

1

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

on this episode of MythBusters.

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

Hold on to your hats because the action is fast and furious.

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

That was awesome.

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

First up, Adam and Jamie investigate excavators on the Internet.

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

Copy that.

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

They take to task three extraordinary viral videos and ask,

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

are they fact or fiction?

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

This has got to be one of the strangest things that I've ever done.

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

Then Carrie Grant and Tori drip into the most requested,

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

insane myth in MythBuster history.

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

Code name, Grizzly.

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

If a bear tears a hole in your plane,

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

is it really possible to patch it up with duct tape?

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

Lives online.

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

Who are the MythBusters?

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00:00:45,000 --> 00:00:46,000

Adam Savage.

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

What more do you need to know?

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

And Jamie Heineman.

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

It's party time.

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

Between them more than 30 years of special effects experience,

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

together with Grant Imahara.

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

A little hotter than I expected.

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

Carrie Byron.

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

There you go.

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

Package for you.

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

And Tori Bellachy.

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00:01:03,000 --> 00:01:05,000

Code name is Science.

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00:01:05,000 --> 00:01:08,000

They don't just tell the myths,

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00:01:08,000 --> 00:01:11,000

they put them to the test.

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00:01:11,000 --> 00:01:21,000

First up, gear up for the rise of the machines.

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00:01:21,000 --> 00:01:25,000

Are you having fun?

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00:01:25,000 --> 00:01:27,000

I am, but there is a point to it.

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00:01:27,000 --> 00:01:28,000

Which is?

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00:01:28,000 --> 00:01:30,000

Well, we've been gathering videos over the past few months

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00:01:30,000 --> 00:01:34,000

of people purportedly doing incredible things using an excavator.

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

Like?

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00:01:35,000 --> 00:01:39,000

Well, we've got one in which a guy seems to be rowing a barge with one,

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00:01:39,000 --> 00:01:43,000

another where a guy actually uses an excavator and climbs in it,

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00:01:43,000 --> 00:01:47,000

and a third where people apparently use one to go wakeboarding.

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00:01:47,000 --> 00:01:48,000

I can dig it.

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00:01:48,000 --> 00:01:50,000

I thought so.

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00:01:50,000 --> 00:01:55,000

Here on the show, we've often shown that seeing is not always believing.

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00:01:58,000 --> 00:02:04,000

After all, the internet incubates fake viral videos like a cyber petri dish.

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00:02:04,000 --> 00:02:08,000

So Adam and Jamie are approaching these three crazy viral videos

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00:02:08,000 --> 00:02:11,000

with a healthy dose of skepticism.

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00:02:11,000 --> 00:02:13,000

Are they real or more film-fakery?

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00:02:13,000 --> 00:02:17,000

One thing's for sure, putting the clips to the test by attempting them

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00:02:17,000 --> 00:02:21,000

is going to be an earth-moving experience.

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00:02:21,000 --> 00:02:23,000

Well, the plan for this seems pretty simple.

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00:02:23,000 --> 00:02:27,000

We take each of the clips one by one and see if we can replicate them with an excavator.

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

Totally.

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

Can we start with rowing?

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00:02:29,000 --> 00:02:30,000

That's the one that throws me the most right now.

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

I don't see why not.

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00:02:31,000 --> 00:02:32,000

Excellent.

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00:02:34,000 --> 00:02:36,000

This is our bar.

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00:02:36,000 --> 00:02:41,000

These are excavators and behind me the open water of the San Francisco Bay.

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00:02:41,000 --> 00:02:44,000

Soon we're going to be dragged out into that water

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00:02:44,000 --> 00:02:47,000

and we're going to have to get back using only these as our oars.

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

Shall we put these guys in place?

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00:02:49,000 --> 00:02:50,000

I think so.

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00:02:50,000 --> 00:02:51,000

All right.

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00:02:51,000 --> 00:02:53,000

Basically what we're going to be doing is rowing a boat

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00:02:53,000 --> 00:02:57,000

except that instead of wooden oars, we're going to be using these buckets.

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00:02:57,000 --> 00:03:01,000

And instead of human power, we're going to be using diesels and hydraulics.

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

Otherwise, it's the same.

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

We lower them into the water and we push and hopefully we go forward.

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00:03:10,000 --> 00:03:14,000

So after breaking down the key elements of the test,

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00:03:14,000 --> 00:03:18,000

they next discuss the potential logistical problems.

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00:03:18,000 --> 00:03:21,000

There are a number of problems that we're going to have to overcome.

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00:03:21,000 --> 00:03:24,000

And the first and foremost one is current.

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00:03:24,000 --> 00:03:27,000

If we have a lot of current or even a lot of wind,

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00:03:27,000 --> 00:03:30,000

it's going to make our job really hard.

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00:03:30,000 --> 00:03:32,000

Secondly, we've got to get our act together.

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00:03:32,000 --> 00:03:36,000

I mean, Adam and I have to coordinate so that we're working in tandem

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00:03:36,000 --> 00:03:39,000

to keep the barge on track.

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00:03:39,000 --> 00:03:44,000

In addition to the tricky logistics required to coordinate their giant mechanical oars,

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00:03:44,000 --> 00:03:48,000

there's also a very real danger of going overboard.

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00:03:48,000 --> 00:03:49,000

We're not taking any chances.

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00:03:49,000 --> 00:03:53,000

We're going to actually weld these excavators to the deck of the barge

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

because once we start swinging back and forth,

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00:03:56,000 --> 00:03:59,000

we could swing ourselves right off the barge.

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00:03:59,000 --> 00:04:04,000

Even welded down, disaster is just one mistimed oar stroke away.

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

Catch the barge with the bucket and the excavator's weight

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00:04:07,000 --> 00:04:11,000

and powerful hydraulics will easily snap those cables.

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00:04:11,000 --> 00:04:14,000

Adam, you want to do a little fist bump?

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00:04:14,000 --> 00:04:20,000

Note that unlike the clip, Adam and Jamie are using two excavators instead of one.

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00:04:20,000 --> 00:04:21,000

Nice!

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00:04:21,000 --> 00:04:23,000

But the principle is the same.

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00:04:23,000 --> 00:04:27,000

Can you generate momentum and maintain directional control?

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00:04:27,000 --> 00:04:32,000

To test that, they're getting a tugboat tow half a mile into the middle of the bay

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00:04:32,000 --> 00:04:34,000

and will have to row back.

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00:04:34,000 --> 00:04:36,000

It's a nerve-wracking operation.

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00:04:36,000 --> 00:04:39,000

I'll be honest with you, when I swing my arm out over the water

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00:04:39,000 --> 00:04:44,000

and all I can see below my cab is water, I get that wingy feeling in my legs.

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00:04:44,000 --> 00:04:49,000

It's a little bit woozy, but I swear I think this is going to work.

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00:04:49,000 --> 00:04:53,000

With no time to practice, it's time to put that prediction to the test.

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00:04:53,000 --> 00:04:55,000

Well, the tug's left. Are you ready?

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00:04:55,000 --> 00:05:00,000

Alright, this is rowing with an excavator back towards shore. Here we go.

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

Adam and Jamie positioned at the front of the barge, go to work.

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

And initially, things look great.

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

They can recreate the rowing action from the video clip.

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00:05:13,000 --> 00:05:18,000

The bucket is lowered, pulled back through the water, lifted out and reset.

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00:05:18,000 --> 00:05:21,000

However, simply going through the motions is not enough.

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00:05:21,000 --> 00:05:25,000

They need forward momentum and control of the barge.

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00:05:25,000 --> 00:05:30,000

You might want to slow down a little bit so I can keep the bow pointed towards shore more.

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00:05:30,000 --> 00:05:34,000

Despite the difficulties of communicating from their awkward vantage points,

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00:05:34,000 --> 00:05:40,000

a high degree of teamwork does enable them to orientate the barge in the correct direction.

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00:05:40,000 --> 00:05:42,000

I'm going to start to reverse.

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00:05:42,000 --> 00:05:43,000

Copy.

111

00:05:43,000 --> 00:05:47,000

But crucially, forward momentum eludes them.

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00:05:47,000 --> 00:05:51,000

Well, so far the current is turning out to be a bit of a problem.

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00:05:51,000 --> 00:05:55,000

I'm encouraged by the fact that we are able to control the direction of the barge,

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00:05:55,000 --> 00:05:58,000

but we need more speed. We need more power.

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00:05:58,000 --> 00:06:03,000

Meaning it's time to call in the tugboat and assess their lack of success.

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00:06:07,000 --> 00:06:13,000

Up next is a grisly, sticky story that hit the headlines the world over.

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00:06:14,000 --> 00:06:17,000

Alright, I'll give you one guess. What's this myth about?

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00:06:17,000 --> 00:06:19,000

Duck tape, airplanes?

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00:06:19,000 --> 00:06:22,000

And bears. It's the old, a bear maul my airplane story.

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00:06:22,000 --> 00:06:26,000

Oh, this is the one where a bear tears into a landed plane to get the food.

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00:06:26,000 --> 00:06:31,000

When the pilot returns, sees the damage, but uses duck tape to repair it and flies out of there.

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00:06:31,000 --> 00:06:35,000

It's a crazy tale that sent the internet into a tailspin.

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00:06:35,000 --> 00:06:39,000

The story goes that an Alaskan local stumbles upon a stranded plane.

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00:06:39,000 --> 00:06:43,000

Tears apart the aircraft, presumably searching for a free lunch,

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00:06:43,000 --> 00:06:47,000

and wonders back into the woods to do what bears do.

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00:06:47,000 --> 00:06:51,000

And our pilot returns to find he's not flying anywhere.

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00:06:51,000 --> 00:06:56,000

It may sound like a tall story, but the pictured evidence is real.

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00:06:56,000 --> 00:07:00,000

Our hero did in fact repair the extensive damage with duck tape.

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

But the question on everyone's social network site is, could the pilot really have flown the patched up plane home?

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00:07:08,000 --> 00:07:10,000

Look, this sounds like a really tough checklist.

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00:07:10,000 --> 00:07:13,000

I mean, first we need a plane, and second we need a bear to mow it.

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00:07:13,000 --> 00:07:17,000

Well, the good news is we found a pilot that's actually going to let us use his plane for our myth.

133

00:07:17,000 --> 00:07:20,000

Really? That's great. What about the bear?

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00:07:20,000 --> 00:07:24,000

Yeah, there's no way we're going to be able to take a plane up to Alaska and have a wild bear tear into it.

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00:07:24,000 --> 00:07:26,000

I mean, that's just too unreliable.

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00:07:26,000 --> 00:07:29,000

I mean, we could build our own claws and tear it up ourselves.

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00:07:29,000 --> 00:07:31,000

Now I like that idea.

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00:07:31,000 --> 00:07:32,000

You gonna be the bear?

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00:07:32,000 --> 00:07:37,000

So we are testing the myth, can you repair a plane with duck tape?

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00:07:37,000 --> 00:07:40,000

Now when I first heard this myth, I thought this was fertile grounds for myth busters.

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00:07:40,000 --> 00:07:41,000

We're building a plane.

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00:07:41,000 --> 00:07:44,000

A bear tears into an airplane to get food.

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00:07:44,000 --> 00:07:50,000

When the pilot returns to his plane, sees the damage done, repairs it with duck tape, and then flies out.

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00:07:50,000 --> 00:07:53,000

Now before we start, we need to build a plane.

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00:07:53,000 --> 00:07:59,000

And our generous aircraft owner is James, who confirms his tentative relationship with Sanity.

146

00:07:59,000 --> 00:08:01,000

Tell you we're building a plane?

147

00:08:01,000 --> 00:08:04,000

By not only allowing the wrong brothers to assemble the plane...

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00:08:04,000 --> 00:08:06,000

I wouldn't trust us to put a plane together.

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00:08:06,000 --> 00:08:15,000

But also by volunteering to fly it after they recreate the myth by tearing it apart and sticking it back together with duck tape.

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00:08:15,000 --> 00:08:19,000

Now to test this, we can't use the actual aircraft that was in the myth,

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00:08:19,000 --> 00:08:25,000

because the FAA frowns upon the type of modifications that we'd be doing to it and then trying to fly it.

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00:08:25,000 --> 00:08:27,000

But what we have is the next best thing.

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00:08:27,000 --> 00:08:28,000

A B-Lite aircraft.

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00:08:28,000 --> 00:08:35,000

It falls under an entirely different set of FAA guidelines, but it has a very similar envelope.

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00:08:35,000 --> 00:08:42,000

By envelope, Grant means the aircraft's outer skin, a flexible state-of-the-art polyethylene-based material.

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00:08:42,000 --> 00:08:46,000

A crucial component of the experiment is that ours matches the myth.

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00:08:46,000 --> 00:08:49,000

That way the team is testing like for luck.

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00:08:49,000 --> 00:08:51,000

They also like the location.

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00:08:51,000 --> 00:08:54,000

We've come out to the new Jerusalem airfield in Tracy, California.

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00:08:54,000 --> 00:08:58,000

First we're going to fly our plane, and then it's time to bring out the bear.

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00:08:58,000 --> 00:09:07,000

But before mom of their bears her claws, the team wants a pre-mall control flight to confirm their flying machine is in full working order.

162

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

So what James is doing right now is putting the plane through its paces.

163

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

That's awesome!

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00:09:16,000 --> 00:09:22,000

Just to see if our assembly worked, if everything is working correctly, so that we know what it's going to do.

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00:09:24,000 --> 00:09:26,000

After it's been repaired.

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00:09:26,000 --> 00:09:27,000

The plane looks good.

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00:09:27,000 --> 00:09:30,000

It's time for my favorite part, pulling out the claws.

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00:09:32,000 --> 00:09:38,000

And sporting a pair of heavy metal handpieces she made back at the shop, Carrie is all set to let rip.

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00:09:39,000 --> 00:09:41,000

Codename, Grizzly.

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00:09:42,000 --> 00:09:44,000

Now we know a bear can tear up a plane.

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00:09:44,000 --> 00:09:46,000

They've been known to peel cars right apart.

172

00:09:46,000 --> 00:09:52,000

But because no bears will be harmed in the filming of the Smithbusters episode, I'm going to be the bear.

173

00:09:52,000 --> 00:09:59,000

I've created these somewhat destructive claws with razor sharp edges so that I can tear the plane apart.

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00:09:59,000 --> 00:10:01,000

Everybody knows when it comes to a duct tape myth.

175

00:10:03,000 --> 00:10:05,000

Destruction is kind of my job.

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00:10:07,000 --> 00:10:09,000

Alright, here we go.

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

In character, wielding her weapons at a furious flurry of slashes.

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00:10:15,000 --> 00:10:16,000

She's a wild woman.

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00:10:17,000 --> 00:10:20,000

Carrie soon has the fugal-eye skin in tappers.

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00:10:21,000 --> 00:10:29,000

With her razor sharp claws, the damage done mirrors the mauling in the genuine photographic evidence.

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

The central cavity is completely exposed.

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00:10:33,000 --> 00:10:39,000

The tail section is seriously compromised, but the metal infrastructure is still intact.

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00:10:43,000 --> 00:10:46,000

So the damage that you see here is very similar to what we saw in the photos.

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00:10:46,000 --> 00:10:51,000

The task now is to fix it with duct tape and then try and put it back in the air.

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00:10:52,000 --> 00:10:55,000

A high-stake task they'll tackle back at the shop.

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00:10:55,000 --> 00:10:57,000

We're really putting duct tape to the test this time.

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

I mean, lives are on the line.

188

00:11:00,000 --> 00:11:02,000

Coming up on Duct Tape Plane.

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00:11:02,000 --> 00:11:04,000

I don't have this done before the bear returns.

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00:11:04,000 --> 00:11:06,000

Do two Ron brothers make a rite?

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00:11:06,000 --> 00:11:20,000

Internet videos of excavator exploits have gone viral and Janie and Adam are digging up the truth.

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00:11:20,000 --> 00:11:26,000

So far, although the clip suggests you can row a boat, real life begs to differ.

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00:11:26,000 --> 00:11:28,000

But they're not done yet.

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00:11:28,000 --> 00:11:30,000

Well, our first attempt was a little bit of a bust.

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00:11:30,000 --> 00:11:34,000

It's a flood tide here in the San Francisco Bay, which means the currents pushing south into the bay.

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00:11:34,000 --> 00:11:36,000

And it was too strong for us to overcut.

197

00:11:36,000 --> 00:11:45,000

This next time around, we're going to go a little closer to shore to see whether that makes enough of a difference so we can actually get to our target.

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00:11:45,000 --> 00:11:51,000

A couple of hundred yards further in, away from the central riptide, they're ready to try again.

199

00:11:51,000 --> 00:11:53,000

Q-Test 2.

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00:11:53,000 --> 00:11:56,000

All right, Jamie, we're back in position. You want to try this again?

201

00:11:56,000 --> 00:11:58,000

Yeah, I'm good to go.

202

00:11:59,000 --> 00:12:05,000

Once again, Adam and Jamie swing their giant diesel powered oars into action.

203

00:12:05,000 --> 00:12:07,000

Okay, now you can come in.

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

And away from the grip of the rip, their high degree of teamwork begins to pay off.

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

Stopping.

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00:12:13,000 --> 00:12:17,000

Incredibly, incrementally, they progress towards their goal.

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00:12:17,000 --> 00:12:18,000

I think we're getting it.

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00:12:18,000 --> 00:12:24,000

Just like the video clip, they are clearly rowing a barge with excavators.

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00:12:24,000 --> 00:12:30,000

Well, it took us a little bit of time to get up to speed, to get our practice, to get our sea legs, the excavators as it was.

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00:12:30,000 --> 00:12:36,000

But once we did, we had actually a pretty fair measure of control over this barge, and it's not small.

211

00:12:36,000 --> 00:12:40,000

Yeah, you break, I'll turn, and we'll put the stern of the barge towards the dock.

212

00:12:40,000 --> 00:12:41,000

Copy that.

213

00:12:41,000 --> 00:12:46,000

This is a great example of how well Jamie and I work together, despite the fact that we don't like each other.

214

00:12:46,000 --> 00:12:48,000

Okay, go forward, Adam.

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00:12:48,000 --> 00:12:55,000

He's got extensive experience playing around with a momentum of large objects in the water, and the two of us can pick up skills pretty fast.

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00:12:55,000 --> 00:12:59,000

Let's try one more shove towards the dock a little bit, and then just let it drift.

217

00:12:59,000 --> 00:13:07,000

Even from our really disadvantaged vantage points, we were able to see what the other was doing and intuit what was necessary, and that made this successful.

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00:13:07,000 --> 00:13:10,000

Hey, Jamie, I think we made it, baby.

219

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

Well, it wasn't a picture perfect landing at the dock, but we got within a few feet of it.

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00:13:16,000 --> 00:13:29,000

Despite the Internet's reputation as a repository of all things fake and fabricated, growing a barge with an excavator is clearly possible, making the first of the three viral videos confirmed.

221

00:13:35,000 --> 00:13:40,000

It's a fact that a bare mauled and grounded an Alaskan aircraft.

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00:13:40,000 --> 00:13:53,000

And these photos before and after the duct tape patch-up are genuine, but what caused the Mythbusters mailbox to overflow is the pilot's claim that he then flew the patched-up plane home.

223

00:13:53,000 --> 00:13:56,000

Carrie, Grant and Tori are about to test just that.

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00:13:56,000 --> 00:13:58,000

First, we took our aircraft up just to see what it could do.

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00:13:58,000 --> 00:13:59,000

That was awesome.

226

00:13:59,000 --> 00:14:04,000

Then, turned myself into a grizzly bear just to see what sort of damage I could do.

227

00:14:04,000 --> 00:14:09,000

Now we've got a bunch of duct tape, and we need to see if we can actually repair this plane and make it airworthy again.

228

00:14:10,000 --> 00:14:16,000

Because as things stand, just like the mythically mauled aircraft, it's definitely grounded.

229

00:14:17,000 --> 00:14:21,000

With this plane in this condition, would you try and fly it?

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00:14:21,000 --> 00:14:23,000

Absolutely not.

231

00:14:23,000 --> 00:14:28,000

The first problem here is that we've lost our rudder, so I'm not going to have any directional control with the airplane.

232

00:14:28,000 --> 00:14:36,000

The good news is that we do have structural integrity, but the bad news is that the skin is gone and flapping in the breeze, creating drag.

233

00:14:36,000 --> 00:14:40,000

We've got this acting like a scoop. This is not going to fly straight.

234

00:14:40,000 --> 00:14:44,000

Sounds like a job for the Mythbusters' favorite engineering cure-all.

235

00:14:44,000 --> 00:14:46,000

But surely it's a stretch.

236

00:14:46,000 --> 00:14:54,000

Replacing the aircraft's \$13,000 aerodynamic fabric covering with a few rolls of five-buck duct tape,

237

00:14:54,000 --> 00:15:01,000

and while Carrie and Tori focus on the fuselage, Grant concentrates on the crucial control surfaces.

238

00:15:01,000 --> 00:15:05,000

So we've done a lot of damage to this plane, both to the fuselage and the tail section.

239

00:15:05,000 --> 00:15:11,000

But this right here, this is the most important part. This is called the horizontal stabilizer. This is called the vertical stabilizer.

240

00:15:11,000 --> 00:15:16,000

They're called stabilizers for a very important reason, because they keep the plane stable.

241

00:15:16,000 --> 00:15:25,000

Stability and steering are obviously priorities when fixing a plane, but a strategy to stay intact in flight is fairly important too.

242

00:15:25,000 --> 00:15:32,000

Alright, the way we're repairing the plane, we did one skin of duct tape going vertically, and now we've covered it with another skin going horizontally.

243

00:15:32,000 --> 00:15:40,000

This way is in line with the travel of the plane, because we don't want any edges to get caught on the wind and unravel what we have made.

244

00:15:40,000 --> 00:15:42,000

We'll have this done before the bear returns.

245

00:15:42,000 --> 00:15:49,000

It's certainly a quick fix. The question is, will it have the necessary structural integrity for a stable flight?

246

00:15:49,000 --> 00:15:56,000

Will they come unstuck? With the finished fix-up looking airworthy, there's only one way to find out.

247

00:15:56,000 --> 00:16:01,000

The true test is when we take this thing up in the air, but personally, I think duct tape is plausible for fixing a plane.

248

00:16:02,000 --> 00:16:07,000

It carries clearly confident it'll work. However, back out on location...

249

00:16:07,000 --> 00:16:09,000

Hope it flies!

250

00:16:09,000 --> 00:16:22,000

As the moment approaches when James will be risking serious injury on their behalf, they're confident that duct tape will withstand the elements and the rigors of flight is replaced with a nervous caution.

251

00:16:22,000 --> 00:16:28,000

It is so hot out here, and as it gets hotter, the duct tape loses its stickiness.

252

00:16:28,000 --> 00:16:34,000

Not only that, we don't know how the tape is going to react once it's up in the air, and the wind speed is going across it.

253

00:16:34,000 --> 00:16:39,000

I mean, the wind might catch an edge and rip the tape off. This could be very bad.

254

00:16:39,000 --> 00:16:43,000

So, I think we need to get this plane up as soon as possible.

255

00:16:43,000 --> 00:16:46,000

Next myth can duct tape fix a pilot.

256

00:16:46,000 --> 00:16:47,000

Been good knowing ya.

257

00:16:47,000 --> 00:16:48,000

Nice knowing you.

258

00:16:48,000 --> 00:16:53,000

Despite the danger of the duct tape coming unstuck in the 90-degree heat...

259

00:16:53,000 --> 00:16:56,000

They won't be rushing into anything.

260

00:16:56,000 --> 00:16:59,000

We're going to do this the safe and methodical way.

261

00:16:59,000 --> 00:17:01,000

So, if this thing goes south, we all run, right?

262

00:17:01,000 --> 00:17:02,000

Run as the plan?

263

00:17:02,000 --> 00:17:03,000

Yeah.

264

00:17:04,000 --> 00:17:11,000

And that is first. James is going to taxi up and down the runway, just to make sure all the control services are okay.

265

00:17:11,000 --> 00:17:14,000

So far, so good. I don't see any duct tape whipping in the wind.

266

00:17:14,000 --> 00:17:18,000

Once he's comfortable with that, then he's going to take it up for the real flight.

267

00:17:18,000 --> 00:17:23,000

With several cautious runs up and down the runway, happy that everything feels right,

268

00:17:23,000 --> 00:17:27,000

James gives the signal that he's ready to try this for real.

269

00:17:28,000 --> 00:17:34,000

This is it. Will the temporary, sticky solution survive the rigors of flight?

270

00:17:35,000 --> 00:17:39,000

Is it really possible to fix your plane with duct tape?

271

00:17:39,000 --> 00:17:41,000

There you go!

272

00:17:41,000 --> 00:17:48,000

It's exciting! This guy is insane.

273

00:17:49,000 --> 00:17:52,000

If it were survival, you'd have to do it, right?

274

00:17:58,000 --> 00:17:59,000

It works!

275

00:17:59,000 --> 00:18:01,000

Fix the duct tape! It'll keep it hold!

276

00:18:01,000 --> 00:18:03,000

It totally works!

277

00:18:04,000 --> 00:18:06,000

Let's hope it does hold.

278

00:18:06,000 --> 00:18:11,000

Yeah, we're going to circle a little bit first. Let's make sure it holds because things can still go wrong.

279

00:18:11,000 --> 00:18:17,000

Carries correct. Getting off the ground is one thing. Returning to it safely is another.

280

00:18:17,000 --> 00:18:21,000

One interesting thing is that the duct tape is actually flapping a lot more than the Dacron,

281

00:18:21,000 --> 00:18:24,000

so I don't know how long you could actually fly like this.

282

00:18:24,000 --> 00:18:30,000

Yep, the airflow across the striped uneven surface is causing the duct tape to shudder and ripple.

283

00:18:31,000 --> 00:18:33,000

Hope it doesn't shake apart.

284

00:18:33,000 --> 00:18:39,000

But James is apparently having no trouble maintaining altitude or making controlled maneuvers,

285

00:18:39,000 --> 00:18:42,000

and there's no sign that duct tape is delaminating.

286

00:18:42,000 --> 00:18:44,000

He's looking pretty stable right now.

287

00:18:44,000 --> 00:18:50,000

And when flight time ticks over the 30-minute mark, the team is confident they can call the result.

288

00:18:51,000 --> 00:18:54,000

This is awesome. This is one more confirmed myth for duct tape.

289

00:18:54,000 --> 00:18:58,000

Bare balls of plane, fix it with duct tape and get it back in the air.

290

00:18:58,000 --> 00:19:01,000

How cool is this? I mean, we have done a lot of things with duct tape,

291

00:19:01,000 --> 00:19:07,000

but never have we done something that is so important as keeping an aircraft in the air.

292

00:19:07,000 --> 00:19:09,000

This one is totally confirmed.

293

00:19:10,000 --> 00:19:12,000

It worked! That's great!

294

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

Thank you very much. That was awesome.

295

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

Fixing a plane with duct tape, confirmed.

296

00:19:18,000 --> 00:19:21,000

I'm starting to think that maybe duct tape can do absolutely anything.

297

00:19:21,000 --> 00:19:27,000

And up next, the team is going to test that claim by stretching their high-flying heroics to the limit.

298

00:19:27,000 --> 00:19:31,000

They're making a whole plane out of duct tape.

299

00:19:39,000 --> 00:19:43,000

Adam and Jamie are excited that their first excavator clip was confirmed.

300

00:19:43,000 --> 00:19:46,000

You can, in fact, row a barge with a backhoe.

301

00:19:48,000 --> 00:19:50,000

I think we made it, baby!

302

00:19:51,000 --> 00:19:56,000

The next viral video they're testing also falls into the exuberant excavator category.

303

00:19:56,000 --> 00:20:00,000

Exuberantly dangerous for one thing, but is it fake?

304

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

There's only one way to find out.

305

00:20:03,000 --> 00:20:06,000

Ha ha! That looks awesome. Have you ever wakeboarded before?

306

00:20:06,000 --> 00:20:09,000

No. Neither have I. Clearly we're perfect to try this out.

307

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

Well, I can't see any reason not to get started.

308

00:20:15,000 --> 00:20:16,000

I'll get suited up.

309

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

I'll bring the excavator down.

310

00:20:18,000 --> 00:20:19,000

Awesome.

311

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

With the clip as reference, Adam and Jamie have everything they need to attempt this dangerous,

312

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

typically outrageous test.

313

00:20:28,000 --> 00:20:32,000

This has got to be one of the strangest things that I've ever done.

314

00:20:32,000 --> 00:20:38,000

The ingredients? An excavator? The perfect size pond? And a few essential safety precautions.

315

00:20:38,000 --> 00:20:43,000

Notice in the clip that at one point our skier swings way away from the excavator

316

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

and then starts to move back towards it at a high-rated speed.

317

00:20:48,000 --> 00:20:49,000

Ha ha!

318

00:20:49,000 --> 00:20:52,000

Now, I obviously have some concerns about that.

319

00:20:52,000 --> 00:20:55,000

So we're going to do this thing incrementally.

320

00:20:55,000 --> 00:20:58,000

Ha ha ha! I think this is going to work.

321

00:20:58,000 --> 00:21:04,000

I'm going to go really slow and a little faster and faster until we really get a good feel for what we're dealing with.

322

00:21:05,000 --> 00:21:06,000

Perfect day for wakeboarding.

323

00:21:07,000 --> 00:21:15,000

And then the skier has to have one thing to keep in mind, and that is to let go before it's too late.

324

00:21:16,000 --> 00:21:22,000

Which may sound like a simple precaution, but remember, Adam and Jamie have never wakeboarded before.

325

00:21:22,000 --> 00:21:29,000

Even under ideal circumstances, they'd be preoccupied with technique, standing up and balancing.

326

00:21:29,000 --> 00:21:31,000

And this is far from ideal.

327

00:21:31,000 --> 00:21:38,000

There are additional factors to focus on, like rotational circumference, speed of the spin, and height of the bucket.

328

00:21:39,000 --> 00:21:44,000

But all of that only comes into play if Adam manages to stand up.

329

00:21:44,000 --> 00:21:48,000

Alright, here we go. Excavator wakeboarding. You ready?

330

00:21:48,000 --> 00:21:51,000

Go ahead and maybe start pulling me slowly.

331

00:21:58,000 --> 00:21:59,000

Ha ha!

332

00:21:59,000 --> 00:22:01,000

Alright, let's try that again.

333

00:22:02,000 --> 00:22:04,000

There's going to be a little bit of a learning curve here.

334

00:22:05,000 --> 00:22:07,000

Learning curve is one phrase.

335

00:22:08,000 --> 00:22:09,000

Ha ha ha!

336

00:22:09,000 --> 00:22:15,000

Repeatedly falling with the uncoordinated chaotic grace of a car crash is another.

337

00:22:15,000 --> 00:22:23,000

The question is, are Adam's falls a failure in technique, or is it just not possible to wakeboard behind an excavator?

338

00:22:24,000 --> 00:22:25,000

This is hard.

339

00:22:25,000 --> 00:22:27,000

Want me to try starting with the bucket up higher?

340

00:22:28,000 --> 00:22:29,000

Hard to say.

341

00:22:29,000 --> 00:22:31,000

Okay, I'm going to raise the bucket.

342

00:22:31,000 --> 00:22:35,000

Jamie may also be a novice wakeboarder, but he's an experienced water skier.

343

00:22:35,000 --> 00:22:41,000

And has noticed the angle is too low. Adam has to crouch awkwardly forwards and downwards.

344

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

Jamie's also noticed there's not enough tension on the rope.

345

00:22:45,000 --> 00:22:48,000

Adam needs to go faster, so they adjust.

346

00:22:50,000 --> 00:22:55,000

And those few feet and slightly faster spin speed makes all the difference.

347

00:23:01,000 --> 00:23:03,000

With Adam's new and improved body position,

348

00:23:04,000 --> 00:23:06,000

it's a completely different ballgame.

349

00:23:09,000 --> 00:23:12,000

It's not like he's suddenly become a champion wakeboarder,

350

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

but his perseverance, the tweak in technique,

351

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

and Jamie's careful control of the spin speed means that not only have they confirmed the myth,

352

00:23:28,000 --> 00:23:33,000

but the rest of the day's schedule is out the window.

353

00:23:35,000 --> 00:23:36,000

One more time.

354

00:23:36,000 --> 00:23:38,000

Well, that might be the most fun.

355

00:23:38,000 --> 00:23:40,000

I've had it a long time on this set.

356

00:23:41,000 --> 00:23:43,000

It was a little tough to go at the beginning,

357

00:23:44,000 --> 00:23:47,000

but once I figured out the physical mechanics of it, and I've never wakeboarded before,

358

00:23:48,000 --> 00:23:49,000

it's nothing but fun.

359

00:23:50,000 --> 00:23:51,000

Yeah!

360

00:23:54,000 --> 00:23:57,000

So wakeboarding with an excavator, busted, plausible, or confirmed?

361

00:23:58,000 --> 00:24:02,000

Well, clearly it's confirmed, but I'd like to add a fourth category for this one.

362

00:24:03,000 --> 00:24:05,000

Can we add pure and adulterated fun to confirmed?

363

00:24:06,000 --> 00:24:07,000

Why, yes we can.

364

00:24:08,000 --> 00:24:09,000

Excellent, let's get out of here.

365

00:24:09,000 --> 00:24:10,000

Okay.

366

00:24:14,000 --> 00:24:16,000

Confirmed on adulterated fun it is.

367

00:24:17,000 --> 00:24:20,000

But be responsible, or you'll answer to the Heinemann.

368

00:24:21,000 --> 00:24:23,000

Water skiing off of one of these things looks like fun, doesn't it?

369

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

Well, it's dangerous, so you shouldn't do it at home.

370

00:24:29,000 --> 00:24:30,000

Can we go back on this, Buster?

371

00:24:30,000 --> 00:24:33,000

Can you fly a plane entirely made of duct tape?

372

00:24:41,000 --> 00:24:43,000

Okay, so the myth is confirmed, but I'm kind of curious.

373

00:24:43,000 --> 00:24:46,000

Do you think we could make an entire plane out of duct tape?

374

00:24:47,000 --> 00:24:48,000

I like it, but how do we do it safely?

375

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

We could do it with radio control, but a full-size unmanned aircraft requires FAA certification,

376

00:24:55,000 --> 00:24:56,000

and that could take forever.

377

00:24:56,000 --> 00:24:59,000

Well, there is one thing we could do, and that's get a pilot, not just anyone,

378

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

but a skilled test pilot that's used to flying experimental airplanes.

379

00:25:04,000 --> 00:25:06,000

And let's face it, it doesn't get any more experimental than this,

380

00:25:07,000 --> 00:25:08,000

and then we'll see if the duct tape works.

381

00:25:08,000 --> 00:25:13,000

Experimental is right.

382

00:25:13,000 --> 00:25:17,000

By replacing all of the aircraft's high-tech fuselage fabric,

383

00:25:18,000 --> 00:25:21,000

the team is taking duct tape to its aerodynamic limit.

384

00:25:22,000 --> 00:25:26,000

So far, we've been very successful at repairing our plane using duct tape and flying it,

385

00:25:27,000 --> 00:25:31,000

thus confirming our myth, but that was only one control surface and part of the fuselage.

386

00:25:32,000 --> 00:25:34,000

Now it's time to put it to the ultimate test,

387

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

and that means ripping up and replacing every surface on this plane with duct tape.

388

00:25:40,000 --> 00:25:43,000

And to do that, we're going to use not only our bear claws,

389

00:25:44,000 --> 00:25:46,000

but also any sharp tool we can find in the shop.

390

00:25:47,000 --> 00:25:54,000

However, if breaking it was fun, furious and fast, fixing it is going to be anything but.

391

00:25:55,000 --> 00:25:59,000

It's as tough a challenge as team duct tape has ever faced.

392

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

Their first strategic decision will be weight management.

393

00:26:04,000 --> 00:26:08,000

The material they're replacing is equal in mass to just five rolls.

394

00:26:09,000 --> 00:26:12,000

So to retain the aircraft's balance and power to weight ratio,

395

00:26:13,000 --> 00:26:15,000

they'll want to use five rolls or less.

396

00:26:16,000 --> 00:26:18,000

But that is going to be very tricky.

397

00:26:19,000 --> 00:26:22,000

With gravity laying down the law, this is a high tension build in more ways than one.

398

00:26:23,000 --> 00:26:28,000

Now if we don't use enough duct tape, or if our quick fix isn't solid enough,

399

00:26:29,000 --> 00:26:31,000

just as disastrous as if we used too much.

400

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

And here's why.

401

00:26:34,000 --> 00:26:38,000

So if we analyze the high speed footage of our flight with the duct tape side,

402

00:26:39,000 --> 00:26:42,000

what we see are vibrations that look like ripples in water.

403

00:26:43,000 --> 00:26:47,000

Now with any system that has vibrations, what you could do is develop a resonance frequency.

404

00:26:52,000 --> 00:26:55,000

If that happens, it could literally shake itself apart.

405

00:26:55,000 --> 00:27:00,000

To avoid that, they'll need structural integrity at a smooth aerodynamic surface.

406

00:27:01,000 --> 00:27:03,000

Their solution is cross hatch layering.

407

00:27:04,000 --> 00:27:10,000

With the base layer adding sufficient stiffness and the top layer running in the same direction as the airflow,

408

00:27:11,000 --> 00:27:12,000

their design is looking up.

409

00:27:13,000 --> 00:27:17,000

But with their five roll limit long gone, their prospects are going down.

410

00:27:20,000 --> 00:27:23,000

When we ripped off the skin of the airplane and weighed it, it weighed 10 pounds,

411

00:27:23,000 --> 00:27:25,000

which equated to five rolls of duct tape.

412

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

So far we've burned through 10.

413

00:27:28,000 --> 00:27:32,000

So we have more than doubled the weight of our airplane already, and we're not even finished.

414

00:27:33,000 --> 00:27:37,000

But I mean that's what you get when you're using duct tape and you want the strength and the smoothness,

415

00:27:38,000 --> 00:27:39,000

you're going to be adding more weight.

416

00:27:40,000 --> 00:27:42,000

And when this is all said and done, this thing might not even get off the ground.

417

00:27:43,000 --> 00:27:49,000

And as 10 rolls become 11, then 12, and ever upwards, the additional mass is becoming a serious problem.

418

00:27:50,000 --> 00:27:51,000

We've finished our final duct tape plane.

419

00:27:51,000 --> 00:27:55,000

Now we tore off all of the covering and fixed it with 17 rolls of duct tape.

420

00:27:56,000 --> 00:27:59,000

That's pushing the weight limit, and this thing is dangerous enough on its own.

421

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

So we're not just going to throw our test pilot up into the air.

422

00:28:03,000 --> 00:28:08,000

We're going to do a little wind tunnel testing first, with our own special kind of wind tunnel.

423

00:28:10,000 --> 00:28:12,000

Now clearly, we're just in the parking lot.

424

00:28:13,000 --> 00:28:15,000

We're not in a wind tunnel like we're normally used to seeing at NASA.

425

00:28:15,000 --> 00:28:21,000

But the most important thing here is that we simulate the type of airspeed that this aircraft is going to experience.

426

00:28:22,000 --> 00:28:24,000

That's why we have this...

427

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

Hollywood wind machine.

428

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

That ought to be enough.

429

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

Now the way we're going to test this is we're going to fire up the fan to the speeds that the airplane is going to be moving at.

430

00:28:37,000 --> 00:28:39,000

I don't know why I get this job. I can barely fly.

431

00:28:39,000 --> 00:28:44,000

Then what we're going to do is we're going to watch the duct tape and see how it reacts to those wind speeds.

432

00:28:45,000 --> 00:28:46,000

See whether or not it's flapping or tearing.

433

00:28:47,000 --> 00:28:50,000

Alright, starting the fan. I'll measure the wind speed.

434

00:28:52,000 --> 00:28:54,000

Most importantly, we are seeing if the duct tape is going to hold.

435

00:28:55,000 --> 00:29:00,000

Because let's face it, the more important that we find out down here, and it is up in the air.

436

00:29:03,000 --> 00:29:05,000

Once the fan matches the airspeed of the aircraft...

437

00:29:10,000 --> 00:29:16,000

Tori and Grant inspect every inch of the duct tape surface looking for any aerodynamic compromises.

438

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

And they're extremely happy with their handiwork.

439

00:29:20,000 --> 00:29:21,000

That looks good!

440

00:29:22,000 --> 00:29:23,000

So it's onwards and upwards.

441

00:29:24,000 --> 00:29:27,000

We got up to a wind speed of 50, which is what the test pilot wants to take it up to.

442

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

I say we take it up in the air.

443

00:29:30,000 --> 00:29:31,000

Alright, let's see if it flies.

444

00:29:32,000 --> 00:29:33,000

Can I fly? I've had a lot of practice just now.

445

00:29:34,000 --> 00:29:37,000

Next, Adam gets a little more excavator excitement than he bargained for.

446

00:29:40,000 --> 00:29:42,000

Adam and Jamie are digging for dirt on excavator viral videos.

447

00:29:43,000 --> 00:29:44,000

So far, they've come up clean.

448

00:29:47,000 --> 00:29:52,000

And last up is this unlikely looking feat of heavy machinery athleticism.

449

00:29:53,000 --> 00:29:57,000

It looks like a genuine video, but is there some sort of film-fakery involved?

450

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

Can a backhoe really back itself into the land?

451

00:30:00,000 --> 00:30:01,000

What do you think of the clip?

452

00:30:02,000 --> 00:30:05,000

I like the clip. I feel like it's real and like it's possibly doable,

453

00:30:06,000 --> 00:30:08,000

but I gotta tell you, I'm a little freaked out about trying it on our own.

454

00:30:09,000 --> 00:30:10,000

What do you have in mind?

455

00:30:11,000 --> 00:30:16,000

I'm feeling like we should bring in an expert, somebody who really knows their way around an excavator to teach us some of the tricks of the trade.

456

00:30:17,000 --> 00:30:18,000

An excavator expert.

457

00:30:19,000 --> 00:30:20,000

Exactly.

458

00:30:31,000 --> 00:30:37,000

Bayside, Adam and Jamie roll up with the necessary heavy equipment and a tough test ahead.

459

00:30:38,000 --> 00:30:39,000

Here's a conundrum.

460

00:30:40,000 --> 00:30:44,000

What if you've got one of these and you want to transport it using one of these?

461

00:30:45,000 --> 00:30:49,000

How do you get this into that with no other piece of equipment?

462

00:30:50,000 --> 00:30:52,000

According to this clip, it's totally possible.

463

00:30:53,000 --> 00:30:56,000

Maybe, but it's certainly dangerous and we've been attempted.

464

00:30:57,000 --> 00:30:58,000

They're going to need some coaching.

465

00:30:58,000 --> 00:31:05,000

We've done a lot of crazy stuff with heavy machinery over the years, but what we're about to attempt is, well, it's an elite by itself.

466

00:31:06,000 --> 00:31:12,000

Jason Klapsdine is a heavy machinery operator with mad skills when it comes to these excavators.

467

00:31:13,000 --> 00:31:20,000

He can practically break dance with them and he and his experience is what's going to keep us, hopefully, from dying when we attempt this.

468

00:31:21,000 --> 00:31:22,000

So, which one's going to do this?

469

00:31:23,000 --> 00:31:24,000

I don't know. Let's roll a shambot?

470

00:31:25,000 --> 00:31:26,000

Okay.

471

00:31:26,000 --> 00:31:27,000

One, two, three.

472

00:31:28,000 --> 00:31:29,000

Paper beats rock. I do it!

473

00:31:30,000 --> 00:31:34,000

So, it's an excited Adam in the driver's seat.

474

00:31:35,000 --> 00:31:38,000

First, Hopi plums our expert resource for as much knowledge as he can.

475

00:31:39,000 --> 00:31:42,000

And then, in an intense hour-long planning discussion,

476

00:31:43,000 --> 00:31:45,000

Make sure that you're nice and square with the box edges.

477

00:31:46,000 --> 00:31:47,000

It's not designed to do this.

478

00:31:48,000 --> 00:31:55,000

Jason and Adam work out every maneuver of their complicated, technical and incredibly risky plan.

479

00:31:56,000 --> 00:31:58,000

The bucket hits the ground instead of me hitting the ground.

480

00:31:59,000 --> 00:32:05,000

It's clear that the level of control and skill set required to attempt this is a huge step up for Adam.

481

00:32:06,000 --> 00:32:10,000

To pull it off, he's going to have to put in some practice, which is dangerous enough in itself.

482

00:32:11,000 --> 00:32:14,000

Jamie and I have a lot of experience in devices like this.

483

00:32:15,000 --> 00:32:17,000

We've used them extensively on the show over the past decade.

484

00:32:18,000 --> 00:32:21,000

Our experiences of a particular kind of doing discrete operations.

485

00:32:22,000 --> 00:32:25,000

Ho-ho! Ho-ho! Hey!

486

00:32:26,000 --> 00:32:27,000

This is scary!

487

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

This operation requires several things to be happening at once.

488

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

And if they don't, things can get very bad very quickly.

489

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

Pushing back? No, this way.

490

00:32:39,000 --> 00:32:42,000

So, it is all about a super coordination between multiple moving parts.

491

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

Ah! Really?

492

00:32:46,000 --> 00:32:48,000

There are a number of elements to think about at once.

493

00:32:49,000 --> 00:32:54,000

Coordinating the boom, the angle of the bucket, and keeping close control of the tracks will be tricky.

494

00:32:54,000 --> 00:32:56,000

Just like that.

495

00:32:57,000 --> 00:32:58,000

Woo! Ha-ha-ha!

496

00:32:59,000 --> 00:33:02,000

But Adam's ready. Or as ready as he'll ever be.

497

00:33:03,000 --> 00:33:05,000

Let's do this, people!

498

00:33:06,000 --> 00:33:11,000

I'm a little nervous. We are just about to step into the I really hope I'm able to make this work category.

499

00:33:12,000 --> 00:33:15,000

Excavator loading itself into the back of a truck.

500

00:33:16,000 --> 00:33:20,000

Starting out, aligning yourself with the back of the truck seems perfectly straightforward.

501

00:33:20,000 --> 00:33:22,000

Put your bucket in the back of the truck.

502

00:33:23,000 --> 00:33:26,000

Start to lift yourself up. That's when the first problem starts to occur.

503

00:33:27,000 --> 00:33:29,000

Adam should do fairly well with this attempt.

504

00:33:30,000 --> 00:33:35,000

But, you know, he's a little bit of a mystery because on the one hand, he's got a fine touch.

505

00:33:36,000 --> 00:33:38,000

But then on the other hand...

506

00:33:39,000 --> 00:33:42,000

Oh! Well, he's sort of twitchy.

507

00:33:43,000 --> 00:33:49,000

This is not exactly what you want if you're trying to climb on top of something like this truck with one of these machines.

508

00:33:51,000 --> 00:33:56,000

Next on Mythbusters, team Ducktape attempts a treacherous takeoff.

509

00:33:57,000 --> 00:33:58,000

This is it. He's going for it.

510

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

And Adam takes a myth test break.

511

00:34:01,000 --> 00:34:02,000

Oh, I've already gone to the bathroom.

512

00:34:07,000 --> 00:34:13,000

Fasten your seatbelt and stow your tray table. The Mythbusters are attempting a Ducktape takeoff.

513

00:34:14,000 --> 00:34:18,000

We're back at New Jerusalem Airport for the final experiment with our Ducktape plane.

514

00:34:18,000 --> 00:34:21,000

And up to this point, we have played it very safe.

515

00:34:22,000 --> 00:34:25,000

We've only tested it on the ground with a giant fan and we're ready to go.

516

00:34:26,000 --> 00:34:27,000

This is going to be the ultimate test.

517

00:34:28,000 --> 00:34:37,000

For the ultimate test of their Ducktape plane, that's right, a Ducktape plane, the team made a call to the ultimate test flight Top Gun.

518

00:34:40,000 --> 00:34:42,000

For our Ducktape experiment, we used a test pilot Dave Moore.

519

00:34:43,000 --> 00:34:47,000

Now, he's flown over 40 prototype aircrafts. Those are airplanes that have never been flown before.

520

00:34:48,000 --> 00:34:50,000

That makes him the perfect person for this job.

521

00:34:51,000 --> 00:34:54,000

He's going to start off slow. First, he's going to taxi down the runway.

522

00:34:55,000 --> 00:34:57,000

Then when he feels comfortable, he's actually going to take it up.

523

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

But only as high as it's willing to fall, which is five feet.

524

00:35:01,000 --> 00:35:03,000

Make no mistake. This is a risky business.

525

00:35:04,000 --> 00:35:14,000

Even with a typically low altitude test flight, a crash at over 50 miles an hour with no hard shell protection or roll cage could be disastrous.

526

00:35:15,000 --> 00:35:16,000

Alright, alright.

527

00:35:16,000 --> 00:35:23,000

Before Top Gun Dave attempts flight, he needs to thoroughly test the aircraft's responses while taxiing.

528

00:35:24,000 --> 00:35:26,000

He's a test pilot. This is what he does.

529

00:35:27,000 --> 00:35:29,000

So he's feeling an advocacy if it's actually airworthy.

530

00:35:30,000 --> 00:35:33,000

Flying a prototype is all about feedback and feel.

531

00:35:34,000 --> 00:35:40,000

The wind, peaking at 30 miles an hour when the plane is rated for just 12, is dangerous enough in itself.

532

00:35:40,000 --> 00:35:46,000

But more importantly, it's masking any feedback info from the aircraft's control surfaces.

533

00:35:48,000 --> 00:35:53,000

But there's good news. With the wind easing, Dave resumes his tentative taxiing.

534

00:35:54,000 --> 00:36:02,000

And after one more earthbound run, the team gets the signal that Dave is ready to attempt the world's first duct tape lift off.

535

00:36:05,000 --> 00:36:06,000

This is it. He's going for it.

536

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

Ah, I just see the tail off the ground.

537

00:36:20,000 --> 00:36:21,000

Yay!

538

00:36:23,000 --> 00:36:24,000

The Airplane!

539

00:36:25,000 --> 00:36:26,000

Airplane, where?

540

00:36:27,000 --> 00:36:28,000

In the air!

541

00:36:29,000 --> 00:36:30,000

The duct tape airplane!

542

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

That was indeed the maiden voyage of an aircraft made of the world's most useful sticky stuff.

543

00:36:37,000 --> 00:36:38,000

Great job!

544

00:36:38,000 --> 00:36:39,000

Awesome!

545

00:36:40,000 --> 00:36:45,000

With the wind still gusting over the 12 miles an hour limit, that's as high as Dave was prepared to go.

546

00:36:46,000 --> 00:36:48,000

So our duct tape plane actually achieved flight.

547

00:36:49,000 --> 00:36:51,000

Now, granted it wasn't a very long flight at not a very high altitude.

548

00:36:52,000 --> 00:36:59,000

But look, these planes, stock off the line with regular covering, no duct tape at all, would have a hard time flying in these gusty winds.

549

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

I'm fully convinced that on a calmer day, Dave could have gotten a much longer flight at a higher altitude.

550

00:37:05,000 --> 00:37:09,000

The Wright brothers, their first flight, only 120 feet. We beat them.

551

00:37:10,000 --> 00:37:13,000

Dave, you did it! You flew a duct tape plane and survived!

552

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

You're still alive!

553

00:37:16,000 --> 00:37:17,000

How'd it do?

554

00:37:18,000 --> 00:37:24,000

It was so much better than I expected. We're flying in gusty wind conditions that exceed what the

airplanes recommended to fly in with normal fabric on it.

555

00:37:25,000 --> 00:37:27,000

And it's doing great. It was a heck of a ride, but it did great.

556

00:37:28,000 --> 00:37:29,000

So successful experiment?

557

00:37:30,000 --> 00:37:31,000

Confirmed.

558

00:37:32,000 --> 00:37:33,000

Myth confirmed.

559

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

The Internet would have us believe you can heave a backhoe into the back of a truck.

560

00:37:42,000 --> 00:37:44,000

And Adam and Jamie are testing just that.

561

00:37:47,000 --> 00:37:52,000

But despite the obvious danger, Jamie has crunched the numbers and believes it is doable.

562

00:37:53,000 --> 00:38:00,000

So what brings all this together and should make it possible is the fact that our excavator has tracks that have 80 inches of ground contact.

563

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

Our truck has a bed that's 50 inches off the ground.

564

00:38:05,000 --> 00:38:14,000

And so if you lift one end of the excavator up and put it on the back of the truck and you do the geometry, you end up with an angle that's about 38 degrees.

565

00:38:15,000 --> 00:38:24,000

Now given that this particular brand of excavator is rated to run at 45 degrees, if it has enough power to lift the other end, we're golden.

566

00:38:24,000 --> 00:38:26,000

However, the proof is in the practice.

567

00:38:27,000 --> 00:38:31,000

And while Adam has practiced the pre-planned maneuvers, pulling them off in a 10 ton vehicle is an entirely different matter.

568

00:38:32,000 --> 00:38:33,000

Perfect.

569

00:38:34,000 --> 00:38:37,000

This qualifies as one of the spookier things that I've ever done on this show.

570

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

And by spooky, I mean that tingling in your hands and your feet when you're doing things as you do on a truck.

571

00:38:44,000 --> 00:38:46,000

That's pretty steep.

572

00:38:47,000 --> 00:38:54,000

But that was the easy part. The crew gets ready to dial 911 because now it starts to get really tricky.

573

00:38:55,000 --> 00:38:57,000

Well, he's got the front end on the truck.

574

00:38:58,000 --> 00:39:00,000

And he's got the front end on the truck.

575

00:39:01,000 --> 00:39:03,000

And he's got the front end on the truck.

576

00:39:04,000 --> 00:39:06,000

And he's got the front end on the truck.

577

00:39:07,000 --> 00:39:09,000

And he's got the front end on the truck.

578

00:39:09,000 --> 00:39:10,000

Now he's got to lift the other end.

579

00:39:11,000 --> 00:39:13,000

All right, so now I come up and over and down.

580

00:39:14,000 --> 00:39:16,000

With the machine perched at a precarious angle.

581

00:39:17,000 --> 00:39:19,000

Oh, hey, this is really not cool.

582

00:39:20,000 --> 00:39:25,000

Adam has to precisely and smoothly lift the bucket and boom up and out of the truck.

583

00:39:27,000 --> 00:39:33,000

Any sudden movements could see the excavator topple sideways with Adam in the unprotected position.

584

00:39:33,000 --> 00:39:34,000

All right, I got to go slower.

585

00:39:35,000 --> 00:39:36,000

He's all sideways.

586

00:39:40,000 --> 00:39:41,000

That's got to feel really wrong.

587

00:39:42,000 --> 00:39:43,000

Make no mistakes.

588

00:39:44,000 --> 00:39:49,000

Spinning 180 degrees while you're leaning at a 45 degree angle just feels plain wrong.

589

00:39:50,000 --> 00:39:53,000

It's not cool. My body is like, stop this.

590

00:39:54,000 --> 00:39:55,000

There you go.

591

00:39:56,000 --> 00:39:58,000

And he's got the front end on the truck.

592

00:39:58,000 --> 00:40:00,000

Adam is like, stop this.

593

00:40:01,000 --> 00:40:02,000

There you go.

594

00:40:03,000 --> 00:40:05,000

Now can you pick yourself up at all?

595

00:40:06,000 --> 00:40:11,000

The next terrifying step is to use the boom to lever the back of the tracks up and into the truck.

596

00:40:14,000 --> 00:40:20,000

All the while, Adam has to adjust the curl of the bucket to prevent it from slipping, which would cause him to topple.

597

00:40:22,000 --> 00:40:23,000

Now add a little bit more lift.

598

00:40:25,000 --> 00:40:26,000

All right.

599

00:40:26,000 --> 00:40:31,000

He also has to monitor and adjust the height of the weighty blade to stay balanced.

600

00:40:32,000 --> 00:40:33,000

Do you need to go to the bathroom or anything?

601

00:40:34,000 --> 00:40:35,000

Oh, I've already gone to the bathroom.

602

00:40:36,000 --> 00:40:39,000

And he has to retain smooth control over the movements of the boom.

603

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

Move down, stick out.

604

00:40:42,000 --> 00:40:47,000

But on the home stretch, Adam's confidence, just like the excavator, is reaching new heights.

605

00:40:48,000 --> 00:40:49,000

Holy crap, it's working.

606

00:40:50,000 --> 00:40:51,000

You're in. Looking good.

607

00:40:51,000 --> 00:40:52,000

Looking good.

608

00:40:53,000 --> 00:40:56,000

Once I actually start to lift myself, things feel a little more like they're in my control.

609

00:40:57,000 --> 00:41:01,000

But feeling like you're in control is when lapses of concentration happen.

610

00:41:02,000 --> 00:41:04,000

Adam, remember which way is forward.

611

00:41:05,000 --> 00:41:07,000

Oh, right. I gotta push that.

612

00:41:08,000 --> 00:41:10,000

That can be a problem.

613

00:41:11,000 --> 00:41:12,000

Thank you. I owe you one.

614

00:41:13,000 --> 00:41:20,000

Adam, about to back into the truck, had forgotten he'd spun 180 degrees and back is forward.

615

00:41:21,000 --> 00:41:22,000

You're almost home free.

616

00:41:23,000 --> 00:41:28,000

With that sorted, he eases into the truck and triumphantly completes the final step.

617

00:41:29,000 --> 00:41:31,000

All right. Here's the moment of truth. Bucket off the ground.

618

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

That was scary.

619

00:41:42,000 --> 00:41:43,000

Good job.

620

00:41:44,000 --> 00:41:47,000

Jamie's right. It is a fantastic achievement.

621

00:41:47,000 --> 00:41:52,000

But an exuberant excavator achievement that should not be attempted at home.

622

00:41:54,000 --> 00:41:55,000

Oh, you did it.

623

00:41:56,000 --> 00:41:59,000

Another video that wasn't faked. It's like we have a whole episode here, implausible and confirmed.

624

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

Let's get out of here.

