Ballistic Products, Inc.
12 Gauge, 20 Gauge and 410 Bore Shotgun Ammunition Terminal Performance

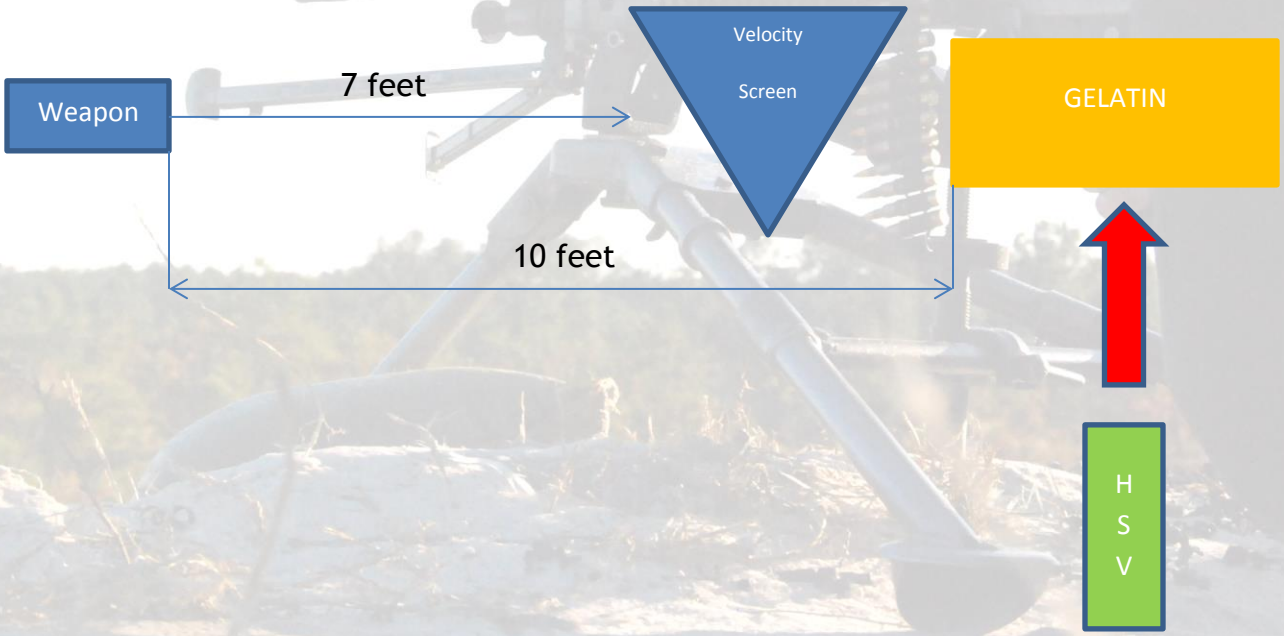
Introduction

In March of 2014, Ballistic Products, Inc. completed the terminal ballistic testing of some of our shotshell products and the ultra slow motion recording of the interaction of the shot pellets with ballistic gelatin blocks. Given the technical acuity of our customer base and the need to provide results that are relatable to test data otherwise publically available, the test medium of ten percent ballistic gelatin was chosen for the testing. This media (10% concentration 250A porcine gelatin) is particularly suited for this task as it has been the domestic law enforcement and de facto commercial standard for three decades.

The ammunition tested during this test event is listed below:

Gauge	Shell Length	Projectile
12	2.75	00 Buckshot
12	2.75	High Velocity Steel (BBB)
12	2.75	ITX-10 Duck #4
12	3.0	Nickel Plated Lead #5
12	2.75	1 ounce Thug Slug
12	3.0	ITX-13 Goose #2
20	2.75	7/8 ounce Thug Slug
410	2.5	125gr Thug Slug

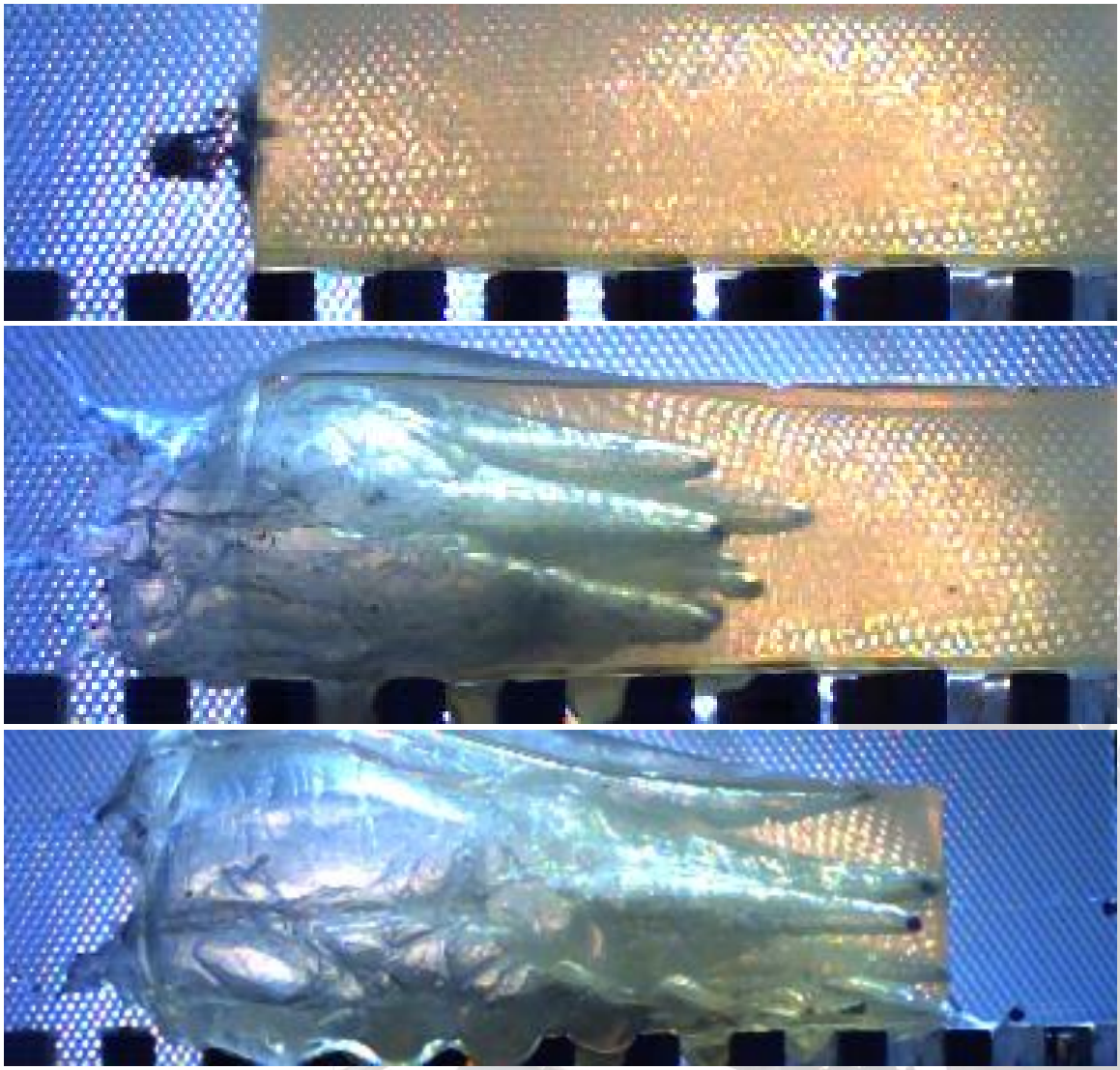
The test site was configured as below:



With the ultra slow motion camera in use being the Photron SA-5 Color. Atmospheric conditions at the test site were 76˚F and 80% relative humidity and took place on 04 April 2014.

Results

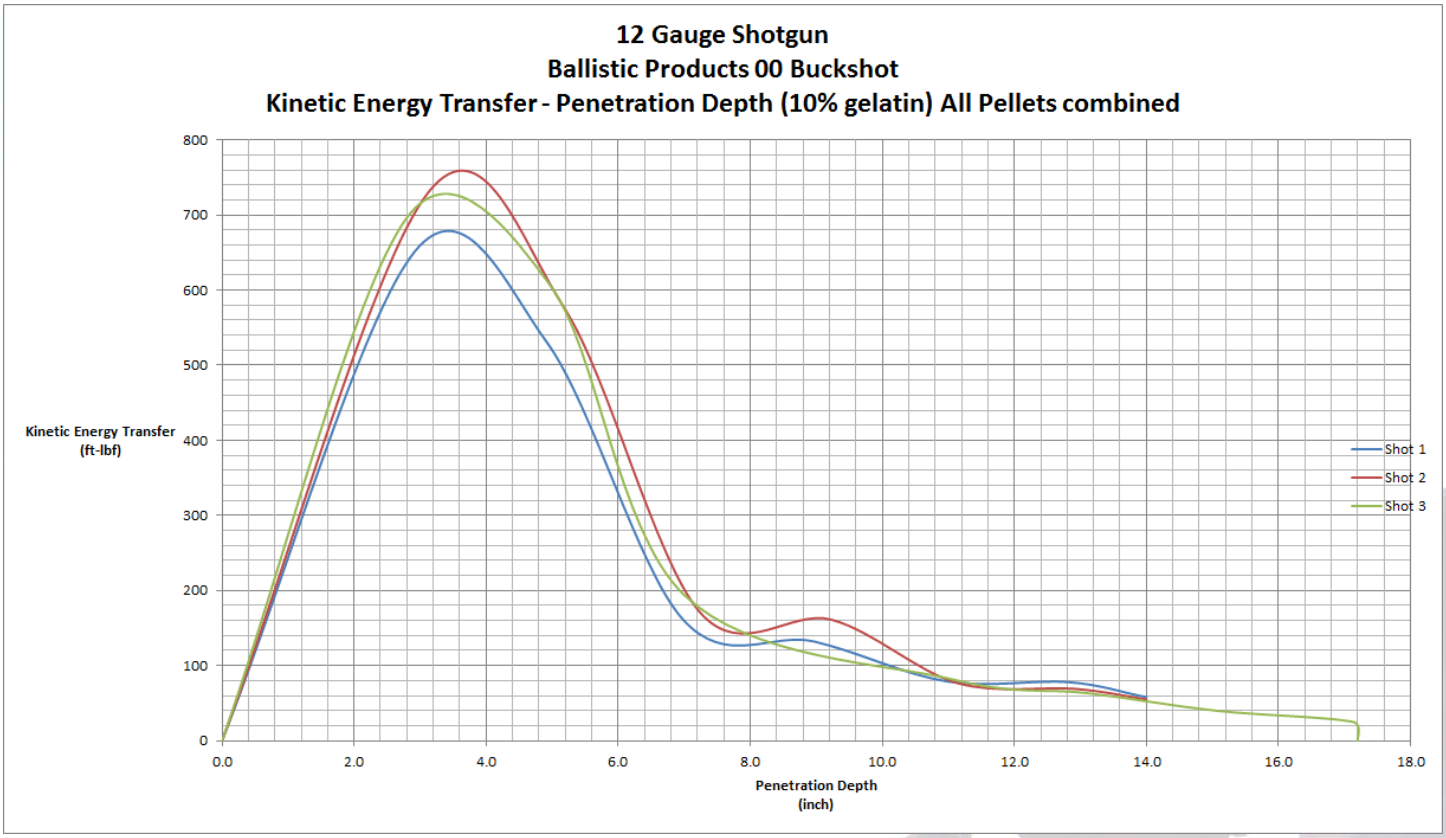
12 gauge 00 Buckshot

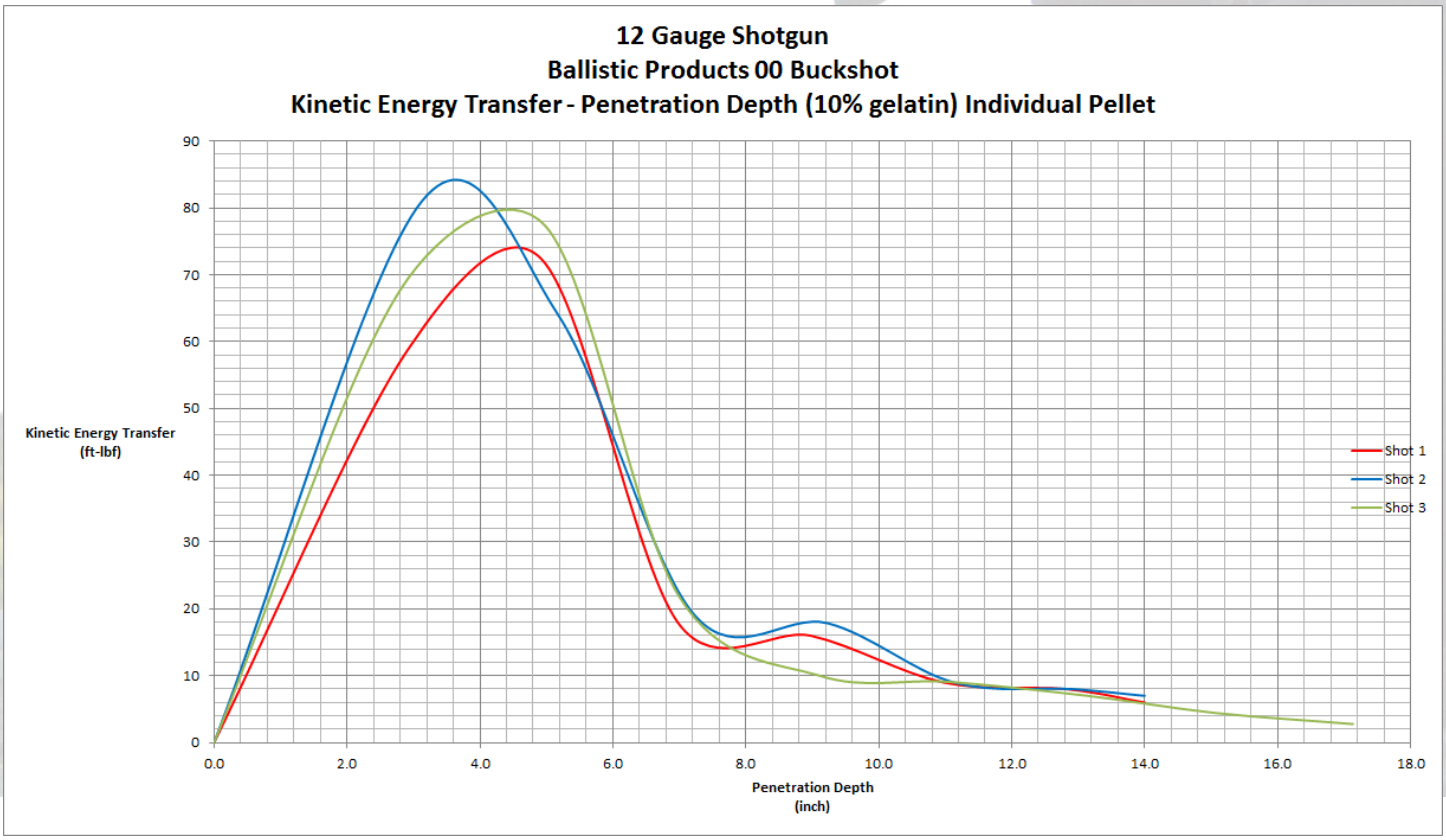


Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)	Kinetic Energy Transfer up to 12" depth (ft-lbf)
1	1325	14.0 +	0.770	1633
2	1382	14.0 +	0.770	1786
3	1314	17.1	0.770	1641

Penetration depth is the maximum straight-line distance traveled by the pellet into the gelatin block. Pellet surface area is conceptually the same as 'expanded diameter' for measuring hollowpoint expansion but the scientifically-relevant units of surface area are used in place of linear inches. KE Transfer up to 12" depth is a measure of the potential for causing damage up to and including the FBI required penetration depth for defensive ammunition.

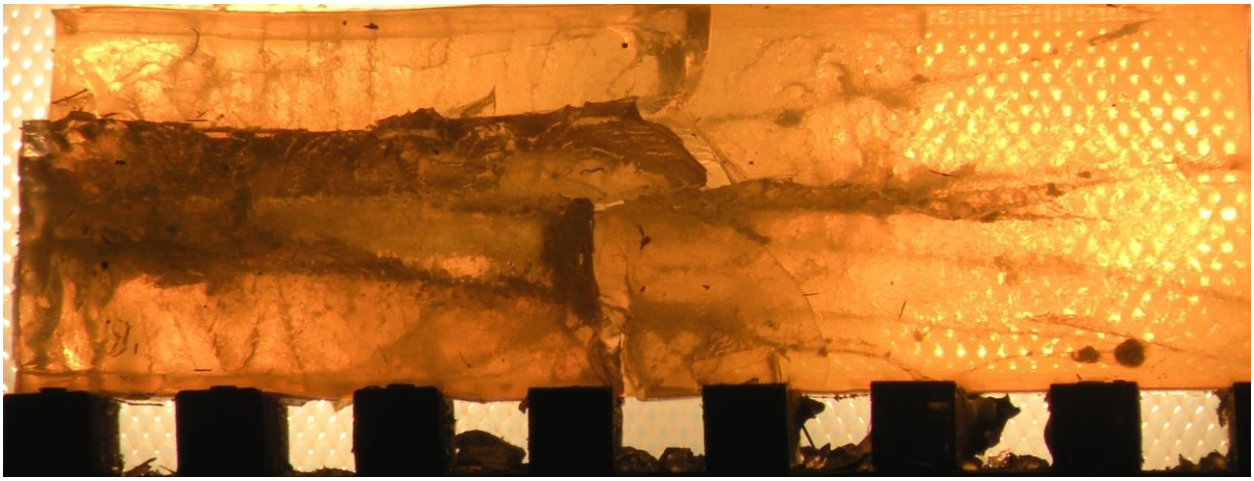
12 gauge 00 Buckshot Kinetic Energy Transfer





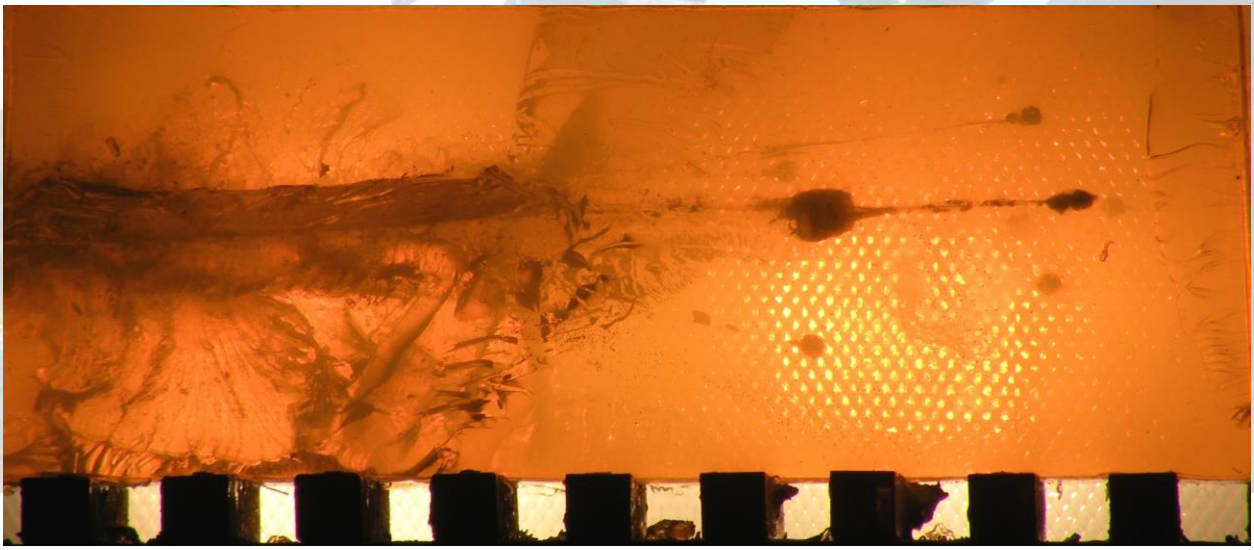
12 gauge 00 Buckshot static gelatin pictures

Shot 1



Shot 2

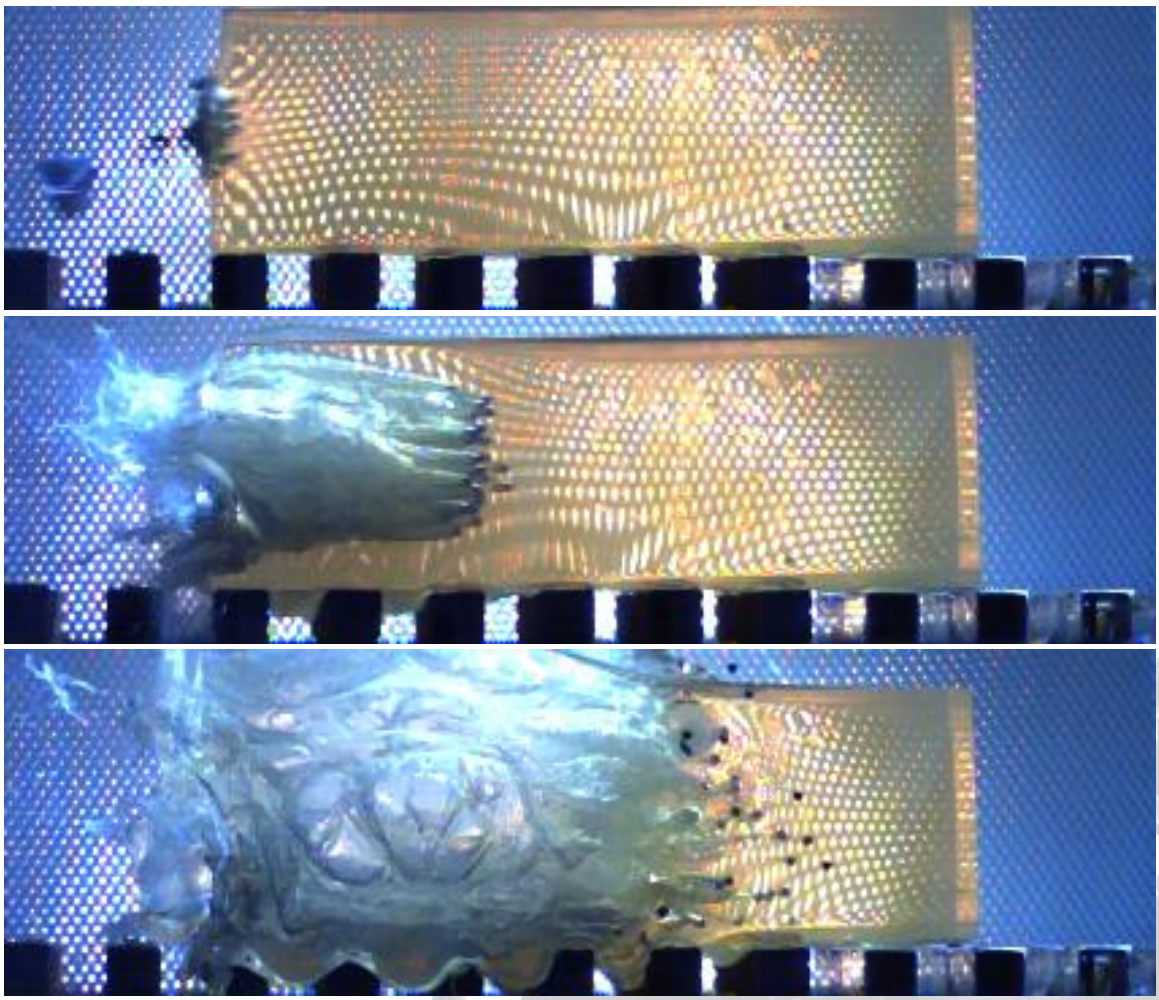
Shot 3



12 gauge 00 Buckshot Recovered Fragments

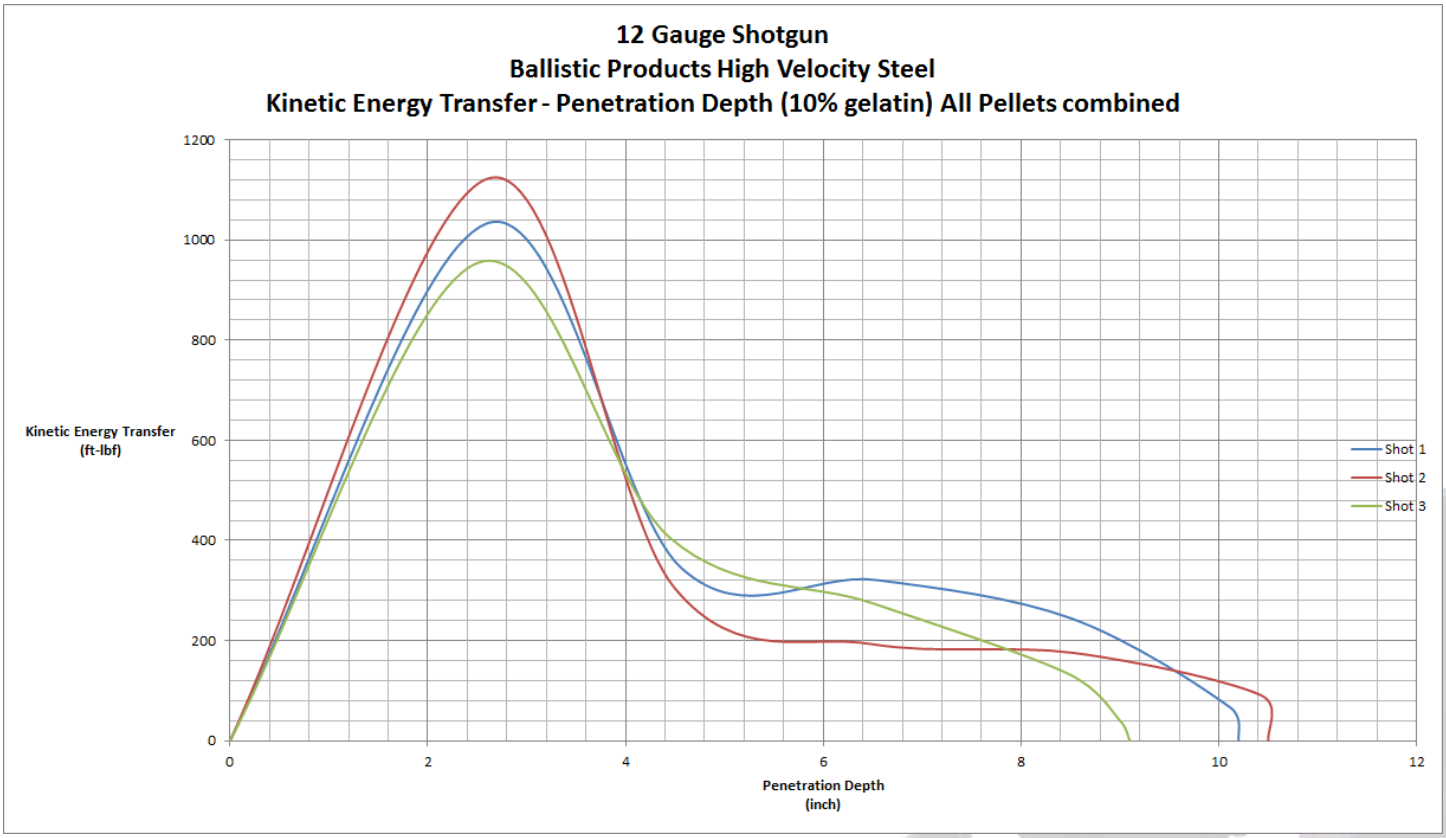
NOTE: THESE ARE DESTRUCTIVE (ONE-TIME) TESTS AS OBSERVED UNDER LABORATORY CONDITIONS FOR THE PURPOSE OF OBSERVATION. NO LOAD DATA OR LOAD INSTRUCTION MAY BE EXTRACTED FROM THE TEST RESULTS AND IMAGES HEREIN. ANALYZING AND DOCUMENTING THE DESTRUCTIVE FAILURE MODE IS ACCOMPLISHED USING HIGH-SPEED VIDEO CAMERA RECORDING CONTINUOUSLY (MOVIE-LOOP) UNTIL THE IMPACT IS COMPLETED.

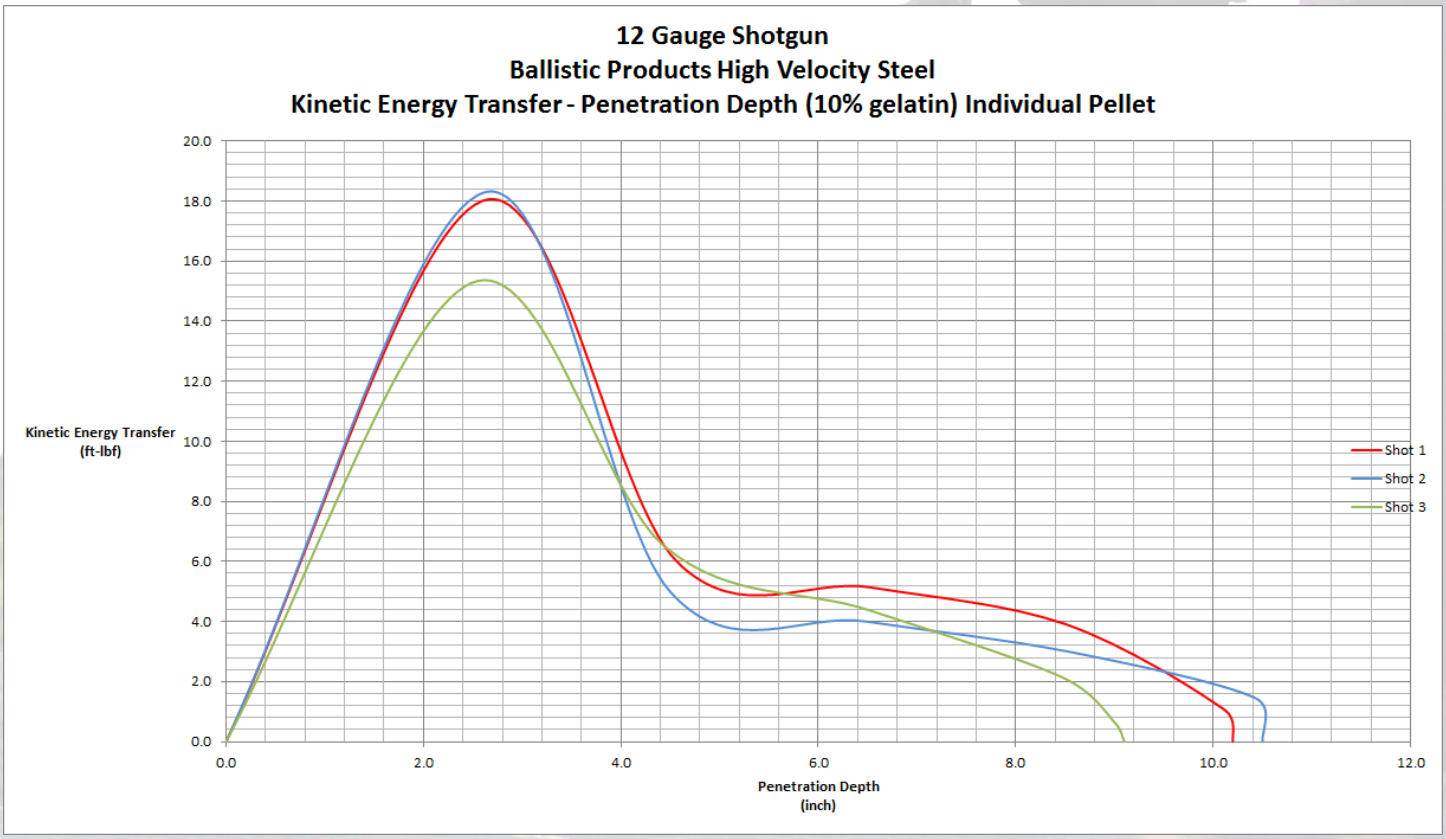
12 gauge High Velocity Steel



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1482	10.2	1.758
2	1405	10.5	1.758
3	1366	9.1	1.758

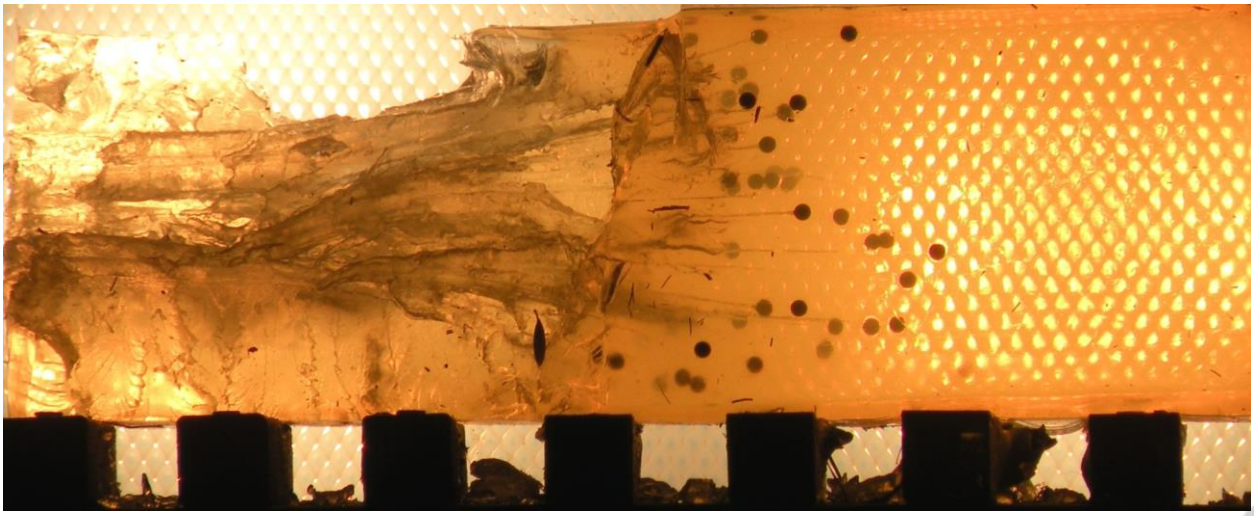
12 gauge High Velocity Steel Kinetic Energy Transfer



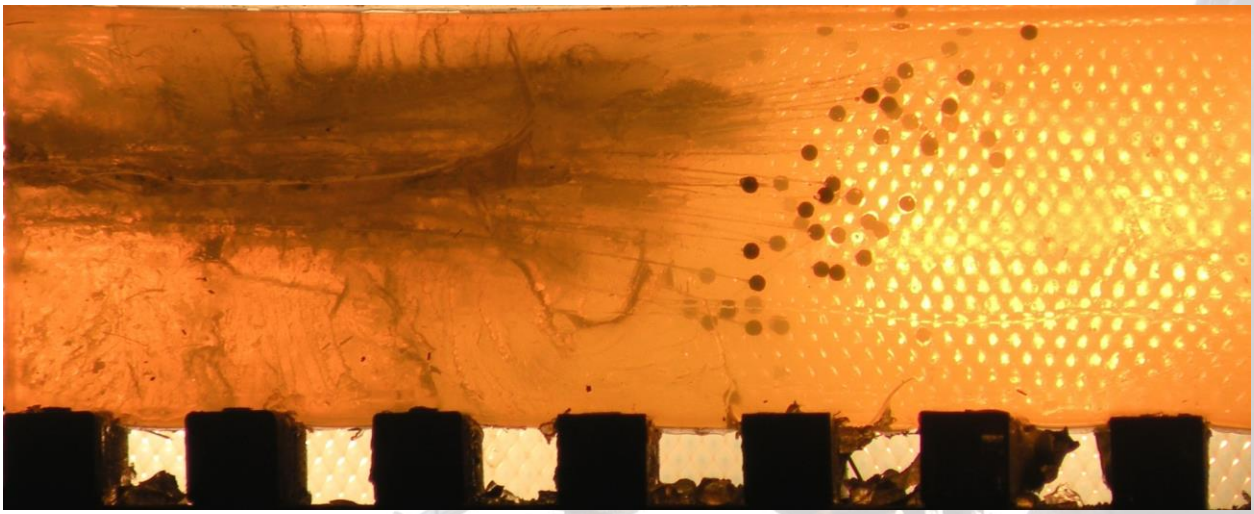


12 gauge High Velocity Steel static gelatin pictures

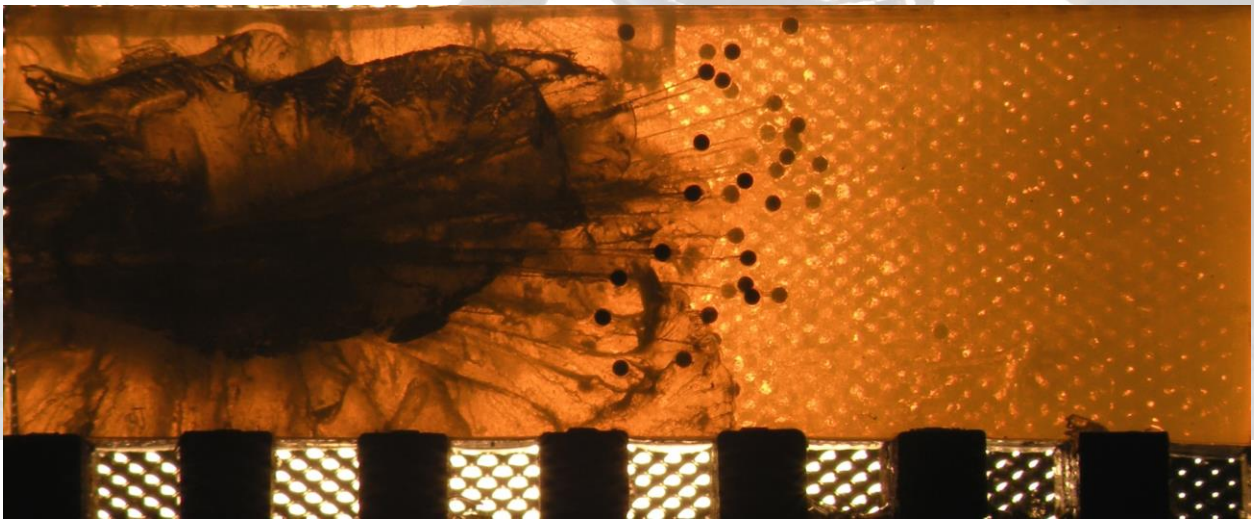
Shot 1



Shot 2



Shot 3



12 gauge High Velocity Steel Recovered Fragments

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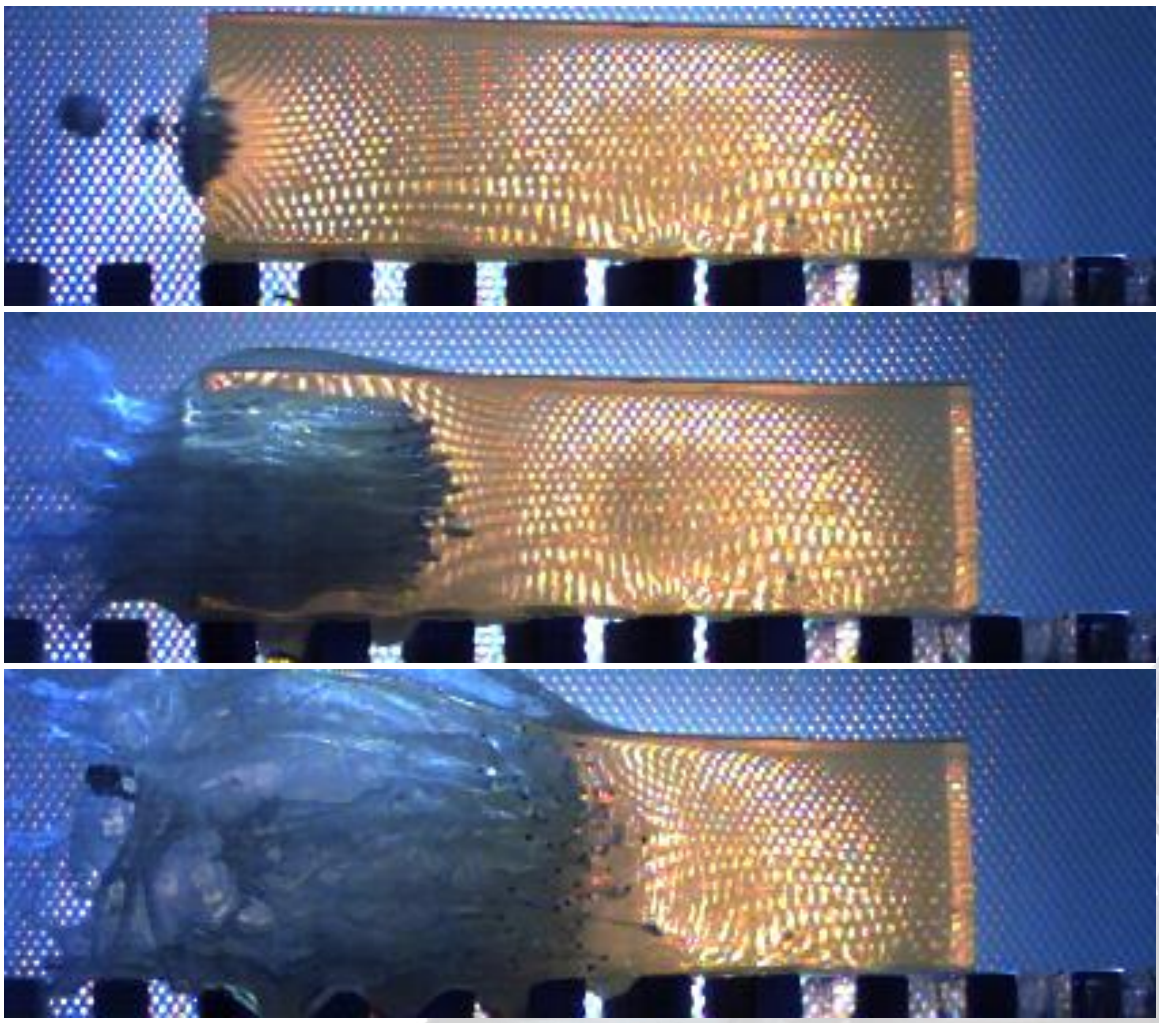
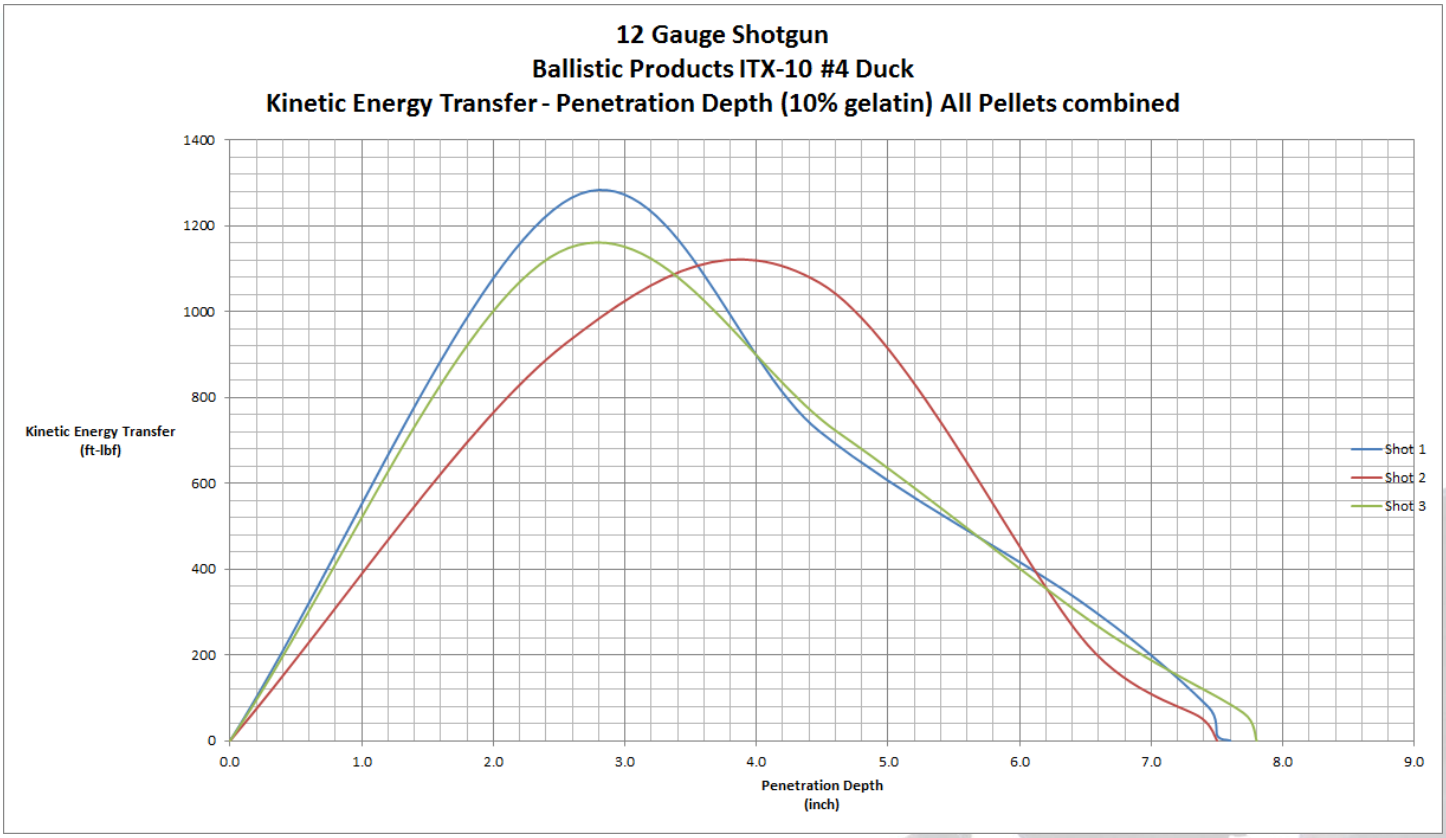
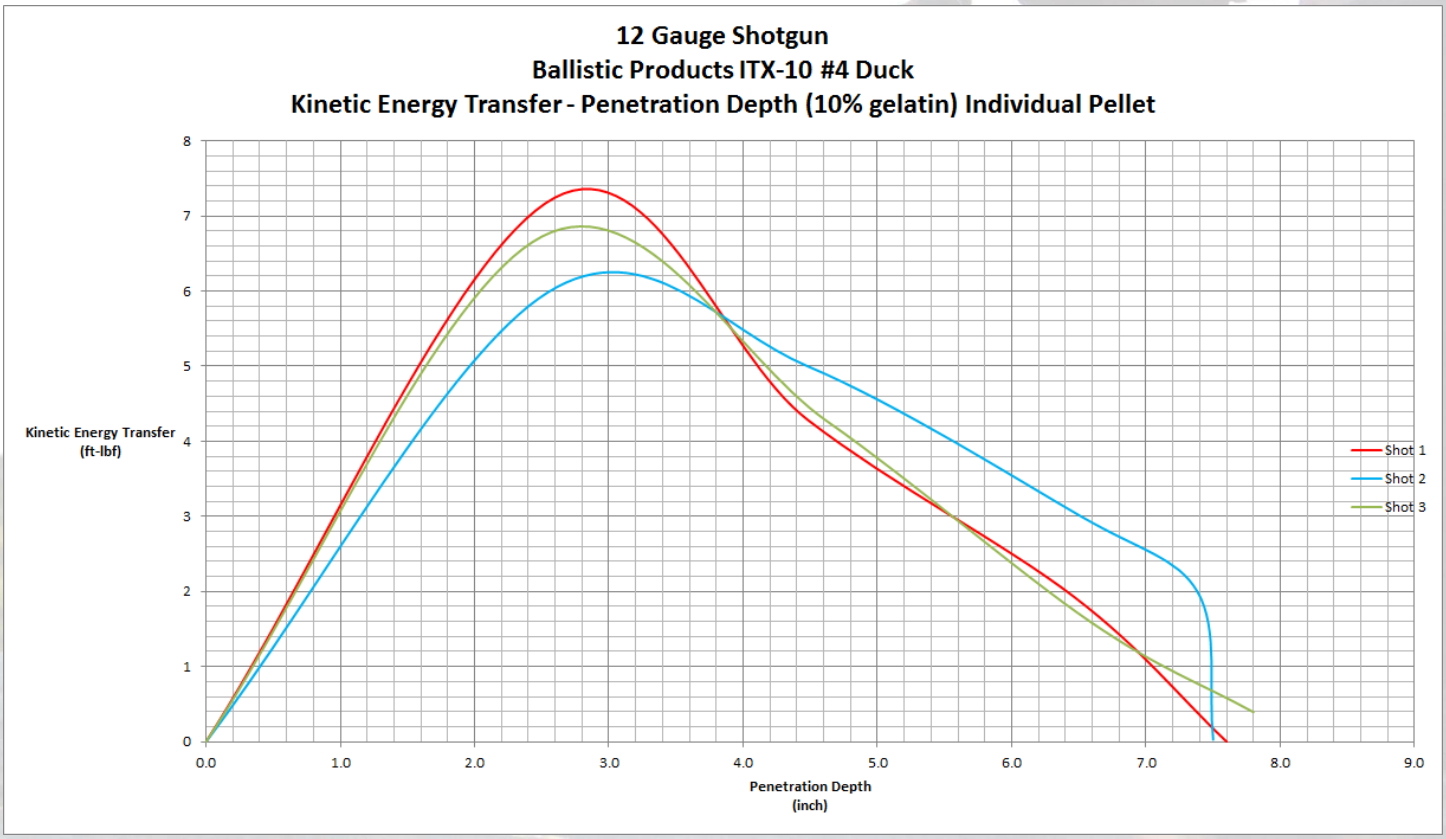
12 gauge ITX-10 Duck #4



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1573	7.6	2.128
2	1530	7.5	2.128
3	1503	7.8	2.128

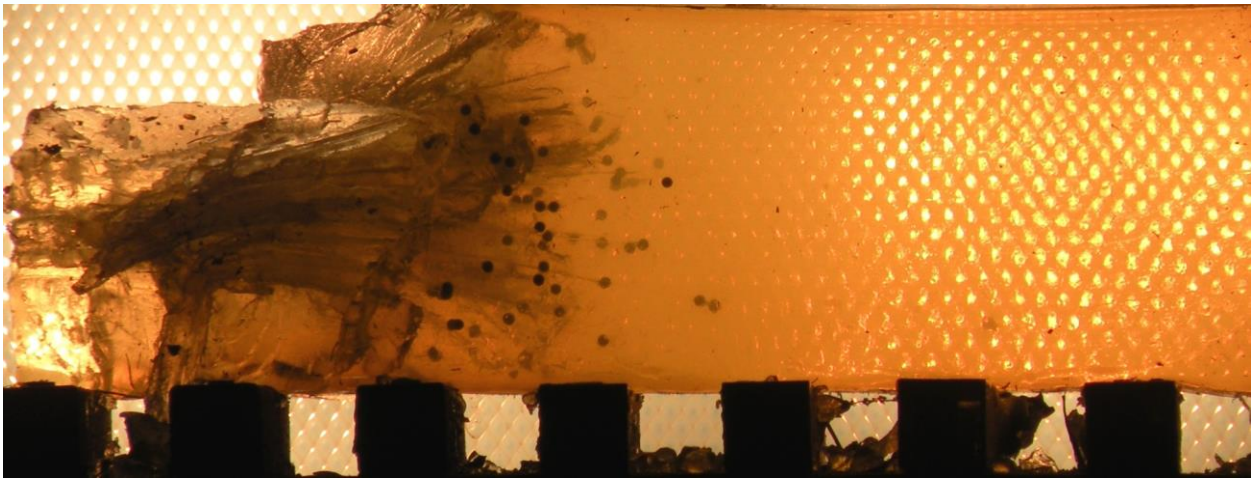
12 gauge ITX-10 Duck #4 Kinetic Energy Transfer



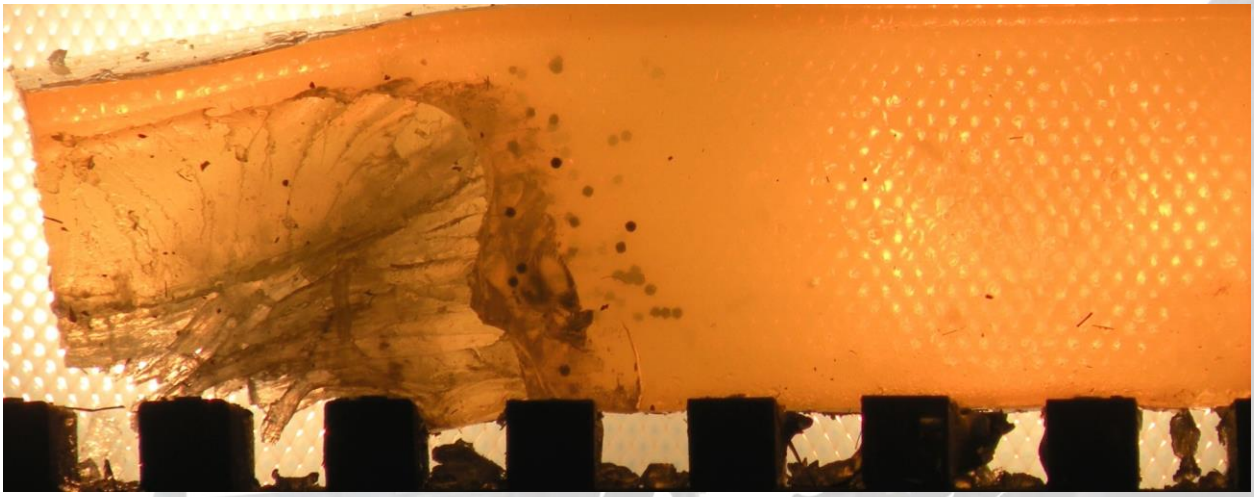


12 gauge ITX-10 Duck #4 static gelatin pictures

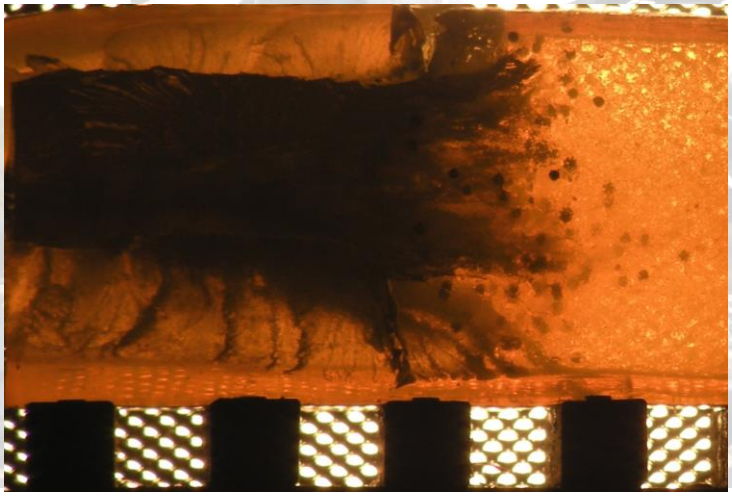
Shot 1



Shot 2



Shot 3



12 gauge ITX-10 Duck #4 Recovered Fragments

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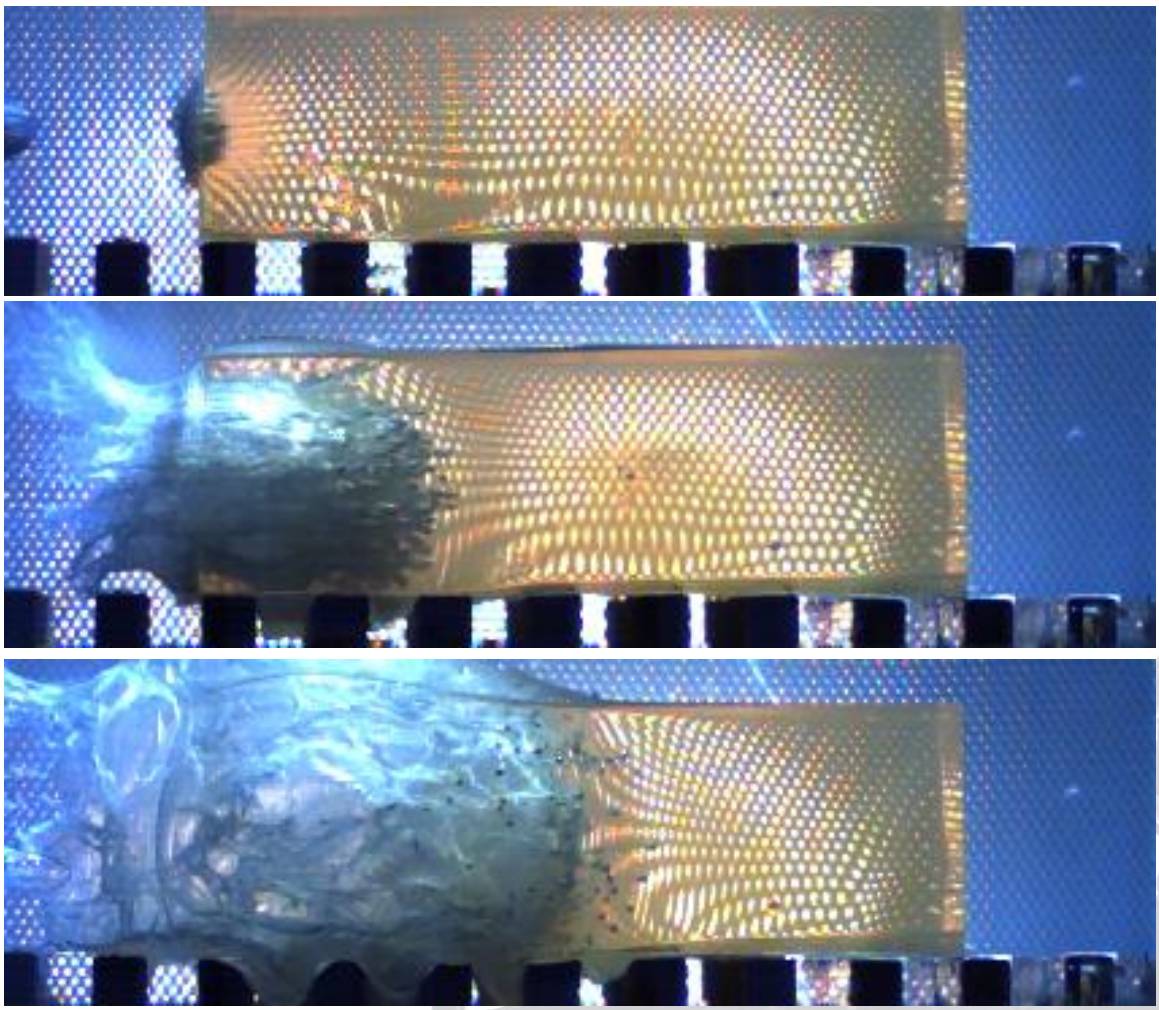
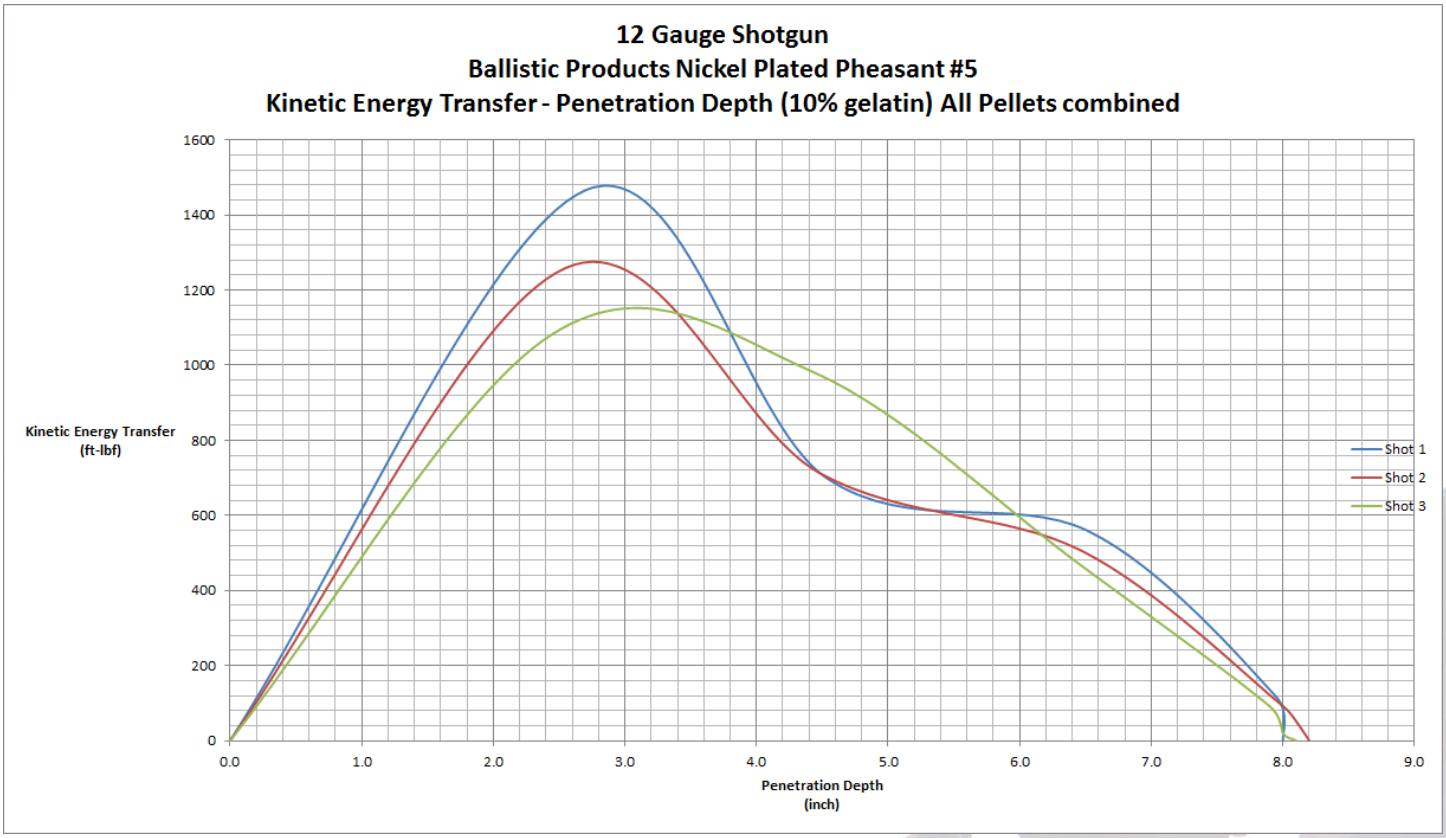
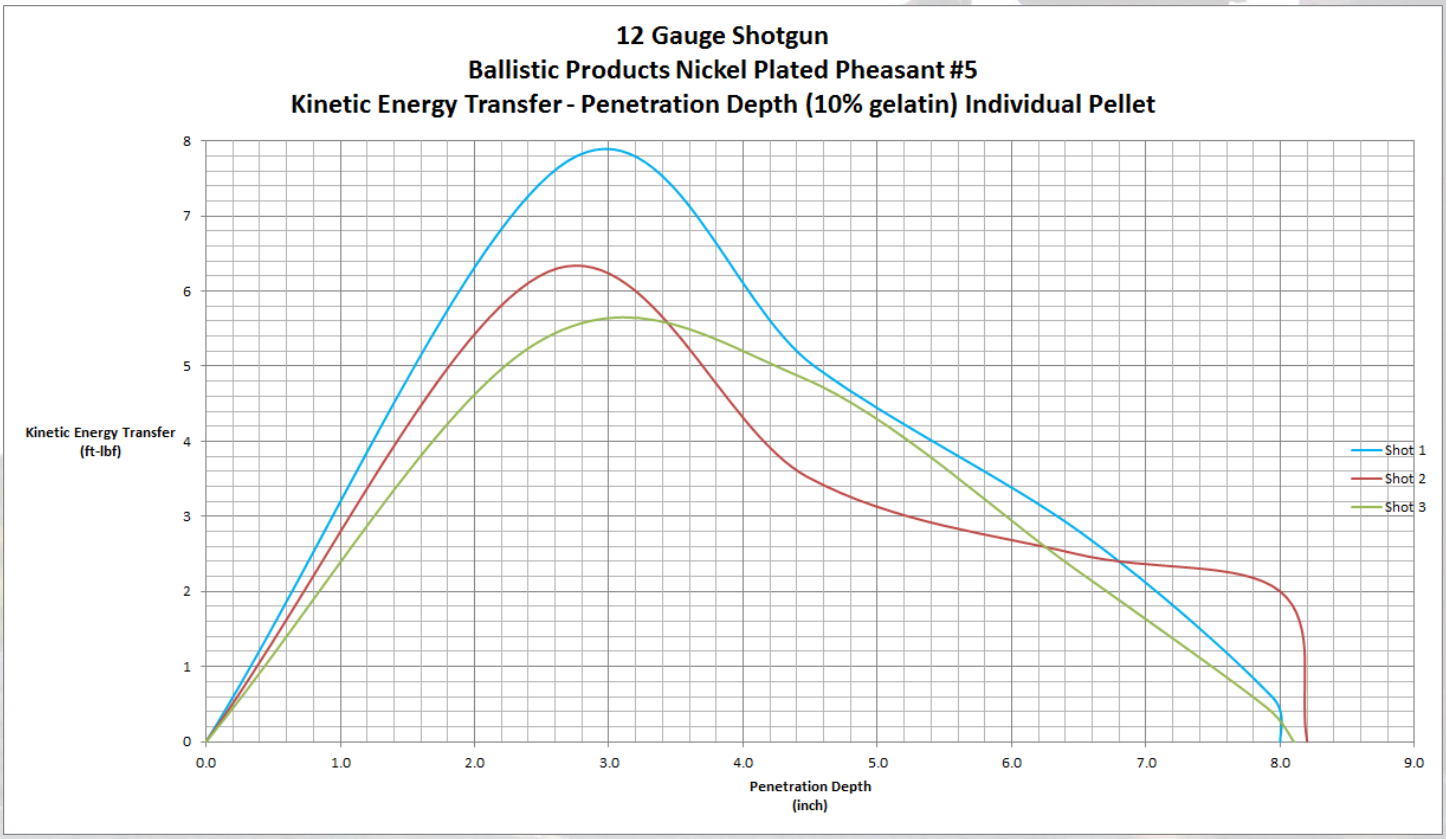
12 gauge Nickel Plated Lead #5



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1501	8.0	2.28
2	1471	8.2	2.28
3	1476	8.1	2.28

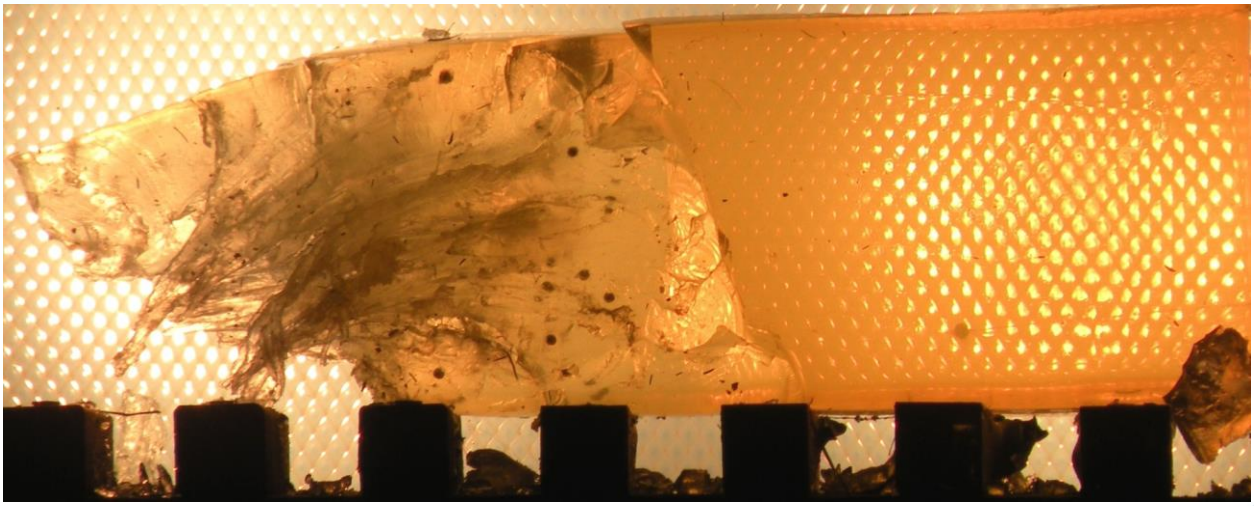
12 gauge Nickel Plated Lead #5 Kinetic Energy Transfer



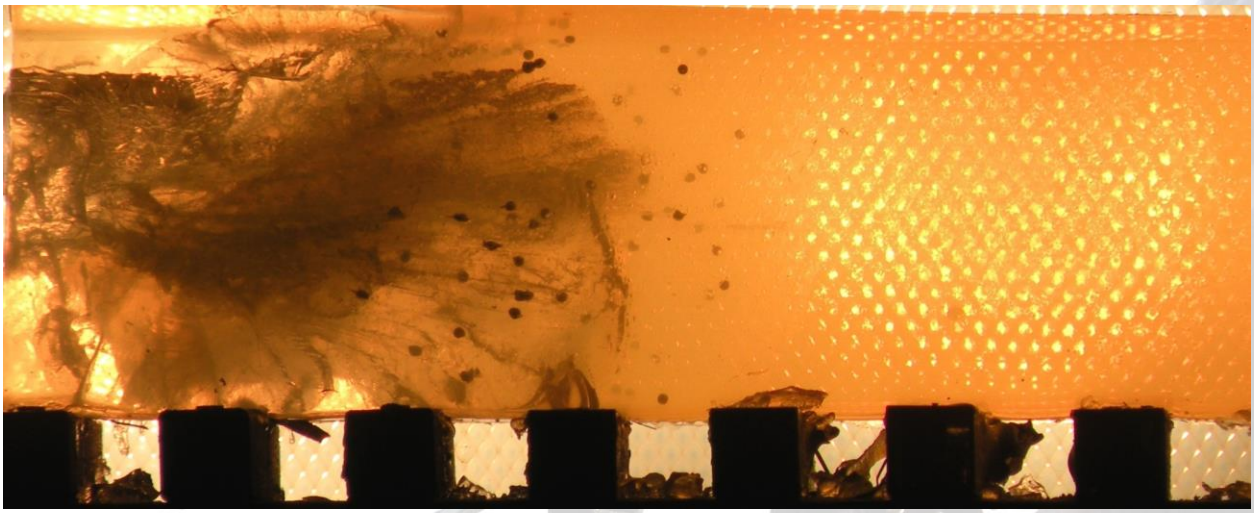


12 gauge Nickel Plated Lead #5 static gelatin pictures

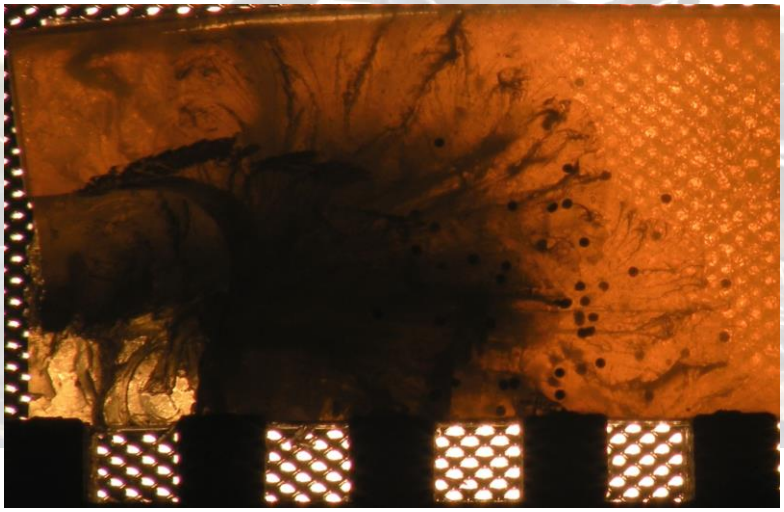
Shot 1



Shot 2



Shot 3



12 gauge Nickel Plated Lead #5 Recovered Fragments

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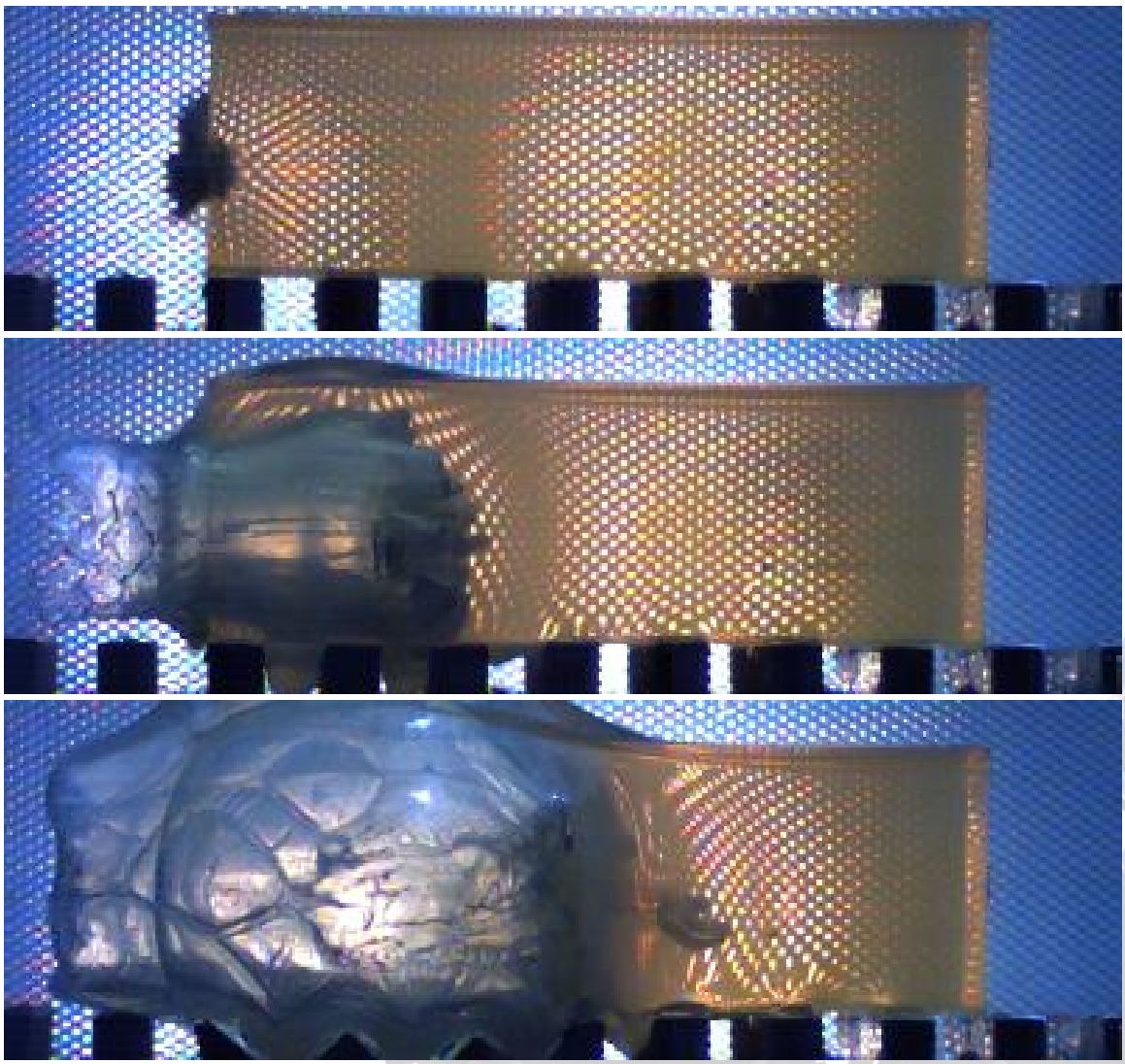
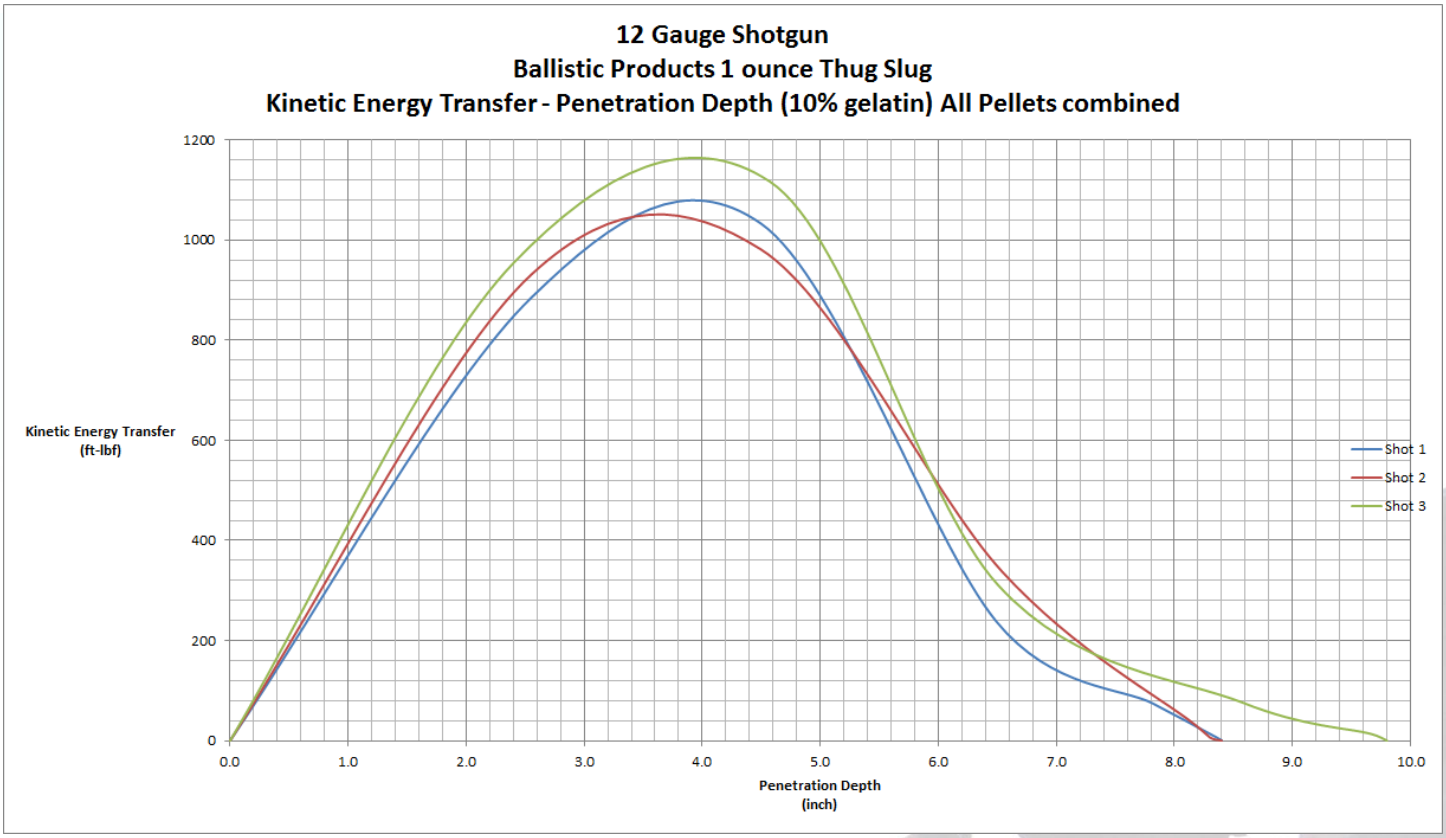
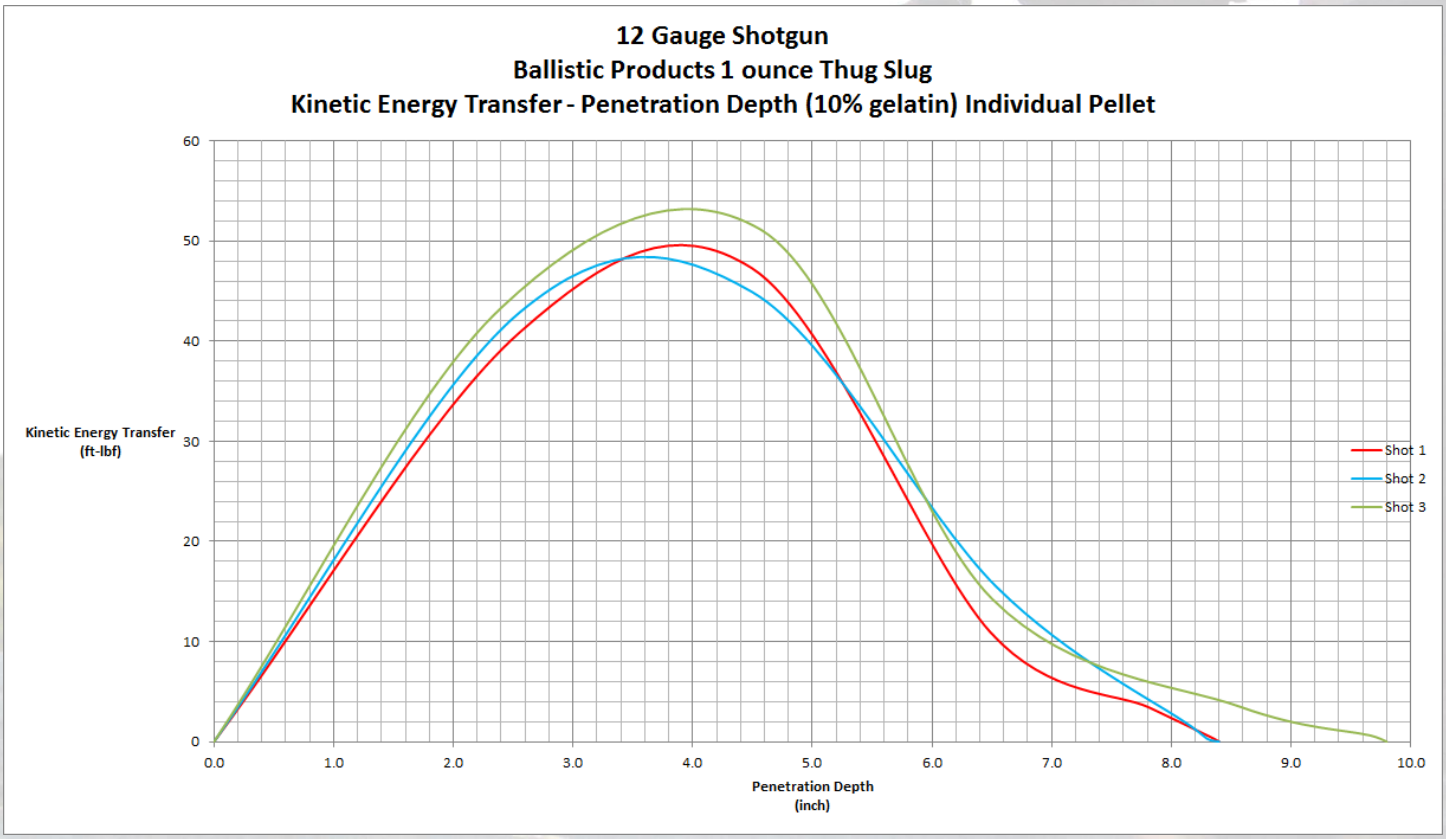
12 gauge 1 ounce Thug Slug



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1521	8.4	EST 1.761
2	1536	8.4	EST 1.761
3	1598	9.8	EST 1.761

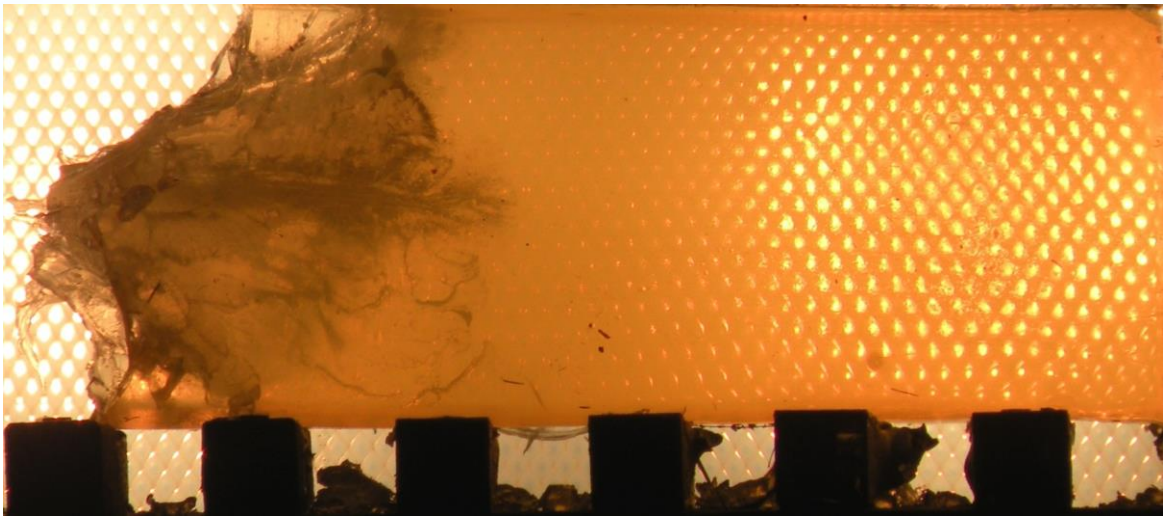
12 gauge 1 ounce Thug Slug Kinetic Energy Transfer



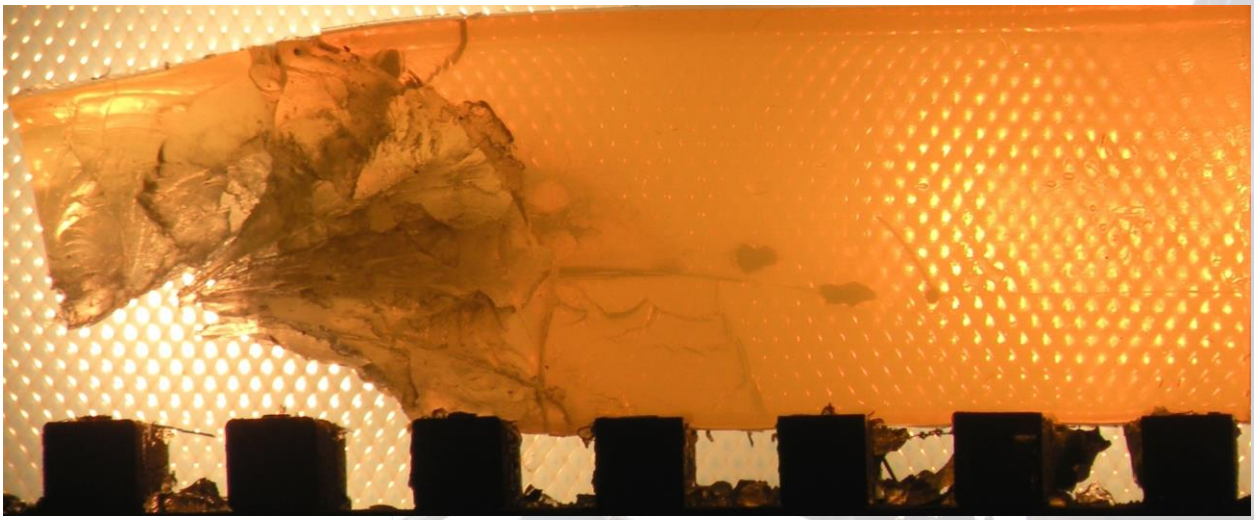


12 gauge 1 ounce Thug Slug static gelatin pictures

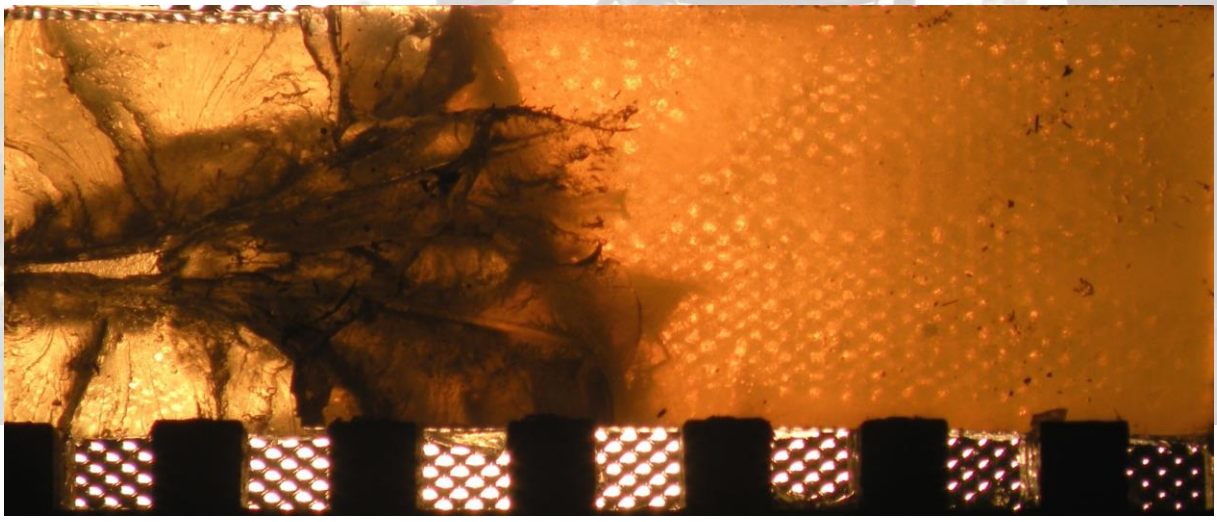
Shot 1



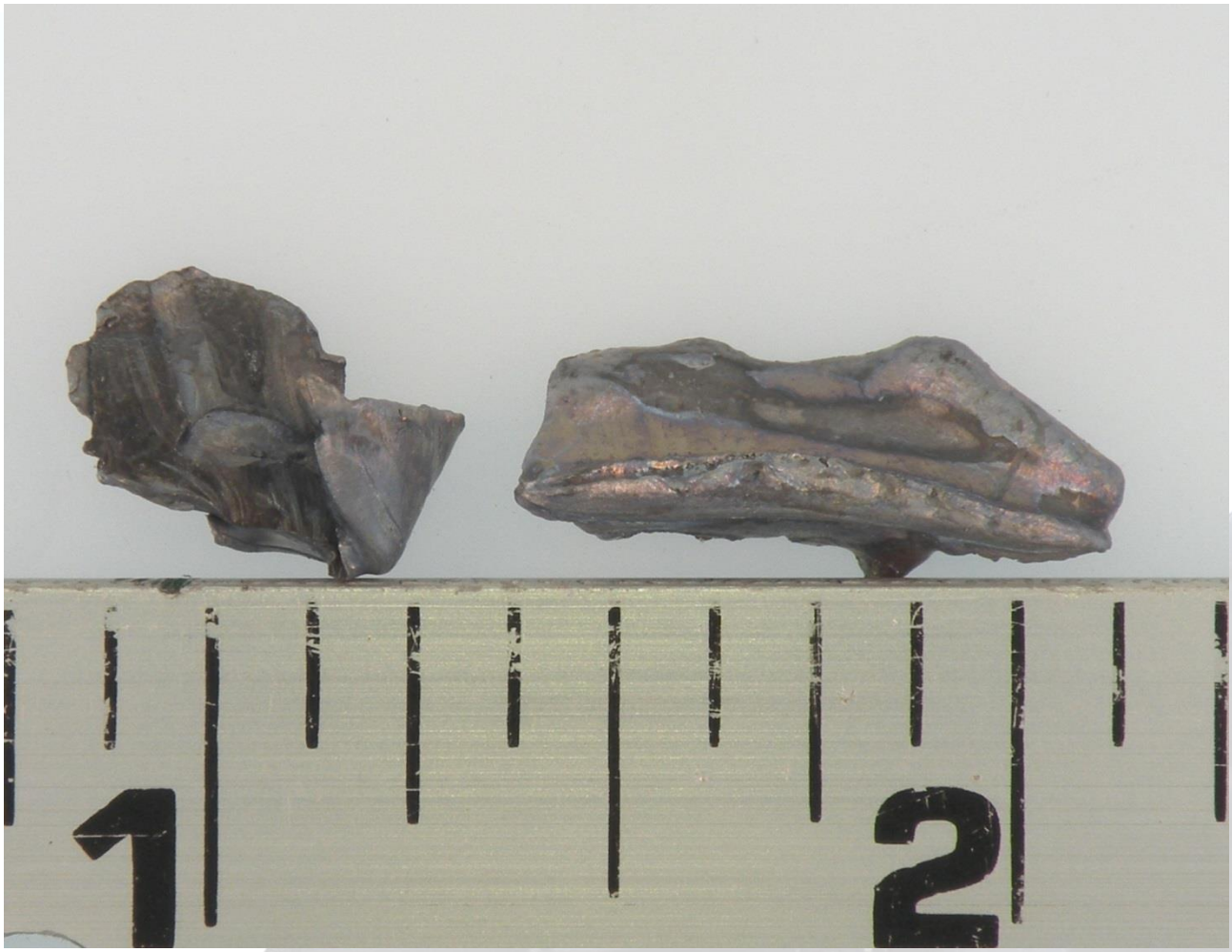
Shot 2



Shot 3



12 gauge 1 ounce Thug Slug Recovered Fragments



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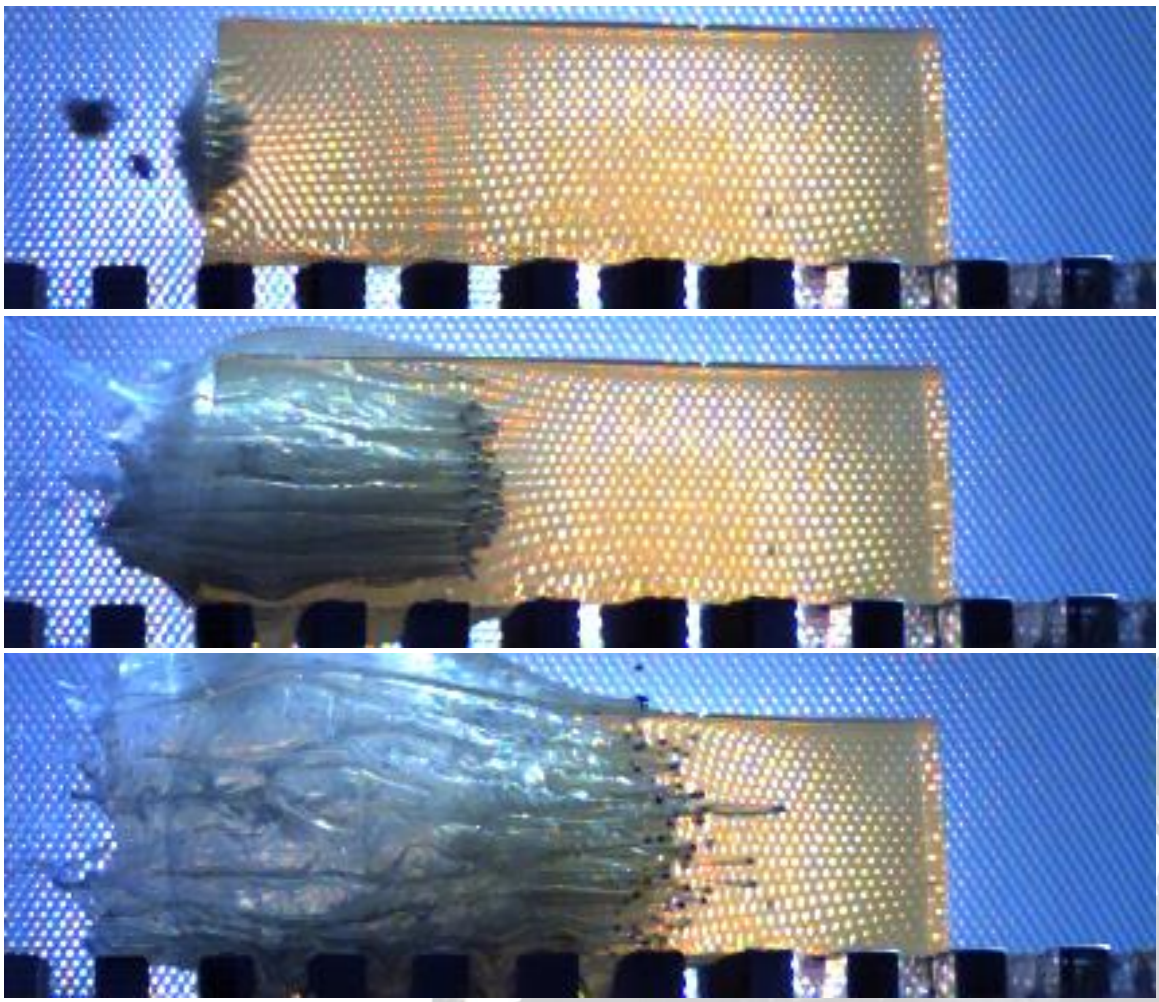
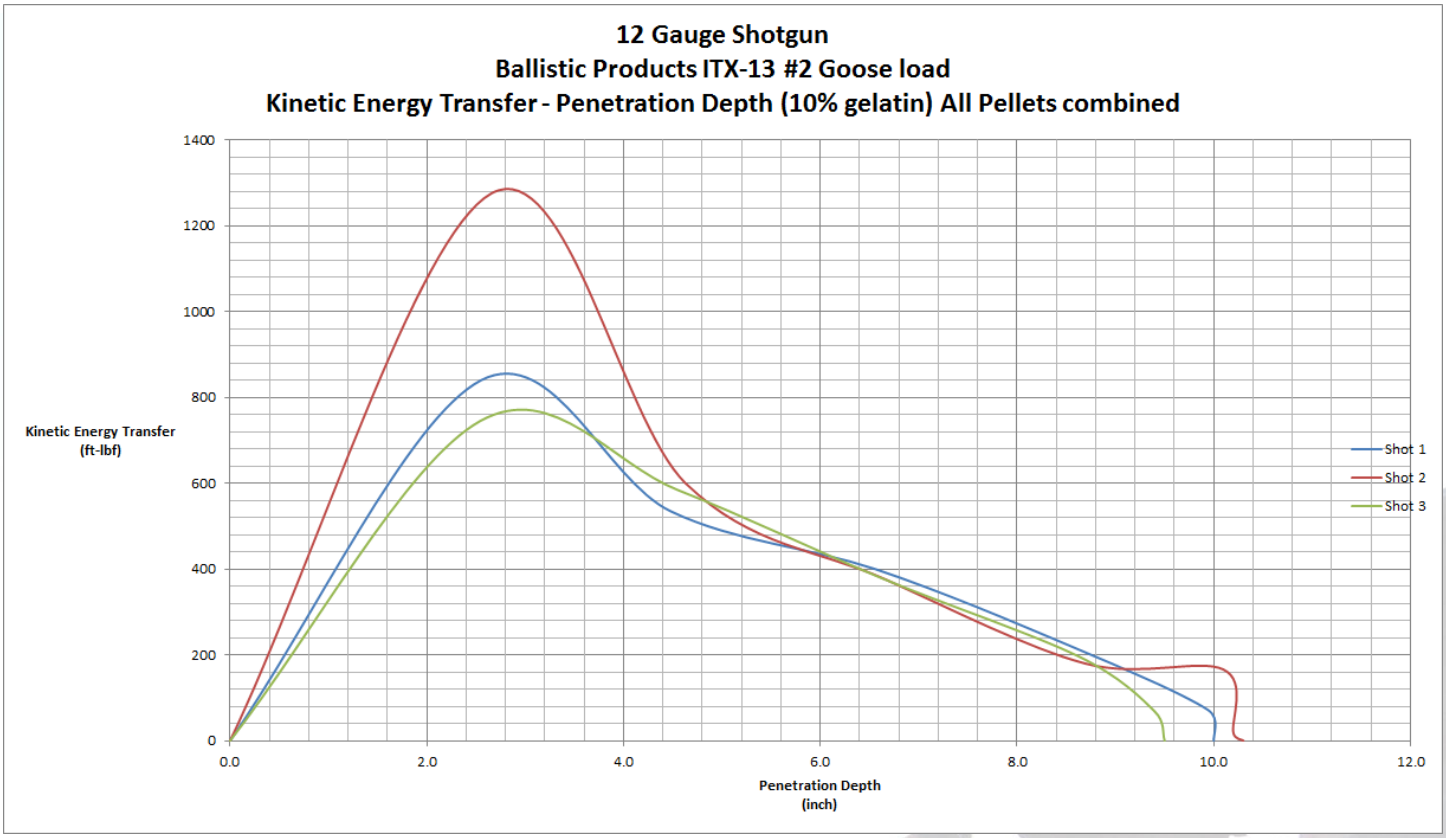
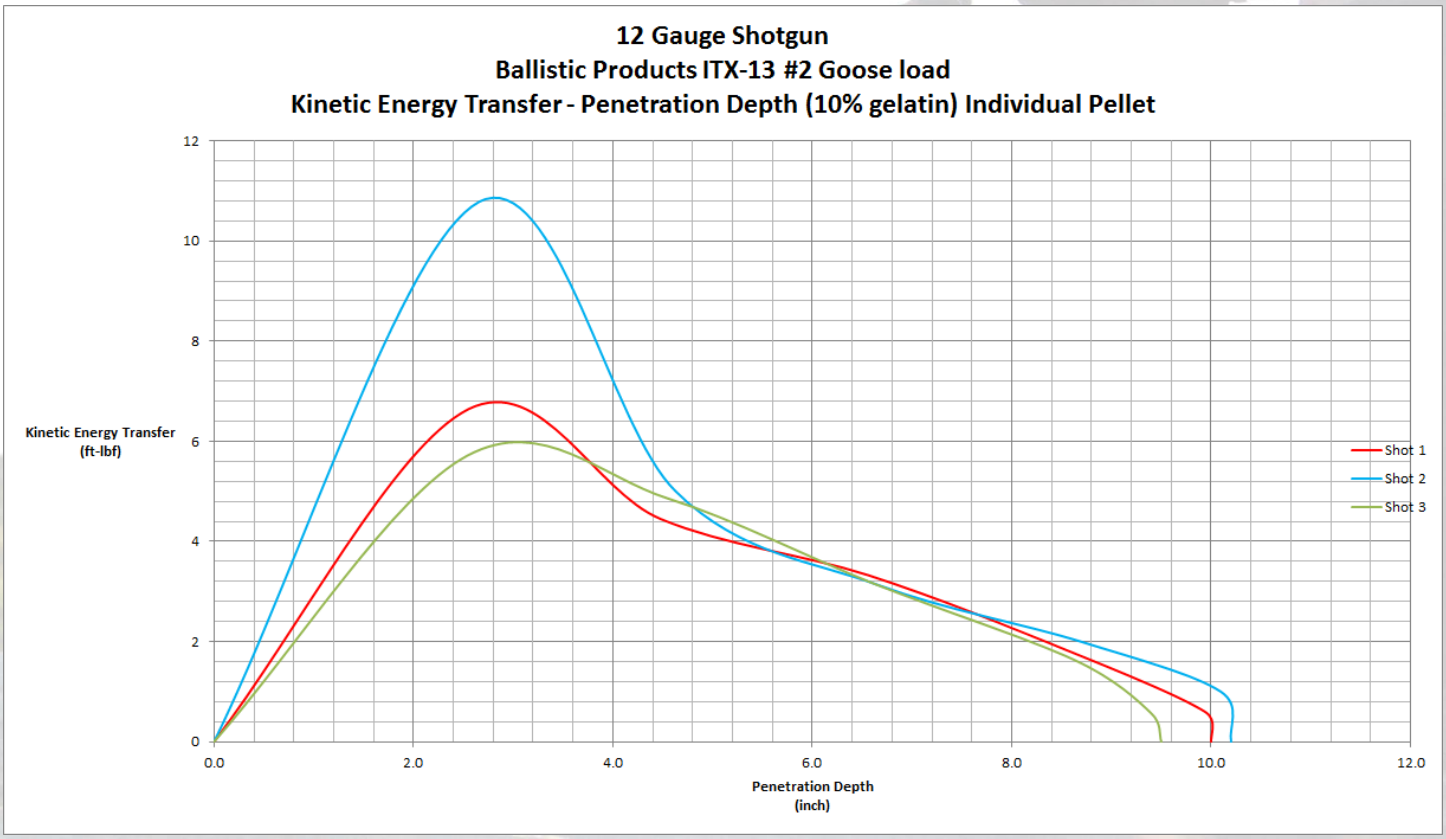
12 gauge ITX-13 Goose #2



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1250	10.0	1.900
2	1402	10.3	1.900
3	1219	9.5	1.900

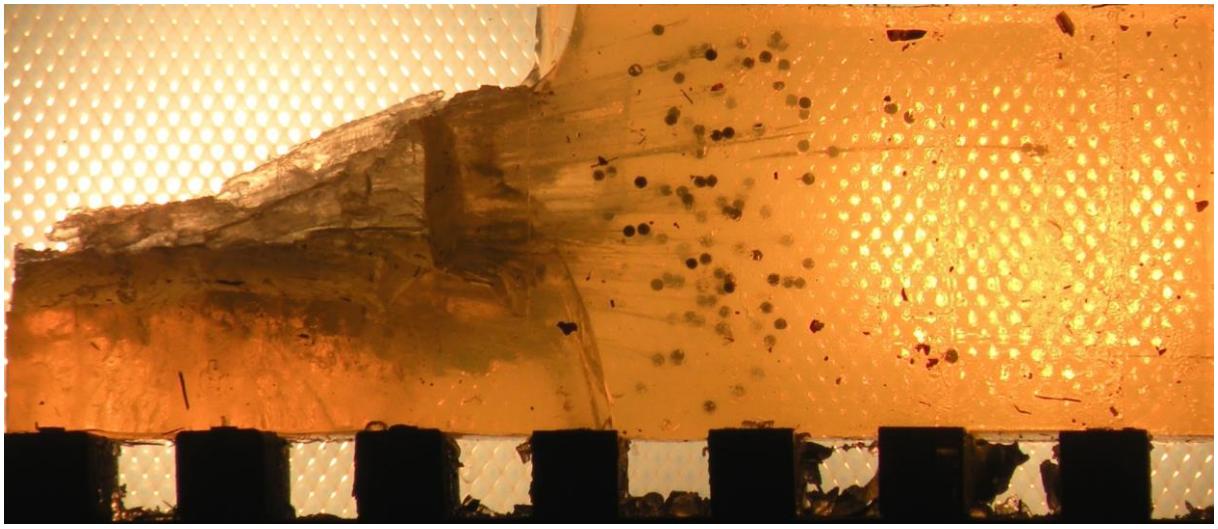
12 gauge ITX-13 Goose #2 Kinetic Energy Transfer



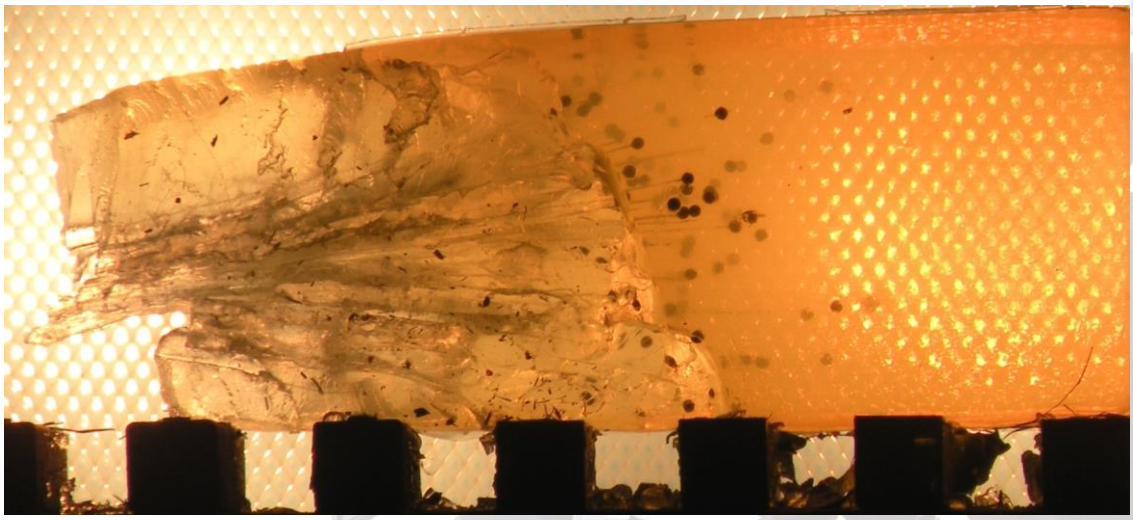


12 gauge ITX-13 Goose #2 static gelatin pictures

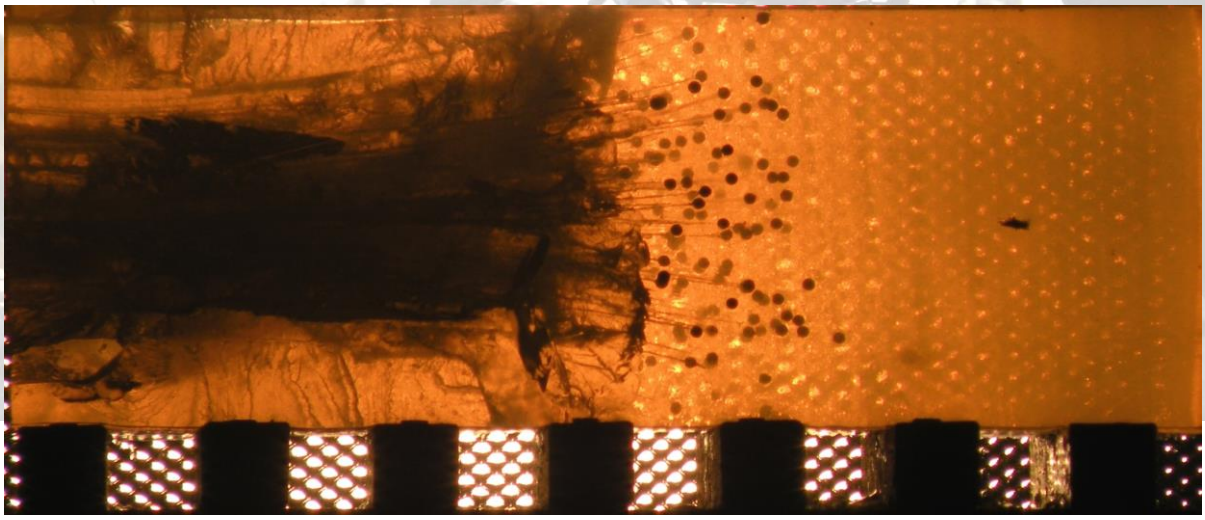
Shot 1



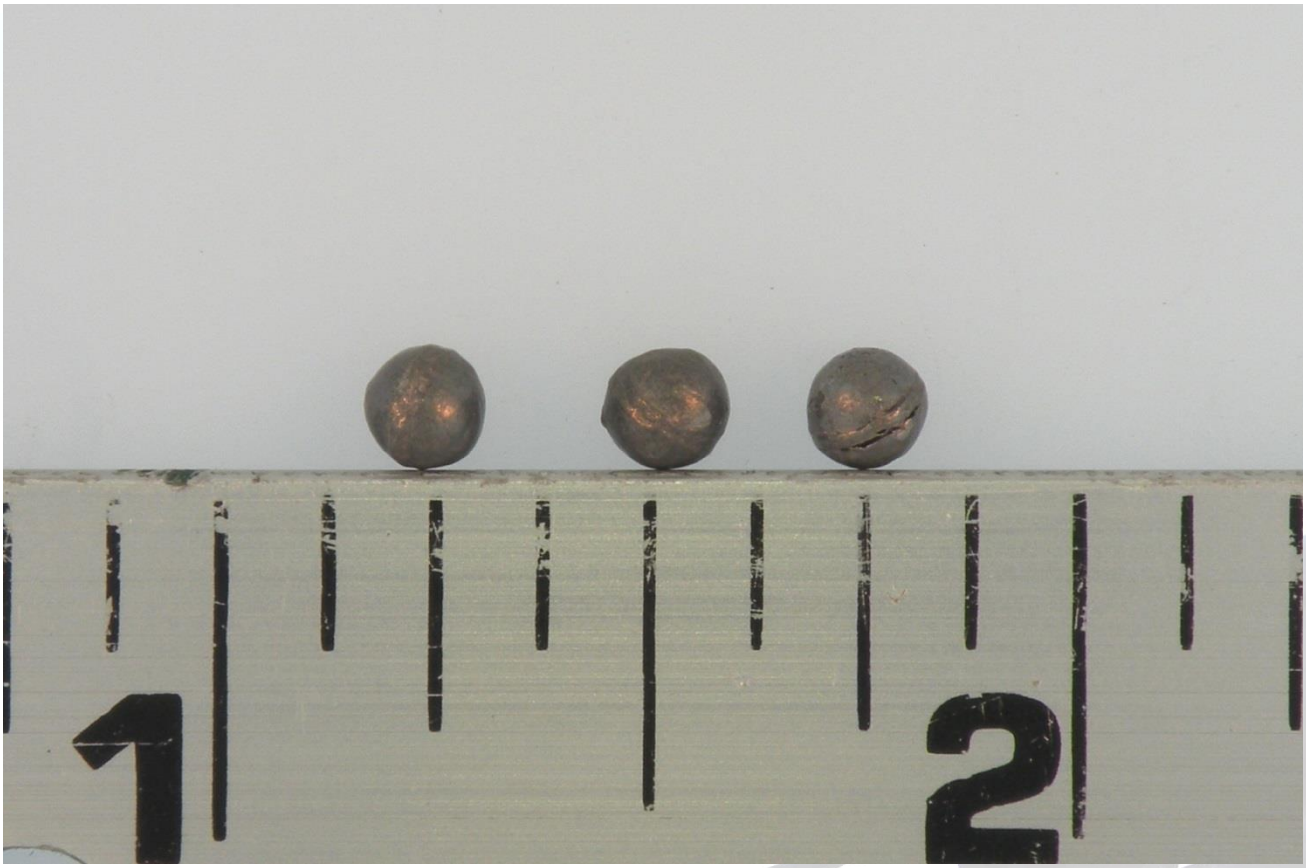
Shot 2



Shot 3



12 gauge ITX-13 Goose #2 Recovered Fragments



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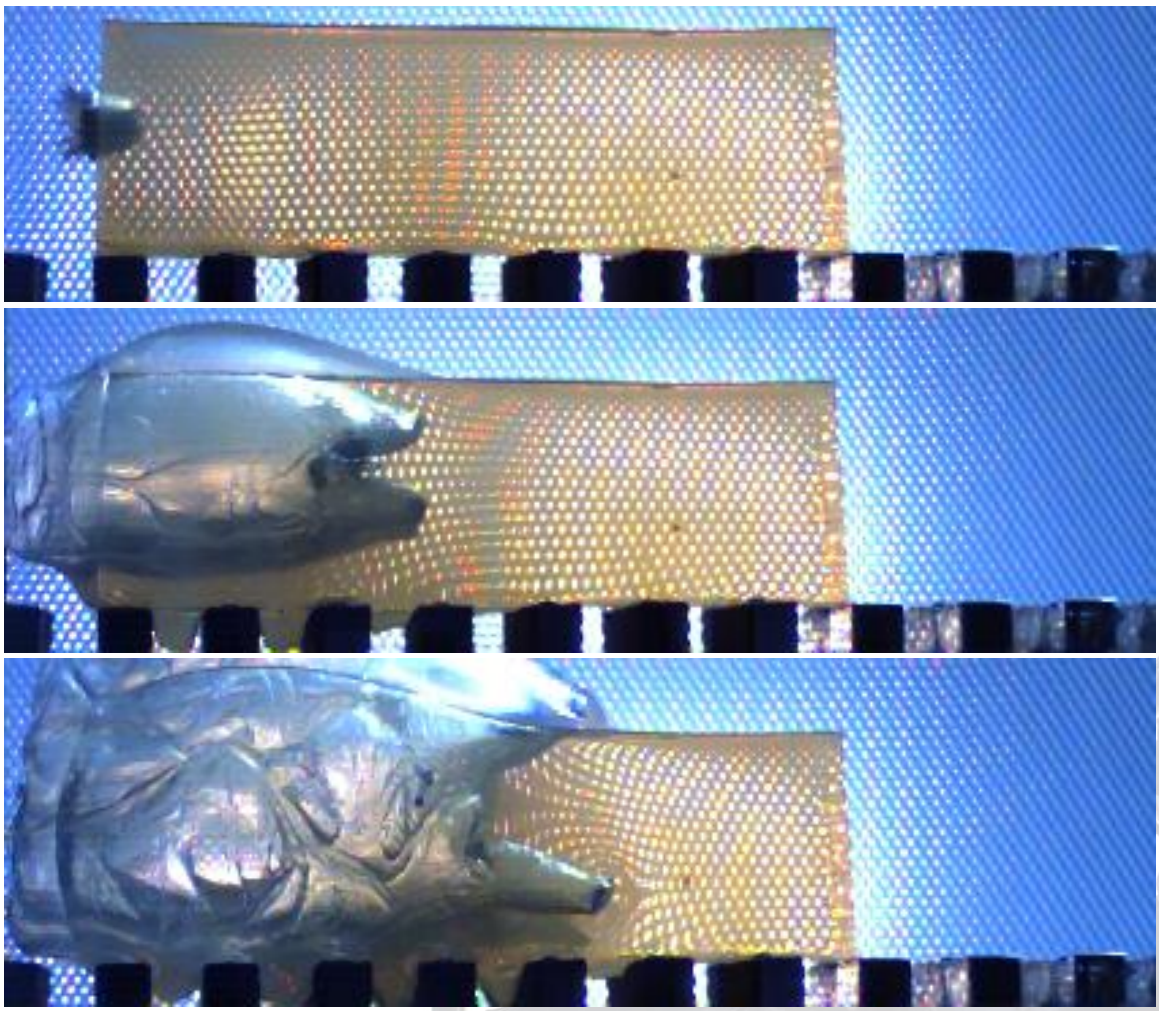
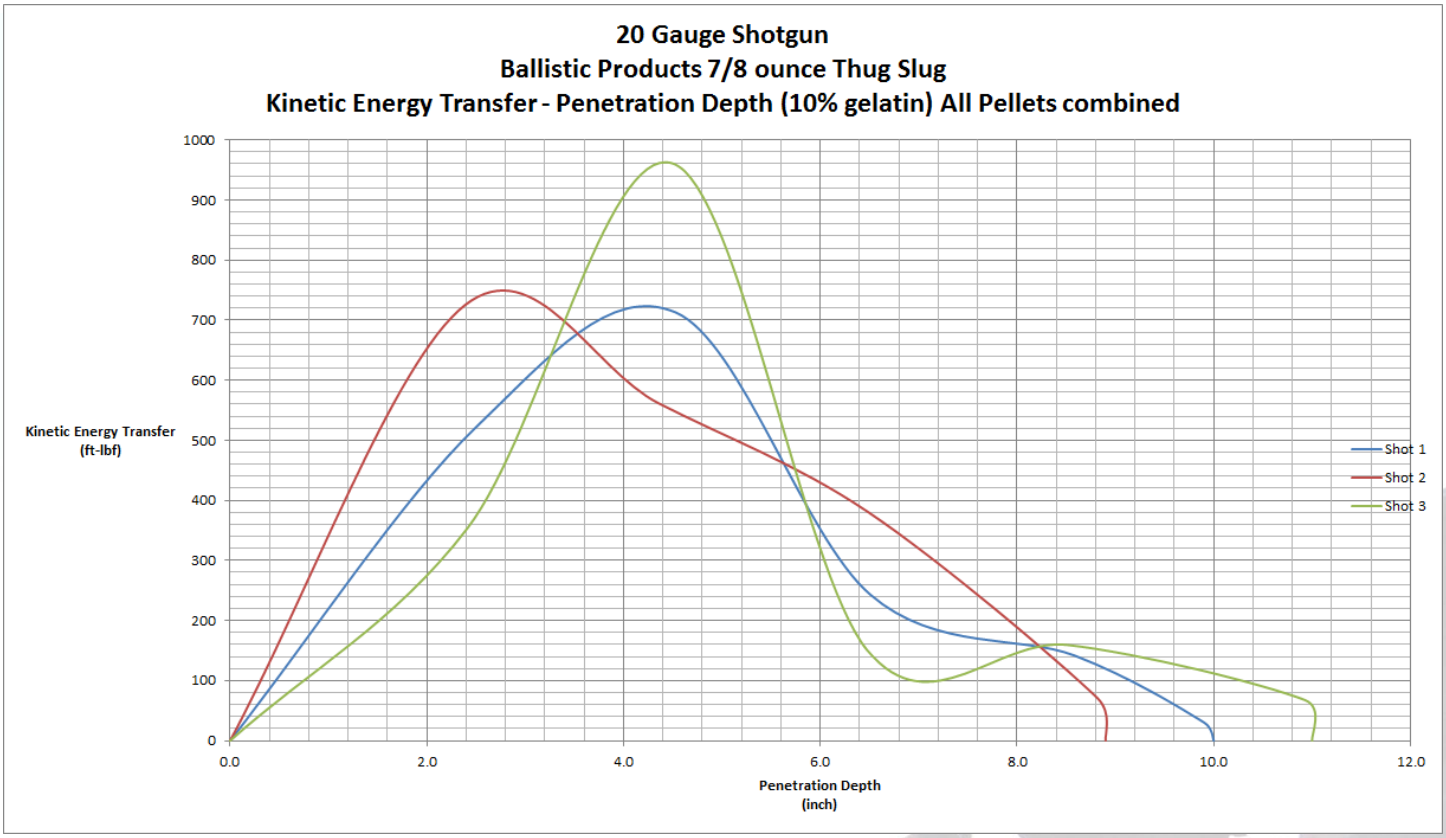
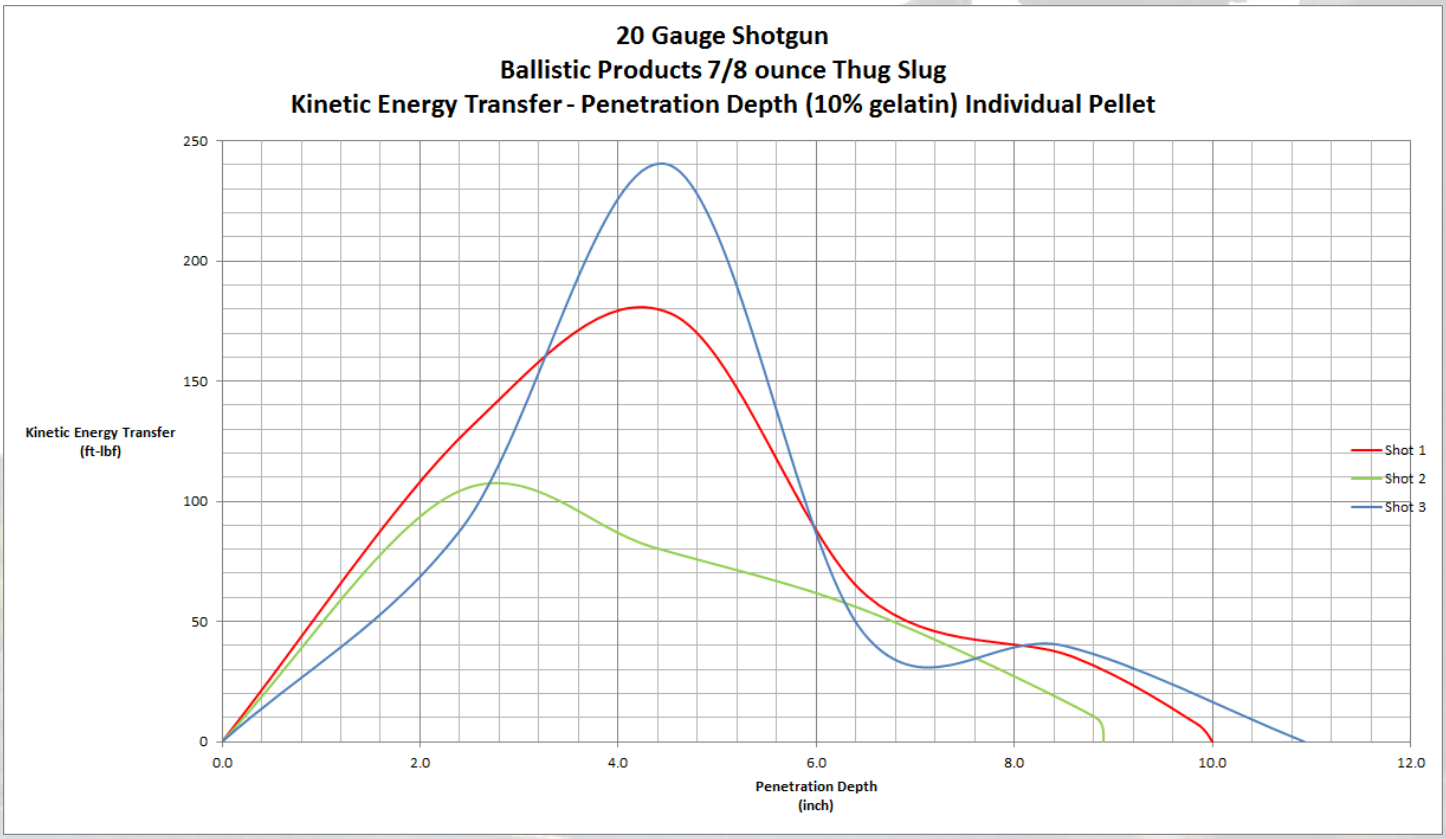
20 gauge 7/8 ounce Thug Slug



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1398	10.0	EST 1.311
2	1440	8.9	EST 1.311
3	1412	11.0	EST 1.311

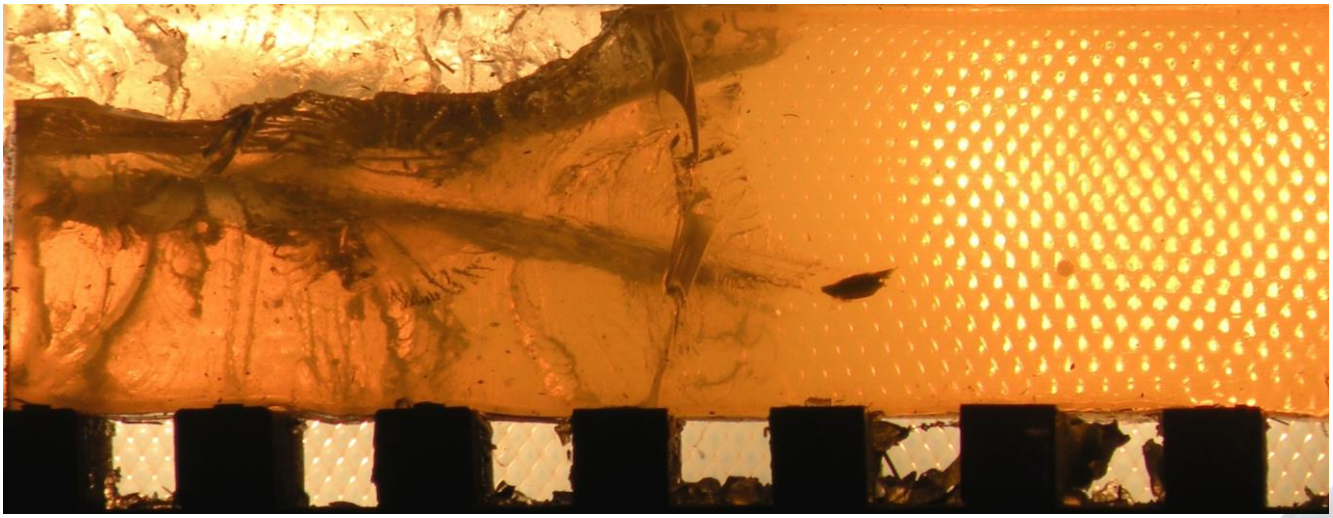
20 gauge 7/8 ounce Thug Slug Kinetic Energy Transfer



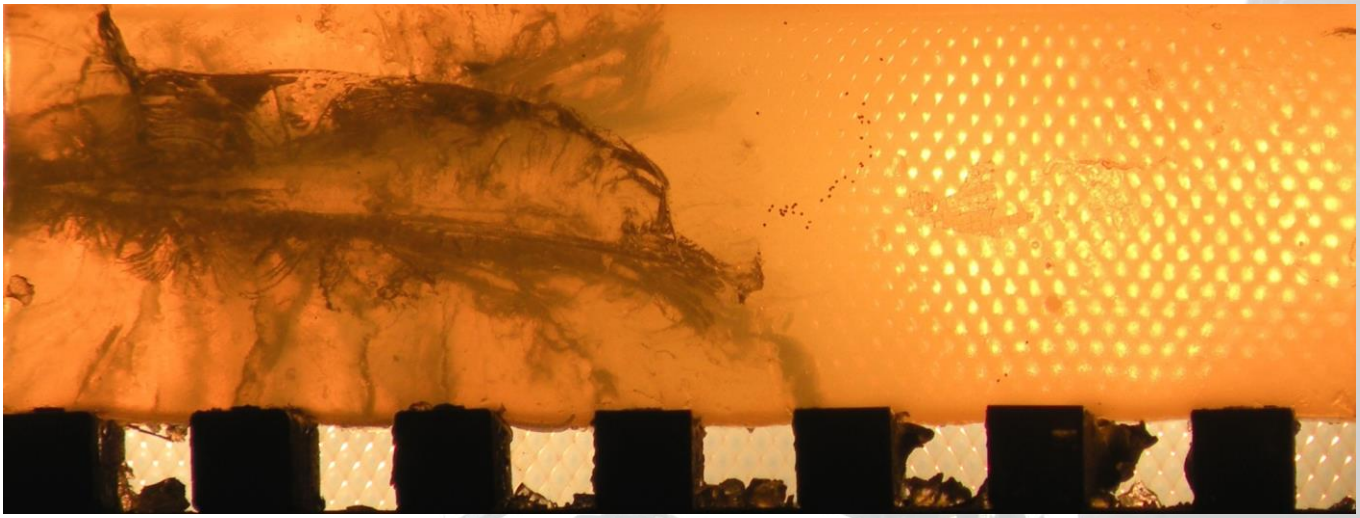


20 gauge 7/8 ounce Thug Slug static gelatin pictures

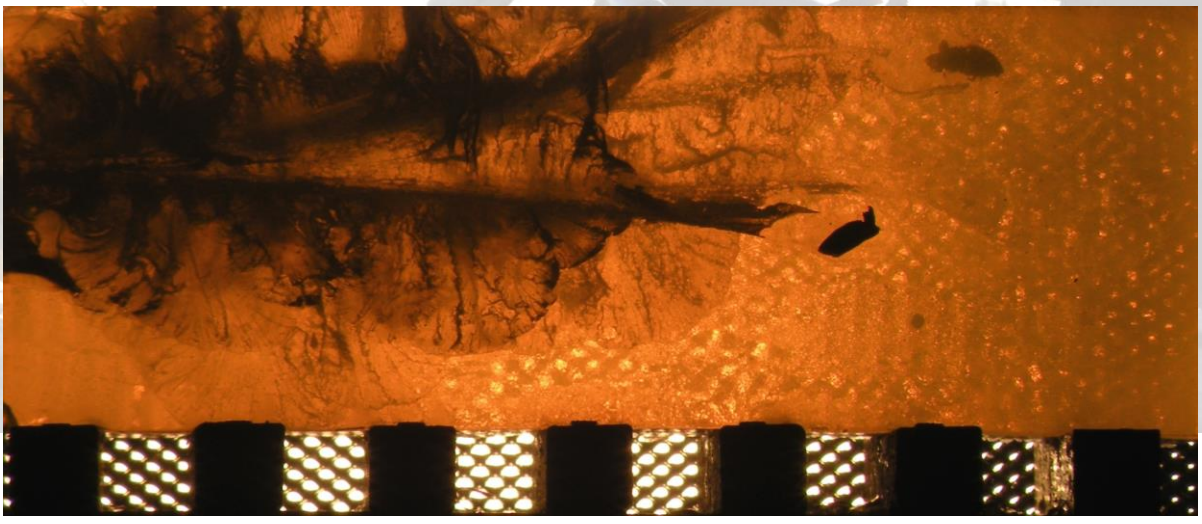
Shot 1



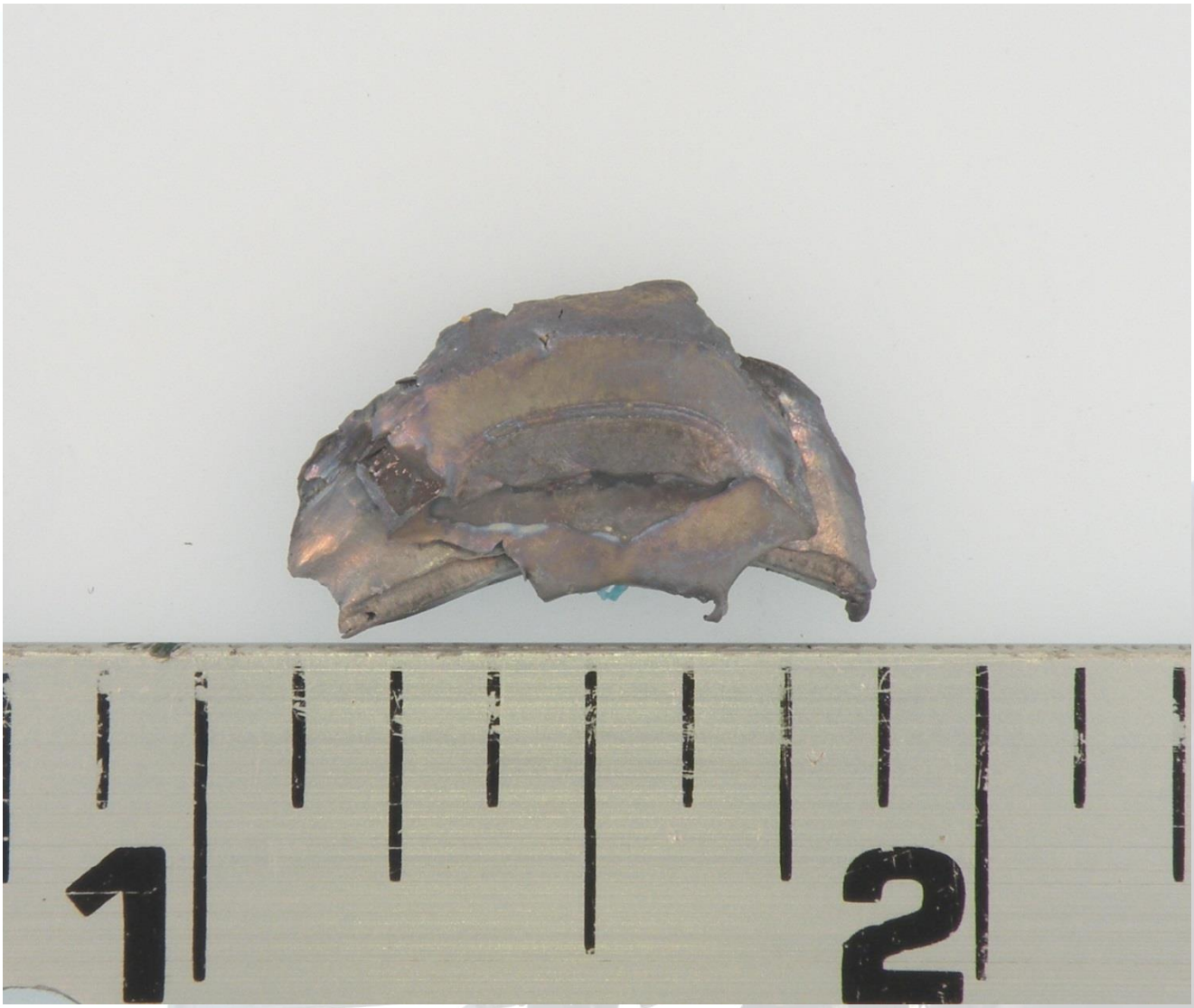
Shot 2



Shot 3



20 gauge 7/8 ounce Thug Slug Recovered Fragments



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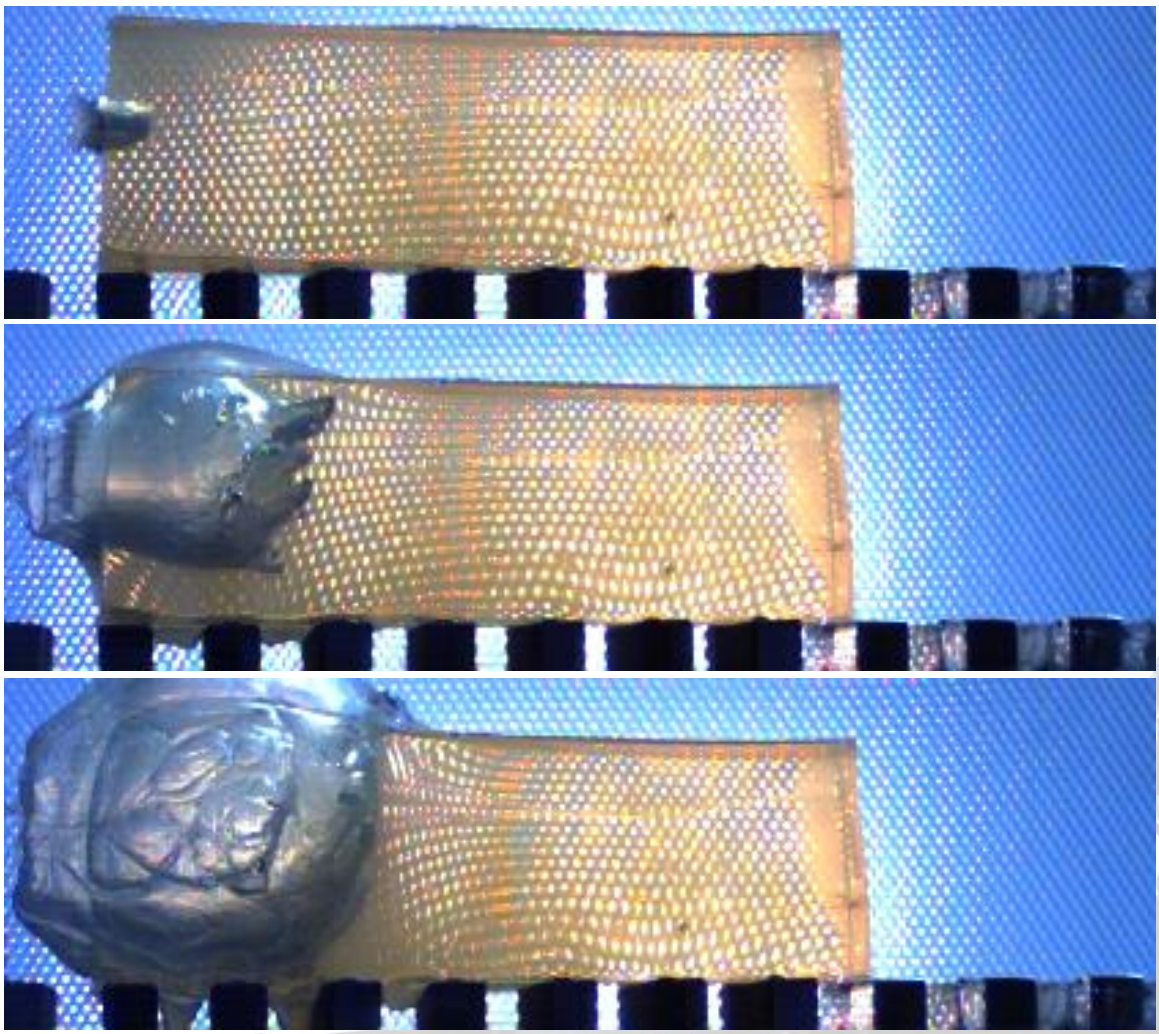
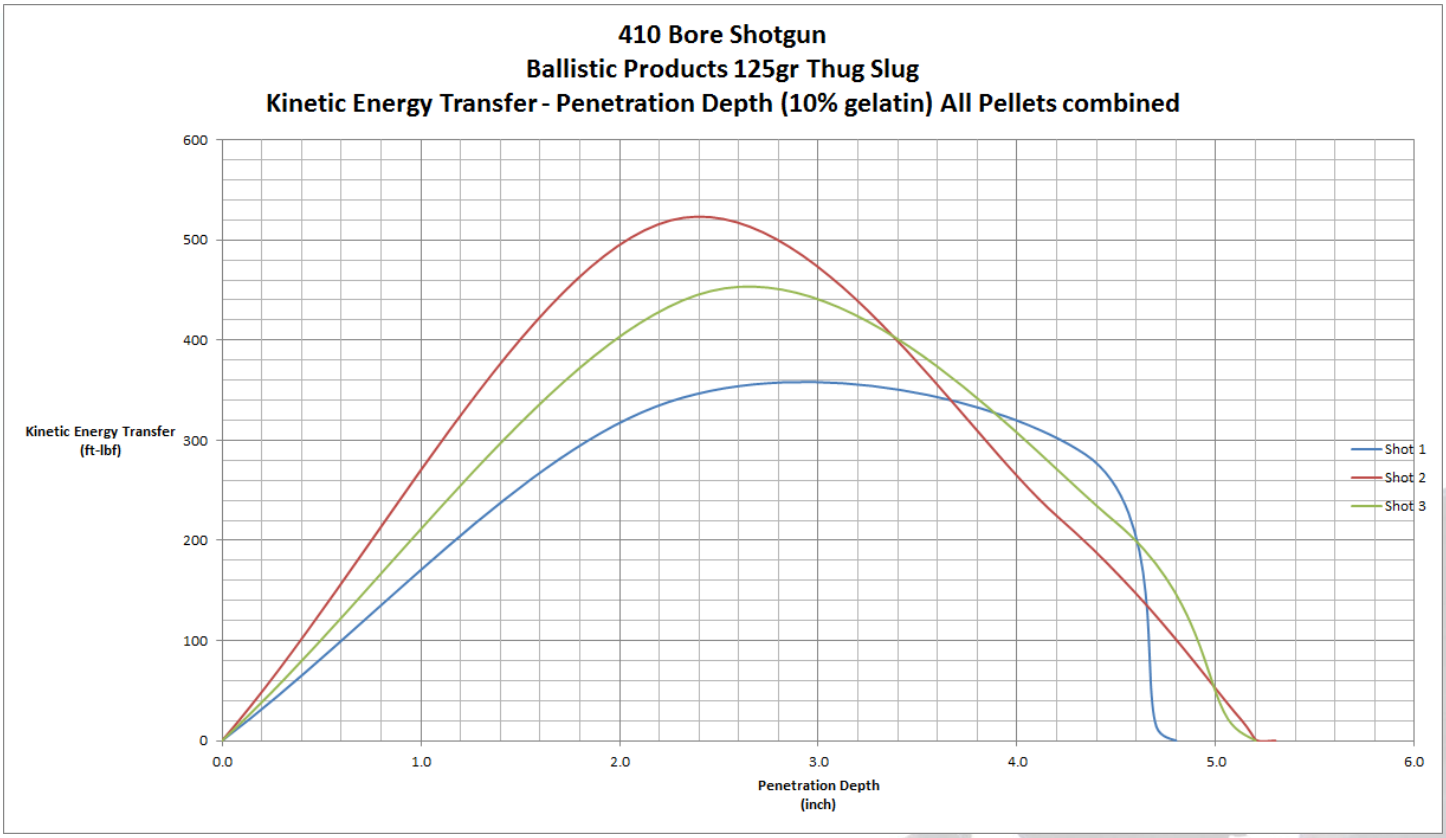
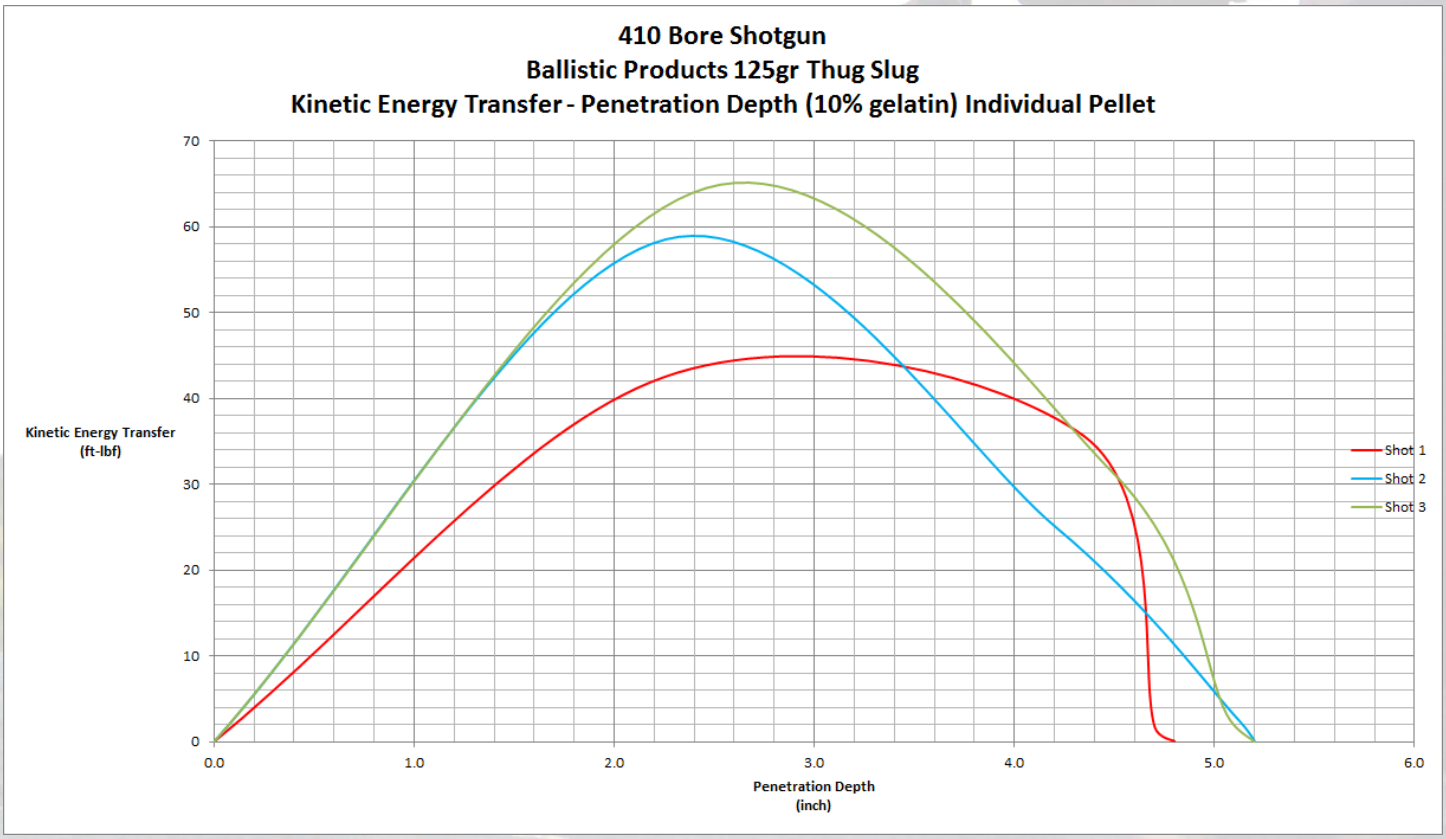
410 Bore 125gr Thug Slug



Shot Number	Impact Velocity (ft/sec)	Average Penetration Depth (inch)	Pellet Surface Area (in^2)
1	1518	4.8	EST 0.105
2	1660	5.3	EST 0.105
3	1577	5.2	EST 0.105

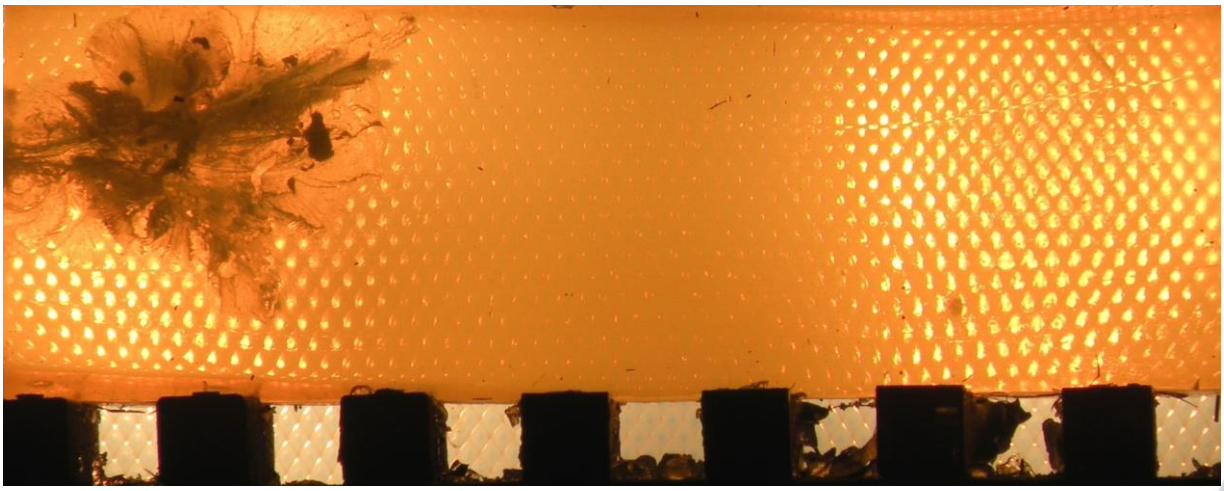
410 Bore 125gr Thug Slug Kinetic Energy Transfer



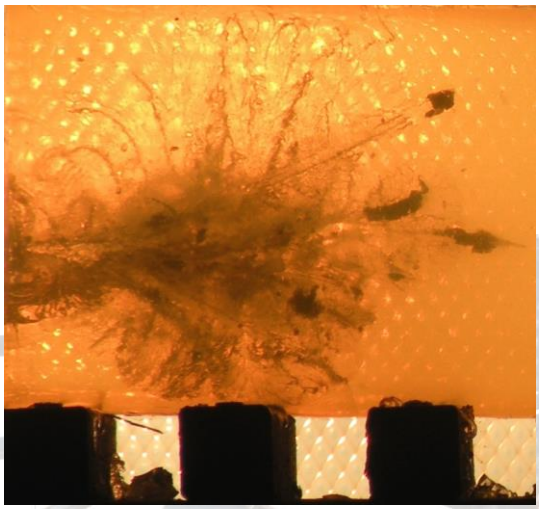


410 Bore 125gr Thug Slug static gelatin pictures

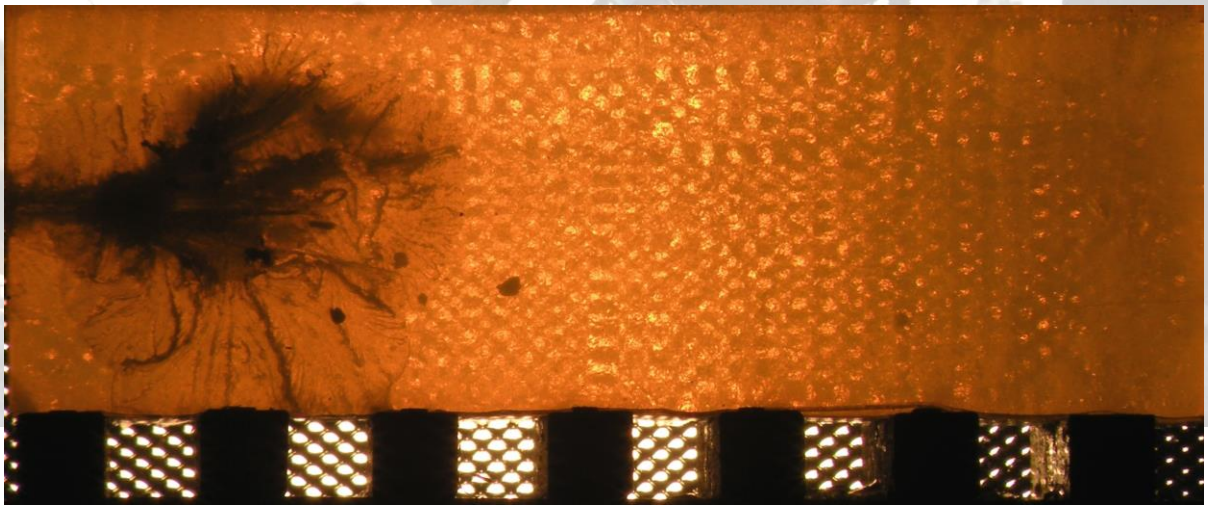
Shot 1



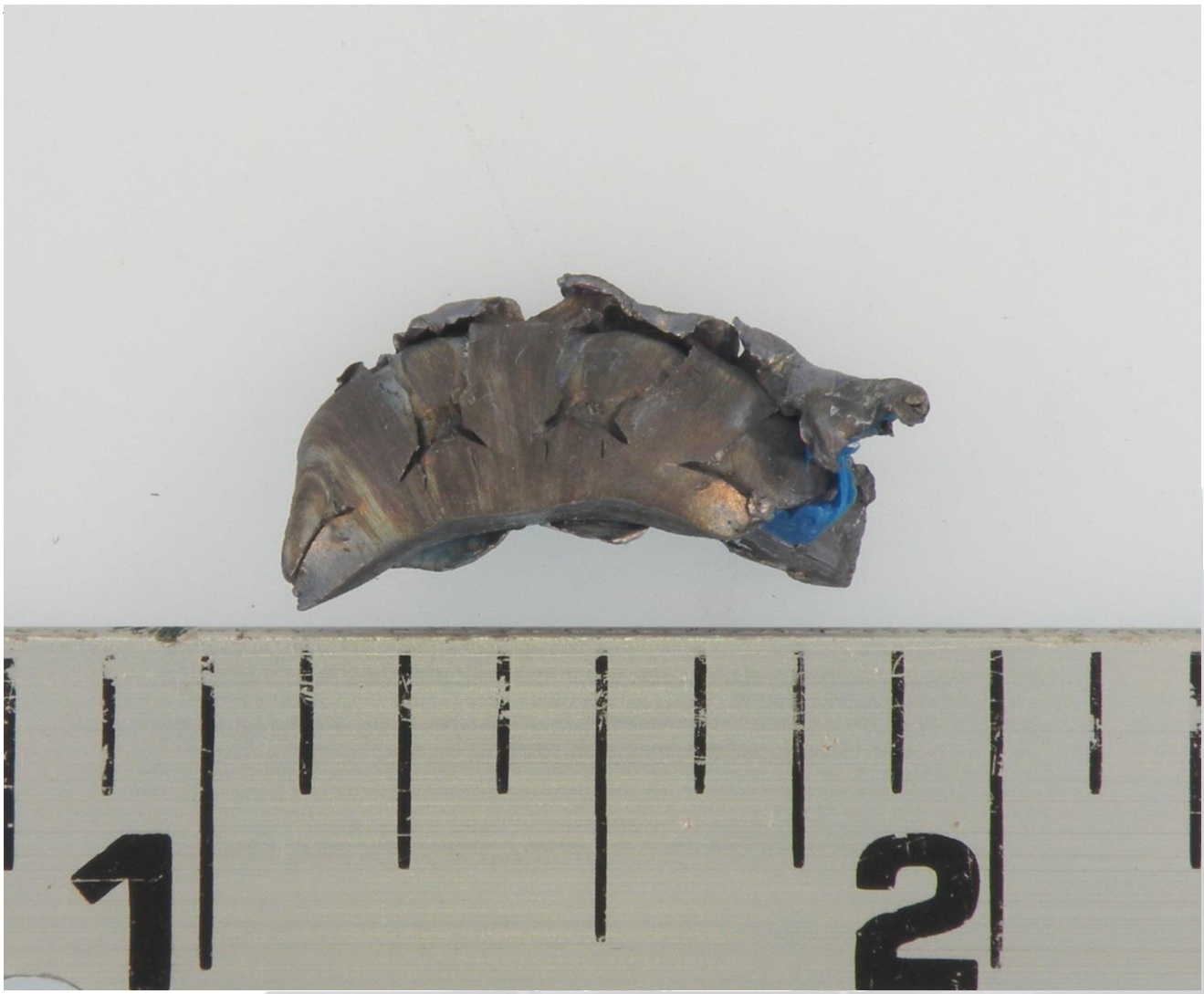
Shot 2



Shot 3



410 Bore 125gr Thug Slug Recovered Fragments



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