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Jack Rabbit Pretest 2021E PT7 Photonic Doppler Velocimetry Data

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The predictive accuracy of a high explosive model cannot be proven.

Except……. by experiment.

- Hart

ACKNOWLEDGEMENT

I want to thank all those who contributed to the success of the Jack Rabbit Pretest series. The encouragement, counsel, criticism, and support both technical and financial, all worked together in developing a successful series of tests and a very rich harvest of data.

One person deserves special mention. David E. Hare working in B Division at LLNL, who took a scientific interest in the test series. He ran well over 100 computer simulations examining high explosive models and predictions for different experiment designs. His work provided clear and compelling evidence of the usefulness and the need for these focused hydrodynamic tests. Dave's work was truly pivotal and his contribution cannot be overstated.

Secondly, none of the data you will see in this report would exist, were it not for the extraordinary skill and resourcefulness of the firing crew, technicians, and engineers working at the Contained Firing Facility (CFF) at Site 300, LLNL. After the countless meetings, presentations, design reviews, engineering design, parts fabrication, and experiment assembly, the process funneled down to a small group of experts who delivered the payoff of accurate data. They are to be commended for their work and accomplishments in executing the Jack Rabbit Pretest focused hydrodynamic experiments.

Mark M. Hart

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ABSTRACT

The Jack Rabbit Pretest (PT) 2021E PT7 experiment was fired on April 3, 2008 at the Contained Firing Facility, Site 300, Lawrence Livermore National Laboratory. This experiment is part of an effort to determine the properties of LX-17 in a regime where corner-turning behavior and dead-zone formation are not well understood. Photonic Doppler Velocimetry (PDV) measured diagnostic plate velocities confirming the presence of a persistent LX-17 dead-zone formation and the resultant impulse gradient applied under the diagnostic plate.

EXECUTIVE SUMMARY

The Jack Rabbit Pretest 2021E PT7, 160 millimeter diameter experiment returned data on all eight PDV probes. The probes measured on the central axis and at 20, 30, 35, 45, 55, 65, 75 millimeters from the central axis. The experiment was shot at an ambient room temperature of 65 degrees Fahrenheit. The PDV earliest signal extinction was 50.7 microseconds at 45 millimeters. The latest PDV signal extinction time was 65.0 microseconds at 20 millimeters. The measured velocity ranged from meters per second to thousands of meters per second. First detonation wave induced jump-off was measured at 55 millimeters and at 15.2 microseconds. The PDV data provided an unambiguous indication of dead-zone formation and an impulse gradient applied to the diagnostic plate. The central axis had a last measured velocity of 1447 meters per second. At 65 millimeters the last measured velocity was 2360 meters per second. The low-to-high velocity ratio was 0.61. Velocity data was integrated to compute diagnostic plate cross section profiles. Velocity data was differentiated to compute a peak pressure under the diagnostic plate at the central axis of 49 kilobars at 23.3 microseconds. Substantial motion (>1 m/s) of the diagnostic plate over the dead-zone is followed by detonation region motion within approximately 4.6 microseconds.

INTRODUCTION

The Photonic Doppler Velocimeter (PDV), also known as the Heterodyne Velocimeter, was fielded on each of the five Jack Rabbit Pretest Series, Figure 1. The PDV system is described in a Review of Scientific Instruments article.[1] Briefly, the PDV uses single mode fiber optic components to mix the Doppler-shifted light from a moving surface with undoppler-shifted light from the laser to generate a beat signal. The frequency of the beat signal is directly proportional to the velocity according to:

$$f_b = 2\left(\frac{v}{c}\right)f_0$$

where f_b is the beat frequency, v is the velocity of the moving surface, c is the speed of light and f_0 is the original frequency of the laser. The PDV system uses lasers with a wavelength of 1550 nanometers, so a velocity of 1000 meters per second yields a beat frequency of 1.29 GHz.

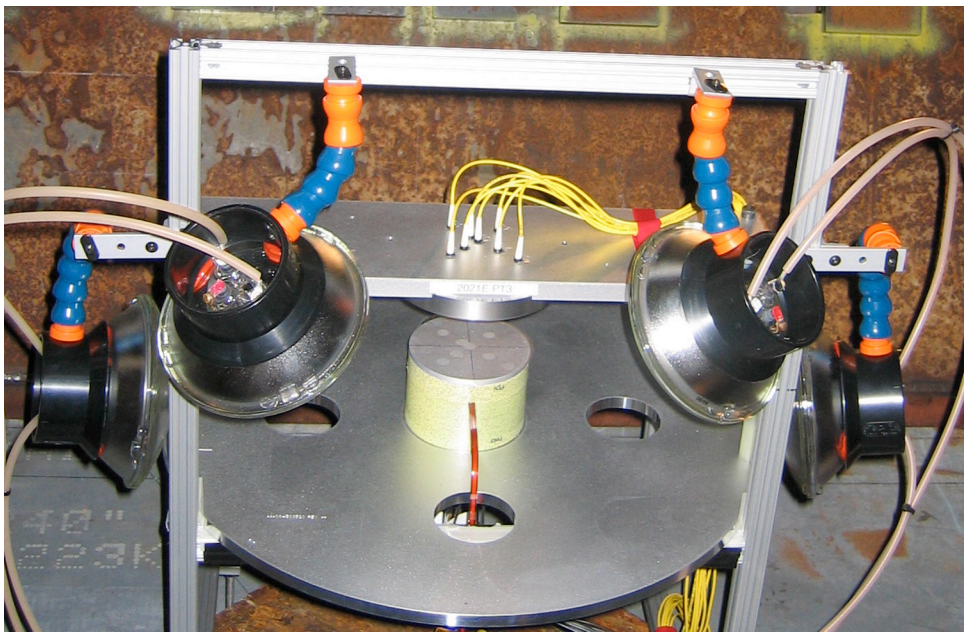

Figure 1. Example (2021E PT3) of shot stand with PDV probes sighted on diagnostic plate

[1] O.T. Strand, et.al, Compact System For High-Speed Velocimetry Using Heterodyne Techniques, Review Of Scientific Instruments 77, 083208 (2006)

There were eight channels of data recorded on each test where each channel corresponded to a probe mounted above the diagnostic plate. Each probe monitored the velocity time history of a discreet spatial location on the surface of the diagnostic plate. The probes used were a standard type commonly used by PDV. They were commercially available probes made by Oz Optics of Ottawa, Canada, and had a focal distance of 97 mm (part #LPF-04-1550-9/125-S-15-97-6.2AS-40-3A-3-5-SP). The probes were actually mounted a distance of 102 mm above the surface to enable the probe to follow the surface for a longer distance of travel. The distance from the center of the plate for each probe on each shot is shown in the table below:

Table 1. Probe location for all Jack Rabbit Pretest Experiments

	Distance from center (mm)				
Probe #	2021E PT3	2021E PT4	2021E PT5	2021E PT6	2021E PT7
1	00	00	00	00	00
2	10	10	20	20	20
3	20	20	30	30	30
4	25	25	35	35	35
5	30	30	45	45	45
6	35	35	55	55	55
7	40	40	65	65	65
8	50	50	75	75	75

The PDV data was recorded by high-bandwidth, high-sample rate digitizers that operated at a sample rate of 20 gigasamples per second. The beat waveforms were processed using two different methods. The early time data corresponding to velocities below approximately 20 meters per second were processed using a fringe counting method. This method uses the fact that the surface moves 775 nanometers for each beat cycle. For velocities above approximately 20 meters per second, a sliding Fourier transform method was used with a window length of 1024 points, which is 51 nanoseconds of sample time. The velocity profiles were then mapped onto a timebase with 100 nanoseconds per point using a linear

interpolation of the original points and are shown in Tabulated Diagnostic Plate Velocities, Table 3. The final velocity profiles were then integrated to obtain the diagnostic plate displacement versus time profiles shown in Figure 12, also with a timebase of 100 nanoseconds per point. The displacement versus time profile data is shown in Table 4.

The timebases given in the spreadsheets are referenced to the time of the CDU (fireset) current start. The timing corrections from the PDV digitizers to the measurement point on the diagnostic plate were determined by taking into account the various fiber and cable delays in the system. The timing loop used to make the timebase corrections is shown in Figure 2.

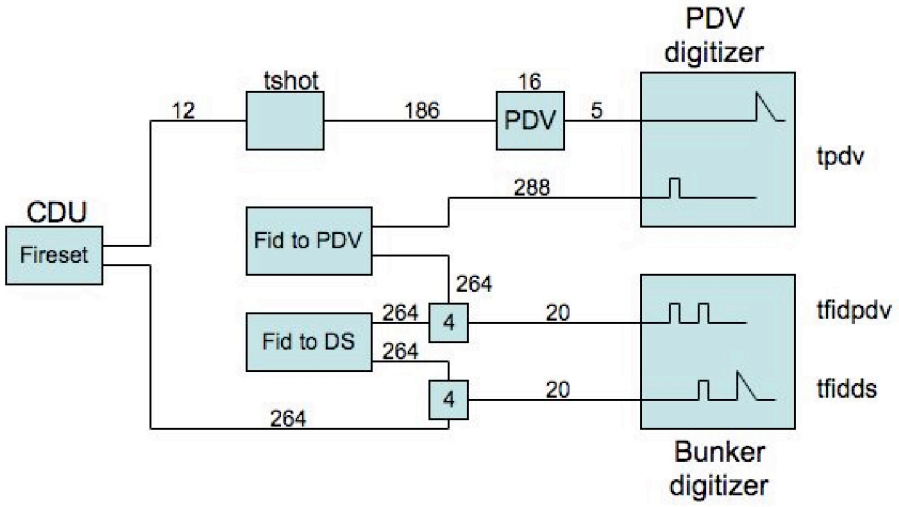

Figure 2. Jack Rabbit Pretest experiment timing diagram

The times are given in nanoseconds. Moving around the loop starting at the fireset CDU yields the following equation:

$$12 + tshot + 186 + 16 + 5 - tpdv - 288 + 288 + tfidpdv - 288 + 288 + tfidds - 20 - 4 - 264 = 0$$

$$12 + tshot + 186 + 16 + 5 - tpdv + tfidpdv + tfidds - 20 - 4 - 264 = 0$$

$$tshot = tpdv – tfidpdv – tfidds + 69$$

where tshot is the time of interest at the diagnostic plate with respect to the CDU current start. The variable tpdv is the time interval from the timing fid recorded by the PDV system to the event of interest in the velocity data. The variable tfidpdv is the time interval from the PDV fid to the fireset fid, and tfidds is the time interval from the fireset fid to the fireset CDU. Completing this loop shows that the total correction due to the various cable and fiber delays is 69 nanoseconds.

There are three velocity plots associated with each test:

1) short time axis giving details about the early-time motion on a semi-log plot, Figure 9,
2) intermediate time axis showing the early time motion of all the probes on a linear plot, Figure 10,
3) long time axis showing the entire data record on a linear plot, Figure 11.

In the velocity plots, the PDV channel numbers are identified by combining the number of the shot with the distance from the center. For example, the velocity profile for probe #3 on shot 2021E PT4 is v420, and the velocity profile for probe #6 on 2021E PT7 is v755. In one case, probe #5 of 2021E PT3 showed a break in the velocity time history at 13 μs, so the plots for 2021E PT3 show two velocity curves for that probe and they are labeled v3301 and v3302. Finally, the diagnostic plate displacement versus time data was extracted at 5 microsecond intervals and then transposed to obtain displacement versus radius profiles at 5 microsecond increments. The resulting displacement profiles are shown in Figure 12.

As a final look at the data, an attempt was made to infer what magnitude of pressure the center of the diagnostic plate experienced during the earliest part of each shot. The semi-log velocity versus time plot for each shot shows that the center probe recorded a fairly long and slow-rising velocity profile, rather than a shocked profile, Figure 9. Differentiating these velocity profiles yields the accelerations, which are related to the pressures. Deriving an expression for the

pressure is fairly straightforward. Start with

$$F = ma = \rho hAa$$

where F is the applied force on the aluminum diagnostic plate, m is the mass of the plate, rho is the density of aluminum = 2.79 grams/cubic centimeter, h is the thickness of the plate = 6 millimeters, A is the area over which the force is applied, and a is the acceleration obtained by differentiating the velocity. The pressure P is the force per unit area:

$$P = \frac{F}{A} = \rho h a$$

Inserting the numerical values yields:

$$P[\text{kbar}] = (1.62 \times 10^{-7}) \times a[\text{m/s}^2]$$

The above expression applies only to a system in which the entire 6 millimeter plate accelerates as a solid body, and does not take into account shock compressions that would make the surface move in a manner different from the bulk motion. To compensate for that, the velocity time histories were smoothed with a 1.1 microsecond sliding average, which is approximately the sound speed transit time through the 6 millimeter thickness of the aluminum diagnostic plate, before differentiating to obtain the acceleration. In the dead-zone pressure plot of Figure 13, the thin red curve is the actual velocity profile, the thick red curve is the smoothed velocity profile, and the blue curve is the pressure obtained by differentiating the thick red curve.

2021E PT7

DESCRIPTION

2021E PT7 used a 76 millimeter thick cylindrical charge of LX-17, 160 millimeters in diameter, Figure 3. The charge was parted along a plane 30 millimeters from the top. The detonator flat cable, piezoelectric diagnostic pin, and embedded fiberoptic line were run through the parting line in the explosive charge. The main-charge diameter of this experiment was limited in the Jack Rabbit Pretest to ensure transparency for x-radiography imaging, while being large enough in diameter to permit transition from dead-zone to detonation wave contact on the aluminum diagnostic flyer plate. 2021E PT7 contained a contoured 86 millimeter diameter, 303 stainless steel shadowplate. It was embedded on the central axis and within the cylindrical LX-17 main-charge. The shadowplate contained a PETN LX-16 pellet that fired downward, initiating an ultrafine TATB (UFTATB) hemispherical booster.

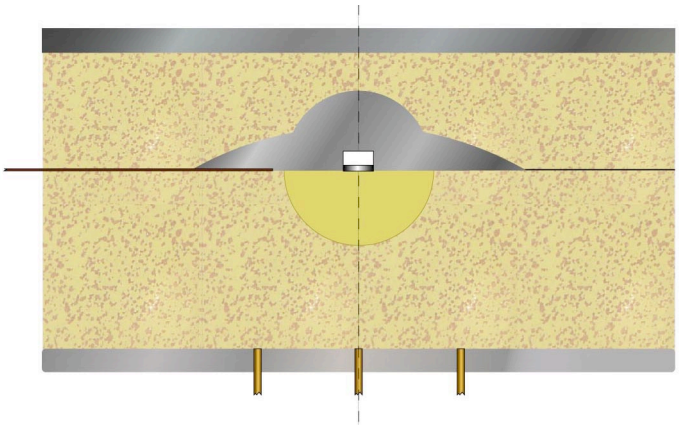

Figure 3. Graphic cross section of Jack Rabbit Pretest 2021E PT7

The charge was sandwiched between two 6 millimeter thick circular aluminum plates of the same diameter. The upper aluminum diagnostic flyer plate (diagnostic plate) monitored the progression of the detonation using x-ray imaging, framing camera imaging, and photonic Doppler velocimetry (PDV). Eight PDV probes were sighted down onto the diagnostic plate for measuring jump-off time and velocity as the diagnostic plate was accelerated in response to the detonation of the LX-17, Figure 1. The PDV laser beams were sighted within +/- 0.25 millimeter of the nominal radial position, Figure 4. For purposes of positioning the probes in close quarters, the monitored positions were laid out along two orthogonal axes on the diagnostic plate surface, Figure 5. These PDV sighting locations were on lines clocked 45 degrees out from the location of the embedded piezoelectric timing pin, detonator cable, and fiberoptic diagnostic cable (was not used in this test) to avoid their potential influence on the progression of the detonation wave. The PDV sighting positions on the aluminum plate were prepared by impressing a lightly textured steel ball on the aluminum surface for optimal laser beam reflection, Figure 6. The radial PDV positions were assigned to closely monitor anticipated regions of interest as shown in ARES simulations. The 2021E PT7, 160 millimeter experiment was monitored at radial distances of 0, 20, 30, 35, 45, 55, 65, and 75 millimeters.

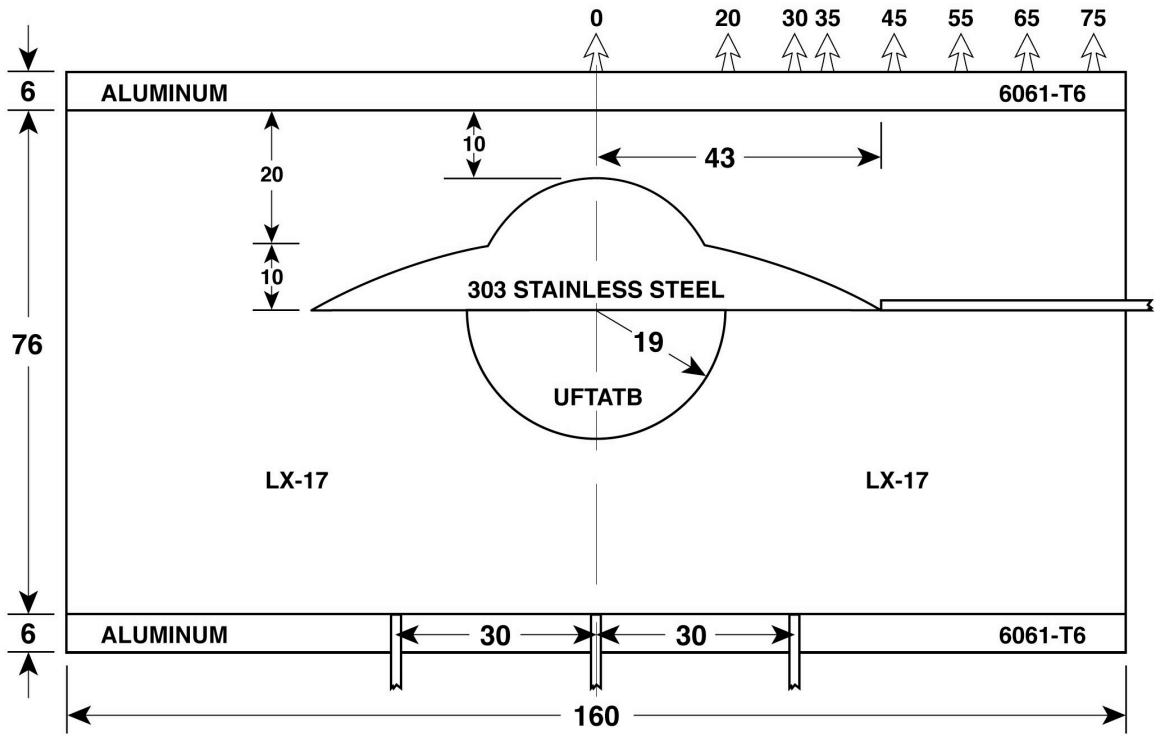

Figure 4. Schematic cross section of the Jack Rabbit Pretest 2021E PT7, dimensions in millimeters

Booster: UFTATB, 25.8 g
Main charge: LX-17, 2809.7 g
Upper charge mass: 1075.9 g
Lower charge mass: 1733.8 g
Upper charge density: 1.893 g/cc
Lower charge density: 1.900 g/cc
Main charge temperature: 18.3C (65F)
PDV measurement positions: 0, 20, 30, 35, 45, 55, 65, 75 mm

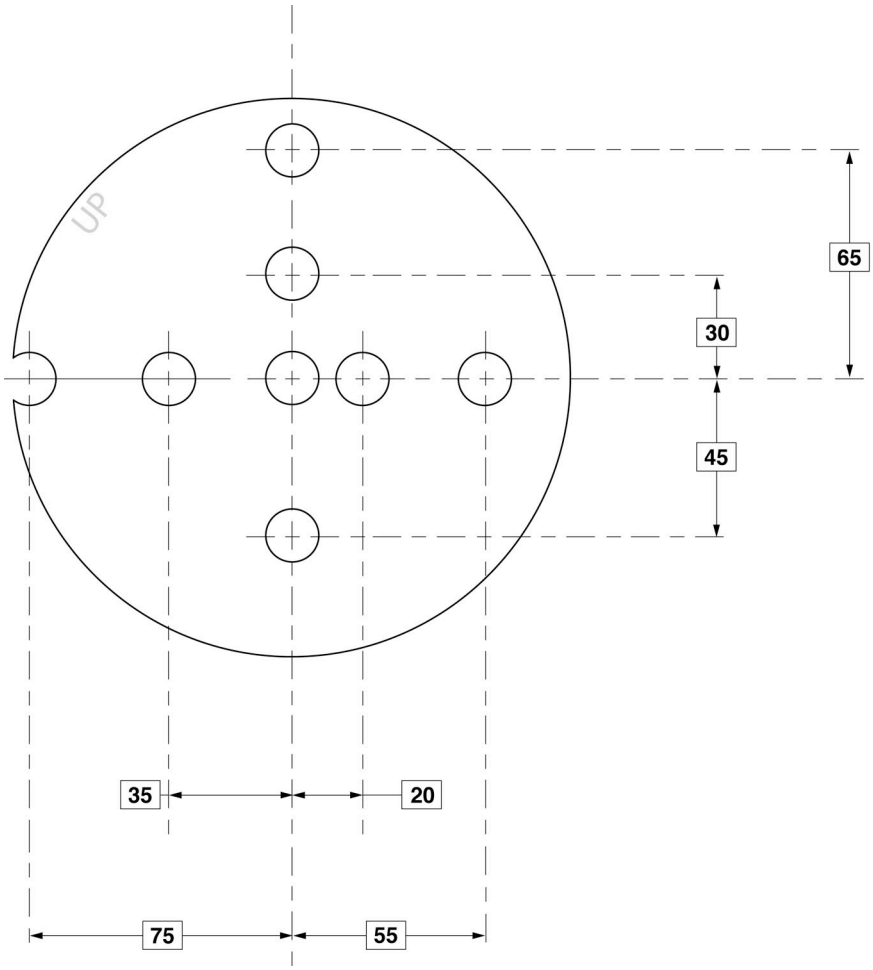

Figure 5. PDV measurement locations on 2021E PT7 aluminum diagnostic plate, dimensions in millimeters

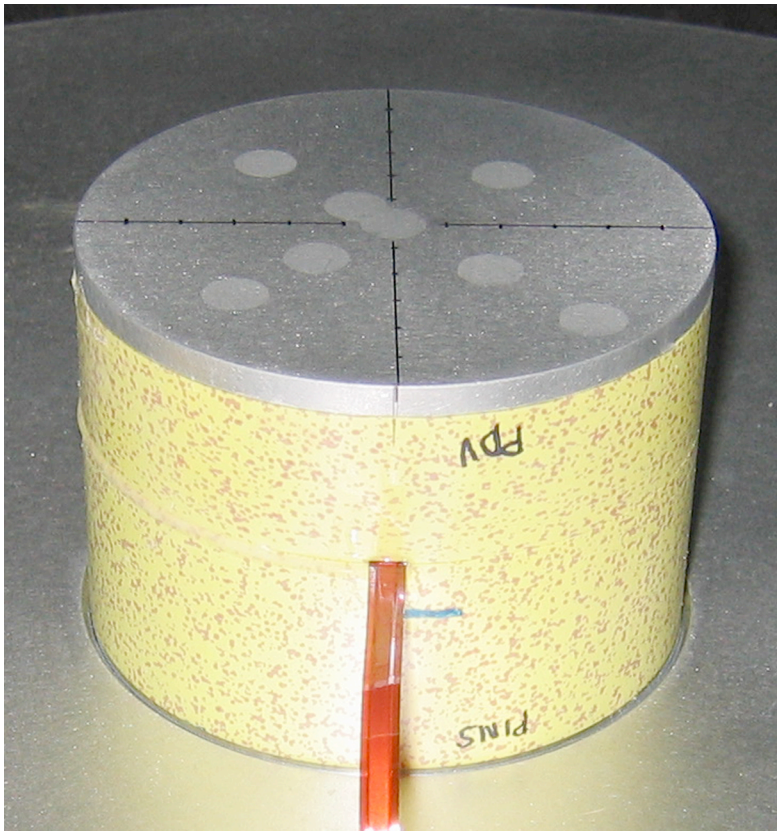

Figure 6. Example (2021E PT4) of a diagnostic plate showing circular spots prepared for optimal laser beam reflection

The shadowplate design for 2021E PT7 was a departure from the PT5 and PT6 experiments that used cylindrical 10 millimeter thick shadowplates, 86 millimeters in diameter. The PT5, PT6 and PT7 shadowplates were twice the diameter of those used in PT3 and PT4. The larger diameter ensured that the detonation wave was fully mature prior to reaching the edge of the shadowplate. It was recognized that the detonation wave would essentially push a ripple of stainless steel towards the edge of the shadow plate. It was anticipated that this ripple could create a circumferential slapper and influence the detonation wave corner-turning as it reached the edge of the shadowplate. Considering the v^2d-Held-criterion, a sharp edge was designed into the PT7 shadowplate to minimize this effect. The bulbous structure of the PT7 shadowplate was designed using intersecting spherical surfaces to create a lensing effect for the shock wave

passing through the shadowplate, Figures 7 and 8. The relatively high sound speed in stainless steel compared to sound speed in LX-17 is analogous to a high refractive index lense in a relatively low refractive index medium. The analogous light source for this lense would be a thin ring of light diametrically expanding from the center, outwards over the front (flat) surface of the lense at approximately 1.3 times the speed of light.

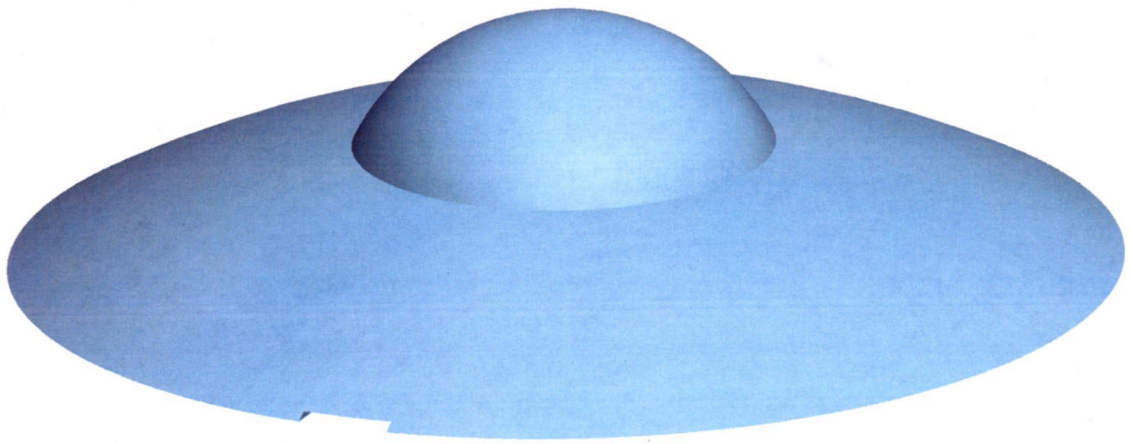

Figure 7. 2021E PT7 lense-like geometry shadowplate with its sharp edge showing the shallow slot allowing passage of the flat detonator cable; the front surface of the shadowplate is defined as the bottom surface in this image

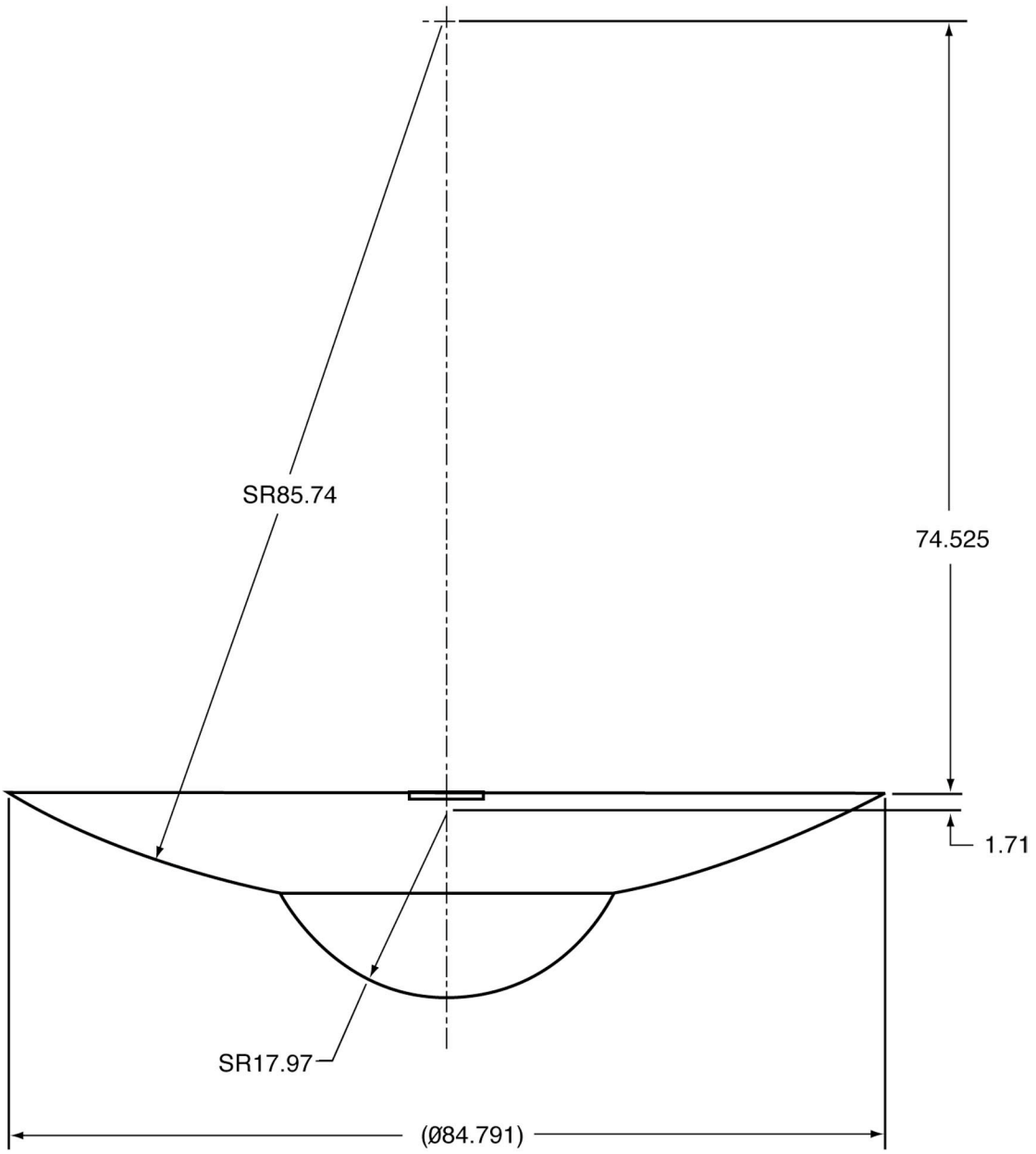

Figure 8. Dimensioned drawing of the 2021E PT7 shadowplate; the front surface of the shadowplate is defined as the top surface in this drawing

DIAGNOSTIC PLATE VELOCITY PLOTS

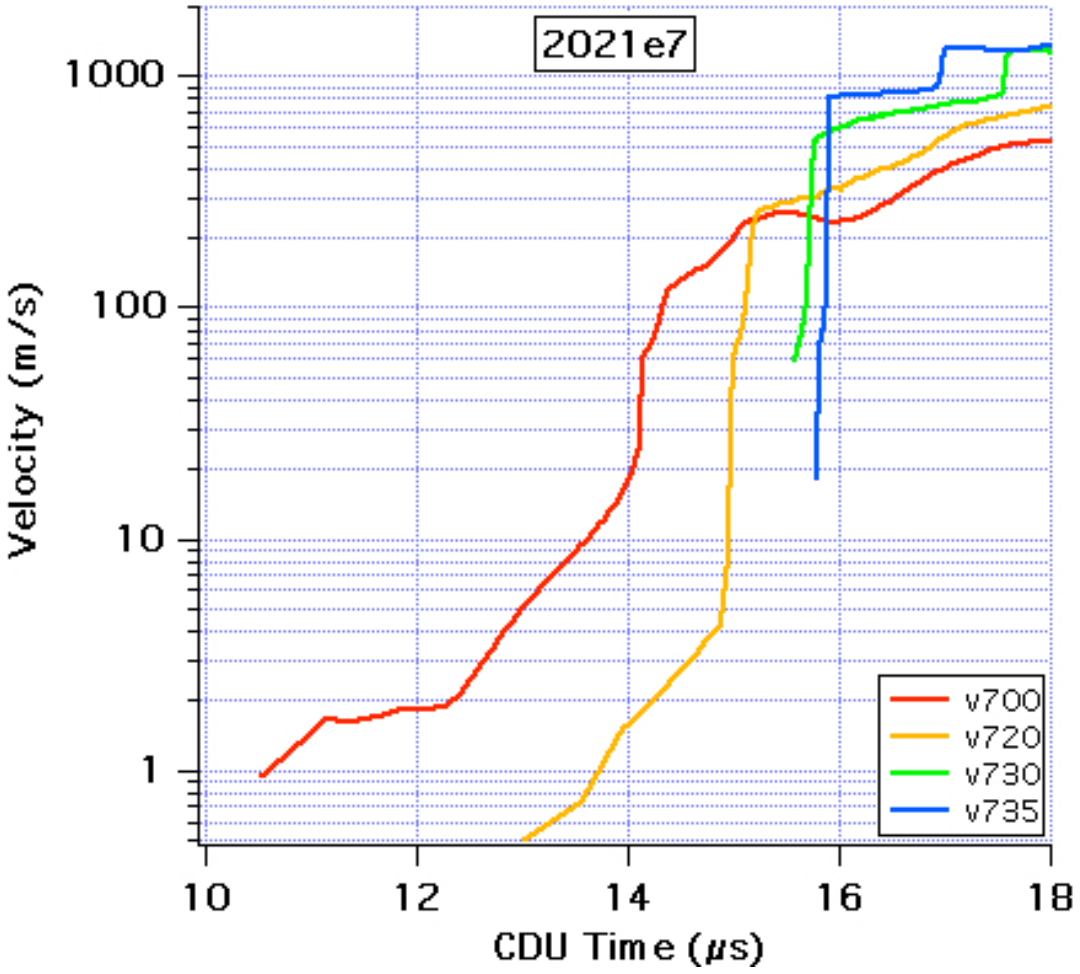

Figure 9. Short Time Axis Velocity Plot of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

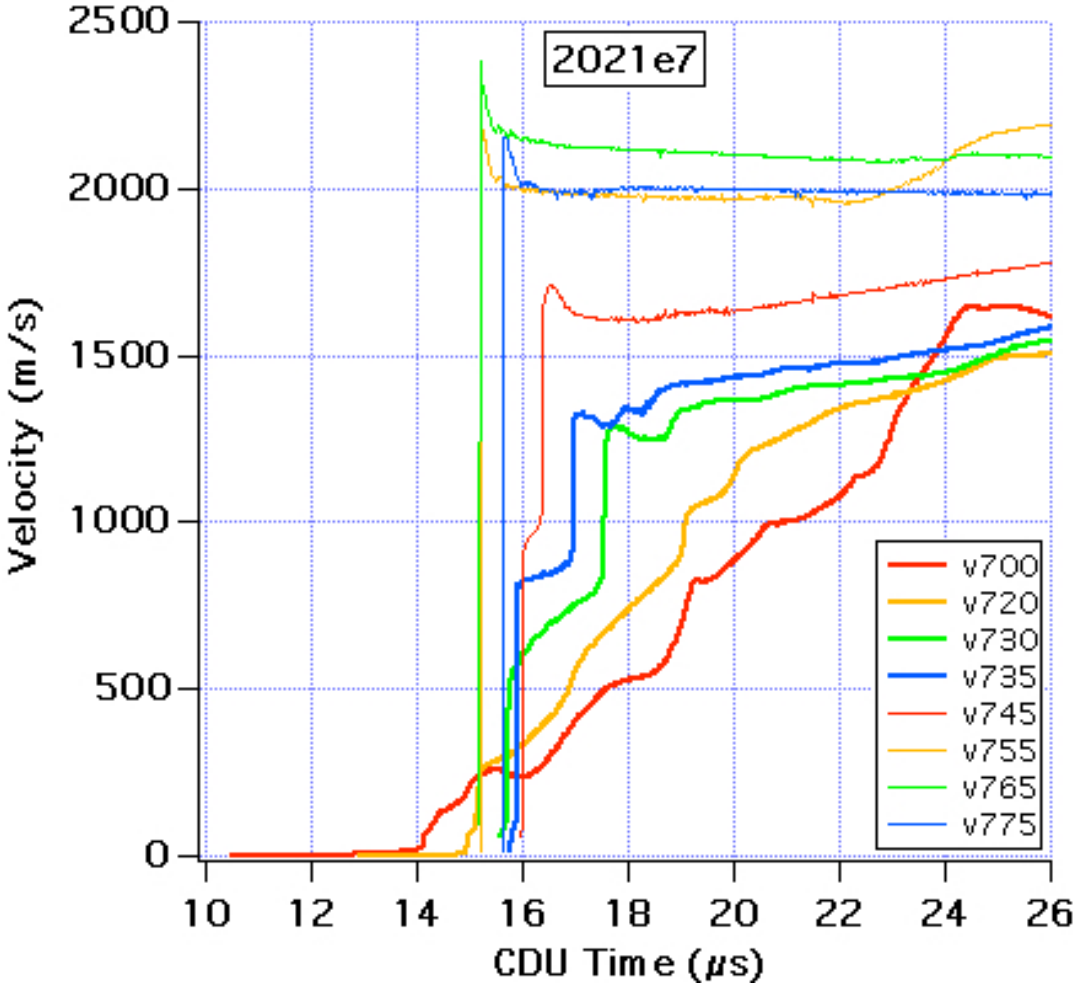

Figure 10. Intermediate Time Axis Velocity Plot of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

Table 2. PDV measurement positions and signal extinction times for 2021E PT7 (μs); time is referenced from detonator circuit current start

00 mm	20 mm	30 mm	35 mm	45 mm	55 mm	65 mm	75 mm
				50.7			
			52.9				
		54.8					
					58.8		
						59.6	
							60.9
64.6							
	65.0						

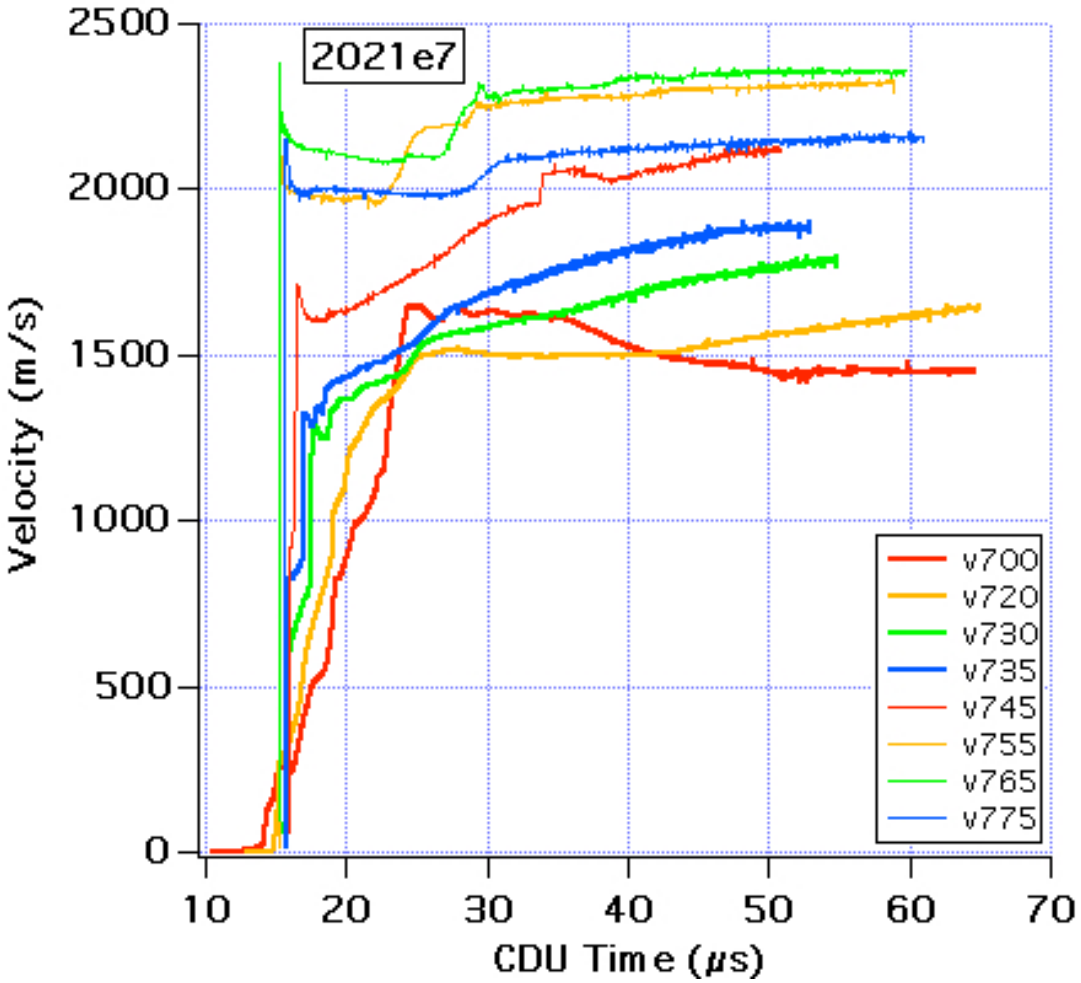

Figure 11. Long Time Axis Velocity Plot of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

DIAGNOSTIC PLATE DISPLACEMENT PROFILES

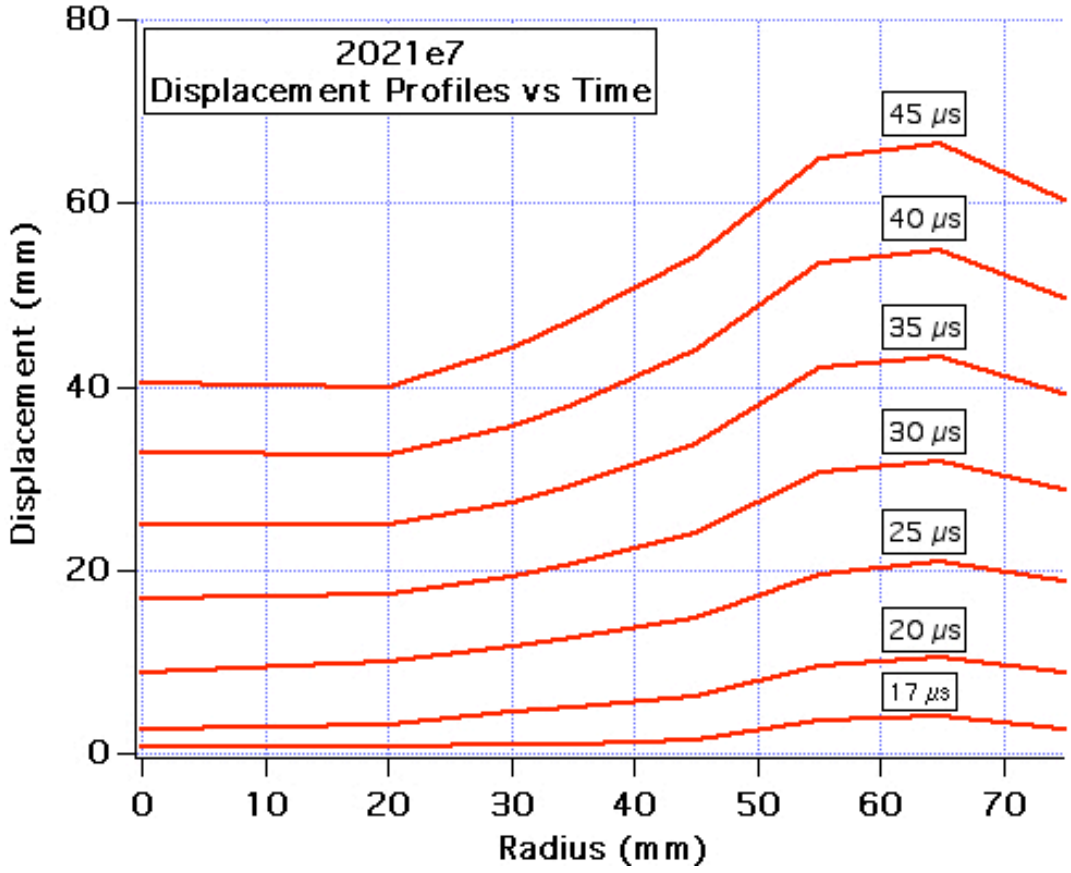

Figure 12. Diagnostic Plate Displacement Profiles of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

CYLINDRICAL AXIS DEAD-ZONE PRESSURE PLOT

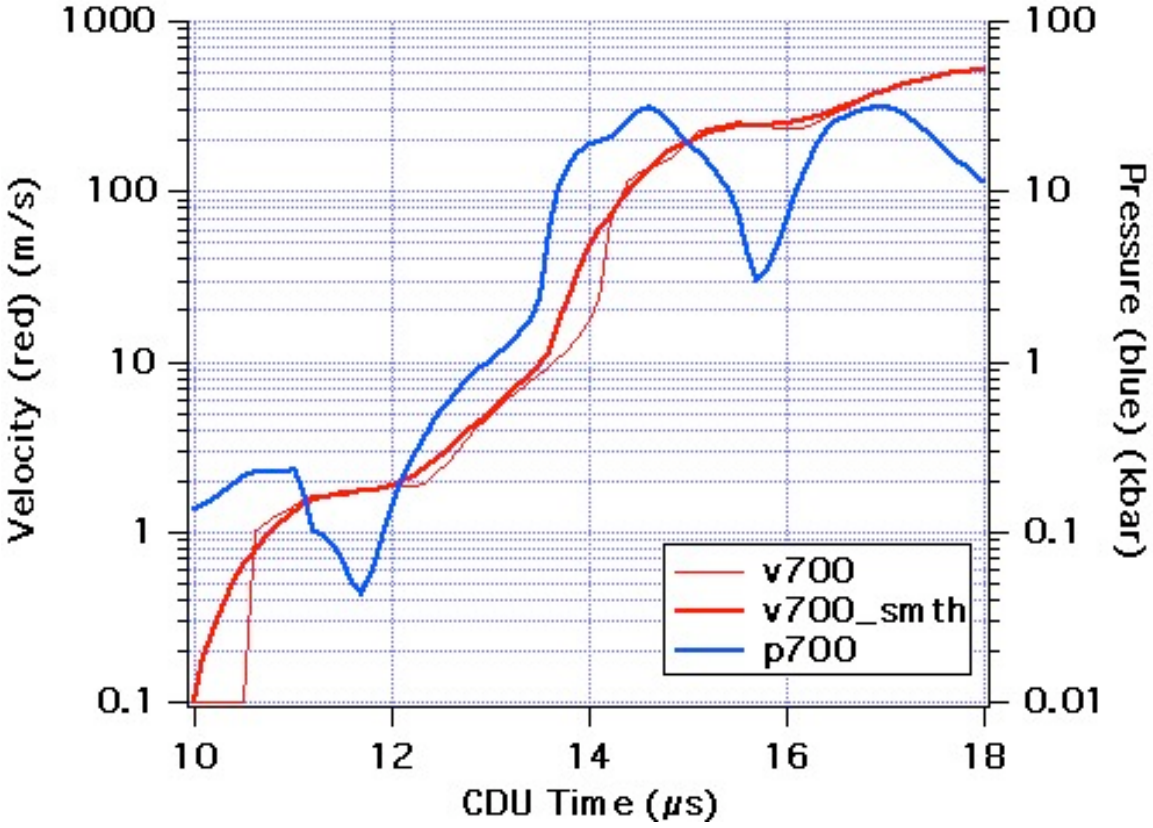

Figure 13. Dead-Zone Pressure Plot of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

DIAGNOSTIC PLATE VELOCITY TABLE

Table 3. Tabulated Diagnostic Plate Velocities of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

Jack Rabbit Pretest 2021E PT7 VELOCITY Data								
Columnar data: meters per second								
absolute timing accuracy relative to time zero = +/- 0.025 microseconds								
relative timing uncertainty between data channels = +/- 0.005 microseconds								
z velocity uncertainty = +/- 5 percent of velocity								
PDV measurement point position uncertainty = +/- 0.25 millimeters								
r →	**0**	**20**	**30**	**35**	**45**	**55**	**65**	**75**
t								
10	0	0	0	0	0	0	0	0
10.1	0	0	0	0	0	0	0	0
10.2	0	0	0	0	0	0	0	0
10.3	0	0	0	0	0	0	0	0
10.4	0	0	0	0	0	0	0	0
10.5	0	0	0	0	0	0	0	0
10.6	1.0173	0	0	0	0	0	0	0
10.7	1.1186	0	0	0	0	0	0	0
10.8	1.2199	0	0	0	0	0	0	0
10.9	1.3269	0	0	0	0	0	0	0
11	1.4551	0	0	0	0	0	0	0
11.1	1.5834	0	0	0	0	0	0	0
11.2	1.638	0	0	0	0	0	0	0
11.3	1.6304	0	0	0	0	0	0	0
11.4	1.6294	0	0	0	0	0	0	0
11.5	1.6617	0	0	0	0	0	0	0
11.6	1.694	0	0	0	0	0	0	0
11.7	1.7458	0	0	0	0	0	0	0
11.8	1.8014	0	0	0	0	0	0	0
11.9	1.8259	0	0	0	0	0	0	0
12	1.8323	0	0	0	0	0	0	0
12.1	1.8446	0	0	0	0	0	0	0
12.2	1.8625	0	0	0	0	0	0	0
12.3	1.9433	0	0	0	0	0	0	0
12.4	2.1099	0	0	0	0	0	0	0
12.5	2.3797	0	0	0	0	0	0	0
12.6	2.7509	0	0	0	0	0	0	0
12.7	3.22	0	0	0	0	0	0	0
12.8	3.738	0	0	0	0	0	0	0
12.9	4.2816	0	0	0	0	0	0	0

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
13	4.9438	0.5021	0	0	0	0	0	0
13.1	5.5884	0.5425	0	0	0	0	0	0
13.2	6.2638	0.5828	0	0	0	0	0	0
13.3	7.0248	0.6232	0	0	0	0	0	0
13.4	7.8068	0.6636	0	0	0	0	0	0
13.5	8.6794	0.7039	0	0	0	0	0	0
13.6	9.6705	0.7624	0	0	0	0	0	0
13.7	10.921	0.9715	0	0	0	0	0	0
13.8	12.379	1.1807	0	0	0	0	0	0
13.9	14.328	1.3898	0	0	0	0	0	0
14	17.526	1.5902	0	0	0	0	0	0
14.1	23.295	1.7627	0	0	0	0	0	0
14.2	66.788	1.9353	0	0	0	0	0	0
14.3	87.459	2.1502	0	0	0	0	0	0
14.4	118.09	2.3802	0	0	0	0	0	0
14.5	131.25	2.689	0	0	0	0	0	0
14.6	139.64	3.0193	0	0	0	0	0	0
14.7	147.65	3.3864	0	0	0	0	0	0
14.8	158.06	3.8134	0	0	0	0	0	0
14.9	174.45	5.4917	0	0	0	0	0	0
15	198.33	60.359	0	0	0	0	0	0
15.1	226.32	87.658	0	0	0	0	0	0
15.2	238.08	223.24	0	0	0	1039	2350.7	0
15.3	246.35	267.63	0	0	0	2130.7	2258	0
15.4	254.31	275.35	0	0	0	2056.9	2209.2	0
15.5	256.14	281.77	0	0	0	2028.7	2177.1	0
15.6	253.71	290.08	62.634	0	0	2034.2	2184.3	0
15.7	248.05	293.91	103.2	0	0	2009.7	2159.5	2143.1
15.8	241.14	302.29	531.95	44.794	0	2000.5	2165.3	2094.3
15.9	235.72	318.73	567.13	438.55	0	2007.1	2151	2027.2
16	235.78	326.41	598.83	816.7	681.43	1993.1	2149.3	2013.9
16.1	238.65	343.86	616.25	824.84	945.67	1997.4	2149.5	2017.8
16.2	246.03	362.08	643.76	826.08	966.89	1997.6	2145.6	2006.9
16.3	258.25	376.02	657.21	834.46	994.12	1995.5	2138.9	2002.1
16.4	272.8	393.03	673.52	837.09	1647.3	1990.5	2136.7	1998.3
16.5	289.55	405.89	689.4	842.19	1709.3	1989.7	2133.8	1991.6
16.6	310.03	421.94	699.35	846.2	1706.4	1991	2130.4	1990.2
16.7	331.73	444.43	708.64	858.22	1673.4	1990	2128.6	1989.3
16.8	355.79	470.36	722.68	869.64	1647.4	1987.4	2127.5	1990.6
16.9	378.26	505.08	737.79	880.63	1639.1	1988.4	2127.2	1991.9

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
17	399.88	544.53	750.05	1308.3	1625.3	1990.1	2123.7	1992.6
17.1	418.22	578.49	761.51	1319.6	1622.6	1984.7	2124.6	1987.8
17.2	433.37	607.71	768.55	1311.9	1611.4	1985.1	2122.6	1990.8
17.3	449.55	625.84	779.71	1314.9	1614	1981.9	2123.5	1977.7
17.4	469.07	642.23	792.82	1302	1611.3	1981.4	2122.5	1993.6
17.5	486.5	658.85	826.82	1288	1608.7	1982.1	2122	1994.7
17.6	499.03	673.74	1213	1289.6	1609.1	1976.9	2122.2	1994.6
17.7	508.75	688.45	1285.1	1291.6	1611.3	1983.3	2119.8	1998.2
17.8	515.18	704.23	1287.1	1302.7	1607.7	1977.4	2121.2	2000.3
17.9	521.77	720.07	1276.5	1330.4	1610.1	1978.8	2119.6	1999.8
18	524.97	735.2	1271.1	1339.1	1607.2	1980.4	2118.7	2005.5
18.1	528.56	749.99	1259.8	1333.9	1608.3	1977.9	2118.8	2000.4
18.2	531.19	764.86	1250.1	1331	1603	1981.6	2115.7	2002.1
18.3	535.25	776.92	1249.7	1324.2	1609.2	1969.3	2114.9	2001
18.4	540.13	790.12	1249	1343.3	1604.7	1976.8	2115.8	2003.3
18.5	548.81	807.88	1245.3	1367.7	1607.9	1976.5	2116	2001.7
18.6	560.41	819.48	1250.2	1387.6	1610.9	1976.2	2110.2	1999.5
18.7	578.62	834.85	1250.4	1393.5	1635.1	1978.1	2114.2	2001.4
18.8	606.6	851.79	1274	1402.7	1620	1977.6	2112.1	1999.5
18.9	641.71	871.52	1308.8	1408.1	1634.3	1977	2111.3	2000.8
19	680.31	894.93	1330.3	1413.1	1626.2	1975.3	2112	2001.6
19.1	729.99	990.92	1337.6	1418.1	1626.1	1972.9	2111.5	2001
19.2	794.88	1032.8	1339.1	1416.1	1631.3	1973.2	2109.4	2007.7
19.3	825.18	1045.9	1340.7	1417.4	1631.2	1973.5	2109.3	1995.1
19.4	821.9	1052.2	1352.4	1418.9	1632.7	1971	2108	2001.6
19.5	822.43	1060.6	1358.7	1421.3	1634.4	1971.8	2106.7	1998.6
19.6	827.67	1066.7	1360	1422	1633.7	1969.4	2106.1	1999.1
19.7	839.08	1073.4	1364	1424.5	1634.1	1971	2106	1999.8
19.8	854.12	1084.8	1365.6	1426.8	1632.7	1962.7	2104.3	1999.7
19.9	868.82	1103.4	1367.7	1430.6	1623.7	1970.3	2103.6	1998.4
20	882.86	1129.7	1367.7	1433.3	1632.9	1972.1	2101.3	1997.7
20.1	895.76	1161.6	1366.9	1433.7	1634.4	1980.2	2100.7	1996.7
20.2	909.48	1189.7	1364.8	1436.5	1638	1969	2101.4	1997.5
20.3	924.83	1205.6	1364.2	1435.4	1640.1	1967.9	2100.9	1997.1
20.4	941.92	1216.8	1364.8	1436.1	1642.4	1972.7	2100	1997.9
20.5	962.78	1221.7	1367.7	1438.9	1644.6	1975.4	2099.2	1995.9
20.6	982.71	1228.8	1370.7	1444.1	1643	1974.6	2097.7	1997.8
20.7	994.5	1236.1	1375.1	1447.1	1647.3	1974.5	2096.5	1996.1
20.8	994.89	1243.9	1380.1	1451.8	1649.3	1976.8	2095.7	1995.8
20.9	996.76	1249.2	1384.9	1455.8	1656.7	1978.5	2094.9	1996.9

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
21	1000.2	1259.5	1391.7	1457.4	1657.5	1978.6	2093.9	1996.7
21.1	1002.9	1267.5	1395.7	1458.6	1657.6	1977.2	2093.1	1991.8
21.2	1005.6	1275.9	1399.3	1459.6	1661.3	1978.9	2093.5	1991.4
21.3	1009.7	1282.2	1402.3	1459.2	1664.3	1971.1	2092.9	1997.5
21.4	1016.4	1290.3	1404.5	1458.6	1667.8	1971.9	2091.3	1992.2
21.5	1025.9	1298.4	1405.2	1458.5	1673	1955.5	2089.9	1992.5
21.6	1036.2	1308.3	1406	1461.2	1672.6	1969.3	2089.5	1993.5
21.7	1045	1317.7	1406.7	1464.6	1675.7	1965.9	2091.2	1993.2
21.8	1053.6	1325.3	1407.7	1469.5	1677.2	1965	2089.3	1993.1
21.9	1062.1	1332.3	1407.6	1472.3	1683.5	1962	2087.8	1993.3
22	1072.7	1337.7	1410.3	1473.6	1681.1	1958.9	2086.3	1993.6
22.1	1087	1342.5	1411.8	1475.6	1684.9	1952.7	2084.9	1995.2
22.2	1106.8	1348	1413.5	1476.8	1686.7	1960.3	2085.7	1990.4
22.3	1131	1353.1	1415.9	1477	1688.1	1960.7	2085.5	1991.4
22.4	1137.1	1355.8	1417.6	1477.2	1689.5	1963.2	2084.3	1992.5
22.5	1139.9	1357	1417.9	1476.4	1693	1966.3	2083.5	1993.7
22.6	1148.1	1365	1419.3	1475.5	1695.8	1971	2080.9	1992.4
22.7	1162.4	1366.6	1421.3	1474	1697.8	1976.5	2083.1	1989.4
22.8	1187.1	1368.3	1423.9	1484	1695.7	1982.1	2082.8	1989.1
22.9	1224.8	1371.3	1427	1484.5	1704.3	1991.8	2081.1	1989.5
23	1270.3	1376.3	1428.4	1489.5	1706.3	1999.2	2084.7	1993.1
23.1	1315.5	1381.8	1430	1491.5	1710.7	2006.4	2084.6	1988.7
23.2	1349.7	1382.4	1431.8	1495	1712.1	2012.8	2080.9	1989.9
23.3	1376.4	1388.2	1433.4	1498.2	1713.6	2016.3	2088.8	1990
23.4	1403.3	1391.5	1434.3	1501.6	1716.3	2026.6	2092.3	1988.4
23.5	1425.9	1395.7	1435.3	1504.2	1720.7	2030.1	2088.7	1989.2
23.6	1446.4	1400.4	1436.7	1506.8	1716.5	2041.5	2087.2	1988.7
23.7	1469.1	1405.2	1439.7	1508.1	1721.8	2049.5	2087.5	1987.6
23.8	1494.4	1410.7	1442	1511.2	1724.9	2056.9	2087.9	1987.7
23.9	1521.7	1415.7	1443.9	1513	1726.5	2063.3	2089.1	1988.4
24	1549.1	1421.5	1446.2	1514.4	1729.1	2084.9	2089.9	1986.1
24.1	1575.7	1427.9	1450.1	1516.6	1733.8	2095.4	2092.9	1987.5
24.2	1602.6	1434	1454.9	1517.8	1734.9	2116.4	2095.7	1991.2
24.3	1625.7	1440.7	1460.9	1520.1	1737.2	2121.1	2103	1990.6
24.4	1639.7	1446.8	1464.9	1522.2	1737.7	2129.8	2103.5	1985.4
24.5	1643.9	1454.4	1472.3	1524.6	1743.6	2140.8	2102.4	1987.2
24.6	1643.7	1461.8	1478.4	1526.5	1749.7	2144.3	2105.5	1987.4
24.7	1640	1469.8	1484.6	1529.3	1746.6	2155	2102	1986
24.8	1638.6	1478.4	1491.6	1531.9	1747.1	2157.3	2102.4	1985.3
24.9	1642.1	1485.4	1497	1535.9	1751.4	2165.1	2101	1984.8

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
25	1645.3	1489.9	1502.3	1539.4	1754.1	2170.1	2100.3	1985.1
25.1	1646.8	1492.4	1510.4	1544.4	1756.4	2170.8	2100.7	1985.2
25.2	1646.1	1493.9	1514.5	1549.7	1758.5	2173.7	2097.7	1984.8
25.3	1644.1	1494.9	1522.3	1554.3	1762.4	2176.6	2100	1986.6
25.4	1642.1	1495.6	1525.6	1559.5	1763.3	2180.6	2098.8	1985.8
25.5	1638.6	1496.7	1529	1563.8	1765.5	2182.5	2098.9	1979.6
25.6	1634.3	1497.9	1532.9	1568.1	1768.2	2185.8	2098.8	1980.4
25.7	1630.2	1499.3	1535.8	1571.7	1770	2186.7	2098.5	1987.4
25.8	1625.6	1500.8	1538.2	1575.5	1773.7	2187.7	2098.2	1984.2
25.9	1621	1500.8	1540.3	1579.8	1777.2	2188.5	2097	1984.4
26	1616.7	1501	1542	1582.7	1779.7	2188.7	2096	1986.1
26.1	1613.7	1501.4	1543.5	1585.7	1781.5	2188.3	2096	1985.3
26.2	1610.2	1501.9	1545.1	1588.8	1785.8	2188	2095.3	1984.7
26.3	1606.7	1502.9	1546.4	1592.1	1772.8	2189.4	2096	1985.4
26.4	1603.9	1503.4	1548.9	1596.2	1797	2189	2097.3	1986.2
26.5	1600.9	1504.4	1550.4	1599.9	1791.9	2189.1	2098.2	1987.5
26.6	1599.3	1505.2	1551.4	1602.8	1798.6	2190.8	2100.6	1973.5
26.7	1601	1505.7	1553.1	1609.1	1799.5	2191.8	2103.8	1978.8
26.8	1603.5	1507	1554.3	1611	1803.1	2193.7	2107.2	1985.1
26.9	1607.9	1508.8	1555.9	1614.2	1807.2	2194	2112.2	1986.4
27	1613.5	1510.4	1556.6	1617	1810.1	2194.3	2118.1	1985.3
27.1	1620.2	1511.6	1557	1620.9	1811	2194.8	2121.7	1986.2
27.2	1626.1	1512.6	1559.7	1626.1	1814.2	2195.1	2133.9	1986.8
27.3	1632.1	1513.4	1560.1	1630.4	1819.4	2195.7	2152.2	1986.9
27.4	1636.4	1513.6	1561.1	1634.2	1822.9	2196.2	2154.3	1988.2
27.5	1638.8	1513.6	1562.2	1639.2	1827.4	2195.2	2163.8	1991.5
27.6	1640.8	1513.2	1563.2	1641.1	1830.6	2195.4	2173	1989.8
27.7	1642	1513.6	1563.6	1642.8	1830.4	2196.5	2183.5	1989.6
27.8	1641.3	1512.3	1564.3	1644.5	1835.2	2196.2	2197.1	1987.7
27.9	1638.8	1512.6	1564.7	1646.2	1841.8	2196.4	2205.4	1990.5
28	1635.5	1513.9	1566.1	1623.3	1842.7	2196.4	2214.2	1990.3
28.1	1632.2	1514.8	1567.1	1645.2	1847.2	2192.6	2226	1993.2
28.2	1630.5	1513.1	1567.1	1647.2	1847	2197.6	2233.1	1992.4
28.3	1629.7	1510.7	1566.9	1650.3	1852.6	2193.7	2238	1998.6
28.4	1629.3	1510.5	1567	1652.2	1858	2204.3	2249.3	1994.5
28.5	1627.9	1508.4	1567.9	1652.1	1860.3	2202.9	2249.2	2002.2
28.6	1626.9	1508.7	1568.4	1653.6	1863.4	2206	2253	2004.1
28.7	1624.5	1507.4	1569	1655.2	1868.4	2217.5	2257.1	2004.7
28.8	1620.5	1507.8	1570	1656.6	1872.7	2220.9	2259.8	2009
28.9	1618.7	1506.1	1570.6	1658.9	1875.5	2225.5	2259.7	2012

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
29	1618.2	1506.2	1571.1	1661	1874.2	2233.4	2263.6	2013.3
29.1	1618.7	1506.4	1573.1	1663.8	1881.7	2243.8	2270.9	2016.8
29.2	1620.2	1506.2	1574.2	1665.2	1883	2251.7	2281.4	2022.5
29.3	1621.6	1505.6	1574.6	1666.3	1890	2254.5	2294.2	2030.9
29.4	1621.9	1505.6	1576.3	1671	1889.2	2256	2308.5	2030.7
29.5	1622.2	1505.2	1577.4	1672.8	1894.6	2251.6	2309.1	2035
29.6	1623.4	1504.7	1580.4	1674.3	1892.7	2259.2	2311.3	2040.4
29.7	1624.7	1503.8	1577.3	1676.4	1896.8	2256.2	2312.5	2039.7
29.8	1625.4	1503.2	1581.8	1679.5	1890.5	2250.8	2296.6	2043.5
29.9	1626.5	1502.2	1582.2	1679.9	1904.1	2249.3	2286.8	2052.5
30	1627.3	1501.4	1581.4	1683.4	1903.2	2252.8	2278.6	2053.9
30.1	1628.3	1500.7	1583	1683.6	1905.5	2252.5	2284.8	2060.5
30.2	1629.4	1500.5	1583.4	1689.9	1909.2	2251.5	2281.1	2058.7
30.3	1630.1	1500	1584.4	1688.6	1912	2253.3	2284	2059.7
30.4	1629.8	1499.3	1584.1	1690.4	1913	2256.6	2273.5	2071.9
30.5	1629.4	1499.6	1585.6	1693.2	1917.1	2250.6	2289.6	2070.8
30.6	1629.2	1500.4	1588.8	1691.8	1920.2	2256.8	2291.8	2078.9
30.7	1628.8	1500.6	1588.7	1688.9	1923.1	2254.4	2287.6	2081.1
30.8	1628.5	1500.9	1589.6	1696.2	1924	2255.3	2267.4	2077.3
30.9	1627.9	1500.9	1590.6	1695.6	1925.3	2266	2270	2083.8
31	1627.3	1500.2	1591.8	1699.6	1924.5	2262.6	2276	2084.9
31.1	1625.9	1499.2	1592.9	1700.2	1928.2	2257.7	2287.6	2084.8
31.2	1624.6	1498.6	1593.3	1701	1925.8	2260	2285	2086.3
31.3	1623.6	1497.5	1594.1	1702.3	1932.1	2263.1	2286.5	2087.8
31.4	1621.8	1496.1	1595.1	1703.3	1932.5	2261.3	2290.4	2089.5
31.5	1620.8	1495.4	1596.9	1706.6	1942.3	2263.3	2290.1	2086.8
31.6	1619.4	1494.7	1597.5	1705.5	1939.2	2263.7	2290.5	2088.9
31.7	1618.1	1494.5	1597.9	1708.8	1938.6	2264.7	2291.8	2087.3
31.8	1617.4	1494.8	1595.2	1709.4	1940	2265.1	2295.8	2089.7
31.9	1616.5	1494.5	1600.1	1714.3	1940.1	2261.8	2297.5	2090
32	1615.8	1494.5	1600.6	1706.7	1941.5	2263.5	2296.9	2093.6
32.1	1616.3	1495	1601.5	1714.3	1946.2	2263.4	2294.5	2096.1
32.2	1617.3	1495.4	1601.5	1714	1948.6	2264.5	2297.9	2089.9
32.3	1616.1	1495.3	1602.4	1714.3	1948.8	2266.1	2298.1	2094.6
32.4	1617.1	1495.4	1602	1718.2	1948	2263.1	2296	2093.5
32.5	1619.5	1495.7	1603.3	1720.8	1947	2264.8	2297.5	2089.7
32.6	1618	1496.1	1603.9	1721.5	1952.7	2265.1	2299.7	2107.4
32.7	1619.4	1496.8	1601.7	1720.5	1950.4	2264.9	2301	2088.1
32.8	1622.3	1497.5	1607.2	1726.2	1953.2	2266.8	2299.4	2095.2
32.9	1621.6	1497.7	1607.7	1723.1	1953.9	2265.1	2297.9	2094.6

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
33	1620.7	1498	1609	1724.2	1956.4	2268.3	2296.3	2094.7
33.1	1621.6	1498.2	1608.3	1727.4	1956.5	2267.1	2296.3	2095.8
33.2	1621.7	1497.7	1609.2	1733.2	1957	2264.6	2296.9	2094.7
33.3	1619.9	1497.3	1610.8	1721.7	1957.7	2266.4	2299.3	2094.9
33.4	1620.2	1496.9	1610.3	1729.7	1957.7	2269.4	2301.6	2098
33.5	1619	1495.6	1608.6	1730.7	1960.8	2267.9	2301.7	2097.5
33.6	1618.4	1495	1609.5	1733.3	1959.6	2271.7	2302.2	2095
33.7	1617.1	1494.1	1611.7	1735.3	1962.9	2275.5	2300.4	2098
33.8	1615.2	1494.1	1612.4	1726.8	1969.9	2270.1	2296.6	2096.2
33.9	1613.6	1492.8	1613.1	1736.8	2049.7	2264.1	2295.9	2099
34	1612.4	1493.6	1613.4	1740	2047.5	2288.2	2297.6	2098
34.1	1611.1	1493.7	1613	1740.9	2048.7	2267.4	2301.6	2098.6
34.2	1609.9	1494.1	1613.7	1740.6	2049.9	2279.5	2302.2	2099.5
34.3	1608.1	1494	1616.3	1741.8	2049.1	2271.2	2303.7	2103.6
34.4	1608	1494.2	1616.7	1746.3	2047.3	2270.3	2304.5	2103.4
34.5	1609.1	1494	1616.1	1749.2	2050.6	2273.6	2303.6	2102.2
34.6	1606.8	1494.4	1619.1	1747.3	2051.7	2269.5	2305.1	2104.6
34.7	1607.4	1494.2	1621.8	1749.1	2051.9	2271.6	2306.8	2104.4
34.8	1606.8	1495	1621.6	1751.3	2076.7	2268.4	2305.9	2100.7
34.9	1607.9	1495.2	1621.5	1750.1	2051.6	2274.7	2302.6	2102.9
35	1608.9	1495.6	1626	1747.4	2053.6	2277	2305.6	2105.5
35.1	1609.1	1495.9	1621.1	1758.2	2053.9	2271.9	2307.8	2105
35.2	1608.3	1497.4	1625.2	1757.6	2054.9	2277	2307.7	2109
35.3	1608.2	1497.8	1625.5	1754	2055.2	2277.4	2306.7	2103.5
35.4	1608.5	1498.1	1624	1759.1	2056.1	2277.6	2308.2	2105.5
35.5	1607.2	1498.6	1629.3	1760.1	2056.6	2278.2	2306.6	2108.1
35.6	1606.8	1498.6	1628	1761.1	2059.5	2277.2	2309.1	2117.2
35.7	1605.7	1498.3	1627.4	1763.2	2054.5	2276.9	2307.7	2109.6
35.8	1604.5	1497.6	1633.5	1764.6	2054.1	2277.5	2310.2	2110.3
35.9	1603.5	1497.1	1629.9	1763.3	2063.5	2278.1	2312.1	2109.8
36	1602.3	1496.9	1629.9	1761.9	2060.7	2279.5	2308	2103.8
36.1	1600.1	1496.6	1631	1767.5	2062.3	2279.3	2308.4	2109.2
36.2	1597.7	1496.2	1633	1768.2	2045.2	2278.4	2309.2	2111.9
36.3	1594.7	1496	1635.6	1767.4	2060.5	2278.9	2308.8	2111.9
36.4	1593.5	1496.2	1637.7	1776.8	2049.4	2278.6	2308.6	2112.9
36.5	1590.2	1495.4	1641.3	1778.4	2060.3	2278.6	2309	2112.9
36.6	1587.5	1495.7	1633.8	1777.5	2063.7	2277.9	2308.6	2112.7
36.7	1586.6	1496.2	1638.1	1776.6	2049.6	2279.4	2308.9	2119.2
36.8	1583.8	1495.3	1638.9	1775.5	2044.9	2274.2	2308.8	2117.3
36.9	1581.7	1495.8	1640.4	1772.2	2042.6	2281.8	2309.7	2115.1

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
37	1580.5	1496.3	1642.2	1777.5	2047.3	2284	2309.5	2116.9
37.1	1578.9	1496	1642.8	1779.6	2043.5	2280.1	2309.3	2118.6
37.2	1577.2	1496.1	1645.6	1781.4	2041.9	2277.5	2309.2	2124.9
37.3	1575.4	1496.4	1644.4	1780.6	2046.4	2278.6	2309.9	2111.7
37.4	1573.6	1497.6	1643.6	1779.2	2046	2278.9	2309.9	2115.2
37.5	1572.6	1498.1	1648.3	1777.5	2045.6	2277.5	2310.4	2115.8
37.6	1570.8	1497.5	1647.8	1793.5	2040.2	2281.1	2311.1	2113.5
37.7	1569.5	1497.8	1657.6	1781.1	2042.5	2279.3	2312.5	2112.9
37.8	1567.8	1499.7	1653.3	1789.9	2037.8	2282.9	2313.4	2114.9
37.9	1565.6	1498.3	1654.4	1780.1	2037.1	2278.3	2312.4	2124.7
38	1564.3	1498.6	1655.3	1792.1	2036	2279.2	2314.6	2114.8
38.1	1561.7	1498.1	1656.8	1793.9	2036.5	2277.6	2315.4	2099.9
38.2	1559.4	1497.7	1656.2	1792.1	2028.9	2277.1	2316.1	2114.9
38.3	1557.3	1497.3	1659.6	1794.2	2031.1	2277.6	2319.5	2115.9
38.4	1555.3	1497	1656.8	1786.6	2033.8	2277.1	2318.7	2116.5
38.5	1552.7	1496.9	1659	1798.9	2032.4	2275.8	2321.6	2117.8
38.6	1550.4	1497.3	1660.8	1798.2	2030.4	2281.4	2319	2114.6
38.7	1546.9	1496.5	1661.7	1796.7	2032.6	2276.7	2320.4	2115
38.8	1542.8	1496.6	1669	1799.4	2028.2	2283.1	2324.6	2124.5
38.9	1543.7	1497.6	1663.5	1802.1	2029.1	2278.7	2326.3	2117.9
39	1539.6	1497	1663	1799.8	2031.9	2276.3	2324.9	2120.8
39.1	1535.2	1497	1662.8	1806.9	2033.3	2279.4	2326.6	2116.5
39.2	1537.7	1496.9	1668.9	1804.9	2033.9	2280.8	2331.8	2114.5
39.3	1533.5	1497.4	1663.5	1803.8	2034.3	2279.2	2331.9	2124.6
39.4	1535.1	1497.3	1671.8	1805.9	2035.2	2283.1	2342	2121.8
39.5	1533.8	1496.9	1668.5	1802.9	2032.9	2279	2329.6	2118.5
39.6	1532.2	1499.7	1673.8	1811	2034.4	2272.5	2331.7	2120.2
39.7	1532.4	1498.6	1672	1808.6	2037.7	2281.3	2336.5	2121.5
39.8	1529.7	1499.2	1676.8	1812.5	2035.8	2281.4	2334.5	2118
39.9	1528.4	1497.7	1676.4	1811.4	2037.2	2283.3	2335.3	2121.6
40	1527.6	1498.2	1678	1812.6	2039.7	2271	2334.6	2113.8
40.1	1525.1	1499.3	1680	1813.7	2042.1	2281.8	2339.5	2119.5
40.2	1524.4	1498.9	1676.1	1815.1	2045.7	2279.2	2341.3	2127.2
40.3	1522	1499.1	1677.7	1815.9	2047.9	2286.7	2338.1	2121.8
40.4	1520.9	1498.7	1685.6	1820	2043.8	2286.1	2340	2122.3
40.5	1518.3	1499	1681.9	1817	2045.9	2283.1	2335.7	2121.4
40.6	1516.4	1498.5	1685.6	1819.3	2051	2287.4	2340.2	2125.4
40.7	1515.7	1498.7	1687.1	1819.5	2049.8	2285	2339.5	2125.5
40.8	1513.6	1498.3	1684.5	1820.7	2043.6	2287.9	2337.3	2120.8
40.9	1511.3	1497.6	1689.5	1822.4	2049	2287.6	2338.6	2122.7

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
41	1510.5	1498.4	1686.8	1824.4	2052.2	2284.5	2340	2118.5
41.1	1508.4	1498.5	1691.2	1816.8	2052.1	2284.6	2338.9	2124.5
41.2	1507.9	1498.7	1689.5	1825.9	2056	2289.3	2336	2129.1
41.3	1506.2	1499.2	1702.3	1823.9	2053.2	2290.4	2340.5	2123
41.4	1505.7	1500.2	1692.1	1817	2057.6	2294.5	2333.6	2125.7
41.5	1504.6	1500.1	1695.8	1825.7	2057	2288.4	2339.1	2126.2
41.6	1505.2	1500.9	1697.3	1826.6	2056.5	2293	2336.9	2125.8
41.7	1503.4	1501.4	1697	1820.2	2059.1	2283.4	2339	2125.4
41.8	1505.2	1501.3	1697.8	1834.9	2058.5	2293.5	2329.7	2124.9
41.9	1501.7	1502.3	1702.1	1826	2058.4	2291.4	2342.5	2128.6
42	1502.7	1502.5	1703.7	1823.6	2058.9	2297.4	2338.1	2126.1
42.1	1500.9	1503.7	1703.2	1832.2	2064.3	2295.3	2339.5	2123.6
42.2	1501.2	1504.2	1702.7	1828.3	2054.9	2296.5	2338.1	2122.5
42.3	1498.2	1504.6	1703.8	1832.1	2064.4	2279.6	2340	2125.7
42.4	1497.4	1505	1701.1	1833.3	2061.8	2302.6	2339.6	2129.9
42.5	1495.4	1505.8	1705.8	1833.4	2066.8	2300.4	2335.8	2126.3
42.6	1495.1	1505.3	1707.6	1834.7	2062.9	2296.5	2335.3	2119.1
42.7	1493.1	1505.2	1707.9	1837	2062.2	2298.8	2335.1	2127.5
42.8	1490.4	1504.9	1710.3	1835.5	2063.7	2299.5	2332.7	2127.4
42.9	1490.2	1504.4	1706.5	1835.6	2066.7	2300	2334	2125.3
43	1490.1	1507.1	1708.2	1839.5	2070.1	2298.5	2331.2	2128.2
43.1	1487.3	1506.7	1710.9	1827.1	2065.7	2300.3	2329.9	2130.6
43.2	1487.5	1507.1	1710.1	1841.3	2069.5	2300.5	2335.3	2140.2
43.3	1488.4	1507.2	1712.5	1836.5	2067.1	2300.6	2330.7	2126.2
43.4	1487.2	1507.6	1712.3	1840.2	2068.3	2302.4	2332	2129.6
43.5	1485.9	1508.2	1716.8	1847.1	2069.3	2302.5	2337.1	2130.1
43.6	1486	1508.6	1719.1	1848.2	2071.2	2304.2	2337.5	2130.9
43.7	1486.3	1509.3	1714.7	1835.5	2070.9	2299.4	2339.7	2133.1
43.8	1486.1	1510.1	1718.5	1843.4	2070.2	2301.8	2338.8	2129.9
43.9	1484.8	1511.2	1718.5	1844.4	2074.1	2303.5	2336.8	2132
44	1484.2	1513	1723.8	1849.3	2075.4	2303.7	2339.7	2129
44.1	1484.6	1513.8	1721.2	1848.6	2075.3	2304.9	2340.1	2133.9
44.2	1482.7	1514.5	1718	1848.1	2074.9	2305.8	2341.8	2117.2
44.3	1481.5	1515.5	1722.5	1852.8	2077.6	2302.9	2341.5	2131.5
44.4	1482.4	1517.1	1724.2	1848	2085.4	2304.1	2343.3	2131.6
44.5	1479.6	1517.8	1725	1849.1	2096.1	2304.5	2341.6	2123.3
44.6	1479.7	1518.9	1722.4	1852.2	2084.3	2302.2	2345	2136.3
44.7	1479.4	1519.3	1718.1	1851.6	2076.6	2304.3	2361.6	2129.9
44.8	1478.1	1519.9	1723.1	1854	2081.9	2305	2344.8	2129.8
44.9	1477.8	1521.2	1727.4	1860.5	2082.6	2303.7	2345.5	2132.3

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
45	1476.1	1521.5	1729.9	1857.4	2087.2	2302.6	2345.5	2132.9
45.1	1475.8	1522.2	1727.8	1861.1	2088.2	2304.1	2348.5	2134.8
45.2	1473.7	1522.6	1728.6	1857.6	2090.2	2304.9	2349.8	2134.9
45.3	1475.6	1523.4	1726.9	1861.1	2088.7	2304.8	2349.3	2138.7
45.4	1472.9	1523.3	1729.2	1858.5	2083.5	2302.7	2349.1	2132.4
45.5	1473	1525	1725	1852	2089	2304	2348.3	2136.3
45.6	1471.7	1524.3	1733.5	1859.7	2094.3	2299.9	2352.2	2134.4
45.7	1473.6	1535.5	1727.8	1865	2086.3	2305.8	2352.9	2135.5
45.8	1471.9	1526.8	1731.7	1867.9	2093.5	2309.6	2351.2	2134.9
45.9	1473.8	1528.1	1734.1	1863.9	2095.5	2303.8	2345.1	2130.3
46	1472	1528.2	1732.9	1861.1	2096.3	2302.6	2350.3	2134.8
46.1	1470.8	1530	1727.7	1870.3	2098.3	2307.1	2352.8	2134.1
46.2	1474.9	1531.1	1738.4	1853.1	2091.1	2305.2	2346.7	2135
46.3	1471.7	1533.4	1735	1868.9	2090.4	2304.8	2348.2	2137.5
46.4	1473.2	1530.5	1738.8	1868.1	2099	2305.9	2360.7	2136.9
46.5	1474.9	1534.8	1745.4	1870.6	2098.6	2306.4	2346.2	2151.2
46.6	1471.3	1533.7	1737.8	1868.9	2100.5	2305.2	2348.7	2136
46.7	1471.6	1534.9	1735.5	1870.8	2103.9	2307.1	2349.5	2140.6
46.8	1467.9	1535.6	1739.5	1869.7	2112.5	2307	2350.4	2142
46.9	1468.2	1536.4	1741.6	1870	2108.8	2306.5	2347	2127.3
47	1470.2	1536.9	1734.7	1873.3	2106.8	2310.1	2341.9	2135.9
47.1	1469.6	1537.3	1738.6	1873.3	2102.2	2305.8	2348.4	2137.1
47.2	1468.9	1538	1738.5	1875.3	2105.6	2305.4	2347	2129.1
47.3	1468.6	1538.3	1736	1870.9	2119.5	2308.7	2350.4	2153.1
47.4	1464.5	1539	1740.1	1872.1	2120.8	2308.1	2358.3	2133.3
47.5	1466.8	1539.9	1742.8	1871.6	2105.7	2306.3	2342.9	2141.8
47.6	1467.8	1540.9	1739.6	1876.5	2113.5	2308.2	2348	2133.2
47.7	1466.3	1540	1742.6	1873.1	2110.7	2303.3	2345.4	2131.3
47.8	1465.8	1541.4	1745.4	1872.2	2106.6	2303.5	2345.4	2140.8
47.9	1465.1	1542.6	1747.8	1876.2	2108.6	2306	2357.2	2151.5
48	1463.1	1543.8	1747.5	1875.4	2114	2307.8	2350.5	2131.8
48.1	1465.6	1543.6	1746.5	1875.8	2109.2	2306.5	2351.9	2128.1
48.2	1468.1	1544	1752.4	1871.7	2110.4	2308.8	2352.5	2137.2
48.3	1462.5	1546.2	1750.6	1876.2	2114.2	2307.1	2351.9	2127.6
48.4	1466.3	1547.4	1752.8	1876.7	2103.6	2306.9	2347.7	2139.5
48.5	1463.8	1547.4	1749.9	1879.1	2118.5	2298.6	2343.1	2146.5
48.6	1463.5	1548.3	1745.5	1877	2104.1	2307.6	2350.2	2139.4
48.7	1464.4	1549	1751.4	1878.4	2115.3	2307.7	2359.5	2139.9
48.8	1462.5	1549.7	1756.3	1878.7	2115.1	2307.9	2352.1	2145
48.9	1467.5	1550.1	1747.1	1872.4	2124.1	2308.5	2355.7	2148.7

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
49	1459	1549.5	1749.2	1875.1	2104.3	2309.8	2355.3	2142.1
49.1	1458.4	1552.3	1753.5	1879.5	2117.9	2308.9	2353.8	2141.8
49.2	1456.4	1552.4	1755.9	1883.6	2112.8	2309.5	2354.9	2139.7
49.3	1457	1552.1	1752.9	1883.4	2124.3	2310.5	2354.9	2137.7
49.4	1454.8	1553.5	1753.8	1874.3	2110.4	2313.5	2357.8	2135.3
49.5	1454.8	1553.7	1758.9	1864.9	2114.1	2307.7	2355.5	2140.4
49.6	1454.2	1553	1758.3	1875.6	2115.3	2308.8	2355	2143.4
49.7	1453	1553.9	1758.2	1886	2117.3	2310.8	2354.9	2143.9
49.8	1451.1	1554.6	1761	1877.2	2120.8	2311.2	2361.6	2146.2
49.9	1451	1557.2	1757.3	1875.8	2113.8	2305.4	2356.4	2145.1
50	1447.6	1555.9	1758.3	1878.3	2119.4	2310.6	2358.1	2143.5
50.1	1447.9	1557.1	1760.8	1879.7	2113.6	2308.8	2359.8	2143.4
50.2	1447	1557.4	1762.3	1881.1	2122.3	2310.3	2353.9	2145.2
50.3	1446.2	1559.3	1766.4	1878.9	2120.4	2310.9	2355.9	2145.4
50.4	1444.5	1558.7	1765	1877.6	2123.7	2310.1	2357	2144.5
50.5	1447.8	1559.6	1752.2	1882.9	2119.7	2310.4	2354.6	2146.7
50.6	1439.7	1566	1768.1	1882.4	2124.4	2310.7	2354	2150.1
50.7	1442.8	1564.2	1753.1	1879.6		2310.1	2362.8	2145.6
50.8	1434.1	1563.3	1765.3	1883		2310.9	2358.6	2144.7
50.9	1434.1	1563.7	1764	1881.3		2312.9	2354.1	2139.6
51	1423.6	1564	1761.2	1883.4		2311.5	2353.2	2140.8
51.1	1434.8	1564.4	1772	1880.1		2309.4	2344.5	2146.8
51.2	1441.8	1564.3	1768.5	1880.8		2312.8	2345.8	2149.3
51.3	1439.5	1561.8	1769.3	1884.3		2309	2352.9	2138
51.4	1438.5	1564.4	1767.5	1884.1		2314.2	2359.2	2145.9
51.5	1438.1	1565.3	1763.9	1881.5		2311.4	2357.2	2136.4
51.6	1443	1565.8	1768.5	1883.9		2315.8	2354.6	2146.6
51.7	1432.3	1564.7	1767.3	1879.9		2313.2	2355.1	2147.5
51.8	1442.7	1566	1766.7	1885.4		2313.6	2361	2149.6
51.9	1442.2	1567.1	1772.4	1883.1		2313.8	2355.3	2145.8
52	1445.1	1572.2	1772.3	1881.5		2315.7	2355.2	2152.3
52.1	1435.8	1568.3	1780.5	1883.6		2320.3	2355.5	2147.1
52.2	1435.5	1568.1	1773	1884.5		2313.6	2353.9	2144.8
52.3	1424.1	1569.2	1772.5	1883.4		2312.8	2356.9	2141.7
52.4	1431.3	1568.3	1774.9	1883.8		2311.5	2348.3	2148.1
52.5	1430.5	1574.1	1773.4	1884.2		2311.8	2354.3	2151.3
52.6	1435.8	1570.3	1777.2	1882.7		2316.1	2355.5	2142.5
52.7	1435.3	1569.4	1775.1	1882.2		2315	2355.6	2150.4
52.8	1439.3	1571.3	1774.3	1887.8		2315.1	2353.6	2153.6
52.9	1434.6	1570.1	1777			2313.3	2357.4	2151.1

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
53	1441.5	1573	1775.8			2315	2359.4	2134.3
53.1	1443	1574.7	1773.9			2315.5	2362	2144.9
53.2	1446	1574.6	1773.2			2320.3	2356.6	2149.2
53.3	1451	1574.1	1777.9			2313.5	2353.7	2145.8
53.4	1450.2	1574	1781			2314.8	2355.6	2147.6
53.5	1450.2	1575.4	1772			2314.9	2356.3	2153.1
53.6	1449.5	1578.5	1778.3			2314.5	2355.8	2147.2
53.7	1452.4	1576.8	1774.2			2315.9	2356.8	2134.2
53.8	1450.5	1578.4	1774.6			2316	2364.3	2151.2
53.9	1453.1	1578	1781.3			2312.8	2353.8	2151.8
54	1453.6	1575	1779			2322	2357.3	2146.8
54.1	1452.1	1578.7	1787.3			2319.1	2357.4	2148.7
54.2	1451.7	1578.6	1787.9			2312.7	2357.3	2142.4
54.3	1453.6	1580.6	1786.6			2317.2	2357.8	2149
54.4	1451.2	1581.6	1786.5			2316.6	2355	2148.6
54.5	1446.4	1582.6	1784			2318.5	2355.4	2156.7
54.6	1448.7	1581.4	1785.1			2314.7	2356	2145
54.7	1446.3	1582.3	1792.7			2314.7	2356.8	2147.6
54.8	1447	1583.6				2318	2352.5	2151.6
54.9	1446.5	1584.2				2315.2	2353.9	2153.9
55	1446.6	1583.7				2309.9	2356.8	2149.1
55.1	1445.8	1585				2312.4	2354.5	2152
55.2	1445.8	1585.9				2317.7	2347.4	2155.5
55.3	1447.3	1587.1				2316.7	2354.6	2153
55.4	1445.1	1592.7				2314.6	2354.8	2160.9
55.5	1444.2	1589.6				2320.6	2355.9	2156.7
55.6	1443.4	1588.3				2311.8	2354.1	2152.8
55.7	1452.6	1589.6				2317.8	2361.2	2149.9
55.8	1445.2	1585.1				2318.9	2357.5	2153.3
55.9	1459.2	1588.9				2317.9	2357.1	2150.3
56	1447.4	1591.2				2317.9	2349.9	2151.2
56.1	1449.5	1593.3				2318.7	2355	2157.5
56.2	1446.4	1595.3				2316	2353	2156
56.3	1451.1	1594.6				2323	2355.6	2155.2
56.4	1452.2	1594.3				2314.8	2356.3	2163.5
56.5	1451.6	1594				2316.6	2352.6	2152.1
56.6	1454.2	1593.1				2318.7	2355.8	2153.4
56.7	1453.6	1594.1				2322.5	2359.4	2150.7
56.8	1453.9	1592.5				2319	2355	2158.3
56.9	1453.9	1594.1				2318.4	2354.5	2153.2

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
57	1453.2	1595.4				2319.1	2355.4	2153.9
57.1	1454.3	1597.8				2320.8	2355.5	2156.5
57.2	1452.6	1597.3				2319.8	2358.1	2153.9
57.3	1451.8	1598.4				2319.5	2354.7	2162.3
57.4	1452.3	1596				2320.8	2355.1	2149.1
57.5	1451.3	1597.9				2321.5	2353.7	2156.8
57.6	1450.3	1599.6				2322.8	2357.3	2155.7
57.7	1450.9	1599.1				2320.7	2356.9	2158.3
57.8	1450.3	1601.4				2323.3	2356.5	2162.4
57.9	1451.1	1600.9				2318.2	2360.8	2149.8
58	1446.8	1601.8				2321.3	2360.2	2162.7
58.1	1449	1603.7				2322.7	2360	2158.2
58.2	1451.3	1603.7				2322	2360.8	2170.1
58.3	1449.5	1610.1				2325.9	2360.4	2164
58.4	1449.3	1605				2325.2	2359.1	2155.9
58.5	1449.9	1606.8				2325.8	2359.3	2158.2
58.6	1448	1606.5				2326.2	2345.8	2156.4
58.7	1448.2	1605.4				2320.8	2350.4	2160.1
58.8	1447.1	1606.1					2352.8	2158.1
58.9	1445.8	1603					2354.7	2161.1
59	1446.2	1607.1					2354.5	2159
59.1	1453.2	1607.1					2354.8	2155.1
59.2	1447.4	1609					2353	2157.3
59.3	1445.8	1610.3					2356.6	2157.6
59.4	1445.8	1612.1					2360.3	2153.5
59.5	1448	1611.9					2360.2	2154.3
59.6	1447.1	1612.2						2156.2
59.7	1445.6	1613.1						2158
59.8	1446.4	1613.9						2153.7
59.9	1470.5	1615						2156.5
60	1445.5	1613.5						2154.3
60.1	1448.3	1608.7						2154.8
60.2	1448.6	1616.2						2156.5
60.3	1446.7	1622.3						2152.8
60.4	1448.9	1618.9						2155.5
60.5	1447.3	1613.4						2154.1
60.6	1446.3	1618.3						2152.4
60.7	1446.8	1617.4						2157.1
60.8	1448	1619.9						2149.8
60.9	1446.6	1616.1						

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
61	1447.6	1620.5						
61.1	1447.4	1620.9						
61.2	1449	1621.3						
61.3	1448.9	1621.5						
61.4	1448.2	1619.5						
61.5	1447.4	1625.6						
61.6	1449.3	1625.4						
61.7	1448.5	1623.3						
61.8	1447.3	1624.9						
61.9	1447.2	1626.2						
62	1450.7	1626.3						
62.1	1451.8	1627.7						
62.2	1448	1626.8						
62.3	1448.1	1625.7						
62.4	1450.6	1625.9						
62.5	1451.9	1625.3						
62.6	1449.3	1641.4						
62.7	1447.3	1630.3						
62.8	1449	1632.8						
62.9	1449.3	1632						
63	1449.5	1632.6						
63.1	1449.2	1633.3						
63.2	1451.8	1630.5						
63.3	1452.3	1628.6						
63.4	1448.6	1628.3						
63.5	1454.7	1632.2						
63.6	1451.5	1632.6						
63.7	1453.2	1634.2						
63.8	1452.9	1634.9						
63.9	1455.2	1637.3						
64	1455.7	1639.2						
64.1	1454.4	1637.7						
64.2	1446.1	1638.8						
64.3	1454.1	1644.9						
64.4	1454.2	1637.7						
64.5	1447.3	1639.2						
64.6		1640.6						
64.7		1639.6						
64.9		1638.5						

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
v = vertical velocity of diagnostic plate at position r = meters/second
t = time from detonator circuit current start = microseconds

DIAGNOSTIC PLATE DISPLACEMENT TABLE

Table 4. Tabulated Diagnostic Plate Displacement of Jack Rabbit Pretest 2021E PT7; time is referenced from detonator circuit current start

Jack Rabbit Pretest 2021E PT7 POSITION Data								
Columnar data: z = mm from top of diagnostic plate datum								
absolute timing accuracy relative to time zero = +/- 0.025 microseconds								
relative timing uncertainty between data channels = +/- 0.005 microseconds								
z postion uncertainty = +/- 5 percent of measurement								
PDV measurement point position uncertainty = +/- 0.25 millimeters								
r →	**0**	**20**	**30**	**35**	**45**	**55**	**65**	**75**
t								
10	0	0	0	0	0	0	0	0
10.1	0	0	0	0	0	0	0	0
10.2	0	0	0	0	0	0	0	0
10.3	0	0	0	0	0	0	0	0
10.4	0	0	0	0	0	0	0	0
10.5	0	0	0	0	0	0	0	0
10.6	5E-05	0	0	0	0	0	0	0
10.7	0.0002	0	0	0	0	0	0	0
10.8	0.0003	0	0	0	0	0	0	0
10.9	0.0004	0	0	0	0	0	0	0
11	0.0005	0	0	0	0	0	0	0
11.1	0.0007	0	0	0	0	0	0	0
11.2	0.0009	0	0	0	0	0	0	0
11.3	0.001	0	0	0	0	0	0	0
11.4	0.0012	0	0	0	0	0	0	0
11.5	0.0013	0	0	0	0	0	0	0
11.6	0.0015	0	0	0	0	0	0	0
11.7	0.0017	0	0	0	0	0	0	0
11.8	0.0019	0	0	0	0	0	0	0
11.9	0.002	0	0	0	0	0	0	0
12	0.0022	0	0	0	0	0	0	0
12.1	0.0024	0	0	0	0	0	0	0
12.2	0.0026	0	0	0	0	0	0	0
12.3	0.0028	0	0	0	0	0	0	0
12.4	0.003	0	0	0	0	0	0	0
12.5	0.0032	0	0	0	0	0	0	0
12.6	0.0035	0	0	0	0	0	0	0
12.7	0.0038	0	0	0	0	0	0	0
12.8	0.0041	0	0	0	0	0	0	0
12.9	0.0045	0	0	0	0	0	0	0

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
13	0.005	3E-05	0	0	0	0	0	0
13.1	0.0055	8E-05	0	0	0	0	0	0
13.2	0.0061	0.0001	0	0	0	0	0	0
13.3	0.0068	0.0002	0	0	0	0	0	0
13.4	0.0075	0.0003	0	0	0	0	0	0
13.5	0.0083	0.0003	0	0	0	0	0	0
13.6	0.0092	0.0004	0	0	0	0	0	0
13.7	0.0103	0.0005	0	0	0	0	0	0
13.8	0.0114	0.0006	0	0	0	0	0	0
13.9	0.0128	0.0007	0	0	0	0	0	0
14	0.0144	0.0009	0	0	0	0	0	0
14.1	0.0164	0.001	0	0	0	0	0	0
14.2	0.0209	0.0012	0	0	0	0	0	0
14.3	0.0286	0.0014	0	0	0	0	0	0
14.4	0.0389	0.0017	0	0	0	0	0	0
14.5	0.0514	0.0019	0	0	0	0	0	0
14.6	0.0649	0.0022	0	0	0	0	0	0
14.7	0.0793	0.0025	0	0	0	0	0	0
14.8	0.0946	0.0029	0	0	0	0	0	0
14.9	0.1112	0.0033	0	0	0	0	0	0
15	0.1298	0.0066	0	0	0	0	0	0
15.1	0.1511	0.014	0	0	0	0	0	0
15.2	0.1743	0.0296	0	0	0	0.052	0.1175	0
15.3	0.1985	0.0541	0	0	0	0.2104	0.348	0
15.4	0.2235	0.0813	0	0	0	0.4198	0.5713	0
15.5	0.2491	0.1091	0	0	0	0.6241	0.7906	0
15.6	0.2746	0.1377	0.0031	0	0	0.8273	1.0087	0
15.7	0.2996	0.1669	0.0114	0	0	1.0294	1.2259	0.1072
15.8	0.3241	0.1967	0.0432	0.0022	0	1.23	1.4422	0.319
15.9	0.3479	0.2278	0.0981	0.0264	0	1.4303	1.658	0.5251
16	0.3715	0.26	0.1564	0.0892	0.0341	1.6304	1.873	0.7272
16.1	0.3952	0.2936	0.2172	0.1712	0.1154	1.8299	2.0879	0.9287
16.2	0.4195	0.3288	0.2802	0.2538	0.2111	2.0296	2.3027	1.13
16.3	0.4447	0.3658	0.3452	0.3368	0.3091	2.2293	2.5169	1.3304
16.4	0.4712	0.4042	0.4118	0.4204	0.4412	2.4286	2.7307	1.5304
16.5	0.4994	0.4442	0.4799	0.5044	0.609	2.6276	2.9442	1.7299
16.6	0.5293	0.4855	0.5494	0.5888	0.7798	2.8266	3.1574	1.929
16.7	0.5614	0.5289	0.6198	0.674	0.9488	3.0257	3.3704	2.128
16.8	0.5958	0.5746	0.6913	0.7604	1.1148	3.2246	3.5832	2.327
16.9	0.6325	0.6234	0.7643	0.8479	1.2791	3.4233	3.7959	2.5261

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
17	0.6714	0.6759	0.8387	0.9574	1.4424	3.6223	4.0085	2.7254
17.1	0.7123	0.732	0.9143	1.0887	1.6047	3.821	4.2209	2.9244
17.2	0.7549	0.7913	0.9908	1.2203	1.7664	4.0195	4.4332	3.1233
17.3	0.799	0.853	1.0682	1.3517	1.9277	4.2178	4.6455	3.3217
17.4	0.845	0.9164	1.1469	1.4825	2.089	4.416	4.8578	3.5203
17.5	0.8927	0.9815	1.2278	1.612	2.25	4.6142	5.0701	3.7197
17.6	0.942	1.0481	1.3298	1.7409	2.4109	4.8121	5.2823	3.9192
17.7	0.9924	1.1162	1.4547	1.8699	2.5719	5.0101	5.4944	4.1188
17.8	1.0436	1.1858	1.5833	1.9996	2.7328	5.2082	5.7064	4.3187
17.9	1.0955	1.257	1.7115	2.1313	2.8937	5.406	5.9185	4.5188
18	1.1478	1.3298	1.8389	2.2648	3.0546	5.6039	6.1304	4.719
18.1	1.2005	1.4041	1.9654	2.3984	3.2154	5.8019	6.3423	4.9193
18.2	1.2535	1.4798	2.0909	2.5317	3.3759	5.9998	6.554	5.1194
18.3	1.3068	1.5569	2.2159	2.6644	3.5365	6.1974	6.7655	5.3196
18.4	1.3605	1.6352	2.3409	2.7978	3.6972	6.3947	6.977	5.5198
18.5	1.415	1.7151	2.4656	2.9333	3.8579	6.5924	7.1886	5.7201
18.6	1.4705	1.7965	2.5904	3.0711	4.0188	6.79	7.3999	5.9201
18.7	1.5274	1.8792	2.7154	3.2102	4.1811	6.9877	7.6112	6.1202
18.8	1.5867	1.9636	2.8416	3.35	4.3438	7.1855	7.8225	6.3202
18.9	1.6491	2.0497	2.9708	3.4905	4.5066	7.3832	8.0337	6.5202
19	1.7152	2.1381	3.1027	3.6316	4.6696	7.5808	8.2448	6.7204
19.1	1.7857	2.2323	3.2361	3.7731	4.8322	7.7783	8.456	6.9205
19.2	1.8619	2.3335	3.3699	3.9148	4.9951	7.9756	8.667	7.1209
19.3	1.9429	2.4375	3.5039	4.0565	5.1582	8.1729	8.878	7.3211
19.4	2.0253	2.5424	3.6386	4.1983	5.3214	8.3701	9.0888	7.5209
19.5	2.1075	2.648	3.7741	4.3403	5.4847	8.5673	9.2996	7.7209
19.6	2.19	2.7544	3.9101	4.4825	5.6482	8.7643	9.5102	7.9208
19.7	2.2734	2.8614	4.0463	4.6248	5.8115	8.9613	9.7208	8.1207
19.8	2.358	2.9693	4.1828	4.7674	5.9749	9.158	9.9313	8.3207
19.9	2.4442	3.0787	4.3194	4.9103	6.1377	9.3547	10.142	8.5206
20	2.5318	3.1904	4.4562	5.0535	6.3005	9.5518	10.352	8.7204
20.1	2.6207	3.3049	4.5929	5.1968	6.4639	9.7494	10.562	8.9202
20.2	2.7109	3.4225	4.7295	5.3403	6.6275	9.9469	10.772	9.1199
20.3	2.8027	3.5422	4.866	5.4839	6.7914	10.144	10.982	9.3196
20.4	2.896	3.6634	5.0024	5.6275	6.9555	10.341	11.192	9.5193
20.5	2.9912	3.7853	5.139	5.7712	7.1199	10.538	11.402	9.719
20.6	3.0885	3.9078	5.2759	5.9154	7.2843	10.736	11.612	9.9187
20.7	3.1874	4.0311	5.4132	6.06	7.4488	10.933	11.822	10.118
20.8	3.2868	4.1551	5.551	6.2049	7.6136	11.131	12.031	10.318
20.9	3.3864	4.2797	5.6892	6.3503	7.7789	11.328	12.241	10.518

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
21	3.4863	4.4051	5.8281	6.4959	7.9446	11.526	12.45	10.717
21.1	3.5864	4.5315	5.9674	6.6417	8.1104	11.724	12.66	10.917
21.2	3.6868	4.6587	6.1072	6.7877	8.2763	11.922	12.869	11.116
21.3	3.7876	4.7866	6.2473	6.9336	8.4426	12.119	13.078	11.315
21.4	3.8889	4.9152	6.3876	7.0795	8.6092	12.317	13.288	11.515
21.5	3.991	5.0446	6.5281	7.2253	8.7762	12.513	13.497	11.714
21.6	4.0941	5.175	6.6687	7.3713	8.9435	12.709	13.706	11.913
21.7	4.1982	5.3063	6.8093	7.5176	9.1109	12.906	13.915	12.113
21.8	4.3031	5.4384	6.95	7.6643	9.2786	13.102	14.124	12.312
21.9	4.4089	5.5713	7.0908	7.8114	9.4466	13.299	14.333	12.511
22	4.5157	5.7048	7.2317	7.9587	9.6148	13.495	14.541	12.711
22.1	4.6236	5.8388	7.3728	8.1062	9.7831	13.69	14.75	12.91
22.2	4.7333	5.9733	7.5141	8.2538	9.9517	13.886	14.958	13.109
22.3	4.8452	6.1084	7.6555	8.4015	10.12	14.082	15.167	13.308
22.4	4.9586	6.2438	7.7972	8.5492	10.289	14.278	15.375	13.508
22.5	5.0725	6.3795	7.939	8.6969	10.458	14.475	15.584	13.707
22.6	5.1869	6.5156	8.0808	8.8445	10.628	14.672	15.792	13.906
22.7	5.3024	6.6522	8.2229	8.9919	10.798	14.869	16	14.105
22.8	5.4199	6.7889	8.3651	9.1398	10.967	15.067	16.209	14.304
22.9	5.5405	6.9259	8.5077	9.2883	11.137	15.266	16.417	14.503
23	5.6652	7.0633	8.6504	9.437	11.308	15.465	16.625	14.702
23.1	5.7945	7.2012	8.7934	9.586	11.479	15.666	16.834	14.901
23.2	5.9278	7.3394	8.9364	9.7353	11.65	15.866	17.042	15.1
23.3	6.0641	7.4779	9.0797	9.885	11.821	16.068	17.25	15.299
23.4	6.2031	7.6169	9.2231	10.035	11.993	16.27	17.459	15.498
23.5	6.3445	7.7562	9.3666	10.185	12.164	16.473	17.668	15.697
23.6	6.4882	7.8961	9.5102	10.336	12.336	16.676	17.877	15.896
23.7	6.6339	8.0363	9.654	10.487	12.508	16.881	18.086	16.095
23.8	6.7821	8.1771	9.7981	10.638	12.681	17.086	18.295	16.294
23.9	6.9329	8.3184	9.9424	10.789	12.853	17.292	18.504	16.492
24	7.0864	8.4603	10.087	10.94	13.026	17.5	18.712	16.691
24.1	7.2427	8.6028	10.232	11.092	13.199	17.709	18.922	16.89
24.2	7.4016	8.7459	10.377	11.243	13.372	17.919	19.131	17.089
24.3	7.563	8.8896	10.523	11.395	13.546	18.131	19.341	17.288
24.4	7.7263	9.034	10.669	11.547	13.72	18.344	19.551	17.487
24.5	7.8905	9.179	10.816	11.7	13.894	18.557	19.762	17.685
24.6	8.0548	9.3248	10.963	11.852	14.069	18.772	19.972	17.884
24.7	8.219	9.4714	11.112	12.005	14.243	18.987	20.182	18.083
24.8	8.3829	9.6188	11.26	12.158	14.418	19.202	20.393	18.281
24.9	8.547	9.767	11.41	12.312	14.593	19.418	20.603	18.48

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
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t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
25	8.7113	9.9158	11.56	12.465	14.768	19.635	20.813	18.678
25.1	8.876	10.065	11.71	12.619	14.944	19.852	21.023	18.877
25.2	9.0406	10.214	11.862	12.774	15.12	20.069	21.233	19.075
25.3	9.2051	10.364	12.013	12.929	15.296	20.287	21.443	19.274
25.4	9.3694	10.513	12.166	13.085	15.472	20.505	21.653	19.472
25.5	9.5335	10.663	12.319	13.241	15.648	20.723	21.863	19.671
25.6	9.6971	10.813	12.472	13.398	15.825	20.941	22.072	19.869
25.7	9.8603	10.962	12.625	13.555	16.002	21.16	22.282	20.067
25.8	10.023	11.112	12.779	13.712	16.179	21.379	22.492	20.266
25.9	10.185	11.262	12.933	13.87	16.357	21.597	22.702	20.464
26	10.347	11.413	13.087	14.028	16.534	21.816	22.912	20.663
26.1	10.509	11.563	13.241	14.186	16.713	22.035	23.121	20.861
26.2	10.67	11.713	13.396	14.345	16.891	22.254	23.331	21.06
26.3	10.831	11.863	13.55	14.504	17.069	22.473	23.54	21.258
26.4	10.991	12.013	13.705	14.664	17.247	22.692	23.75	21.457
26.5	11.152	12.164	13.86	14.823	17.427	22.911	23.96	21.655
26.6	11.312	12.314	14.015	14.984	17.606	23.13	24.17	21.854
26.7	11.472	12.465	14.17	15.144	17.786	23.349	24.38	22.051
26.8	11.632	12.615	14.326	15.305	17.966	23.568	24.59	22.249
26.9	11.792	12.766	14.481	15.466	18.147	23.787	24.801	22.448
27	11.954	12.917	14.637	15.628	18.328	24.007	25.013	22.647
27.1	12.115	13.068	14.792	15.79	18.509	24.226	25.225	22.845
27.2	12.278	13.22	14.948	15.952	18.69	24.446	25.438	23.044
27.3	12.44	13.371	15.104	16.115	18.872	24.665	25.652	23.242
27.4	12.604	13.522	15.26	16.278	19.054	24.885	25.867	23.441
27.5	12.768	13.674	15.416	16.442	19.236	25.105	26.083	23.64
27.6	12.932	13.825	15.573	16.606	19.419	25.324	26.3	23.839
27.7	13.096	13.976	15.729	16.77	19.602	25.544	26.518	24.038
27.8	13.26	14.128	15.885	16.935	19.786	25.763	26.737	24.237
27.9	13.424	14.279	16.042	17.099	19.969	25.983	26.957	24.436
28	13.588	14.43	16.198	17.263	20.154	26.203	27.178	24.635
28.1	13.751	14.582	16.355	17.426	20.338	26.422	27.4	24.834
28.2	13.914	14.733	16.512	17.591	20.523	26.641	27.623	25.033
28.3	14.077	14.884	16.669	17.756	20.708	26.861	27.847	25.233
28.4	14.24	15.035	16.825	17.921	20.893	27.081	28.071	25.433
28.5	14.403	15.186	16.982	18.086	21.079	27.301	28.296	25.633
28.6	14.566	15.337	17.139	18.251	21.265	27.522	28.521	25.833
28.7	14.728	15.488	17.296	18.417	21.452	27.743	28.746	26.033
28.8	14.891	15.639	17.453	18.582	21.639	27.965	28.972	26.234
28.9	15.053	15.789	17.61	18.748	21.826	28.187	29.198	26.435

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r →	0	20	30	35	45	55	65	75
t								
29	15.214	15.94	17.767	18.914	22.014	28.41	29.424	26.636
29.1	15.376	16.09	17.924	19.08	22.202	28.634	29.651	26.838
29.2	15.538	16.241	18.081	19.247	22.39	28.859	29.879	27.04
29.3	15.7	16.392	18.239	19.413	22.579	29.084	30.108	27.242
29.4	15.862	16.542	18.396	19.58	22.768	29.31	30.338	27.445
29.5	16.025	16.693	18.554	19.747	22.957	29.535	30.569	27.649
29.6	16.187	16.843	18.712	19.915	23.146	29.761	30.8	27.853
29.7	16.349	16.994	18.87	20.082	23.336	29.986	31.031	28.057
29.8	16.512	17.144	19.028	20.25	23.525	30.212	31.261	28.261
29.9	16.674	17.294	19.186	20.418	23.715	30.437	31.49	28.466
30	16.837	17.445	19.344	20.586	23.905	30.662	31.719	28.671
30.1	17	17.595	19.502	20.754	24.096	30.887	31.947	28.877
30.2	17.163	17.745	19.661	20.923	24.286	31.112	32.175	29.083
30.3	17.326	17.895	19.819	21.092	24.477	31.337	32.403	29.288
30.4	17.489	18.045	19.977	21.261	24.669	31.563	32.631	29.495
30.5	17.652	18.195	20.136	21.43	24.86	31.788	32.859	29.702
30.6	17.815	18.345	20.295	21.599	25.052	32.014	33.088	29.91
30.7	17.978	18.495	20.453	21.768	25.244	32.239	33.317	30.118
30.8	18.14	18.645	20.612	21.938	25.436	32.465	33.545	30.326
30.9	18.303	18.795	20.771	22.107	25.629	32.691	33.772	30.534
31	18.466	18.945	20.931	22.277	25.821	32.917	33.999	30.742
31.1	18.629	19.095	21.09	22.447	26.014	33.143	34.228	30.951
31.2	18.791	19.245	21.249	22.617	26.207	33.369	34.456	31.159
31.3	18.954	19.395	21.408	22.787	26.4	33.595	34.685	31.368
31.4	19.116	19.544	21.568	22.958	26.593	33.822	34.914	31.577
31.5	19.278	19.694	21.728	23.128	26.787	34.048	35.143	31.785
31.6	19.44	19.843	21.887	23.299	26.981	34.274	35.372	31.994
31.7	19.602	19.993	22.047	23.469	27.175	34.501	35.601	32.203
31.8	19.764	20.142	22.207	23.64	27.369	34.727	35.83	32.412
31.9	19.925	20.292	22.366	23.811	27.563	34.953	36.06	32.621
32	20.087	20.441	22.526	23.983	27.757	35.18	36.289	32.83
32.1	20.249	20.591	22.687	24.154	27.951	35.406	36.519	33.04
32.2	20.41	20.74	22.847	24.325	28.146	35.632	36.749	33.249
32.3	20.572	20.89	23.007	24.496	28.341	35.859	36.978	33.458
32.4	20.734	21.039	23.167	24.668	28.535	36.085	37.208	33.667
32.5	20.895	21.189	23.327	24.84	28.73	36.312	37.438	33.877
32.6	21.057	21.338	23.488	25.012	28.925	36.538	37.668	34.087
32.7	21.219	21.488	23.648	25.184	29.12	36.765	37.898	34.296
32.8	21.381	21.638	23.808	25.357	29.316	36.991	38.128	34.505
32.9	21.543	21.787	23.969	25.529	29.511	37.218	38.358	34.715

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r →	0	20	30	35	45	55	65	75
t								
33	21.706	21.937	24.13	25.701	29.706	37.445	38.587	34.924
33.1	21.868	22.087	24.291	25.874	29.902	37.671	38.817	35.134
33.2	22.03	22.237	24.452	26.047	30.098	37.898	39.047	35.343
33.3	22.192	22.387	24.613	26.22	30.293	38.124	39.276	35.553
33.4	22.354	22.536	24.774	26.392	30.489	38.351	39.506	35.763
33.5	22.516	22.686	24.935	26.565	30.685	38.578	39.737	35.972
33.6	22.678	22.835	25.096	26.739	30.881	38.805	39.967	36.182
33.7	22.84	22.985	25.257	26.912	31.077	39.032	40.197	36.392
33.8	23.001	23.134	25.418	27.085	31.274	39.26	40.427	36.601
33.9	23.163	23.284	25.579	27.258	31.475	39.486	40.656	36.811
34	23.324	23.433	25.741	27.432	31.68	39.714	40.886	37.021
34.1	23.485	23.582	25.902	27.606	31.885	39.942	41.116	37.231
34.2	23.646	23.732	26.063	27.78	32.09	40.169	41.346	37.441
34.3	23.807	23.881	26.225	27.954	32.294	40.397	41.577	37.651
34.4	23.968	24.031	26.386	28.129	32.499	40.624	41.807	37.861
34.5	24.129	24.18	26.548	28.303	32.704	40.851	42.037	38.071
34.6	24.289	24.329	26.71	28.478	32.909	41.078	42.268	38.282
34.7	24.45	24.479	26.872	28.653	33.114	41.305	42.498	38.492
34.8	24.611	24.628	27.034	28.828	33.321	41.532	42.729	38.703
34.9	24.772	24.778	27.196	29.003	33.527	41.759	42.959	38.913
35	24.932	24.927	27.358	29.178	33.733	41.987	43.19	39.123
35.1	25.093	25.077	27.521	29.353	33.938	42.214	43.421	39.334
35.2	25.254	25.227	27.683	29.529	34.143	42.442	43.651	39.544
35.3	25.415	25.376	27.846	29.705	34.349	42.67	43.882	39.755
35.4	25.576	25.526	28.008	29.88	34.554	42.897	44.113	39.965
35.5	25.737	25.676	28.171	30.056	34.76	43.125	44.344	40.176
35.6	25.897	25.826	28.334	30.232	34.966	43.353	44.574	40.387
35.7	26.058	25.976	28.496	30.409	35.172	43.581	44.805	40.599
35.8	26.218	26.125	28.66	30.585	35.377	43.808	45.036	40.81
35.9	26.379	26.275	28.823	30.761	35.583	44.036	45.267	41.021
36	26.539	26.425	28.986	30.938	35.789	44.264	45.498	41.231
36.1	26.699	26.575	29.149	31.114	35.995	44.492	45.729	41.442
36.2	26.859	26.724	29.312	31.291	36.201	44.72	45.96	41.653
36.3	27.019	26.874	29.475	31.468	36.406	44.948	46.191	41.864
36.4	27.178	27.023	29.639	31.645	36.611	45.176	46.422	42.075
36.5	27.337	27.173	29.803	31.823	36.817	45.403	46.653	42.287
36.6	27.496	27.323	29.967	32	37.023	45.631	46.883	42.498
36.7	27.655	27.472	30.13	32.178	37.229	45.859	47.114	42.71
36.8	27.814	27.622	30.294	32.356	37.433	46.087	47.345	42.921
36.9	27.972	27.771	30.458	32.533	37.638	46.315	47.576	43.133

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t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
37	28.13	27.921	30.622	32.711	37.842	46.543	47.807	43.345
37.1	28.288	28.071	30.787	32.888	38.047	46.771	48.038	43.556
37.2	28.446	28.22	30.951	33.067	38.251	46.999	48.269	43.769
37.3	28.603	28.37	31.115	33.245	38.456	47.227	48.5	43.98
37.4	28.761	28.519	31.28	33.423	38.66	47.455	48.731	44.192
37.5	28.918	28.669	31.444	33.6	38.865	47.682	48.962	44.403
37.6	29.075	28.819	31.609	33.779	39.069	47.91	49.193	44.615
37.7	29.232	28.969	31.775	33.958	39.273	48.138	49.424	44.826
37.8	29.389	29.119	31.94	34.136	39.477	48.366	49.655	45.038
37.9	29.546	29.269	32.105	34.315	39.681	48.595	49.887	45.25
38	29.702	29.418	32.271	34.493	39.885	48.822	50.118	45.462
38.1	29.859	29.568	32.437	34.673	40.088	49.05	50.35	45.672
38.2	30.015	29.718	32.602	34.852	40.292	49.278	50.581	45.883
38.3	30.17	29.868	32.768	35.031	40.495	49.506	50.813	46.095
38.4	30.326	30.017	32.934	35.21	40.698	49.733	51.045	46.306
38.5	30.482	30.167	33.1	35.39	40.901	49.961	51.277	46.518
38.6	30.637	30.317	33.266	35.569	41.104	50.189	51.509	46.729
38.7	30.792	30.467	33.432	35.749	41.307	50.417	51.741	46.941
38.8	30.946	30.616	33.598	35.929	41.51	50.645	51.973	47.153
38.9	31.1	30.766	33.765	36.109	41.713	50.873	52.206	47.365
39	31.255	30.916	33.931	36.289	41.916	51.101	52.438	47.577
39.1	31.408	31.065	34.097	36.47	42.12	51.328	52.671	47.789
39.2	31.562	31.215	34.264	36.65	42.323	51.557	52.904	48
39.3	31.715	31.365	34.431	36.831	42.526	51.785	53.137	48.212
39.4	31.869	31.515	34.597	37.011	42.73	52.013	53.371	48.425
39.5	32.022	31.664	34.764	37.192	42.933	52.241	53.604	48.637
39.6	32.176	31.814	34.932	37.372	43.137	52.468	53.837	48.849
39.7	32.329	31.964	35.099	37.553	43.34	52.696	54.071	49.061
39.8	32.482	32.114	35.266	37.734	43.544	52.924	54.304	49.273
39.9	32.635	32.264	35.434	37.915	43.748	53.152	54.538	49.485
40	32.788	32.413	35.602	38.097	43.951	53.38	54.771	49.696
40.1	32.94	32.563	35.77	38.278	44.155	53.608	55.005	49.908
40.2	33.093	32.713	35.937	38.459	44.36	53.836	55.239	50.12
40.3	33.245	32.863	36.105	38.641	44.565	54.064	55.473	50.333
40.4	33.397	33.013	36.273	38.823	44.769	54.293	55.707	50.545
40.5	33.549	33.163	36.442	39.005	44.974	54.521	55.941	50.757
40.6	33.701	33.313	36.61	39.186	45.178	54.75	56.174	50.97
40.7	33.853	33.463	36.779	39.368	45.383	54.978	56.408	51.182
40.8	34.004	33.613	36.947	39.55	45.588	55.207	56.642	51.394
40.9	34.155	33.762	37.116	39.732	45.793	55.436	56.876	51.607

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t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
41	34.306	33.912	37.285	39.915	45.998	55.664	57.11	51.819
41.1	34.457	34.062	37.454	40.097	46.203	55.893	57.344	52.031
41.2	34.608	34.212	37.623	40.279	46.408	56.121	57.578	52.244
41.3	34.759	34.362	37.792	40.462	46.614	56.35	57.811	52.456
41.4	34.909	34.512	37.962	40.644	46.819	56.58	58.045	52.669
41.5	35.06	34.662	38.131	40.826	47.025	56.809	58.279	52.881
41.6	35.21	34.812	38.301	41.008	47.231	57.038	58.513	53.094
41.7	35.361	34.962	38.471	41.191	47.437	57.267	58.746	53.306
41.8	35.511	35.112	38.64	41.373	47.643	57.496	58.98	53.519
41.9	35.662	35.262	38.81	41.556	47.848	57.725	59.213	53.732
42	35.812	35.412	38.981	41.739	48.054	57.954	59.447	53.944
42.1	35.962	35.563	39.151	41.922	48.26	58.184	59.681	54.157
42.2	36.112	35.713	39.321	42.105	48.466	58.414	59.915	54.369
42.3	36.262	35.864	39.492	42.288	48.672	58.642	60.149	54.581
42.4	36.412	36.014	39.662	42.471	48.879	58.871	60.383	54.794
42.5	36.561	36.165	39.832	42.654	49.085	59.102	60.617	55.007
42.6	36.711	36.315	40.003	42.838	49.292	59.331	60.85	55.219
42.7	36.86	36.466	40.174	43.021	49.498	59.561	61.084	55.432
42.8	37.01	36.616	40.345	43.205	49.704	59.791	61.317	55.644
42.9	37.159	36.767	40.516	43.389	49.911	60.021	61.551	55.857
43	37.308	36.917	40.686	43.572	50.117	60.251	61.784	56.07
43.1	37.457	37.068	40.857	43.756	50.324	60.481	62.017	56.283
43.2	37.605	37.219	41.028	43.939	50.531	60.711	62.25	56.496
43.3	37.754	37.369	41.199	44.123	50.738	60.941	62.484	56.71
43.4	37.903	37.52	41.371	44.307	50.945	61.171	62.717	56.922
43.5	38.051	37.671	41.542	44.491	51.151	61.401	62.95	57.135
43.6	38.2	37.822	41.714	44.676	51.358	61.632	63.184	57.348
43.7	38.349	37.973	41.886	44.86	51.566	61.862	63.418	57.562
43.8	38.497	38.124	42.057	45.044	51.773	62.092	63.652	57.775
43.9	38.646	38.275	42.229	45.228	51.98	62.322	63.885	57.988
44	38.794	38.426	42.401	45.413	52.187	62.553	64.119	58.201
44.1	38.943	38.577	42.573	45.598	52.395	62.783	64.353	58.414
44.2	39.091	38.729	42.745	45.783	52.602	63.014	64.587	58.627
44.3	39.239	38.88	42.917	45.968	52.81	63.244	64.821	58.839
44.4	39.388	39.032	43.09	46.153	53.018	63.474	65.056	59.052
44.5	39.536	39.183	43.262	46.338	53.227	63.705	65.29	59.265
44.6	39.684	39.335	43.435	46.523	53.436	63.935	65.524	59.478
44.7	39.832	39.487	43.607	46.708	53.644	64.165	65.76	59.691
44.8	39.979	39.639	43.779	46.893	53.852	64.396	65.995	59.904
44.9	40.127	39.791	43.951	47.079	54.06	64.626	66.229	60.117

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
45	40.275	39.943	44.124	47.265	54.269	64.857	66.464	60.33
45.1	40.423	40.096	44.297	47.451	54.478	65.087	66.699	60.544
45.2	40.57	40.248	44.47	47.637	54.687	65.318	66.934	60.757
45.3	40.717	40.4	44.643	47.823	54.896	65.548	67.169	60.971
45.4	40.865	40.552	44.815	48.009	55.104	65.778	67.403	61.185
45.5	41.012	40.705	44.988	48.194	55.313	66.009	67.638	61.398
45.6	41.159	40.857	45.161	48.38	55.522	66.239	67.873	61.612
45.7	41.307	41.01	45.334	48.566	55.731	66.469	68.109	61.825
45.8	41.454	41.163	45.507	48.753	55.94	66.7	68.344	62.039
45.9	41.601	41.316	45.68	48.939	56.149	66.931	68.579	62.252
46	41.748	41.469	45.854	49.126	56.359	67.161	68.813	62.465
46.1	41.896	41.622	46.027	49.312	56.569	67.391	69.049	62.679
46.2	42.043	41.775	46.2	49.498	56.778	67.622	69.284	62.892
46.3	42.19	41.928	46.374	49.684	56.987	67.853	69.518	63.106
46.4	42.337	42.081	46.547	49.871	57.197	68.083	69.754	63.319
46.5	42.485	42.235	46.722	50.058	57.407	68.314	69.989	63.534
46.6	42.632	42.388	46.896	50.245	57.617	68.544	70.224	63.748
46.7	42.779	42.542	47.069	50.432	57.827	68.775	70.459	63.962
46.8	42.926	42.695	47.243	50.619	58.038	69.006	70.694	64.176
46.9	43.073	42.849	47.417	50.806	58.249	69.236	70.929	64.39
47	43.22	43.002	47.591	50.993	58.459	69.467	71.163	64.603
47.1	43.367	43.156	47.765	51.181	58.67	69.698	71.398	64.816
47.2	43.514	43.31	47.939	51.368	58.88	69.928	71.632	65.03
47.3	43.661	43.464	48.112	51.555	59.092	70.159	71.867	65.244
47.4	43.808	43.617	48.286	51.743	59.304	70.39	72.103	65.458
47.5	43.954	43.771	48.46	51.93	59.515	70.621	72.338	65.672
47.6	44.101	43.925	48.634	52.117	59.726	70.851	72.572	65.886
47.7	44.248	44.079	48.808	52.305	59.937	71.082	72.807	66.099
47.8	44.394	44.234	48.983	52.492	60.148	71.312	73.041	66.312
47.9	44.541	44.388	49.158	52.679	60.359	71.543	73.277	66.527
48	44.687	44.542	49.332	52.867	60.57	71.773	73.512	66.741
48.1	44.834	44.696	49.507	53.054	60.781	72.004	73.747	66.954
48.2	44.98	44.851	49.682	53.242	60.992	72.235	73.982	67.167
48.3	45.127	45.005	49.857	53.429	61.203	72.466	74.218	67.381
48.4	45.273	45.16	50.032	53.617	61.414	72.696	74.453	67.594
48.5	45.42	45.315	50.207	53.805	61.625	72.927	74.687	67.808
48.6	45.566	45.47	50.382	53.992	61.836	73.157	74.922	68.023
48.7	45.712	45.624	50.557	54.18	62.047	73.388	75.157	68.237
48.8	45.859	45.779	50.732	54.368	62.259	73.619	75.393	68.451
48.9	46.005	45.934	50.908	54.556	62.471	73.849	75.628	68.666

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
49	46.152	46.089	51.082	54.743	62.682	74.08	75.864	68.88
49.1	46.297	46.244	51.257	54.931	62.893	74.311	76.099	69.094
49.2	46.443	46.4	51.433	55.119	63.105	74.542	76.335	69.308
49.3	46.589	46.555	51.608	55.307	63.317	74.773	76.57	69.522
49.4	46.734	46.71	51.784	55.495	63.528	75.004	76.806	69.736
49.5	46.88	46.866	51.959	55.682	63.74	75.235	77.041	69.95
49.6	47.025	47.021	52.135	55.869	63.951	75.466	77.277	70.164
49.7	47.171	47.176	52.311	56.057	64.163	75.697	77.512	70.378
49.8	47.316	47.332	52.487	56.245	64.375	75.928	77.748	70.593
49.9	47.461	47.487	52.663	56.433	64.586	76.159	77.984	70.807
50	47.606	47.643	52.839	56.621	64.798	76.39	78.22	71.022
50.1	47.751	47.799	53.015	56.809	65.01	76.621	78.456	71.236
50.2	47.895	47.954	53.191	56.997	65.222	76.852	78.691	71.45
50.3	48.04	48.11	53.367	57.185	65.434	77.083	78.927	71.665
50.4	48.185	48.266	53.544	57.372	65.646	77.314	79.163	71.88
50.5	48.329	48.422	53.72	57.561	65.858	77.545	79.398	72.094
50.6	48.474	48.578	53.896	57.749	66.07	77.776	79.634	72.309
50.7	48.618	48.735	54.072	57.937		78.007	79.869	72.524
50.8	48.762	48.891	54.248	58.125		78.238	80.106	72.738
50.9	48.905	49.047	54.424	58.313		78.469	80.341	72.952
51	49.048	49.204	54.6	58.501		78.701	80.577	73.166
51.1	49.191	49.36	54.777	58.69		78.932	80.811	73.381
51.2	49.335	49.517	54.954	58.878		79.163	81.046	73.596
51.3	49.479	49.673	55.131	59.066		79.394	81.281	73.81
51.4	49.623	49.829	55.308	59.254		79.625	81.516	74.024
51.5	49.766	49.986	55.484	59.443		79.856	81.752	74.238
51.6	49.911	50.142	55.661	59.631		80.088	81.988	74.452
51.7	50.054	50.299	55.838	59.819		80.319	82.223	74.667
51.8	50.198	50.455	56.014	60.007		80.55	82.459	74.882
51.9	50.342	50.612	56.191	60.196		80.782	82.695	75.097
52	50.487	50.769	56.369	60.384		81.013	82.931	75.312
52.1	50.631	50.926	56.546	60.572		81.245	83.166	75.527
52.2	50.774	51.083	56.724	60.761		81.477	83.402	75.741
52.3	50.917	51.24	56.901	60.949		81.708	83.637	75.956
52.4	51.06	51.397	57.079	61.137		81.939	83.872	76.17
52.5	51.203	51.554	57.256	61.326		82.17	84.107	76.385
52.6	51.346	51.711	57.434	61.514		82.402	84.343	76.6
52.7	51.49	51.868	57.611	61.702		82.633	84.578	76.814
52.8	51.634	52.025	57.789	61.891		82.865	84.814	77.03
52.9	51.777	52.182	57.966			83.096	85.049	77.245

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
53	51.921	52.339	58.144			83.328	85.285	77.459
53.1	52.065	52.497	58.321			83.559	85.521	77.673
53.2	52.21	52.654	58.499			83.791	85.757	77.888
53.3	52.355	52.811	58.676			84.023	85.993	78.103
53.4	52.5	52.969	58.854			84.254	86.228	78.317
53.5	52.645	53.126	59.032			84.486	86.464	78.532
53.6	52.79	53.284	59.209			84.717	86.7	78.747
53.7	52.935	53.442	59.387			84.949	86.935	78.961
53.8	53.08	53.6	59.564			85.18	87.171	79.176
53.9	53.225	53.757	59.742			85.412	87.407	79.391
54	53.371	53.915	59.92			85.643	87.643	79.606
54.1	53.516	54.073	60.099			85.875	87.878	79.82
54.2	53.661	54.231	60.277			86.107	88.114	80.035
54.3	53.806	54.388	60.456			86.339	88.35	80.25
54.4	53.952	54.547	60.635			86.57	88.586	80.464
54.5	54.096	54.705	60.813			86.802	88.821	80.68
54.6	54.241	54.863	60.992			87.034	89.057	80.895
54.7	54.386	55.021	61.171			87.265	89.292	81.109
54.8	54.531	55.18				87.497	89.528	81.324
54.9	54.675	55.338				87.728	89.763	81.54
55	54.82	55.496				87.96	89.999	81.755
55.1	54.965	55.655				88.191	90.234	81.97
55.2	55.109	55.813				88.422	90.469	82.185
55.3	55.254	55.972				88.654	90.704	82.401
55.4	55.398	56.131				88.886	90.94	82.616
55.5	55.543	56.29				89.117	91.175	82.832
55.6	55.687	56.449				89.349	91.411	83.048
55.7	55.832	56.608				89.58	91.647	83.263
55.8	55.977	56.767				89.812	91.883	83.478
55.9	56.122	56.925				90.044	92.118	83.693
56	56.267	57.084				90.276	92.354	83.908
56.1	56.412	57.243				90.508	92.589	84.124
56.2	56.557	57.403				90.739	92.824	84.339
56.3	56.702	57.562				90.971	93.06	84.555
56.4	56.847	57.722				91.203	93.295	84.771
56.5	56.992	57.881				91.435	93.531	84.987
56.6	57.138	58.041				91.667	93.766	85.202
56.7	57.283	58.2				91.899	94.002	85.417
56.8	57.428	58.359				92.131	94.238	85.633
56.9	57.574	58.519				92.363	94.473	85.848

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
57	57.719	58.678				92.595	94.709	86.063
57.1	57.865	58.838				92.827	94.944	86.279
57.2	58.01	58.998				93.059	95.18	86.495
57.3	58.155	59.157				93.291	95.415	86.71
57.4	58.3	59.317				93.523	95.651	86.926
57.5	58.445	59.477				93.755	95.886	87.141
57.6	58.591	59.637				93.987	96.122	87.357
57.7	58.736	59.797				94.219	96.358	87.573
57.8	58.881	59.957				94.451	96.593	87.789
57.9	59.026	60.117				94.683	96.829	88.004
58	59.171	60.277				94.915	97.065	88.22
58.1	59.315	60.437				95.148	97.301	88.436
58.2	59.46	60.597				95.38	97.537	88.652
58.3	59.605	60.758				95.612	97.773	88.869
58.4	59.75	60.919				95.845	98.009	89.085
58.5	59.895	61.08				96.077	98.245	89.301
58.6	60.04	61.24				96.31	98.48	89.516
58.7	60.185	61.401				96.542	98.715	89.732
58.8	60.33	61.561					98.95	89.948
58.9	60.474	61.722					99.186	90.164
59	60.619	61.882					99.421	90.38
59.1	60.764	62.043					99.657	90.596
59.2	60.909	62.204					99.892	90.811
59.3	61.054	62.365					100.13	91.027
59.4	61.198	62.526					100.36	91.243
59.5	61.343	62.687					100.6	91.458
59.6	61.488	62.848						91.674
59.7	61.632	63.01						91.889
59.8	61.777	63.171						92.105
59.9	61.923	63.332						92.32
60	62.069	63.494						92.536
60.1	62.213	63.655						92.751
60.2	62.358	63.816						92.967
60.3	62.503	63.978						93.182
60.4	62.648	64.14						93.398
60.5	62.793	64.302						93.613
60.6	62.937	64.463						93.829
60.7	63.082	64.625						94.044
60.8	63.227	64.787						94.26
60.9	63.371	64.949						

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

r →	0	20	30	35	45	55	65	75
t								
61	63.516	65.111						
61.1	63.661	65.273						
61.2	63.806	65.435						
61.3	63.951	65.597						
61.4	64.095	65.759						
61.5	64.24	65.921						
61.6	64.385	66.084						
61.7	64.53	66.246						
61.8	64.675	66.409						
61.9	64.819	66.571						
62	64.964	66.734						
62.1	65.109	66.897						
62.2	65.254	67.059						
62.3	65.399	67.222						
62.4	65.544	67.384						
62.5	65.689	67.547						
62.6	65.834	67.71						
62.7	65.979	67.874						
62.8	66.124	68.037						
62.9	66.269	68.2						
63	66.414	68.364						
63.1	66.559	68.527						
63.2	66.704	68.69						
63.3	66.849	68.853						
63.4	66.994	69.016						
63.5	67.139	69.179						
63.6	67.285	69.342						
63.7	67.43	69.505						
63.8	67.575	69.669						
63.9	67.72	69.833						
64	67.866	69.996						
64.1	68.012	70.16						
64.2	68.157	70.324						
64.3	68.302	70.488						
64.4	68.447	70.652						
64.5	68.592	70.816						
64.6		70.98						
64.7		71.144						
64.9		71.472						

r = radial distance of HPDV measurement, from center of diagnostic plate = millimeters
z = vertical distance from top surface datum of diagnostic plate = millimeters
t = time from detonator circuit current start = microseconds

CYLINDRICAL AXIS DEAD-ZONE PRESSURE TABLE

Table 5. Tabulated Dead-Zone Pressure of Jack Rabbit Pretest 2021E PT7

First column: time in microseconds following detonator circuit current start

Second column: pressure in kilobars on cylindrical axis (POINT 00)

tpressure	PT7 Point 00
8	0.0000
8.1	0.0000
8.2	0.0000
8.3	0.0000
8.4	0.0000
8.5	0.0000
8.6	0.0000
8.7	0.0000
8.8	0.0000
8.9	0.0000
9	0.0000
9.1	0.0000
9.2	0.0000
9.3	0.0000
9.4	0.0000
9.5	0.0000
9.6	0.0000
9.7	0.0000
9.8	0.0000
9.9	0.0000
10	0.1351
10.1	0.1426
10.2	0.1575
10.3	0.1728
10.4	0.1901
10.5	0.2090
10.6	0.2225
10.7	0.2259
10.8	0.2253
10.9	0.2276
11	0.2324
11.1	0.1710
11.2	0.1039
11.3	0.0949
11.4	0.0818
11.5	0.0659
11.6	0.0492
11.7	0.0430
11.8	0.0578
11.9	0.0906
12	0.1354
12.1	0.1926
12.2	0.2591
12.3	0.3293
12.4	0.4122
12.5	0.5062
12.6	0.6020
12.7	0.7055
12.8	0.8119
12.9	0.9155
13	1.0206
13.1	1.1385
13.2	1.2760
13.3	1.4542
13.4	1.7551
13.5	2.3266
13.6	5.8578
13.7	10.4854
13.8	14.1575
13.9	17.2682
14	18.7329
14.1	19.8037
14.2	20.9950
14.3	22.7691
14.4	25.4841
14.5	28.9245
14.6	31.1907
14.7	29.0383
14.8	25.5086
14.9	22.4513
15	19.1831
15.1	17.0011
15.2	14.8673

15.3	12.6032	20.2	23.7575
15.4	10.2352	20.3	21.9766
15.5	7.4844	20.4	20.1775
15.6	4.4194	20.5	18.5112
15.7	2.9365	20.6	16.9240
15.8	3.4330	20.7	15.4687
15.9	4.5428	20.8	14.1274
16	6.5635	20.9	12.9280
16.1	9.7133	21	11.5905
16.2	13.6786	21.1	9.9915
16.3	18.0308	21.2	8.9392
16.4	22.1852	21.3	9.3031
16.5	25.5218	21.4	10.5387
16.6	27.7725	21.5	11.9850
16.7	29.3253	21.6	14.0460
16.8	30.5109	21.7	16.8875
16.9	31.2600	21.8	18.6152
17	31.1606	21.9	18.4752
17.1	30.0582	22	18.0962
17.2	28.1420	22.1	18.2900
17.3	25.7304	22.2	19.7560
17.4	23.0246	22.3	23.0726
17.5	20.2782	22.4	27.9371
17.6	17.7947	22.5	33.2133
17.7	15.8213	22.6	37.2262
17.8	14.1722	22.7	39.1995
17.9	12.5419	22.8	39.9079
18	11.3141	22.9	41.3189
18.1	11.3037	23	43.8306
18.2	13.0661	23.1	46.1980
18.3	16.5222	23.2	48.0836
18.4	20.9918	23.3	49.0852
18.5	26.7713	23.4	48.5145
18.6	34.7080	23.5	46.3708
18.7	41.2591	23.6	43.6267
18.8	42.7562	23.7	41.4558
18.9	41.8959	23.8	39.7036
19	41.3217	23.9	37.0953
19.1	41.0549	24	33.7466
19.2	40.8074	24.1	30.2948
19.3	39.5956	24.2	26.7426
19.4	37.0661	24.3	23.3571
19.5	33.6225	24.4	19.9818
19.6	29.0831	24.5	16.2997
19.7	22.7864	24.6	12.3746
19.8	18.1650	24.7	8.2434
19.9	18.9699	24.8	4.2703
20	22.1762	24.9	1.1285
20.1	24.0869	25	-0.7867

25.1	-1.7013	30	1.0634
25.2	-2.0592	30.1	0.9147
25.3	-2.3560	30.2	0.6740
25.4	-3.1601	30.3	0.4614
25.5	-4.1940	30.4	0.2436
25.6	-5.0211	30.5	-0.0406
25.7	-5.5932	30.6	-0.3728
25.8	-5.8617	30.7	-0.7021
25.9	-5.9951	30.8	-1.0370
26	-5.9206	30.9	-1.2753
26.1	-5.3373	31	-1.4006
26.2	-4.4124	31.1	-1.5533
26.3	-3.2699	31.2	-1.6651
26.4	-1.8607	31.3	-1.7297
26.5	-0.2959	31.4	-1.7776
26.6	1.1708	31.5	-1.7002
26.7	2.5265	31.6	-1.4425
26.8	3.8022	31.7	-1.2607
26.9	4.7609	31.8	-1.0982
27	5.5120	31.9	-0.6428
27.1	6.0804	32	-0.3702
27.2	6.1079	32.1	-0.2028
27.3	5.5667	32.2	0.3094
27.4	4.6385	32.3	0.6221
27.5	3.4178	32.4	0.6232
27.6	2.1358	32.5	0.7397
27.7	1.0173	32.6	0.8214
27.8	0.0532	32.7	0.5849
27.9	-0.8377	32.8	0.4889
28	-1.5097	32.9	0.4363
28.1	-2.0806	33	0.0528
28.2	-2.7854	33.1	-0.1573
28.3	-3.2494	33.2	-0.3821
28.4	-3.1804	33.3	-0.9523
28.5	-2.7524	33.4	-1.3210
28.6	-2.1215	33.5	-1.3879
28.7	-1.5404	33.6	-1.5734
28.8	-1.2248	33.7	-1.8647
28.9	-1.0946	33.8	-1.8748
29	-0.8524	33.9	-1.6846
29.1	-0.4873	34	-1.7129
29.2	-0.0940	34.1	-1.7103
29.3	0.5090	34.2	-1.5625
29.4	1.0763	34.3	-1.2872
29.5	1.3764	34.4	-0.8752
29.6	1.5271	34.5	-0.5814
29.7	1.5120	34.6	-0.4408
29.8	1.3336	34.7	-0.3224
29.9	1.1514	34.8	-0.0894

34.9	-0.0337	39.8	-2.0802
35	-0.2340	39.9	-2.1629
35.1	-0.2483	40	-2.5194
35.2	-0.2956	40.1	-2.4945
35.3	-0.4638	40.2	-2.5936
35.4	-0.6600	40.3	-2.7353
35.5	-1.0616	40.4	-2.6756
35.6	-1.4904	40.5	-2.7371
35.7	-1.8429	40.6	-2.6815
35.8	-2.0876	40.7	-2.6037
35.9	-2.4330	40.8	-2.5391
36	-2.7915	40.9	-2.4003
36.1	-2.9329	41	-2.1622
36.2	-3.0972	41.1	-1.9193
36.3	-3.2850	41.2	-1.7266
36.4	-3.3632	41.3	-1.6505
36.5	-3.4079	41.4	-1.5081
36.6	-3.4056	41.5	-1.3367
36.7	-3.3287	41.6	-1.2356
36.8	-3.1994	41.7	-1.2458
36.9	-3.0941	41.8	-1.3650
37	-2.9665	41.9	-1.4024
37.1	-2.7586	42	-1.4589
37.2	-2.7170	42.1	-1.5949
37.3	-2.7284	42.2	-1.8460
37.4	-2.6265	42.3	-2.0575
37.5	-2.6691	42.4	-1.9572
37.6	-2.8247	42.5	-1.9930
37.7	-2.9072	42.6	-2.1221
37.8	-2.9446	42.7	-1.9249
37.9	-3.0165	42.8	-1.7485
38	-3.1744	42.9	-1.6571
38.1	-3.3958	43	-1.5477
38.2	-3.7270	43.1	-1.3457
38.3	-3.7382	43.2	-1.1630
38.4	-3.6902	43.3	-0.9295
38.5	-4.0590	43.4	-0.8588
38.6	-3.9118	43.5	-0.8465
38.7	-3.6795	43.6	-0.7419
38.8	-3.5450	43.7	-0.7795
38.9	-3.2203	43.8	-0.8841
39	-3.0964	43.9	-1.0014
39.1	-2.8377	44	-1.0145
39.2	-2.5961	44.1	-0.9389
39.3	-2.3268	44.2	-1.0816
39.4	-2.2446	44.3	-1.2123
39.5	-2.2536	44.4	-1.2564
39.6	-1.8602	44.5	-1.2670
39.7	-1.9500	44.6	-1.4279

44.7	-1.3277	49.6	-1.6577
44.8	-1.1609	49.7	-1.5984
44.9	-1.3326	49.8	-1.6740
45	-1.2804	49.9	-1.4312
45.1	-1.0365	50	-1.6254
45.2	-1.0066	50.1	-1.9535
45.3	-0.8765	50.2	-2.2353
45.4	-0.7430	50.3	-2.6412
45.5	-0.8070	50.4	-3.2649
45.6	-0.4453	50.5	-2.9597
45.7	-0.2108	50.6	-1.3919
45.8	-0.3264	50.7	-1.0026
45.9	-0.0241	50.8	-1.1162
46	0.0328	50.9	-1.0360
46.1	-0.1276	51	-0.8288
46.2	-0.4234	51.1	-0.8960
46.3	-0.6847	51.2	-0.5461
46.4	-0.5328	51.3	0.5904
46.5	-0.4410	51.4	1.4025
46.6	-0.3186	51.5	1.7067
46.7	-0.6051	51.6	0.9518
46.8	-0.9893	51.7	-1.2514
46.9	-0.9914	51.8	-1.9003
47	-0.9899	51.9	-1.1869
47.1	-0.8953	52	-0.7554
47.2	-0.7991	52.1	-0.7302
47.3	-0.6354	52.2	-0.0470
47.4	-0.5840	52.3	-0.0822
47.5	-0.7114	52.4	-0.6491
47.6	-0.4497	52.5	-0.2033
47.7	-0.5912	52.6	0.5959
47.8	-0.6519	52.7	1.8926
47.9	-0.2288	52.8	3.0692
48	-0.2996	52.9	3.3129
48.1	-0.4993	53	2.7852
48.2	-0.5322	53.1	2.6185
48.3	-0.1512	53.2	2.3372
48.4	-0.3251	53.3	2.1270
48.5	-0.7983	53.4	2.4137
48.6	-1.0244	53.5	2.1805
48.7	-1.4978	53.6	1.4178
48.8	-1.3848	53.7	1.2002
48.9	-1.4111	53.8	0.5748
49	-1.5502	53.9	-0.2650
49.1	-1.4749	54	-0.3901
49.2	-1.7510	54.1	-0.3470
49.3	-1.8299	54.2	-0.6345
49.4	-2.3141	54.3	-0.6886
49.5	-2.2801	54.4	-0.7694

54.5	-1.0549	59.4	1.6986
54.6	-1.0421	59.5	0.1273
54.7	-0.7886	59.6	-0.1866
54.8	-0.9452	59.7	-0.3965
54.9	-1.1407	59.8	0.1684
55	-0.7436	59.9	0.3332
55.1	0.0640	60	-0.0173
55.2	0.2073	60.1	-0.1453
55.3	0.8190	60.2	0.1567
55.4	0.9645	60.3	0.1935
55.5	0.2792	60.4	-1.6721
55.6	0.2626	60.5	-1.5460
55.7	0.4397	60.6	0.1964
55.8	0.7504	60.7	0.0760
55.9	0.8341	60.8	0.1355
56	1.2116	60.9	0.0077
56.1	1.4887	61	0.0413
56.2	0.8516	61.1	0.3066
56.3	0.7401	61.2	0.1958
56.4	0.1962	61.3	-0.0173
56.5	0.0639	61.4	0.2468
56.6	0.7341	61.5	0.6088
56.7	0.6212	61.6	0.3508
56.8	0.4854	61.7	-0.0286
56.9	0.0283	61.8	0.0534
57	-0.1600	61.9	0.3958
57.1	-0.3423	62	0.4066
57.2	-0.4891	62.1	-0.0097
57.3	-0.4566	62.2	-0.1058
57.4	-0.7334	62.3	0.1877
57.5	-0.8303	62.4	0.3181
57.6	-0.5263	62.5	0.0622
57.7	-0.4429	62.6	-0.1048
57.8	-0.4080	62.7	0.3207
57.9	-0.3599	62.8	0.3600
58	-0.4205	62.9	0.3430
58.1	-0.3994	63	0.2738
58.2	-0.4294	63.1	0.2592
58.3	-0.6021	63.2	0.6947
58.4	-0.6858	63.3	0.8613
58.5	0.1143	63.4	0.9235
58.6	0.3580	63.5	0.8296
58.7	-0.5215	63.6	0.1283
58.8	-0.6766	63.7	-0.0640
58.9	-0.3666	63.8	0.3070
59	-0.3062	63.9	0.0454
59.1	-0.3905	64	-0.2578
59.2	-0.3118	64.1	-0.0777
59.3	1.5922	64.2	0.0241

64.3	-0.1063
64.4	-0.4154
64.5	-1.4964
64.6	-1.1529
64.7	1.0573
64.8	2.1677

APPENDIX A – COMPUTER READABLE FILE NAMES

To obtain computer readable files containing the data shown in this report, contact:

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DATA CONTENT	FILE NAME
PDV velocity data (m/s) for 2021E PT7	JackRabbitPretestVelocityPT7.xls
Position data (mm) for 2021E PT7	JackRabbitPretestPositionPT7.xls
Pressure data (kilobar) on center axis, Point 00 for all 2021E experiments	Pressure00VsTime_JR.txt
Diagnostic Plate Profile Vs Time PT7	ProfileVsTime_PT7_final.xls