113 to 907 g of composition C-4 explosive detonated outside and inside the entrance of tunnels of circular and square cross-sections. The model structures were about 30 cm in diameter and from 4 to 24 tunnel diameters long. Both end-on and side-on burst configurations were used. Blast pressure was measured at locations ranging from 1/6 to 24 diameters from the entrance. Included in the program were tests of blast propagation in a long straight tunnel, blast reflection at the end of short tunnels, blast attenuation in side tunnels and "T" tunnels, blast propagation in 45 and 90 degree bends and blast suppression with a vented expansion chamber.

The test structures were fabricated from steel plate and heavy

wall (0.95 cm thickness) steel tubing of both round and square cross-sections. Pressure transducers were mounted from the outside of the tunnel so that the sensing surface was flush with the inside wall to obtain side-on balst measurements. Gages were also located facing thc blast on the plate surrounding the entrance.

The tests were performed at the Waterways Experiment Station Big Black Test Site near Vicksburg, MS.

CHAPTER 2

INSTRUMENTATION AND DATA PROCESSING

2.1 GAGES

Airblast overpressures for the 1981 series of tests were measured with Kulite HKS-375 pressure sensors in ranges from 3.45 to 68.9 MPa (500 to 10,000 psi), having natural frequencies from 350 to 700 kHz, respectively. PCB Piezoelectronics, Inc. Series 102 gages were also used at locations 2, 15, 19, 23, 32, 33, and 35 of the long straight tunnel but no usable records were obtained due to instrumentation problems. The transducers were mounted flush with the inside walls of the tunnel and the front of the entrance plate.

The measurements for the 1982 series of tests were made with Kulite HKS-375 pressure transducers with identical ranges and natural frequencies as those used in the 1981 series. In addition, Kulite XT-190 transducers with ranges from 0.689 to 1.38 MPa (100 to 200 psi) and natural frequencies from 160 to 200 kHz, respectively, were used.

Excessive noise caused by waves traveling down the tunnel wall was encountered during the 1981 series. In order to insulate the transducers used in the 1982 series from this vibration, specially designed gage mounts shown in Figures 2.1 through 2.3 were used. Initially, mounts fabricated from aluminum and nylon were used. After several shots it was observed that these mounts were not providing the desired gage isolation. To futher cushion the transducers, a thin layer of RTV silicon rubber or biwax was used between the nylon insert and the outer aluminum housing in several mounts. These mounts were installed for

trial use in Shots 24 through 36. Gage 14 in these shots was mounted in the RTV lined mount, while gages 11 and 13 in Shots 26 through 36 were mounted in the biwax lined mounts. The RTV provided excellent damping of the vibrations but was rather weak. The biwax proved to be no improvement over the solid nylon insert. Based on these results, the RTV mount was used whenever possible in the remaining tests, except in locations near the tunnel entrance, where the stronger nylon-aluminum mounts were used.

The gages were connected to the recording system using small 4 conductor shielded cable approximately 40 meters (130 ft) in length.

2.2 RECORDING SYSTEM

The analog signals for the 1981 series were recorded using Sangamo Sabre IV 32-track FM magnetic tape recorders with a flat frequency response from dc to 40 kHz. A Sangamo Sabre V 32-track FM wide band Group I magnetic tape recorder with a flat frequency response from dc to 80 kHz was used during the 1982 series. WES developed amplifiers compensated for flat frequency response to 80 kHz were used during both series.

2.3 DATA PROCESSING

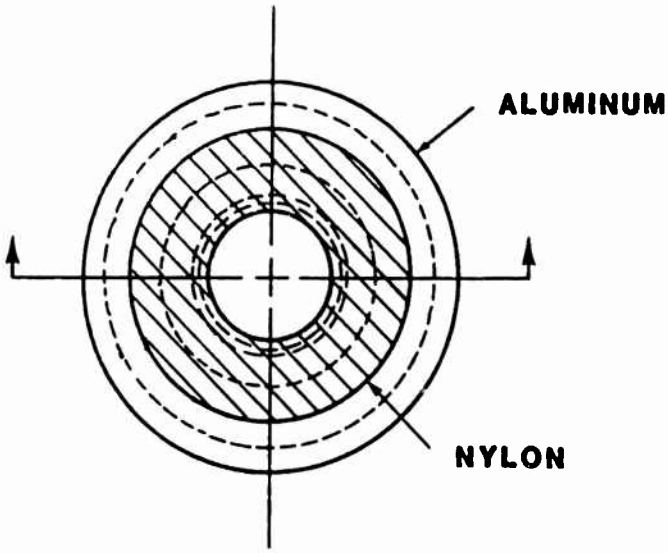
All data were reduced to digital format on the WES analog-to-digital converter and processed on the WES computer. Processing included baseline correction, filtering, and itegration routines.

2.3.1. Digitizing. The analog data signals were converted to digital format using the WES high-speed analog-to-digital converter. Gages 1 thru 20 and 31 thru 38 of the 1981 series were digitized at a

rate of 500 kHz, while Gages 21 thru 30 were digitized at 200 kHz. All data from the 1982 series were digitized at 500 kHz.

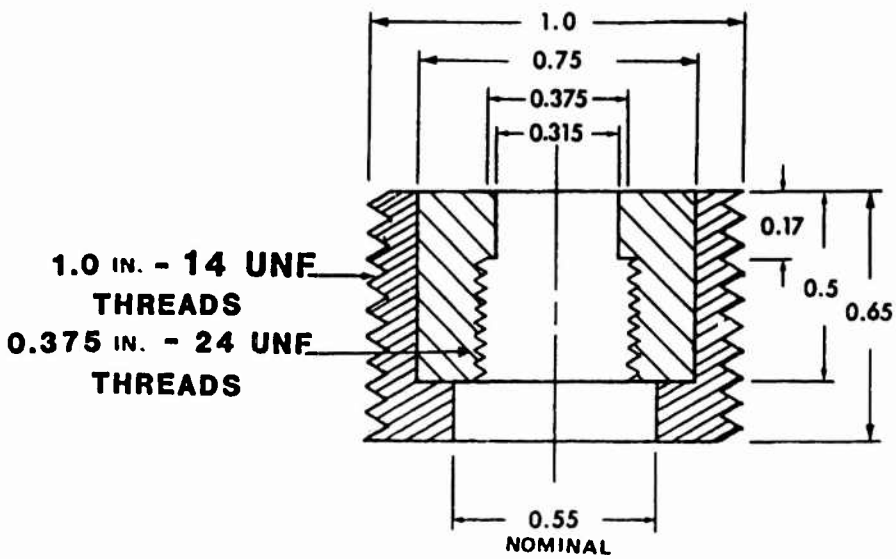
2.3.2 Filtering. Digital filtering routines were used when necessary to reduce background noise in the data signal. Filter information, when present, is listed below the shot and gage identification for each record. Generally, low-pass filters were used. Various sampling frequencies were required in conjunction with the filters to obtain the desired low-pass band. Details of the filters are given in Reference 5.

2.3.3 Baseline Correction. Baseline corrections were applied when necessary to produce zero impulse at the arrival of the shock wave front.



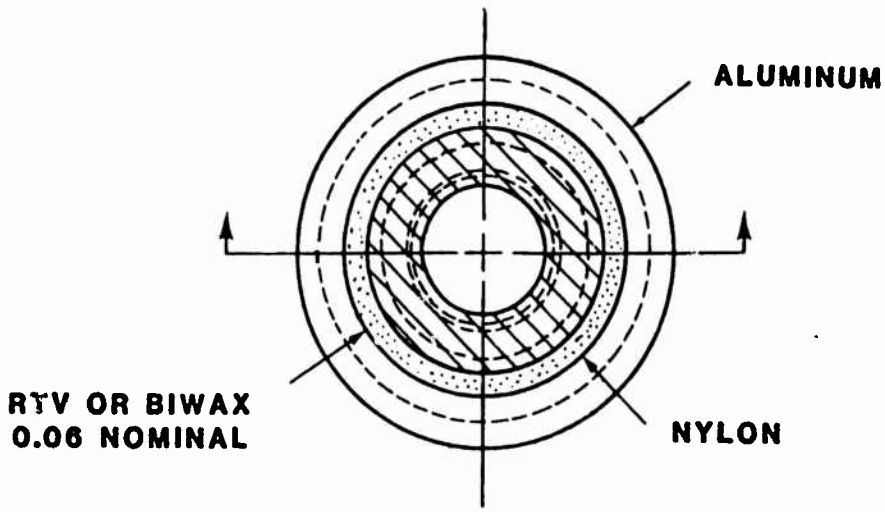
TOP VIEW

ALL DIMENSIONS
IN INCHES



FRONT VIEW

Figure 2.1 Nylon-aluminum gage mount.



TOP VIEW

ALL DIMENSIONS
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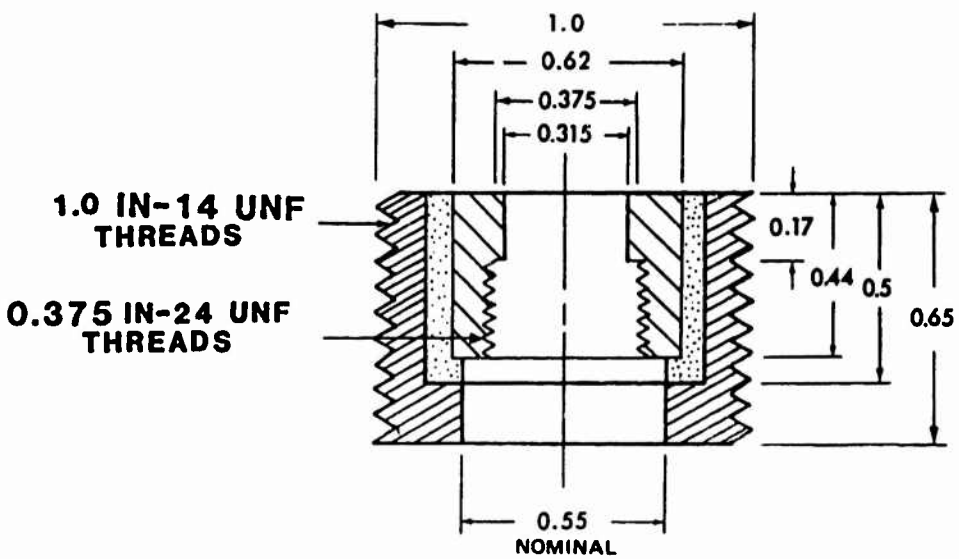
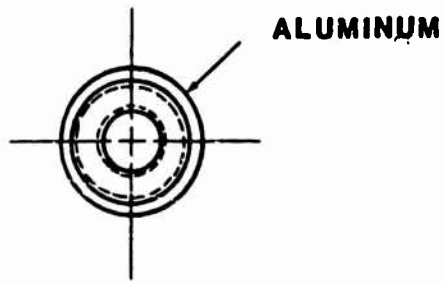


FRONT VIEW

Figure 2.2 Gage mounts with RTV or Biwax.



TOP VIEW

ALL DIMENSIONS
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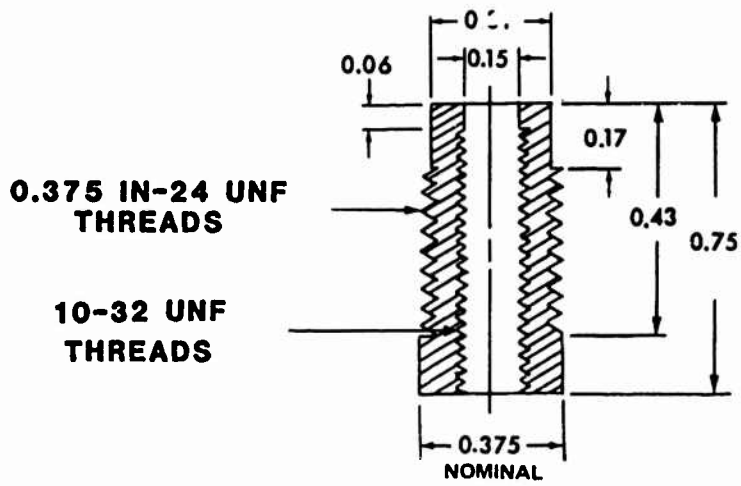


FRONT VIEW

Figure 2.3 Adapter for XT-190 transducers.

CHAPTER 3

TEST DESCRIPTION

3.1 STRUCTURE DESCRIPTION

The 1981 series of tests used the 24 ft (7.32 m) long straight tunnel shown in Figure 3.1. Figure 3.2 represents the general dimensions of the structure, and Table 3.1 lists the gage positions with respect to both radial orientation and distance from the tunnel entrance. A total of 38 gages were installed in the long straight tunnel, with Gages 1 thru 30 located inside along the length of the tunnel and 31 thru 38 located on the face of the entrance plate.

In the 1982 series the long straight tunnel, short straight tunnel, side tunnel, "T" tunnel, 90^{o} and 45^{o} bend, and vented expansion chamber configurations were used.

The 1982 long straight tunnel was the same structure used in the 1981 series, with fewer gages. Structure dimensions and gage positions are shown in Figure 3.2. Tests were conducted with the tunnel entrance both open (Shots 1-8 and 32-36) and baffled (Shots 9-31). The baffles (shown in Figures 3.3-3.5) consisted of an 1/2 inch thick steel plate and a 3 inch thick steel-plywood lamenated plate, both vented with 9 holes, and an 1/2 inch thick steel plate with 36 holes. These baffles were placed over the entrance of the long straight tunnel to reduce the blast entering the structure. In Shots 24 through 31, a 30.48 cm x 30.48 cm x 30.48 cm (1 ft x 1 ft x 1 ft) steel-plywood box shown in Figures 3.6-3.8 modeling an air intake structure was placed over the entrance. The box was vented by 9 holes on every side except one. The

bottom of the box placed over the tunnel entrance was open.

The short straight tunnel dimensions and gage positions are shown in Figures 3.9-3.11. Both round and square cross-sections shown in Figure 3.12 were used.

The side tunnel and "T" tunnel configurations and gage positions are shown in Figures 3.13-3.20. Both round and square cross-sections were used.

All structure dimensions shown for each configuration are inside dimensions unless otherwise stated. Gage positions that are referenced to Point P in the illustrations are measured along the axis of the component, not from Point P to the gage position directly.

The 90^{o} and 45^{o} bend tunnels were constructed with square cross-sectional components only. Figures 3.21-3.24 illustrate the dimensions and gage positions of the tunnels.

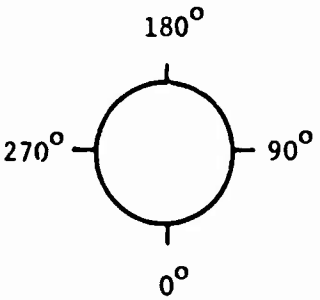
The vented expansion chamber configuration consisted of a square cross-sectional tunnel leading into a 1.2 m x 1.2 m x 1.2 m (4 ft x 4 ft x 4 ft) expansion chamber, and a square tunnel exiting from one side of the chamber. Each of the components was instrumented. Overall dimensions and gage positions are shown in Figures 3.25-3.27.

3.2 SHOT PARAMETERS

Composition C-4, a military high explosive, was used for all tests. Most charges were detonated in an end-on position in front of the entrance. Side-on burst configurations were also used. Figure 3.28 illustrates the notation used to describe the charge location. Explosive weight and charge location for each test is shown in Tables 3.2 and 3.3.

Other information such as shot date, time and air temperature are listed in Table 3.4.

Table 3.1. Airblast Penetration
1981 Gage Locations



FRONT VIEW

Gage No.	Angle (Degrees)	Distance From Face (cm)	(in.)
	Gages Located Inside Tunnel		
1	180	5.08	2.0
2	0	5.08	2.0
3	90	5.08	2.0
4	270	5.08	2.0
5	180	10.16	4.0
6	0	10.16	4.0
7	90	10.16	4.0
8	270	10.16	4.0
9	180	20.32	8.0
10	0	20.32	8.0
11	90	20.32	8.0
12	270	20.32	8.0
13	180	40.64	16.0
14	0	40.64	16.0
15	90	40.64	16.0
16	270	40.64	16.0
17	180	81.28	32.0
18	0	81.28	32.0
19	90	81.28	32.0
20	270	81.28	32.0
21	180	162.56	64.0
22	0	162.56	64.0
23	90	162.56	64.0
24	270	162.56	64.0
25	180	325.12	128.0
26	0	325.12	128.0
27	180	457.20	180.0
28	0	457.20	180.0
29	180	670.56	264.0
30	Center of End Cap	731.52	288.0

(Continued)

Table 3.1 (Concluded)

Gage No.	Angle (Degrees)	Distance From Center of Tunnel (cm)	(in.)
	Gages Located on Entrance Plate		
31	180	18.42	7.25
32	0	18.42	7.25
33	90	18.42	7.25
34	270	18.42	7.25
35	45	20.32	8.0
36	45	25.00	10.0
37	45	35.56	14.00
38	45	55.88	22.00

Table 3.2 Airblast Penetration Test Configurations (1981)

Charge Weight (gm) = 340.2

Shot Number	Nominal Entrance Pressure (MPa)	Charge Location
1	3.45	Side-On d = 0.610 m, r = 0.041 m, h = 0
2	1.38	End-On r = 0.634 m
3	3.45	Side-On d = 0.610 m, r = 0.041 m, h = 0
4	0.689	End-On r = 0.875 m
5	0.689	Side-On d = 0.89 m, r = 0.305 m, h = 0.668 m
6	1.38	Side-On d = 0.658 m, r = 0.305 m, h = 0.494 m
7	0.345	End-On r = 1.189 m
8	3.45	Side-On d = 0.468 m, r = 0.152 m, h = 0.351 m
9	6.89	Side-On d = 0.295 m, r = 0.152 m, h = 0.221 m
10	3.45	End-On r = 0.402 m

Table 3.3. Airblast Penetration Test Configuration (1982)

Shot Number	Charge Weight gm	Nominal Entrance Pressure MPa	Charge Location	Pressure Gage Locations
			LONG TUNNEL 7.32m (24 ft) LONG, 0.3048m (1.0 ft) I.D.	
1	340.2	3.45	End-on r = 0.402m	1-14
2	113.4	3.45	End-on r = 0.280m	1-14
3	907.2	3.45	End-on r = 0.558m	1-14
4	340.2	10.3	Side-on d = 0.193m, r = 0.152m	1-14
5	113.4	6.89	End-on r = 0.186m	1-14
6	340.2	6.89	End-on r = 0.268m	1-14
7	113.4	13.8	End-on r = 0.116m	1-14
8	340.2	13.8	End-on r = 0.165m	1-14
			LONG TUNNEL WITH 9-HOLE 0.5 INCH (1.27 cm) STEEL BAFFLE	
9	113.4	1.38	End-on r = 0.439m	1-13
10	340.2	1.38	End-on r = 0.634m	1-13
11	340.2	6.89	Side-on d = 0.369m, r = 0.152m	1-13
12	340.2	3.45	End-on r = 0.402m	1-13
13	340.2	6.89	End-on r = 0.268m	1-13
14	340.2	13.8	End-on r = 0.165m	1-13
			LONG TUNNEL WITH 9-HOLE 3 INCH (7.62 cm) THICK STEEL AND WOOD BAFFLE	
15	340.2	3.45	End-on r = 0.402m*	1-13
16	340.2	6.89	End-on r = 0.268m*	1-13
17	340.2	13.8	End-on r = 0.165m*	1-13
18	340.2	6.89	Side-on d = 0.369m, r = 0.152m	1-13

* Measured from 6 ft x 6 ft (1.83m x 1.83m) steel plate.

Table 3.3. (Continued)

Shot Number	Charge Weight gm	Nominal Entrance Pressure MPa	Charge Location	Pressure Gage Locations
			LONG TUNNEL WITH 36-HOLE 0.5 in (1.27 cm) THICK STEEL BAFFLE	
19	340.2	1.38	End-on r = 0.634m*	1-13
20	340.2	3.45	End-on r = 0.402m	1-13
21	340.2	6.89	End-on r = 0.268m	1-13
22	340.2	6.89	Side-on d = 0.369m, r = 0.152m	1-13
23	340.2	13.8	End-on r = 0.165m	1-13
			LONG TUNNEL WITH 1 ft (.3048 m) BOX OVER ENTRANCE	
Box Side Without Holes Up				
24	340.2	1.38	r = 0.152m, d = 0.884m, h = 0.299m	1-14**
25	340.2	1.38	r = 0.152m, d = 1.100m, h = 0	1-14
26	340.2	3.45	r = 0.152m, d = 0.771m, h = 0	1-14***
27	340.2	6.89	r = 0.152m, d = 0.585m, h = 0	1-14
Box Side Without Holes Down				
28	340.2	3.45	r = 0.152m, d = 0.585m, h = 0.299m	1-14
29	340.2	6.89	r = 0.152m, d = 0.369m, h = 0.299m	1-14
30	340.2	1.38	r = 0.152m, d = 0.884m, h = 0.299m	1-14
Box Side Without Holes Up				
31	340.2	13.8	r = 0.152m, d = 0.381m, h = 0	1-14

* Measured from 6 ft x 6 ft (1.83m x 1.83m) steel plate.

** For Shots 24-36 gage 14 was located opposite gage 13 and used mount with RTV between nylon and aluminum.

*** For Shots 26-36 gages 11 and 13 were in mounts with biwax between nylon and aluminum.

Table 3.3. (Continued)

Shot Number	Charge Weight gm	Nominal Entrance Pressure MPa	Charge Location	Pressure Gage Locations
			LONG TUNNEL 7.32 m (24 ft) LONG, 0.3048 m (1.0 ft) I.D.	
32	113.4	--	Half inside entrance	5-14
33	113.4	--	Just inside entrance	5-14
34	113.4	--	0.152m inside	5-14
35	340.2	--	Half inside entrance	5-14
36	340.2	--	Just inside entrance	5-14
			SHORT 2.44 m (8 ft) CAPPED TUNNELS	
			Structure A 0.3048 m (1.0 ft) I.D., Structure B Square Cross-section 0.286 m (11.25 in) I.D.	
37	113.4	1.38	End-on r = 0.439m	A 1-12, B 1-12
38	340.2	1.38	End-on r = 0.634m	A 1-12, B 1-12
39	340.2	3.45	End-on r = 0.402m	A 1-12, B 1-12
40	340.2	6.89	End-on r = 0.268m	A 1-12, B 1-12
41	340.2	13.8	End-on r = 0.165m	A 1-12, B 1-12
			SIDE TUNNELS	
42	340.2	0.689	End-on r = 0.875m	A 1-12, B 1-11
43	340.2	2.93	End-on r = 0.439m	A 1-12, B 1-12
44	113.4	1.38	End-on r = 0.439m	A 1-12, B 1-13
45	340.2	1.38	End-on r = 0.634m	A 1-12, B 1-13
46	340.2	3.45	End-on r = 0.402m	A 1-6, 8-12, 14 B 1-6, 8-14
47	113.4	3.45	End-on r = 0.280m	A 1-6, 8-12, 14 B 1-6, 8-14
48	340.2	6.89	End-on r = 0.268m	A 1-6, 8-12, 14 B 1-6, 8-14
49	340.2	13.8	End-on r = 0.165m	A 1-6, 8-12, 14 B 1-6, 8-14

Table 3.3. (Concluded)

Shot Number	Charge Weight gm	Nominal Entrance Pressure MPa	Charge Location	Pressure Gage Locations
			T-TUNNELS	
50	340.2	0.689	End-on r = 0.875m	A 1-14, B 1-14
51	340.2	1.38	End-on r = 0.634m	A 1-14, B 1-14
52	340.2	3.45	End-on r = 0.402m	A 1-14, B 1-14
53	340.2	6.89	End-on r = 0.268m	A 1-14, B 1-14
54	340.2	13.8	End-on r = 0.165m	A 1-14, B 1-14
			90^{o} ELL IN SQUARE CROSS-SECTION TUNNEL	
55	340.2	0.689	End-on r = 0.875m	1-12
56	340.2	1.38	End-on r = 0.634m	1-12
57	340.2	3.45	End-on r = 0.402m	1-12
58	340.2	6.48	End-on r = 0.268m	1-12
59	340.2	13.8	End-on r = 0.165m	1-12
			45^{o} BEND IN SQUARE CROSS-SECTION TUNNEL	
60	340.2	13.8	End-on r = 0.165m	1-12
61	340.2	6.89	End-on r = 0.268m	1-12
62	340.2	3.45	End-on r = 0.402m	1-12
63	340.2	1.38	End-on r = 0.634m	1-12
64	340.2	0.689	End-on r = 0.875m	1-12
			VENTED EXPANSION CHAMBER	
65	340.2	0.689	End-on r = 0.875m	1-23
66	113.4	1.38	End-on r = 0.439m	1-23
67	340.2	1.38	End-on r = 0.634m	1-23
68	340.2	3.45	End-on r = 0.402m	1-23
69	340.2	6.89	End-on r = 0.268m	1-23
70	340.2	13.8	End-on r = 0.165m	1-23
71	113.4	20.7	End-on r = 0.082m	1-23

Table 3.4. Airblast Penetration - Supplemental Test Information

Shot No.	Date	Time	Temperature (^{o}C)
		1981 Series	
1	14 Jul 81	1:44 PM	38
2	17 Jul 81	1:34 PM	37
3	20 Jul 81	2:53 PM	38
4	21 Jul 81	2:46 PM	35
5	22 Jul 81	10:24 AM	33
6	22 Jul 81	2:24 PM	38
7	23 Jul 81	12:09 PM	38
8	23 Jul 81	3:29 PM	40
9	24 Jul 81	10:44 AM	35
10	24 Jul 81	3:05 PM	39
		1982 Series	
1	26 Jan 82	1:36 PM	9
2	28 Jan 82	11:36 AM	14
3	29 Jan 82	11:25 AM	17
4	29 Jan 82	1:14 PM	22
5	29 Jan 82	1:56 PM	22
6	1 Feb 82	1:03 PM	10
7	1 Feb 82	2:57 PM	10
8	2 Feb 82	11:13 AM	12
9	3 Feb 82	12:36 PM	7
10	3 Feb 82	1:27 PM	7
11	3 Feb 82	1:56 PM	6
12	4 Feb 82	10:32 AM	0
13	4 Feb 82	11:27 AM	0
14	4 Feb 82	12:03 PM	0
15	5 Feb 82	1:24 PM	11
16	5 Feb 82	1:54 PM	11
17	5 Feb 82	2:23 PM	11
18	5 Feb 82	2:53 PM	9
19	8 Feb 82	12:52 PM	17
20	8 Feb 82	1:31 PM	20
21	8 Feb 82	2:08 PM	21
22	8 Feb 82	2:30 PM	21
23	8 Feb 82	3:16 PM	21
24	11 Feb 82	12:37 PM	12
25	11 Feb 82	2:19 PM	14
26	16 Feb 82	1:55 PM	24
27	17 Feb 82	10:32 AM	16
28	17 Feb 82	2:01 PM	24

(Continued)

Table 3.4 (Concluded)

Shot No.	Date	Time	Temperature (^{o}C)
	1982 Series Continued		
29	19 Feb 82	12:22 PM	21
30	19 Feb 82	1:17 PM	21
31	19 Feb 82	2:43 PM	21
32	23 Feb 82	10:17 AM	26
33	23 Feb 82	10:43 AM	26
34	23 Feb 82	11:43 AM	26
35	23 Feb 82	12:47 PM	29
36	24 Feb 82	12:38 PM	27
37	4 Mar 82	11:49 AM	23
38	4 Mar 82	1:29 PM	23
39	5 Mar 82	11:43 AM	13
40	5 Mar 82	1:40 PM	11
41	8 Mar 82	11:40 AM	13
42	11 Mar 82	12:21 PM	25
43	11 Mar 82	1:49 PM	25
44	12 Mar 82	10:43 AM	23
45	12 Mar 82	12:34 PM	28
46	12 Mar 82	2:23 PM	28
47	15 Mar 82	11:46 AM	29
48	16 Mar 82	9:25 AM	27
49	16 Mar 82	1:20 PM	29
50	18 Mar 82	10:19 AM	31
51	18 Mar 82	11:18 AM	31
52	18 Mar 82	12:51 PM	33
53	23 Mar 82	12:17 PM	21
54	23 Mar 82	1:19 PM	21
55	25 Mar 82	1:03 PM	27
56	25 Mar 82	1:44 PM	27
57	25 Mar 82	2:16 PM	26
58	25 Mar 82	2:53 PM	26
59	25 Mar 82	3:37 PM	22
60	26 Mar 82	10:44 AM	12
61	26 Mar 82	11:11 AM	12
62	26 Mar 82	12:48 PM	16
63	26 Mar 82	1:22 PM	16
64	26 Mar 82	2:40 PM	14
65	30 Mar 82	10:37 AM	19
66	31 Mar 82	1:55 PM	27
67	31 Mar 82	2:29 PM	25
68	31 Mar 82	3:06 PM	25
69	1 Apr 82	12:33 PM	30
70	1 Apr 82	1:11 PM	30
71	1 Apr 82	1:47 PM	30

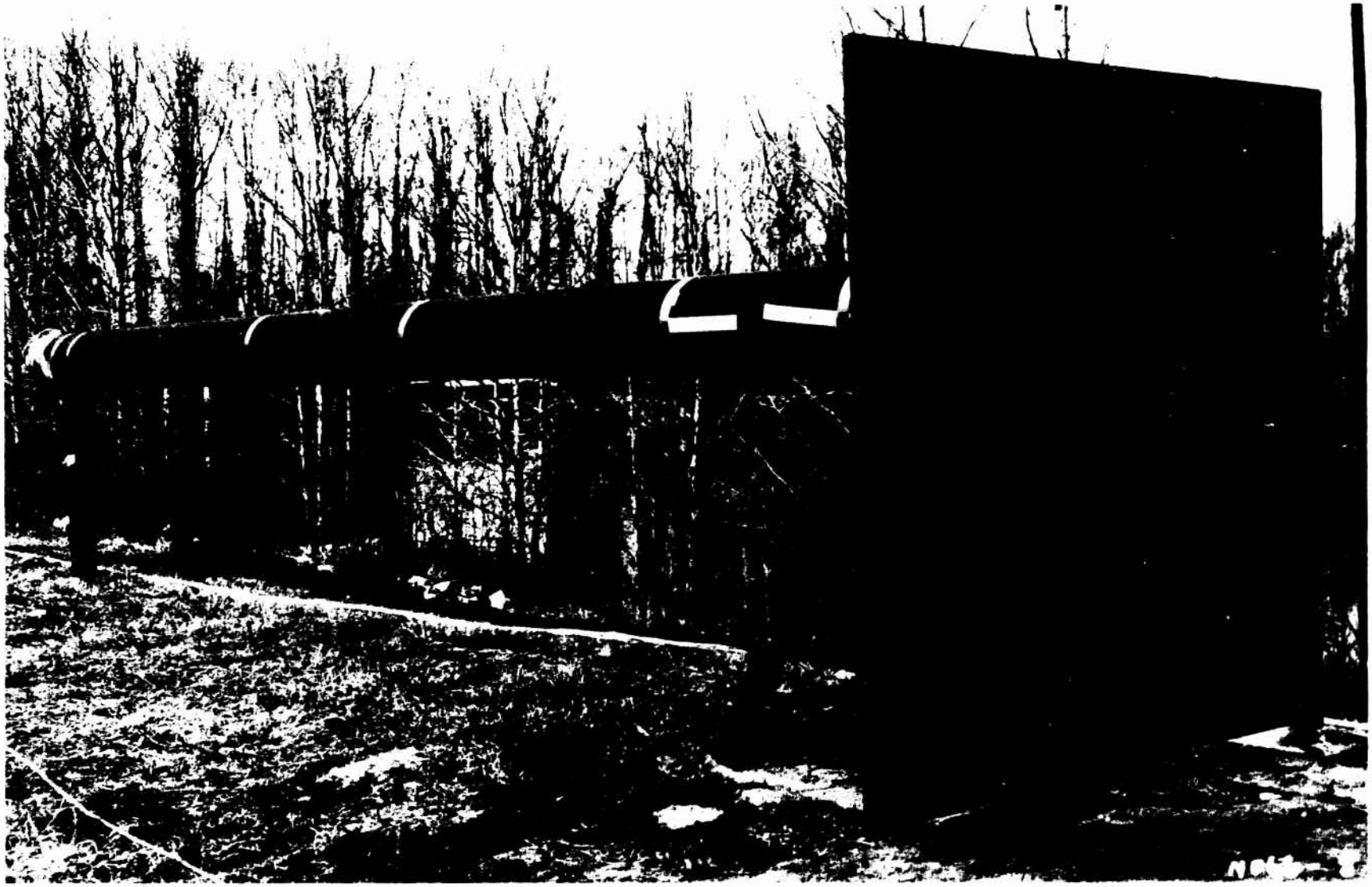
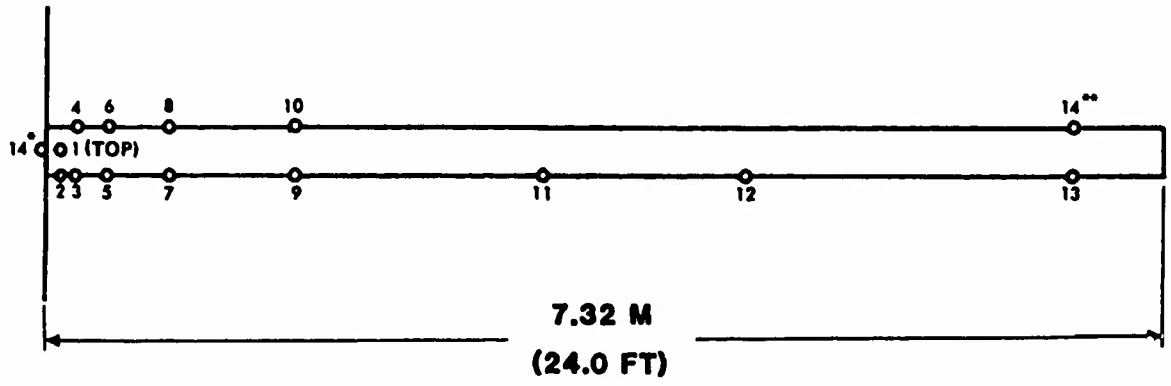


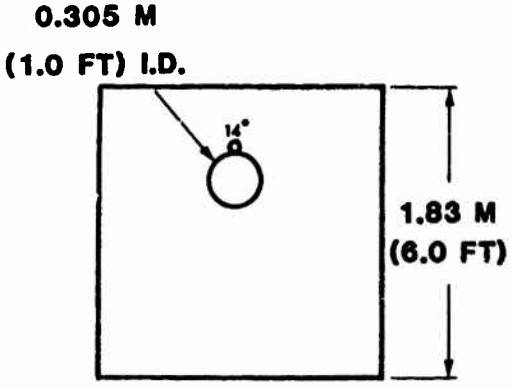
Figure 3.1 Long straight tunnel.

TOP VIEW



*SHOT 1-23
**SHOT 24-31

FRONT VIEW



GAGE NO.	DISTANCE FROM FACE	
	cm	(in)
1	10.16	(4.0)
2	10.16	(4.0)
3	20.32	(8.0)
4	20.32	(8.0)
5	40.64	(16.0)
6	40.64	(16.0)
7	81.28	(32.0)
8	81.28	(32.0)
9	162.56	(64.0)
10	162.56	(64.0)
11	325.12	(128.0)
12	457.20	(180.0)
13	670.56	(264.0)
14*	0.0	(0.0)
14**	670.56	(264.0)

Figure 3.2 Pressure gage arrangement in long straight tunnel, 1982 test series.

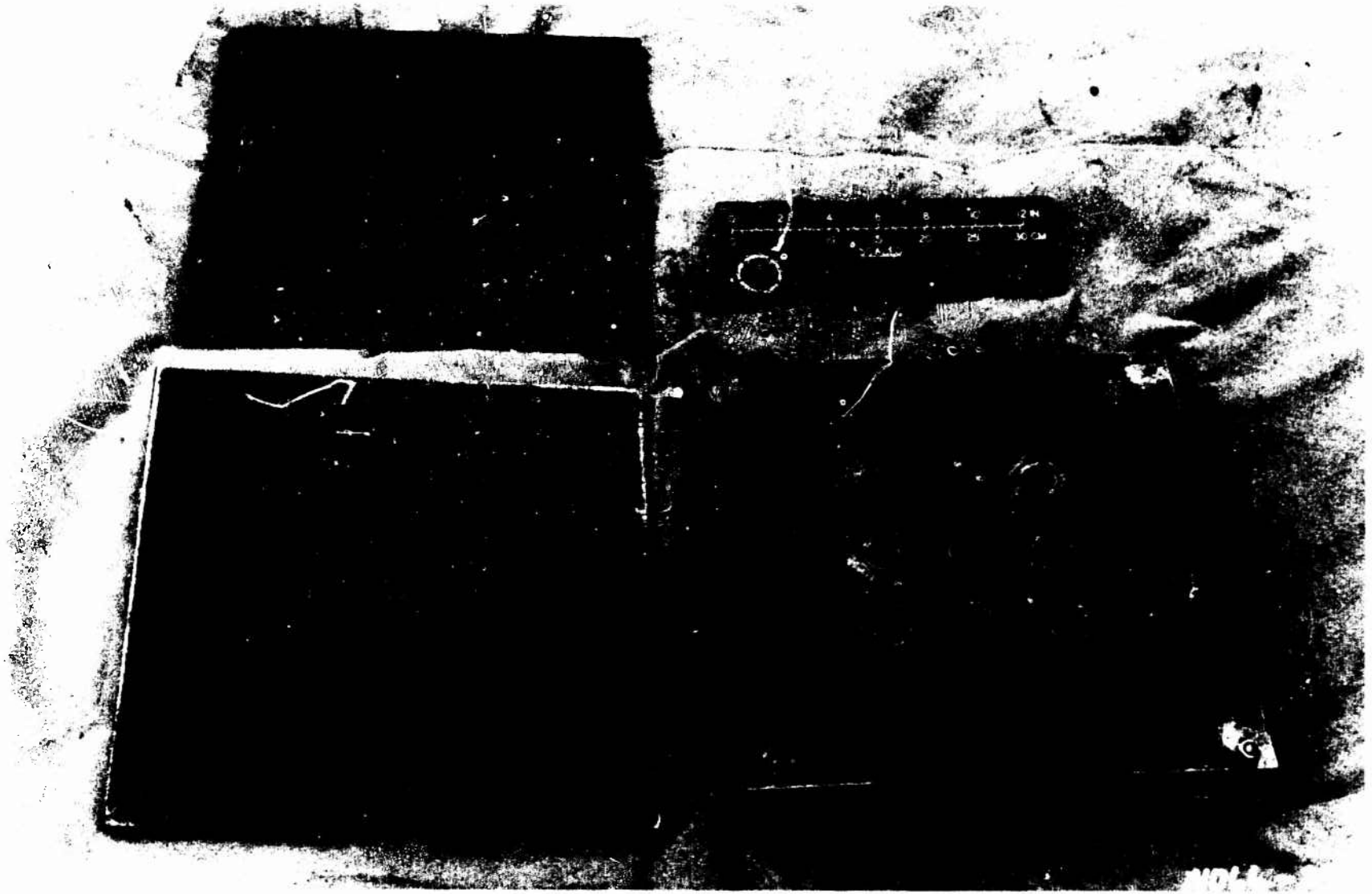


Figure 3.3 Perforated plate baffles.

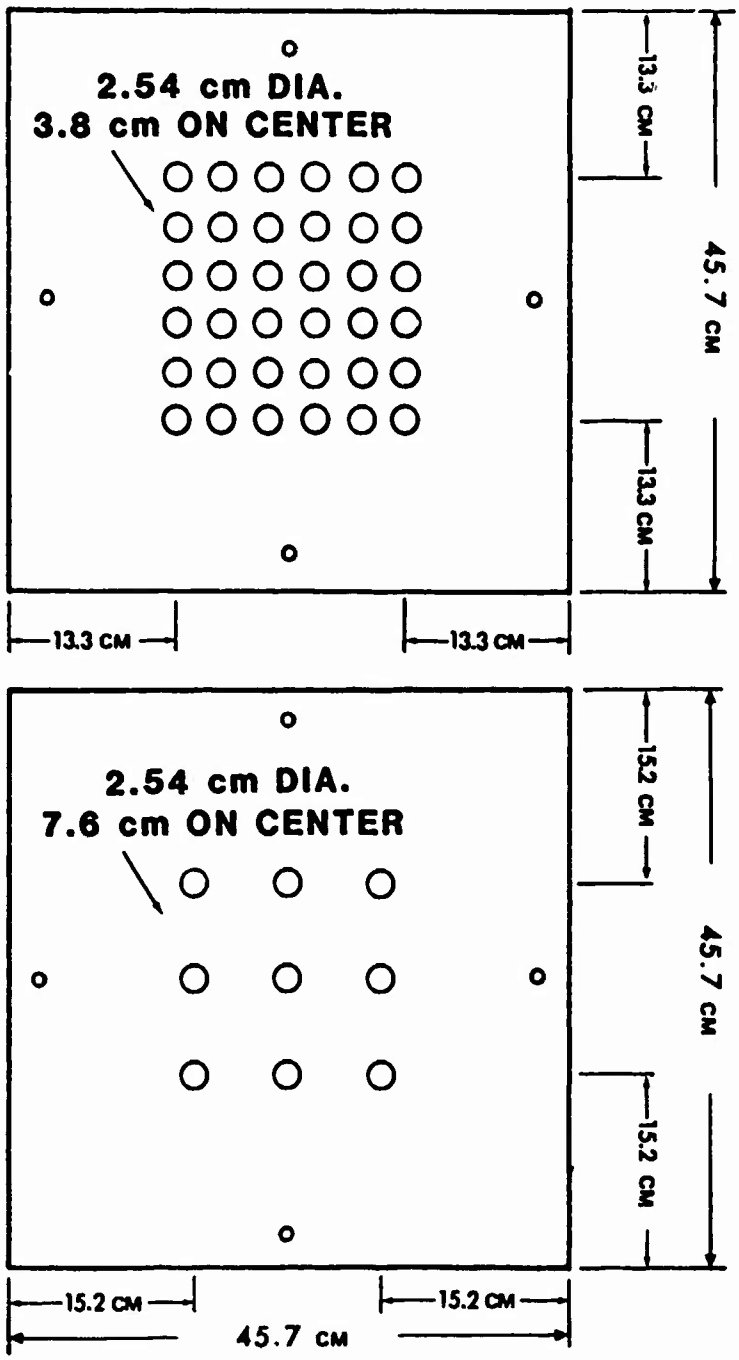


Figure 3.4 Steel baffle dimensions.

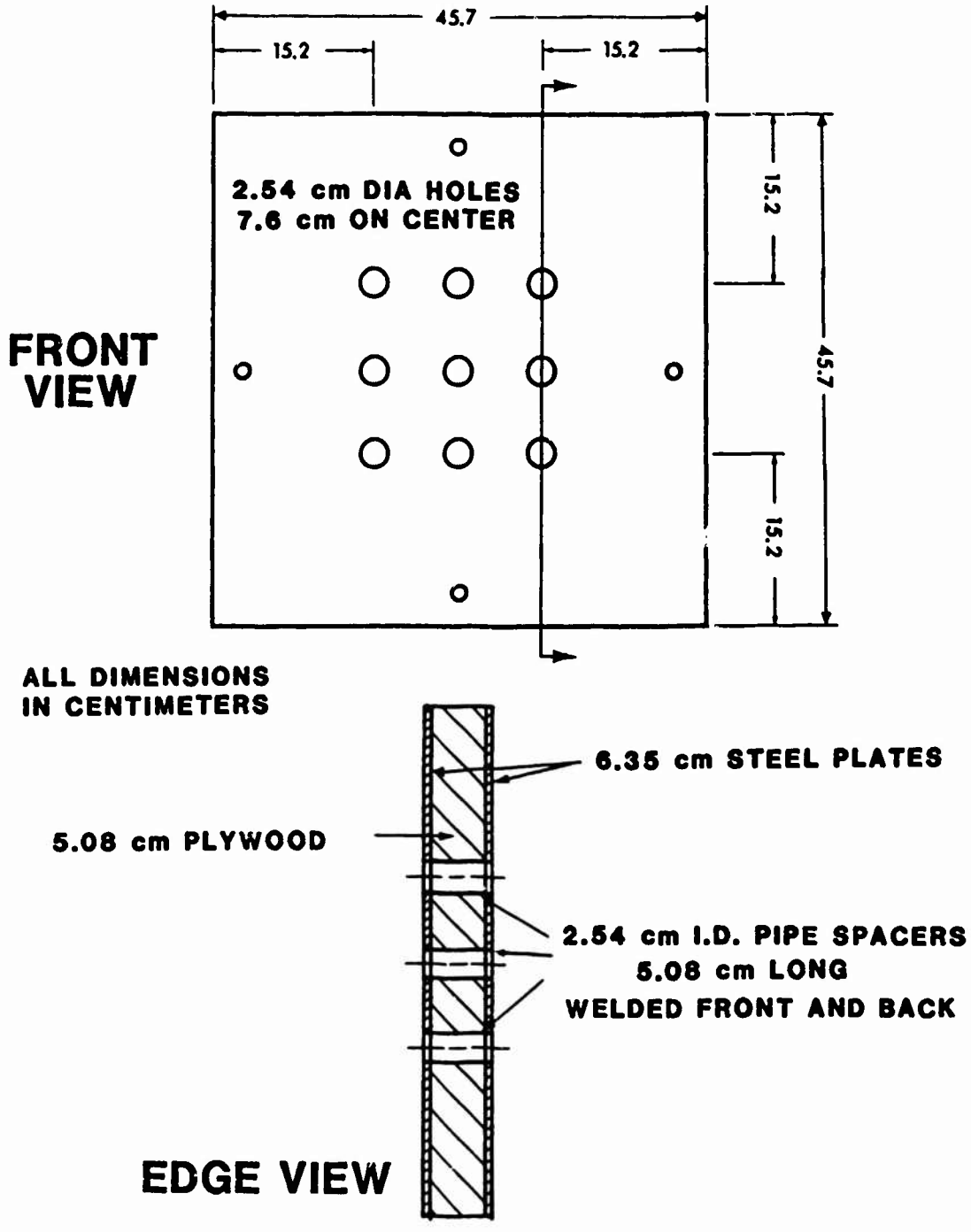


Figure 3.5 Steel-plywood laminated baffle.

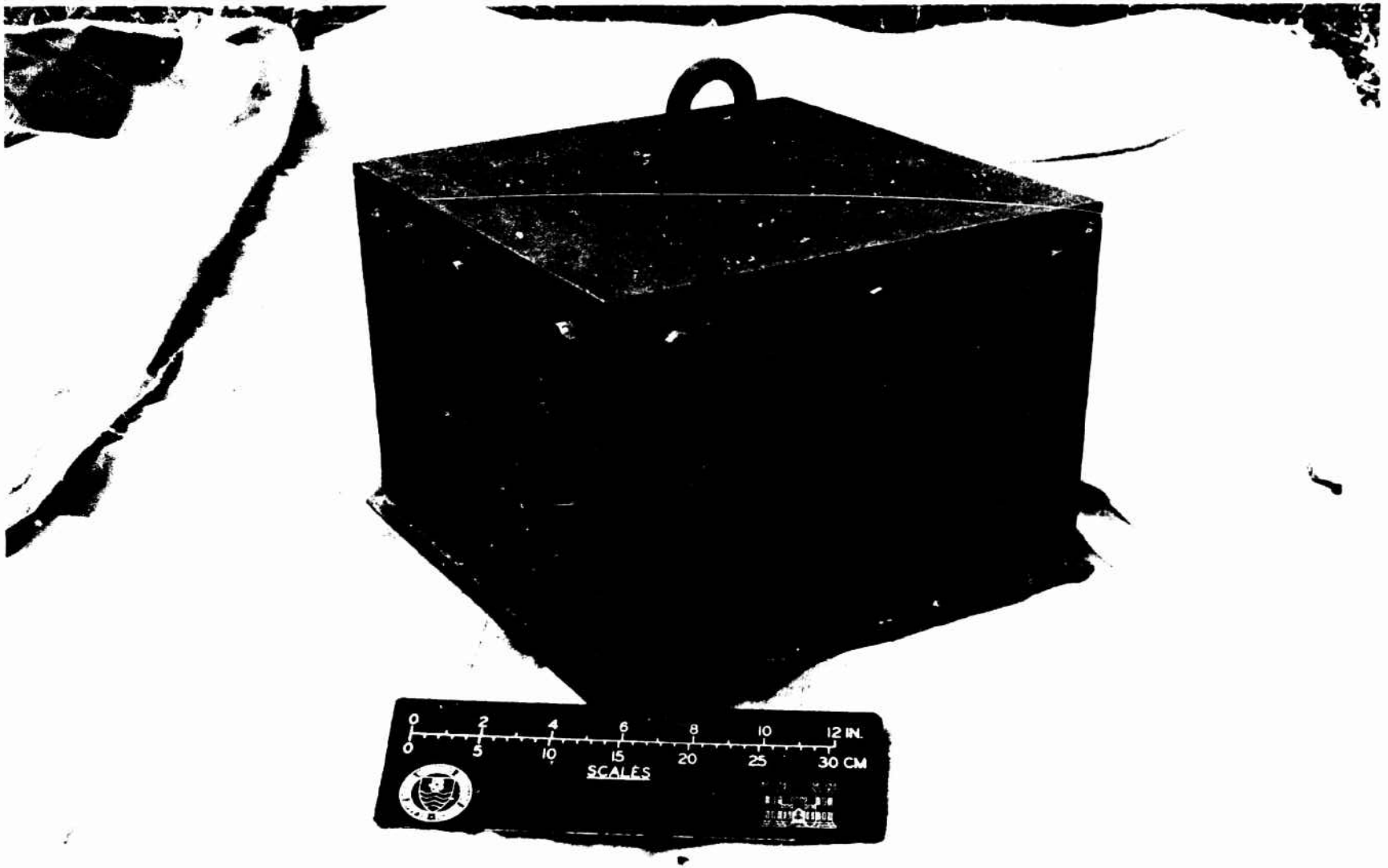


Figure 3.6 Steel-plywood model of air intake structure.

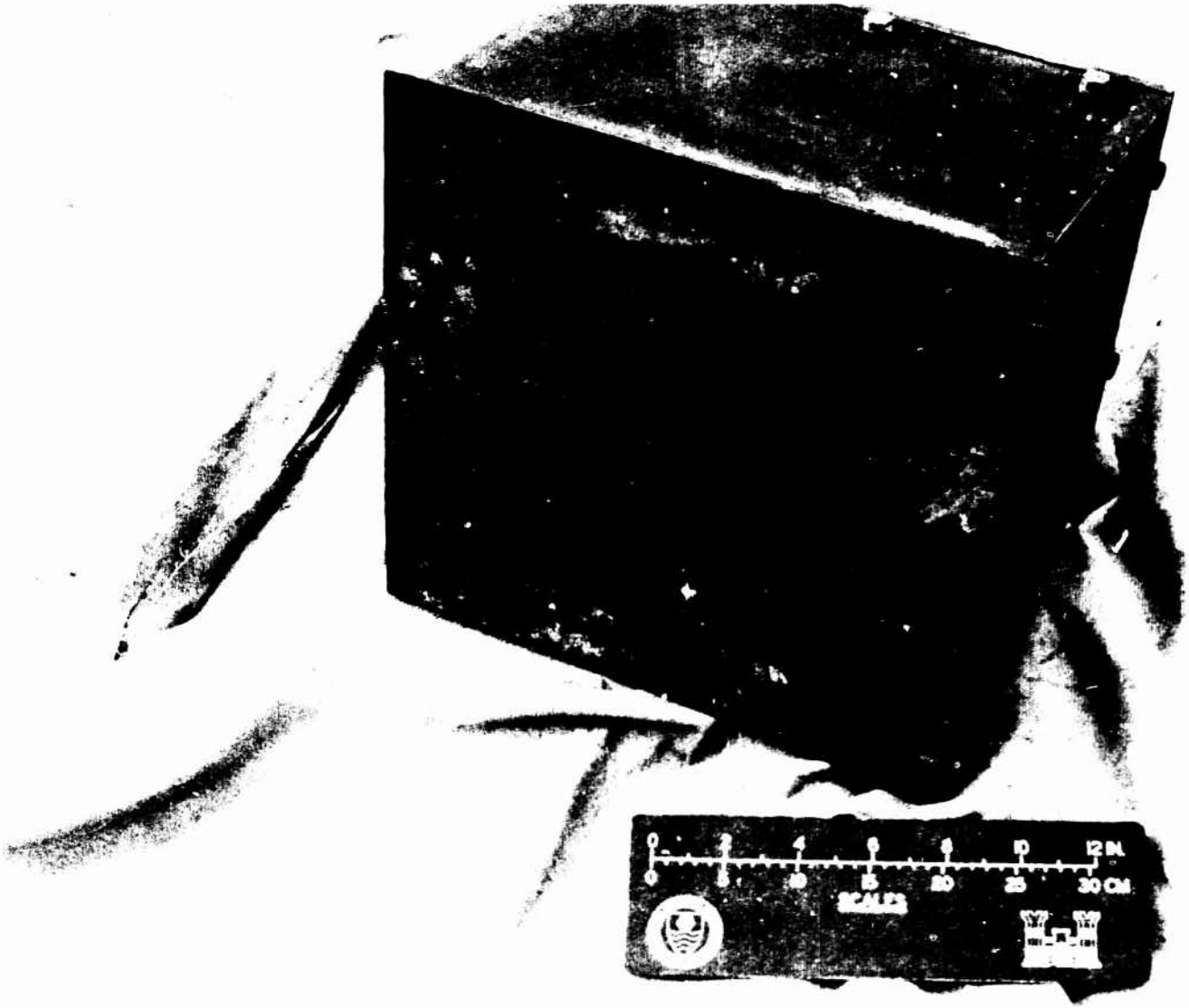


Figure 3.7 Steel-plywood model of air intake structure.

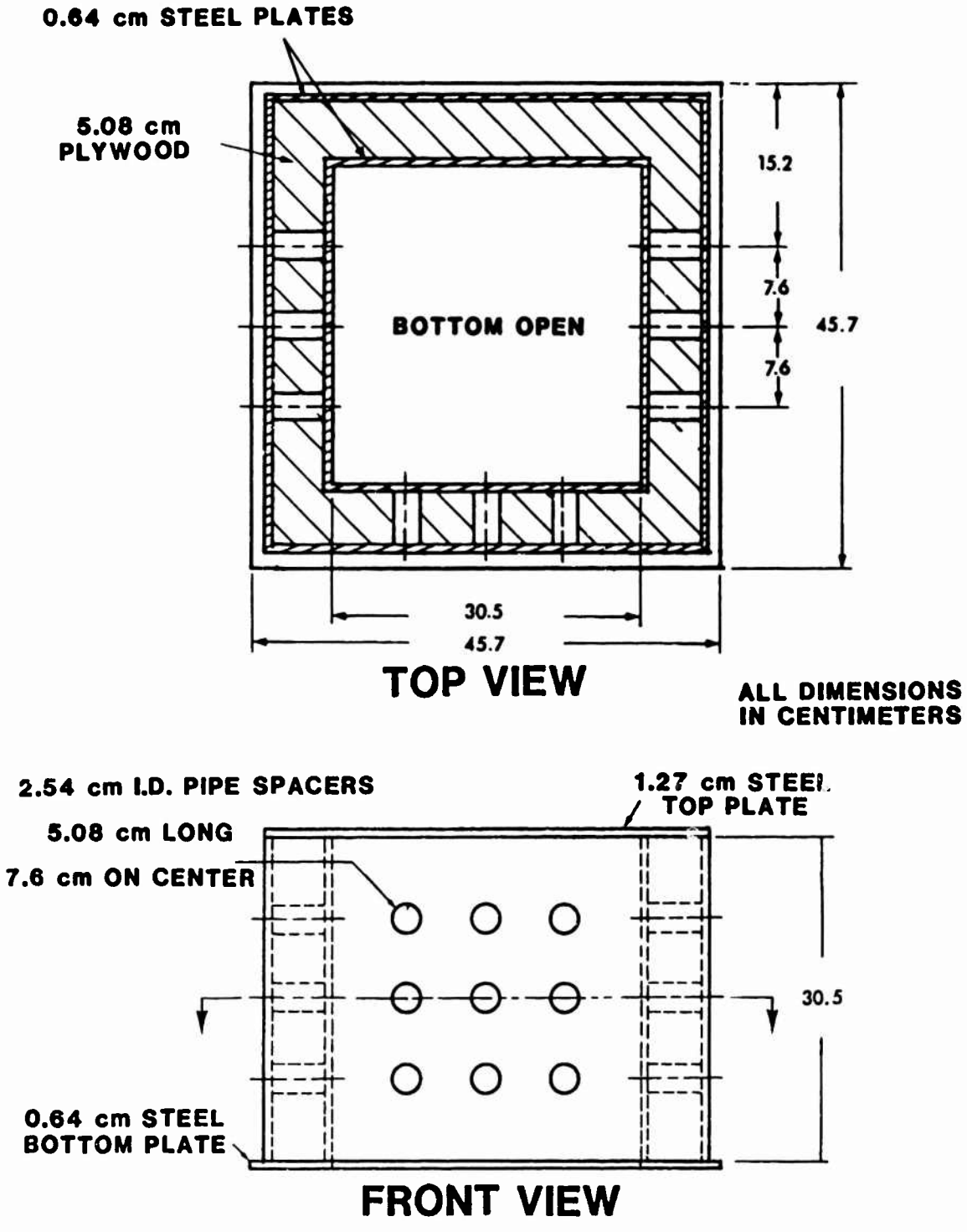


Figure 3.8 Model of air intake structure.

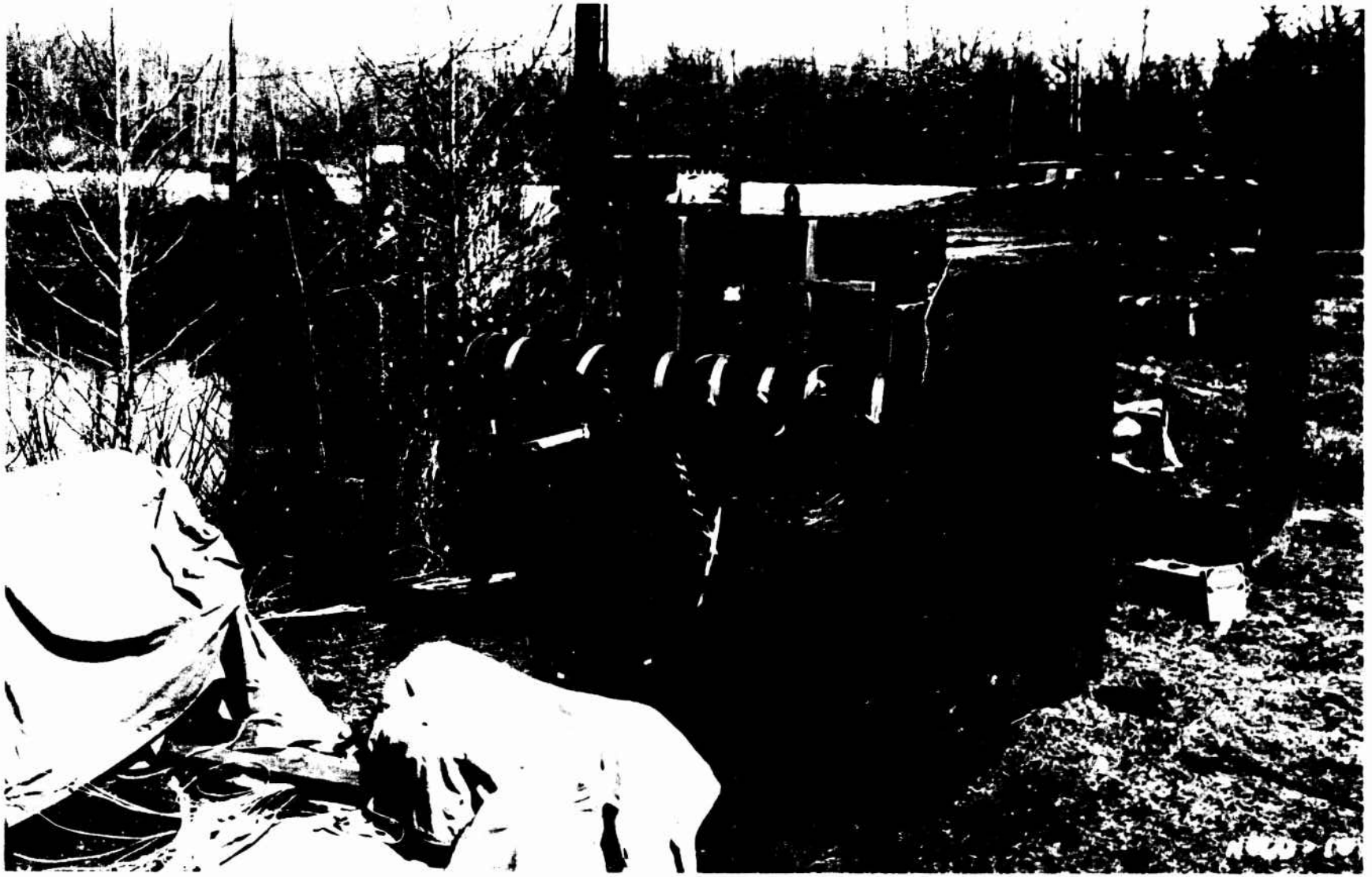
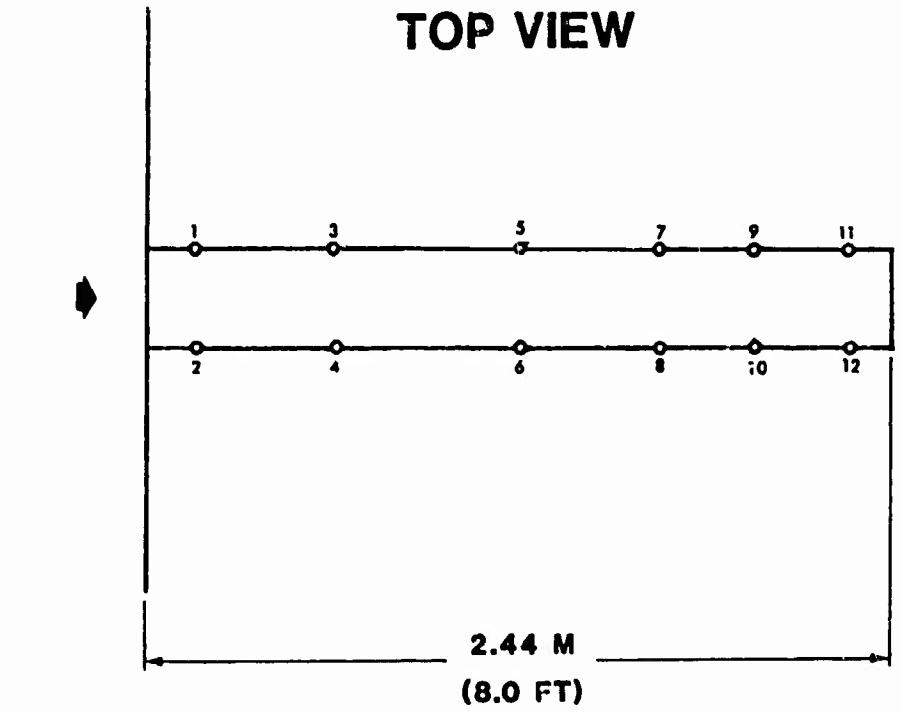
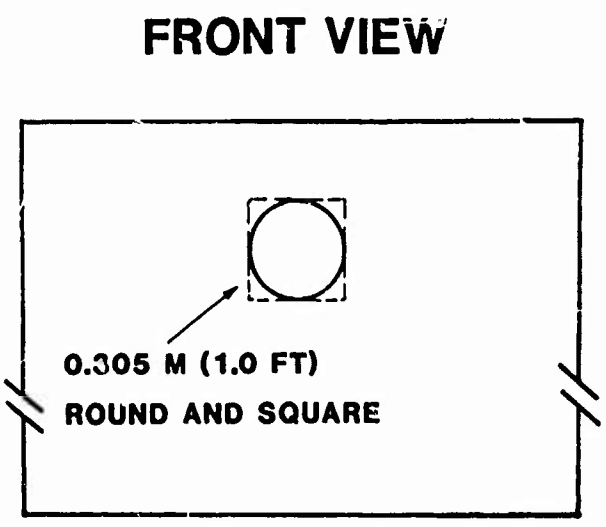


Figure 3.9 Short Straight tunnel with round cross-section.

Figure 3.10 Short straight tunnel with square cross-section.





GAGE NO.	DISTANCE FROM FACE	
	cm	(in)
1	15.24	(6.0)
2	15.24	(6.0)
3	60.96	(24.0)
4	60.96	(24.0)
5	121.92	(48.0)
6	121.92	(48.0)
7	167.64	(66.0)
8	167.64	(66.0)
9	198.12	(78.0)
10	198.12	(78.0)
11	228.60	(90.0)
12	228.60	(90.0)

Figure 3.11 Gage arrangement for short tunnel tests.

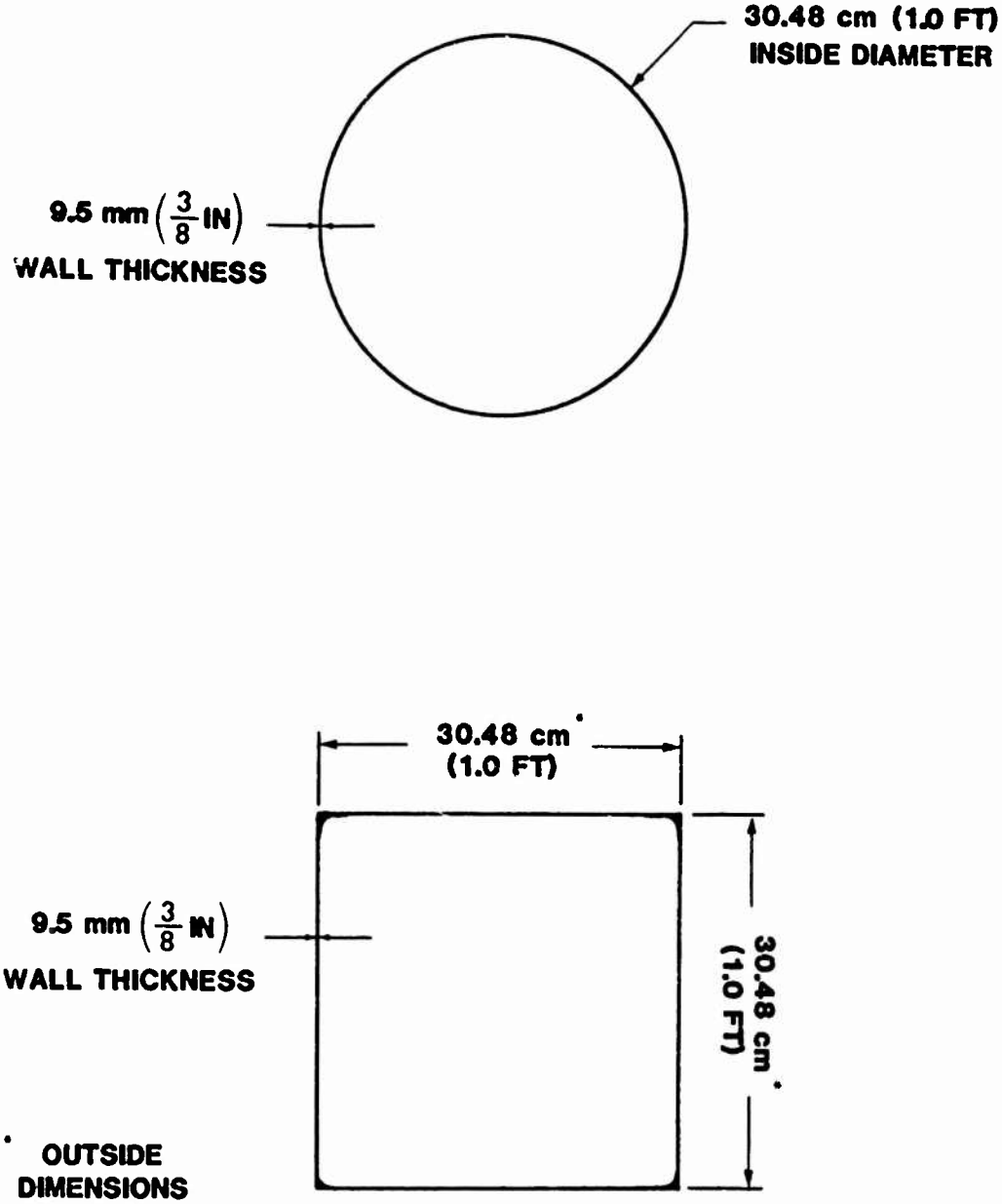


Figure 3.12 Cross-sections of model tunnel.

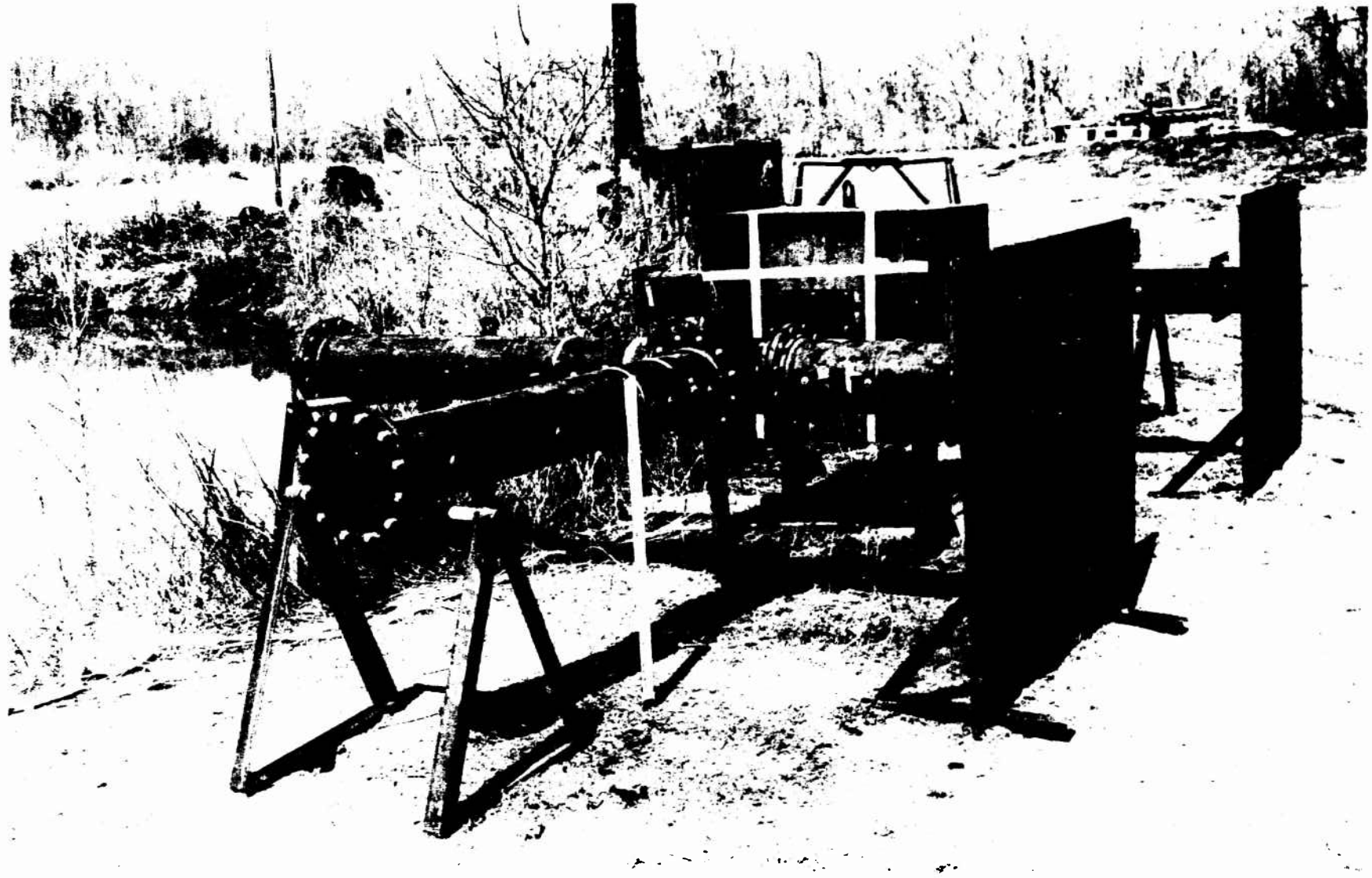


Figure 3.13 Side tunnel structure with round cross-section.

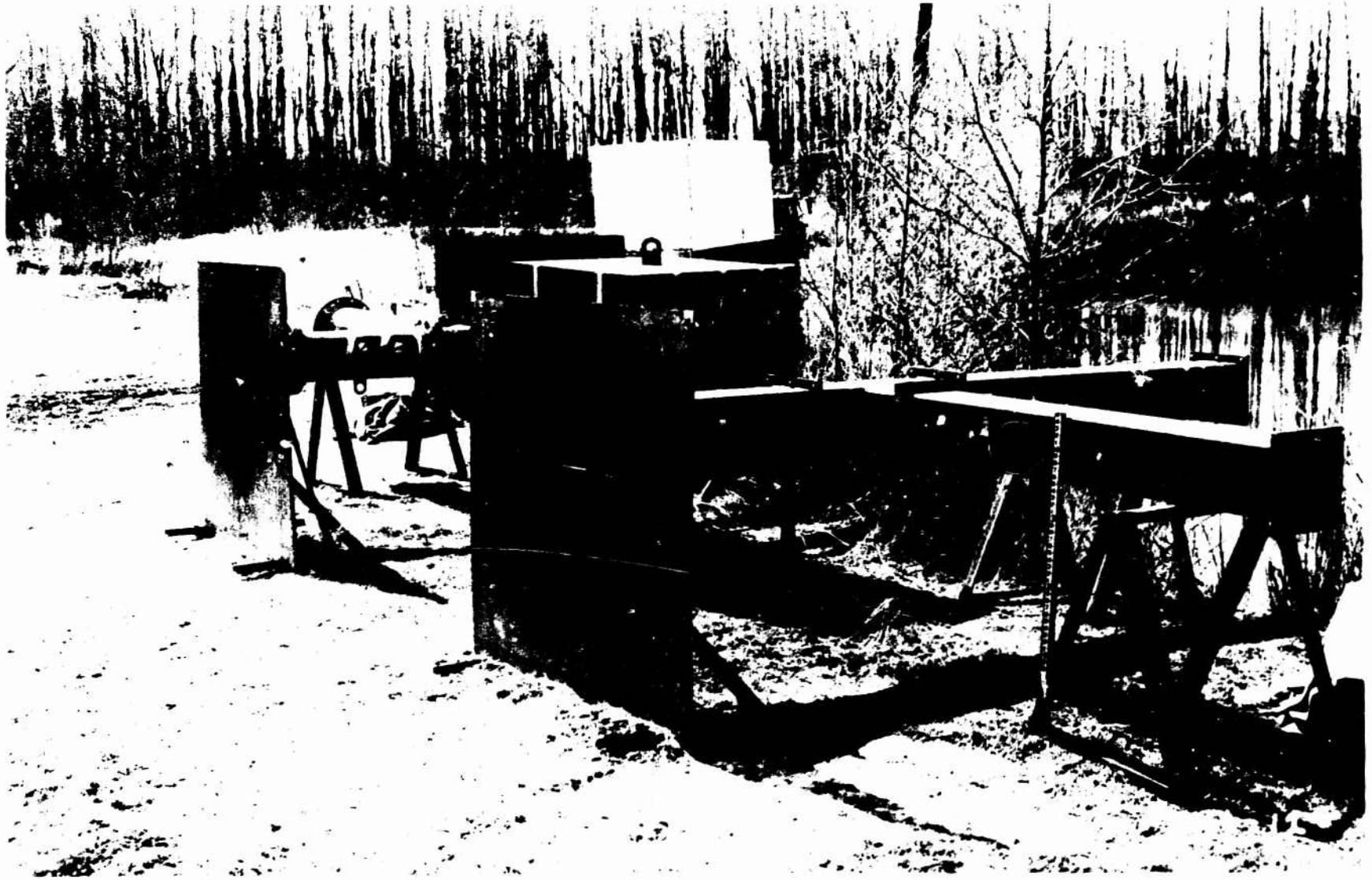
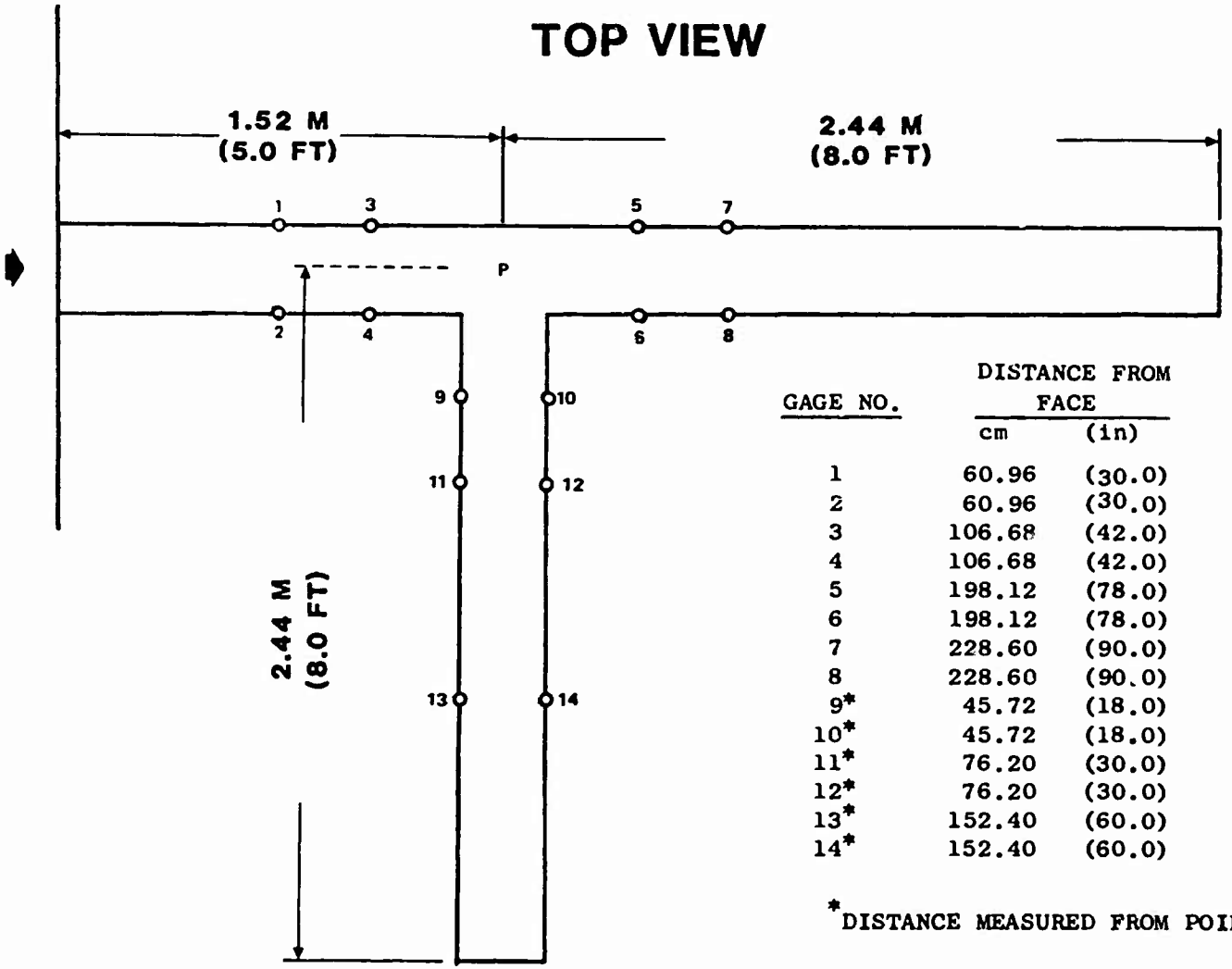


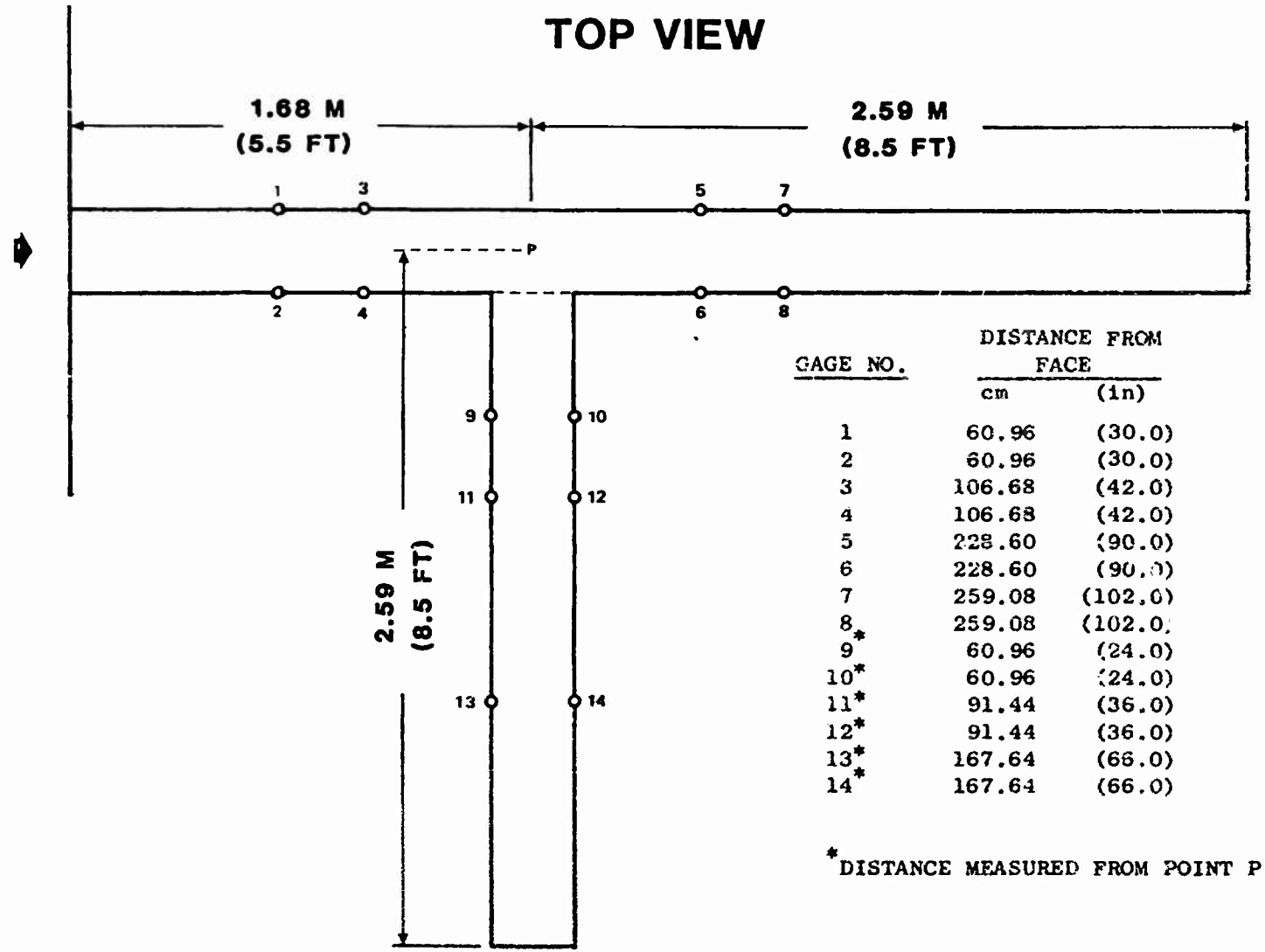
Figure 3.14 Side tunnel structure with square cross-section.



GAGE NO.	DISTANCE FROM FACE cm	(in)
1	60.96	(30.0)
2	60.96	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
5	198.12	(78.0)
6	198.12	(78.0)
7	228.60	(90.0)
8	228.60	(90.0)
9*	45.72	(18.0)
10*	45.72	(18.0)
11*	76.20	(30.0)
12*	76.20	(30.0)
13*	152.40	(60.0)
14*	152.40	(60.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.15 Dimensions and gage locations of side tunnel structure with round cross-section.



GAGE NO.	DISTANCE FROM FACE cm	(in)
1	60.96	(30.0)
2	60.96	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
5	228.60	(90.0)
6	228.60	(90.0)
7	259.08	(102.0)
8	259.08	(102.0)
9*	60.96	(24.0)
10*	60.96	(24.0)
11*	91.44	(36.0)
12*	91.44	(36.0)
13*	167.64	(66.0)
14*	167.64	(66.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.16 Dimensions and gage locations of side tunnel structure with square cross-section.

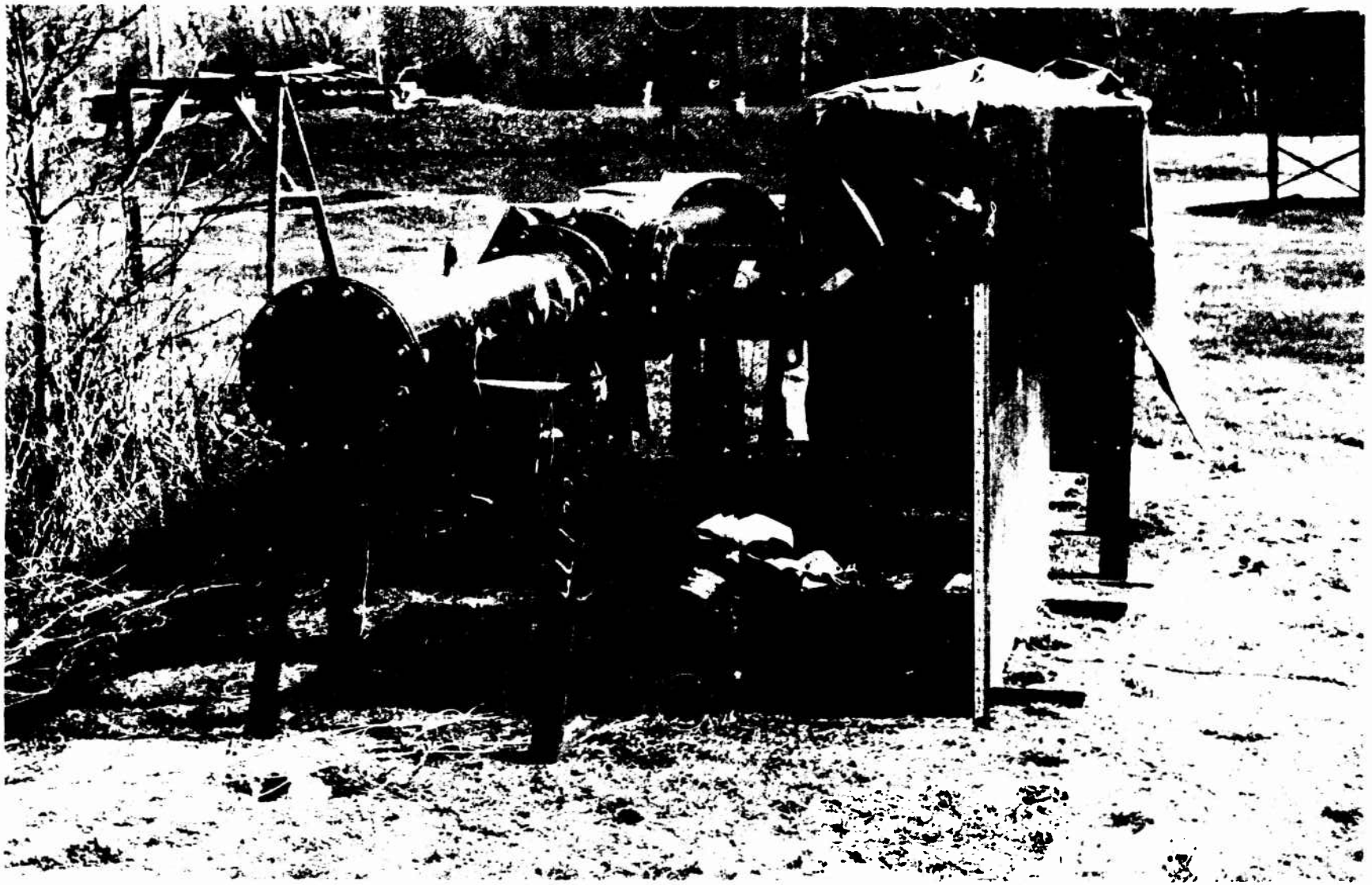


Figure 3.17 "T" tunnel structure with round cross-section.

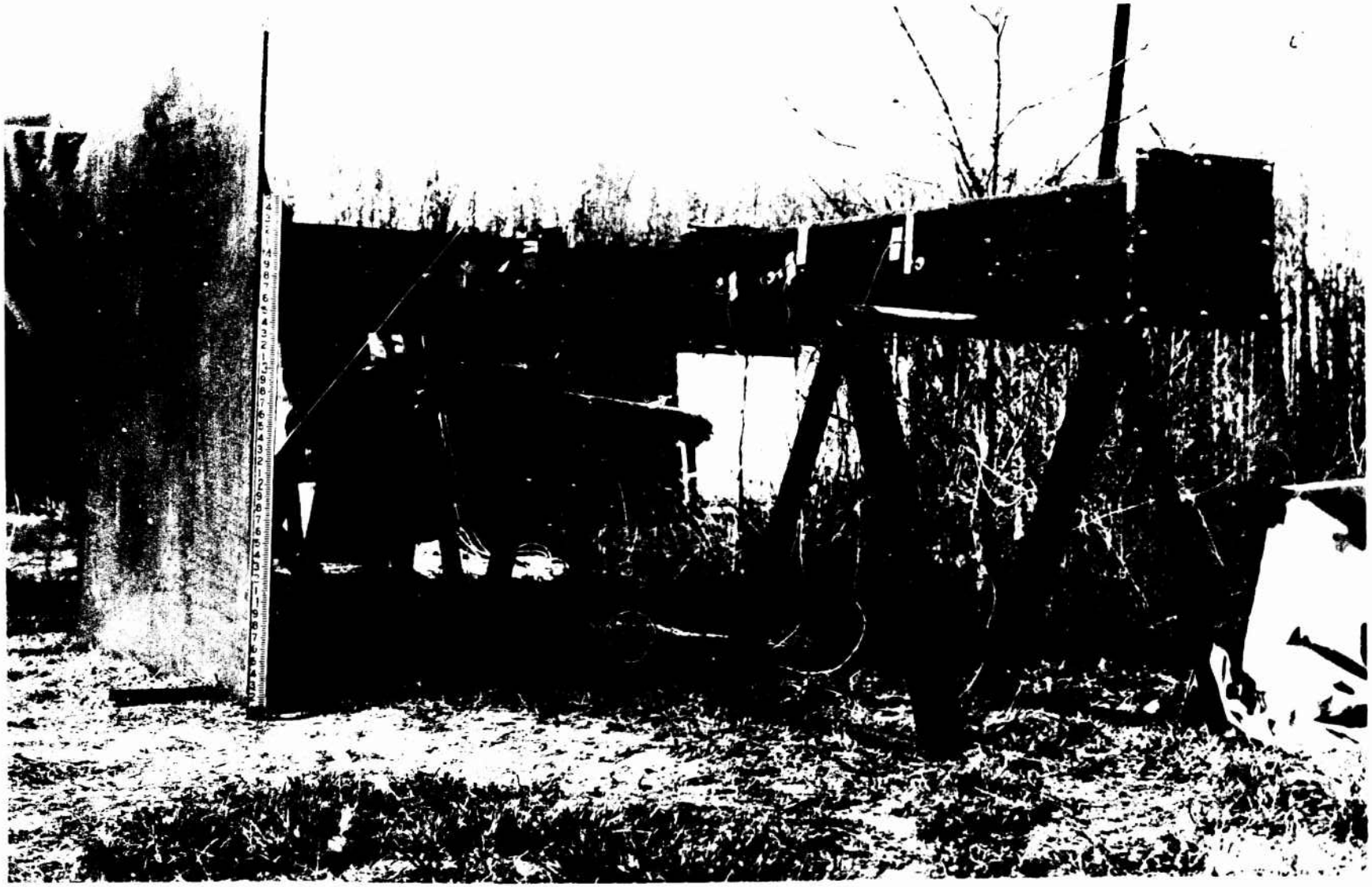
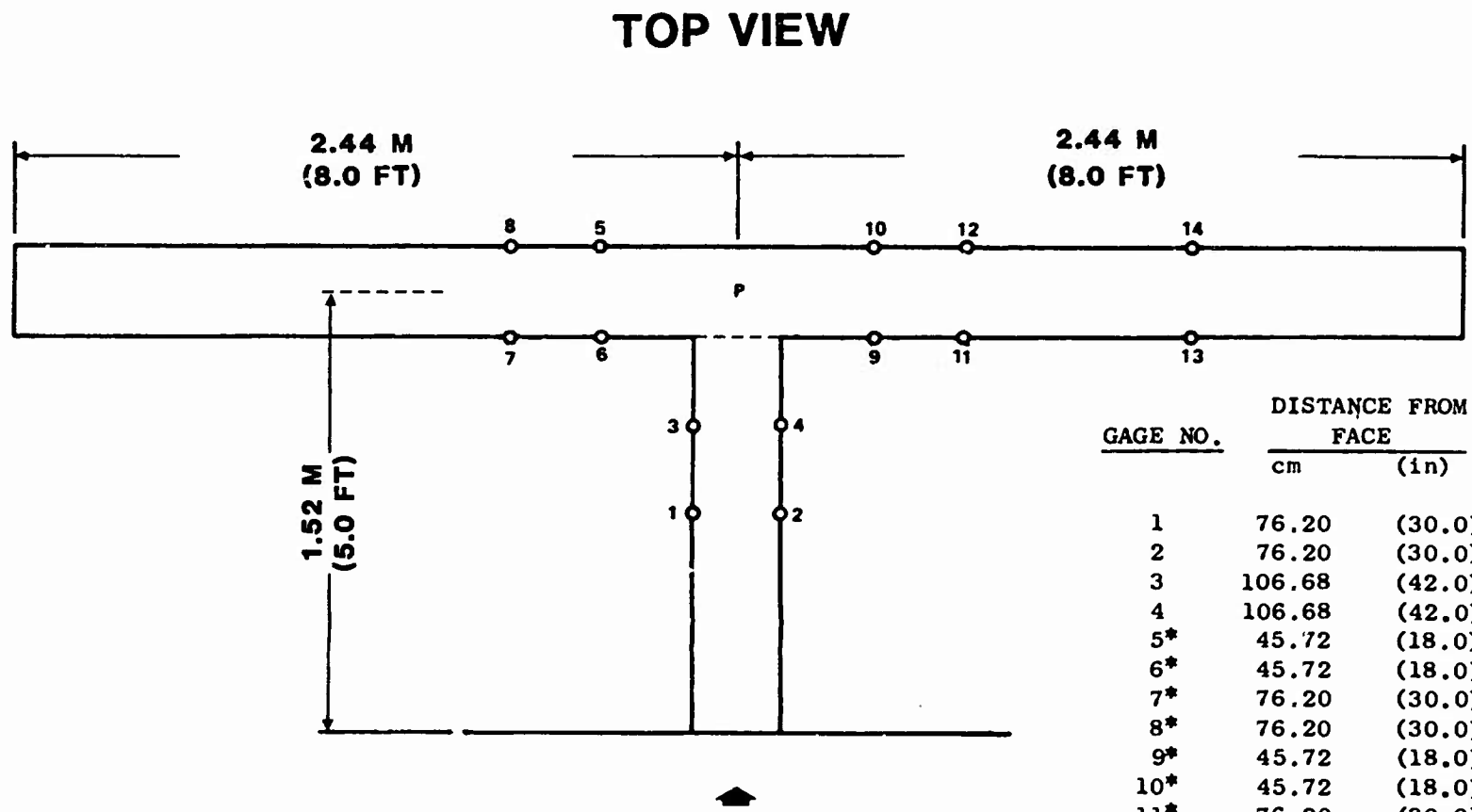


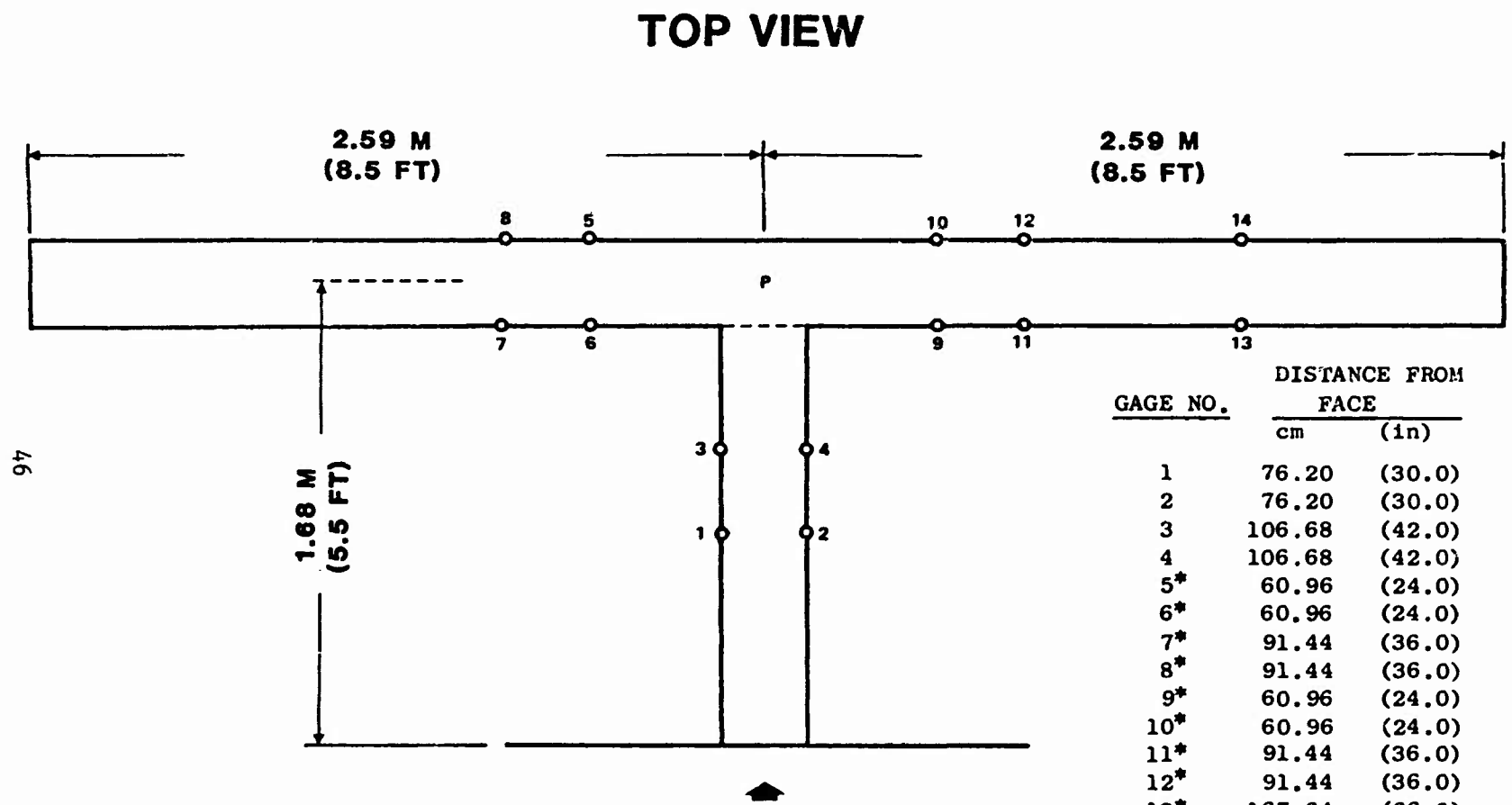
Figure 3.18 "T" tunnel structure with square cross-section.



GAGE NO.	DISTANCE FROM FACE	
	cm	(in)
1	76.20	(30.0)
2	76.20	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
5*	45.72	(18.0)
6*	45.72	(18.0)
7*	76.20	(30.0)
8*	76.20	(30.0)
9*	45.72	(18.0)
10*	45.72	(18.0)
11*	76.20	(30.0)
12*	76.20	(30.0)
13*	152.40	(60.0)
14*	152.40	(60.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.19 Dimensions and gage locations of "T" tunnel structure with round cross-section.



GAGE NO.	DISTANCE FROM FACE cm	(in)
1	76.20	(30.0)
2	76.20	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
5*	60.96	(24.0)
6*	60.96	(24.0)
7*	91.44	(36.0)
8*	91.44	(36.0)
9*	60.96	(24.0)
10*	60.96	(24.0)
11*	91.44	(36.0)
12*	91.44	(36.0)
13*	167.64	(66.0)
14*	167.64	(66.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.20 Dimensions and gage locations of "T" tunnel structure with square cross-section.

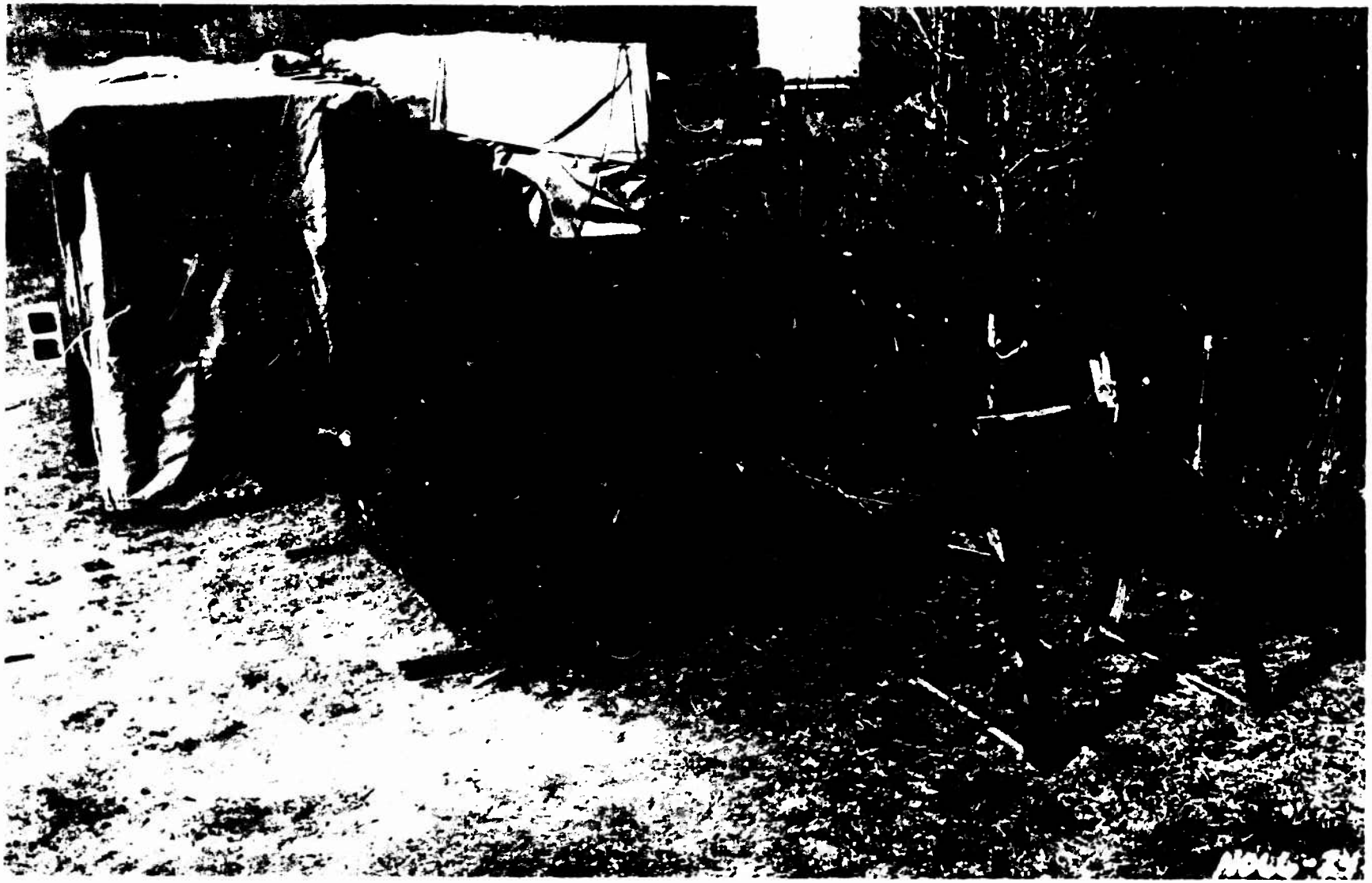
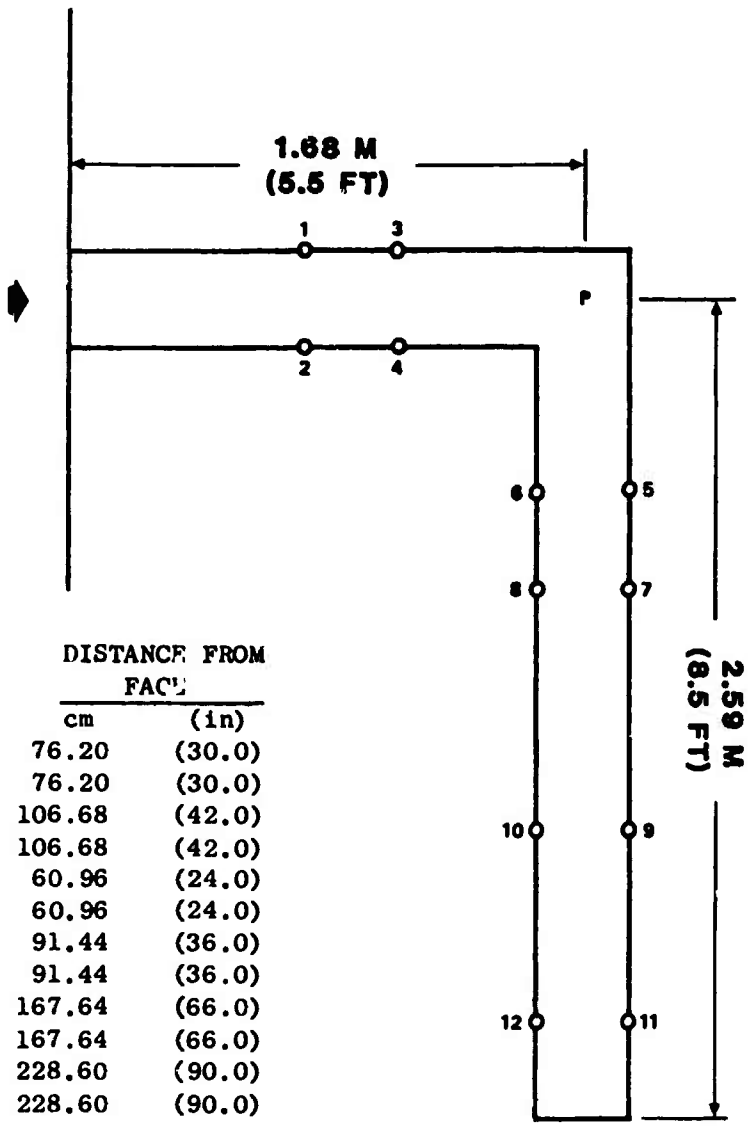


Figure 3.21 Ninety degree bend tunnel.

TOP VIEW



GAGE NO.	DISTANCE FROM FACE	
	cm	(in)
1	76.20	(30.0)
2	76.20	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
5*	60.96	(24.0)
6*	60.96	(24.0)
7*	91.44	(36.0)
8*	91.44	(36.0)
9*	167.64	(66.0)
10*	167.64	(66.0)
11*	228.60	(90.0)
12*	228.60	(90.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.22 Dimensions and gage positions of 90 degree bend tunnel.

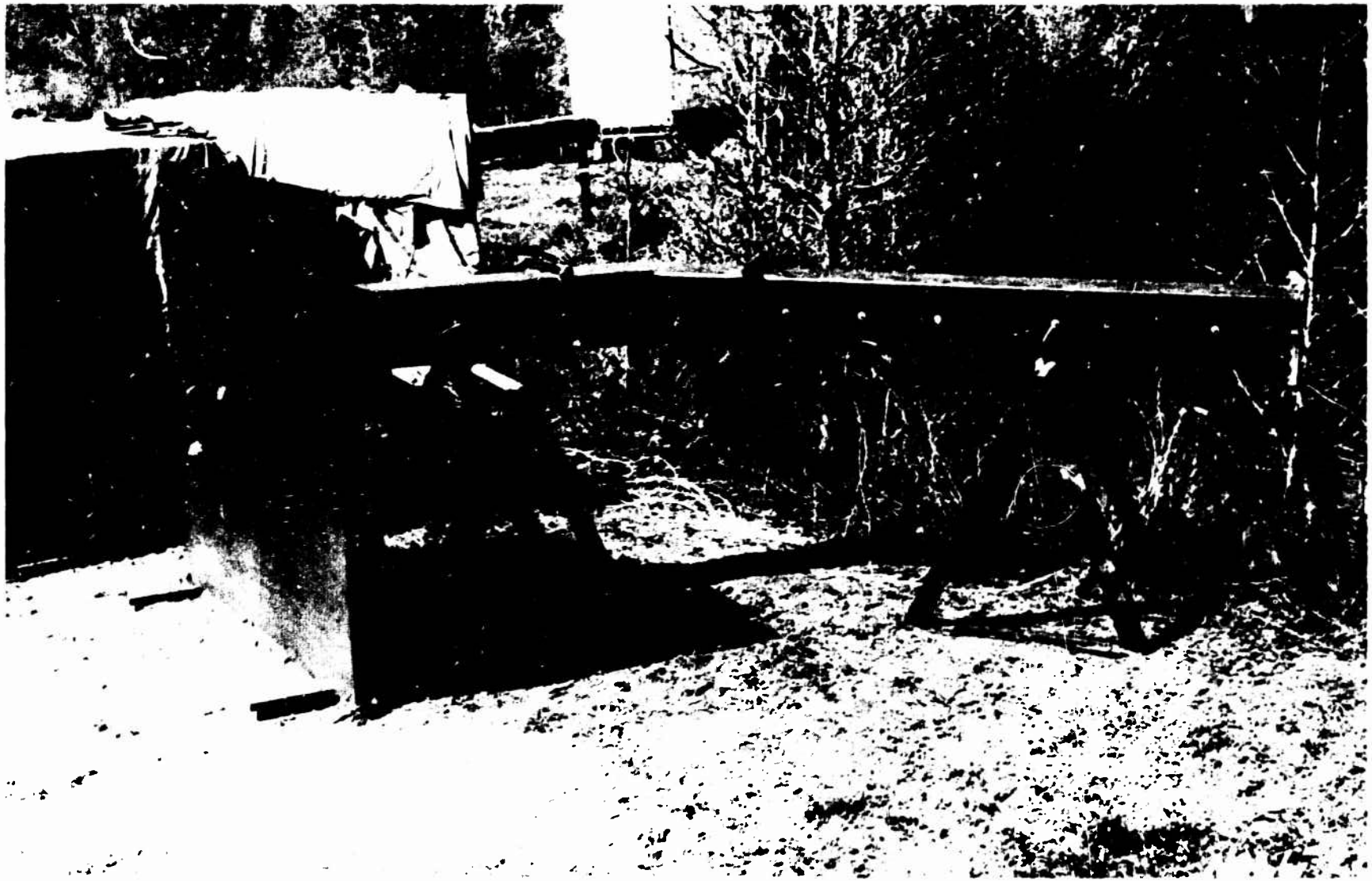
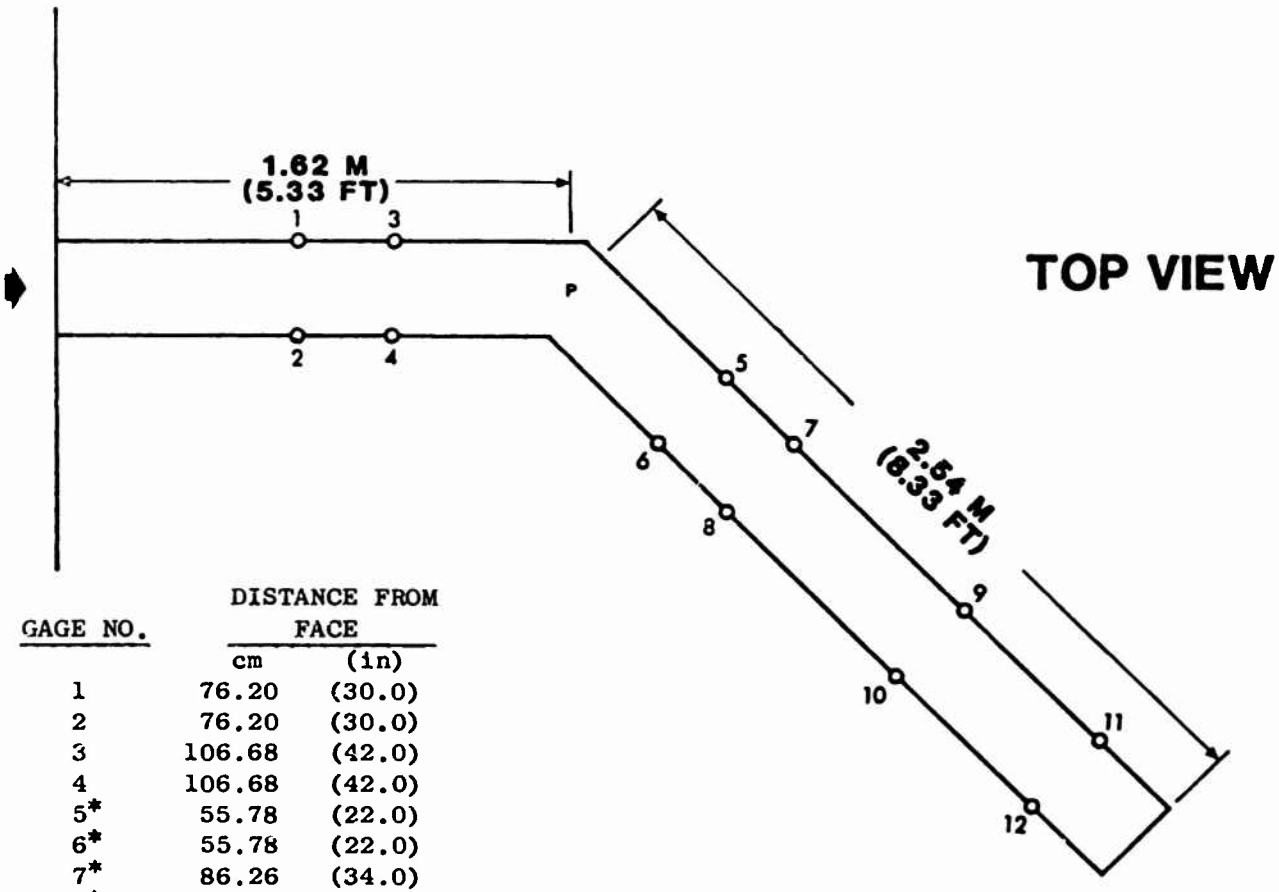


Figure 3.23 Forty-five degree bend tunnel.



GAGE NO.	DISTANCE FROM FACE	
	cm	(in)
1	76.20	(30.0)
2	76.20	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
5*	55.78	(22.0)
6*	55.78	(22.0)
7*	86.26	(34.0)
8*	86.26	(34.0)
9*	162.46	(64.0)
10*	162.46	(64.0)
11*	223.42	(88.0)
12*	223.42	(88.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.24 Dimensions and gage positions of 45 degree bend tunnel.

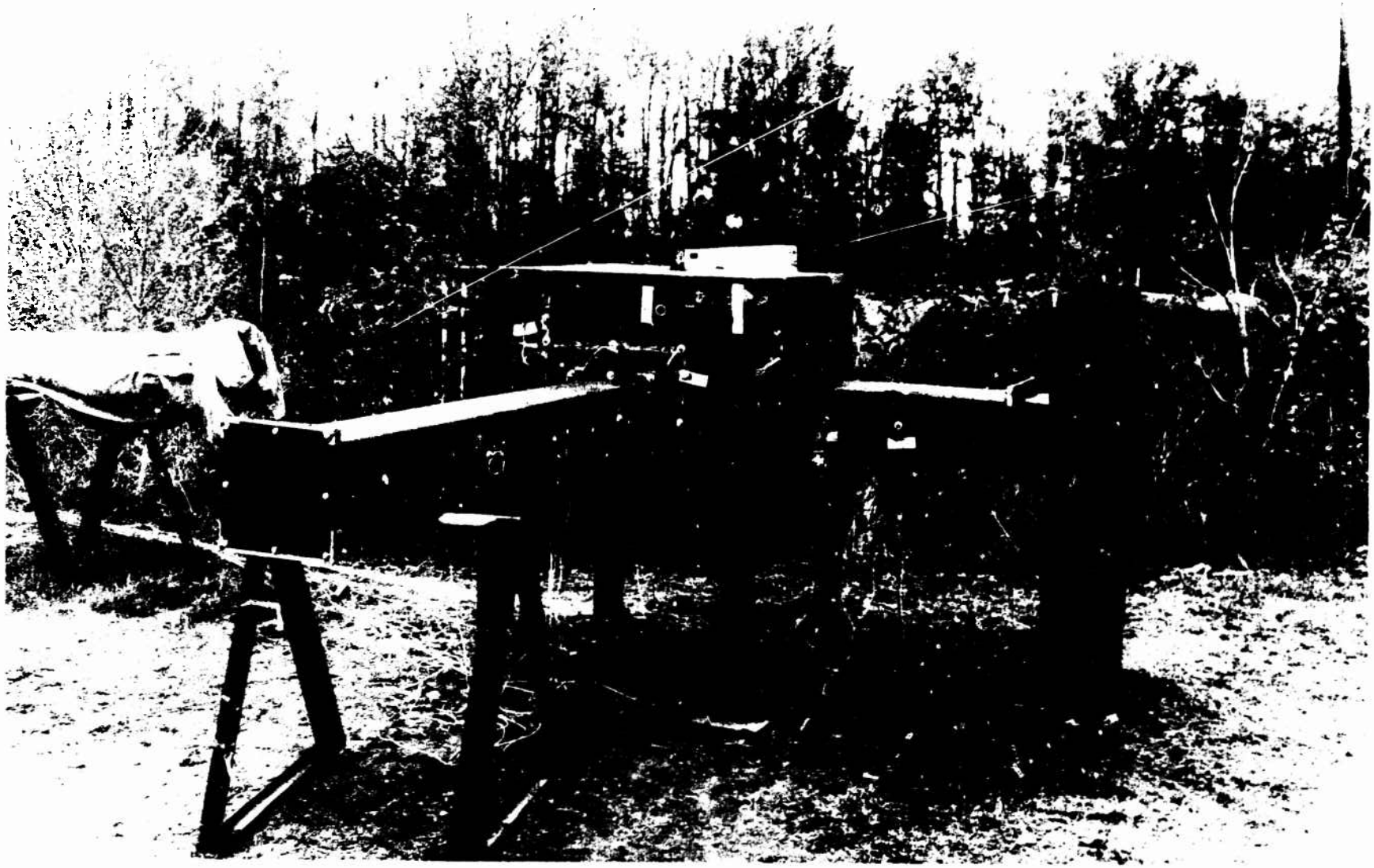
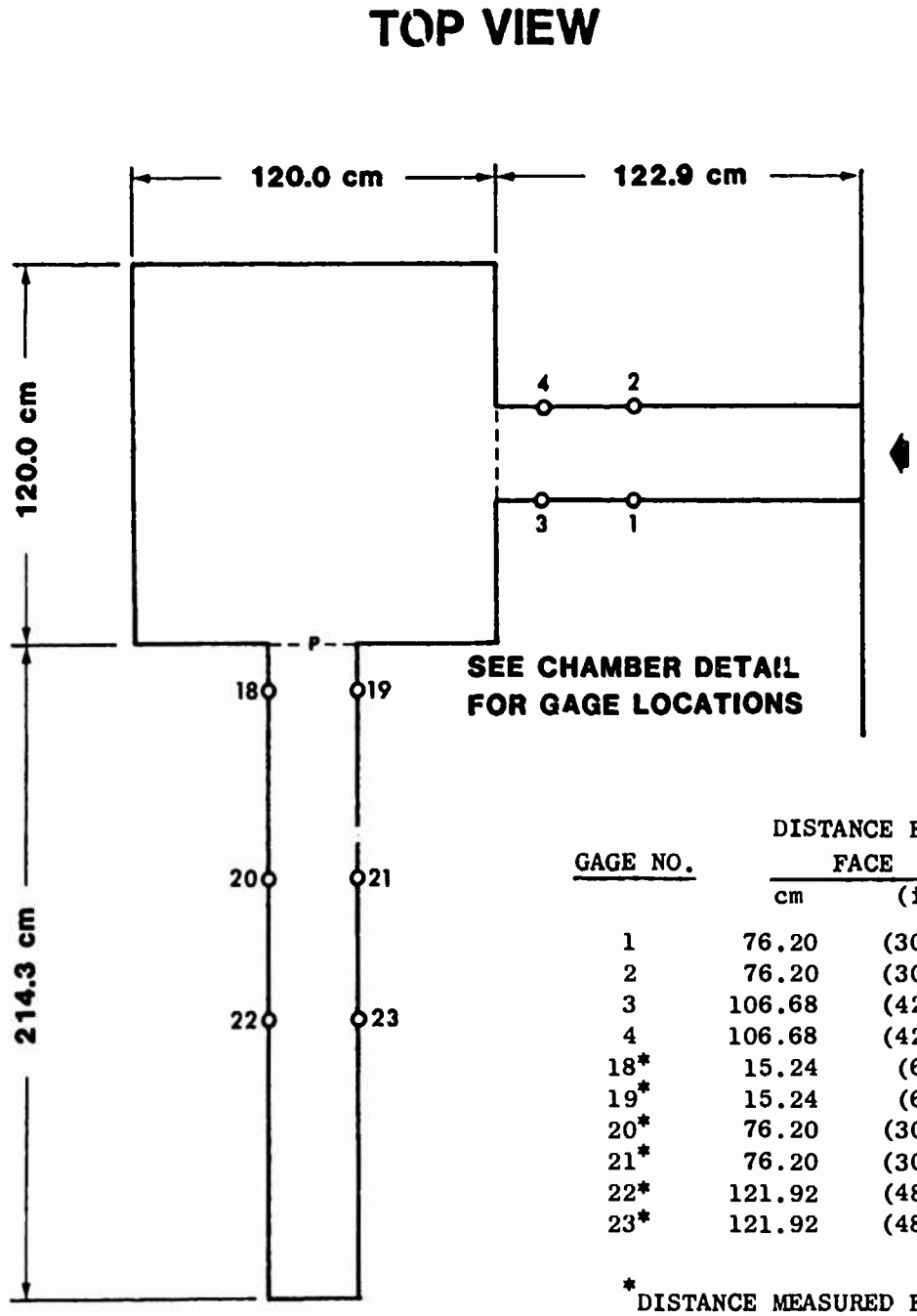


Figure 3.25 Vented expansion chamber structure.



GAGE NO.	DISTANCE FROM FACE	
	cm	(in)
1	76.20	(30.0)
2	76.20	(30.0)
3	106.68	(42.0)
4	106.68	(42.0)
18*	15.24	(6.0)
19*	15.24	(6.0)
20*	76.20	(30.0)
21*	76.20	(30.0)
22*	121.92	(48.0)
23*	121.92	(48.0)

*DISTANCE MEASURED FROM POINT P

Figure 3.26 Top view of vented expansion chamber and gage locations in entrance and exit tunnels.

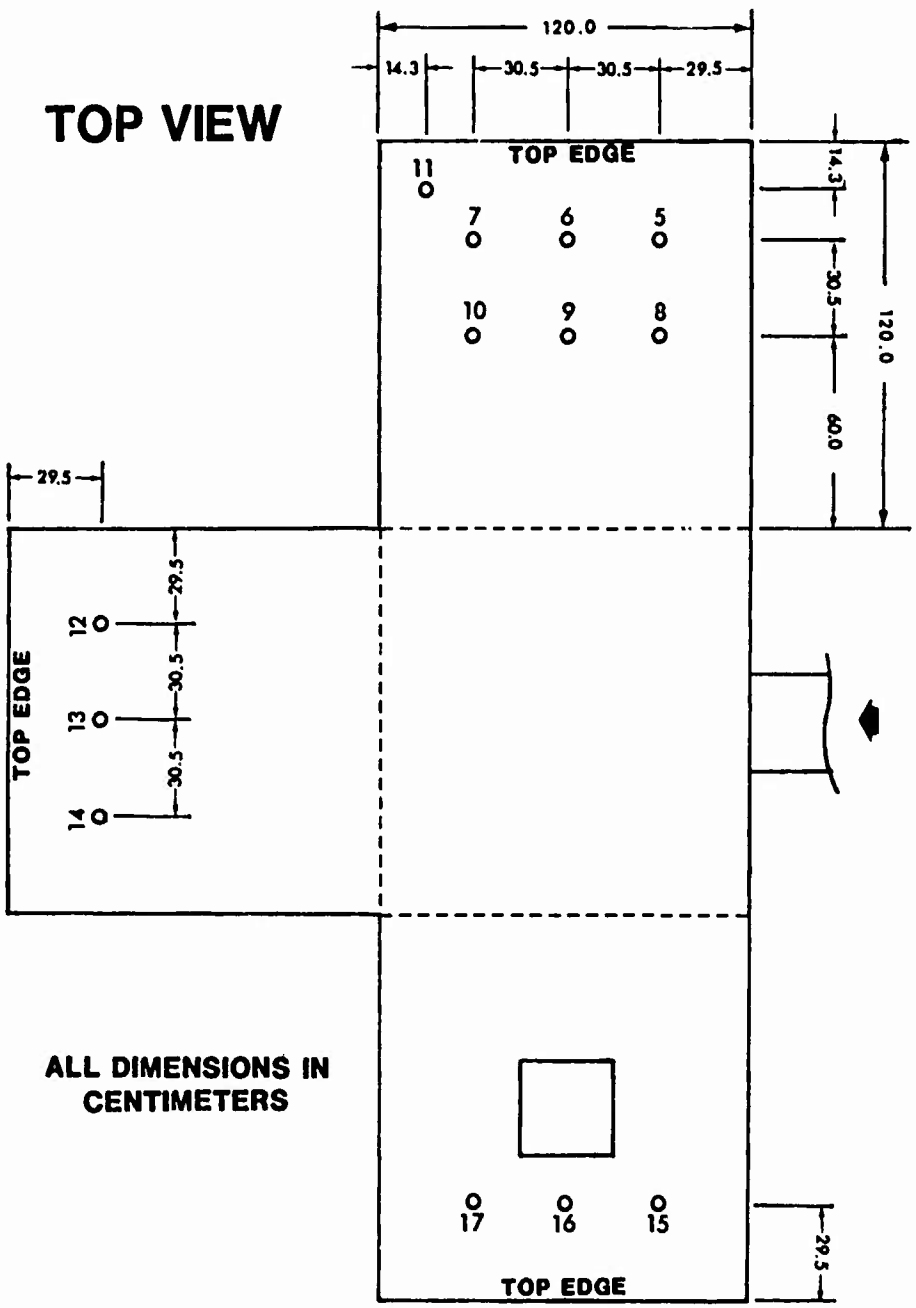


Figure 3.27 Gage locations on inside walls of expansion chamber.

CHARGE LOCATION

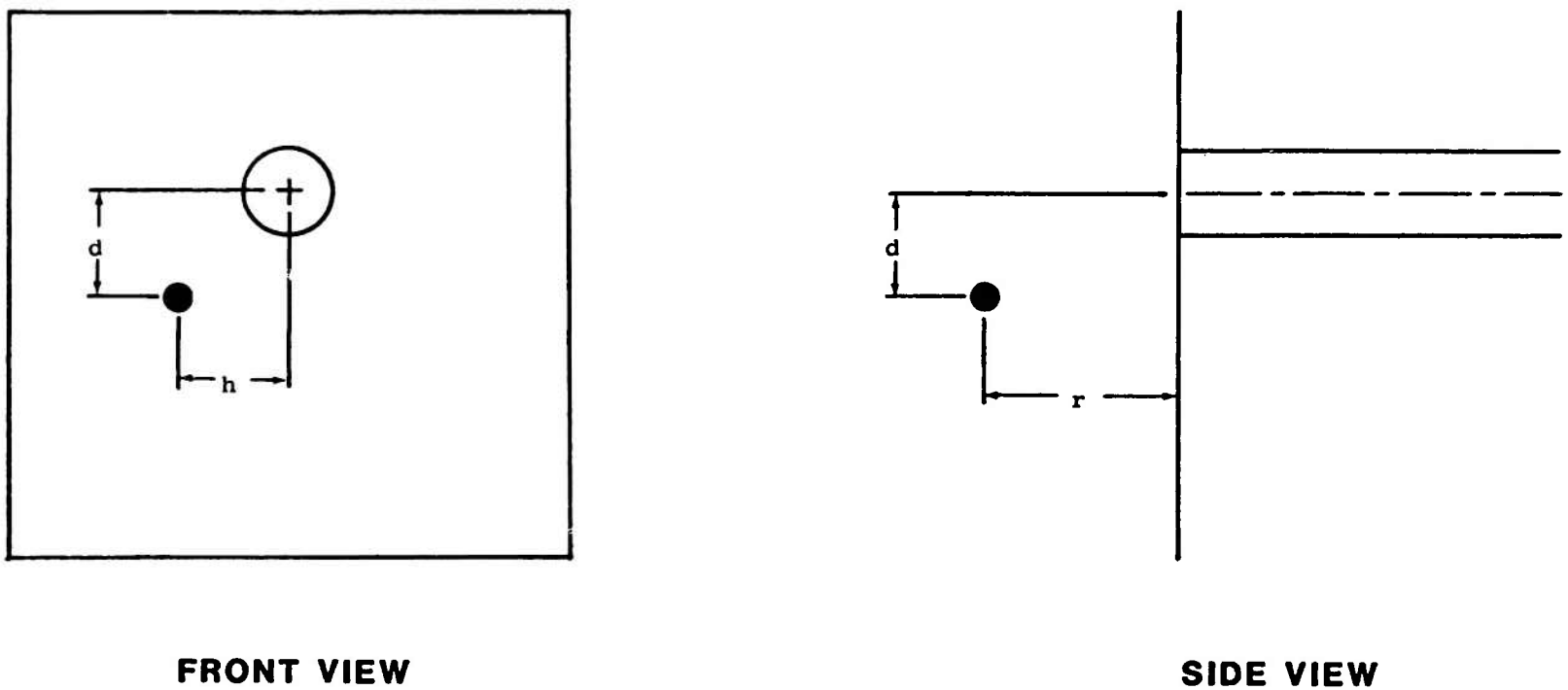


Figure 3.28 Charge geometry.

CHAPTER 4

AIRBLAST MEASUREMENTS

The measured pressure time records and the impulse or integral of the pressure is given in Appendix A for the 1981 test series and in Appendix B for the 1982 series. Characteristic peak pressures, impulses and times are given in the tables of Appendices C and D. The parameters of the tables are defined in Figure 4.1.

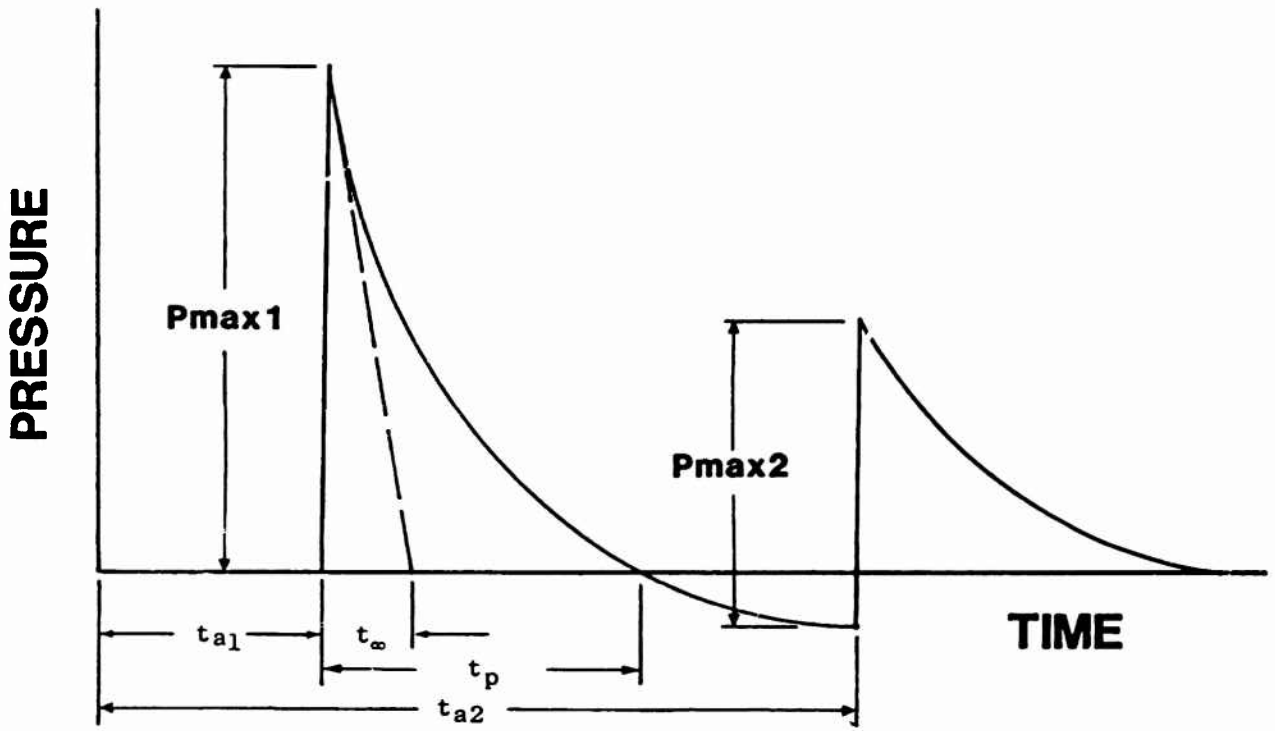


Figure 4.1 Definition of tabulated blast parameters.

CHAPTER 5

CONCLUSIONS

The data presented in this report are the result of the first phase of an experimental effort conducted by WES. Further small-scale explosive tests are being performed, with test descriptions and results to be published in later reports.

A limited analysis of the results of the first phase resulted in several general observations, which include:

1) Blast attenuation of short duration pulses in straight tunnels involves some different mechanisms than those which dominate for longer duration pulses. Formulae used for long duration pulses do not work well for short duration pulses.

2) Side-on blast pressures at one diameter into the tunnel agree with shock tube values of the transmitted pressures. However, blast attenuation before and beyond is much different from the shock tube results.

3) The processes of blast propagation into side tunnels and T-tunnels and around 90 and 45 degree bends produce reflected and diffracted pulses which have quite similar characteristics.

A final, detailed analysis of the experimental data will be performed and reported at a later date.

REFERENCES

1. Kriebel, A. R., "Airblast in Tunnels and Chambers," Nuclear Weapons Blast Phenomena, DASA 1200, Volume II, Supplement 1, Defense Nuclear Agency, 1972.

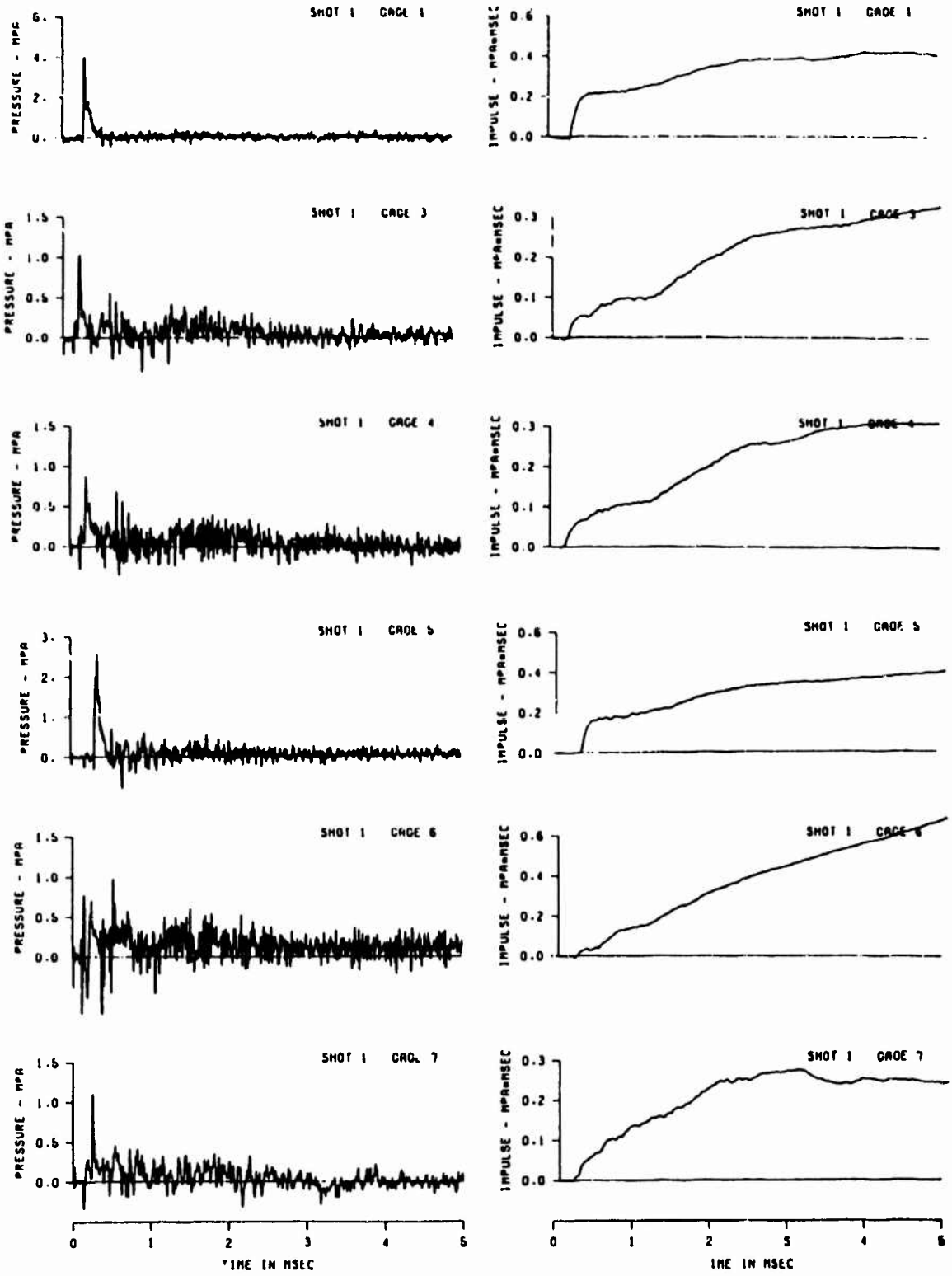
2. Coulter, G. A., "Attenuation of Peaked Air Shock Waves in Smooth Tunnels," BRL MR-1809, U. S. Army Ballistic Research Laboratories, 1966.

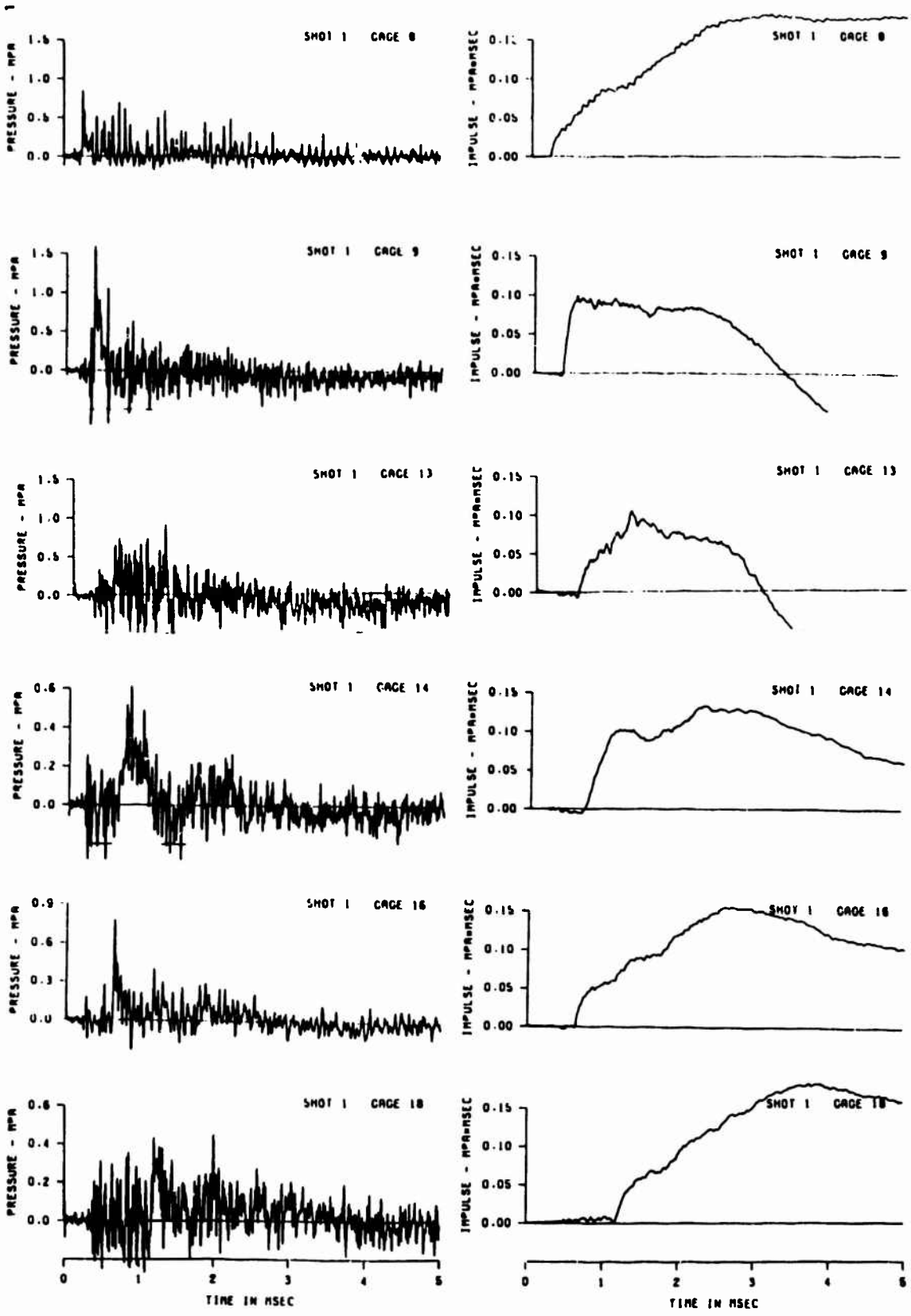
3. Itschner, D. and Anet, B., "Entry and Attenuation of Shock Waves in Tunnels," Proceedings Fifth International Symposium on Military Applications of Blast Simulation, Stockholm, 1977.

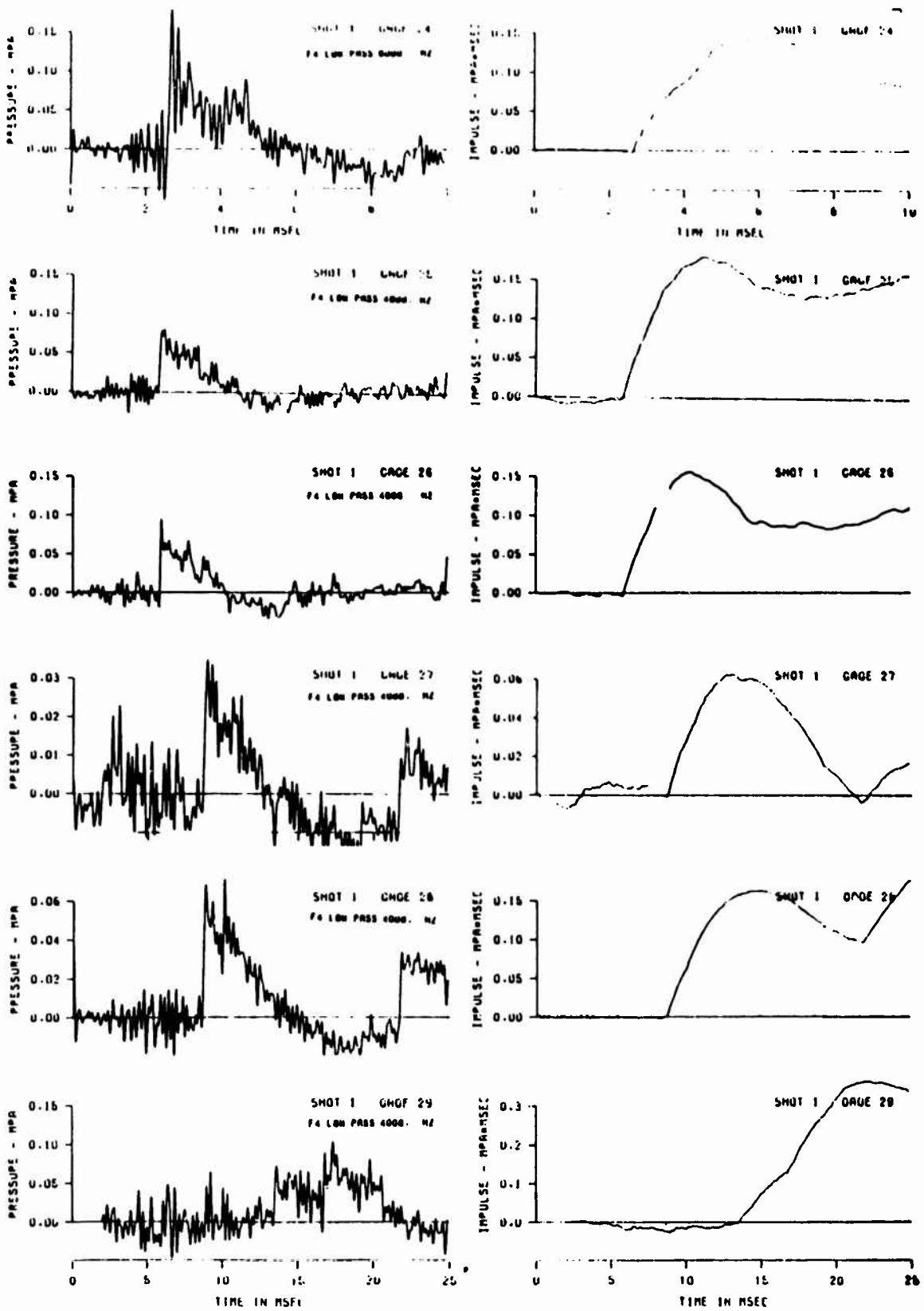
4. Gurke, G. and Scheklinski-Gluck, G., "An Investigation of Blastwave Penetration into a Tunnel Entrance," Report E 7/90, Ernst-Mach-Institute der Fraunhofer-Gesellschaft, Friburg, Germany, 1980.

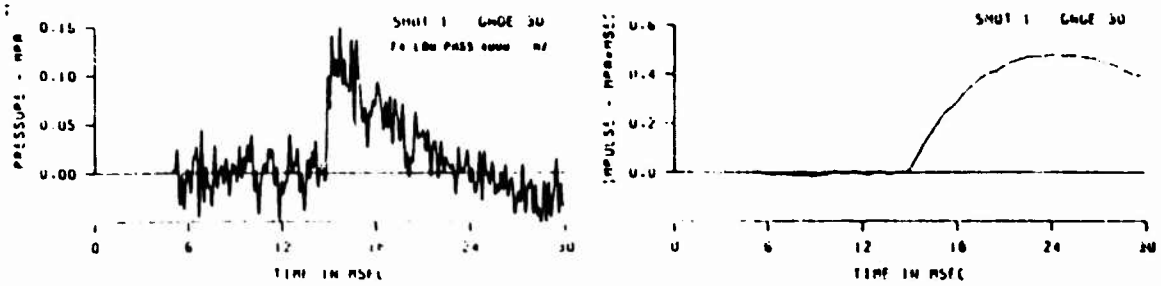
APPENDIX A

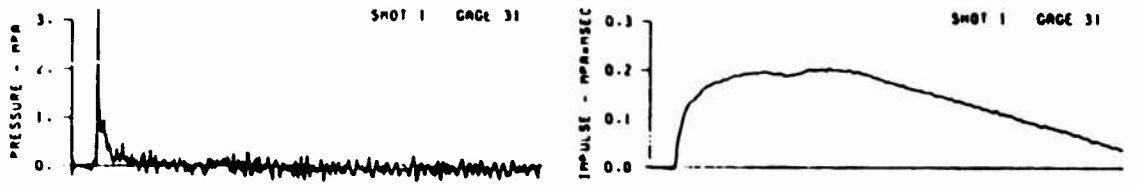
AIRBLAST MEASUREMENTS 1981 SERIES

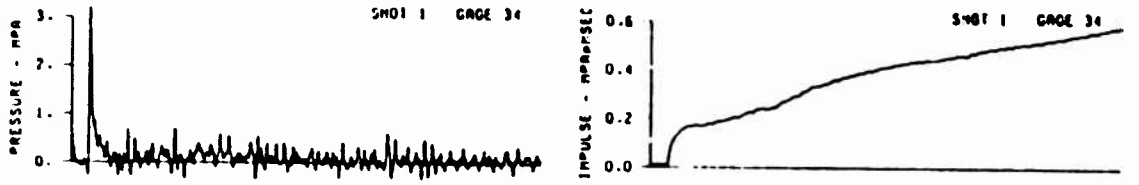

SHOT 1 GAGE 1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 1 GAGE 3
SHOT 1 GAGE 4
SHOT 1 GAGE 5
SHOT 1 GAGE 6
SHOT 1 GAGE 7
TIME IN MSEC

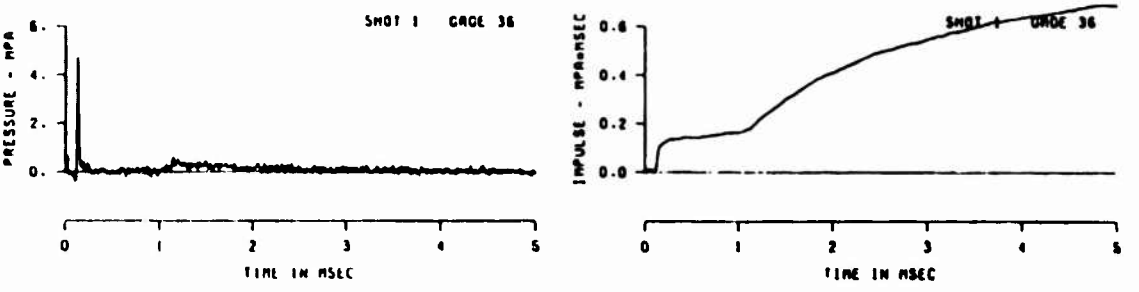

SHOT 1 GAGE 8
SHOT 1 GAGE 9
SHOT 1 GAGE 13
SHOT 1 GAGE 14
SHOT 1 GAGE 16
SHOT 1 GAGE 18
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

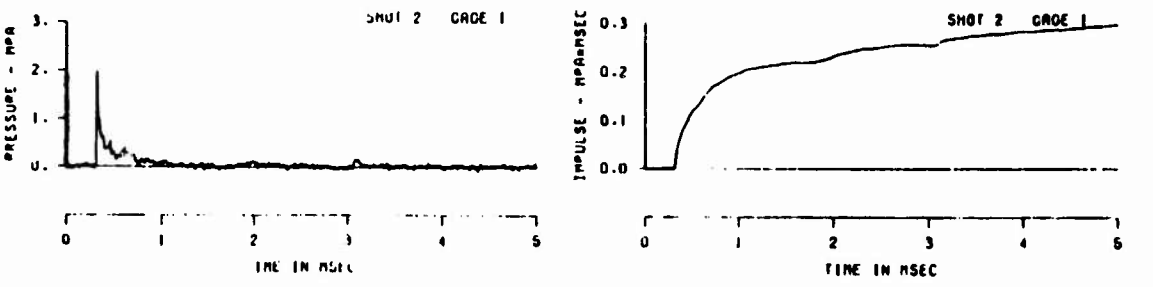

PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0.15
0.10
0.05
0.00
0.03
0.02
0.01
0.06
0.04
0.3
0.2
0.1
0.0
0
5
10
15
20
25

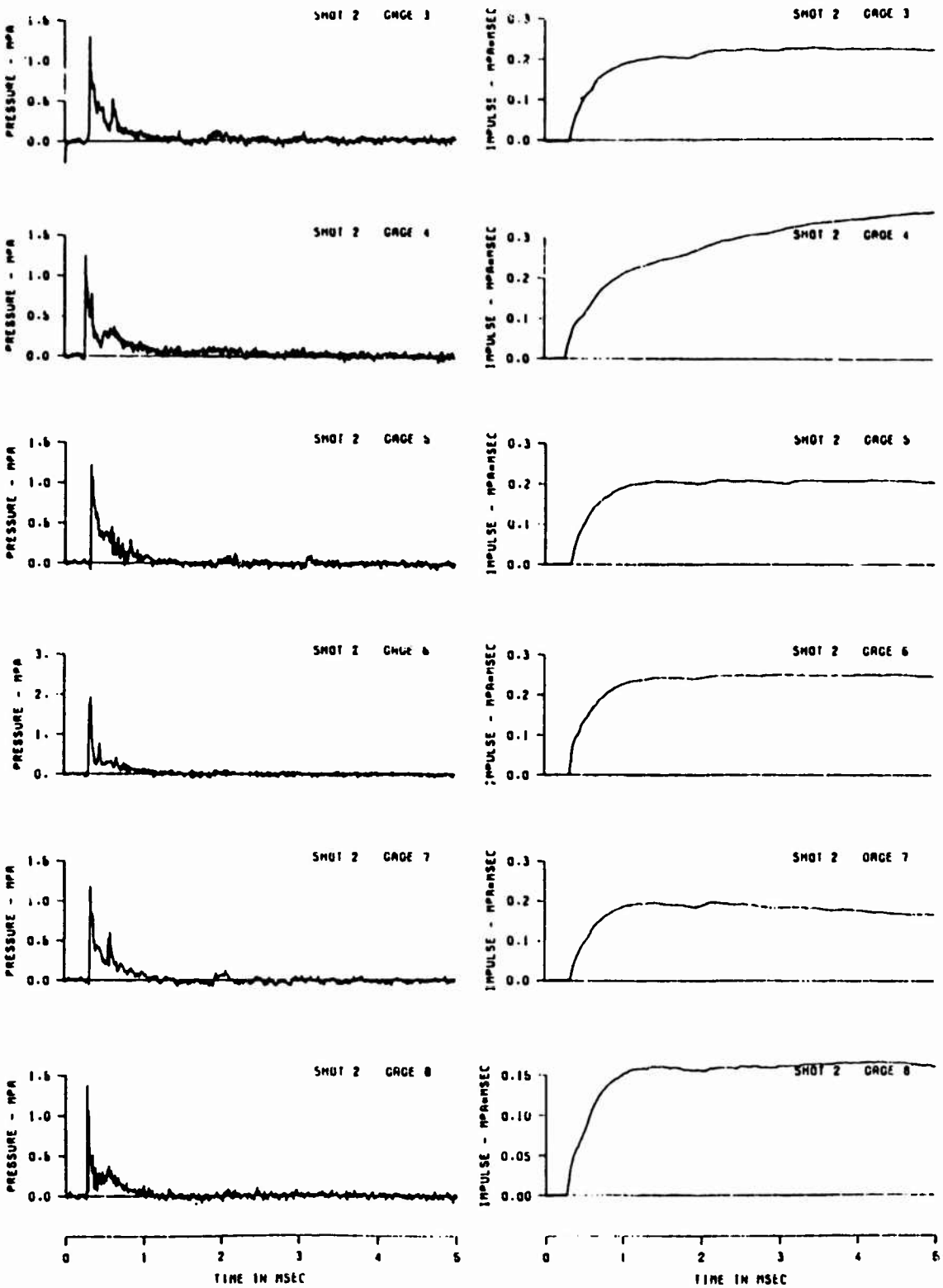

SHOT 1 GAGE 30
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

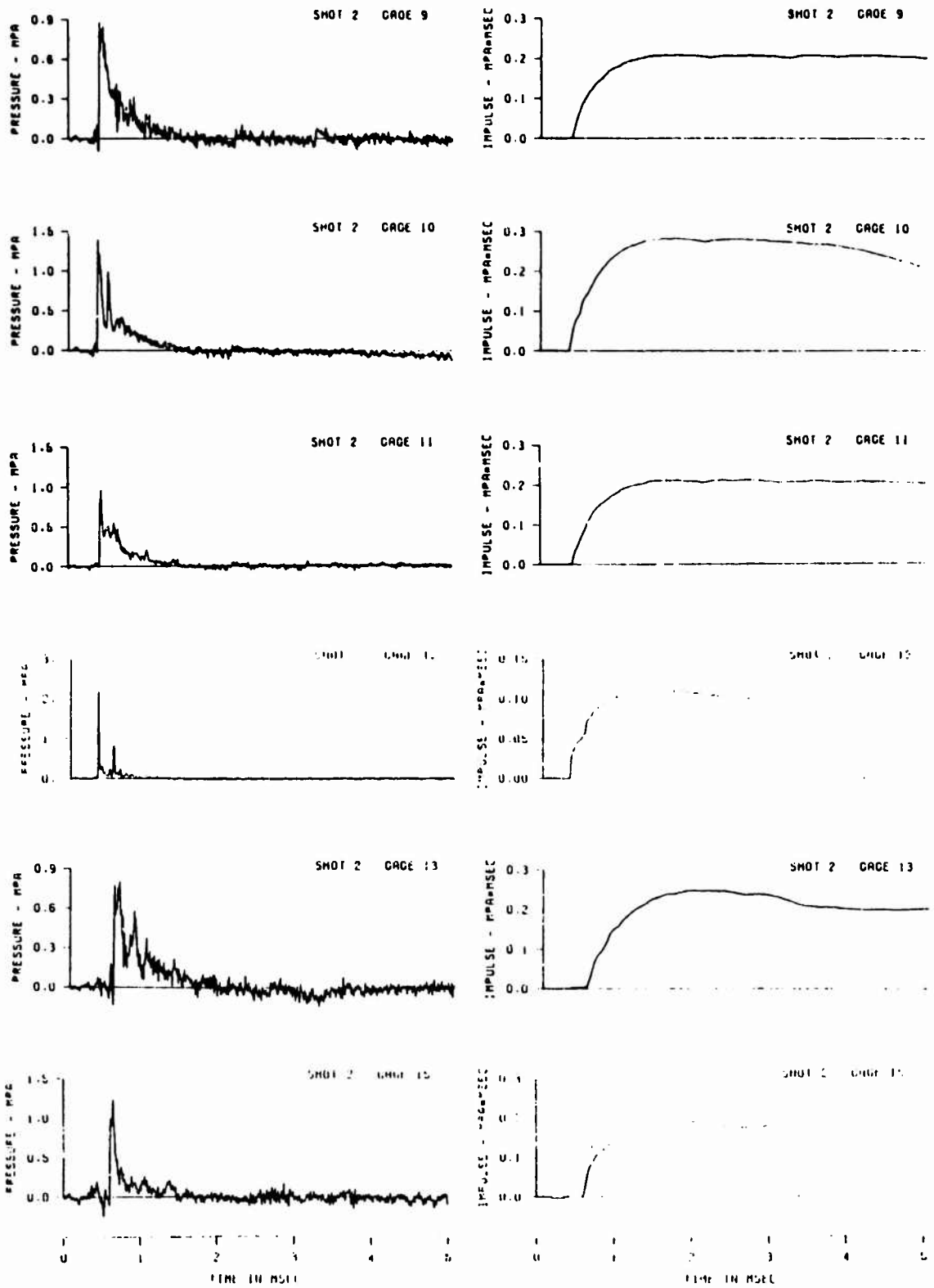

SHOT 1 GAGE 31
PRESSURE - MPA
IMPULSE - MPAmSEC

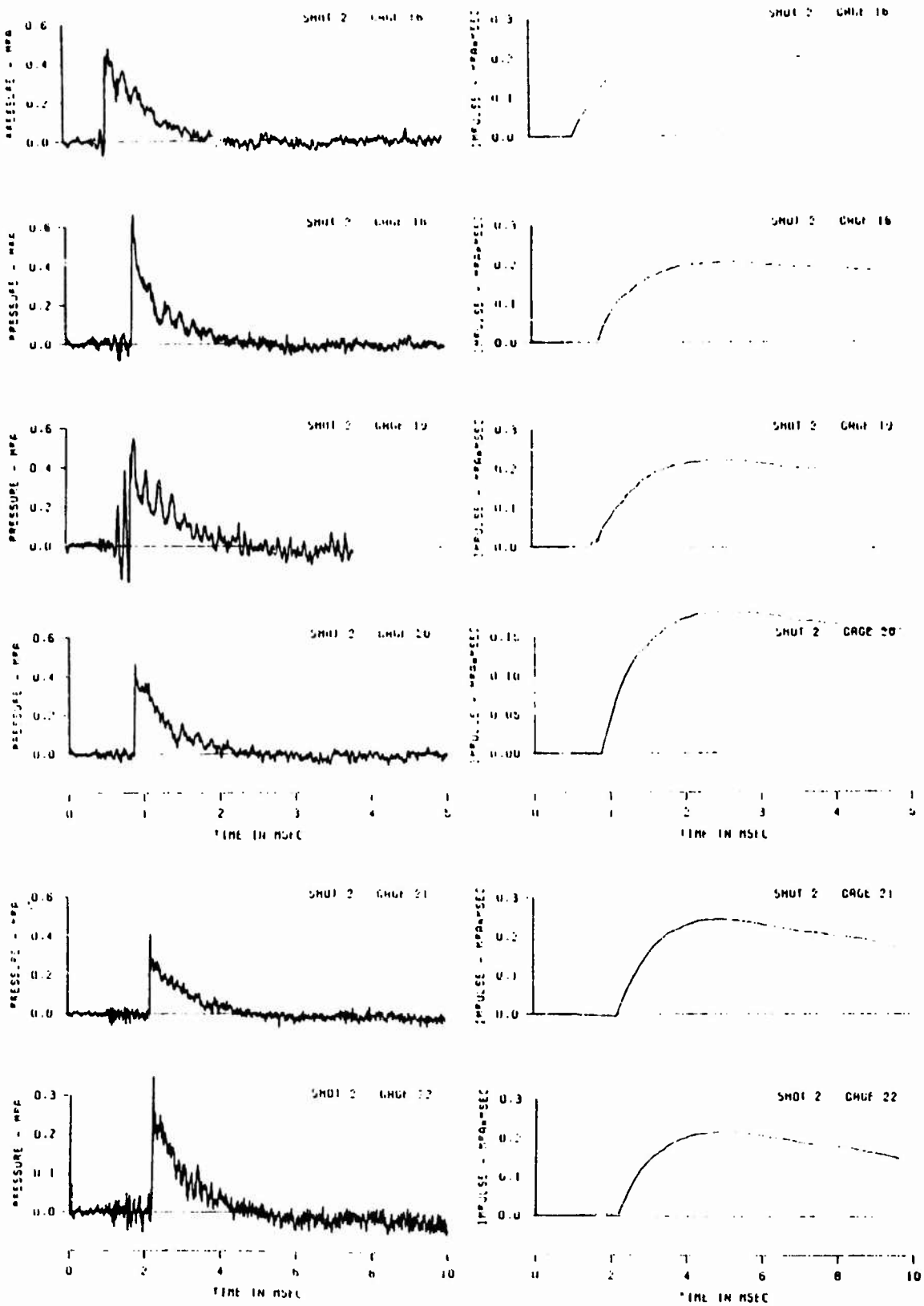

SHOT 1 GAGE 34
PRESSURE - MPA
IMPULSE - MPAmSEC

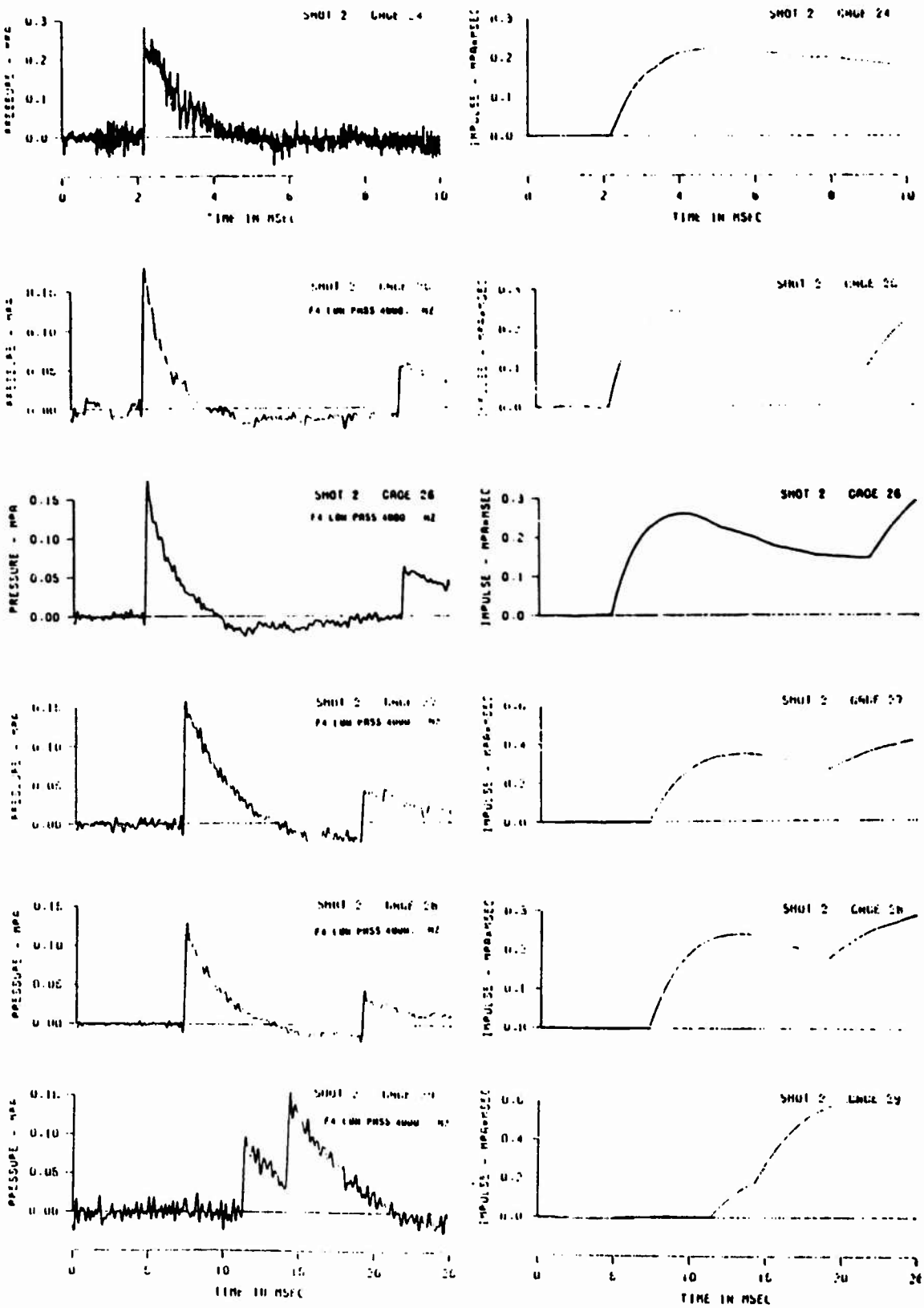

SHOT 1 GAGE 36
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

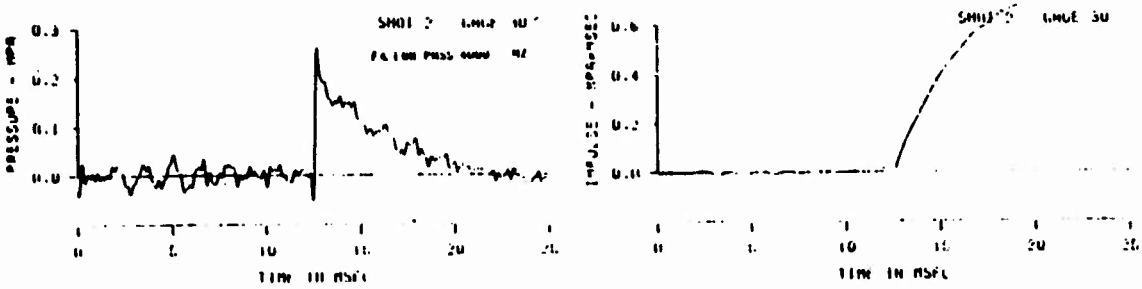

SHOT 2 GAGE 1
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

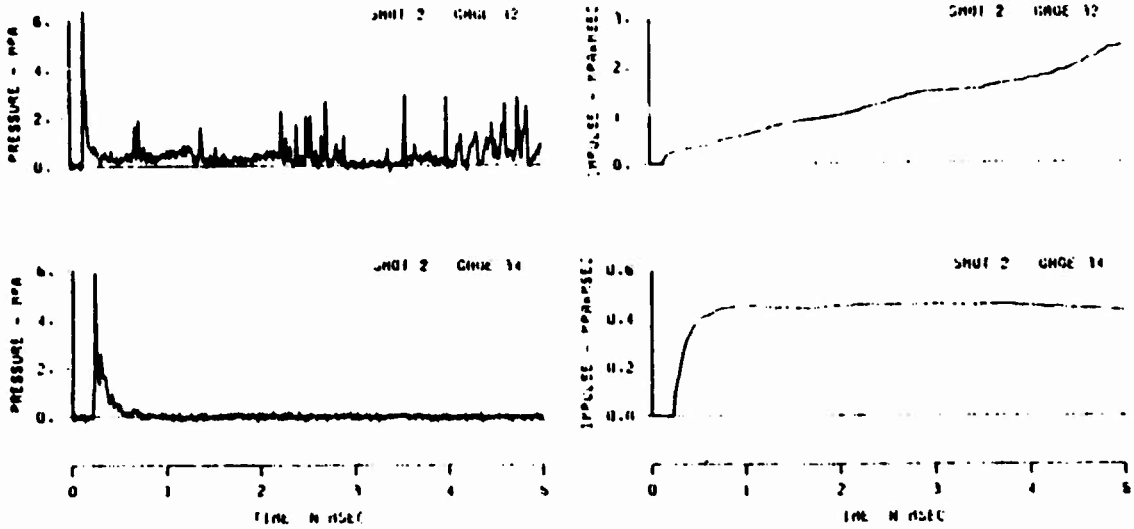

SHOT 2 GAGE 3
SHOT 2 GAGE 4
SHOT 2 GAGE 5
SHOT 2 GAGE 6
SHOT 2 GAGE 7
SHOT 2 GAGE 8
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

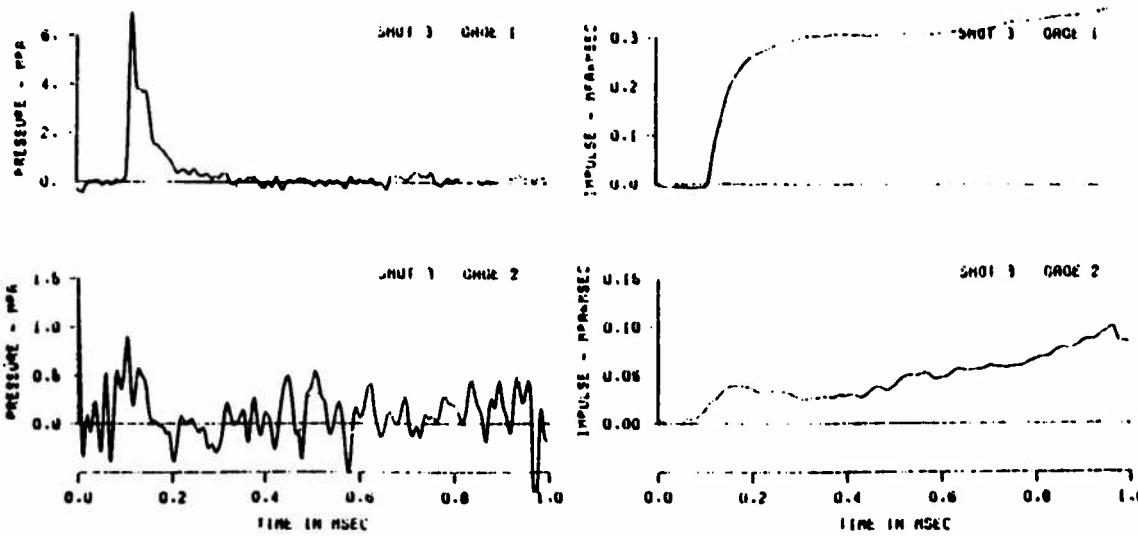

SHOT 2 GAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 2 GAGE 10
SHOT 2 GAGE 11
SHOT 2 GAGE 13
TIME IN MSEC

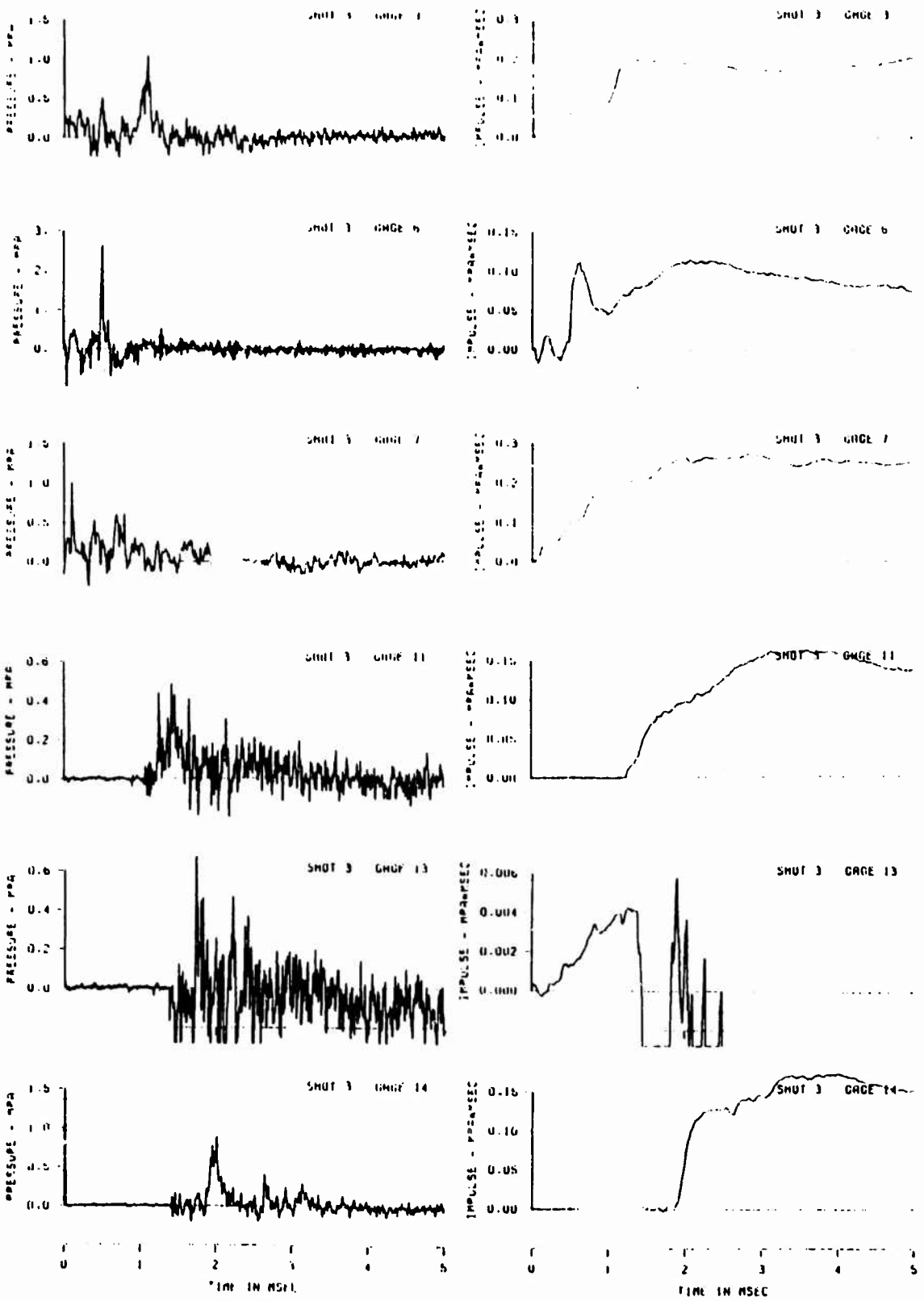

SHOT 2 GAGE 18
SHOT 2 GAGE 19
SHOT 2 GAGE 20
SHOT 2 GAGE 21
SHOT 2 GAGE 22
TIME IN MSEC

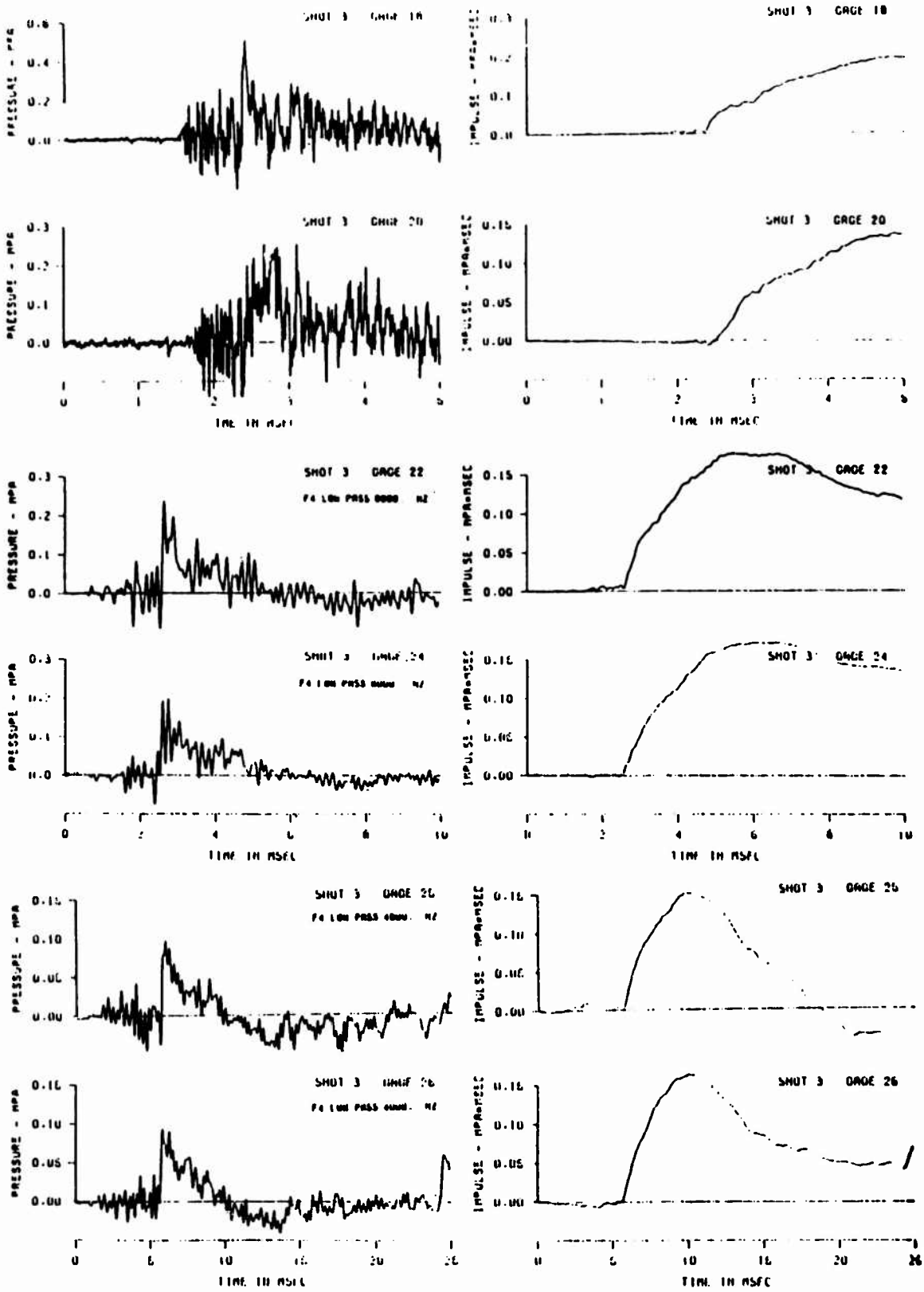

SHOT 2 GAGE 24
0.3
0.2
0.1
0.0
0
2
4
6
8
10
TIME IN MSEC
SHOT 2 GAGE 24
0.3
0.2
0.1
0.0
0
2
4
6
8
10
TIME IN MSEC
SHOT 2 GAGE 26
P4 LOW PASS 4000. HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 2 GAGE 26
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0

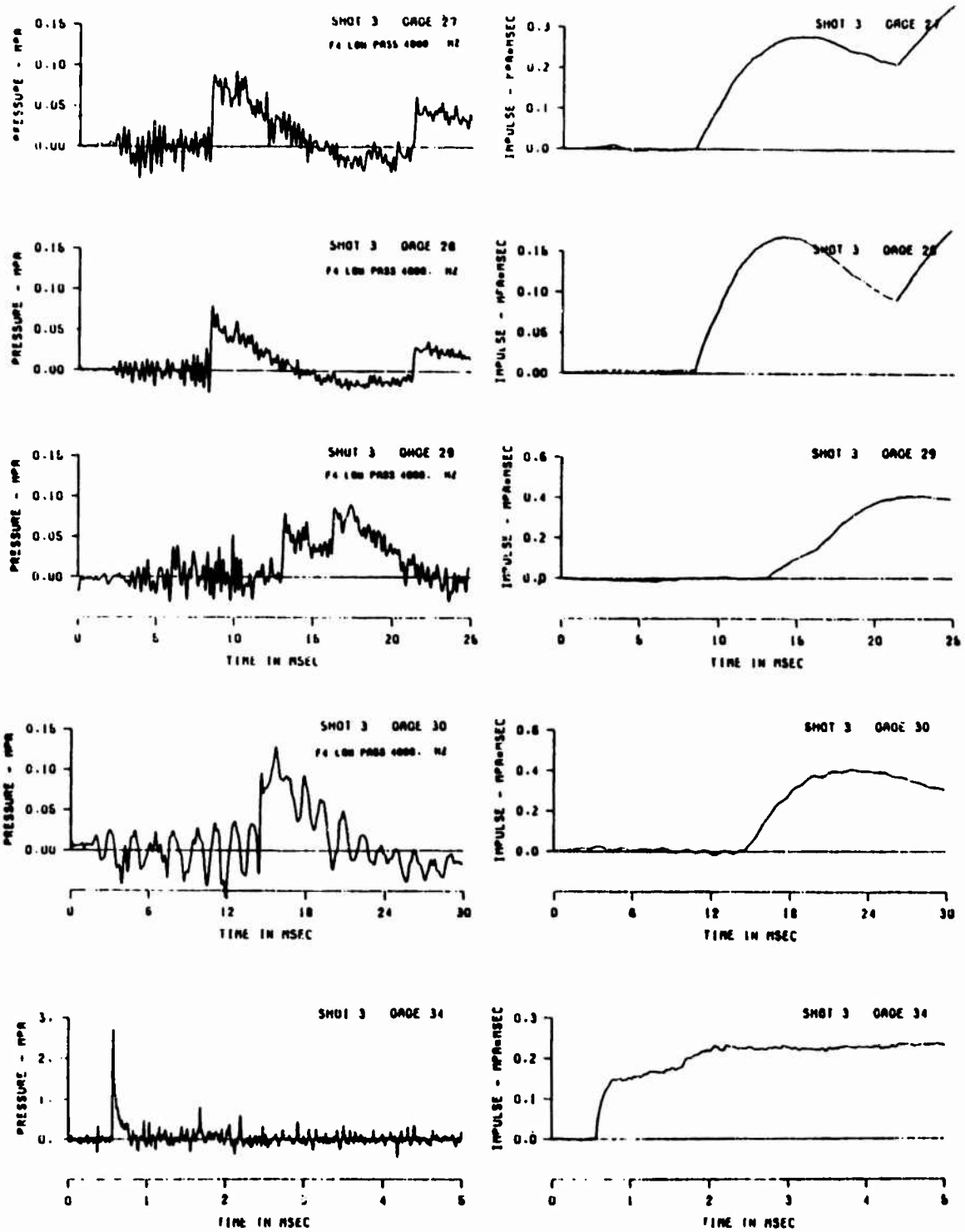


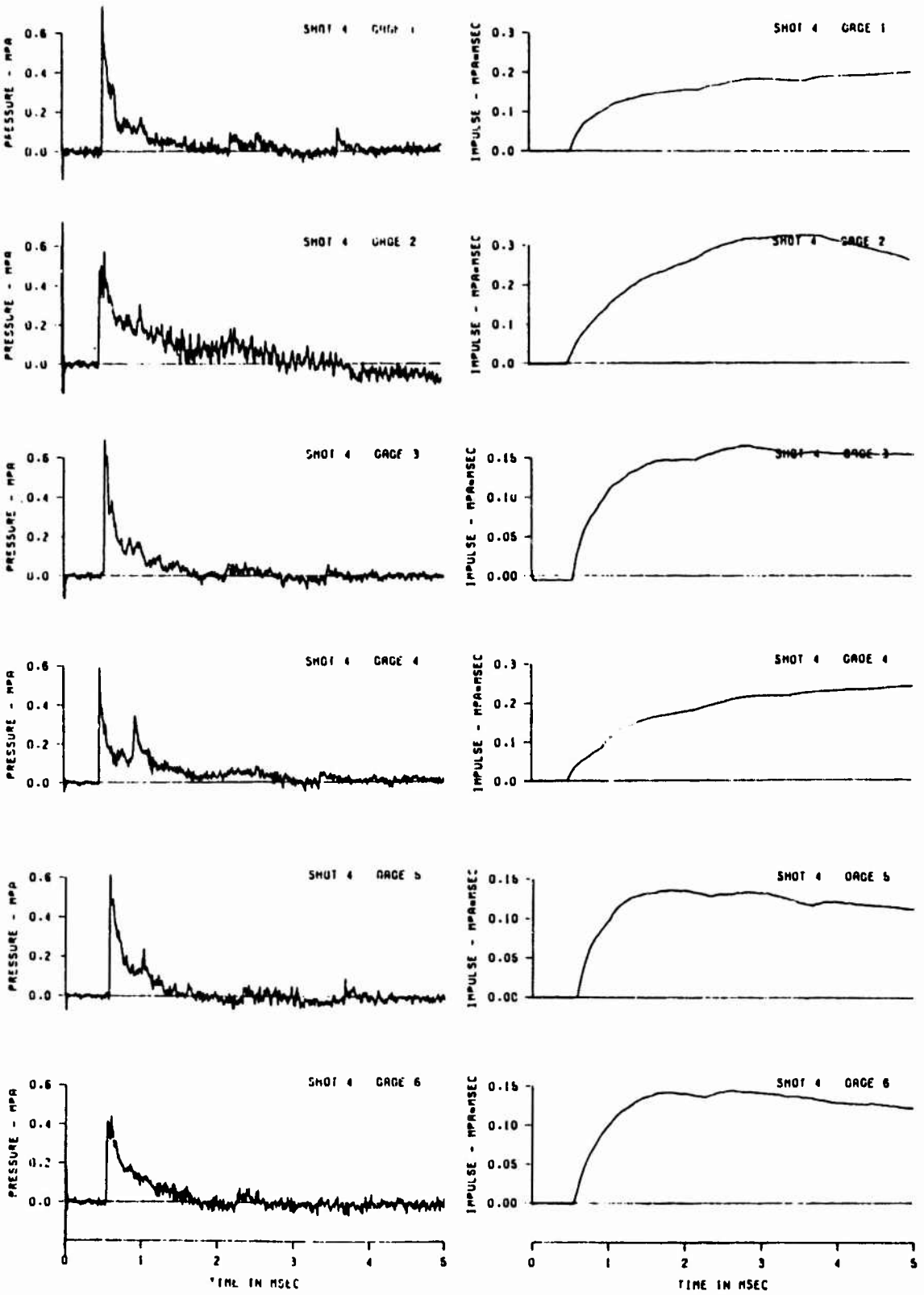


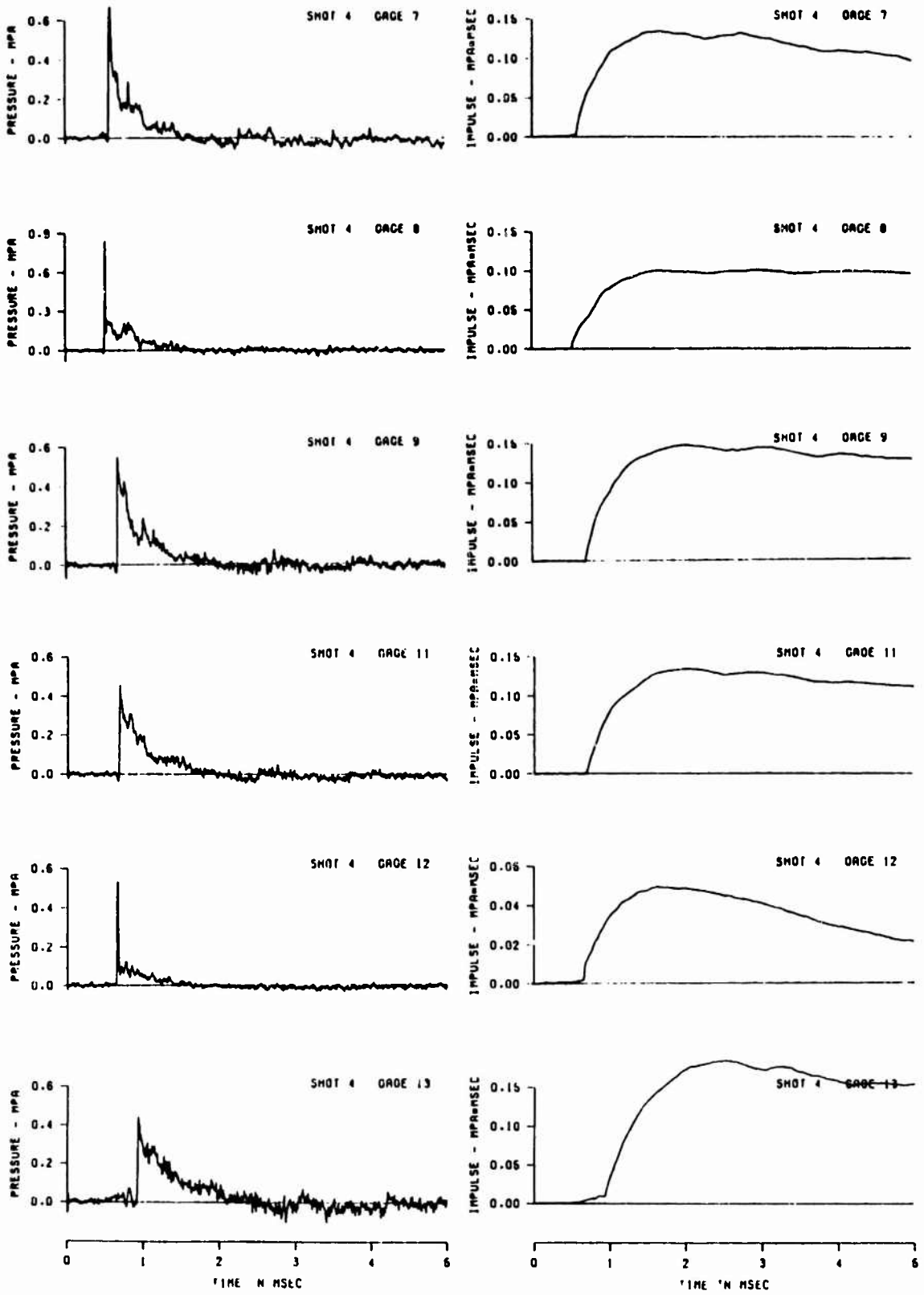


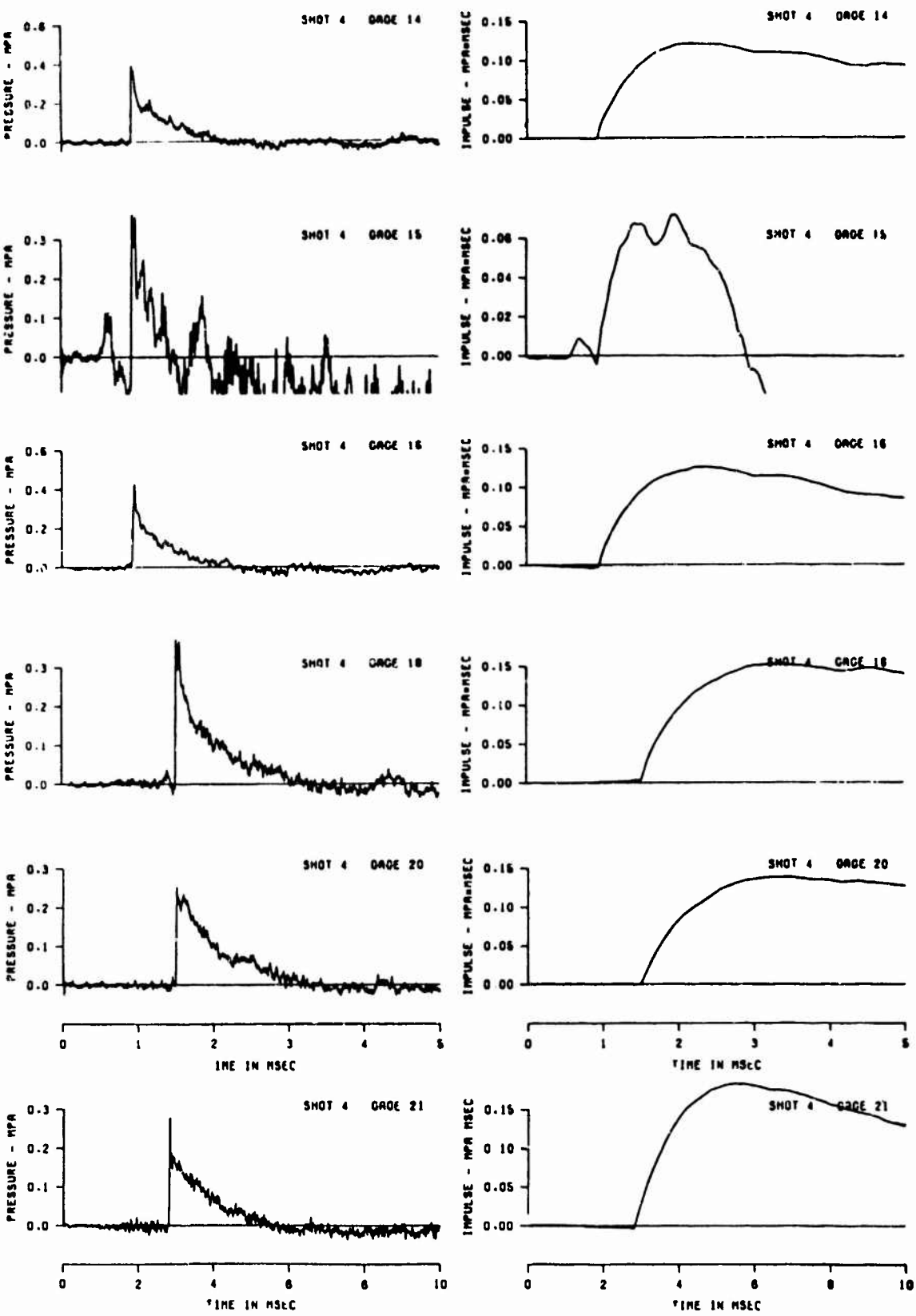

SHOT 3 GAGE 5
SHOT 3 GAGE 6
SHOT 3 GAGE 7
SHOT 3 GAGE 11
SHOT 3 GAGE 13
SHOT 3 GAGE 14
TIME IN MSEC
TIME IN MSEC

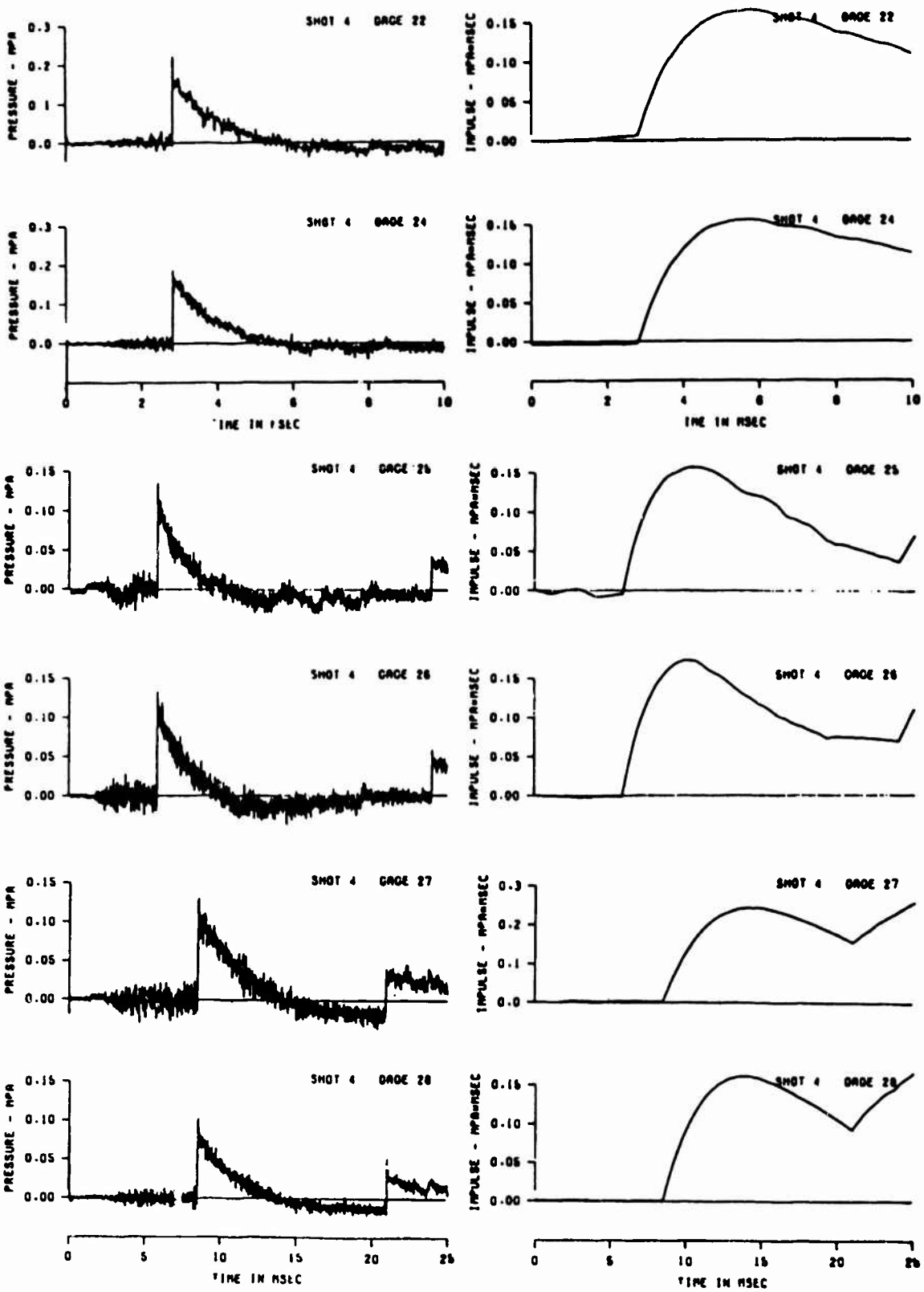

SHOT 3 GAGE 18
SHOT 3 GAGE 20
SHOT 3 GAGE 22
SHOT 3 GAGE 24
SHOT 3 GAGE 26
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

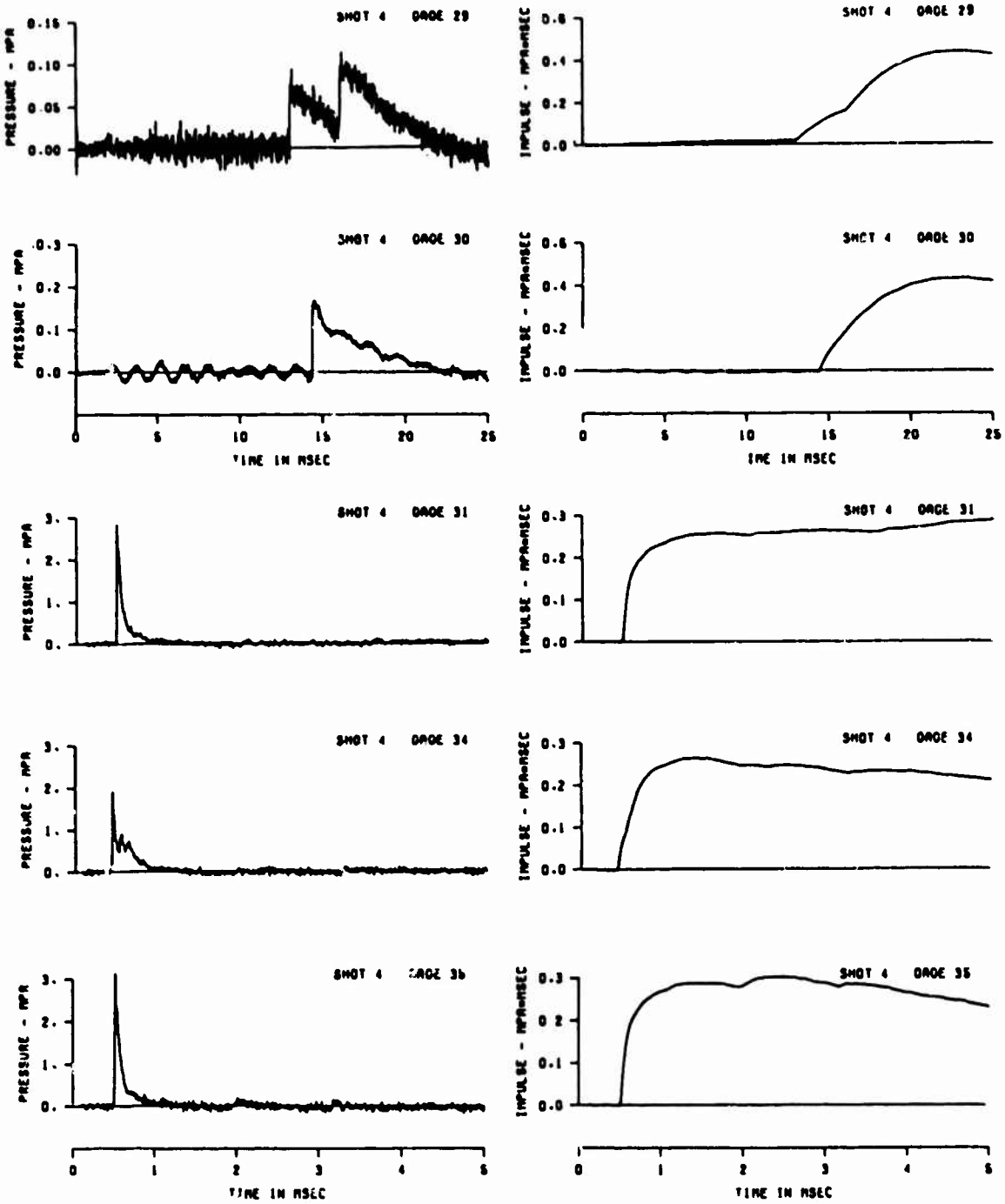

SHOT 3 GAGE 27
SHOT 3 GAGE 28
SHOT 3 GAGE 29
SHOT 3 GAGE 30
SHOT 3 GAGE 34
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

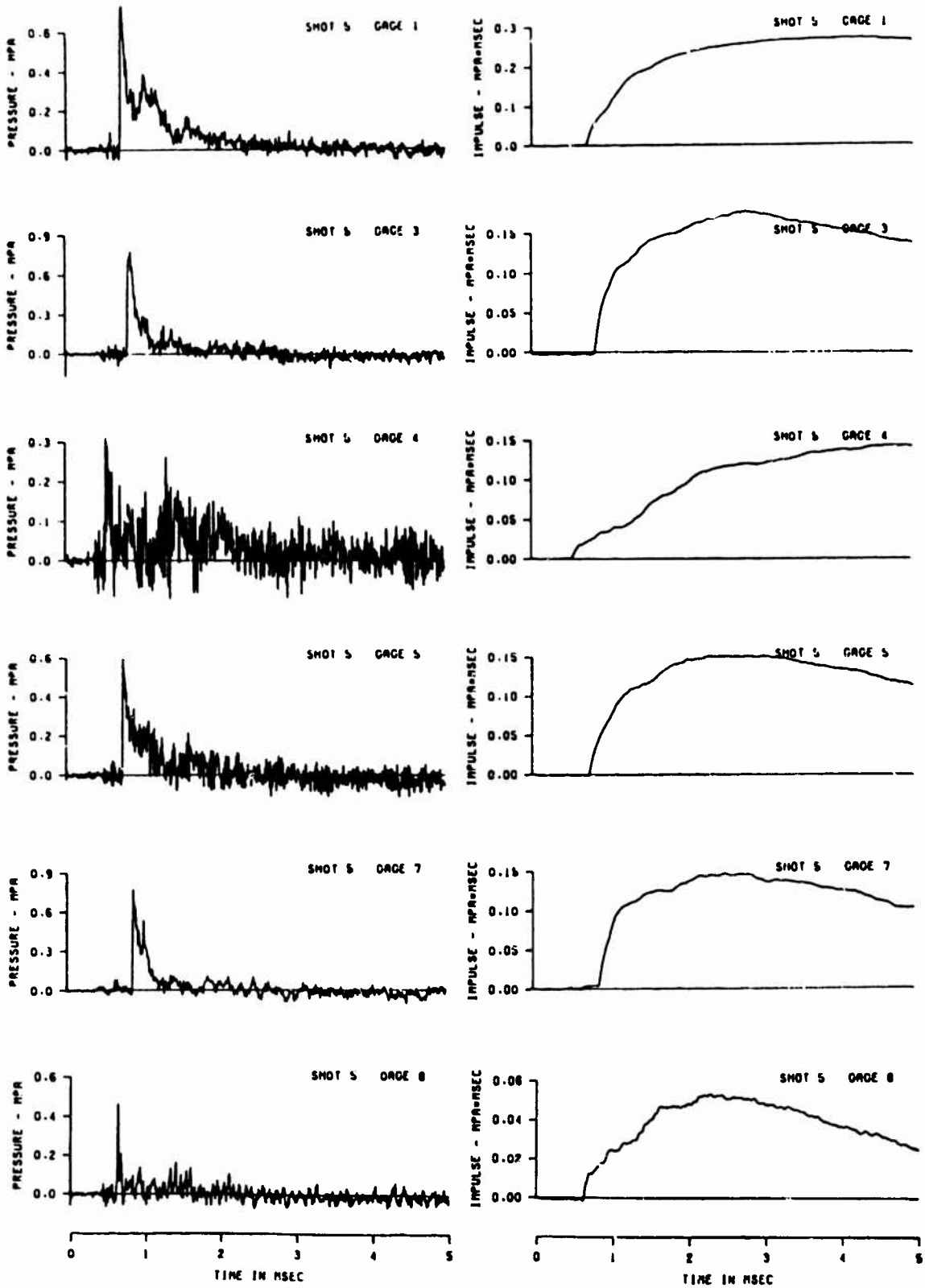

SHOT 4 GAGE 1
SHOT 4 GAGE 2
SHOT 4 GAGE 3
SHOT 4 GAGE 4
SHOT 4 GAGE 5
SHOT 4 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

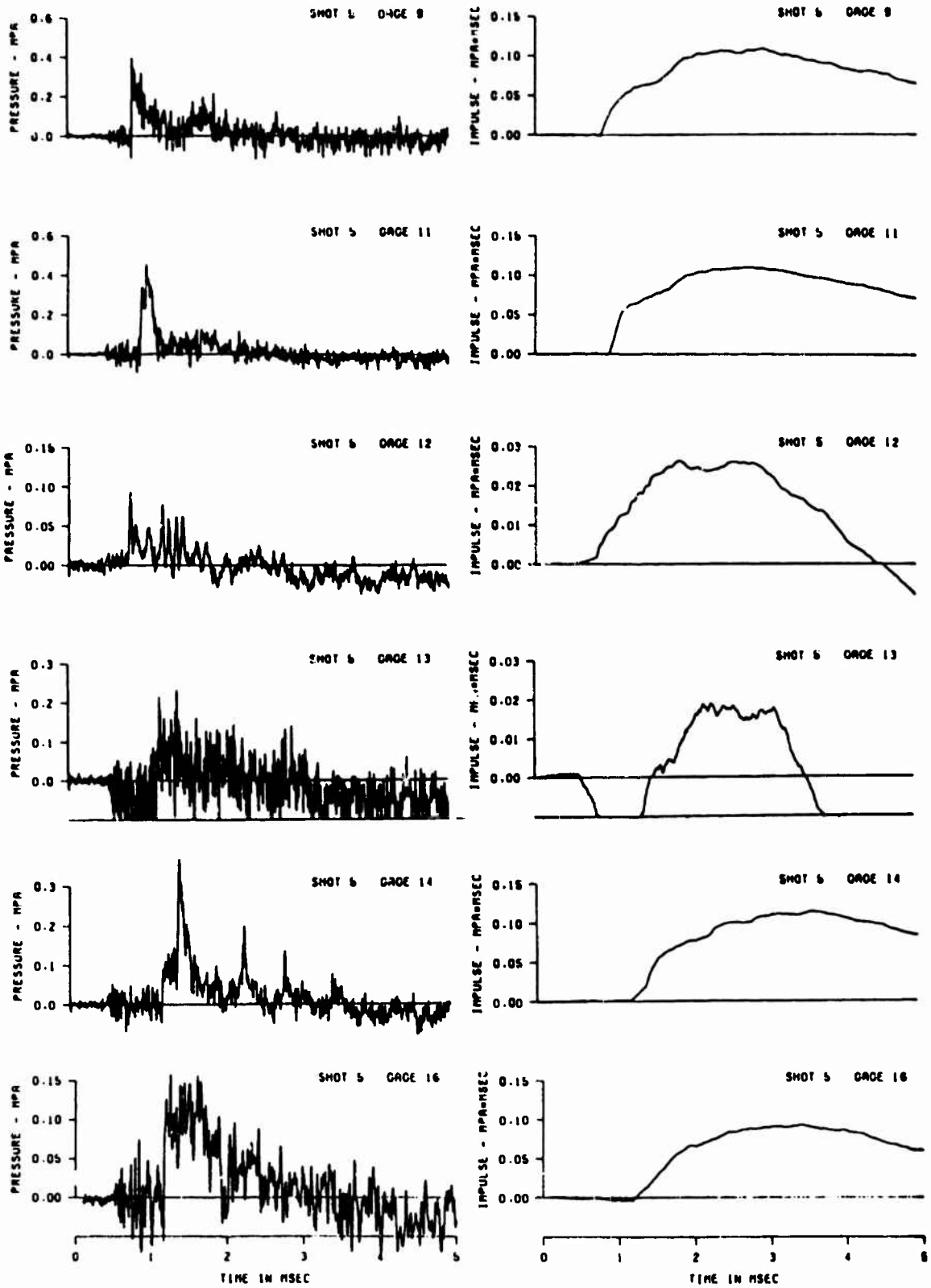

SHOT 4 GAGE 7
SHOT 4 GAGE 8
SHOT 4 GAGE 9
SHOT 4 GAGE 11
SHOT 4 GAGE 12
SHOT 4 GAGE 13
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

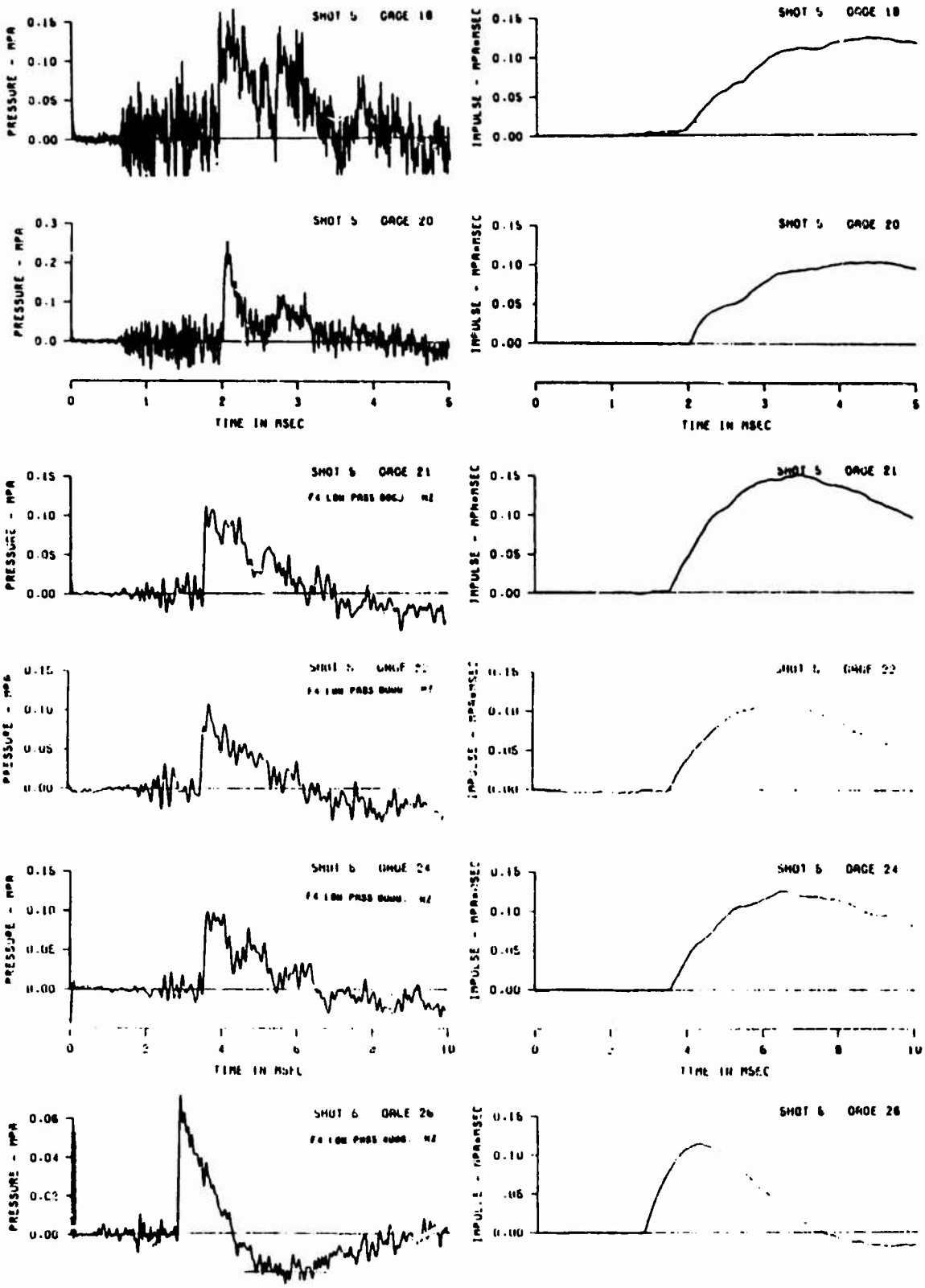

SHOT 4 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 4 GAGE 15
SHOT 4 GAGE 16
SHOT 4 GAGE 18
SHOT 4 GAGE 20
SHOT 4 GAGE 21
TIME IN MSEC

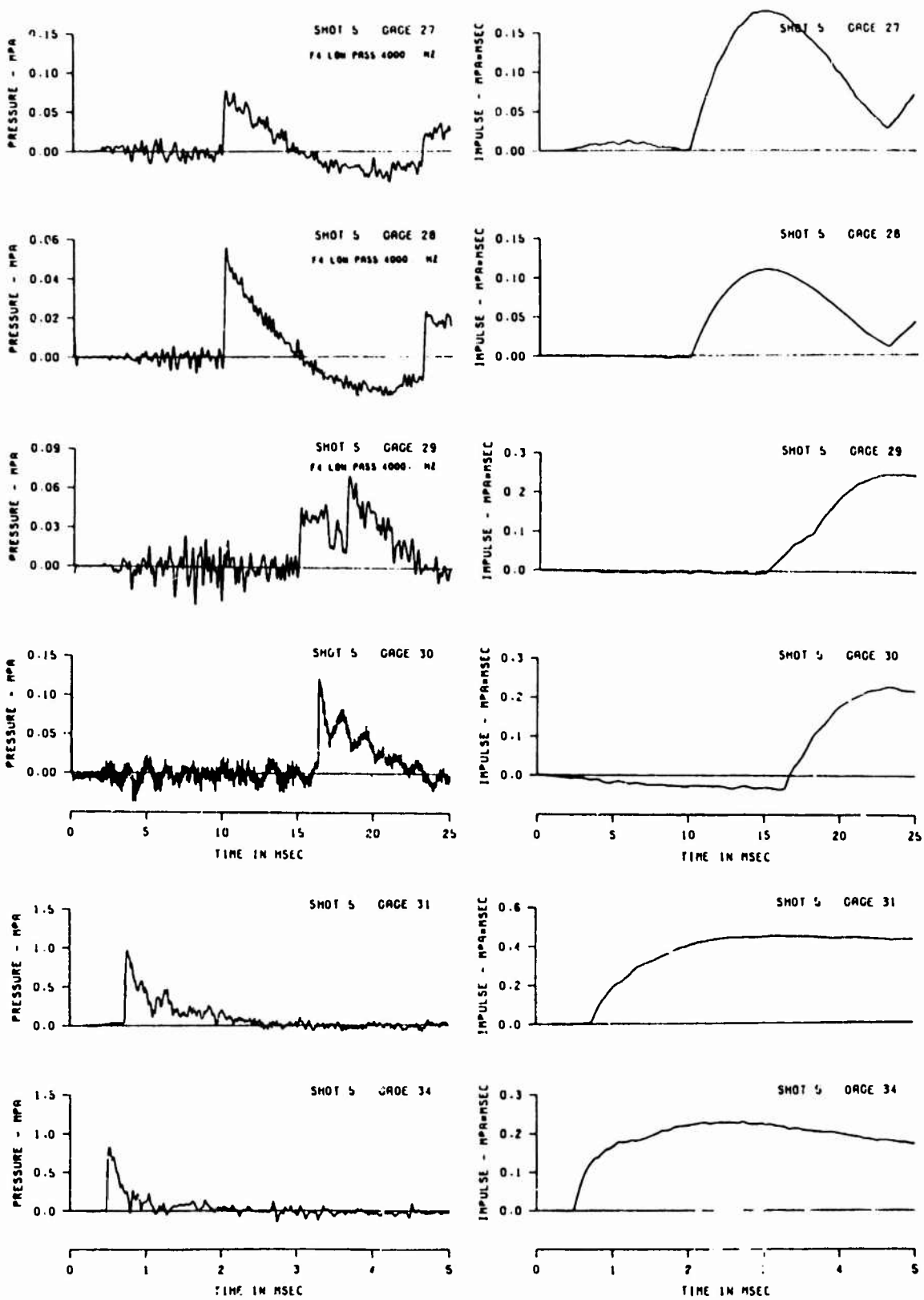

SHOT 4 GAGE 22
SHOT 4 GAGE 24
SHOT 4 GAGE 25
SHOT 4 GAGE 26
SHOT 4 GAGE 27
SHOT 4 GAGE 28
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC


SHOT 4 GAGE 29
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 4 GAGE 29
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 4 GAGE 30
PRESSURE - MPA
0.3
0.2
0.1
0.0
0
5
10
15
20
25
TIME IN MSEC
SHOT 4 GAGE 30
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
0
5
10
15
20
25
IME IN MSEC
SHOT 4 GAGE 31
PRESSURE - MPA
3.
2.
1.
0.
SHOT 4 GAGE 31
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 4 GAGE 34
PRESSURE - MPA
3.
2.
1.
0.
SHOT 4 GAGE 34
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 4 GAGE 35
PRESSURE - MPA
3.
2.
1.
0.
SHOT 4 GAGE 35
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0
1
2
3
4
5
TIME IN MSEC
0
1
2
3
4
5
TIME IN MSEC


SHOT 5 GAGE 1
SHOT 5 GAGE 1
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 5 GAGE 3
SHOT 5 GAGE 3
SHOT 5 GAGE 4
SHOT 5 GAGE 4
SHOT 5 GAGE 5
SHOT 5 GAGE 5
SHOT 5 GAGE 7
SHOT 5 GAGE 7
SHOT 5 GAGE 8
SHOT 5 GAGE 8
TIME IN MSEC
TIME IN MSEC


SHOT 5 GAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 5 GAGE 11
SHOT 5 GAGE 12
SHOT 5 GAGE 13
SHOT 5 GAGE 14
SHOT 5 GAGE 16
TIME IN MSEC


SHOT 5 GAGE 18
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 5 GAGE 18
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 5 GAGE 20
PRESSURE - MPA
0.3
0.2
0.1
0.0
0 1 2 3 4 5
TIME IN MSEC
SHOT 5 GAGE 20
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
0 1 2 3 4 5
TIME IN MSEC
SHOT 5 GAGE 21
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 5 GAGE 21
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 5 GAGE 24
PRESSURE - MPA
0.15
0.10
0.05
0.00
0 2 4 6 8 10
TIME IN MSEC
SHOT 5 GAGE 24
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
0 2 4 6 8 10
TIME IN MSEC
SHOT 6 GAGE 26
PRESSURE - MPA
0.06
0.04
0.00
SHOT 6 GAGE 26
IMPULSE - MPA-MSEC
0.15
0.10
0.00


SHOT 5 GAGE 27
F4 LOW PASS 4000 HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 5 GAGE 27
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 5 GAGE 28
F4 LOW PASS 4000 HZ
PRESSURE - MPA
0.06
0.04
0.02
0.00
SHOT 5 GAGE 28
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 5 GAGE 29
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.09
0.06
0.03
0.00
SHOT 5 GAGE 29
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 5 GAGE 30
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 5 GAGE 30
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0 5 10 15 20 25
TIME IN MSEC
SHOT 5 GAGE 31
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 5 GAGE 31
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 5 GAGE 34
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 5 GAGE 34
IMPULSE - MPA-MSEC
0.3
0.2
0.1
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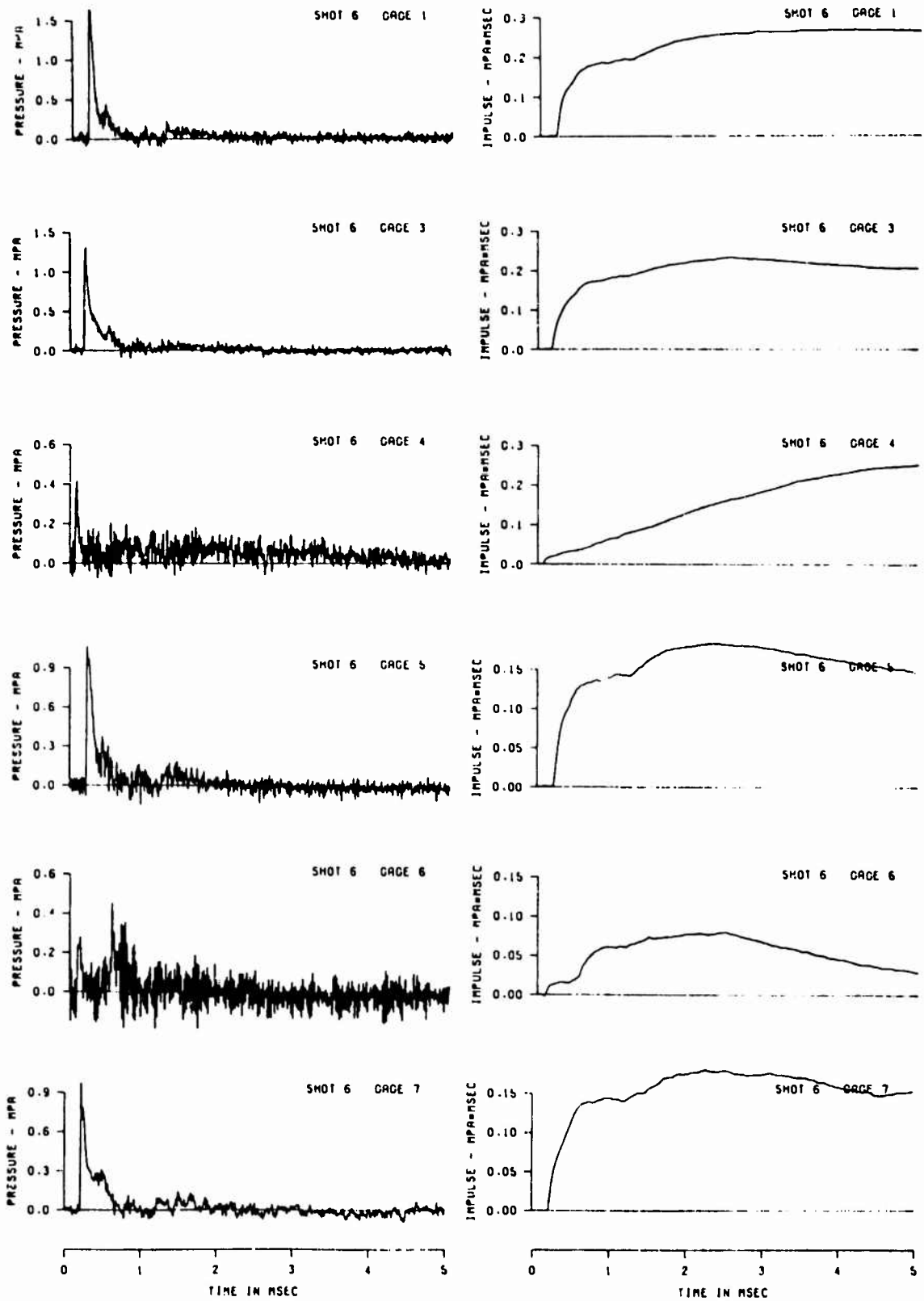
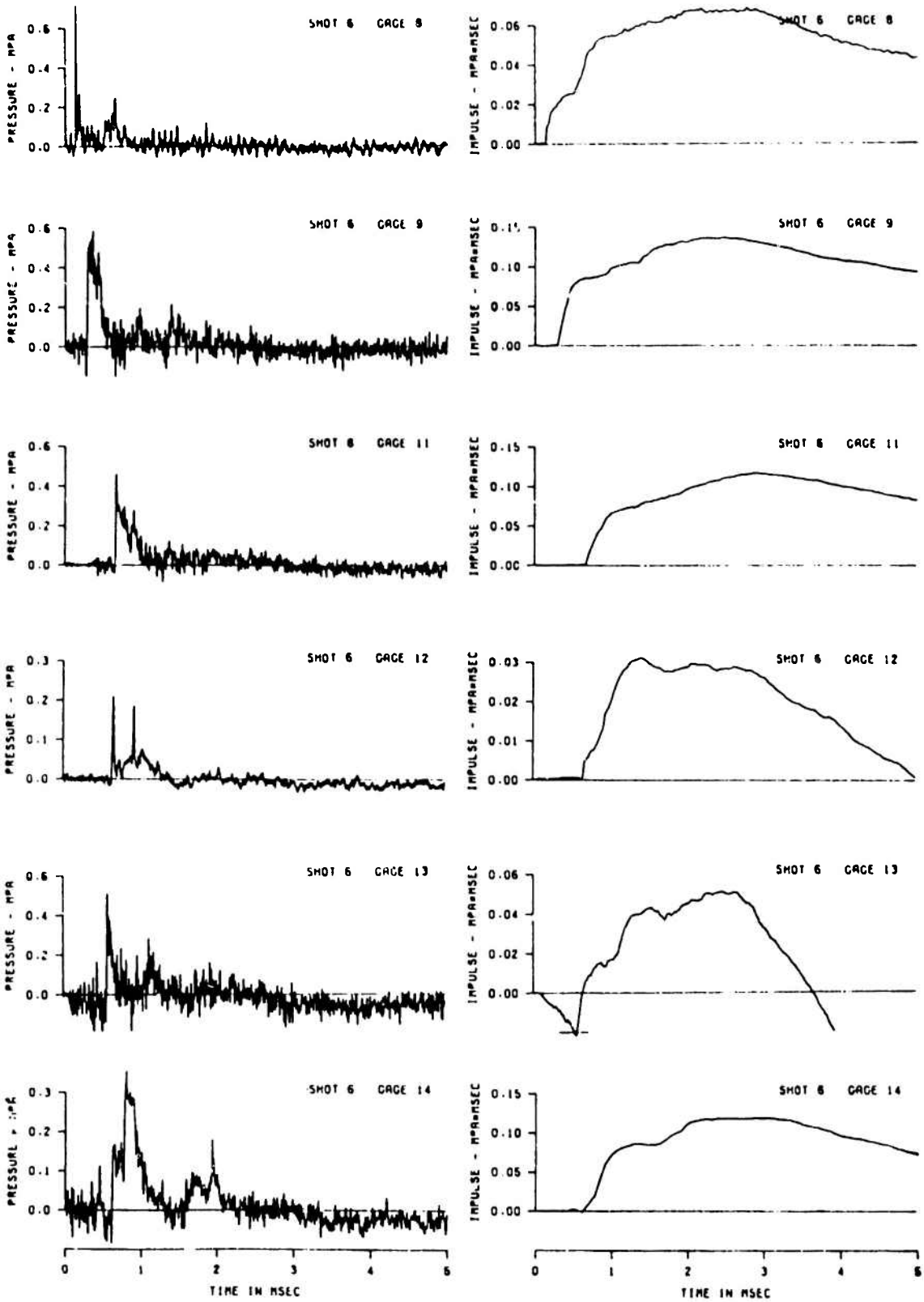
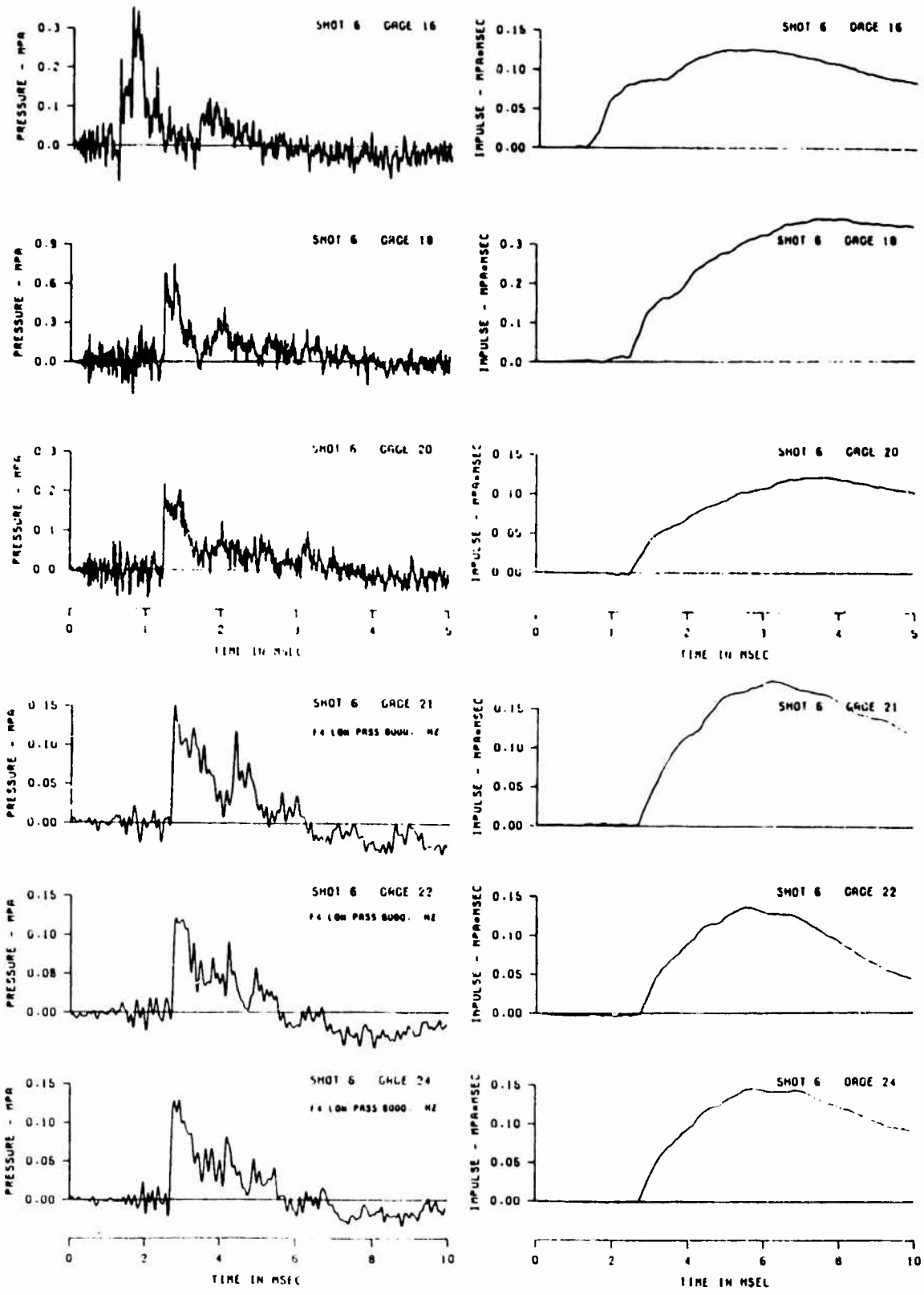
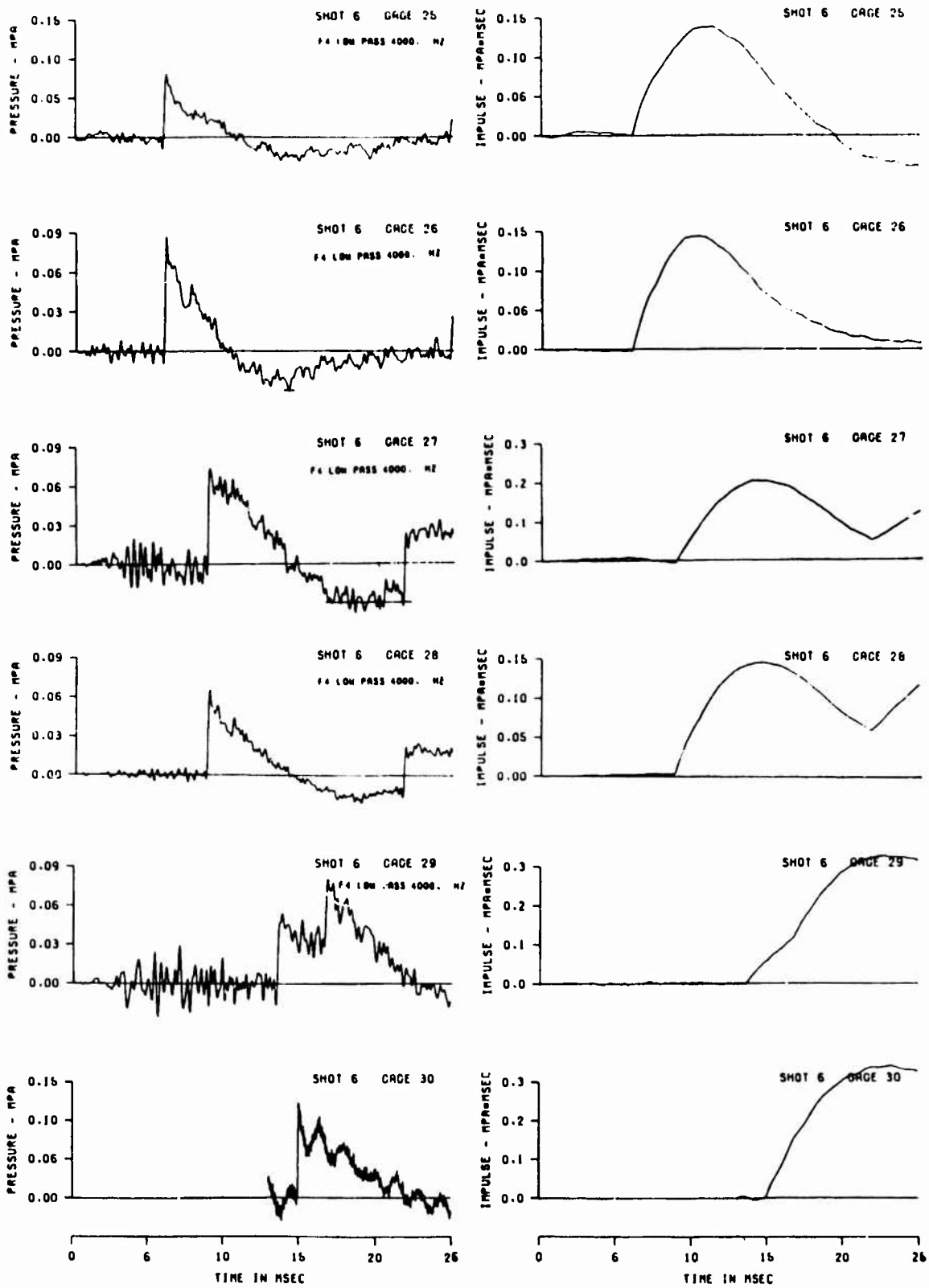
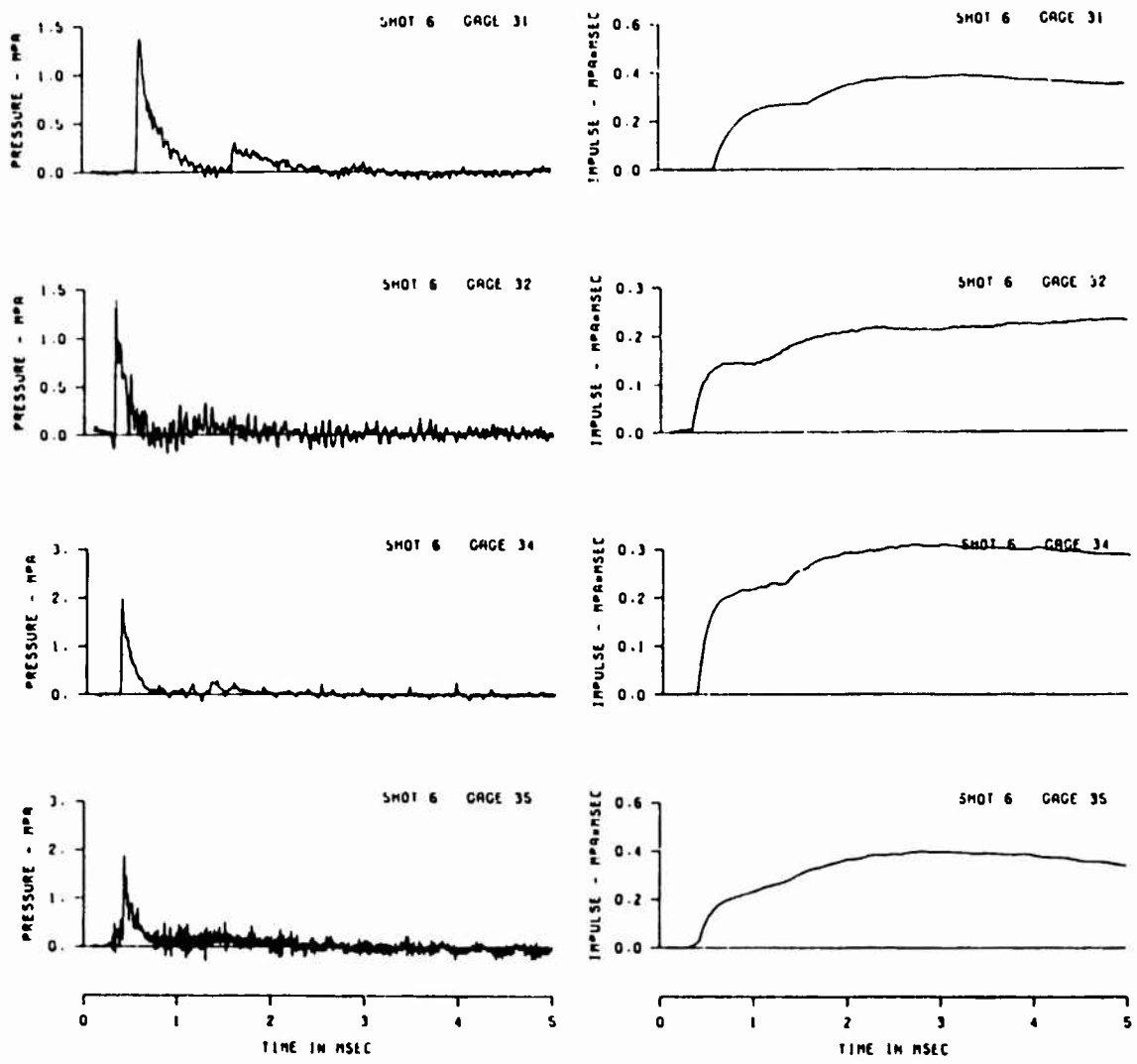
0 1 2 3 4 5
TIME IN MSEC

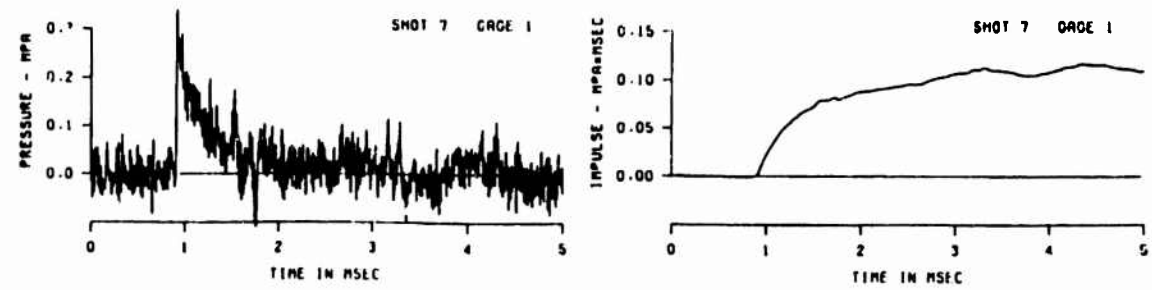

SHOT 6 GAGE 1
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 6 GAGE 1
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 6 GAGE 3
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 6 GAGE 3
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 6 GAGE 4
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 6 GAGE 4
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 6 GAGE 5
PRESSURE - MPA
0.9
0.6
0.3
0.0
SHOT 6 GAGE 5
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 6 GAGE 6
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 6 GAGE 6
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 6 GAGE 7
PRESSURE - MPA
0.9
0.6
0.3
0.0
SHOT 6 GAGE 7
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
0 1 2 3 4 5
TIME IN MSEC
0 1 2 3 4 5
TIME IN MSEC

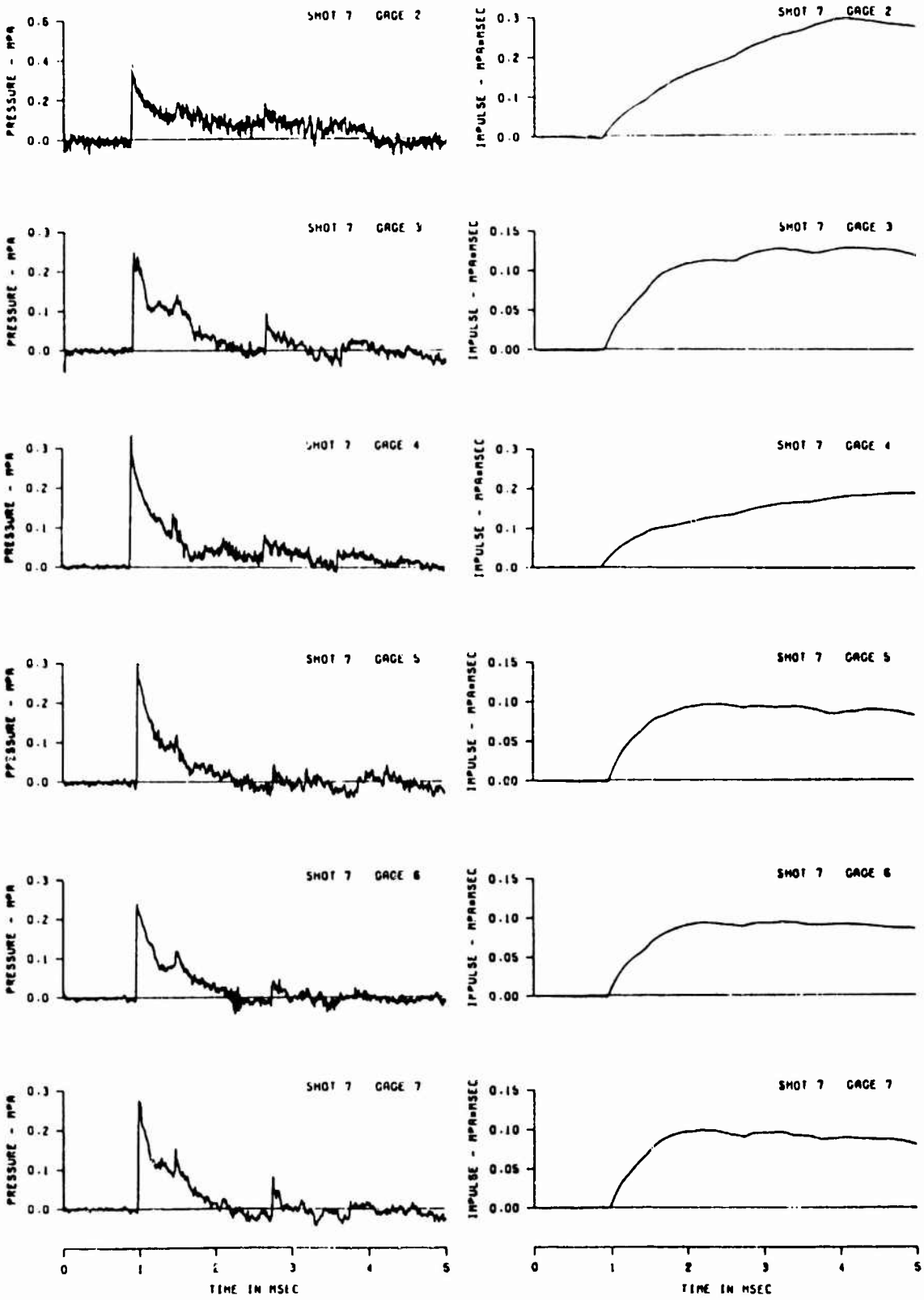

SHOT 6 GAGE 8
SHOT 6 GAGE 9
SHOT 6 GAGE 11
SHOT 6 GAGE 12
SHOT 6 GAGE 13
SHOT 6 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

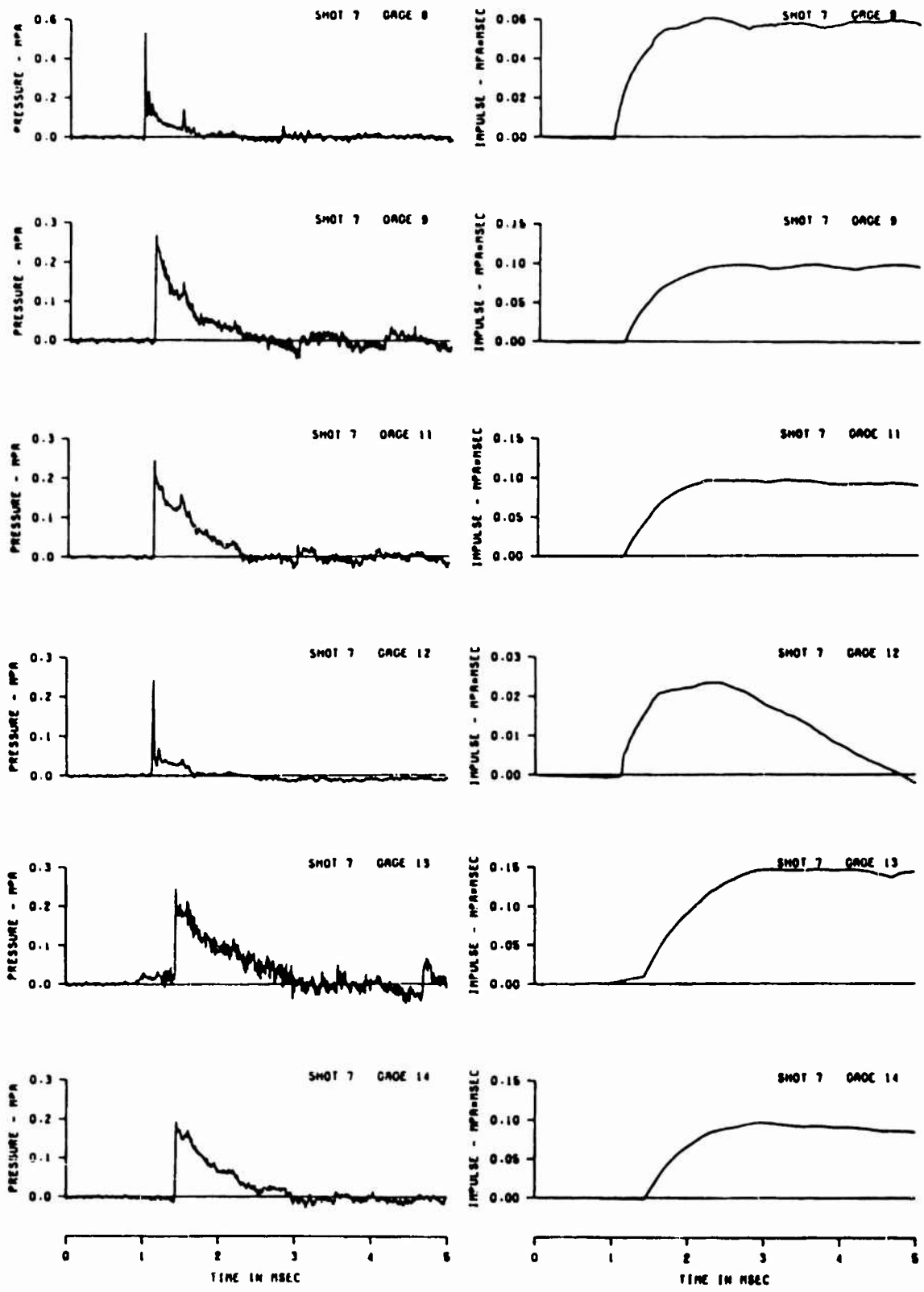

SHOT 6 GAGE 16
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 6 GAGE 18
SHOT 6 GAGE 20
SHOT 6 GAGE 21
SHOT 6 GAGE 22
SHOT 6 GAGE 24
TIME IN MSEC

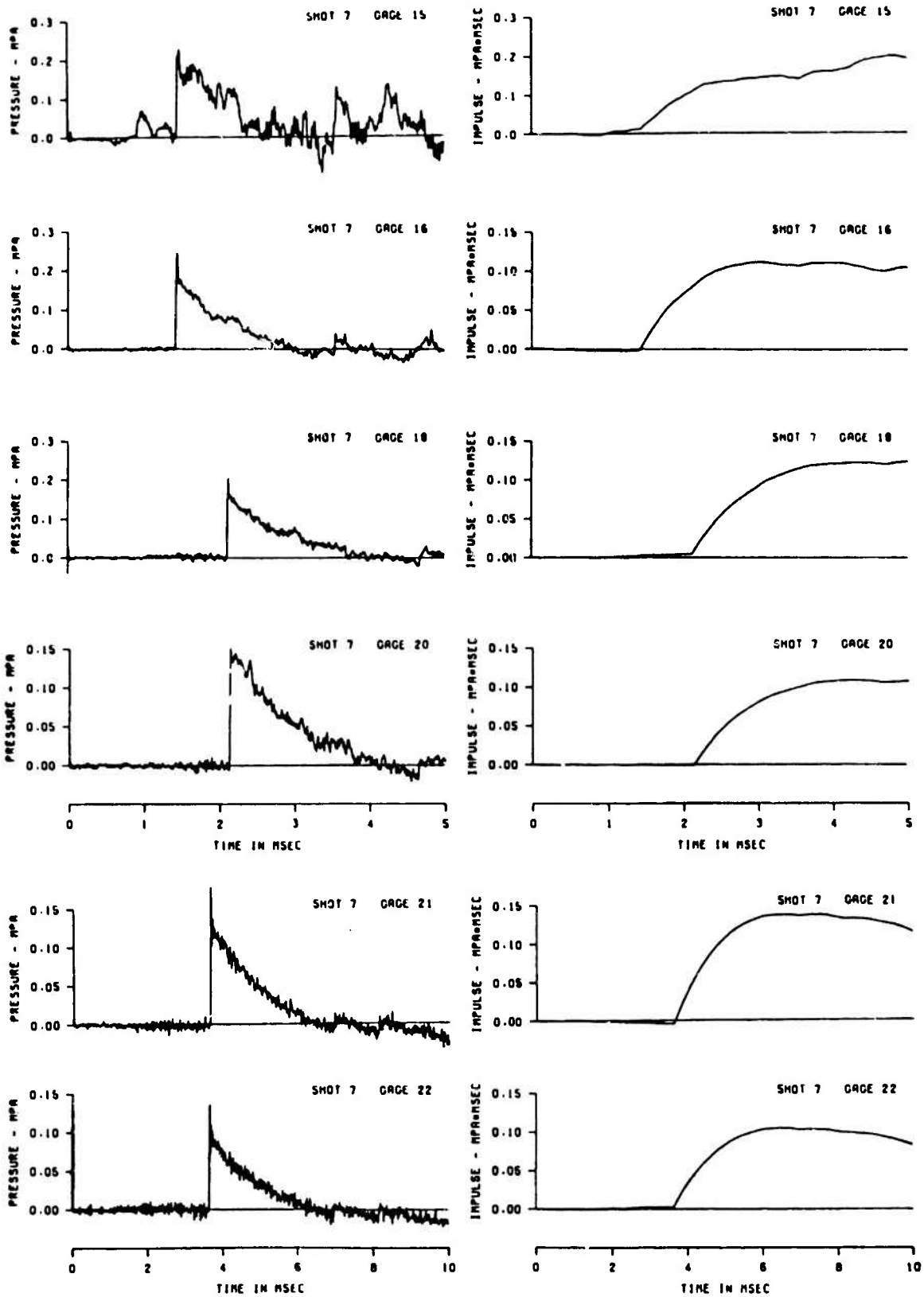

SHOT 6 GAGE 25
SHOT 6 GAGE 26
SHOT 6 GAGE 27
SHOT 6 GAGE 28
SHOT 6 GAGE 29
SHOT 6 GAGE 30
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

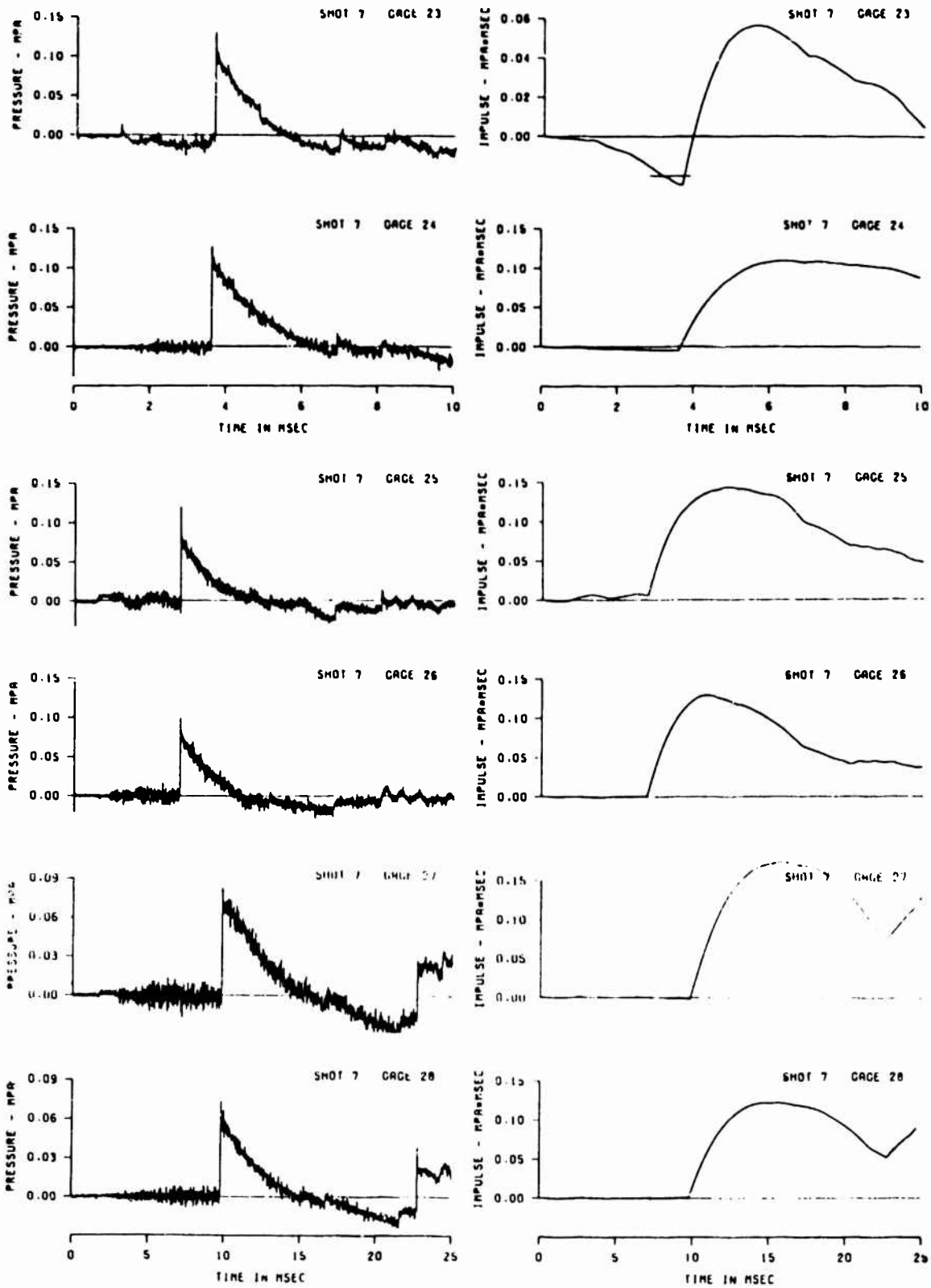

SHOT 6 GAGE 31
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 6 GAGE 32
SHOT 6 GAGE 34
SHOT 6 GAGE 35
TIME IN MSEC

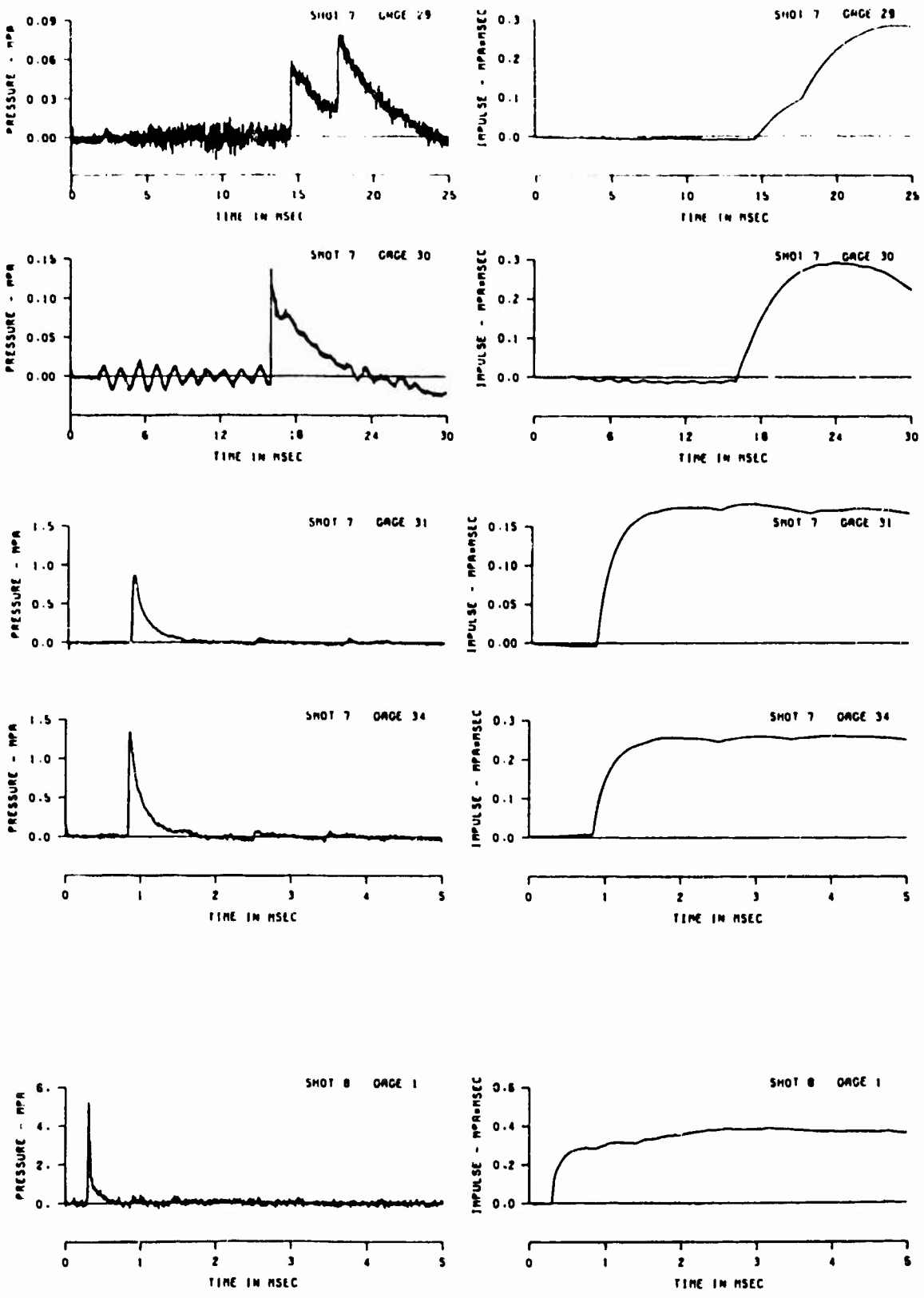

SHOT 7 GAGE 1
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

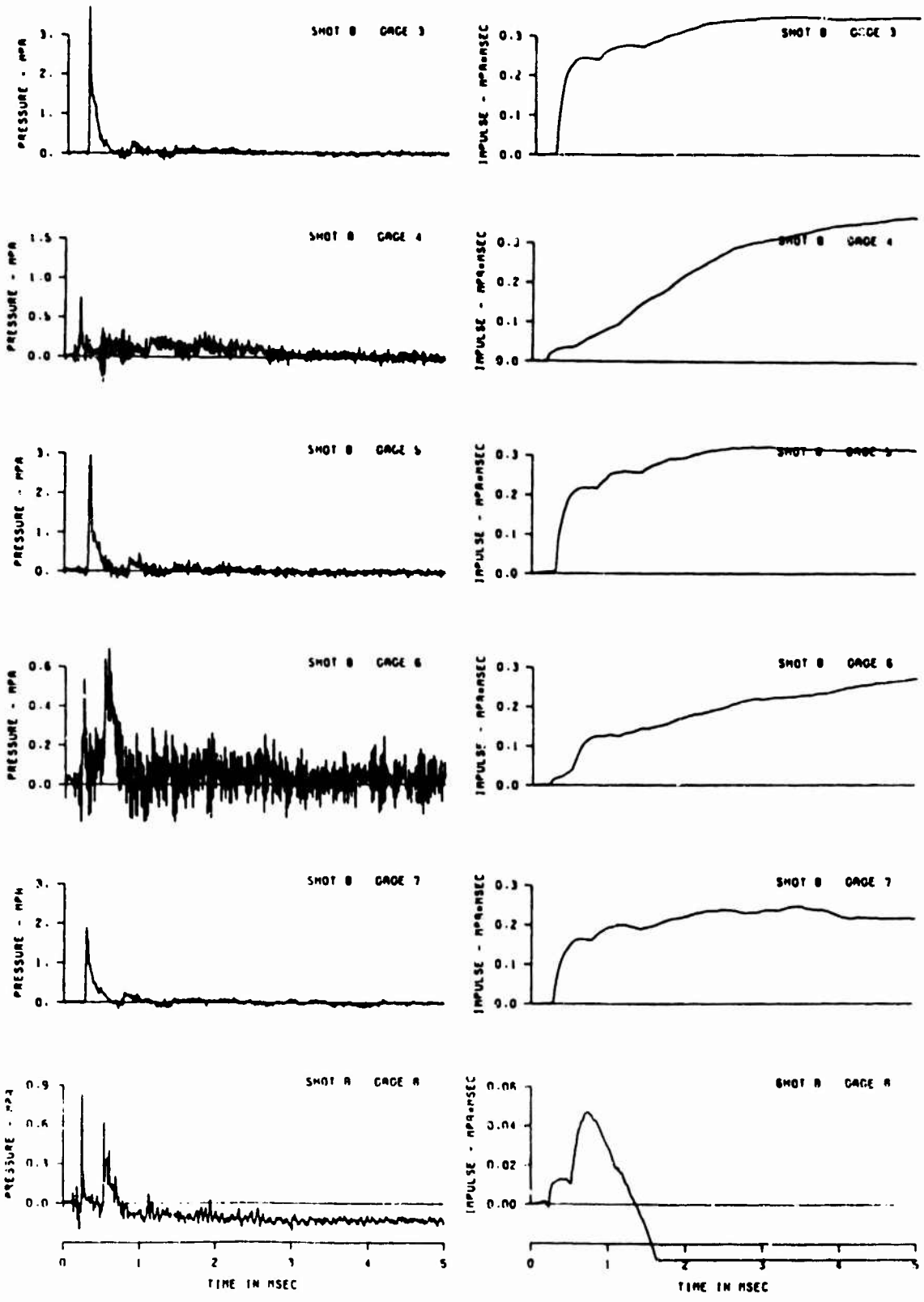

SHOT 7 GAGE 2
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 7 GAGE 3
SHOT 7 GAGE 4
SHOT 7 GAGE 5
SHOT 7 GAGE 6
SHOT 7 GAGE 7
TIME IN MSEC

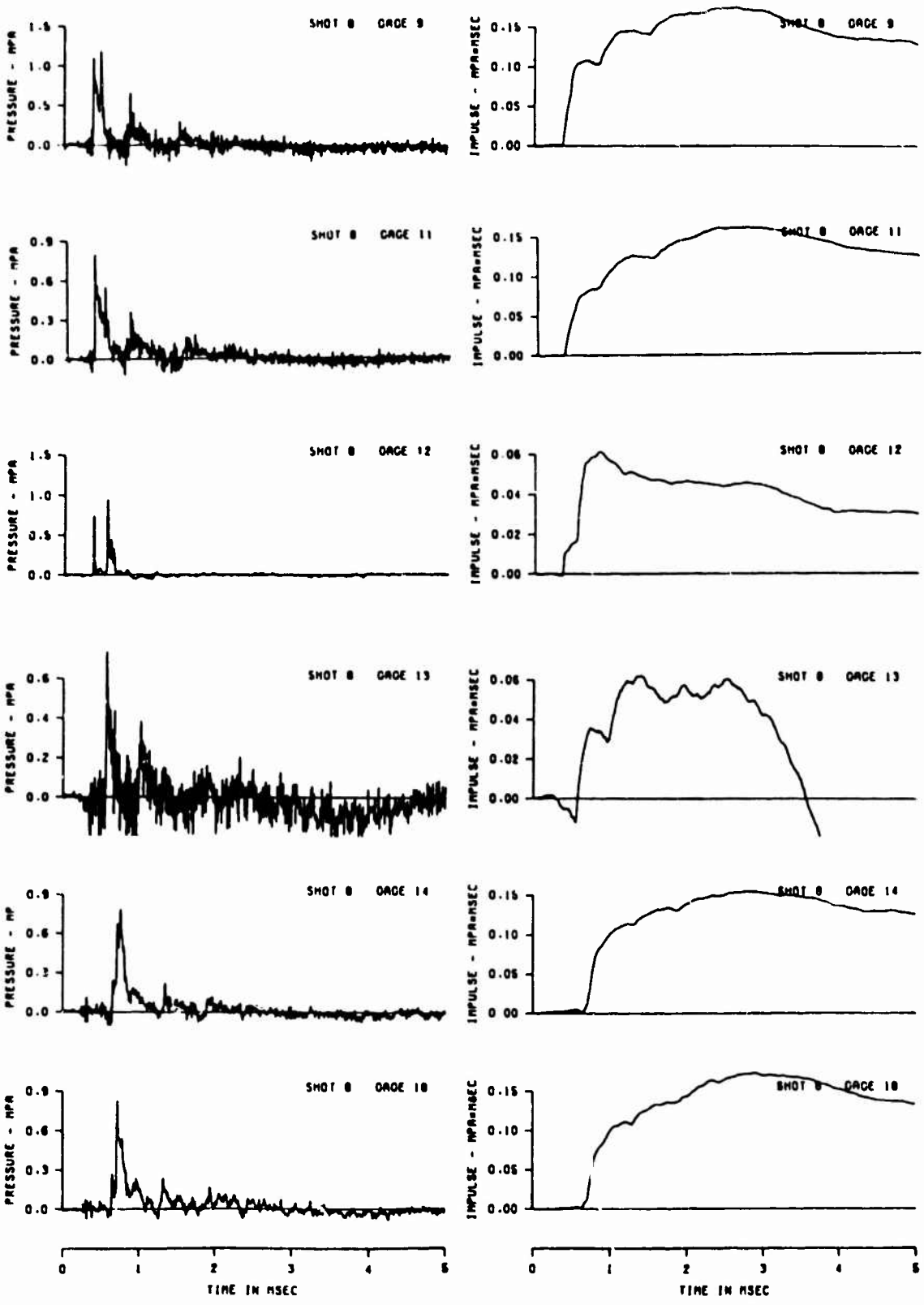

SHOT 7 GAGE 8
SHOT 7 GAGE 9
SHOT 7 GAGE 11
SHOT 7 GAGE 12
SHOT 7 GAGE 13
SHOT 7 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

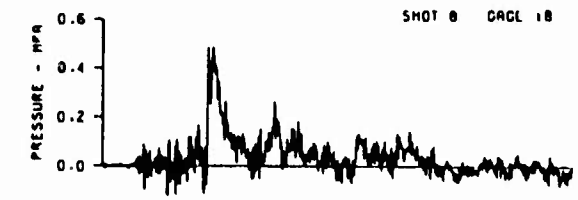

SHOT 7 GAGE 15
PRESSURE - MPA
IMPULSE - MPAmSEC
SHOT 7 GAGE 16
SHOT 7 GAGE 18
SHOT 7 GAGE 20
SHOT 7 GAGE 21
SHOT 7 GAGE 22
TIME IN MSEC


SHOT 7 GAGE 23
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 7 GAGE 24
SHOT 7 GAGE 25
SHOT 7 GAGE 26
SHOT 7 GAGE 27
SHOT 7 GAGE 28
TIME IN MSEC

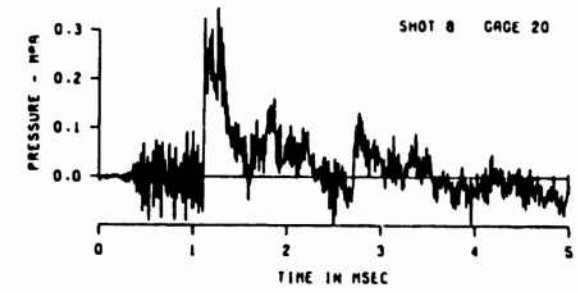

SHOT 7 GAGE 29
PRESSURE - MPA
0.09
0.06
0.03
0.00
0 5 10 15 20 25
TIME IN MSEC
SHOT 7 GAGE 29
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0 5 10 15 20 25
TIME IN MSEC
SHOT 7 GAGE 30
PRESSURE - MPA
0.15
0.10
0.05
0.00
0 6 12 18 24 30
TIME IN MSEC
SHOT 7 GAGE 30
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0 6 12 18 24 30
TIME IN MSEC
SHOT 7 GAGE 31
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 7 GAGE 31
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 7 GAGE 34
PRESSURE - MPA
1.5
1.0
0.5
0.0
0 1 2 3 4 5
TIME IN MSEC
SHOT 7 GAGE 34
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0 1 2 3 4 5
TIME IN MSEC
SHOT 8 GAGE 1
PRESSURE - MPA
6.
4.
2.
0.
0 1 2 3 4 5
TIME IN MSEC
SHOT 8 GAGE 1
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
0 1 2 3 4 5
TIME IN MSEC

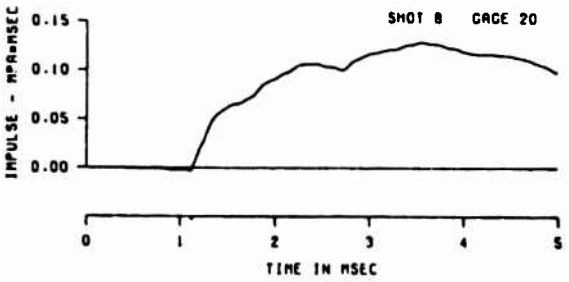

SHOT 8 GAGE 3
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 8 GAGE 4
SHOT 8 GAGE 5
SHOT 8 GAGE 6
SHOT 8 GAGE 7
SHOT 8 GAGE 8
TIME IN MSEC

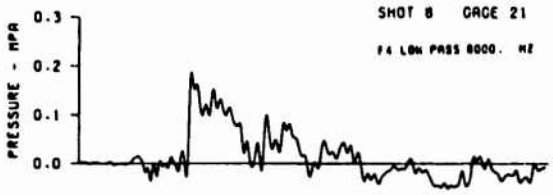

SHOT 8 GAGE 9
SHOT 8 GAGE 11
SHOT 8 GAGE 12
SHOT 8 GAGE 13
SHOT 8 GAGE 14
SHOT 8 GAGE 10
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC


SHOT 8 GAGE 18
PRESSURE - MPA
0.6
0.4
0.2
0.0

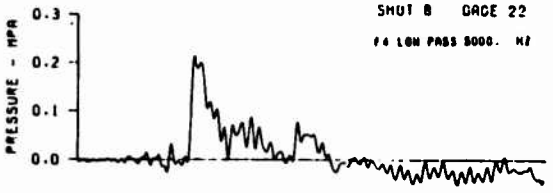
SHOT 8 GAGE 18
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0


SHOT 8 GAGE 20
PRESSURE - MPA
0.3
0.2
0.1
0.0
0 1 2 3 4 5
TIME IN MSEC

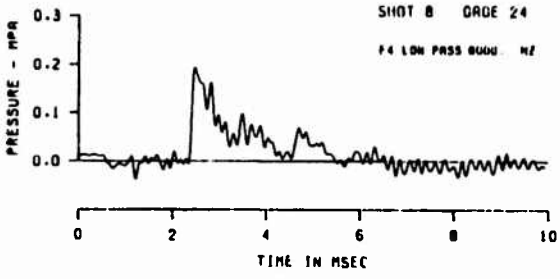

SHOT 8 GAGE 20
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
0 1 2 3 4 5
TIME IN MSEC

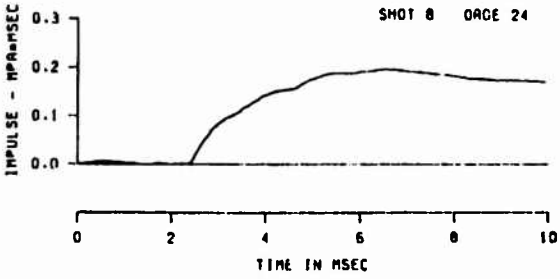

SHOT 8 GAGE 21
F4 LOW PASS 8000. HZ
PRESSURE - MPA
0.3
0.2
0.1
0.0

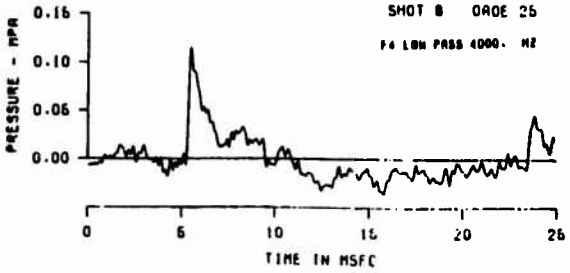
SHOT 8 GAGE 21
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0

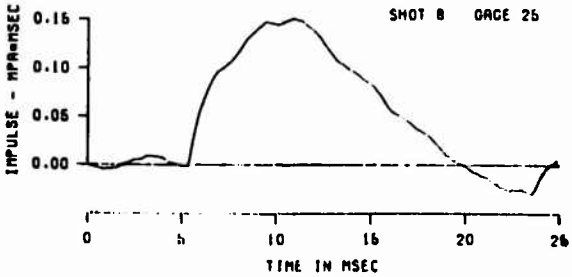

SHOT 8 GAGE 22
F4 LOW PASS 8000. HZ
PRESSURE - MPA
0.3
0.2
0.1
0.0

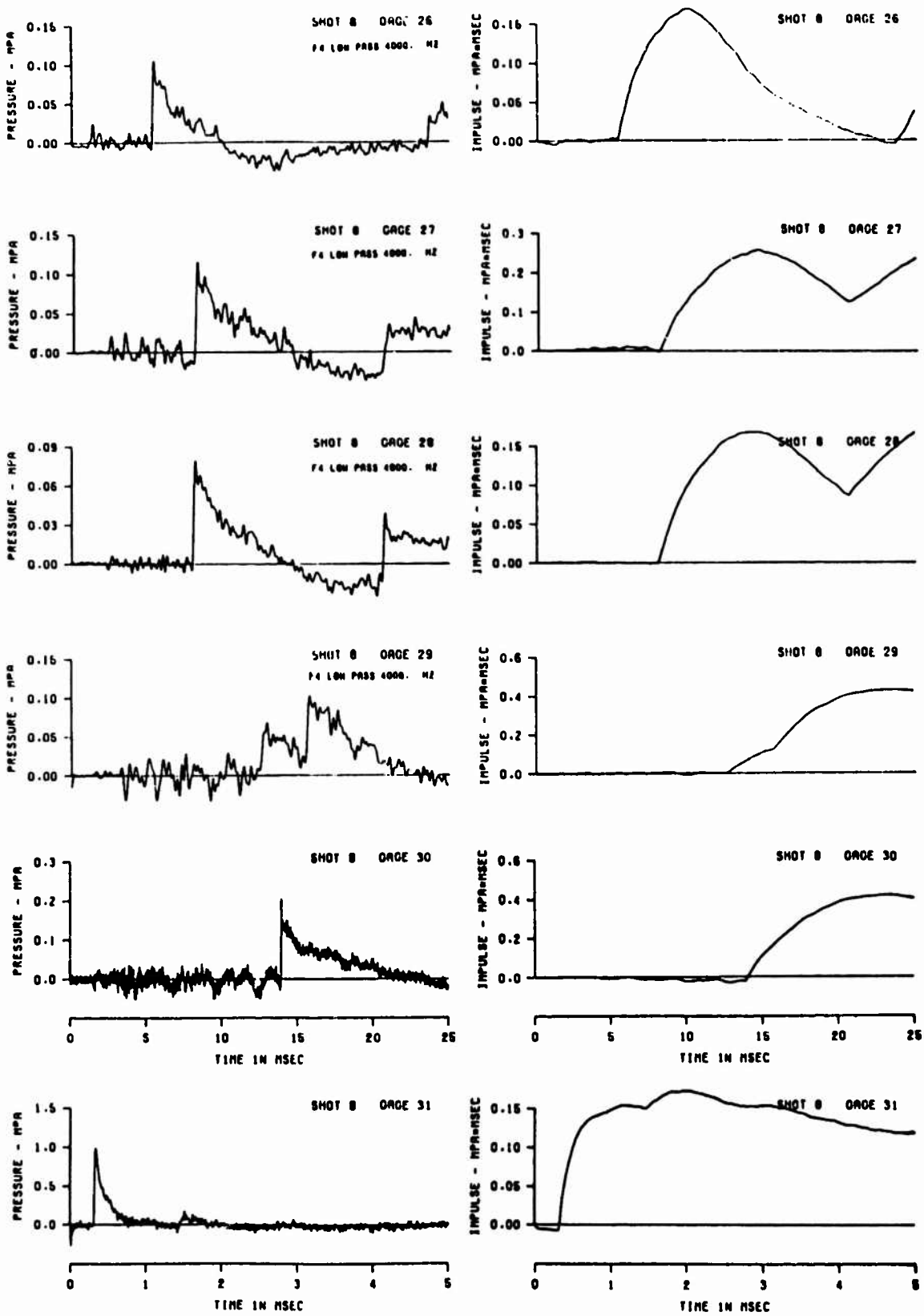
SHOT 8 GAGE 22
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00

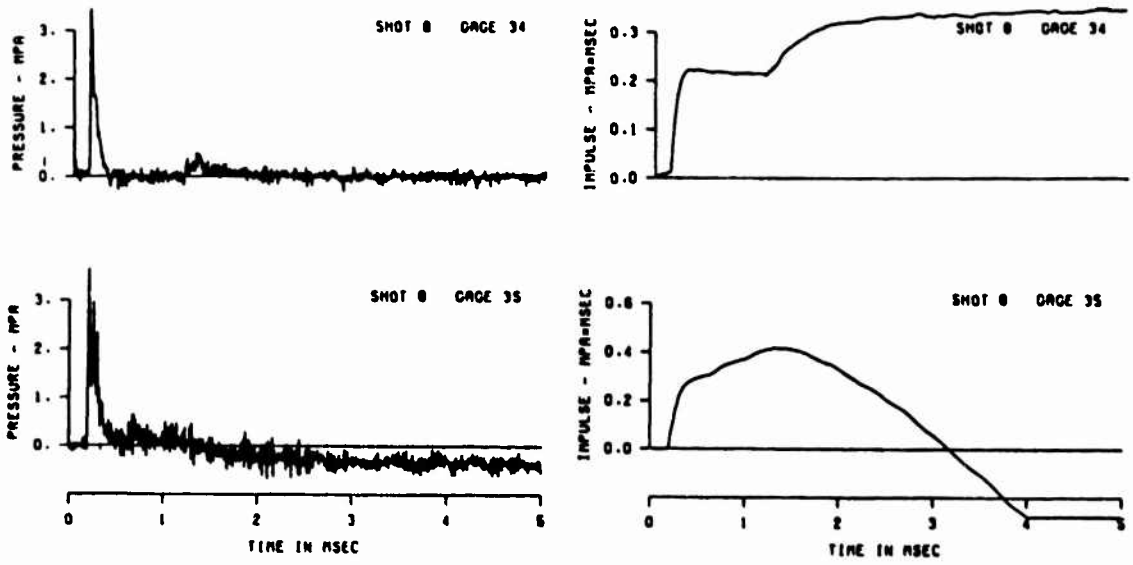

SHOT 8 GAGE 24
F4 LOW PASS 8000. HZ
PRESSURE - MPA
0.3
0.2
0.1
0.0
0 2 4 6 8 10
TIME IN MSEC

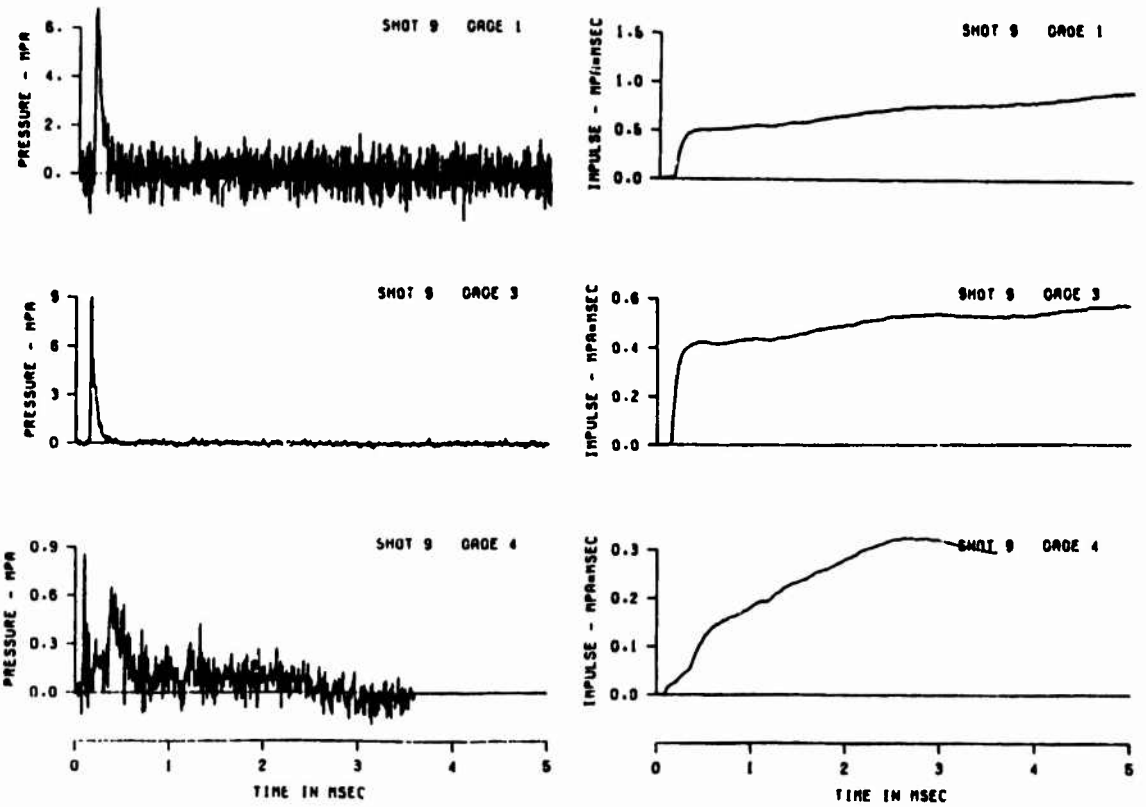

SHOT 8 GAGE 24
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0
0 2 4 6 8 10
TIME IN MSEC

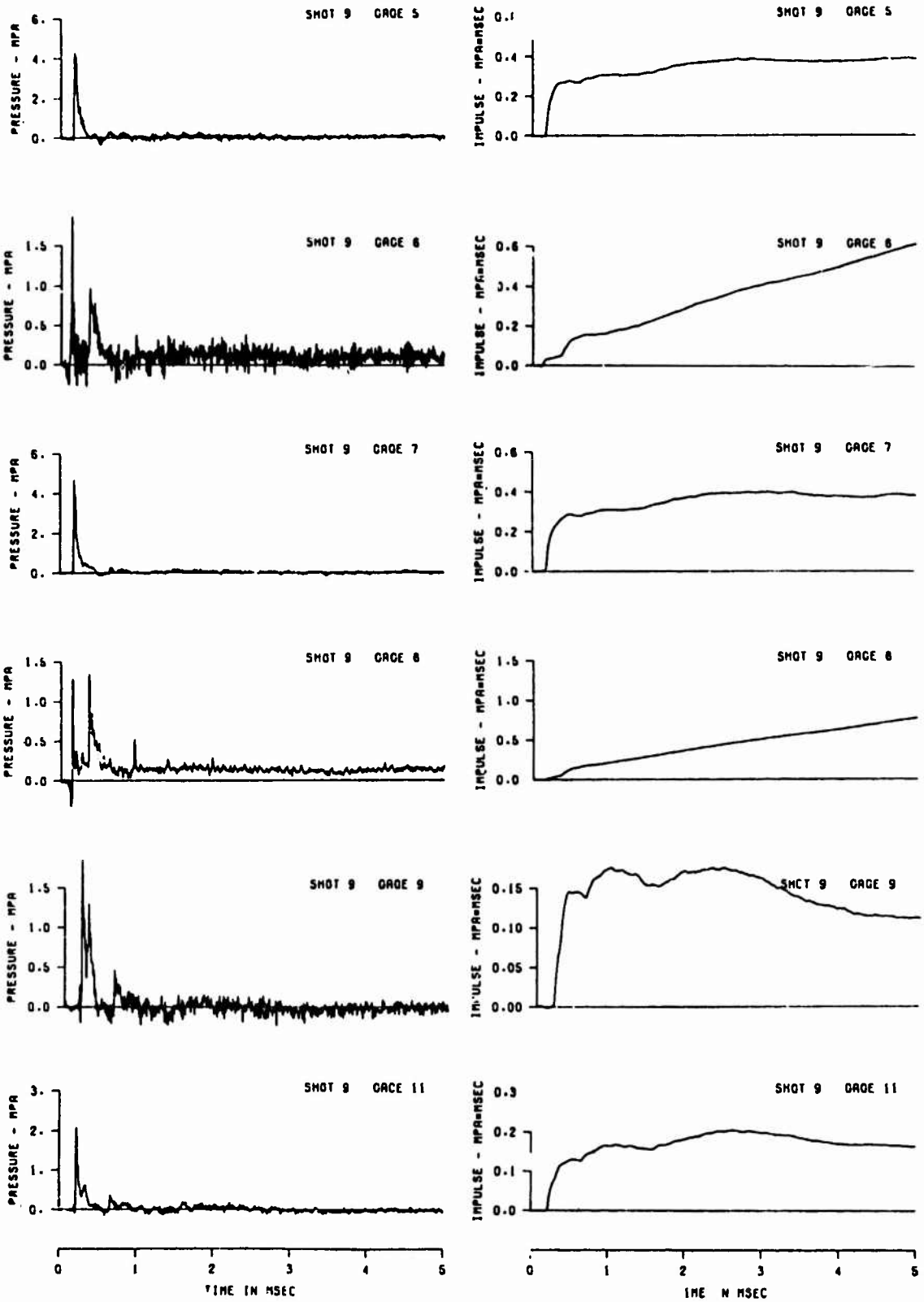

SHOT 8 GAGE 25
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
0 5 10 15 20 25
TIME IN MSEC

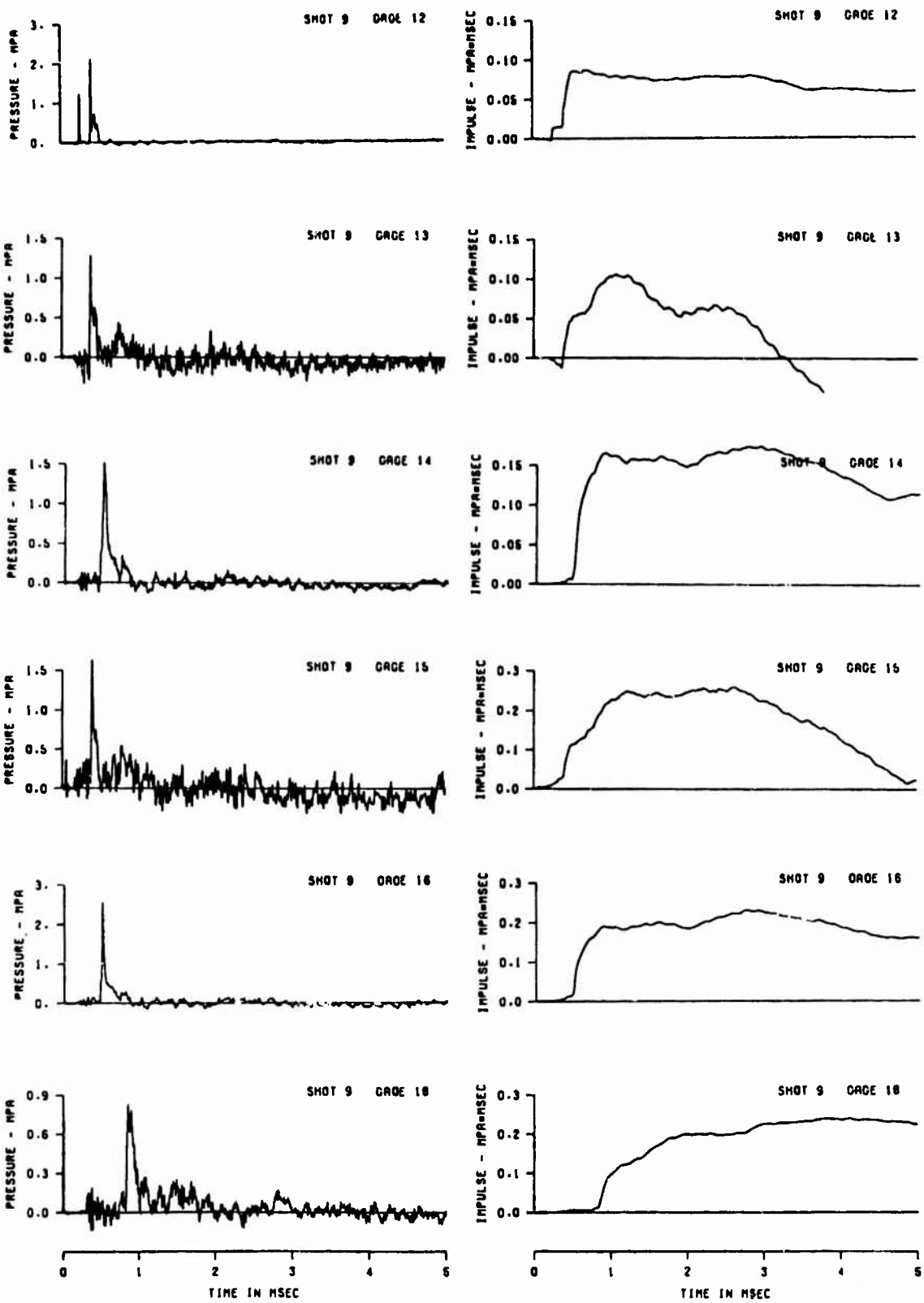

SHOT 8 GAGE 25
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
0 5 10 15 20 25
TIME IN MSEC


SHOT 8 GAGE 26
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 8 GAGE 26
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
SHOT 8 GAGE 27
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 8 GAGE 27
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0
SHOT 8 GAGE 28
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.09
0.06
0.03
0.00
SHOT 8 GAGE 28
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
SHOT 8 GAGE 29
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 8 GAGE 29
IMPULSE - MPAmSEC
0.6
0.4
0.2
0.0
SHOT 8 GAGE 30
PRESSURE - MPA
0.3
0.2
0.1
0.0
0 5 10 15 20 25
TIME IN MSEC
SHOT 8 GAGE 30
IMPULSE - MPAmSEC
0.6
0.4
0.2
0.0
0 5 10 15 20 25
TIME IN MSEC
SHOT 8 GAGE 31
PRESSURE - MPA
1.5
1.0
0.5
0.0
0 1 2 3 4 5
TIME IN MSEC
SHOT 8 GAGE 31
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
0 1 2 3 4 5
TIME IN MSEC


SHOT 8 GAGE 34
PRESSURE - MPA
3.
2.
1.
0.
SHOT 8 GAGE 34
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 8 GAGE 35
PRESSURE - MPA
3.
2.
1.
0.
0
1
2
3
4
5
TIME IN MSEC
SHOT 8 GAGE 35
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC


SHOT 9 GAGE 1
PRESSURE - MPA
6.
4.
2.
0.
SHOT 9 GAGE 1
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0
SHOT 9 GAGE 3
PRESSURE - MPA
9
6
3
0
SHOT 9 GAGE 3
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 9 GAGE 4
PRESSURE - MPA
0.9
0.6
0.3
0.0
0
1
2
3
4
5
TIME IN MSEC
SHOT 9 GAGE 4
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0
1
2
3
4
5
TIME IN MSEC


SHOT 9 GAGE 5
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 9 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 9 GAGE 7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 9 GAGE 8
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 9 GAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 9 GAGE 11
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
TIME IN MSEC


SHOT 9 GAGE 12
PRESSURE - MPA
3.
2.
1.
0.
SHOT 9 GAGE 12
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
SHOT 9 GAGE 13
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 9 GAGE 13
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
SHOT 9 GAGE 14
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 9 GAGE 14
IMPULSE - MPAmSEC
0.15
0.10
0.05
0.00
SHOT 9 GAGE 15
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 9 GAGE 15
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0
SHOT 9 GAGE 16
PRESSURE - MPA
3.
2.
1.
0.
SHOT 9 GAGE 16
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0
SHOT 9 GAGE 18
PRESSURE - MPA
0.9
0.6
0.3
0.0
SHOT 9 GAGE 18
IMPULSE - MPAmSEC
0.3
0.2
0.1
0.0
0
1
2
3
4
5
TIME IN MSEC
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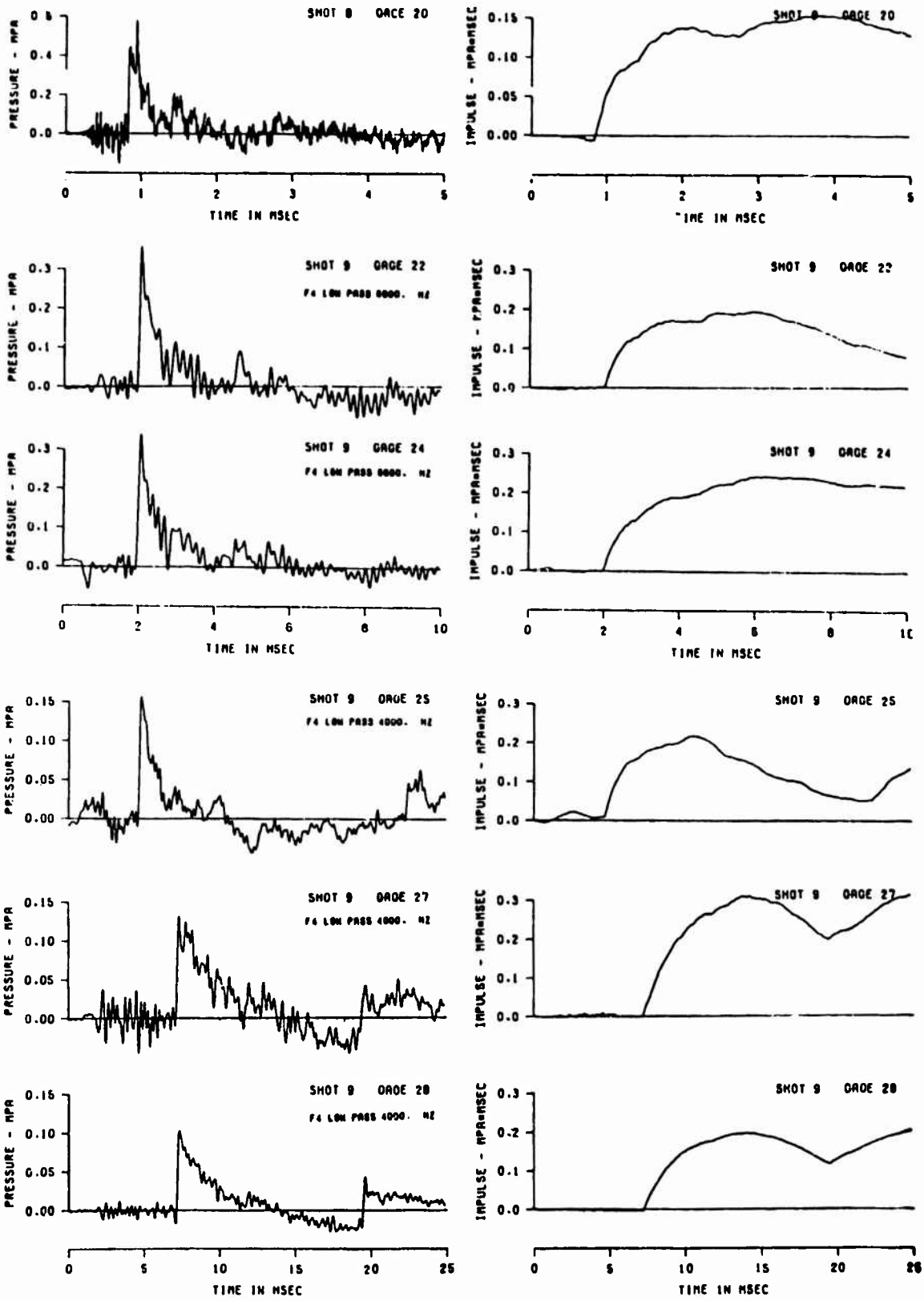
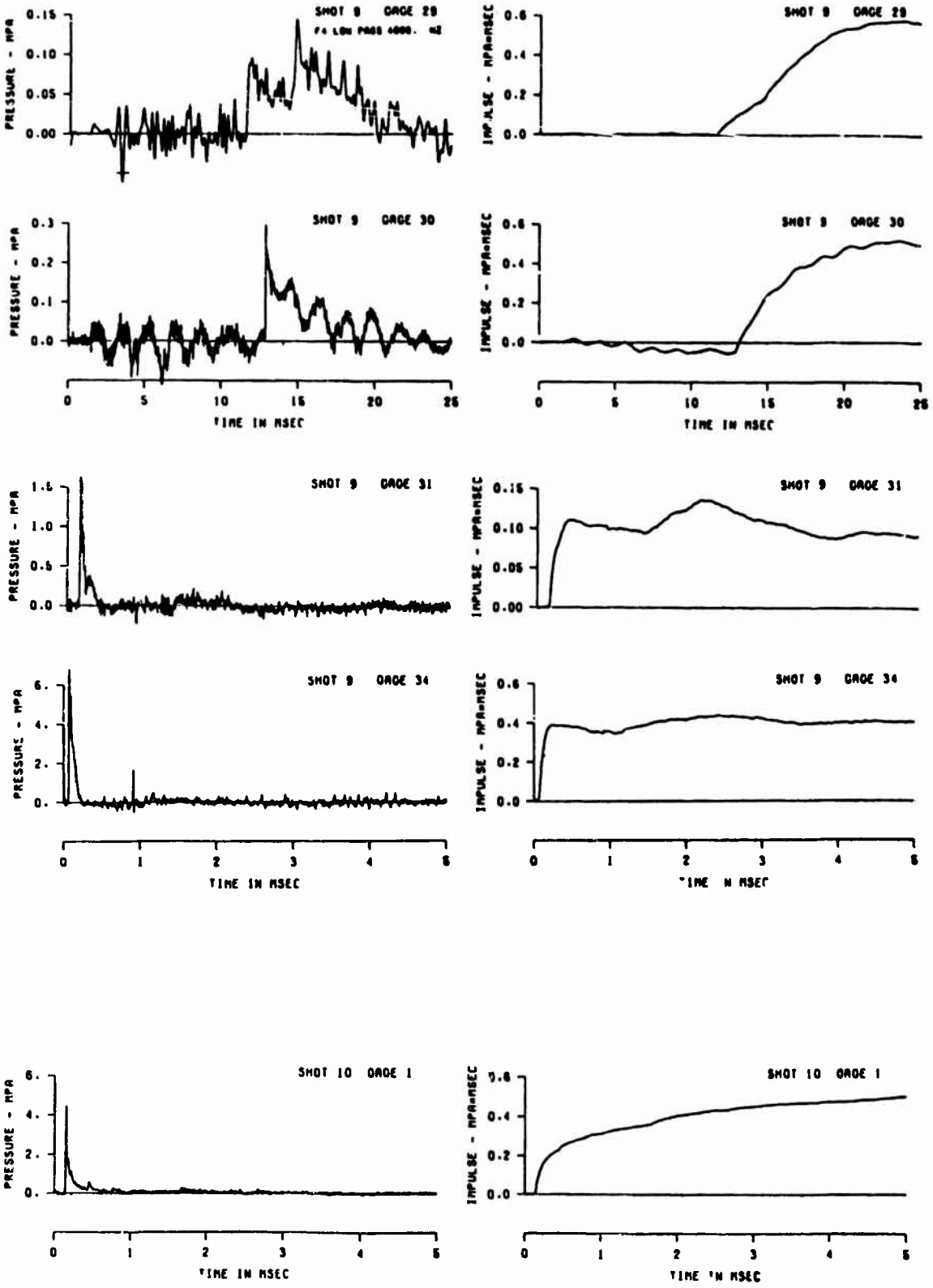
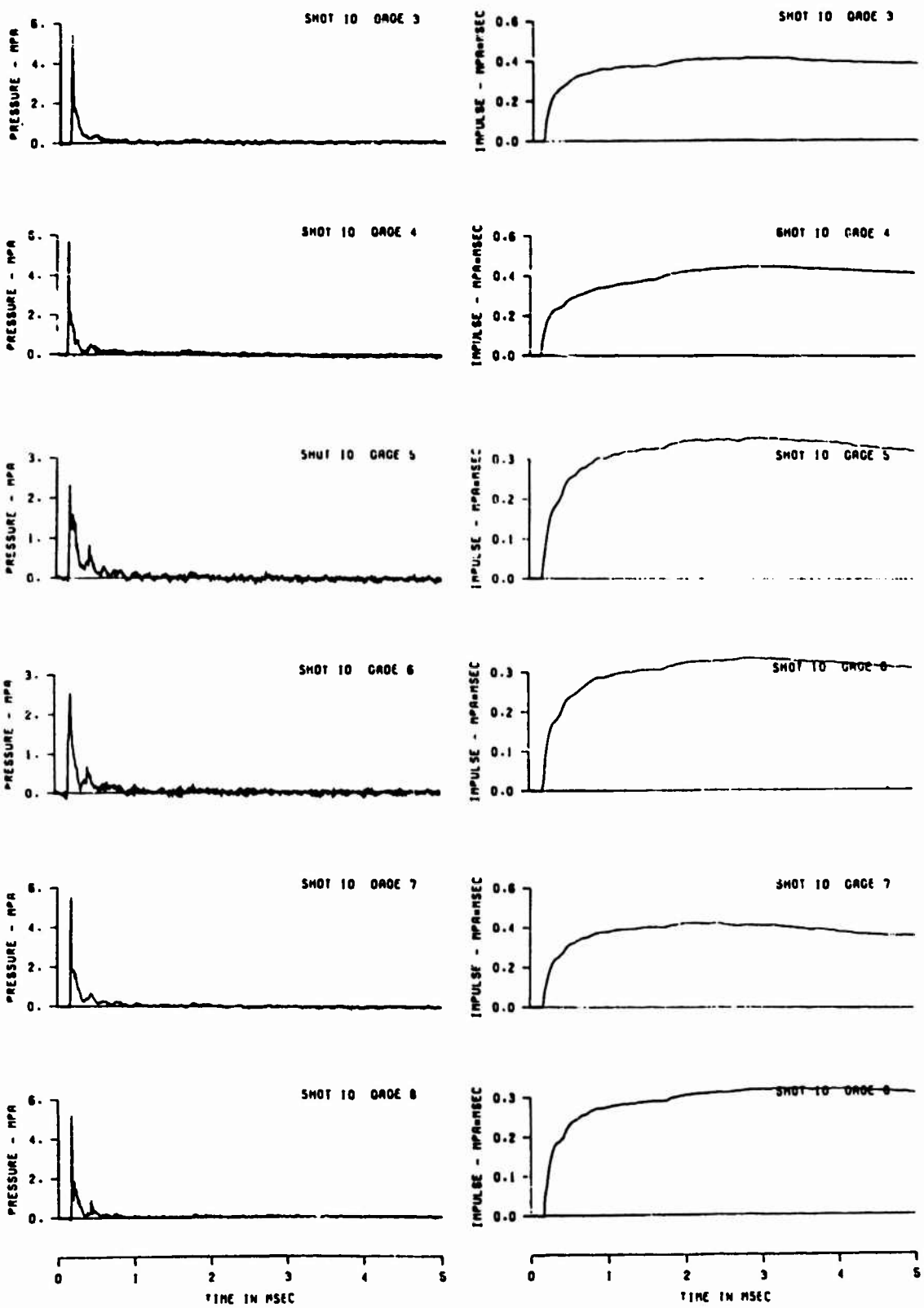
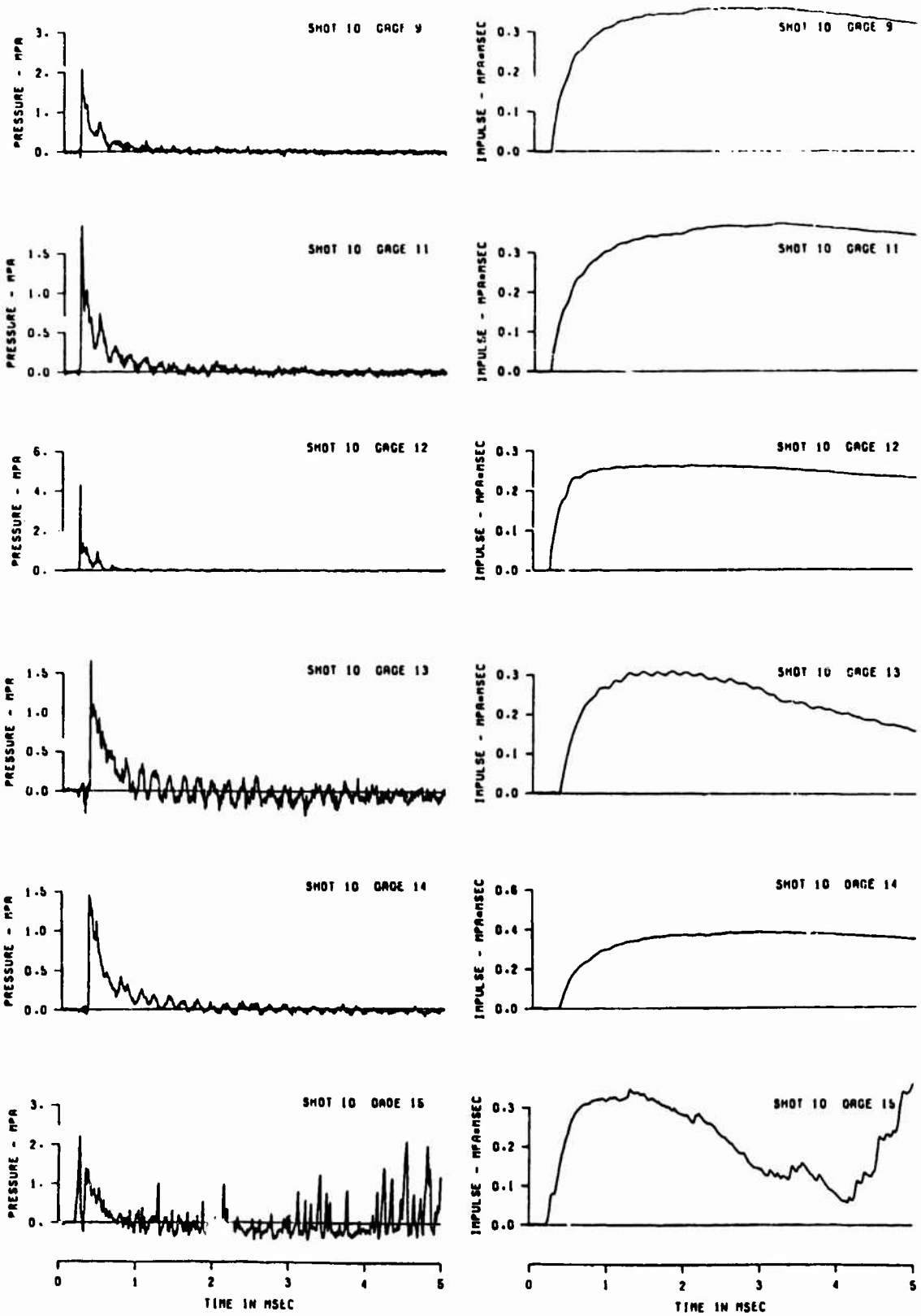
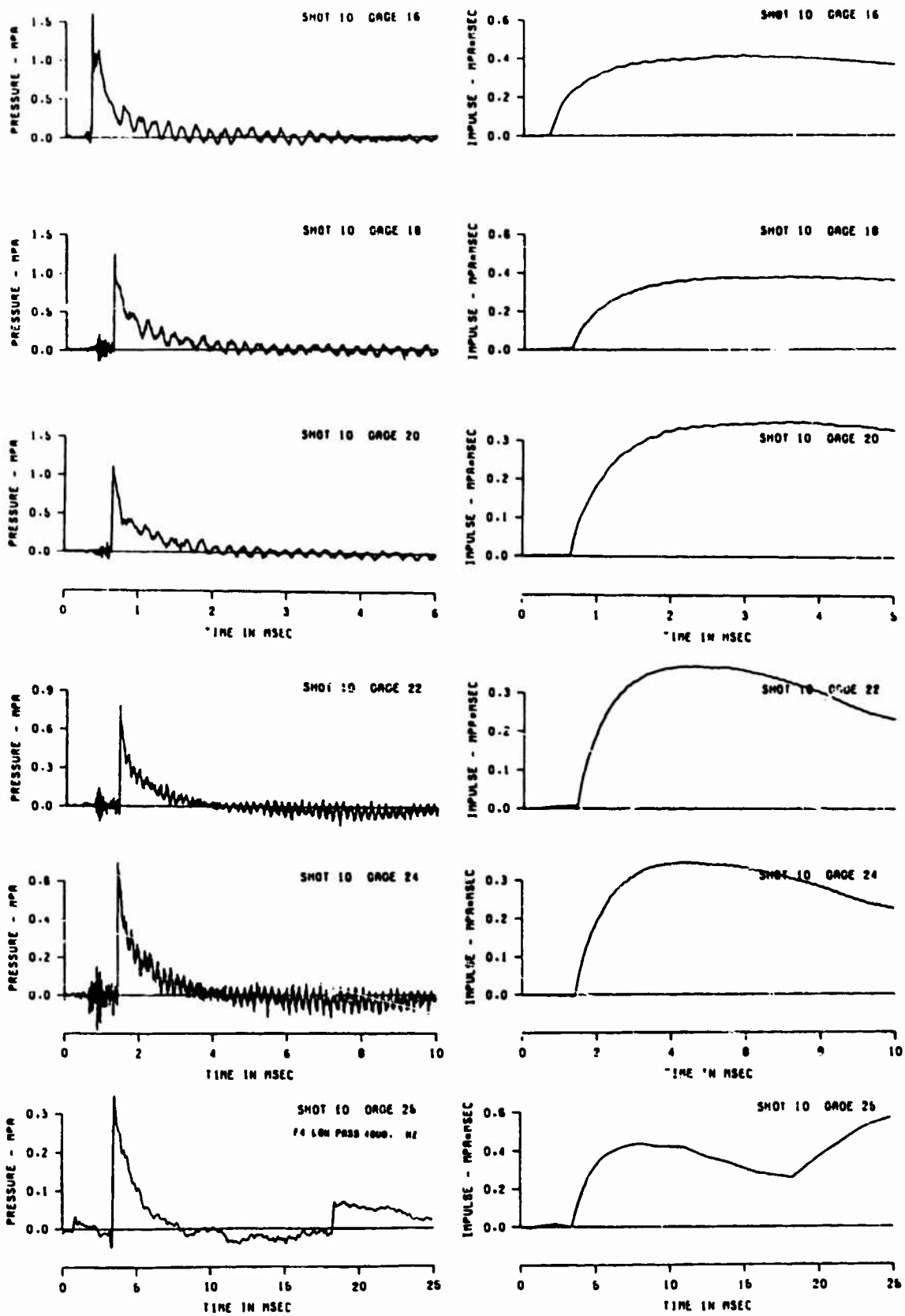
3
4
5
TIME IN MSEC

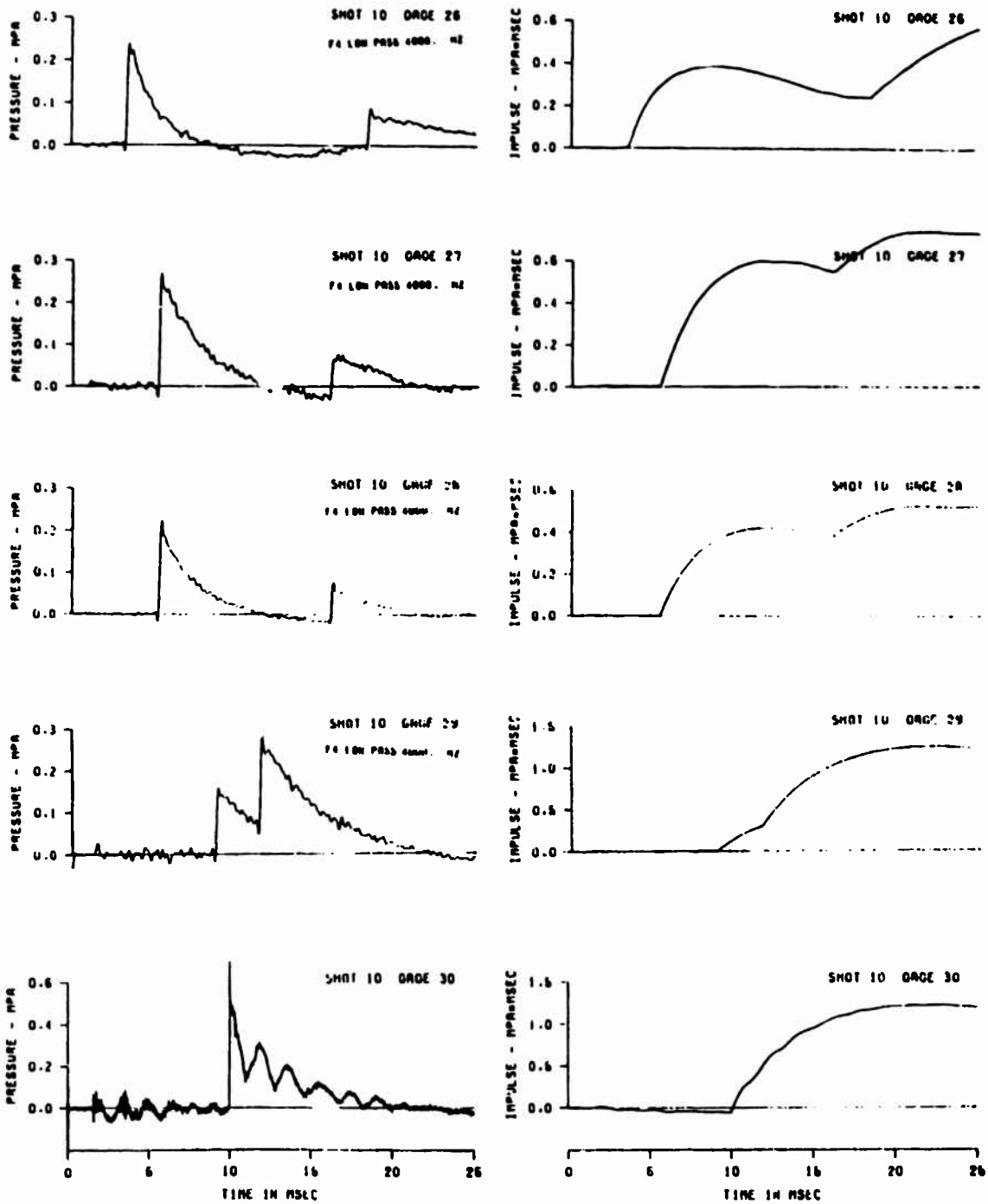

SHOT 8 GAGE 20
PRESSURE - MPA
TIME IN MSEC
SHOT 8 GAGE 20
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 9 GAGE 22
F4 LOW PASS 8000. HZ
PRESSURE - MPA
TIME IN MSEC
SHOT 9 GAGE 24
F4 LOW PASS 8000. HZ
PRESSURE - MPA
TIME IN MSEC
SHOT 9 GAGE 25
F4 LOW PASS 4000. HZ
PRESSURE - MPA
SHOT 9 GAGE 27
F4 LOW PASS 4000. HZ
PRESSURE - MPA
SHOT 9 GAGE 28
F4 LOW PASS 4000. HZ
PRESSURE - MPA
TIME IN MSEC

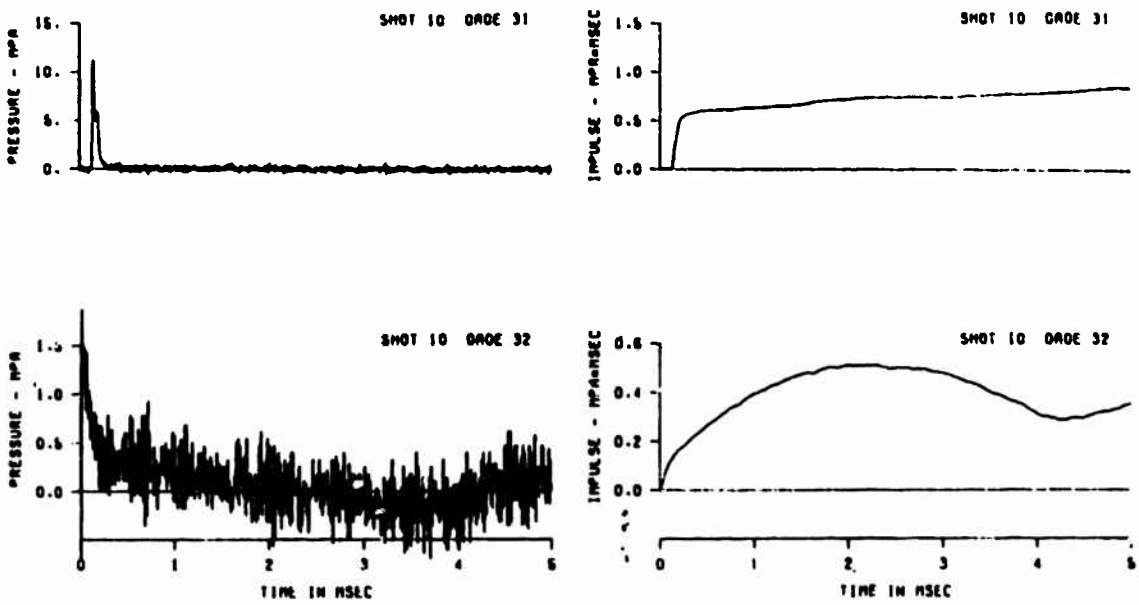

SHOT 9 GAGE 29
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 9 GAGE 30
SHOT 9 GAGE 31
SHOT 9 GAGE 34
TIME IN MSEC
SHOT 10 GAGE 1


SHOT 10 GAGE 3
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 10 GAGE 4
SHOT 10 GAGE 5
SHOT 10 GAGE 6
SHOT 10 GAGE 7
SHOT 10 GAGE 8
TIME IN MSEC


SHOT 10 GAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 10 GAGE 11
SHOT 10 GAGE 12
SHOT 10 GAGE 13
SHOT 10 GAGE 14
SHOT 10 GAGE 15
TIME IN MSEC

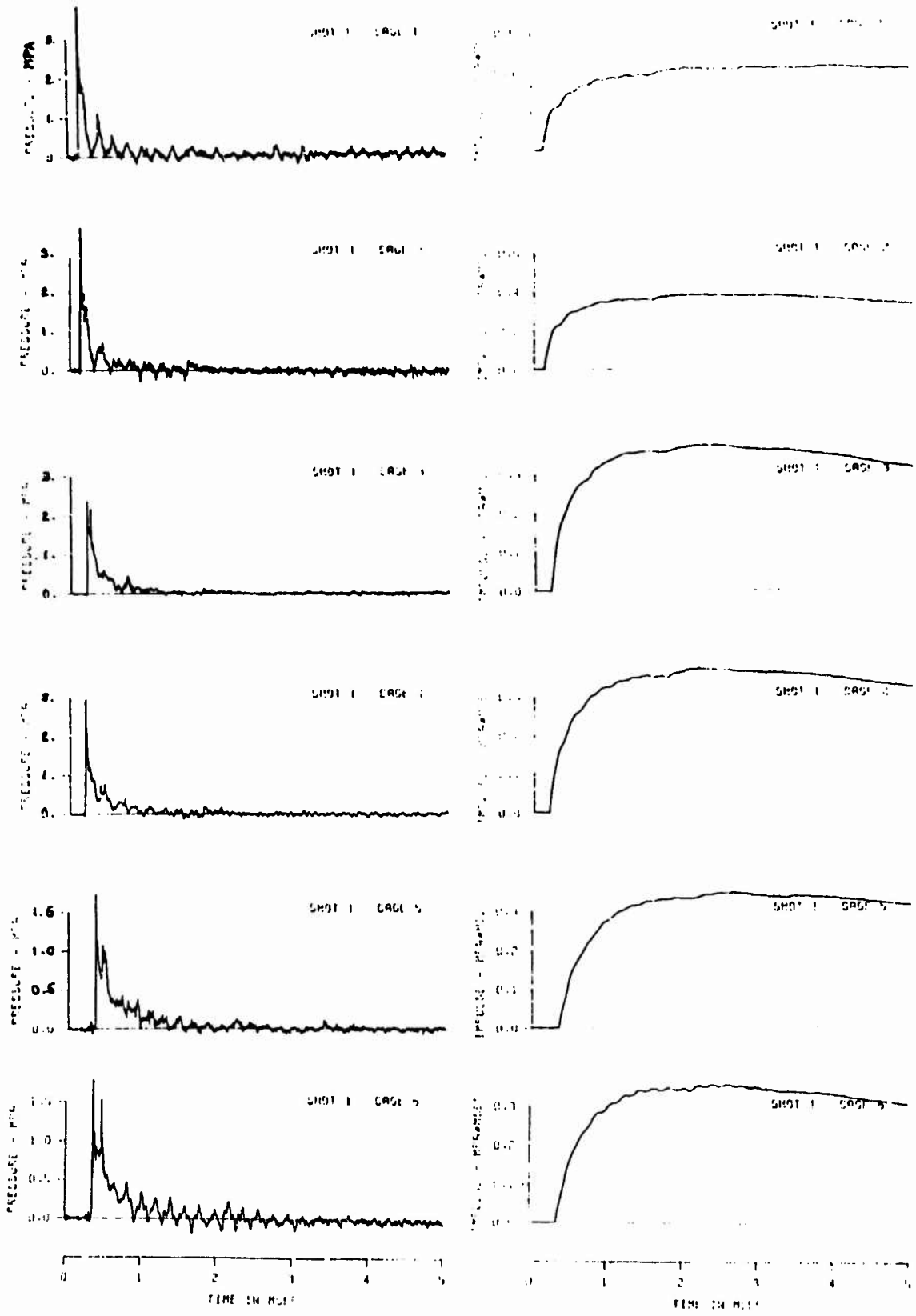

SHOT 10 GAGE 16
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 10 GAGE 18
SHOT 10 GAGE 20
SHOT 10 GAGE 22
SHOT 10 GAGE 24
SHOT 10 GAGE 26
F4 LOW PASS 4000. HZ
TIME IN MSEC

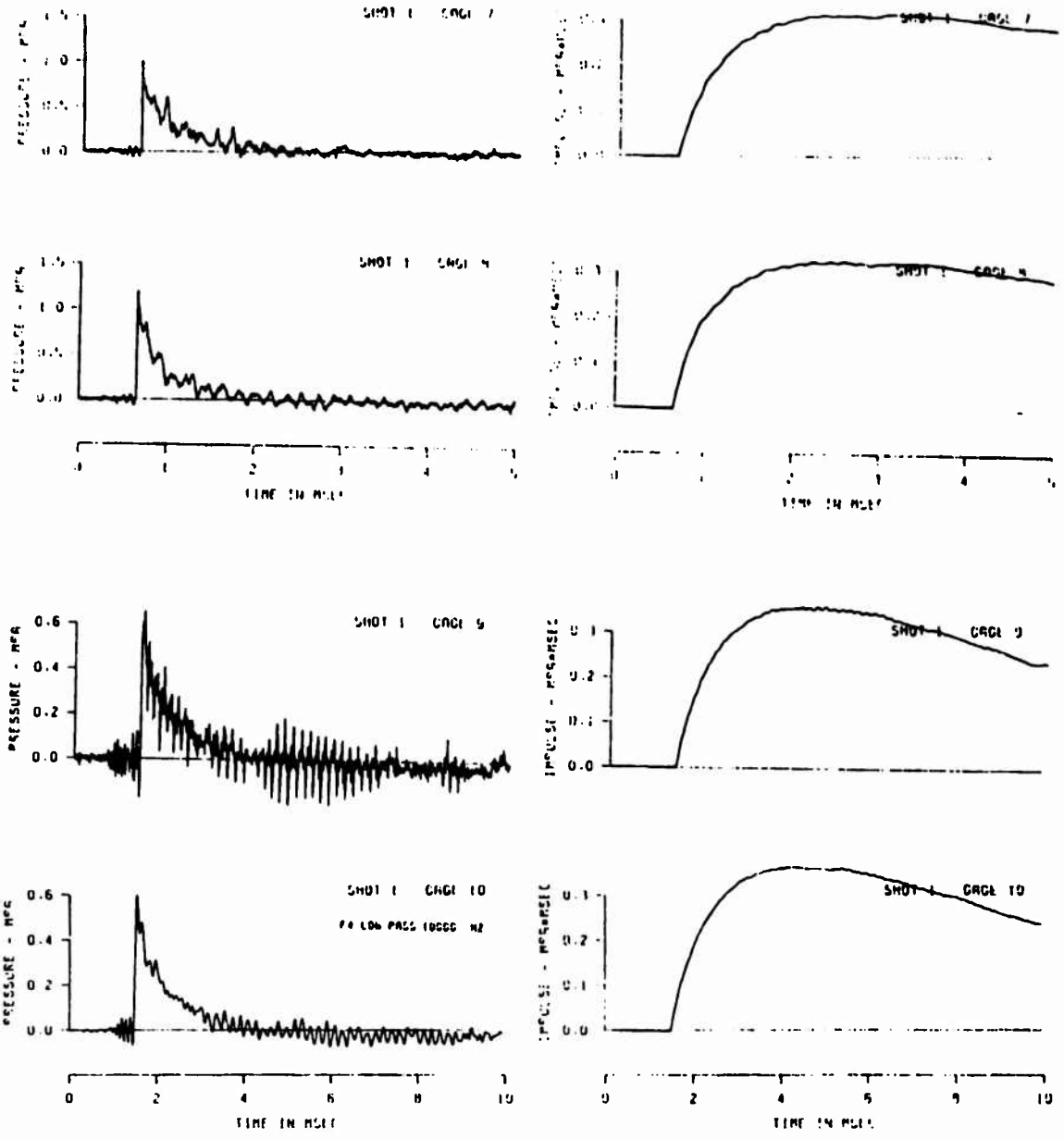

SHOT 10 GAGE 26
SHOT 10 GAGE 26
SHOT 10 GAGE 27
SHOT 10 GAGE 27
SHOT 10 GAGE 30
SHOT 10 GAGE 30
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

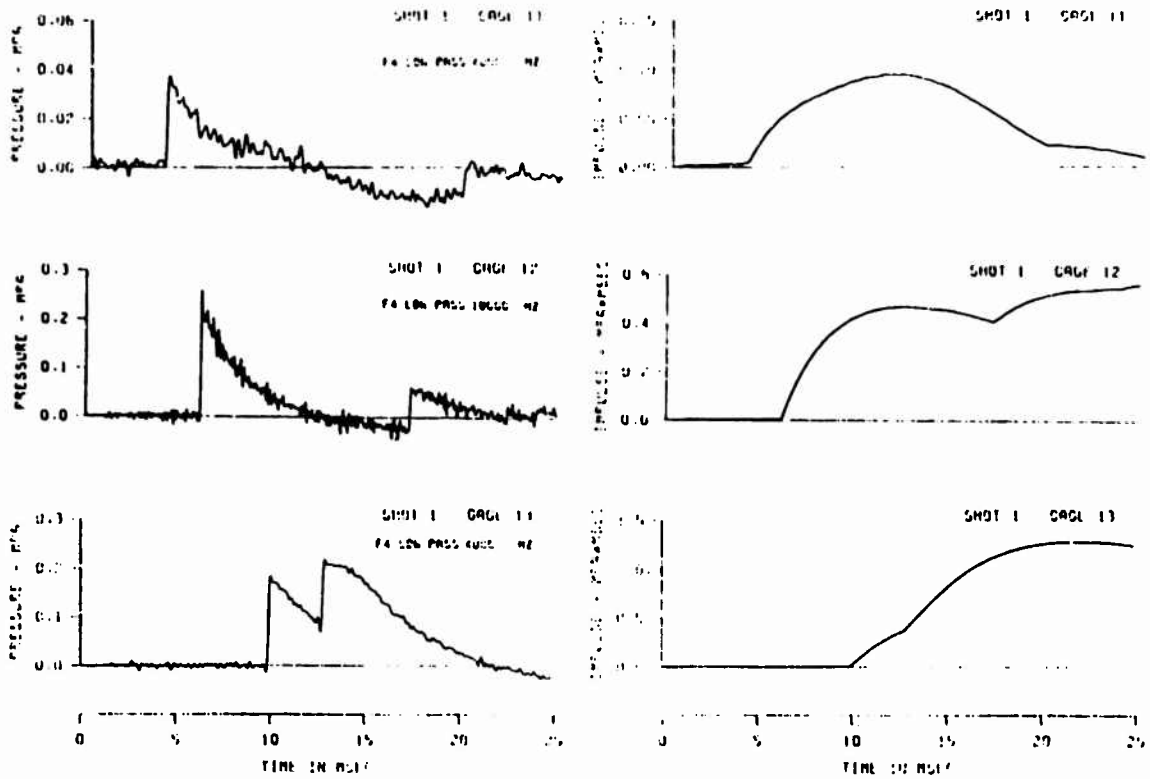

SHOT 10 GAGE 31
PRESSURE - MPA
15.
10.
5.
0.
SHOT 10 GAGE 31
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0
SHOT 10 GAGE 32
PRESSURE - MPA
1.0
0.5
0.0
0
1
2
3
4
5
TIME IN MSEC
SHOT 10 GAGE 32
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC

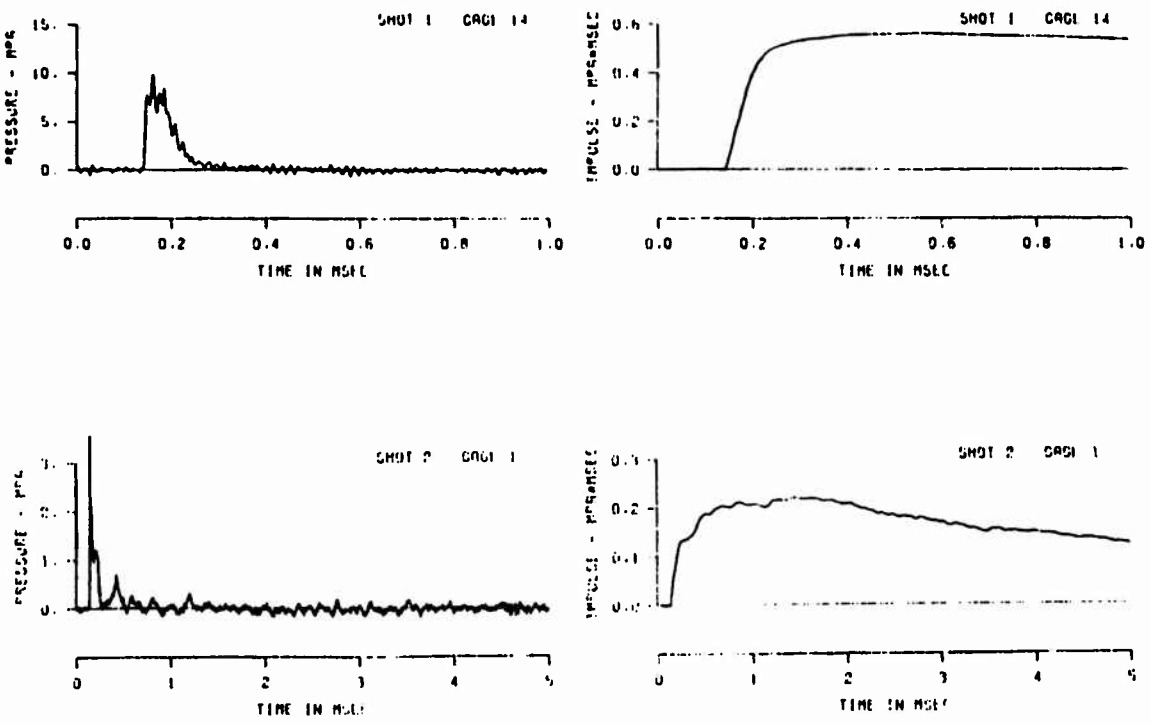
APPENDIX B

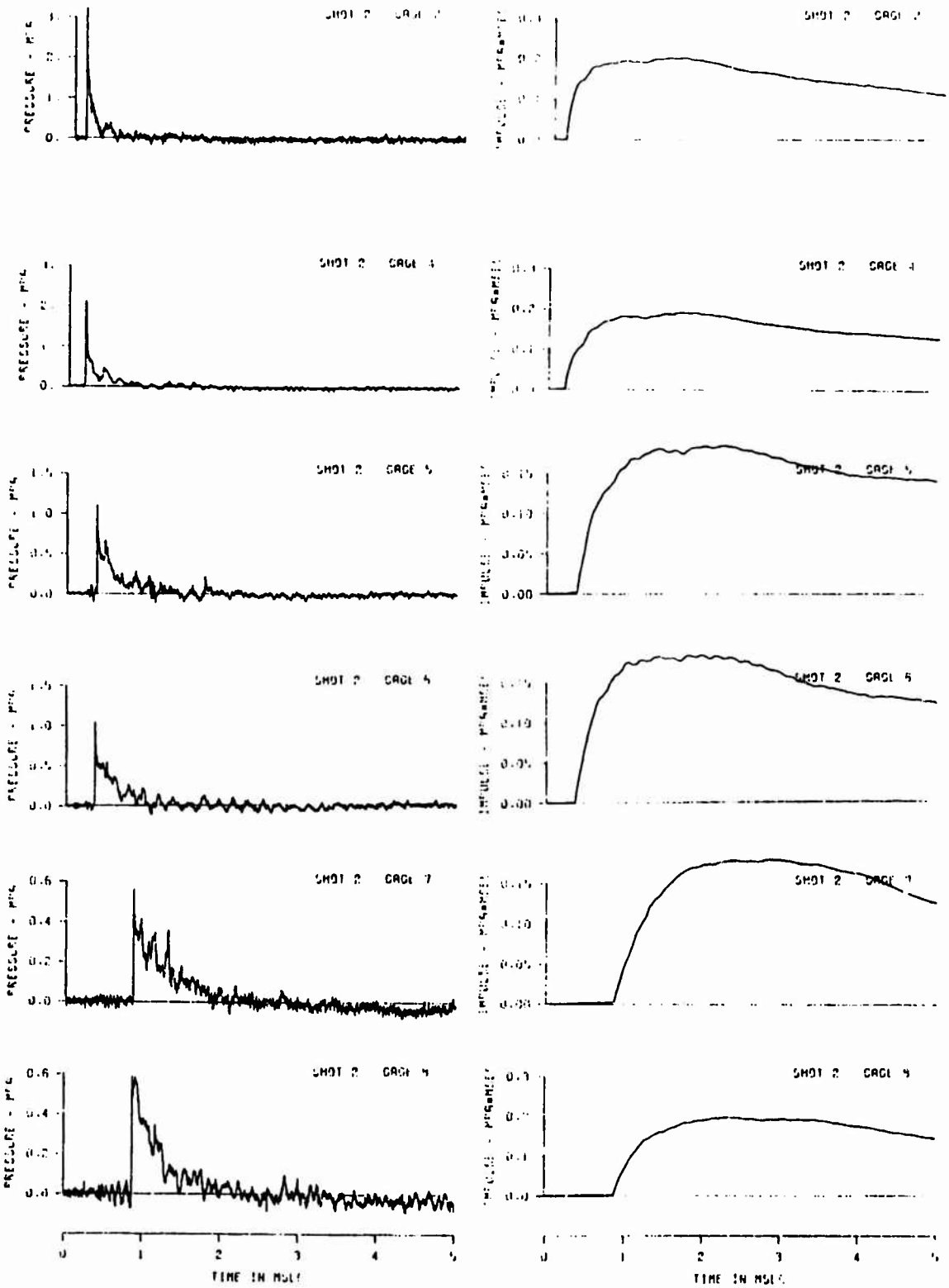
AIRBLAST MEASUREMENTS 1982 SERIES

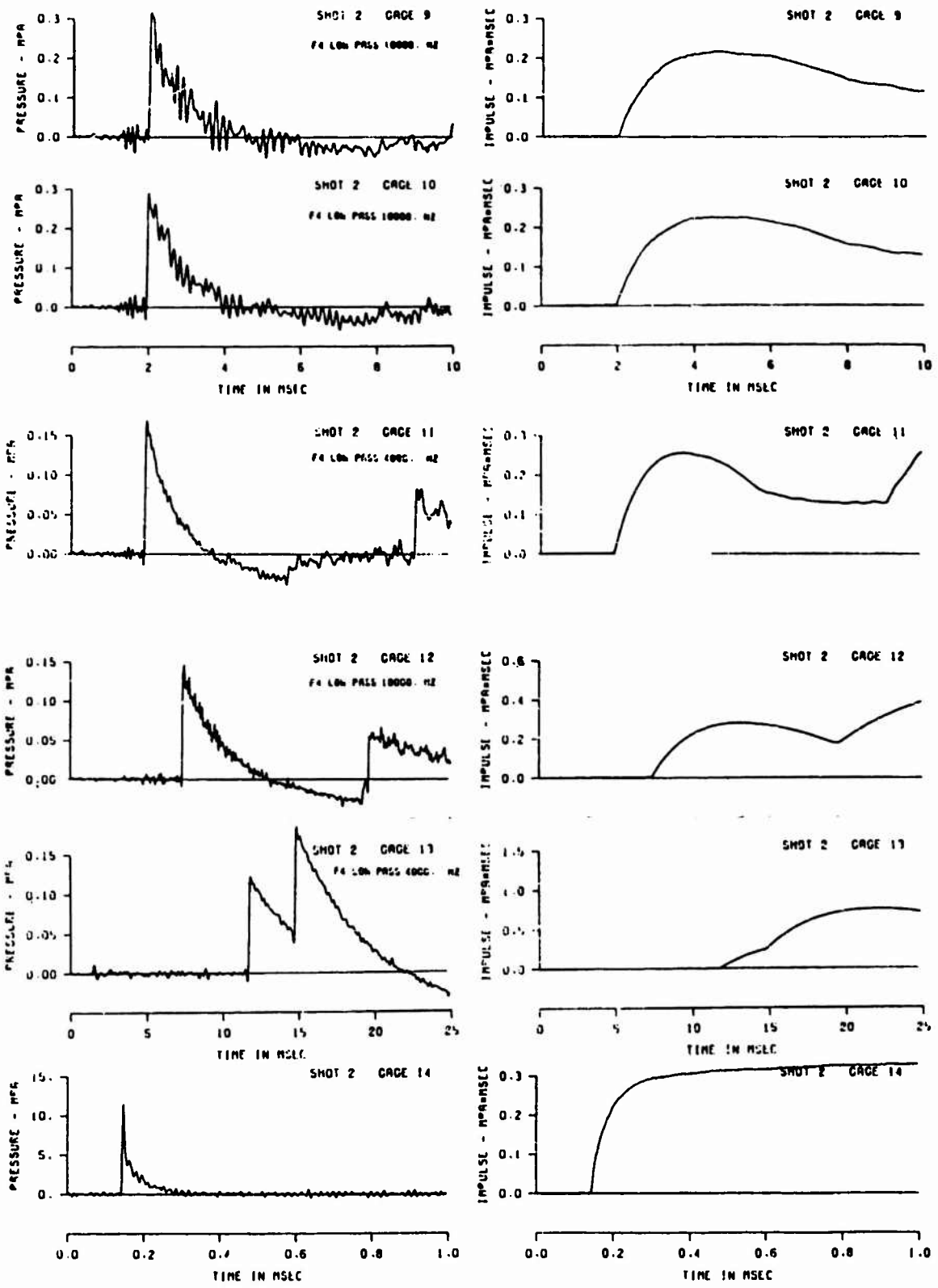


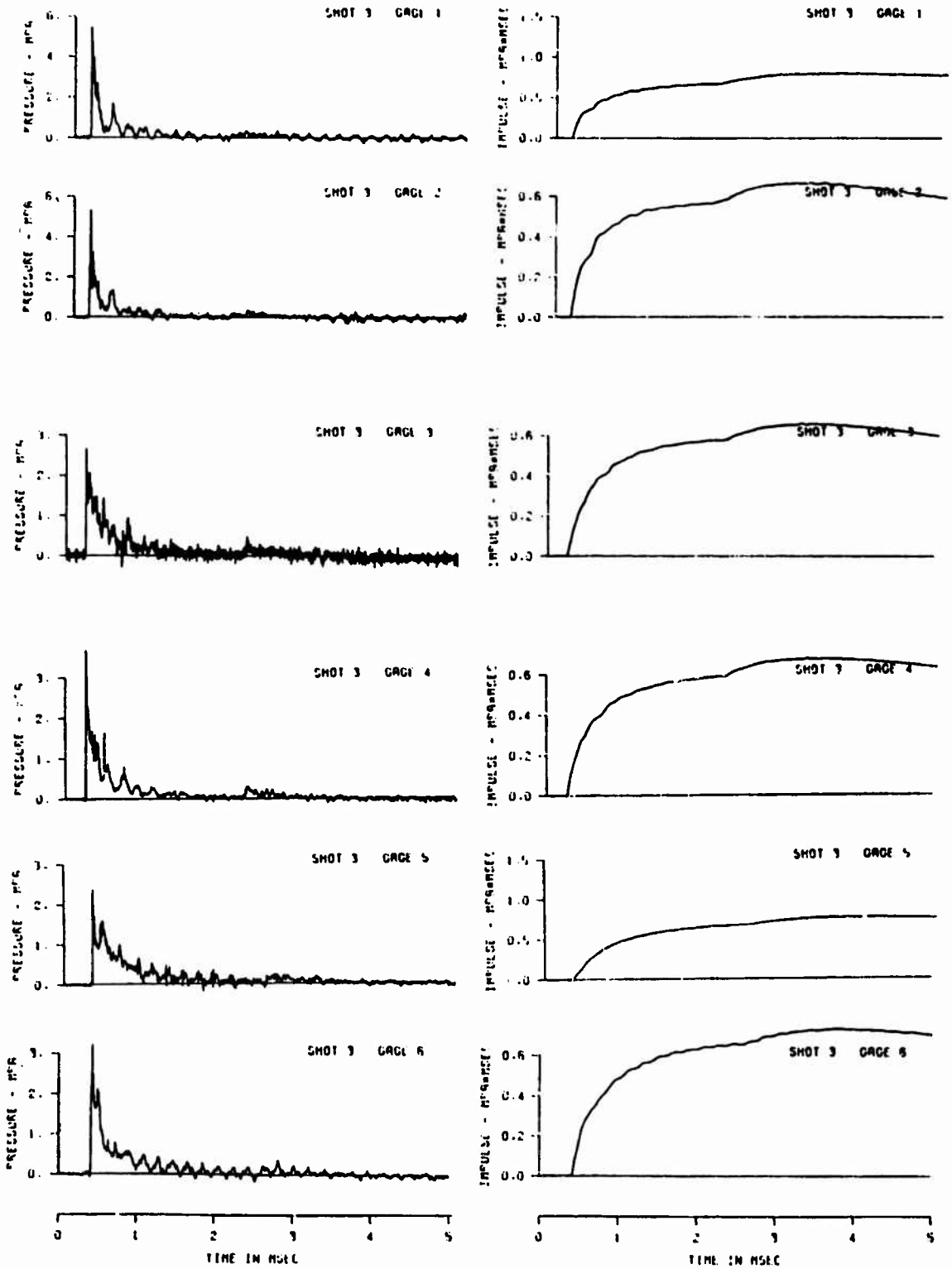

SHOT 1 GAGE 7
SHOT 1 GAGE 9
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 1 GAGE 10
0 LOW PASS 10000 HZ
0
2
4
6
8
10
TIME IN MSEC

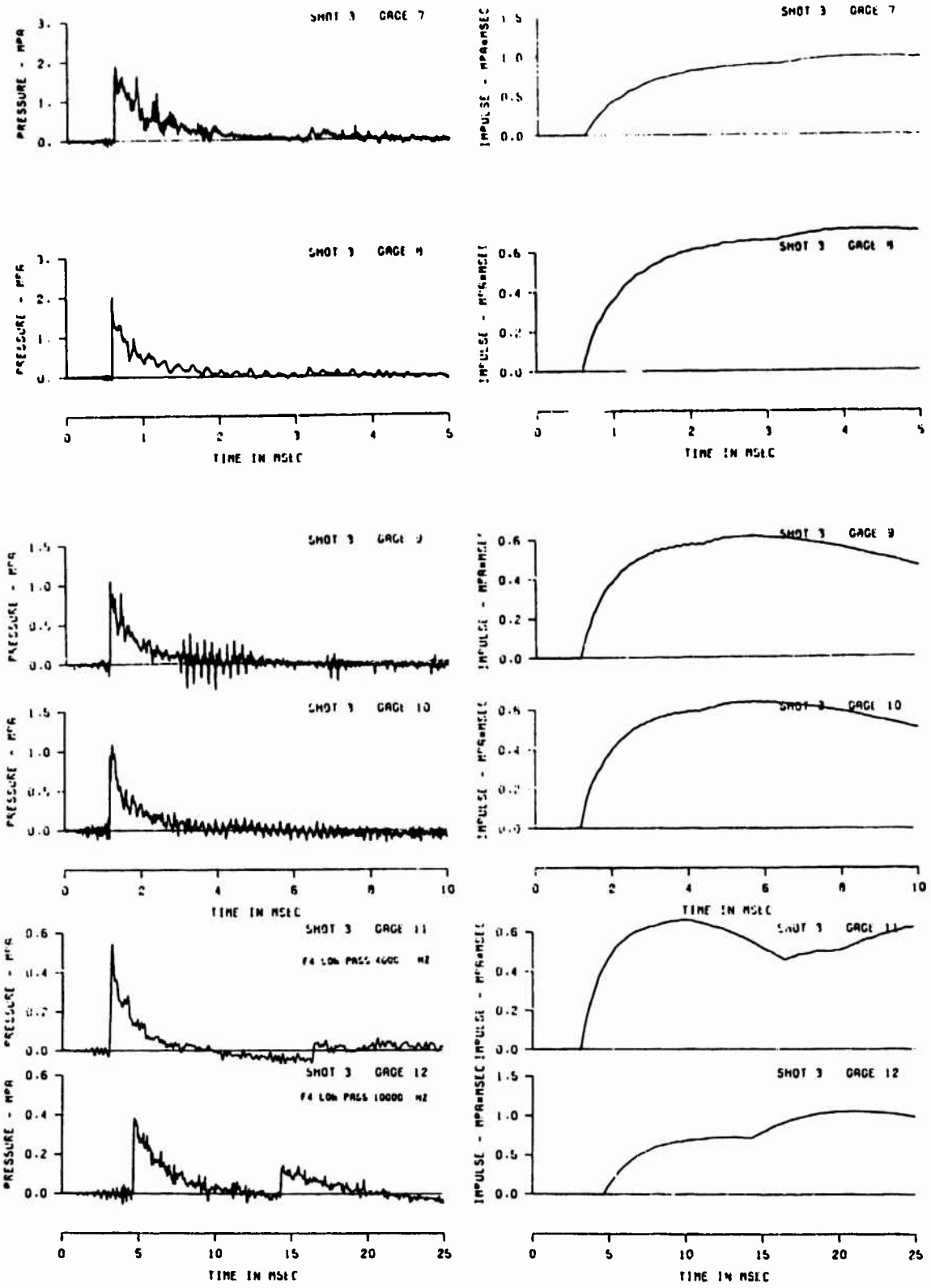


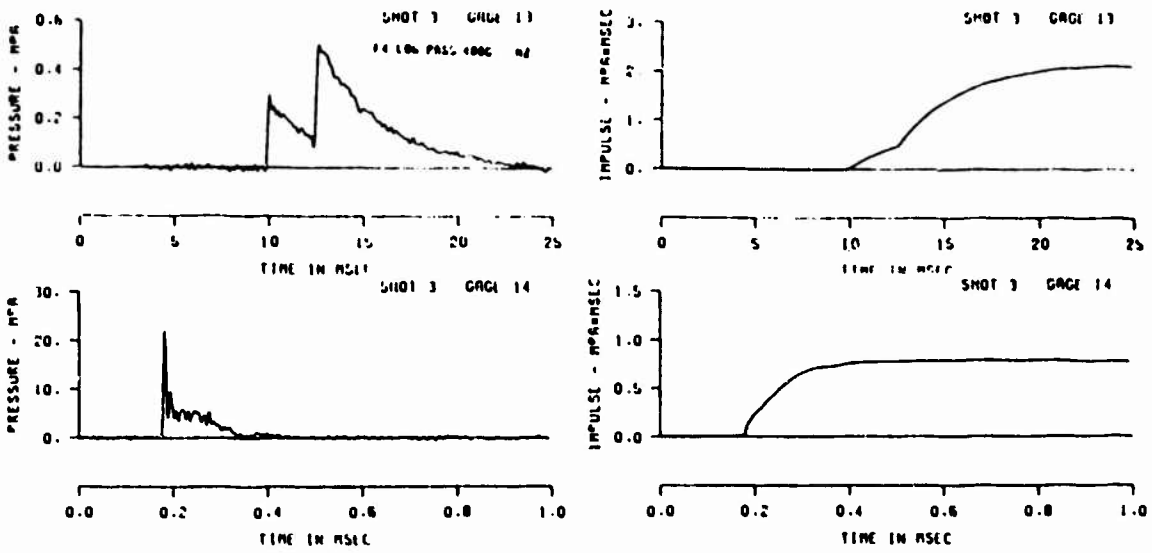


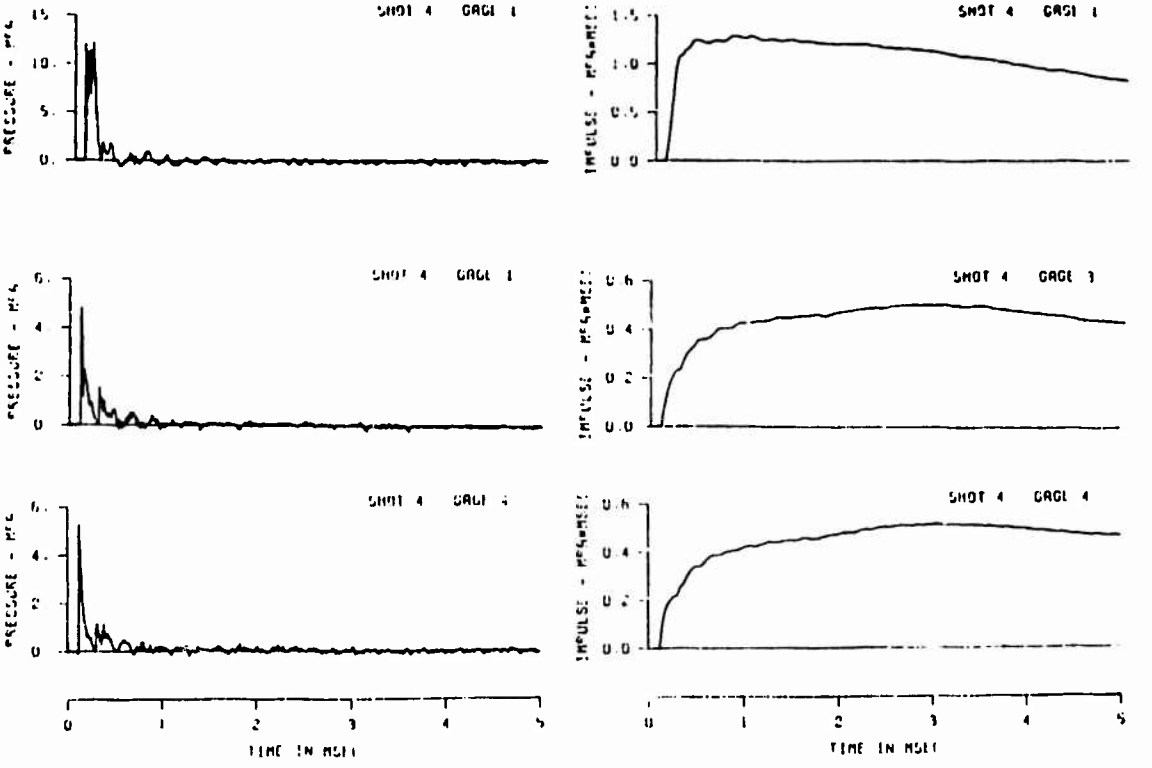


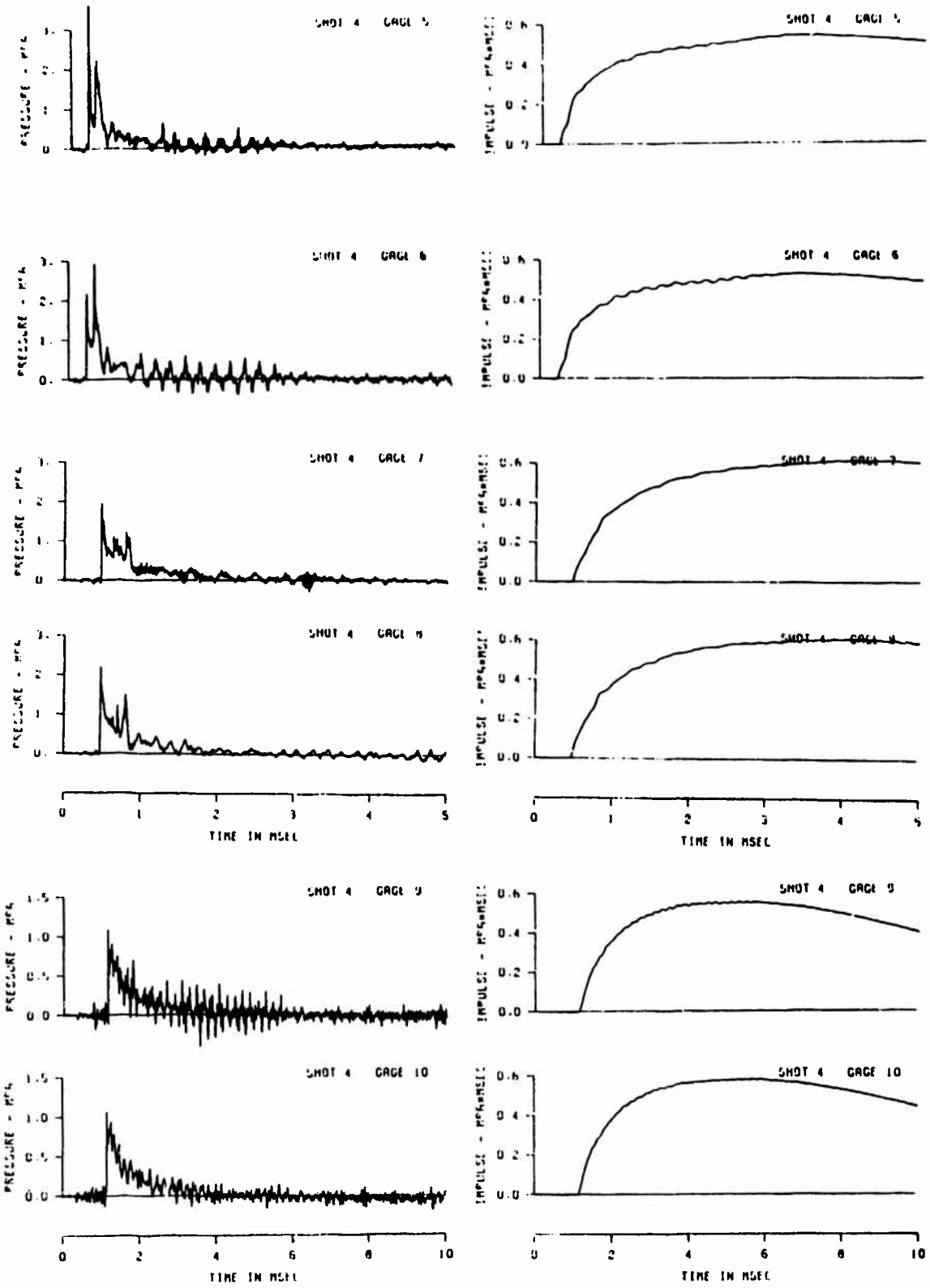

SHOT 2 CAGE 9
SHOT 2 CAGE 10
SHOT 2 CAGE 11
SHOT 2 CAGE 12
SHOT 2 CAGE 13
SHOT 2 CAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

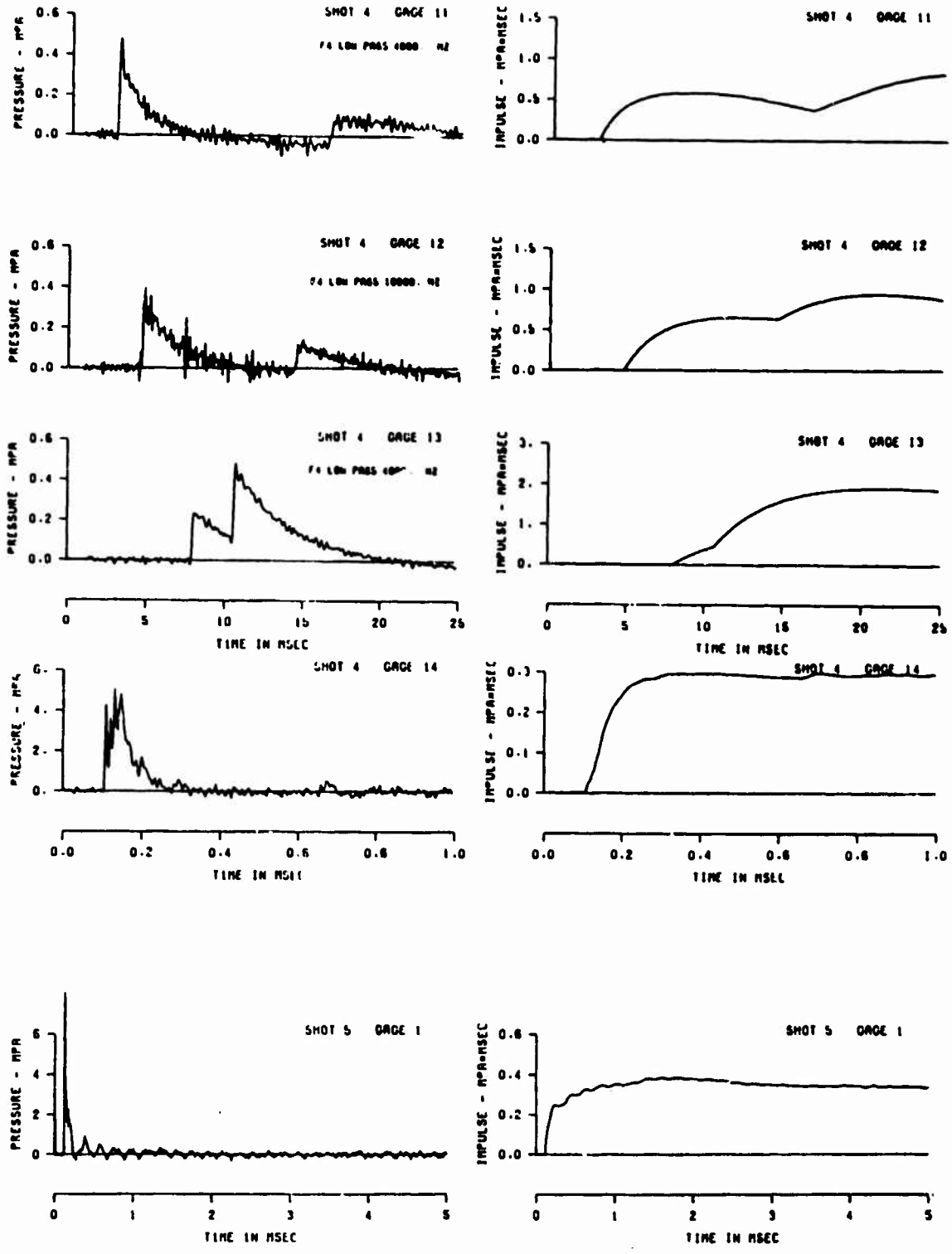

SHOT 9 GAGE 1
SHOT 9 GAGE 1
SHOT 9 GAGE 2
SHOT 9 GAGE 3
SHOT 9 GAGE 4
SHOT 9 GAGE 5
SHOT 9 GAGE 6
TIME IN MSEC
TIME IN MSEC

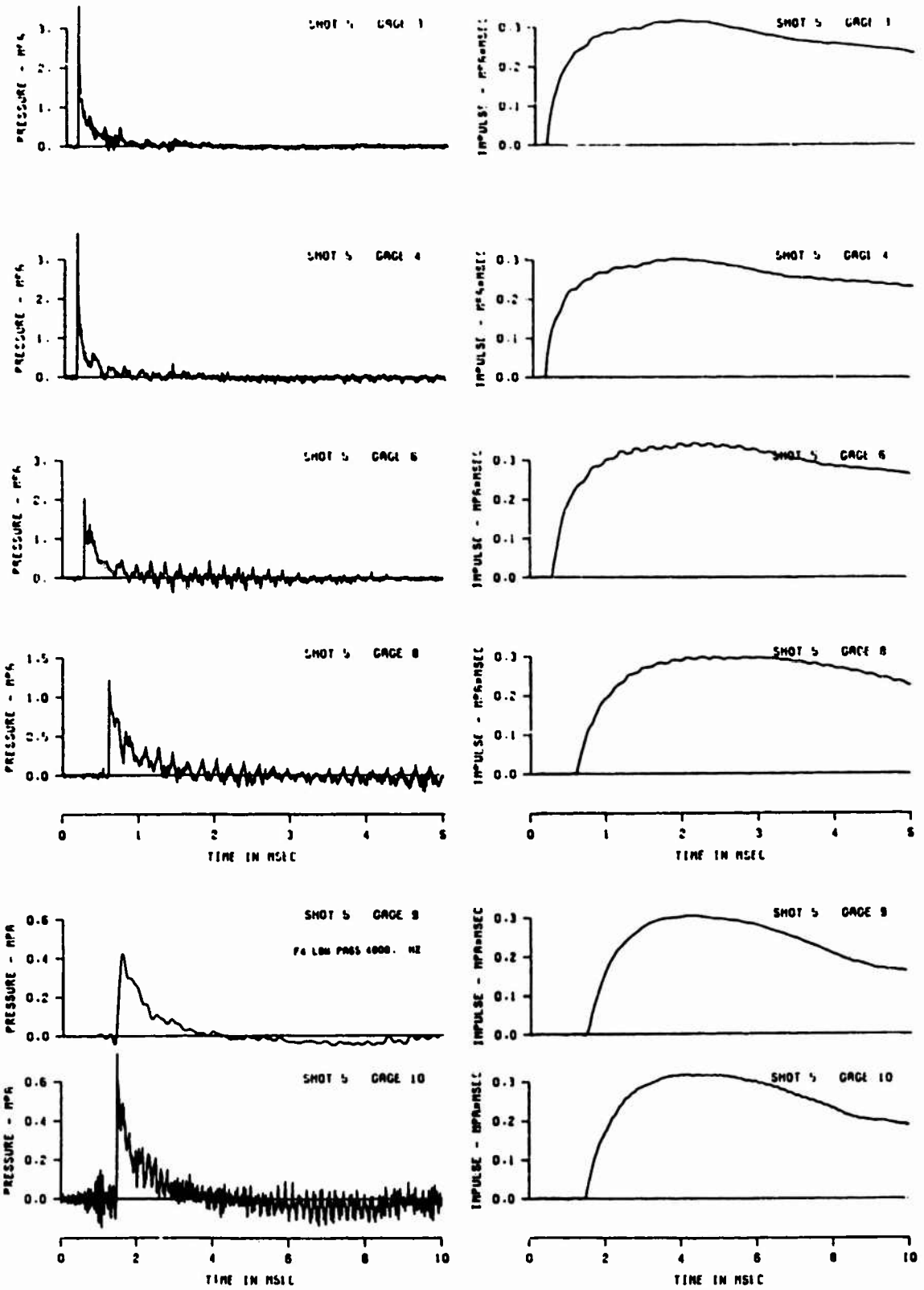

SHOT 3 GAGE 7
PRESSURE - MPA
IMPULSE - MPAmSEC
SHOT 3 GAGE 8
SHOT 3 GAGE 9
SHOT 3 GAGE 10
SHOT 3 GAGE 11
F4 LOW PASS 4000 HZ
SHOT 3 GAGE 12
F4 LOW PASS 10000 HZ
TIME IN MSEC

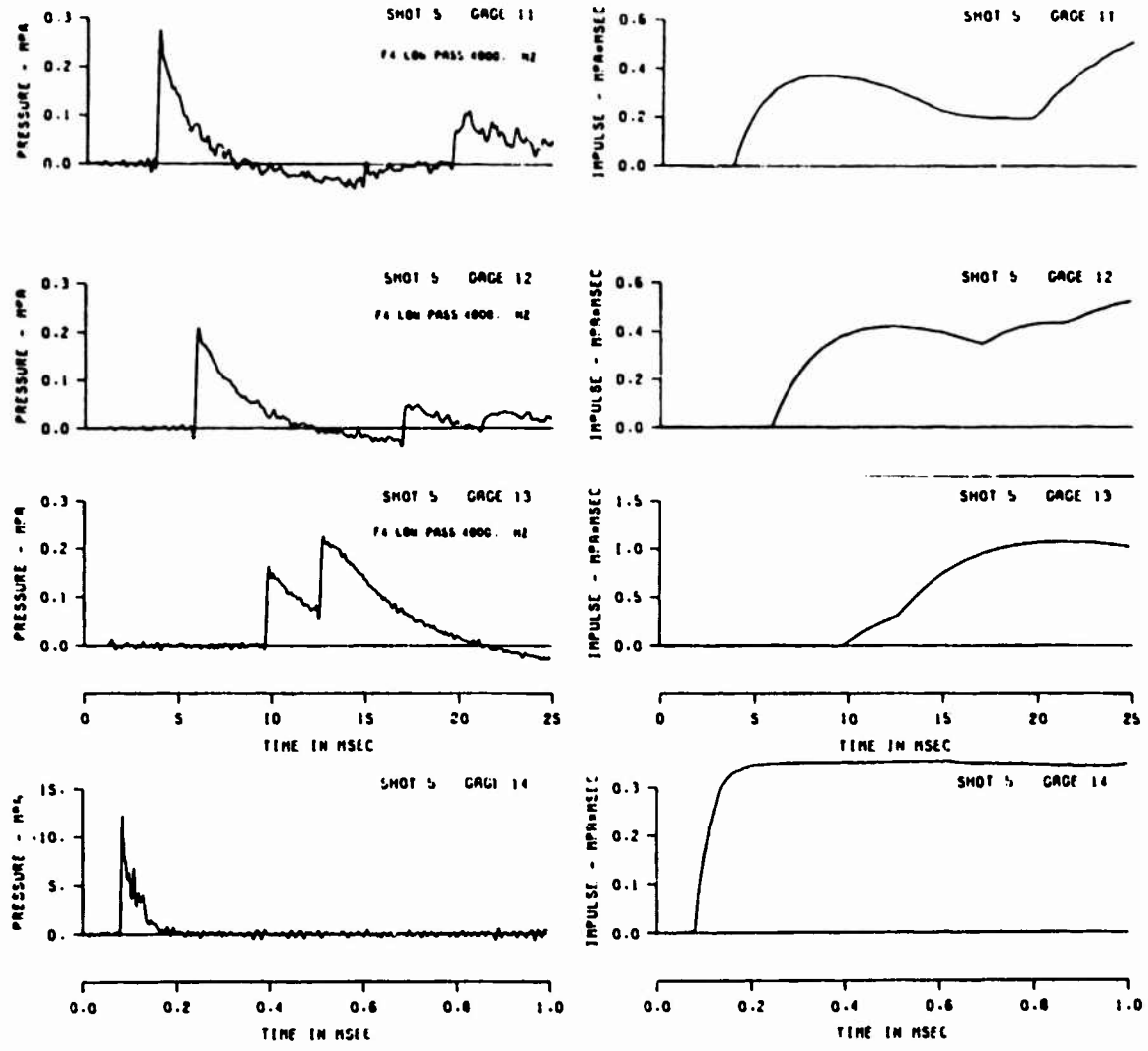

SHOT 3 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 3 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

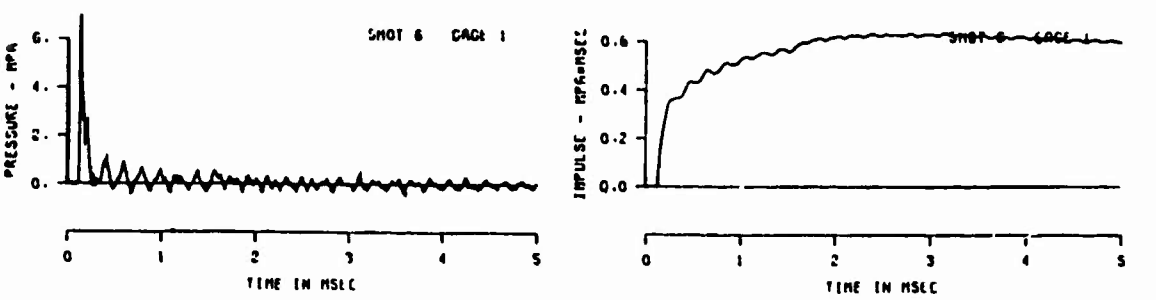

SHOT 4 GAGE 1
SHOT 4 GAGE 3
SHOT 4 GAGE 4
TIME IN MSEC

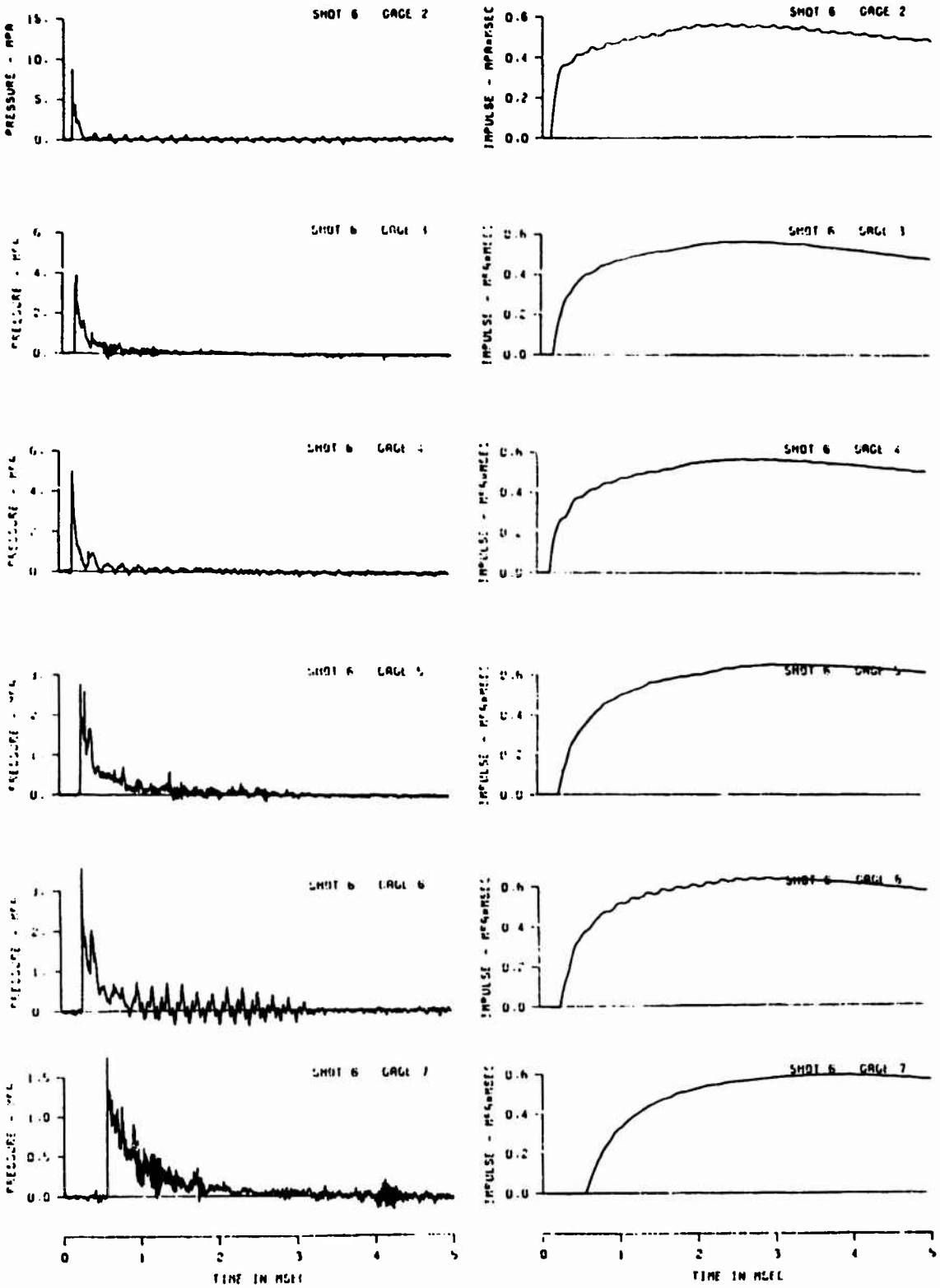

SHOT 4 GAGE 5
SHOT 4 GAGE 6
SHOT 4 GAGE 7
SHOT 4 GAGE 8
SHOT 4 GAGE 9
SHOT 4 GAGE 10
TIME IN MSEC
TIME IN MSEC

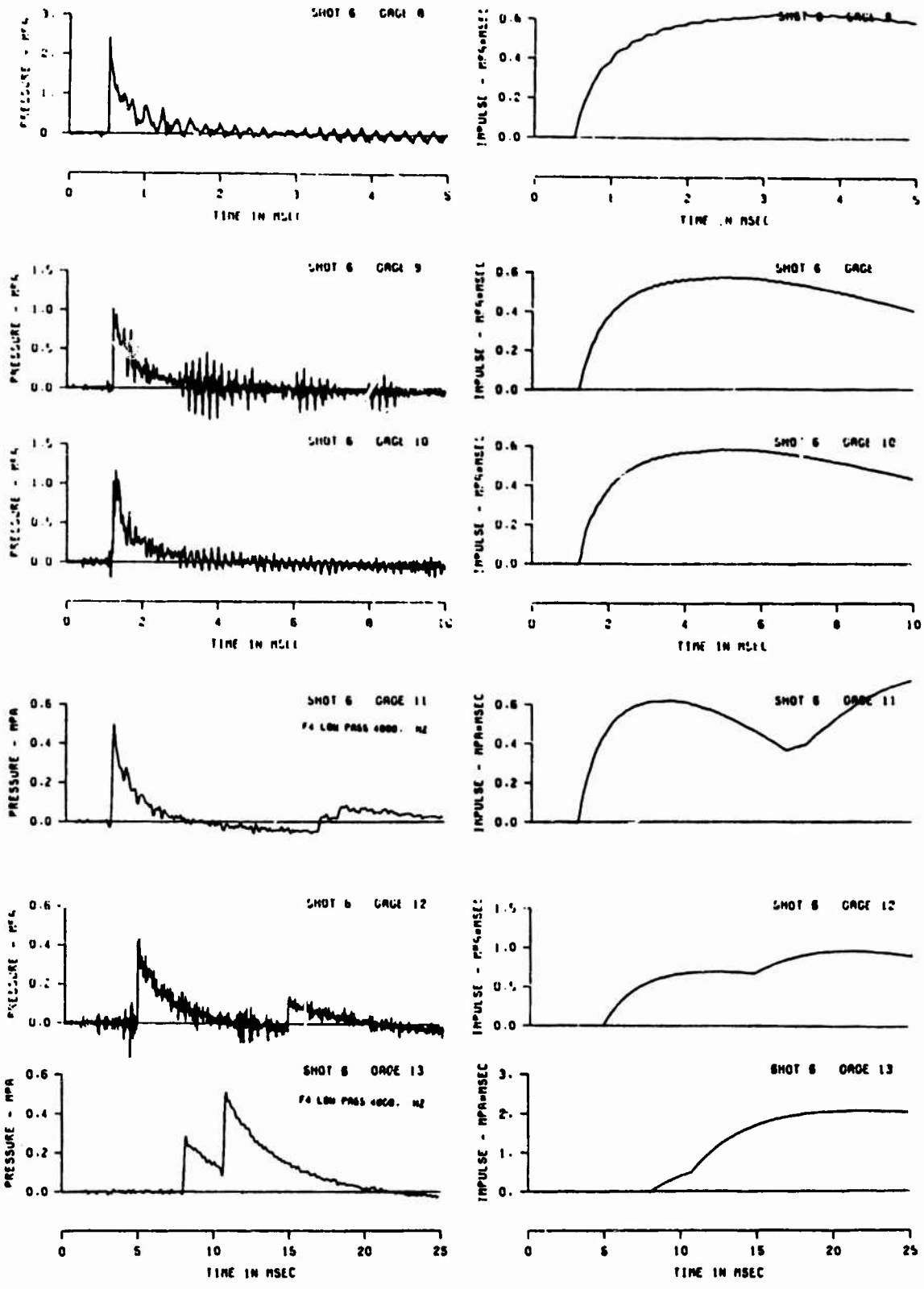

SHOT 4 GAGE 11
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 4 GAGE 12
SHOT 4 GAGE 13
SHOT 4 GAGE 14
TIME IN MSEC
SHOT 5 GAGE 1

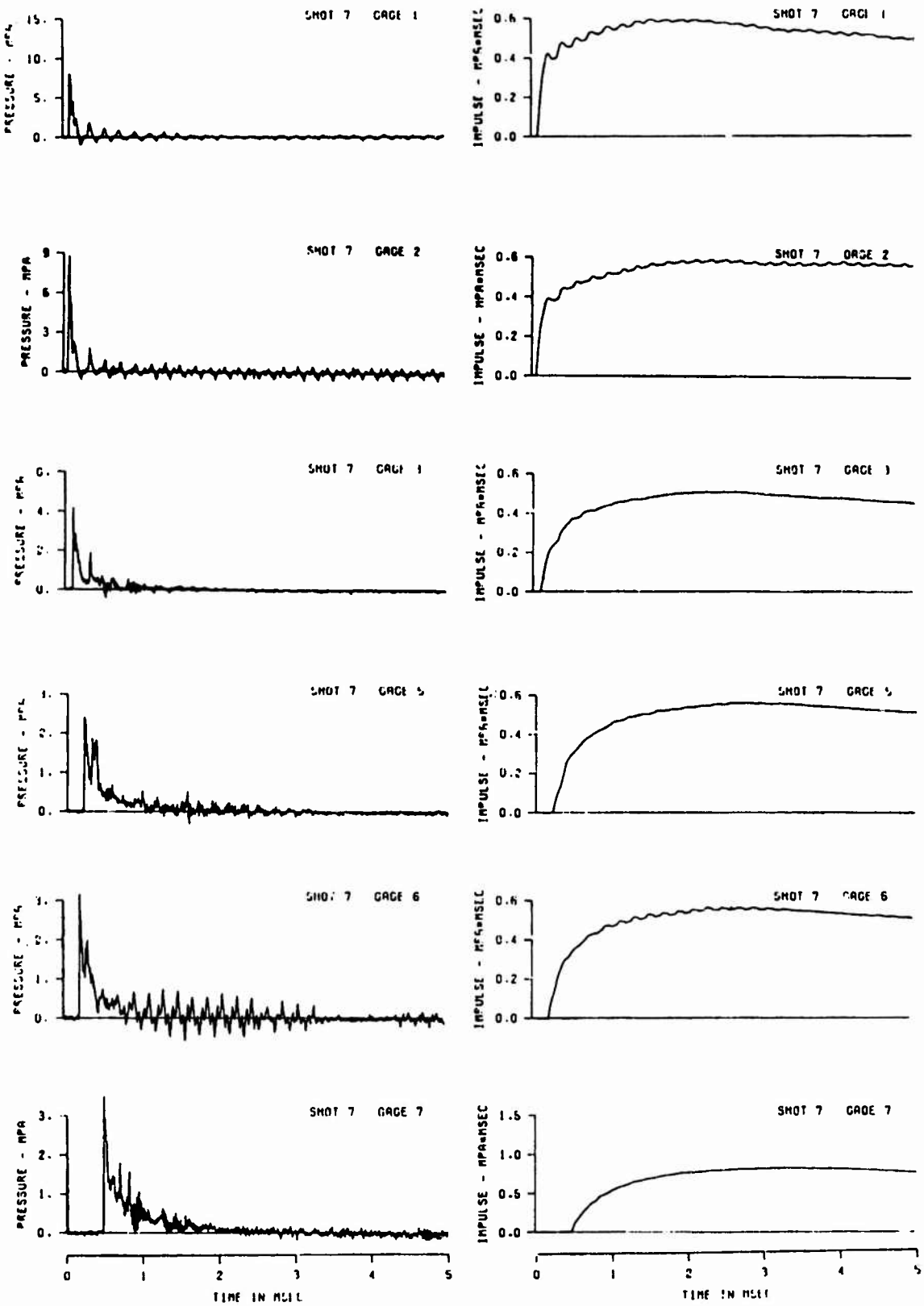

SHOT 5 GAGE 1
SHOT 5 GAGE 4
SHOT 5 GAGE 6
SHOT 5 GAGE 8
SHOT 5 GAGE 9
SHOT 5 GAGE 10
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

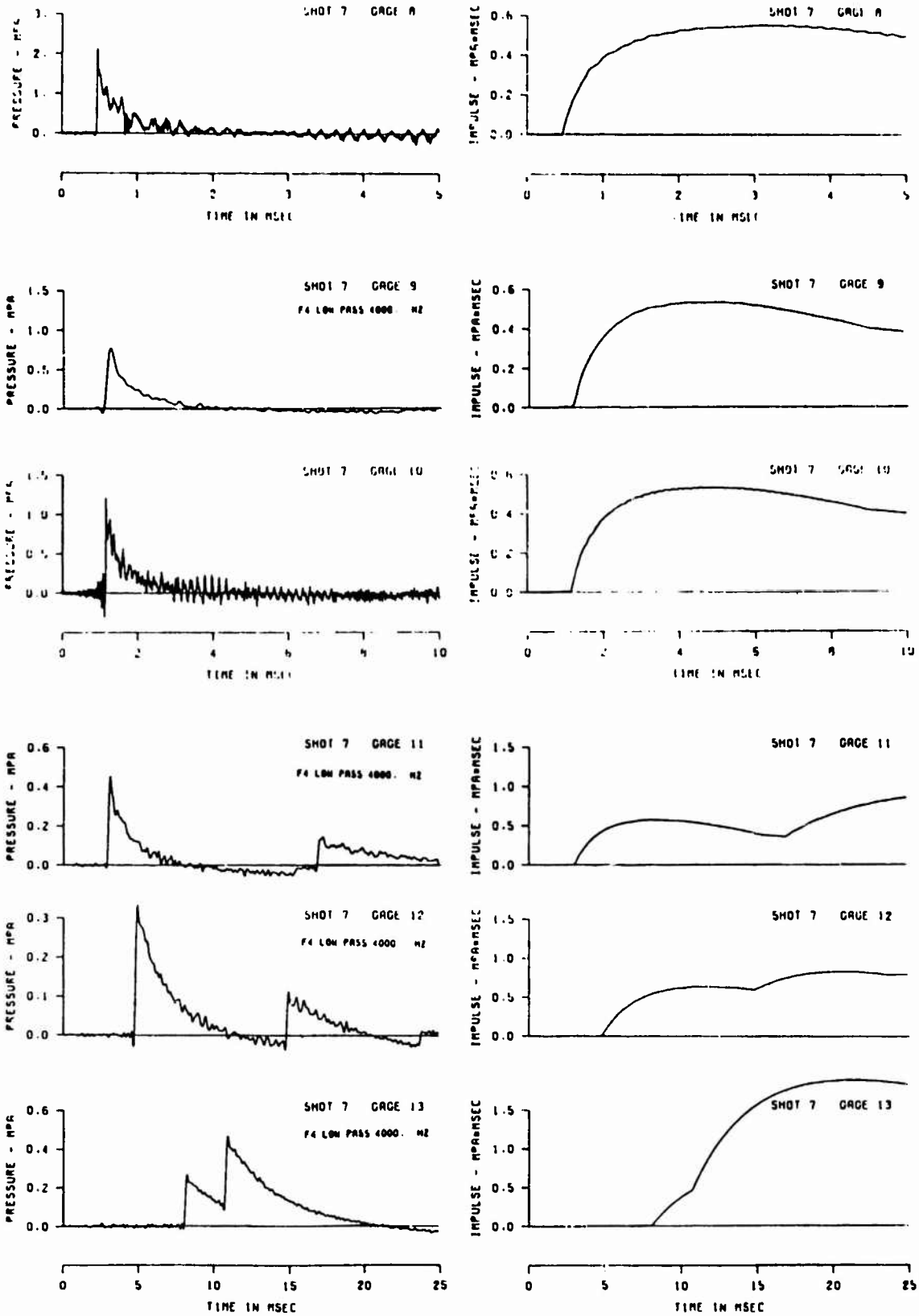

SHOT 5 GAGE 11
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 5 GAGE 12
SHOT 5 GAGE 13
TIME IN MSEC
SHOT 5 GAGE 14

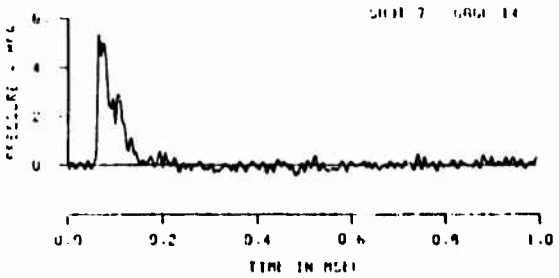

SHOT 6 GAGE 1
PRESSURE - MPA
IMPULSE - MPA•MSEC
TIME IN MSEC

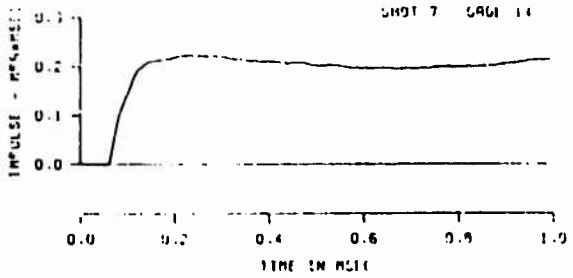

SHOT 6 GAGE 2
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

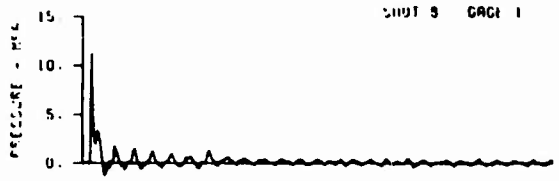

SHOT 6 GAGE 8
SHOT 6 GAGE 9
SHOT 6 GAGE 10
SHOT 6 GAGE 11
SHOT 6 GAGE 12
SHOT 6 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

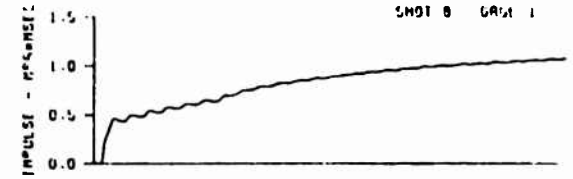

SHOT 7 GAGE 1
PRESSURE - MPA
15.
10.
5.
0.
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 7 GAGE 2
PRESSURE - MPA
9
6
3
0
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 7 GAGE 3
PRESSURE - MPA
6.
4.
2.
0.
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 7 GAGE 5
PRESSURE - MPA
3.
2.
1.
0.
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 7 GAGE 6
PRESSURE - MPA
3.
2.
1.
0.
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 7 GAGE 7
PRESSURE - MPA
3.
2.
1.
0.
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0
0
1
2
3
4
5
TIME IN MSEC


SHOT 7 GAGE 8
SHOT 7 GAGE 9
F4 LOW PASS 4000. HZ
SHOT 7 GAGE 10
SHOT 7 GAGE 11
F4 LOW PASS 4000. HZ
SHOT 7 GAGE 12
F4 LOW PASS 4000 HZ
SHOT 7 GAGE 13
F4 LOW PASS 4000. HZ
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

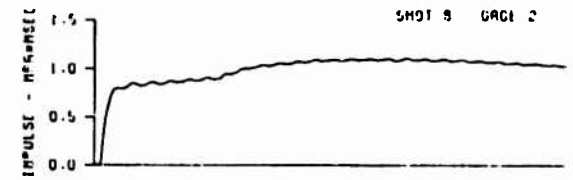

SHOT 7 GAGE 14
0.0
0.2
0.4
0.6
0.8
1.0
TIME IN MSEC


SHOT 7 GAGE 14
0.0
0.1
0.2
0.0
0.2
0.4
0.6
0.8
1.0
TIME IN MSEC

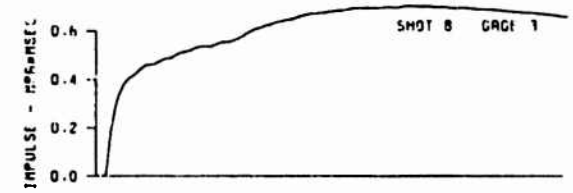

SHOT 8 GAGE 1
15
10.
5.
0.

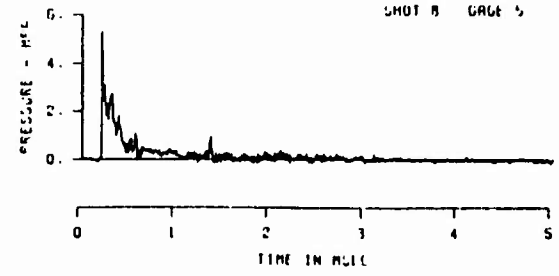

SHOT 8 GAGE 1
1.5
1.0
0.5
0.0

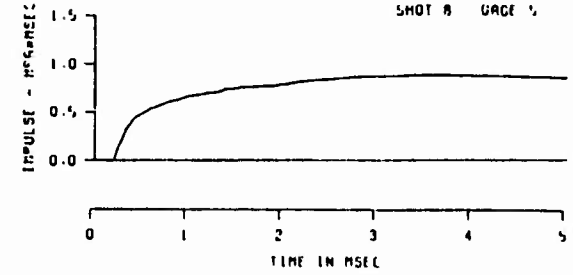
SHOT 8 GAGE 2
30.
20.
10.
0.

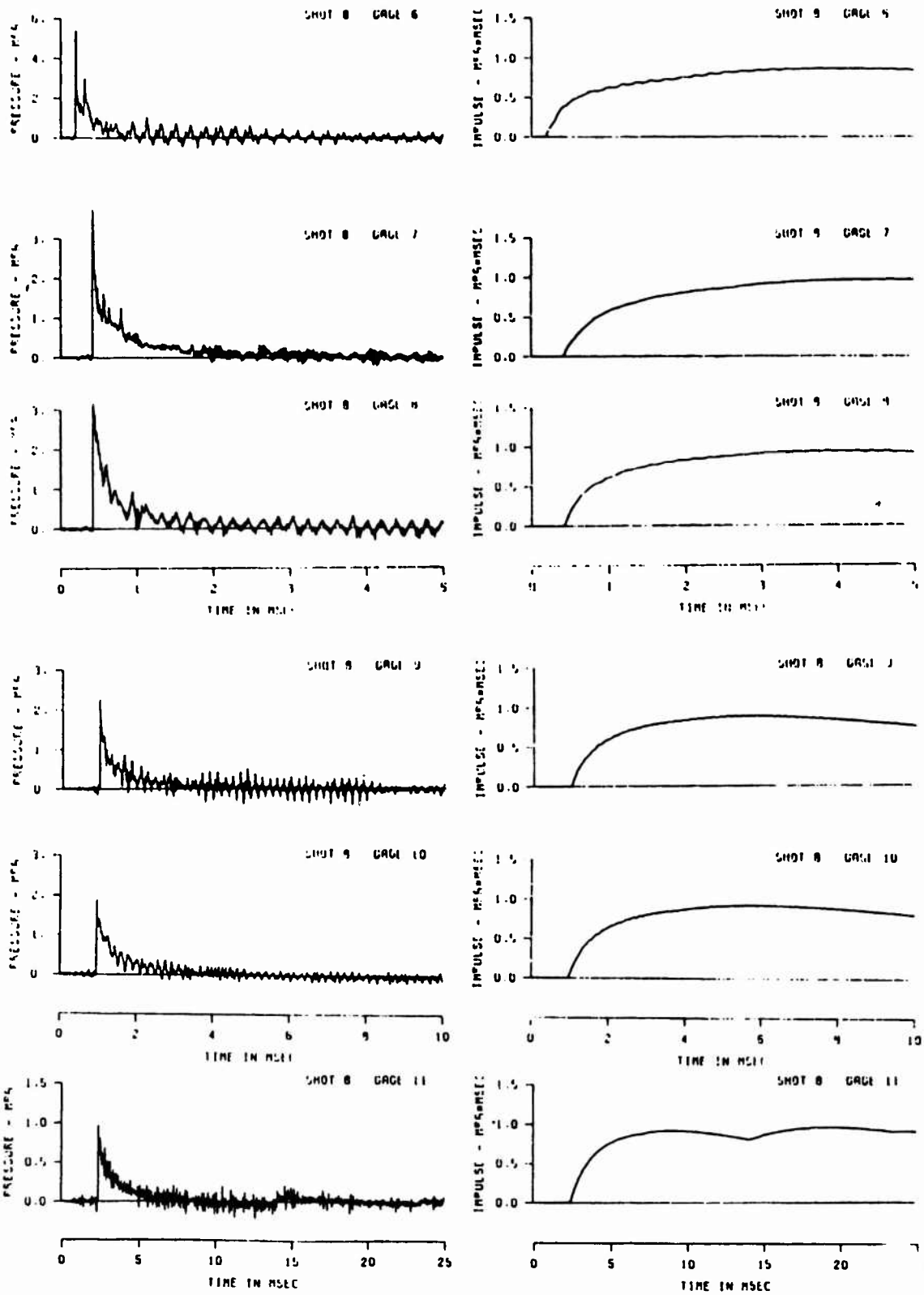

SHOT 8 GAGE 2
1.5
1.0
0.5
0.0

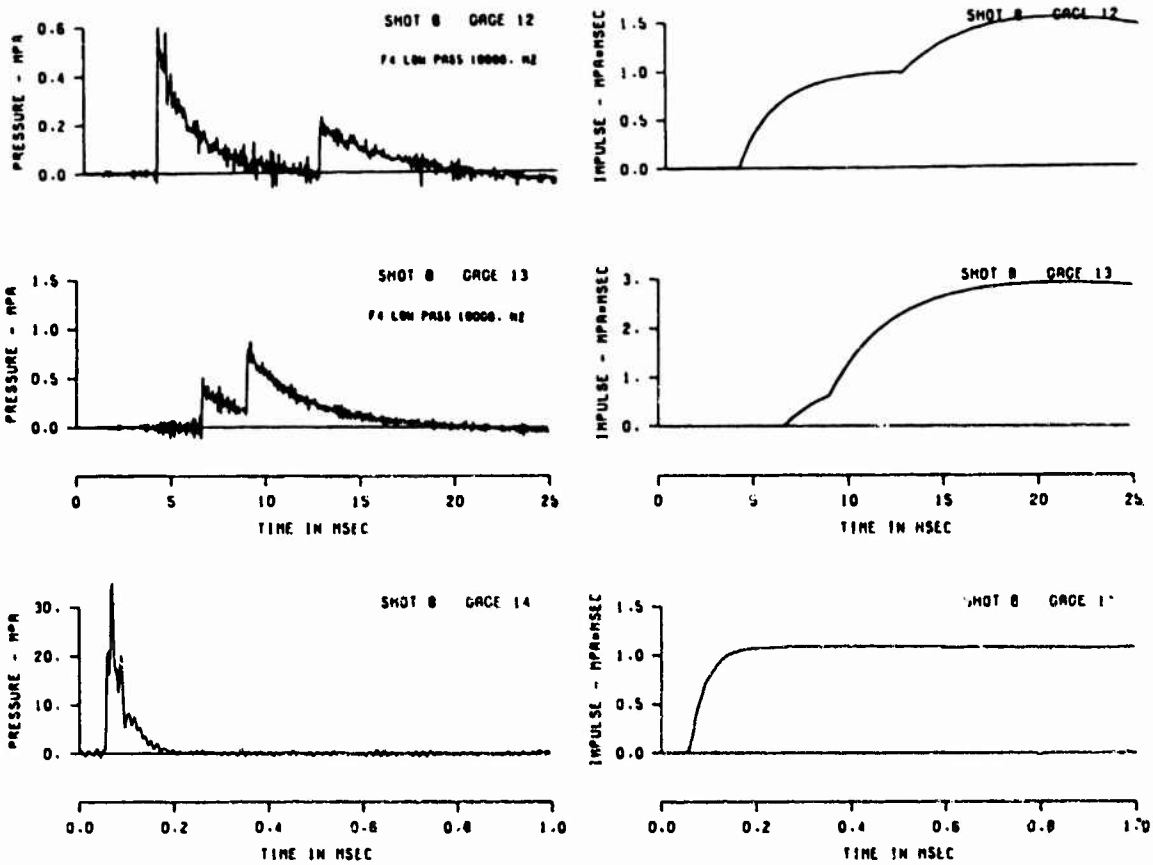
SHOT 8 GAGE 3
6.
4.
2.
0.

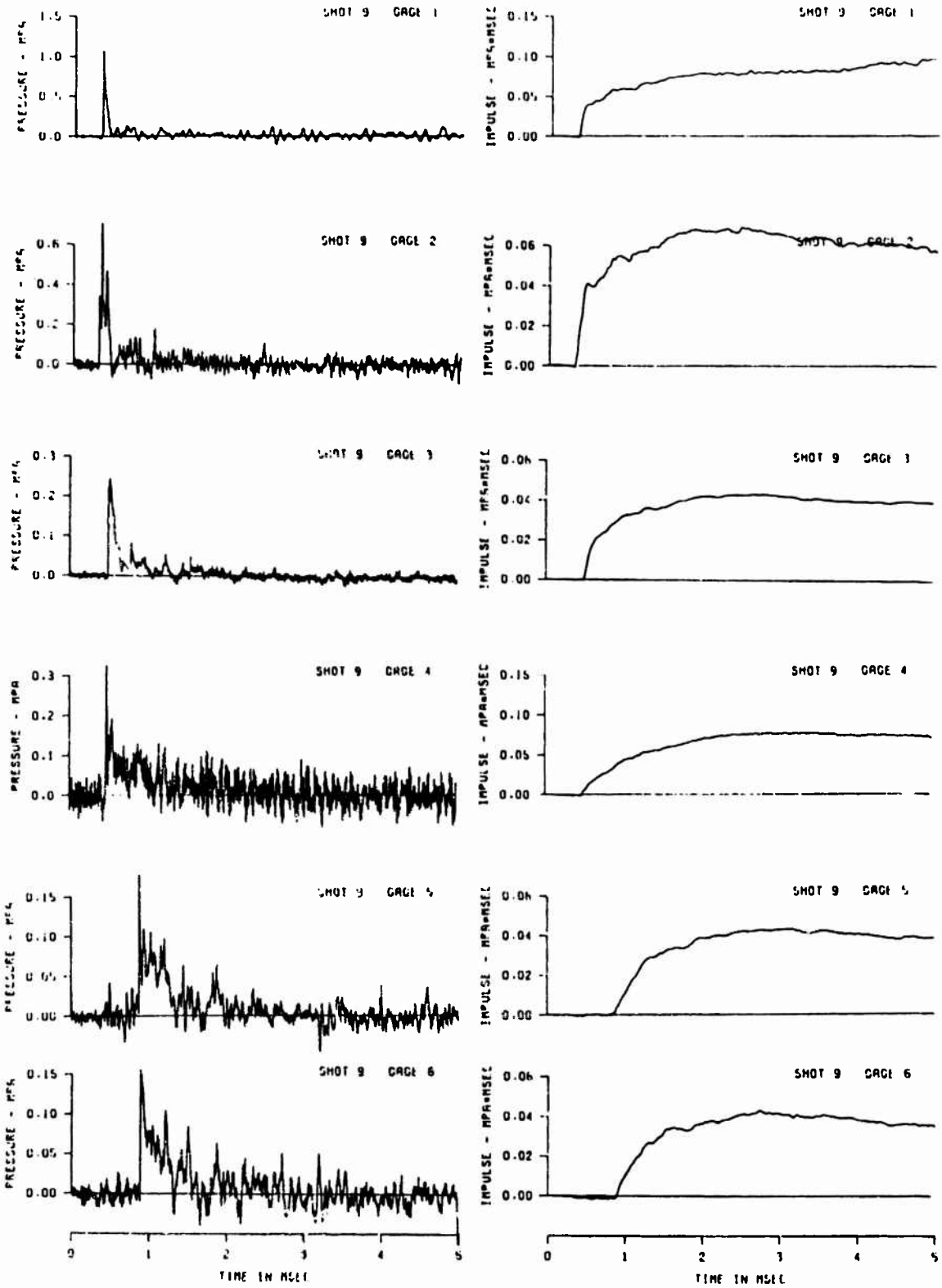

SHOT 8 GAGE 7
0.6
0.4
0.2
0.0

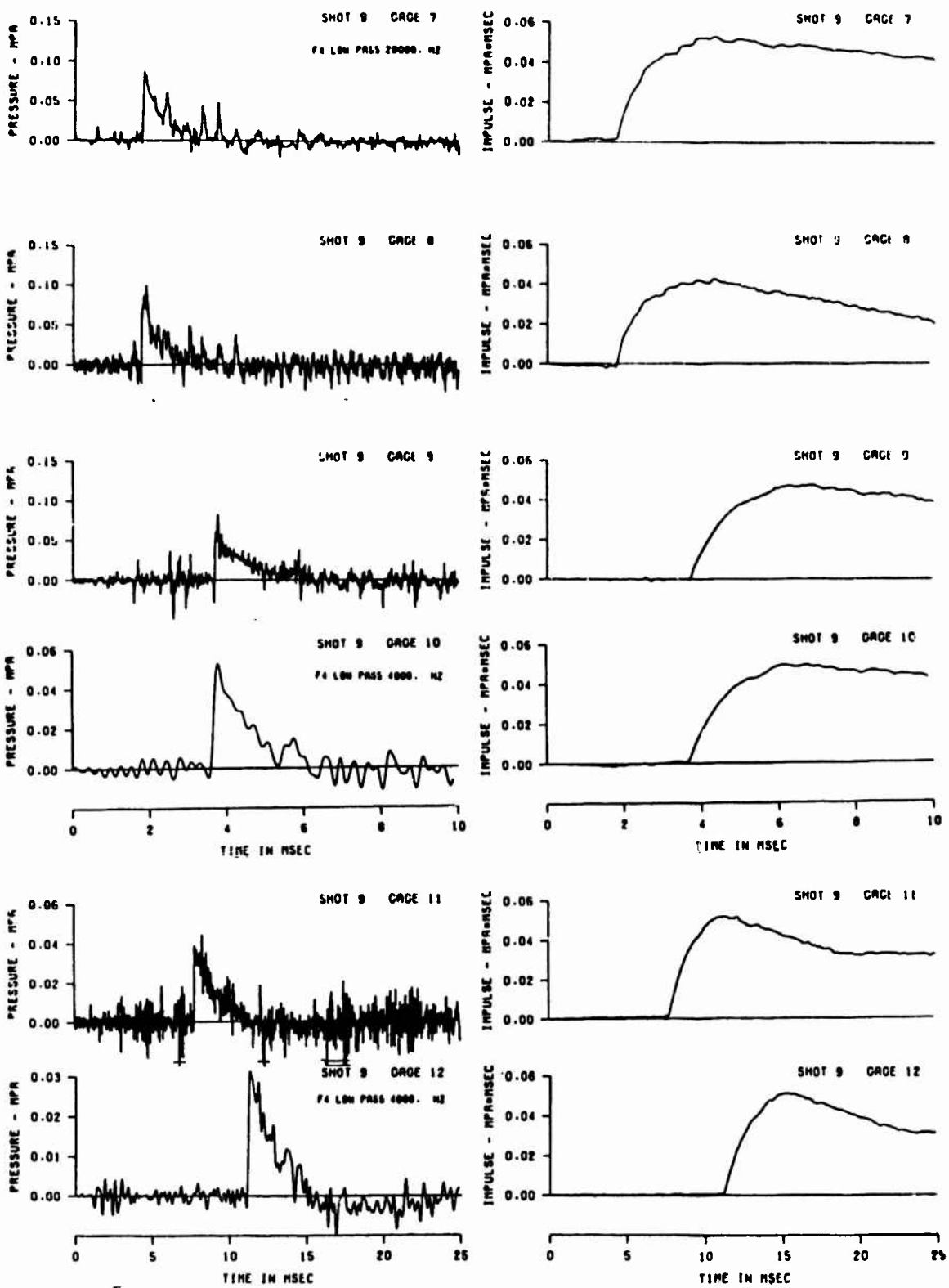

SHOT 8 GAGE 5
6.
4.
2.
0.
0
1
2
3
4
5
TIME IN MSEC

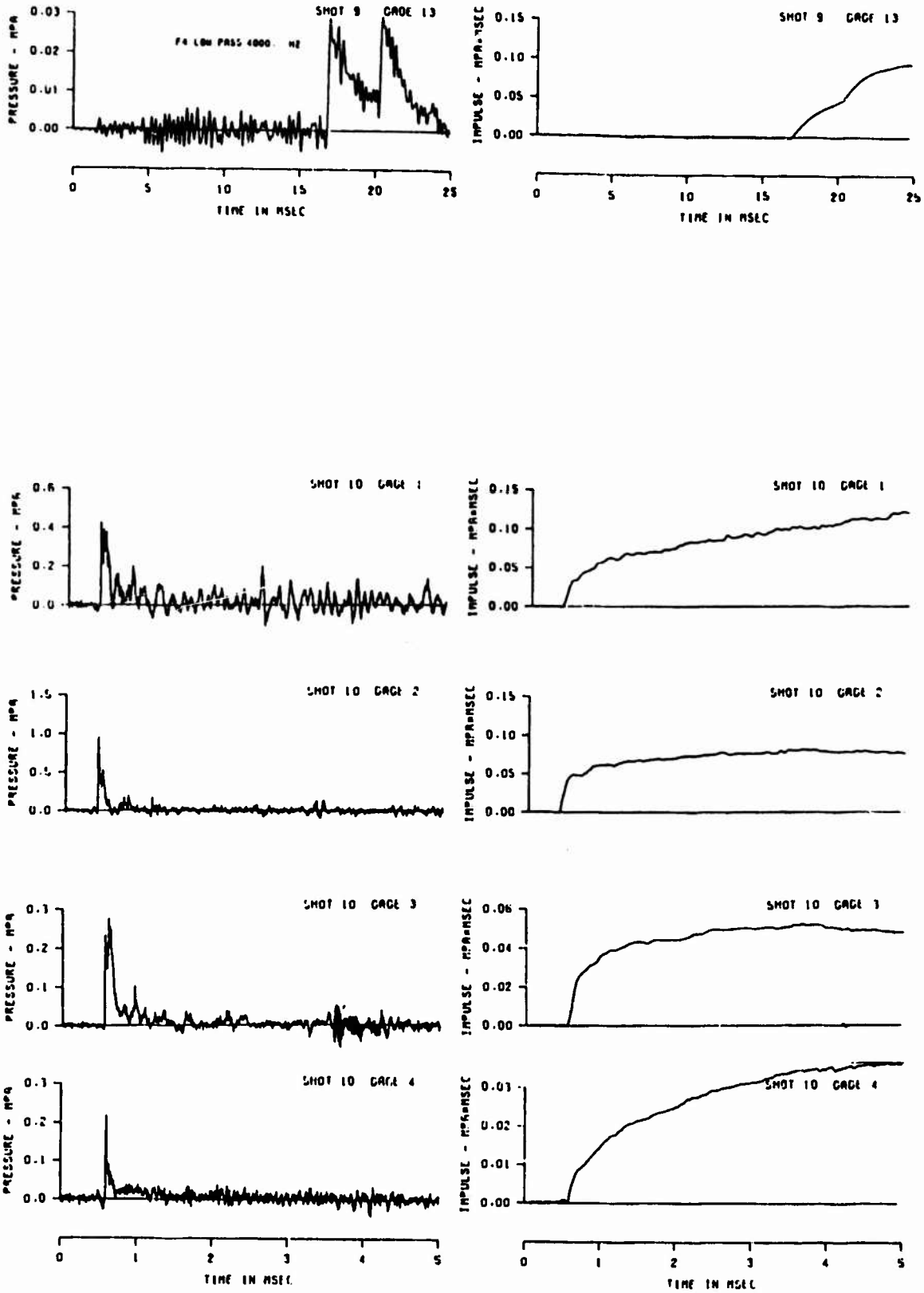

SHOT 8 GAGE 5
1.5
1.0
0.5
0.0
0
1
2
3
4
5
TIME IN MSEC

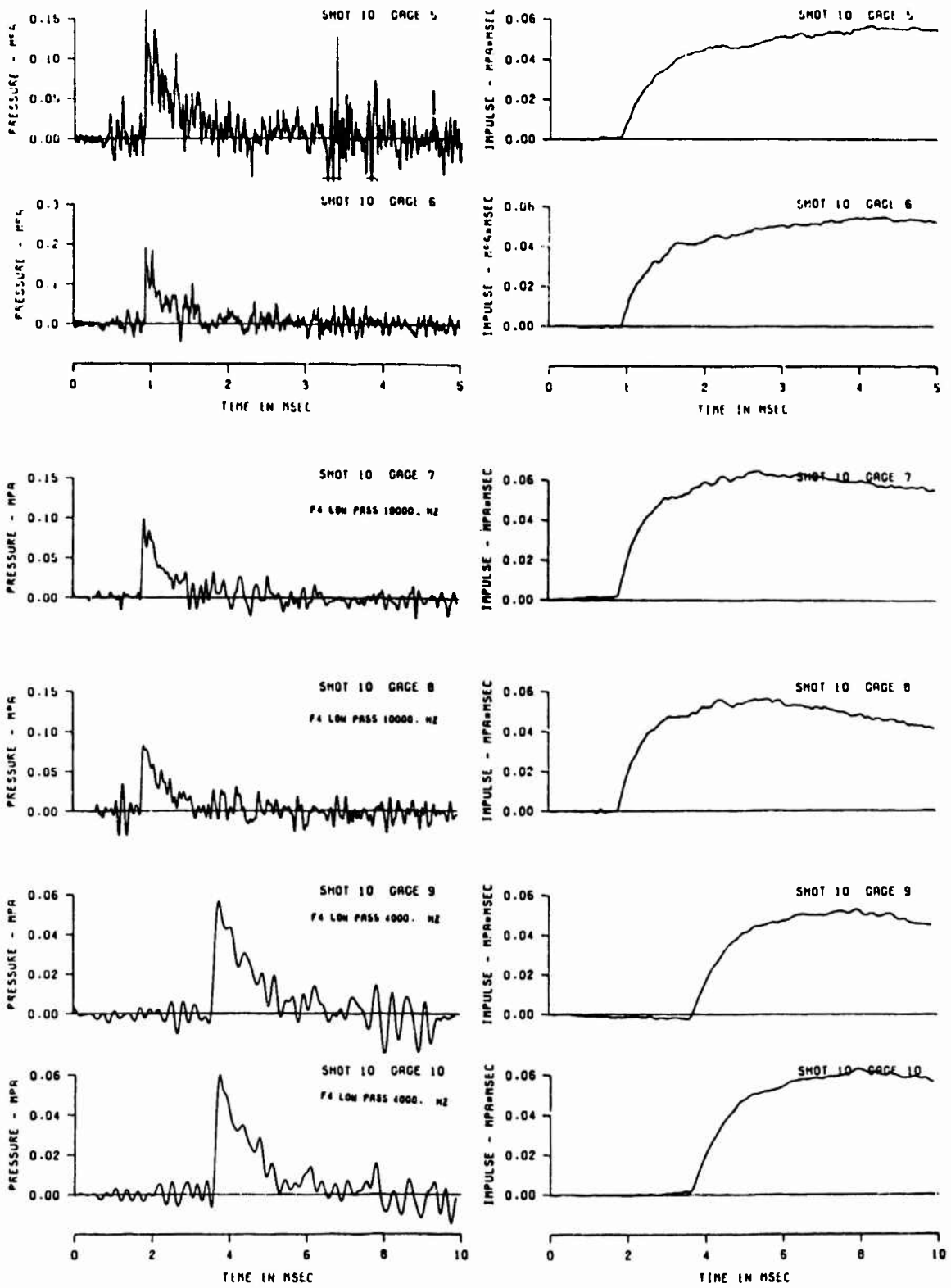

SHOT 8 GAGE 6
SHOT 9 GAGE 6
SHOT 8 GAGE 7
SHOT 9 GAGE 7
SHOT 8 GAGE 8
SHOT 9 GAGE 8
SHOT 8 GAGE 9
SHOT 8 GAGE 9
SHOT 9 GAGE 10
SHOT 8 GAGE 10
SHOT 8 GAGE 11
SHOT 8 GAGE 11
TIME IN MSEC
TIME IN MSEC
TIME IN MSEC
TIME IN MSEC

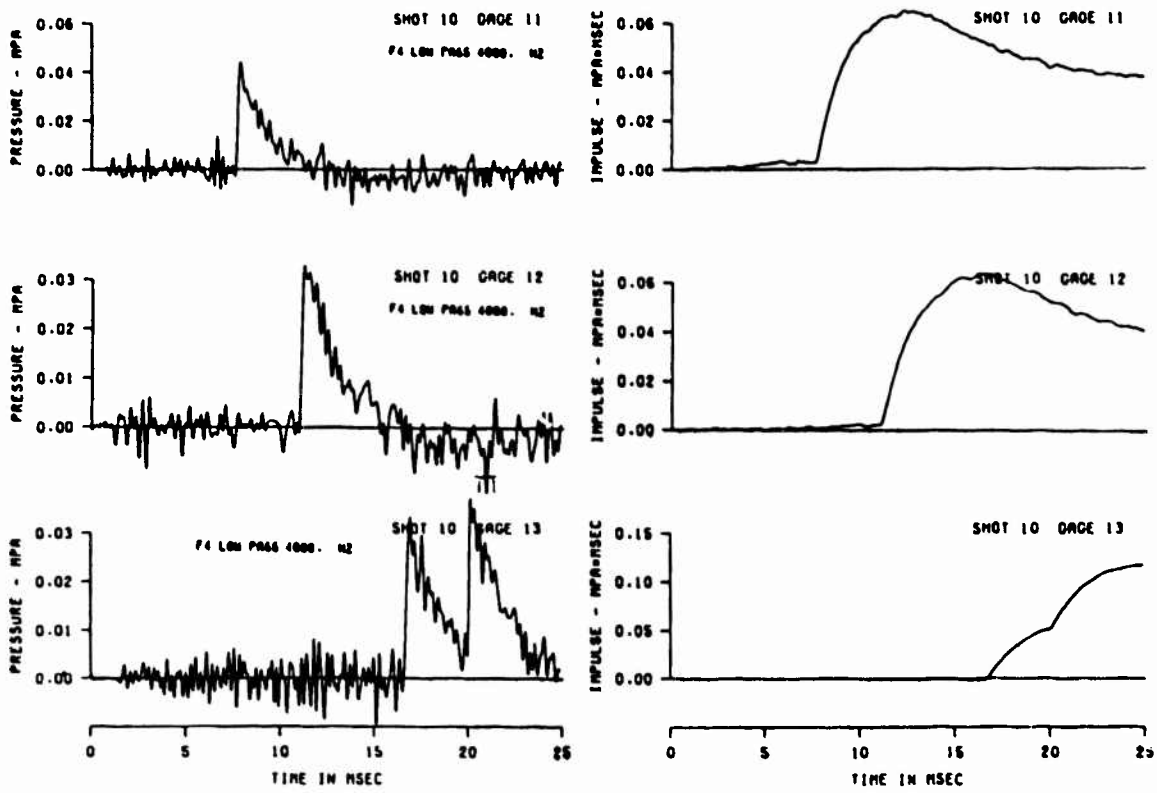

SHOT 8 GAGE 12
F4 LOW PASS 10000. HZ
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 8 GAGE 12
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0
SHOT 8 GAGE 13
F4 LOW PASS 10000. HZ
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 8 GAGE 13
IMPULSE - MPA-MSEC
3.
2.
1.
0.
0
5
10
15
20
25
TIME IN MSEC
SHOT 8 GAGE 14
PRESSURE - MPA
30.
20.
10.
0.
0.0
0.2
0.4
0.6
0.8
1.0
TIME IN MSEC
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0
0.0
0.2
0.4
0.6
0.8
1.0
TIME IN MSEC

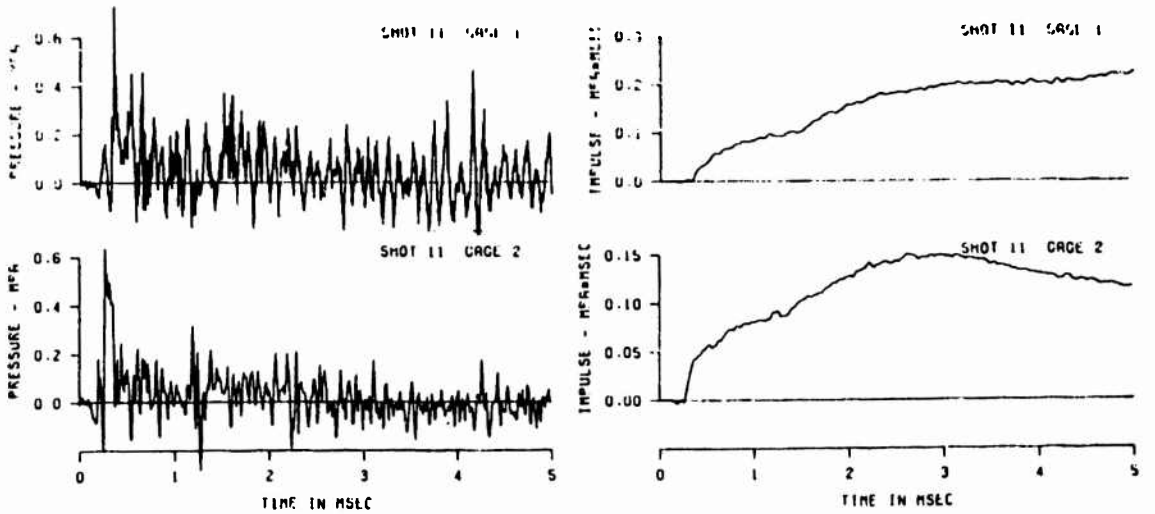

SHOT 9 GAGE 1
SHOT 9 GAGE 2
SHOT 9 GAGE 3
SHOT 9 GAGE 4
SHOT 9 GAGE 5
SHOT 9 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

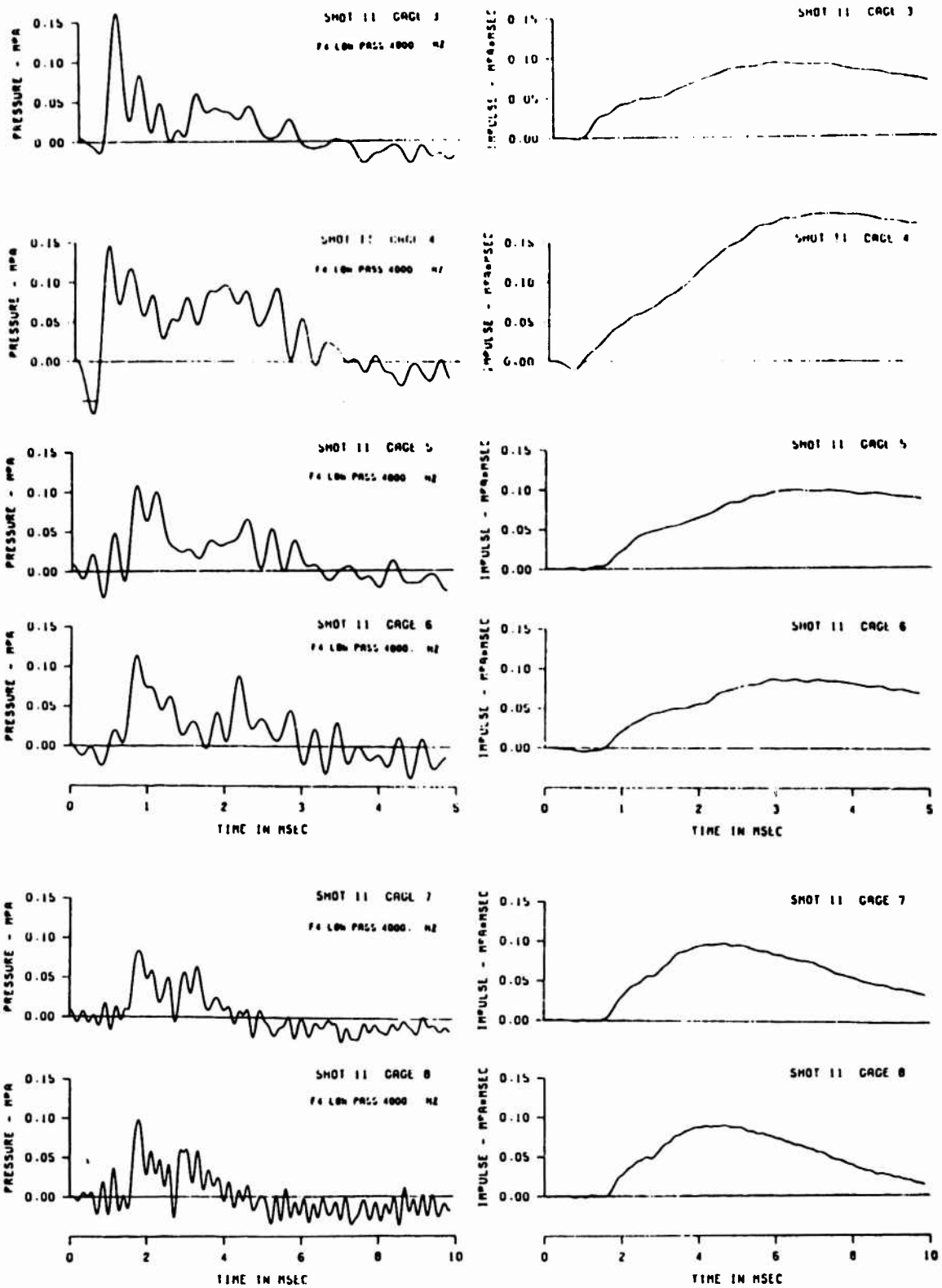

SHOT 9 GAGE 7
F4 LOW PASS 20000. HZ
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 9 GAGE 7
IMPULSE - MPA-MSEC
0.06
0.04
0.02
0.00
SHOT 9 GAGE 8
SHOT 9 GAGE 9
SHOT 9 GAGE 10
F4 LOW PASS 4000. HZ
0.06
0.04
0.02
0.00
0 2 4 6 8 10
TIME IN MSEC
SHOT 9 GAGE 11
SHOT 9 GAGE 12
F4 LOW PASS 4000. HZ
0.03
0.02
0.01
0.00
0 5 10 15 20 25
TIME IN MSEC

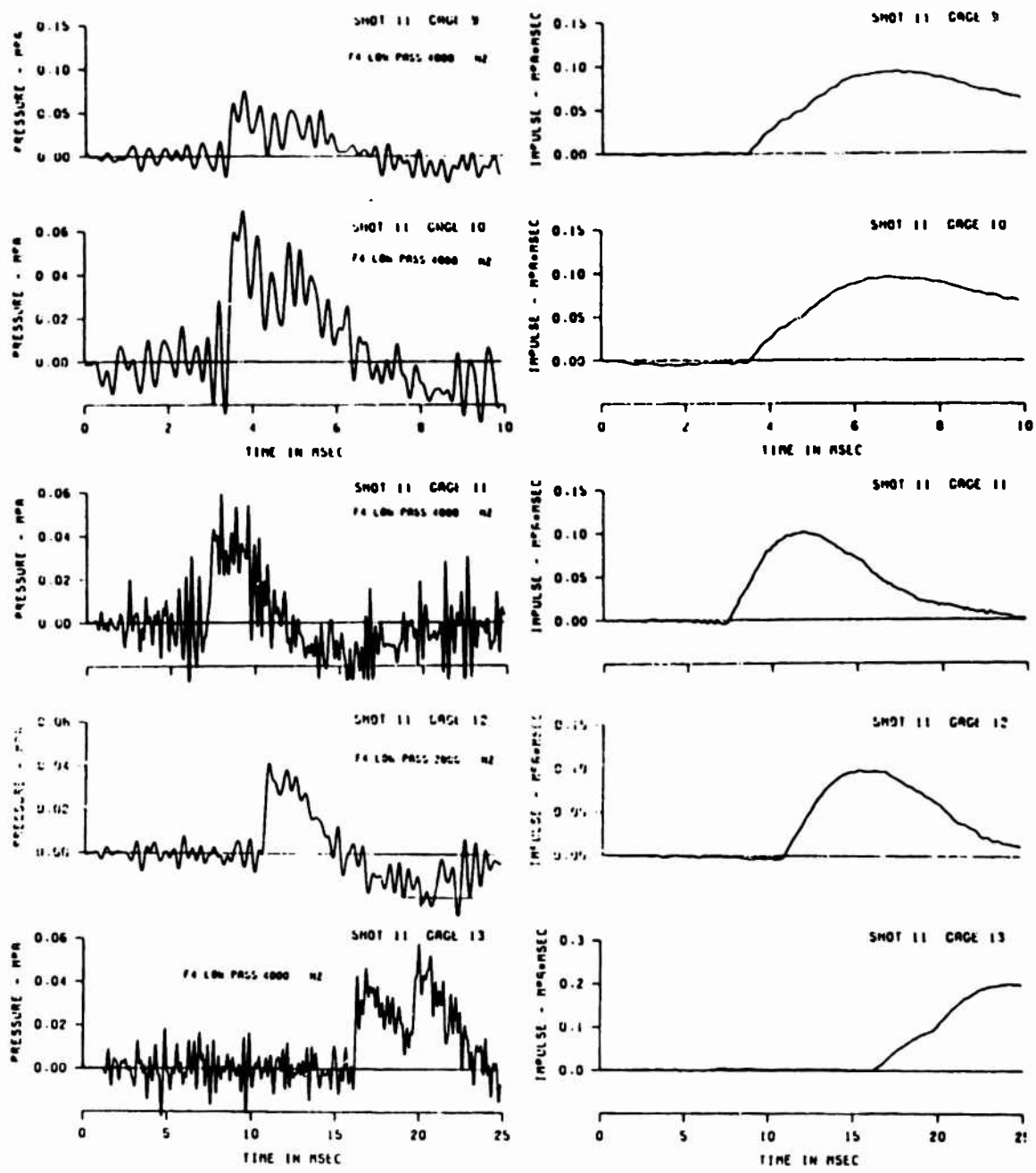

SHOT 9 GAGE 13
F4 LOW PASS 4000. HZ
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 10 GAGE 1
SHOT 10 GAGE 2
SHOT 10 GAGE 3
SHOT 10 GAGE 4

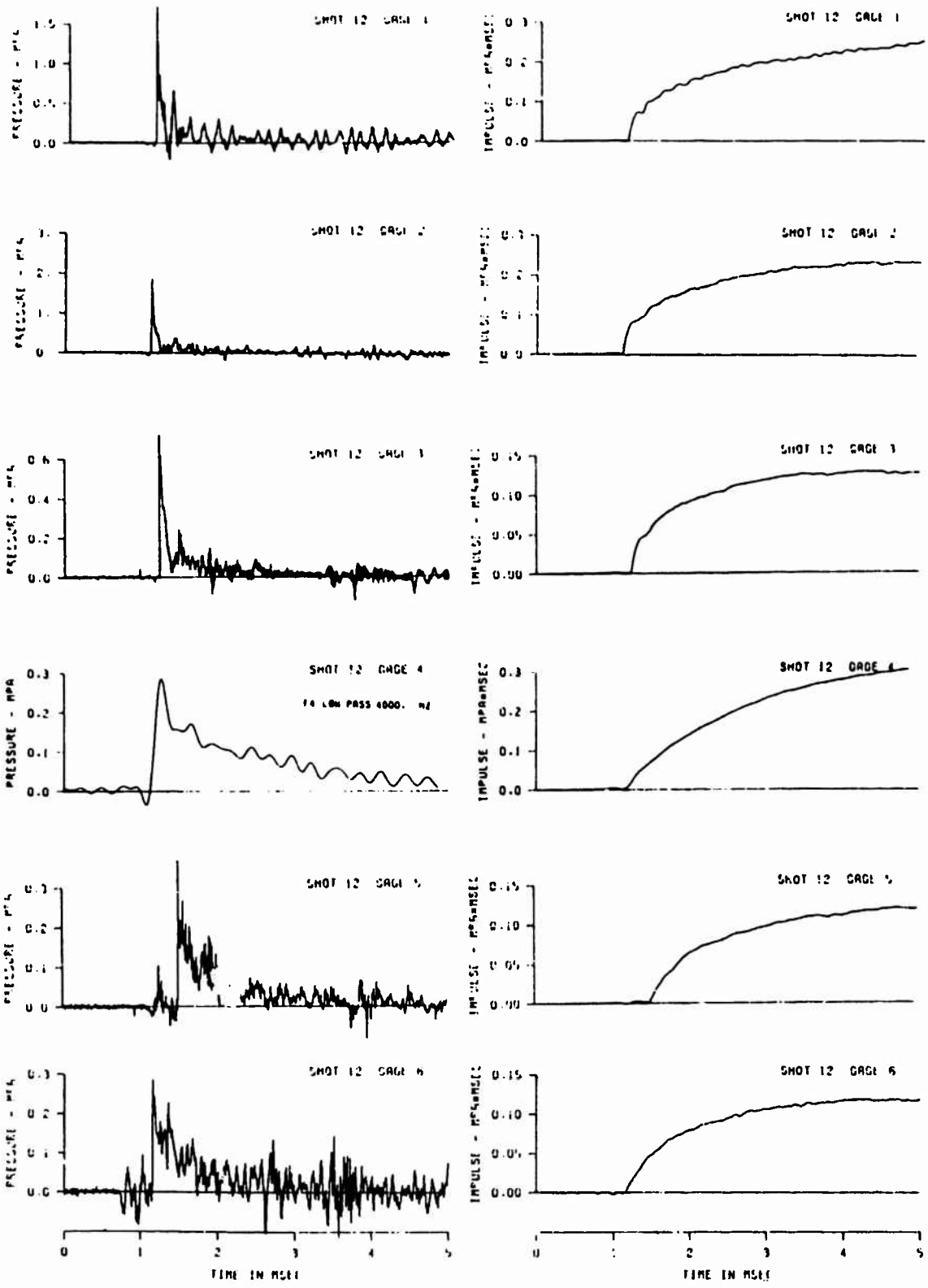

SHOT 10 GAGE 5
SHOT 10 GAGE 6
SHOT 10 GAGE 7
F4 LOW PASS 10000. HZ
SHOT 10 GAGE 8
F4 LOW PASS 10000. HZ
SHOT 10 GAGE 9
F4 LOW PASS 4000. HZ
SHOT 10 GAGE 10
F4 LOW PASS 4000. HZ
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

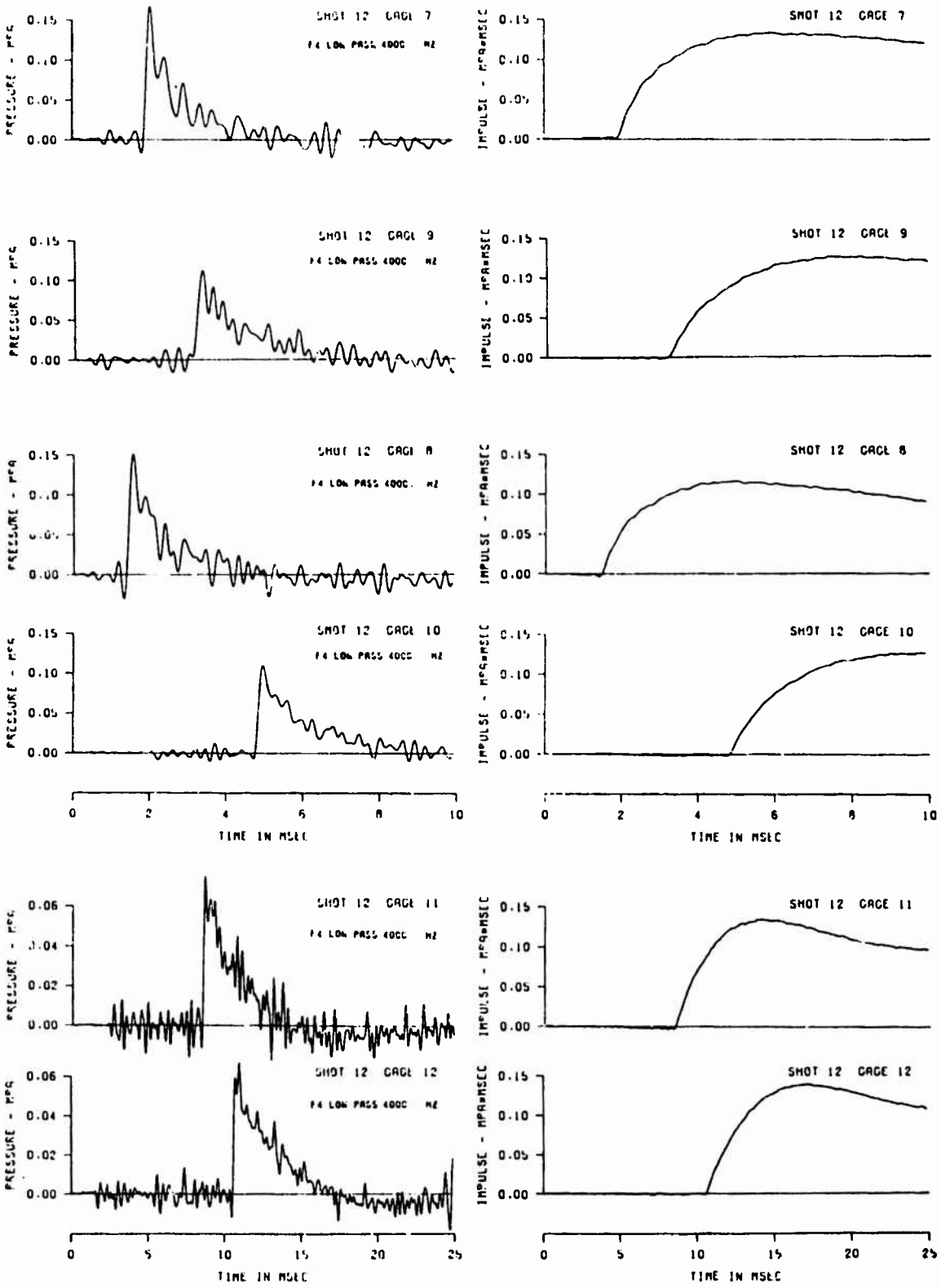

SHOT 10 GAGE 11
SHOT 10 GAGE 12
SHOT 10 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

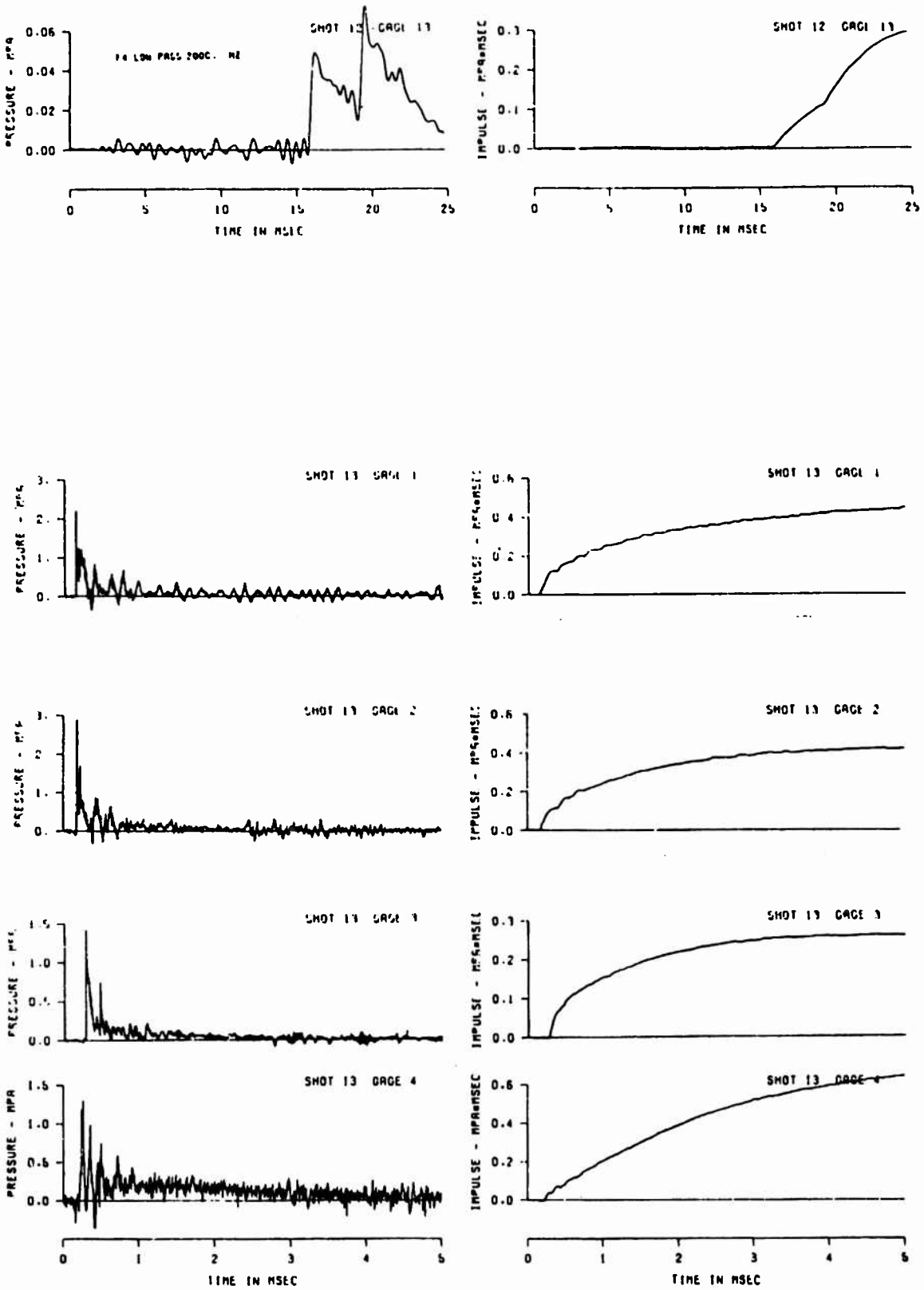

SHOT 11 GAGE 1
SHOT 11 GAGE 2
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

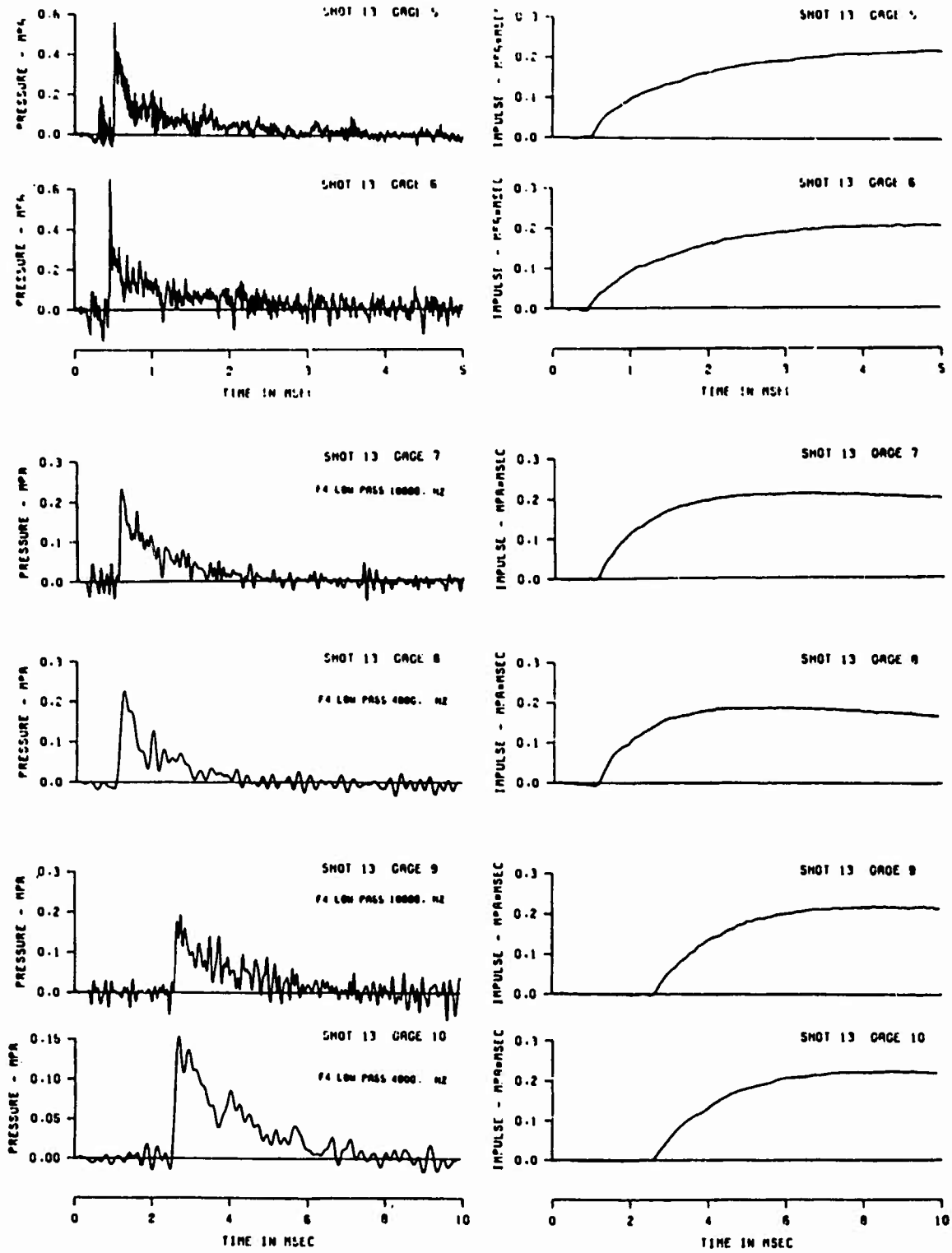

SHOT 11 GAGE 3
SHOT 11 GAGE 4
SHOT 11 GAGE 5
SHOT 11 GAGE 6
SHOT 11 GAGE 7
SHOT 11 GAGE 8
PRESSURE - MPA
IMPULSE - MPa-MSEC
TIME IN MSEC

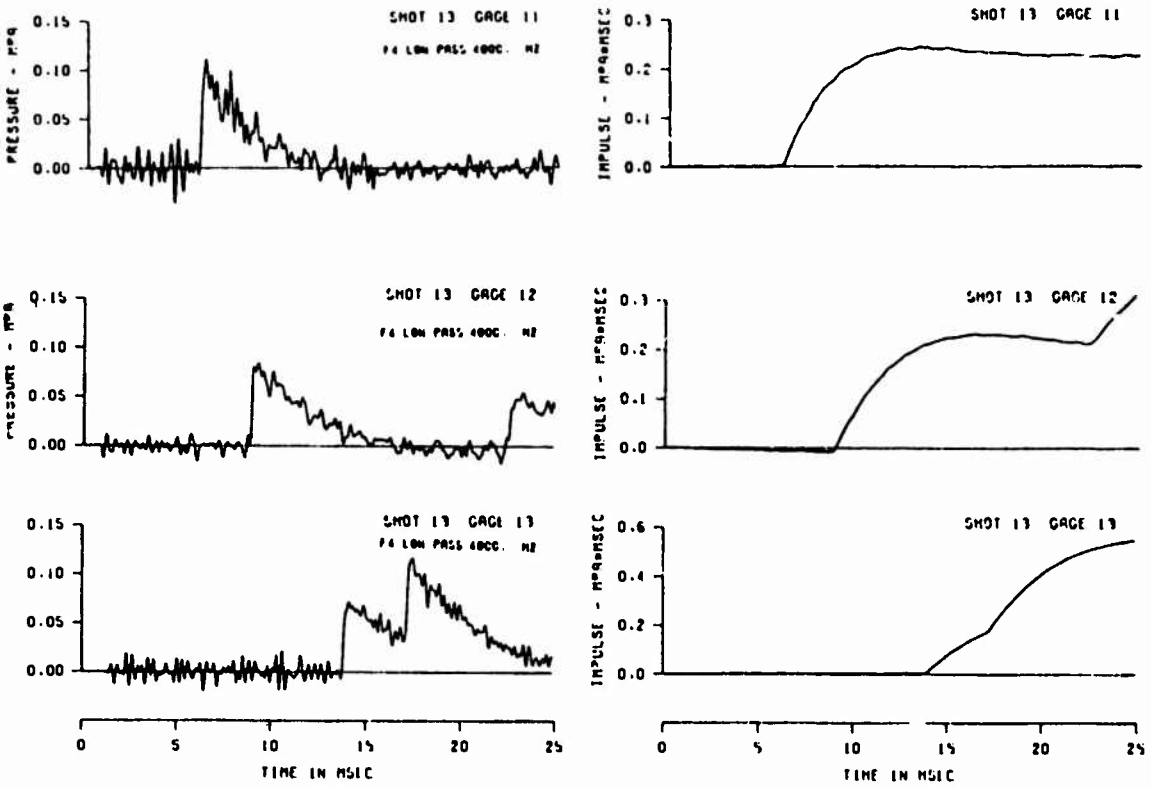

SHOT 11 CAGE 9
SHOT 11 CAGE 10
SHOT 11 CAGE 11
SHOT 11 CAGE 12
SHOT 11 CAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

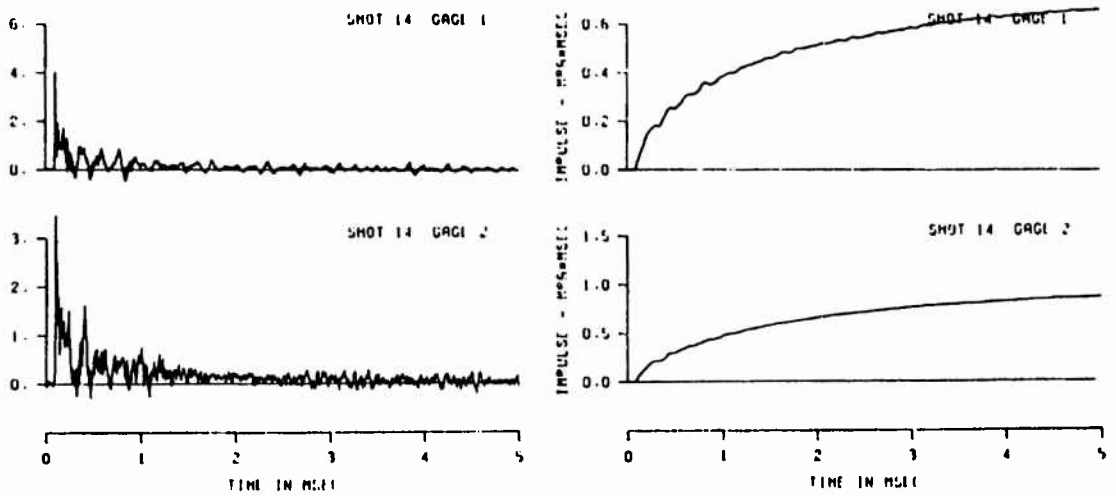

SHOT 12 GAGE 1
SHOT 12 GAGE 2
SHOT 12 GAGE 3
SHOT 12 GAGE 4
SHOT 12 GAGE 5
SHOT 12 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

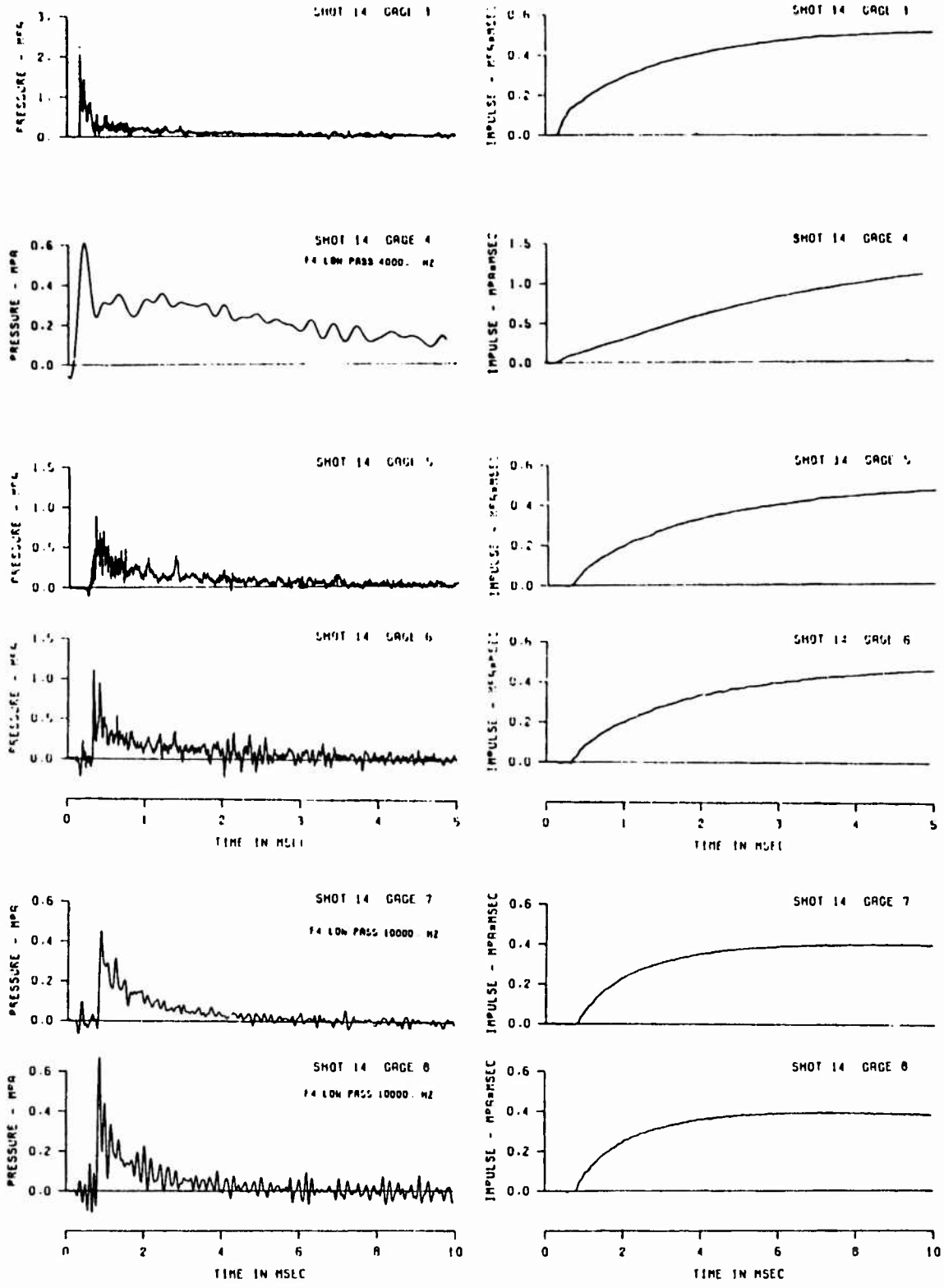

SHOT 12 CAGE 7
SHOT 12 CAGE 9
SHOT 12 CAGE 8
SHOT 12 CAGE 10
SHOT 12 CAGE 11
SHOT 12 CAGE 12
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

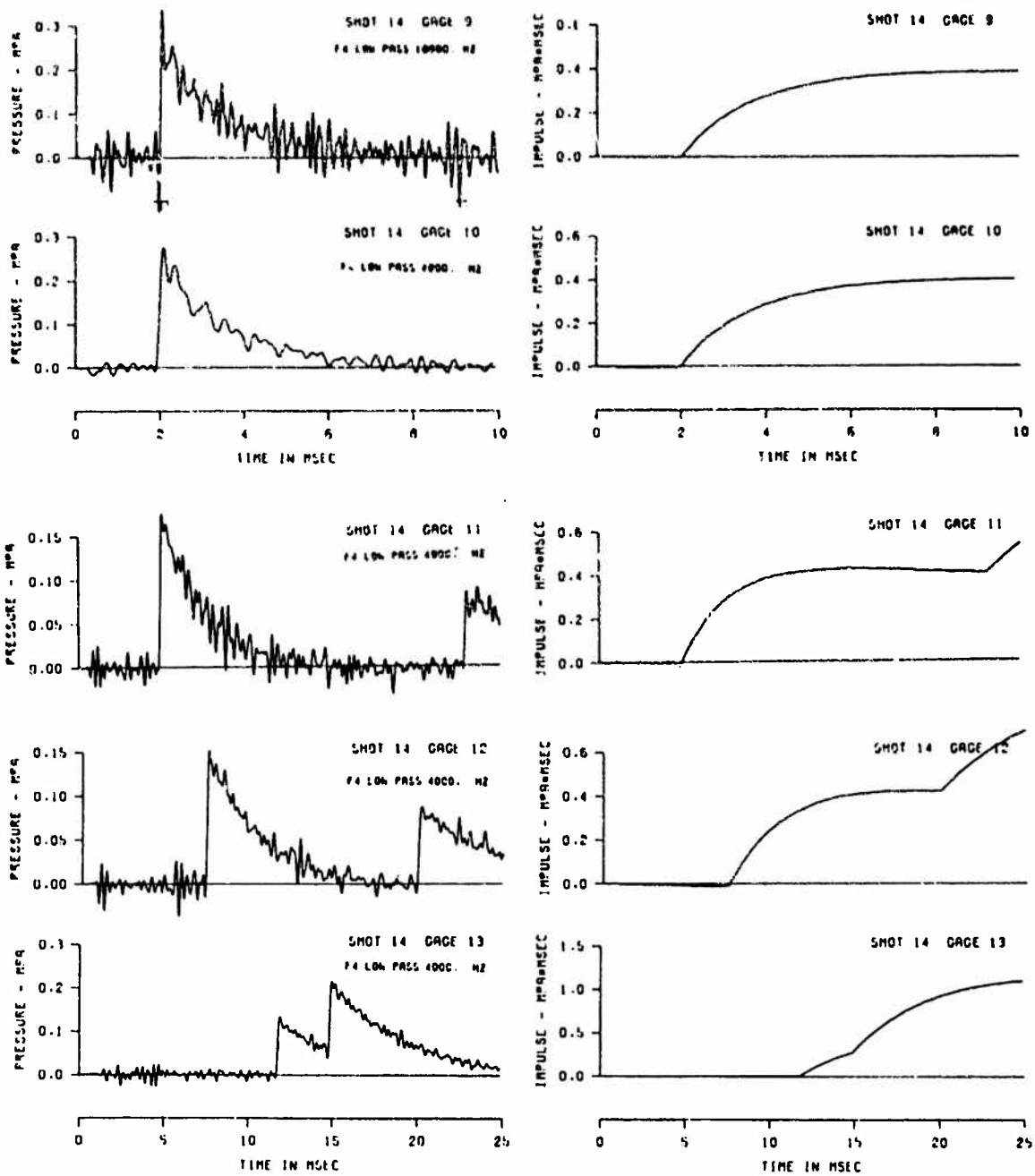

SHOT 12 GAGE 13
PRESSURE - MPa
0.06
0.04
0.02
0.00
0
5
10
15
20
25
TIME IN MSEC
SHOT 12 GAGE 13
IMPULSE - MPaMSEC
0.3
0.2
0.1
0.0
0
5
10
15
20
25
TIME IN MSEC
SHOT 13 GAGE 1
PRESSURE - MPa
3.
2.
1.
0.
SHOT 13 GAGE 1
IMPULSE - MPaMSEC
0.6
0.4
0.0
SHOT 13 GAGE 2
PRESSURE - MPa
3.
2.
1.
0.
SHOT 13 GAGE 2
IMPULSE - MPaMSEC
0.6
0.4
0.2
0.0
SHOT 13 GAGE 3
PRESSURE - MPa
1.5
1.0
0.0
SHOT 13 GAGE 3
IMPULSE - MPaMSEC
0.3
0.2
0.1
0.0
SHOT 13 GAGE 4
PRESSURE - MPa
1.5
1.0
0.5
0.0
SHOT 13 GAGE 4
IMPULSE - MPaMSEC
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC
0
1
2
3
4
5
TIME IN MSEC

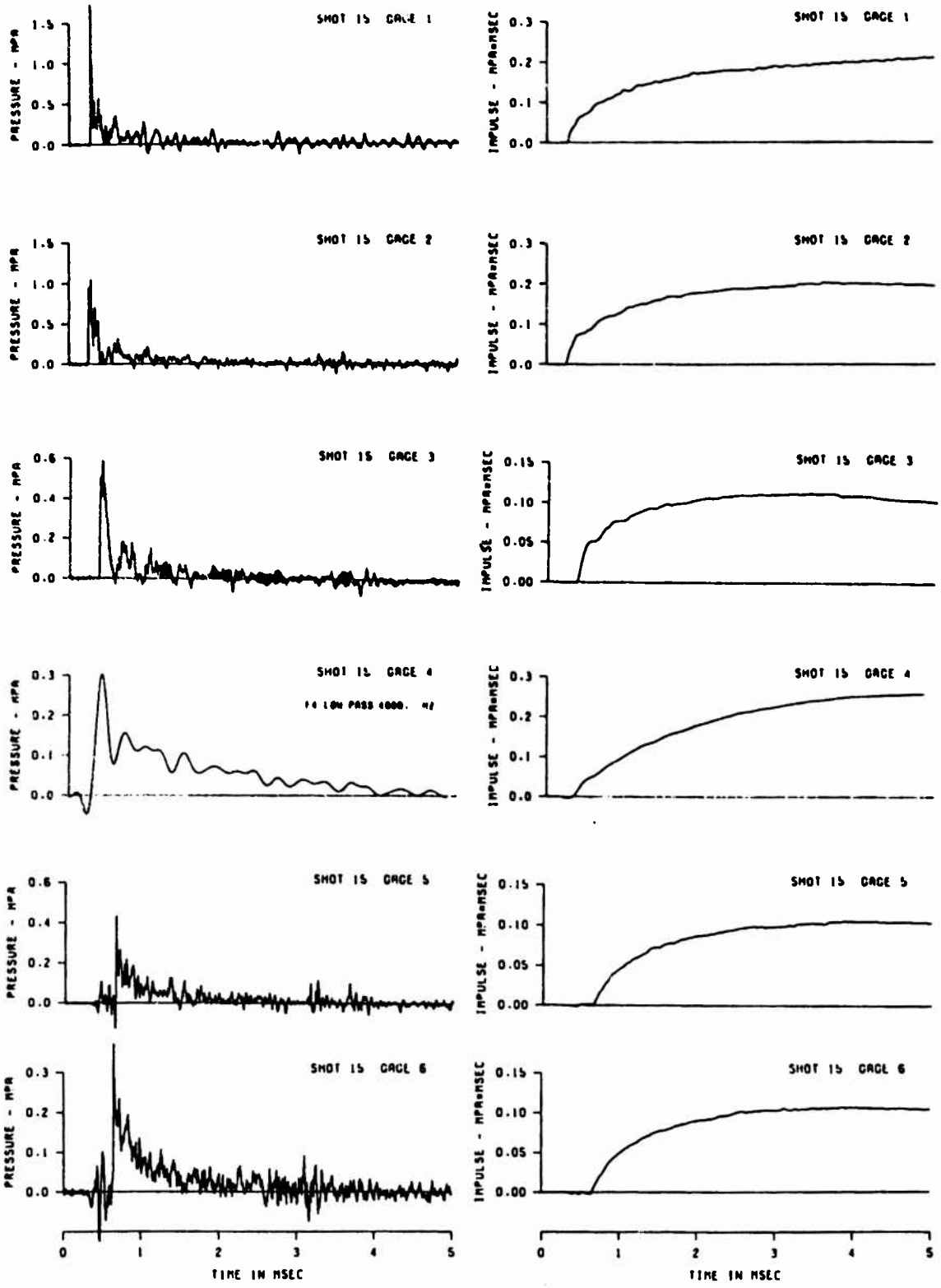

SHOT 13 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 13 GAGE 7
F4 LOW PASS 10000. HZ
SHOT 13 GAGE 8
F4 LOW PASS 4000. HZ
SHOT 13 GAGE 9
F4 LOW PASS 10000. HZ
SHOT 13 GAGE 10
F4 LOW PASS 4000. HZ

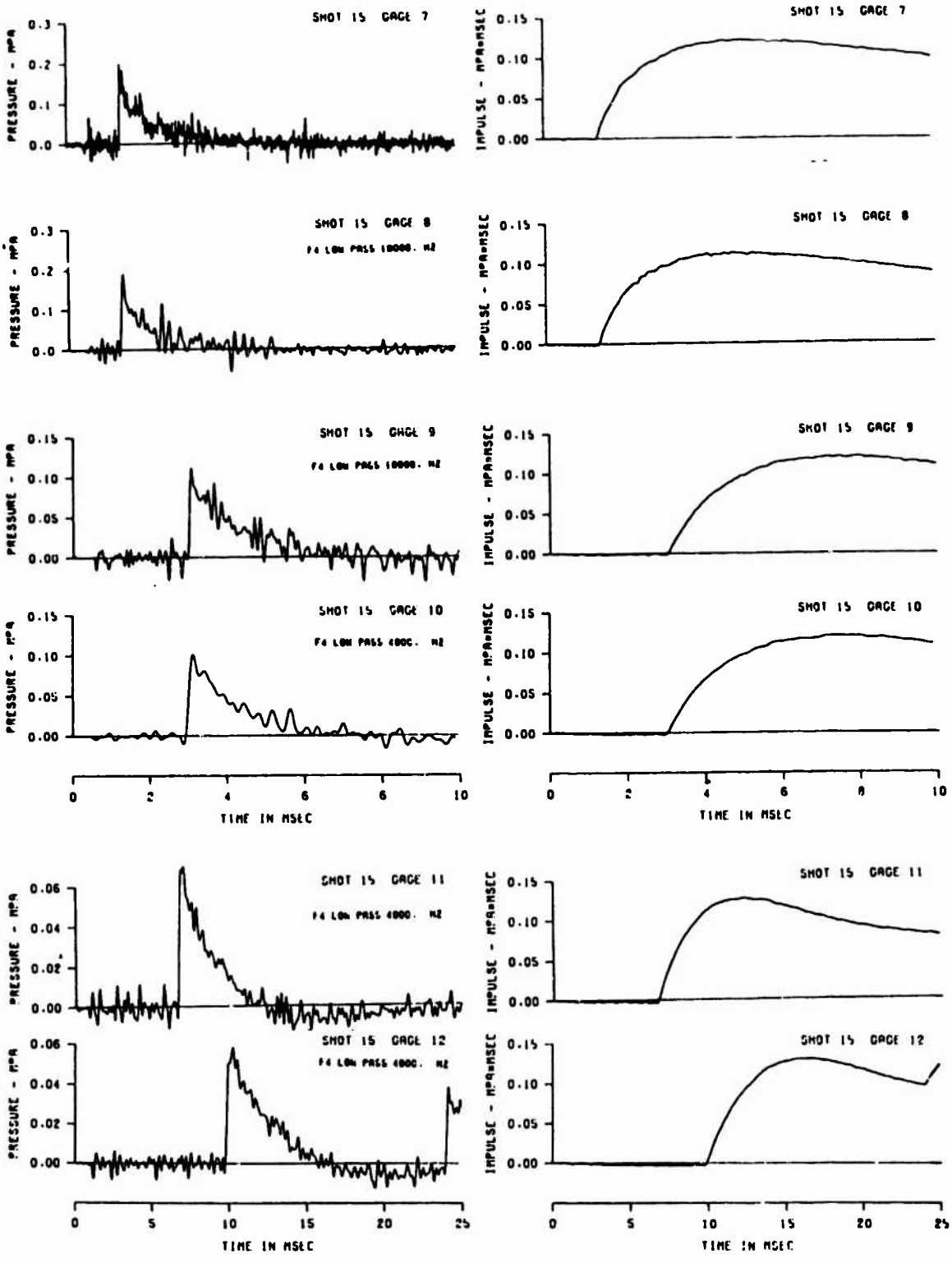

SHOT 13 GAGE 11
SHOT 13 GAGE 12
SHOT 13 GAGE 13
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

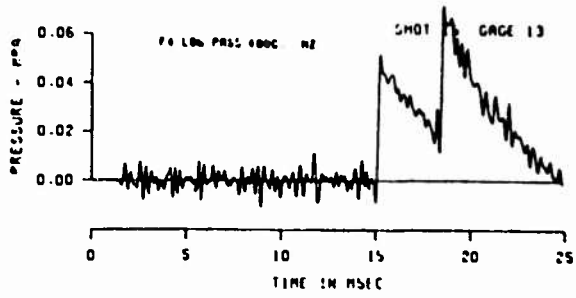

SHOT 14 GAGE 1
SHOT 14 GAGE 2
IMPULSE - MPa-MSEC
TIME IN MSEC

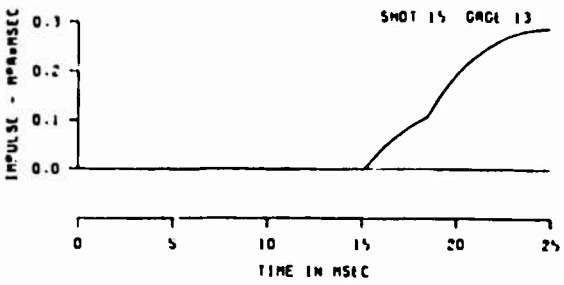

SHOT 14 GAGE 1
SHOT 14 GAGE 4
F4 LOW PASS 4000. HZ
SHOT 14 GAGE 5
SHOT 14 GAGE 6
SHOT 14 GAGE 7
F4 LOW PASS 10000. HZ
SHOT 14 GAGE 8
F4 LOW PASS 10000. HZ
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

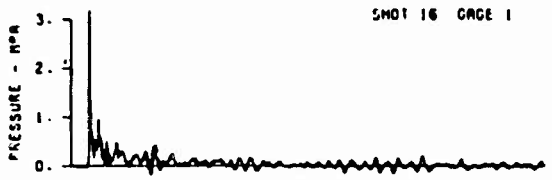

SHOT 14 GAGE 9
SHOT 14 GAGE 10
SHOT 14 GAGE 11
SHOT 14 GAGE 12
SHOT 14 GAGE 13
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

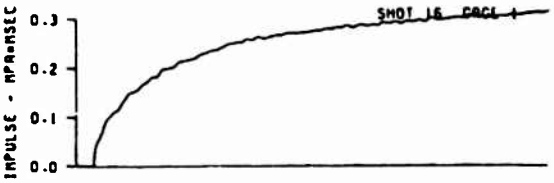

SHOT 15 GAGE 1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 15 GAGE 2
SHOT 15 GAGE 3
SHOT 15 GAGE 4
SHOT 15 GAGE 5
SHOT 15 GAGE 6
TIME IN MSEC


SHOT 15 GAGE 7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 15 GAGE 8
SHOT 15 GAGE 9
SHOT 15 GAGE 10
SHOT 15 GAGE 11
SHOT 15 GAGE 12
TIME IN MSEC

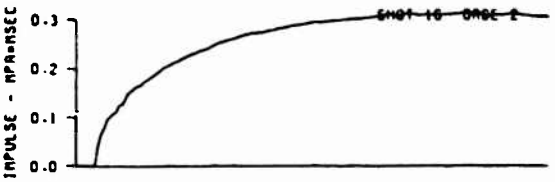

SHOT
GAGE 13
PRESSURE - MPA
0.06
0.04
0.02
0.00
0
5
10
15
20
25
TIME IN MSEC

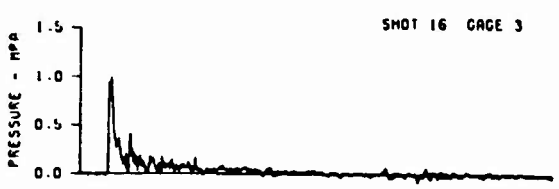

SHOT 15 GAGE 13
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0
5
10
15
20
25
TIME IN MSEC

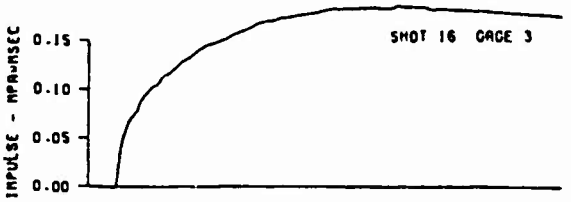

SHOT 16 GAGE 1
PRESSURE - MPA
3.
2.
1.
0.

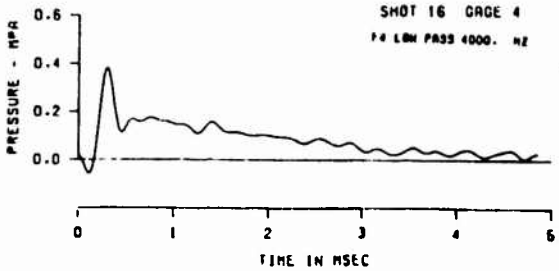

SHOT 16 GAGE 1
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0

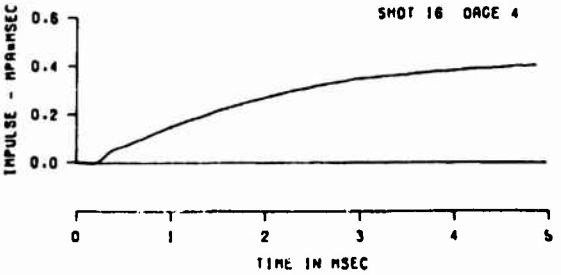
SHOT 16 GAGE 2
PRESSURE - MPA
3.
2.
1.
0.

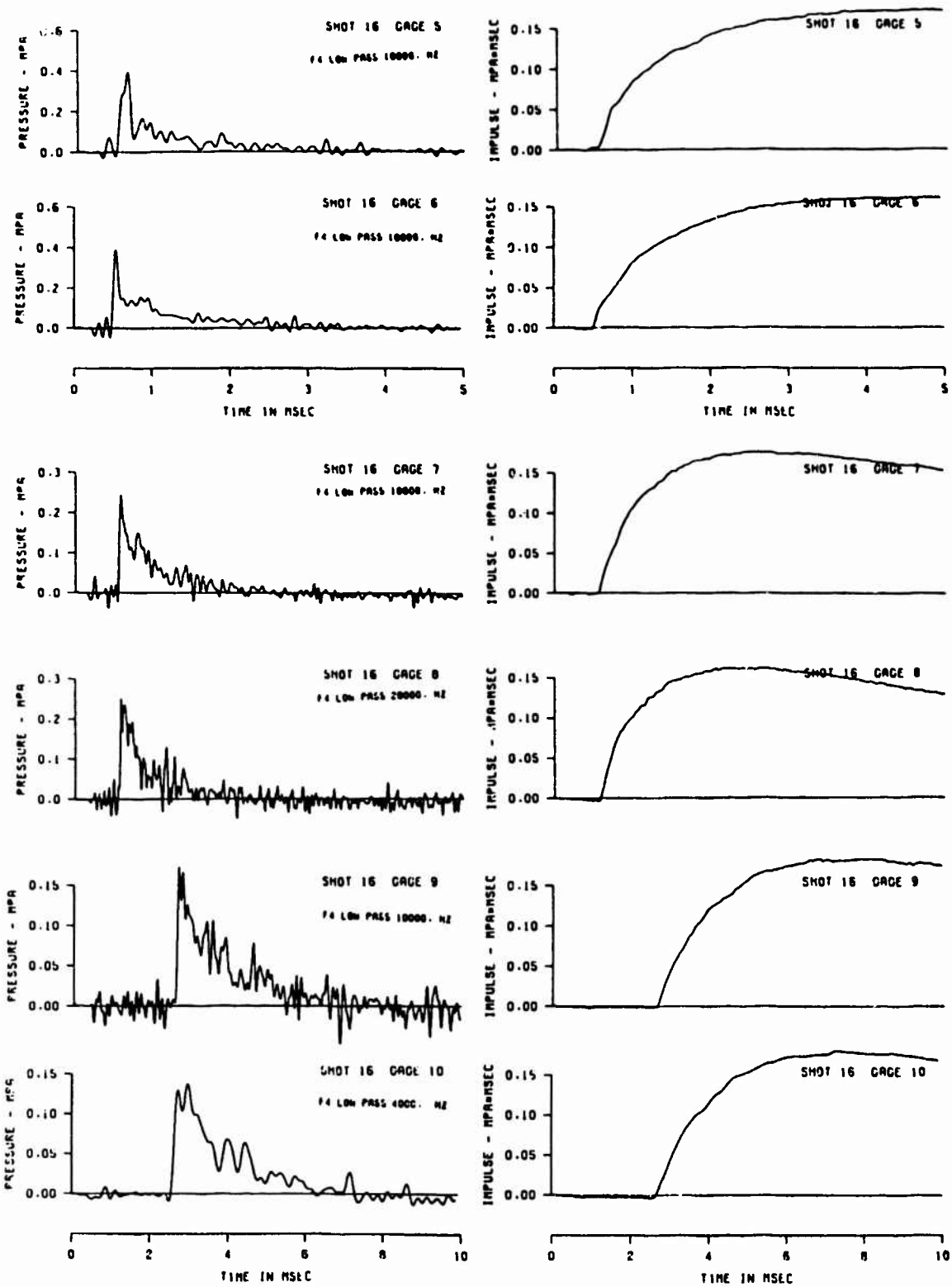

SHOT 16 GAGE 2
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0

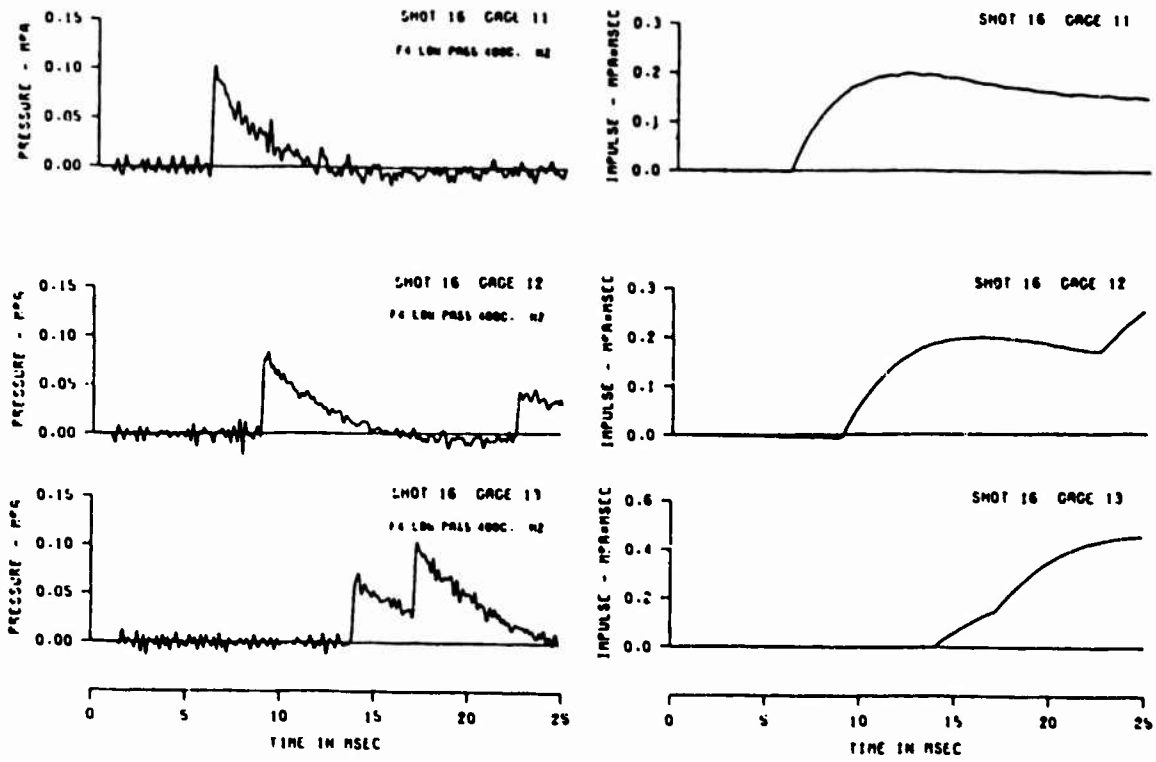

SHOT 16 GAGE 3
PRESSURE - MPA
1.5
1.0
0.5
0.0

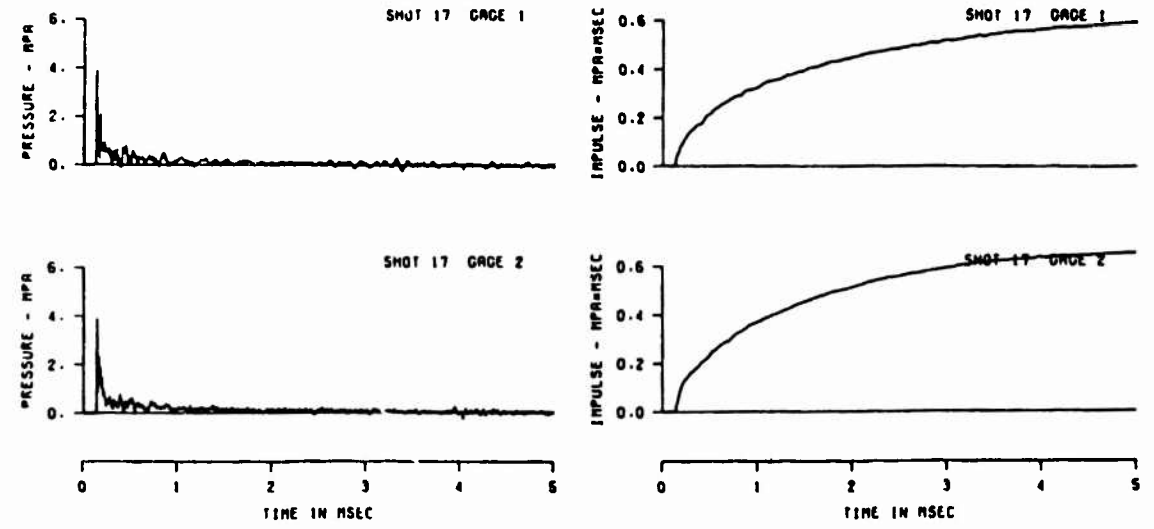

SHOT 16 GAGE 3
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00

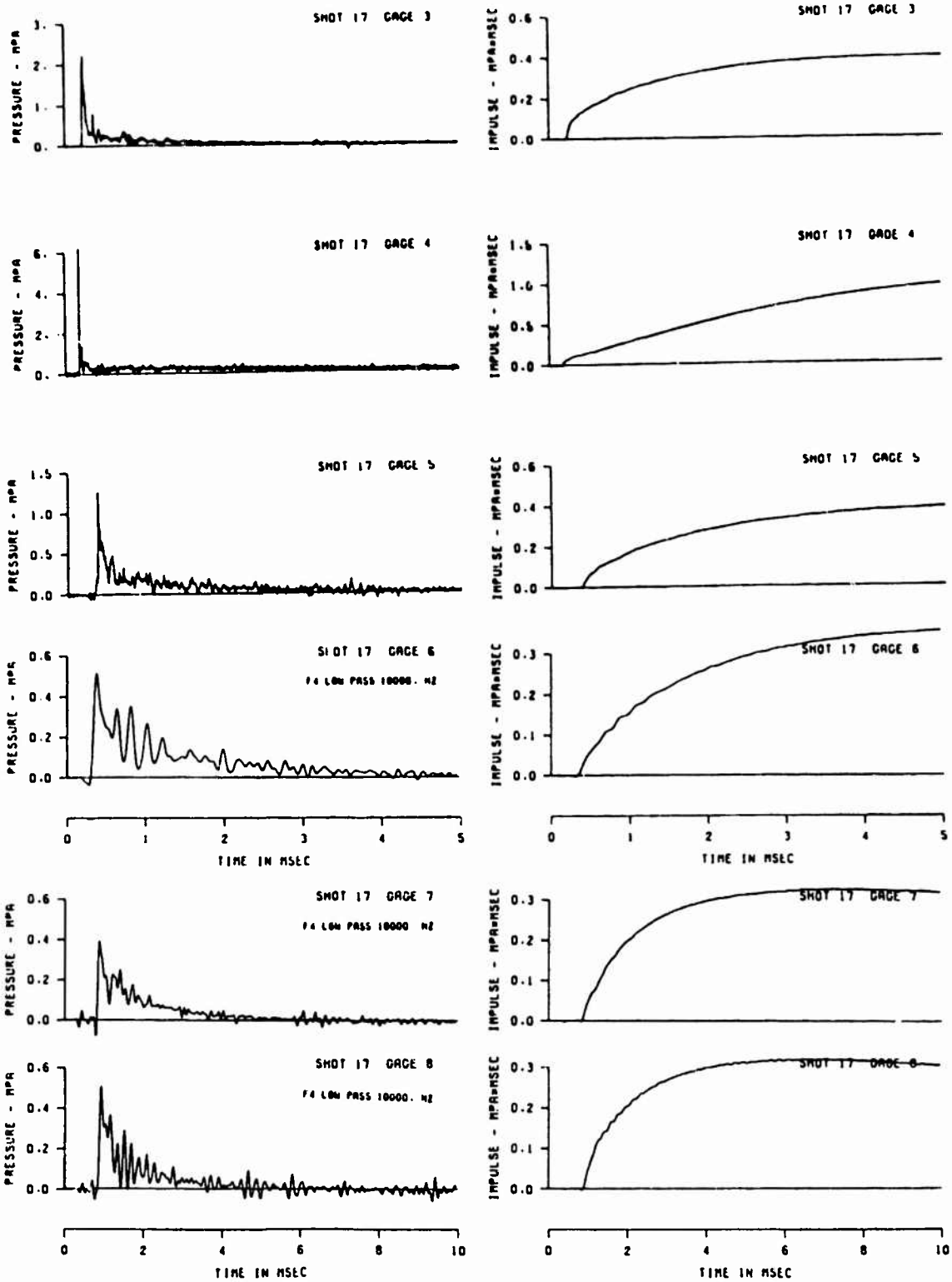

SHOT 16 GAGE 4
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC

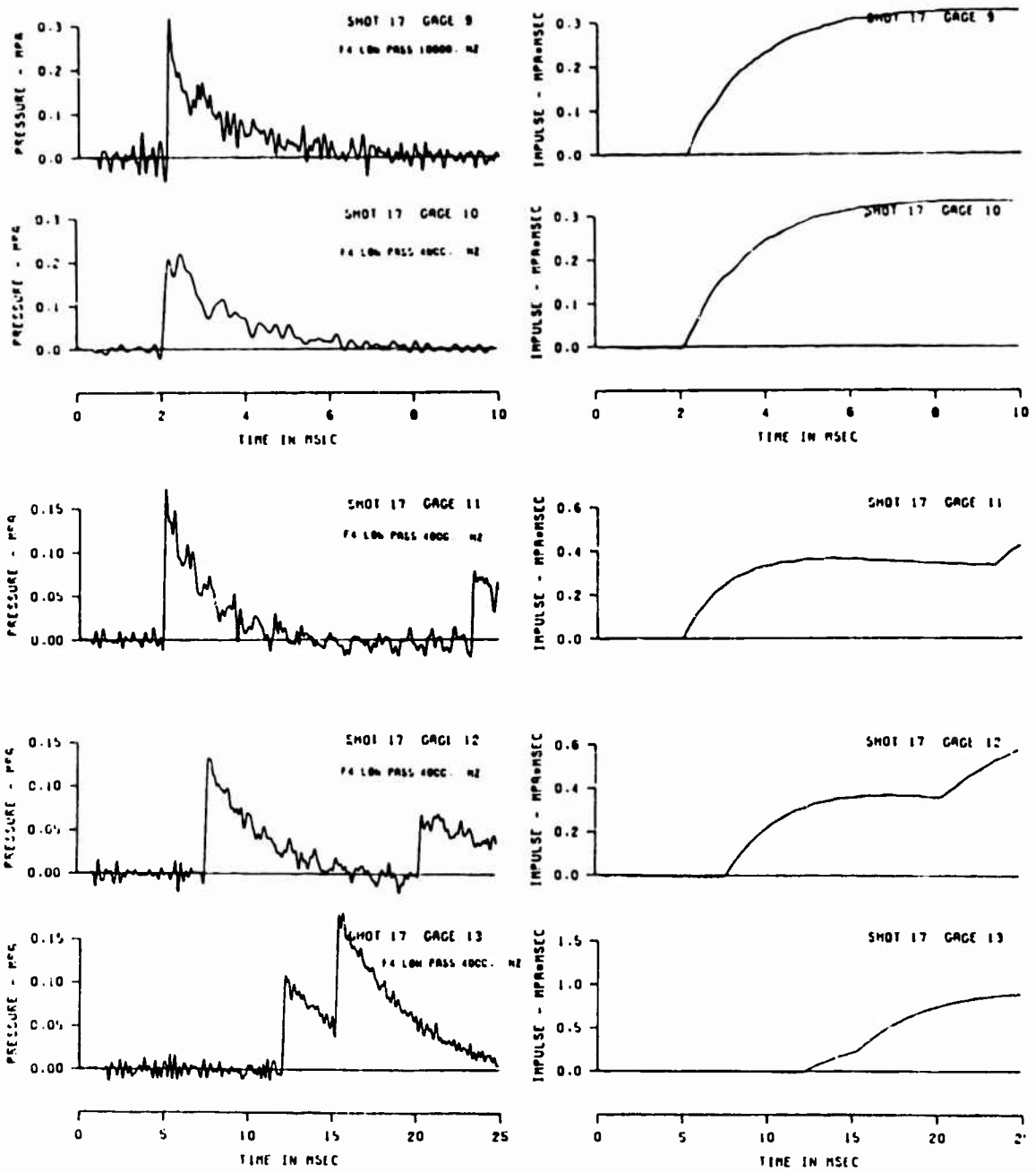

SHOT 16 GAGE 4
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC

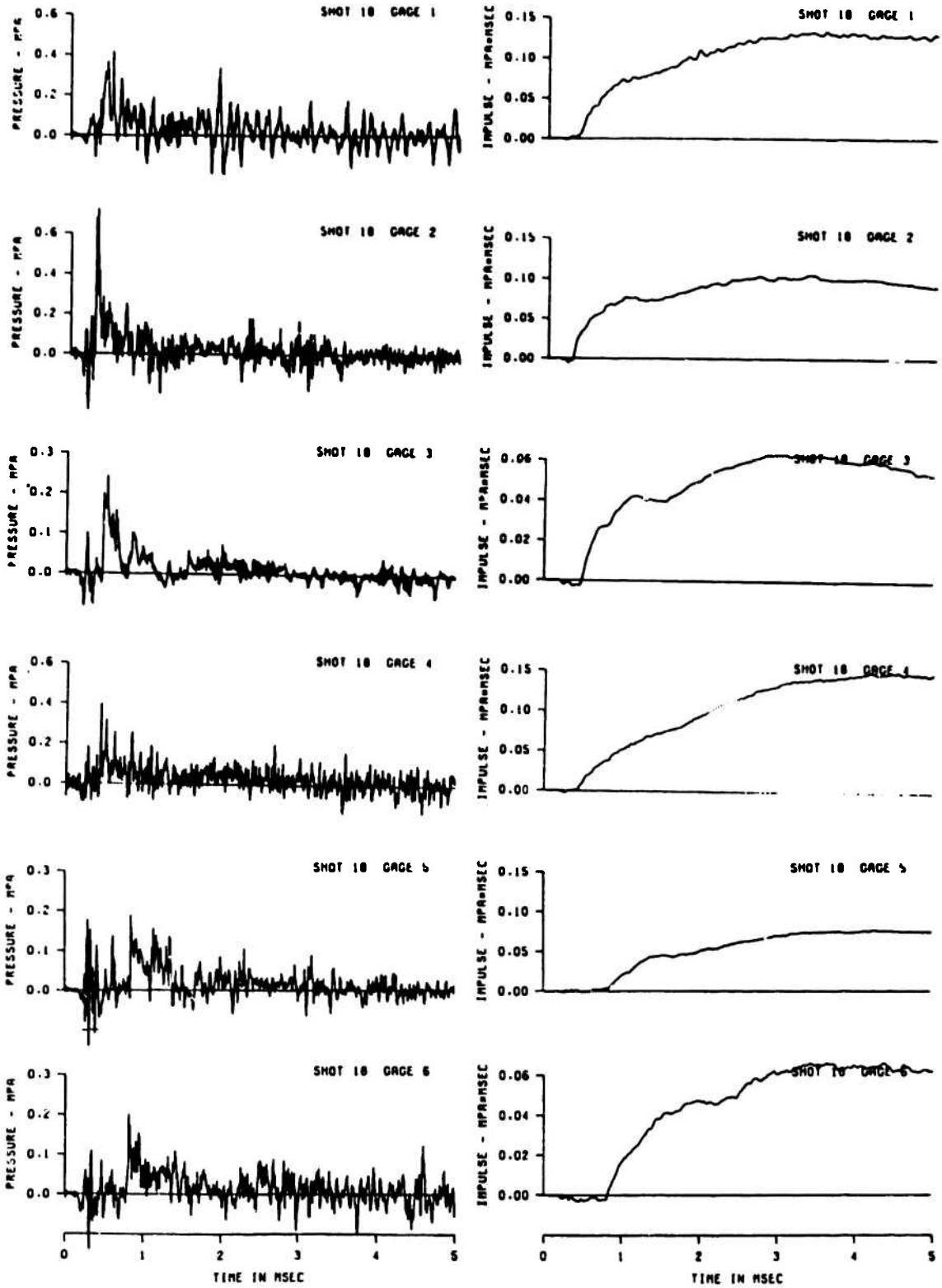

SHOT 16 GAGE 5
SHOT 16 GAGE 6
SHOT 16 GAGE 7
SHOT 16 GAGE 8
SHOT 16 GAGE 9
SHOT 16 GAGE 10
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

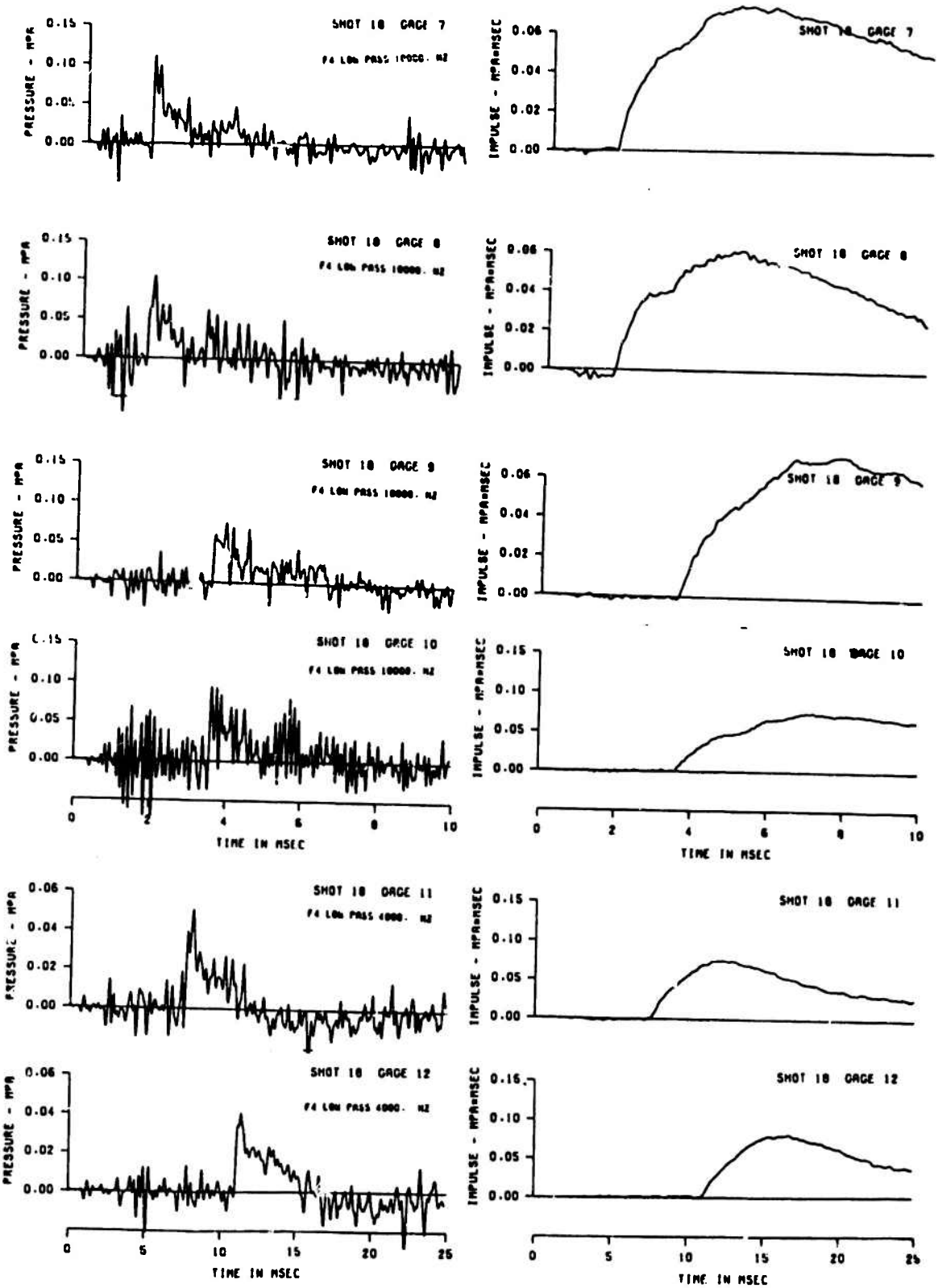

SHOT 16 GAGE 11
SHOT 16 GAGE 12
SHOT 16 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
0.3
0.2
0.1
0.0
0.6
0.4
0.2
0
5
10
15
20
25
TIME IN MSEC

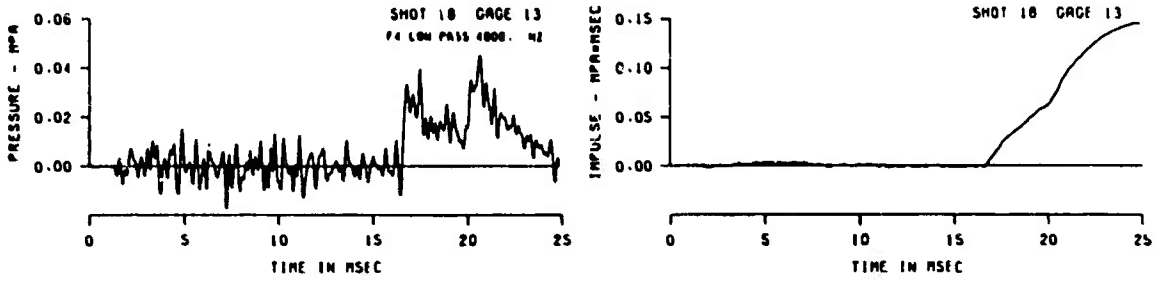

SHOT 17 GAGE 1
SHOT 17 GAGE 2
PRESSURE - MPA
IMPULSE - MPA-MSEC
6.
4.
2.
0.
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC

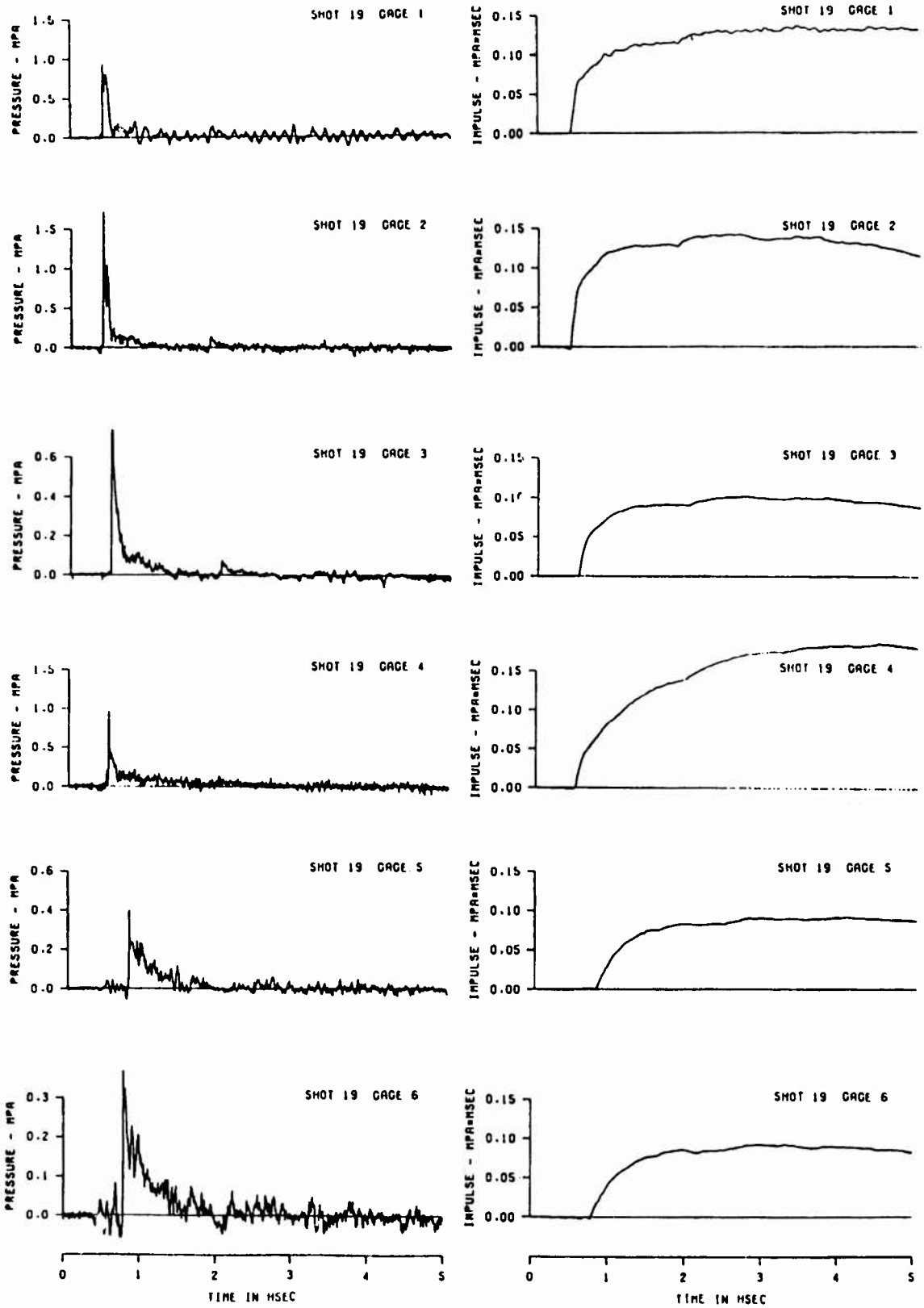

SHOT 17 GAGE 3
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 17 GAGE 4
SHOT 17 GAGE 5
SHOT 17 GAGE 6
F4 LOW PASS 10000. HZ
SHOT 17 GAGE 7
SHOT 17 GAGE 8
TIME IN MSEC

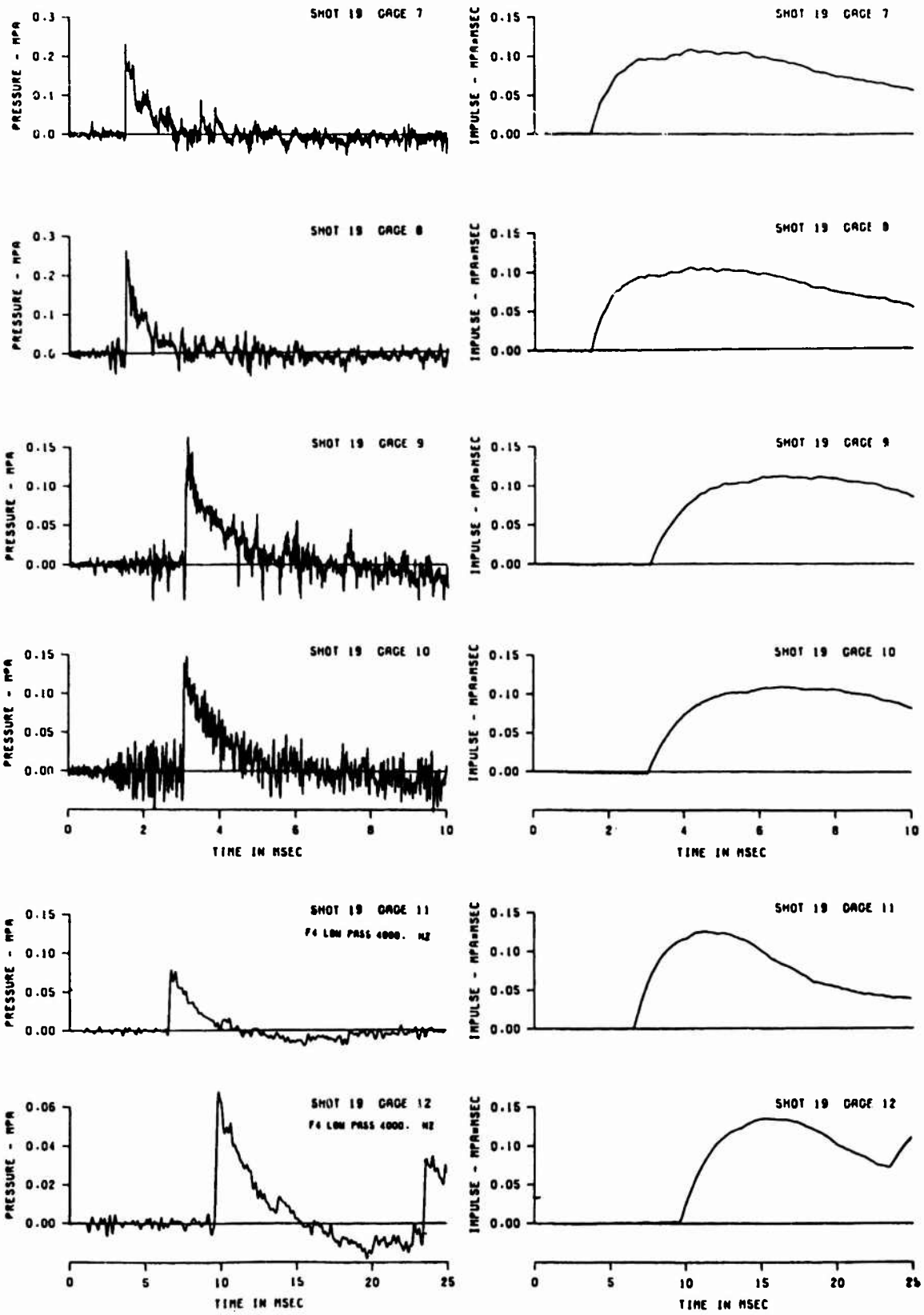

SHOT 17 GAGE 9
SHOT 17 GAGE 10
SHOT 17 GAGE 11
SHOT 17 GAGE 12
SHOT 17 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

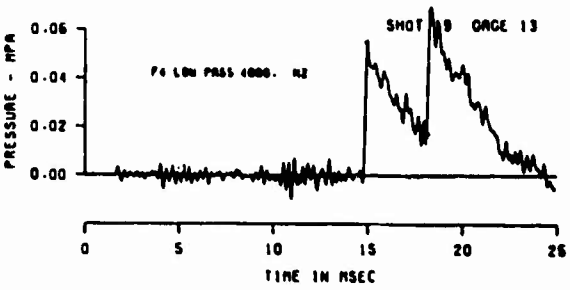

SHOT 18 GAGE 1
SHOT 18 GAGE 2
SHOT 18 GAGE 3
SHOT 18 GAGE 4
SHOT 18 GAGE 5
SHOT 18 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

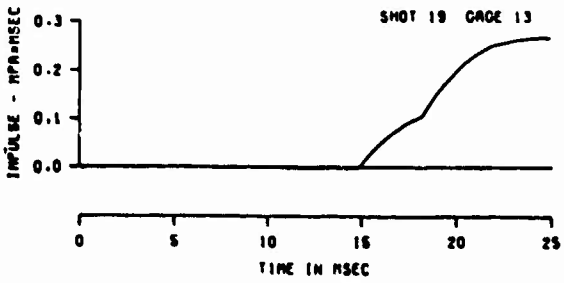

SHOT 18 GAGE 7
SHOT 18 GAGE 8
SHOT 18 GAGE 9
SHOT 18 GAGE 10
SHOT 18 GAGE 11
SHOT 18 GAGE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

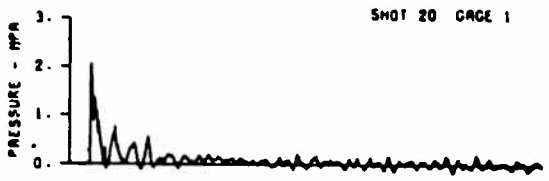

SHOT 18 GAGE 13
F4 LOW PASS 4000. HZ
PRESSURE - MPA
0.06
0.04
0.02
0.00
0
5
10
15
20
25
TIME IN MSEC
SHOT 18 GAGE 13
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
0
5
10
15
20
25
TIME IN MSEC

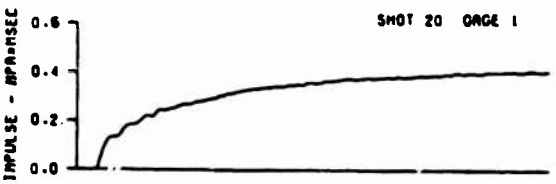

SHOT 19 GAGE 1
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 19 GAGE 2
SHOT 19 GAGE 3
SHOT 19 GAGE 4
SHOT 19 GAGE 5
SHOT 19 GAGE 6
TIME IN MSEC


SHOT 19 GAGE 7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 19 GAGE 8
SHOT 19 GAGE 9
SHOT 19 GAGE 10
SHOT 19 GAGE 11
F4 LOW PASS 4000. HZ
SHOT 19 GAGE 12
F4 LOW PASS 4000. HZ
TIME IN MSEC


SHOT 19 GAGE 13
PRESSURE - MPA
TIME IN MSEC


SHOT 19 GAGE 13
IMPULSE - MPA-MSEC
TIME IN MSEC


SHOT 20 GAGE 1
PRESSURE - MPA

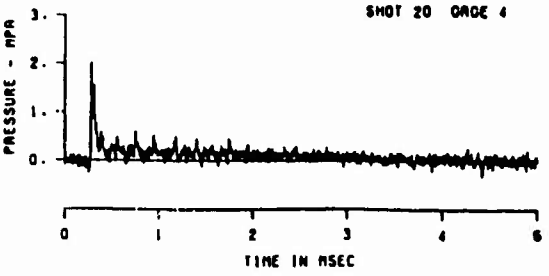

SHOT 20 GAGE 1
IMPULSE - MPA-MSEC

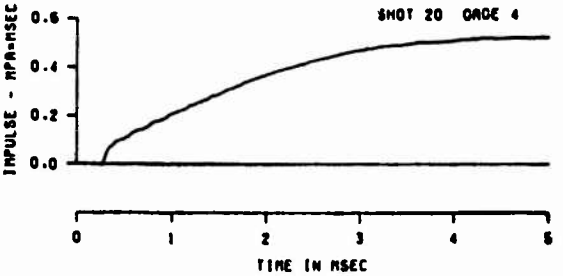
SHOT 20 GAGE 2
PRESSURE - MPA

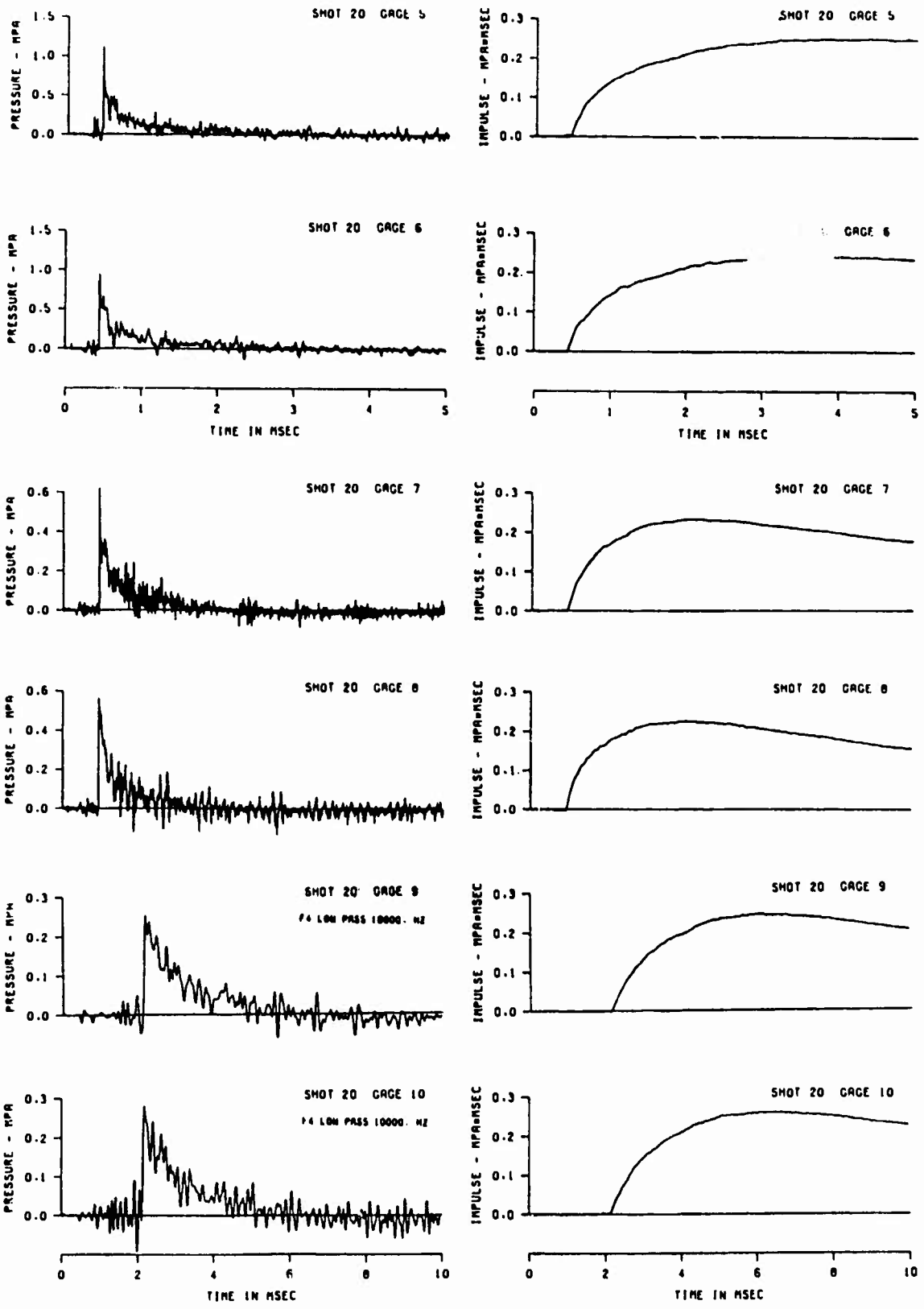
SHOT 20 GAGE 2
IMPULSE - MPA-MSEC

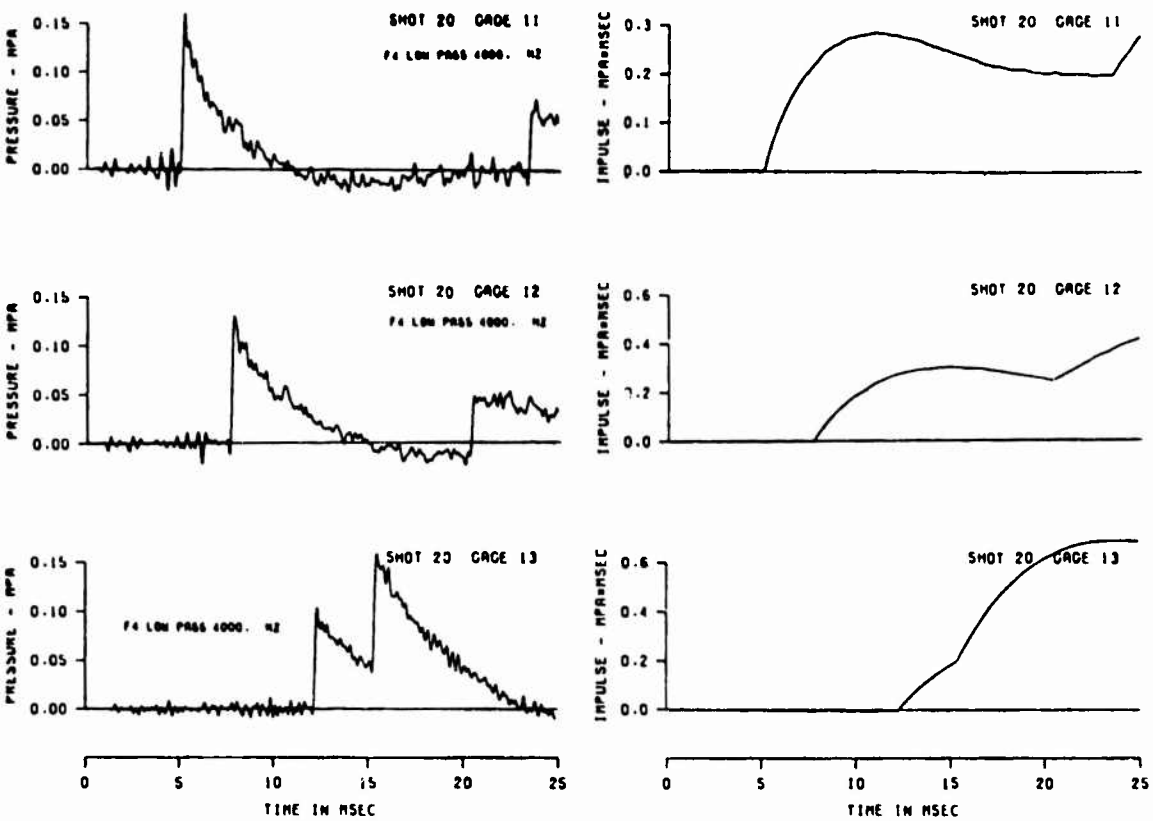
SHOT 20 GAGE 3
PRESSURE - MPA

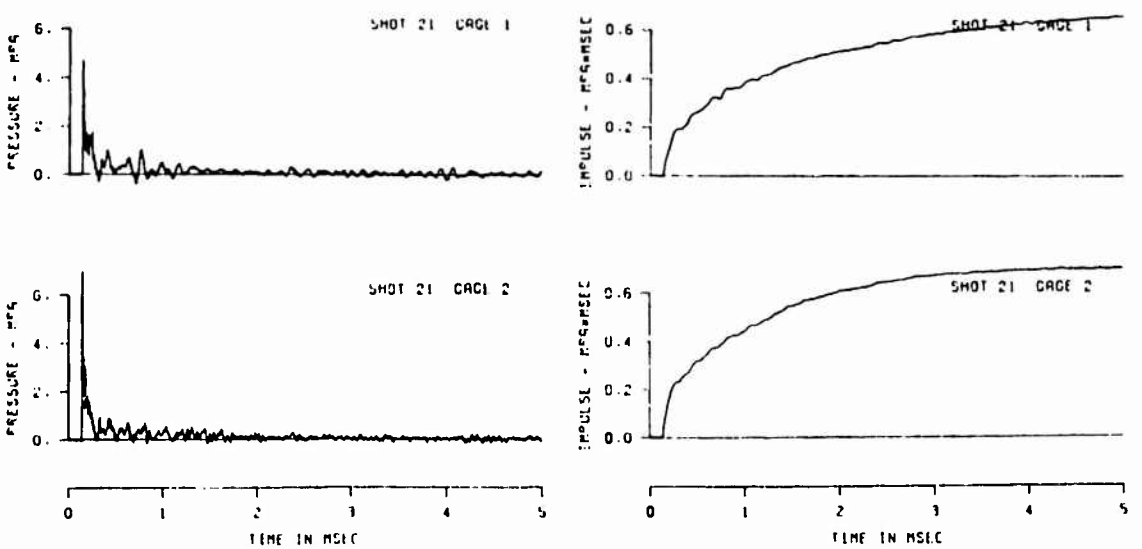
SHOT 20 GAGE 3
IMPULSE - MPA-MSEC

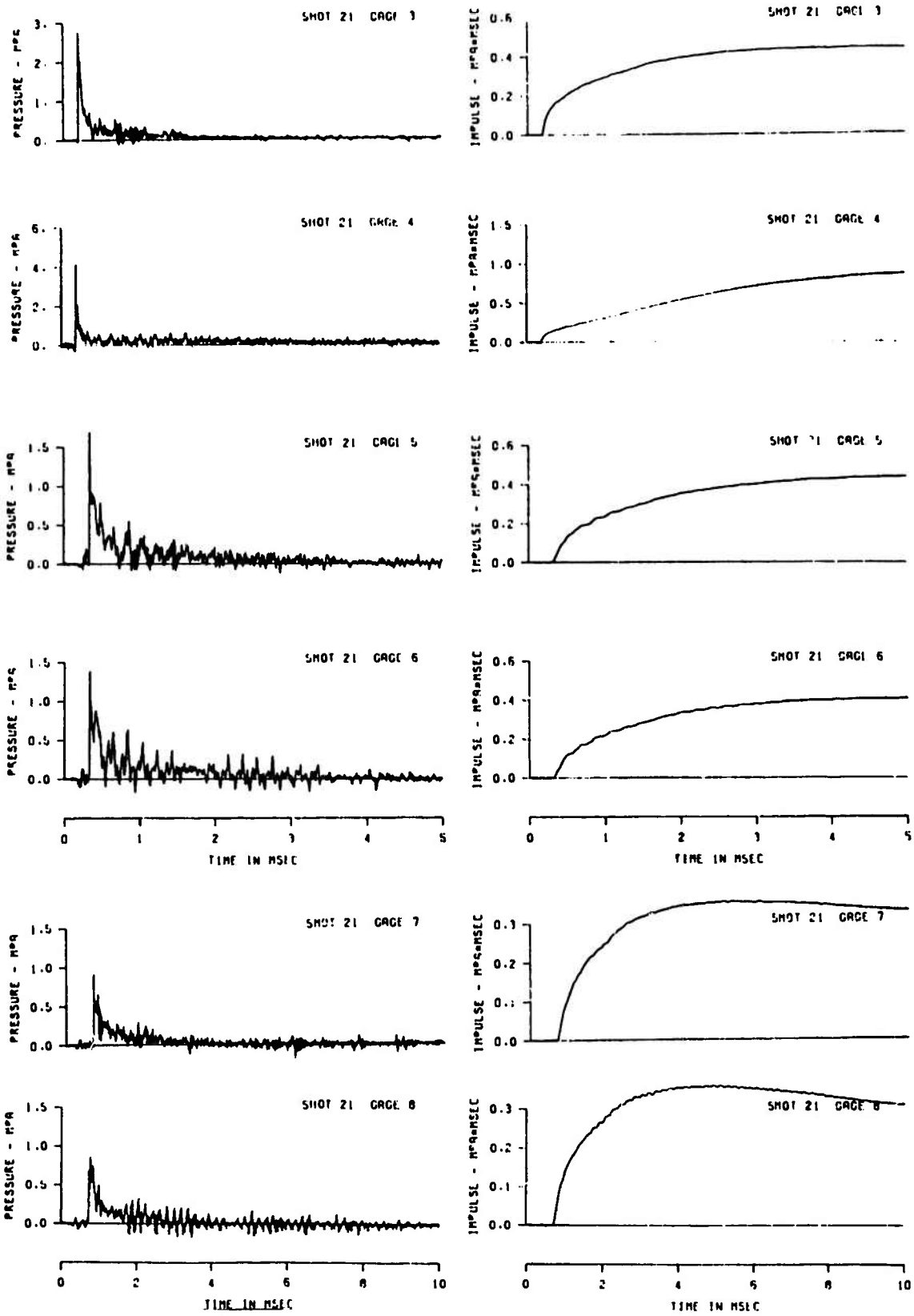

SHOT 20 GAGE 4
PRESSURE - MPA
TIME IN MSEC

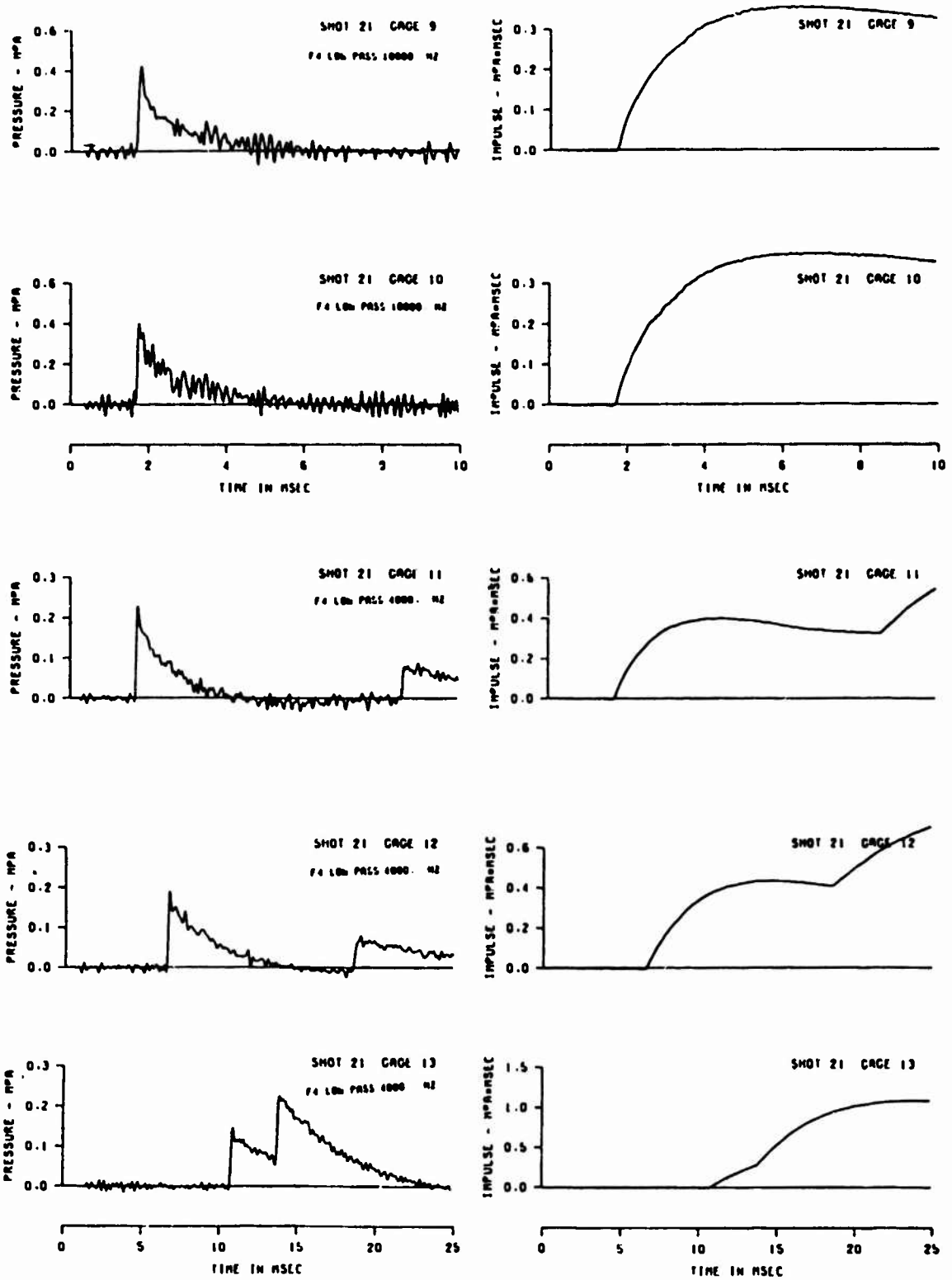

SHOT 20 GAGE 4
IMPULSE - MPA-MSEC
TIME IN MSEC

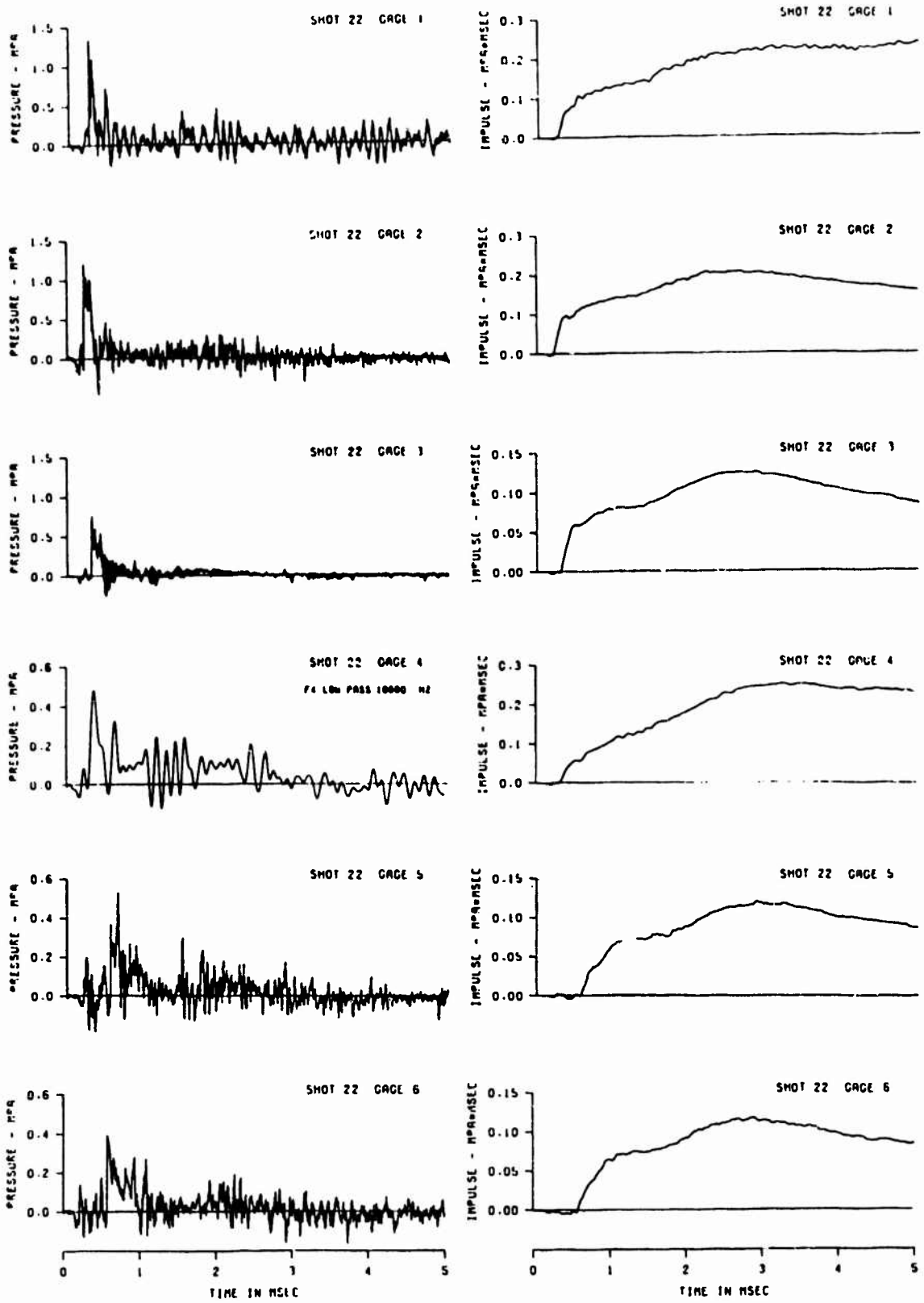

SHOT 20 GAGE 5
PRESSURE - MPA
1.5
1.0
0.5
0.0
SHOT 20 GAGE 5
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 20 GAGE 6
PRESSURE - MPA
1.5
1.0
0.5
0.0
0 1 2 3 4 5
TIME IN MSEC
GAGE 6
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0 1 2 3 4 5
TIME IN MSEC
SHOT 20 GAGE 7
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 20 GAGE 7
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 20 GAGE 8
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 20 GAGE 8
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 20 GAGE 9
F4 LOW PASS 10000. HZ
PRESSURE - MPA
0.3
0.2
0.1
0.0
SHOT 20 GAGE 9
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 20 GAGE 10
F4 LOW PASS 10000. HZ
PRESSURE - MPA
0.3
0.2
0.1
0.0
0 2 4 6 8 10
TIME IN MSEC
SHOT 20 GAGE 10
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0 2 4 6 8 10
TIME IN MSEC

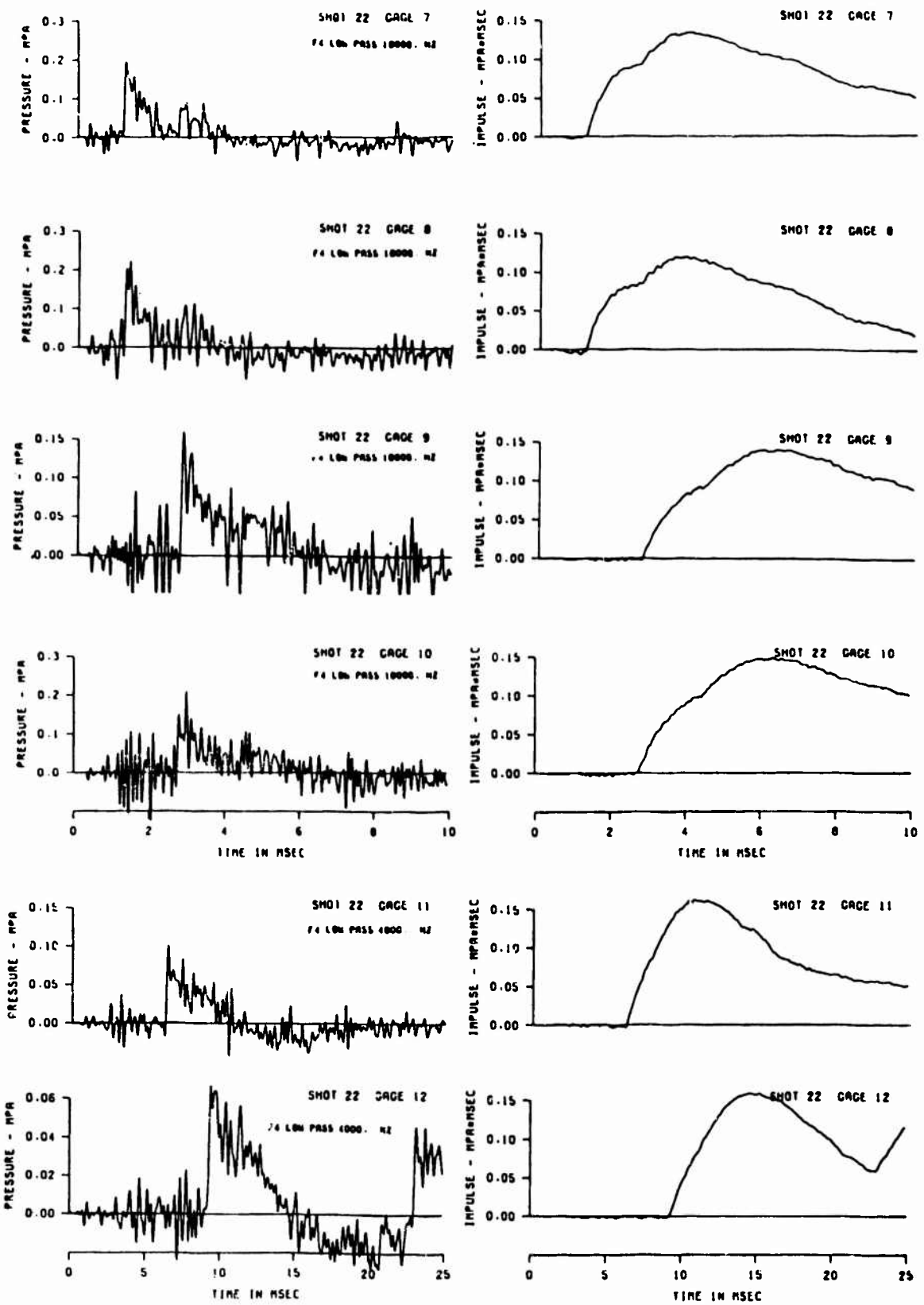

SHOT 20 GAGE 11
SHOT 20 GAGE 12
SHOT 20 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
0.3
0.2
0.1
0.0
0.6
0.4
0.2
0
5
10
15
20
25
TIME IN MSEC

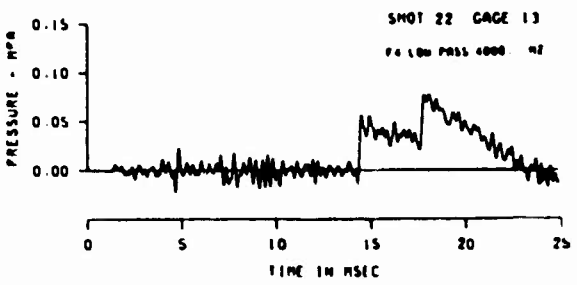

SHOT 21 GAGE 1
SHOT 21 GAGE 2
PRESSURE - MPA
IMPULSE - MPA-MSEC
6.
4.
0.
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC

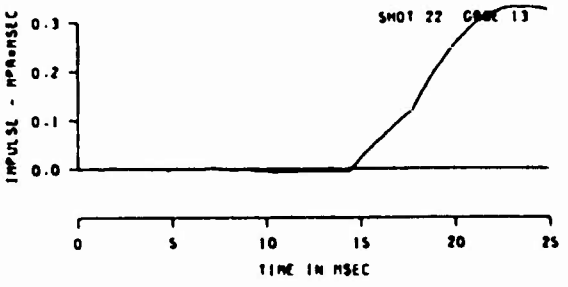

SHOT 21 GAGE 1
PRESSURE - MPa
IMPULSE - MPa-MSEC
SHOT 21 GAGE 4
SHOT 21 GAGE 5
SHOT 21 GAGE 6
SHOT 21 GAGE 7
SHOT 21 GAGE 8
TIME IN MSEC


SHOT 21 GAGE 9
SHOT 21 GAGE 10
SHOT 21 GAGE 11
SHOT 21 GAGE 12
SHOT 21 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

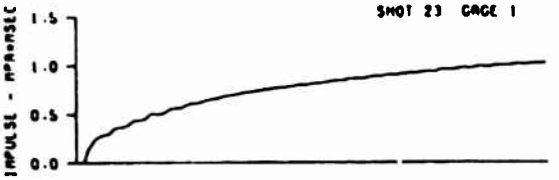

SHOT 22 GAGE 1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 22 GAGE 2
SHOT 22 GAGE 3
SHOT 22 GAGE 4
SHOT 22 GAGE 5
SHOT 22 GAGE 6
TIME IN MSEC


SHOT 22 GAGE 7
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 22 GAGE 8
SHOT 22 GAGE 9
SHOT 22 GAGE 10
SHOT 22 GAGE 11
SHOT 22 GAGE 12
TIME IN MSEC

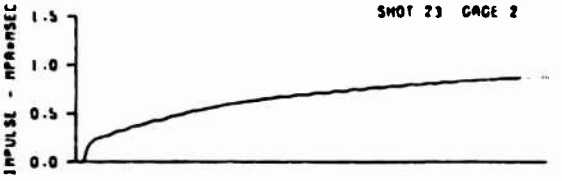

SHOT 22 GAGE 13
PRESSURE - MPA
0.15
0.10
0.05
0.00
0
5
10
15
20
25
TIME IN MSEC


SHOT 22 GAGE 13
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0
5
10
15
20
25
TIME IN MSEC

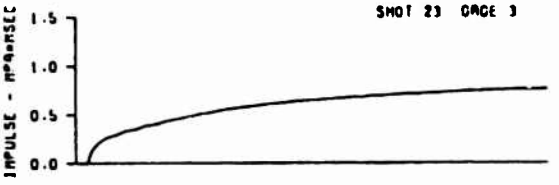
SHOT 23 GAGE 1
PRESSURE - MPA
9
6
3
0

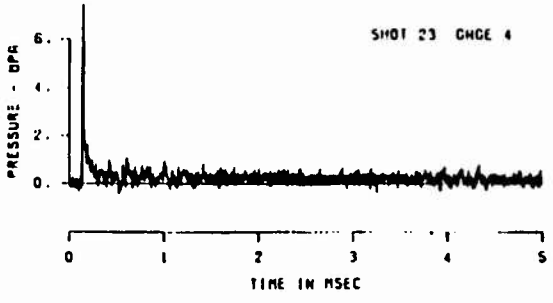

SHOT 23 GAGE 1
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0

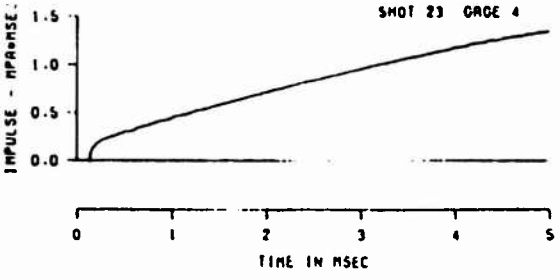
SHOT 23 GAGE 2
PRESSURE - MPA
9
6
3
0

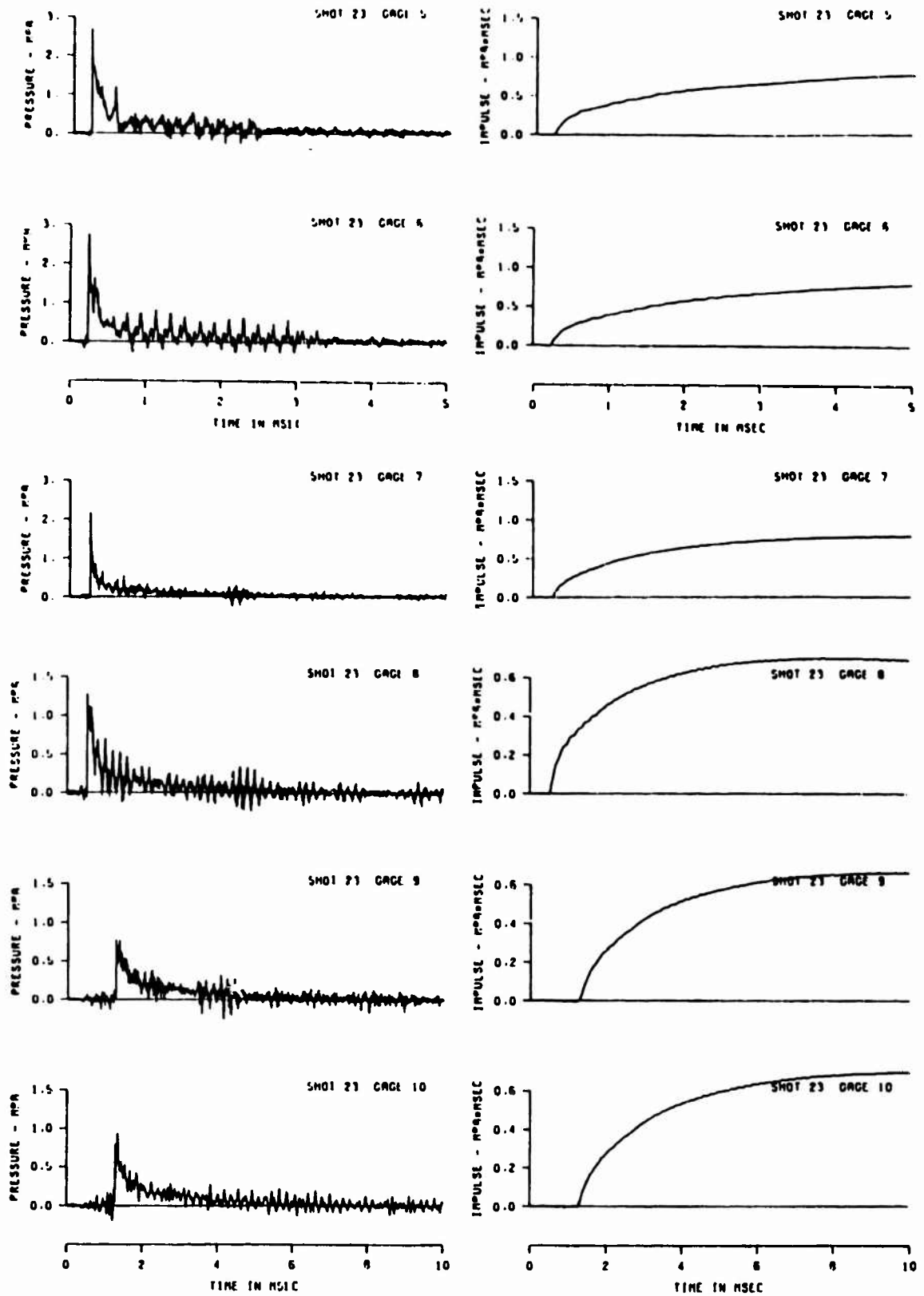

SHOT 23 GAGE 2
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0

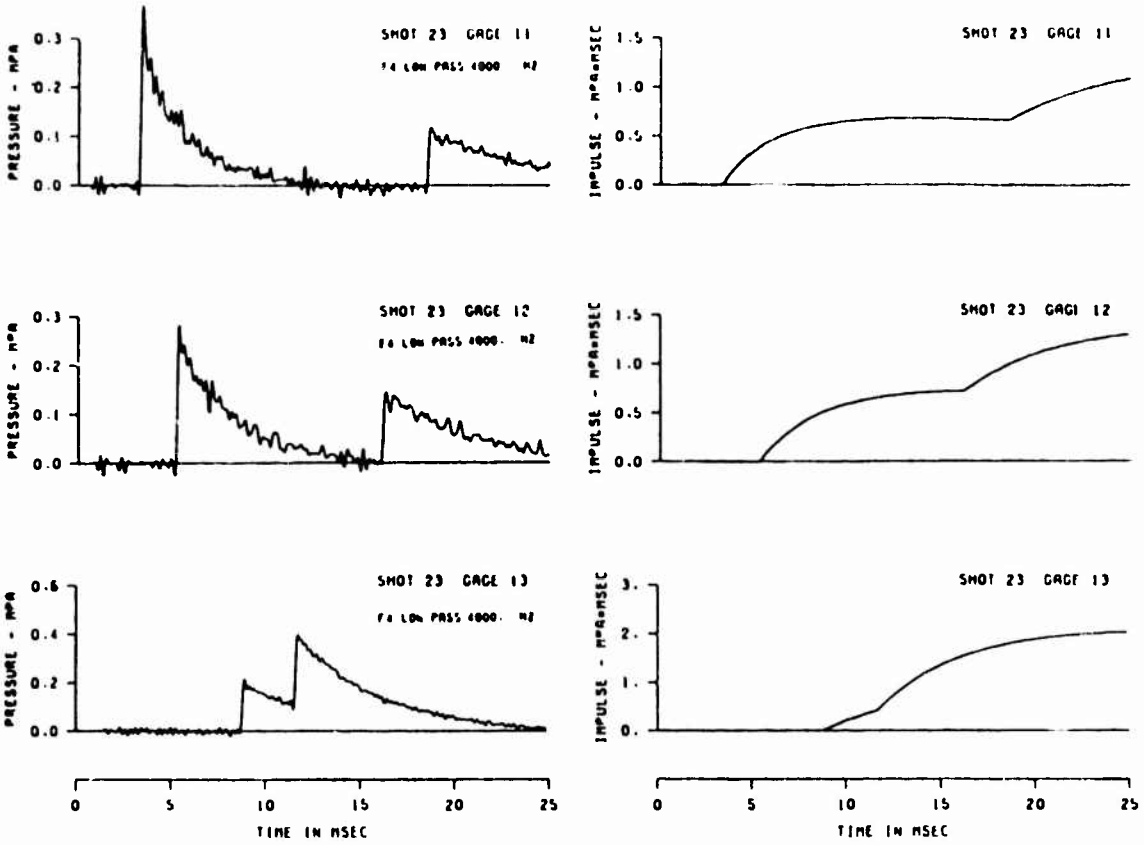
SHOT 23 GAGE 3
PRESSURE - MPA
6.
4.
2.
0.

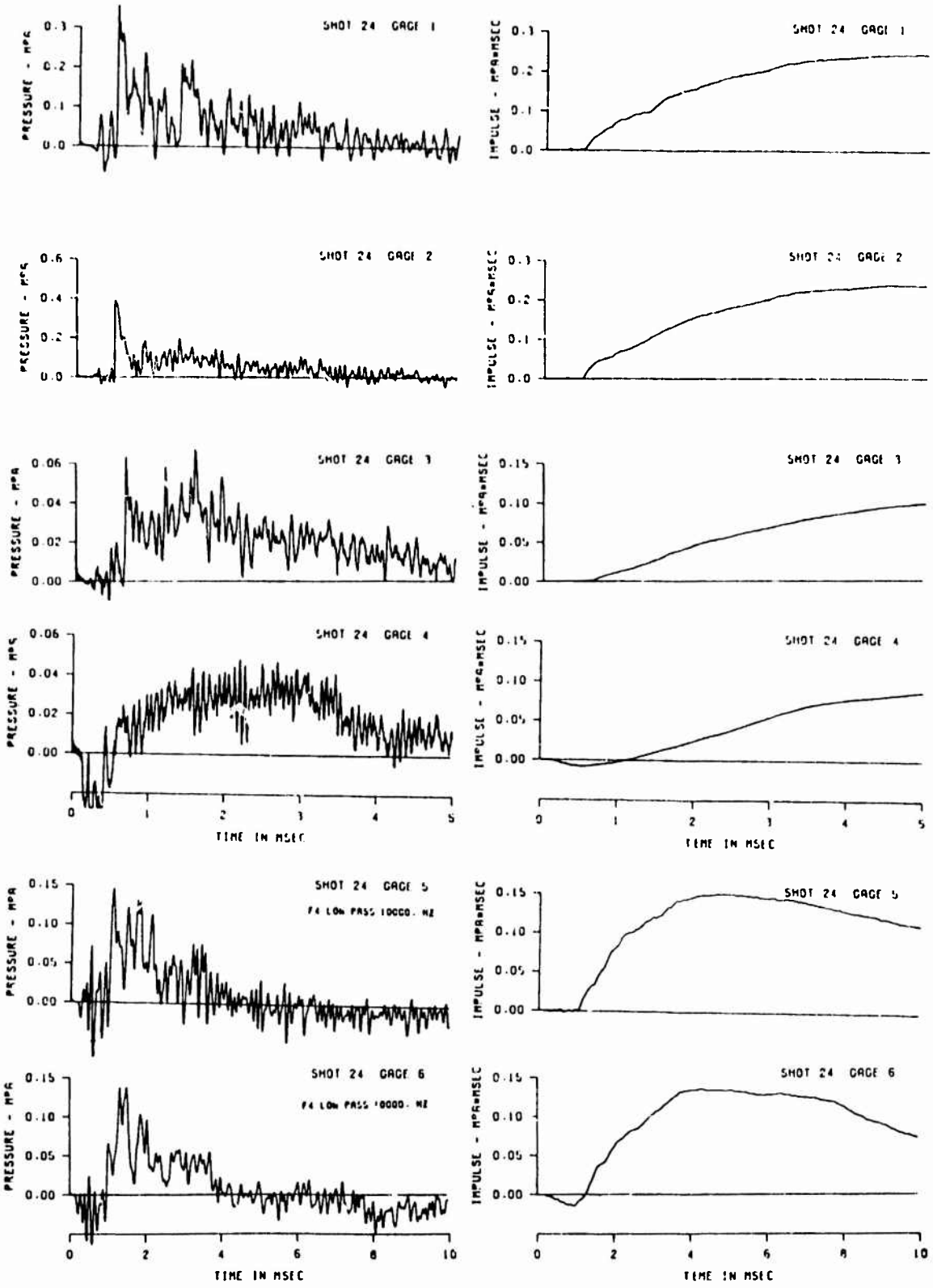

SHOT 23 GAGE 3
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0

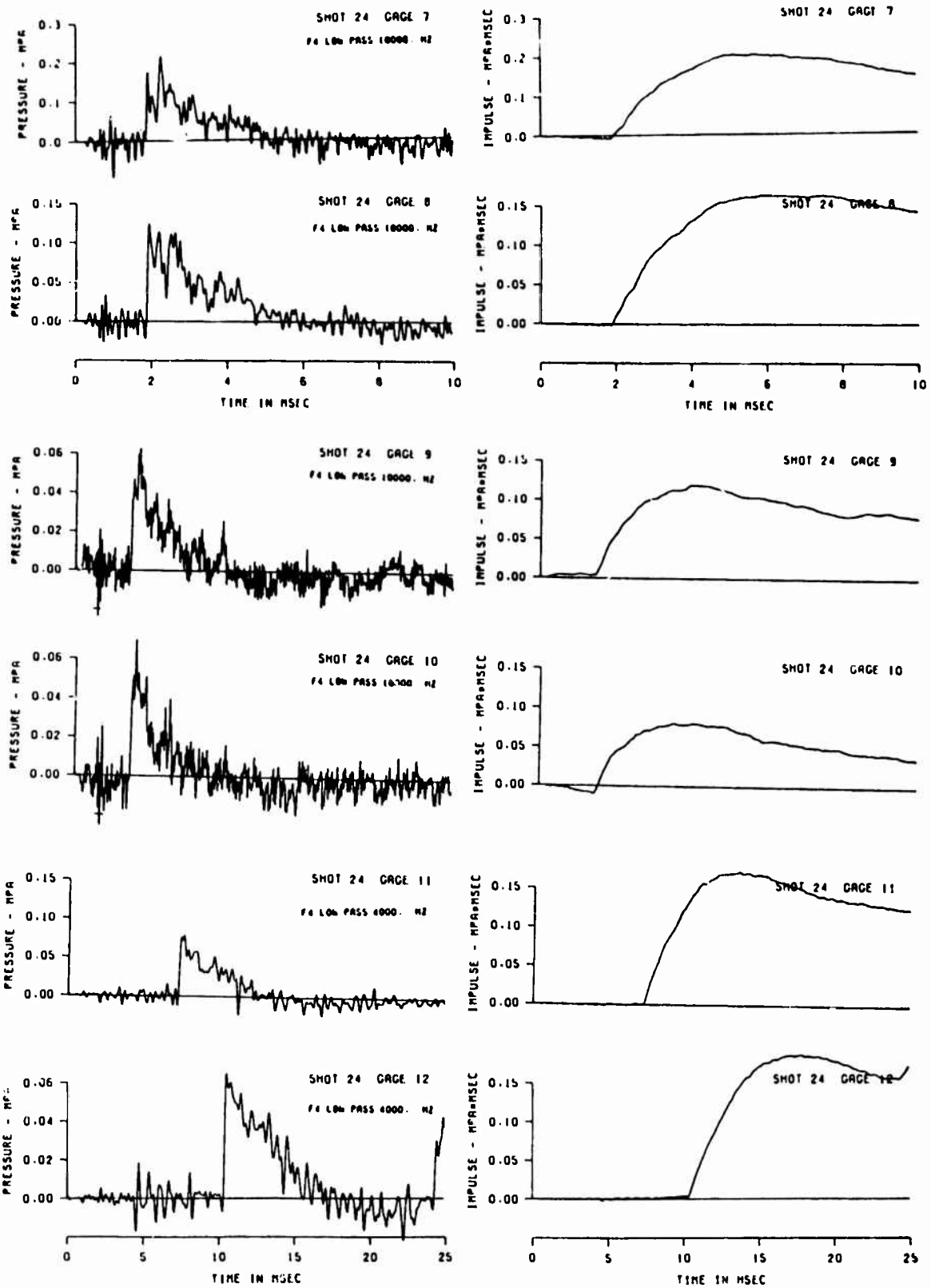

SHOT 23 GAGE 4
PRESSURE - MPA
6.
4.
2.
0.
0
1
2
3
4
5
TIME IN MSEC

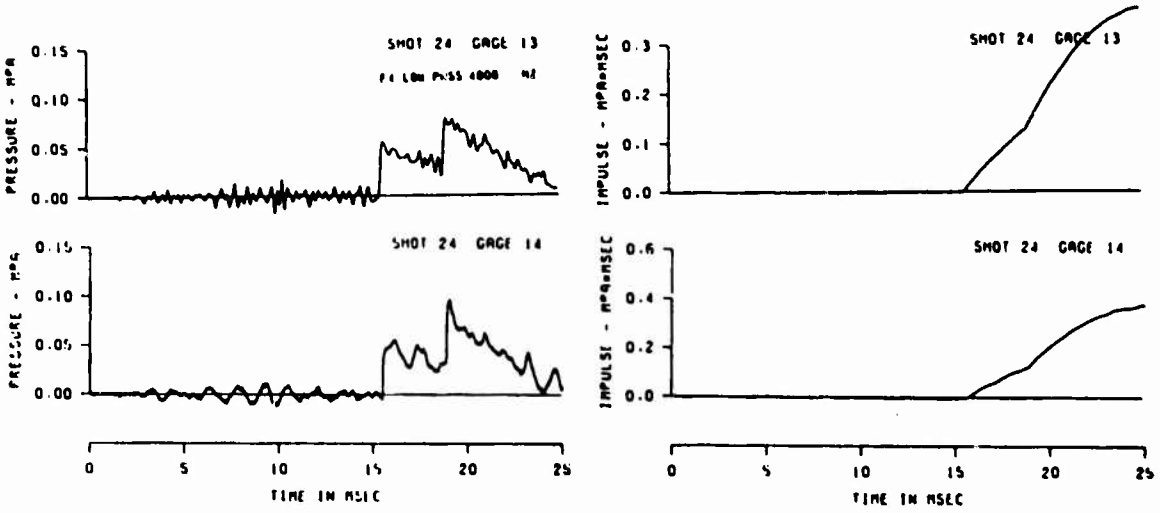

SHOT 23 GAGE 4
IMPULSE - MPA-MSEC
1.5
1.0
0.5
0.0
0
1
2
3
4
5
TIME IN MSEC

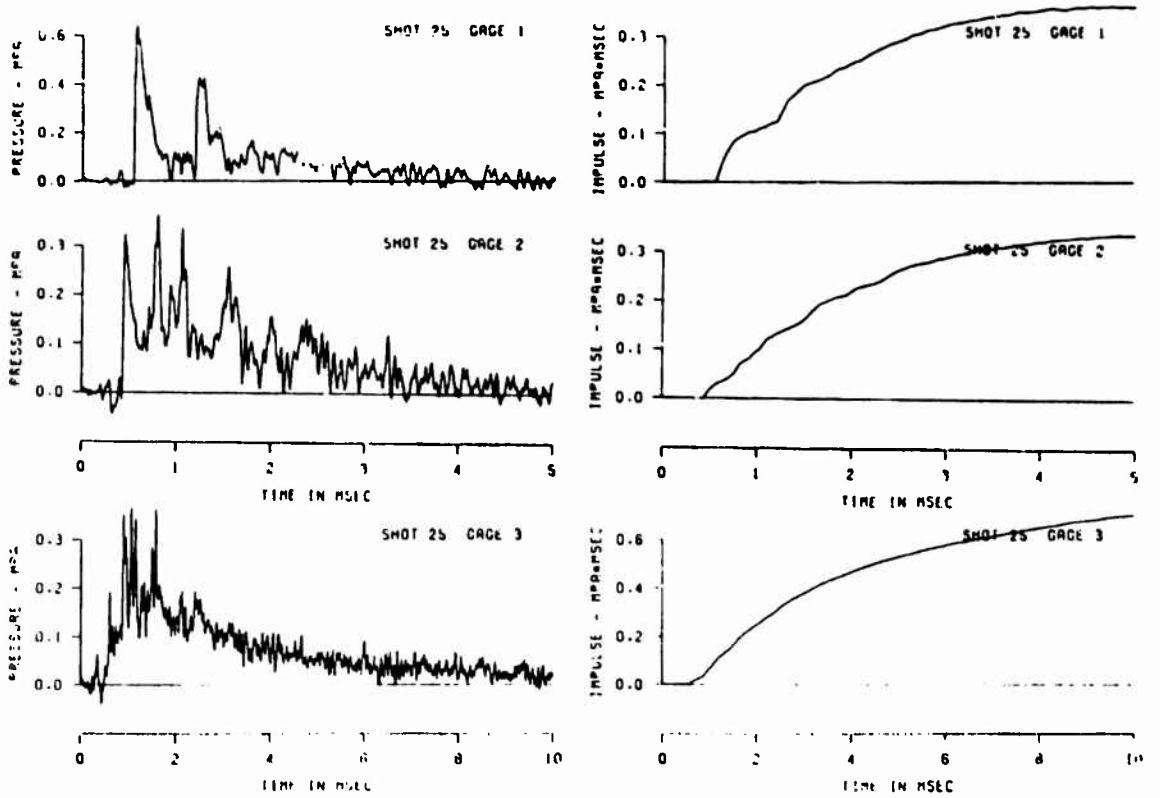

SHOT 23 GAGE 5
SHOT 23 GAGE 6
SHOT 23 GAGE 7
SHOT 23 GAGE 8
SHOT 23 GAGE 9
SHOT 23 GAGE 10
TIME IN MSEC

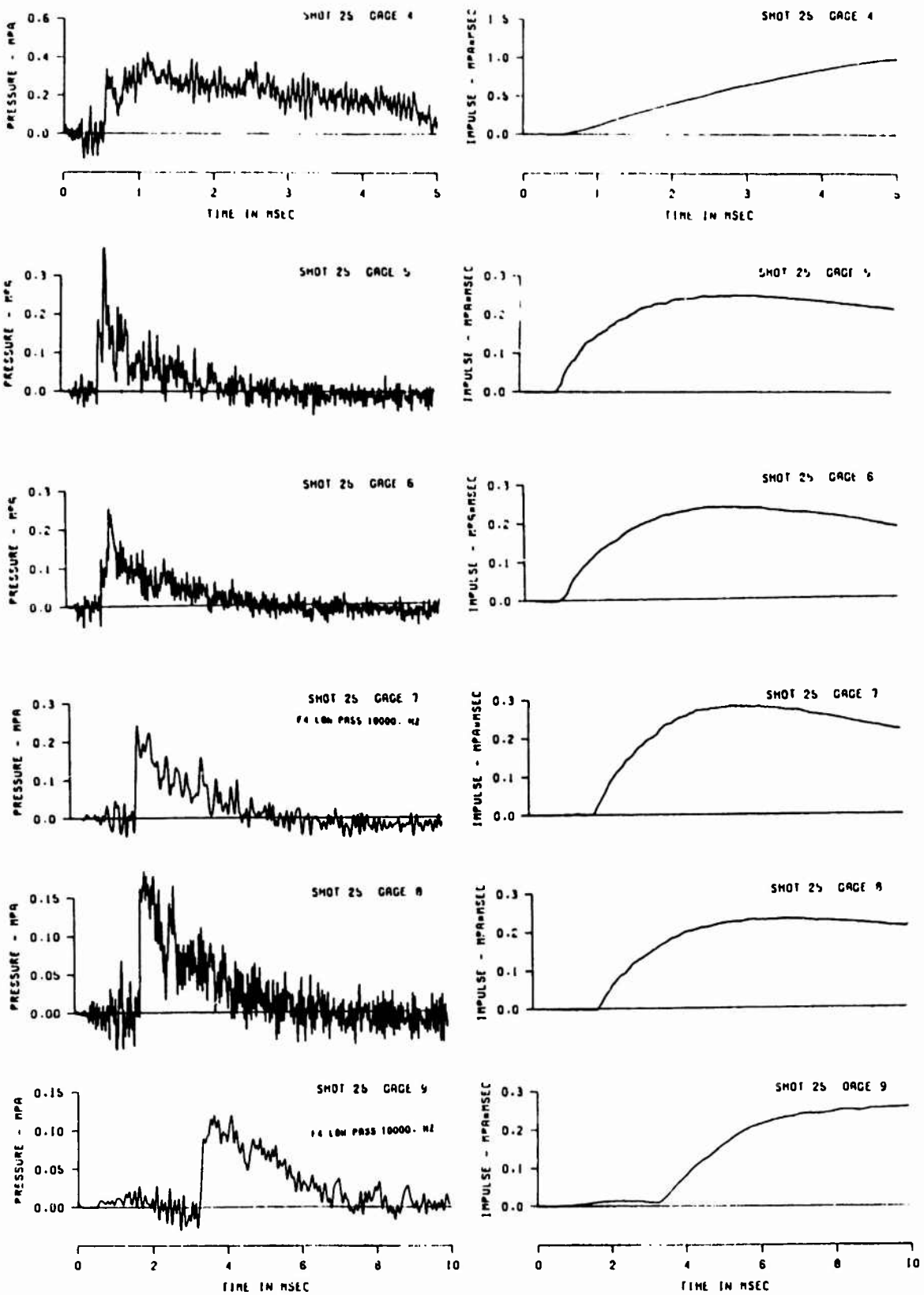

SHOT 23 GAGE 11
SHOT 23 GAGE 11
SHOT 23 GAGE 12
SHOT 23 GAGE 12
SHOT 23 GAGE 13
SHOT 23 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

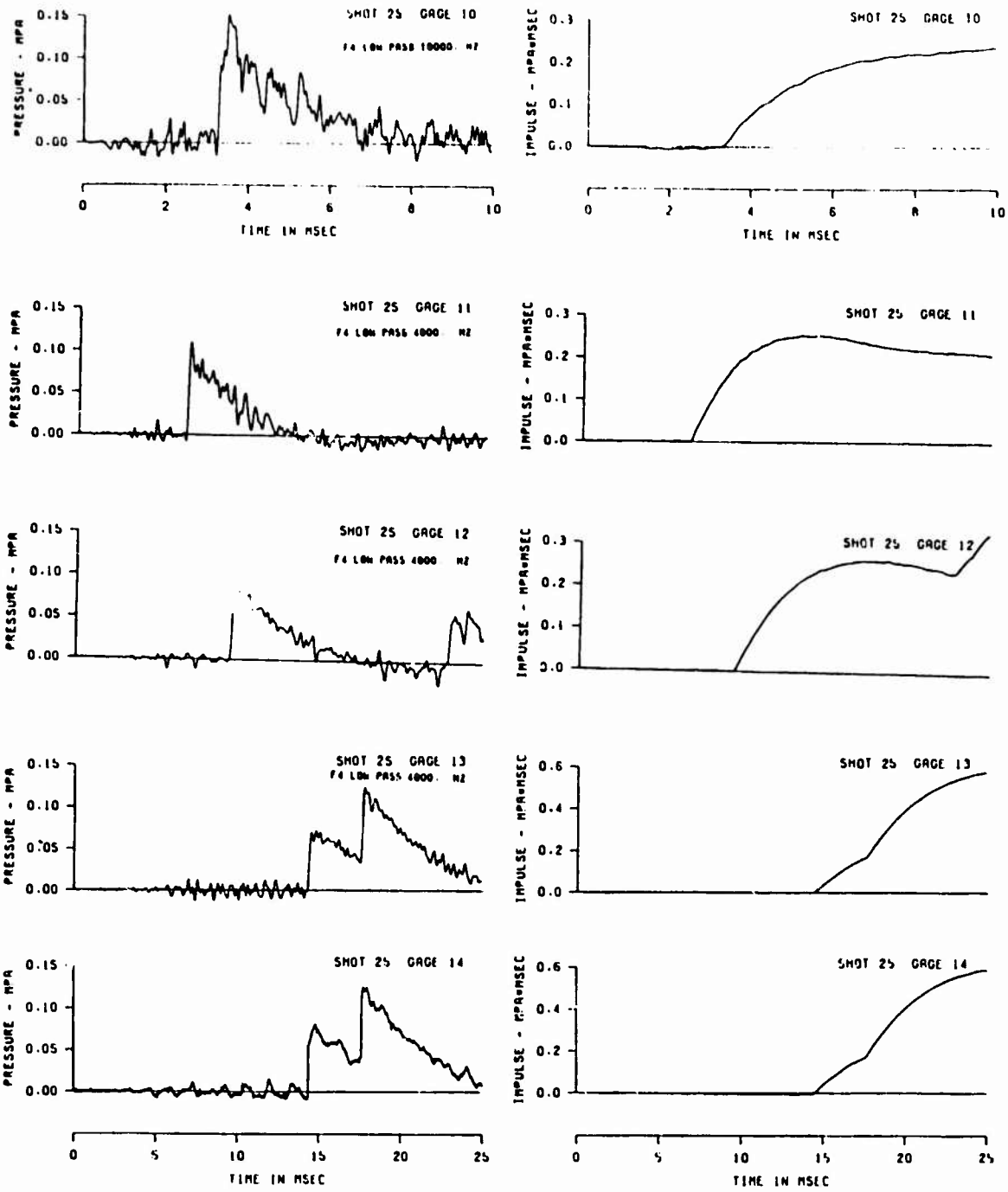

SHOT 24 GAGE 1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 24 GAGE 2
SHOT 24 GAGE 3
SHOT 24 GAGE 4
SHOT 24 GAGE 5
F4 LOW PASS 10000. HZ
SHOT 24 GAGE 6
F4 LOW PASS 10000. HZ
TIME IN MSEC

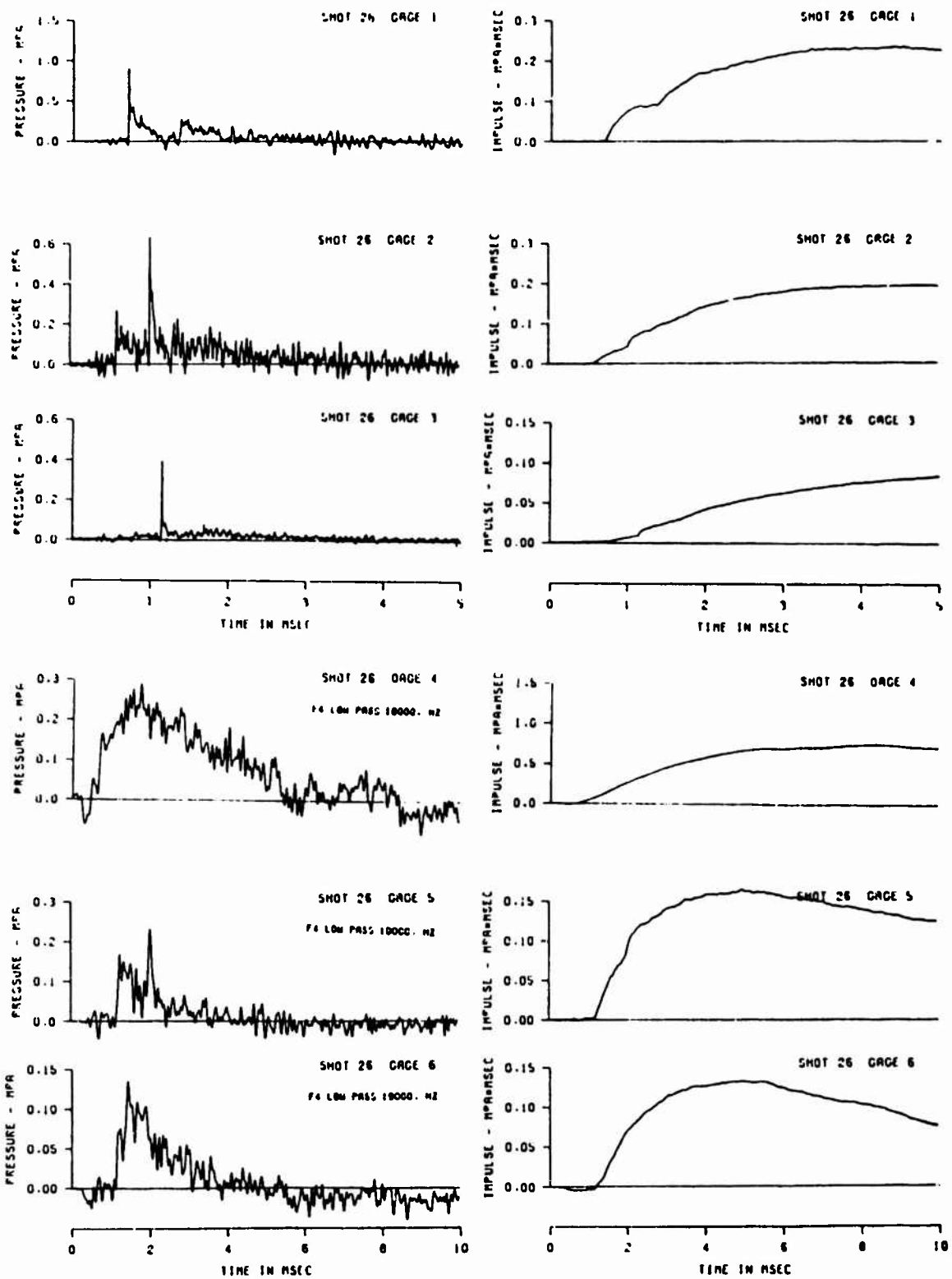

SHOT 24 GAGE 7
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 24 GAGE 8
SHOT 24 GAGE 9
SHOT 24 GAGE 10
SHOT 24 GAGE 11
SHOT 24 GAGE 12
TIME IN MSEC

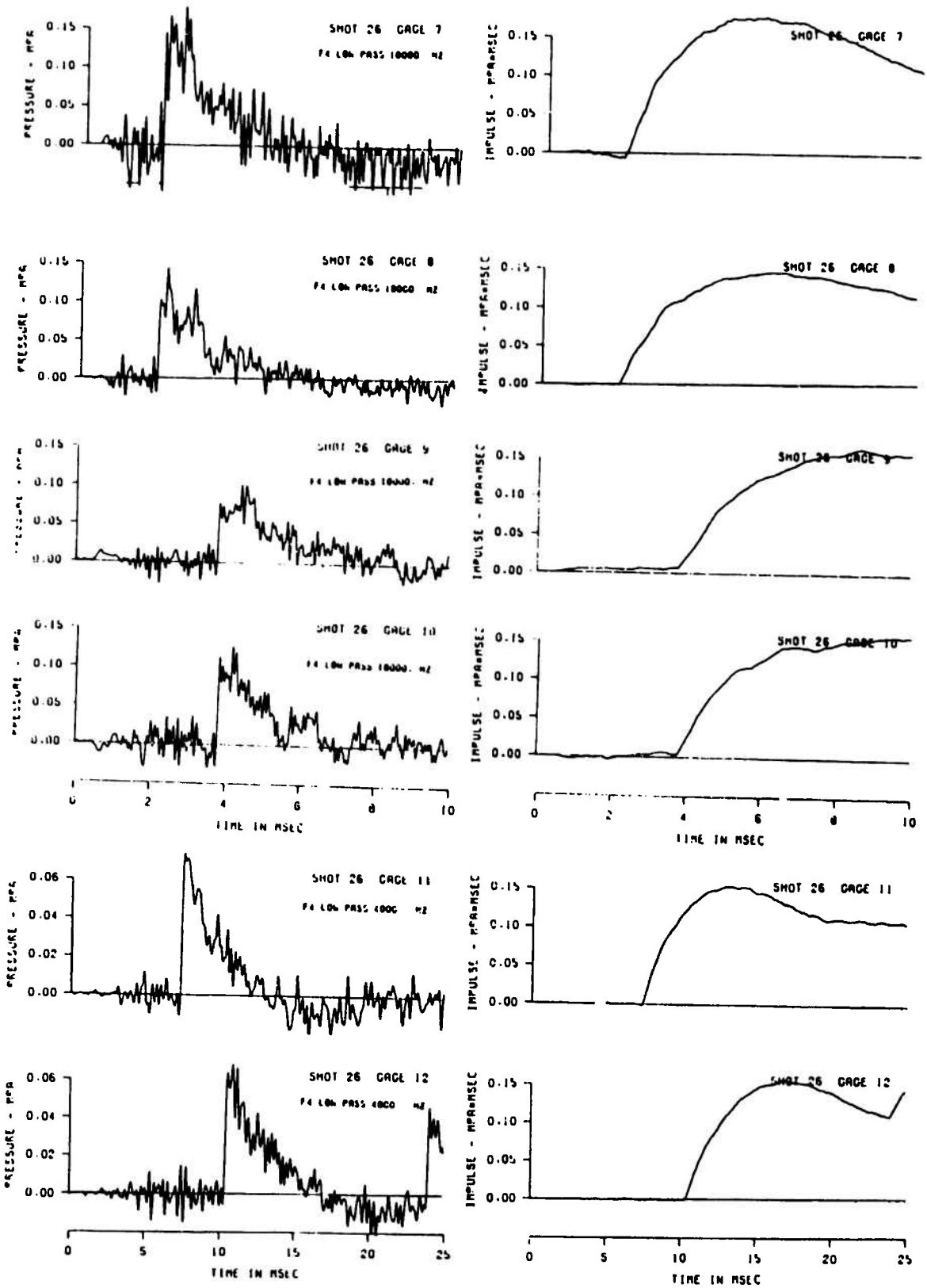

SHOT 24 GAGE 13
SHOT 24 GAGE 14
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

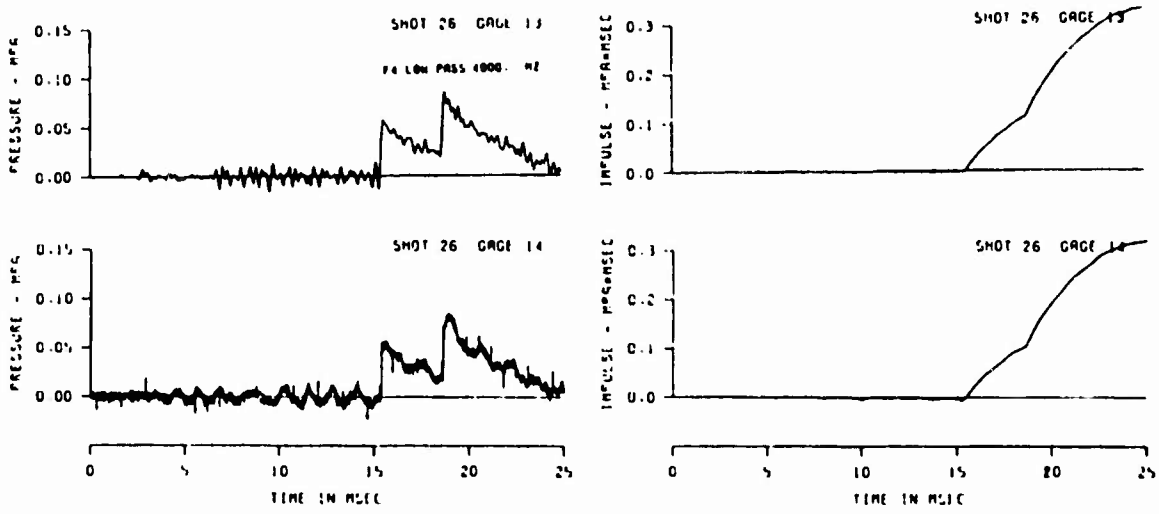

SHOT 25 GAGE 1
SHOT 25 GAGE 2
SHOT 25 GAGE 3
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

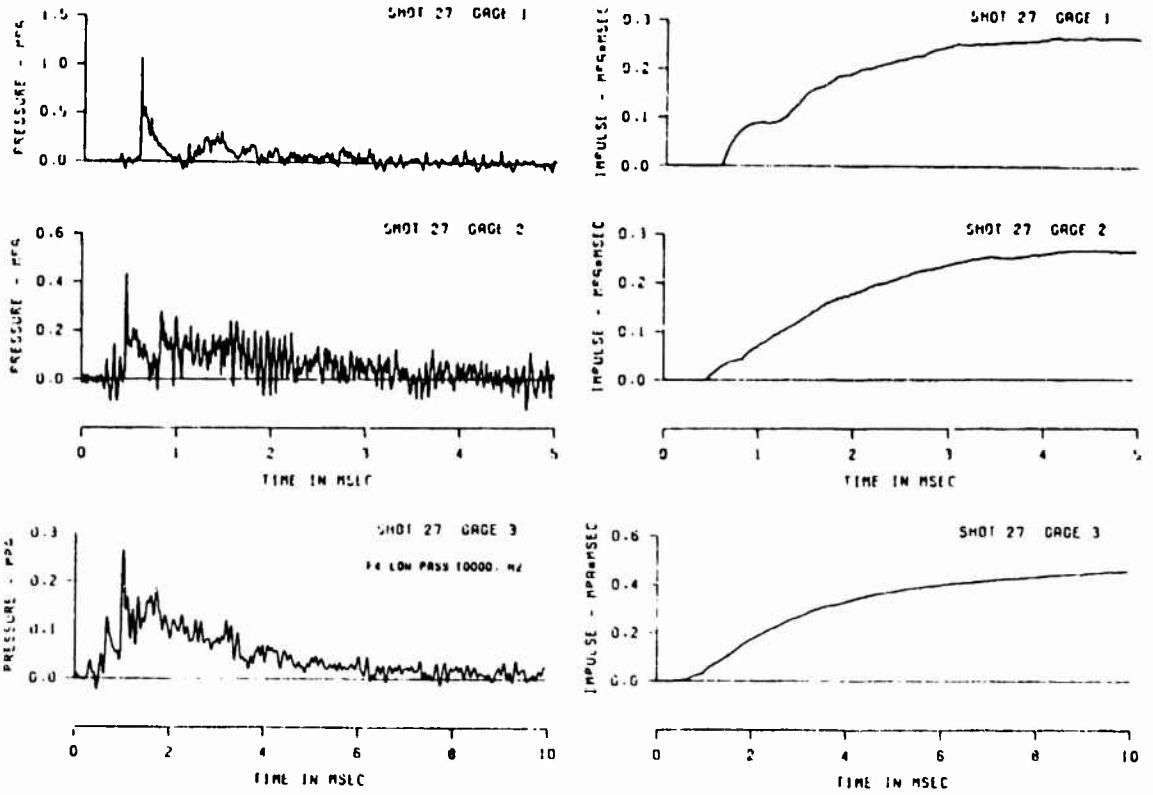

SHOT 25 GAGE 4
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 25 GAGE 5
SHOT 25 GAGE 6
SHOT 25 GAGE 7
SHOT 25 GAGE 8
SHOT 25 GAGE 9

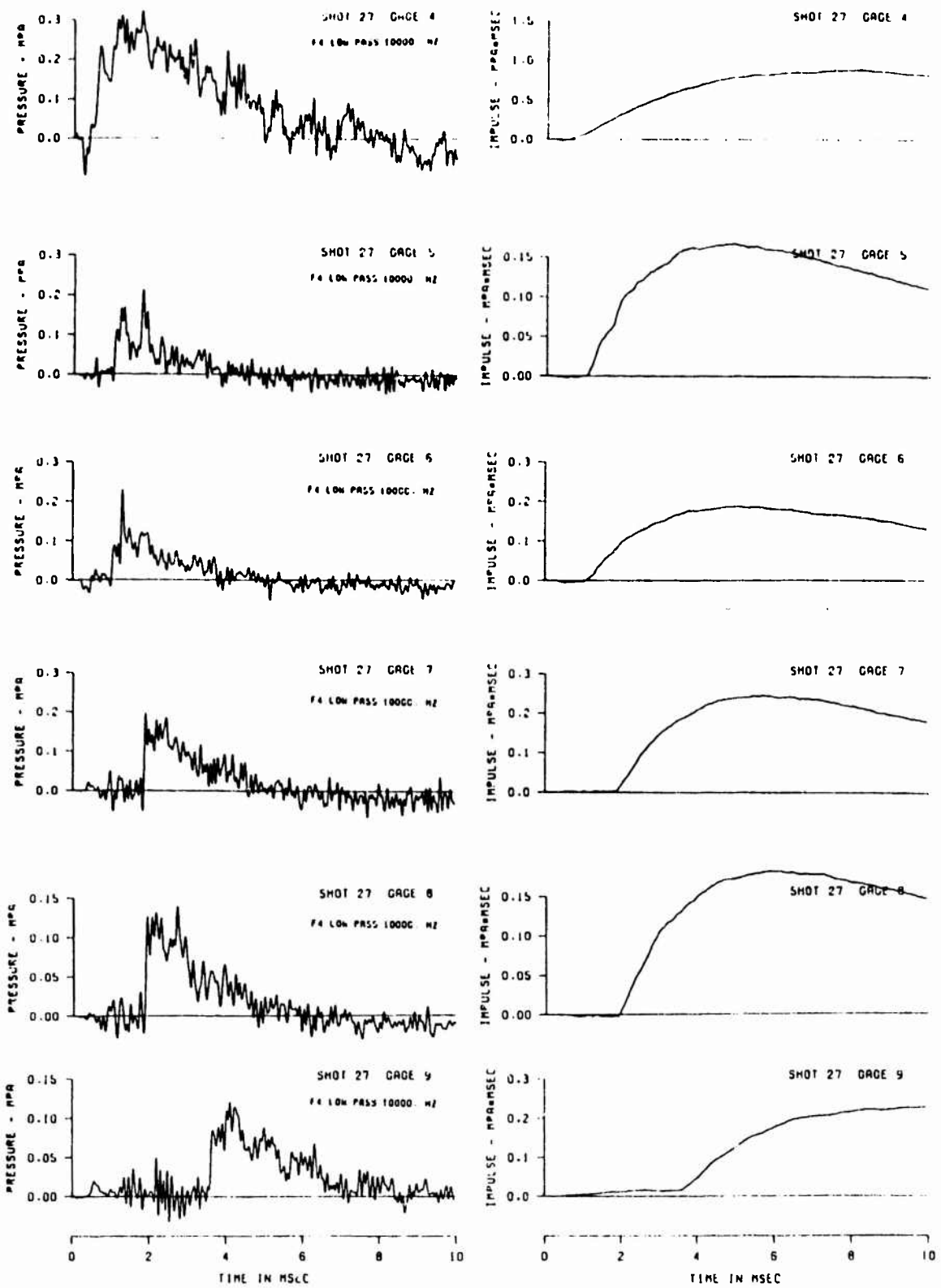

SHOT 25 GAGE 10
SHOT 25 GAGE 10
SHOT 25 GAGE 11
SHOT 25 GAGE 11
SHOT 25 GAGE 12
SHOT 25 GAGE 12
SHOT 25 GAGE 13
SHOT 25 GAGE 13
SHOT 25 GAGE 14
SHOT 25 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

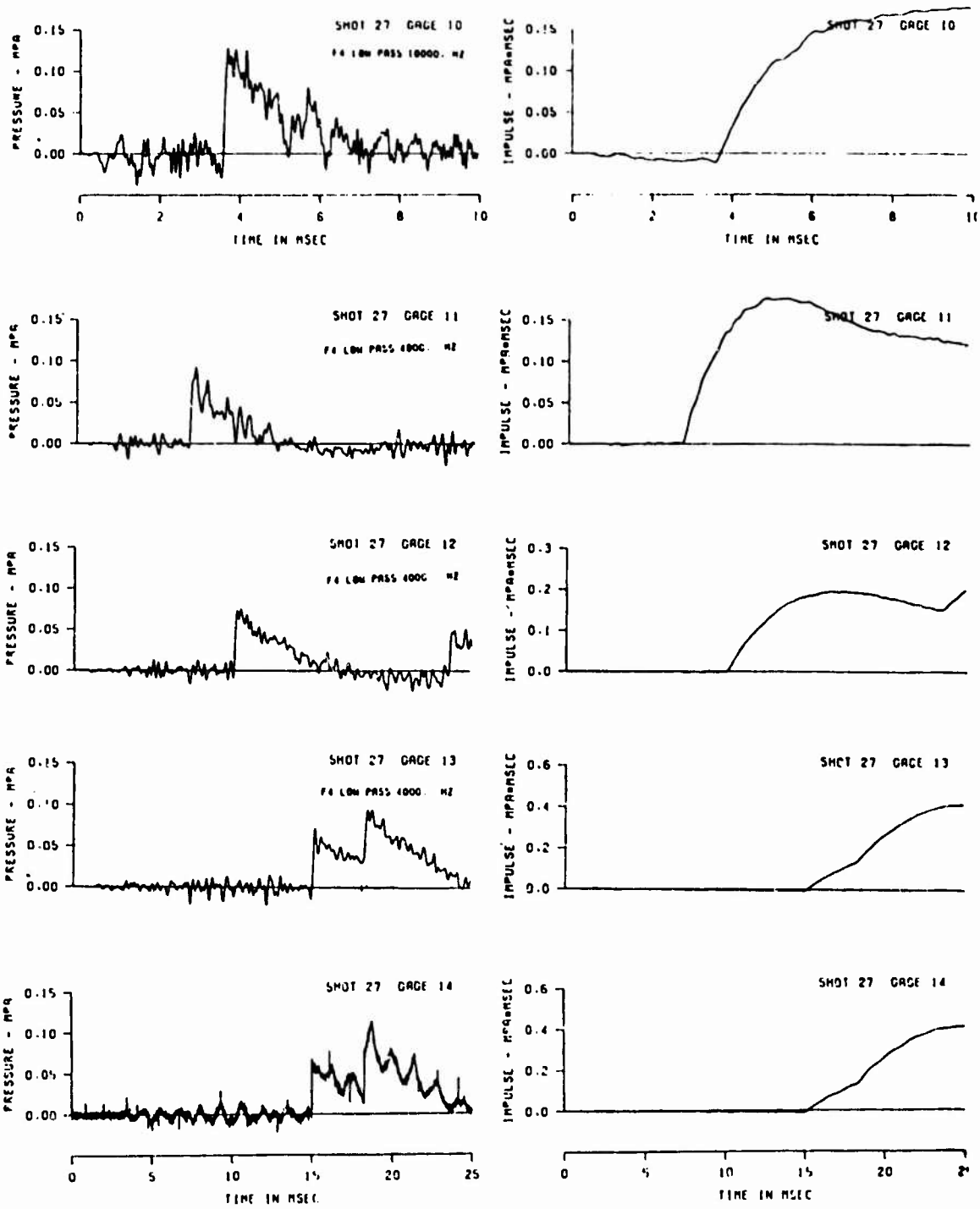

SHOT 26 GAGE 1
SHOT 26 GAGE 2
SHOT 26 GAGE 3
SHOT 26 GAGE 4
SHOT 26 GAGE 5
SHOT 26 GAGE 6
TIME IN MSEC

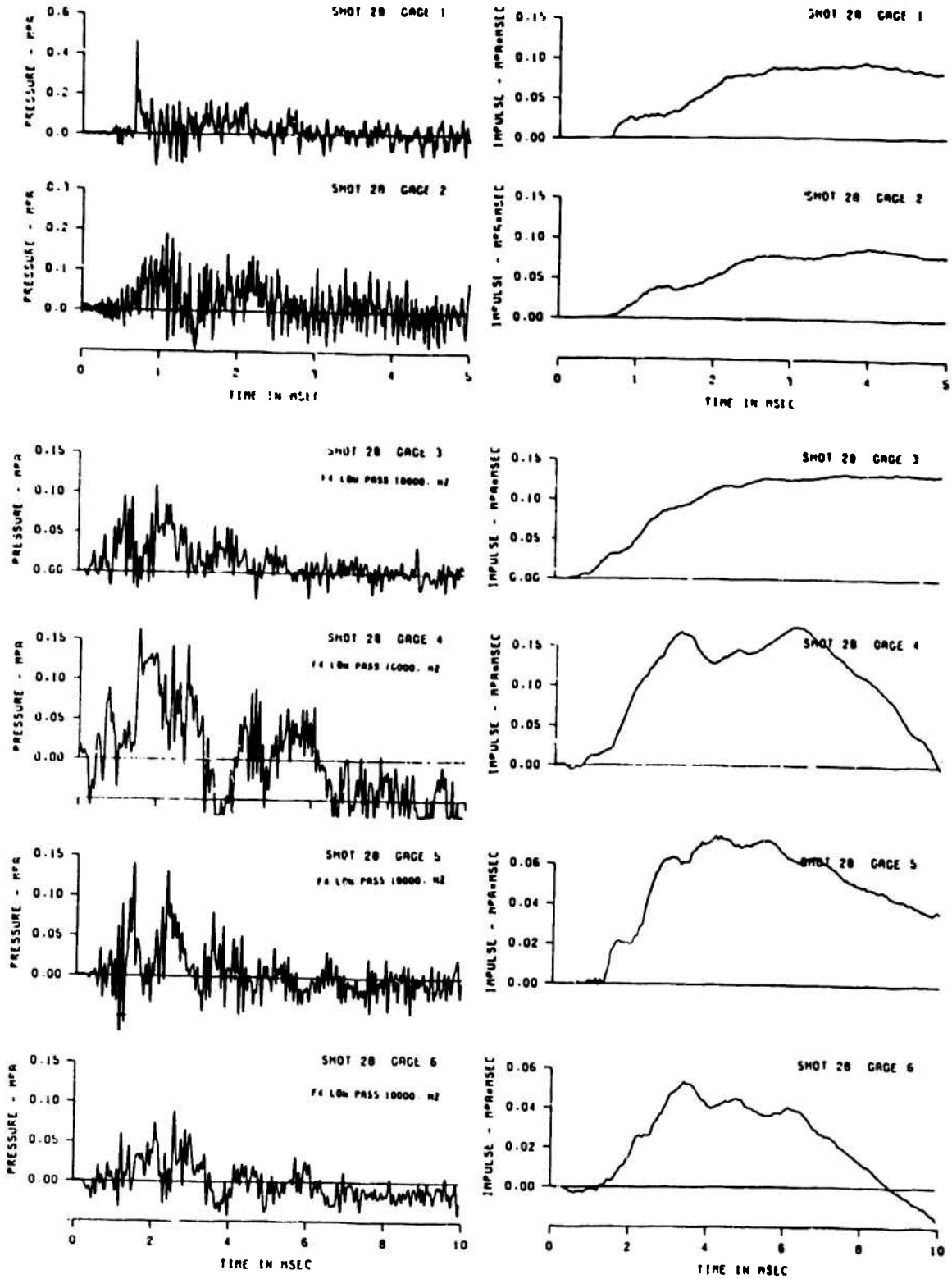

SHOT 26 GAGE 7
SHOT 26 GAGE 8
SHOT 26 GAGE 9
SHOT 26 GAGE 10
SHOT 26 GAGE 11
SHOT 26 GAGE 12
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

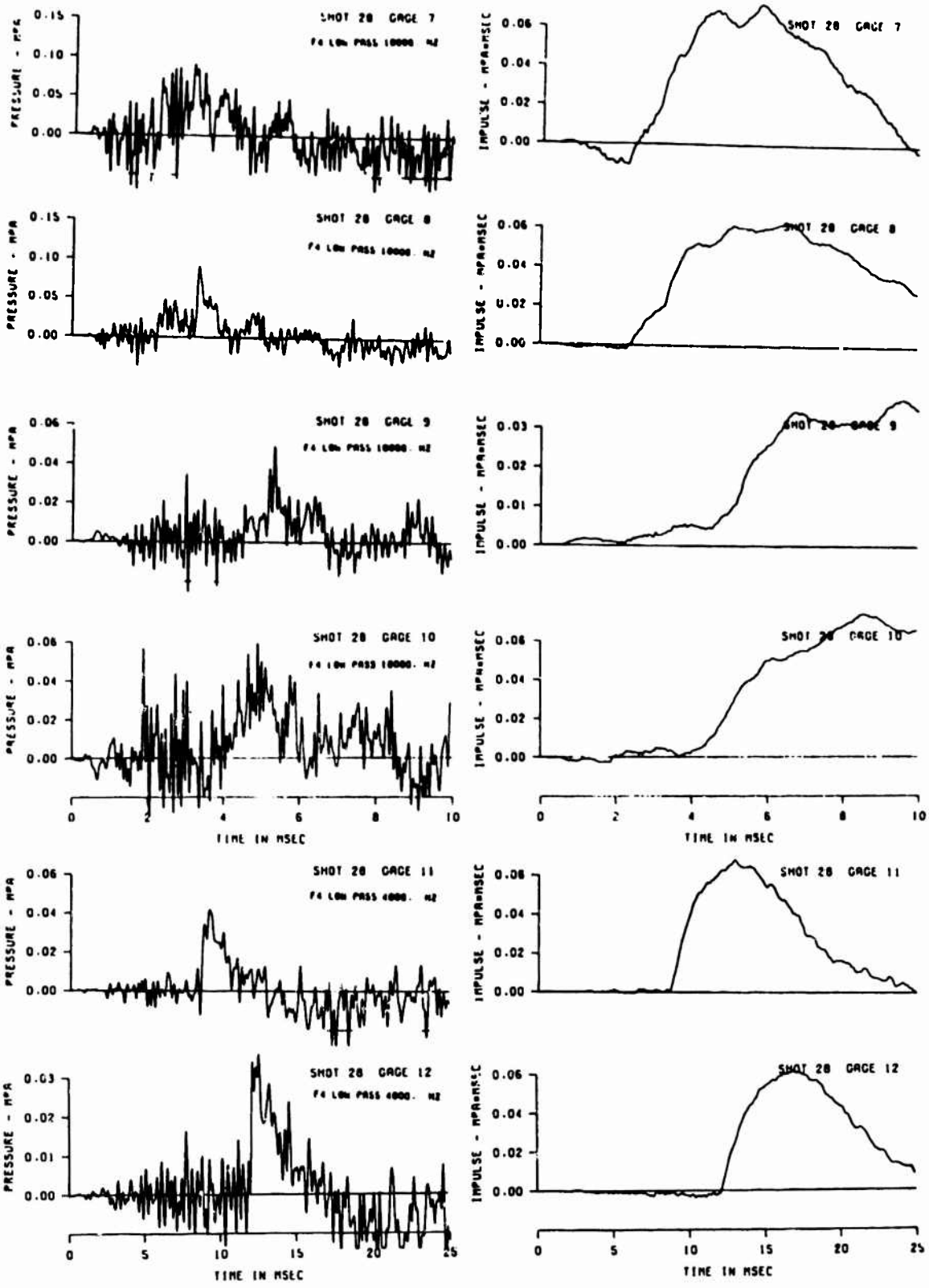

SHOT 26 GAGE 13
SHOT 26 GAGE 14
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

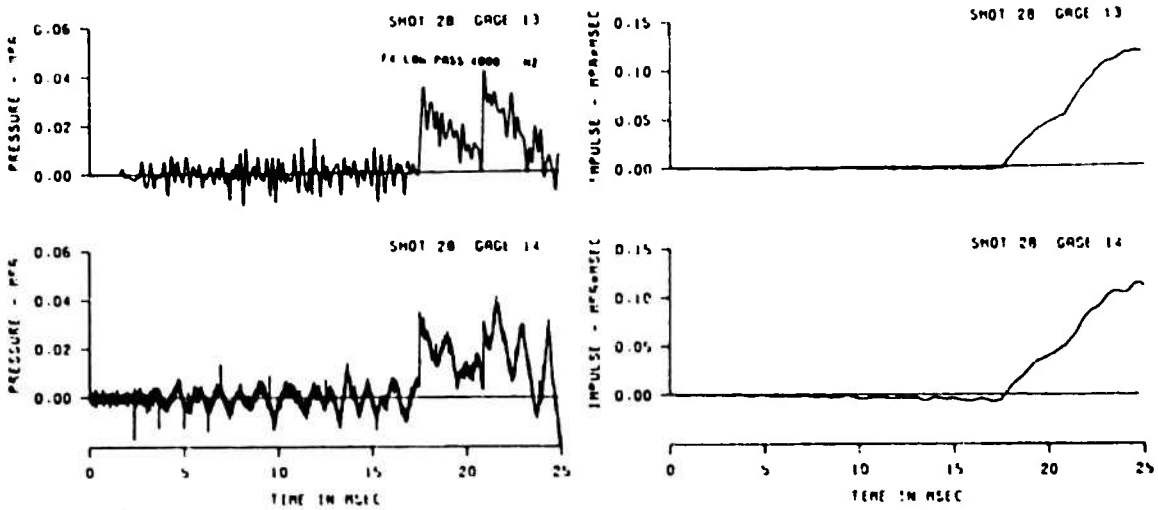

SHOT 27 GAGE 1
SHOT 27 GAGE 2
SHOT 27 GAGE 3
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

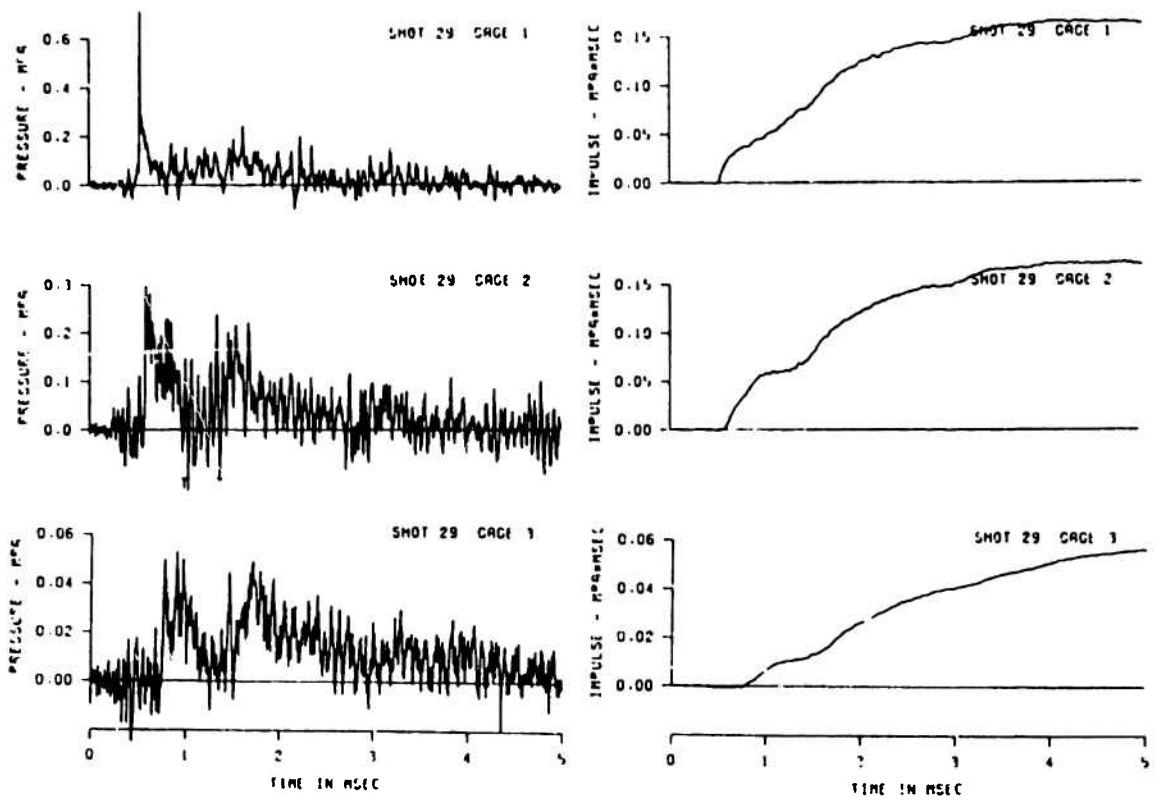

SHOT 27 GAGE 4
SHOT 27 GAGE 5
SHOT 27 GAGE 6
SHOT 27 GAGE 7
SHOT 27 GAGE 8
SHOT 27 GAGE 9
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

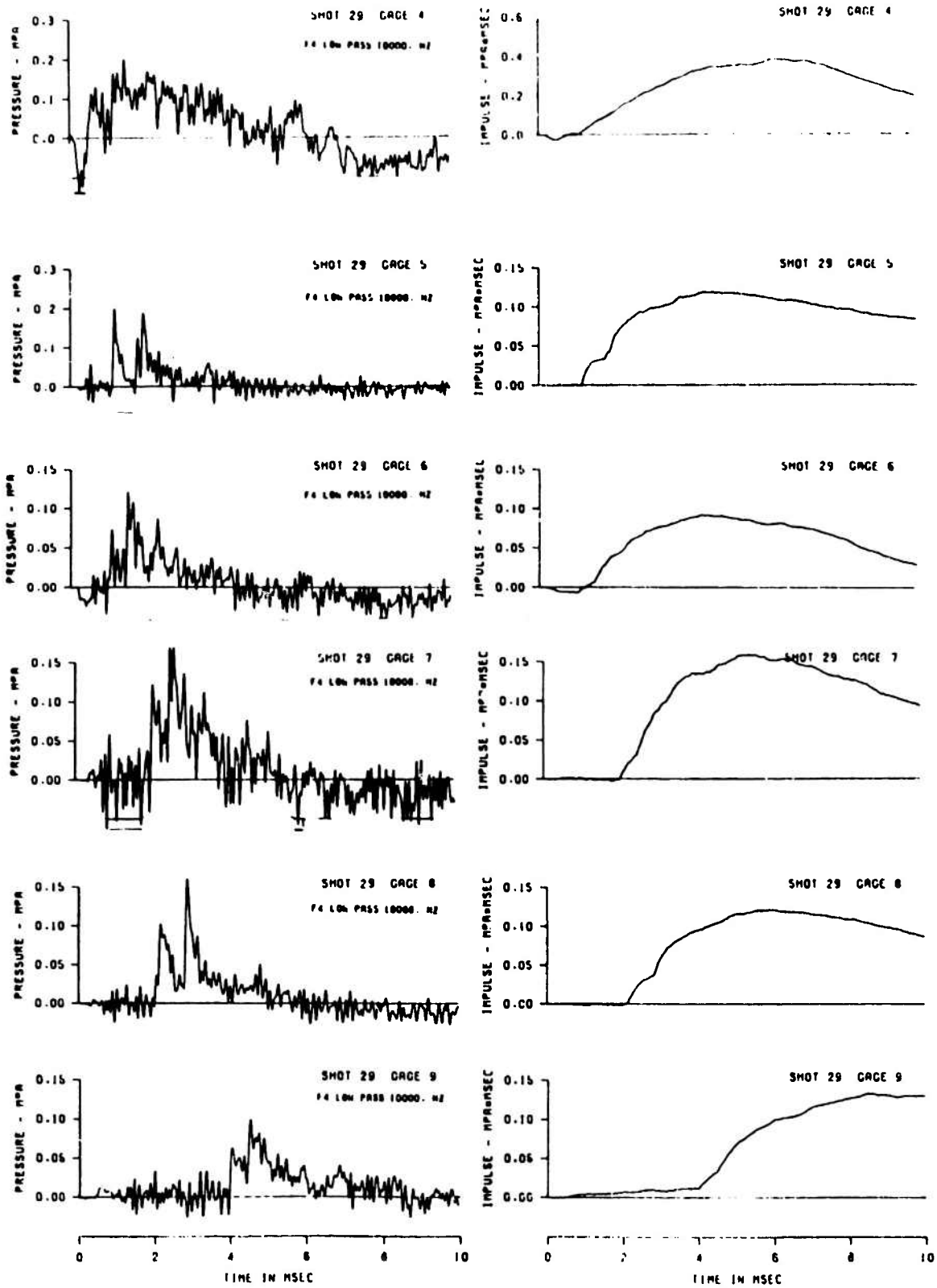

SHOT 27 GAGE 10
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC
SHOT 27 GAGE 11
SHOT 27 GAGE 12
SHOT 27 GAGE 13
SHOT 27 GAGE 14

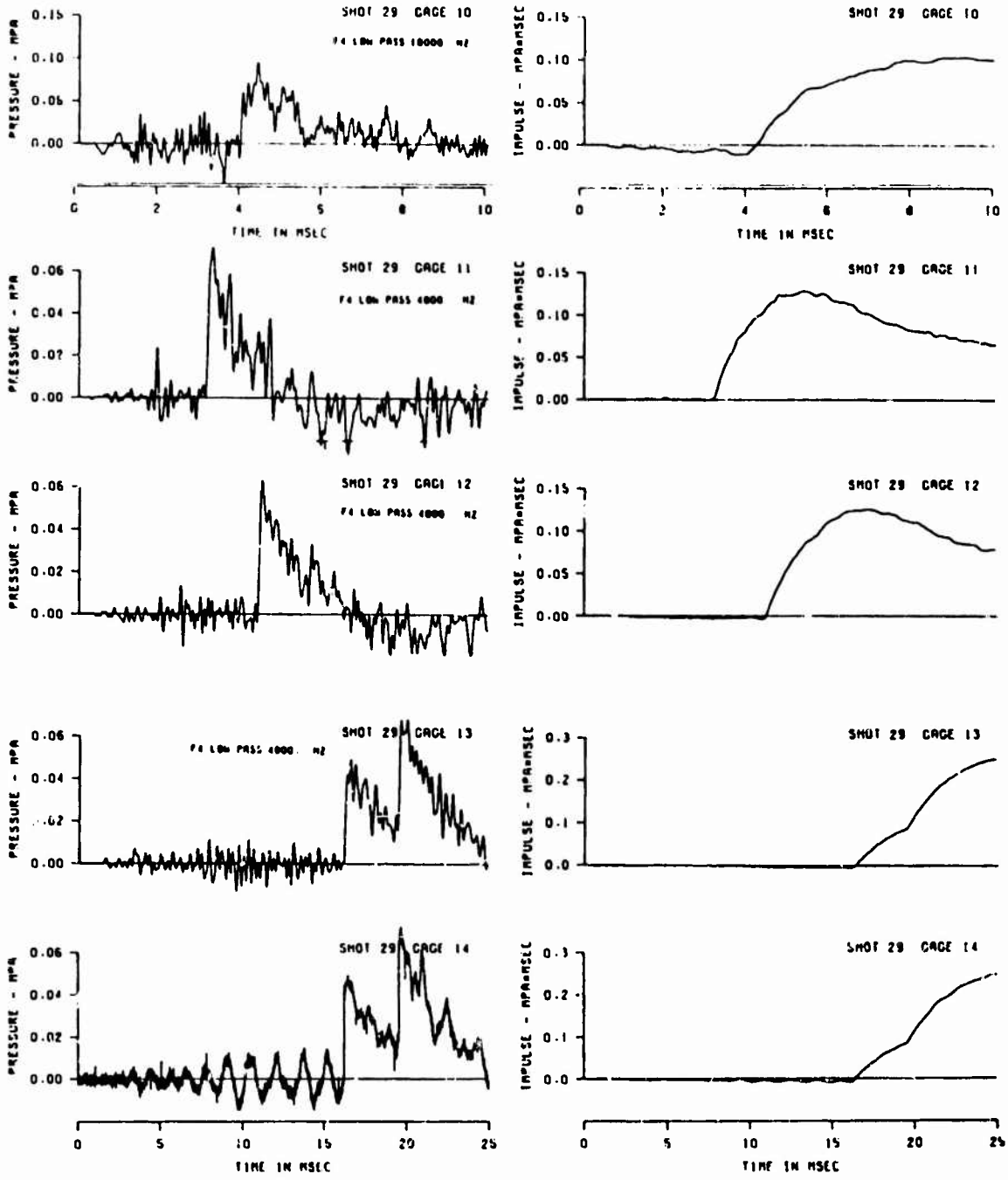

SHOT 28 GAGE 1
PRESSURE - MPA
IMPULSE - MPAmSEC
SHOT 28 GAGE 2
SHOT 28 GAGE 3
SHOT 28 GAGE 4
SHOT 28 GAGE 5
SHOT 28 GAGE 6
TIME IN MSEC

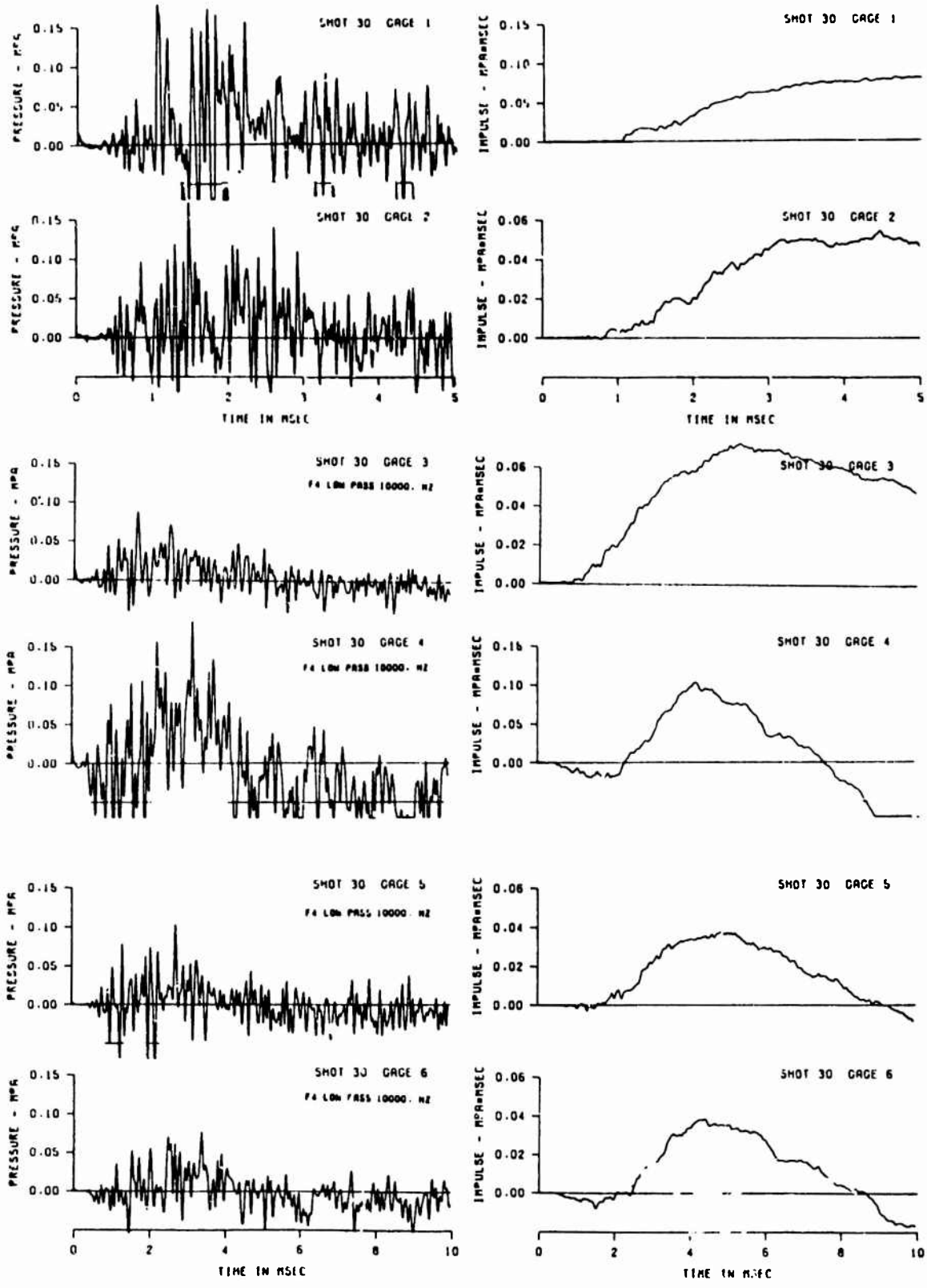

SHOT 28 GAGE 7
SHOT 28 GAGE 8
SHOT 28 GAGE 9
SHOT 28 GAGE 10
SHOT 28 GAGE 11
SHOT 28 GAGE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

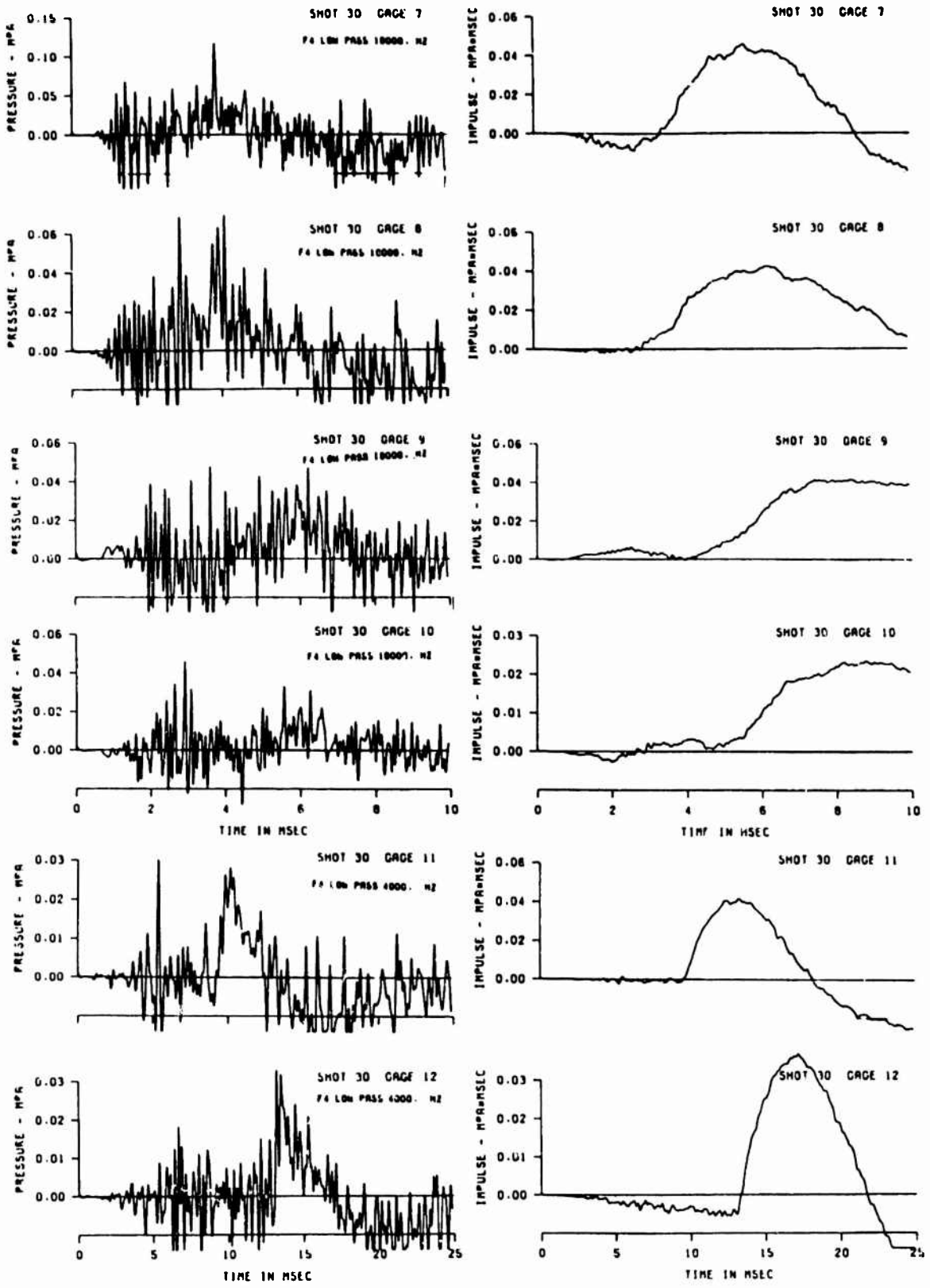

SHOT 28 GAGE 13
SHOT 28 GAGE 14
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

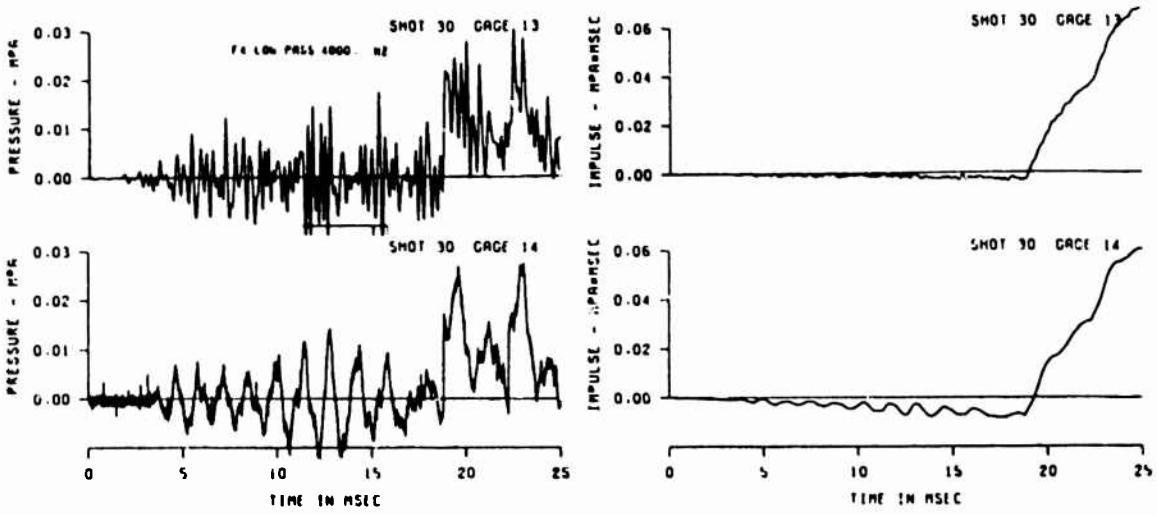

SHOT 29 GAGE 1
SHOT 29 GAGE 2
SHOT 29 GAGE 3
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

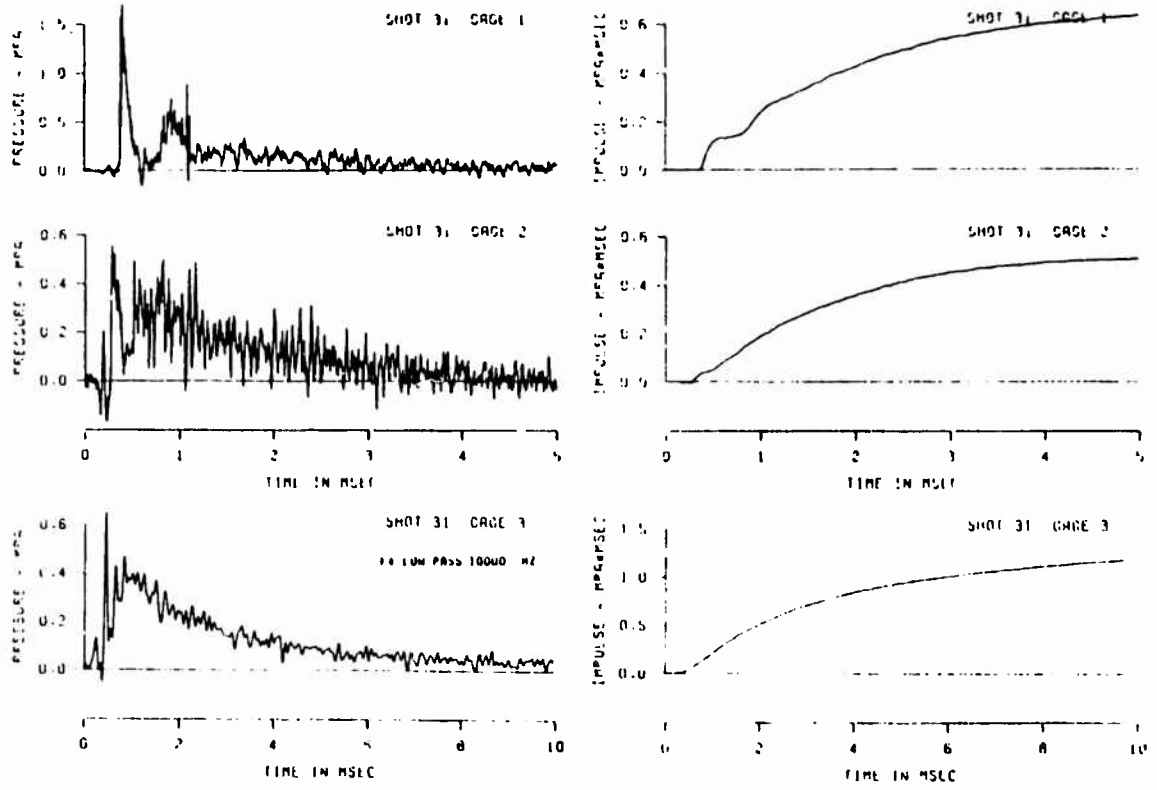

SHOT 29 GAGE 4
SHOT 29 GAGE 5
SHOT 29 GAGE 6
SHOT 29 GAGE 7
SHOT 29 GAGE 8
SHOT 29 GAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

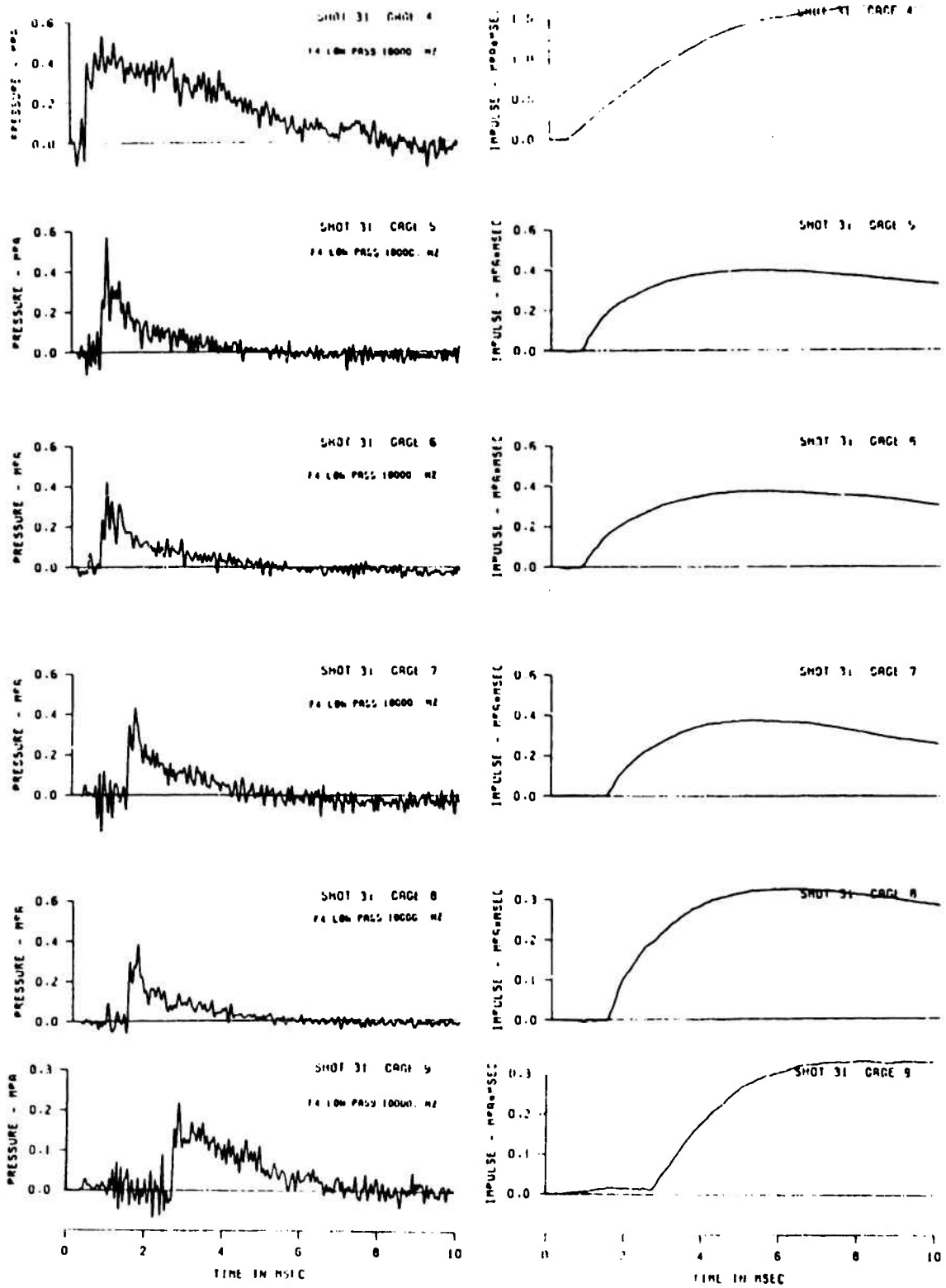

SHOT 29 GAGE 10
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 29 GAGE 11
SHOT 29 GAGE 12
SHOT 29 GAGE 13
SHOT 29 GAGE 14

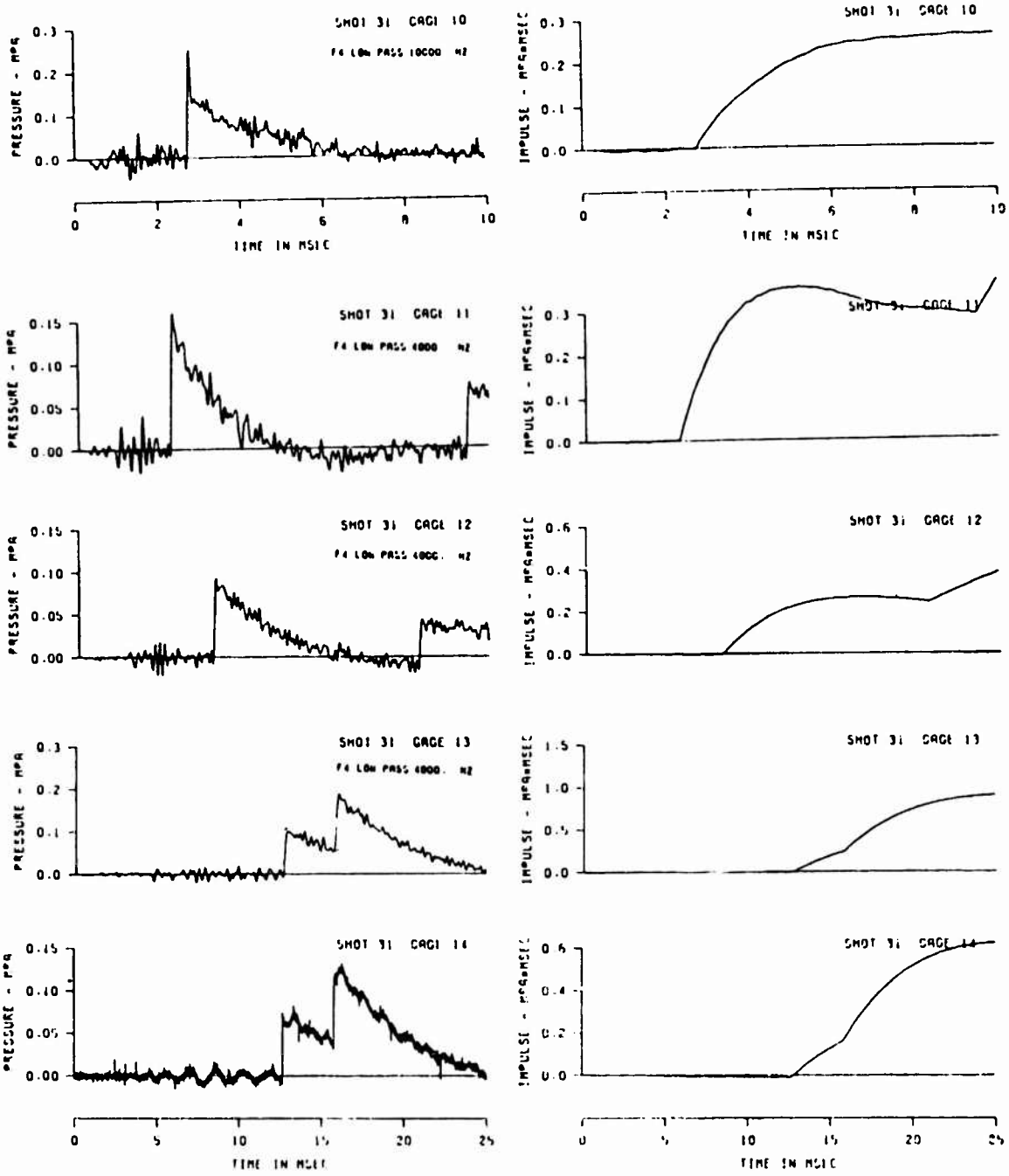

SHOT 30 GAGE 1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 30 GAGE 2
SHOT 30 GAGE 3
F4 LOW PASS 10000. HZ
SHOT 30 GAGE 4
SHOT 30 GAGE 5
SHOT 30 GAGE 6
TIME IN MSEC

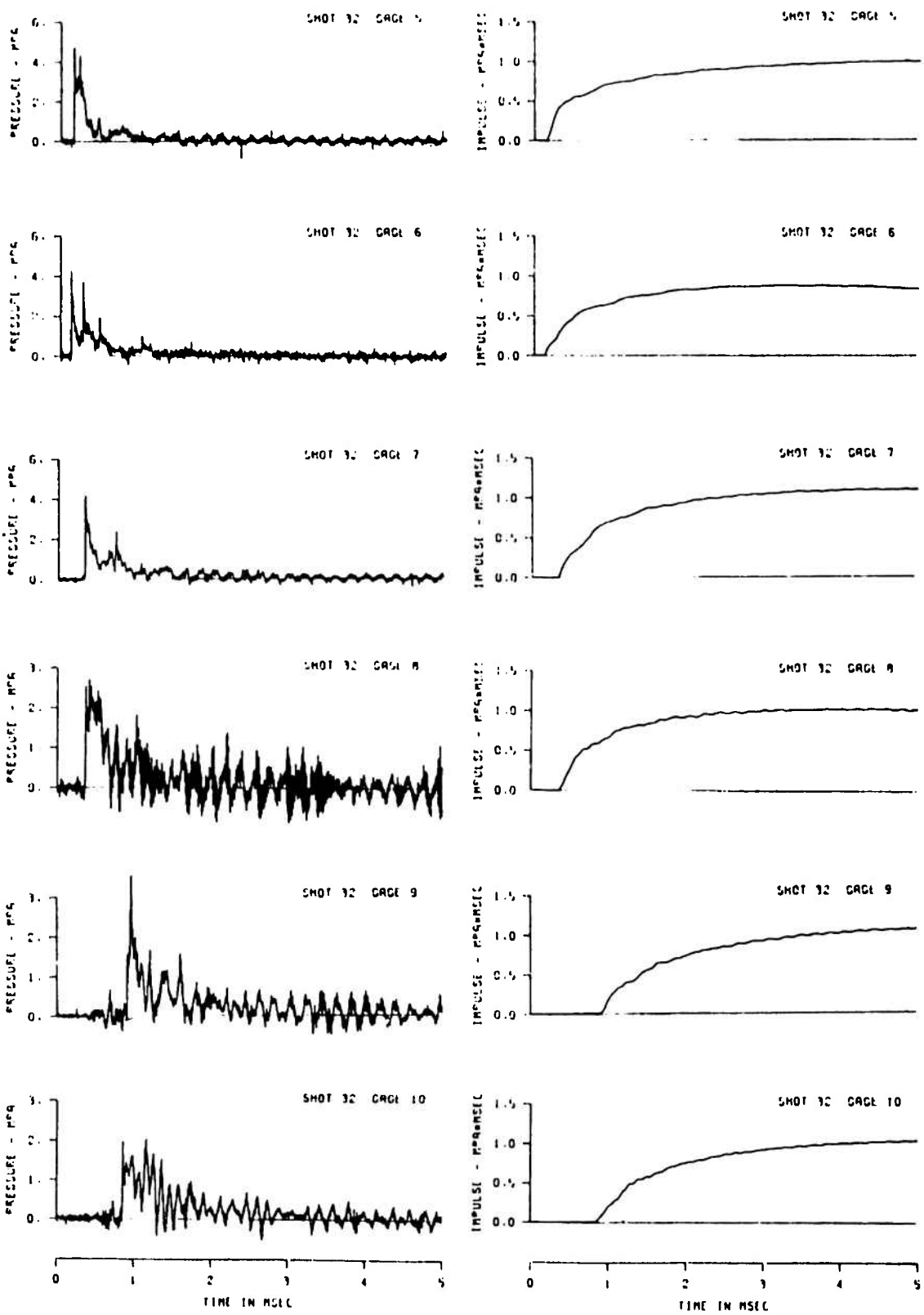

SHOT 30 GAGE 7
PRESSURE - MPa
IMPULSE - MPa•MSEC
SHOT 30 GAGE 8
SHOT 30 GAGE 9
SHOT 30 GAGE 10
SHOT 30 GAGE 11
SHOT 30 GAGE 12
TIME IN MSEC

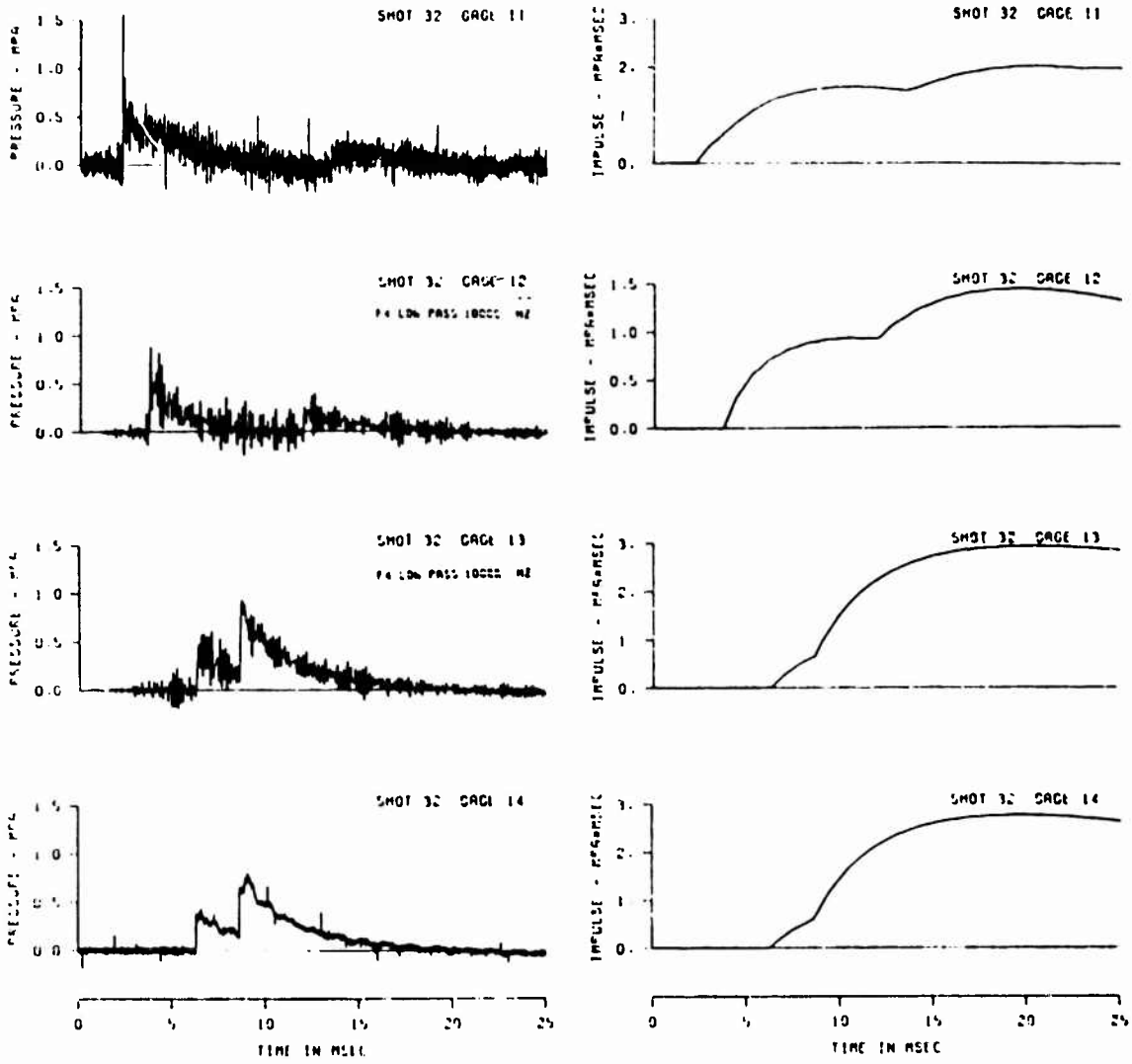

SHOT 30 GAGE 13
PRESSURE - MPa
0.03
0.02
0.01
0.00
SHOT 30 GAGE 14
0 5 10 15 20 25
TIME IN MSEC
SHOT 30 GAGE 13
IMPULSE - MPa-MSEC
0.06
0.04
0.02
0.00
SHOT 30 GAGE 14
0 5 10 15 20 25
TIME IN MSEC

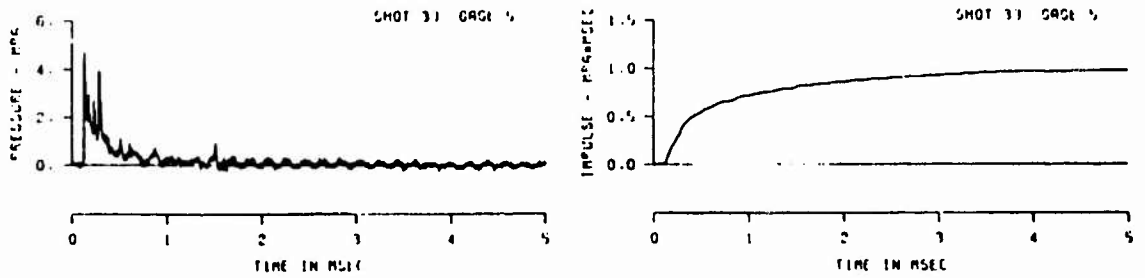

SHOT 31 GAGE 1
SHOT 31 GAGE 2
SHOT 31 GAGE 3
0.6
0.4
0.2
0.0
0 1 2 3 4 5
0 2 4 6 8 10
TIME IN MSEC

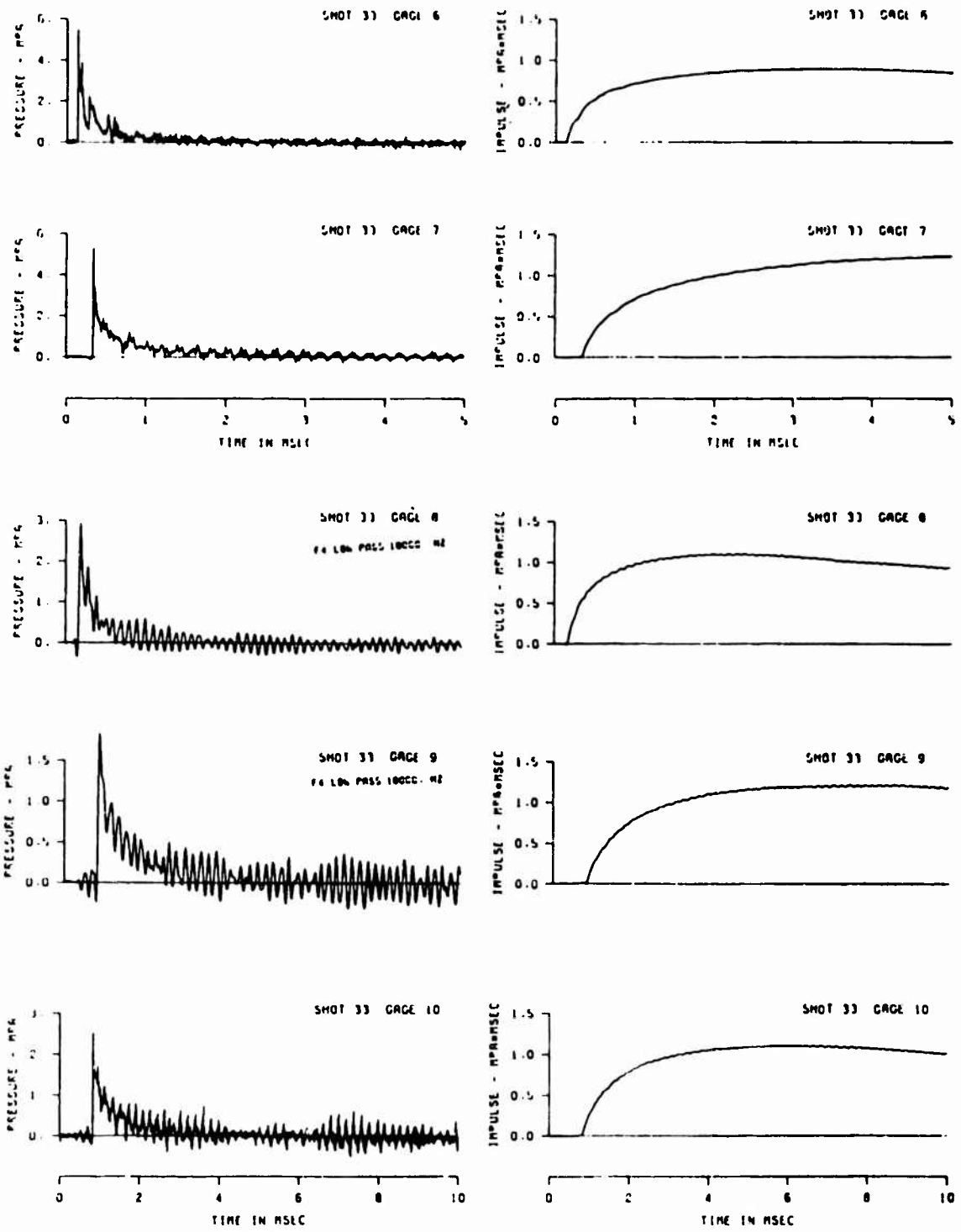

SHOT 31 CAGE 4
SHOT 31 CAGE 5
SHOT 31 CAGE 6
SHOT 31 CAGE 7
SHOT 31 CAGE 8
SHOT 31 CAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

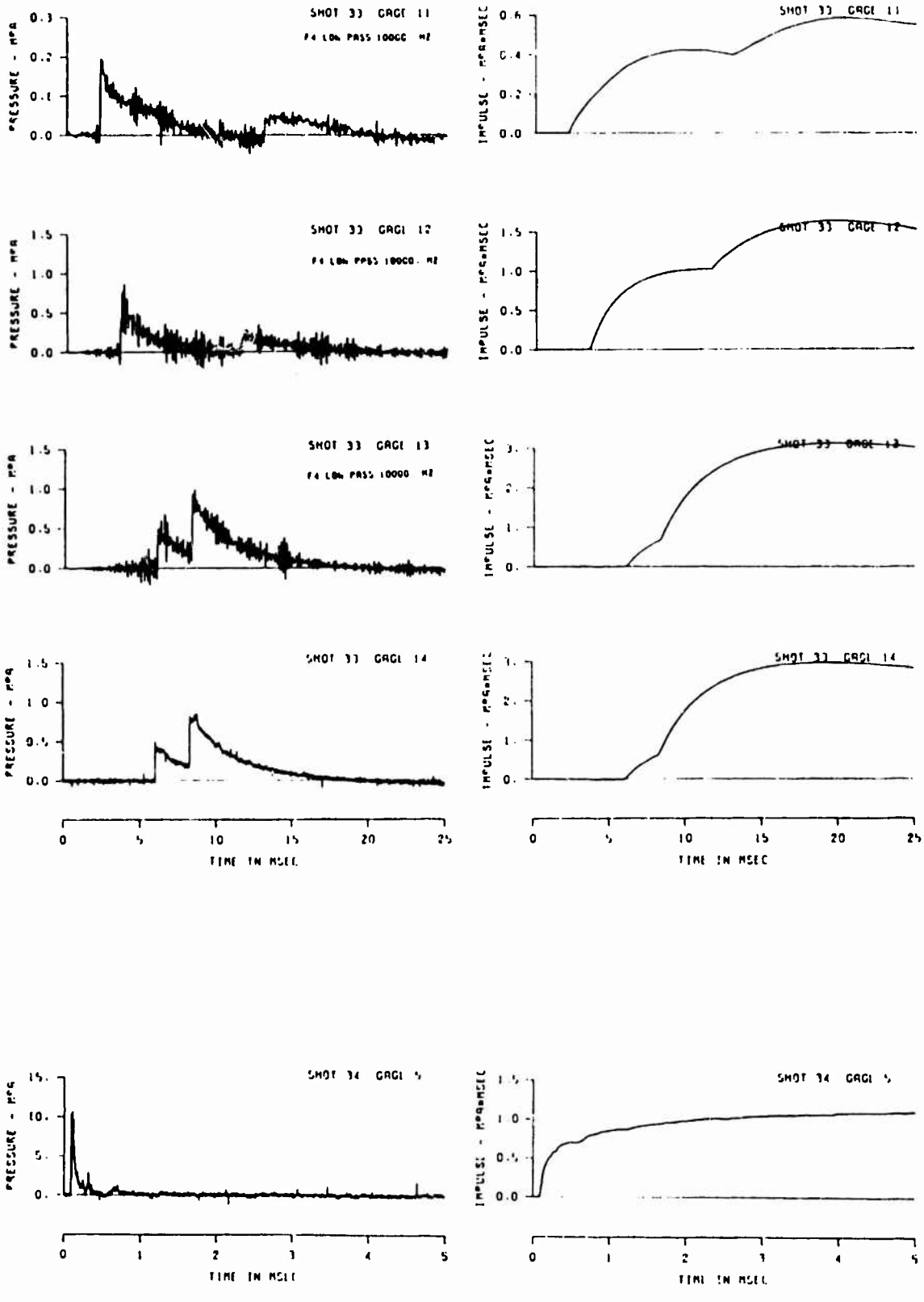

SHOT 31 GAGE 10
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC
SHOT 31 GAGE 11
SHOT 31 GAGE 12
SHOT 31 GAGE 13
SHOT 31 GAGE 14

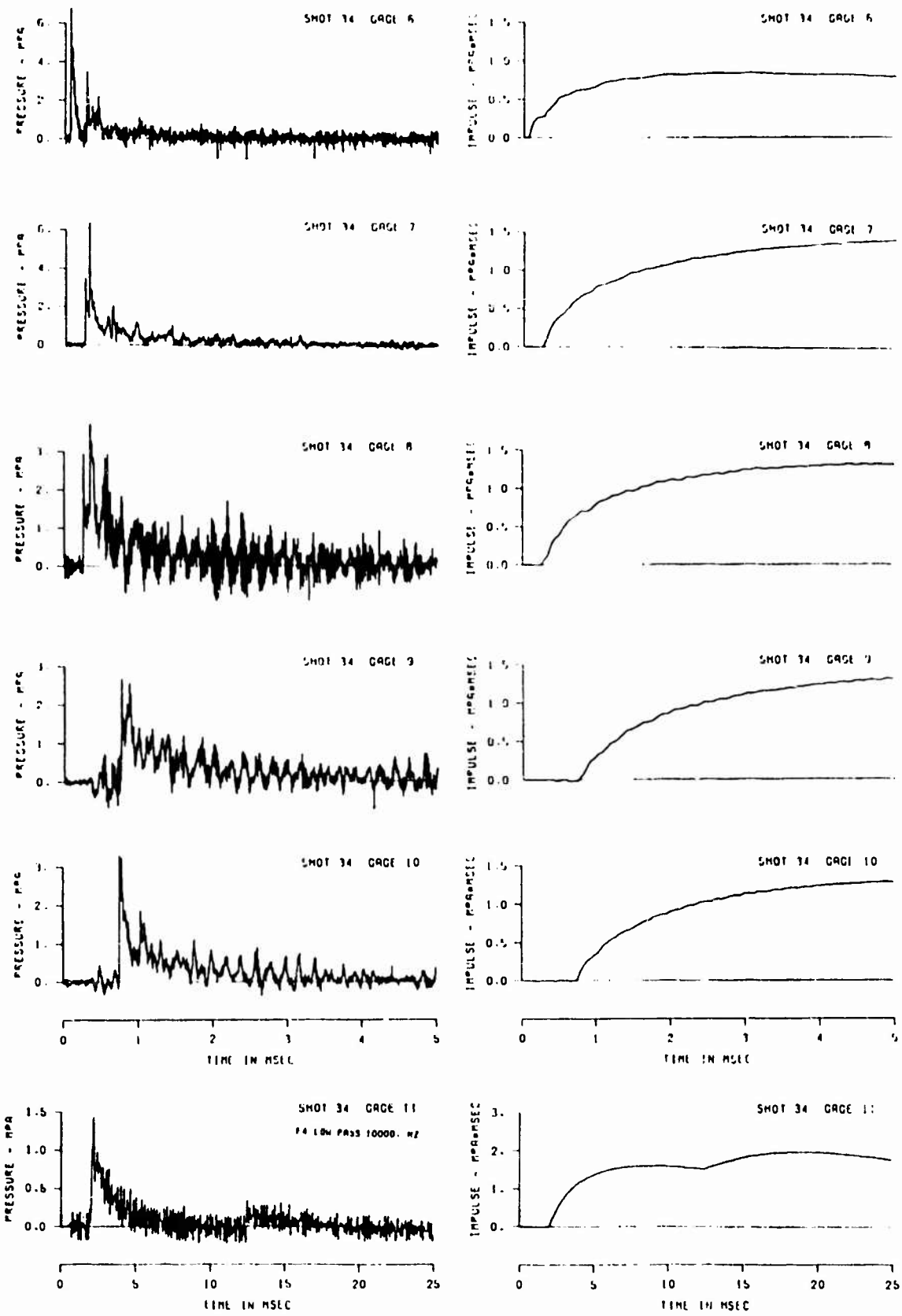

SHOT 32 GAGE 5
SHOT 32 GAGE 6
SHOT 32 GAGE 7
SHOT 32 GAGE 8
SHOT 32 GAGE 9
SHOT 32 GAGE 10
TIME IN MSEC
TIME IN MSEC

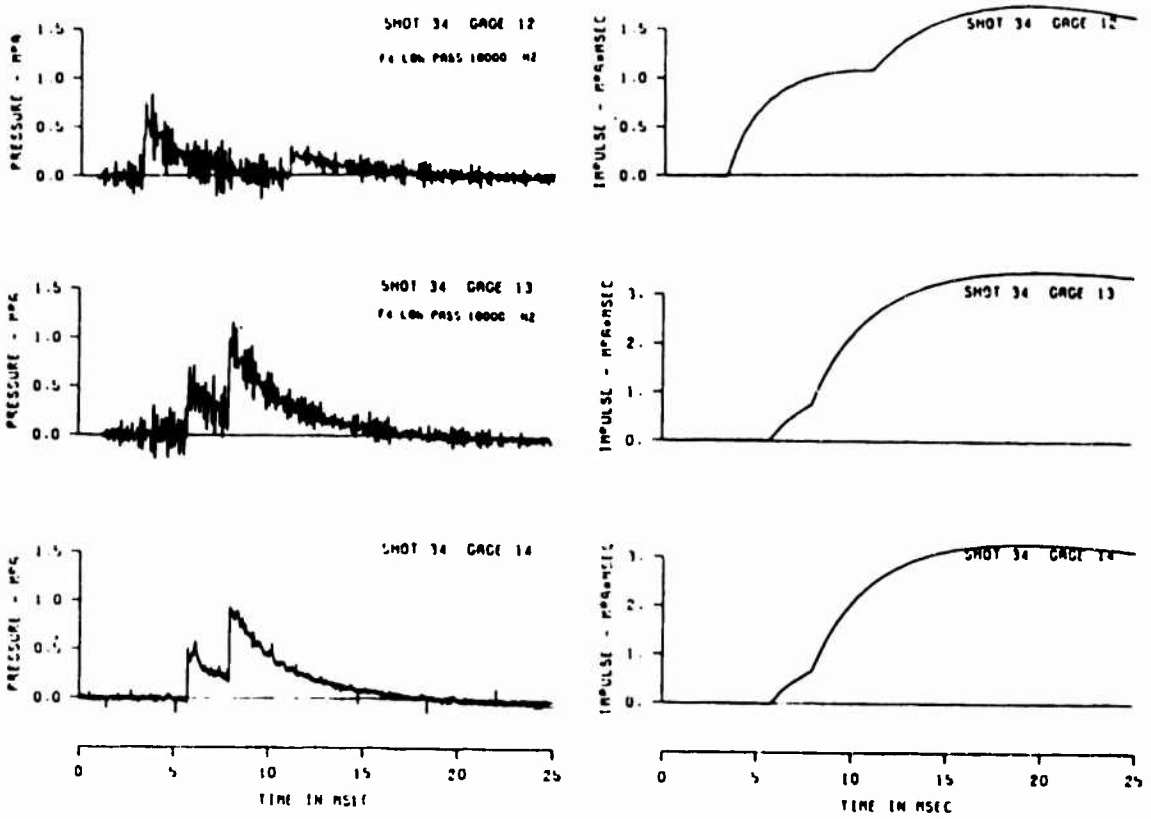

SHOT 32 GAGE 11
SHOT 32 GAGE 11
SHOT 32 GAGE 12
SHOT 32 GAGE 12
SHOT 32 GAGE 13
SHOT 32 GAGE 13
SHOT 32 GAGE 14
SHOT 32 GAGE 14
TIME IN MSEC
TIME IN MSEC

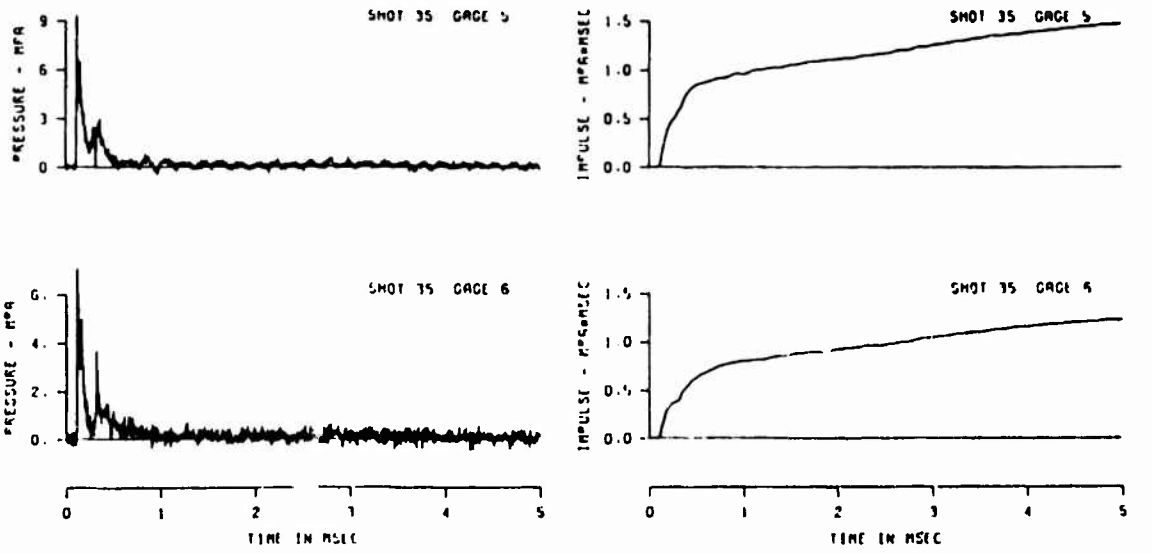

SHOT 33 GAGE 5
SHOT 33 GAGE 5
TIME IN MSEC
TIME IN MSEC

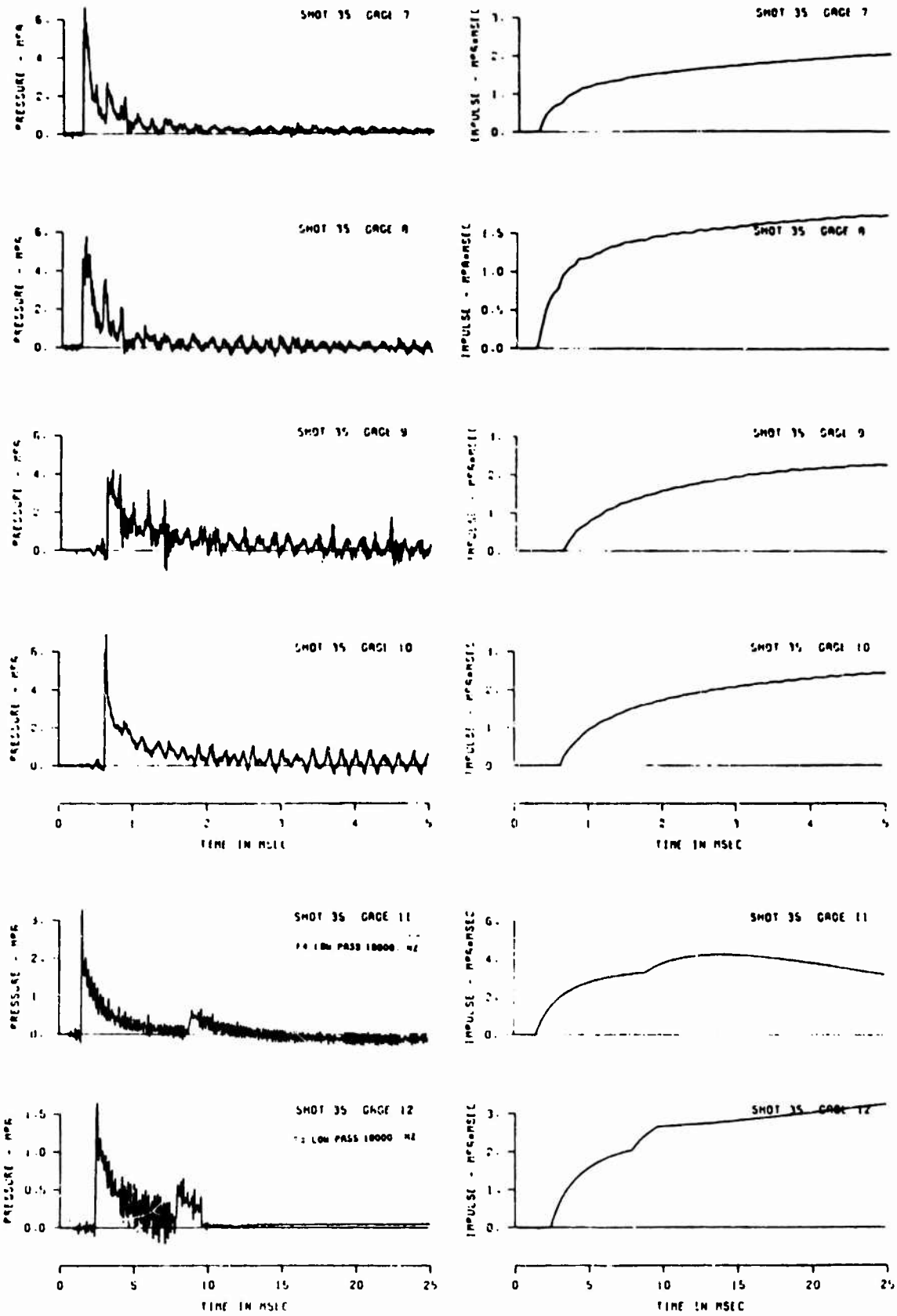

SHOT 33 GAGE 6
SHOT 33 GAGE 6
SHOT 33 GAGE 7
SHOT 33 GAGE 7
TIME IN MSEC
TIME IN MSEC
SHOT 33 GAGE 8
SHOT 33 GAGE 8
SHOT 33 GAGE 9
SHOT 33 GAGE 9
SHOT 33 GAGE 10
SHOT 33 GAGE 10
TIME IN MSEC
TIME IN MSEC

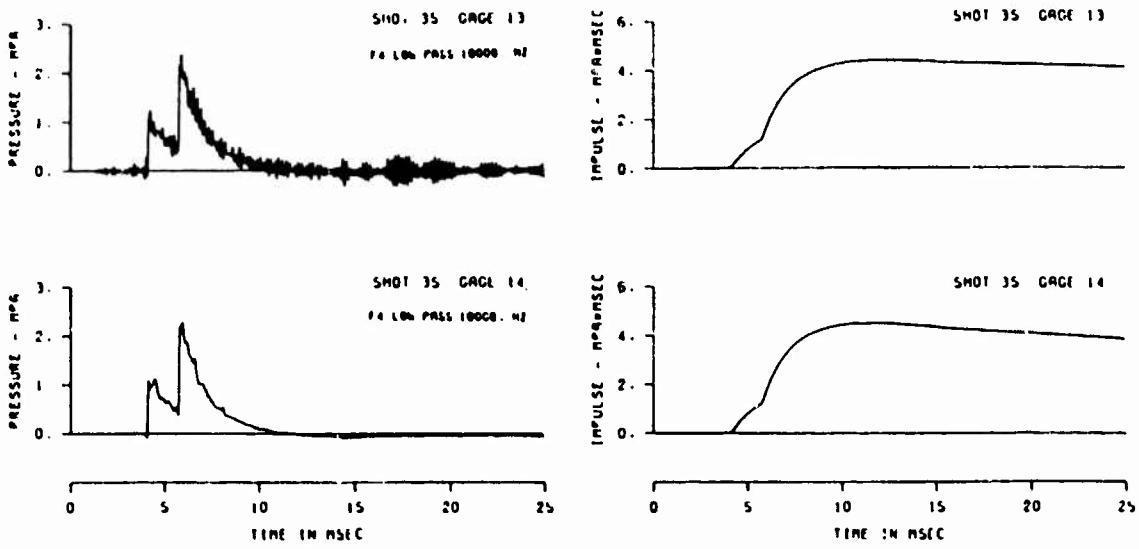

SHOT 33 GAGE 11
SHOT 33 GAGE 12
SHOT 33 GAGE 13
SHOT 33 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 34 GAGE 5

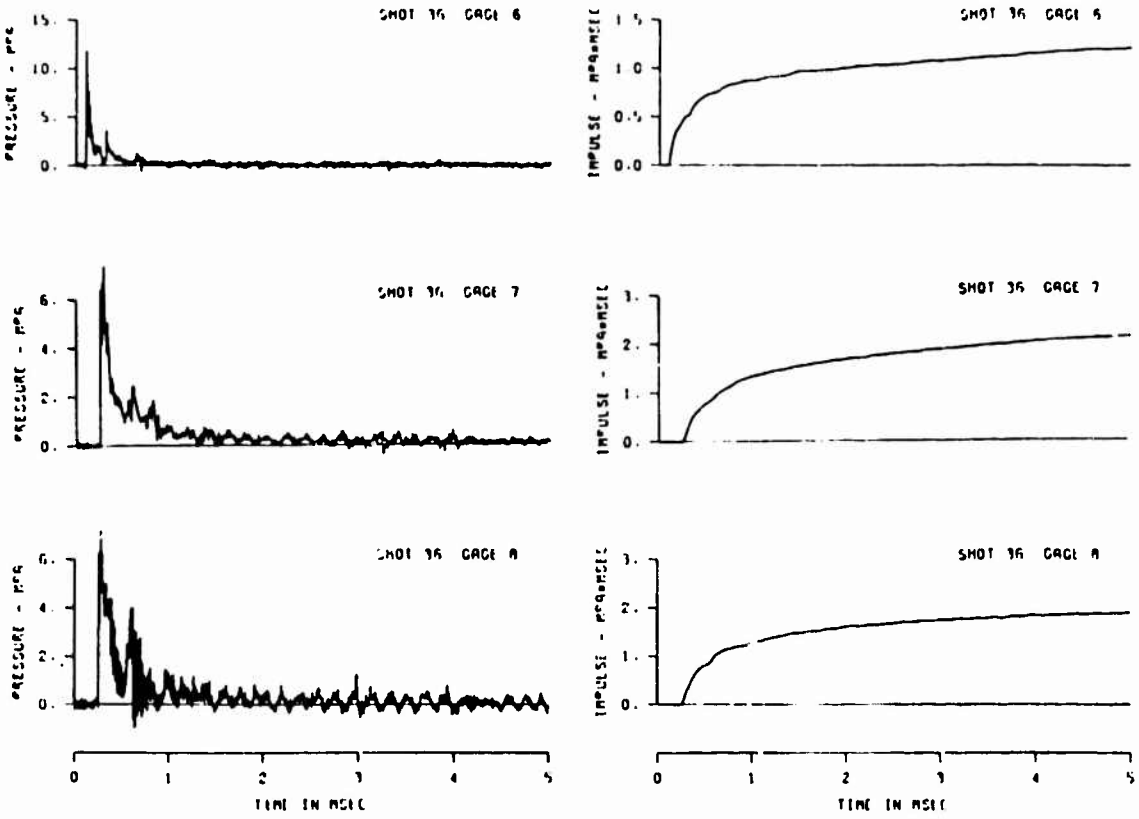

SHOT 34 GAGE 6
SHOT 34 GAGE 7
SHOT 34 GAGE 8
SHOT 34 GAGE 9
SHOT 34 GAGE 10
SHOT 34 GAGE 11
F4 LOW PASS 10000. HZ
TIME IN MSEC

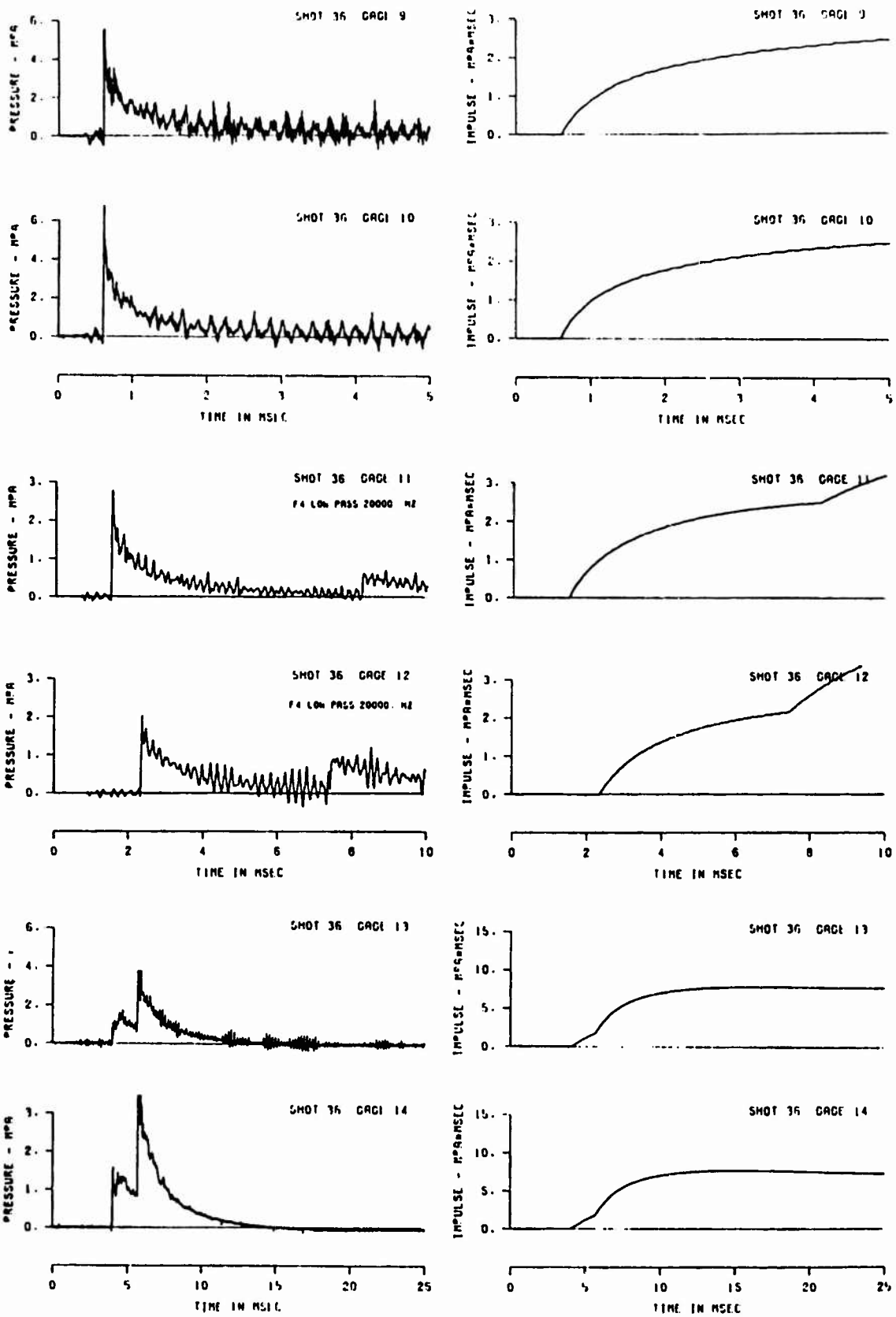

SHOT 34 GAGE 12
SHOT 34 GAGE 13
SHOT 34 GAGE 14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

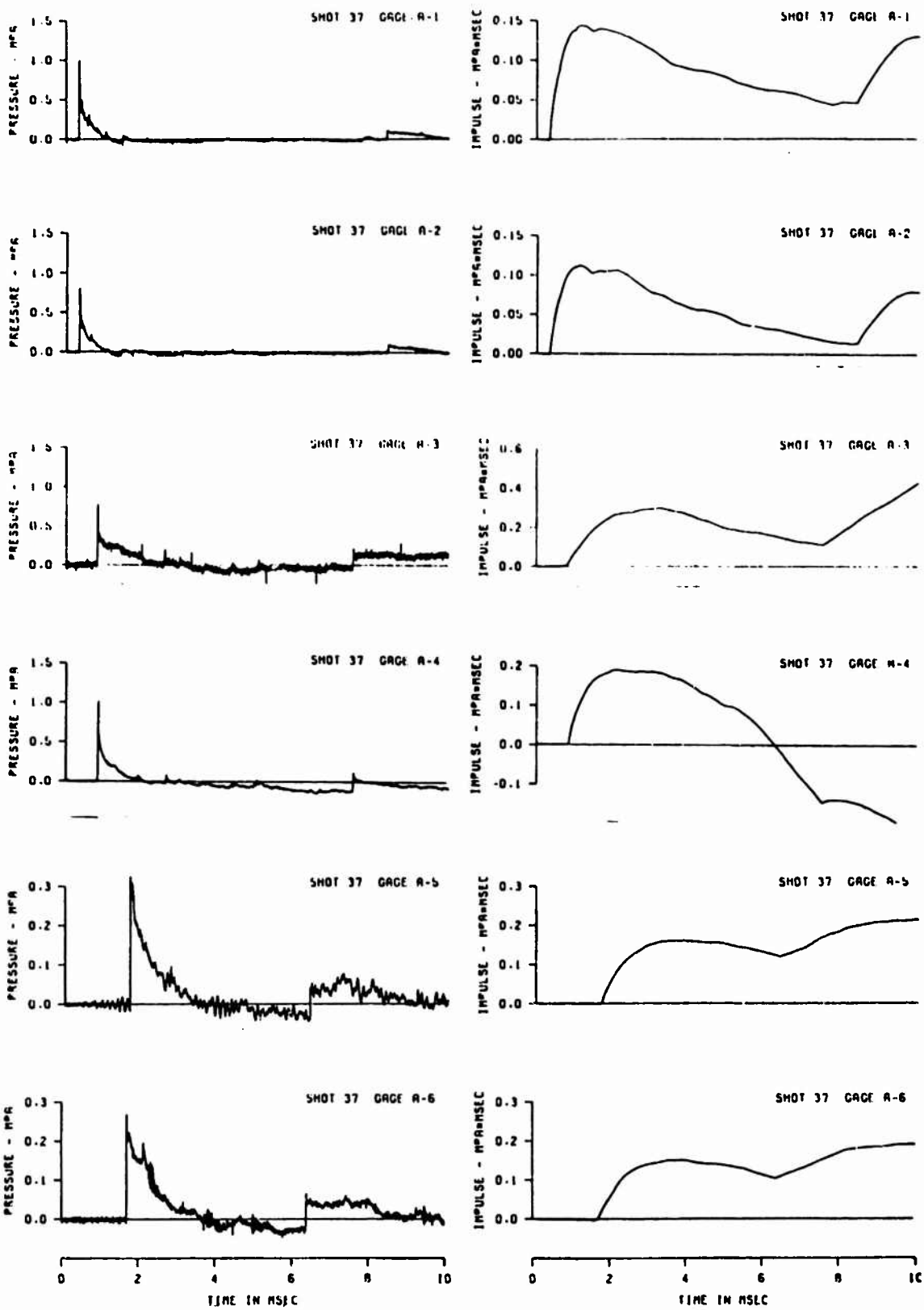

SHOT 35 GAGE 5
SHOT 35 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

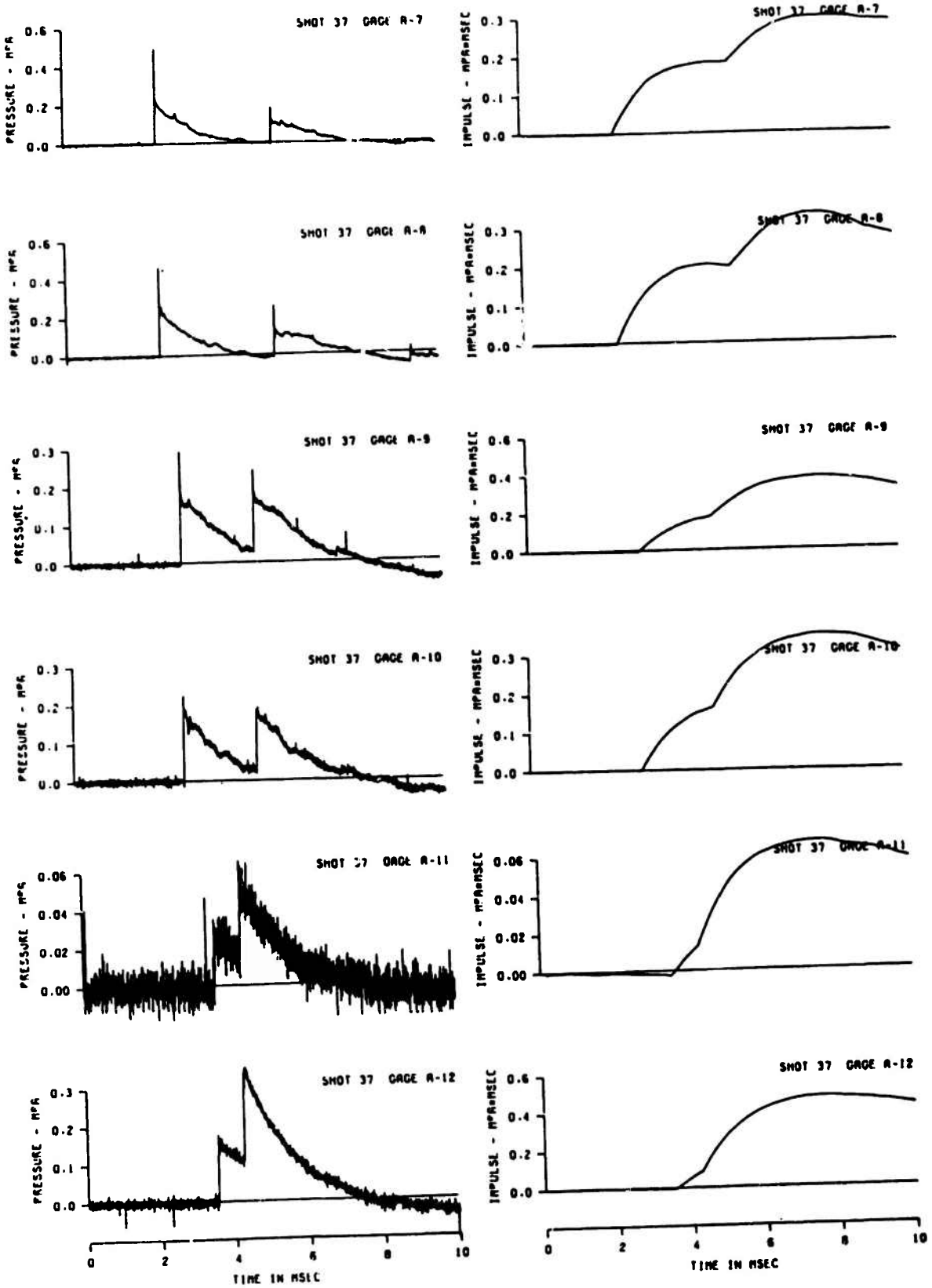

SHOT 35 GAGE 7
SHOT 35 GAGE 8
SHOT 35 GAGE 9
SHOT 35 GAGE 10
SHOT 35 GAGE 11
SHOT 35 GAGE 12
TIME IN MSEC

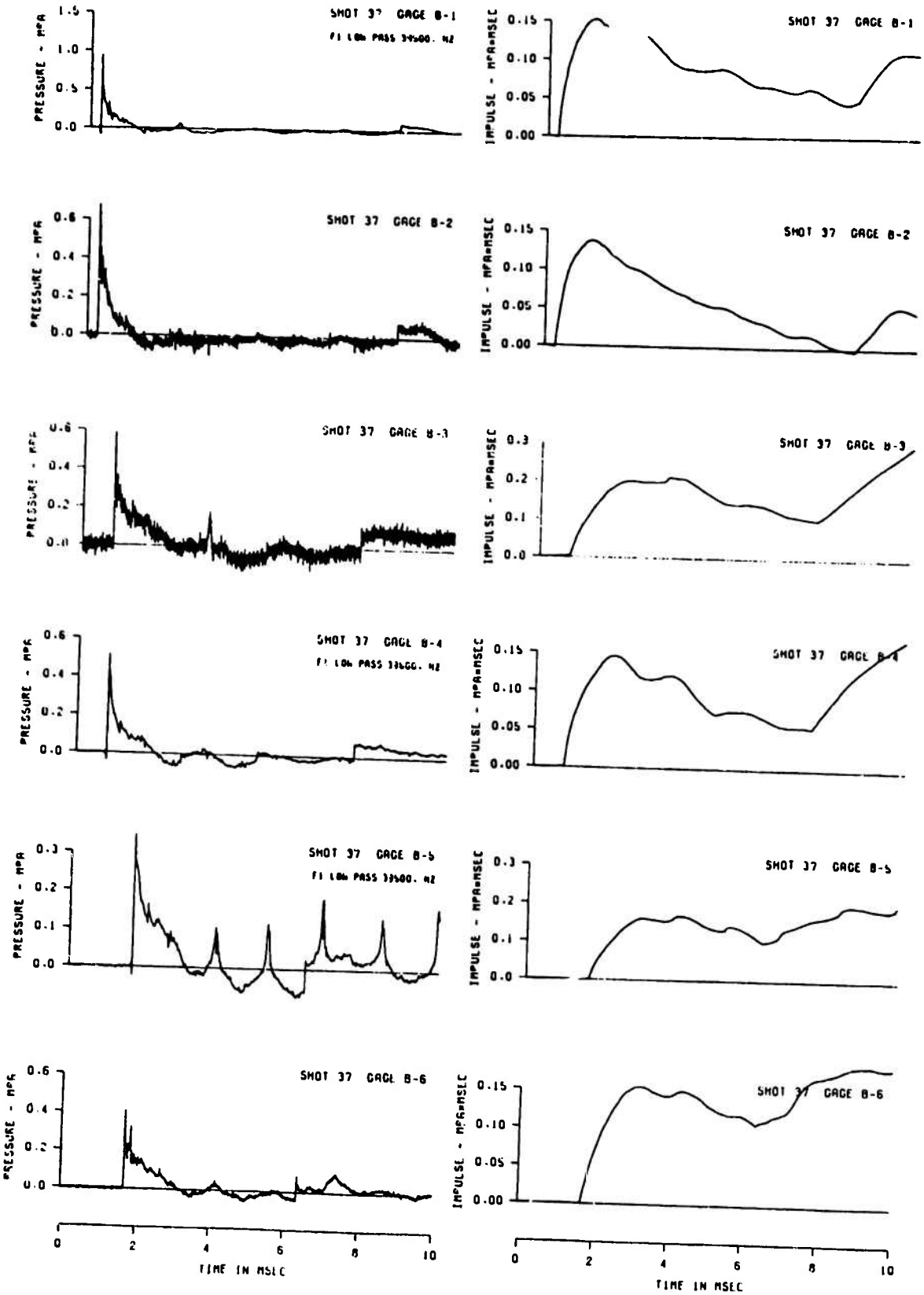

SHOT 35 GAGE 13
SHOT 35 GAGE 14
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

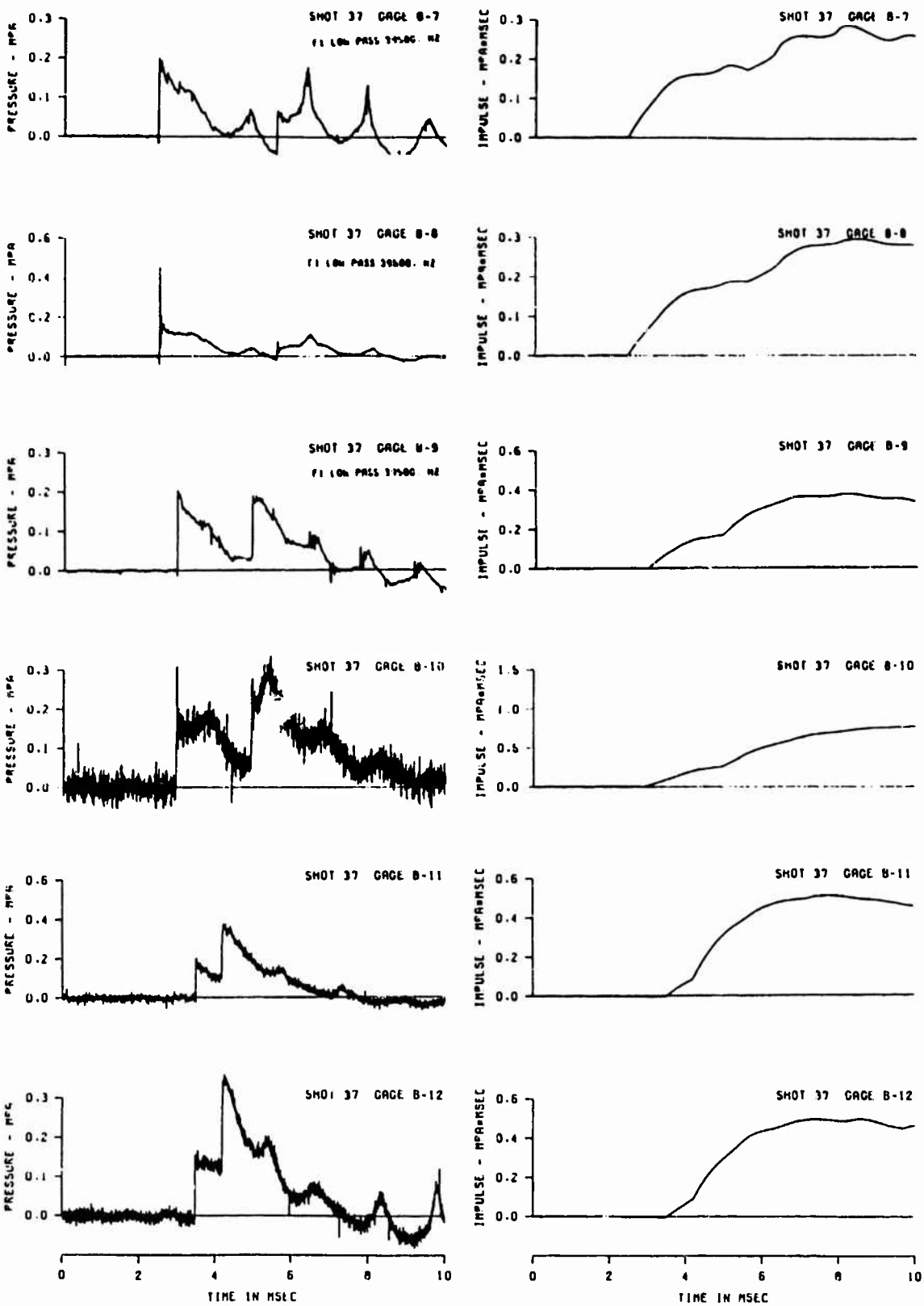

SHOT 36 GAGE 6
SHOT 36 GAGE 7
SHOT 36 GAGE 8
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

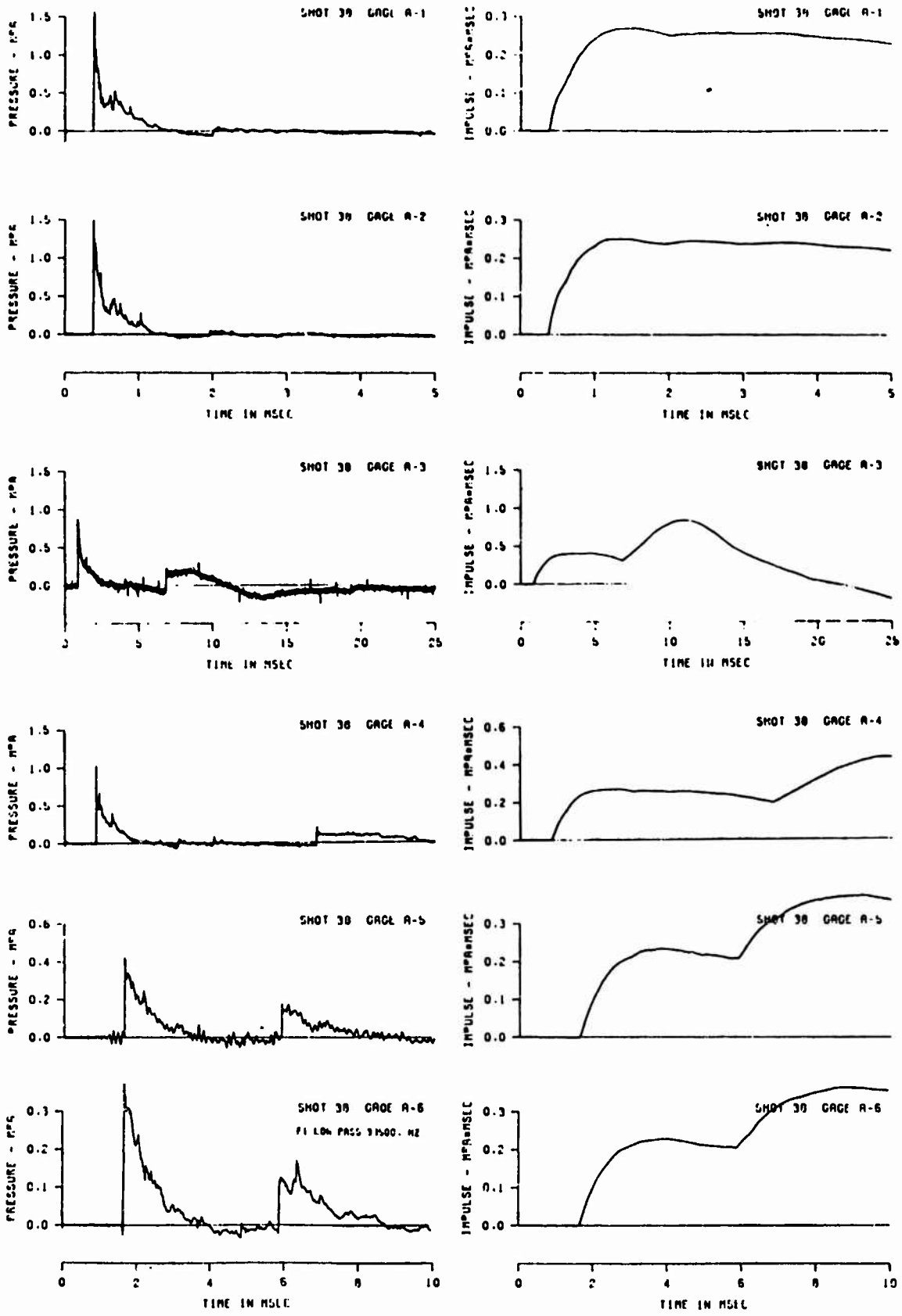

SHOT 36 GAGE 9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 36 GAGE 10
SHOT 36 GAGE 11
F4 LOW PASS 20000. HZ
SHOT 36 GAGE 12
F4 LOW PASS 20000. HZ
SHOT 36 GAGE 13
SHOT 36 GAGE 14
TIME IN MSEC

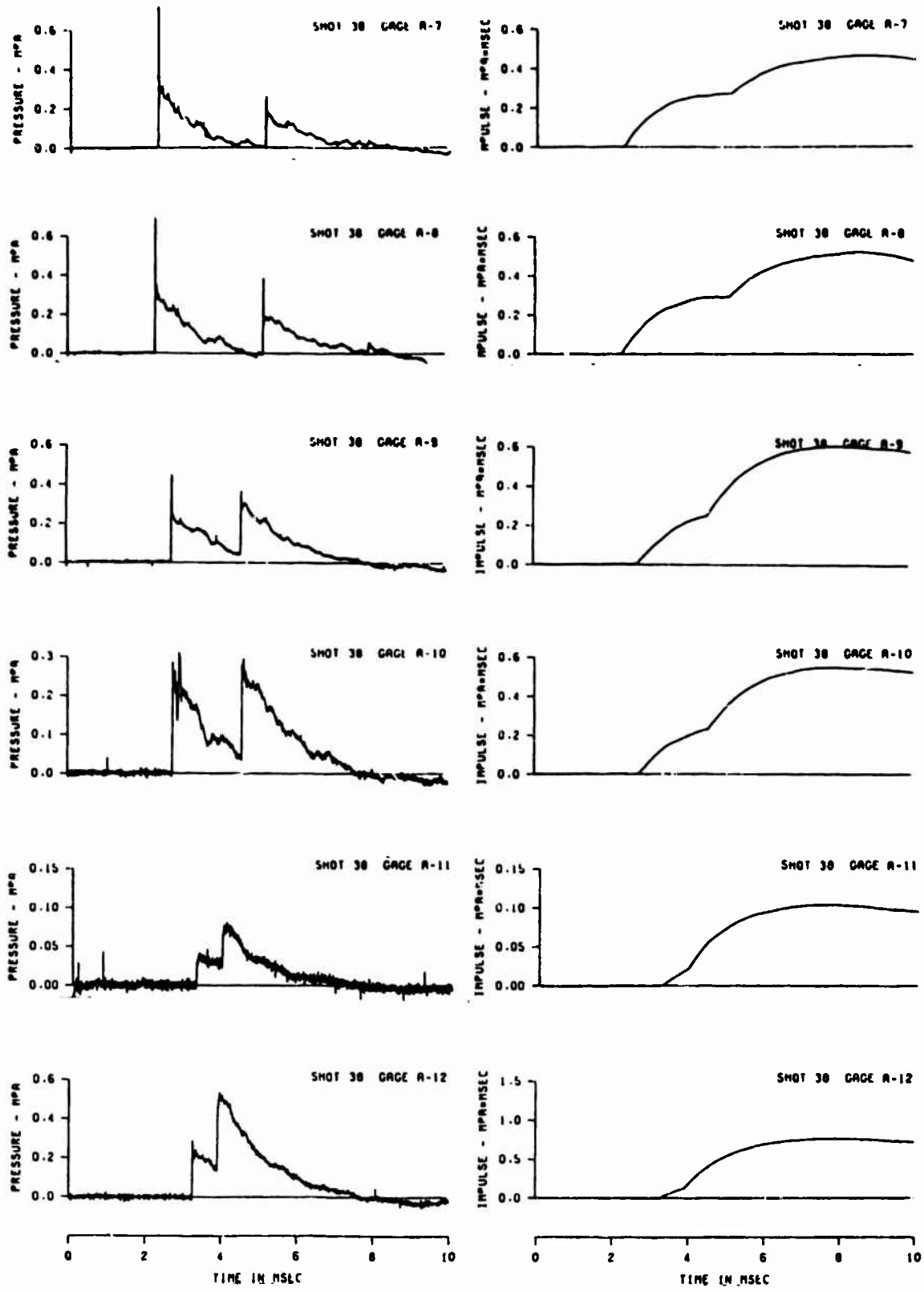

SHOT 37 GAGE A-1
SHOT 37 GAGE A-2
SHOT 37 GAGE A-3
SHOT 37 GAGE A-4
SHOT 37 GAGE A-5
SHOT 37 GAGE A-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

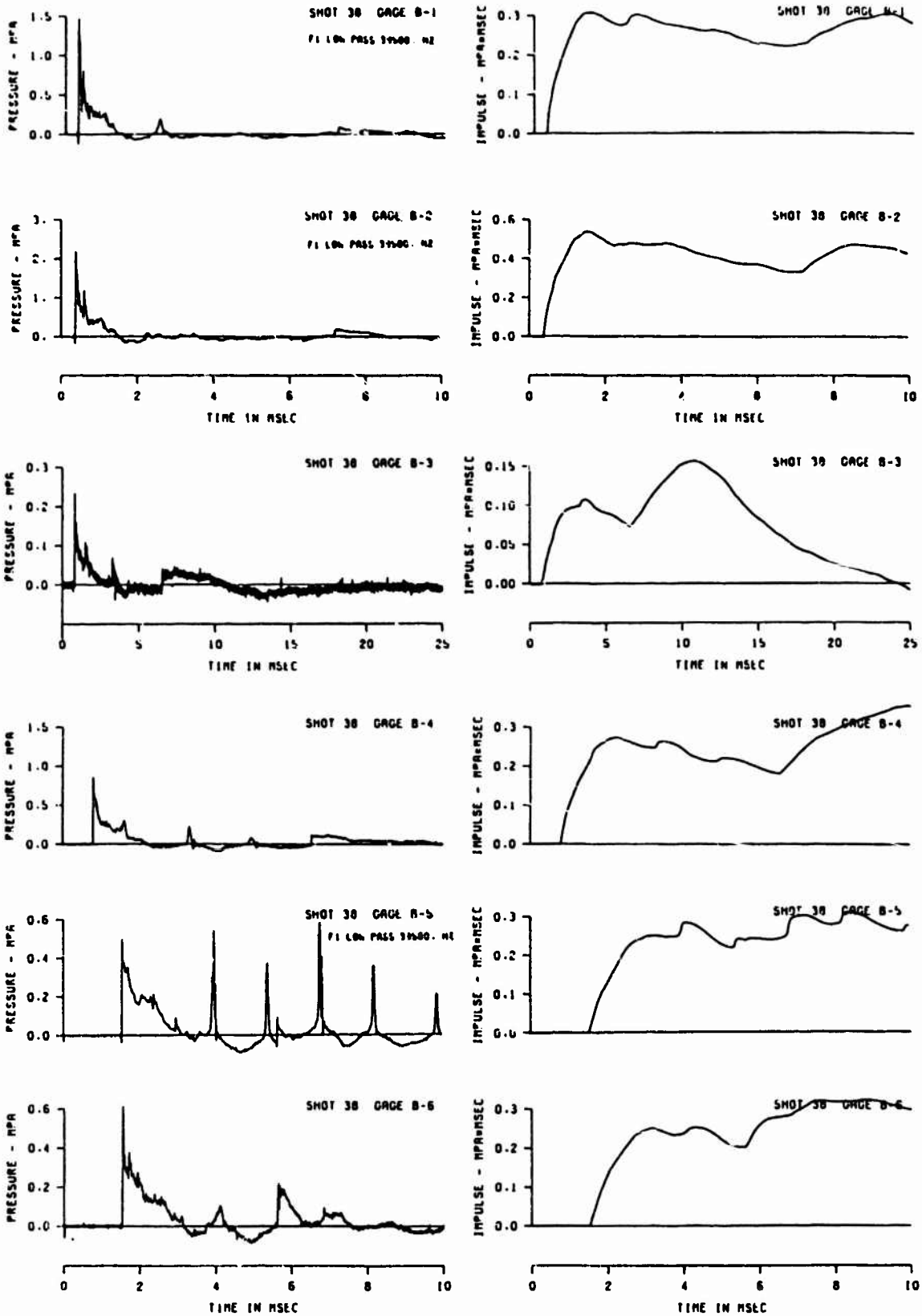

SHOT 37 GAGE A-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 37 GAGE A-8
SHOT 37 GAGE A-9
SHOT 37 GAGE A-10
SHOT 37 GAGE A-11
SHOT 37 GAGE A-12
TIME IN MSEC

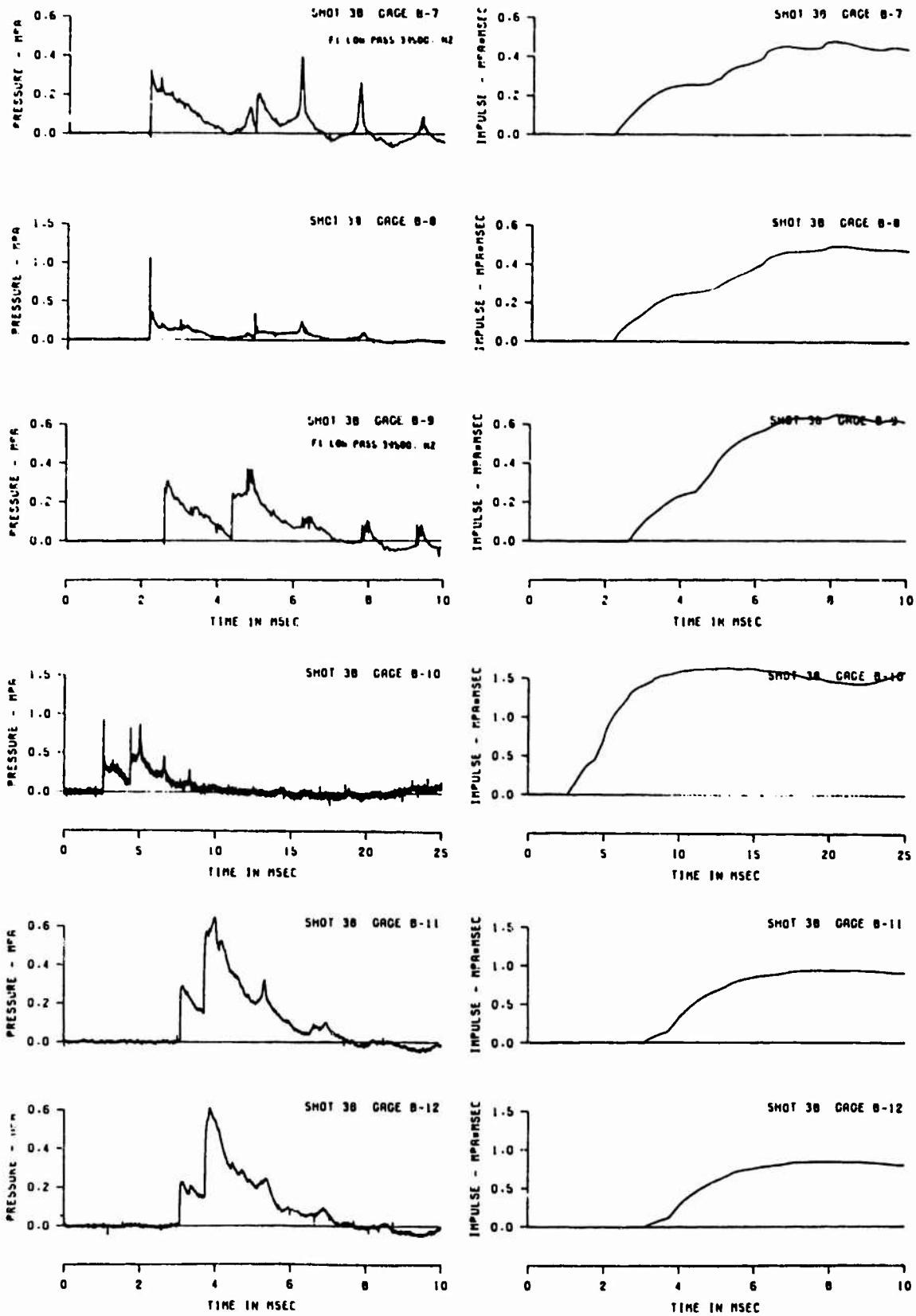

SHOT 37 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 37 GAGE B-2
SHOT 37 GAGE B-3
SHOT 37 GAGE B-4
SHOT 37 GAGE B-5
SHOT 37 GAGE B-6
TIME IN MSEC

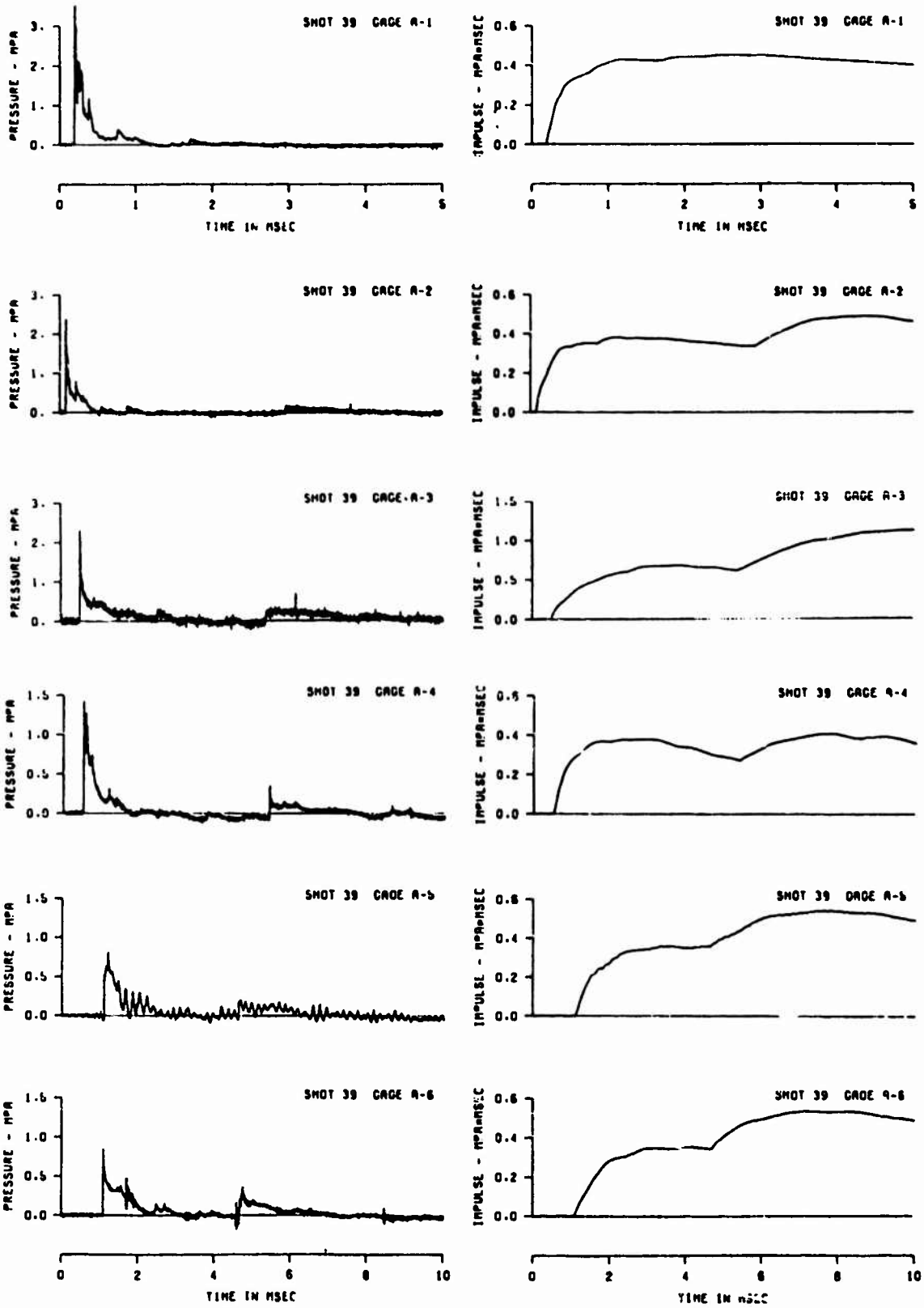

SHOT 37 GAGE B-7
SHOT 37 GAGE B-8
SHOT 37 GAGE B-9
SHOT 37 GAGE B-10
SHOT 37 GAGE B-11
SHOT 37 GAGE B-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

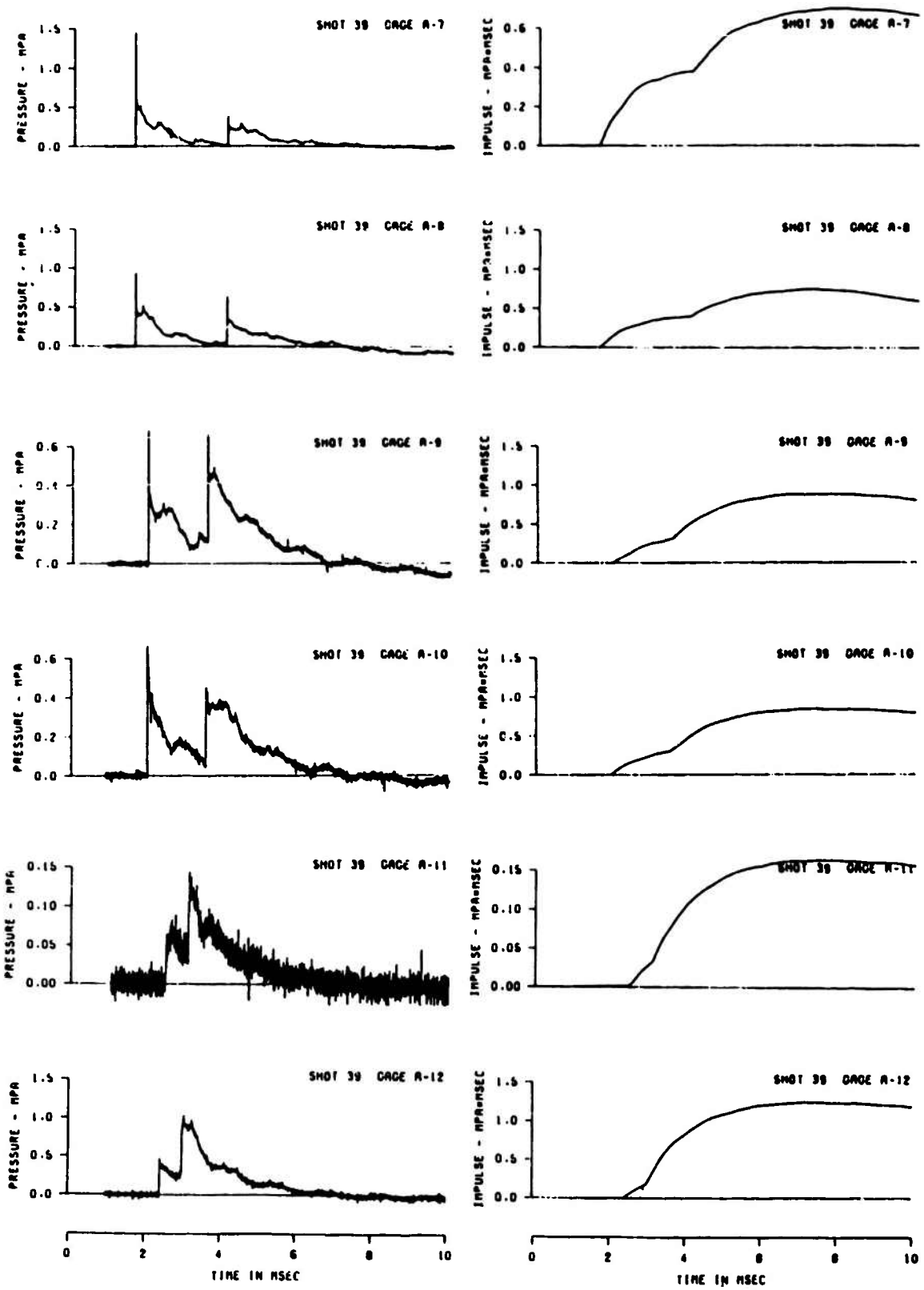

SHOT 38 GAGE A-1
SHOT 38 GAGE A-2
SHOT 38 GAGE A-3
SHOT 38 GAGE A-4
SHOT 38 GAGE A-5
SHOT 38 GAGE A-6
TIME IN MSEC

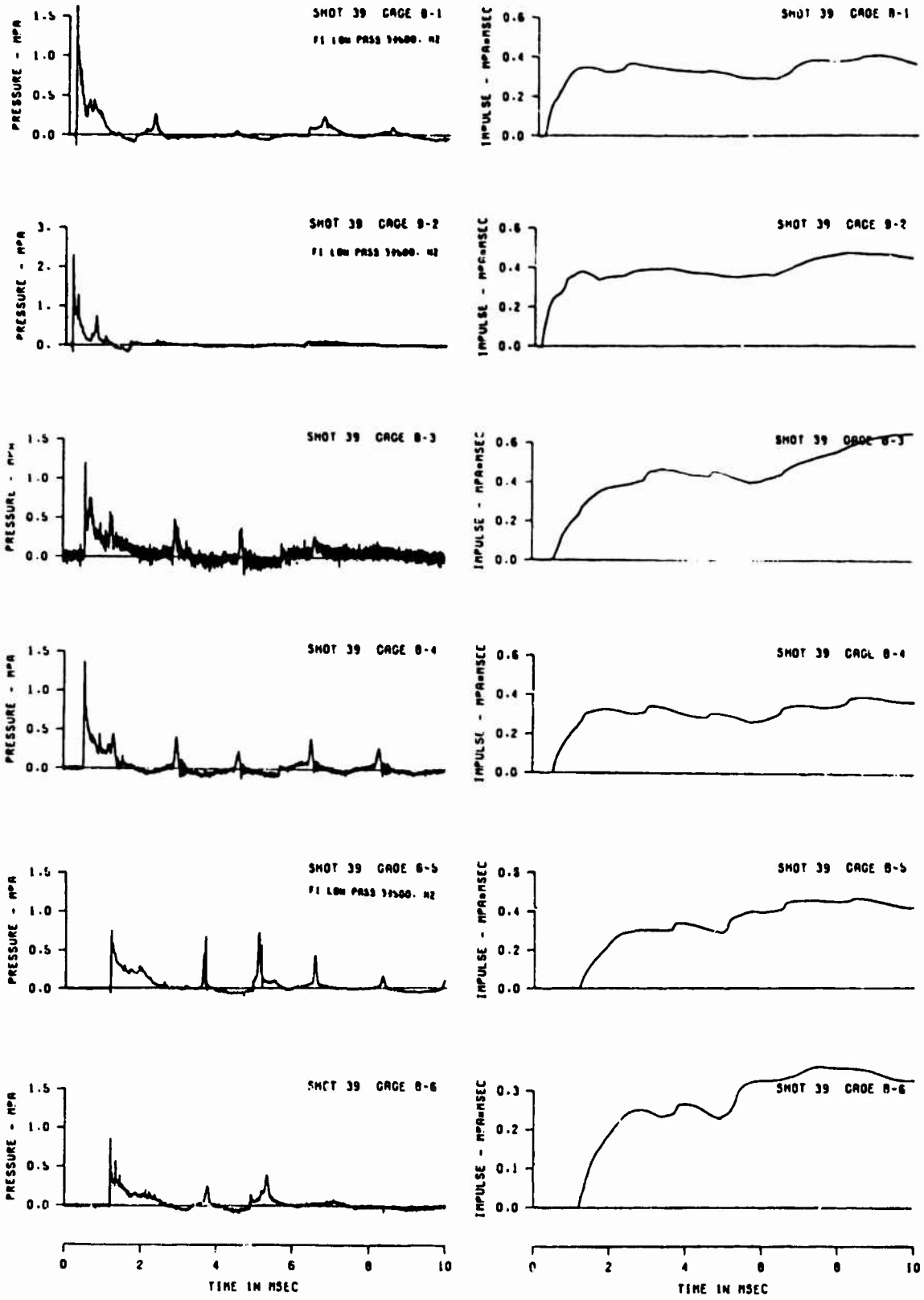

SHOT 38 GAGE A-7
SHOT 38 GAGE A-8
SHOT 38 GAGE A-9
SHOT 38 GAGE A-10
SHOT 38 GAGE A-11
SHOT 38 GAGE A-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

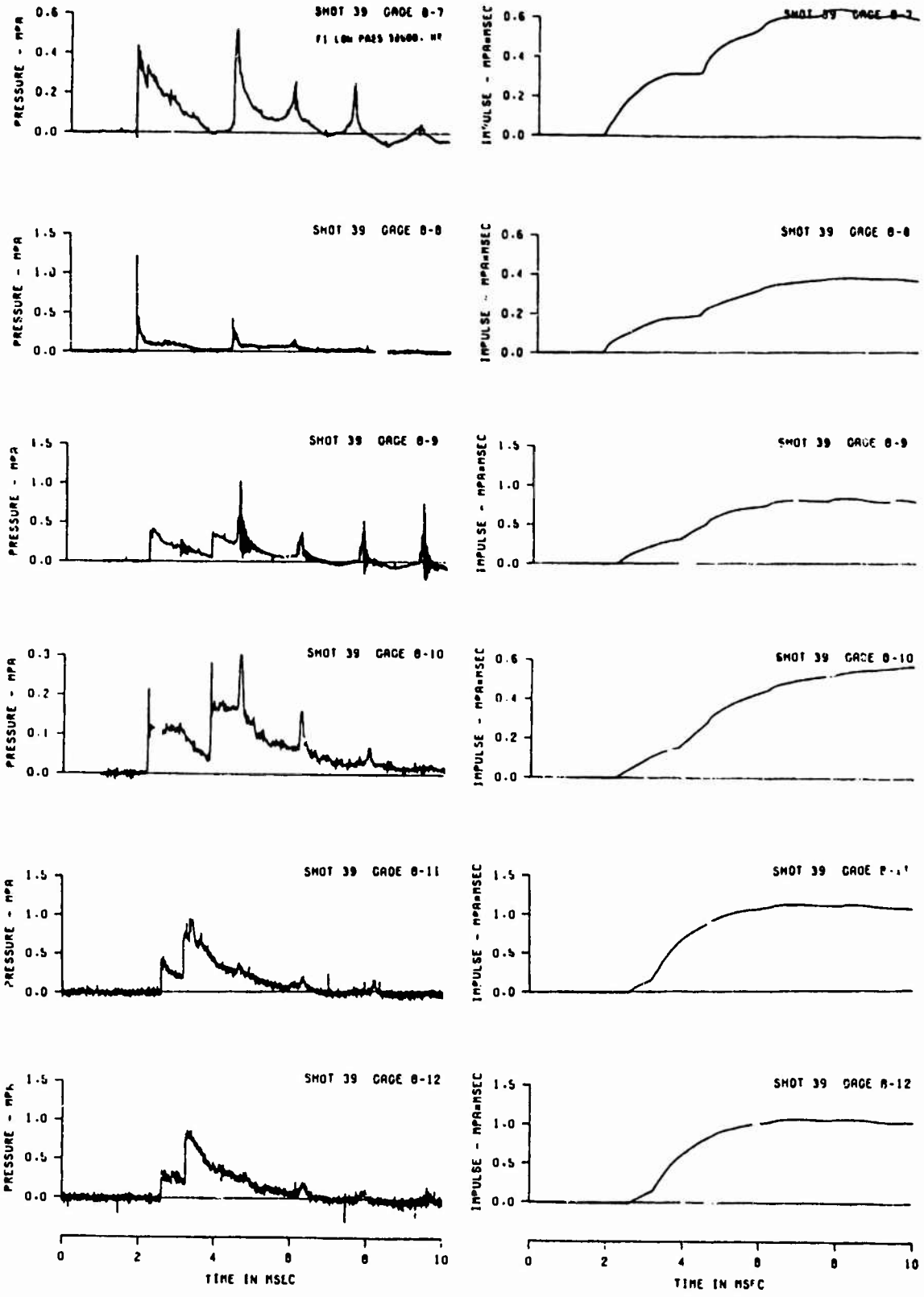

SHOT 38 GAGE B-1
SHOT 38 GAGE B-2
SHOT 38 GAGE B-3
SHOT 38 GAGE B-4
SHOT 38 GAGE B-5
SHOT 38 GAGE B-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

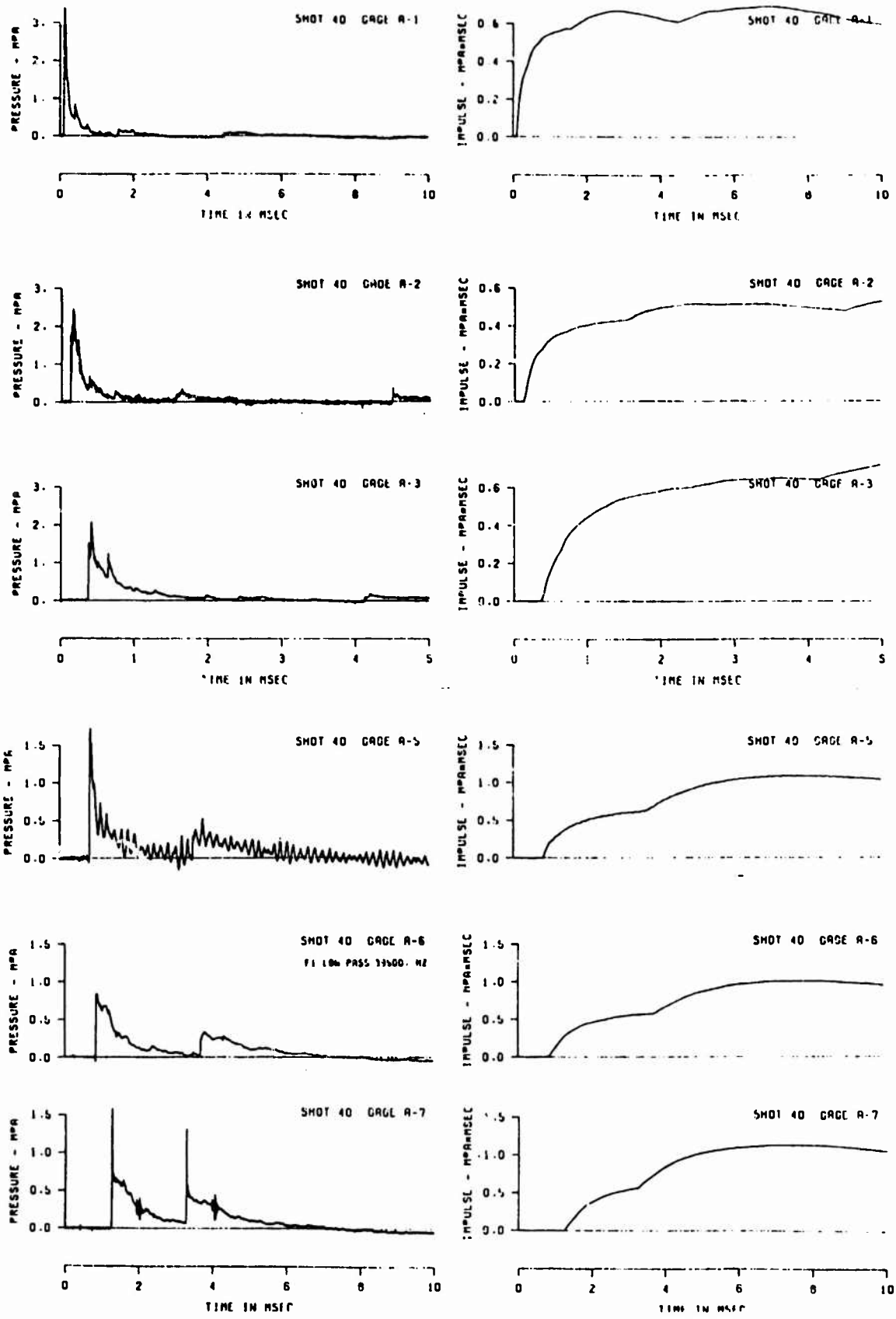

SHOT 38 GAGE B-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 38 GAGE B-8
SHOT 38 GAGE B-9
SHOT 38 GAGE B-10
SHOT 38 GAGE B-11
SHOT 38 GAGE B-12
TIME IN MSEC

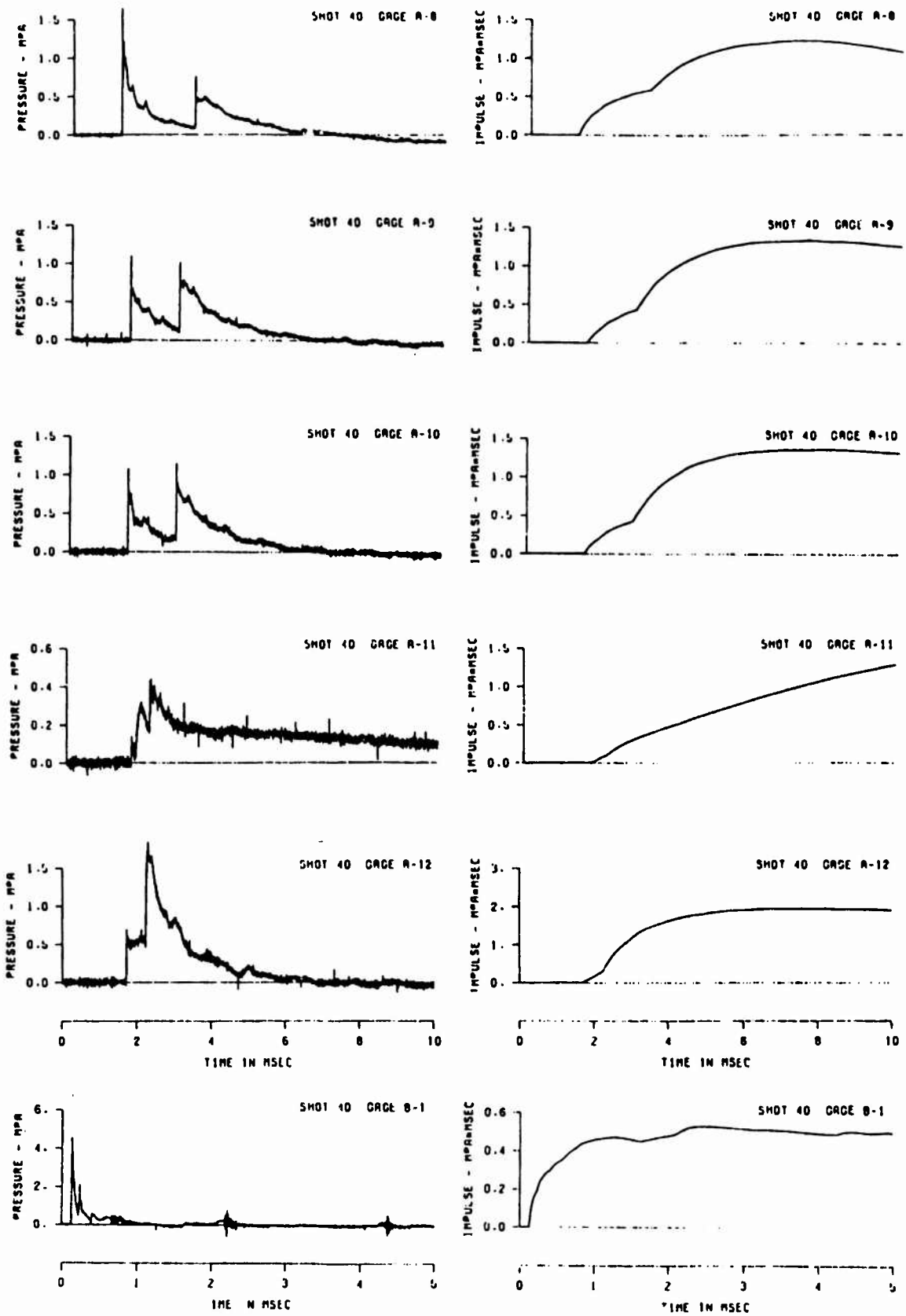

SHOT 39 GAGE A-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 39 GAGE A-2
SHOT 39 GAGE A-3
SHOT 39 GAGE A-4
SHOT 39 GAGE A-5
SHOT 39 GAGE A-6

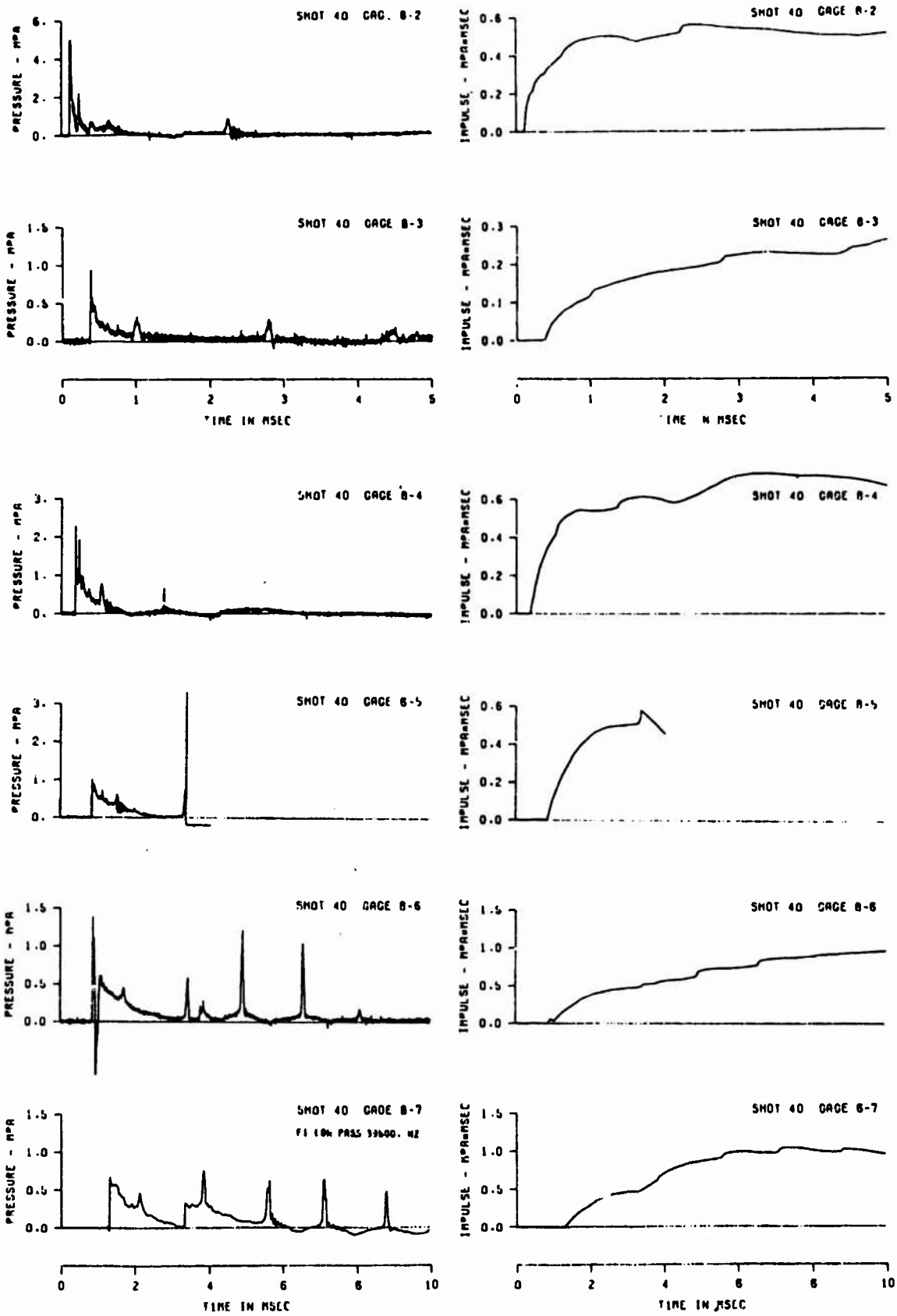

SHOT 39 GAGE A-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 39 GAGE A-8
SHOT 39 GAGE A-9
SHOT 39 GAGE A-10
SHOT 39 GAGE A-11
SHOT 39 GAGE A-12
TIME IN MSEC

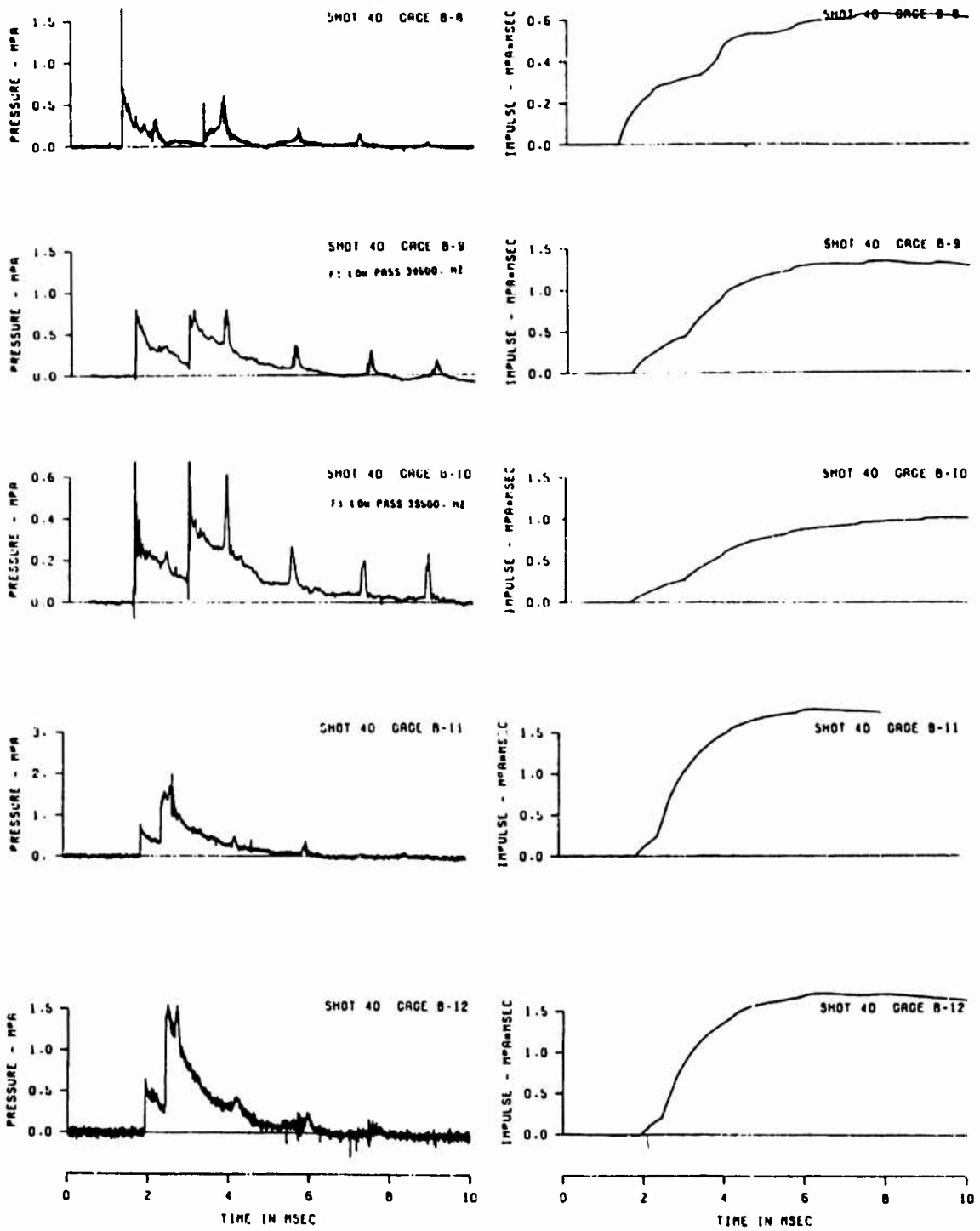

SHOT 39 GAGE 8-1
SHOT 39 GAGE 8-2
SHOT 39 GAGE 8-3
SHOT 39 GAGE 8-4
SHOT 39 GAGE 8-5
SHOT 39 GAGE 8-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

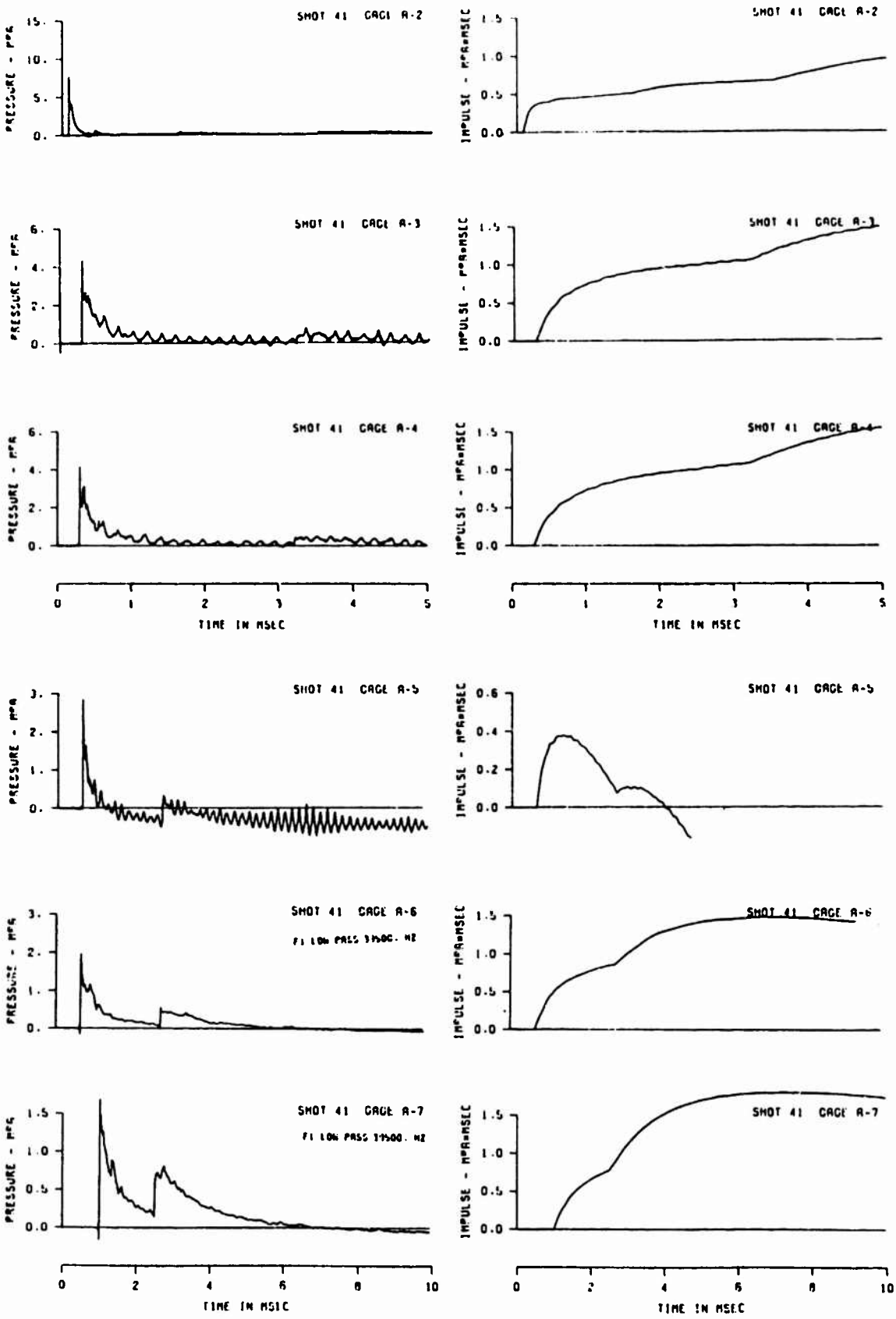

SHOT 39 GAGE 8-7
SHOT 39 GAGE 8-8
SHOT 39 GAGE 8-9
SHOT 39 GAGE 8-10
SHOT 39 GAGE 8-11
SHOT 39 GAGE 8-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

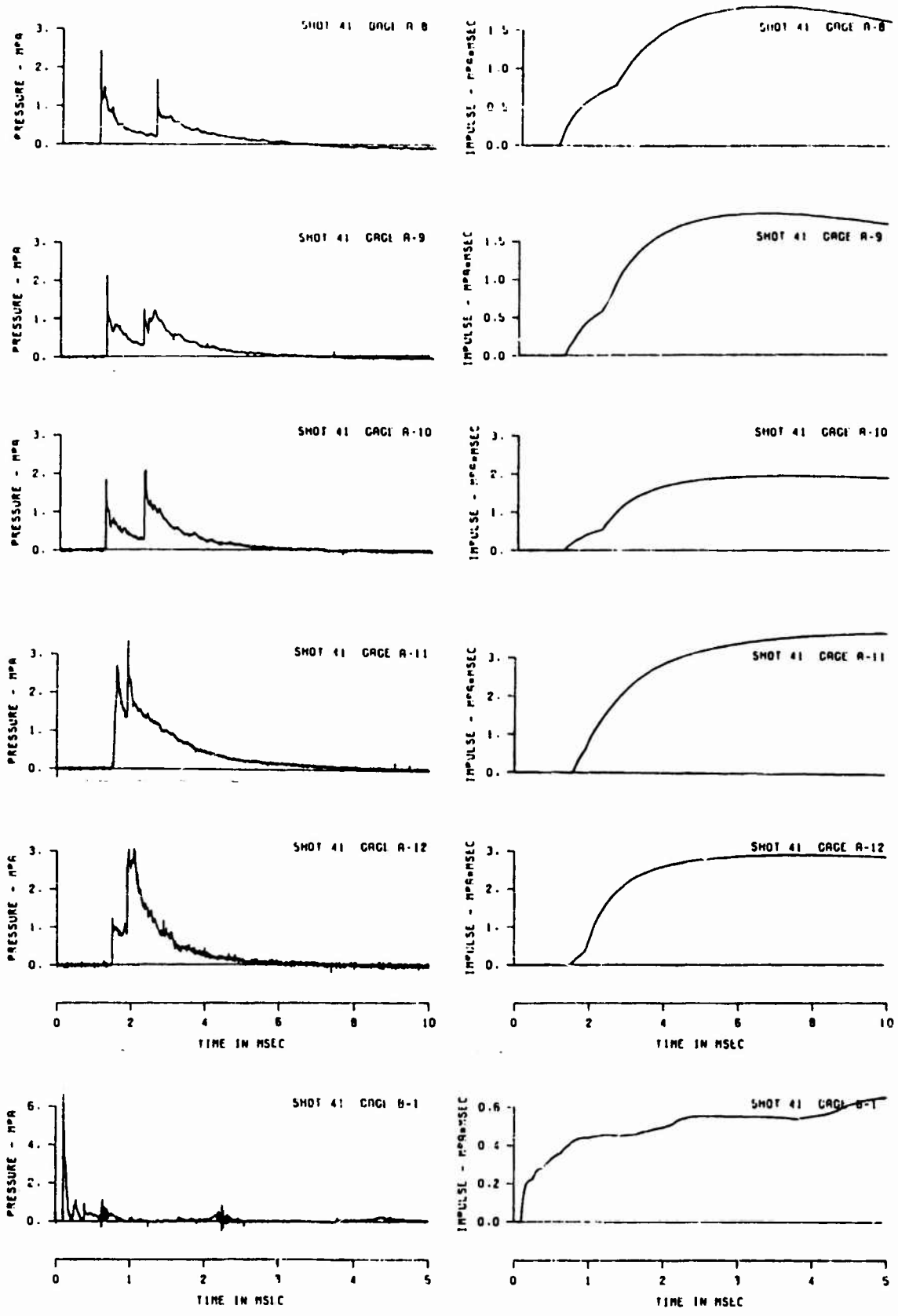

SHOT 40 GAGE A-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
SHOT 40 GAGE A-2
SHOT 40 GAGE A-3
SHOT 40 GAGE A-5
SHOT 40 GAGE A-6
FILTER PASS 30000. HZ
SHOT 40 GAGE A-7

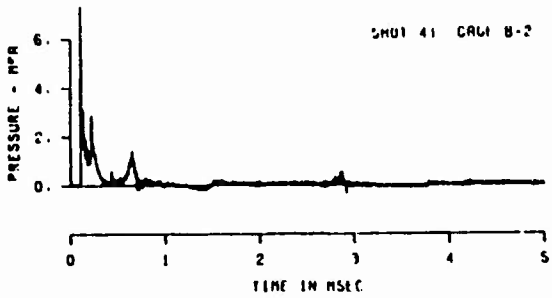

SHOT 40 GAGE A-8
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 40 GAGE A-9
SHOT 40 GAGE A-10
SHOT 40 GAGE A-11
SHOT 40 GAGE A-12
TIME IN MSEC
SHOT 40 GAGE B-1
TIME IN MSEC

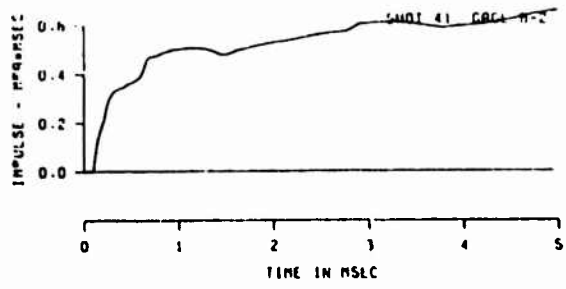

SHOT 40 GAG. B-2
PRESSURE - MPA
SHOT 40 GAGE B-2
IMPULSE - MPAmSEC
SHOT 40 GAGE B-3
PRESSURE - MPA
SHOT 40 GAGE B-3
IMPULSE - MPAmSEC
TIME IN MSEC
TIME N MSEC
SHOT 40 GAGE B-4
PRESSURE - MPA
SHOT 40 GAGE B-4
IMPULSE - MPAmSEC
SHOT 40 GAGE B-5
PRESSURE - MPA
SHOT 40 GAGE B-5
IMPULSE - MPAmSEC
SHOT 40 GAGE B-6
PRESSURE - MPA
SHOT 40 GAGE B-6
IMPULSE - MPAmSEC
SHOT 40 GAGE B-7
PRESSURE - MPA
SHOT 40 GAGE B-7
IMPULSE - MPAmSEC
TIME IN MSEC
TIME IN MSEC

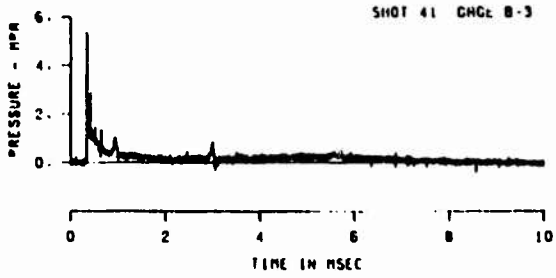

SHOT 40 GAGE B-8
SHOT 40 GAGE B-9
SHOT 40 GAGE B-10
SHOT 40 GAGE B-11
SHOT 40 GAGE B-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

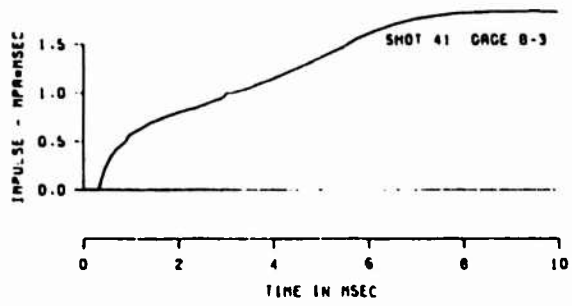

SHOT 41 GAGE A-2
PRESSURE - PSI
IMPULSE - PSI-MSEC
SHOT 41 GAGE A-3
SHOT 41 GAGE A-4
SHOT 41 GAGE A-5
SHOT 41 GAGE A-6
SHOT 41 GAGE A-7
TIME IN MSEC


SHOT 41 GAGE A-8
SHOT 41 GAGE A-9
SHOT 41 GAGE A-10
SHOT 41 GAGE A-11
SHOT 41 GAGE A-12
SHOT 41 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

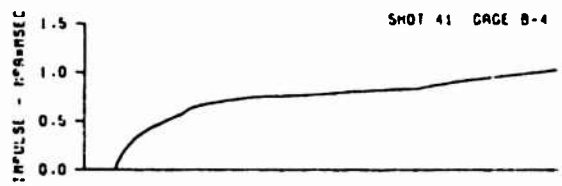

SHOT 41 GAGE B-2
PRESSURE - MPA
TIME IN MSEC

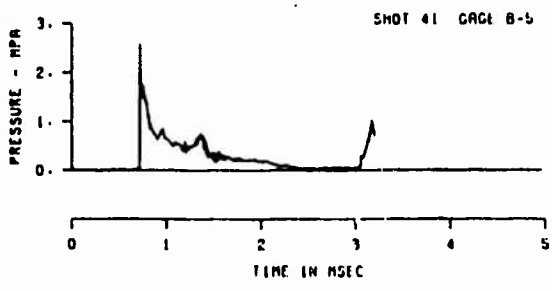

IMPULSE - MPA-MSEC
TIME IN MSEC

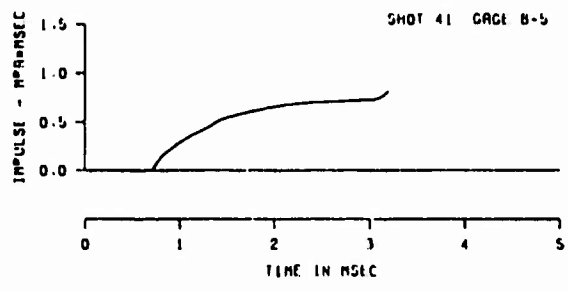

SHOT 41 GAGE B-3
PRESSURE - MPA
TIME IN MSEC

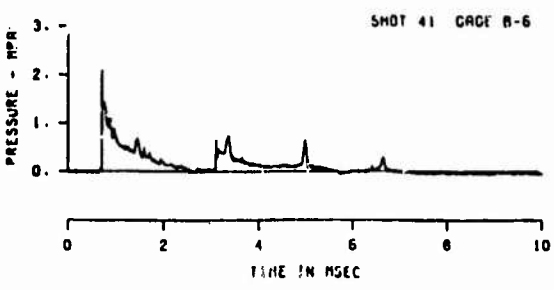

SHOT 41 GAGE B-3
IMPULSE - MPA-MSEC
TIME IN MSEC

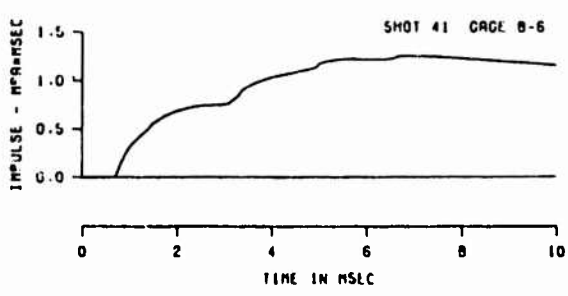
SHOT 41 GAGE B-4
PRESSURE - MPA

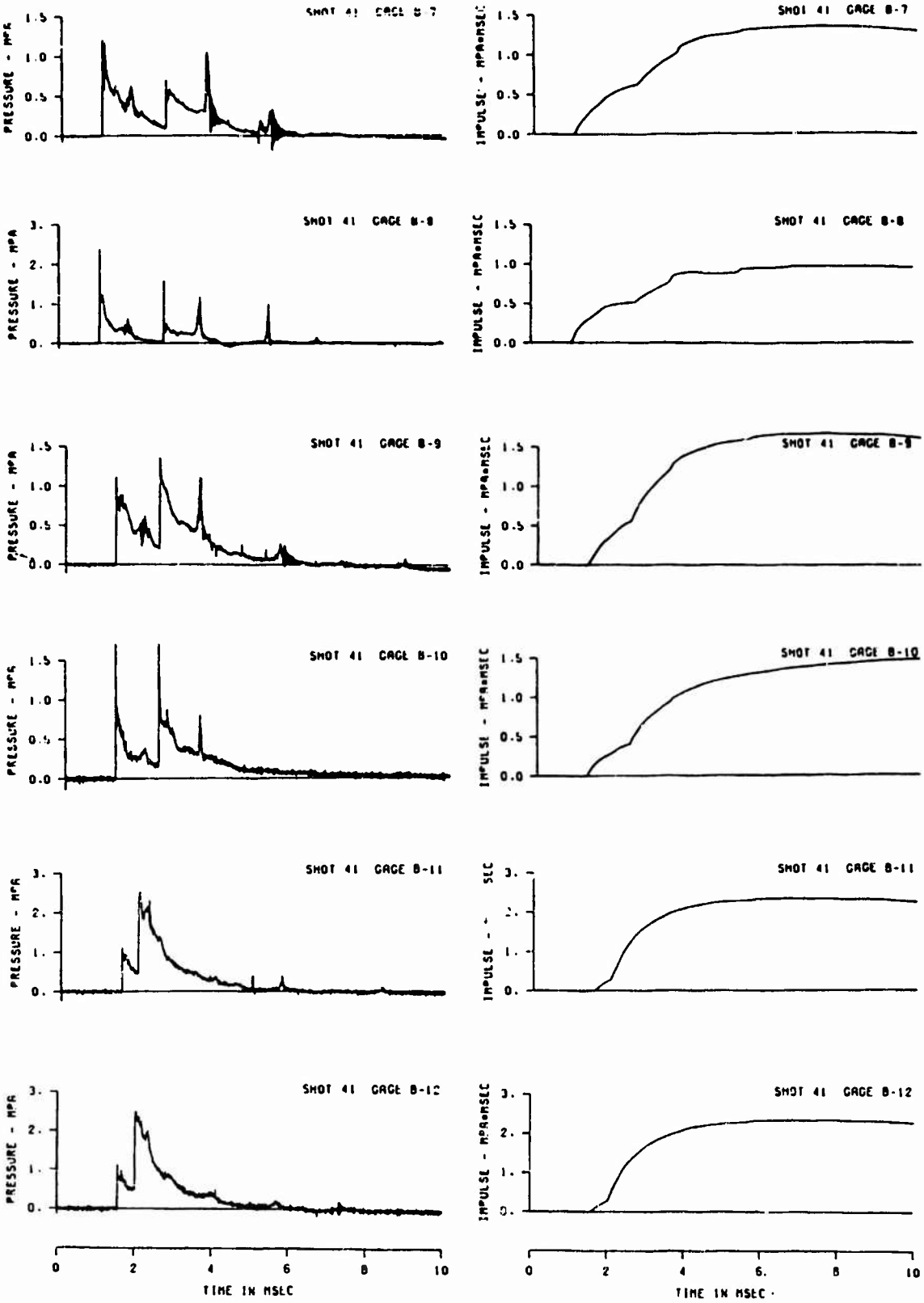

SHOT 41 GAGE B-4
IMPULSE - MPA-MSEC

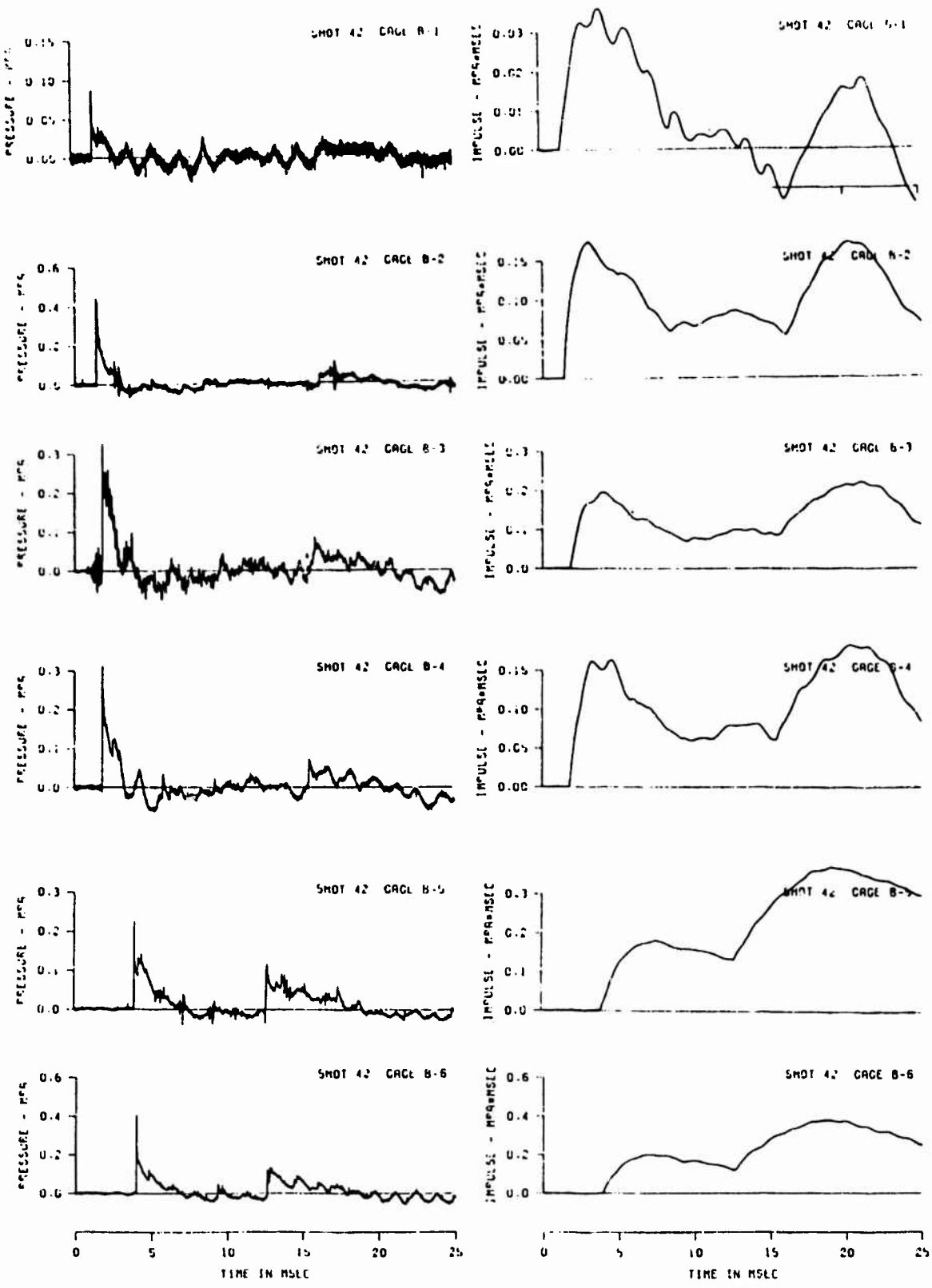

SHOT 41 GAGE B-5
PRESSURE - MPA
TIME IN MSEC

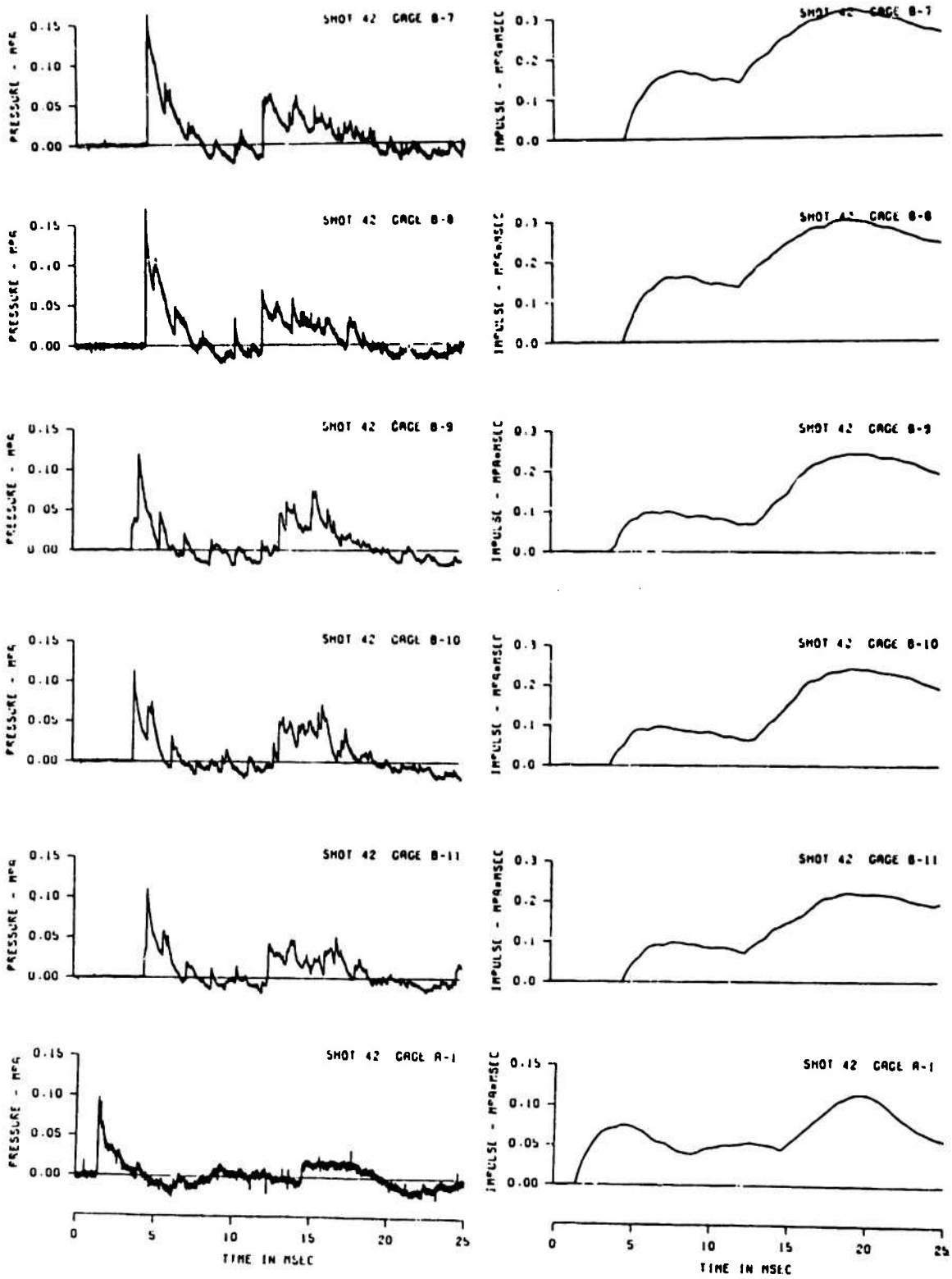

SHOT 41 GAGE B-5
IMPULSE - MPA-MSEC
TIME IN MSEC

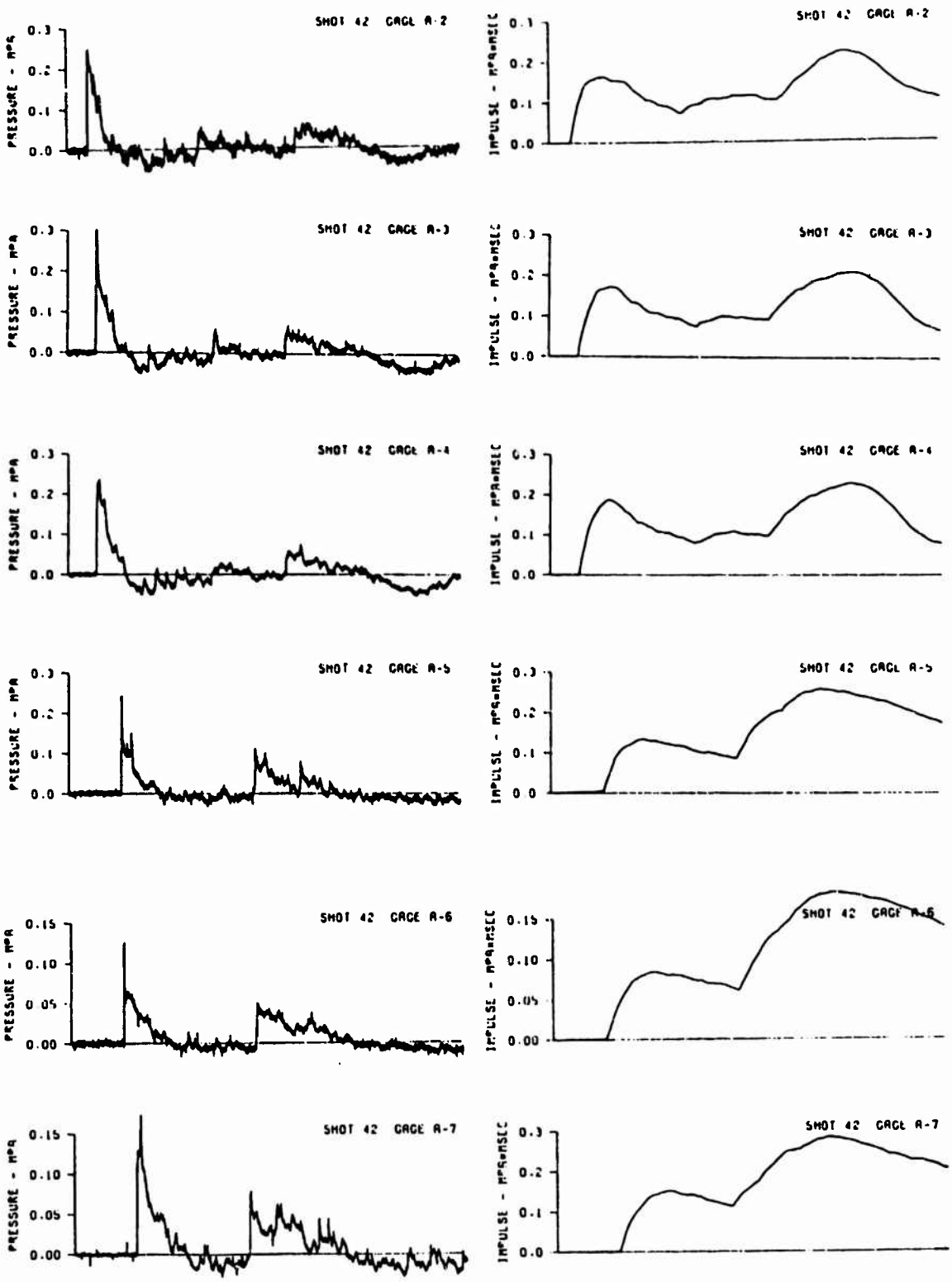

SHOT 41 GAGE B-6
PRESSURE - MPA
TIME IN MSEC

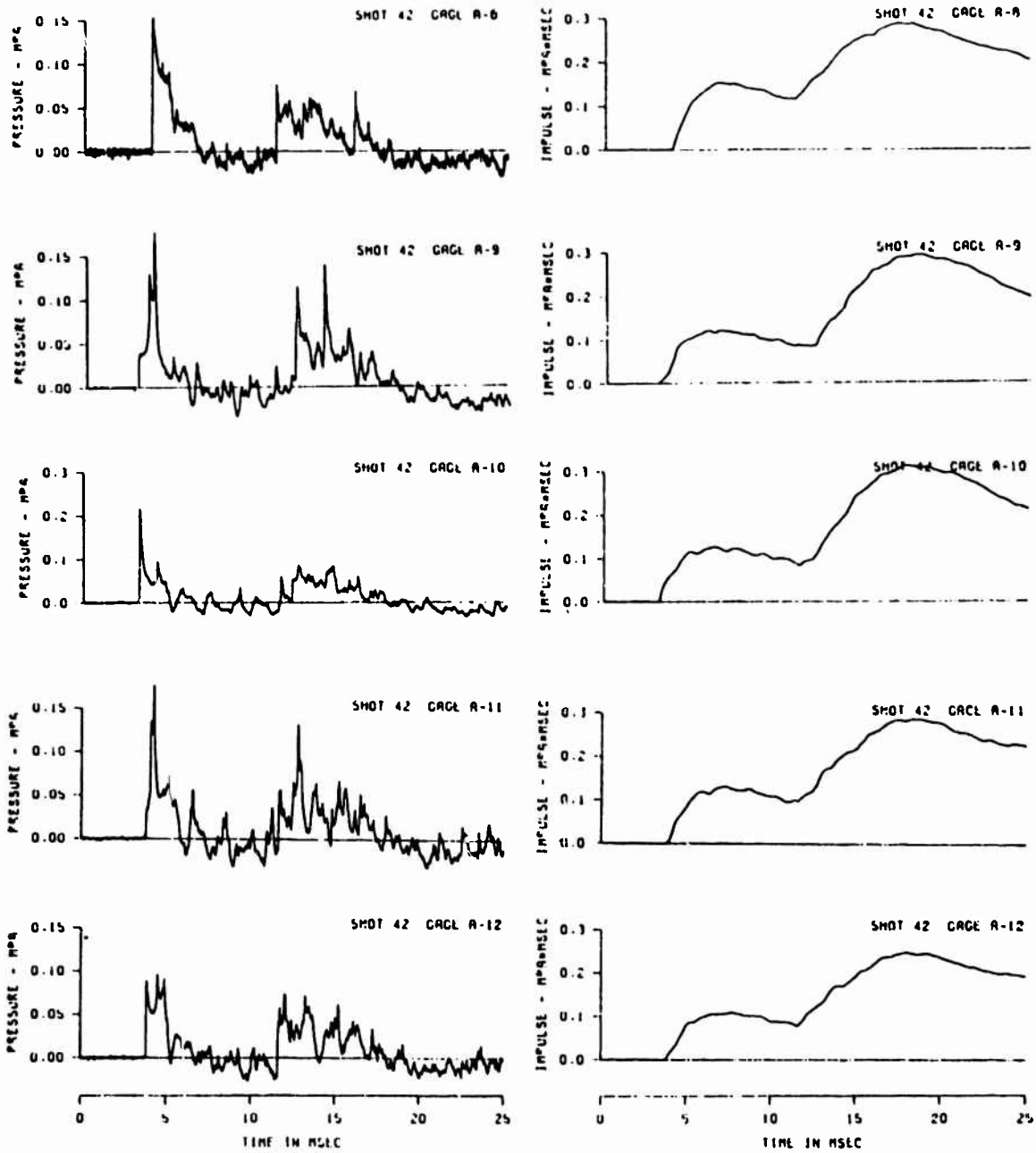

SHOT 41 GAGE B-6
IMPULSE - MPA-MSEC
TIME IN MSEC

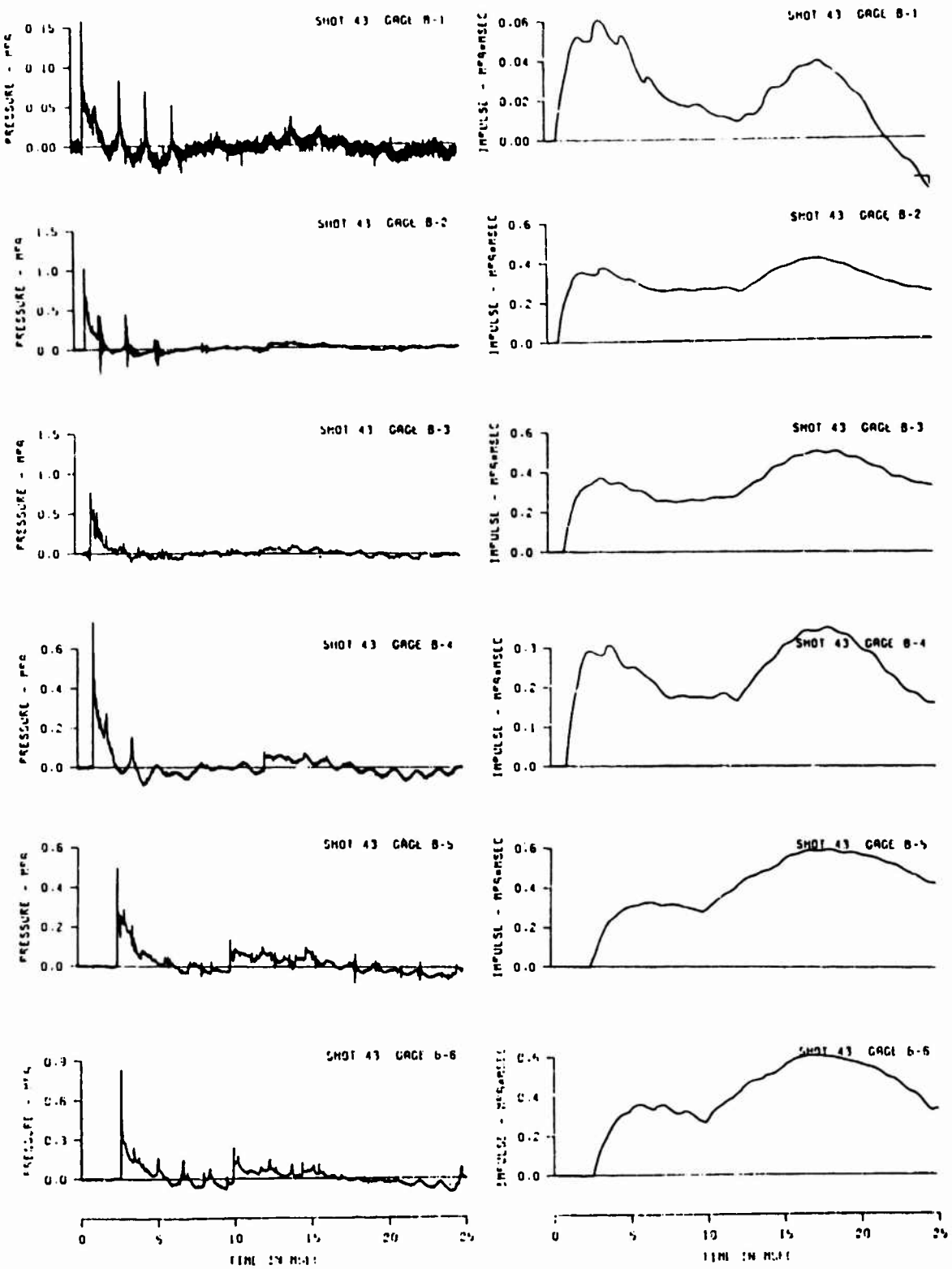

SHOT 41 GAGE B-7
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 41 GAGE B-8
SHOT 41 GAGE B-9
SHOT 41 GAGE B-10
SHOT 41 GAGE B-11
SHOT 41 GAGE B-12
TIME IN MSEC

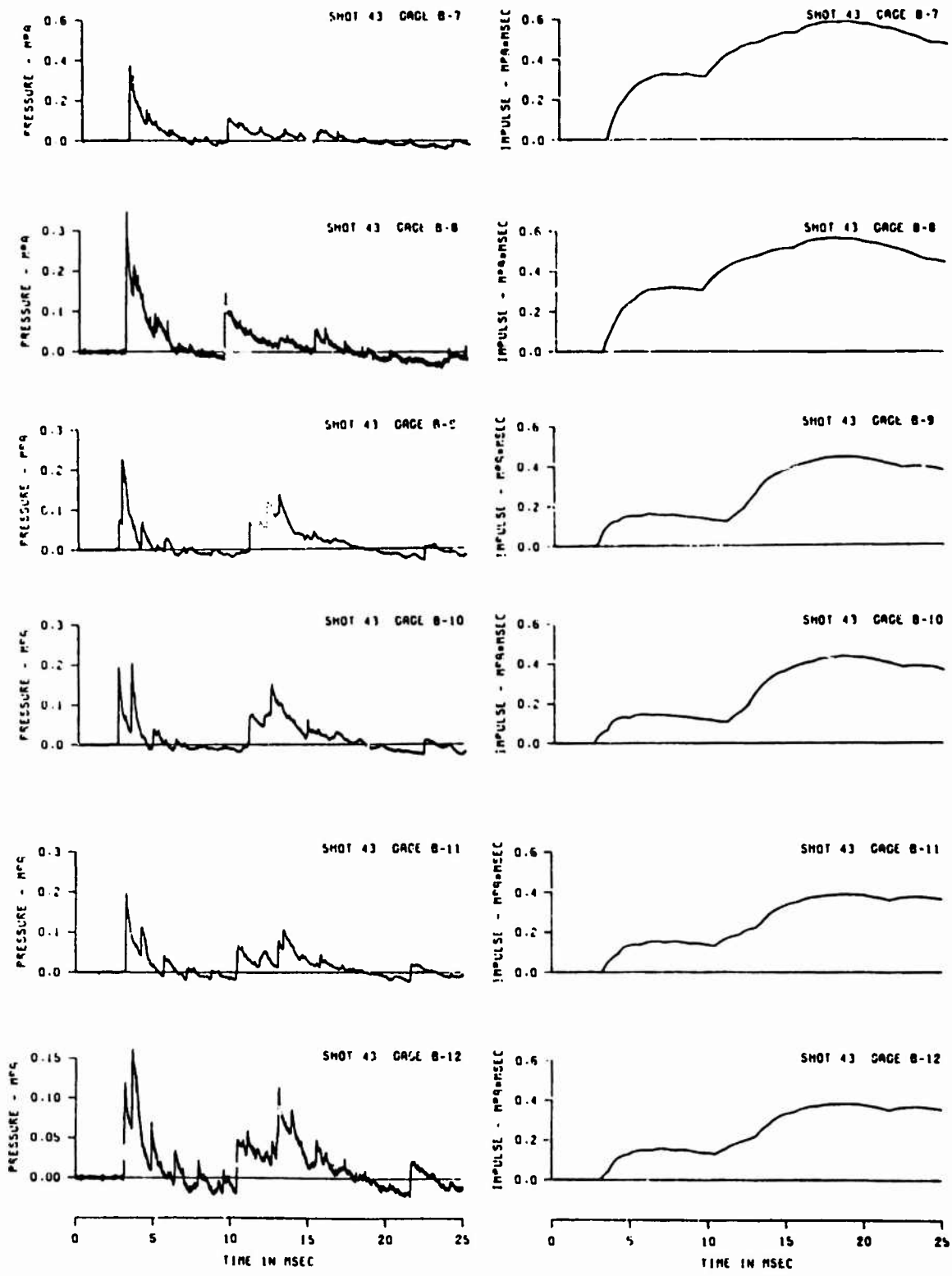

SHOT 42 CAGE B-1
SHOT 42 CAGE B-2
SHOT 42 CAGE B-3
SHOT 42 CAGE B-4
SHOT 42 CAGE B-5
SHOT 42 CAGE B-6
0
5
10
15
20
25
TIME IN MSEC

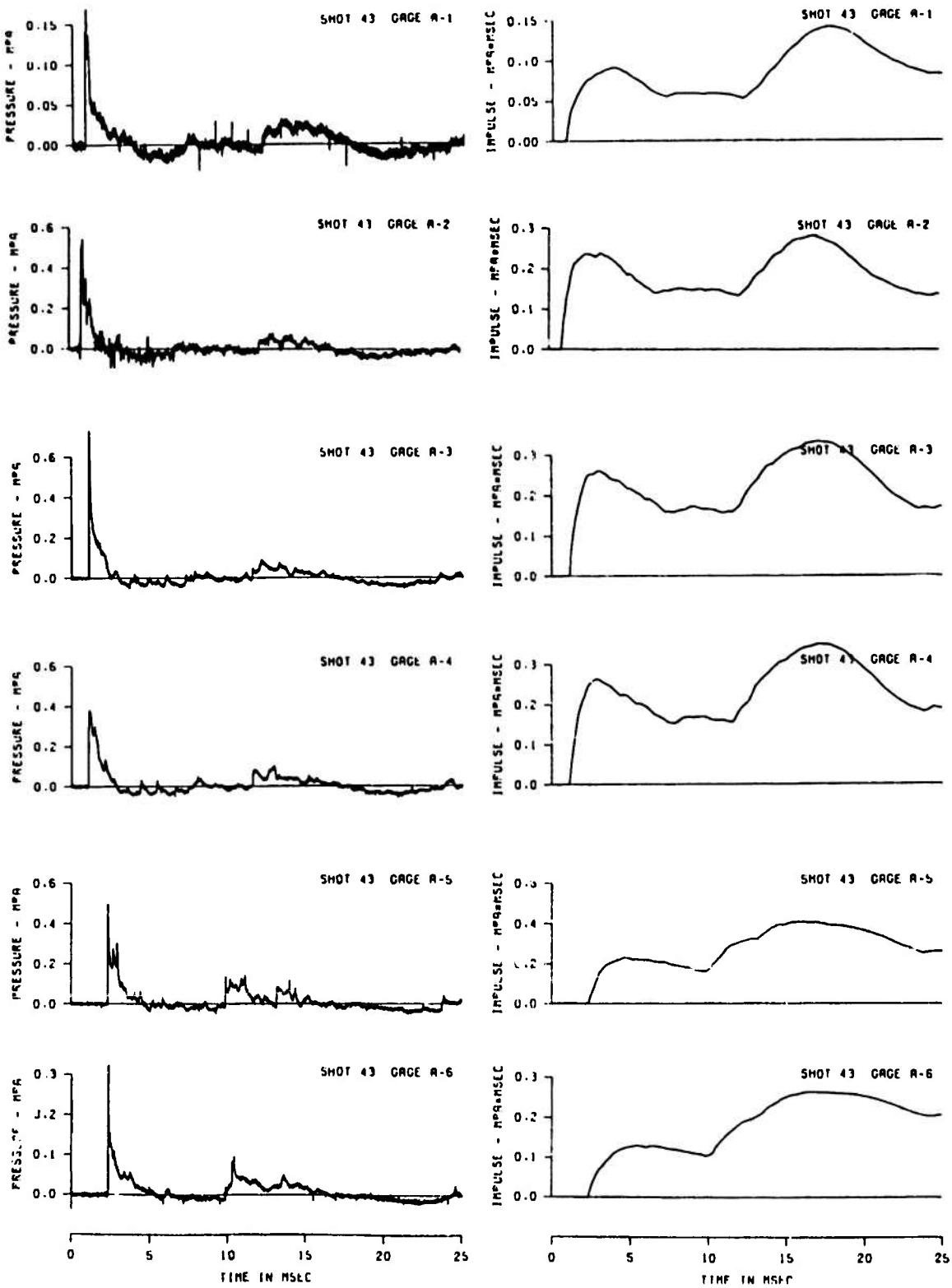

SHOT 42 GAGE B-7
SHOT 42 GAGE B-8
SHOT 42 GAGE B-9
SHOT 42 GAGE B-10
SHOT 42 GAGE B-11
SHOT 42 GAGE A-1
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

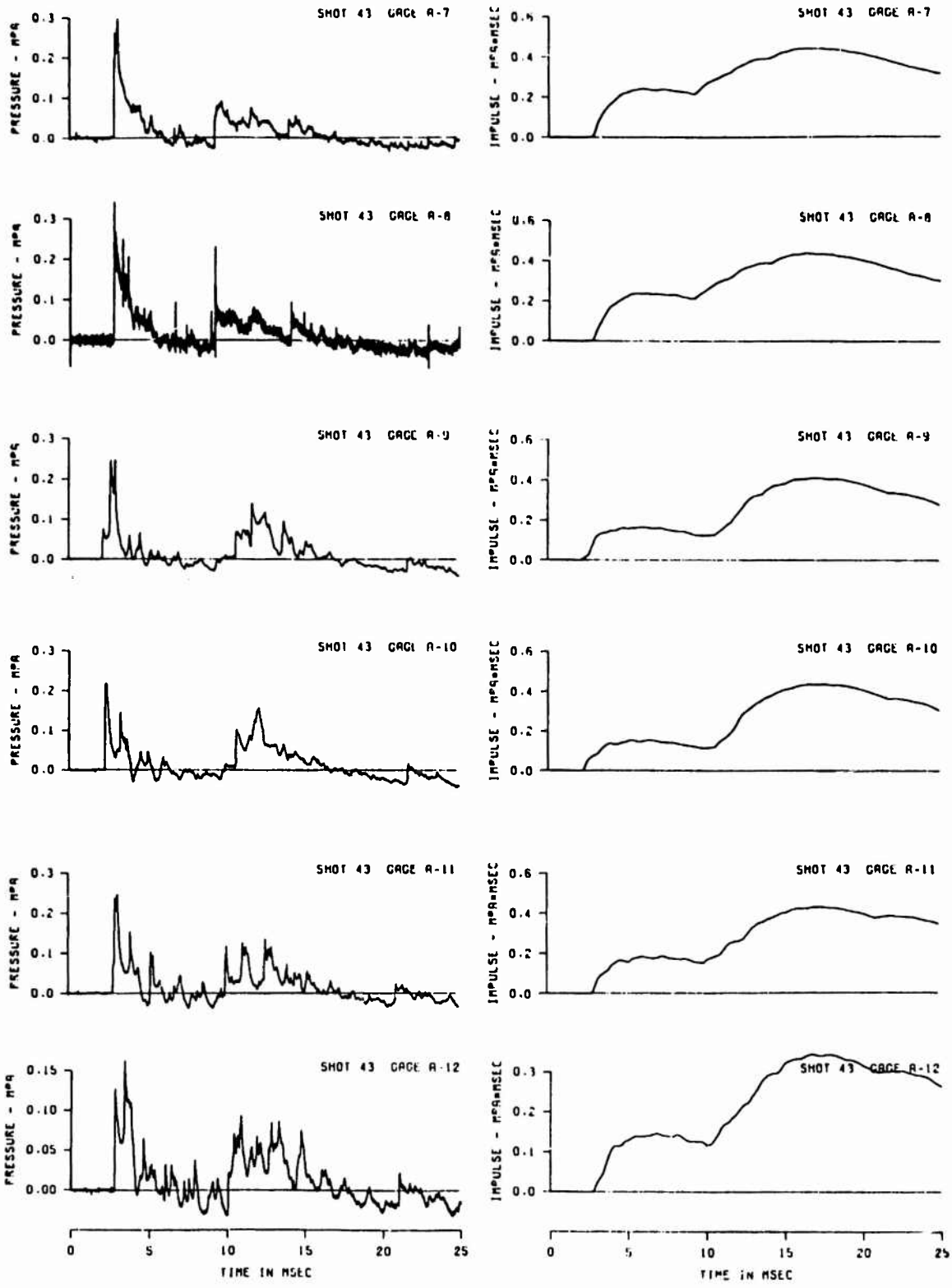

SHOT 42 GAGE A-2
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 42 GAGE A-3
SHOT 42 GAGE A-4
SHOT 42 GAGE A-5
SHOT 42 GAGE A-6
SHOT 42 GAGE A-7

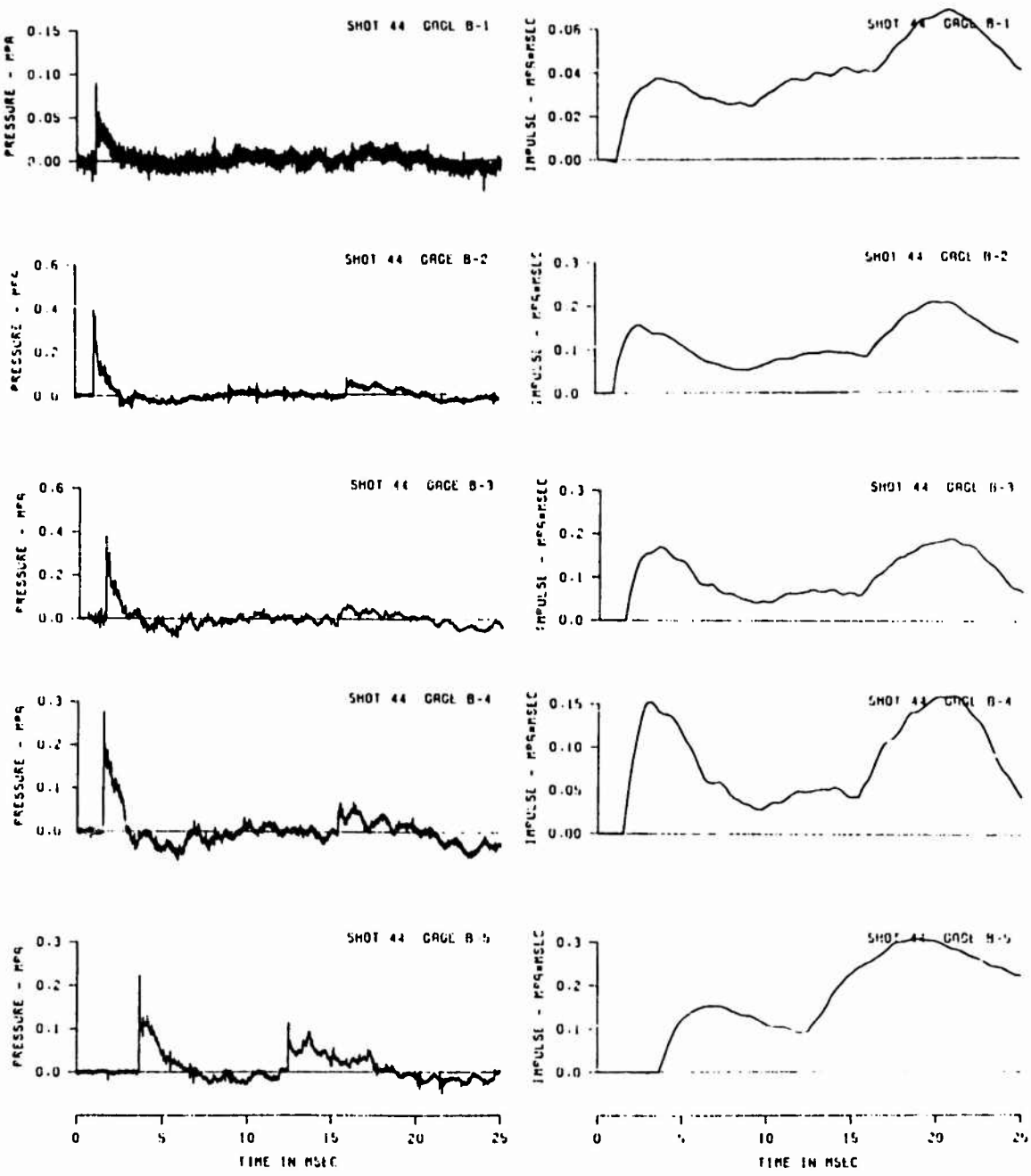

SHOT 42 GAGE A-8
SHOT 42 GAGE A-9
SHOT 42 GAGE A-10
SHOT 42 GAGE A-11
SHOT 42 GAGE A-12
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

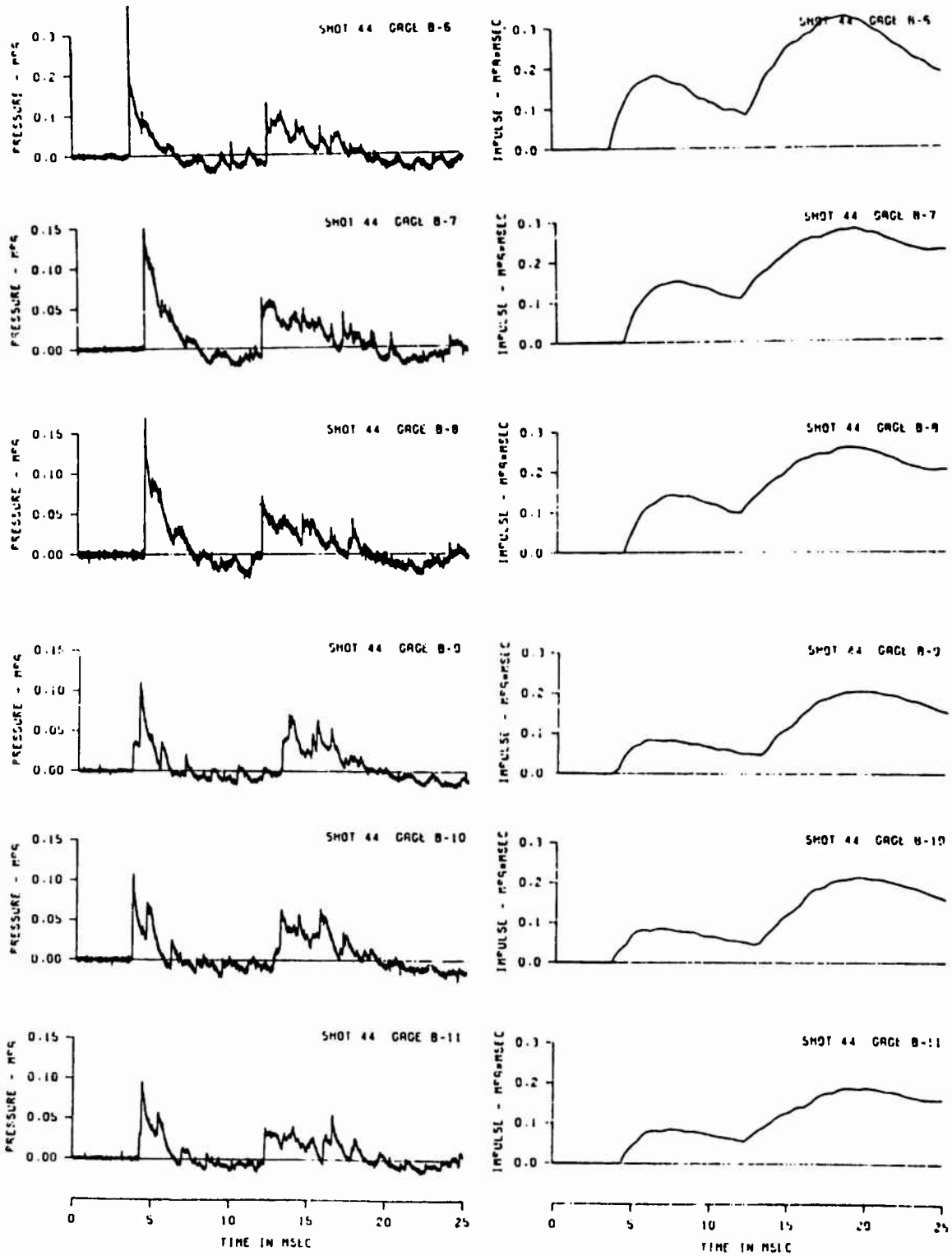

SHOT 43 GAGE B-1
SHOT 43 GAGE B-2
SHOT 43 GAGE B-3
SHOT 43 GAGE B-4
SHOT 43 GAGE B-5
SHOT 43 GAGE B-6
0 5 10 15 20

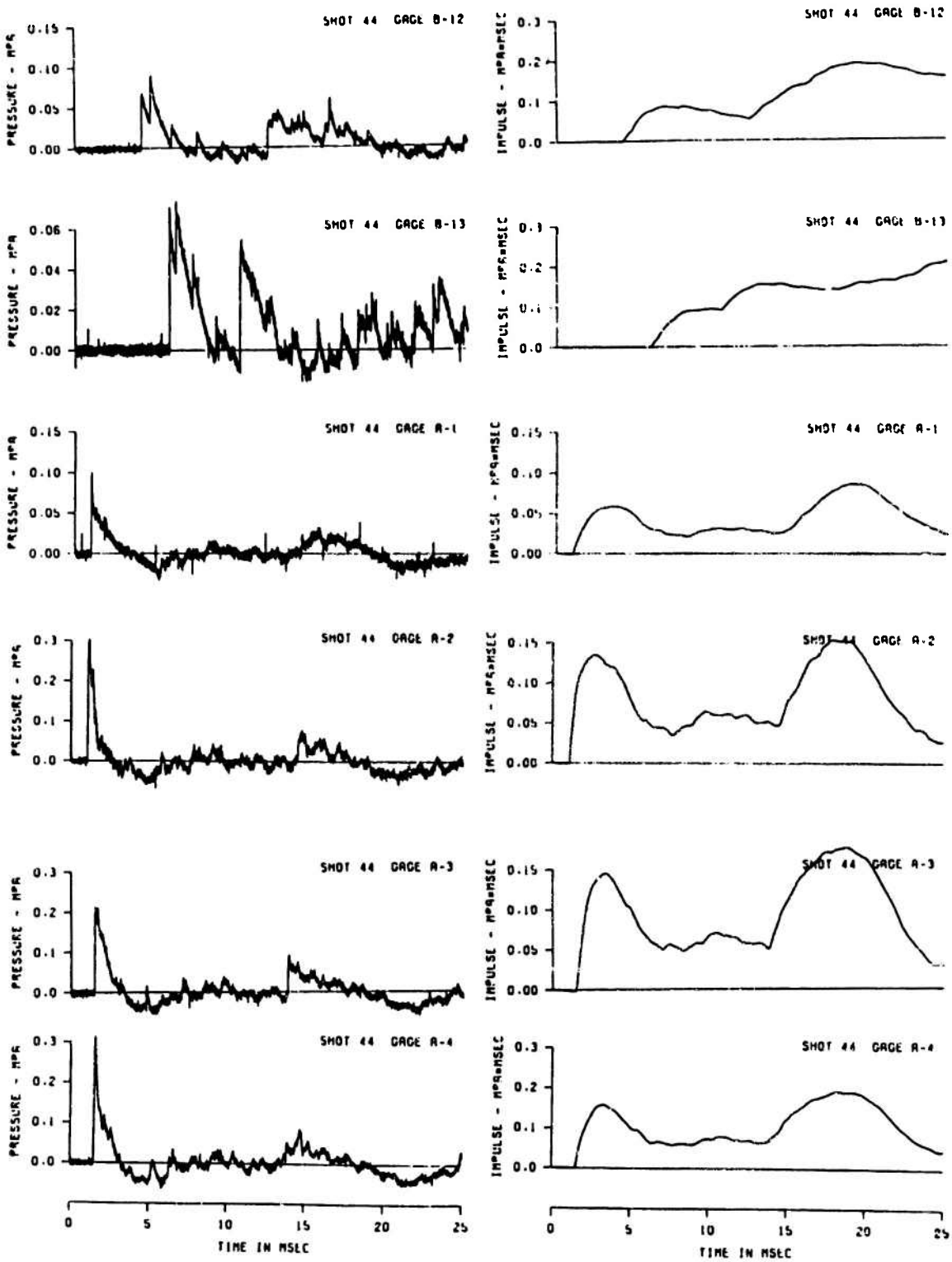

SHOT 43 GAGE B-7
SHOT 43 GAGE B-8
SHOT 43 GAGE B-9
SHOT 43 GAGE B-10
SHOT 43 GAGE B-11
SHOT 43 GAGE B-12
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

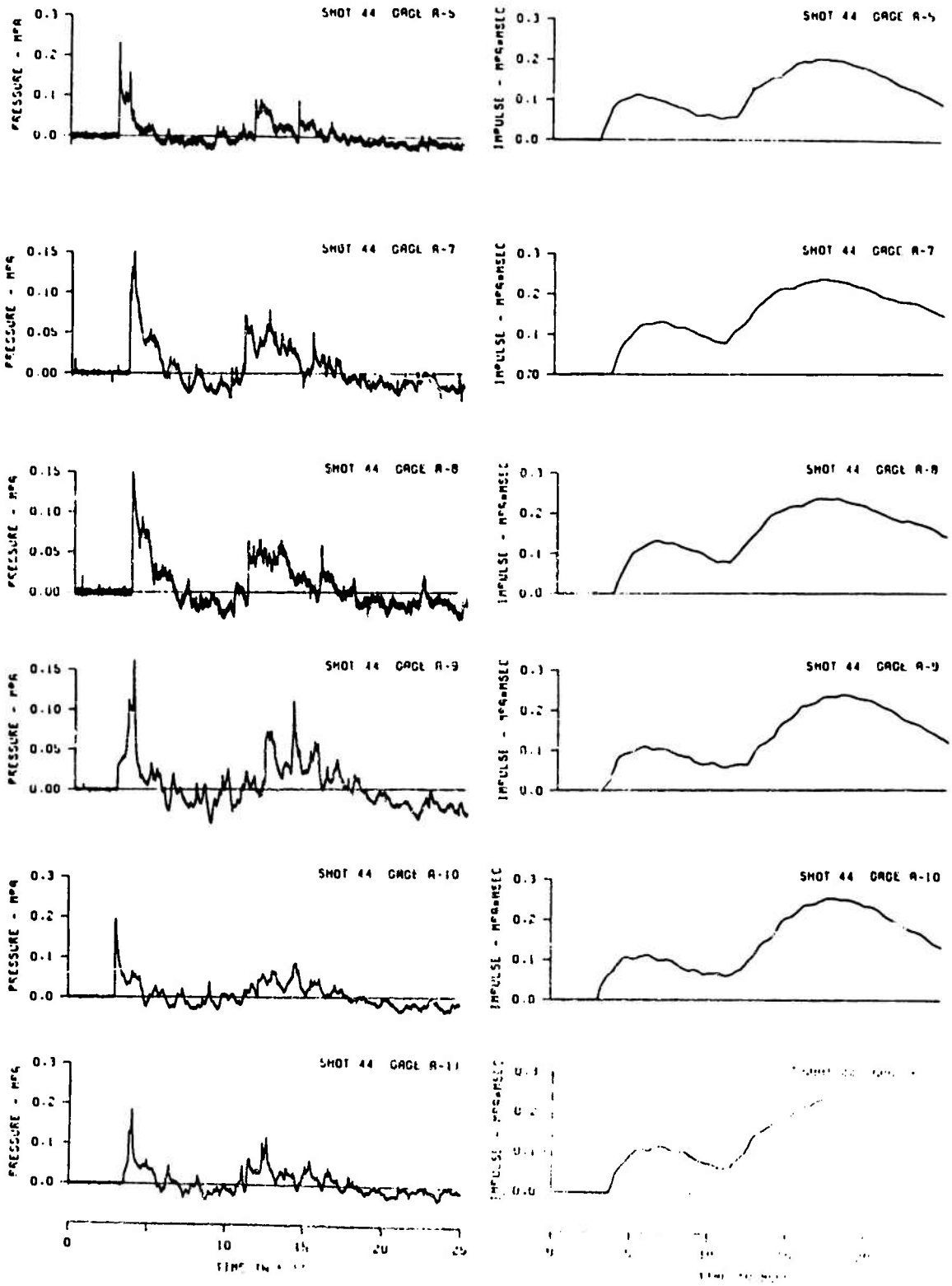

SHOT 43 GAGE A-1
SHOT 43 GAGE A-2
SHOT 43 GAGE A-3
SHOT 43 GAGE A-4
SHOT 43 GAGE A-5
SHOT 43 GAGE A-6
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC
0
5
10
15
20
25

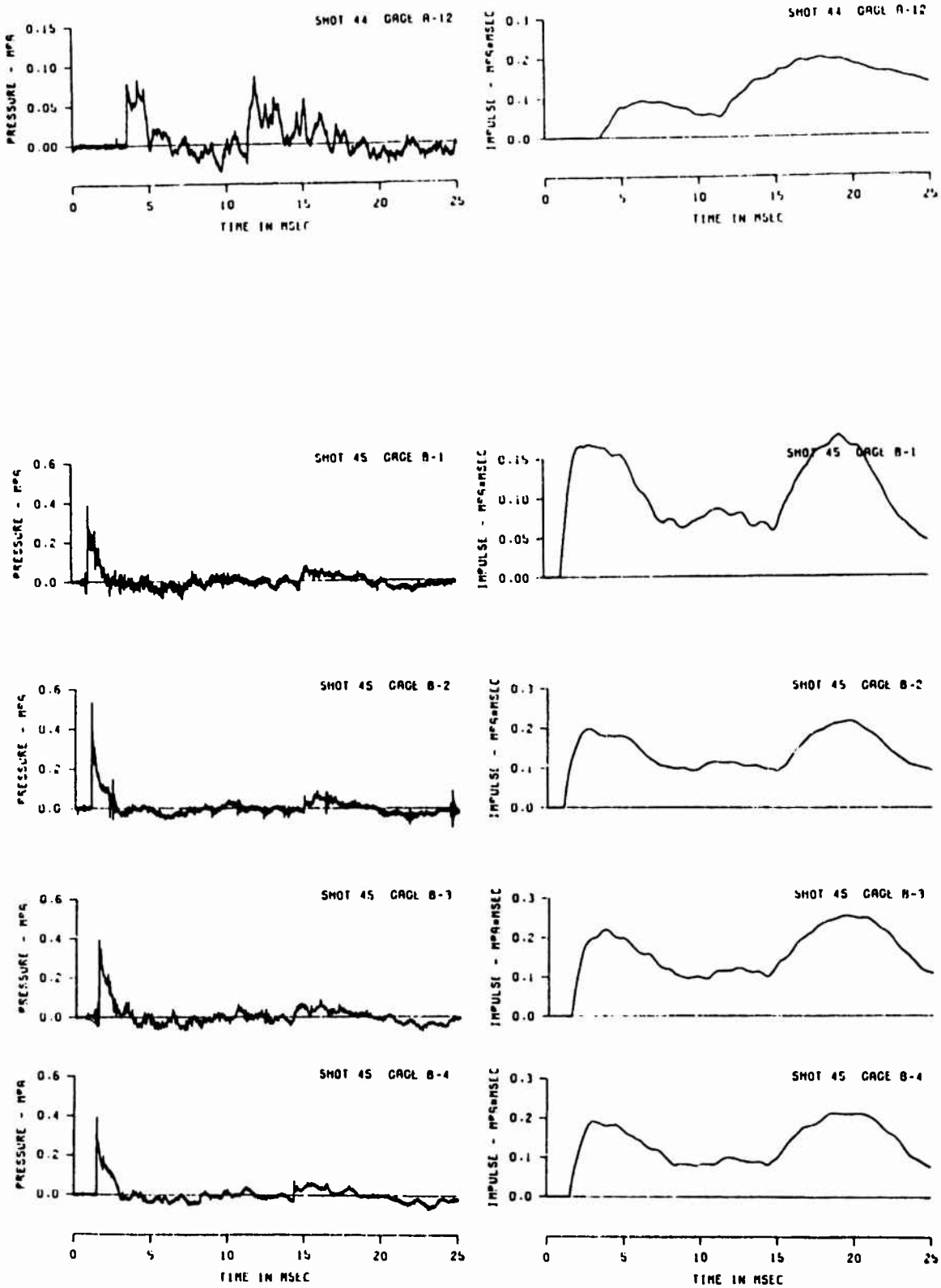

SHOT 43 GAGE A-7
SHOT 43 GAGE A-8
SHOT 43 GAGE A-9
SHOT 43 GAGE A-10
SHOT 43 GAGE A-11
SHOT 43 GAGE A-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

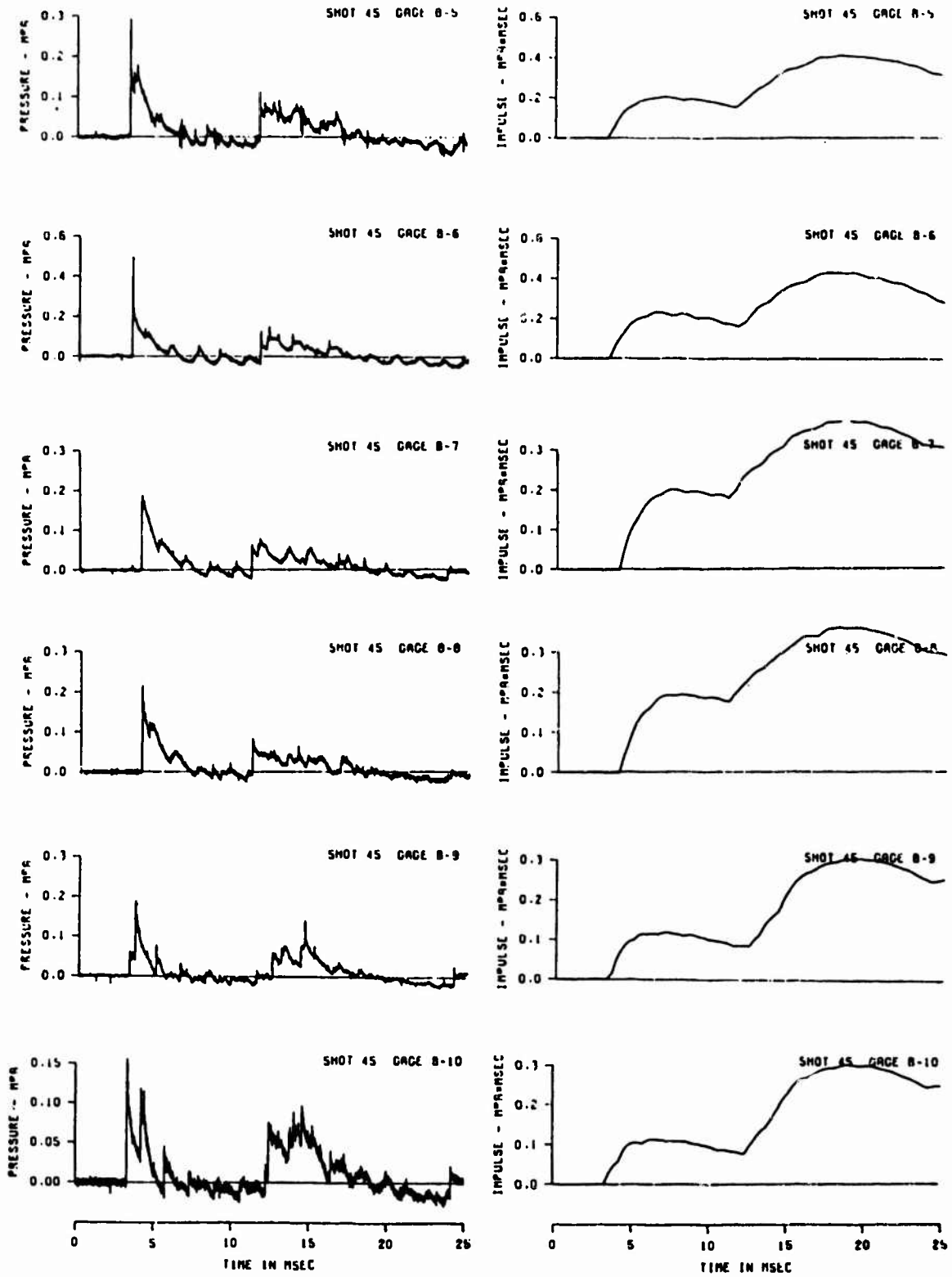

SHOT 44 GAGE B-1
SHOT 44 GAGE B-2
SHOT 44 GAGE B-3
SHOT 44 GAGE B-4
SHOT 44 GAGE B-5
PRESSURE - PSI
IMPULSE - PSI-MSEC
0.15
0.10
0.05
0.00
0.06
0.04
0.02
0.6
0.4
0.2
0.0
0.3
0.1
0.09
0
5
10
15
20
25
TIME IN MSEC

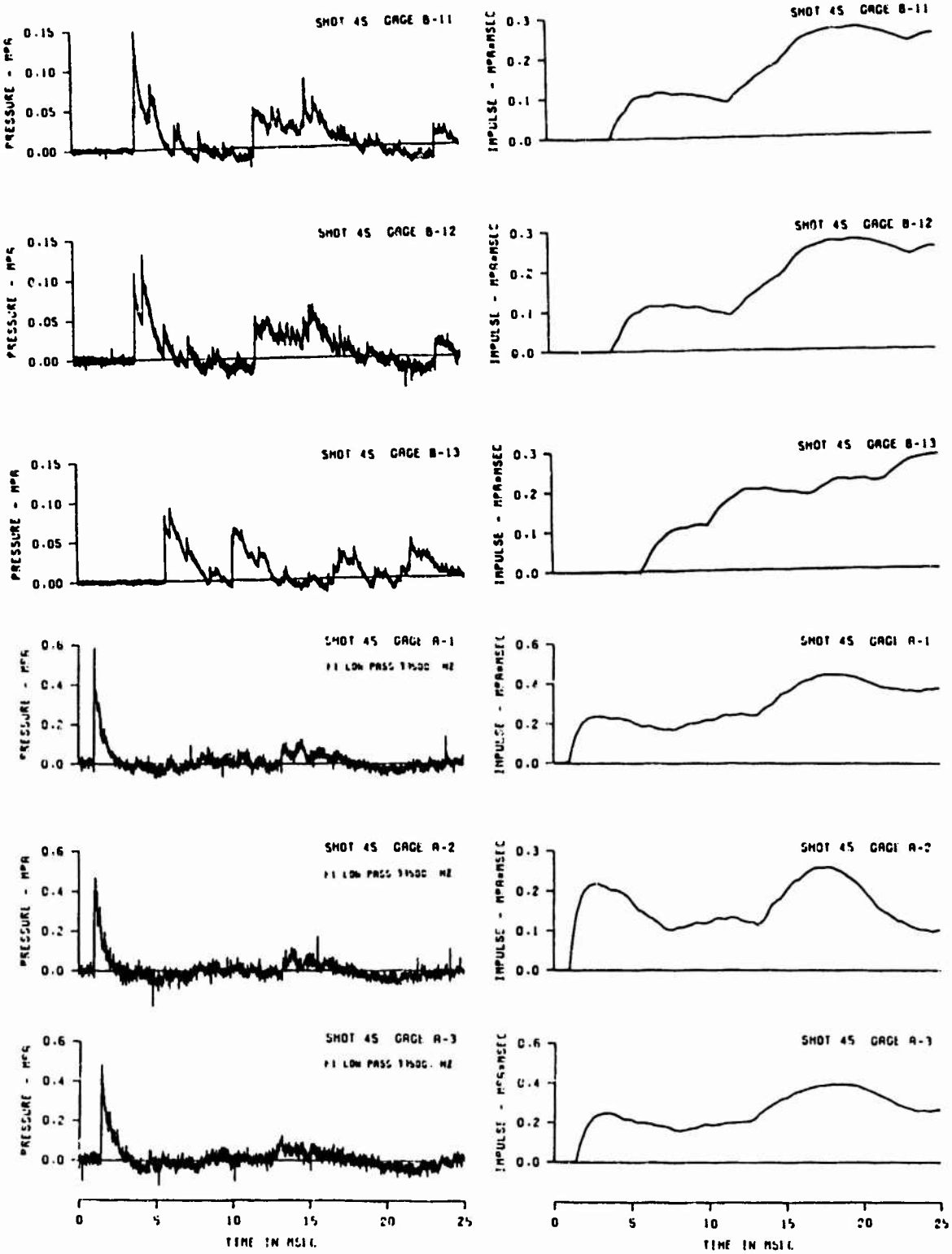

SHOT 44 GAGE B-6
SHOT 44 GAGE B-7
SHOT 44 GAGE B-8
SHOT 44 GAGE B-9
SHOT 44 GAGE B-10
SHOT 44 GAGE B-11
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

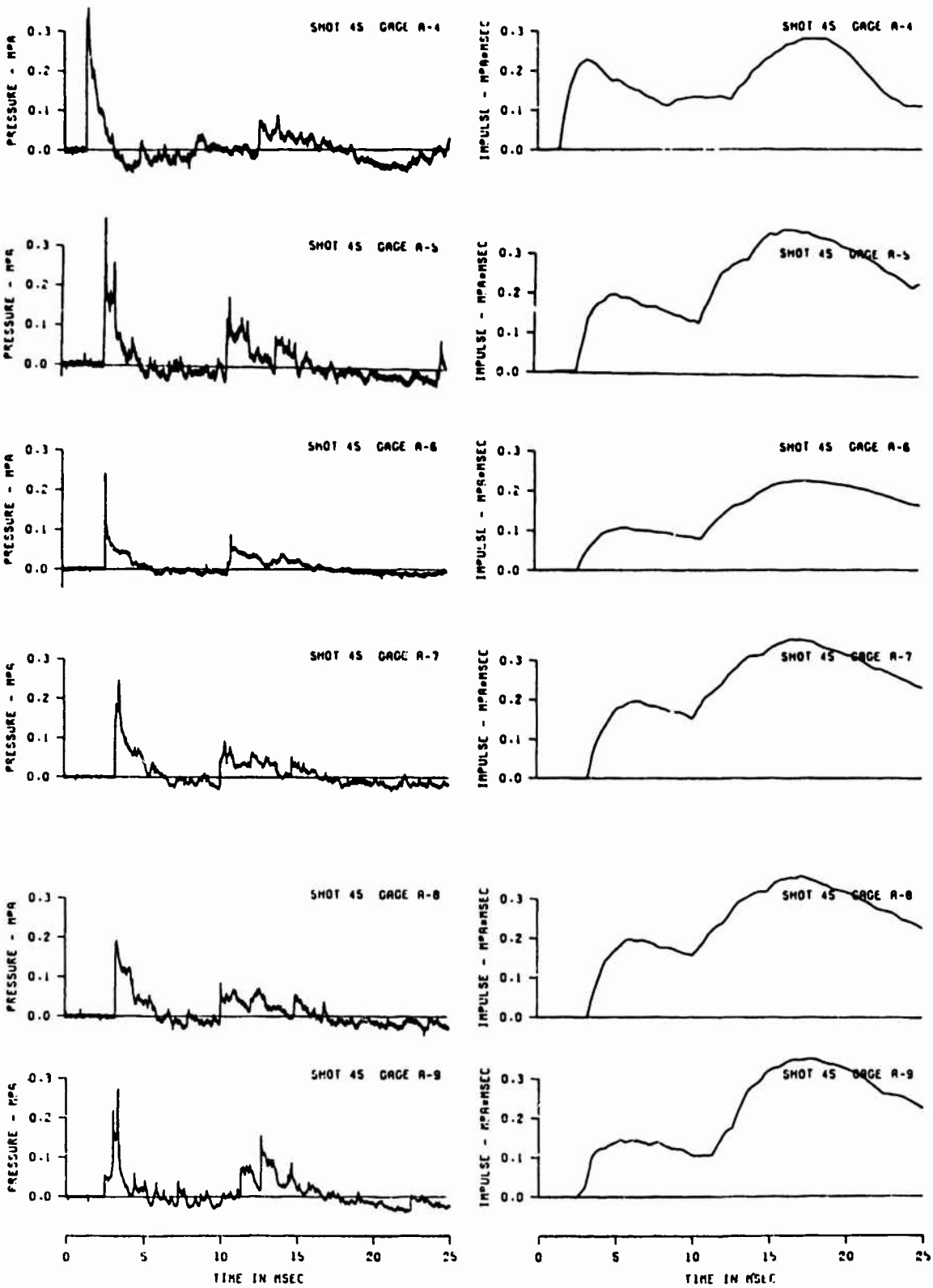

SHOT 44 GAGE B-12
SHOT 44 GAGE B-13
SHOT 44 GAGE A-1
SHOT 44 GAGE A-2
SHOT 44 GAGE A-3
SHOT 44 GAGE A-4
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

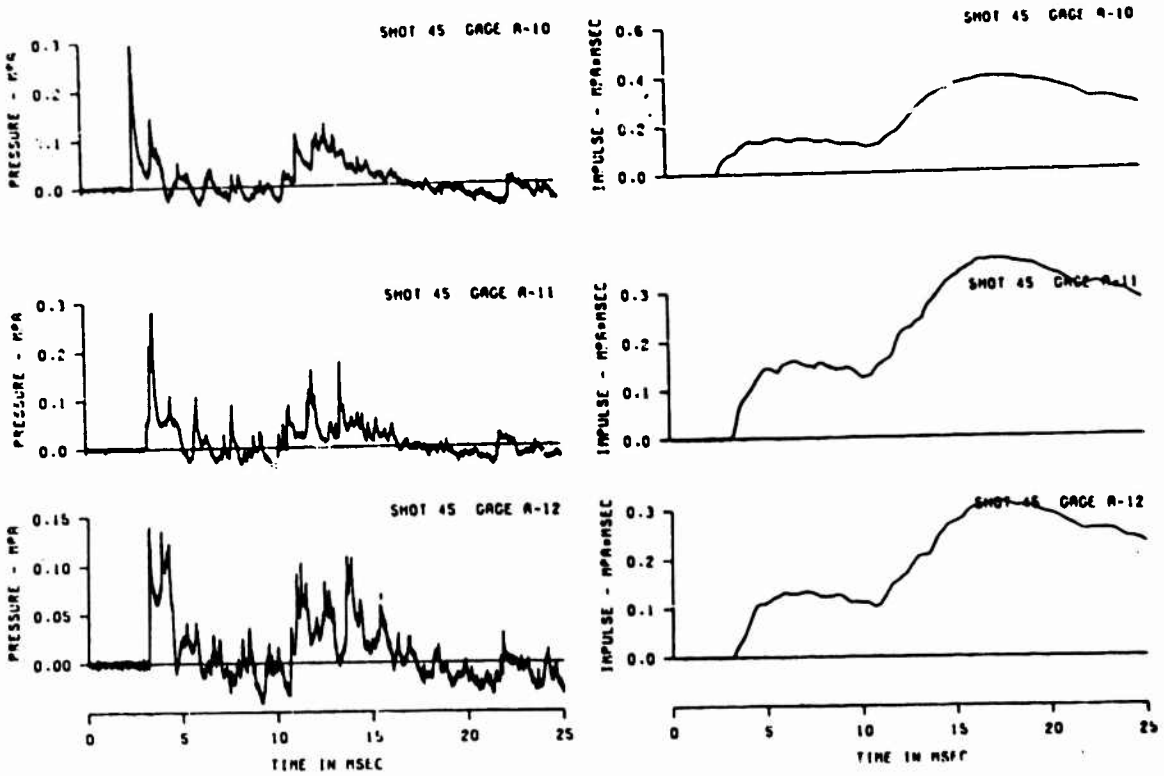

SHOT 44 GAGE A-5
SHOT 44 GAGE A-5
SHOT 44 GAGE A-7
SHOT 44 GAGE A-7
SHOT 44 GAGE A-8
SHOT 44 GAGE A-8
SHOT 44 GAGE A-9
SHOT 44 GAGE A-9
SHOT 44 GAGE A-10
SHOT 44 GAGE A-10
SHOT 44 GAGE A-11

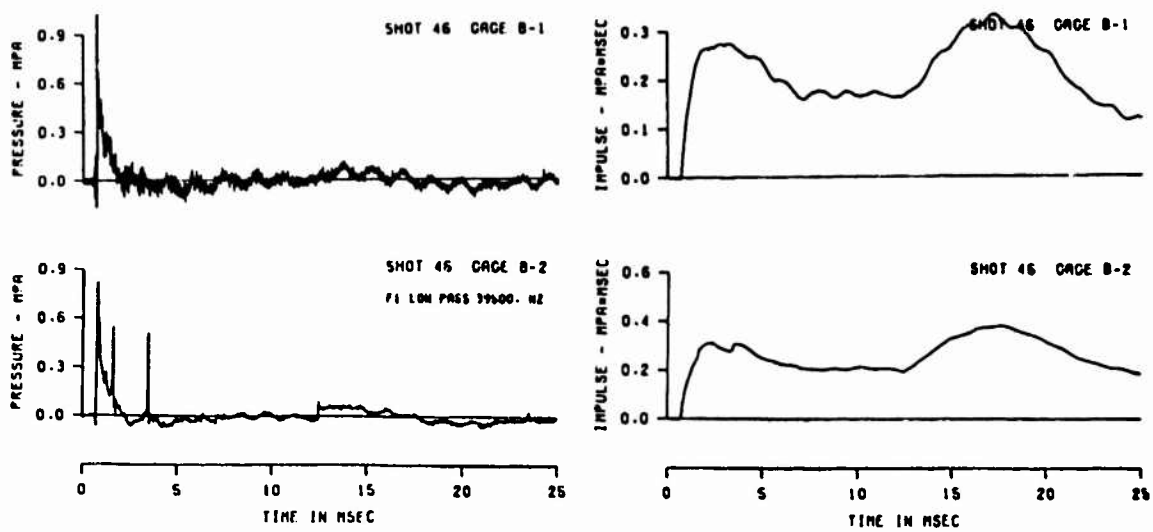

SHOT 44 GAGE A-12
PRESSURE - MPA
0.15
0.10
0.05
0.00
0
5
10
15
20
25
TIME IN MSEC
SHOT 44 GAGE A-12
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0
5
10
15
20
25
TIME IN MSEC
SHOT 45 GAGE A-1
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 45 GAGE A-1
IMPULSE - MPA-MSEC
0.15
0.10
0.05
0.00
SHOT 45 GAGE A-2
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 45 GAGE A-2
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 45 GAGE A-3
PRESSURE - MPA
0.6
0.4
0.2
0.0
SHOT 45 GAGE A-3
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
SHOT 45 GAGE A-4
PRESSURE - MPA
0.6
0.4
0.2
0.0
0
5
10
15
20
25
TIME IN MSEC
SHOT 45 GAGE A-4
IMPULSE - MPA-MSEC
0.3
0.2
0.1
0.0
0
5
10
15
20
25
TIME IN MSEC

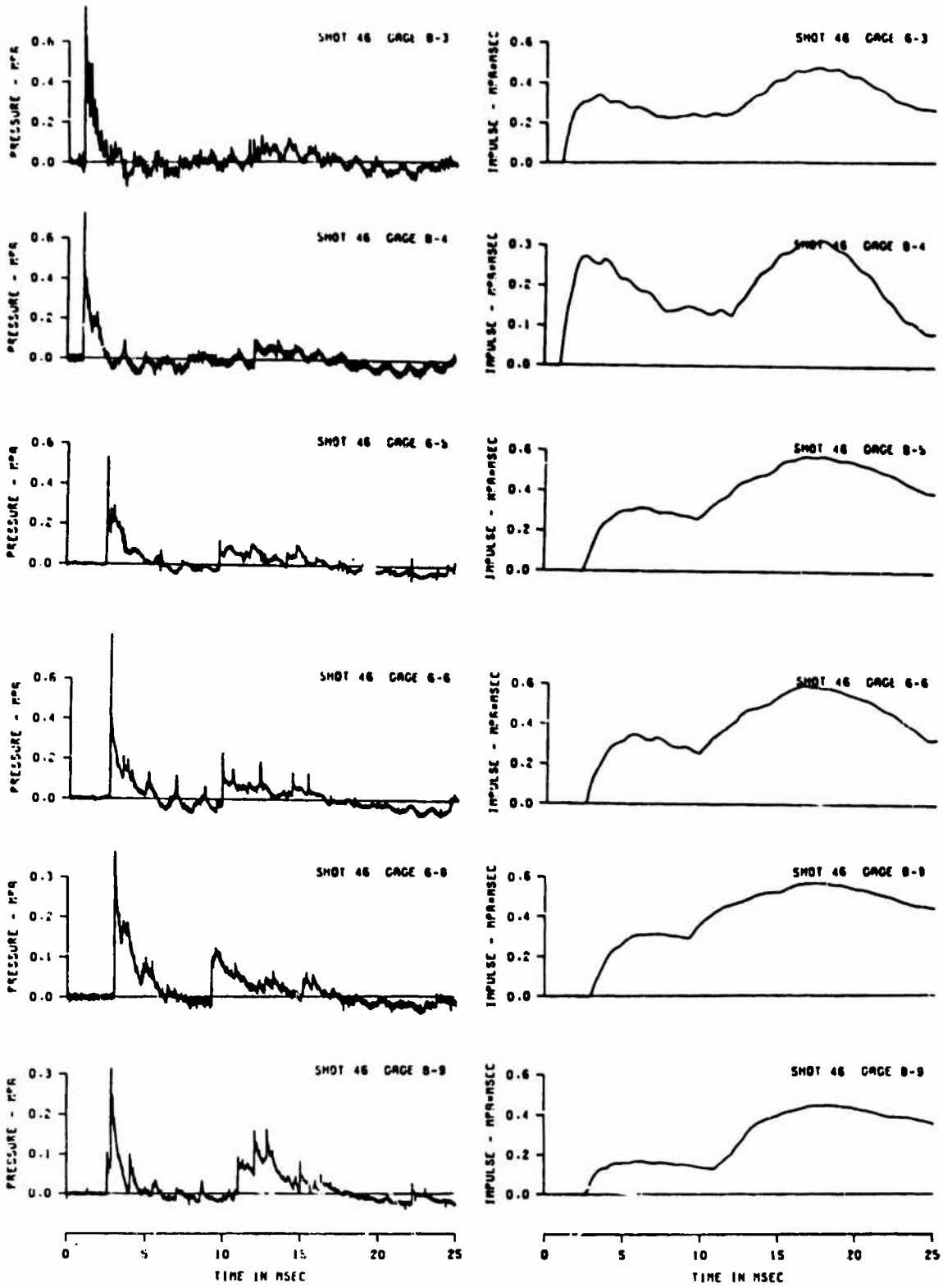

SHOT 45 GAGE B-5
SHOT 45 GAGE B-6
SHOT 45 GAGE B-7
SHOT 45 GAGE B-8
SHOT 45 GAGE B-9
SHOT 45 GAGE B-10
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

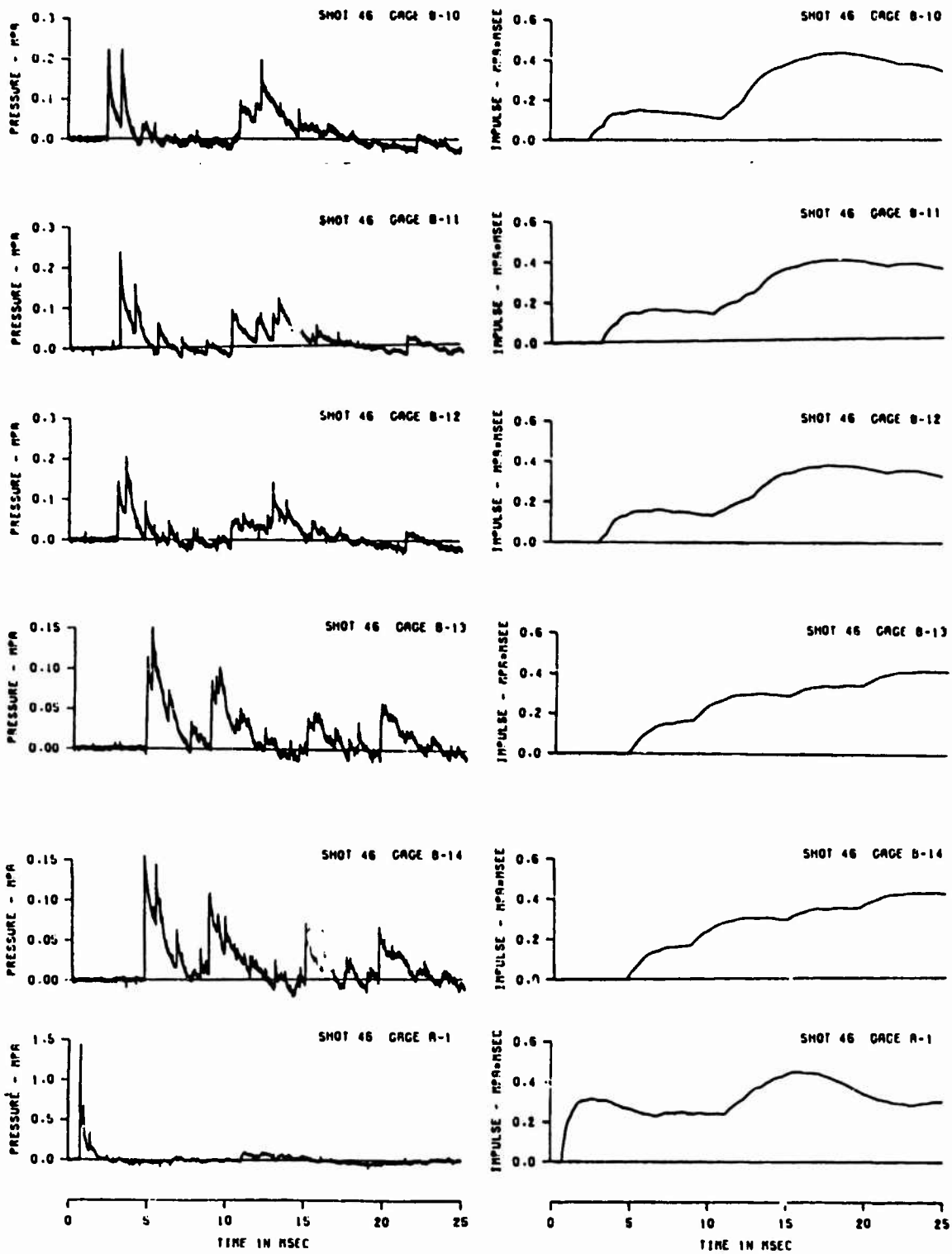

SHOT 45 GAGE B-11
SHOT 45 GAGE B-12
SHOT 45 GAGE B-13
SHOT 45 GAGE A-1
SHOT 45 GAGE A-2
SHOT 45 GAGE A-3
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

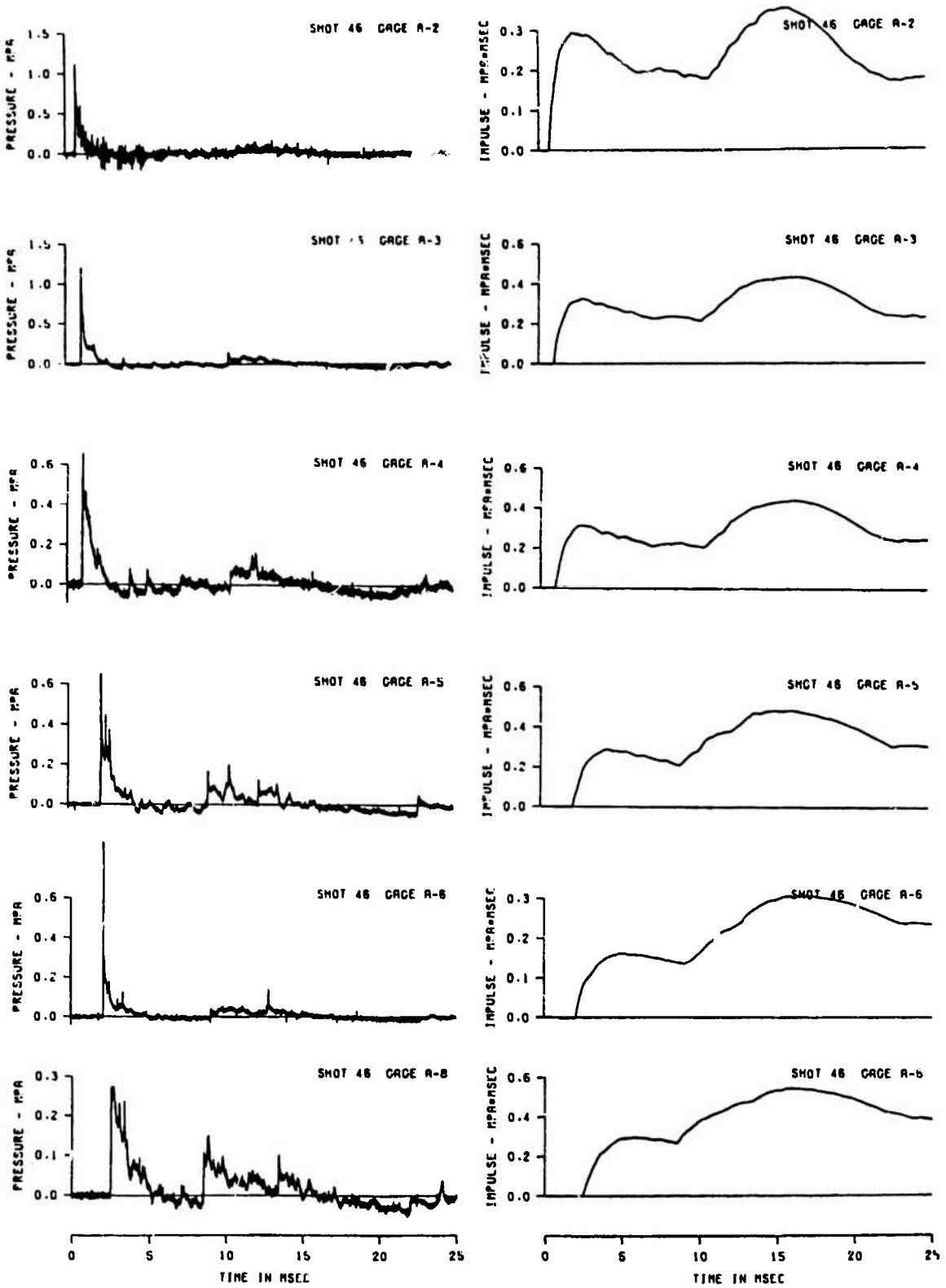

SHOT 45 GAGE A-4
SHOT 45 GAGE A-5
SHOT 45 GAGE A-6
SHOT 45 GAGE A-7
SHOT 45 GAGE A-8
SHOT 45 GAGE A-9
PRESSURE - MPA
IMPULSE - MPA•MSEC
0.0
0.1
0.2
0.3
0
5
10
15
20
25
TIME IN MSEC

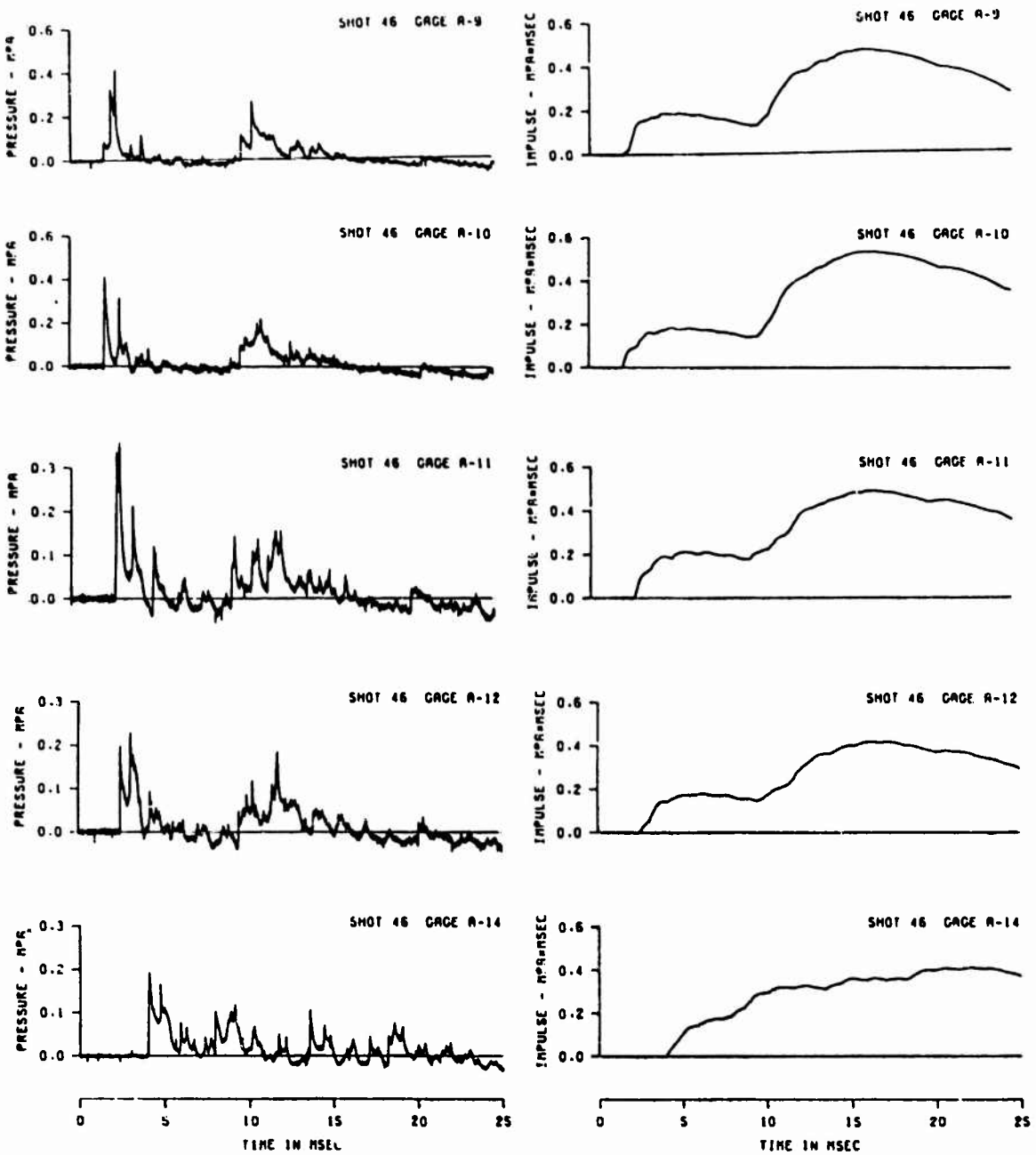

SHOT 45 GAGE A-10
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 45 GAGE A-11
SHOT 45 GAGE A-12
TIME IN MSEC

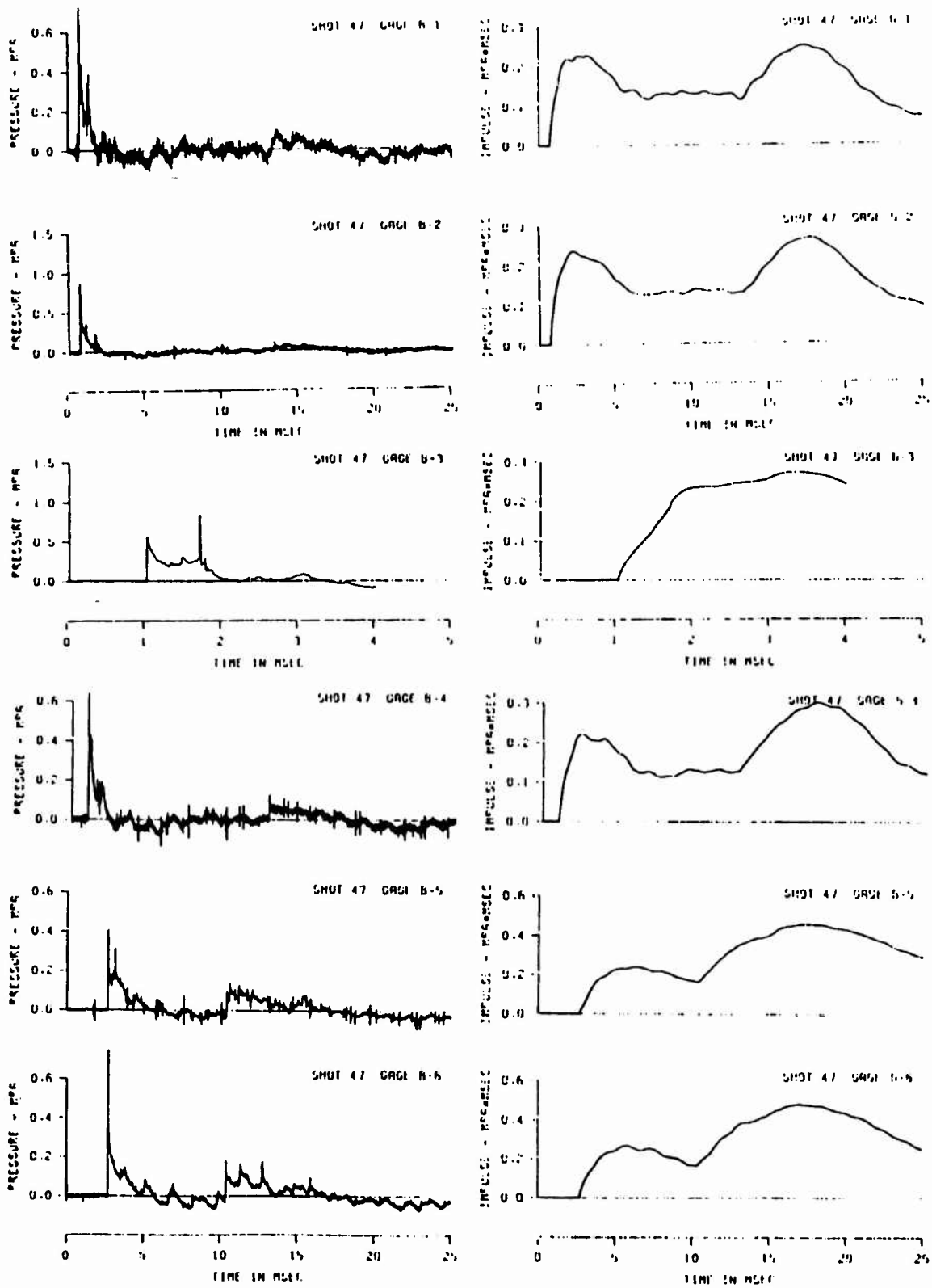

SHOT 46 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 46 GAGE B-2
FI LOW PASS 39600. HZ
TIME IN MSEC

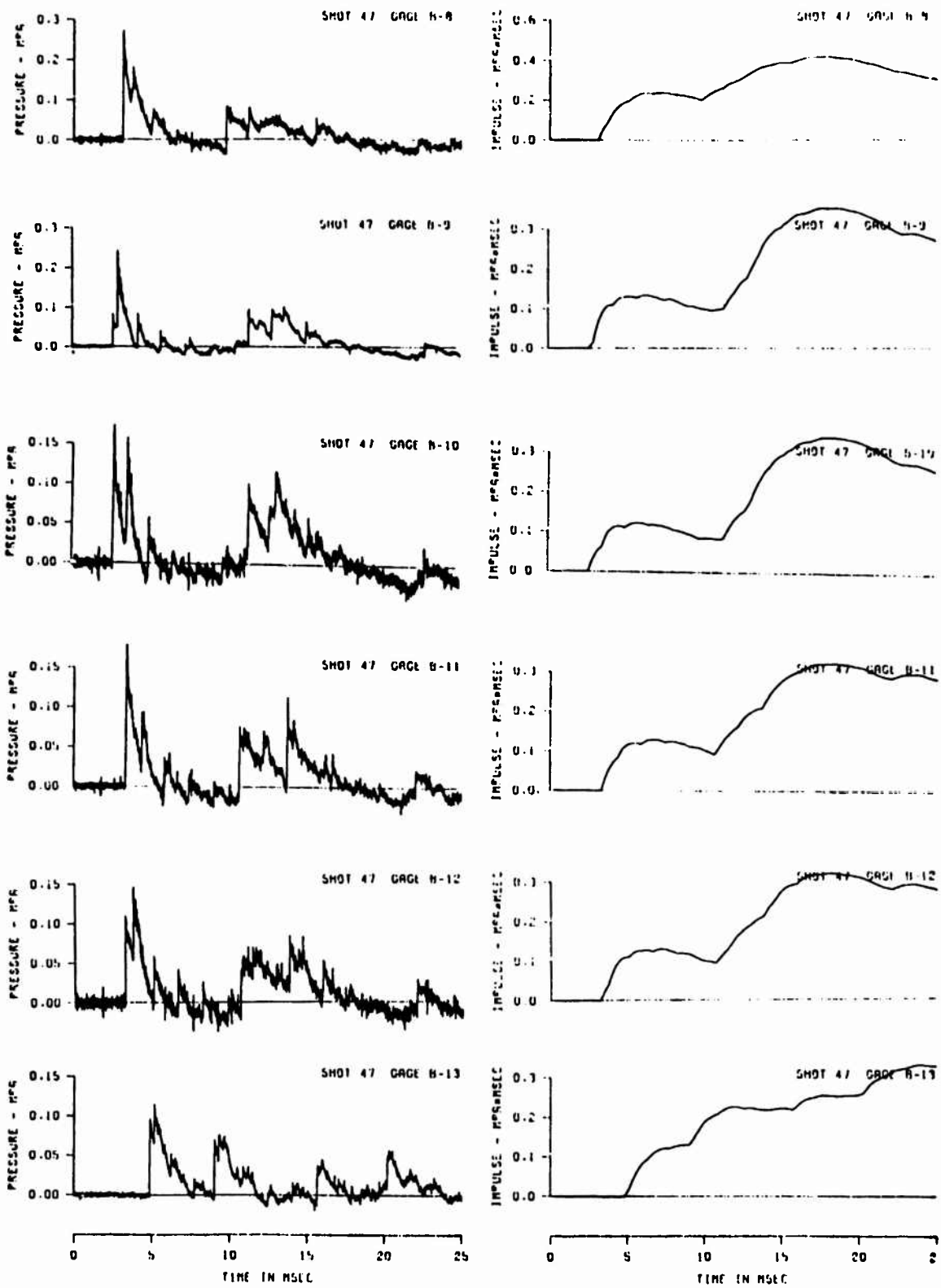

SHOT 46 GAGE B-3
SHOT 46 GAGE B-4
SHOT 46 GAGE B-5
SHOT 46 GAGE B-6
SHOT 46 GAGE B-8
SHOT 46 GAGE B-9
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0
5
10
15
20
25

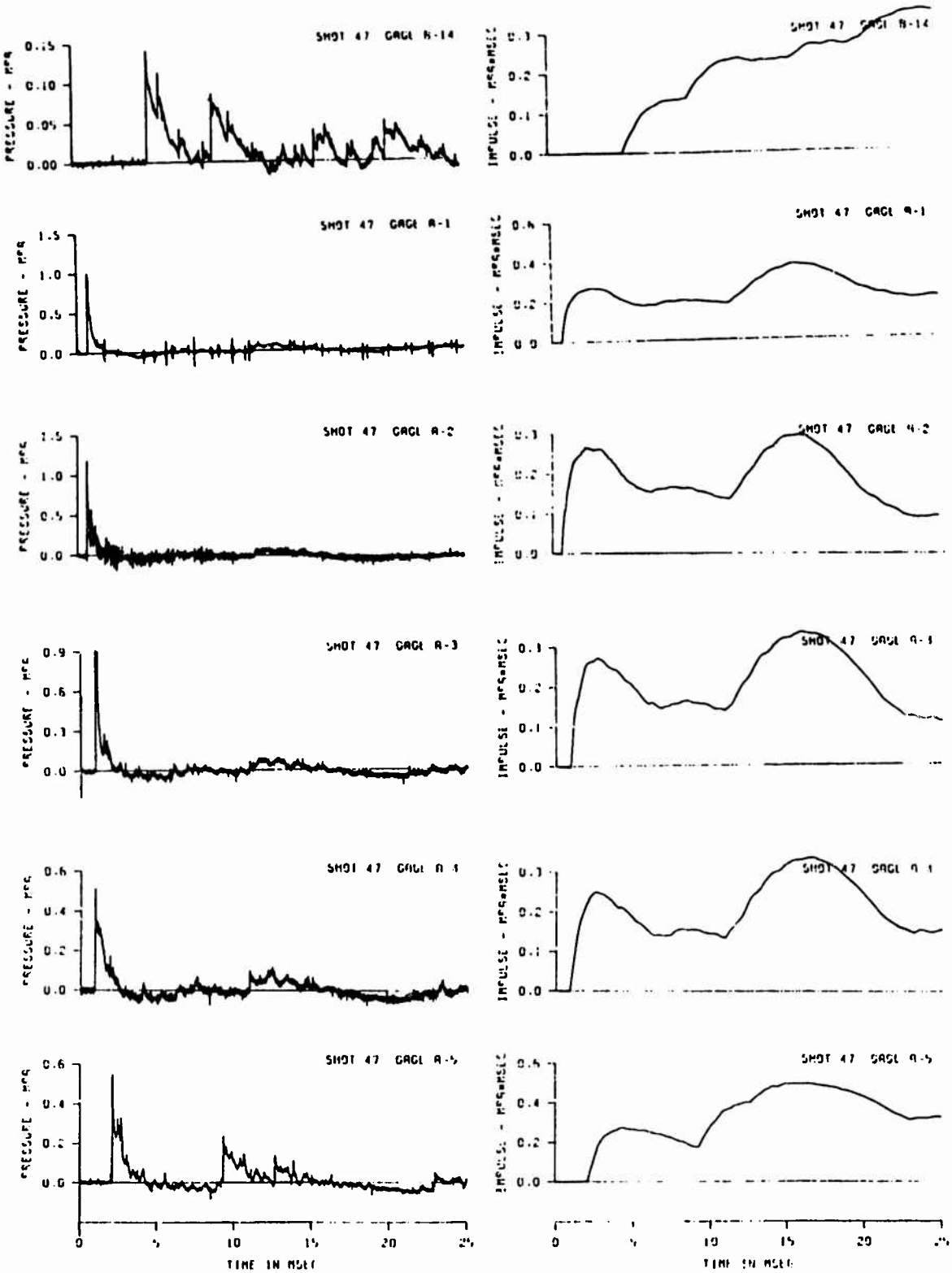

SHOT 46 GAGE B-10
SHOT 46 GAGE B-11
SHOT 46 GAGE B-12
SHOT 46 GAGE B-13
SHOT 46 GAGE B-14
SHOT 46 GAGE A-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

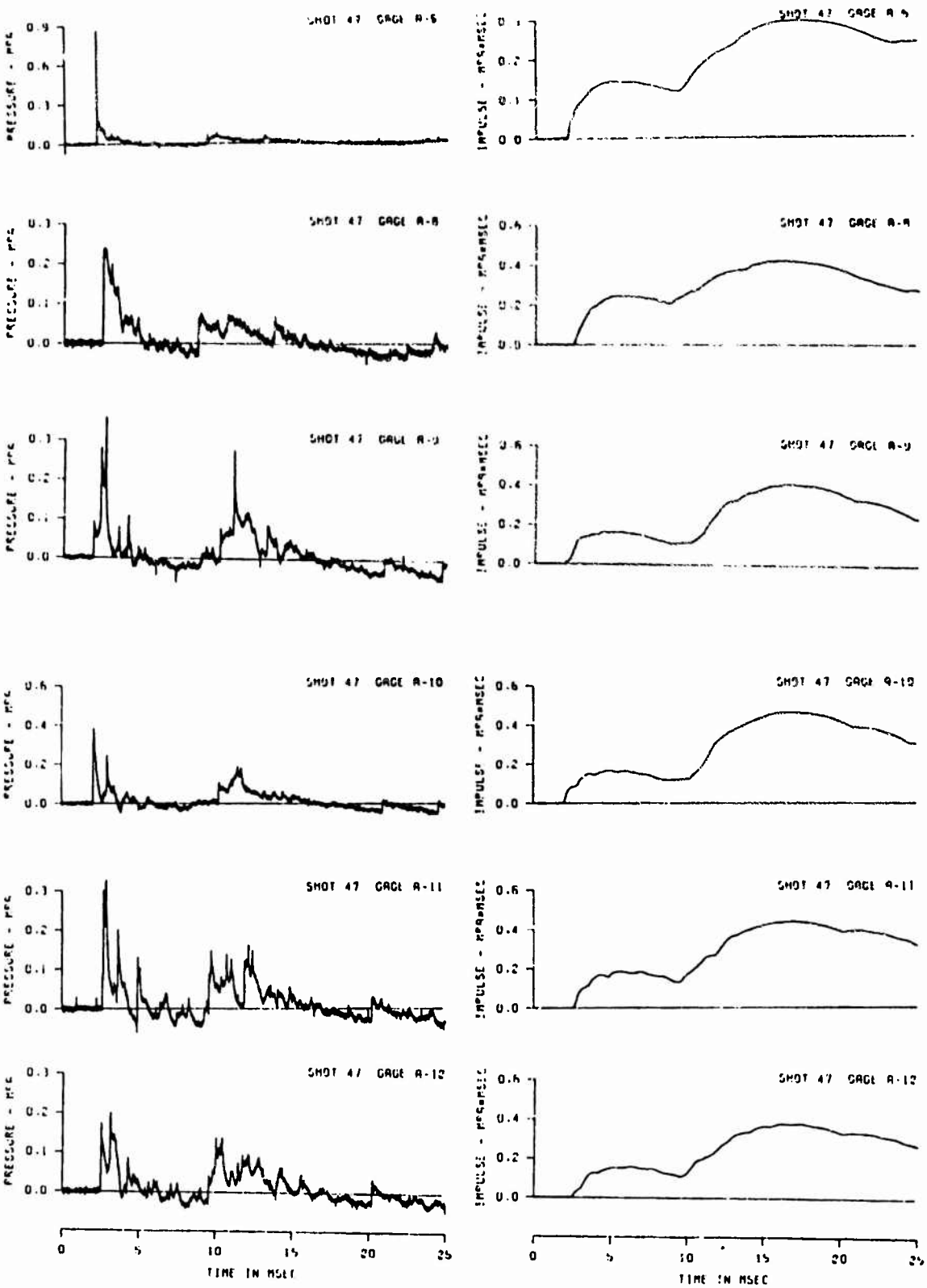

SHOT 46 GAGE A-2
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 46 GAGE A-3
SHOT 46 GAGE A-4
SHOT 46 GAGE A-5
SHOT 46 GAGE A-6
SHOT 46 GAGE A-8
TIME IN MSEC

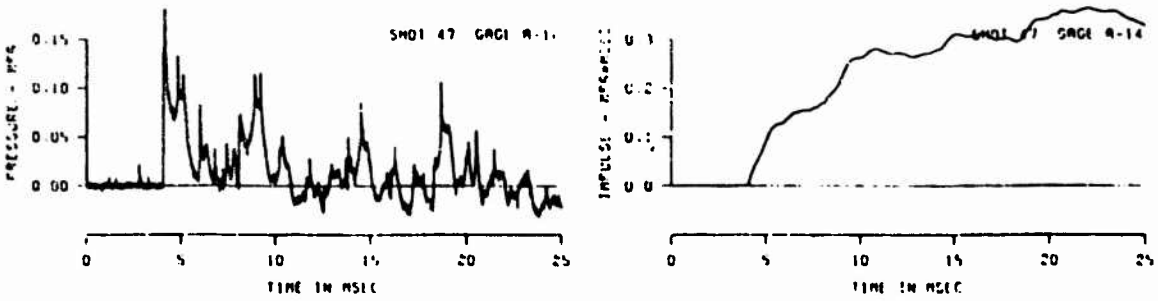

SHOT 46 GAGE A-9
SHOT 46 GAGE A-10
SHOT 46 GAGE A-11
SHOT 46 GAGE A-12
SHOT 46 GAGE A-14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC


SHOT 47 GAGE B-1
SHOT 47 GAGE B-2
SHOT 47 GAGE B-3
SHOT 47 GAGE B-4
SHOT 47 GAGE B-5
SHOT 47 GAGE B-6
PRESSURE - PSI
TIME IN MSEC

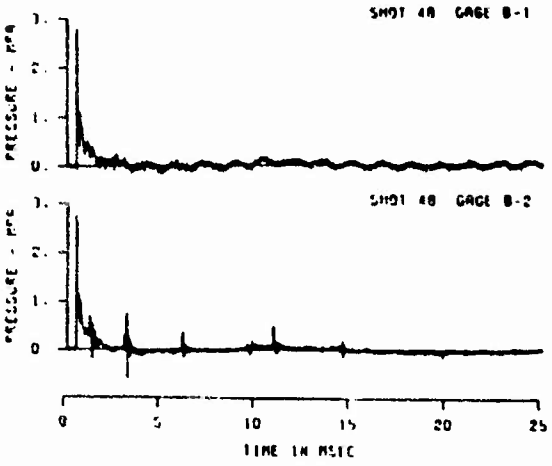

SHOT 47 GAGE B-8
SHOT 47 GAGE B-9
SHOT 47 GAGE B-10
SHOT 47 GAGE B-11
SHOT 47 GAGE B-12
SHOT 47 GAGE B-13
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

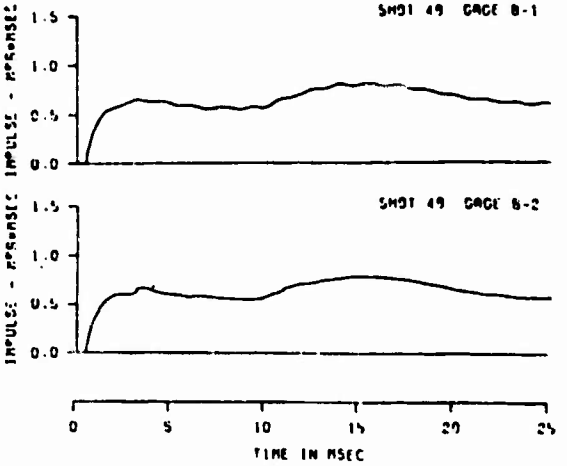

SHOT 47 GAGE R-14
SHOT 47 GAGE R-1
SHOT 47 GAGE R-2
SHOT 47 GAGE R-3
SHOT 47 GAGE R-4
SHOT 47 GAGE R-5
PRESSURE - PSI
0.00
0.05
0.10
0.15
0.0
0.5
1.0
1.5
0.6
0.9
0
5
10
15
20
25
TIME IN MSEC

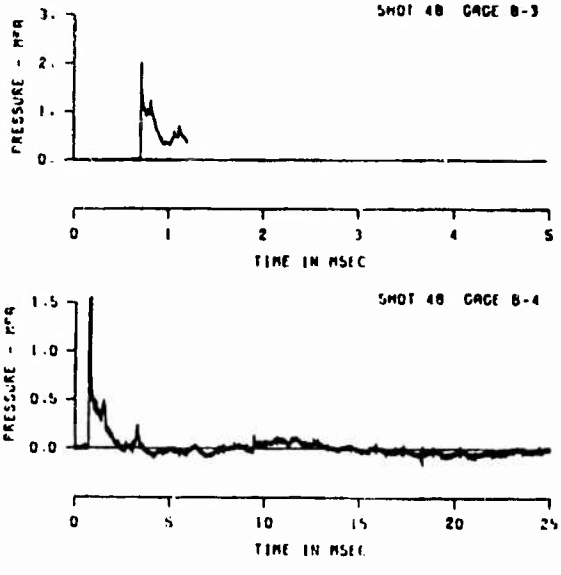

SHOT 47 GAGE A-5
SHOT 47 GAGE A-6
SHOT 47 GAGE A-7
SHOT 47 GAGE A-8
SHOT 47 GAGE A-9
SHOT 47 GAGE A-10
SHOT 47 GAGE A-11
SHOT 47 GAGE A-12
0
5
10
15
20
25
TIME IN MSEC

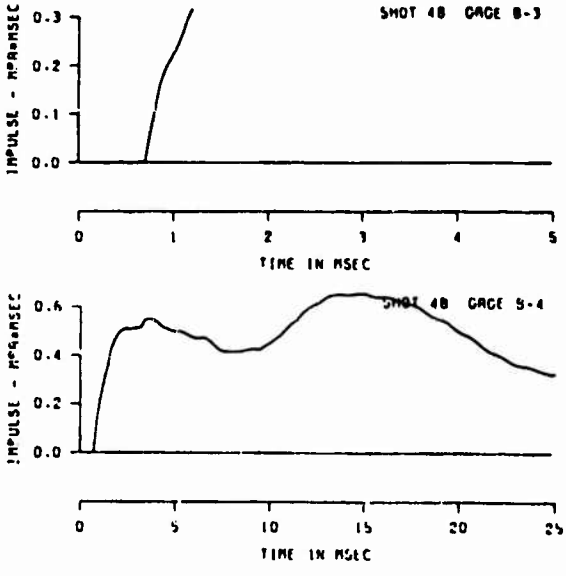

SHOT 47 GAGE B-1
0.15
0.10
0.05
0.00
0
5
10
15
20
25
TIME IN MSEC

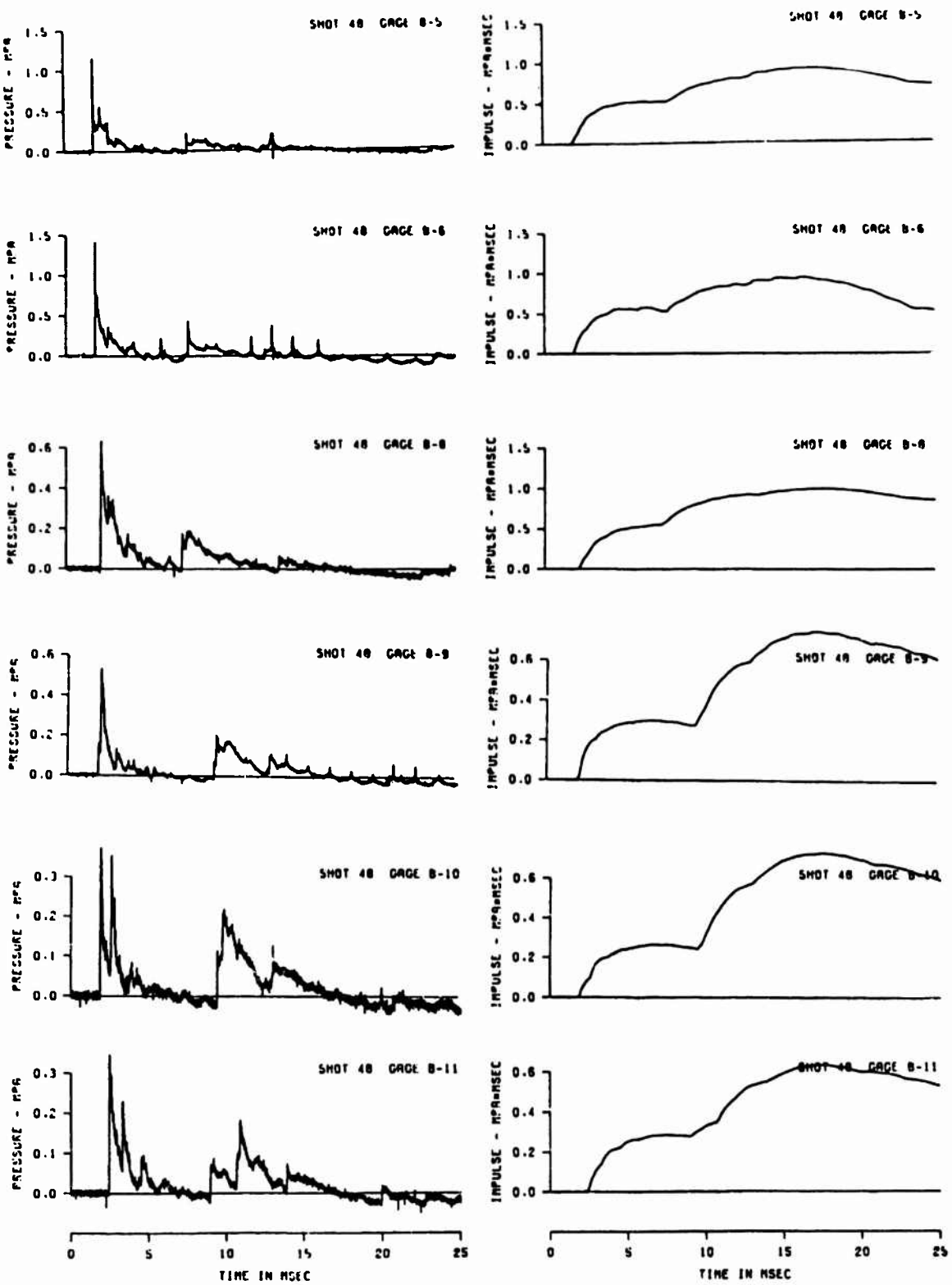
SHOT 47 GAGE B-14
0
5
10
15
20
25
TIME IN MSEC

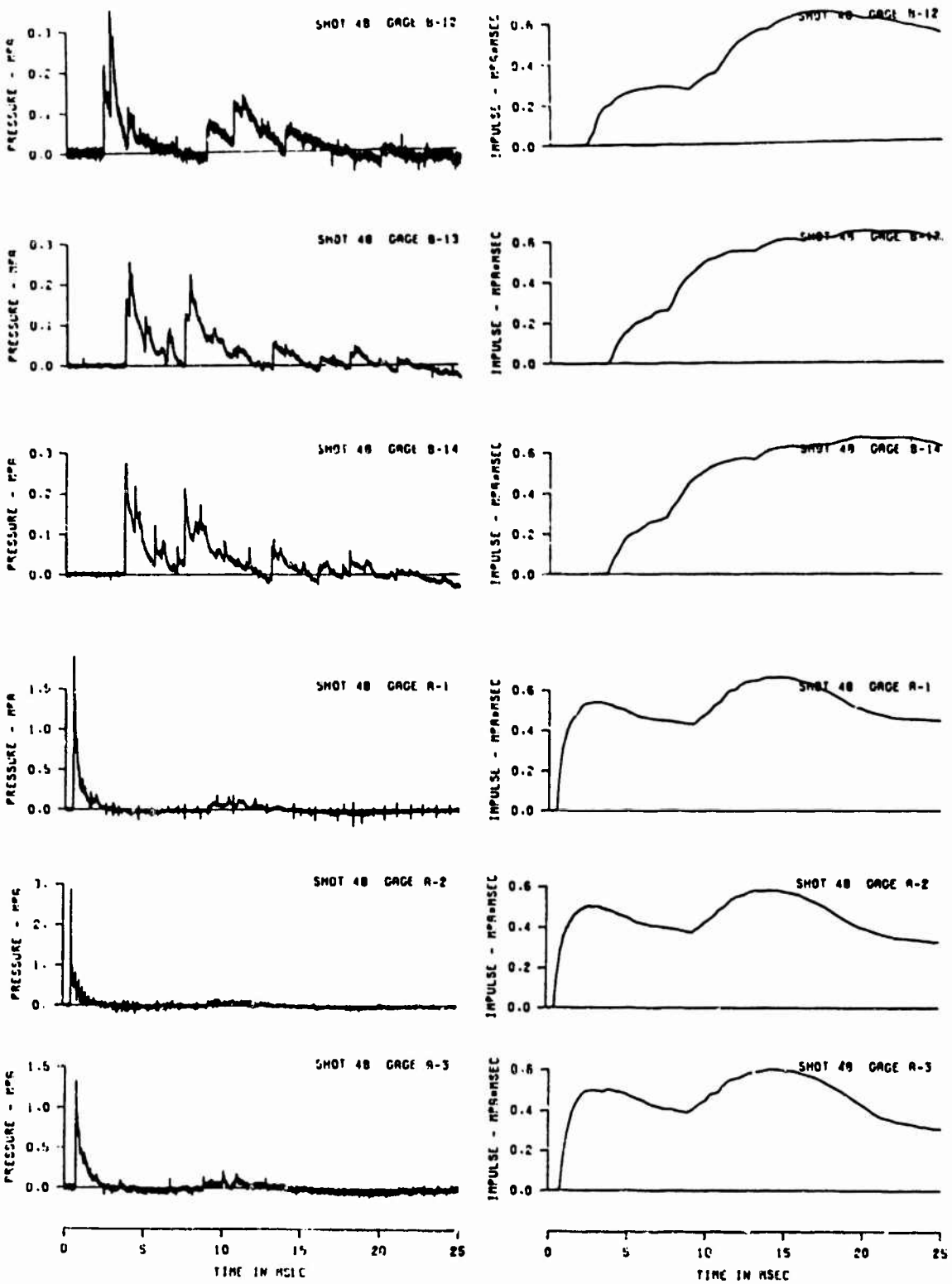

SHOT 48 GAGE B-1
SHOT 48 GAGE B-2
0
5
10
15
20
25
TIME IN MSEC

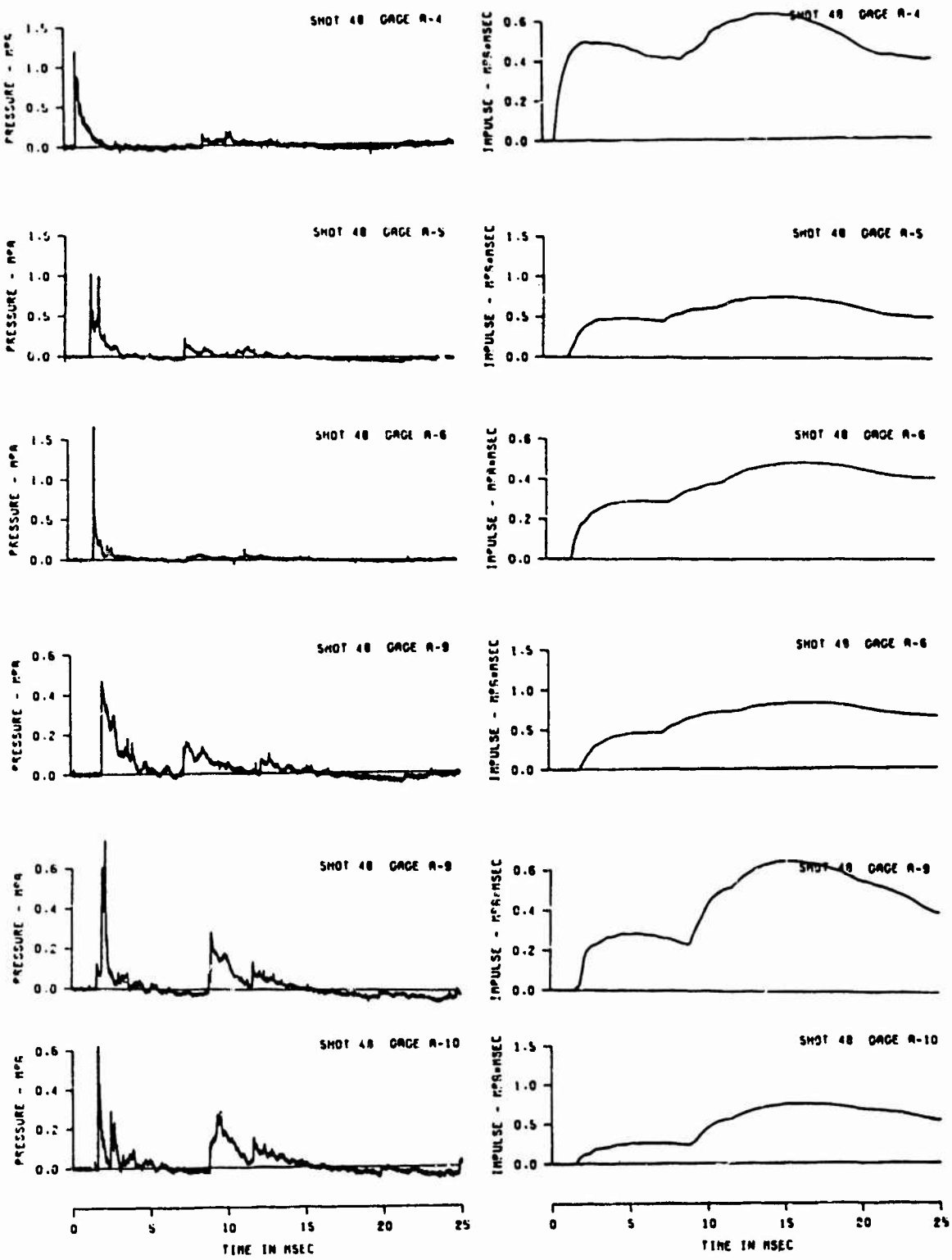

SHOT 49 GAGE B-1
SHOT 49 GAGE B-2
1.5
1.0
0.5
0.0
0
5
10
15
20
25
TIME IN MSEC

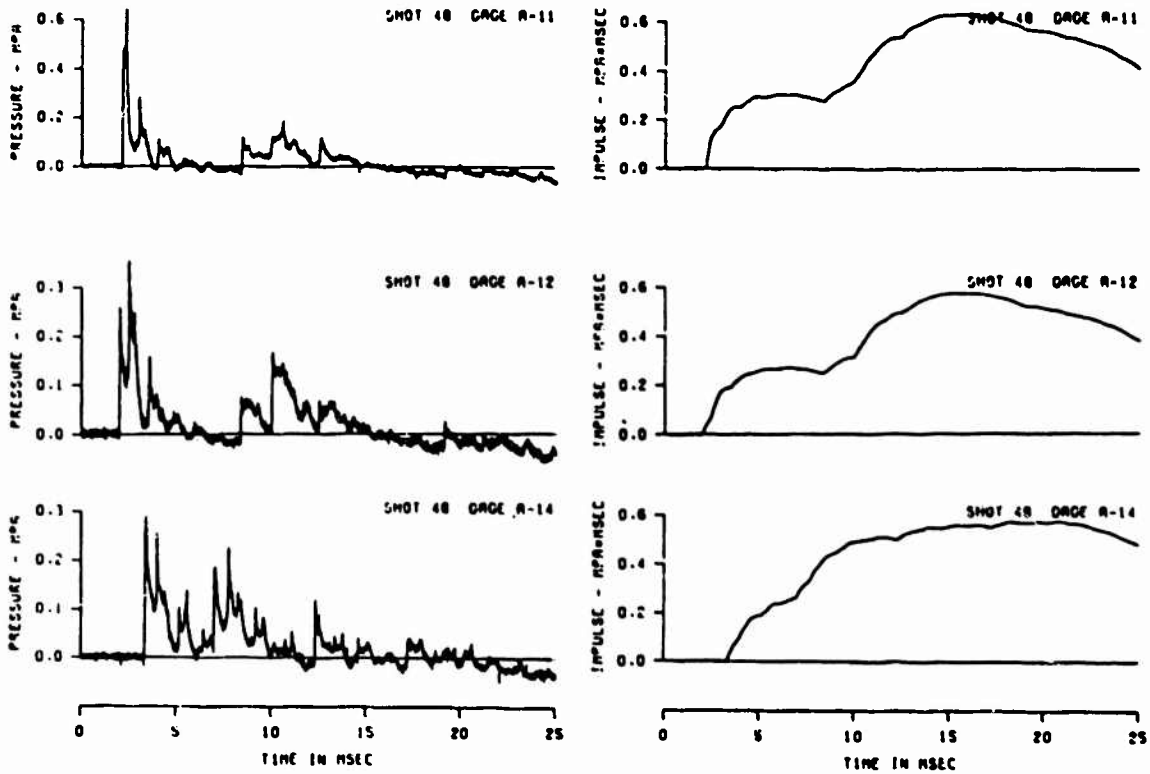

SHOT 48 GAGE B-3
SHOT 48 GAGE B-4
3.
2.
1.
0.
0
1
2
3
4
5
TIME IN MSEC

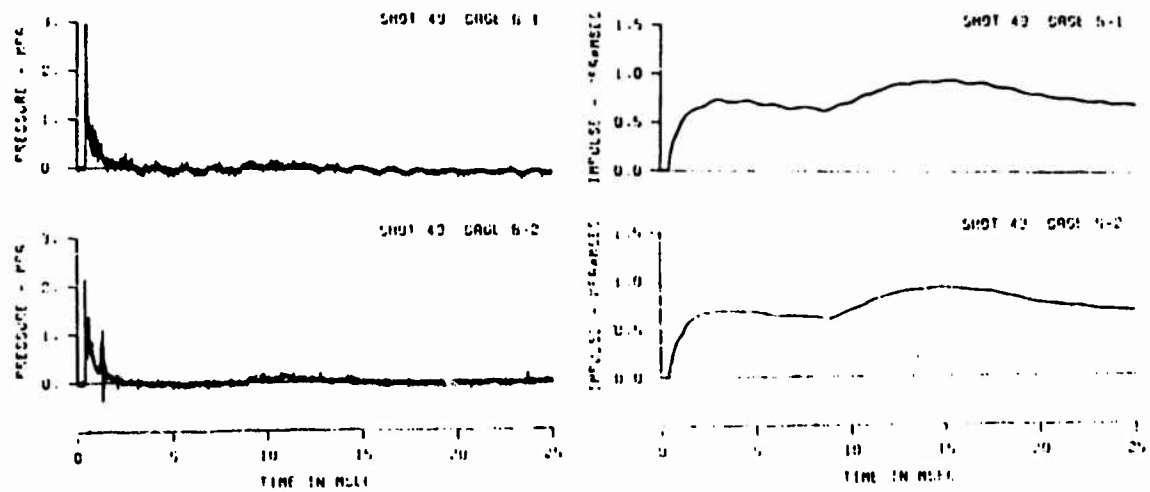

SHOT 48 GAGE B-3
SHOT 48 GAGE B-4
0.6
0.4
0.2
0.0
0
1
2
3
4
5
TIME IN MSEC

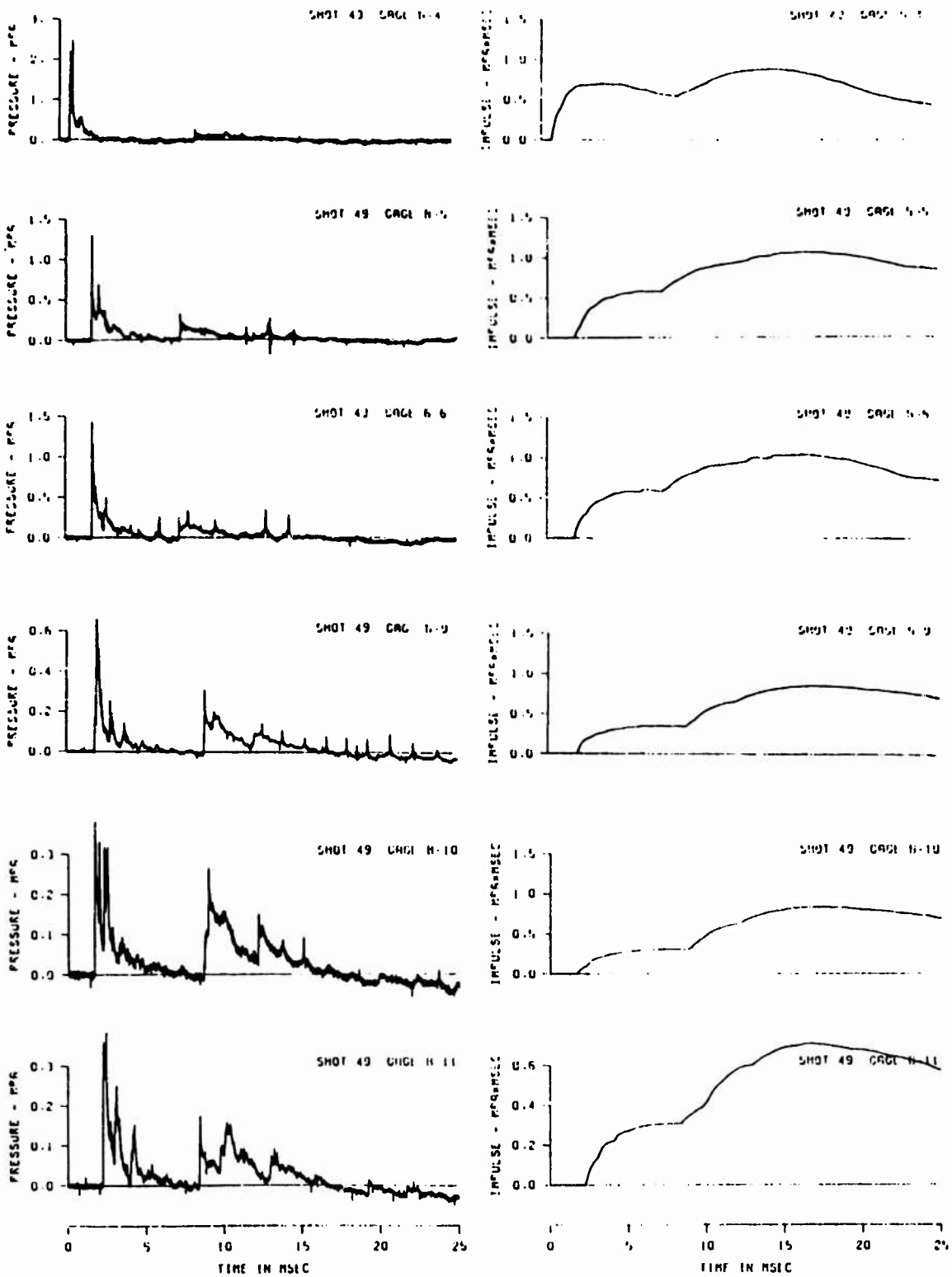

SHOT 48 GAGE B-5
PRESSURE - MPa
IMPULSE - MPa-MSEC
SHOT 48 GAGE B-6
SHOT 48 GAGE B-8
SHOT 48 GAGE B-9
SHOT 48 GAGE B-10
SHOT 48 GAGE B-11
TIME IN MSEC

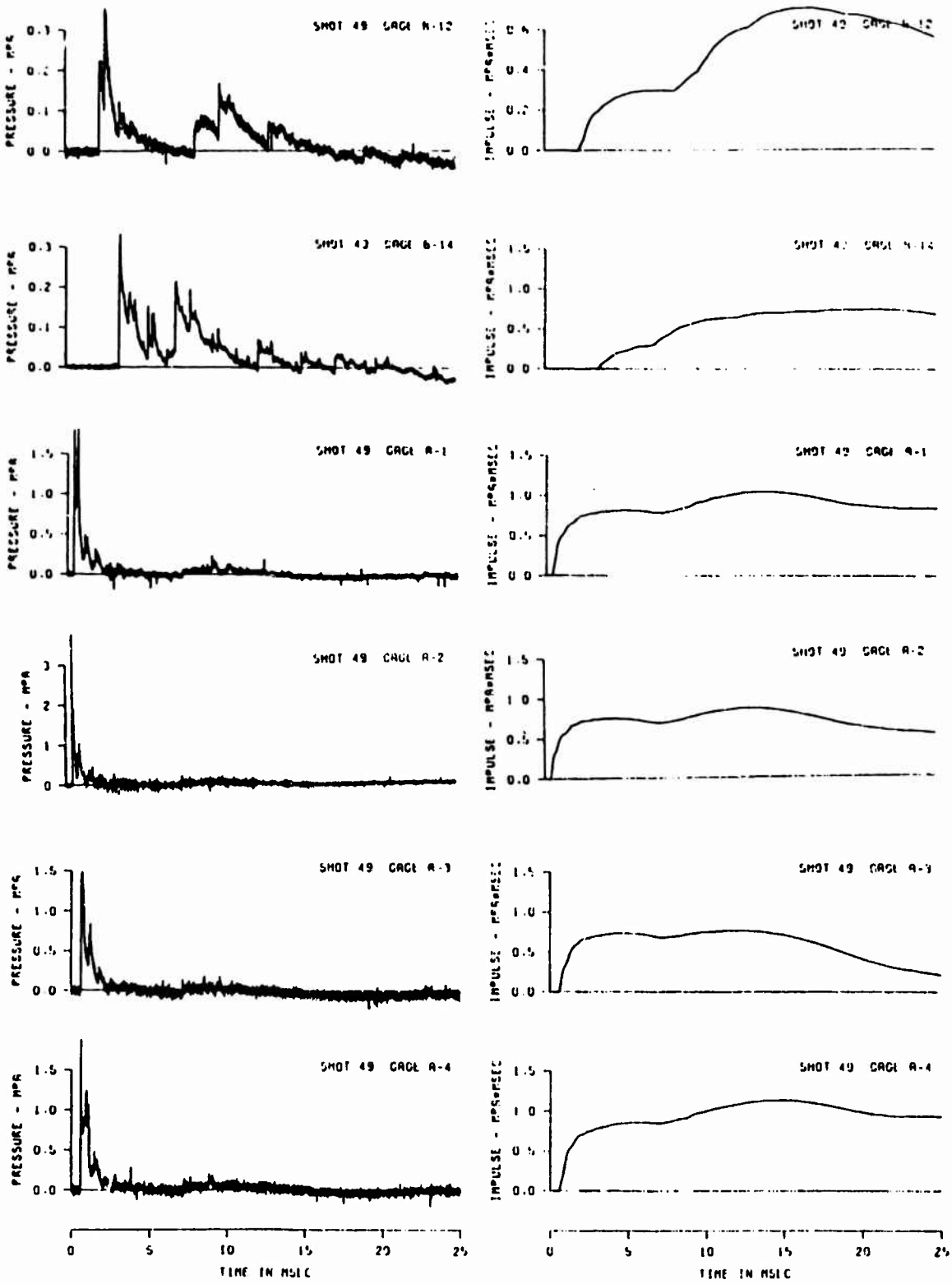

SHOT 48 GAGE B-12
SHOT 48 GAGE B-13
SHOT 48 GAGE B-14
SHOT 48 GAGE A-1
SHOT 48 GAGE A-2
SHOT 48 GAGE A-3
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC
0
5
10
15
20
25

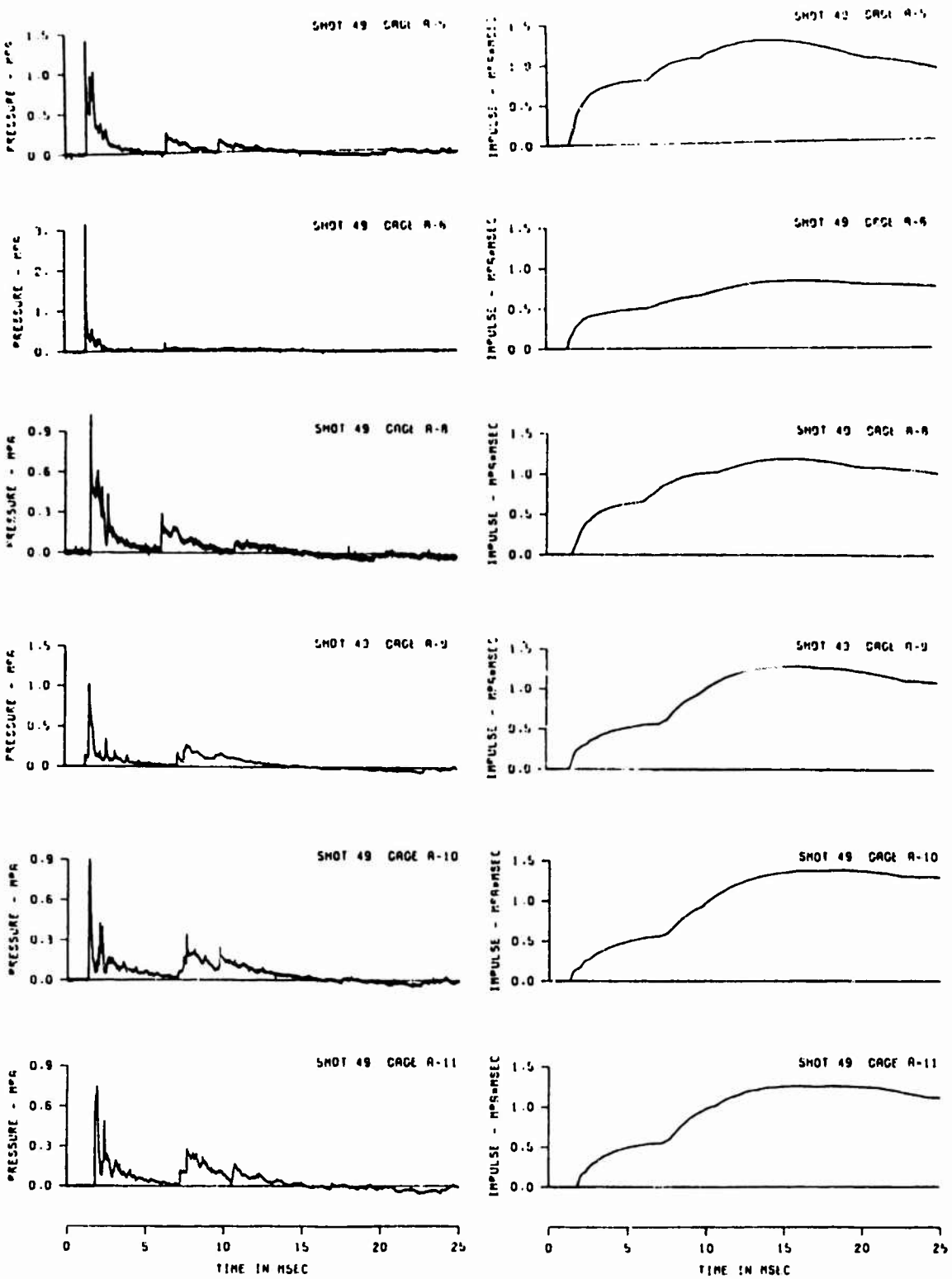

SHOT 48 GAGE A-4
SHOT 48 GAGE A-5
SHOT 48 GAGE A-6
SHOT 48 GAGE A-9
SHOT 48 GAGE A-10
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0
5
10
15
20
25

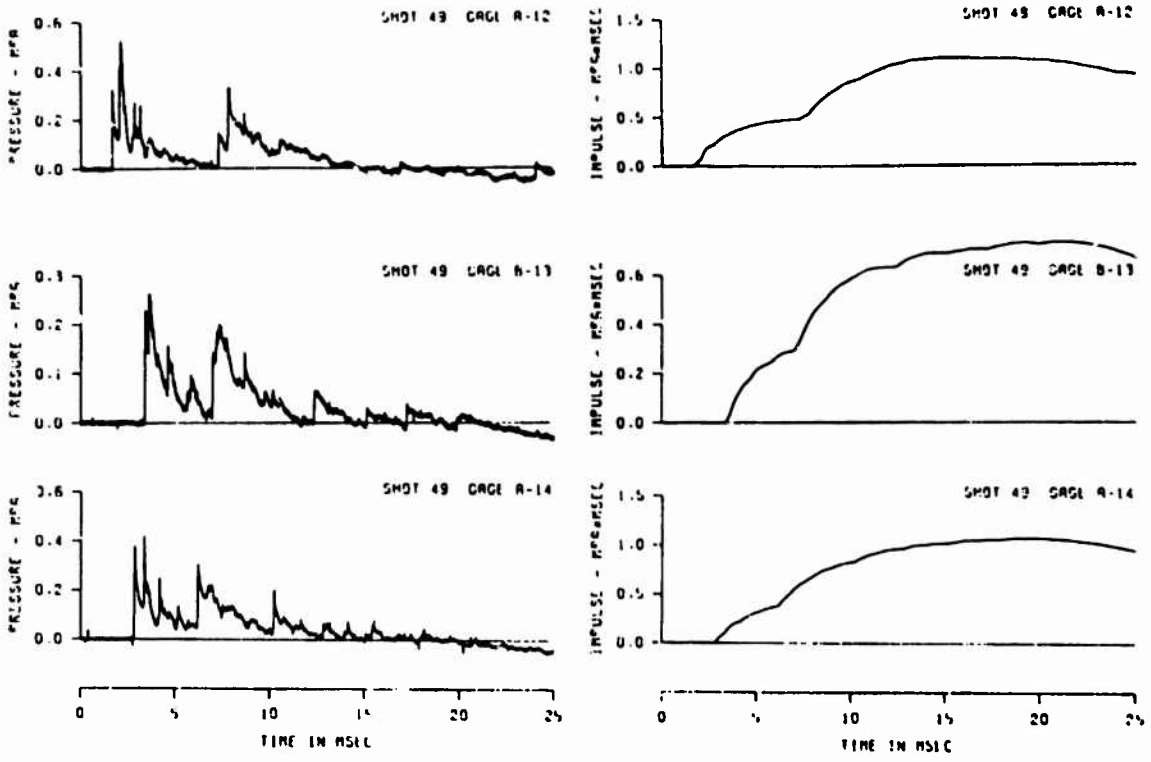

SHOT 48 GAGE A-11
SHOT 48 GAGE A-12
SHOT 48 GAGE A-14
TIME IN MSEC

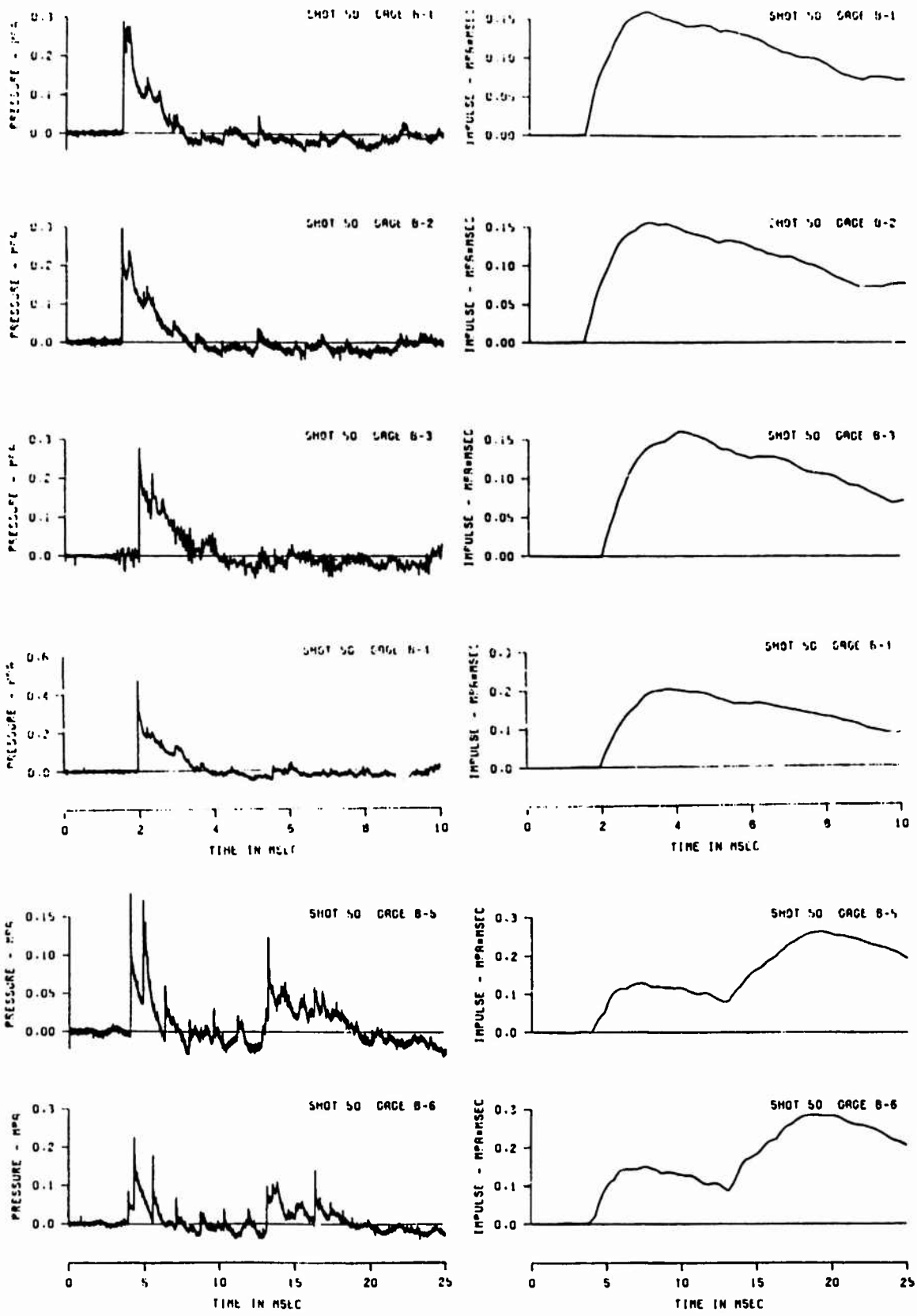

TIME IN MSEC

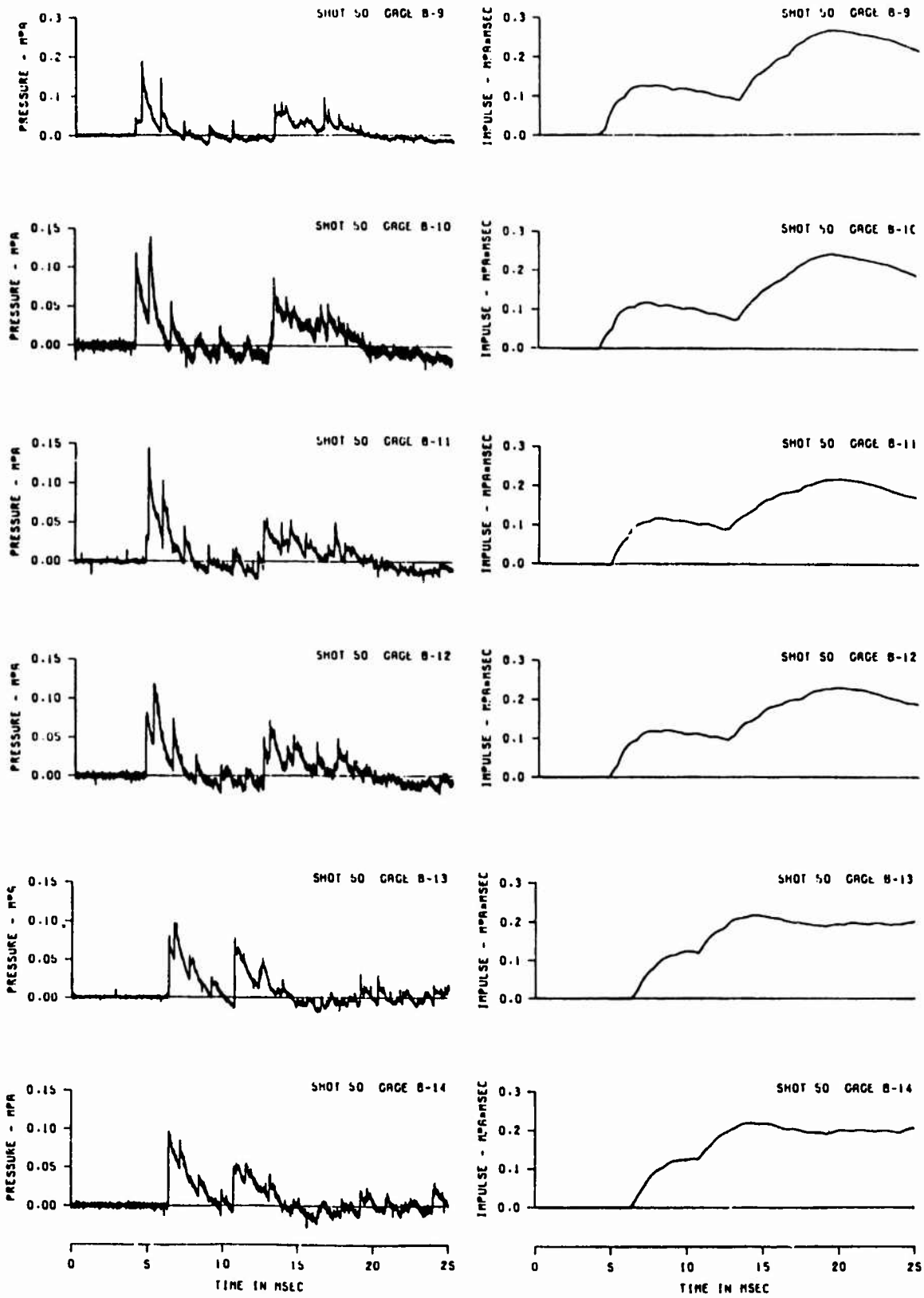

PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

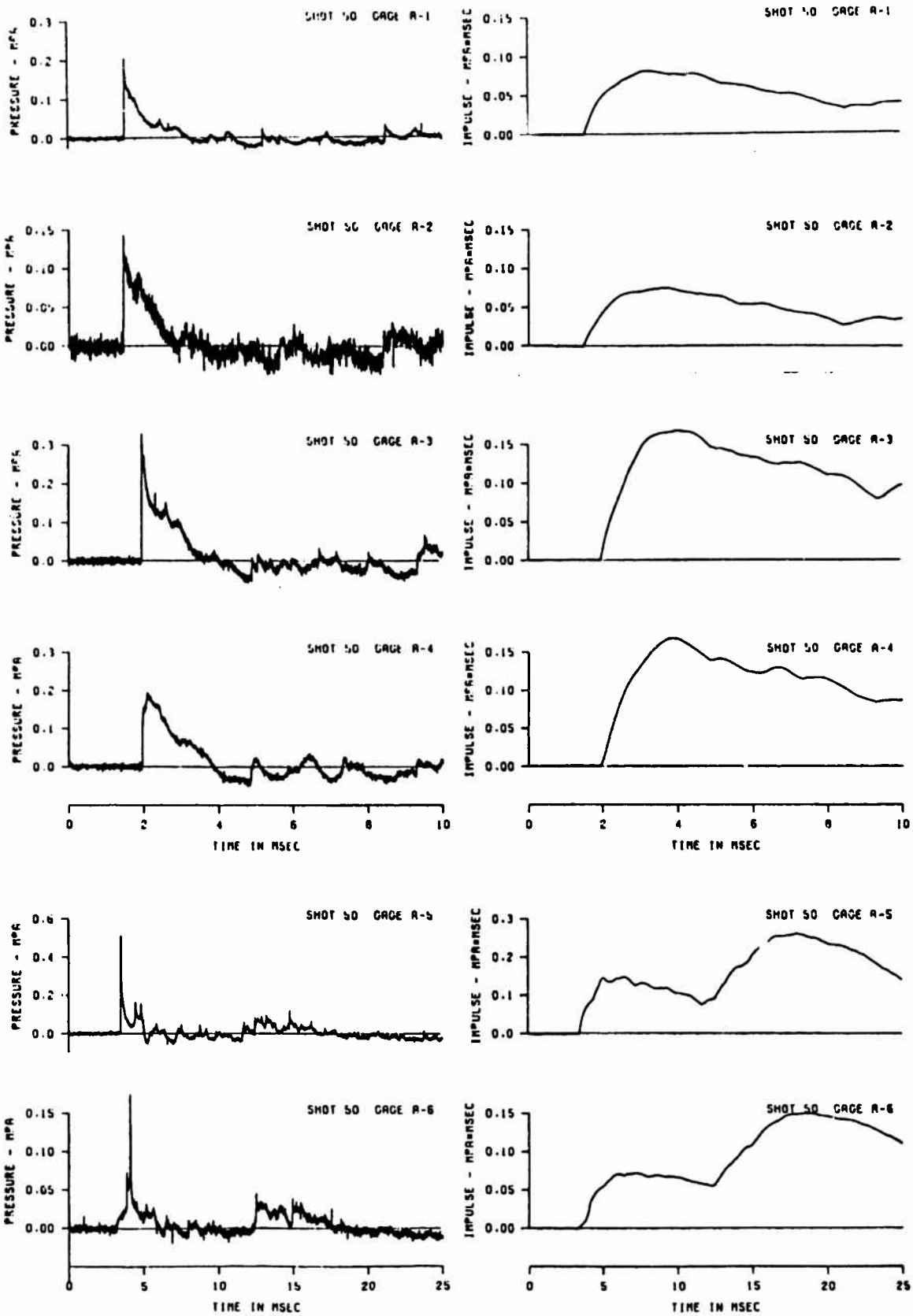

SHOT 49 GAGE A-12
SHOT 49 GAGE A-14
SHOT 49 GAGE A-1
SHOT 49 GAGE A-2
SHOT 49 GAGE A-3
SHOT 49 GAGE A-4
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

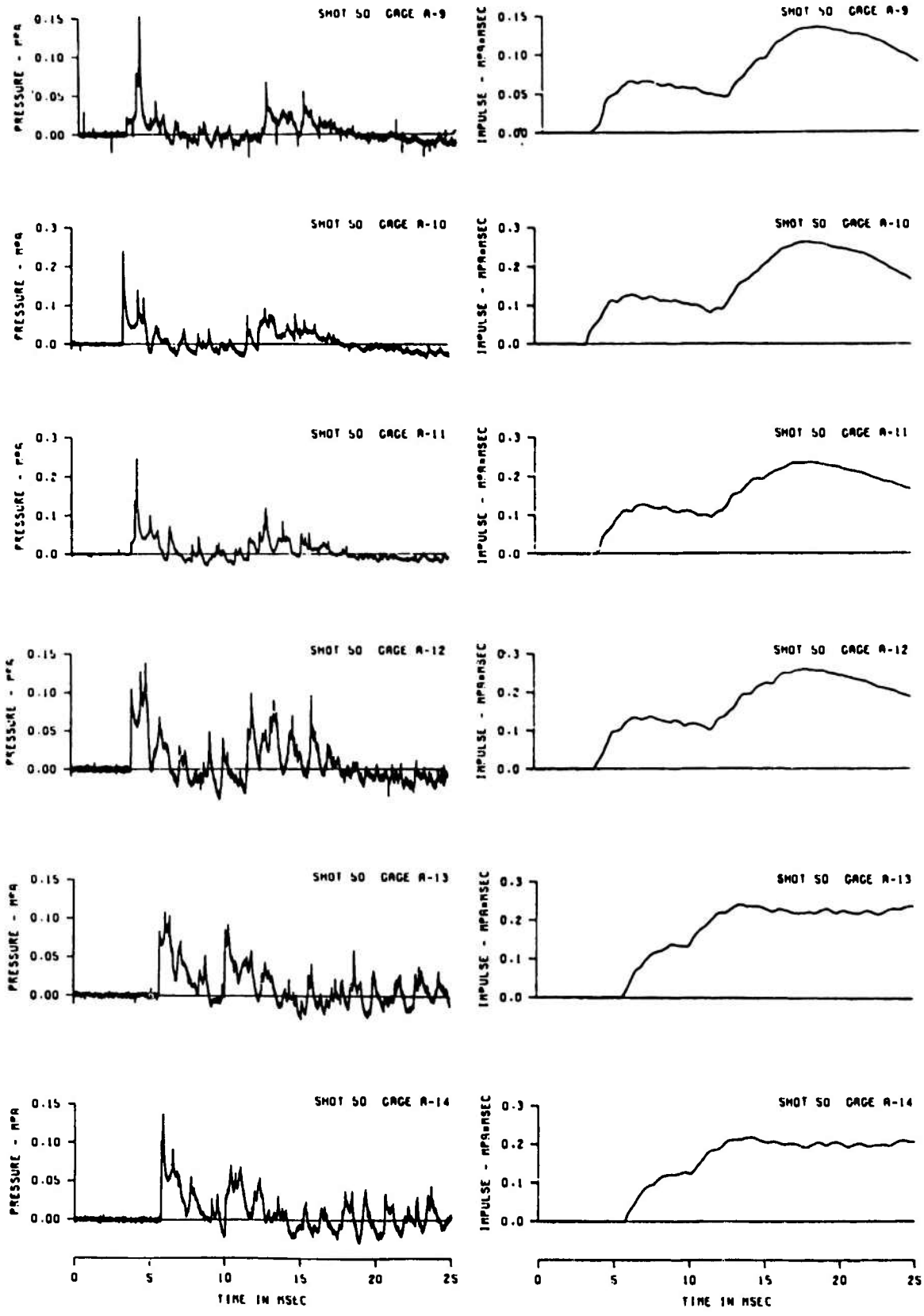

SHOT 49 CAGE A-5
SHOT 49 CAGE A-6
SHOT 49 CAGE A-8
SHOT 49 CAGE A-9
SHOT 49 CAGE A-10
SHOT 49 CAGE A-11
PRESSURE - MPa
IMPULSE - MPa-MSEC
0 5 10 15 20 25
TIME IN MSEC

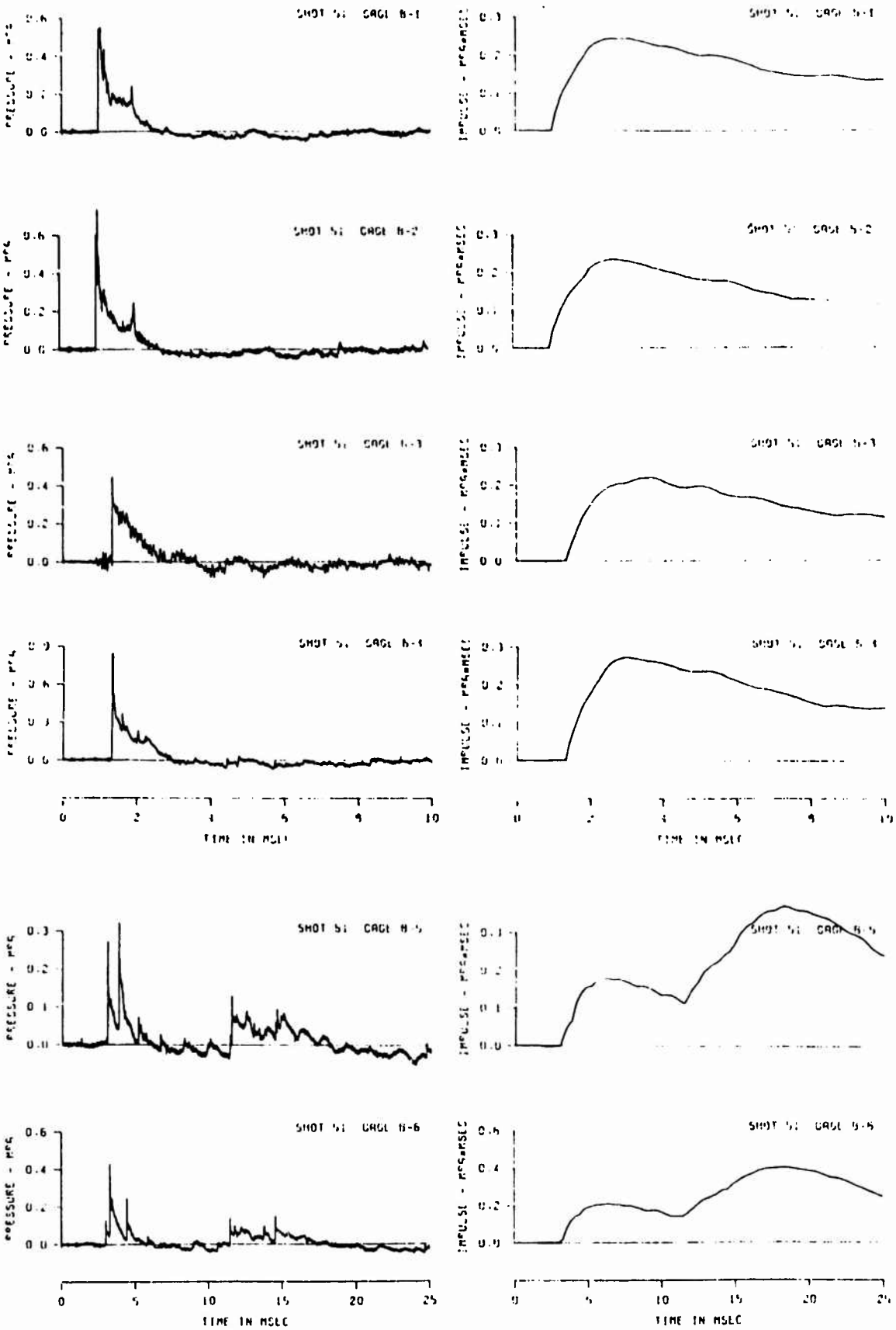

SHOT 49 GAGE A-12
SHOT 49 GAGE A-13
SHOT 49 GAGE A-14
0.6
0.4
0.2
0.0
1.5
1.0
0.5
0.8
0
5
10
15
20
25
TIME IN MSEC

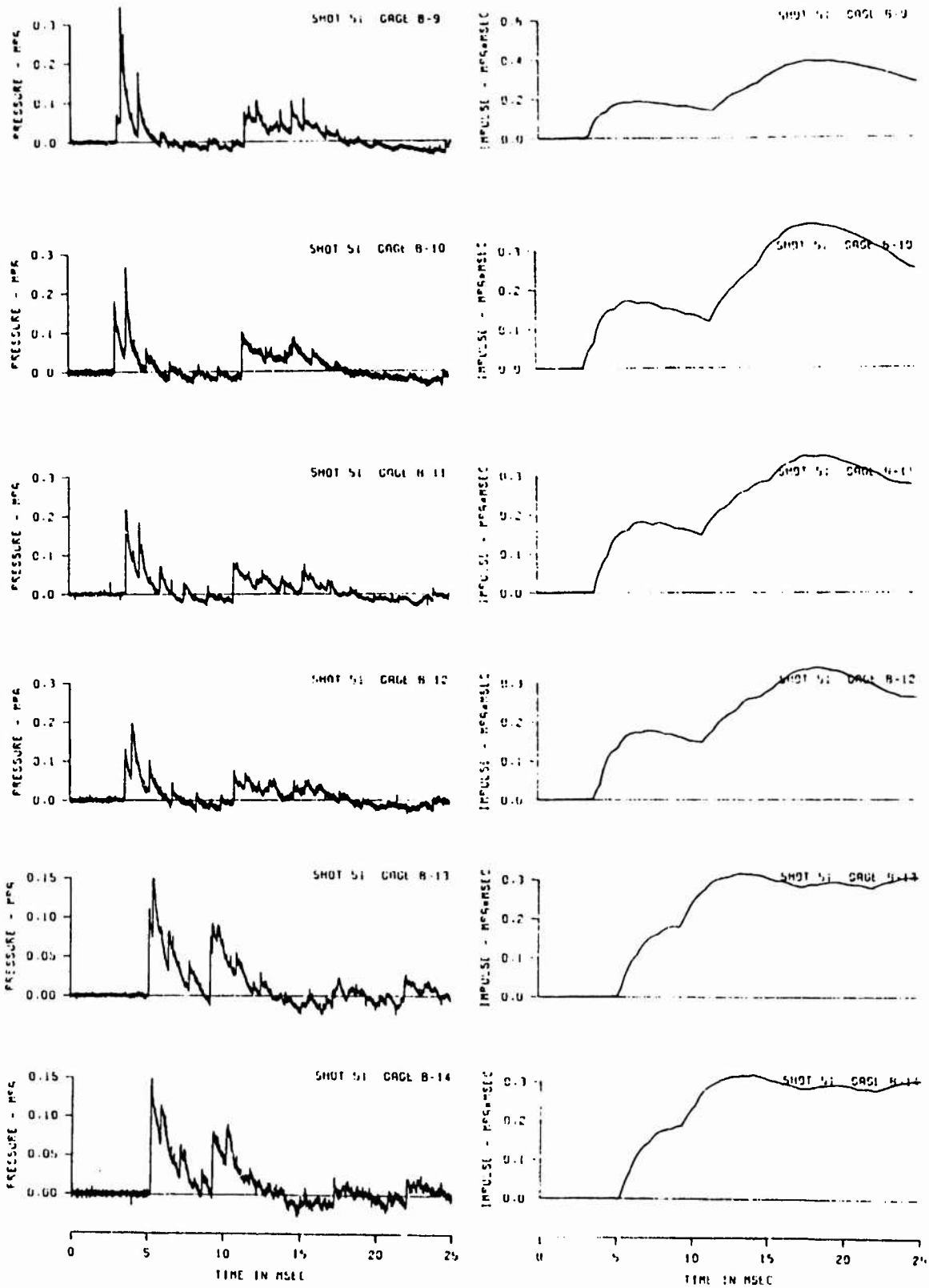

SHOT 50 GAGE B-1
SHOT 50 GAGE B-2
SHOT 50 GAGE B-3
SHOT 50 GAGE B-4
SHOT 50 GAGE B-5
SHOT 50 GAGE B-6
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

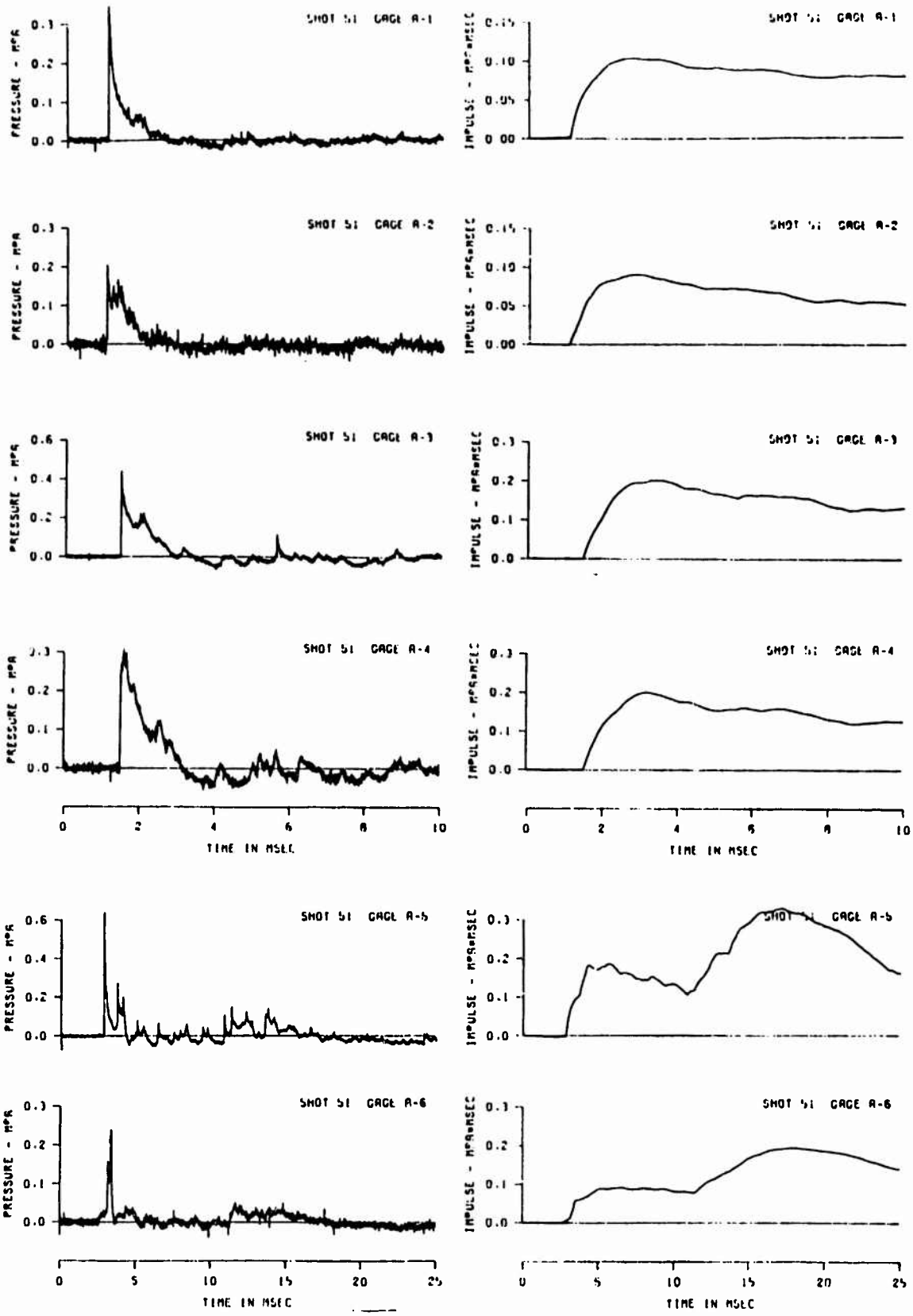

SHOT 50 GAGE B-9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 50 GAGE B-10
SHOT 50 GAGE B-11
SHOT 50 GAGE B-12
SHOT 50 GAGE B-13
SHOT 50 GAGE B-14
TIME IN MSEC

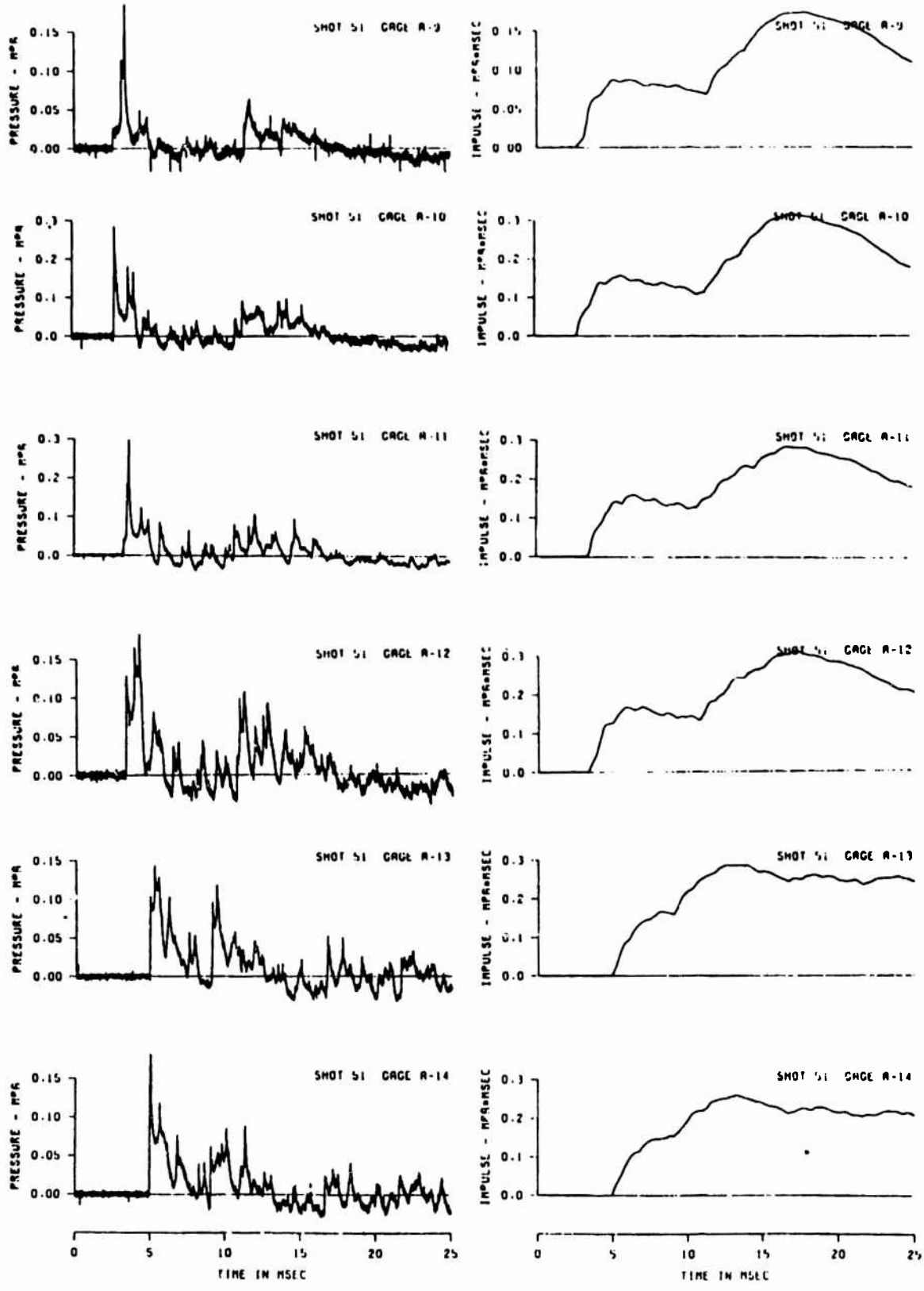

SHOT 50 GAGE A-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 50 GAGE A-2
SHOT 50 GAGE A-3
SHOT 50 GAGE A-4
SHOT 50 GAGE A-5
SHOT 50 GAGE A-6
TIME IN MSEC

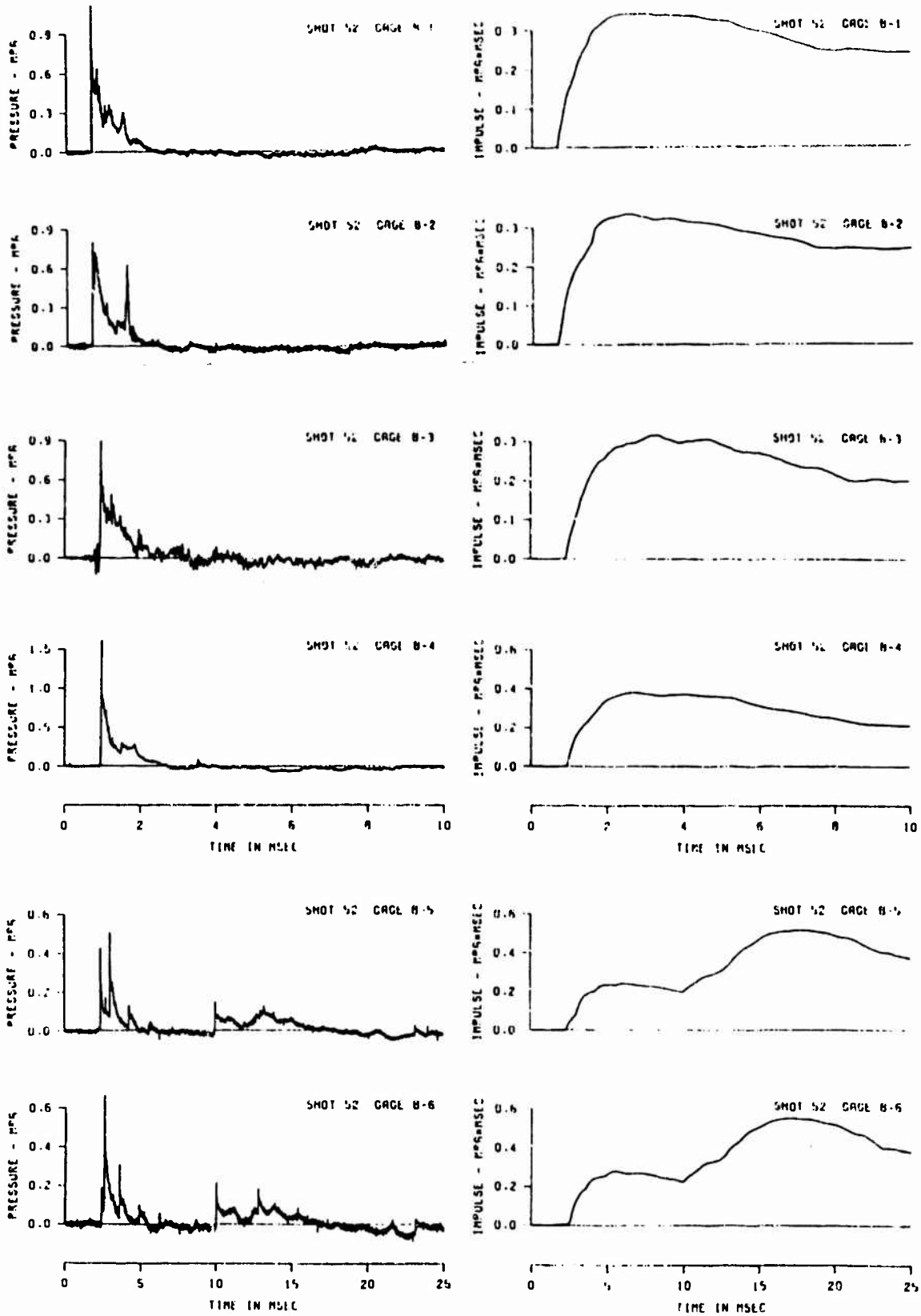

SHOT 50 GAGE A-9
SHOT 50 GAGE A-10
SHOT 50 GAGE A-11
SHOT 50 GAGE A-12
SHOT 50 GAGE A-13
SHOT 50 GAGE A-14
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

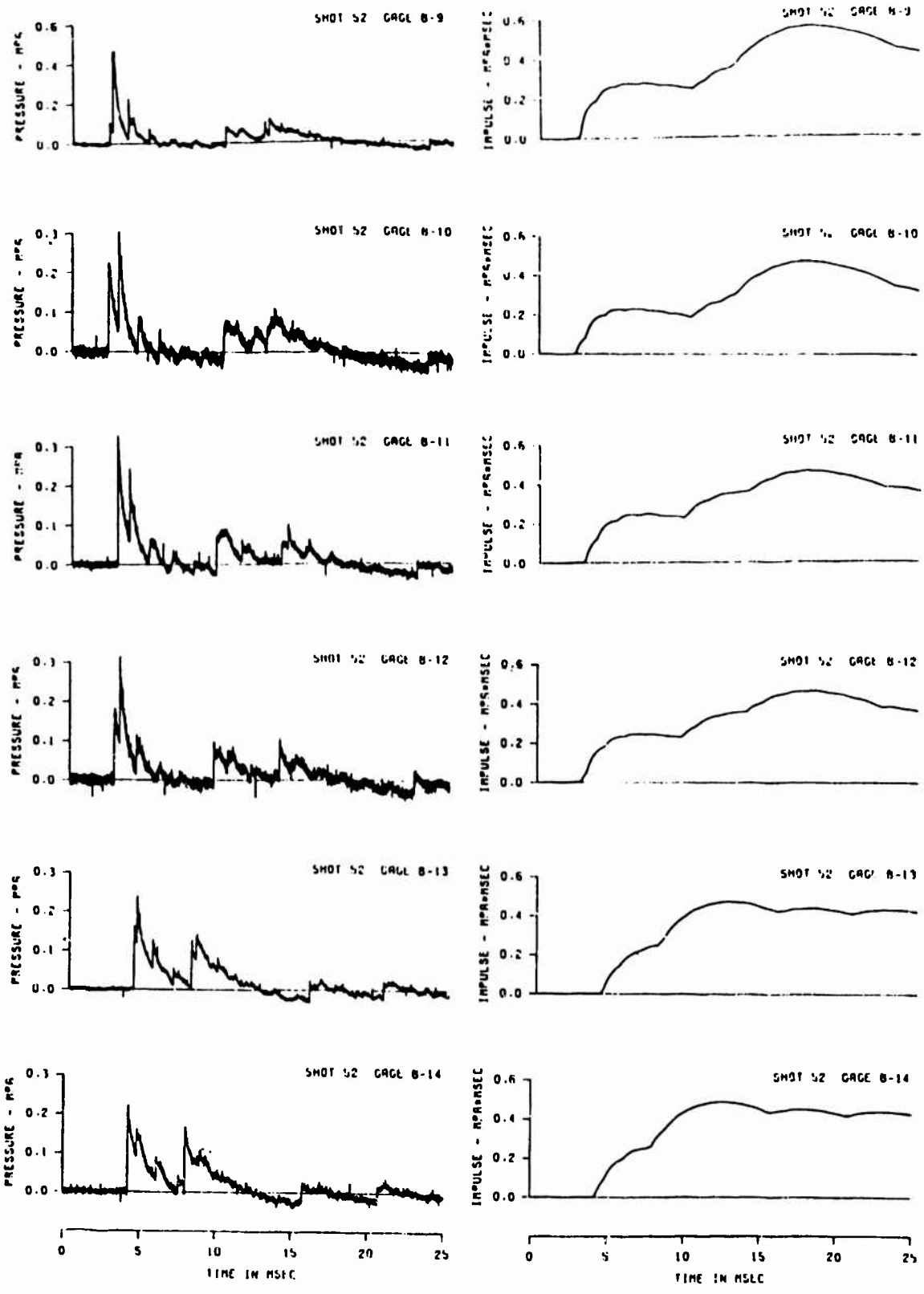

TIME IN MSEC
TIME IN MSEC

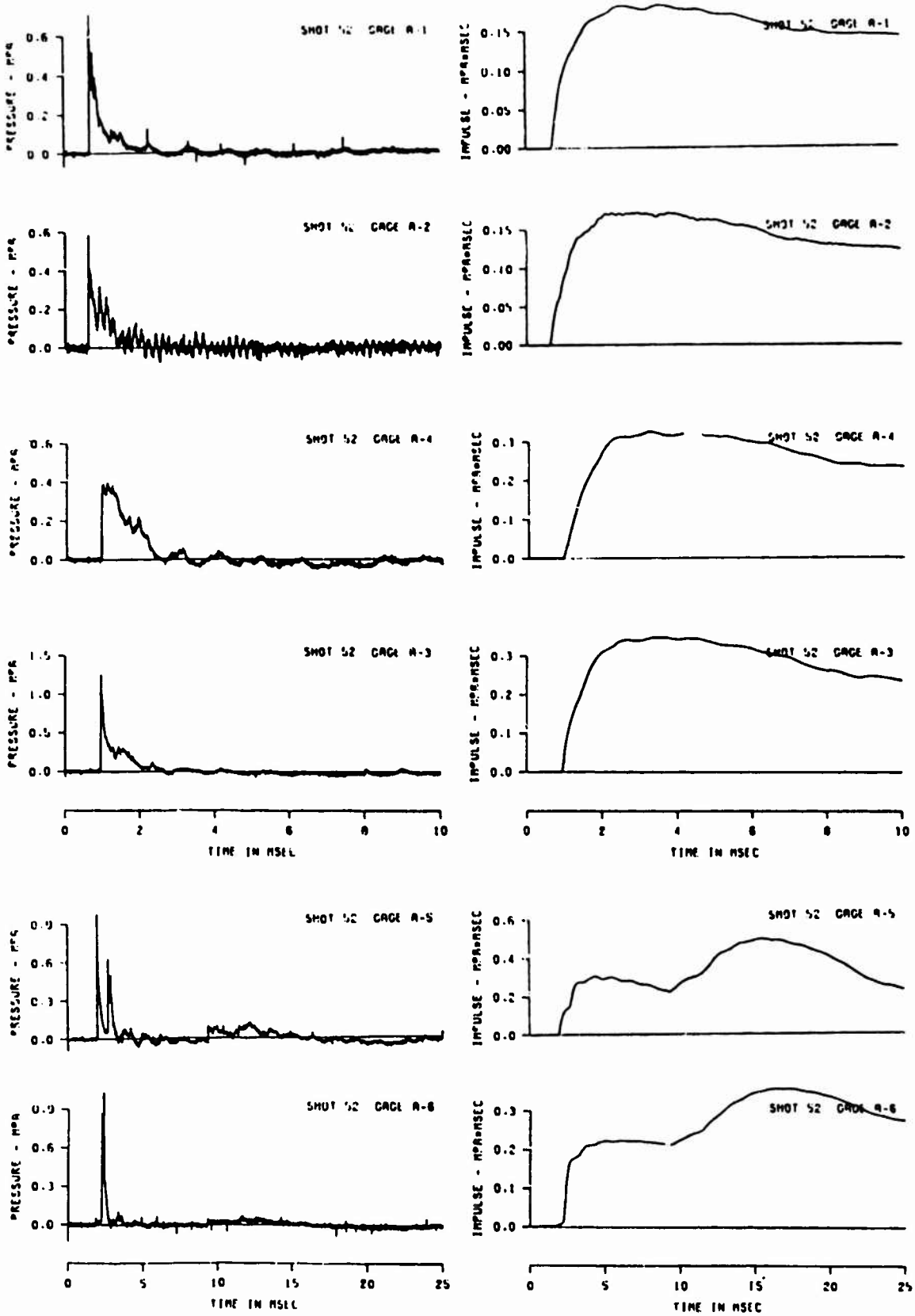

SHOT 51 GAGE B-9
SHOT 51 GAGE B-10
SHOT 51 GAGE B-11
SHOT 51 GAGE B-12
SHOT 51 GAGE B-13
SHOT 51 GAGE B-14
PRESSURE - PSI
IMPULSE - PSI-MSEC
TIME IN MSEC

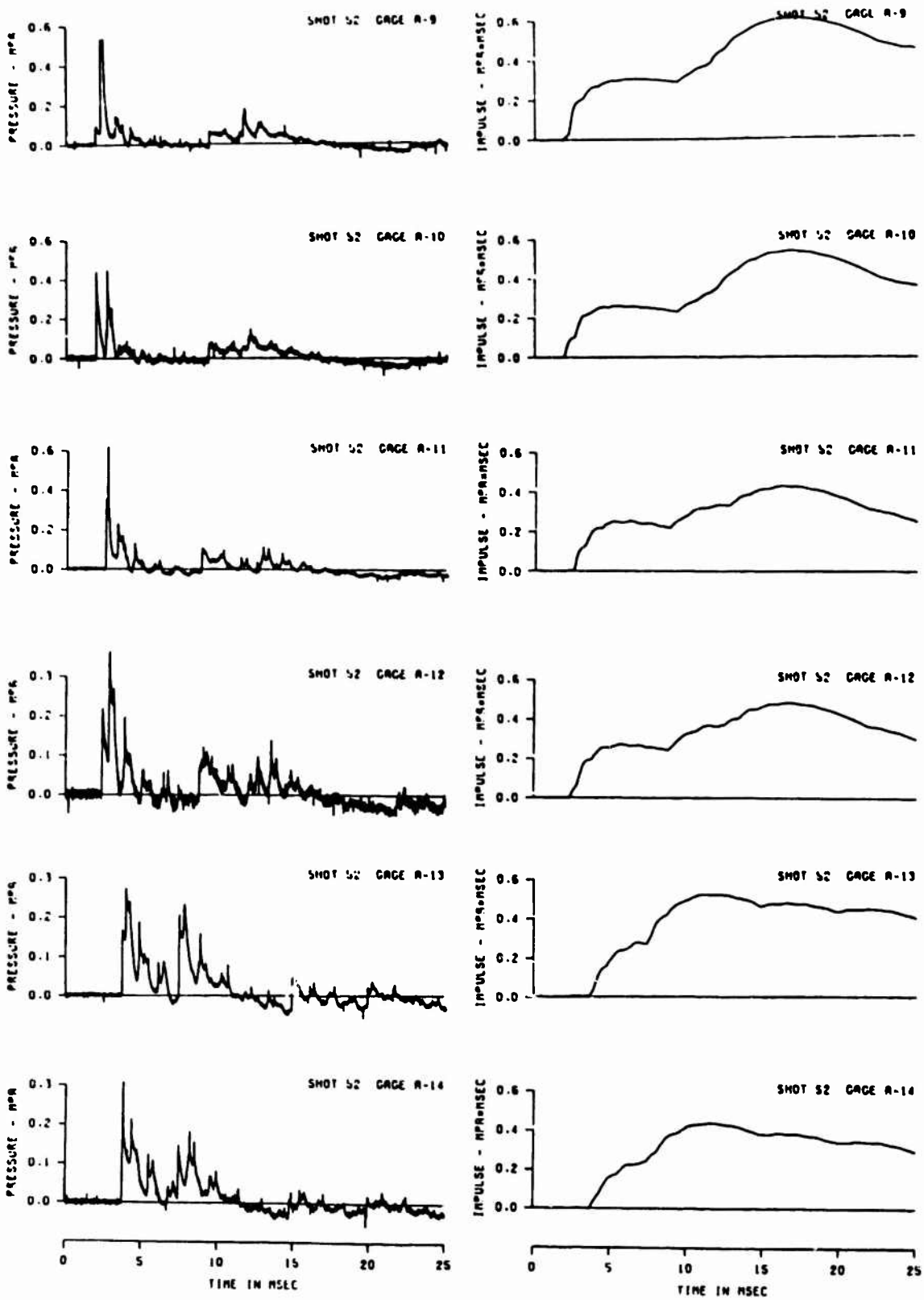

SHOT 51 GAGE A-1
SHOT 51 GAGE A-2
SHOT 51 GAGE A-3
SHOT 51 GAGE A-4
SHOT 51 GAGE A-5
SHOT 51 GAGE A-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

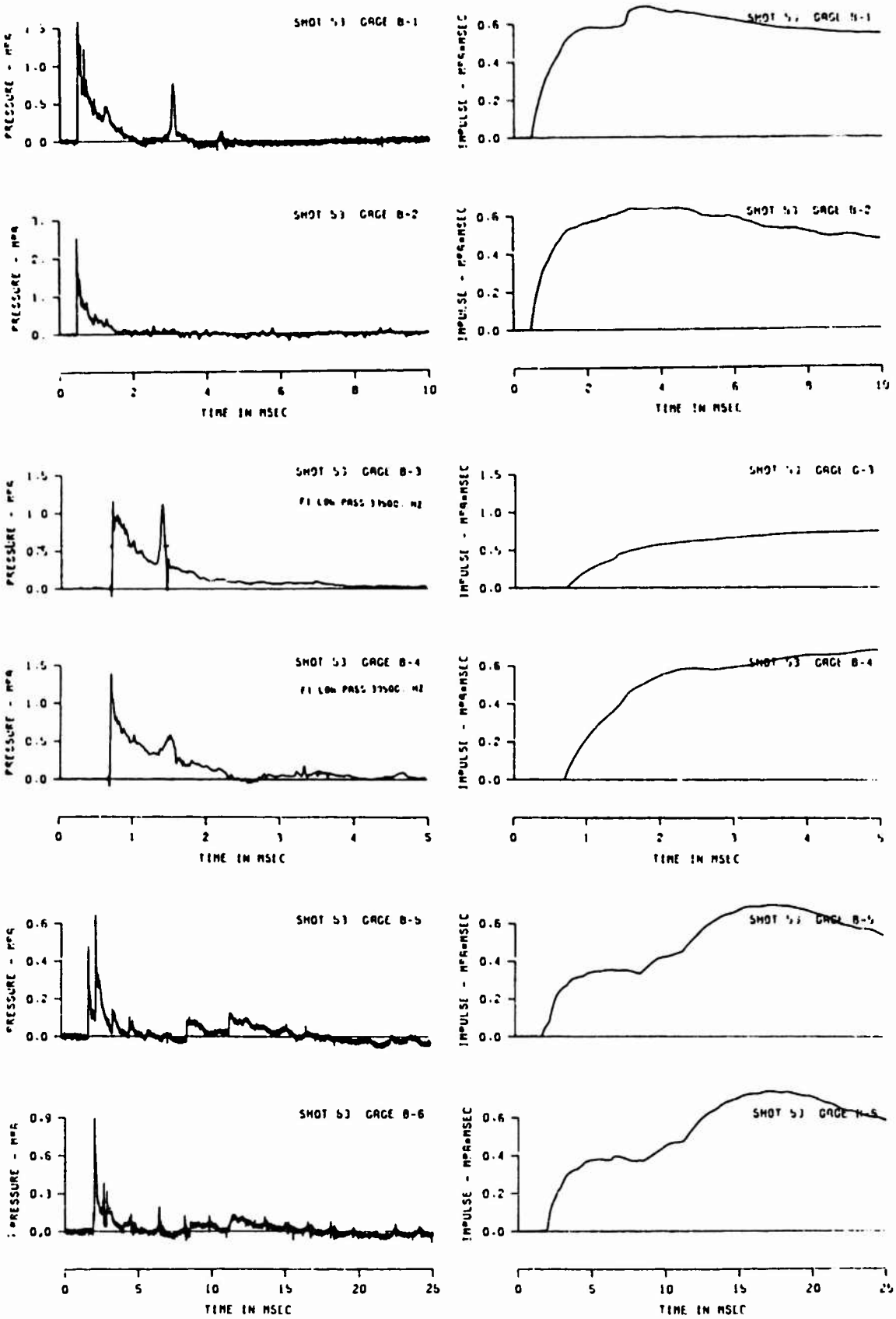

SHOT 51 GAGE A-9
SHOT 51 GAGE A-10
SHOT 51 GAGE A-11
SHOT 51 GAGE A-12
SHOT 51 GAGE A-13
SHOT 51 GAGE A-14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0
5
10
15
20
25

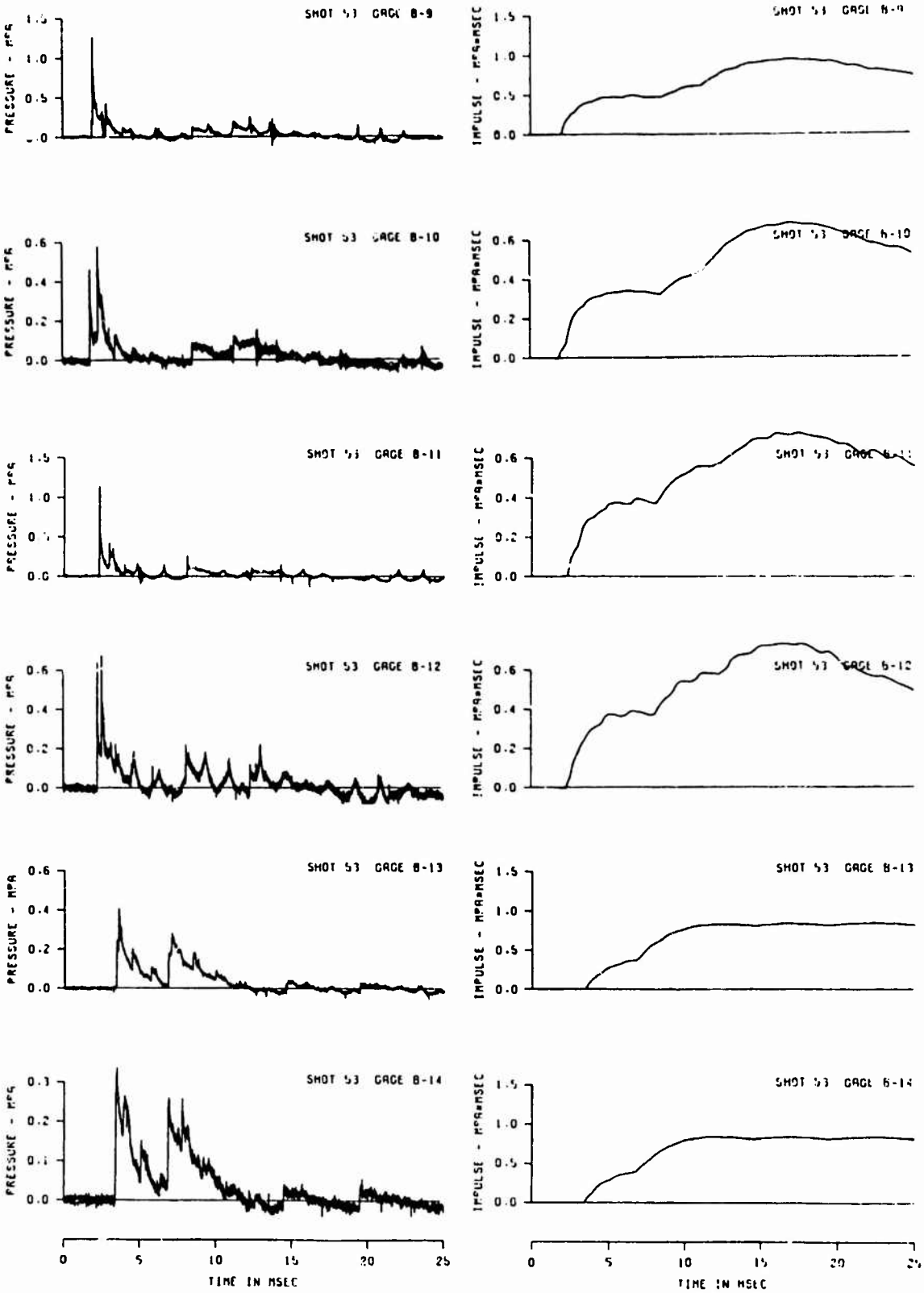

PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

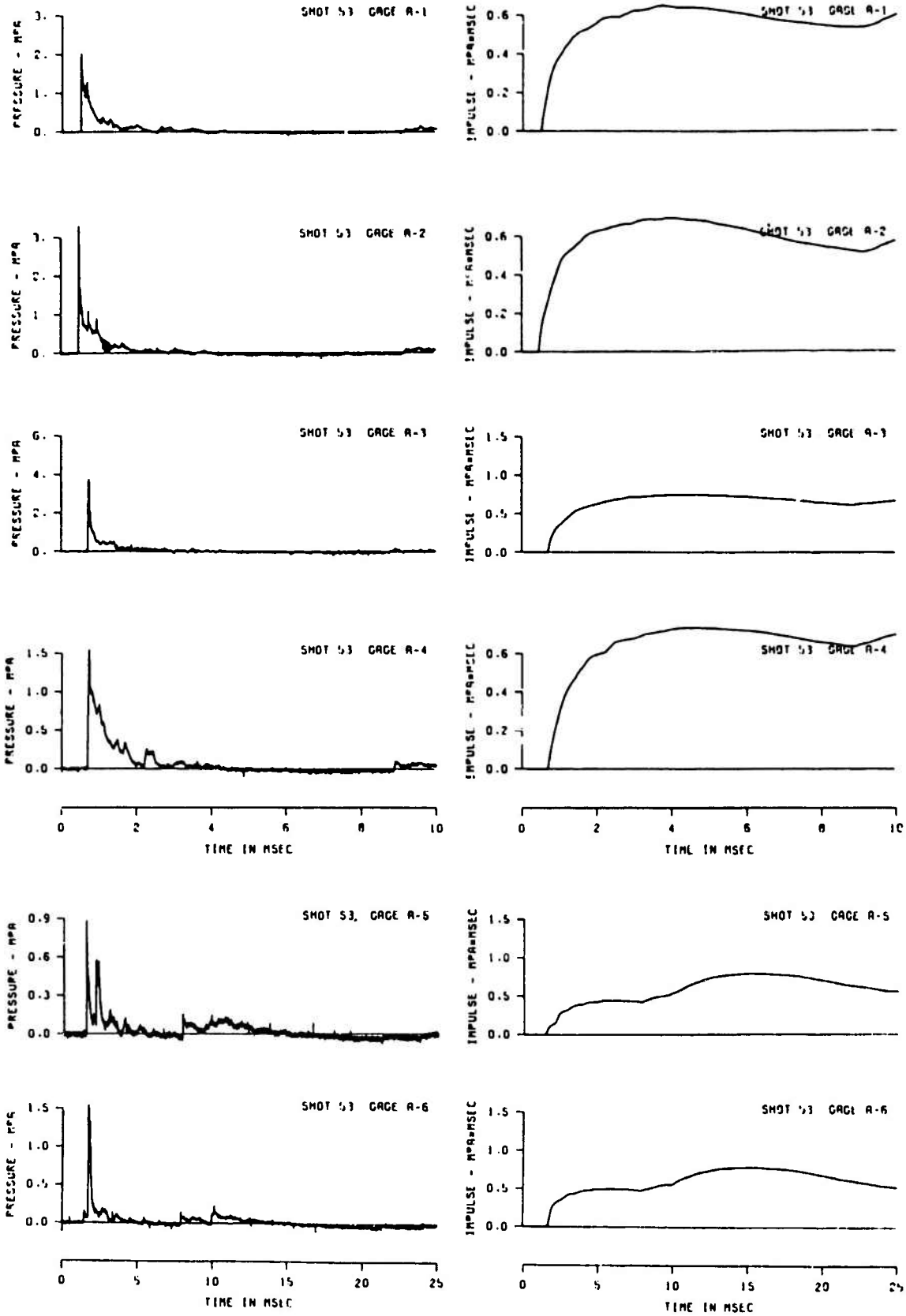

SHOT 52 GAGE B-9
SHOT 52 GAGE B-10
SHOT 52 GAGE B-11
SHOT 52 GAGE B-12
SHOT 52 GAGE B-13
SHOT 52 GAGE B-14
PRESSURE - PSI
IMPULSE - PSI-MSEC
0.0
0.1
0.2
0.3
0.4
0.6
0
5
10
15
20
25
TIME IN MSEC

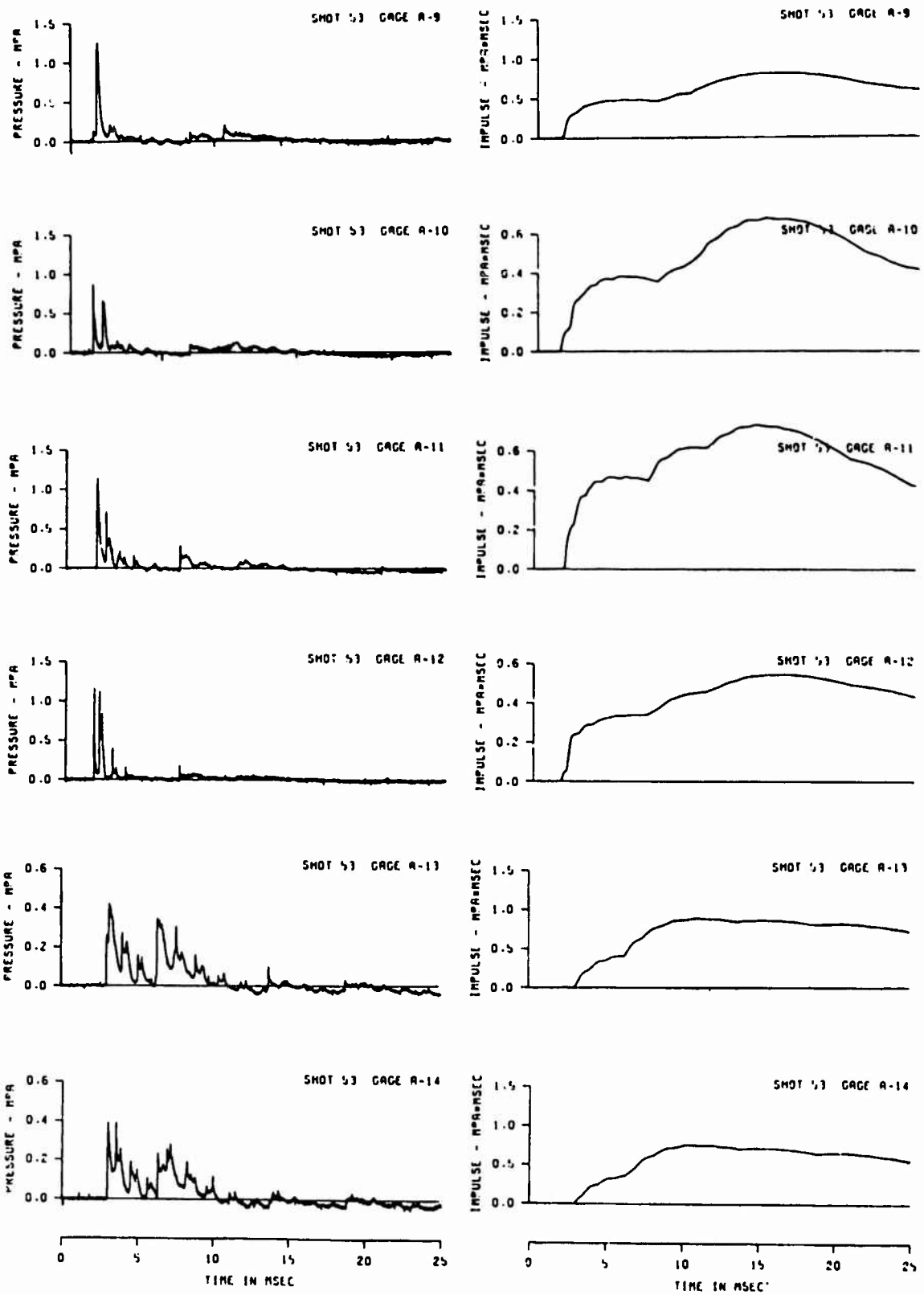

SHOT 52 CAGE A-1
SHOT 52 CAGE A-2
SHOT 52 CAGE A-4
SHOT 52 CAGE A-3
SHOT 52 CAGE A-5
SHOT 52 CAGE A-6
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

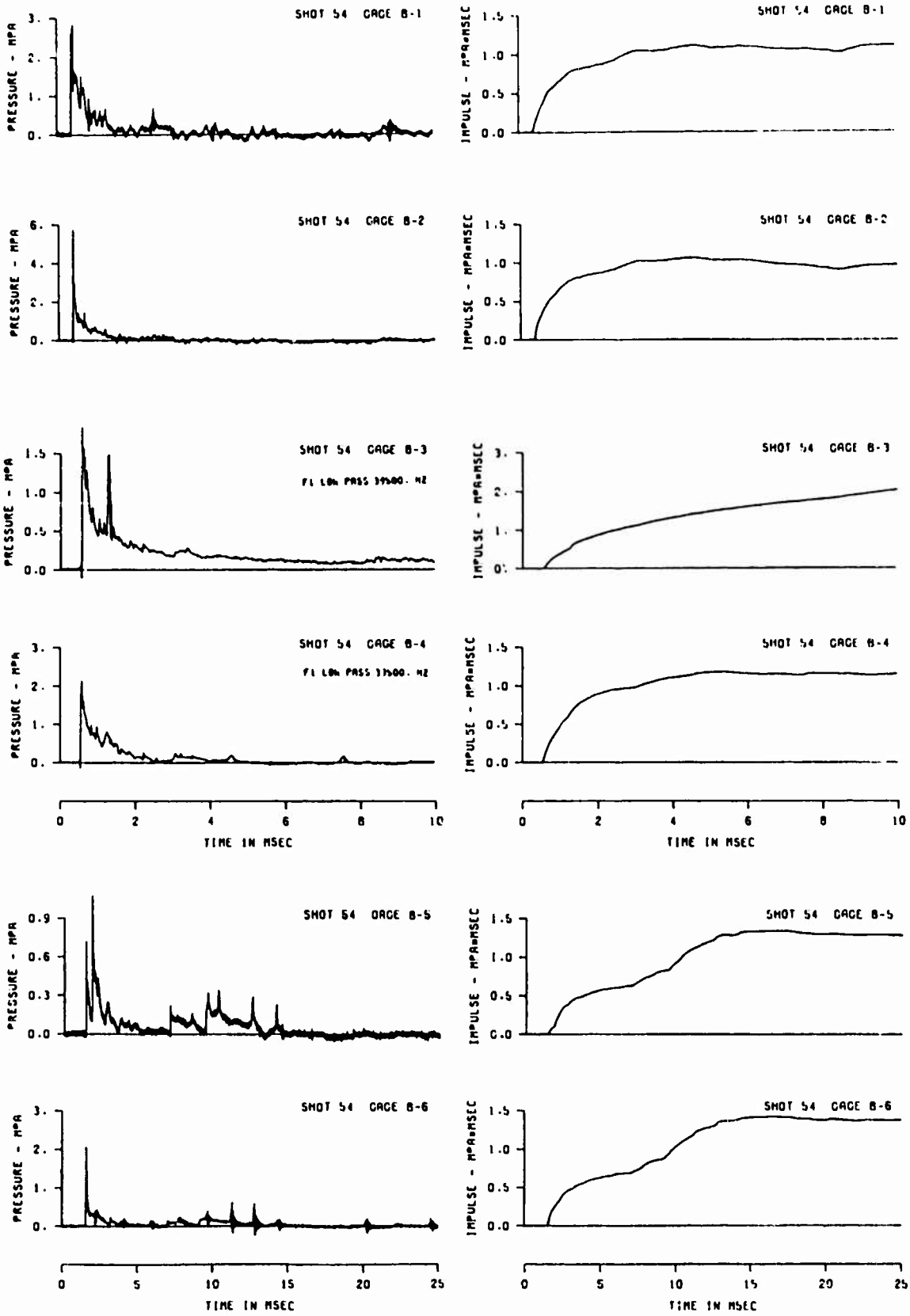

SHOT S2 GAGE A-9
SHOT S2 GAGE A-10
SHOT S2 GAGE A-11
SHOT S2 GAGE A-12
SHOT S2 GAGE A-13
SHOT S2 GAGE A-14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0 5 10 15 20 25

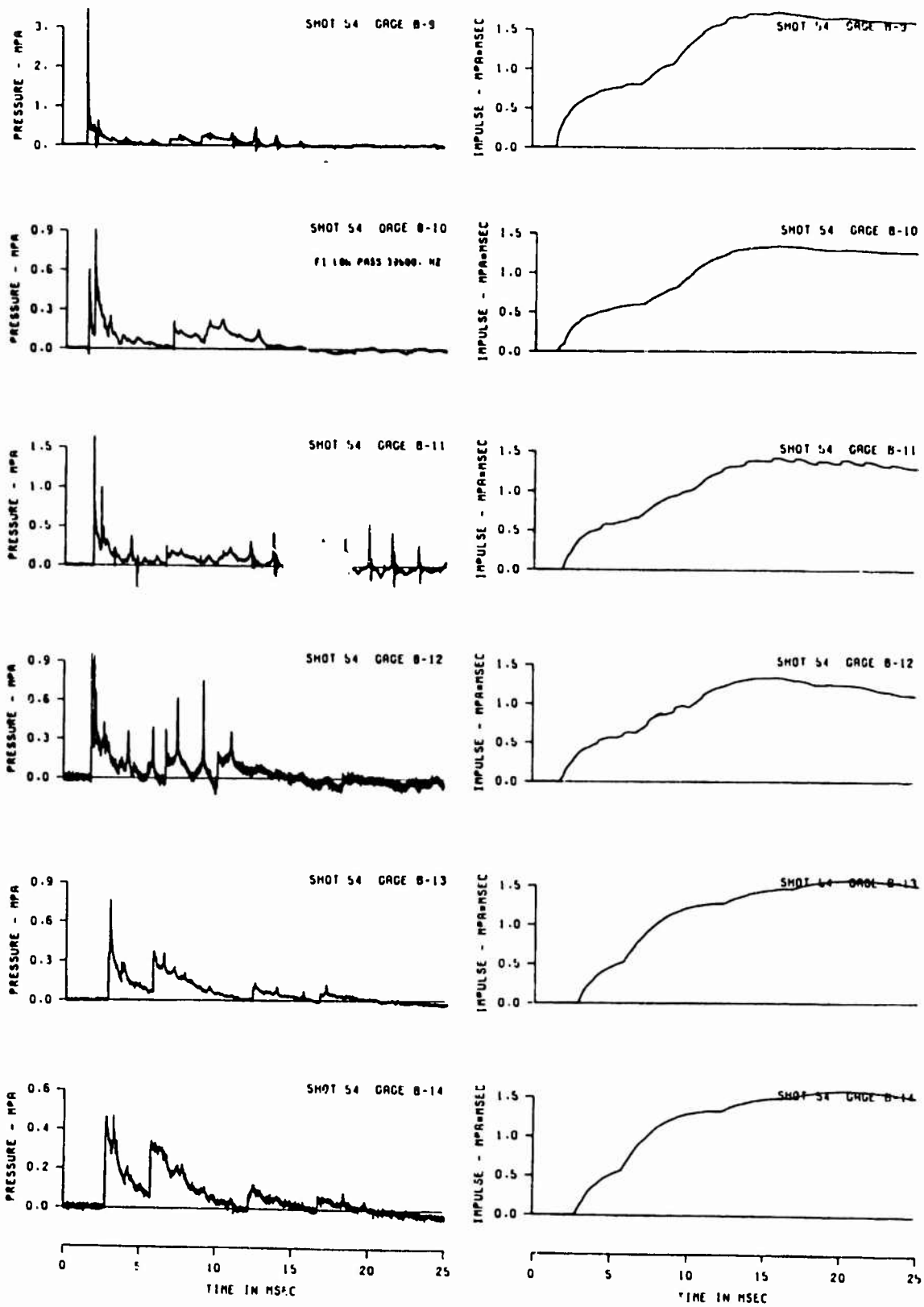

SHOT 53 GAGE B-1
SHOT 53 GAGE B-2
SHOT 53 GAGE B-3
SHOT 53 GAGE B-4
SHOT 53 GAGE B-5
SHOT 53 GAGE B-6
TIME IN MSEC

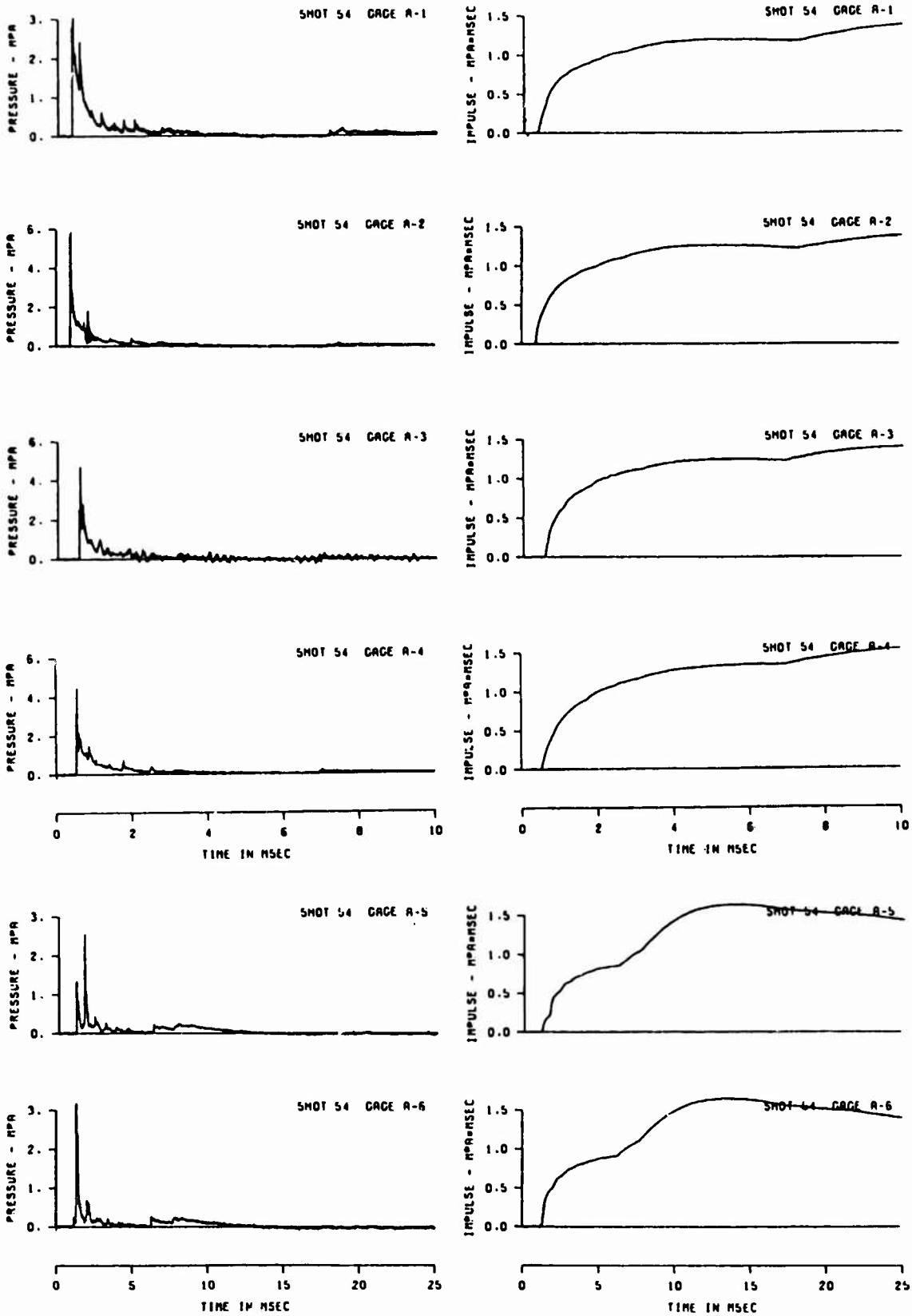

SHOT 53 GAGE B-9
SHOT 53 GAGE B-10
SHOT 53 GAGE B-11
SHOT 53 GAGE B-12
SHOT 53 GAGE B-13
SHOT 53 GAGE B-14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0
5
10
15
20
25

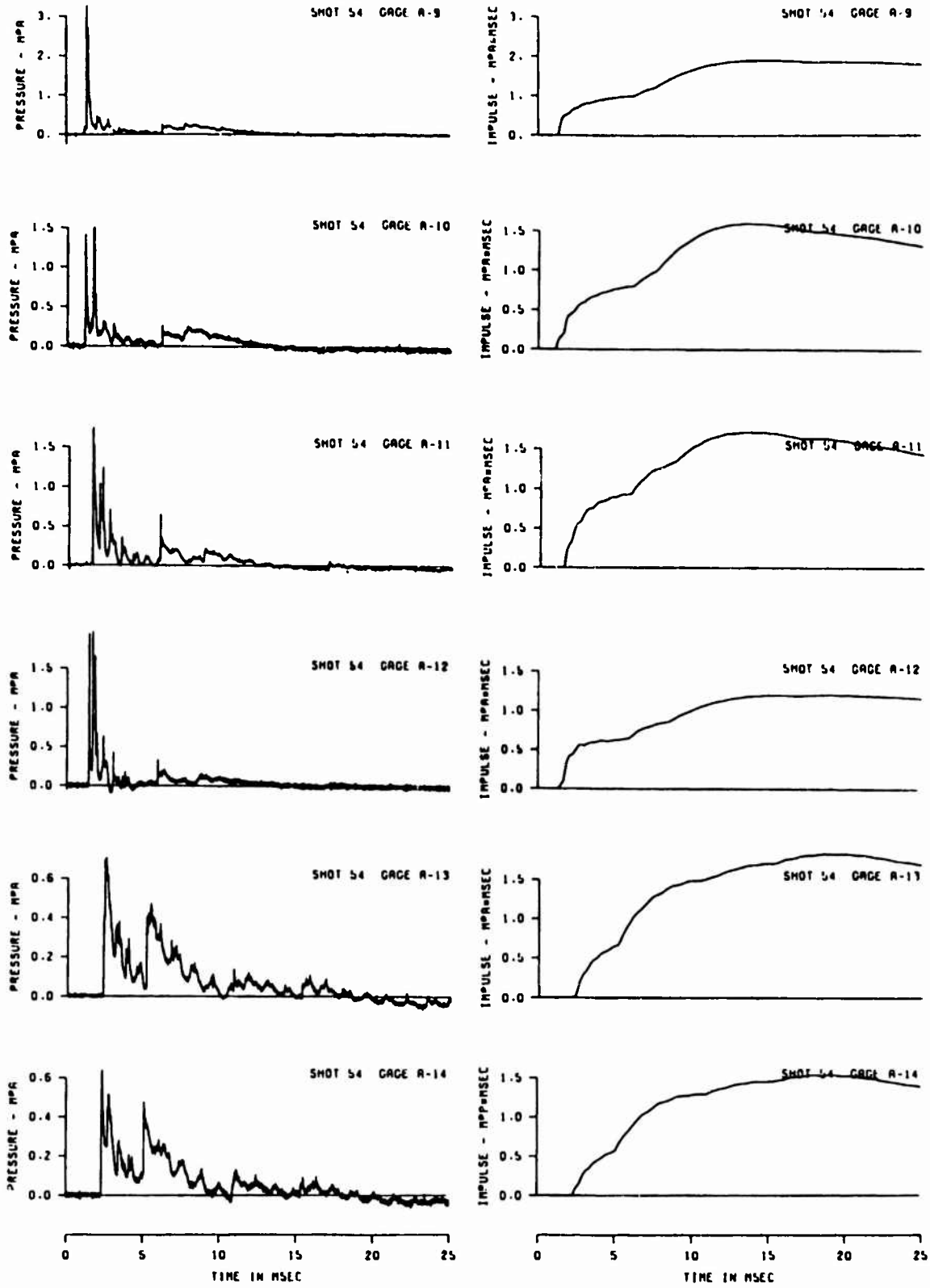

SHOT 53 GAGE A-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 53 GAGE A-2
SHOT 53 GAGE A-3
SHOT 53 GAGE A-4
SHOT 53, GAGE A-5
SHOT 53 GAGE A-6
TIME IN MSEC

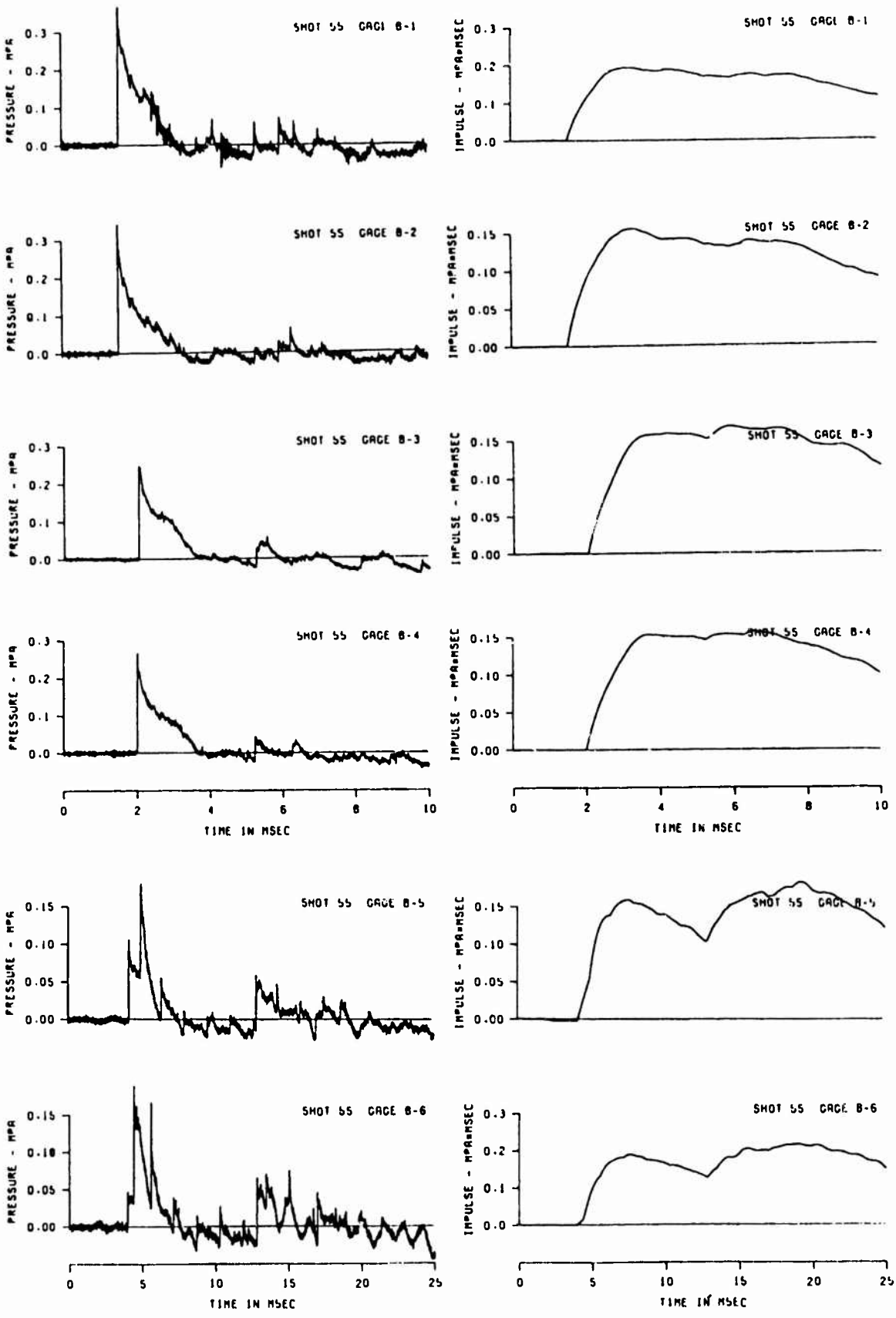

SHOT 53 GAGE A-9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 53 GAGE A-10
SHOT 53 GAGE A-11
SHOT 53 GAGE A-12
SHOT 53 GAGE A-13
SHOT 53 GAGE A-14
TIME IN MSEC

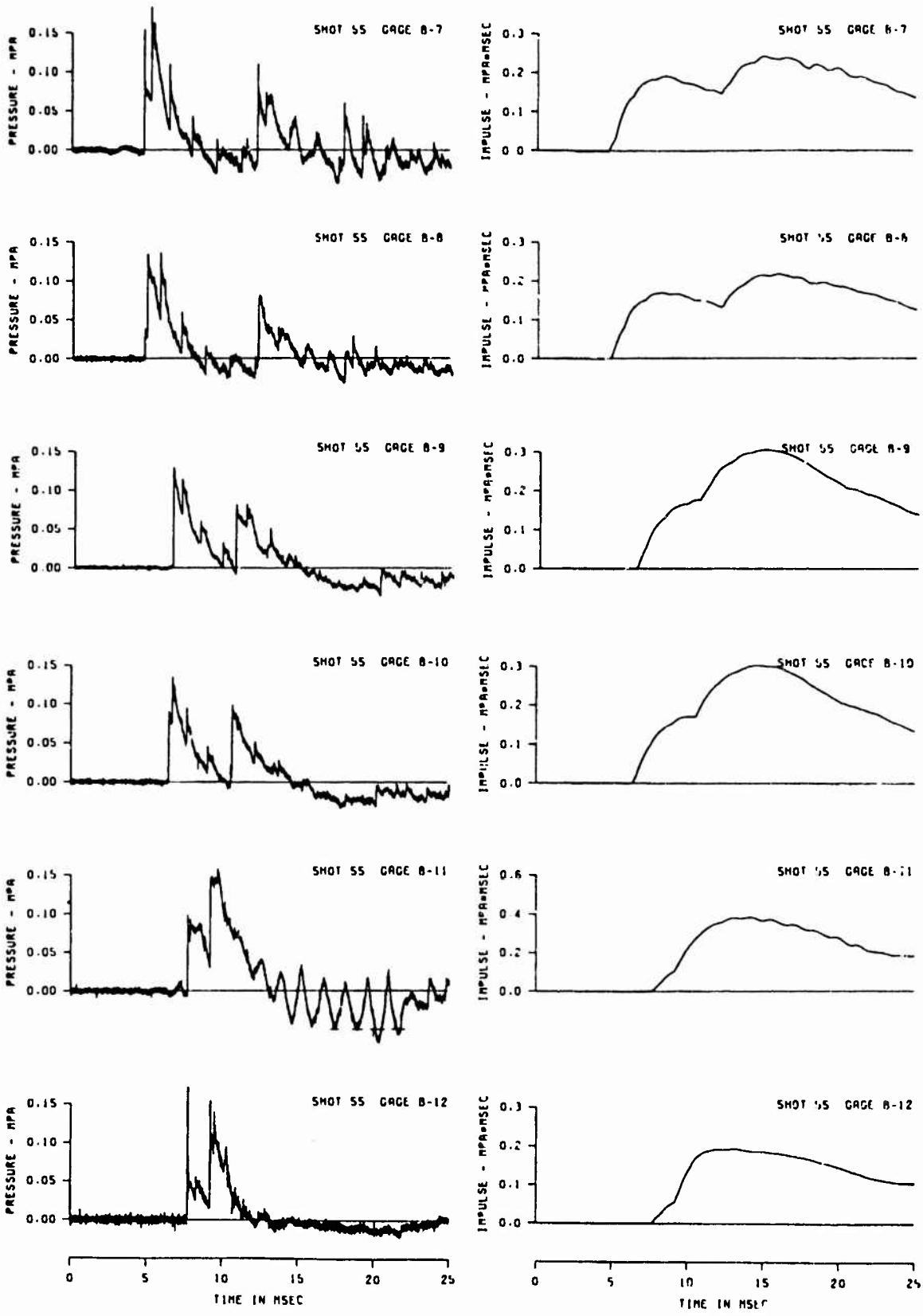

SHOT 54 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 54 GAGE B-2
SHOT 54 GAGE B-3
FI LOW PASS 39500. HZ
SHOT 54 GAGE B-4
FI LOW PASS 37500. HZ
SHOT 54 GAGE B-5
SHOT 54 GAGE B-6
TIME IN MSEC

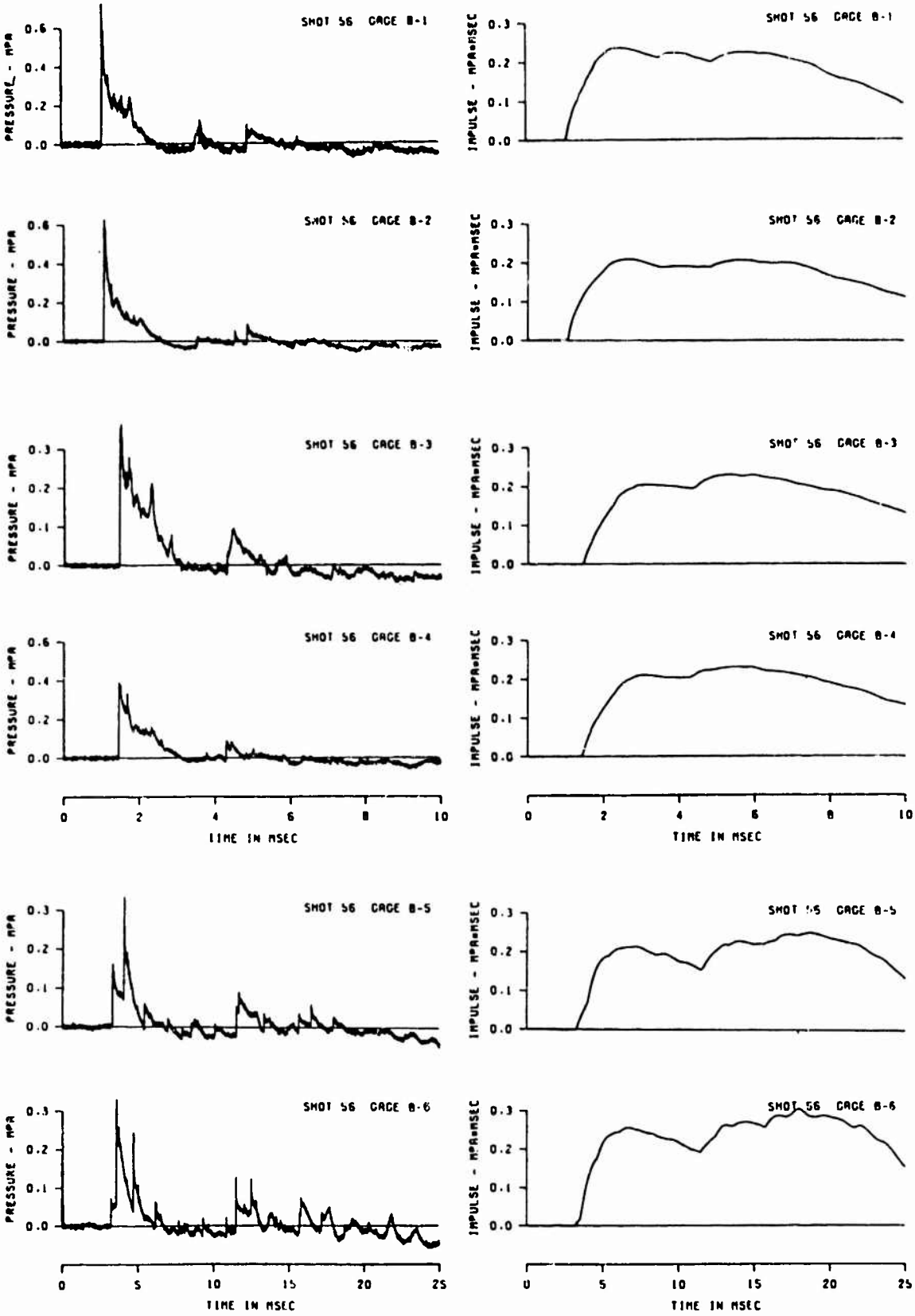

SHOT 54 GAGE B-9
SHOT 54 GAGE B-10
FI 10k PASS 30000. HZ
SHOT 54 GAGE B-11
SHOT 54 GAGE B-12
SHOT 54 GAGE B-13
SHOT 54 GAGE B-14
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

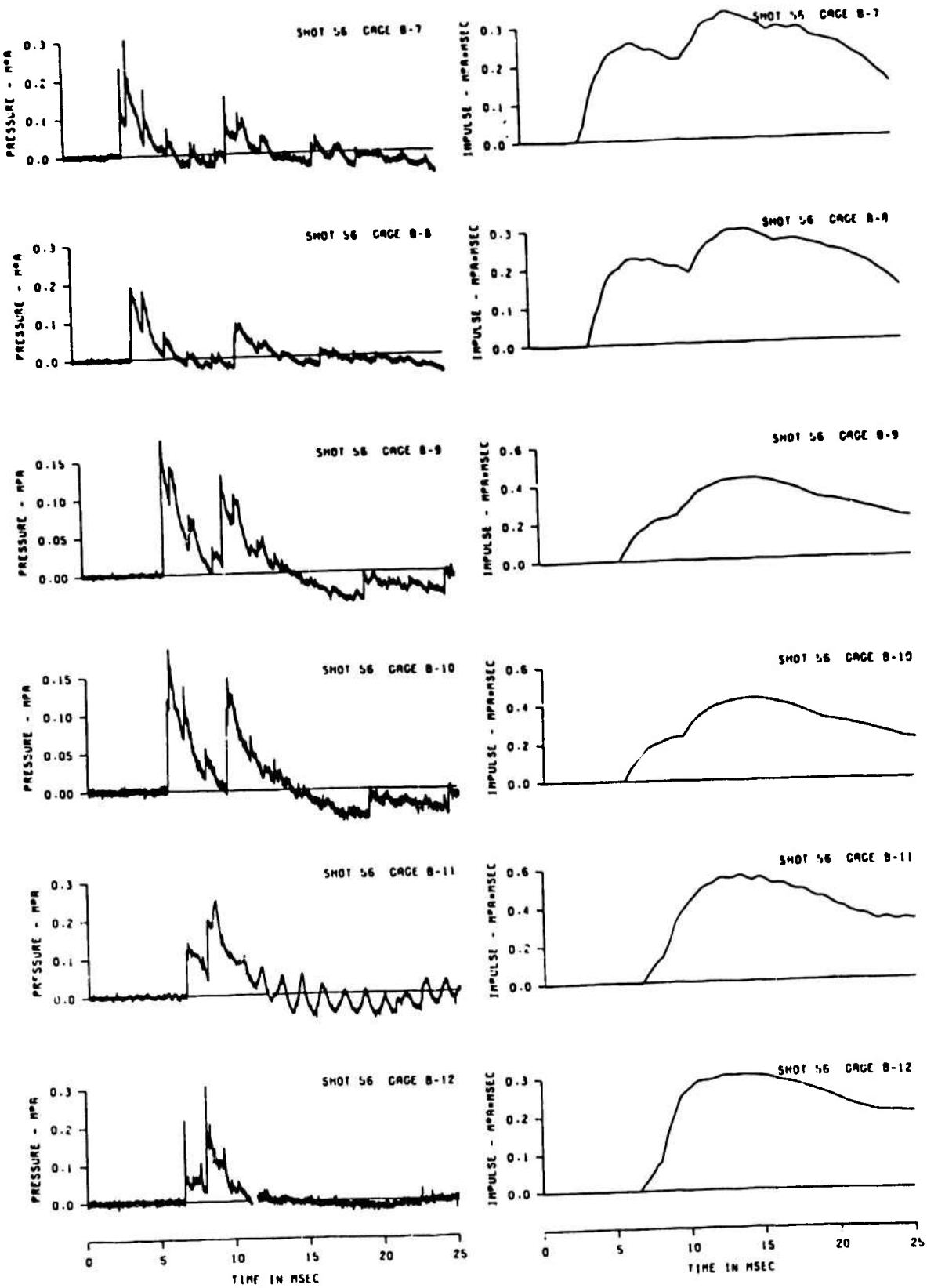

SHOT 54 GAGE A-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 54 GAGE A-2
SHOT 54 GAGE A-3
SHOT 54 GAGE A-4
SHOT 54 GAGE A-5
SHOT 54 GAGE A-6
TIME IN MSEC

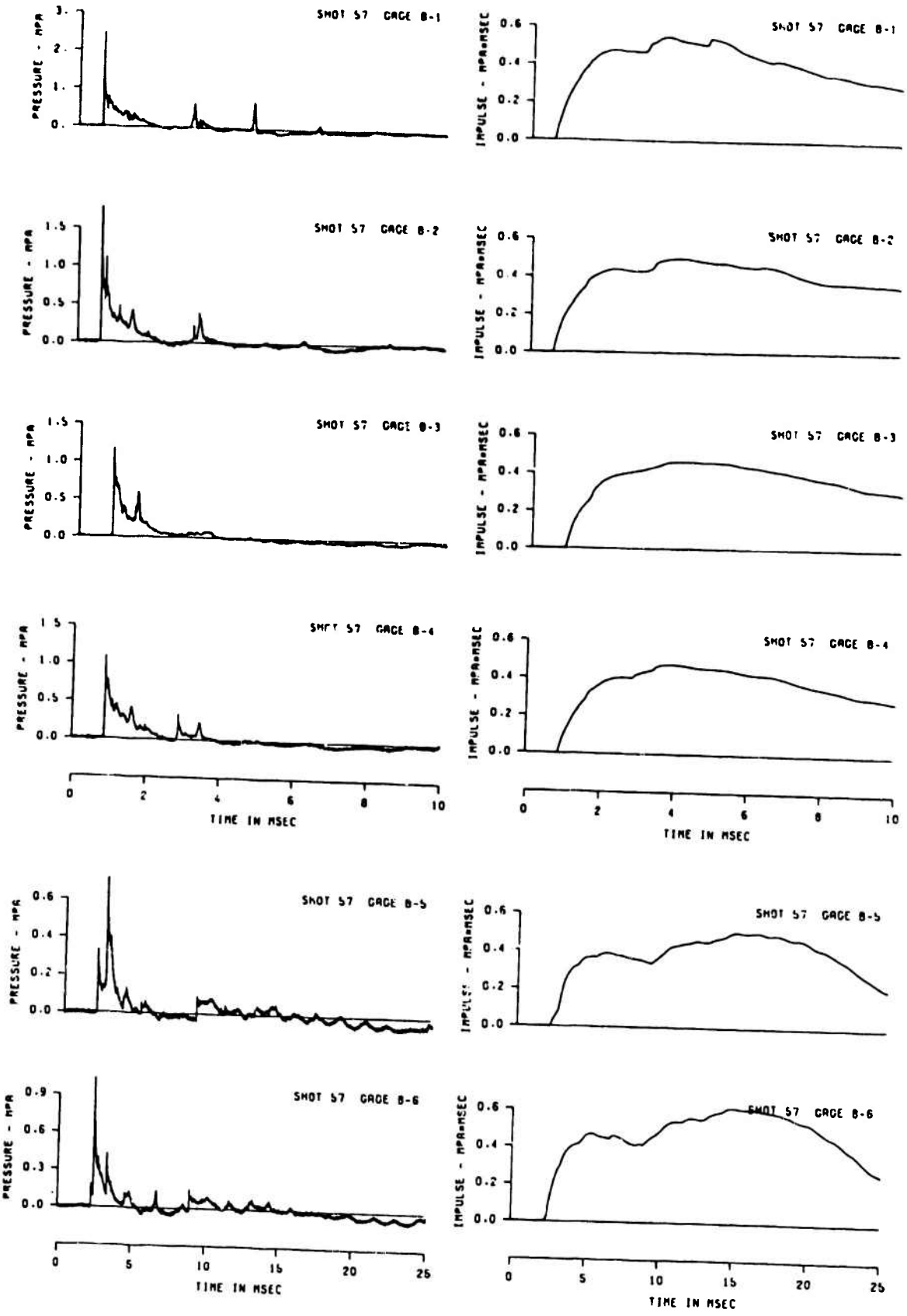

SHOT 54 GAGE A-9
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 54 GAGE A-10
SHOT 54 GAGE A-11
SHOT 54 GAGE A-12
SHOT 54 GAGE A-13
SHOT 54 GAGE A-14
TIME IN MSEC

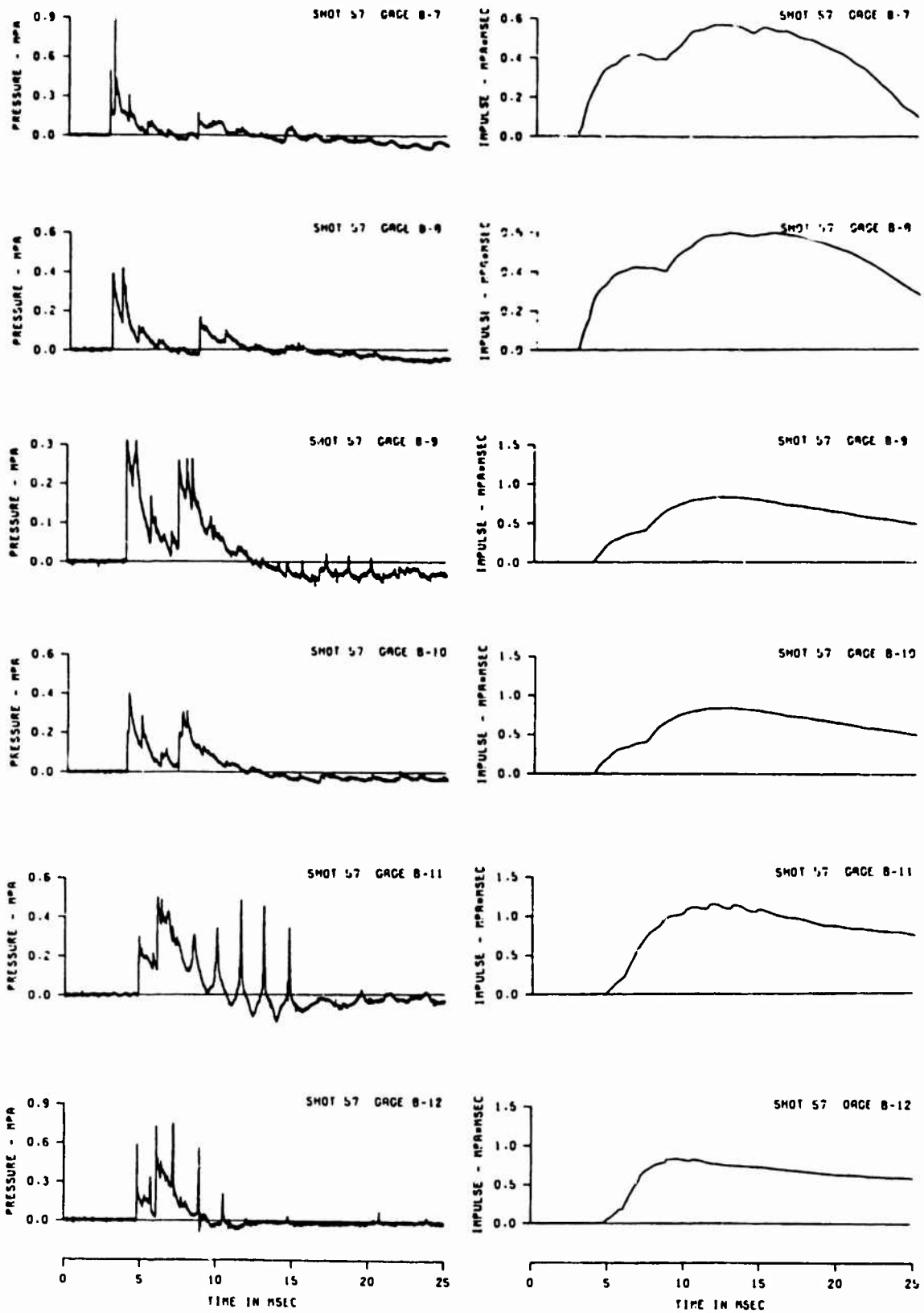

SHOT 55 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 55 GAGE B-2
SHOT 55 GAGE B-3
SHOT 55 GAGE B-4
SHOT 55 GAGE B-5
SHOT 55 GAGE B-6
TIME IN MSEC

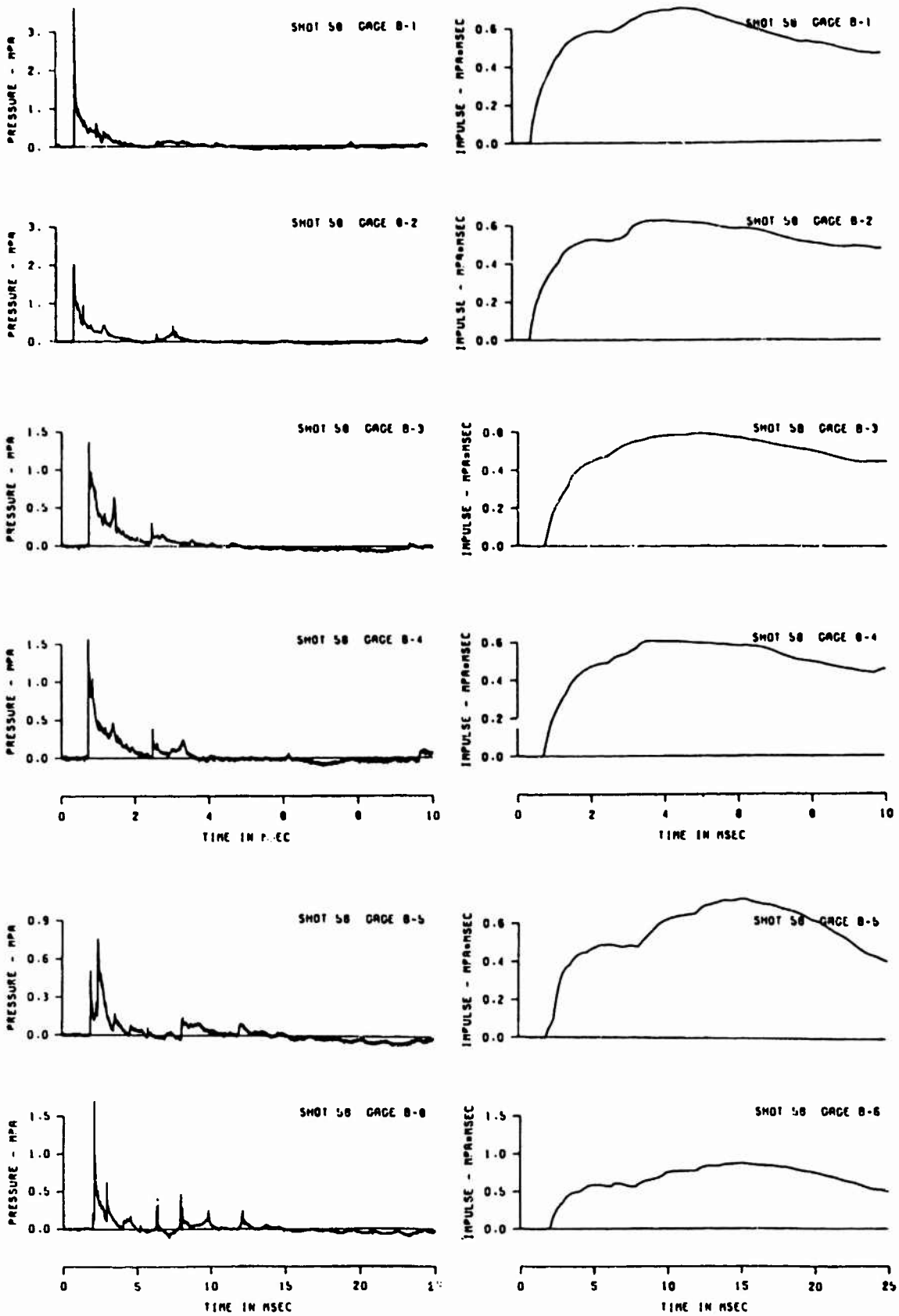

SHOT 55 GAGE B-7
SHOT 55 GAGE B-8
SHOT 55 GAGE B-9
SHOT 55 GAGE B-10
SHOT 55 GAGE B-11
SHOT 55 GAGE B-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

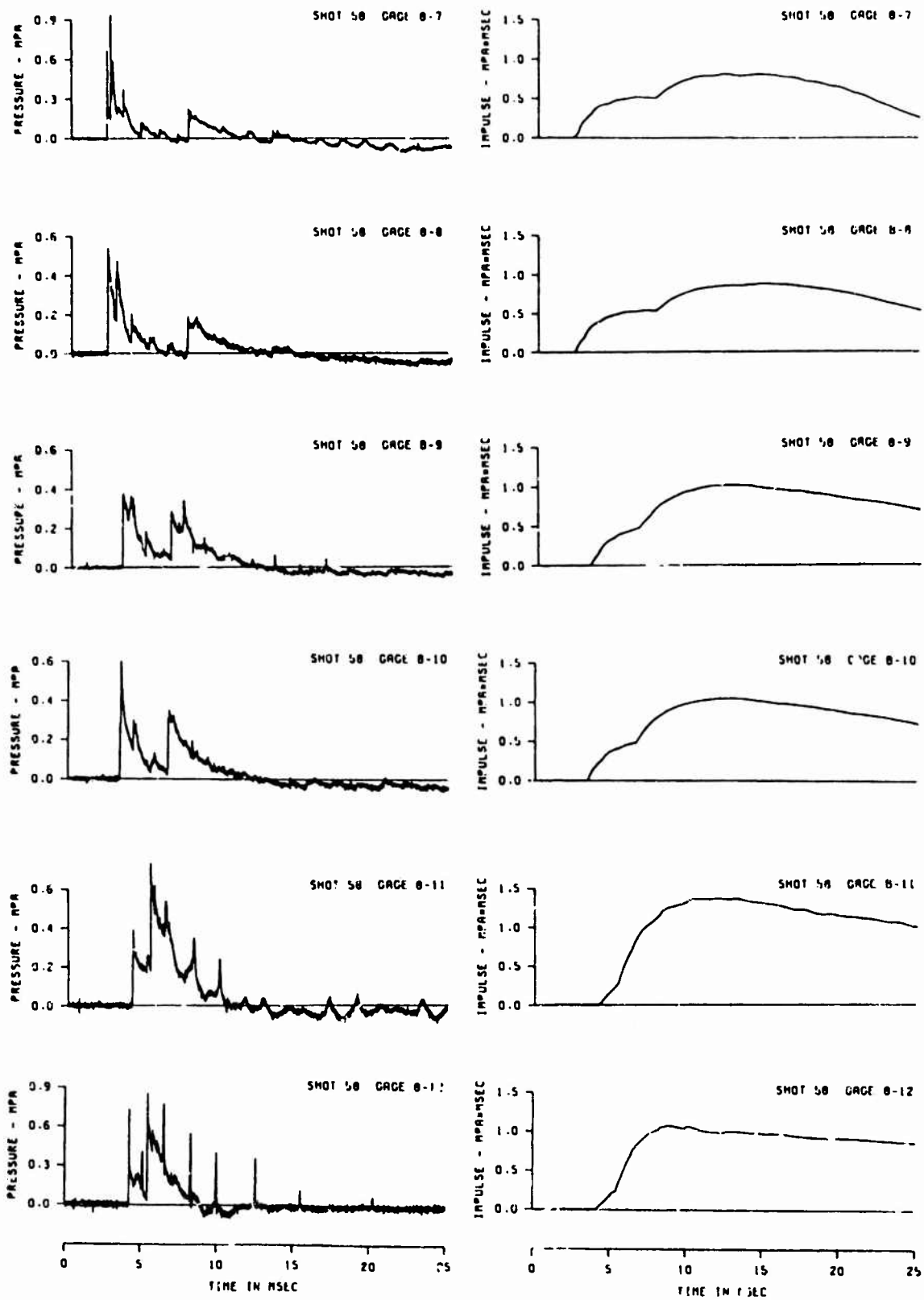

SHOT 56 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA•MSEC
SHOT 56 GAGE B-2
SHOT 56 GAGE B-3
SHOT 56 GAGE B-4
SHOT 56 GAGE B-5
SHOT 56 GAGE B-6
TIME IN MSEC

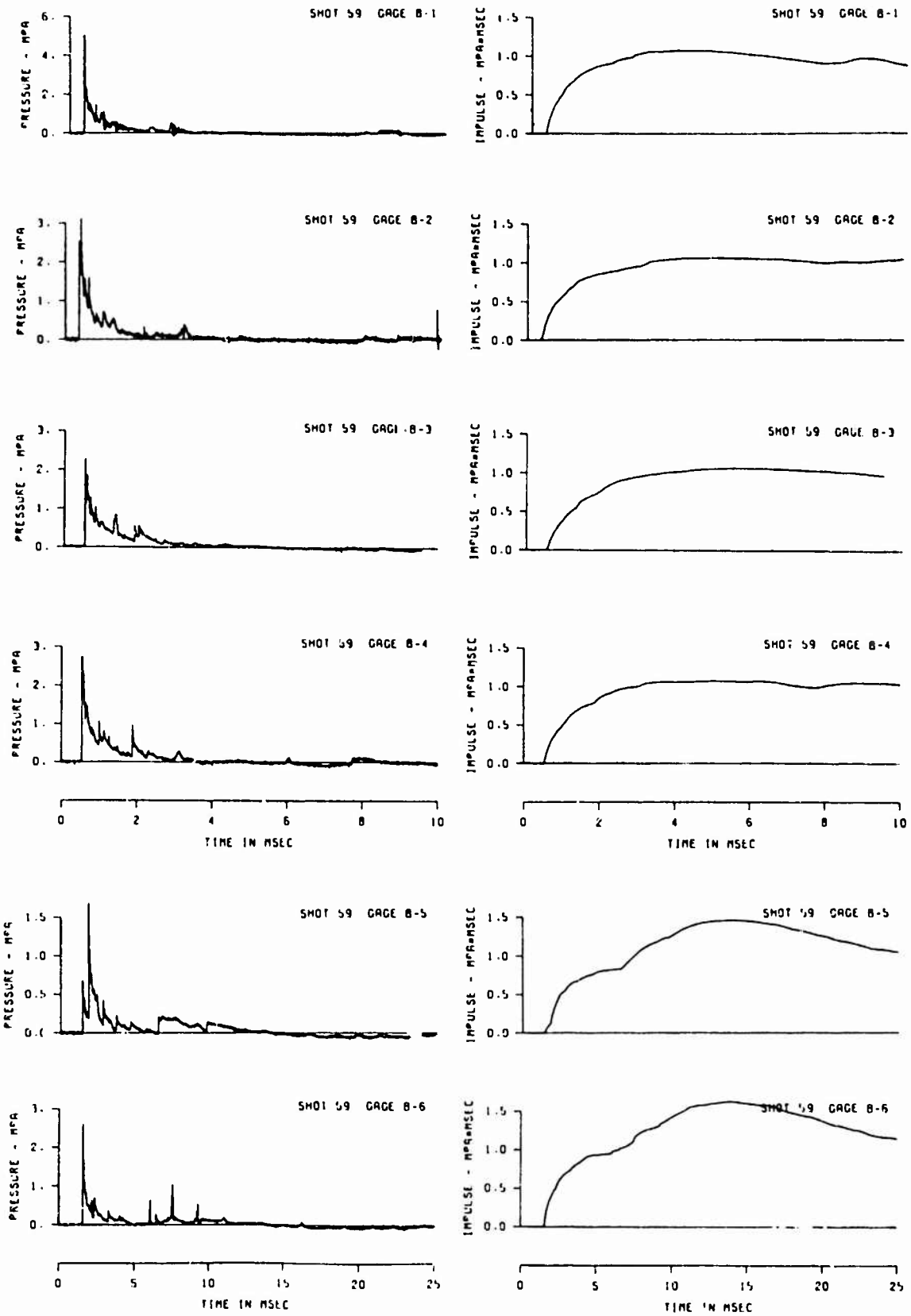

SHOT 56 CAGE B-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 56 CAGE B-8
SHOT 56 CAGE B-9
SHOT 56 CAGE B-10
SHOT 56 CAGE B-11
SHOT 56 CAGE B-12
TIME IN MSEC

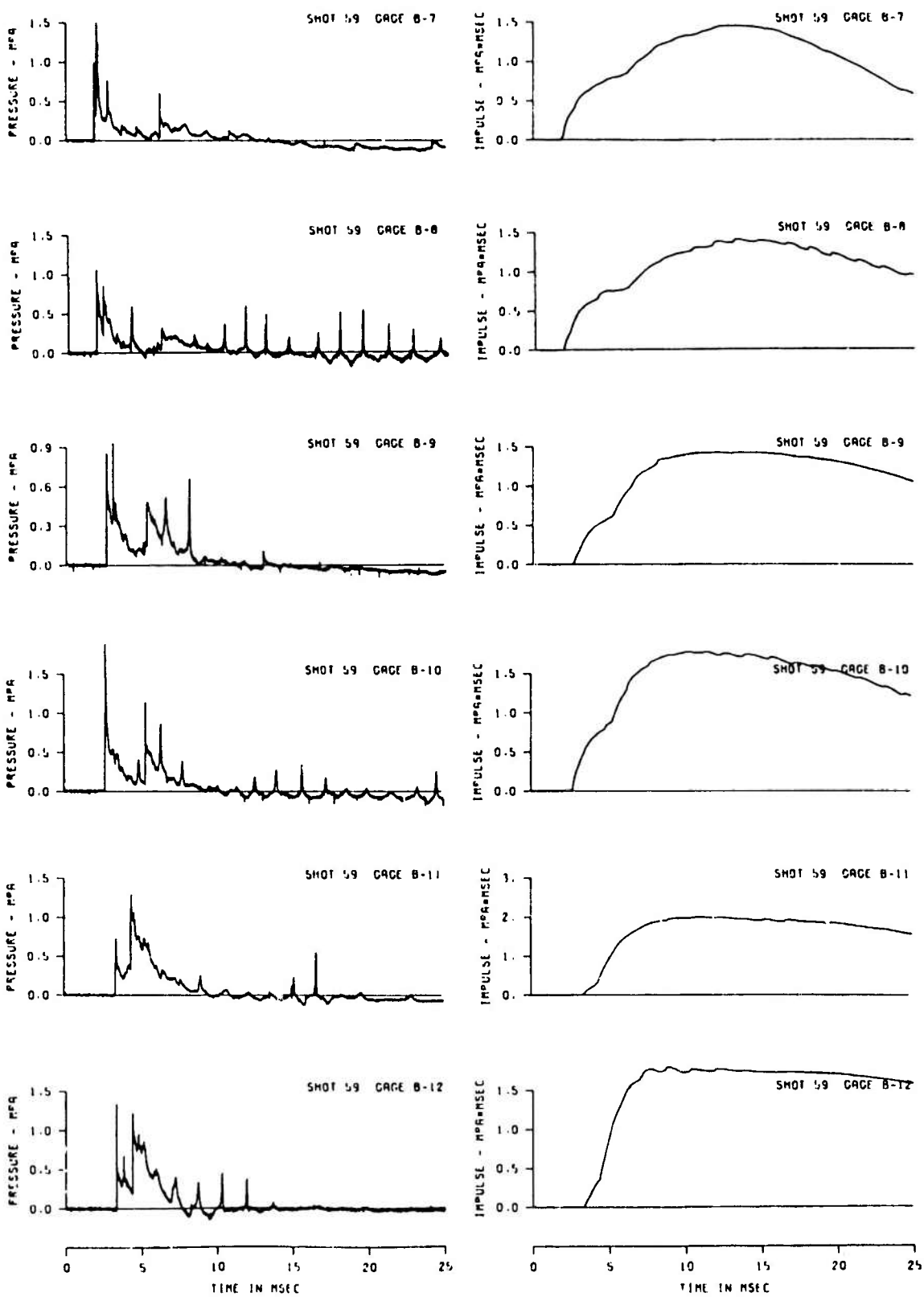

SHOT 57 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 57 GAGE B-2
SHOT 57 GAGE B-3
SHOT 57 GAGE B-4
SHOT 57 GAGE B-5
SHOT 57 GAGE B-6
TIME IN MSEC

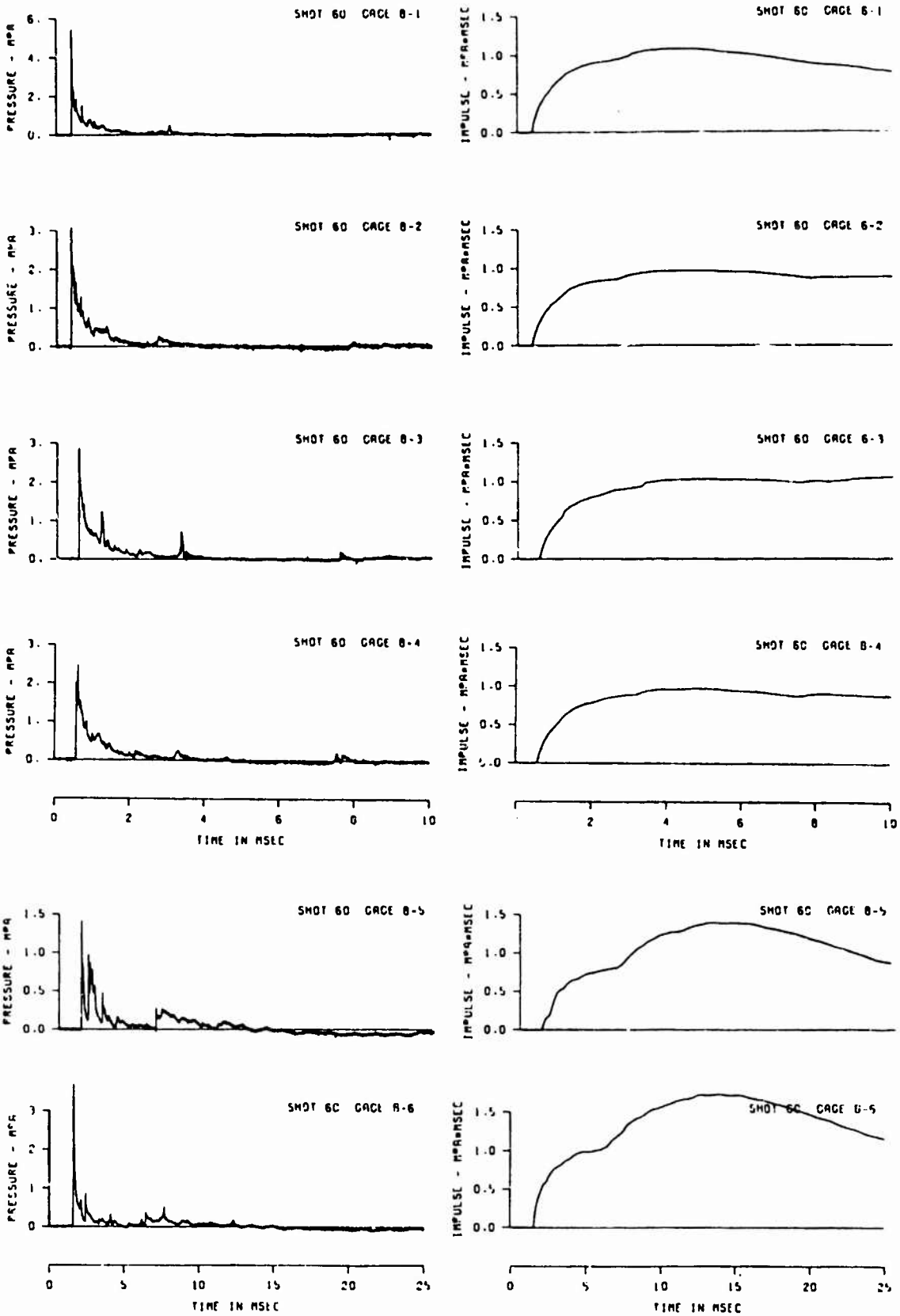

SHOT 57 GAGE B-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 57 GAGE B-8
SHOT 57 GAGE B-9
SHOT 57 GAGE B-10
SHOT 57 GAGE B-11
SHOT 57 GAGE B-12
TIME IN MSEC

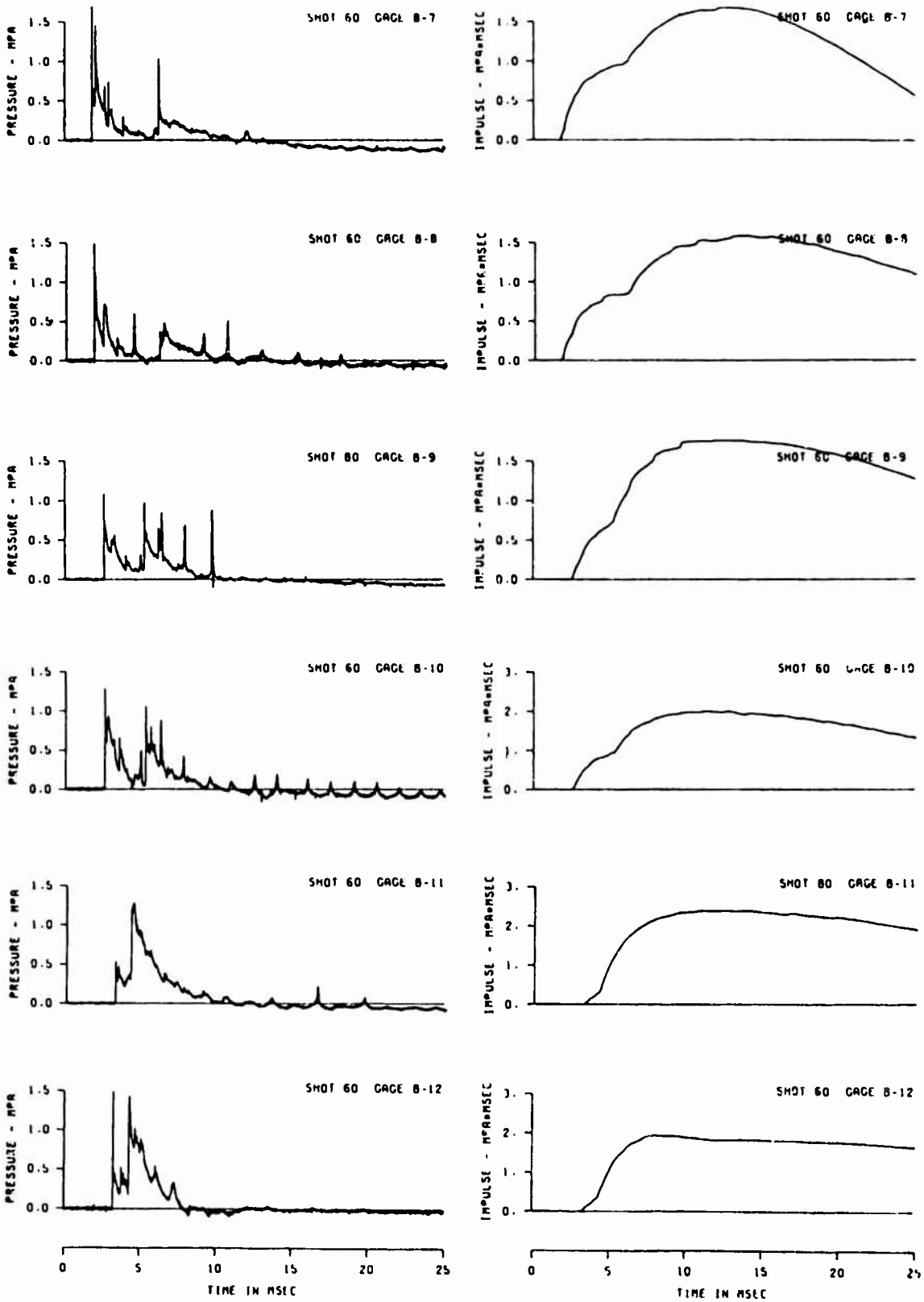

SHOT 58 GAGE B-1
SHOT 58 GAGE B-2
SHOT 58 GAGE B-3
SHOT 58 GAGE B-4
SHOT 58 GAGE B-5
SHOT 58 GAGE B-6
PRESSURE - MPA
IMPULSE - MPA•MSEC
TIME IN MSEC

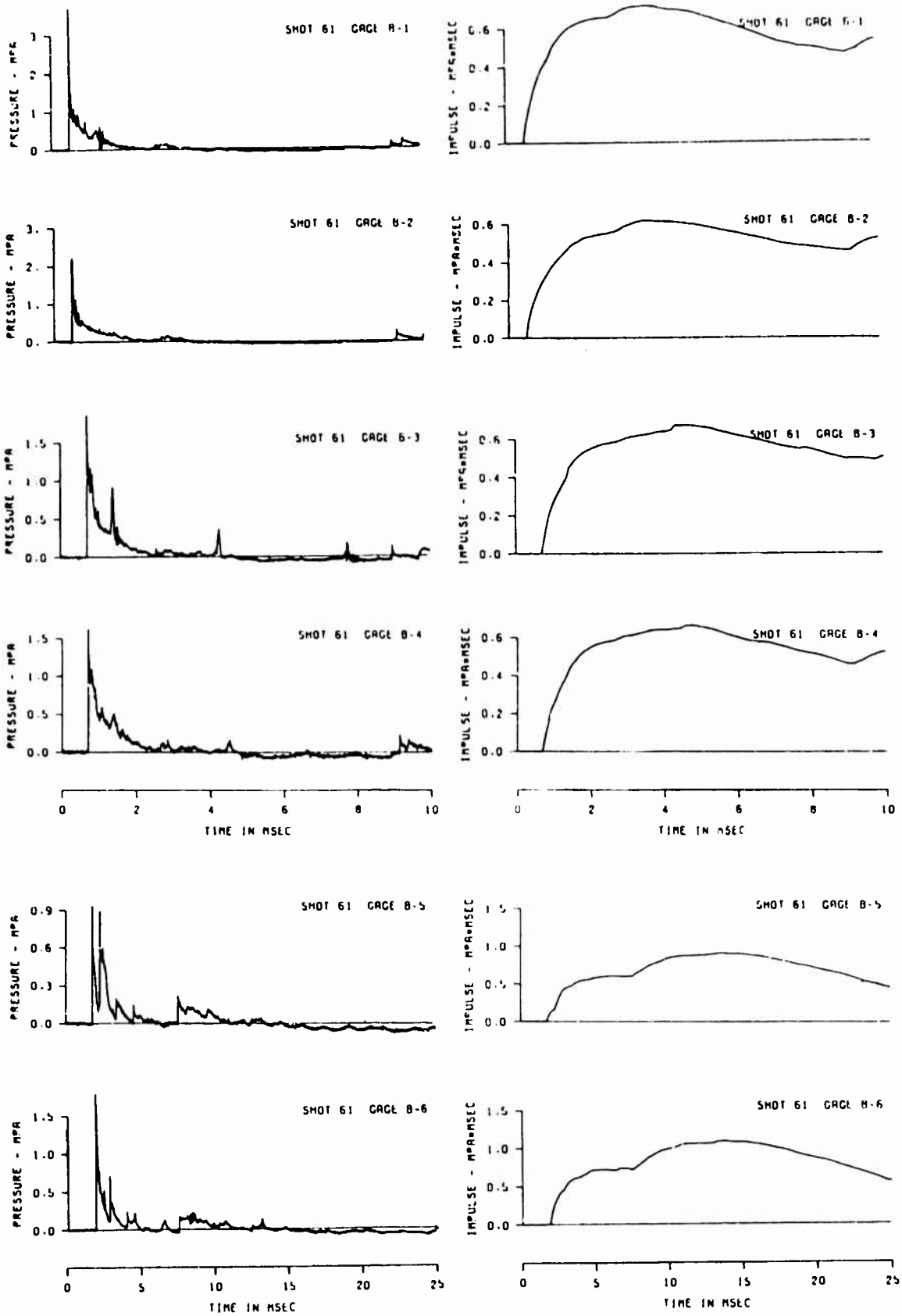

SHOT 58 GAGE 8-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 58 GAGE 8-8
SHOT 58 GAGE 8-9
SHOT 58 GAGE 8-10
SHOT 58 GAGE 8-11
SHOT 58 GAGE 8-12
TIME IN MSEC

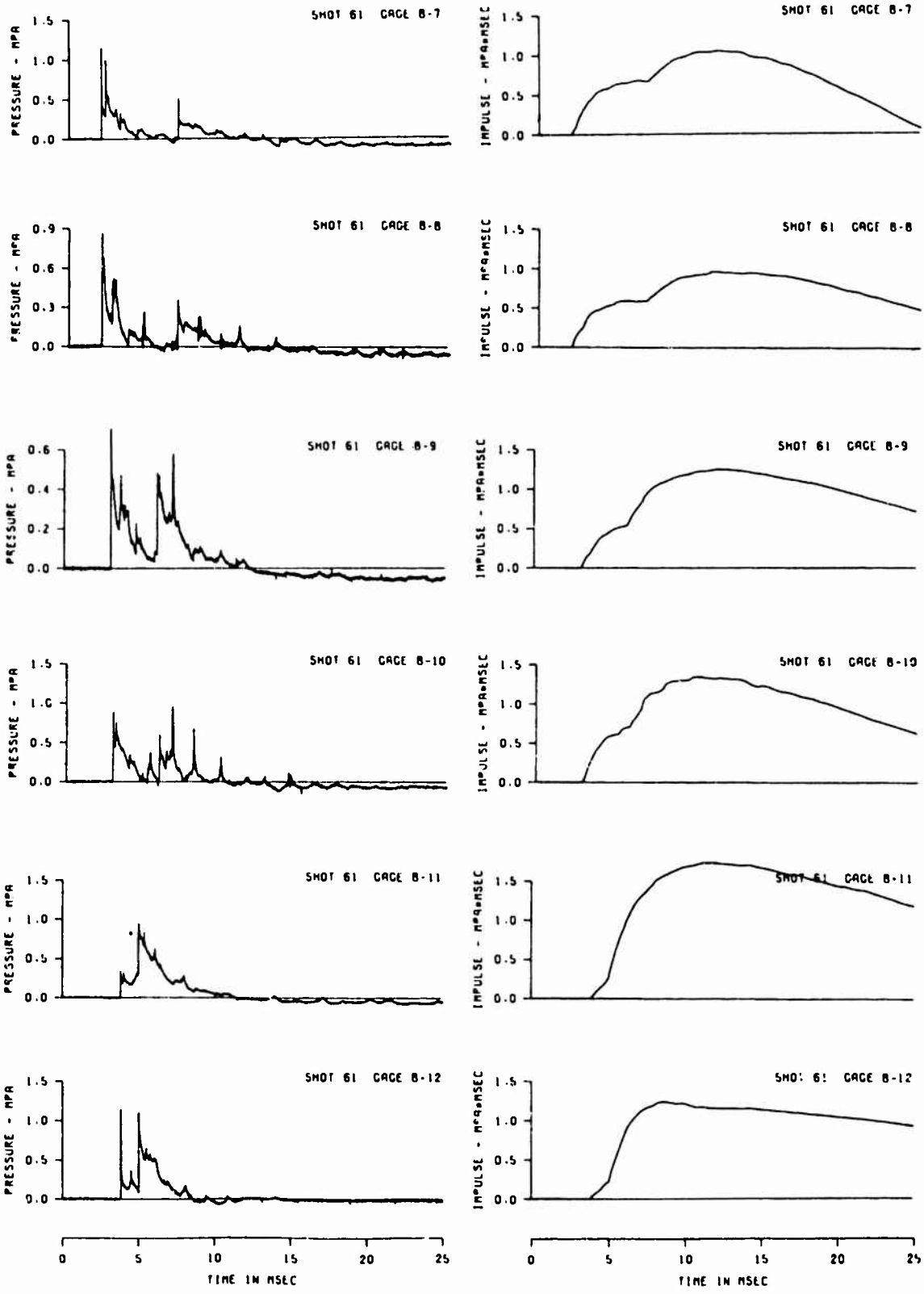

SHOT 59 GAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 59 GAGE B-2
SHOT 59 GAGE B-3
SHOT 59 GAGE B-4
SHOT 59 GAGE B-5
SHOT 59 GAGE B-6
TIME IN MSEC

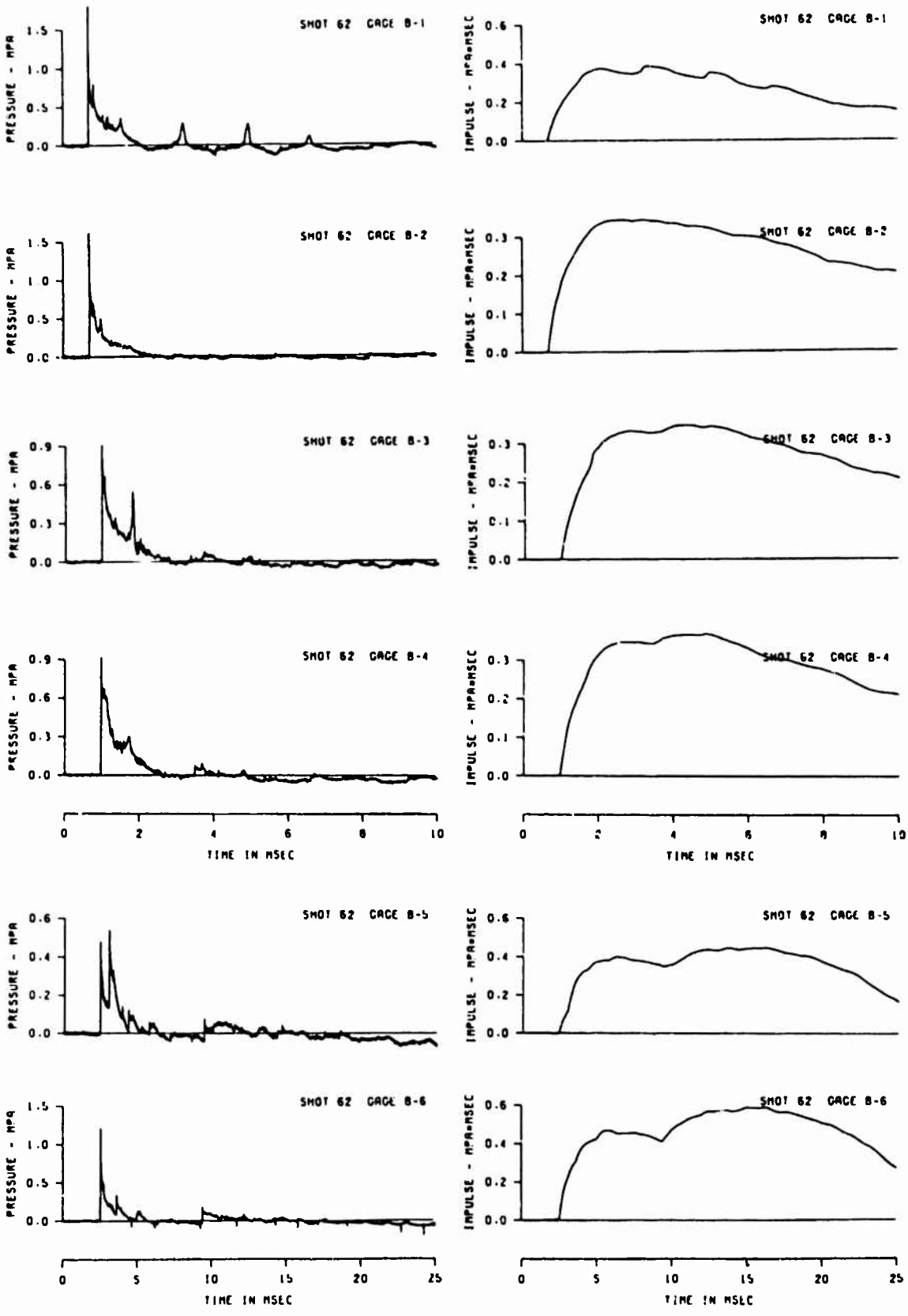

SHOT 59 GAGE B-7
SHOT 59 GAGE B-8
SHOT 59 GAGE B-9
SHOT 59 GAGE B-10
SHOT 59 GAGE B-11
SHOT 59 GAGE B-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

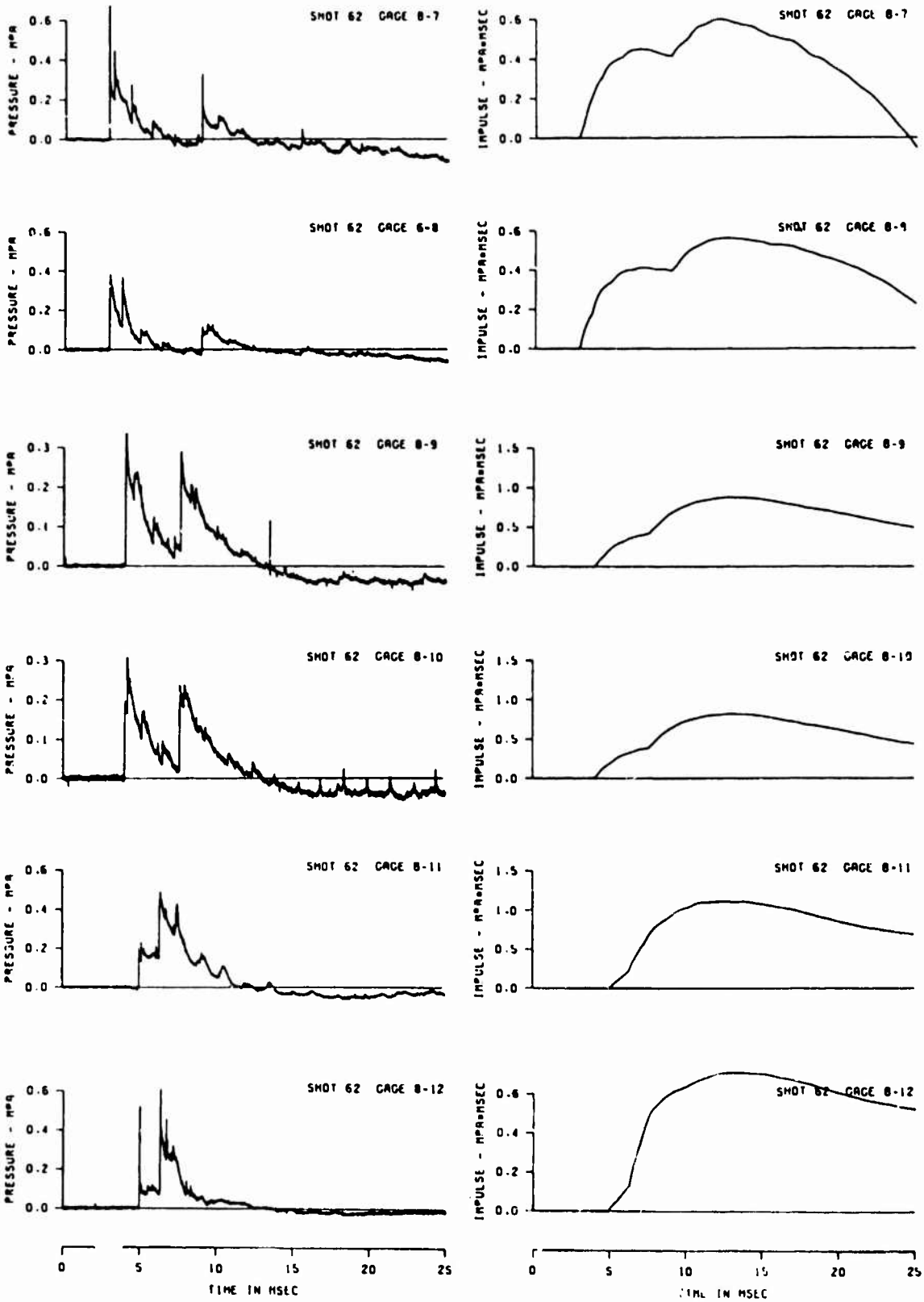

SHOT 60 CAGE 6-1
SHOT 60 CAGE 6-2
SHOT 60 CAGE 6-3
SHOT 60 CAGE 6-4
SHOT 60 CAGE 6-5
SHOT 60 CAGE 6-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

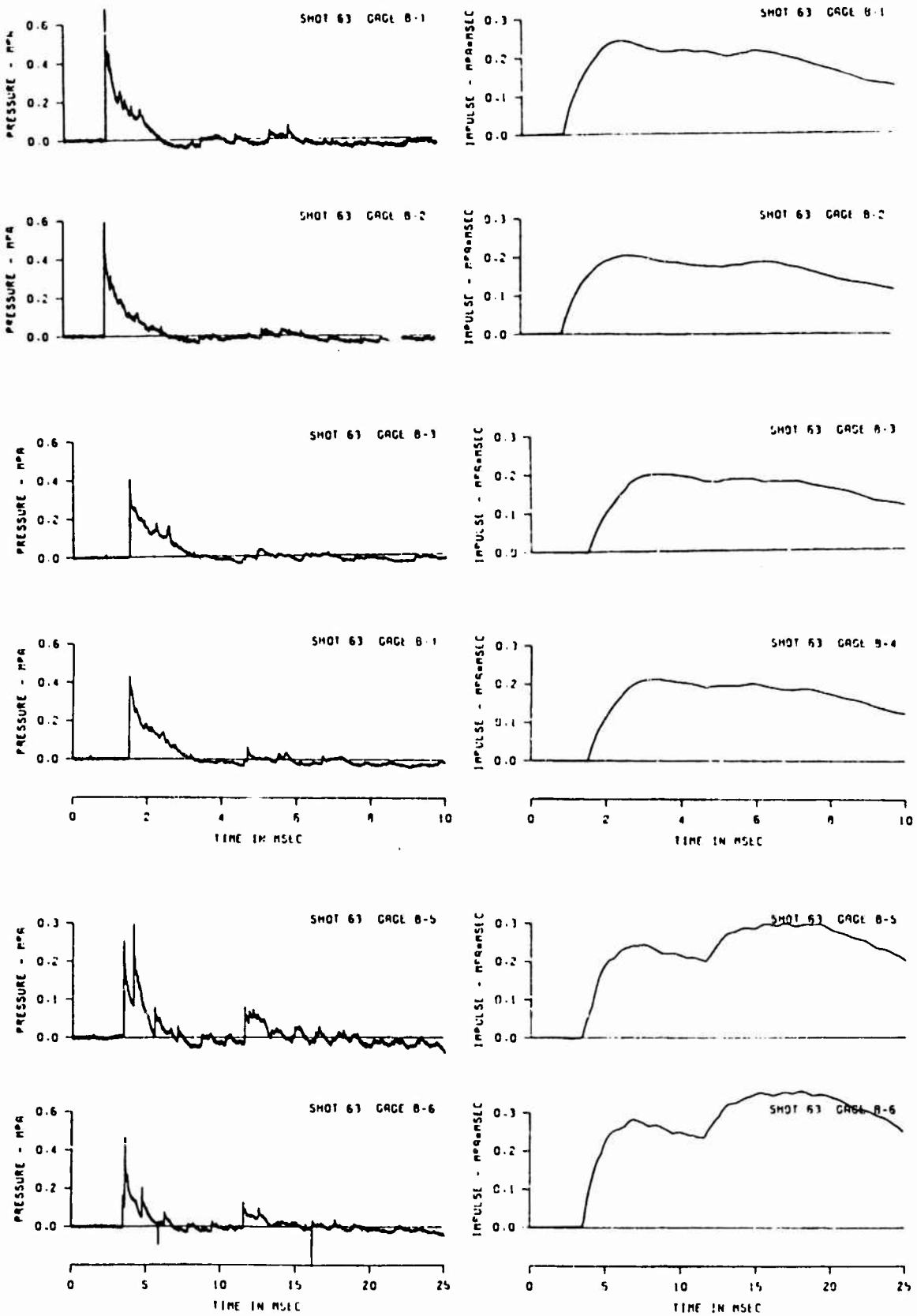

SHOT 60 GAGE B-7
SHOT 60 GAGE B-8
SHOT 60 GAGE B-9
SHOT 60 GAGE B-10
SHOT 60 GAGE B-11
SHOT 60 GAGE B-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

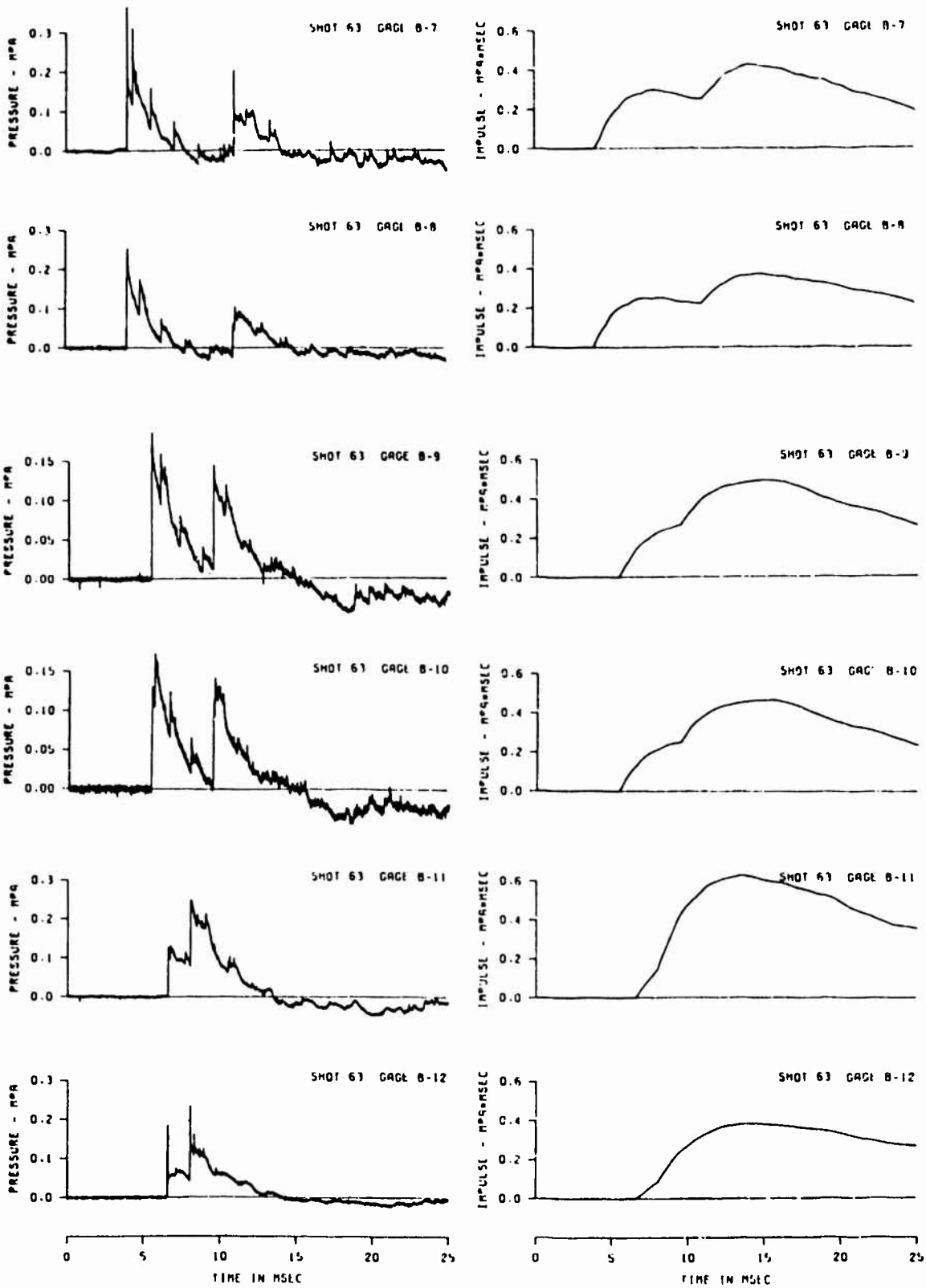

SHOT 61 GAGE B-1
SHOT 61 GAGE B-2
SHOT 61 GAGE B-3
SHOT 61 GAGE B-4
SHOT 61 GAGE B-5
SHOT 61 GAGE B-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

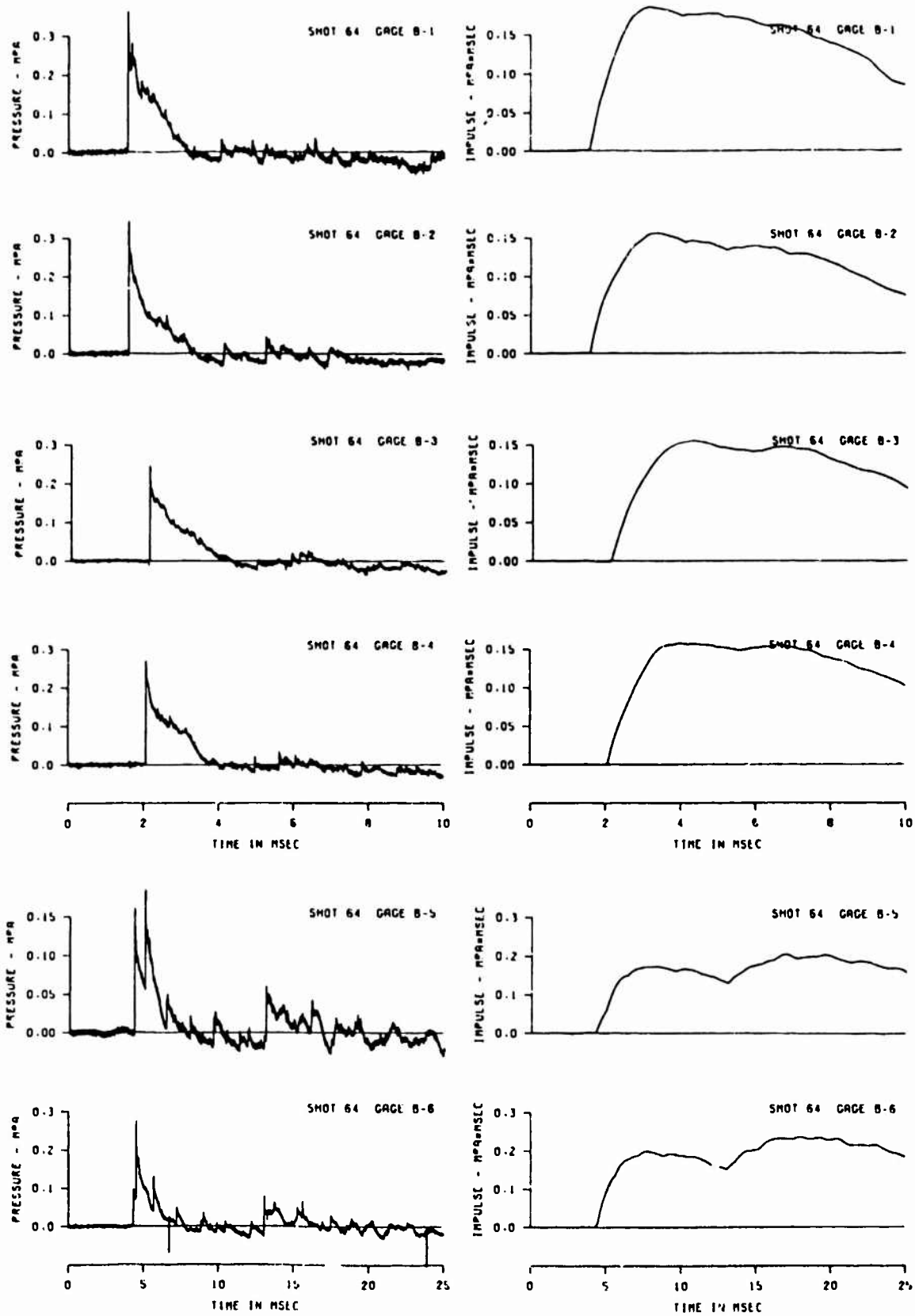

SHOT 61 GAGE B-7
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 61 GAGE B-8
SHOT 61 GAGE B-9
SHOT 61 GAGE B-10
SHOT 61 GAGE B-11
SHOT 61 GAGE B-12
TIME IN MSEC

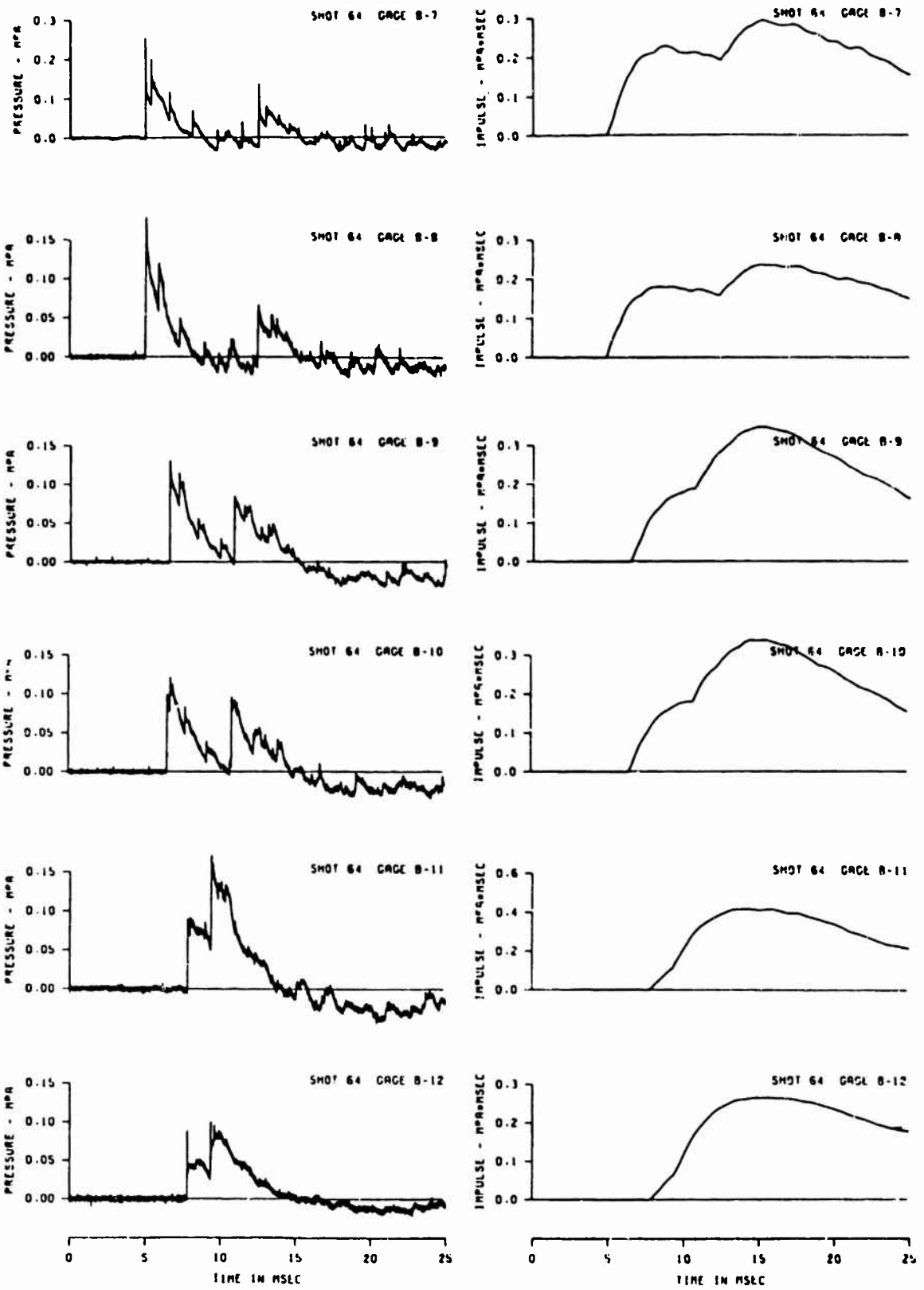

SHOT 62 CAGE B-1
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 62 CAGE B-2
SHOT 62 CAGE B-3
SHOT 62 CAGE B-4
SHOT 62 CAGE B-5
SHOT 62 CAGE B-6
TIME IN MSEC

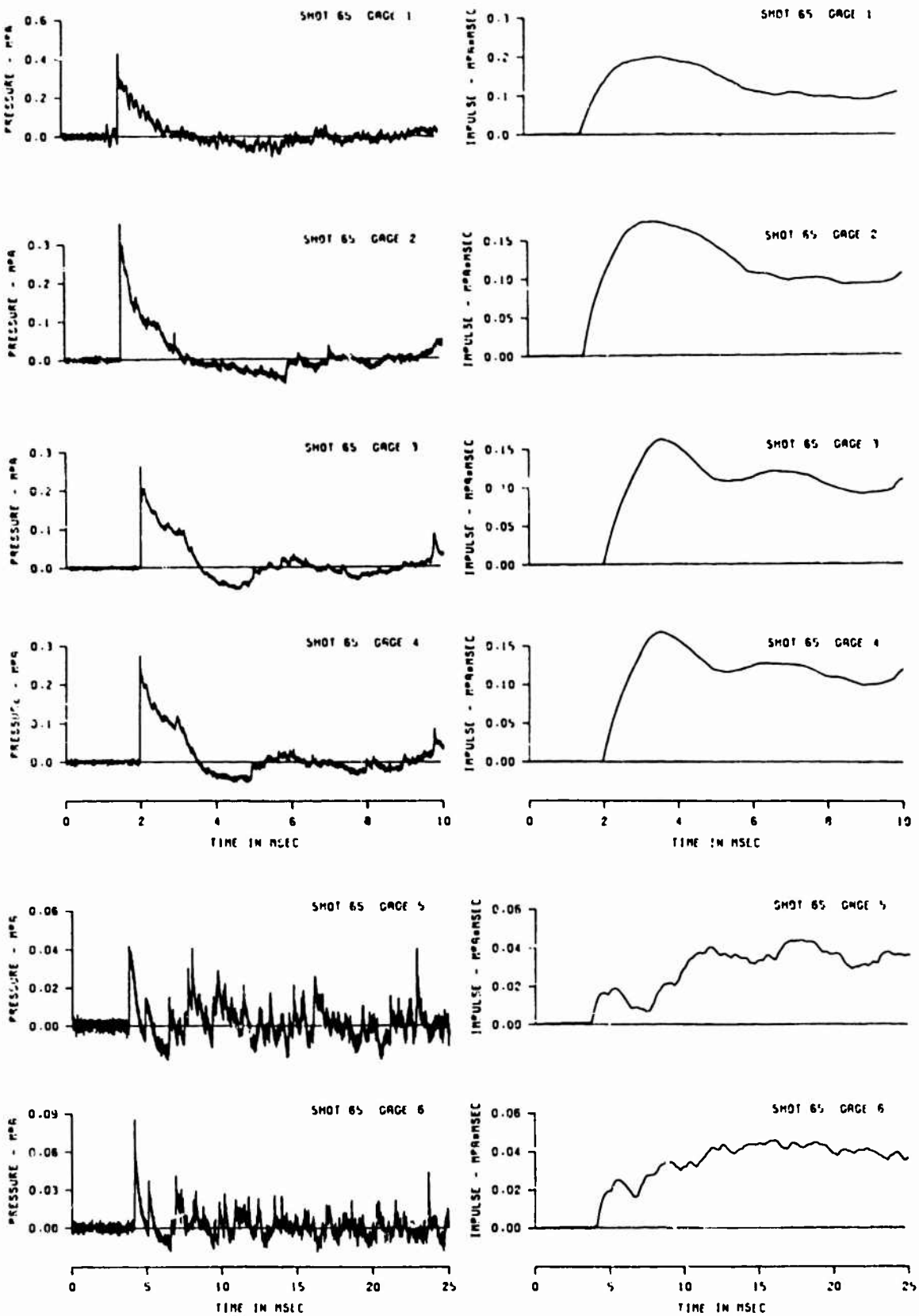

SHOT 62 GAGE 8-7
SHOT 62 GAGE 8-8
SHOT 62 GAGE 8-9
SHOT 62 GAGE 8-10
SHOT 62 GAGE 8-11
SHOT 62 GAGE 8-12
PRESSURE - MPA
IMPULSE - MPA•MSEC
TIME IN MSEC
0
5
10
15
20
25

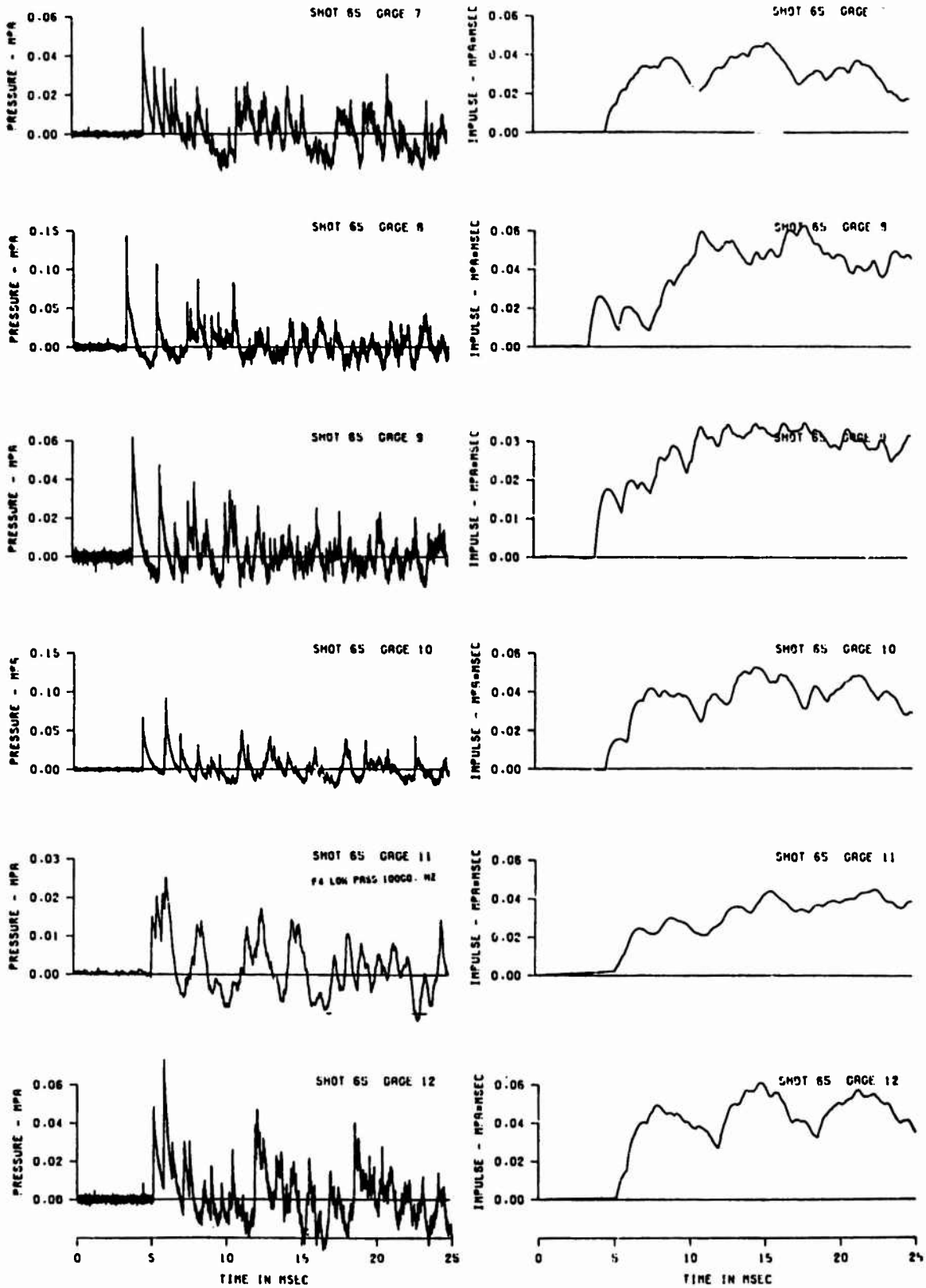

SHOT 63 GAGE B-1
SHOT 63 GAGE B-2
SHOT 63 GAGE B-3
SHOT 63 GAGE B-4
SHOT 63 GAGE B-5
SHOT 63 GAGE B-6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

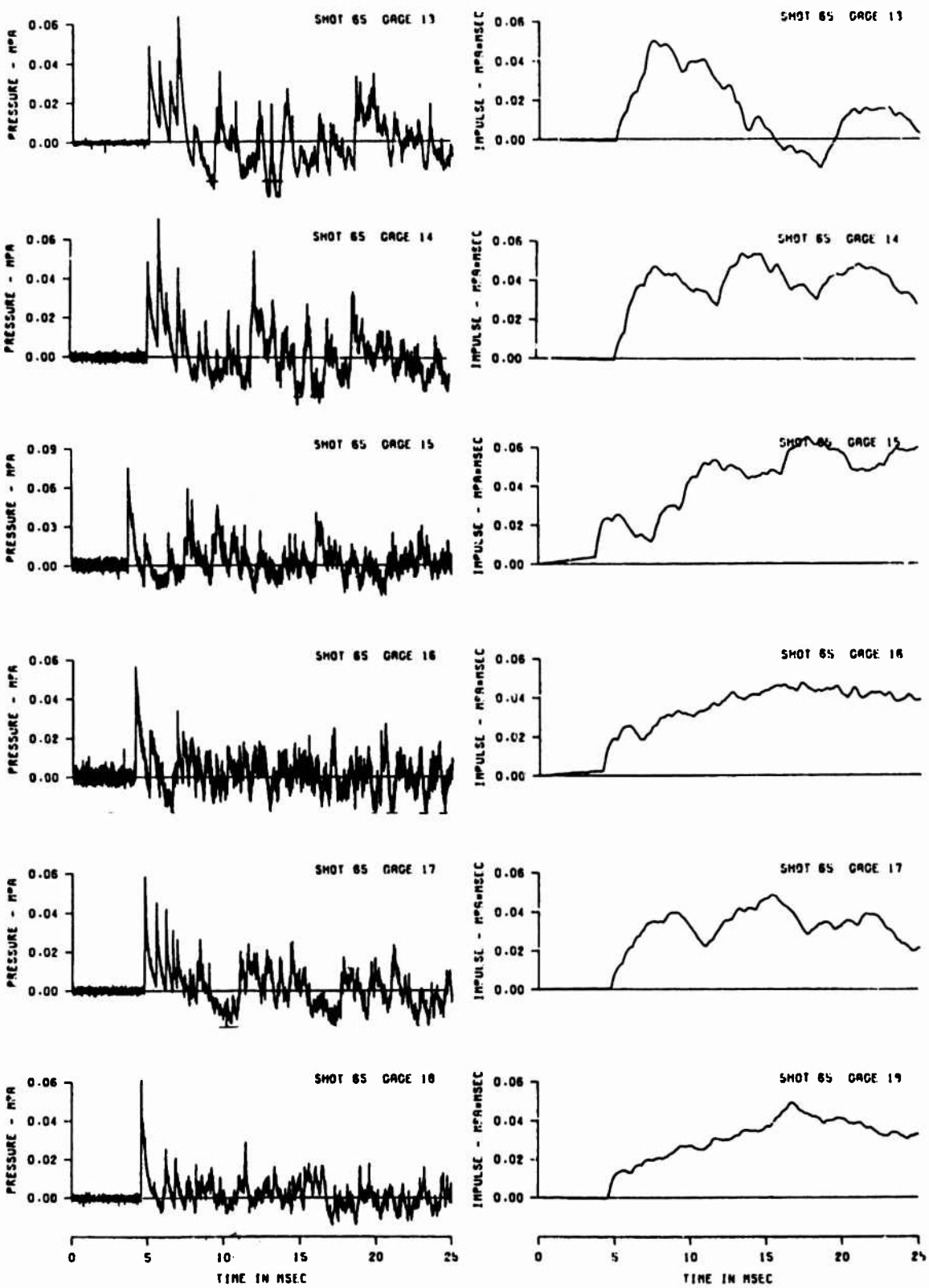

SHOT 63 GAGE B-7
SHOT 63 GAGE B-8
SHOT 63 GAGE B-9
SHOT 63 GAGE B-10
SHOT 63 GAGE B-11
SHOT 63 GAGE B-12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

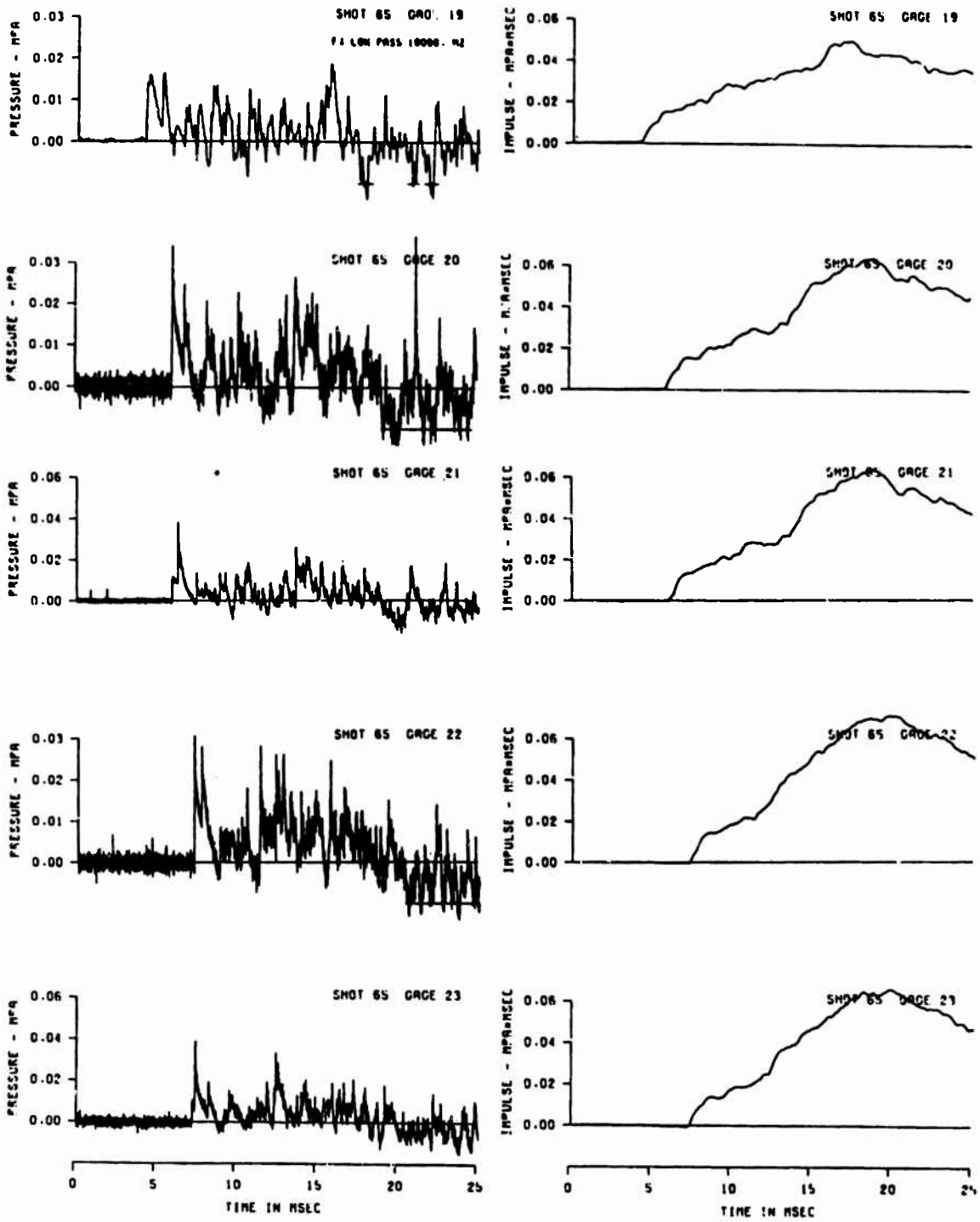

SHOT 64 GAGE B-1
SHOT 64 GAGE B-2
SHOT 64 GAGE B-3
SHOT 64 GAGE B-4
SHOT 64 GAGE B-5
SHOT 64 GAGE B-6
PRESSURE - MPa
IMPULSE - MPa•MSEC
TIME IN MSEC

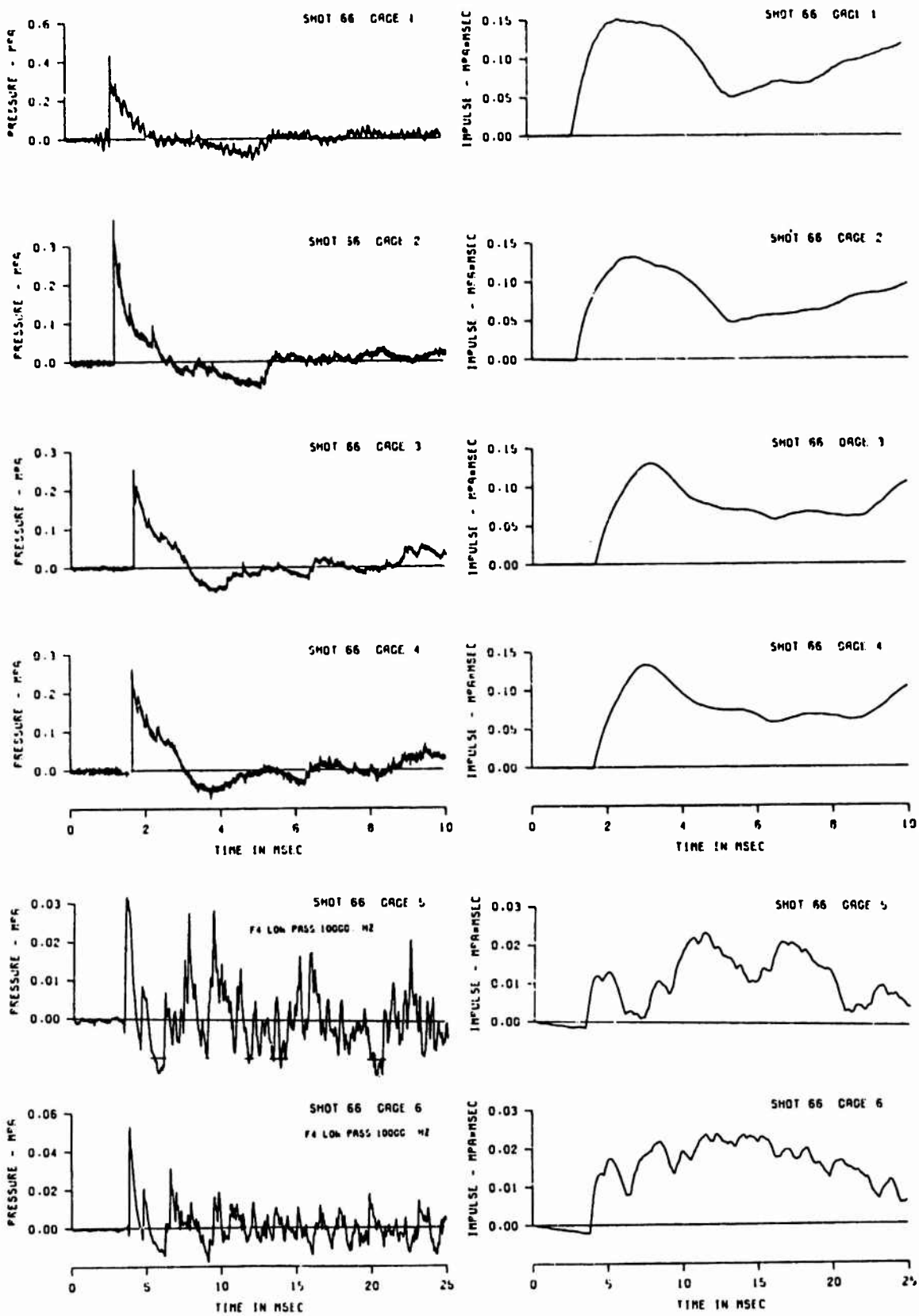

SHOT 64 GAGE B-7
SHOT 64 GAGE B-8
SHOT 64 GAGE B-9
SHOT 64 GAGE B-10
SHOT 64 GAGE B-11
SHOT 64 GAGE B-12
PRESSURE - MPA
IMPULSE - MPa-MSEC
TIME IN MSEC
0
5
10
15
20
25

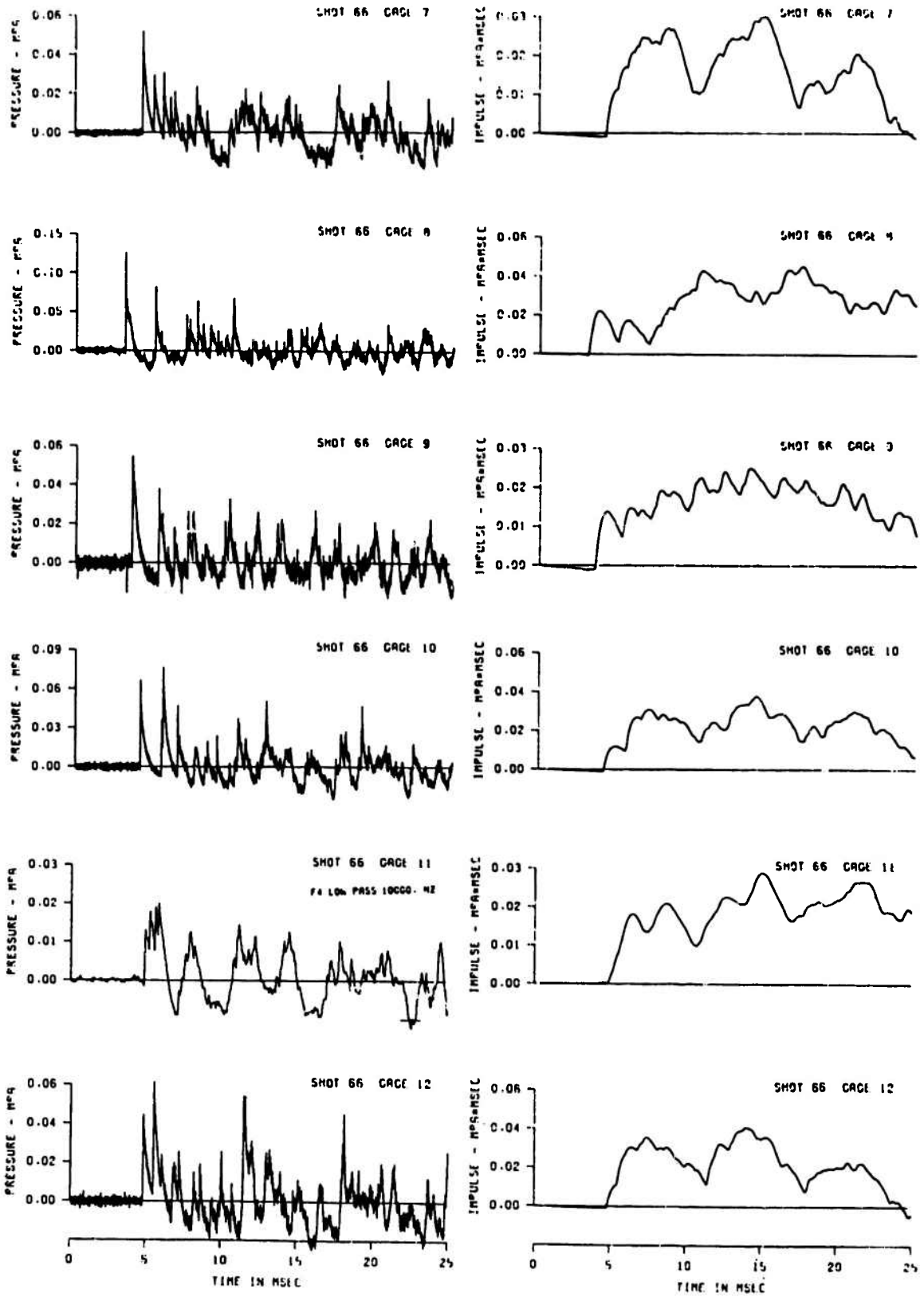

SHOT 65 GAGE 1
SHOT 65 GAGE 2
SHOT 65 GAGE 3
SHOT 65 GAGE 4
SHOT 65 GAGE 5
SHOT 65 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

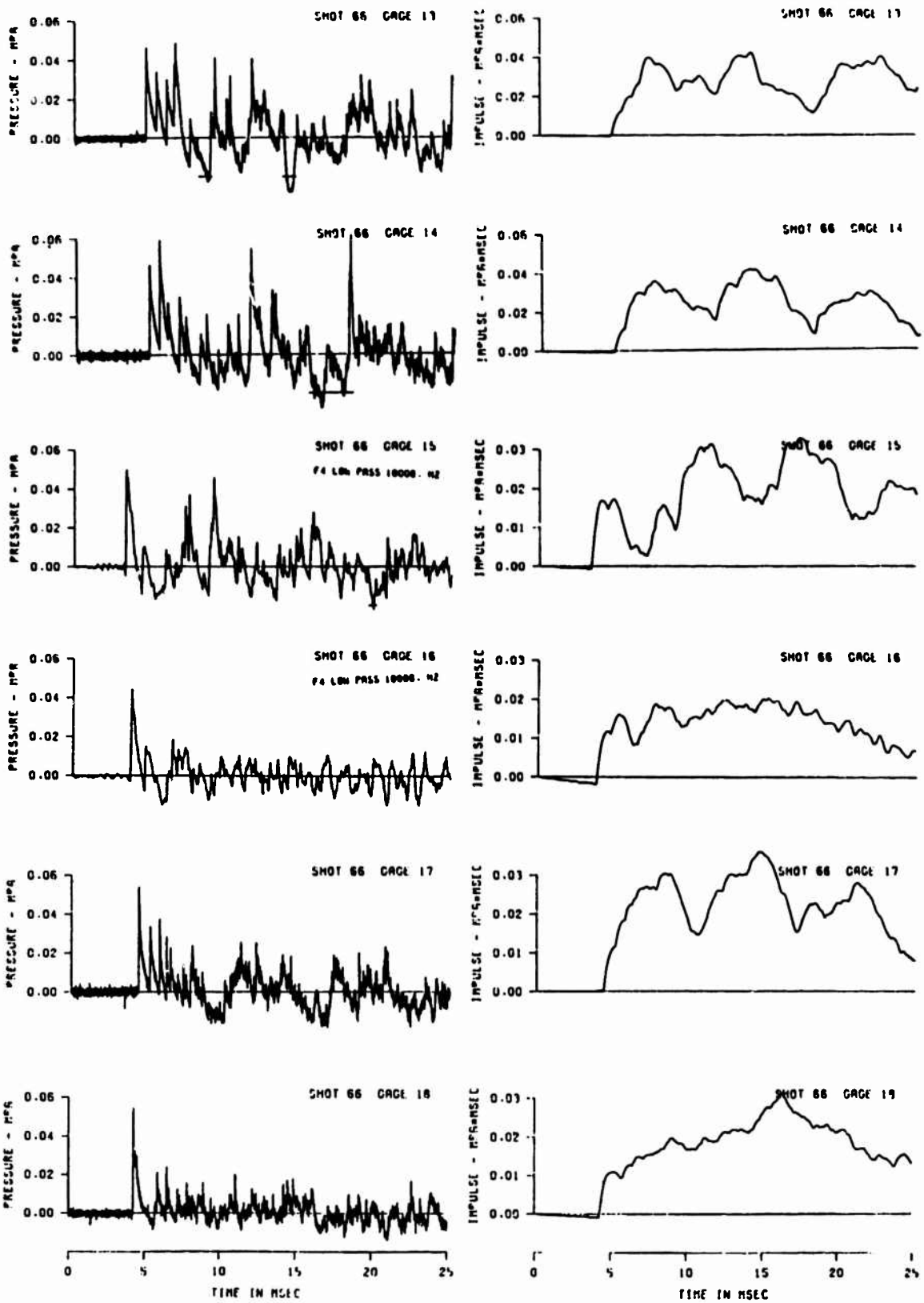

SHOT 65 GAGE 7
SHOT 65 GAGE
SHOT 65 GAGE 8
SHOT 65 GAGE 9
SHOT 65 GAGE 9
SHOT 65 GAGE 10
SHOT 65 GAGE 10
SHOT 65 GAGE 11
FA LOW PASS 10000. HZ
SHOT 65 GAGE 11
SHOT 65 GAGE 12
SHOT 65 GAGE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

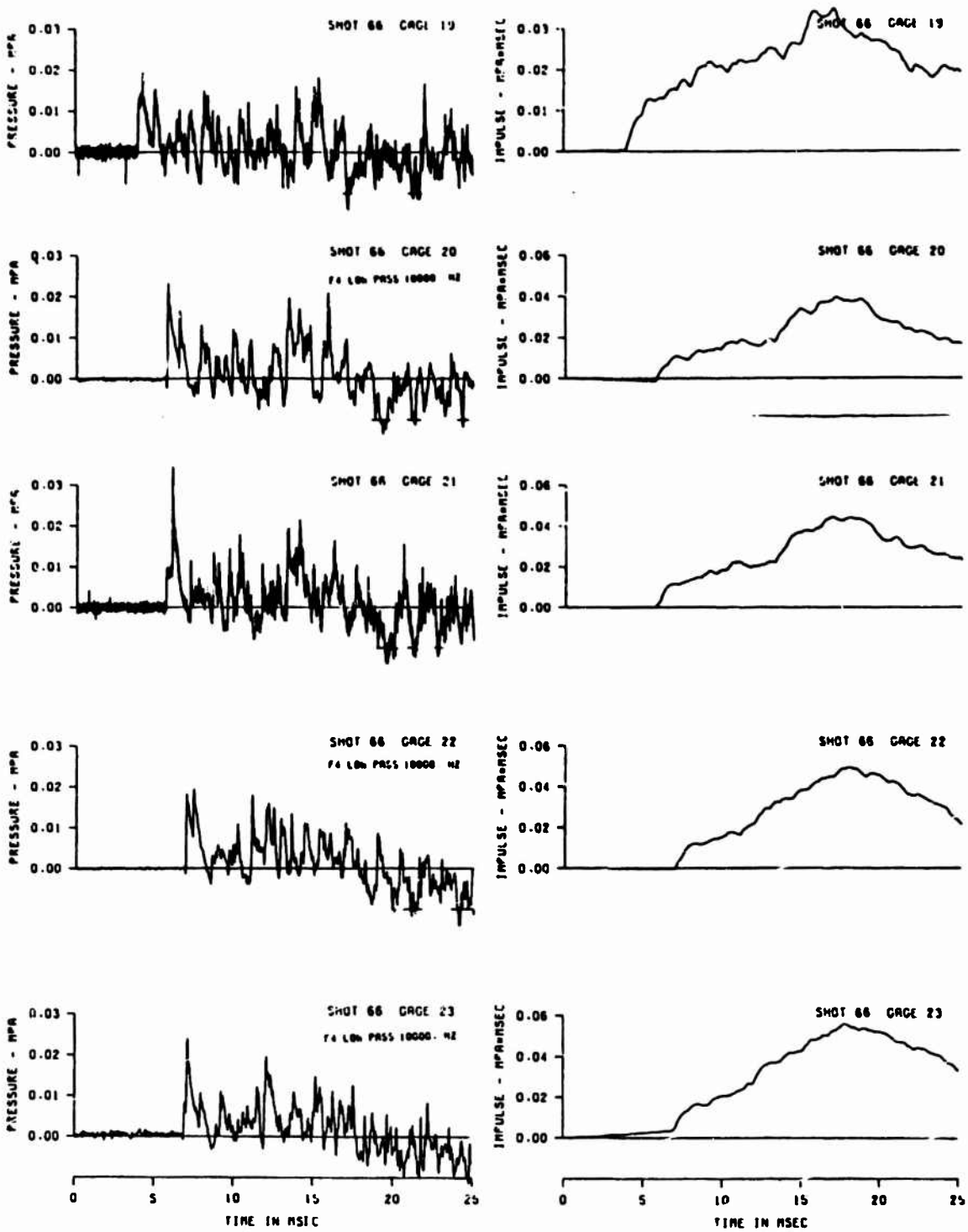

SHOT 65 GAGE 13
SHOT 65 GAGE 14
SHOT 65 GAGE 15
SHOT 65 GAGE 16
SHOT 65 GAGE 17
SHOT 65 GAGE 18
SHOT 65 GAGE 19
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

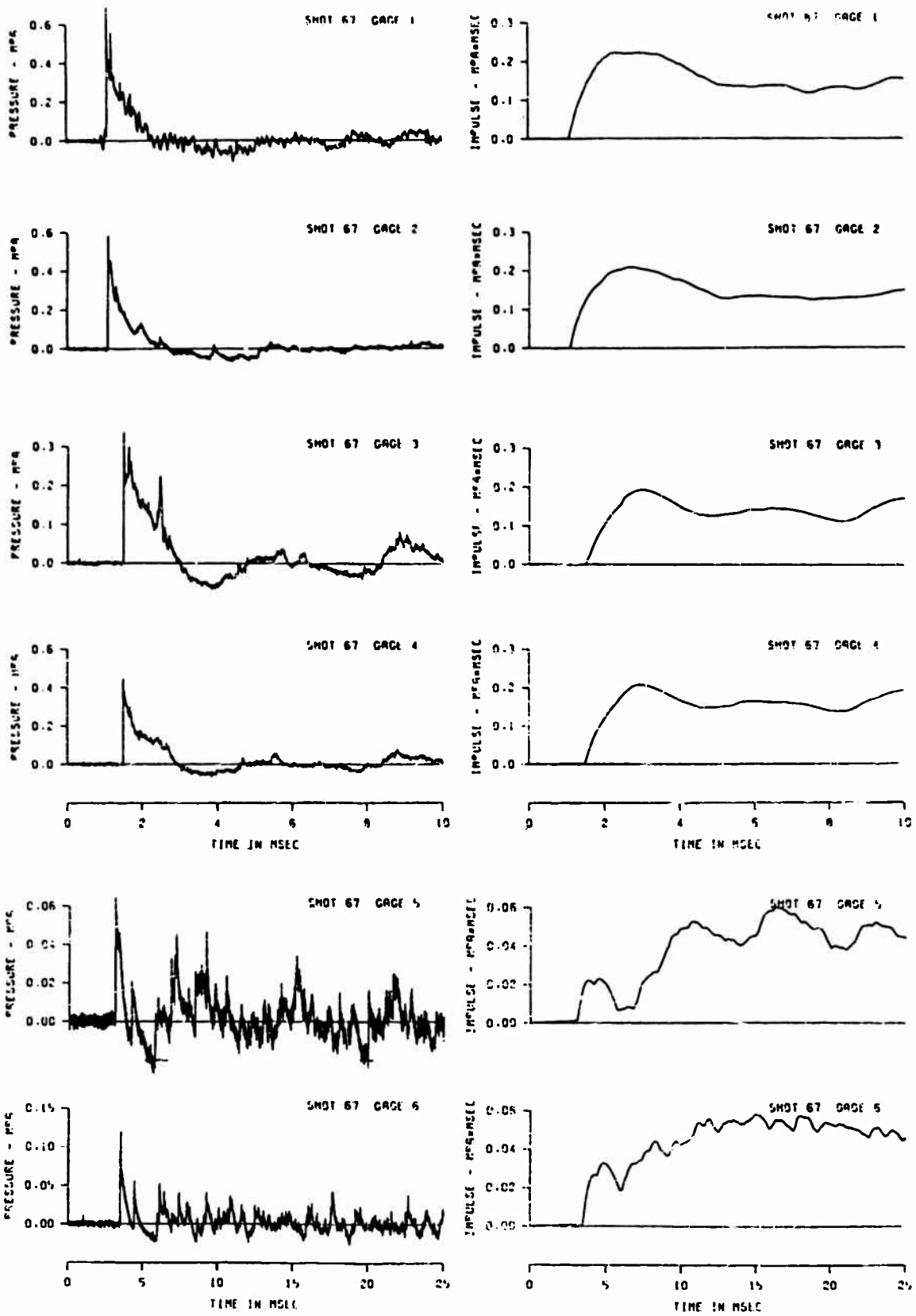

SHOT 65 GAGE 19
SHOT 65 GAGE 20
SHOT 65 GAGE 21
SHOT 65 GAGE 22
SHOT 65 GAGE 23
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

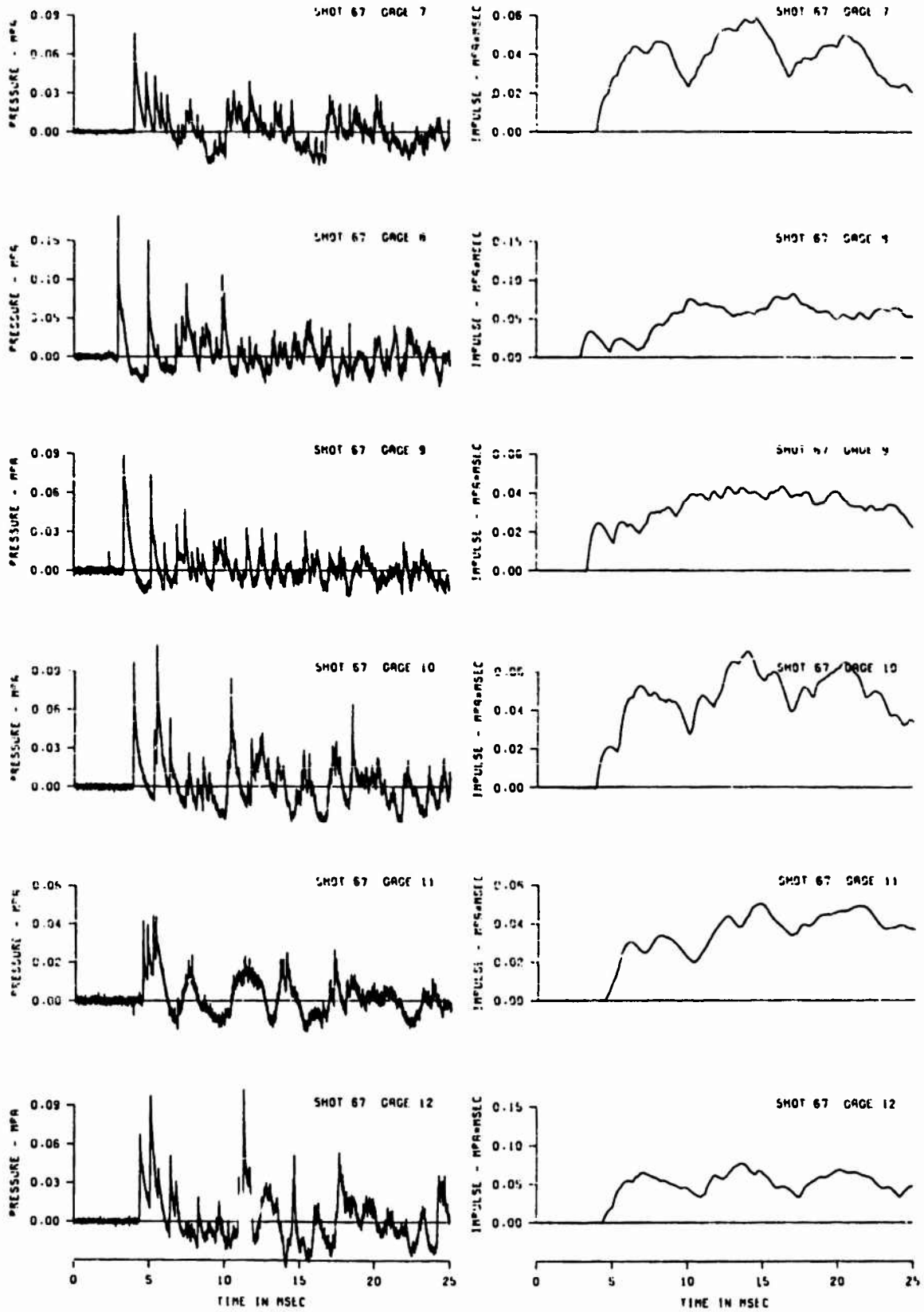

SHOT 66 GAGE 1
SHOT 66 GAGE 2
SHOT 66 GAGE 3
SHOT 66 GAGE 4
SHOT 66 GAGE 5
F4 LOW PASS 10000 HZ
SHOT 66 GAGE 6
F4 LOW PASS 10000 HZ
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

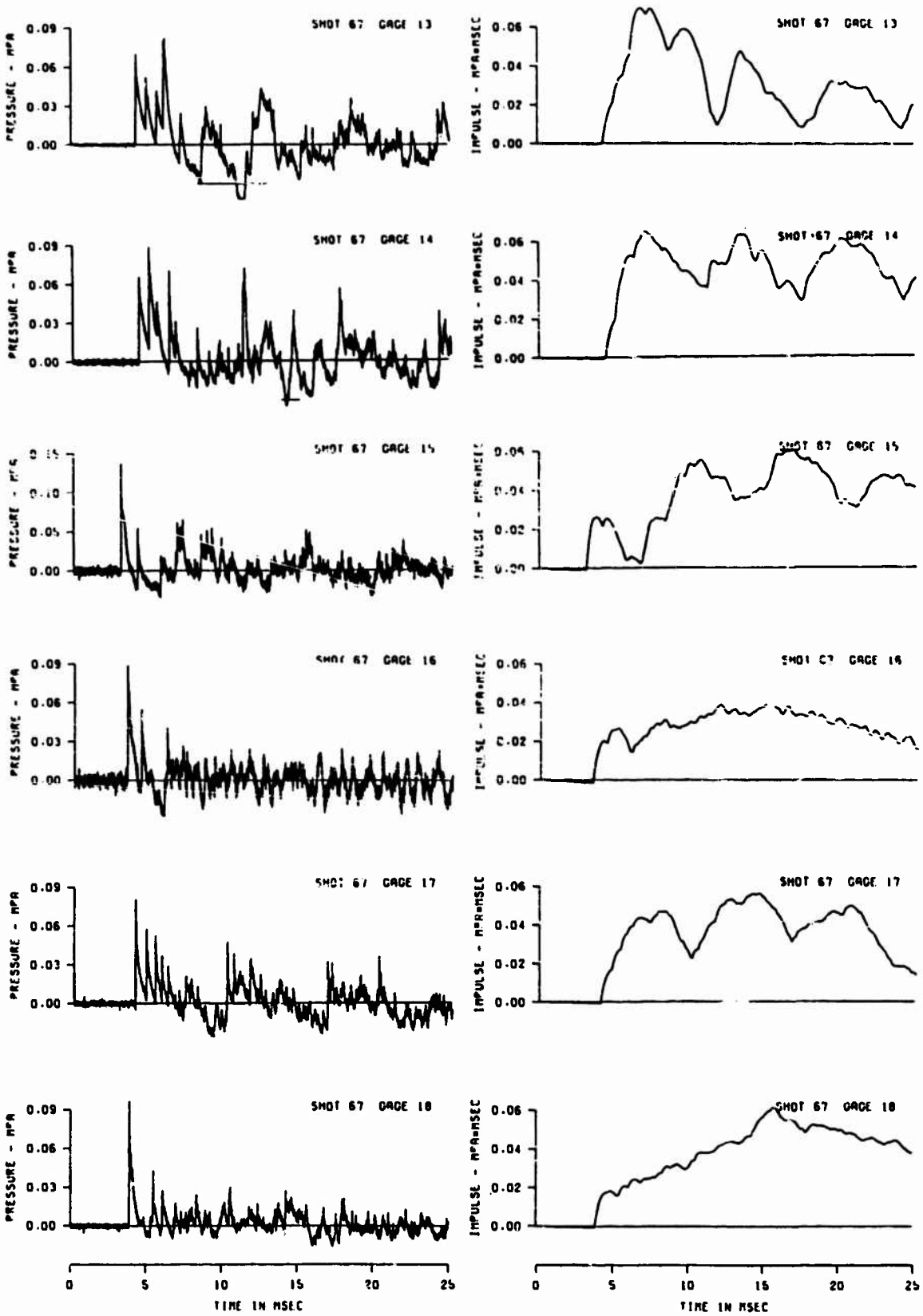

SHOT 66 CAGE 7
SHOT 66 CAGE 8
SHOT 66 CAGE 9
SHOT 66 CAGE 10
SHOT 66 CAGE 11
F4 LOW PASS 10000. HZ
SHOT 66 CAGE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

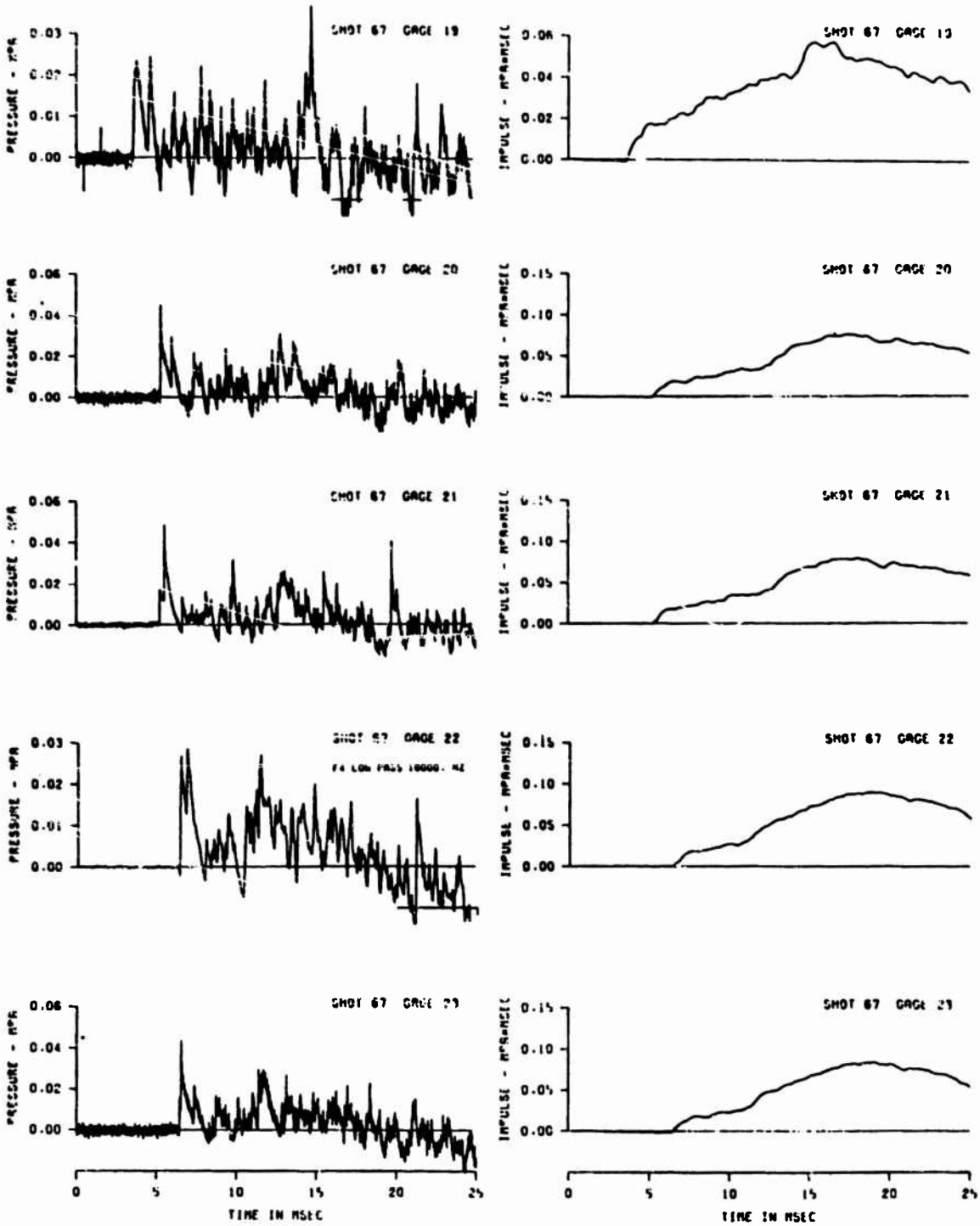

SHOT 66 CAGE 13
SHOT 66 CAGE 14
SHOT 66 CAGE 15
SHOT 66 CAGE 16
SHOT 66 CAGE 17
SHOT 66 CAGE 18
SHOT 66 CAGE 19
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0.00
0.02
0.04
0.06
0.01
0.03
0
5
10
15
20
25

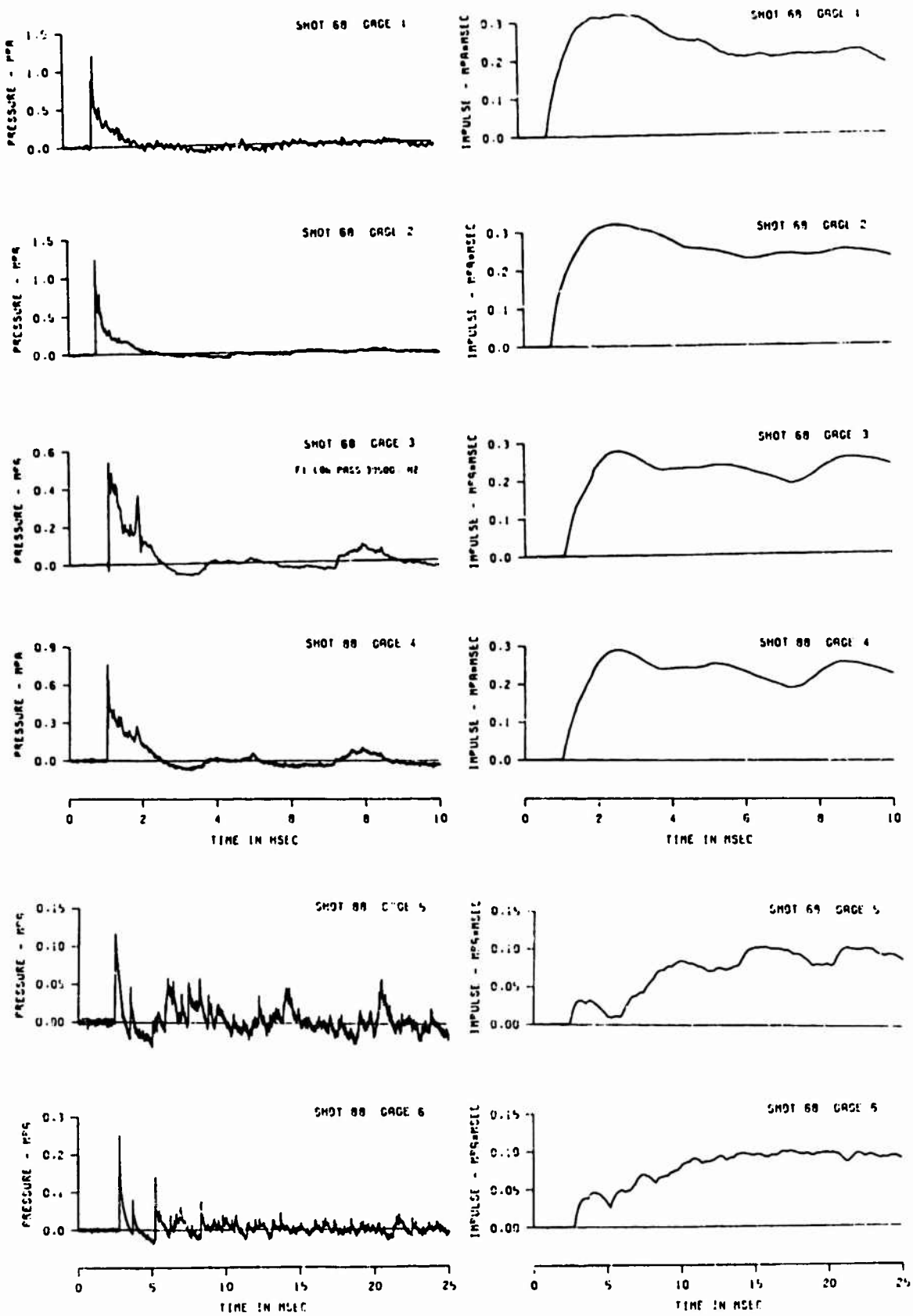

SHOT 66 GAGE 19
SHOT 66 GAGE 20
SHOT 66 GAGE 21
SHOT 66 GAGE 22
SHOT 66 GAGE 23
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0
5
10
15
20
25

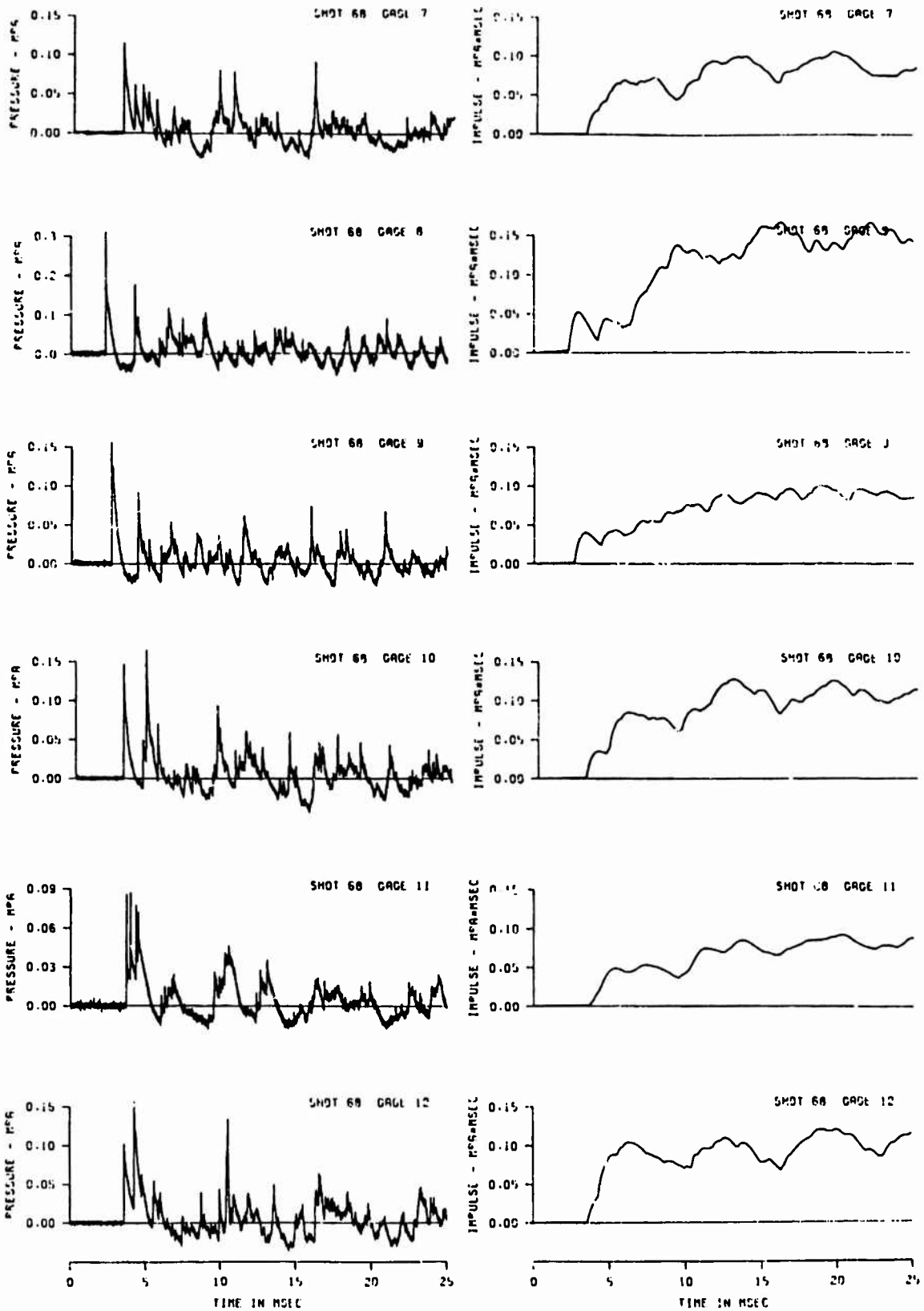

SHOT 67 GAGE 1
SHOT 67 GAGE 2
SHOT 67 GAGE 3
SHOT 67 GAGE 4
SHOT 67 GAGE 5
SHOT 67 GAGE 6
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC

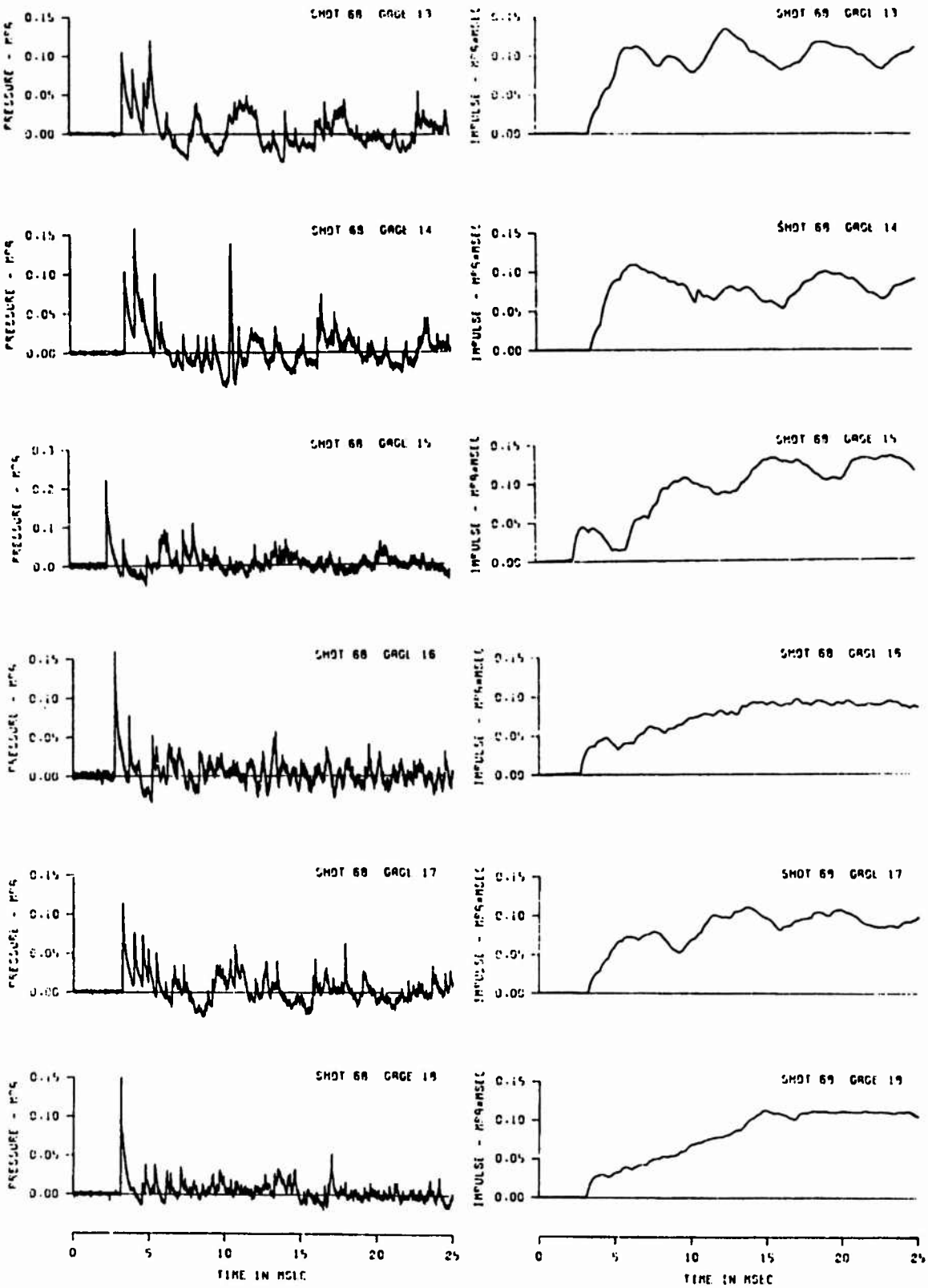

SHOT 67 GAGE 7
SHOT 67 GAGE 8
SHOT 67 GAGE 9
SHOT 67 GAGE 10
SHOT 67 GAGE 11
SHOT 67 GAGE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

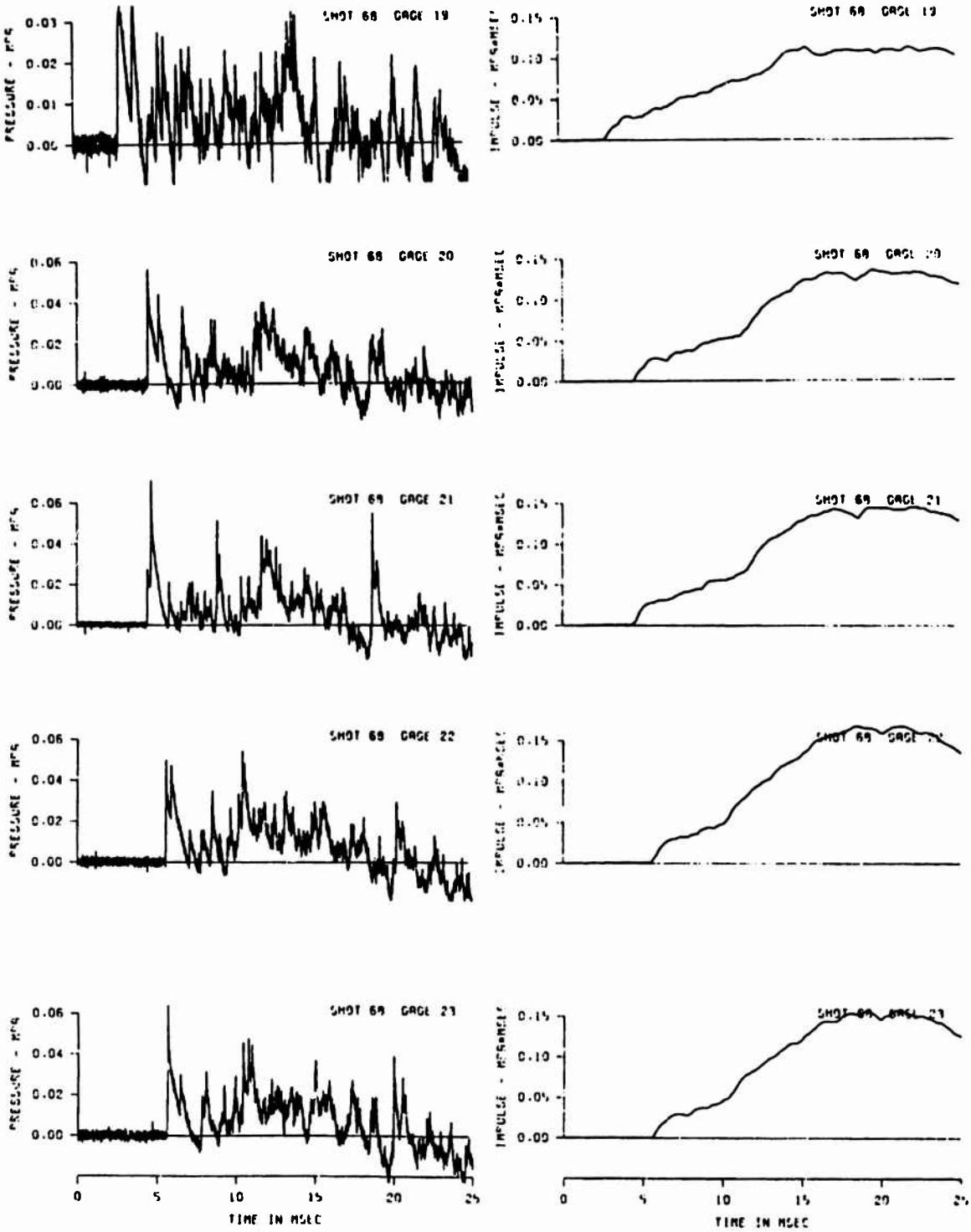

SHOT 67 GAGE 13
SHOT 67 GAGE 14
SHOT 67 GAGE 15
SHOT 67 GAGE 16
SHOT 67 GAGE 17
SHOT 67 GAGE 18
PRESSURE - MPA
IMPULSE - MPA-MSEC
0.09
0.06
0.03
0.00
0.06
0.04
0.02
0.00
0
5
10
15
20
25
TIME IN MSEC

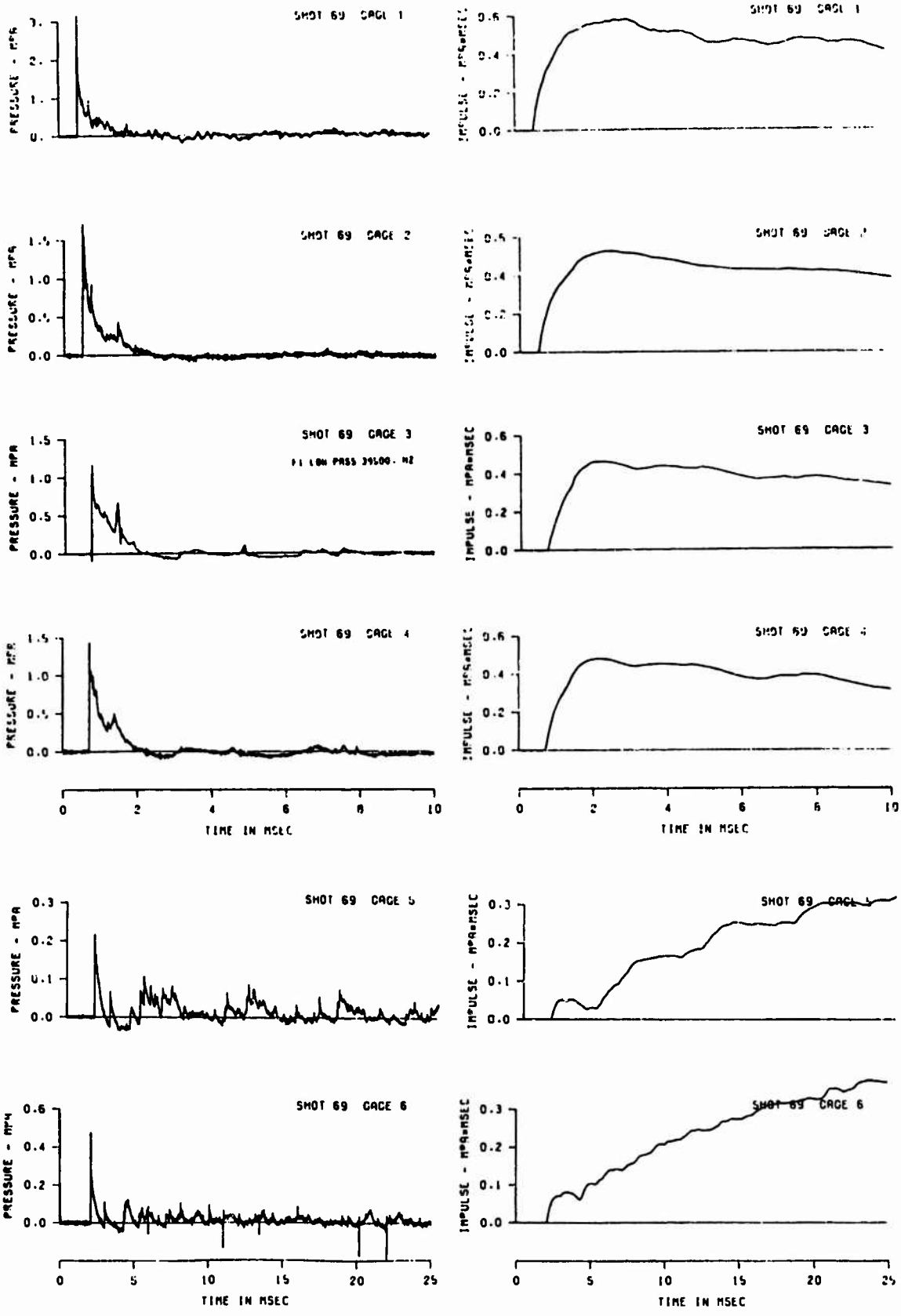

SHOT 67 GAGE 19
SHOT 67 GAGE 20
SHOT 67 GAGE 21
SHOT 67 GAGE 22
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

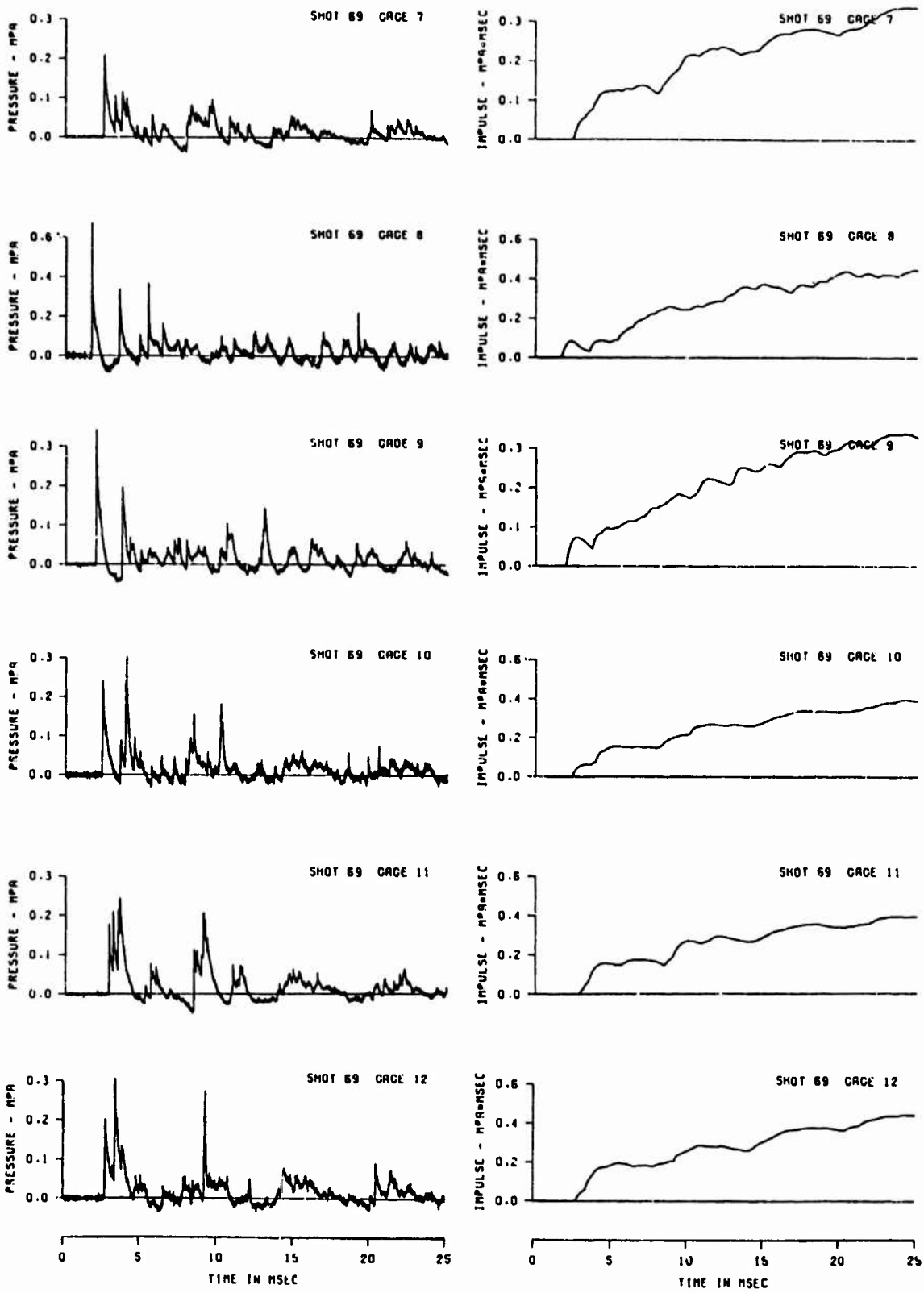

SHOT 68 GAGE 1
SHOT 68 GAGE 2
SHOT 68 GAGE 3
SHOT 68 GAGE 4
SHOT 68 GAGE 5
SHOT 68 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

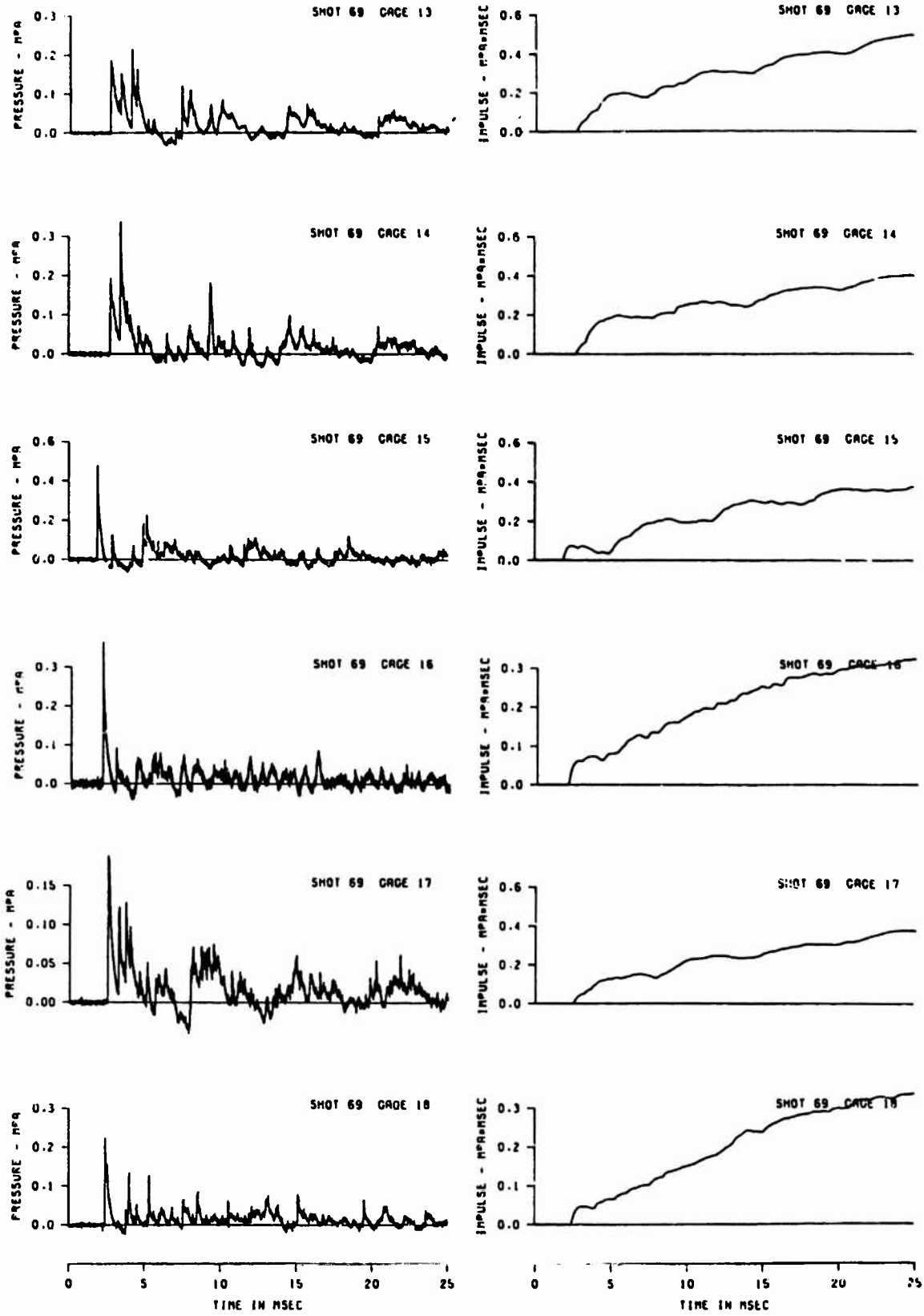

SHOT 68 GAGE 7
SHOT 68 GAGE 8
SHOT 68 GAGE 9
SHOT 68 GAGE 10
SHOT 68 GAGE 11
SHOT 68 GAGE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

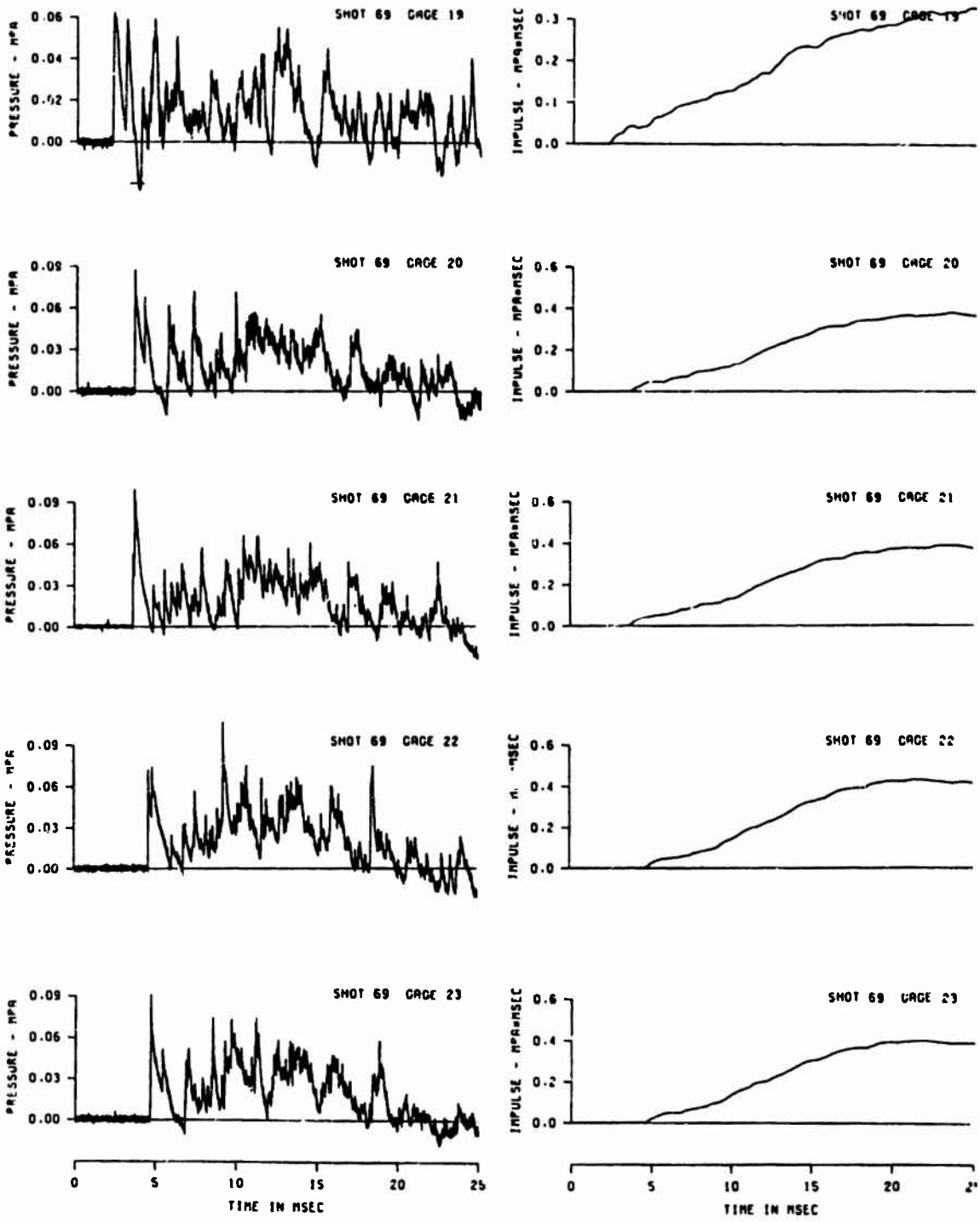

SHOT 68 GAGE 13
SHOT 69 GAGE 13
SHOT 68 GAGE 14
SHOT 69 GAGE 14
SHOT 68 GAGE 15
SHOT 69 GAGE 15
SHOT 68 GAGE 16
SHOT 69 GAGE 16
SHOT 68 GAGE 17
SHOT 69 GAGE 17
SHOT 68 GAGE 18
SHOT 69 GAGE 18
0.15
0.10
0.05
0.00
0
5
10
15
20
25
TIME IN MSEC

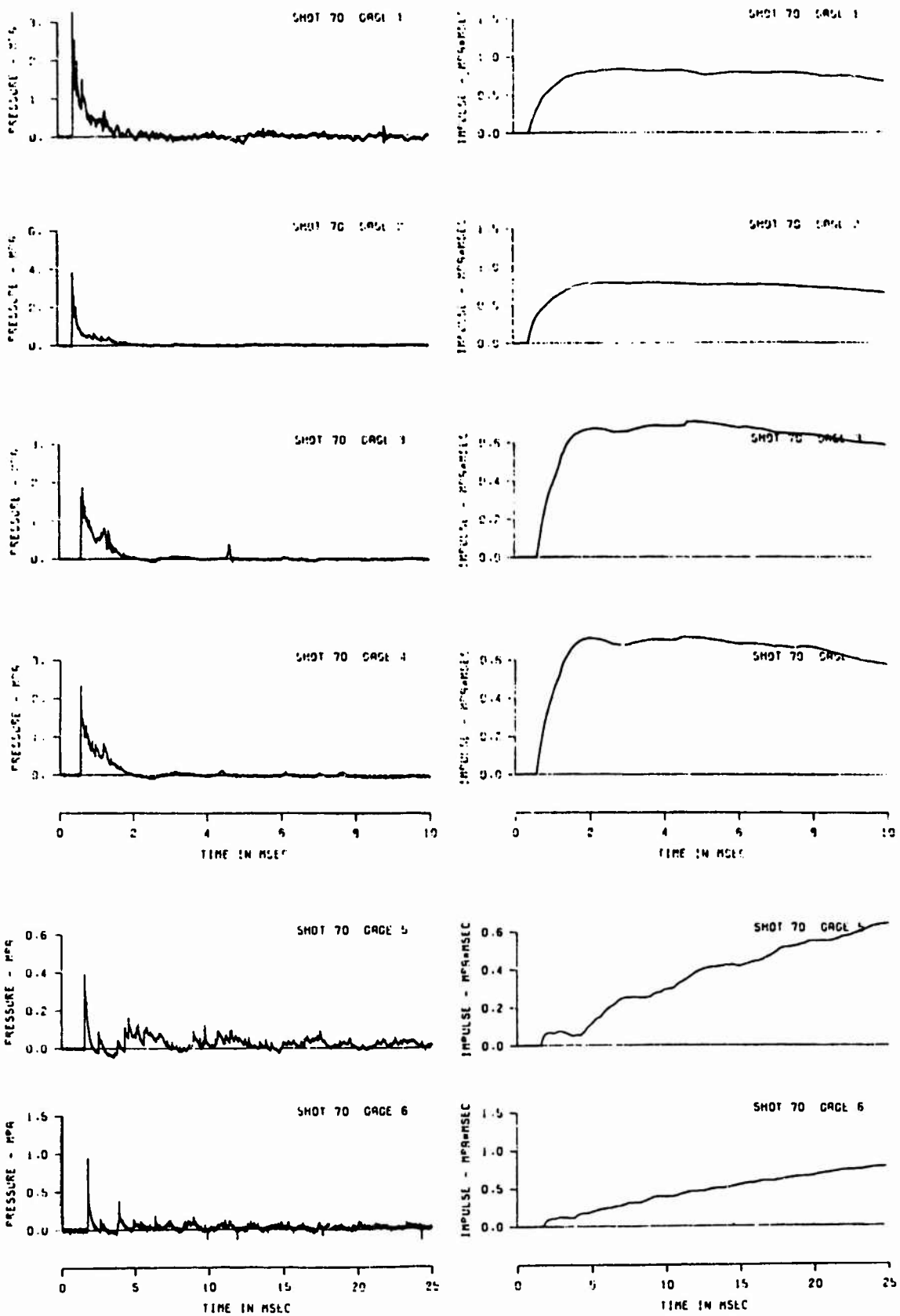

SHOT 68 GAGE 19
SHOT 68 GAGE 20
SHOT 68 GAGE 21
SHOT 68 GAGE 22
SHOT 68 GAGE 23
0.06
0.04
0.02
0.00
0
5
10
15
20
25
TIME IN MSEC

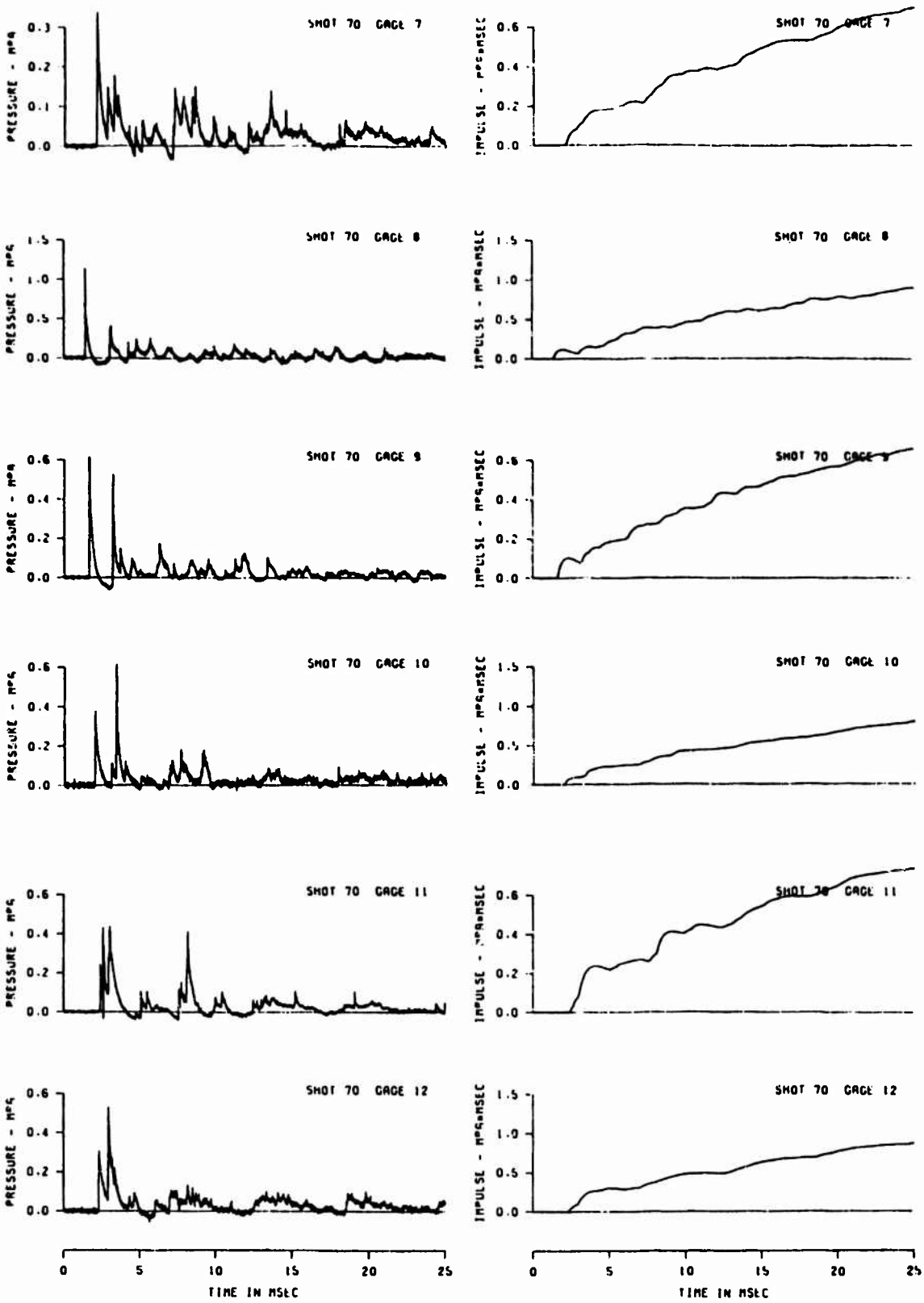

SHOT 69 CAGE 1
SHOT 69 CAGE 2
SHOT 69 CAGE 3
SHOT 69 CAGE 4
SHOT 69 CAGE 5
SHOT 69 CAGE 6
PRESSURE - MPA
IMPULSE - MPAmSEC
TIME IN MSEC

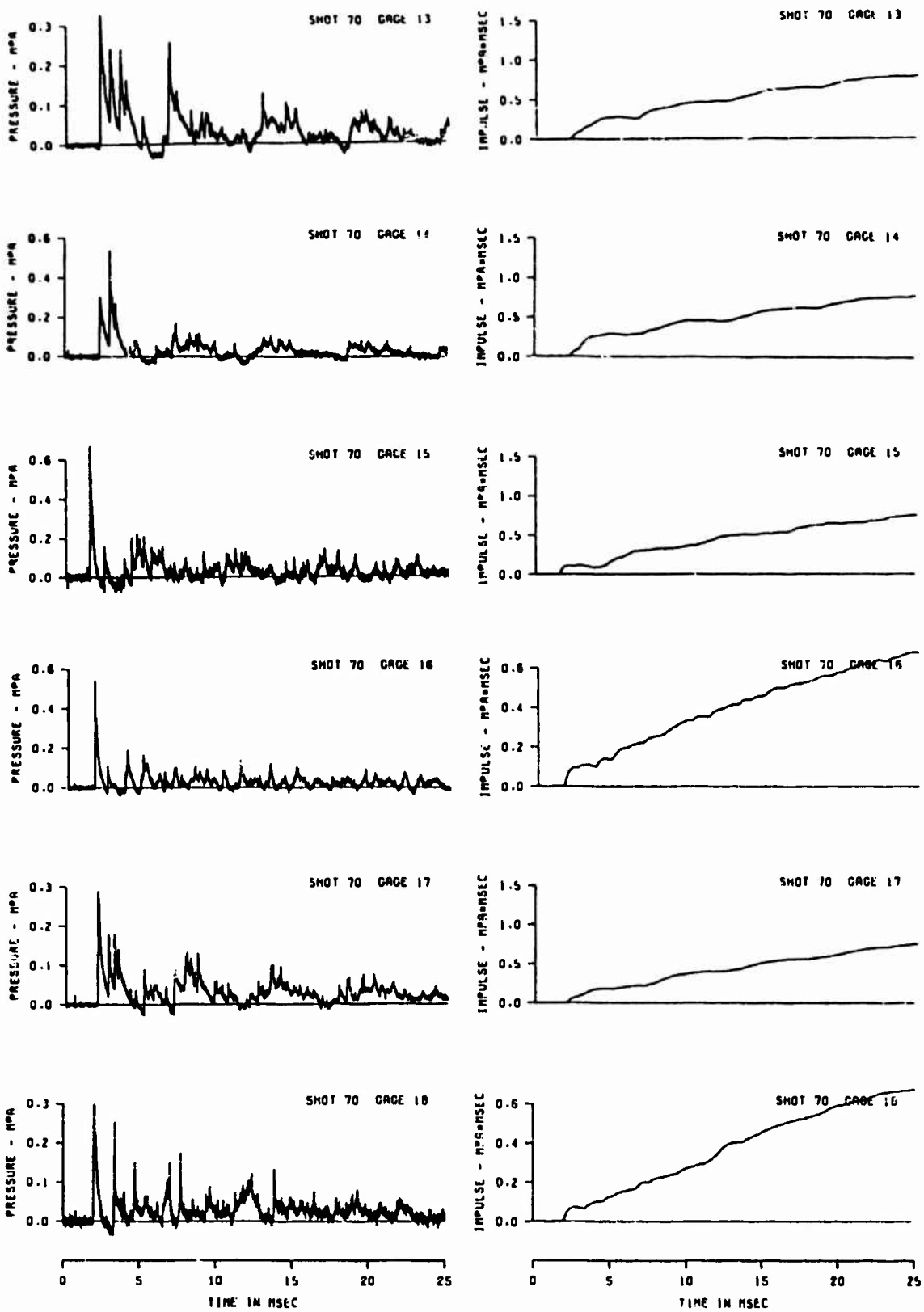

SHOT 69 CASE 7
SHOT 69 CASE 8
SHOT 69 CASE 9
SHOT 69 CASE 10
SHOT 69 CASE 11
SHOT 69 CASE 12
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC
0.0
0.1
0.2
0.3
0.4
0.6
0
5
10
15
20
25

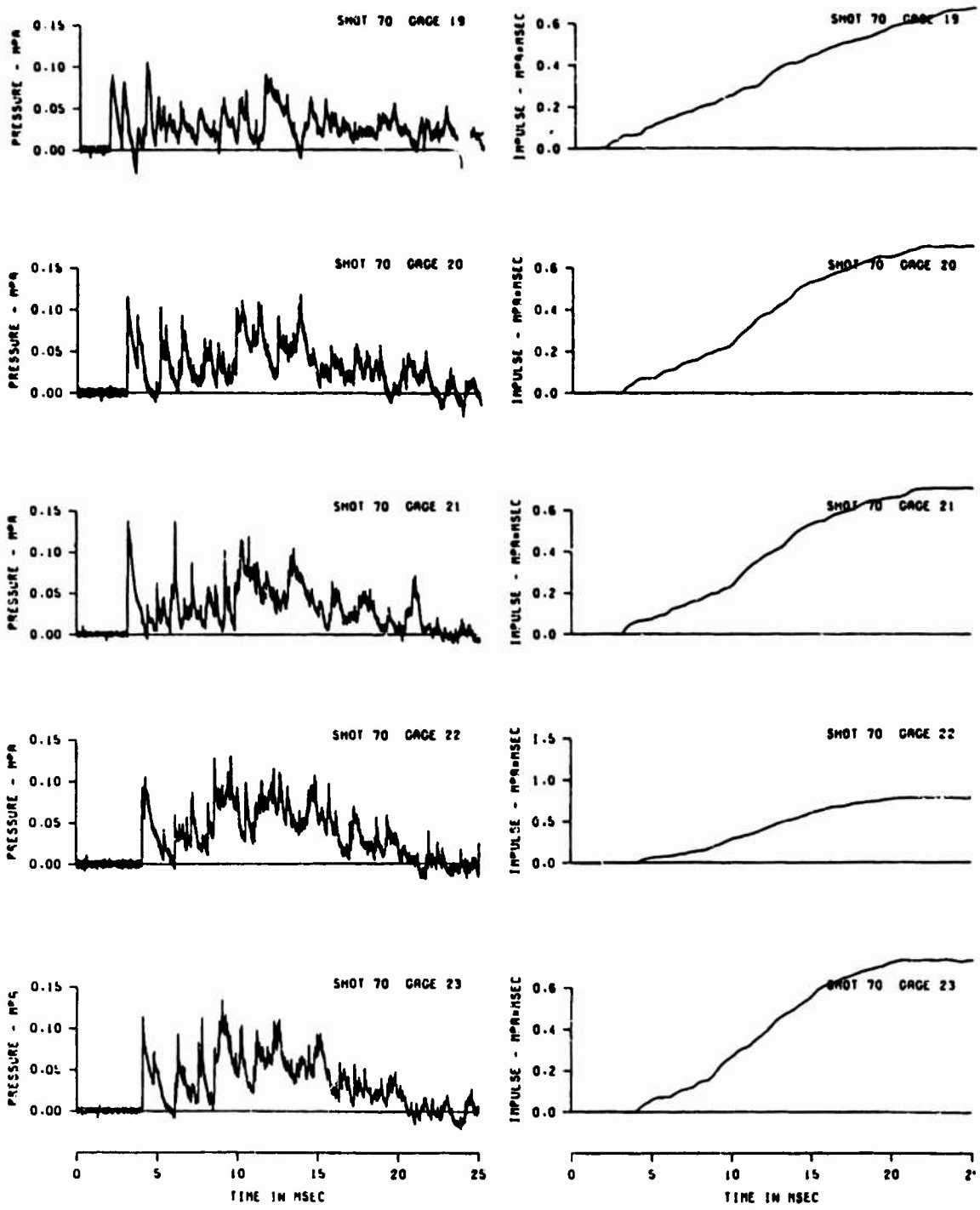

SHOT 69 GAGE 13
PRESSURE - MPa
IMPULSE - MPa•MSEC
SHOT 69 GAGE 14
SHOT 69 GAGE 15
SHOT 69 GAGE 16
SHOT 69 GAGE 17
SHOT 69 GAGE 18
TIME IN MSEC

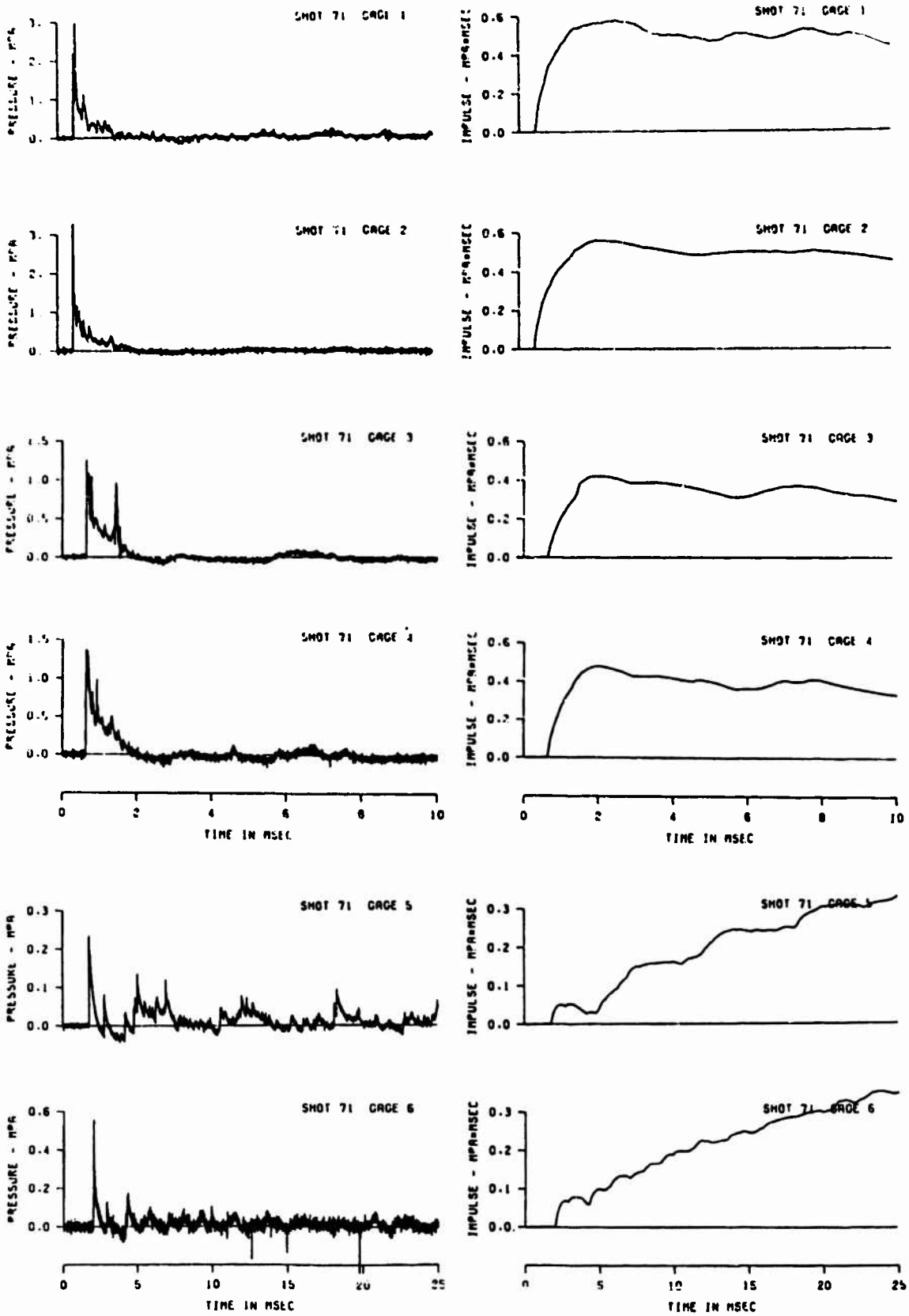

SHOT 69 CAGE 19
SHOT 69 CAGE 20
SHOT 69 CAGE 21
SHOT 69 CAGE 22
SHOT 69 CAGE 23
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

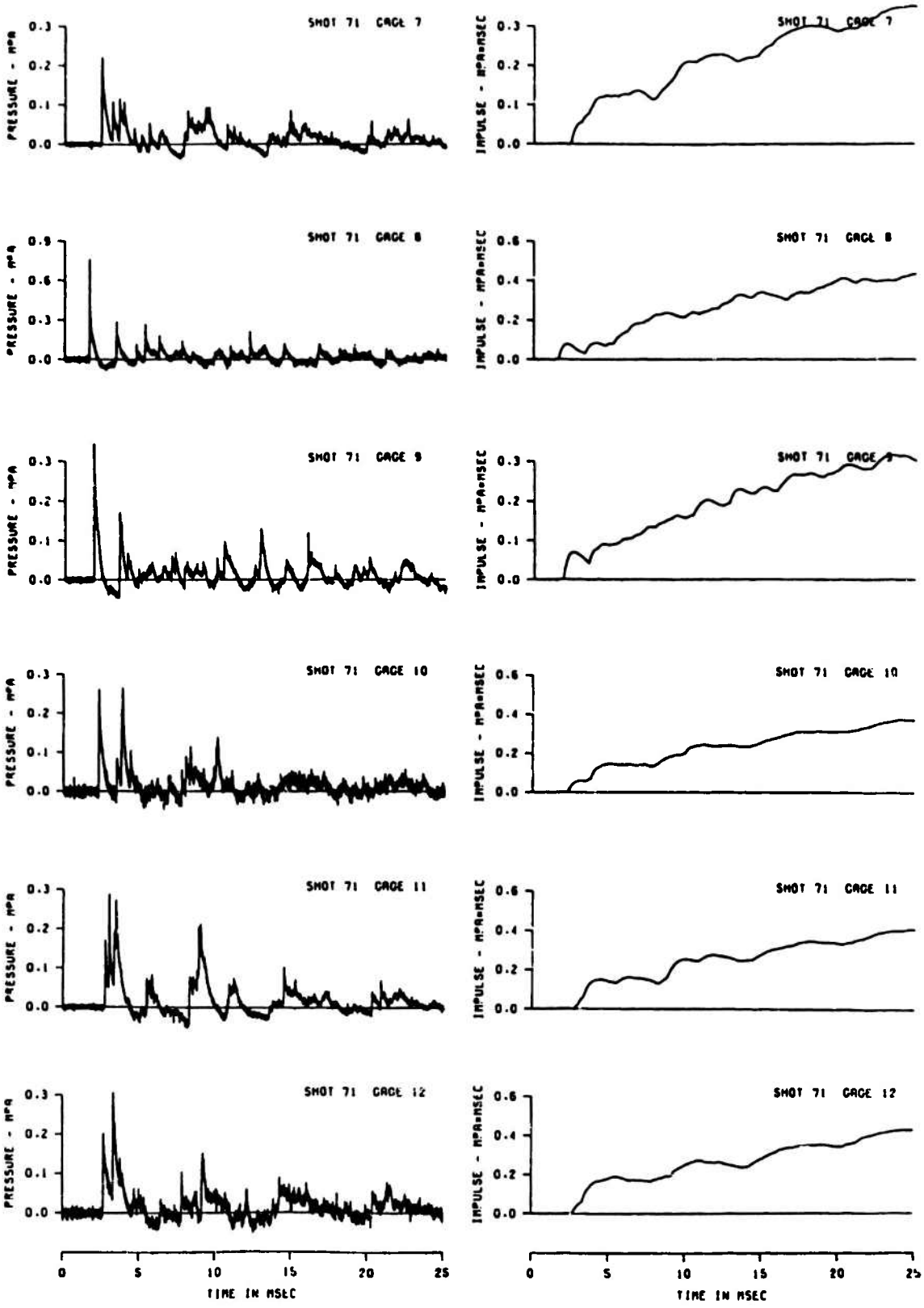

SHOT 70 GAGE 1
SHOT 70 GAGE 5
SHOT 70 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

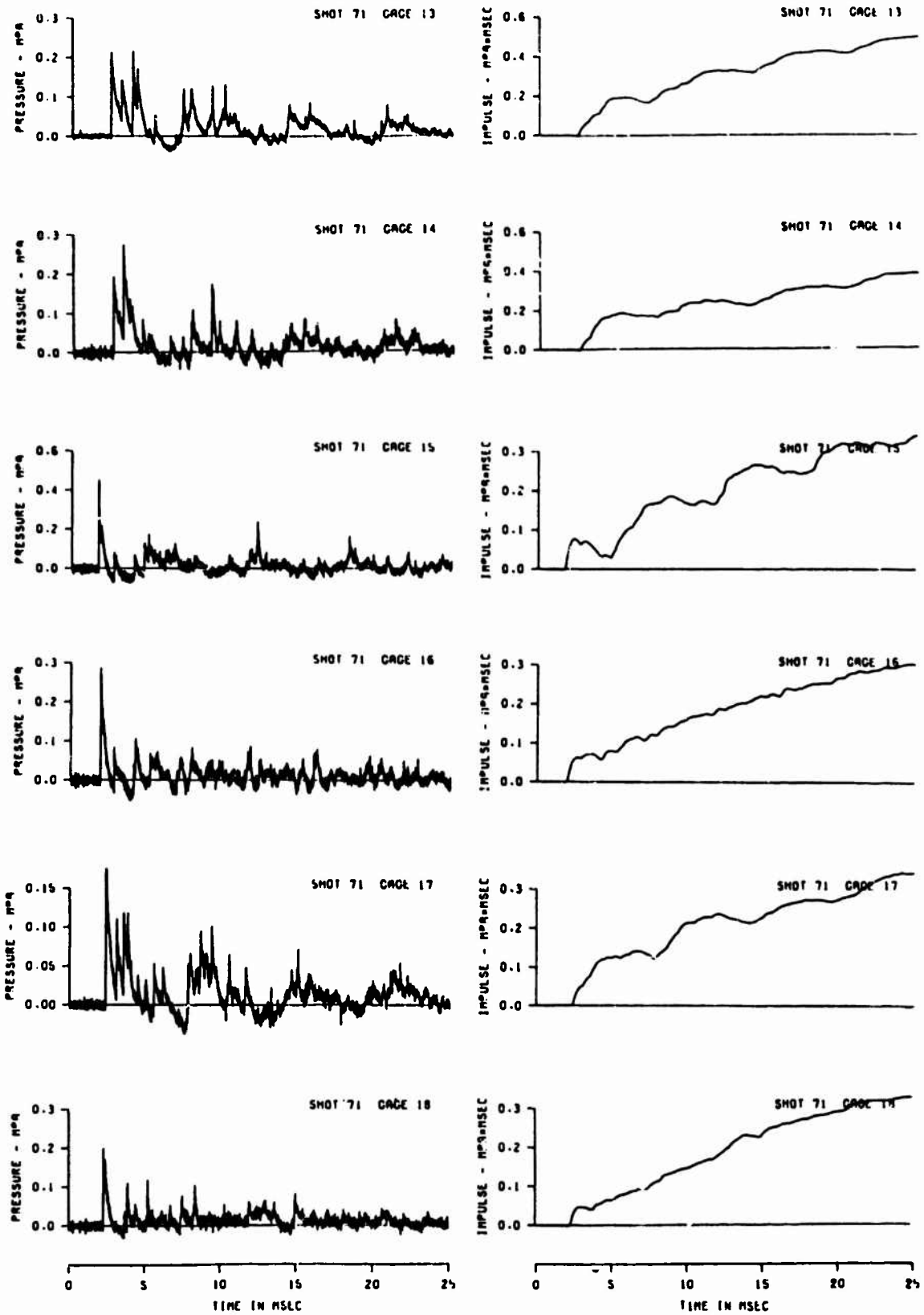

SHOT 70 GAGE 7
SHOT 70 GAGE 8
SHOT 70 GAGE 9
SHOT 70 GAGE 10
SHOT 70 GAGE 11
SHOT 70 GAGE 12
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC
0
5
10
15
20
25

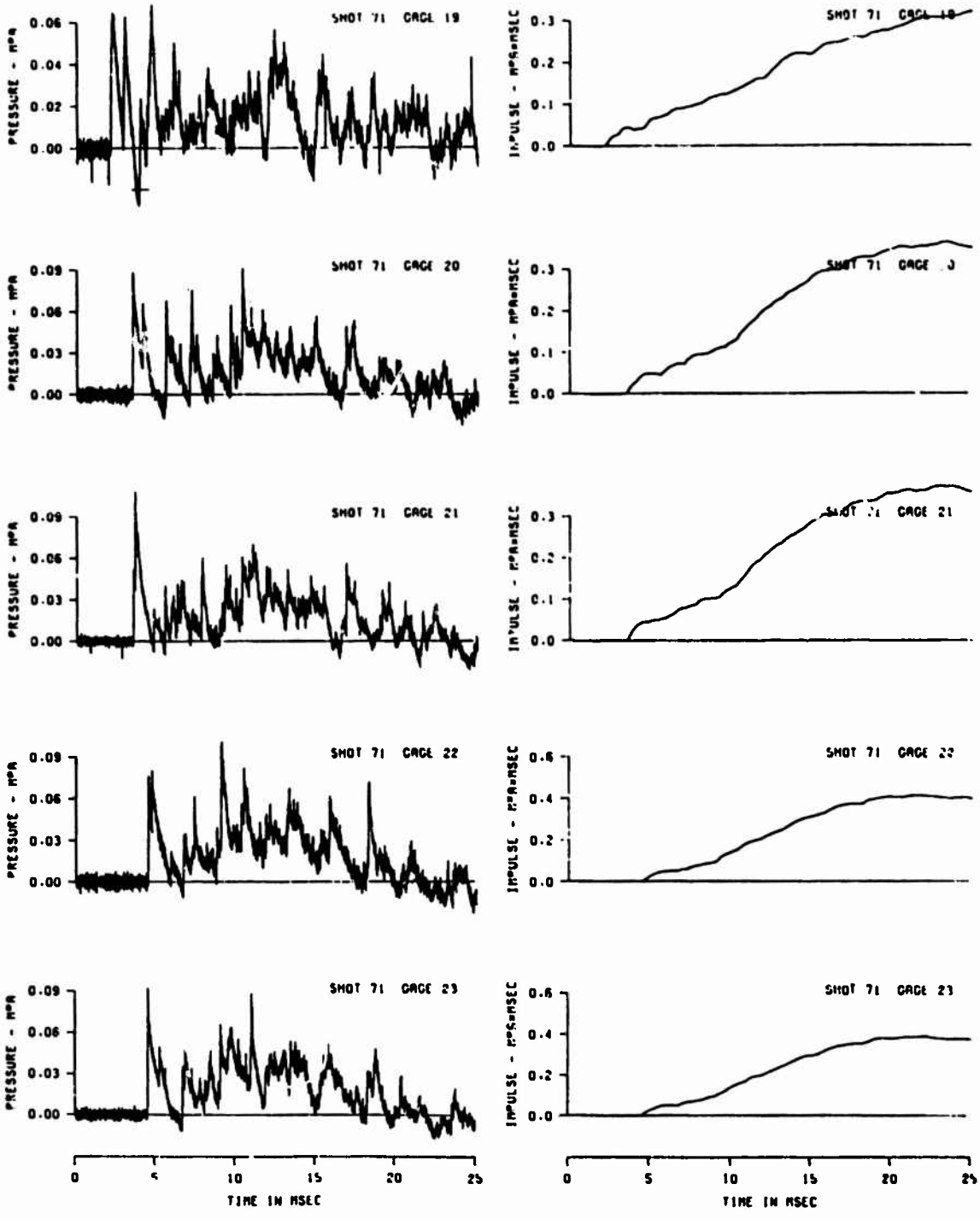

SHOT 70 GAGE 13
PRESSURE - MPA
IMPULSE - MPA-MSEC
SHOT 70 GAGE 14
SHOT 70 GAGE 15
SHOT 70 GAGE 16
SHOT 70 GAGE 17
SHOT 70 GAGE 18
TIME IN MSEC


SHOT 70 GAGE 19
PRESSURE - MPA
0.15
0.10
0.05
0.00
SHOT 70 GAGE 19
IMPULSE - MPA-MSEC
0.6
0.4
0.2
0.0
SHOT 70 GAGE 20
SHOT 70 GAGE 20
SHOT 70 GAGE 21
SHOT 70 GAGE 21
SHOT 70 GAGE 22
SHOT 70 GAGE 22
1.5
1.0
0.5
SHOT 70 GAGE 23
SHOT 70 GAGE 23
0
5
10
15
20
25
TIME IN MSEC


SHOT 71 GAGE 1
SHOT 71 GAGE 2
SHOT 71 GAGE 3
SHOT 71 GAGE 4
SHOT 71 GAGE 5
SHOT 71 GAGE 6
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC


SHOT 71 GAGE 7
SHOT 71 GAGE 8
SHOT 71 GAGE 9
SHOT 71 GAGE 10
SHOT 71 GAGE 11
SHOT 71 GAGE 12
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC


SHOT 71 CAGE 13
SHOT 71 CAGE 14
SHOT 71 CAGE 15
SHOT 71 CAGE 16
SHOT 71 CAGE 17
SHOT 71 CAGE 18
PRESSURE - MPa
IMPULSE - MPa-MSEC
TIME IN MSEC
0
5
10
15
20
25


SHOT 71 GAGE 19
SHOT 71 GAGE 20
SHOT 71 GAGE 21
SHOT 71 GAGE 22
SHOT 71 GAGE 23
PRESSURE - MPA
IMPULSE - MPA-MSEC
TIME IN MSEC

APPENDIX C

PEAK PRESSURES .ND IMPULSES AND CHARACTERISTIC TIMES OF 198! SERIES

- Airblast Penetration 1981 -

Shot 1

08-SEP-82 10:54:41

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.27	0.11	1.09	2.85	0.38	--	--	--
2	--	--	--	--	--	--	--	--
3	0.20	0.07	--	1.04	--	--	--	--
4	0.20	0.07	4.20	0.89	0.31	--	--	--
5	0.30	0.10	2.20	2.24	0.30	--	--	--
6	0.42	0.18	--	0.64	--	--	--	--
7	0.25	0.04	2.80	0.87	0.28	--	--	--
8	0.24	0.08	2.96	0.53	0.18	--	--	--
9	0.36	0.11	1.53	1.35	0.10	--	--	--
10	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--
13	0.53	0.09	0.99	0.61	0.11	--	--	--
14	0.68	0.35	1.95	0.54	0.13	--	--	--
15	--	--	--	--	--	--	--	--
16	0.62	0.13	2.23	0.71	0.16	--	--	--
17	--	--	--	--	--	--	--	--
18	1.16	0.16	2.62	0.41	0.18	--	--	--
19	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--
21	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 1

08-SEP-82 10:55:13

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
22	--	--	--	--	--	--	--	--
23	--	--	--	--	--	--	--	--
24	2.58	0.70	3.52	0.18	0.14	--	--	--
25	5.76	1.99	5.41	0.08	0.18	--	--	--
26	5.78	1.60	4.47	0.10	0.16	--	--	--
27	8.63	2.30	5.05	0.04	0.06	--	--	--
28	8.62	2.42	6.08	0.07	0.18	--	--	--
29	13.38	1.84	8.66	0.11	0.36	--	--	--
30	14.72	4.18	9.40	0.14	0.47	--	--	--
31	0.26	0.10	1.47	2.52	0.21	--	--	--
32	0.18	0.08	--	2.63	--	--	--	--
33	--	--	--	--	--	--	--	--
34	--	--	--	--	--	--	--	--
35	--	--	--	--	--	--	--	--
36	0.12	0.06	--	3.40	--	--	--	--

- Airblast Penetration 1981 -

Shot 2

08-SEP-82 10:55:40

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
1	0.30	0.10	1.32	1.67	0.23	--	--	--
2	--	--	--	--	--	--	--	--
3	0.31	0.14	1.20	1.18	0.21	--	--	--
4	0.26	0.15	--	1.18	--	--	--	--
5	0.33	0.16	1.18	1.08	0.21	--	--	--
6	0.31	0.14	1.27	1.79	0.25	--	--	--
7	0.32	0.13	1.09	1.04	0.20	--	--	--
8	0.27	0.15	1.02	1.04	0.20	--	--	--
9	0.40	0.22	1.38	0.82	0.21	--	--	--
10	0.38	0.25	1.18	1.19	0.28	--	--	--
11	0.40	0.18	1.18	0.88	0.21	--	--	--
12	0.35	0.09	1.02	0.83	0.11	--	--	--
13	0.57	0.29	1.37	0.73	0.25	--	--	--
14	--	--	--	--	--	--	--	--
15	0.60	0.13	1.12	1.12	0.19	--	--	--
16	0.55	0.47	1.53	0.48	0.22	--	--	--
17	--	--	--	--	--	--	--	--
18	0.85	0.25	1.84	0.62	0.21	--	--	--
19	0.84	0.34	1.61	0.55	0.22	--	--	--
20	0.85	0.35	1.65	0.42	0.18	--	--	--
21	2.18	0.49	2.65	0.31	0.25	--	--	--

- Airblast Penetration 1981 -

Shot 2

08-SEP-82 10:56:18

gage no.	First Pulse arriv. time, Ta (msec)	First Pulse inter. time, Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time, Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
22	2.18	0.60	2.92	0.28	0.22	--	--	--
23	--	--	--	--	--	--	--	--
24	2.18	1.00	2.92	0.25	0.22	--	--	--
25	4.70	1.85	4.40	0.18	0.24	21.65	0.07	--
26	4.70	1.42	4.92	0.18	0.26	21.68	0.07	--
27	7.10	2.50	6.25	0.16	0.34	18.90	0.07	--
28	7.10	1.65	6.12	0.13	0.24	18.95	0.06	--
29	11.35	2.45	--	0.10	--	14.15	0.13	--
30	12.52	2.43	9.78	0.26	0.73	--	--	--
31	--	--	--	--	--	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.22	0.12	0.78	3.50	0.46	--	--	--
35	--	--	--	--	--	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 3

08-SEP-82 10:56:50

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.10	0.07	0.30	5.40	0.36	--	--	--
2	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--
6	--	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--	--
8	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--
11	1.22	0.41	2.18	0.38	0.16	--	--	--
12	--	--	--	--	--	--	--	--
13	--	--	--	--	--	--	--	--
14	1.40	0.68	1.98	0.81	0.17	--	--	--
15	--	--	--	--	--	--	--	--
16	--	--	--	--	--	--	--	--
17	--	--	--	--	--	--	--	--
18	2.37	0.18	2.63	0.50	0.19	--	--	--
19	--	--	--	--	--	--	--	--
20	--	--	--	0.25	0.14	--	--	--
21	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 3

08-SEP-82 10:57:18

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	2.57	0.59	3.33	0.24	0.18	--	--	--
23	--	--	--	--	--	--	--	--
24	2.52	0.58	3.51	0.20	0.17	--	--	--
25	5.62	1.56	4.36	0.10	0.15	--	--	--
26	5.60	1.56	4.52	0.10	0.17	24.15	0.07	--
27	8.36	3.09	6.76	0.09	0.28	21.20	0.07	--
28	8.35	2.35	5.85	0.08	0.17	21.25	0.04	--
29	13.00	2.10	--	0.07	--	16.20	0.05	--
30	14.45	3.50	8.60	0.13	0.41	--	--	--
31	--	--	--	--	--	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.55	0.13	1.62	2.34	0.24	--	--	--
35	1.20	--	--	3.10	--	--	--	--
36	1.18	--	--	1.70	--	--	--	--

- Airblast Penetration 1981 -

Shot 4

08-SEP-82 10:57:50

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.52	0.20	1.68	0.64	0.20	--	--	--
2	0.49	0.29	3.12	0.52	0.33	--	--	--
3	0.53	0.22	1.55	0.62	0.17	--	--	--
4	0.46	0.24	2.69	0.52	0.24	--	--	--
5	0.57	0.28	1.25	0.52	0.14	--	--	--
6	0.53	0.29	1.25	0.42	0.14	--	--	--
7	0.57	0.31	1.12	0.45	0.13	--	--	--
8	0.52	0.18	1.18	0.40	0.10	--	--	--
9	0.68	0.27	1.32	0.52	0.15	--	--	--
10	--	--	--	--	--	--	--	--
11	0.68	0.38	1.32	0.41	0.13	--	--	--
12	0.65	0.15	1.05	0.26	0.05	--	--	--
13	0.92	0.34	1.58	0.42	0.18	--	--	--
14	0.92	0.20	1.28	0.38	0.12	--	--	--
15	0.93	0.35	0.99	0.33	0.07	--	--	--
16	0.93	0.25	1.40	0.40	0.13	--	--	--
17	--	--	--	--	--	--	--	--
18	1.51	0.29	1.81	0.35	0.15	--	--	--
19	--	--	--	--	--	--	--	--
20	1.50	0.70	1.80	0.24	0.14	--	--	--
21	2.80	0.95	2.76	0.22	0.18	--	--	--

- Airblast Penetration 1981 -

Shot 4

08-SEP-82 10:58:19

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	2.80	0.82	3.00	0.18	0.17	--	--	--
23	--	--	--	--	--	--	--	--
24	2.78	0.90	3.02	0.18	0.17	--	--	--
25	5.82	1.43	4.78	0.12	0.16	23.95	0.04	--
26	5.80	1.52	4.20	0.12	0.17	24.00	0.04	--
27	8.45	2.23	5.75	0.11	0.25	20.92	0.05	--
28	8.42	1.48	5.30	0.10	0.16	20.95	0.05	--
29	13.00	2.80	--	0.08	--	16.05	0.08	--
30	14.32	1.98	7.98	0.22	0.43	--	--	--
31	0.49	0.17	1.09	2.55	0.29	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.44	0.16	0.96	1.80	0.26	--	--	--
35	0.50	0.18	0.95	2.70	0.30	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 5

08-SEP-82 10:50:53

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.72	0.30	2.64	0.66	0.27	--	--	--
2	--	--	--	--	--	--	--	--
3	0.82	0.18	1.98	0.78	0.18	--	--	--
4	0.53	0.25	4.32	0.28	0.15	--	--	--
5	0.74	0.18	1.84	0.60	0.15	--	--	--
6	--	--	--	--	--	--	--	--
7	0.87	0.21	1.69	0.74	0.15	--	--	--
8	0.61	0.12	1.79	0.37	0.05	--	--	--
9	0.85	0.20	2.13	0.36	0.11	--	--	--
10	--	--	--	--	--	--	--	--
11	0.96	0.25	1.86	0.42	0.11	--	--	--
12	0.80	0.21	1.10	0.09	0.03	--	--	--
13	--	--	--	0.18	0.02	--	--	--
14	1.23	0.41	2.41	0.37	0.11	--	--	--
15	--	--	--	--	--	--	--	--
16	1.18	0.70	2.08	0.15	0.09	--	--	--
17	--	--	--	--	--	--	--	--
18	1.95	0.69	2.53	0.14	0.12	--	--	--
19	--	--	--	--	--	--	--	--
20	2.01	0.29	2.37	0.25	0.11	--	--	--
21	3.52	1.24	3.48	0.11	0.15	--	--	--

- Airblast Penetration 1981 -

Shot 5

08-SEP-82 10:59:21

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
22	3.50	1.05	2.78	0.11	0.11	--	--	--
23	--	--	--	--	--	--	--	--
24	3.53	1.27	3.02	0.10	0.13	--	--	--
25	--	--	--	--	--	--	--	--
26	6.94	1.81	3.68	0.07	0.12	--	--	--
27	9.88	2.24	5.17	0.08	0.18	23.04	0.05	--
28	9.90	2.00	5.30	0.06	0.11	23.10	0.03	--
29	14.86	3.04	--	0.05	--	18.03	0.06	--
30	16.30	1.52	6.95	0.12	0.26	--	--	--
31	0.72	0.38	1.91	0.97	0.45	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.48	0.29	2.02	0.83	0.23	--	--	--
35	--	--	--	--	--	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 6

08-SEP-82 10:59:51

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.21	0.17	2.35	1.60	0.26	--	--	--
2	--	--	--	--	--	--	--	--
3	0.18	0.14	2.35	1.30	0.24	--	--	--
4	0.08	0.10	--	0.42	--	--	--	--
5	0.22	0.17	2.10	1.03	0.18	--	--	--
6	--	--	--	0.35	0.08	--	--	--
7	0.20	0.19	2.08	0.86	0.18	--	--	--
8	0.13	0.12	2.07	0.52	0.07	--	--	--
9	0.28	0.23	2.05	0.53	0.14	--	--	--
10	--	--	--	--	--	--	--	--
11	0.67	0.23	2.25	0.37	0.12	--	--	--
12	0.63	0.20	0.79	0.20	0.03	--	--	--
13	0.57	0.19	1.78	0.40	0.05	--	--	--
14	0.62	0.49	1.88	0.34	0.12	--	--	--
15	--	--	--	--	--	--	--	--
16	0.62	0.42	2.06	0.34	0.13	--	--	--
17	--	--	--	--	--	--	--	--
18	1.24	0.23	2.81	0.71	0.36	--	--	--
19	--	--	--	--	--	--	--	--
20	1.23	0.36	2.47	0.21	0.12	--	--	--
21	2.64	1.11	3.64	0.15	0.19	--	--	--

- Airblast Penetration 1981 -

Shot 6

08-SEP-82 11:00:20

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
22	2.58	1.07	2.95	0.12	0.14	--	--	--
23	--	--	--	--	--	--	--	--
24	2.65	1.00	3.15	0.13	0.15	--	--	--
25	5.88	1.42	5.12	0.08	0.15	--	--	--
26	5.82	1.90	4.48	0.09	0.14	--	--	--
27	8.71	3.79	5.71	0.07	0.20	21.68	0.06	--
28	8.68	2.32	5.77	0.07	0.15	21.65	0.04	--
29	13.52	2.98	--	0.05	--	16.62	0.06	--
30	15.00	2.78	7.70	0.12	0.34	--	--	--
31	0.57	0.23	0.98	1.38	0.28	--	--	--
32	0.32	0.14	0.57	1.23	0.15	--	--	--
33	--	--	--	--	--	--	--	--
34	0.36	0.16	0.53	2.00	0.23	--	--	--
35	0.43	0.12	2.37	1.65	0.40	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 7

08-SEP-82 11:00:50

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.90	0.25	2.38	0.29	0.11	--	--	--
2	0.88	0.23	3.18	0.34	0.29	--	--	--
3	0.90	0.38	1.45	0.24	0.11	--	--	--
4	0.89	0.26	--	0.30	--	--	--	--
5	0.96	0.28	1.36	0.27	0.10	--	--	--
6	0.95	0.36	1.35	0.24	0.09	--	--	--
7	0.97	0.33	1.23	0.27	0.10	--	--	--
8	0.96	0.23	1.29	0.27	0.06	--	--	--
9	1.10	0.36	1.58	0.26	0.10	--	--	--
10	--	--	--	--	--	--	--	--
11	1.13	0.35	1.19	0.23	0.10	--	--	--
12	1.12	0.11	1.20	0.19	0.02	--	--	--
13	1.44	0.58	1.66	0.21	0.15	--	--	--
14	1.43	0.60	1.53	0.19	0.10	--	--	--
15	1.45	0.45	1.85	0.22	0.15	--	--	--
16	1.43	0.41	1.62	0.20	0.11	--	--	--
17	--	--	--	--	--	--	--	--
18	2.12	0.46	2.21	0.17	0.12	--	--	--
19	--	--	--	--	--	--	--	--
20	2.13	0.84	2.12	0.15	0.11	--	--	--
21	3.62	1.06	2.90	0.14	0.14	--	--	--

- Airblast Penetration 1981 -

Shot 7

08-SEP-82 11:01:20

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
22	3.62	0.68	2.88	0.11	0.11	--	--	--
23	3.62	0.66	1.98	0.11	0.06	--	--	--
24	3.63	0.82	2.77	0.12	0.11	--	--	--
25	6.95	1.58	5.47	0.08	0.14	--	--	--
26	6.95	1.35	4.10	0.08	0.13	--	--	--
27	9.78	2.72	5.97	0.08	0.17	22.65	0.05	--
28	9.75	1.90	5.17	0.06	0.12	22.70	0.04	--
29	14.60	2.52	--	0.06	--	17.75	0.05	--
30	15.95	1.95	7.95	0.12	0.29	--	--	--
31	0.84	0.20	1.03	0.87	0.18	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.84	0.20	1.03	1.34	0.26	--	--	--
35	--	--	--	--	--	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 8

08-SEP-82 11:01:51

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.30	0.10	0.49	0.50	0.36	--	--	--
2	--	--	--	--	--	--	--	--
3	0.26	0.12	0.46	3.45	0.24	--	--	--
4	--	--	--	--	--	--	--	--
5	0.30	0.14	0.40	2.80	0.22	--	--	--
6	--	--	--	--	--	--	--	--
7	0.28	0.11	0.42	1.79	0.17	--	--	--
8	0.22	0.06	0.16	0.70	0.08	--	--	--
9	0.36	0.16	0.37	0.90	0.11	--	--	--
10	--	--	--	--	--	--	--	--
11	0.35	0.15	0.95	0.64	0.13	--	--	--
12	--	--	--	0.72	--	--	--	--
13	--	--	--	0.62	--	--	--	--
14	0.65	0.23	1.11	0.71	0.15	--	--	--
15	--	--	--	--	--	--	--	--
16	0.64	0.24	2.22	0.75	0.17	--	--	--
17	--	--	--	--	--	--	--	--
18	1.12	0.24	1.47	0.44	0.19	--	--	--
19	--	--	--	--	--	--	--	--
20	1.12	0.24	1.47	0.32	0.10	--	--	--
21	2.32	0.83	3.43	0.19	0.20	--	--	--

- Airblast Penetration 1981 -

Shot 8

08-SEP-82 11:02:23

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
22	2.38	0.82	3.02	0.22	0.17	--	--	--
23	--	--	--	--	--	--	--	--
24	2.37	0.83	3.24	0.20	0.20	--	--	--
25	5.25	1.45	5.67	0.12	0.15	23.45	0.05	--
26	5.30	1.40	4.74	0.11	0.17	23.50	0.06	--
27	7.98	2.17	6.52	0.12	0.26	20.40	0.07	--
28	7.95	2.23	6.65	0.08	0.17	20.55	0.05	--
29	12.50	2.20	--	0.05	--	15.88	0.08	--
30	13.90	1.54	9.20	0.16	0.42	--	--	--
31	0.31	0.17	0.94	0.99	0.15	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.16	0.11	0.38	3.15	0.22	--	--	--
35	0.18	0.15	1.20	2.82	0.42	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 9

08-SEP-82 11:02:53

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.16	0.14	0.84	6.50	0.91	--	--	--
2	--	--	--	--	--	--	--	--
3	0.15	0.13	0.35	5.80	0.42	--	--	--
4	0.16	0.22	2.57	0.71	0.33	--	--	--
5	0.16	0.12	0.37	4.20	0.36	--	--	--
6	0.12	--	--	1.22	--	--	--	--
7	0.17	0.10	0.43	4.20	0.28	--	--	--
8	0.14	--	--	1.15	--	--	--	--
9	0.21	0.19	0.90	1.66	0.18	--	--	--
10	--	--	--	--	--	--	--	--
11	0.21	0.10	0.90	1.80	0.16	--	--	--
12	--	--	--	1.80	0.09	--	--	--
13	0.38	0.16	0.82	1.00	0.11	--	--	--
14	0.46	0.16	0.82	1.42	0.17	--	--	--
15	0.39	0.13	1.21	1.50	0.26	--	--	--
16	0.47	0.11	0.59	2.21	0.20	--	--	--
17	--	--	--	--	--	--	--	--
18	0.82	0.20	1.30	0.79	0.22	--	--	--
19	--	--	--	--	--	--	--	--
20	0.82	0.36	1.29	0.50	0.14	--	--	--
21	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 9

08-SEP-82 11:03:22

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	1.95	0.60	2.30	0.36	0.18	--	--	--
23	--	--	--	--	--	--	--	--
24	1.92	0.58	4.31	0.34	0.24	--	--	--
25	4.60	1.45	5.92	0.16	0.22	22.25	0.06	--
26	4.60	1.72	5.20	0.15	0.22	22.30	0.07	--
27	7.12	2.86	7.18	0.13	0.31	19.38	0.06	--
28	7.12	1.88	6.88	0.10	0.20	19.45	0.05	--
29	11.50	2.05	--	0.09	--	14.60	0.11	--
30	12.85	1.15	9.75	0.24	0.32	--	--	--
31	0.15	0.15	0.35	1.55	0.11	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	0.03	0.15	0.38	5.80	0.40	--	--	--
35	--	--	--	--	--	--	--	--
36	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 10

08-SEP-82 11:03:52

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.13	0.08	1.15	3.20	0.43	--	--	--
2	--	--	--	--	--	--	--	--
3	0.14	0.11	1.13	3.10	0.41	--	--	--
4	0.13	0.09	1.14	3.20	0.45	--	--	--
5	0.16	0.15	1.33	2.10	0.35	--	--	--
6	0.16	0.12	1.17	2.32	0.33	--	--	--
7	0.16	0.09	1.36	2.95	0.43	--	--	--
8	0.16	0.09	1.06	2.50	0.32	--	--	--
9	0.21	0.14	1.54	1.90	0.36	--	--	--
10	--	--	--	--	--	--	--	--
11	0.20	0.20	2.29	1.40	0.37	--	--	--
12	0.21	0.10	1.29	2.00	0.26	--	--	--
13	0.36	0.16	1.46	1.42	0.31	--	--	--
14	0.33	0.25	2.25	1.46	0.38	--	--	--
15	0.32	0.10	0.96	1.33	0.36	--	--	--
16	0.35	0.25	2.33	1.34	0.41	--	--	--
17	--	--	--	--	--	--	--	--
18	0.63	0.22	2.27	1.12	0.38	--	--	--
19	--	--	--	--	--	--	--	--
20	0.63	0.21	1.94	1.04	0.35	--	--	--
21	--	--	--	--	--	--	--	--

- Airblast Penetration 1981 -

Shot 10

08-SEP-82 11:04:21

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
22	1.42	0.33	2.91	0.70	0.37	--	--	--
23	--	--	--	--	--	--	--	--
24	1.42	0.37	3.08	0.66	0.34	--	--	--
25	3.36	1.14	4.76	0.35	0.43	18.15	0.08	--
26	3.35	1.90	5.53	0.24	0.38	18.20	0.09	--
27	5.30	2.38	6.26	0.27	0.60	15.92	0.10	--
28	5.30	1.40	6.55	0.23	0.42	15.95	0.10	--
29	8.82	3.24	--	0.16	--	11.55	0.22	--
30	9.96	1.28	11.36	0.52	1.22	--	--	--
31	0.14	0.07	--	10.00	--	--	--	--
32	--	--	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	--	--	--	--	--	--	--	--
35	--	--	--	--	--	--	--	--
36	--	--	--	--	--	--	--	--

APPENDIX D

PEAK PRESSURES AND IMPULSES AND CHARACTERISTIC TIMES OF 1982 SERIES

- Airblast Penetration 1982 -

Shot 1

09-SEP-82 07:43:26

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
1	0.14	0.16	1.12	2.90	0.41	--	--	--
2	0.14	0.12	1.18	3.50	0.38	--	--	--
3	0.21	0.18	1.37	2.26	0.36	--	--	--
4	0.20	0.14	1.48	2.60	0.36	--	--	--
5	0.36	0.08	1.74	1.33	0.33	--	--	--
6	0.36	0.15	2.08	1.62	0.36	--	--	--
7	0.66	0.35	1.82	0.92	0.31	--	--	--
8	0.65	0.43	1.91	1.20	0.33	--	--	--
9	1.50	1.18	3.18	0.56	0.35	--	--	--
10	1.50	0.90	2.90	0.55	0.36	--	--	--
11	3.95	2.87	8.05	0.04	0.09	19.60	0.02	--
12	6.00	2.70	6.70	0.25	0.47	17.10	0.09	--
13	9.90	14.72	--	0.22	--	12.10	--	--
14	0.14	0.10	0.30	9.88	0.56	--	--	--

- Airblast Penetration 1982 -

Shot 2

09-SEP-82 07:44:02

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
1	0.14	0.08	0.86	2.43	0.21	--	--	--
2	0.14	0.12	0.90	2.10	0.19	--	--	--
3	--	--	--	--	--	--	--	--
4	0.20	0.09	0.92	1.80	0.19	--	--	--
5	0.38	0.15	1.24	0.90	0.18	--	--	--
6	0.36	0.30	1.26	0.90	0.18	--	--	--
7	0.86	0.68	1.70	0.49	0.18	--	--	--
8	0.88	0.51	1.70	0.59	0.20	--	--	--
9	1.92	1.36	2.66	0.30	0.22	--	--	--
10	1.90	1.50	2.60	0.28	0.22	7.90	0.04	--
11	4.80	2.40	4.55	0.17	0.26	22.50	0.08	--
12	7.30	2.50	5.70	0.15	0.39	19.20	0.08	--
13	11.62	4.48	--	0.12	--	14.70	0.14	--
14	0.14	0.03	0.26	11.50	0.33	--	--	--

- Airblast Penetration 1982 -

Shot 3

09-SEP-82 07:44:21

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.20	0.14	1.38	5.10	0.81	--	--	--
2	0.20	0.12	1.38	4.44	0.67	--	--	--
3	0.26	0.26	1.85	2.42	0.66	--	--	--
4	0.26	0.26	2.49	3.20	0.62	--	--	--
5	0.36	0.34	2.52	2.20	0.70	--	--	--
6	0.41	0.23	2.54	2.82	0.70	--	--	--
7	0.62	0.45	3.13	1.28	0.65	--	--	--
8	0.60	0.48	2.48	1.85	0.66	--	--	--
9	1.17	0.94	4.58	0.98	0.61	--	--	--
10	1.15	0.93	4.75	1.05	0.65	--	--	--
11	3.08	2.54	6.72	0.57	0.66	16.30	0.10	--
12	4.55	3.15	8.05	0.39	0.72	14.20	0.14	--
13	9.80	3.40	--	0.32	--	12.38	0.40	--
14	0.18	0.03	0.29	21.30	0.79	--	--	--

- Airblast Penetration 1982 -

Shot 4

09-SEP-82 07:44:40

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.10	0.14	0.34	12.26	1.28	--	--	--
2	--	--	--	--	--	--	--	--
3	0.11	0.07	0.20	4.21	0.23	--	--	--
4	0.12	0.08	1.33	4.70	0.46	--	--	--
5	0.22	0.24	2.63	2.80	0.54	--	--	--
6	0.24	0.44	2.76	2.61	0.52	--	--	--
7	0.48	0.26	2.70	1.79	0.61	--	--	--
8	0.47	0.25	2.73	2.18	0.61	--	--	--
9	1.08	0.82	4.49	0.76	0.55	--	--	--
10	1.09	0.71	4.26	0.83	0.59	--	--	--
11	2.81	1.72	6.31	0.48	0.58	16.20	0.15	--
12	4.51	2.74	8.15	0.34	0.65	14.30	0.15	--
13	7.89	4.21	--	0.22	--	10.50	0.38	--
14	0.10	0.10	0.29	4.69	0.30	--	--	--

- Airblast Penetration 1982 -

Shot 5

09-SEP-82 08:09:22

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.11	0.05	0.99	7.62	0.29	--	--	--
2	--	--	--	--	--	--	--	--
3	0.14	0.07	1.77	2.70	0.31	--	--	--
4	0.16	0.11	1.66	2.95	0.30	--	--	--
5	--	--	--	--	--	--	--	--
6	0.28	0.23	1.63	1.89	0.34	--	--	--
7	--	--	--	--	--	--	--	--
8	0.60	0.29	0.86	1.34	0.29	--	--	--
9	1.38	1.15	2.95	0.43	0.30	--	--	--
10	1.38	0.77	3.12	0.50	0.32	--	--	--
11	3.65	2.10	5.30	0.30	0.37	19.40	0.11	--
12	5.80	8.70	12.35	0.21	0.42	16.90	0.08	--
13	9.60	4.31	--	0.16	--	12.50	0.15	--
14	0.08	0.05	0.17	11.50	0.35	--	--	--

- Airblast Penetration 1982 -

Shot 6

09-SEP-82 08:09:38

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
1	0.12	0.08	0.22	6.64	0.37	--	--	--
2	0.10	0.08	0.22	6.00	0.50	--	--	--
3	0.16	0.10	1.69	3.65	0.56	--	--	--
4	0.17	0.07	2.38	4.60	0.56	--	--	--
5	0.26	0.23	2.89	2.40	0.64	--	--	--
6	0.27	0.22	2.65	2.98	0.63	--	--	--
7	0.45	0.37	3.13	1.55	0.59	--	--	--
8	0.42	0.28	3.10	2.26	0.63	--	--	--
9	1.10	0.52	4.22	0.80	0.57	--	--	--
10	1.10	0.52	4.23	1.02	0.58	--	--	--
11	2.95	1.45	6.17	0.50	0.62	16.60	0.12	--
12	4.80	2.10	7.90	0.38	0.70	14.70	0.14	--
13	7.90	4.05	--	0.27	--	10.55	0.38	--
14	--	--	--	--	--	--	--	--

- Airblast Penetration 1982 -

Shot 7

09-SEP-82 08:09:53

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.08	0.07	1.87	7.90	0.59	--	--	--
2	0.06	0.05	2.06	8.07	0.58	--	--	--
3	0.10	0.13	2.32	3.60	0.51	--	--	--
4	--	--	--	--	--	--	--	--
5	0.21	0.16	2.86	2.30	0.56	--	--	--
6	0.21	0.11	2.44	2.81	0.56	--	--	--
7	0.48	0.15	2.87	2.18	0.55	--	--	--
8	0.46	0.20	2.56	2.00	0.55	--	--	--
9	1.02	0.61	3.87	0.78	0.55	--	--	--
10	1.02	0.58	3.91	0.83	0.52	--	--	--
11	2.99	0.89	5.59	0.46	0.57	16.68	0.14	--
12	4.70	2.60	7.19	0.33	0.64	14.78	0.12	--
13	8.00	4.30	--	0.24	--	10.60	0.34	--
14	0.06	0.07	0.19	5.35	0.22	--	--	--

- Airblast Penetration 1982 -

Shot 8

09-SEP-82 07:44:56

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.08	0.05	1.72	9.60	0.76	--	--	--
2	0.06	0.09	1.02	12.90	0.88	--	--	--
3	0.10	0.11	2.78	5.18	0.69	--	--	--
4	--	--	--	--	--	--	--	--
5	0.20	0.12	3.10	4.10	0.88	--	--	--
6	0.20	0.12	3.12	4.60	0.86	--	--	--
7	0.42	0.14	3.48	3.32	0.95	--	--	--
8	0.42	0.22	3.26	3.16	0.94	--	--	--
9	0.98	0.32	4.52	2.05	0.89	--	--	--
10	0.95	0.35	4.70	1.78	0.93	--	--	--
11	2.40	0.75	7.05	0.90	0.91	13.90	0.13	--
12	3.79	1.99	8.11	0.56	0.98	12.35	0.21	--
13	6.60	3.40	--	0.45	--	9.00	0.65	--
14	0.06	0.04	0.30	30.00	1.09	--	--	--

- Airblast Penetration 1982 -

Shot 9

09-SEP-82 08:10:09

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.34	0.07	1.62	0.88	0.08	--	--	--
2	0.33	0.15	2.01	0.61	0.07	--	--	--
3	0.50	0.13	2.24	0.24	0.04	--	--	--
4	0.47	0.04	2.63	0.33	0.02	--	--	--
5	0.88	0.40	2.26	0.13	0.04	--	--	--
6	0.89	0.21	2.47	0.14	0.04	--	--	--
7	1.63	0.75	2.47	0.09	0.05	--	--	--
8	1.68	0.46	2.40	0.09	0.04	--	--	--
9	3.58	0.62	3.33	0.06	0.05	--	--	--
10	3.52	0.98	3.01	0.05	0.05	--	--	--
11	7.73	1.87	4.27	0.04	0.05	--	--	--
12	11.10	2.50	4.35	0.03	0.05	--	--	--
13	16.60	2.58	--	0.03	--	20.20	0.02	--

- Airblast Penetration 1982 -

Shot 10

09-SEP-82 08:10:23

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.41	0.10	1.73	0.39	0.08	--	--	--
2	0.42	0.09	2.00	0.82	0.08	--	--	--
3	0.55	0.15	2.39	0.26	0.05	--	--	--
4	0.59	0.53	2.29	0.19	0.03	--	--	--
5	0.90	0.36	2.10	0.13	0.05	--	--	--
6	0.92	0.18	2.28	0.18	0.05	--	--	--
7	1.65	0.85	3.97	0.09	0.07	--	--	--
8	1.65	0.75	3.96	0.08	0.06	--	--	--
9	3.50	1.28	3.90	0.06	0.05	--	--	--
10	3.52	1.09	4.58	0.06	0.06	--	--	--
11	7.56	1.00	5.26	0.04	0.07	--	--	--
12	10.95	2.68	5.55	0.03	0.06	--	--	--
13	16.40	3.12	--	0.03	--	19.64	0.03	--

- Airblast Penetration 1982 -

Shot 11

09-SEP-82 08:10:48

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.21	0.46	3.29	0.22	0.20	--	--	--
2	0.26	0.18	2.64	0.59	0.15	--	--	--
3	0.28	0.43	2.72	0.16	0.09	--	--	--
4	0.24	1.22	3.44	0.17	0.06	--	--	--
5	0.69	0.80	2.86	0.11	0.10	--	--	--
6	0.68	0.83	2.81	0.11	0.09	--	--	--
7	1.52	0.93	3.08	0.08	0.10	--	--	--
8	1.50	1.00	3.10	0.08	0.09	--	--	--
9	3.35	1.15	3.77	0.07	0.09	--	--	--
10	3.36	1.72	3.59	0.07	0.10	--	--	--
11	6.80	2.95	5.20	0.04	0.10	--	--	--
12	10.50	2.30	5.10	0.04	0.10	--	--	--
13	16.00	3.55	--	0.04	--	19.55	0.03	--

- Airblast Penetration 1982 -

Shot 12

09-SEP-82 07:45:13

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	1.12	0.07	2.18	1.44	0.22	--	--	--
2	1.11	0.05	2.29	1.63	0.23	--	--	--
3	1.24	0.08	2.71	0.66	0.13	--	--	--
4	1.88	0.40	--	0.38	--	--	--	--
5	1.50	0.35	--	0.19	--	--	--	--
6	1.15	0.32	3.25	0.21	0.12	--	--	--
7	1.86	0.59	4.14	0.17	0.13	--	--	--
8	1.30	0.75	3.70	0.15	0.12	--	--	--
9	3.09	1.11	4.83	0.11	0.13	--	--	--
10	4.75	0.76	4.70	0.11	0.13	--	--	--
11	8.45	3.47	6.07	0.07	0.14	--	--	--
12	10.52	2.76	6.98	0.06	0.14	--	--	--
13	15.70	4.90	--	0.05	--	18.90	0.05	--

- Airblast Penetration 1982 -

Shot 13

09-SEP-82 08:11:06

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.14	0.13	3.47	1.36	0.42	--	--	--
2	0.17	0.11	3.51	2.24	0.41	--	--	--
3	0.28	0.08	3.72	1.15	0.26	--	--	--
4	0.21	0.20	--	1.05	--	--	--	--
5	0.46	0.35	3.45	0.38	0.22	--	--	--
6	0.44	0.22	3.66	0.45	0.21	--	--	--
7	1.00	0.88	5.59	0.22	0.21	--	--	--
8	1.00	0.87	4.80	0.23	0.19	--	--	--
9	2.58	0.94	5.82	0.18	0.22	--	--	--
10	2.50	1.38	5.40	0.15	0.23	--	--	--
11	3.85	2.83	8.15	0.10	0.24	--	--	--
12	8.80	4.65	8.60	0.09	0.23	22.40	0.06	--
13	13.65	5.65	--	0.07	--	16.90	0.07	--

- Airblast Penetration 1982 -

Shot 14

09-SEP-82 08:11:20

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.09	0.07	3.67	2.23	0.64	--	--	--
2	0.08	0.12	4.82	2.52	0.86	--	--	--
3	0.16	0.10	4.50	1.88	0.51	--	--	--
4	0.16	0.18	--	1.62	--	--	--	--
5	0.26	0.32	--	0.73	--	--	--	--
6	0.32	0.24	4.68	0.94	--	--	--	--
7	0.80	0.55	7.70	0.45	0.40	--	--	--
8	0.70	0.60	7.40	0.45	0.39	--	--	--
9	1.90	1.76	7.40	0.25	0.39	--	--	--
10	1.88	1.68	7.72	0.28	0.40	--	--	--
11	4.75	3.65	10.75	0.18	0.42	22.75	0.08	--
12	7.30	4.25	11.50	0.15	0.42	19.80	0.09	--
13	11.60	5.00	--	0.12	--	14.60	0.16	--

- Airblast Penetration 1982 -

Shot 15

09-SEP-82 07:45:41

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.26	0.10	2.74	1.20	0.20	--	--	--
2	0.25	0.11	3.55	0.95	0.20	--	--	--
3	0.38	0.18	3.08	0.54	0.11	--	--	--
4	0.37	0.12	4.19	0.83	0.07	--	--	--
5	0.64	0.16	3.66	0.36	0.11	--	--	--
6	0.63	0.27	2.52	0.29	0.11	--	--	--
7	1.25	1.01	4.15	0.15	0.12	--	--	--
8	1.20	1.00	4.00	0.15	0.11	--	--	--
9	2.90	1.82	4.92	0.10	0.12	--	--	--
10	2.90	1.66	4.90	0.10	0.12	--	--	--
11	6.60	2.50	6.40	0.07	0.13	--	--	--
12	9.70	1.60	6.90	0.06	0.13	23.80	0.04	--
13	15.00	4.70	--	0.05	--	18.40	0.05	--

- Airblast Penetration 1982 -

Shot 16

09-SEP-82 08:11:39

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.18	0.08	4.07	1.32	0.30	--	--	--
2	0.20	0.09	4.25	1.60	0.31	--	--	--
3	0.30	0.12	3.32	0.95	0.19	--	--	--
4	0.26	0.14	--	0.90	--	--	--	--
5	0.48	0.30	3.70	0.40	0.17	--	--	--
6	0.47	0.23	3.79	0.39	0.16	--	--	--
7	1.05	1.00	4.65	0.24	0.18	--	--	--
8	1.05	0.95	3.67	0.23	0.16	--	--	--
9	2.52	1.06	5.68	0.16	0.18	--	--	--
10	2.50	1.60	5.00	0.14	0.18	--	--	--
11	5.90	2.50	7.10	0.10	0.20	--	--	--
12	8.90	2.85	7.80	0.08	0.20	22.40	0.05	--
13	13.80	5.80	--	0.07	--	17.00	0.07	--

- Airblast Penetration 1982 -

Shot 17

09-SEP-82 08:11:53

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.12	0.06	4.48	2.72	0.59	--	--	--
2	0.14	0.07	4.61	2.70	0.65	--	--	--
3	0.22	0.08	4.78	2.10	0.40	--	--	--
4	0.18	0.04	4.32	2.48	--	--	--	--
5	0.32	0.38	4.68	1.00	--	--	--	--
6	0.32	0.38	4.68	0.63	--	--	--	--
7	0.80	0.80	6.25	0.40	0.33	--	--	--
8	0.85	0.57	6.25	0.50	0.32	--	--	--
9	2.00	1.09	7.25	0.32	0.33	--	--	--
10	1.98	1.50	7.27	0.24	0.37	--	--	--
11	5.00	2.90	8.93	0.17	0.36	22.25	0.08	--
12	6.70	4.25	10.80	0.13	0.37	20.25	0.07	--
13	12.00	5.35	--	0.11	--	15.10	0.13	--

- Airblast Penetration 1982 -

Shot 18

09-SEP-82 08:12:06

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.36	0.28	2.94	0.34	0.13	--	--	--
2	0.31	0.17	3.19	0.46	0.11	--	--	--
3	0.46	0.22	2.84	0.22	0.06	--	--	--
4	0.44	0.06	4.06	0.34	--	--	--	--
5	0.85	0.22	3.53	0.18	0.08	--	--	--
6	0.80	0.14	3.07	0.19	0.06	--	--	--
7	1.65	0.45	3.85	0.12	0.07	--	--	--
8	1.66	0.64	3.75	0.11	0.06	--	--	--
9	3.58	0.69	4.37	0.08	0.07	--	--	--
10	3.52	0.76	4.10	0.09	0.08	--	--	--
11	7.60	1.30	5.10	0.05	0.08	--	--	--
12	10.95	1.60	6.25	0.04	0.08	--	--	--
13	16.50	3.20	--	0.04	--	19.75	0.03	--

- Airblast Penetration 1982 -

Shot 19

09-SEP-82 08:12:20

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.42	0.11	2.71	0.85	0.13	--	--	--
2	0.42	0.11	2.53	1.24	0.14	--	--	--
3	0.53	0.13	2.66	0.74	0.10	--	--	--
4	0.52	0.10	2.70	0.94	0.06	--	--	--
5	0.81	0.15	2.97	0.30	0.09	--	--	--
6	0.79	0.14	2.41	0.34	0.09	--	--	--
7	1.48	0.42	3.30	0.22	0.11	--	--	--
8	1.49	0.31	3.21	0.26	0.11	--	--	--
9	3.05	0.40	2.99	0.15	0.11	--	--	--
10	3.03	0.55	3.77	0.15	0.11	--	--	--
11	6.55	1.75	5.05	0.08	0.13	--	--	--
12	9.65	2.20	5.85	0.07	0.14	23.40	0.04	--
13	14.90	4.50	--	0.06	--	18.10	0.05	--

- Airblast Penetration 1982 -

Shot 20

09-SEP-82 07:46:03

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.21	0.09	4.29	2.00	0.40	--	--	--
2	0.22	0.08	3.28	3.40	0.45	--	--	--
3	0.29	0.11	2.91	1.80	0.27	--	--	--
4	0.27	0.07	--	1.81	--	--	--	--
5	0.46	0.10	3.94	0.88	0.25	--	--	--
6	0.45	0.15	3.29	0.86	0.25	--	--	--
7	0.95	0.33	3.65	0.47	0.23	--	--	--
8	0.94	0.36	3.71	0.52	0.23	--	--	--
9	2.12	0.90	4.43	0.26	0.24	--	--	--
10	2.11	0.89	4.69	0.28	0.26	--	--	--
11	5.00	1.65	6.20	0.16	0.29	23.20	0.08	--
12	7.70	2.35	7.60	0.13	0.30	20.35	0.06	--
13	12.20	5.05	--	0.10	--	15.30	0.11	--

- Airblast Penetration 1982 -

Shot 21

09-SEP-82 08:12:33

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.13	0.07	4.87	3.40	0.70	--	--	--
2	0.14	0.08	4.86	3.70	0.70	--	--	--
3	0.19	0.09	4.41	2.50	0.44	--	--	--
4	0.20	0.06	4.80	2.82	--	--	--	--
5	0.33	0.16	4.67	1.20	0.44	--	--	--
6	0.32	0.15	4.50	1.16	0.41	--	--	--
7	0.74	0.21	4.76	0.75	0.36	--	--	--
8	0.73	0.27	4.27	0.75	0.36	--	--	--
9	1.70	0.40	4.55	0.47	0.35	--	--	--
10	1.70	0.55	4.70	0.41	0.38	--	--	--
11	4.25	1.45	7.50	0.23	0.40	21.32	0.08	--
12	6.60	1.60	8.15	0.19	0.43	18.50	0.08	--
13	10.70	5.65	--	0.13	--	13.75	0.16	--

- Airblast Penetration 1982 -

Shot 22

09-SEP-82 08:12:48

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.26	0.10	--	1.15	--	--	--	--
2	0.22	0.12	2.54	1.15	0.21	--	--	--
3	0.31	0.11	2.57	0.70	0.13	--	--	--
4	0.31	0.12	3.25	0.87	0.08	--	--	--
5	0.56	0.08	2.76	0.43	0.12	--	--	--
6	0.57	0.13	2.55	0.39	0.12	--	--	--
7	1.22	0.28	2.83	0.22	0.13	--	--	--
8	1.22	0.42	2.78	0.26	0.12	--	--	--
9	2.75	0.50	3.80	0.18	0.14	--	--	--
10	2.75	0.25	3.65	0.15	0.15	--	--	--
11	6.25	1.15	5.30	0.10	0.16	--	--	--
12	9.85	1.15	5.30	0.08	0.16	23.00	0.04	--
13	14.25	6.95	--	0.05	--	17.55	0.04	--

- Airblast Penetration 1982 -

Shot 23

09-SEP-82 08:13:02

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
1	0.09	0.06	4.91	5.62	--	--	--	--
2	0.08	0.06	4.92	5.38	--	--	--	--
3	0.12	0.07	4.88	4.64	0.76	--	--	--
4	0.14	0.04	4.86	4.23	--	--	--	--
5	0.23	0.19	4.77	2.21	--	--	--	--
6	0.23	0.12	4.77	2.42	--	--	--	--
7	0.52	0.18	8.08	1.62	0.78	--	--	--
8	0.52	0.28	6.98	1.20	0.70	--	--	--
9	1.28	0.44	8.72	0.75	0.66	--	--	--
10	1.29	0.26	8.71	0.86	0.69	--	--	--
11	3.30	1.00	9.80	0.36	0.66	18.45	0.12	--
12	5.25	2.25	10.85	0.27	0.72	16.10	0.14	--
13	8.75	5.60	--	0.20	--	11.60	0.29	--

- Airblast Penetration 1982 -

Shot 24

09-SEP-82 08:13:15

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.49	0.39	4.51	0.33	0.25	--	--	--
2	0.49	0.25	4.21	0.38	0.24	--	--	--
3	0.64	0.66	4.36	0.05	0.12	--	--	--
4	0.42	--	7.00	0.12	0.11	--	--	--
5	1.00	0.88	3.96	0.13	0.15	--	--	--
6	0.98	0.82	4.08	0.13	0.14	--	--	--
7	1.85	0.97	4.00	0.18	0.20	--	--	--
8	1.90	1.18	4.22	0.12	0.17	--	--	--
9	3.60	1.75	7.40	0.05	0.12	--	--	--
10	3.62	2.08	6.73	0.06	0.08	--	--	--
11	7.35	2.20	7.00	0.08	0.17	--	--	--
12	10.30	3.10	7.60	0.07	0.18	24.25	0.03	--
13	15.50	5.85	--	0.06	--	18.85	0.06	--
14	15.50	7.10	--	0.05	--	18.80	0.07	--

- Airblast Penetration 1982 -

Shot 25

09-SEP-82 08:13:29

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.43	0.44	4.57	0.60	0.36	--	--	--
2	0.43	0.82	5.47	0.31	0.34	--	--	--
3	0.60	1.20	6.40	0.36	--	--	--	--
4	0.55	2.80	7.85	0.35	0.16	--	--	--
5	0.96	0.65	5.04	0.37	0.25	--	--	--
6	0.92	0.66	4.68	0.25	0.24	--	--	--
7	1.70	1.40	4.55	0.24	0.28	--	--	--
8	1.73	1.27	5.07	0.18	0.23	--	--	--
9	3.30	1.60	5.70	0.13	0.14	--	--	--
10	3.25	1.25	6.75	0.15	0.15	--	--	--
11	6.60	2.15	6.90	0.11	0.25	--	--	--
12	9.45	4.05	8.15	0.09	0.27	22.80	0.06	--
13	14.35	6.65	--	0.08	--	17.60	0.09	--
14	14.30	6.40	--	0.08	--	17.55	0.09	--

- Airblast Penetration 1982 -

Shot 26

09-SEP-82 07:46:39

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.69	0.15	3.57	0.68	0.23	--	--	--
2	0.68	0.19	4.22	0.54	0.19	--	--	--
3	1.13	0.09	--	0.30	--	--	--	--
4	0.68	--	7.72	0.29	0.11	--	--	--
5	1.20	0.43	3.80	0.23	0.16	--	--	--
6	1.10	1.18	4.30	0.16	0.13	--	--	--
7	2.00	1.10	3.75	0.16	0.18	--	--	--
8	2.04	0.86	4.31	0.14	0.15	--	--	--
9	3.80	1.50	4.85	0.10	0.09	--	--	--
10	3.76	1.92	6.24	0.12	0.10	--	--	--
11	7.35	2.65	5.90	0.08	0.16	--	--	--
12	10.40	2.05	7.00	0.08	0.16	23.80	0.06	--
13	15.35	3.00	--	0.07	--	18.60	0.07	--
14	15.35	3.15	--	0.06	--	18.60	0.06	--

- Airblast Penetration 1982 -

Shot 27

09-SEP-82 07:46:55

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.59	0.18	3.91	0.90	0.27	--	--	--
2	0.46	0.30	4.14	0.38	0.27	--	--	--
3	1.00	0.33	9.00	0.41	0.14	--	--	--
4	0.56	--	7.39	0.29	0.12	--	--	--
5	1.05	0.55	3.90	0.25	0.17	--	--	--
6	0.96	0.74	4.34	0.23	0.19	--	--	--
7	1.82	1.78	3.93	0.19	0.25	--	--	--
8	1.90	1.30	4.20	0.15	0.18	--	--	--
9	3.60	1.92	6.40	0.12	0.13	--	--	--
10	3.62	1.18	6.38	0.13	0.11	--	--	--
11	7.10	1.55	6.35	0.09	0.18	--	--	--
12	10.00	3.35	8.35	0.08	0.20	23.50	0.06	--
13	14.85	3.15	--	0.08	--	18.22	0.07	--
14	15.00	3.15	--	0.07	--	18.25	0.09	--

- Airblast Penetration 1982 -

Shot 28

09-SEP-82 07:47:24

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.66	0.14	3.44	0.38	0.09	--	--	--
2	0.75	0.55	3.45	0.12	0.09	--	--	--
3	0.90	0.50	8.15	0.11	0.04	--	--	--
4	1.45	0.95	1.80	0.17	0.03	--	--	--
5	1.30	0.70	3.80	0.14	0.07	--	--	--
6	--	--	--	0.09	0.05	--	--	--
7	--	--	--	0.09	0.07	--	--	--
8	3.20	0.65	3.30	0.09	0.06	--	--	--
9	--	--	--	0.05	0.04	--	--	--
10	--	--	--	0.05	0.05	--	--	--
11	8.50	2.10	5.25	0.04	0.07	--	--	--
12	12.00	2.40	5.25	0.04	0.06	--	--	--
13	17.35	2.65	--	0.03	--	20.70	0.04	--
14	17.50	2.40	--	0.03	--	20.82	0.03	--

- Airblast Penetration 1982 -

Shot 29

09-SEP-82 07:47:40

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.50	0.15	3.86	0.46	0.17	--	--	--
2	0.55	0.53	4.07	0.25	0.17	--	--	--
3	0.72	0.68	5.43	0.15	0.06	--	--	--
4	1.10	--	5.28	0.20	0.05	--	--	--
5	1.10	0.60	3.52	0.20	0.12	--	--	--
6	1.10	0.98	3.58	0.12	0.09	--	--	--
7	1.95	0.60	3.55	0.16	0.16	--	--	--
8	2.10	0.70	3.90	0.20	0.12	--	--	--
9	3.95	0.65	4.87	0.10	0.08	--	--	--
10	3.90	1.00	5.38	0.10	0.06	--	--	--
11	7.80	0.55	5.30	0.08	0.13	--	--	--
12	10.90	2.95	6.10	0.06	0.13	--	--	--
13	16.20	2.30	--	0.06	--	19.45	0.06	--
14	16.20	2.52	--	0.05	--	19.50	0.06	--

- Airblast Penetration 1982 -

Shot 30

09-SEP-82 08:13:57

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	1.00	0.50	3.95	0.16	0.08	--	--	--
2	0.80	--	3.60	0.11	0.06	--	--	--
3	1.10	--	4.60	0.13	0.02	--	--	--
4	2.20	--	2.30	0.22	0.02	--	--	--
5	2.40	--	2.75	0.10	0.04	--	--	--
6	2.46	--	2.54	0.10	0.04	--	--	--
7	3.00	--	2.60	0.09	0.05	--	--	--
8	2.85	--	3.50	0.09	0.04	--	--	--
9	4.00	--	3.50	0.08	0.03	--	--	--
10	4.50	--	4.50	0.08	0.03	--	--	--
11	8.40	3.20	5.00	0.03	0.04	--	--	--
12	13.00	1.60	4.00	0.03	0.04	--	--	--
13	18.70	2.40	--	0.03	--	22.35	0.02	--
14	18.80	1.70	--	0.02	--	22.25	0.03	--

- Airblast Penetration 1982 -

Shot 31

09-SEP-82 08:14:11

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.38	0.27	5.62	1.58	0.64	--	--	--
2	0.28	0.34	5.34	0.49	0.51	--	--	--
3	0.42	--	--	0.75	--	--	--	--
4	0.42	--	8.08	0.58	0.22	--	--	--
5	0.75	0.55	4.77	0.58	0.40	--	--	--
6	0.70	0.85	4.80	0.43	0.38	--	--	--
7	1.42	0.44	4.13	0.44	0.38	--	--	--
8	1.40	0.52	4.90	0.46	0.32	--	--	--
9	2.70	1.51	5.80	0.23	0.20	--	--	--
10	2.70	1.00	5.10	0.21	0.26	--	--	--
11	5.65	2.75	8.25	0.17	0.36	23.55	0.09	--
12	8.10	3.95	8.40	0.09	0.26	20.50	0.06	--
13	12.62	5.73	--	0.10	--	15.75	0.14	--
14	12.62	5.63	--	0.07	--	15.80	0.09	--

- Airblast Penetration 1982 -

Shot 32

09-SEP-82 08:14:25

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--
5	0.17	0.17	4.18	4.10	0.99	--	--	--
6	0.14	0.14	3.16	3.66	0.89	--	--	--
7	0.34	0.17	3.30	3.80	1.09	--	--	--
8	0.36	0.28	3.70	2.53	1.05	--	--	--
9	0.91	0.20	3.84	2.96	1.06	--	--	--
10	0.85	0.25	3.90	1.90	1.05	--	--	--
11	2.25	0.75	9.00	1.05	0.48	13.45	0.05	--
12	3.70	0.90	6.50	0.82	0.93	11.95	0.26	--
13	6.30	1.75	--	0.55	--	8.60	0.80	--
14	6.30	2.25	--	0.40	--	8.60	0.60	--

- Airblast Penetration 1982 -

Shot 33

09-SEP-82 08:14:39

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--
5	0.12	0.11	3.88	4.10	0.98	--	--	--
6	0.13	0.12	2.75	4.25	0.89	--	--	--
7	0.33	0.17	4.75	4.00	1.28	--	--	--
8	0.33	0.17	3.60	3.80	1.11	--	--	--
9	0.83	0.24	5.55	2.58	1.22	--	--	--
10	0.82	0.26	5.13	2.05	1.16	--	--	--
11	2.20	1.20	8.50	0.72	0.42	13.00	0.06	--
12	3.45	0.90	6.90	0.70	1.03	11.45	0.25	--
13	6.00	2.00	--	0.53	--	8.28	0.70	--
14	6.00	2.90	--	0.43	--	8.28	0.65	--

- Airblast Penetration 1982 -

Shot 34

09-SEP-82 08:14:52

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--
5	0.09	0.08	3.91	9.60	1.10	--	--	--
6	0.08	0.10	2.57	5.38	0.85	--	--	--
7	0.25	0.17	6.25	4.40	1.49	--	--	--
8	0.28	0.37	4.97	3.00	1.31	--	--	--
9	0.75	0.35	6.85	2.32	1.35	--	--	--
10	0.76	0.20	4.69	2.90	1.32	--	--	--
11	2.00	1.00	6.85	1.26	1.08	12.45	0.20	--
12	3.25	1.40	7.30	0.73	1.08	11.00	0.26	--
13	5.70	1.65	--	0.66	--	7.90	0.90	--
14	5.70	2.00	--	0.54	--	7.90	0.70	--

- Airblast Penetration 1982 -

Shot 35

09-SEP-82 07:48:18

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--
5	0.10	0.12	4.90	7.50	1.48	--	--	--
6	0.10	0.12	4.90	6.40	1.23	--	--	--
7	0.26	0.17	4.74	6.20	2.02	--	--	--
8	0.27	0.23	4.73	5.56	1.76	--	--	--
9	0.62	0.25	4.38	4.00	2.28	--	--	--
10	0.62	0.13	4.38	6.20	2.44	--	--	--
11	1.51	0.59	--	2.61	--	8.85	0.38	--
12	2.41	0.69	--	1.70	--	7.95	0.54	--
[illegible]	4.10	1.30	--	1.22	--	5.75	1.82	--
14	4.10	1.85	--	1.21	--	5.75	1.76	--

- Airblast Penetration 1982 -

Shot 36

09-SEP-82 07:48:34

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--
6	0.10	0.10	3.15	9.40	1.21	--	--	--
7	0.25	0.17	4.75	7.00	2.12	--	--	--
8	0.25	0.21	4.50	6.80	1.90	--	--	--
9	0.61	0.16	4.39	5.10	2.44	--	--	--
10	0.60	0.14	4.40	5.80	2.50	--	--	--
11	1.45	0.60	--	2.62	--	8.20	0.60	--
12	2.35	0.55	--	2.00	--	7.40	0.88	--
13	4.00	2.60	--	1.22	--	5.70	2.80	--
14	4.00	3.50	--	1.45	--	5.70	2.55	--

- Airblast Penetration 1982 -

Shot 37 ROUND TUNNEL

03-JAN-83 08:57:16

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.33	0.17	0.86	0.87	0.14	8.39	0.13	0.09
A- 2	0.33	0.12	0.78	0.76	0.11	8.40	0.10	0.07
A- 3	0.81	0.28	2.29	0.51	0.04	7.52	0.03	--
A- 4	0.82	0.28	1.28	0.70	0.19	7.51	0.20	0.01
A- 5	1.70	0.42	1.92	0.31	0.16	6.39	0.08	0.09
A- 6	1.70	0.62	2.18	0.24	0.15	6.39	0.08	0.09
A- 7	2.50	0.70	2.70	0.26	0.18	5.60	0.12	0.13
A- 8	2.51	0.59	2.47	0.30	0.21	5.60	0.14	0.13
A- 9	3.00	0.75	--	0.21	--	4.96	0.17	0.20
A-10	2.99	0.66	--	0.20	--	4.95	0.16	0.19
A-11	3.53	1.37	--	0.19	--	4.27	0.04	0.06
A-12	3.53	1.30	--	0.16	--	4.25	0.24	0.39

- Airblast Penetration 1982 -

Shot 37 SQUARE TUNNEL

03-JAN-83 08:58:20

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
B- 1	0.26	0.14	0.97	0.79	0.15	8.35	0.10	0.06
B- 2	0.28	0.20	0.94	0.62	0.14	8.36	0.08	0.06
B- 3	0.82	0.28	1.78	0.47	0.06	7.50	0.03	--
B- 4	0.81	0.24	1.29	0.49	0.15	7.48	0.08	--
B- 5	1.69	0.39	1.46	0.31	0.17	6.35	0.08	--
B- 6	1.69	0.41	1.51	0.29	0.16	6.35	0.10	0.08
B- 7	2.44	0.84	1.91	0.20	0.18	5.57	0.11	0.10
B- 8	2.46	0.54	2.89	0.20	0.11	5.55	0.04	0.06
B- 9	2.95	0.66	--	0.20	--	4.92	0.15	0.21
B-10	2.95	0.80	--	0.24	--	4.92	0.07	0.15
B-11	3.50	1.00	--	0.18	--	4.19	0.27	0.43
B-12	3.48	--	--	0.15	--	4.20	0.23	0.41

- Airblast Penetration 1982 -

Shot 38 ROUND TUNNEL

03-JAN-83 08:59:10

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.39	0.21	1.11	1.18	0.27	7.54	0.12	0.09
A- 2	0.39	0.21	1.01	1.28	0.25	7.54	0.10	0.08
A- 3	0.88	0.39	2.77	0.83	0.06	6.86	0.04	--
A- 4	0.85	0.35	1.70	0.72	0.27	6.82	0.20	0.34
A- 5	1.63	0.67	2.12	0.38	0.23	5.90	0.16	0.17
A- 6	1.62	0.83	2.38	0.36	0.23	5.88	0.14	0.16
A- 7	2.30	0.62	2.82	0.36	0.27	5.12	0.20	0.19
A- 8	2.30	0.50	2.48	0.38	0.29	5.12	0.21	0.21
A- 9	2.76	0.34	--	0.34	--	4.60	0.28	0.36
A-10	2.75	1.25	--	0.26	--	4.60	0.23	0.32
A-11	3.26	1.16	--	0.27	--	3.95	0.05	0.08
A-12	3.25	1.03	--	0.25	--	3.92	0.38	0.65

- Airblast Penetration 1982 -

Shot 38 SQUARE TUNNEL

03-JAN-83 08:59:53

gage no.	First Pulse arriv. time, Ta (msec)	First Pulse inter. time, Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time, Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.32	0.20	1.18	1.25	0.31	7.16	0.08	0.01
B- 2	0.36	0.24	1.14	1.90	0.54	7.19	0.20	0.14
B- 3	0.80	0.52	2.48	0.56	0.11	6.56	0.04	--
B- 4	0.79	0.21	1.41	0.78	0.27	6.54	0.13	0.18
B- 5	1.52	0.55	1.75	0.42	0.25	5.62	0.12	--
B- 6	1.53	0.67	1.65	0.37	0.25	5.62	0.17	0.12
B- 7	2.15	0.75	2.13	0.33	0.26	4.90	0.20	0.22
B- 8	2.18	0.40	--	0.38	--	4.90	0.06	0.12
B- 9	2.60	0.70	--	0.30	--	4.40	0.26	0.40
B-10	2.60	0.93	--	0.43	--	4.40	0.10	0.34
B-11	3.08	1.02	--	0.28	--	3.70	0.44	0.79
B-12	3.05	1.45	--	0.22	--	3.72	0.46	0.72

- Airblast Penetration 1982 -

Shot 39 ROUND TUNNEL

03-JAN-83 09:00:41

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	0.19	0.22	1.11	2.32	0.45	5.90	0.18	0.17
A- 2	0.15	0.17	0.90	1.85	0.30	5.90	0.18	0.15
A- 3	0.49	0.21	3.31	1.30	0.09	5.38	0.40	0.07
A- 4	0.52	0.34	2.43	1.22	0.38	5.40	0.24	0.13
A- 5	1.10	0.40	2.48	0.70	0.36	4.60	0.18	0.18
A- 6	1.10	0.20	2.20	0.75	0.35	4.68	0.30	0.20
A- 7	1.60	0.23	2.44	0.80	0.38	4.04	0.25	0.32
A- 8	1.62	0.22	--	0.55	--	4.02	0.30	0.35
A- 9	1.97	0.45	--	0.42	--	3.58	0.38	0.58
A-10	2.00	0.40	--	0.52	--	3.56	0.33	0.54
A-11	2.45	0.75	--	0.42	--	3.08	0.09	0.14
A-12	2.41	0.69	--	0.40	--	3.00	0.70	1.07

- Airblast Penetration 1982 -

Shot 39 SQUARE TUNNEL

03-JAN-83 09:01:44

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.20	0.15	1.02	1.40	0.36	6.28	0.10	0.11
B- 2	0.18	0.20	1.08	1.82	0.40	6.28	0.15	0.11
B- 3	0.60	0.36	2.85	0.79	0.14	5.72	0.04	0.08
B- 4	0.54	0.21	1.38	0.95	0.34	5.68	0.10	0.13
B- 5	1.20	0.20	1.70	0.70	0.33	4.90	0.15	0.17
B- 6	1.20	0.32	1.62	0.50	0.27	4.90	0.15	0.13
B- 7	1.72	0.28	2.14	0.45	0.32	4.28	0.38	0.32
B- 8	1.75	0.25	2.11	0.40	0.19	4.28	0.25	0.19
B- 9	2.20	-0.20	--	0.36	--	2.79	0.28	0.54
B-10	2.20	--	--	--	--	2.89	--	0.63
B-11	2.60	0.45	--	0.43	--	3.20	0.58	0.96
B-12	2.60	1.10	--	0.30	--	3.23	0.62	0.93

- Airblast Penetration 1982 -

Shot 40 ROUND TUNNEL

03-JAN-83 09:02:28

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	0.10	0.20	2.72	3.10	0.66	4.43	0.10	0.09
A- 2	0.10	0.22	2.45	2.18	0.51	4.50	0.25	0.12
A- 3	0.38	0.24	3.30	1.75	0.65	4.10	0.20	0.12
A- 4	--	--	--	--	--	--	--	--
A- 5	0.80	0.35	2.80	1.42	0.67	3.60	0.32	0.41
A- 6	0.84	0.64	2.84	0.83	0.58	3.68	0.30	0.42
A- 7	1.26	0.84	--	0.80	--	3.26	0.55	0.59
A- 8	1.28	0.42	--	1.23	--	3.25	0.43	0.63
A- 9	1.56	0.74	--	0.72	--	2.90	0.70	0.91
A-10	1.55	0.31	--	0.83	--	2.85	0.80	0.94
A-11	1.70	--	--	0.30	--	2.22	0.24	--
A-12	1.70	1.55	--	0.62	--	2.22	1.20	1.66

- Airblast Penetration 1982 -

Shot 40 SQUARE TUNNEL

03-JAN-83 09:03:59

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
B- 1	0.12	0.11	1.13	3.00	0.50	4.25	--	--
B- 2	0.10	0.12	1.08	2.80	0.56	--	--	--
B- 3	0.38	0.15	3.17	0.75	0.23	--	--	--
B- 4	0.38	0.26	1.42	1.32	0.60	4.25	--	0.16
B- 5	--	--	--	--	--	--	--	--
B- 6	0.86	0.50	--	0.82	--	3.75	0.38	--
B- 7	1.28	0.56	2.02	0.83	0.47	3.30	0.33	0.57
B- 8	1.28	0.32	2.02	0.74	0.33	3.30	0.30	0.30
B- 9	1.60	0.60	--	0.75	--	2.93	0.60	0.90
B-10	1.62	0.94	--	0.34	--	2.96	0.36	0.80
B-11	1.92	0.40	--	0.72	--	2.43	1.03	1.55
B-12	1.92	0.42	--	0.76	--	2.43	1.35	1.52

- Airblast Penetration 1982 -

Shot 41 ROUND TUNNEL

03-JAN-83 09:04:54

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	--	--	--	--	--	--	--	--
A- 2	0.10	0.11	2.70	4.80	0.66	3.45	0.30	0.40
A- 3	0.30	0.30	2.73	3.00	1.05	3.20	0.40	0.53
A- 4	0.30	0.26	2.70	3.02	1.08	3.22	0.40	0.60
A- 5	0.68	0.22	0.72	2.30	0.38	2.82	--	--
A- 6	0.68	0.32	--	1.95	--	2.82	0.42	0.64
A- 7	1.00	0.40	--	1.76	--	2.50	0.60	1.03
A- 8	1.00	0.50	--	1.60	--	2.52	0.80	1.03
A- 9	1.24	0.39	--	1.28	--	2.23	0.80	1.29
A-10	1.24	0.36	--	1.44	--	2.28	1.46	1.42
A-11	1.55	0.40	--	2.48	--	1.92	1.35	3.10
A-12	1.50	0.60	--	1.10	--	1.90	1.88	2.54

- Airblast Penetration 1982 -

Shot 41 SQUARE TUNNEL

03-JAN-83 09:05:53

gage no.	First Pulse arriv. time, Ta (msec)	First Pulse inter. time, Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time, Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.10	0.10	2.66	4.76	0.56	3.78	0.10	0.19
B- 2	0.10	0.11	3.18	3.60	0.61	3.78	0.10	0.17
B- 3	0.32	0.18	--	3.12	--	3.49	0.15	--
B- 4	0.32	0.18	1.73	2.46	0.84	3.49	0.12	0.26
B- 5	0.71	0.21	--	2.08	--	3.06	--	--
B- 6	0.70	0.30	2.00	1.65	0.75	3.10	0.45	0.50
B- 7	1.04	0.38	--	1.21	--	2.71	0.45	0.72
B- 8	1.06	0.32	--	1.32	--	2.73	0.45	0.46
B- 9	1.30	0.58	--	0.95	--	2.45	1.08	1.12
B-10	1.30	0.42	--	0.96	--	2.43	0.96	1.05
B-11	1.58	0.62	--	1.04	--	2.01	1.95	2.06
B-12	1.58	0.62	--	0.95	--	2.02	1.94	2.08

- Airblast Penetration 1982 -

Shot 42 ROUND TUNNEL

30-DEC-82 15:22:41

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
A- 1	1.36	0.64	3.09	0.09	0.08	14.50	0.02	0.07
A- 2	1.32	1.06	2.08	0.25	0.16	14.50	0.05	0.12
A- 3	1.80	0.70	2.25	0.30	0.17	13.90	0.06	0.12
A- 4	1.80	1.15	1.85	0.24	0.19	13.90	0.06	0.13
A- 5	3.35	0.90	2.50	0.18	0.13	11.85	0.08	0.17
A- 6	3.38	1.67	3.12	0.08	0.09	11.85	0.05	0.12
A- 7	3.95	1.15	3.20	0.16	0.15	11.20	0.10	0.16
A- 8	3.95	1.10	2.85	0.15	0.15	11.25	0.08	0.17
A- 9	3.00	1.32	3.70	0.18	0.12	12.30	0.13	0.20
A-10	3.25	0.57	2.90	0.22	0.13	12.28	0.06	0.22
A-11	3.78	0.77	4.17	0.18	0.13	11.60	0.13	0.19
A-12	3.80	--	4.25	0.09	0.11	11.60	0.09	0.18

- Airblast Penetration 1982 -

Shot 42 SQUARE TUNNEL

30-DEC-82 15:17:44

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	1.35	0.55	2.65	0.05	0.04	16.00	0.02	0.03
B- 2	1.38	0.42	1.67	0.45	0.18	16.05	0.07	0.12
B- 3	1.80	1.00	2.25	0.29	0.20	15.30	0.10	0.13
B- 4	1.80	0.70	2.55	0.25	0.16	15.40	0.07	0.12
B- 5	3.92	1.18	3.58	0.15	0.18	12.60	0.11	0.24
B- 6	3.94	0.46	3.06	0.27	0.20	12.58	0.14	0.26
B- 7	4.54	1.31	3.58	0.16	0.17	11.95	0.08	0.18
B- 8	4.50	1.00	3.75	0.15	0.16	11.95	0.10	0.16
B- 9	3.72	1.28	3.53	0.12	0.10	13.18	0.07	0.17
B-10	3.80	0.70	3.32	0.13	0.10	13.20	0.07	0.20
B-11	4.50	0.90	3.50	0.11	0.10	12.50	0.06	0.15
B-12	--	--	--	--	--	--	--	--

- Airblast Penetration 1982 -

Shot 43 ROUND TUNNEL

30-DEC-82 15:25:33

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.82	0.36	3.08	0.17	0.09	12.12	0.03	0.09
A- 2	0.76	0.32	1.68	0.55	0.24	12.15	0.08	0.15
A- 3	1.14	0.24	1.89	0.73	0.26	11.55	0.08	0.17
A- 4	1.11	0.65	1.79	0.38	0.26	11.55	0.08	0.20
A- 5	2.36	0.36	2.28	0.37	0.23	9.88	0.12	0.25
A- 6	2.35	0.35	3.07	0.23	0.13	9.85	0.10	0.16
A- 7	2.85	0.93	3.19	0.30	0.24	9.30	0.11	0.23
A- 8	2.82	0.88	2.88	0.27	0.24	9.32	0.10	0.23
A- 9	2.12	--	3.80	--	0.13	11.62	0.19	0.29
A-10	2.28	--	3.67	--	0.15	11.65	0.15	0.32
A-11	2.85	--	3.45	--	0.18	10.02	0.13	0.28
A-12	2.75	1.35	3.25	0.16	0.15	10.00	0.12	0.22

- Airblast Penetration 1982 -

Shot 43 SQUARE TUNNEL

30-DEC-82 15:24:33

gage no.	First Pulse arriv. time, Ta (msec)	First Pulse inter. time, Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time, Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.72	0.13	1.48	0.14	0.06	12.60	0.02	0.03
B- 2	0.70	0.12	1.58	0.97	0.37	12.56	0.06	0.16
B- 3	1.03	0.21	2.35	0.77	0.37	12.00	0.10	0.22
B- 4	1.00	0.26	1.55	0.56	0.31	12.1[illegible]	0.07	0.19
B- 5	2.53	1.29	3.82	0.30	0.33	9.90	0.10	0.32
B- 6	2.52	0.53	3.08	0.54	0.36	9.86	0.15	0.34
B- 7	3.03	0.47	3.69	0.38	0.33	9.38	0.15	0.27
B- 8	3.00	0.60	4.40	0.35	0.32	9.38	0.15	0.27
B- 9	2.60	0.95	2.85	0.23	0.16	11.04	0.14	0.32
B-10	2.55	0.41	1.85	0.21	0.15	11.02	0.15	0.34
B-11	3.20	0.75	2.15	0.20	0.16	10.45	0.13	0.26
B-12	3.12	0.58	3.08	0.16	0.16	10.42	0.13	0.26

- Airblast Penetration 1982 -

Shot 44 ROUND TUNNEL

30-DEC-82 15:28:15

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	1.05	0.27	2.48	0.10	0.06	14.50	0.05	0.06
A- 2	1.08	0.42	1.57	0.31	0.14	14.50	0.06	0.11
A- 3	1.50	0.85	1.90	0.22	0.15	13.85	0.09	0.13
A- 4	1.50	0.45	1.75	0.32	0.16	13.85	0.08	0.14
A- 5	3.05	0.35	2.35	0.18	0.11	11.75	0.08	0.14
A- 6	3.10	0.40	3.00	0.08	0.07	11.75	0.03	[illegible]
A- 7	3.65	0.80	2.21	0.15	0.13	11.05	0.06	[illegible]
A- 8	3.65	0.67	2.75	0.15	0.13	11.05	0.06	0.16
A- 9	2.70	1.20	2.85	0.16	0.11	12.10	0.09	0.16
A-10	3.00	0.40	1.80	0.20	0.11	12.10	0.08	0.18
A-11	3.50	0.68	2.12	0.19	0.12	11.40	0.13	0.17
A-12	3.58	0.78	2.82	0.08	0.09	11.40	0.10	0.15

- Airblast Penetration 1982 -

Shot 44 SQUARE TUNNEL

30-DEC-82 15:26:54

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
B- 1	1.10	0.15	2.63	0.08	0.04	16.30	--	0.03
B- 2	1.08	0.35	1.58	0.40	0.16	16.00	0.07	0.13
B- 3	1.56	0.24	2.04	0.34	0.17	15.20	0.09	0.13
B- 4	1.52	0.56	1.53	0.23	0.15	15.35	0.06	0.12
B- 5	3.68	0.82	3.17	0.15	0.15	12.50	0.08	0.22
B- 6	3.68	0.52	2.97	0.24	0.18	12.46	0.12	0.24
B- 7	4.28	1.02	3.47	0.15	0.15	11.78	0.07	0.16
B- 8	4.28	0.84	3.04	0.16	0.14	11.80	0.07	0.16
B- 9	3.46	1.14	2.46	0.11	0.08	13.00	0.07	0.16
B-10	3.56	0.44	2.04	0.11	0.09	13.04	0.05	0.17
B-11	4.25	0.75	2.33	0.10	0.09	12.30	0.06	0.13
B-12	4.22	0.88	2.70	0.09	0.09	12.30	0.07	0.14
B-13	6.00	0.96	2.72	0.07	0.10	10.50	0.06	0.12

- Airblast Penetration 1982 -

Shot 45 ROUND TUNNEL

30-DEC-82 15:30:46

gage no.	First Pulse: arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse: arriv. time,T (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	1.02	0.19	1.78	0.54	0.24	13.12	0.08	0.21
A- 2	1.00	0.42	1.78	0.47	0.27	13.12	0.12	0.14
A- 3	1.40	0.40	1.96	0.48	0.25	12.50	0.10	0.20
A- 4	1.40	0.70	1.80	0.36	0.23	12.50	0.08	0.15
A- 5	2.75	0.53	2.35	0.28	0.20	10.70	0.18	0.27
A- 6	2.76	0.54	2.99	0.14	0.11	10.70	0.08	0.15
A- 7	3.30	0.55	3.20	0.25	0.20	10.10	0.11	0.20
A- 8	3.25	0.85	2.70	0.19	0.20	10.05	0.08	0.20
A- 9	2.48	1.07	2.77	0.26	0.15	11.32	0.14	0.24
A-10	2.66	0.54	1.79	0.27	0.14	11.35	0.10	0.27
A-11	3.22	0.61	0.98	0.26	0.16	10.65	0.14	0.23
A-12	3.22	0.33	1.38	0.14	0.13	10.65	0.12	0.21

- Airblast Penetration 1982 -

Shot 45 SQUARE TUNNEL

30-DEC-82 15:29:43

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	1.06	0.26	1.42	0.32	0.17	14.80	0.10	0.12
B- 2	1.08	0.18	1.64	0.50	0.20	14.90	0.08	0.13
B- 3	1.50	0.35	2.20	0.35	0.22	14.15	0.08	0.16
B- 4	1.46	0.47	1.54	0.32	0.19	14.30	0.08	0.13
B- 5	3.40	0.55	2.65	0.18	0.21	11.65	0.08	0.25
B- 6	3.42	0.38	3.00	0.32	0.23	11.62	0.14	0.27
B- 7	3.96	1.29	3.44	0.19	0.20	11.00	0.09	0.19
B- 8	3.93	0.72	3.12	0.20	0.20	11.02	0.09	0.18
B- 9	3.28	0.76	2.30	0.19	0.12	12.42	0.13	0.22
B-10	3.32	0.43	2.00	0.16	0.11	12.45	0.08	0.22
B-11	4.02	0.68	2.23	0.15	0.12	11.75	0.08	0.18
B-12	3.96	0.74	2.19	0.12	0.12	11.72	0.07	0.19
B-13	5.65	1.07	2.73	0.09	0.12	10.00	0.07	0.10

- Airblast Penetration 1982 -

Shot 46 ROUND TUNNEL

30-DEC-82 15:38:15

gage no.	First Pulse arriv. time,Ta msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	0.73	0.14	1.63	1.15	0.32	11.05	0.10	0.21
A- 2	0.68	0.20	1.50	0.92	0.29	11.10	0.08	0.17
A- 3	1.02	0.16	1.33	1.12	0.33	10.55	0.15	0.22
A- 4	0.98	0.23	1.70	0.60	0.31	10.60	0.12	0.24
A- 5	2.08	0.38	2.22	0.48	0.29	9.05	0.18	0.28
A- 6	2.05	0.75	3.00	0.31	0.16	9.02	0.12	0.17
A- 8	2.46	0.86	2.66	0.28	0.29	8.52	0.14	0.28
A- 9	1.95	0.55	2.17	0.38	0.19	10.02	0.21	0.34
A-10	2.00	0.40	1.60	0.41	0.19	10.03	0.21	0.39
A-11	2.60	0.52	1.75	0.36	0.21	9.44	0.16	0.31
A-12	2.50	0.50	1.35	0.23	0.18	9.42	0.21	0.27
A-14	4.00	0.40	2.95	0.19	0.19	7.90	0.10	0.22

- Airblast Penetration 1982 -

Shot 46 SQUARE TUNNEL

30-DEC-82 15:35:43

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
B- 1	0.72	0.17	1.28	0.85	0.28	13.00	0.10	0.17
B- 2	0.72	0.18	1.48	0.85	0.31	12.46	0.10	0.18
B- 3	1.02	0.18	1.41	0.73	0.34	11.50	0.10	0.23
B- 4	1.00	0.33	1.60	0.51	0.27	12.00	0.10	0.19
B- 5	2.50	0.40	2.90	0.31	0.32	9.80	0.11	0.30
B- 6	2.50	0.80	3.05	0.44	0.35	9.80	0.16	0.35
B- 8	3.00	0.72	3.12	0.33	0.31	9.25	0.13	0.27
B- 9	2.55	0.75	1.40	0.29	0.17	10.98	0.15	0.32
B-10	2.52	0.36	1.80	0.23	0.15	10.98	0.14	0.33
B-11	3.18	0.40	2.12	0.24	0.16	10.35	0.13	0.26
B-12	3.07	0.53	2.61	0.21	0.16	10.35	0.14	0.25
B-13	4.62	0.88	2.68	0.15	0.17	8.72	0.10	0.13
B-14	4.62	1.08	2.90	0.15	0.17	8.75	0.09	0.13

- Airblast Penetration 1982 -

Shot 47 ROUND TUNNEL

30-DEC-82 15:41:40

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.67	0.13	1.95	1.00	0.27	11.46	0.08	0.19
A- 2	0.62	0.16	1.73	0.98	0.27	11.46	0.08	0.12
A- 3	0.95	0.23	1.75	0.81	0.27	10.92	0.09	0.23
A- 4	0.92	0.23	1.61	0.50	0.25	10.92	0.09	0.23
A- 5	2.10	0.42	2.26	0.41	0.27	9.30	0.20	0.32
A- 6	2.08	0.22	2.92	0.35	0.15	9.30	0.08	0.18
A- 8	2.50	0.96	2.70	0.23	0.23	8.76	0.10	0.22
A- 9	1.91	0.41	2.52	0.31	0.17	10.20	0.22	0.31
A-10	2.03	0.29	1.59	0.39	0.17	10.22	0.17	0.35
A-11	2.60	0.46	1.73	0.33	0.19	9.05	0.14	0.31
A-12	2.50	0.55	1.32	0.20	0.16	9.05	0.15	0.28
A-14	4.[illegible]4	0.41	3.14	0.18	0.17	8.05	0.11	0.11

- Airblast Penetration 1982 -

Shot 47 SQUARE TUNNEL

30-DEC-82 15:40:08

gage no.	First Pulse arriv. time, Ta (msec)	First Pulse inter. time, Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time, Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.68	0.14	1.18	0.67	0.23	13.20	0.10	0.13
B- 2	0.70	0.18	1.50	0.78	0.24	13.32	0.15	0.13
B- 3	1.02	0.14	1.16	0.84	0.27	--	--	--
B- 4	1.02	0.26	1.48	0.48	0.22	12.84	0.10	0.17
B- 5	2.66	0.34	2.86	0.26	0.24	10.38	0.14	0.30
B- 6	2.68	0.50	3.02	0.44	0.26	10.36	0.16	0.32
B- 8	3.15	0.65	3.15	0.27	0.24	9.80	0.11	0.22
B- 9	2.62	0.88	1.50	0.22	0.13	11.35	0.10	0.25
B-10	2.62	0.68	1.88	0.17	0.12	11.35	0.10	0.25
B-11	3.30	0.68	2.20	0.18	0.13	10.65	0.12	0.23
B-12	3.22	0.96	1.78	0.15	0.13	10.68	0.10	0.23
B-13	4.86	0.92	2.69	0.12	0.13	9.04	0.08	0.20
B-14	4.86	0.64	2.89	0.14	0.14	9.02	0.98	0.21

- Airblast Penetration 1982 -

Shot 48 ROUND TUNNEL

03-JAN-83 08:37:26

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
A- 1	0.50	0.22	2.10	1.92	0.54	9.22	0.15	0.24
A- 2	0.50	0.10	2.12	2.00	0.51	9.22	0.15	0.20
A- 3	0.74	0.22	1.81	1.33	0.50	8.82	0.18	0.22
A- 4	0.73	0.29	1.97	1.00	0.49	8.85	0.16	0.23
A- 5	1.62	0.66	2.10	0.85	0.48	7.70	0.25	0.31
A- 6	1.63	0.27	2.81	0.70	0.29	7.68	0.08	0.20
A- 8	1.96	0.92	3.74	0.47	0.46	7.28	0.1[illegible]	0.37
A- 9	1.55	0.71	3.07	0.69	0.29	8.80	0.30	0.41
A-10	1.58	0.32	3.63	0.62	0.26	8.80	0.15	0.52
A-11	2.12	0.40	1.56	0.60	0.31	8.38	0.21	0.36
A-12	1.98	1.06	3.44	0.33	0.27	8.32	0.18	0.33
A-14	3.34	0.34	2.76	0.29	0.26	6.98	0.19	0.26

- Airblast Penetration 1982 -

Shot 48 SQUARE TUNNEL

03-JAN-83 08:34:01

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
B- 1	0.48	0.12	2.70	2.66	0.66	9.82	0.15	0.27
B- 2	0.48	0.24	1.90	2.45	0.67	9.76	0.18	0.27
B- 3	0.70	0.16	--	1.50	--	--	--	--
B- 4	0.70	0.16	1.70	1.16	0.55	9.42	0.14	0.24
B- 5	1.86	0.27	3.64	0.75	0.53	7.88	0.15	0.37
B- 6	1.86	0.26	2.94	0.97	0.58	7.88	0.35	0.41
B- 8	2.20	0.40	4.08	0.60	0.55	7.46	0.19	0.39
B- 9	1.96	0.54	3.44	0.54	0.30	9.43	0.18	0.45
B-10	1.88	0.30	4.82	0.37	0.26	9.40	0.23	0.48
B-11	2.43	0.57	4.45	0.[illegible]	0.28	8.95	0.20	0.35
B-12	2.34	0.98	4.80	0.[illegible]	0.29	8.90	0.14	0.36
B-13	3.72	0.86	3.68	0.26	0.26	7.48	0.21	0.39
B-14	3.70	0.38	3.30	0.28	0.28	7.50	0.18	0.29

- Airblast Penetration 1982 -

Shot 49 ROUND TUNNEL

03-JAN-83 08:42:21

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.40	0.35	3.38	1.80	0.82	7.32	0.20	0.25
A- 2	0.42	0.26	2.94	3.00	0.75	7.40	0.15	0.19
A- 3	0.62	0.27	3.66	1.49	0.74	7.20	0.08	0.09
A- 4	0.60	0.16	3.40	1.68	0.85	7.20	0.10	0.28
A- 5	1.32	0.63	4.88	1.08	0.80	6.42	0.24	0.25
A- 6	1.33	0.27	3.42	1.30	0.58	6.42	0.10	0.34
A- 8	1.60	0.30	--	0.85	--	6.18	0.23	0.54
A- 9	1.30	0.70	--	0.93	--	7.06	0.30	0.80
A-10	1.33	0.25	--	0.91	--	7.06	0.30	0.80
A-11	1.78	0.34	5.44	0.75	0.55	7.22	0.28	0.71
A-12	1.65	0.75	5.50	0.53	0.50	7.25	0.30	0.60
A-14	2.80	0.32	--	0.42	--	6.18	0.26	0.70

- Airblast Penetration 1982 -

Shot 49 SQUARE TUNNEL

03-JAN-83 08:40:15

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
B- 1	0.44	0.18	2.70	2.18	0.73	--	--	--
B- 2	0.41	0.10	3.04	1.75	0.69	8.95	0.14	0.30
B- 3	--	--	--	--	--	--	--	--
B- 4	0.64	0.18	1.94	2.02	0.70	8.62	0.25	0.34
B- 5	1.69	0.41	3.41	0.85	0.58	7.32	0.18	0.47
B- 6	1.70	0.30	3.40	1.05	0.62	7.30	0.35	0.47
B- 8	--	--	--	--	--	--	--	--
B- 9	1.81	0.61	5.27	0.66	0.35	8.76	0.28	0.52
B-10	1.70	0.30	5.05	0.38	0.30	8.67	0.26	0.53
B-11	2.22	0.40	4.58	0.38	0.30	8.39	0.17	0.41
B-12	2.16	0.90	4.70	0.36	0.30	8.30	0.17	0.40
B-13	3.40	0.75	--	0.27	--	7.00	0.19	0.45
B-14	3.38	0.52	--	0.33	--	7.00	0.17	0.45

- Airblast Penetration 1982 -

Shot 50 ROUND TUNNEL

03-JAN-83 08:44:48

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	1.50	0.30	1.72	0.18	0.08	--	--	--
A- 2	1.46	0.48	2.16	0.13	0.08	--	--	--
A- 3	1.96	0.30	2.06	0.31	0.17	--	--	--
A- 4	1.96	0.88	1.90	0.20	0.17	--	--	--
A- 5	3.45	0.40	1.63	0.28	0.15	11.62	0.12	0.19
A- 6	3.85	0.33	2.20	0.16	0.07	12.45	0.03	0.08
A- 9	3.20	0.95	2.70	0.15	0.07	12.45	0.04	0.09
A-10	3.44	0.31	3.06	0.22	0.13	12.45	0.08	0.16
A-11	3.96	0.50	3.22	0.21	0.13	11.75	0.12	0.14
A-12	4.00	0.58	3.75	0.14	0.14	11.72	0.09	0.16
A-13	5.69	0.99	3.35	0.11	0.14	10.05	0.08	0.11
A-14	5.73	0.33	3.99	0.13	0.13	10.04	0.08	0.10

- Airblast Penetration 1982 -

Shot 50 SQUARE TUNNEL

03-JAN-83 08:43:42

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	1.50	0.38	1.60	0.29	0.16	--	--	--
B- 2	1.45	0.36	1.75	0.26	0.16	--	--	--
B- 3	1.95	0.43	2.11	0.26	0.16	--	--	--
B- 4	1.95	0.35	1.85	0.36	0.20	--	--	--
B- 5	4.03	1.37	2.03	0.14	0.13	13.20	0.06	0.16
B- 6	3.90	0.78	2.50	0.18	0.15	13.16	0.12	0.20
B- 9	3.90	0.95	2.90	0.19	0.13	13.14	0.10	0.17
B-10	4.00	0.75	2.95	0.14	0.12	13.12	0.07	0.17
B-11	4.68	0.55	3.15	0.14	0.12	12.45	0.08	0.13
B-12	4.68	1.10	2.82	0.12	0.12	12.45	0.08	0.13
B-13	6.40	1.38	3.65	0.10	0.12	10.72	0.08	0.10
B-14	6.40	1.25	4.08	0.10	0.12	10.75	0.06	0.10

- Airblast Penetration 1982 -

Shot 51 ROUND TUNNEL

03-JAN-83 08:47:02

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	1.10	0.25	1.60	0.35	0.10	--	--	--
A- 2	1.06	0.34	1.74	0.21	0.09	--	--	--
A- 3	1.47	0.41	1.93	0.40	0.20	--	--	--
A- 4	1.50	0.60	1.68	0.31	0.20	--	--	--
A- 5	2.85	0.43	2.85	0.39	0.17	10.85	0.16	0.22
A- 6	2.60	0.85	3.90	0.24	0.09	11.32	0.05	0.12
A- 9	2.58	0.94	3.67	0.16	0.09	11.32	0.07	0.10
A-10	2.78	0.34	2.94	0.25	0.16	11.30	0.08	0.21
A-11	3.32	0.56	3.13	0.26	0.16	10.62	0.10	0.16
A-12	3.32	0.63	3.63	0.18	0.17	10.66	0.13	0.18
A-13	4.90	1.05	3.32	0.14	0.17	9.04	0.12	0.13
A-14	4.95	0.75	3.15	0.16	0.16	9.04	0.09	0.10

- Airblast Penetration 1982 -

Shot 51 SQUARE TUNNEL

03-JAN-83 08:45:55

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.98	0.28	1.70	0.55	0.24	--	--	--
B- 2	0.98	0.22	1.76	0.56	0.23	--	--	--
B- 3	1.34	0.61	2.28	0.39	0.22	--	--	--
B- 4	1.33	0.25	1.59	0.56	0.27	--	--	--
B- 5	3.04	0.96	3.11	0.23	0.18	11.45	0.11	0.26
B- 6	3.00	0.76	3.30	0.37	0.21	11.45	0.10	0.26
B- 9	3.03	0.85	3.37	0.30	0.19	11.45	0.11	0.25
B-10	3.06	0.50	2.99	0.27	0.17	11.45	0.11	0.25
B-11	3.76	0.50	3.12	0.22	0.18	10.80	0.10	0.20
B-12	3.65	0.60	3.71	0.20	0.18	10.82	0.12	0.19
B-13	5.20	0.85	3.70	0.15	0.18	9.25	0.10	0.14
B-14	5.20	1.00	3.32	0.15	0.19	9.28	0.08	0.13

- Airblast Penetration 1982 -

Shot 52 ROUND TUNNEL

03-JAN-83 08:49:43

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.68	0.32	1.92	0.58	0.18	--	--	--
A- 2	0.63	0.30	2.32	0.44	0.17	--	--	--
A- 3	0.95	0.25	1.73	1.03	0.35	--	--	--
A- 4	0.93	0.75	2.27	0.40	0.33	--	--	--
A- 5	1.95	0.35	2.40	0.64	0.31	9.38	0.13	0.28
A- 6	2.20	0.28	2.62	0.76	0.23	9.40	0.05	0.15
A- 9	1.88	0.68	4.84	0.54	0.30	9.33	0.18	0.32
A-10	1.94	0.34	2.56	0.45	0.26	9.30	0.15	0.31
A-11	2.50	0.40	2.62	0.52	0.25	8.82	0.11	0.22
A-12	2.36	0.82	3.39	0.37	0.27	8.80	0.14	0.25
A-13	3.70	0.80	3.10	0.27	0.28	7.42	0.08	0.25
A-14	3.75	0.67	2.81	0.28	0.24	7.42	0.15	0.20

- Airblast Penetration 1982 -

Shot 52 SQUARE TUNNEL

03-JAN-83 08:48:47

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.66	0.28	1.79	0.91	0.34	12.35	0.10	0.14
B- 2	0.67	0.43	1.83	0.81	0.34	--	--	--
B- 3	0.92	0.30	2.40	0.67	0.32	--	--	--
B- 4	0.95	0.35	1.77	0.93	0.38	--	--	--
B- 5	2.36	0.89	2.62	0.37	0.24	9.96	0.12	0.32
B- 6	2.40	0.49	3.10	0.51	0.28	10.00	0.17	0.34
B- 9	2.40	0.60	3.18	0.47	0.28	10.00	0.14	0.31
B-10	2.37	1.13	2.97	0.29	0.23	10.00	0.14	0.31
B-11	3.00	0.50	3.00	0.32	0.25	9.45	0.12	0.29
B-12	2.90	0.78	3.40	0.32	0.25	9.45	0.10	0.24
B-13	4.23	0.57	3.72	0.24	0.25	7.98	0.13	0.23
B-14	4.22	0.73	3.30	0.22	0.26	7.98	0.14	0.23

- Airblast Penetration 1982 -

Shot 53 ROUND TUNNEL

03-JAN-83 08:52:25

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
A- 1	0.50	0.17	3.28	2.04	0.65	--	--	--
A- 2	0.46	0.17	3.14	2.10	0.70	--	--	--
A- 3	0.70	0.22	3.05	2.22	0.75	--	--	--
A- 4	0.70	0.50	3.70	1.25	0.74	--	--	--
A- 5	1.50	0.30	4.02	0.76	0.44	7.92	0.15	0.37
A- 6	1.44	0.58	3.68	1.40	0.50	7.90	0.18	0.31
A- 9	1.48	0.58	4.20	1.18	0.49	7.88	0.13	0.35
A-10	1.48	0.32	4.05	0.78	0.38	7.88	0.12	0.32
A-11	1.98	0.34	3.09	1.08	0.48	7.48	0.20	0.28
A-12	1.84	0.36	3.78	0.85	0.34	7.48	0.08	0.21
A-13	2.95	0.75	3.15	0.42	0.42	6.30	0.26	0.47
A-14	2.95	0.47	--	0.39	--	6.28	0.26	0.40

- Airblast Penetration 1982 -

Shot 53 SQUARE TUNNEL

03-JAN-83 08:50:49

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.48	0.22	1.62	1.50	0.69	--	--	--
B- 2	0.46	0.22	2.79	1.65	0.64	--	--	--
B- 3	0.69	0.46	3.31	1.16	0.75	--	--	--
B- 4	0.69	0.32	4.33	1.23	0.69	--	--	--
B- 5	1.83	0.72	4.57	0.52	0.35	8.50	0.13	0.36
B- 6	1.91	0.37	3.67	0.74	0.39	8.50	0.13	0.40
B- 9	1.94	0.36	3.46	0.92	0.49	8.50	0.18	0.47
B-10	1.85	0.88	3.77	0.51	0.34	8.48	0.14	0.36
B-11	2.32	0.38	3.19	0.60	0.40	8.08	0.15	0.35
B-12	2.26	0.52	4.44	0.50	0.39	8.06	0.15	0.36
B-13	3.40	0.60	3.40	0.41	0.37	6.80	0.26	0.47
B-14	3.38	0.72	--	0.34	--	6.83	0.22	0.45

- Airblast Penetration 1982 -

Shot 54 ROUND TUNNEL

03-JAN-83 08:55:01

gage no.	First Pulse arriv. time,Ta (msec)	inter. time,Too (msec)	pos. dur. (msec)	Pmax (MPa)	Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Pmax (MPa)	Imax (MPa-msec)
A- 1	0.38	0.27	4.62	2.70	1.20	--	--	--
A- 2	0.36	0.22	4.24	4.30	1.26	--	--	--
A- 3	0.56	0.27	4.46	3.20	1.25	--	--	--
A- 4	0.53	0.25	4.31	3.20	1.34	--	--	--
A- 5	1.16	0.74	4.54	2.10	0.86	6.25	0.23	0.78
A- 6	1.15	0.39	4.20	2.36	0.92	6.25	0.26	0.73
A- 9	1.19	0.37	4.41	2.65	1.00	6.26	0.25	0.91
A-10	1.16	0.73	4.79	1.38	0.80	6.22	0.20	0.80
A-11	1.55	0.37	4.03	1.45	0.94	5.98	0.25	0.77
A-12	1.42	0.53	3.70	1.45	0.65	5.94	0.17	0.56
A-13	2.35	0.85	--	0.71	--	5.10	0.42	1.16
A-14	2.32	0.48	--	0.64	--	5.08	0.34	0.96

- Airblast Penetration 1982 -

Shot 54 SQUARE TUNNEL

03-JAN-83 08:54:06

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
B- 1	0.37	0.23	3.06	2.45	1.12	--	--	--
B- 2	0.37	0.15	3.01	3.60	1.07	--	--	--
B- 3	0.56	0.37	--	1.72	--	--	--	--
B- 4	0.54	0.34	4.67	1.88	1.18	--	--	--
B- 5	1.46	0.64	4.49	0.92	0.63	7.05	0.30	0.71
B- 6	1.58	0.24	4.97	1.50	0.68	7.03	0.32	0.74
B- 9	1.60	0.26	5.10	1.86	0.80	7.04	0.28	0.92
B-10	1.46	0.64	5.54	0.91	0.60	7.07	0.23	0.74
B-11	1.88	0.29	4.77	0.90	0.66	6.70	0.18	0.77
B-12	1.82	0.43	4.50	0.68	0.64	6.75	0.30	0.71
B-13	2.78	0.38	--	0.76	--	5.78	0.30	1.04
B-14	2.76	0.38	--	0.47	--	5.73	0.26	1.05

- Airblast Penetration 1982 -

Shot 55

09-SEP-82 08:21:27

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Tod (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	1.53	0.68	1.63	0.32	0.19	--	--	--
2	1.53	0.55	1.82	0.29	0.16	--	--	--
3	2.04	0.52	2.18	0.23	0.17	--	--	--
4	2.00	0.56	1.80	0.24	0.16	--	--	--
5	4.10	1.45	3.40	0.18	0.16	12.84	0.06	0.08
6	3.95	1.20	3.65	0.17	0.19	12.82	0.08	0.09
7	4.75	1.07	3.80	0.16	0.19	12.20	0.09	0.09
8	4.64	0.86	3.56	0.14	0.17	12.18	0.08	0.09
9	6.44	0.98	4.04	0.12	0.18	10.60	0.09	0.13
10	6.40	1.48	3.85	0.13	0.17	10.52	0.10	0.13
11	7.70	1.84	--	0.09	--	9.18	0.12	0.20
12	7.70	1.62	--	0.07	--	9.18	0.11	0.10

- Airblast Penetration 1982 -

Shot 56

09-SEP-82 08:21:40

gage no.	First Pulse arriv. time, Ta (msec)	First Pulse inter. time, Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time, Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	1.06	0.36	1.46	0.57	0.24	--	--	--
2	1.07	0.35	1.60	0.56	0.21	--	--	--
3	1.45	0.40	1.65	0.36	0.23	--	--	--
4	1.44	0.41	1.68	0.38	0.23	--	--	--
5	3.30	1.08	3.42	0.27	0.21	11.50	0.11	0.10
6	3.22	1.03	3.48	0.26	0.26	11.50	0.12	0.11
7	3.90	0.96	3.65	0.24	0.26	10.88	0.11	0.12
8	3.95	0.87	3.37	0.19	0.23	10.88	0.11	0.11
9	5.43	0.72	3.27	0.17	0.24	9.40	0.11	0.18
10	5.42	0.94	3.88	0.18	0.23	9.40	0.14	0.20
11	6.56	1.62	--	0.14	--	8.00	0.20	0.43
12	6.56	1.39	--	0.10	--	8.03	0.18	0.22

- Airblast Penetration 1982 -

Shot 57

09-SEP-82 07:51:43

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.63	0.21	1.62	1.40	0.55	--	--	--
2	0.62	0.36	1.73	1.15	0.50	--	--	--
3	0.90	0.32	3.00	0.95	0.46	--	--	--
4	0.87	0.35	3.06	0.95	0.48	--	--	--
5	2.20	0.90	3.68	0.56	0.39	8.92	0.12	0.17
6	2.25	0.51	3.10	0.82	0.47	8.90	0.12	0.20
7	2.68	0.54	3.50	0.51	0.42	8.47	0.13	0.18
8	2.75	0.63	3.63	0.42	0.42	8.48	0.19	0.20
9	3.88	1.07	--	0.32	--	7.28	0.22	0.43
10	3.89	0.66	--	0.41	--	7.28	0.28	0.44
11	4.82	0.99	--	0.28	--	6.05	0.36	0.92
12	4.88	0.43	--	0.33	--	6.06	0.55	0.65

- Airblast Penetration 1982 -

Shot 58

09-SEP-82 08:22:01

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.50	0.20	4.22	1.91	0.70	--	--	--
2	0.49	0.19	3.51	1.78	0.63	--	--	--
3	0.73	0.42	3.62	1.05	0.60	--	--	--
4	0.72	0.38	3.00	1.20	0.61	--	--	--
5	1.90	0.72	3.70	0.76	0.49	8.09	0.15	0.25
6	1.95	0.43	3.05	1.03	0.60	8.04	0.20	0.29
7	2.32	0.68	4.13	0.63	0.52	7.68	0.20	0.29
8	2.38	0.57	3.78	0.53	0.53	7.68	0.18	0.34
9	3.40	0.83	--	0.38	--	6.62	0.30	0.54
10	3.42	0.53	--	0.60	--	6.62	0.30	0.57
11	4.28	0.85	--	0.35	--	5.44	0.50	1.10
12	4.22	0.53	--	0.40	--	5.42	0.65	0.85

- Airblast Penetration 1982 -

Shot 59

09-SEP-82 08:22:14

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.38	0.22	2.92	2.80	1.07	--	--	--
2	0.36	0.37	3.74	2.50	1.06	--	--	--
3	0.55	0.34	4.09	2.00	1.07	--	--	--
4	0.55	0.27	3.22	2.36	1.08	--	--	--
5	1.46	0.70	4.74	1.31	0.82	6.49	0.20	0.64
6	1.58	0.28	3.50	2.00	0.95	6.43	0.23	0.68
7	1.83	0.50	--	1.30	--	6.20	0.30	0.71
8	1.85	0.47	--	0.90	--	6.14	0.25	0.78
9	2.66	0.29	--	0.83	--	5.31	0.30	0.81
10	2.70	0.32	--	1.53	--	5.34	0.50	0.89
11	3.38	0.37	--	0.68	--	4.39	0.90	1.68
12	3.34	0.68	--	0.60	--	4.40	0.90	1.44

- Airblast Penetration 1982 -

Shot 60

09-SEP-82 08:22:26

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.40	0.20	3.42	3.10	1.08	--	--	--
2	0.40	0.30	3.50	2.30	0.97	--	--	--
3	0.58	0.29	3.60	2.28	1.06	--	--	--
4	0.57	0.28	3.48	2.05	0.98	--	--	--
5	1.48	0.30	4.74	1.02	0.80	6.47	0.25	0.59
6	1.58	0.20	3.58	3.02	1.05	6.47	0.33	0.68
7	1.78	0.52	--	1.31	--	6.20	0.50	0.67
8	1.82	0.34	3.33	1.15	0.85	6.13	0.43	0.73
9	2.58	0.42	--	0.90	--	5.26	0.73	1.05
10	2.57	0.75	--	0.95	--	5.26	0.61	1.03
11	3.25	0.75	--	0.50	--	4.29	0.86	2.07
12	3.25	0.80	--	0.52	--	4.30	1.21	1.59

- Airblast Penetration 1982 -

Shot 61

09-SEP-82 08:22:39

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	0.48	0.27	3.27	1.76	0.72	--	--	--
2	0.48	0.25	3.15	1.50	0.62	--	--	--
3	0.71	0.35	3.91	1.35	0.67	--	--	--
4	0.70	0.40	4.02	1.28	0.67	--	--	--
5	1.78	0.34	4.32	0.82	0.61	7.55	0.18	0.31
6	1.89	0.31	3.58	1.58	0.74	7.50	0.23	0.37
7	2.12	0.64	4.36	0.70	0.68	7.18	0.20	0.38
8	2.16	0.36	3.54	0.74	0.60	7.15	0.28	0.37
9	3.07	0.51	--	0.59	--	6.11	0.40	0.71
10	3.06	0.64	--	0.70	--	6.11	0.40	0.72
11	3.85	0.80	--	0.33	--	5.02	0.65	1.49
12	3.85	0.40	--	0.38	--	5.03	0.80	1.01

D80

- Airblast Penetration 1982 -

Shot 62

09-SEP-82 07:51:55

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.69	0.25	1.41	0.95	0.39	--	--	--
2	0.69	0.24	1.72	0.98	0.34	--	--	--
3	0.98	0.27	1.82	0.80	0.35	--	--	--
4	0.98	0.33	1.74	0.77	0.37	--	--	--
5	2.41	1.09	3.88	0.46	0.40	9.39	0.09	0.10
6	2.52	0.30	3.26	0.86	0.47	9.40	0.15	0.18
7	2.85	0.60	4.00	0.41	0.45	8.91	0.19	0.19
8	2.89	0.57	4.06	0.38	0.41	8.92	0.14	0.17
9	4.03	0.47	--	0.34	--	7.63	0.23	0.46
10	4.02	0.81	--	0.30	--	7.61	0.22	0.43
11	4.99	1.44	--	0.21	--	6.31	0.33	0.90
12	4.99	0.84	--	0.18	--	6.33	0.38	0.59

- Airblast Penetration 1982 -

Shot 63

09-SEP-82 08:22:53

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	1.11	0.45	1.52	0.50	0.24	--	--	--
2	1.11	0.34	1.77	0.45	0.21	--	--	--
3	1.52	0.30	1.80	0.37	0.20	--	--	--
4	1.52	0.43	1.73	0.40	0.21	--	--	--
5	3.42	0.95	3.42	0.24	0.24	11.56	0.08	0.10
6	3.46	0.49	3.42	0.34	0.28	11.56	0.10	0.12
7	3.98	0.96	3.78	0.25	0.30	10.98	0.10	0.18
8	4.03	0.58	3.43	0.26	0.26	10.98	0.12	0.16
9	5.40	0.69	--	0.19	--	9.46	0.13	0.22
10	5.39	1.28	--	0.17	--	9.45	0.14	0.22
11	6.57	1.24	--	0.13	--	8.93	0.17	0.49
12	6.58	--	--	0.07	--	8.07	0.10	0.29

- Airblast Penetration 1982 -

Shot 64

09-SEP-82 08:23:05

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	1.58	0.47	1.62	0.28	0.19	--	--	--
2	1.58	0.39	1.80	0.29	0.16	--	--	--
3	2.10	0.47	2.21	0.21	0.16	--	--	--
4	2.07	0.39	1.95	0.25	0.16	--	--	--
5	4.31	1.19	3.45	0.15	0.17	13.09	0.06	0.08
6	4.32	0.53	3.43	0.22	0.20	13.09	0.08	0.09
7	4.93	1.11	3.85	0.17	0.23	12.48	0.10	0.10
8	4.98	0.52	3.44	0.18	0.18	12.45	0.08	0.08
9	6.53	0.87	4.17	0.12	0.19	10.86	0.08	0.16
10	6.52	1.38	4.03	0.12	0.18	10.80	0.08	0.16
11	7.80	1.74	--	0.09	--	9.33	0.11	0.31
12	7.80	--	--	0.05	--	9.34	0.06	0.20

- Airblast Penetration 1982 -

Shot 65

09-SEP-82 08:23:18

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
1	1.51	0.35	1.99	0.34	0.20	--	--	--
2	1.49	0.45	1.87	0.32	0.17	--	--	--
3	1.98	0.55	1.58	0.22	0.16	--	--	--
4	1.96	0.47	1.56	0.25	0.17	--	--	--
5	3.74	0.58	0.80	0.04	0.02	--	0.04	0.04
6	4.17	0.25	0.91	0.07	0.02	--	0.04	0.05
7	4.75	0.30	--	0.05	--	--	0.03	0.05
8	3.55	0.29	0.75	0.09	0.03	--	0.06	0.06
9	4.02	0.43	0.88	0.06	0.02	--	0.03	0.04
10	4.63	0.17	0.95	0.06	0.02	--	0.09	0.05
11	5.22	0.38	--	0.02	--	--	0.03	0.05
12	5.13	0.45	--	0.04	--	--	0.07	0.06
13	5.04	0.42	--	0.04	--	--	0.06	0.05
14	5.12	0.47	--	0.04	--	--	0.06	0.05
15	3.74	0.37	0.78	0.07	0.02	--	0.04	0.06
16	4.18	0.35	0.73	0.05	0.02	--	0.03	0.04
17	4.76	0.32	--	0.05	--	--	0.04	0.05
18	4.58	0.42	1.02	0.04	0.01	--	0.02	0.05
19	4.22	0.82	--	0.02	--	--	0.02	0.05
20	6.05	0.39	--	0.03	--	--	0.03	0.06
21	5.96	0.64	--	0.03	--	--	0.02	0.06

- Airblast Penetration 1982 -

Shot 65

09-SEP-82 08:23:33

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	7.36	0.24	--	0.02	--	--	0.02	0.07
23	7.25	0.45	--	0.03	--	--	0.03	0.07

- Airblast Penetration 1982 -

Shot 66

09-SEP-82 08:23:44

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	1.20	0.48	1.30	0.32	0.15	--	--	--
2	1.18	0.36	1.54	0.33	0.13	--	--	--
3	1.68	0.64	1.48	0.22	0.13	--	--	--
4	1.66	0.56	1.40	0.23	0.13	--	--	--
5	3.40	0.47	0.78	0.03	0.01	--	0.03	0.03
6	3.85	0.44	0.76	0.05	0.02	--	0.03	0.03
7	4.44	0.27	--	0.05	--	--	0.03	0.03
8	3.24	0.31	0.72	0.09	0.03	--	0.06	0.05
9	3.71	0.41	0.79	0.05	0.02	--	0.03	0.03
10	4.32	0.21	0.78	0.06	0.91	--	0.07	0.04
11	4.90	0.50	--	0.01	--	--	0.02	0.03
12	4.81	0.39	--	0.04	--	--	0.06	0.04
13	4.70	0.40	--	0.04	--	--	0.05	0.04
14	4.80	0.40	--	0.04	--	--	0.05	0.04
15	3.42	0.37	0.76	0.05	0.02	--	0.05	0.03
16	3.85	0.35	0.73	0.05	0.01	--	0.02	0.02
17	4.43	0.24	--	0.05	--	--	0.03	0.04
18	4.27	0.38	0.93	0.04	0.01	--	0.02	0.03
19	3.90	0.76	--	0.01	--	--	0.02	0.04
20	5.72	0.37	--	0.02	--	--	0.02	0.04
21	5.62	--	--	0.01	--	--	0.03	0.04

- Airblast Penetration 1982 -

Shot 66

09-SEP-82 08:23:59

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	6.93	0.44	--	0.02	--	--	0.02	0.05
23	6.90	--	--	0.01	--	--	0.02	0.05

- Airblast Penetration 1982 -

Shot 67

09-SEP-82 07:52:22

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	1.10	0.42	1.24	0.45	0.22	--	--	--
2	1.09	0.34	1.63	0.48	0.21	--	--	--
3	1.50	0.70	1.52	0.29	0.19	--	--	--
4	1.49	0.43	1.43	0.40	0.21	--	--	--
5	3.09	0.45	0.74	0.06	0.02	--	0.04	0.06
6	3.49	0.29	0.81	0.09	0.03	--	0.05	0.06
7	4.03	0.25	--	0.07	--	--	0.04	0.06
8	2.93	0.37	0.71	0.11	0.03	--	0.08	0.08
9	3.35	0.33	0.79	0.08	0.03	--	0.06	0.04
10	3.93	0.27	0.87	0.09	0.02	0.10	0.10	0.07
11	4.48	0.42	--	0.02	--	--	0.04	0.05
12	4.38	0.32	--	0.06	--	--	0.09	0.08
13	4.27	0.36	--	0.07	--	--	0.08	0.07
14	4.38	0.44	--	0.06	--	--	0.08	0.07
15	3.12	0.35	0.69	0.10	0.03	--	0.05	0.06
16	3.48	0.32	0.68	0.09	0.02	--	0.05	0.04
17	4.04	0.23	--	0.07	--	--	0.05	0.06
18	3.89	0.32	1.02	0.07	0.02	--	0.03	0.06
19	3.56	0.74	--	0.02	--	--	0.03	0.05
20	5.29	0.29	--	0.04	--	--	0.03	0.08
21	5.22	0.51	--	0.02	--	--	0.04	0.08

- Airblast Penetration 1982 -

Shot 67

09-SEP-82 07:52:36

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	6.38	0.72	--	0.03	--	--	0.03	0.09
23	6.47	--	--	0.01	--	--	0.04	0.08

- Airblast Penetration 1982 -

Shot 68

09-SEP-82 07:52:47

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.76	0.25	1.42	0.92	0.32	--	--	--
2	0.73	0.23	1.72	0.94	0.32	--	--	--
3	1.08	0.57	1.47	0.50	0.28	--	--	--
4	1.03	0.33	1.47	0.54	0.29	--	--	--
5	2.49	0.38	0.67	0.11	0.03	--	0.06	0.11
6	2.80	0.25	0.74	0.17	0.04	--	0.11	0.10
7	3.28	0.32	--	0.11	--	--	0.07	0.11
8	2.32	0.33	0.62	0.19	0.05	--	0.13	0.17
9	2.67	0.38	0.68	0.14	0.04	--	0.08	0.10
10	3.18	0.30	0.78	0.13	0.04	--	0.15	0.12
11	3.70	0.50	--	0.03	--	--	0.05	0.09
12	3.68	0.27	--	0.10	--	--	0.15	0.12
13	3.47	0.43	--	0.10	--	--	0.12	0.14
14	3.56	0.42	--	0.10	--	--	0.15	0.11
15	2.45	0.25	0.68	0.17	0.04	--	0.09	0.13
16	2.76	0.28	0.88	0.14	0.04	--	0.04	0.10
17	3.25	0.31	--	0.10	--	--	0.06	0.11
18	3.12	0.38	0.98	0.10	0.03	--	0.04	0.11
19	2.84	0.88	--	0.03	--	--	0.03	0.11
20	4.45	0.37	--	0.05	--	--	0.04	0.14
21	4.43	0.46	--	0.03	--	--	0.04	0.15

- Airblast Penetration 1982 -

Shot 68

09-SEP-82 07:53:03

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
22	5.59	0.47	--	0.04	--	--	0.04	0.17
23	5.65	0.48	--	0.05	--	--	0.04	0.16

- Airblast Penetration 1982 -

Shot 69

09-SEP-82 07:53:14

gage no.	First Pulse: arriv. time,Ta (msec)	First Pulse: inter. time,Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time,Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.50	0.20	2.23	1.75	0.58	--	--	--
2	0.50	0.26	1.93	1.43	0.53	--	--	--
3	0.72	0.21	1.48	1.05	0.46	--	--	--
4	0.72	0.40	1.54	1.10	0.48	--	--	--
5	1.88	0.29	0.73	0.20	0.05	--	0.11	0.33
6	2.10	0.25	0.80	0.28	0.07	--	0.11	0.37
7	2.50	0.28	--	0.21	--	--	0.12	0.34
8	1.70	0.26	0.62	0.38	0.09	0.26	0.26	0.44
9	1.97	0.33	0.73	0.27	0.07	--	0.17	0.34
10	2.38	0.26	0.90	0.23	0.06	--	0.28	0.40
11	2.88	0.22	--	0.17	--	--	0.24	0.39
12	2.76	0.31	--	0.20	--	--	0.29	0.45
13	2.65	0.47	--	0.19	--	--	0.21	0.50
14	2.74	0.42	--	0.19	--	--	0.33	0.41
15	1.89	0.23	0.52	0.37	0.07	--	0.19	0.38
16	2.10	0.22	0.68	0.30	0.06	--	0.08	0.33
17	2.50	0.33	--	0.19	--	--	0.13	0.38
18	2.40	0.30	0.88	0.20	0.05	--	0.11	0.34
19	2.21	0.59	--	0.06	--	--	0.06	0.33
20	3.59	0.44	--	0.08	--	--	0.07	0.38
21	3.62	0.38	--	0.05	--	--	0.10	0.39

- Airblast Penetration 1982 -

Shot 69

09-SEP-82 07:53:28

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
22	4.63	0.38	--	0.06	--	--	0.10	0.43
23	4.67	0.37	--	0.08	--	--	0.07	0.41

- Airblast Penetration 1982 -

Shot 70

09-SEP-82 07:53:39

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.40	0.30	1.98	2.12	0.84	--	--	--
2	0.40	0.22	1.91	2.63	0.80	--	--	--
3	0.60	0.30	1.58	1.69	0.71	--	--	--
4	0.57	0.27	1.51	1.66	0.72	--	--	--
5	1.59	0.25	0.58	0.33	0.07	--	0.14	0.64
6	1.76	0.18	0.74	0.57	0.10	--	0.28	0.78
7	2.11	0.30	--	0.34	--	--	0.15	0.78
8	1.42	0.23	0.55	0.63	0.12	--	0.35	0.90
9	1.64	0.26	0.66	0.49	0.10	--	0.40	0.66
10	2.01	0.27	0.97	0.38	0.09	--	0.48	0.80
11	2.43	0.17	--	0.23	--	--	0.43	0.74
12	2.31	0.40	--	0.30	--	--	0.48	0.88
13	2.22	0.41	--	0.32	--	--	0.24	0.79
14	2.38	0.37	--	0.30	--	--	0.48	0.80
15	1.57	0.26	0.59	0.51	0.11	--	0.21	0.75
16	1.72	0.23	0.70	0.46	0.10	--	0.18	0.68
17	2.09	0.31	--	0.28	--	--	0.17	0.75
18	2.00	0.35	0.82	0.26	0.07	--	0.17	0.68
19	1.83	0.58	--	0.09	--	--	0.11	0.67
20	3.07	0.43	--	0.11	--	--	0.10	0.71
21	3.15	0.57	1.13	0.13	--	--	0.12	0.71

- Airblast Penetration 1982 -

Shot 70

09-SEP-82 07:53:53

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
22	4.05	0.91	1.96	0.10	0.08	--	0.13	0.78
23	4.06	0.49	1.89	0.11	0.07	--	0.13	0.74

- Airblast Penetration 1982 -

Shot 71

09-SEP-82 08:24:16

gage no.	First Pulse: arriv. time, Ta (msec)	First Pulse: inter. time, Too (msec)	First Pulse: pos. dur. (msec)	First Pulse: Pmax (MPa)	First Pulse: Imax (MPa-msec)	Second Pulse: arriv. time, Ta (msec)	Second Pulse: Pmax (MPa)	Second Pulse: Imax (MPa-msec)
1	0.42	0.23	1.76	2.00	0.58	--	--	--
2	0.41	0.20	1.75	2.00	0.56	--	--	--
3	0.65	0.39	1.37	0.95	0.42	--	--	--
4	0.62	0.34	1.38	1.25	0.48	--	--	--
5	1.78	0.30	0.62	0.21	0.05	--	0.12	0.33
6	2.00	0.23	0.75	0.32	0.07	--	0.17	0.36
7	2.40	0.30	--	0.21	--	--	0.12	0.35
8	1.61	0.22	0.59	0.42	0.08	--	0.20	0.43
9	1.89	0.35	0.65	0.29	0.07	--	0.17	0.32
10	2.30	0.30	0.87	0.23	0.06	--	0.25	0.38
11	2.75	0.25	--	0.17	--	--	0.26	0.41
12	2.64	0.38	--	0.19	--	--	0.29	0.43
13	2.56	0.44	--	0.21	--	--	0.22	0.50
14	2.64	0.38	--	0.19	--	--	0.27	0.38
15	1.76	0.25	0.64	0.33	0.08	--	0.21	0.34
16	1.97	0.28	0.73	0.27	0.06	--	0.10	0.31
17	2.40	0.42	--	0.18	--	--	0.12	0.34
18	2.30	0.38	0.82	0.18	0.05	--	0.10	0.33
19	2.08	0.64	--	0.06	--	--	0.07	0.32
20	3.48	0.47	--	0.08	--	--	0.08	0.37
21	3.51	0.57	1.19	0.10	0.05	--	0.06	0.37

- Airblast Penetration 1982 -

Shot 71

09-SEP-82 08:24:30

gage no.	First Pulse arriv. time,Ta (msec)	First Pulse inter. time,Too (msec)	First Pulse pos. dur. (msec)	First Pulse Pmax (MPa)	First Pulse Imax (MPa-msec)	Second Pulse arriv. time,Ta (msec)	Second Pulse Pmax (MPa)	Second Pulse Imax (MPa-msec)
22	4.51	0.75	1.39	0.07	0.05	--	0.10	0.41
23	4.55	0.46	1.65	0.08	0.05	--	0.08	0.39