1

00:00:00,000 --> 00:00:02,000

What's going on here?

2

00:00:02,000 --> 00:00:04,000

It's the mainframe. It's the mainframe!

3

00:00:04,000 --> 00:00:11,000

Morning, morning, M5 is in Melton. Morning, morning, M5 is in Melton.

4

00:00:11,000 --> 00:00:12,000

What's going on here?

5

00:00:12,000 --> 00:00:14,000

It's the mainframe. It's the mainframe!

6

00:00:14,000 --> 00:00:17,000

The mainframe!

7

00:00:17,000 --> 00:00:29,000

Doug instructions

8

00:00:29,000 --> 00:00:31,000

Doug instructions

9

00:00:31,000 --> 00:00:33,000

What is error?

10

00:00:33,000 --> 00:00:42,000

What is solution?

11

00:00:47,000 --> 00:00:48,000

Revisit.

12

00:00:48,000 --> 00:00:49,000

Revisit.

13

00:00:50,000 --> 00:00:52,000

Revisit.

14

00:01:01,000 --> 00:01:03,000

Revisit.

15

00:01:17,000 --> 00:01:22,000

Well, Jamie, since 2002, you know, we've had our fair share of mottos that have helped define this show.

16

00:01:22,000 --> 00:01:23,000

I mean, there was...

17

00:01:23,000 --> 00:01:25,000

One in doubt.

18

00:01:25,000 --> 00:01:26,000

C4.

19

00:01:26,000 --> 00:01:31,000

And who could forget?

20

00:01:31,000 --> 00:01:33,000

Holy crap! Run!

21

00:01:33,000 --> 00:01:35,000

Run! Run!

22

00:01:36,000 --> 00:01:42,000

And then, of course, there's the classic iconic failure is always an option.

23

00:01:44,000 --> 00:01:46,000

Well, we do screw up a lot.

24

00:01:46,000 --> 00:01:50,000

Yes, but one of the things I love that we do on this show is if we make a major mistake,

25

00:01:50,000 --> 00:01:53,000

we are willing to try a new methodology and to test it again.

26

00:01:53,000 --> 00:01:55,000

And that's what this whole episode is about.

27

00:01:55,000 --> 00:01:58,000

We are tackling fan complaints pretty much for the last time.

28

00:01:58,000 --> 00:01:59,000

What do we got?

29

00:01:59,000 --> 00:02:03,000

Well, later we're going to test two Mythbuster icons that fans said we got wrong.

30

00:02:03,000 --> 00:02:05,000

One is, what is bulletproof?

31

00:02:05,000 --> 00:02:08,000

And three, two, one!

32

00:02:10,000 --> 00:02:12,000

And what is bombproof?

33

00:02:15,000 --> 00:02:16,000

Holy ****!

34

00:02:16,000 --> 00:02:19,000

But first, remember San Francisco Drift?

35

00:02:19,000 --> 00:02:20,000

Sure.

36

00:02:23,000 --> 00:02:24,000

Yeah, baby.

37

00:02:24,000 --> 00:02:28,000

Right, so in that episode we proved beyond a shadow of a doubt that on a regular road surface,

38

00:02:28,000 --> 00:02:31,000

drifting is not faster than regular driving really fast.

39

00:02:31,000 --> 00:02:37,000

But fans said that if we'd done that test on dirt, we would have come to a completely opposite

result.

40

00:02:37,000 --> 00:02:39,000

So, it's time to break out our drifting moves.

41

00:02:39,000 --> 00:02:40,000

Yes, it is.

42

00:02:41,000 --> 00:02:43,000

Hey, here we go.

43

00:02:43,000 --> 00:02:46,000

When Adam and Jamie first slid for science...

44

00:02:47,000 --> 00:02:49,000

Oh my God!

45

00:02:49,000 --> 00:02:51,000

Wow!

46

00:02:51,000 --> 00:02:55,000

They proved that drifting is never faster than regular driving.

47

00:02:55,000 --> 00:02:56,000

Woo!

48

00:02:56,000 --> 00:03:01,000

But by conducting all of their tests on tarmac, fans cried foul.

49

00:03:04,000 --> 00:03:11,000

So in a suitably dusty destination, it's all systems go on a final season drifting do-over.

50

00:03:13,000 --> 00:03:15,000

Dude, this looks perfect.

51

00:03:15,000 --> 00:03:18,000

Yeah, lots of slipping and sliding, huh?

52

00:03:18,000 --> 00:03:19,000

Let's do it.

53

00:03:20,000 --> 00:03:25,000

I'm standing in a quarry in Ion, California, and behind me is a lake you might recognize

54

00:03:25,000 --> 00:03:28,000

because we've blown a lot of stuff up there.

55

00:03:28,000 --> 00:03:29,000

We've blown up boats.

56

00:03:32,000 --> 00:03:34,000

We've even blown up sharks.

57

00:03:37,000 --> 00:03:48,000

However, we have never tested a driving myth up here, and that ends today because surrounding this lake are a bunch of beautiful, flat clay surfaces perfect for drifting on dirt.

58

00:03:48,000 --> 00:03:50,000

We're gonna race, we gotta need a course.

59

00:03:50,000 --> 00:03:52,000

We're gonna put one together.

60

00:03:52,000 --> 00:03:53,000

Woo-hoo!

61

00:03:53,000 --> 00:03:56,000

Yep, before driving into the dust...

62

00:03:56,000 --> 00:03:57,000

That is our start line.

63

00:03:57,000 --> 00:04:00,000

...the guys must first plot out a path...

64

00:04:00,000 --> 00:04:01,000

Okay, slow down.

65

00:04:01,000 --> 00:04:04,000

...that'll let them put this myth to the ultimate test.

66

00:04:04,000 --> 00:04:13,000

If we're gonna test drifting versus not drifting, we're gonna have to have a course that has both curves and straight aways that can really put the car to the test.

67

00:04:14,000 --> 00:04:22,000

In total, their course is nearly two miles of twists and turns that'll challenge their driving skills to the max.

68

00:04:22,000 --> 00:04:24,000

So, what's the plan?

69

00:04:24,000 --> 00:04:29,000

Now remember that the last time we tested drifting, we concluded that straight driving was faster.

70

00:04:29,000 --> 00:04:31,000

Dude, that's a result. That's beautiful.

71

00:04:31,000 --> 00:04:36,000

People kept writing us and saying, on a dirt track, drifting will be faster, and that's what we're testing.

72

00:04:36,000 --> 00:04:38,000

Jamie is the control.

73

00:04:38,000 --> 00:04:44,000

He's doing the straight driving, attempting to make it around this track as fast as possible without drifting.

74

00:04:44,000 --> 00:04:46,000

I will be doing the opposite.

75

00:04:46,000 --> 00:04:49,000

I'm gonna be doing this entire friggin' thing sideways if I can.

76

00:04:51,000 --> 00:04:53,000

Right there. Stop right there.

77

00:04:53,000 --> 00:04:59,000

So, first up is the non-drifting control, a.k.a. James Franklin Heinemann.

78

00:04:59,000 --> 00:05:02,000

First official timing run. Control.

79

00:05:02,000 --> 00:05:06,000

Five, four, three, two, one, go!

80

00:05:09,000 --> 00:05:13,000

Jamie will do two pedal-to-the-metal laps.

81

00:05:16,000 --> 00:05:20,000

And his best time will be the benchmark that Adam has to beat.

82

00:05:23,000 --> 00:05:24,000

Yeah, baby!

83

00:05:24,000 --> 00:05:29,000

But for an accurate comparison, it's crucial that Jamie doesn't drift at all.

84

00:05:29,000 --> 00:05:31,000

And there he goes.

85

00:05:31,000 --> 00:05:34,000

Which, on dirt like this, is downright difficult.

86

00:05:34,000 --> 00:05:38,000

To not drift at all, I'm simply taking the racing line.

87

00:05:38,000 --> 00:05:42,000

That means braking as late as possible as I approach a bend.

88

00:05:44,000 --> 00:05:50,000

Taking that bend as fast as I can without losing traction, and then accelerating out of it like there's no tomorrow.

89

00:05:50,000 --> 00:05:57,000

Reaching a top speed of 52 miles an hour without ever losing traction at a turn.

90

00:05:59,000 --> 00:06:00,000

Jamie comes home in...

91

00:06:00,000 --> 00:06:02,000

Two minutes, 24 seconds.

92

00:06:02,000 --> 00:06:05,000

A quick reset later, and it's lap two of two.

93

00:06:05,000 --> 00:06:08,000

Three, two, one, go!

94

00:06:13,000 --> 00:06:16,000

Every time he takes off, it's like a film about the dust bowl.

95

00:06:17,000 --> 00:06:22,000

Once again, Jamie pushes the car to the limit through turns big and small.

96

00:06:22,000 --> 00:06:25,000

Let's cut to the inside of the car, see if Jamie's having fun.

97

00:06:25,000 --> 00:06:30,000

And his time?

98

00:06:30,000 --> 00:06:32,000

Okay, here he comes.

99

00:06:32,000 --> 00:06:34,000

Seems a bit faster, okay?

100

00:06:34,000 --> 00:06:36,000

He's going for it, and...

101

00:06:36,000 --> 00:06:38,000

Two minutes, 22.

102

00:06:38,000 --> 00:06:40,000

Man, that is fast.

103

00:06:42,000 --> 00:06:48,000

It's not only fast, but by never drifting, Jamie's lap is the perfect control.

104

00:06:48,000 --> 00:06:53,000

With my skill and with that car, I'm as fast as I'm gonna get.

105

00:06:53,000 --> 00:07:00,000

But before Adam tries to better it, there's another revisit to redo.

106

00:07:00,000 --> 00:07:04,000

Well, Jamie, it's time to go back into some very familiar territory for you and I.

107

00:07:04,000 --> 00:07:06,000

What is bulletproof?

108

00:07:06,000 --> 00:07:07,000

Why's that?

109

00:07:07,000 --> 00:07:13,000

Well, first we have an amazing fan submission story about supposedly bulletproof fish tanks.

110

00:07:15,000 --> 00:07:17,000

That I've got to try.

111

00:07:17,000 --> 00:07:18,000

Yeah, I totally agree.

112

00:07:18,000 --> 00:07:23,000

But first, it's a return to the very first item we ever shot at, and that is this.

113

00:07:23,000 --> 00:07:25,000

A simple brass lighter.

114

00:07:25,000 --> 00:07:27,000

Which turned out to be not bulletproof at all.

115

00:07:27,000 --> 00:07:30,000

Not even a little bit, but fans insist that we got this wrong,

116

00:07:30,000 --> 00:07:34,000

that there is a circumstance under which a lighter can stop a slug.

117

00:07:34,000 --> 00:07:36,000

Well, I guess it's now or never.

118

00:07:48,000 --> 00:07:55,000

Shooting at Stuff has been our bread and butter on Mythbusters over the years.

119

00:08:00,000 --> 00:08:05,000

To more specifically, we have shot hundreds of objects to find out and answer the question,

120

00:08:05,000 --> 00:08:08,000

what is and isn't bulletproof from belt buckles.

121

00:08:08,000 --> 00:08:10,000

Oh, it went all the way through.

122

00:08:10,000 --> 00:08:12,000

But look at what it did to the buckle.

123

00:08:12,000 --> 00:08:13,000

It caught it like a catcher's mitt.

124

00:08:13,000 --> 00:08:14,000

Two cars.

125

00:08:14,000 --> 00:08:18,000

That didn't suck.

126

00:08:18,000 --> 00:08:19,000

To pizzas.

127

00:08:19,000 --> 00:08:22,000

Oh, check out my new bulletproof vest, man.

128

00:08:22,000 --> 00:08:24,000

But it all began with this.

129

00:08:24,000 --> 00:08:28,000

The humble, fun-based lighter.

130

00:08:28,000 --> 00:08:31,000

And 12 years ago, we found that these are not at all bulletproof

131

00:08:31,000 --> 00:08:34,000

by putting a 22-round cleanly through it.

132

00:08:34,000 --> 00:08:35,000

We're going hot.

133

00:08:35,000 --> 00:08:41,000

It was way back in 2004 that the guys lacerated a lighter.

134

00:08:41,000 --> 00:08:43,000

Looks like you hit it pretty good.

135

00:08:43,000 --> 00:08:51,000

But fans were furious because an article like this alleged that a lighter did stop a slug in a botched burglary.

136

00:08:51,000 --> 00:08:57,000

So it's time for a final season two over to retest a decade-long dispute.

137

00:08:57,000 --> 00:09:05,000

We're using a 22-caliber rifle firing a full metal-jacketed round with a muzzle velocity of 1,440 feet per second.

138

00:09:05,000 --> 00:09:09,000

But will the guys really get a different result?

139

00:09:09,000 --> 00:09:10,000

What's that for?

140

00:09:10,000 --> 00:09:11,000

You'll love this.

141

00:09:11,000 --> 00:09:14,000

That's for holding our lighter.

142

00:09:14,000 --> 00:09:15,000

All right.

143

00:09:15,000 --> 00:09:19,000

To find out, they're cranking the coverage to the max.

144

00:09:19,000 --> 00:09:24,000

In the early days of Mythbusters, if we wanted to get a better viewpoint on a bullet going through a lighter,

145

00:09:24,000 --> 00:09:28,000

for instance, all we really had as our option was to just freeze frame our video.

146

00:09:28,000 --> 00:09:32,000

But the last 13 years have seen an incredible amount of advancement.

147

00:09:32,000 --> 00:09:35,000

This is today's ultra-high-speed camera.

148

00:09:35,000 --> 00:09:40,000

It will record this bullet shot at 28,000 frames per second in HD.

149

00:09:40,000 --> 00:09:46,000

This is our slow-poke high-speed camera, which will record it at 6,900 frames per second,

150

00:09:46,000 --> 00:09:49,000

all to give us a better vantage point on what's actually happening.

151

00:09:49,000 --> 00:09:53,000

With all cameras rolling, it's showtime.

152

00:09:53,000 --> 00:09:54,000

All right.

153

00:09:54,000 --> 00:10:00,000

Our first shot, guy with a lighter in his pocket versus a direct shot from a 22-caliber rifle firing a full metal-jacketed round.

154

00:10:00,000 --> 00:10:01,000

You ready?

155

00:10:01,000 --> 00:10:06,000

Firing in three, two, one.

156

00:10:06,000 --> 00:10:11,000

It's a bull-jack on the breast.

157

00:10:11,000 --> 00:10:13,000

I think that was a perfect shot.

158

00:10:13,000 --> 00:10:16,000

But it's bad news for Ballistics gel buster.

159

00:10:16,000 --> 00:10:19,000

So that bullet made it all the way through.

160

00:10:19,000 --> 00:10:25,000

There's cotton from the lighter in the wound.

161

00:10:25,000 --> 00:10:28,000

I'm going to go out on a limb and say, this guy is dead.

162

00:10:28,000 --> 00:10:30,000

He's dead, Jim.

163

00:10:30,000 --> 00:10:33,000

So that experiment worked beautifully.

164

00:10:33,000 --> 00:10:34,000

Jamie pulled the trigger.

165

00:10:34,000 --> 00:10:38,000

The bullet exited the rifle at about 1,400 feet per second, and bang!

166

00:10:38,000 --> 00:10:41,000

It hit the lighter dead center.

167

00:10:41,000 --> 00:10:47,000

But then, just like in 2004, the bullet kept going through buster and almost came out the other side of him.

168

00:10:47,000 --> 00:10:48,000

There we go.

169

00:10:48,000 --> 00:10:51,000

I mean, the lighter did virtually nothing.

170

00:10:51,000 --> 00:10:53,000

So how come so many people told us we got this wrong?

171

00:10:53,000 --> 00:10:57,000

How come there's a story saying that some guys later did stop a slug?

172

00:10:57,000 --> 00:10:59,000

Well, we can think of only one thing.

173

00:10:59,000 --> 00:11:03,000

I mean, the mythical slug that we're talking about just can't have been a direct hit.

174

00:11:03,000 --> 00:11:07,000

It had to have bounced off something else on its way to the lighter.

175

00:11:07,000 --> 00:11:09,000

And that is where we're going next.

176

00:11:09,000 --> 00:11:15,000

We are about to enlist the help of famous Irish Ballistics expert, Rick O'Shea.

177

00:11:15,000 --> 00:11:19,000

Later on the guy's last ever revisit.

178

00:11:19,000 --> 00:11:20,000

Fire in the hole!

179

00:11:20,000 --> 00:11:23,000

Adam and Jamie want big boo.

180

00:11:23,000 --> 00:11:25,000

Wow, holy s***.

181

00:11:25,000 --> 00:11:30,000

But next, will the lighter bounce back from the brink?

182

00:11:30,000 --> 00:11:32,000

Hey!

183

00:11:37,000 --> 00:11:40,000

Since 2004, I can see you.

184

00:11:40,000 --> 00:11:47,000

The mythbusters have tested the bullet-stopping capabilities of 35 everyday items.

185

00:11:49,000 --> 00:11:51,000

Holy Cremoli.

186

00:11:51,000 --> 00:11:57,000

But does internet gossip like this prove their very first foray was false?

187

00:11:57,000 --> 00:11:59,000

Well, no.

188

00:11:59,000 --> 00:12:04,000

Because this episode's retest replicated that first result.

189

00:12:04,000 --> 00:12:06,000

Right in the middle of his heart.

190

00:12:06,000 --> 00:12:08,000

But all is not lost for the lighter.

191

00:12:08,000 --> 00:12:11,000

Now it's time to set up a ricocheting bullet.

192

00:12:11,000 --> 00:12:15,000

Now, we have some experience with ricocheting bullets, I mean, on purpose.

193

00:12:15,000 --> 00:12:20,000

We did an episode a while back in which we found out several vital things about ricocheting.

194

00:12:20,000 --> 00:12:22,000

And I see a hole in me.

195

00:12:22,000 --> 00:12:26,000

The best material to ricochet a bullet off of is this, a concrete paver.

196

00:12:26,000 --> 00:12:31,000

So we're going to set this up at an angle that helps our bullet hit our dude.

197

00:12:31,000 --> 00:12:39,000

The theory is that by bouncing off the paver, the bullet's speed will be so reduced that a lighter may then stop it.

198

00:12:39,000 --> 00:12:41,000

I think that puts us in the ballpark.

199

00:12:41,000 --> 00:12:48,000

But because ricochets are notoriously unpredictable, they're starting without the lighter in place.

200

00:12:48,000 --> 00:12:51,000

This could be a little tricky to get this all dialed in.

201

00:12:51,000 --> 00:12:55,000

So we've come up with a setup that hopefully it'll make it easier.

202

00:12:55,000 --> 00:13:02,000

Starting with the gun, which is mounted here, and it's aimed at our ricochet brick here.

203

00:13:02,000 --> 00:13:09,000

Hopefully it'll bounce off of this and then into this piece of cardboard here, leave them a mark,

204

00:13:09,000 --> 00:13:14,000

which will tell us where to put our dummy with the lighter on it without a whole lot of messing around.

205

00:13:14,000 --> 00:13:17,000

All right, sir, we're all set up for the ricochet. You ready to shoot?

206

00:13:17,000 --> 00:13:18,000

Yeah.

207

00:13:18,000 --> 00:13:23,000

For test one, the paver is at an angle of 45 degrees relative to the rifle.

208

00:13:23,000 --> 00:13:27,000

Firing in three, two, one.

209

00:13:27,000 --> 00:13:30,000

But the bullets know where to be seen.

210

00:13:30,000 --> 00:13:35,000

It didn't go through our card. Let's take a look at high speed and find out where that bullet went.

211

00:13:35,000 --> 00:13:36,000

Okay.

212

00:13:36,000 --> 00:13:41,000

Oh, wow. Okay. There it is. It reflected at two part an angle.

213

00:13:41,000 --> 00:13:45,000

Yeah, so we need to shallow that out.

214

00:13:45,000 --> 00:13:52,000

Our first shot into the 45 degree paver ended up bouncing the bullet so much that it flew straight past our cardboard target.

215

00:13:52,000 --> 00:13:58,000

So we're just going to shallow the angle of the brick, try it again, see what happens.

216

00:13:58,000 --> 00:14:03,000

Yep, for test two, Adam reduces the angle to 25 degrees.

217

00:14:03,000 --> 00:14:06,000

Three, two, one.

218

00:14:06,000 --> 00:14:08,000

Wow.

219

00:14:08,000 --> 00:14:14,000

This time the bullet did hit the target, but only after breaking to bits.

220

00:14:15,000 --> 00:14:17,000

I count four holes.

221

00:14:17,000 --> 00:14:22,000

So next they shallow the angle again to just 15 degrees.

222

00:14:22,000 --> 00:14:25,000

And three, two, one.

223

00:14:25,000 --> 00:14:35,000

And just like that, they get the ricochet there out, a bounce that not only hits the target, but also stays in one piece.

224

00:14:35,000 --> 00:14:36,000

That's perfect.

225

00:14:36,000 --> 00:14:39,000

And there's one giant hole and one dent.

226

00:14:39,000 --> 00:14:42,000

That means the guys can bring Buster back.

227

00:14:42,000 --> 00:14:44,000

Don't overstress yourself, old man.

228

00:14:44,000 --> 00:14:50,000

And line him up so that his lighter is directly behind the previous ricochet's path.

229

00:14:50,000 --> 00:14:53,000

That's actually perfect.

230

00:14:53,000 --> 00:14:56,000

Then the guys sub in a clean paver.

231

00:14:56,000 --> 00:14:57,000

Beauty.

232

00:14:57,000 --> 00:15:01,000

And they're all set, but a little apprehensive.

233

00:15:01,000 --> 00:15:03,000

And here it is for the money.

234

00:15:03,000 --> 00:15:14,000

However unlikely we are going to bounce a .22 caliber full metal jacket bullet off of a paving stone into a lighter and see if it goes through or bounces off.

235

00:15:14,000 --> 00:15:20,000

Okay, and to the lighter, hopefully in three, two, one.

236

00:15:20,000 --> 00:15:24,000

Hey! Hey!

237

00:15:24,000 --> 00:15:30,000

The lighter bounced off the dude, which means something hit the lighter, which really should have been our bullet.

238

00:15:30,000 --> 00:15:36,000

Incredibly, their bullet ricocheted into the lighter on their very first try.

239

00:15:36,000 --> 00:15:39,000

It's almost like we knew what we were doing.

240

00:15:39,000 --> 00:15:41,000

But did the lighter save Buster's life?

241

00:15:41,000 --> 00:15:44,000

Hey!

242

00:15:44,000 --> 00:15:51,000

Dude, it is precisely where we expected it to hit, and it did hit.

243

00:15:51,000 --> 00:15:56,000

And clearly, the bullet bounced off the lighter.

244

00:15:56,000 --> 00:16:00,000

Well, that is not only beautiful, but quite definitive.

245

00:16:00,000 --> 00:16:04,000

Take a straight shot at a lighter with a .22, and it goes right through that sucker.

246

00:16:04,000 --> 00:16:10,000

But let that bullet bounce off some concrete at even a shallow angle, and no, it bounces right off.

247

00:16:10,000 --> 00:16:18,000

I would never challenge the man or woman that told me this lighter saved their lives, and now we know how such a thing might be possible.

248

00:16:19,000 --> 00:16:22,000

It's a result to vindicate the viewers.

249

00:16:22,000 --> 00:16:25,000

Ten years on, and a lighter can't stop a bullet.

250

00:16:25,000 --> 00:16:29,000

Provided that bullet has first bounced.

251

00:16:29,000 --> 00:16:37,000

And that gives this myth a brand new conclusion.

252

00:16:37,000 --> 00:16:43,000

With one myth back from the dead, it's back to drifting on dirt.

253

00:16:43,000 --> 00:16:47,000

Where Jamie clocked a super fast lap.

254

00:16:47,000 --> 00:16:49,000

Look at him go.

255

00:16:49,000 --> 00:16:52,000

Without ever losing traction.

256

00:16:52,000 --> 00:16:56,000

Two minutes, 22 seconds.

257

00:16:56,000 --> 00:17:03,000

Look, it's worth restating that we stand 100% behind the results of the first time we conducted this test.

258

00:17:03,000 --> 00:17:09,000

Hollywood's always leading you to believe that sliding around a corner is faster than driving around a corner.

259

00:17:09,000 --> 00:17:15,000

And we found definitively that driving is faster on asphalt.

260

00:17:15,000 --> 00:17:19,000

But fans wrote and said we would come to a totally different result if we tested it on dirt.

261

00:17:19,000 --> 00:17:21,000

And so that is what we are doing here.

262

00:17:21,000 --> 00:17:30,000

We are driving this dirt course while driving and also testing that against drifting to find out

which one is faster and whether or not the fans are right.

263

00:17:30,000 --> 00:17:39,000

Remember, Jamie's fastest non-drifting lap was two minutes, 22.

264

00:17:39,000 --> 00:17:42,000

But with Adam ready to drift like a pro.

265

00:17:42,000 --> 00:17:48,000

Okay, three, two, one, go.

266

00:17:48,000 --> 00:17:52,000

Can he beat that benchmark?

267

00:17:55,000 --> 00:17:57,000

Adam's off.

268

00:17:57,000 --> 00:17:58,000

Now throttle.

269

00:17:58,000 --> 00:18:00,000

Yeah, that's it.

270

00:18:00,000 --> 00:18:10,000

And immediately he's using a complex combination of steering, throttle and brake to lose traction with the dirt and drift.

271

00:18:10,000 --> 00:18:14,000

And use the power to steer the car. Yeah, baby.

272

00:18:14,000 --> 00:18:16,000

Through every turn.

273

00:18:16,000 --> 00:18:20,000

Yeah, that's what I'm talking about.

274

00:18:20,000 --> 00:18:27,000

Because the myth is that drifting through every turn is the fastest way to drive.

275

00:18:27,000 --> 00:18:30,000

Oh yeah, that's it.

276

00:18:30,000 --> 00:18:31,000

But is it?

277

00:18:31,000 --> 00:18:36,000

There comes the finish line.

278

00:18:36,000 --> 00:18:37,000

How did I do there?

279

00:18:37,000 --> 00:18:38,000

224.

280

00:18:38,000 --> 00:18:44,000

224? That's almost identical to your time.

281

00:18:44,000 --> 00:18:46,000

All right, I'm going to try again.

282

00:18:46,000 --> 00:18:47,000

Okay.

283

00:18:53,000 --> 00:18:54,000

Yes.

284

00:18:54,000 --> 00:18:59,000

For his second and final lap, Adam again puts pedal to the metal.

285

00:18:59,000 --> 00:19:06,000

Yeah, this is freaking live.

286

00:19:07,000 --> 00:19:12,000

But this time will be Hammer the Heinemann.

287

00:19:12,000 --> 00:19:14,000

Yeah, that's it.

288

00:19:14,000 --> 00:19:16,000

Yeah, come on.

289

00:19:16,000 --> 00:19:27,000

Or will this myth be done and dusted?

290

00:19:27,000 --> 00:19:29,000

That felt so good.

291

00:19:29,000 --> 00:19:31,000

That felt so awesome. How did I do?

292

00:19:31,000 --> 00:19:33,000

223.

293

00:19:33,000 --> 00:19:39,000

No way. That is awesome.

294

00:19:39,000 --> 00:19:42,000

All right, so after kicking up all that dust, where do we stand?

295

00:19:42,000 --> 00:19:47,000

Jamie's best time driving this course without drifting, two minutes, 22 seconds.

296

00:19:47,000 --> 00:19:54,000

My best time driving this course drifting to heck and back, two minutes, 23 seconds.

297

00:19:54,000 --> 00:19:57,000

They are functionally identical times.

298

00:19:57,000 --> 00:20:03,000

Yep, overall the two times from two equally skilled drivers were statistically the same.

299

00:20:03,000 --> 00:20:10,000

But closer inspection of the footage reveals a wrinkle.

300

00:20:10,000 --> 00:20:15,000

So over the entire course, Jamie's and my lap times were identical, but check this out.

301

00:20:15,000 --> 00:20:20,000

On this gentle turn, we've superimposed Jamie's driving car and my drifting car.

302

00:20:20,000 --> 00:20:25,000

And as you can see, Jamie makes the turn faster because I lose traction in the drift.

303

00:20:25,000 --> 00:20:27,000

But now look at the sharp turn.

304

00:20:27,000 --> 00:20:31,000

Here, I'm faster because I don't lose as much momentum.

305

00:20:31,000 --> 00:20:36,000

So yes, there are occasions when drifting on dirt is quicker, but the idea that it's always quicker,

306

00:20:36,000 --> 00:20:43,000

no matter what, which is what we're testing, well, I guess that's for the wrap up.

307

00:20:43,000 --> 00:20:47,000

So once upon a time, there was a myth that drifting was faster than driving,

308

00:20:47,000 --> 00:20:51,000

and we tested this on asphalt and found it to be busted.

309

00:20:51,000 --> 00:20:55,000

But fans gave us a new myth they said drifting is faster than driving.

310

00:20:55,000 --> 00:20:59,000

If the surface that you're driving on is actually dirt like this, we have tested it.

311

00:20:59,000 --> 00:21:00,000

What have we found?

312

00:21:00,000 --> 00:21:01,000

Busted.

313

00:21:01,000 --> 00:21:04,000

Let's get out of here, preferably without too much drifting.

314

00:21:10,000 --> 00:21:11,000

Still to come.

315

00:21:11,000 --> 00:21:13,000

I love these robotic fish.

316

00:21:13,000 --> 00:21:15,000

There's fish in the firing line.

317

00:21:17,000 --> 00:21:19,000

And a boom with a view.

318

00:21:21,000 --> 00:21:31,000

In this final season special, what's next?

319

00:21:31,000 --> 00:21:34,000

So I understand we're ending with a bang.

320

00:21:34,000 --> 00:21:39,000

Yes, it's time to cue the explosions with a return to what is bomb proof.

321

00:21:39,000 --> 00:21:43,000

We've tested this in the past, and fans didn't say we got any specific test wrong.

322

00:21:43,000 --> 00:21:46,000

Instead, they have a brand new twist on this, which I love.

323

00:21:46,000 --> 00:21:51,000

They claim that the best protection against a bomb is another bomb,

324

00:21:51,000 --> 00:21:56,000

specifically that if two explosions that are identical in size go off simultaneously,

325

00:21:56,000 --> 00:21:59,000

their shock waves will cancel out where they meet.

326

00:21:59,000 --> 00:22:02,000

And if you're standing in that location, you'll be totally fine.

327

00:22:02,000 --> 00:22:03,000

Good story.

328

00:22:03,000 --> 00:22:04,000

I thought so.

329

00:22:04,000 --> 00:22:05,000

It's time to blow some stuff up.

330

00:22:05,000 --> 00:22:06,000

One.

331

00:22:08,000 --> 00:22:10,000

What is bomb proof?

332

00:22:12,000 --> 00:22:14,000

You're not first, we're good.

333

00:22:14,000 --> 00:22:17,000

Has been a fan favorite for years.

334

00:22:20,000 --> 00:22:22,000

So no final season revisit.

335

00:22:23,000 --> 00:22:26,000

We'd be complete without a bomb proof kaboom.

336

00:22:38,000 --> 00:22:40,000

My favorite place to blow stuff up.

337

00:22:40,000 --> 00:22:41,000

Mine too. Let's get set up.

338

00:22:42,000 --> 00:22:45,000

Now to test this myth about explosive cancellation,

339

00:22:45,000 --> 00:22:49,000

we could have just gone to the bomb range and set off two blasts without much fuss.

340

00:22:49,000 --> 00:22:54,000

But instead, we've come back to I own, and that's because we want to do the test above water.

341

00:22:54,000 --> 00:22:55,000

Why?

342

00:22:55,000 --> 00:22:57,000

Well, this myth is all about shock waves.

343

00:22:57,000 --> 00:23:00,000

And we found in an earlier experiment.

344

00:23:00,000 --> 00:23:01,000

One.

345

00:23:02,000 --> 00:23:06,000

That explosions above water give you a great visual image of the shock wave.

346

00:23:06,000 --> 00:23:09,000

Not only is the shock wave itself more visible in the air,

347

00:23:09,000 --> 00:23:13,000

but it also leaves a really clear pattern in the water.

348

00:23:14,000 --> 00:23:17,000

Not only should the lake showcase the shock wave,

349

00:23:17,000 --> 00:23:21,000

it's also good for picturing the two boom plan.

350

00:23:21,000 --> 00:23:27,000

Now soon enough in this episode, you are going to get to see some absolutely gorgeous high speed shots

351

00:23:27,000 --> 00:23:32,000

of the blast pressure waves from an explosion moving outwards across this beautiful lake.

352

00:23:32,000 --> 00:23:36,000

But until then, let me use these stones to tell you what we're going to see.

353

00:23:36,000 --> 00:23:39,000

The first explosion will be a single five pound blast,

354

00:23:39,000 --> 00:23:43,000

and we'll get to see the blast pressure wave move out from that like this.

355

00:23:44,000 --> 00:23:46,000

See those ripples moving outwards from where I dropped the pebble?

356

00:23:46,000 --> 00:23:48,000

That equates to our blast pressure wave.

357

00:23:48,000 --> 00:23:52,000

And our pressure transducers will be reading the intensity of that pressure front

358

00:23:52,000 --> 00:23:55,000

as it moves away from the epicenter of the explosion.

359

00:23:55,000 --> 00:23:59,000

Once we have that data in hand, it will be time to do two simultaneous explosions,

360

00:23:59,000 --> 00:24:02,000

symbolized by these two rocks.

361

00:24:03,000 --> 00:24:07,000

Now watch as their ripples move towards each other and then collide.

362

00:24:07,000 --> 00:24:12,000

It's that collision of the two blast pressure waves that we are going to be looking at the data.

363

00:24:12,000 --> 00:24:19,000

If this myth is true, we should see a significant drop in the intensity of those pressure fronts when they meet.

364

00:24:19,000 --> 00:24:25,000

Well, to find out, Jamie's replacing the rocks with something altogether more dangerous.

365

00:24:25,000 --> 00:24:27,000

So these are our explosives.

366

00:24:27,000 --> 00:24:32,000

That's five pounds of TNT, and these are our floating platforms.

367

00:24:32,000 --> 00:24:36,000

With a hole right in the middle, there will be a rod that comes up three feet.

368

00:24:36,000 --> 00:24:38,000

That sits on top of it.

369

00:24:38,000 --> 00:24:39,000

Bob's your uncle.

370

00:24:40,000 --> 00:24:49,000

Meanwhile, Adam's building the data collection device upon which the whole experiment depends.

371

00:24:49,000 --> 00:24:54,000

So first up, I'm making an a-foot by one-foot platform that will float on the surface of the lake.

372

00:24:55,000 --> 00:25:01,000

Then I'm going to drill seven holes at one-foot intervals across the length of the platform.

373

00:25:01,000 --> 00:25:03,000

Another good use for a cowboy hat.

374

00:25:03,000 --> 00:25:08,000

Into each of those holes, I am putting a six-foot length of schedule 40 pipe.

375

00:25:08,000 --> 00:25:09,000

Awesome.

376

00:25:09,000 --> 00:25:16,000

At the very top of each piece of pipe will sit pressure transducers, which will measure the exact last pressure of our explosions.

377

00:25:16,000 --> 00:25:17,000

One down.

378

00:25:17,000 --> 00:25:25,000

Attached to each of the transducers is a wire that will emerge from the pipes carrying some lovely pieces of data for us to analyze.

379

00:25:25,000 --> 00:25:28,000

So the rig is certainly complex.

380

00:25:30,000 --> 00:25:31,000

I think we're fine.

381

00:25:31,000 --> 00:25:34,000

But its job is surprisingly simple.

382

00:25:34,000 --> 00:25:39,000

Once in position on the water, the guys will set off a single blast.

383

00:25:39,000 --> 00:25:47,000

The rig 7 PCB transducers will then record baseline pressure readings as the blast wave passes by.

384

00:25:47,000 --> 00:26:00,000

Next comes blast 2, an identical double explosion, where the rig will help reveal if the pressure readings where the two waves meet goes up, down, or sees no change at all.

385

00:26:02,000 --> 00:26:03,000

We're on the move.

386

00:26:03,000 --> 00:26:06,000

Add with the assembly at last ready to roll.

387

00:26:06,000 --> 00:26:07,000

Cool.

388

00:26:07,000 --> 00:26:11,000

The guys must next position it in the lake for the single blast control.

389

00:26:11,000 --> 00:26:14,000

A procedure that's a very delicate operation.

390

00:26:15,000 --> 00:26:16,000

Well that was interesting.

391

00:26:16,000 --> 00:26:21,000

Jamie and I are out setting up for the first experiment when all of a sudden the wind picks up.

392

00:26:21,000 --> 00:26:23,000

Oh for f***.

393

00:26:26,000 --> 00:26:30,000

We actually turned out to have gotten caught in a little tiny tornado.

394

00:26:31,000 --> 00:26:32,000

You alright?

395

00:26:32,000 --> 00:26:33,000

Yeah.

396

00:26:33,000 --> 00:26:34,000

That was...

397

00:26:34,000 --> 00:26:37,000

Oh! Felt like being smacked with a ton of bricks.

398

00:26:37,000 --> 00:26:41,000

All of a sudden I knew my hat was almost blowing off. Jamie's hat was blowing off.

399

00:26:41,000 --> 00:26:45,000

I've never seen that happen here since we've all the time we've been coming here.

400

00:26:45,000 --> 00:26:47,000

Yeah. That was weird.

401

00:26:48,000 --> 00:26:54,000

It's not what such a delicate operation needed, but it's not long before the rig is in place.

402

00:26:54,000 --> 00:26:55,000

It'll float.

403

00:26:58,000 --> 00:26:59,000

Cool.

404

00:26:59,000 --> 00:27:01,000

Next it's joined by the controls explosive.

405

00:27:01,000 --> 00:27:07,000

Five pounds of TNT positioned three feet above the water and five feet from the end of the rig.

406

00:27:07,000 --> 00:27:09,000

Awesome. Awesome.

407

00:27:09,000 --> 00:27:12,000

And with that it's time for the single boom benchmark.

408

00:27:14,000 --> 00:27:20,000

Fire in the hole! Fire in the hole! Fire in the hole!

409

00:27:21,000 --> 00:27:23,000

Alright. Here we go. This is for real.

410

00:27:23,000 --> 00:27:30,000

Control explosion five pounds in three, two, one.

411

00:27:32,000 --> 00:27:33,000

Whoa!

412

00:27:34,000 --> 00:27:36,000

That was a crack!

413

00:27:36,000 --> 00:27:37,000

Yes.

414

00:27:42,000 --> 00:27:43,000

Dude!

415

00:27:44,000 --> 00:27:46,000

Well the sensor platform is still there.

416

00:27:46,000 --> 00:27:48,000

And our drone is still flying.

417

00:27:50,000 --> 00:27:52,000

That was intense.

418

00:27:54,000 --> 00:28:02,000

As far as control blasts go, that was as neat as you please.

419

00:28:03,000 --> 00:28:12,000

I don't mean neat in terms of tidy because no, Jamie is actually out there picking up the big chunks of EPP we left out there.

420

00:28:12,000 --> 00:28:15,000

But the explosion went off perfectly.

421

00:28:17,000 --> 00:28:21,000

And we got beautiful data from all seven of our sensors.

422

00:28:21,000 --> 00:28:23,000

That was awesome.

423

00:28:30,000 --> 00:28:33,000

In this final season, retro revisit.

424

00:28:34,000 --> 00:28:38,000

Adam and Jamie have confirmed that a lighter can stop a slug.

425

00:28:39,000 --> 00:28:40,000

Hey dude!

426

00:28:40,000 --> 00:28:42,000

But the shooting ain't done yet.

427

00:28:44,000 --> 00:28:50,000

Next up on What is Bulletproof, an often requested fan favorite that we somehow haven't gotten to yet, but that ends today.

428

00:28:50,000 --> 00:28:51,000

Here is the story.

429

00:28:51,000 --> 00:29:02,000

A man supposedly survived a point blank shotgun blast thanks to a 30 gallon fish tank positioned directly in between him and the shooter, which completely stopped the round.

430

00:29:02,000 --> 00:29:09,000

Now we don't know what kind of round was fired at the fish tank, so we're going to have to fire more than one. Get ready.

431

00:29:09,000 --> 00:29:11,000

Things are about to get fishy.

432

00:29:11,000 --> 00:29:16,000

Stand by for the guys last ever. What is Bulletproof Revisit?

433

00:29:16,000 --> 00:29:17,000

Awesome.

434

00:29:17,000 --> 00:29:19,000

Reason enough for Adam to go to town.

435

00:29:20,000 --> 00:29:24,000

Now just because we're going to shoot our fish tank doesn't mean we can't make it look nice.

436

00:29:24,000 --> 00:29:26,000

I'm going to do a little bit of interior decorating.

437

00:29:26,000 --> 00:29:28,000

First up, some grack.

438

00:29:29,000 --> 00:29:31,000

It's beautiful!

439

00:29:31,000 --> 00:29:34,000

Adam's following that Mythbusters mantra.

440

00:29:34,000 --> 00:29:35,000

I love it.

441

00:29:35,000 --> 00:29:39,000

That if it's worth doing, look, it's totally working.

442

00:29:39,000 --> 00:29:41,000

It's worth overdoing.

443

00:29:41,000 --> 00:29:45,000

Meanwhile, Jamie's got the big gun.

444

00:29:45,000 --> 00:29:50,000

This gun right here is what this story is about. It's standard 12 gauge pump action shotgun.

445

00:29:50,000 --> 00:29:54,000

Now we're going to be running three separate experiments with three separate types of rounds.

446

00:29:54,000 --> 00:29:58,000

Bird shot, buck shot, and a deer slope.

447

00:29:58,000 --> 00:30:03,000

Because the guys like to end with a bang, they're starting with the least energetic round.

448

00:30:03,000 --> 00:30:07,000

The bird shot, which will be fired by Adam.

449

00:30:07,000 --> 00:30:10,000

Okay, here we go. The classic battle.

450

00:30:10,000 --> 00:30:13,000

Bird shot versus fish tank.

451

00:30:13,000 --> 00:30:16,000

And three, two, one.

452

00:30:20,000 --> 00:30:25,000

Well, I'll tell you on the next shot, I am going to wear sleeves because a bunch of stuff hit me.

453

00:30:25,000 --> 00:30:27,000

Yeah, I got a little mark there.

454

00:30:27,000 --> 00:30:30,000

Ironically, Adam's been hit.

455

00:30:30,000 --> 00:30:33,000

But Buster's not.

456

00:30:33,000 --> 00:30:36,000

Looks like he was safer than you were.

457

00:30:37,000 --> 00:30:42,000

The dummy is completely injury-free and the high speed shows why.

458

00:30:44,000 --> 00:30:49,000

So check this out. The bird shot blasts into the tank at 1300 feet per second.

459

00:30:49,000 --> 00:30:56,000

But because each pellet weighs less than one gram, they're stopped by the water before they hit the back glass.

460

00:30:56,000 --> 00:31:02,000

That glass only breaks because of the shock wave caused by the blast itself.

461

00:31:04,000 --> 00:31:11,000

Meaning that Adam and the fish really did get more hurt than Buster.

462

00:31:13,000 --> 00:31:18,000

But with a brand new 30 gallon tank set up just like before.

463

00:31:18,000 --> 00:31:21,000

Here you go, my prettys. I love these robotic fish.

464

00:31:21,000 --> 00:31:28,000

Will Buster be saved again when facing off against bird shots bigger brother?

465

00:31:28,000 --> 00:31:30,000

So what's going to happen with buckshot?

466

00:31:30,000 --> 00:31:35,000

Well, the lead pellets that are inside buckshot are the size of a 9mm round.

467

00:31:35,000 --> 00:31:40,000

So for my money, it's going to make it all the way through the tank and it may well actually

penetrate our dummy.

468

00:31:40,000 --> 00:31:44,000

Well, with Jamie dressed to kill, it's time to find out.

469

00:31:45,000 --> 00:31:49,000

Fireing in three, two, one.

470

00:31:52,000 --> 00:31:54,000

The back glass didn't even shatter.

471

00:31:56,000 --> 00:32:00,000

I don't even need to walk over there to tell that our guy's okay.

472

00:32:01,000 --> 00:32:09,000

Despite each pellet having more than 12 times the energy of bird shot, Buster's even more safe.

473

00:32:09,000 --> 00:32:11,000

And Adam has a theory as to why.

474

00:32:12,000 --> 00:32:17,000

How is it possible that our buckshot didn't even get through the back of our fish tank?

475

00:32:17,000 --> 00:32:19,000

I have a little bit of an explanation for this.

476

00:32:20,000 --> 00:32:21,000

What is ammunition designed to do?

477

00:32:21,000 --> 00:32:23,000

It's designed to harm flesh.

478

00:32:23,000 --> 00:32:25,000

And what is flesh made of?

479

00:32:25,000 --> 00:32:28,000

Well, it's a bit of gristle but mostly water.

480

00:32:28,000 --> 00:32:33,000

And water resists an impact in direct proportion to the speed of that impact.

481

00:32:33,000 --> 00:32:36,000

Faster the impact, faster water repels that energy.

482

00:32:36,000 --> 00:32:42,000

And that's why our buckshot loses almost all of its energy in the 12 inches of our fish tank.

483

00:32:42,000 --> 00:32:43,000

But we're not done yet.

484

00:32:43,000 --> 00:32:45,000

We have one more type of ammo to try.

485

00:32:47,000 --> 00:32:53,000

Yep, for the third and final test, it's the big daddy, the Deerslug.

486

00:32:53,000 --> 00:32:56,000

But will this be stopped even quicker again?

487

00:32:56,000 --> 00:32:58,000

All right, here we go.

488

00:32:58,000 --> 00:33:03,000

This is Deerslug versus fish tank, the final chapter.

489

00:33:03,000 --> 00:33:07,000

Safety's off, range is hot.

490

00:33:09,000 --> 00:33:12,000

And three, two, one.

491

00:33:15,000 --> 00:33:19,000

All the way through.

492

00:33:19,000 --> 00:33:24,000

It's clear that this test caused way more carnage than the buckshot.

493

00:33:24,000 --> 00:33:29,000

But with no sign of the slug in the tank or in buster...

494

00:33:30,000 --> 00:33:33,000

I don't see a slug in him.

495

00:33:33,000 --> 00:33:38,000

It's down to the spectacular high speeds to sort out the science.

496

00:33:38,000 --> 00:33:41,000

So I fired the Deerslug at the fish tank.

497

00:33:41,000 --> 00:33:43,000

And just like the other two types of ammo from the shotgun,

498

00:33:43,000 --> 00:33:48,000

the initial impact created this magnificent shockwave inside the fish tank.

499

00:33:51,000 --> 00:33:58,000

But uniquely among the three, the Deerslug not only broke but also pierced the back glass of our fish tank.

500

00:33:59,000 --> 00:34:06,000

But it's pretty clear on the high speed that as it does, it loses whatever remaining energy it had

501

00:34:06,000 --> 00:34:10,000

and then starts to move downwards instead of towards our ballistics gel dude.

502

00:34:10,000 --> 00:34:19,000

So I think based on this, we've got to conclude that the slug also does not make it true a fish tank in any lethal fashion.

503

00:34:19,000 --> 00:34:25,000

And that's a conclusion that's even more concrete when Jamie does find the slug.

504

00:34:25,000 --> 00:34:29,000

Found it. This is that bullet after it hit.

505

00:34:29,000 --> 00:34:36,000

It spread it in this case flat as pancake and that sort of meant that it was like a drag shoot on that bullet as it moved through the water.

506

00:34:36,000 --> 00:34:41,000

It did break through the other side of the tank, but really only just.

507

00:34:41,000 --> 00:34:58,000

Alright, time to tally up the results. What is bullet proof fish tanks?

508

00:34:58,000 --> 00:35:01,000

Did we prove that they're in fact bullet proof?

509

00:35:01,000 --> 00:35:04,000

If we're talking about shotguns, pretty much.

510

00:35:04,000 --> 00:35:06,000

Totally astonishing too I might add.

511

00:35:06,000 --> 00:35:07,000

Let's get out of here.

512

00:35:07,000 --> 00:35:08,000

Alright.

513

00:35:09,000 --> 00:35:12,000

Next in what is bomb proof?

514

00:35:12,000 --> 00:35:18,000

Will there be fire in the hole in three, two, one.

515

00:35:23,000 --> 00:35:28,000

After 14 years of guns and ammo, here's the final season shooting stats.

516

00:35:31,000 --> 00:35:36,000

Since 2002, the myth busters have shot over 40 types of gun.

517

00:35:39,000 --> 00:35:43,000

And fired more than half a million bullets.

518

00:35:48,000 --> 00:35:51,000

They've revisited what is bullet proof six times.

519

00:35:51,000 --> 00:35:54,000

Another reason to have pepperoni pizza.

520

00:35:56,000 --> 00:36:00,000

And proved once that Walter White was right.

521

00:36:00,000 --> 00:36:02,000

That was an adrenaline rush.

522

00:36:09,000 --> 00:36:11,000

One.

523

00:36:11,000 --> 00:36:13,000

Whoa.

524

00:36:13,000 --> 00:36:17,000

Adam and Jamie are ending their final ever revisit.

525

00:36:17,000 --> 00:36:18,000

That was a crack.

526

00:36:18,000 --> 00:36:20,000

With a bang.

527

00:36:21,000 --> 00:36:28,000

They're testing whether two simultaneous explosions of the same size can really cancel each other out.

528

00:36:28,000 --> 00:36:32,000

And after test one, the control data is in.

529

00:36:32,000 --> 00:36:34,000

So the data was clean.

530

00:36:34,000 --> 00:36:37,000

The nearest sensor showed 135 psi.

531

00:36:37,000 --> 00:36:41,000

And it evenly lowered to the last sensor at 25 psi.

532

00:36:41,000 --> 00:36:47,000

Now for the next test, instead of one blast, we're going to have two blasts on opposite sides.

533

00:36:47,000 --> 00:36:50,000

Going off at exactly the same time, the same distance.

534

00:36:50,000 --> 00:36:54,000

And those numbers, those pressure readings will change.

535

00:36:54,000 --> 00:36:56,000

How exactly we don't know.

536

00:36:56,000 --> 00:36:59,000

They could go down, they could go up, they could cancel each other out.

537

00:36:59,000 --> 00:37:01,000

But that's what we're looking for.

538

00:37:01,000 --> 00:37:05,000

To find out the guy salvage what they can from test one.

539

00:37:05,000 --> 00:37:06,000

Three.

540

00:37:06,000 --> 00:37:07,000

Four.

541

00:37:07,000 --> 00:37:08,000

That's good.

542

00:37:08,000 --> 00:37:09,000

Awesome.

543

00:37:09,000 --> 00:37:12,000

I love that we don't have to replace this.

544

00:37:12,000 --> 00:37:14,000

And begin to set up for test two.

545

00:37:14,000 --> 00:37:15,000

Good.

546

00:37:15,000 --> 00:37:18,000

But Adam's already got concerns.

547

00:37:18,000 --> 00:37:22,000

Look, we often make a joke on this show that failure is always an option.

548

00:37:22,000 --> 00:37:26,000

In this case, for this experiment, it's not.

549

00:37:26,000 --> 00:37:27,000

And allow me to explain.

550

00:37:27,000 --> 00:37:32,000

When we say failure is always an option, we're actually explaining that we have no bias as to how something turns out.

551

00:37:32,000 --> 00:37:38,000

So what we're really talking about is a failure of our expectations is always an option.

552

00:37:38,000 --> 00:37:41,000

Any result to result, that's for sure.

553

00:37:41,000 --> 00:37:44,000

But we can't survive a failure of our methodology.

554

00:37:44,000 --> 00:37:47,000

And in this case, the methodology for this experiment is everything.

555

00:37:47,000 --> 00:37:54,000

We have to have those two explosives go off simultaneously and perfectly equidistant from the center sensor

556

00:37:54,000 --> 00:37:57,000

in order to get the reading that we're looking for.

557

00:37:57,000 --> 00:38:02,000

If we don't get that, it's going to be a heavy-duty reset to try and get it again.

558

00:38:02,000 --> 00:38:09,000

To try to get two identical booms, the guys are using exactly the same quantity of explosive

559

00:38:09,000 --> 00:38:13,000

that's positioned perfectly equidistant from their data rig.

560

00:38:13,000 --> 00:38:19,000

And by using exactly the same length of detonation tube, they're leaving nothing to chance.

561

00:38:19,000 --> 00:38:22,000

Fire in the hole!

562

00:38:22,000 --> 00:38:25,000

But will that be enough?

563

00:38:25,000 --> 00:38:33,000

Okay, double explosion in three, two, one, go!

564

00:38:42,000 --> 00:38:43,000

Well, that was a bit of a cold shower.

565

00:38:43,000 --> 00:38:45,000

I pushed the button and nothing happened.

566

00:38:45,000 --> 00:38:46,000

Well, almost nothing.

567

00:38:46,000 --> 00:38:51,000

Actually, I did watch the spark travel down the tube, but when it got to the water's edge, it stopped,

568

00:38:51,000 --> 00:38:53,000

which means that we may have gotten some water.

569

00:38:53,000 --> 00:38:59,000

But what it really means, what it really means is that somebody owes us a case of beer,

570

00:38:59,000 --> 00:39:02,000

because that's what that means in the bomb world.

571

00:39:02,000 --> 00:39:08,000

Rules aside, the guys quickly replace the detonation tube, and then it's good for take two.

572

00:39:08,000 --> 00:39:11,000

Okay, here we go. Count it in, Mr. Heidemann.

573

00:39:11,000 --> 00:39:14,000

Okay, two blasts cancelling each other out.

574

00:39:14,000 --> 00:39:21,000

Maybe in three, two, one.

575

00:39:22,000 --> 00:39:23,000

Wow.

576

00:39:27,000 --> 00:39:28,000

I felt that one.

577

00:39:28,000 --> 00:39:31,000

That was a bone rattle.

578

00:39:33,000 --> 00:39:35,000

Holy ****.

579

00:39:36,000 --> 00:39:41,000

In real time, it's impossible to see if the experiment was a success.

580

00:39:41,000 --> 00:39:44,000

But the high speed shows it was exactly that.

581

00:39:52,000 --> 00:39:54,000

This is really, really beautiful.

582

00:39:54,000 --> 00:39:58,000

First of all, this camera angle is shooting at 4,000 frames per second.

583

00:40:00,000 --> 00:40:04,000

And you can actually see here from one frame to the next, boom.

584

00:40:04,000 --> 00:40:06,000

It's a perfectly simultaneous explosion.

585

00:40:06,000 --> 00:40:08,000

That's exactly what we were looking at.

586

00:40:08,000 --> 00:40:11,000

Now there's some cool stuff as you advance through the frames.

587

00:40:11,000 --> 00:40:15,000

You can start to see the actual shock waves there, these two bubbles.

588

00:40:15,000 --> 00:40:23,000

And as they increase, the gray line here above the water, you can actually see the cross of the two bubbles intersecting.

589

00:40:23,000 --> 00:40:27,000

We have sensors in place that will tell us what's actually happening there.

590

00:40:27,000 --> 00:40:30,000

Is it increasing the power? Is it decreasing the power?

591

00:40:30,000 --> 00:40:32,000

I honestly have no idea.

592

00:40:32,000 --> 00:40:35,000

And I might be over excited because I was just rattled by an explosion.

593

00:40:38,000 --> 00:40:40,000

But I think this is pretty awesome.

594

00:40:42,000 --> 00:40:44,000

Well, the good news is that the sensors survived.

595

00:40:44,000 --> 00:40:45,000

Got the data.

596

00:40:45,000 --> 00:40:46,000

You did?

597

00:40:46,000 --> 00:40:47,000

Got it.

598

00:40:47,000 --> 00:40:48,000

Dude, that's awesome.

599

00:40:49,000 --> 00:40:52,000

And once dissected, Adam's ready to divulge.

600

00:40:54,000 --> 00:40:59,000

All right, Mr. Heidemann, we have actual data from that last blast and it's beautiful. Do you want to hear it?

601

00:40:59,000 --> 00:41:00,000

Yes.

602

00:41:00,000 --> 00:41:06,000

Okay, so if you remember, right, we had seven sensors to catch the intersection between the two pressure waves.

603

00:41:06,000 --> 00:41:11,000

Remember for the first test, number four read 50 psi.

604

00:41:11,000 --> 00:41:12,000

Okay.

605

00:41:12,000 --> 00:41:14,000

Second test, you will not believe it's reading.

606

00:41:14,000 --> 00:41:15,000

Is it double?

607

00:41:15,000 --> 00:41:17,000

100 psi.

608

00:41:17,000 --> 00:41:18,000

Yes, it was right.

609

00:41:18,000 --> 00:41:20,000

Was that your prediction?

610

00:41:20,000 --> 00:41:22,000

Well, it's two energies and they intersected.

611

00:41:22,000 --> 00:41:24,000

Did you say that on camera?

612

00:41:24,000 --> 00:41:25,000

No.

613

00:41:25,000 --> 00:41:26,000

Oh, well, then it doesn't count.

614

00:41:26,000 --> 00:41:27,000

I said it just now.

615

00:41:27,000 --> 00:41:28,000

I was going to bed.

616

00:41:28,000 --> 00:41:29,000

No, no, no.

617

00:41:29,000 --> 00:41:32,000

He never wants to give a prediction before the actual fact.

618

00:41:32,000 --> 00:41:33,000

Isn't that awesome?

619

00:41:33,000 --> 00:41:34,000

Yeah.

620

00:41:34,000 --> 00:41:36,000

It's totally the opposite of canceling each other out.

621

00:41:36,000 --> 00:41:38,000

It doubled the power.

622

00:41:39,000 --> 00:41:49,000

So we set out to test the myth that two identical explosions set off equidistant from each other would cancel each other out where their pressure waves intersected in the middle.

623

00:41:49,000 --> 00:41:51,000

Now, what we found was the exact opposite.

624

00:41:51,000 --> 00:41:53,000

It actually doubled there.

625

00:41:53,000 --> 00:42:03,000

A lot of physics is not exactly intuitive, but in this case, I think it is because you've got twice the explosive power in the same vicinity right next to each other.

626

00:42:04,000 --> 00:42:08,000

And it's not unlike a couple of hammers hitting.

627

00:42:08,000 --> 00:42:13,000

All that energy impacts right in the middle and that's a bad place to be.

628

00:42:17,000 --> 00:42:19,000

That one's pretty cleanly busted.

629

00:42:19,000 --> 00:42:22,000

Yep, busted with TNT.

630

00:42:22,000 --> 00:42:23,000

My ears are still ringing.

631

00:42:23,000 --> 00:42:25,000

I have hearing protection.