
# Episode 5: Odd Jobs Around the Rocket Ranch

October 2018

@NASAKennedy
#NASARocketRanch

New episodes every month!

1
00:00:01,180 --> 00:00:05,340
When they call us to go do something, that's what we do.

2
00:00:07,400 --> 00:00:12,140
EGS Program Chief Engineer, verify no constraints to launch.

3
00:00:12,220 --> 00:00:14,740
EGS Chief Engineer team has no constraints.

4
00:00:14,860 --> 00:00:15,800
I copy that.

5
00:00:15,980 --> 00:00:18,000
You are clear to launch.

6
00:00:18,080 --> 00:00:24,940
Five, four, three, two, one, and lift-off.

7
00:00:24,940 --> 00:00:26,320
All clear.

8
00:00:26,680 --> 00:00:29,560
Now passing through max q, maximum dynamic pressure.

9
00:00:29,920 --> 00:00:31,680
Welcome to space.

10
00:00:34,000 --> 00:00:35,220
Welcome to the Rocket Ranch.

11
00:00:35,360 --> 00:00:37,200
I'm your host, Joshua Santora.

12
00:00:37,200 --> 00:00:41,960
When people think of the Kennedy Space Center,

rockets are what likely come to mind.

13
00:00:42,120 --> 00:00:44,760
But we have more than rocket scientists here
on the Space Coast.

14
00:00:44,960 --> 00:00:47,480
We're a bit like a small city.

15
00:00:47,740 --> 00:00:52,460
In this episode, we meet a few Ranch hands with
odd jobs you may not expect to find around these parts.

16
00:00:52,520 --> 00:00:57,960
First up, we talk with a marine biologist
who actually gets to fish as part of his day job.

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00:00:57,960 --> 00:01:02,180
Literally, the best habitat we have here on
Center and probably just about the best habitat

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00:01:02,180 --> 00:01:08,620
here in the county is, no joke, a stone's
throw outside those launchpads.

19
00:01:08,620 --> 00:01:14,070
Next, we sit down with a driver whose vehicle
of choice weighs 6 million pounds and clocks

20
00:01:14,070 --> 00:01:16,300
in at a staggering one mile an hour.

21
00:01:16,300 --> 00:01:22,560
It has the power, the electrical power to do
2 miles an hour, but you never would do that, right?

22
00:01:22,560 --> 00:01:23,540
[ Laughs ]

23

00:01:23,550 --> 00:01:28,140
Finally, a helicopter pilot who tracks animals
and trespassers rounds out our glimpse into

24
00:01:28,140 --> 00:01:30,360
odd jobs here at the Ranch.

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00:01:30,360 --> 00:01:35,250
We'll be up in the air during launches looking
for anyone trying to do damage to the rocket

26
00:01:35,250 --> 00:01:37,520
or just make themselves famous.

27
00:01:38,940 --> 00:01:44,920
Kennedy Space Center not only launches rockets,
but it also doubles as a wildlife refuge.

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00:01:44,920 --> 00:01:50,570
Looking after many of the critters here on
the Ranch is marine biologist Dr. Eric Reyier.

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00:01:50,570 --> 00:01:52,780
I'm in the booth now with Dr. Eric Reyier.

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00:01:52,780 --> 00:01:54,890
I will call him the fish doctor.

31
00:01:54,890 --> 00:01:55,890
[ Both chuckle ]

32
00:01:55,890 --> 00:01:57,510
Dr. Reyier, thanks for being here.

33
00:01:57,510 --> 00:01:58,510
Sure.

34
00:01:58,510 --> 00:01:59,530
Yeah, it's my first podcast.

35
00:01:59,530 --> 00:02:00,530
[ Laughs ]

36
00:02:00,530 --> 00:02:02,360
So, tell me a little bit about yourself.

37
00:02:02,360 --> 00:02:03,740
What's your background?

38
00:02:03,740 --> 00:02:07,420
And obviously give some context as to why
I would refer to you as the doctor of fishing.

39
00:02:07,420 --> 00:02:08,420
Sure.

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00:02:08,420 --> 00:02:11,030
So I'm a Fisheries Biologist here at Kennedy
Space Center.

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00:02:11,030 --> 00:02:13,540
I've been here now almost 20 years.

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00:02:13,540 --> 00:02:16,890
I was planning on being here for two, but
the place sort of grabbed ahold of me, and

43
00:02:16,890 --> 00:02:19,300
it's hard to leave a job this interesting.

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00:02:19,300 --> 00:02:23,420
I'm part of the Kennedy Space Center Ecological
Program.

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00:02:23,420 --> 00:02:28,310
It's a group of, I think, about 15 biologists
that work on a variety of environmental issues

46
00:02:28,310 --> 00:02:33,140
around the Space Center, and so I'm a Fisheries Biologist here, but we've got marine-mammal

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00:02:33,140 --> 00:02:37,709
folks, we got folks that study endangered species like scrub jays and sea turtles and

48
00:02:37,709 --> 00:02:42,670
beach mice, and we cross-collaborate on a number of issues around the Space Center,

49
00:02:42,670 --> 00:02:47,460
but, yeah, I came down, actually, from outside of Seattle to go to F.I.T. down there in Melbourne

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00:02:47,460 --> 00:02:50,020
for a couple years, and it's pretty spectacular.

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00:02:50,020 --> 00:02:54,620
In fact, one of the first jobs I ever had coming here wasn't related to fisheries, but

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00:02:54,620 --> 00:02:57,840
when the Shuttle would launch, we'd actually -- right before a launch, we'd go into the

53
00:02:57,840 --> 00:03:01,200
pad perimeter -- you know, the Space Shuttle was on the pad.

54
00:03:01,200 --> 00:03:02,200
It's getting ready to go.

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00:03:02,200 --> 00:03:06,480
A few days before launch, we'd go in, and we'd have to clear out all the baby alligators

56
00:03:06,480 --> 00:03:12,900

that had made it under the fence, and baby
alligators are really fast.

57
00:03:12,900 --> 00:03:17,860
So there's these ponds that collect deluge
water from the Shuttle, and these little baby

58
00:03:17,860 --> 00:03:21,970
gators could make it under or through the
fence, and some turtles, too, and we'd have

59
00:03:21,970 --> 00:03:26,080
to hop in there, and we'd go in with just
an empty truck, and we'd come out with a truckful

60
00:03:26,080 --> 00:03:30,210
of baby alligators and turtles, and we do
that before every launch.

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00:03:30,210 --> 00:03:33,730
Can you tell me a little bit about what's
going on as far as right around a launchpad,

62
00:03:33,730 --> 00:03:34,730
for instance?

63
00:03:34,730 --> 00:03:38,490
Because I know that that's probably -- when
we think about if we're harming the environment,

64
00:03:38,490 --> 00:03:40,020
people would expect it to be there.

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00:03:40,020 --> 00:03:42,650
So what's the environment like in that area?

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00:03:42,650 --> 00:03:44,300
Yeah, it's just the opposite.

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00:03:44,300 --> 00:03:46,010
That's an excellent question.

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00:03:46,010 --> 00:03:53,590
We think of rocket launches as really dangerous
and very industrial, and, clearly, they are,

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00:03:53,590 --> 00:04:01,310
but the impact of those launches is -- the
footprint is very small, and from our observations

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00:04:01,310 --> 00:04:05,350
over the years, literally, the best habitat
we have here on Center -- and probably just

71
00:04:05,350 --> 00:04:11,840
about the best habitat here in the county
is, no joke, a stone's throw outside those

72
00:04:11,840 --> 00:04:16,959
launchpads, and we've got huge sport fish
that come, really, within the shadow of some

73
00:04:16,959 --> 00:04:21,900
of our launch facilities, and it's because
there's no other development, but wildlife

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00:04:21,900 --> 00:04:24,690
benefits tremendously from the Space Program,
as well, so...

75
00:04:24,690 --> 00:04:25,690
Yeah, that's awesome.

76
00:04:25,690 --> 00:04:30,340
So I want to step back for a second because,
obviously, you just mentioned a lot of biologists

77
00:04:30,340 --> 00:04:35,970
and a lot of interesting wildlife that people

may not be familiar with, so we need to paint

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00:04:35,970 --> 00:04:39,600
a picture for what the Kennedy Space Center
is, 'cause people say, "Space Center," and

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00:04:39,600 --> 00:04:43,630
they think rockets, they think smoke and fire,
they think, obviously, like big production,

80
00:04:43,630 --> 00:04:45,390
but we're surrounded by a wildlife refuge.

81
00:04:45,390 --> 00:04:49,100
Can you tell us more about what would people
see if they came out here?

82
00:04:49,100 --> 00:04:51,021
Yeah, they'd see a lot of green, to be honest
with you.

83
00:04:51,021 --> 00:04:56,240
You know, I think it was back in the early
'60s -- I think '62.

84
00:04:56,240 --> 00:05:00,730
NASA needs a lot of space to launch rockets,
both for public safety and security purposes.

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00:05:00,730 --> 00:05:05,570
So early '60s, they bought up a lot of property
here, and they realized early on that most

86
00:05:05,570 --> 00:05:08,340
of it wasn't directly gonna be used for rocket
launches.

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00:05:08,340 --> 00:05:09,600
The Space Center's actually huge.

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00:05:09,600 --> 00:05:16,060
You know, it's about 140,000 acres of which,
when you do the math, I think about 5% is

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00:05:16,060 --> 00:05:21,060
actually used for space-launch infrastructure
-- launchpads, roads, buildings, et cetera.

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00:05:21,060 --> 00:05:27,420
They, fairly quickly, ceded a lot of the natural-lands
management to U.S. Fish and Wildlife Service,

91
00:05:27,420 --> 00:05:31,860
who created Merritt Island National Wildlife
Refuge, and then a little bit later on, the

92
00:05:31,860 --> 00:05:36,200
northern part of the property was actually
-- management was ceded to Canaveral National

93
00:05:36,200 --> 00:05:37,410
Seashore, as well.

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00:05:37,410 --> 00:05:43,010
So we actually have a wildlife refuge and
a national seashore that overlay Kennedy Space

95
00:05:43,010 --> 00:05:44,010
Center.

96
00:05:44,010 --> 00:05:48,810
Another interesting aspect of it is, NASA
wants a security perimeter around their launch

97
00:05:48,810 --> 00:05:50,650
infrastructure, which makes sense.

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00:05:50,650 --> 00:05:54,900
So early on, they establish this perimeter,

which there's no public access around these

99
00:05:54,900 --> 00:06:00,930
launchpads, and while the purpose was public
safety and security, they sort of, coincidentally,

100
00:06:00,930 --> 00:06:06,730
created what we call a de facto marine reserve,
and marine reserves, they're being used more

101
00:06:06,730 --> 00:06:11,220
and more for marine management, where, basically,
you set areas off-limits and let the ecosystem

102
00:06:11,220 --> 00:06:14,949
sort of persist in its natural state, and
some areas are controversial.

103
00:06:14,949 --> 00:06:18,050
At the Space Center, they're not, because
it wasn't really designed as a marine reserve.

104
00:06:18,050 --> 00:06:20,170
It was designed for security.

105
00:06:20,170 --> 00:06:25,960
Fish don't know that, so the fish here have
been, basically, unmolested now since 1962,

106
00:06:25,960 --> 00:06:30,030
and there's been several studies that have
shown that water within the security zone

107
00:06:30,030 --> 00:06:34,919
of Kennedy Space Center, they harbor higher
densities of sport fish.

108
00:06:34,919 --> 00:06:39,410
Those sport fish are generally larger, and
we have higher, overall, fisheries diversity

109
00:06:39,410 --> 00:06:44,530
within the Space Center than adjacent public
areas that have been developed over the past

110
00:06:44,530 --> 00:06:48,840
few decades, and so it's basically a gem here
in East Florida.

111
00:06:48,840 --> 00:06:52,820
The fisheries habitat here is the best we
have, really, on the east coast of the United

112
00:06:52,820 --> 00:06:53,990
States anymore.

113
00:06:53,990 --> 00:06:59,320
On the fisheries side, we've got red drum,
black drum, spotted seatrout, tarpon, snook

114
00:06:59,320 --> 00:07:03,910
-- all these really important sport fish,
and a large percentage of the rest of that

115
00:07:03,910 --> 00:07:06,690
is actually managed in a fairly natural state.

116
00:07:06,690 --> 00:07:12,120
So you got a tremendous amount of habitat
and wildlife issues that you have to attend to.

117
00:07:12,360 --> 00:07:17,060
The lagoon has a very high density of West
Indian manatees, green and loggerhead sea

118
00:07:17,060 --> 00:07:20,330
turtles that use the lagoon as, basically,
a nursery, as well.

119

00:07:20,330 --> 00:07:23,070
Bull sharks is the common fish in the lagoon.

120
00:07:23,070 --> 00:07:28,949
Our folks traditionally work on scrub jays,
bald eagles, gopher tortoises, invasive hogs

121
00:07:28,949 --> 00:07:35,070
-- most dense population of alligators left
in any of the lagoons here at KSC.

122
00:07:35,070 --> 00:07:38,260
Much of the Space Center is actually co-managed
either as Merritt Island National Wildlife

123
00:07:38,260 --> 00:07:44,020
Refuge or Canaveral National Seashore, and
so NASA, as a federal agency, has to -- They're

124
00:07:44,020 --> 00:07:48,350
held to sort of a high standard on how they
maintain their land and the wildlife and habitat

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00:07:48,350 --> 00:07:50,160
land, and that's sort of where we come in.

126
00:07:50,160 --> 00:07:51,160
Cool.

127
00:07:51,160 --> 00:07:52,540
And so what is your day job?

128
00:07:52,540 --> 00:07:53,919
Like, what do you do on a daily basis?

129
00:07:53,919 --> 00:07:55,600
Would we find you in an office?

130
00:07:55,600 --> 00:07:57,419

Are you outside, like, hacking through the
bush?

131
00:07:57,419 --> 00:07:58,419
Like, what's going on?

132
00:07:58,419 --> 00:08:01,729
Oh, so that is the best part of my job is
that it's the diversity.

133
00:08:01,729 --> 00:08:05,260
I'm in the field quite a bit,
probably about two to three days a week, but

134
00:08:05,260 --> 00:08:09,210
we also do a fair bit of lab work, and not
only do we have to catch fish, but we have

135
00:08:09,210 --> 00:08:14,270
to write about it, as well -- you know, permits
and reports and whatnot, but, all in all,

136
00:08:14,270 --> 00:08:15,630
it's a super-diverse project.

137
00:08:15,630 --> 00:08:19,080
You don't know what you're gonna get into
on any given day 'cause issues pop up all

138
00:08:19,080 --> 00:08:22,290
the time, and there hasn't been a single day
where I rolled out of bed and didn't want

139
00:08:22,290 --> 00:08:23,290
to come to work.

140
00:08:23,290 --> 00:08:24,290
That's awesome.

141

00:08:24,290 --> 00:08:25,290
That's so cool.

142
00:08:25,290 --> 00:08:27,819
So, obviously, it's probably no mystery now
at this point.

143
00:08:27,819 --> 00:08:31,479
Like, it is factual that some days we pay
you to fish.

144
00:08:31,479 --> 00:08:32,479
Is that fair to say?

145
00:08:32,479 --> 00:08:34,140
I'm told I'm not supposed to advertise that
-- yes.

146
00:08:34,140 --> 00:08:35,140
[ Chuckles ]

147
00:08:35,140 --> 00:08:36,390
So it's a little bit different.

148
00:08:36,390 --> 00:08:40,440
In a way, it's cheating 'cause we get the
permits to fish with interesting gear like

149
00:08:40,440 --> 00:08:44,229
long longlines and gill nets, where you can
catch a lot of fish really fast for scientific

150
00:08:44,229 --> 00:08:47,320
purposes, but, also, we don't take things
home.

151
00:08:47,320 --> 00:08:49,420
Yeah, exactly, exactly.

152

00:08:49,420 --> 00:08:52,550
Generally, most of the fisheries' research
we do -- and we can talk a little bit about

153
00:08:52,550 --> 00:08:56,180
this in-depth later on -- is nonlethal.

154
00:08:56,180 --> 00:09:00,980
We catch fish, we measure them, record them,
identify them, and let them go.

155
00:09:00,980 --> 00:09:04,240
Yeah, I want to make sure that we are clear
to say that it's not like you're out here,

156
00:09:04,240 --> 00:09:07,330
like, just sitting back just chilling in the
boat, fishing.

157
00:09:07,330 --> 00:09:08,330
No, no.

158
00:09:08,330 --> 00:09:09,930
Like, you're out here, you're doing research,
you're doing science.

159
00:09:09,930 --> 00:09:13,770
So, give us some examples of the research
that is going on both amongst your team, as

160
00:09:13,770 --> 00:09:16,710
well as I know that we bring in other folks
to do research in the area, as well.

161
00:09:16,710 --> 00:09:17,880
Yes, yes.

162
00:09:17,880 --> 00:09:22,470
So, big picture -- if you look at the landscape
of the Space Center, it's about 65% water.

163
00:09:22,470 --> 00:09:26,459
So fish are really a dominant part of the ecosystem here.

164
00:09:26,459 --> 00:09:30,839
We've got a number of -- In fact, I think about over 100 species that are federally

165
00:09:30,839 --> 00:09:35,010
managed, which means NASA's got to consult with other agencies when they do construction

166
00:09:35,010 --> 00:09:40,330
or modify habitat, and so having that basic information on where fish are, what are the

167
00:09:40,330 --> 00:09:44,320
most critical habitats around the Space Center, that information is important because it allows

168
00:09:44,320 --> 00:09:49,640
NASA to minimize the effects of, basically, the Space Program on the fisheries habitat here.

169
00:09:49,880 --> 00:09:55,400
So, some of the specific projects we do -- we're involved in what's called the Florida Atlantic

170
00:09:55,410 --> 00:09:57,290
Coast Telemetry Network.

171
00:09:57,290 --> 00:10:02,550
It's an array of now several thousand underwater listening stations.

172
00:10:02,550 --> 00:10:06,500
They're acoustic receivers, but they're moored underwater here in the lagoon and along our

173
00:10:06,500 --> 00:10:10,269
shoreline here at Canaveral, and so we manage
this section of the FACT Array, and we're

174
00:10:10,269 --> 00:10:14,540
teamed up with all sorts of universities,
wildlife agencies basically from the Gulf

175
00:10:14,540 --> 00:10:20,160
of Mexico up to Canada, and these sensors
that are underwater listen for the passing

176
00:10:20,160 --> 00:10:22,490
of tagged fishes and sea turtles.

177
00:10:22,490 --> 00:10:26,200
We put transmitters -- Typically, we actually
sew them inside the fish.

178
00:10:26,200 --> 00:10:27,630
The sea turtle bobs, we work with that.

179
00:10:27,630 --> 00:10:32,530
We'll fiberglass a transmitter on the sea
turtle, and they ping about every 90 seconds,

180
00:10:32,530 --> 00:10:36,910
and as these animals move through the environment
here -- The Indian River Lagoon is what's

181
00:10:36,920 --> 00:10:42,520
surrounding the Space Center, or along the
Atlantic Coast, which is we border the Atlantic Ocean.

182
00:10:42,600 --> 00:10:46,800
As these animals move through the system,
we can actually document that those movements,

183
00:10:46,800 --> 00:10:50,650

their habitat preferences, their survival
sometimes using this system.

184
00:10:50,650 --> 00:10:51,910
So why is that important?

185
00:10:51,910 --> 00:10:56,040
'Cause I think that there's some people that
are lovers of all things fishing, and they

186
00:10:56,040 --> 00:10:59,770
can kind of appreciate what you're doing,
but for those that may not really have a background

187
00:10:59,770 --> 00:11:04,310
with fish and fishing, like, why does it matter
that we track these fish or turtles or the

188
00:11:04,310 --> 00:11:05,310
nesting patterns?

189
00:11:05,310 --> 00:11:06,680
Like, what does that benefit us?

190
00:11:06,680 --> 00:11:07,680
Sure.

191
00:11:07,680 --> 00:11:12,360
So it benefits NASA because now they have
a good sense as to what fish we have here,

192
00:11:12,360 --> 00:11:15,240
where they spend most of their time, where
they're spawning, where they're foraging,

193
00:11:15,240 --> 00:11:18,440
and, like I said, many of these are federally
managed.

194

00:11:18,440 --> 00:11:23,149
By knowing that information, you can actually
make good choices on how you develop habitat

195
00:11:23,149 --> 00:11:26,279
or, if possible, avoid critical habitats.

196
00:11:26,279 --> 00:11:29,480
You can gauge the effects of construction
activities.

197
00:11:29,480 --> 00:11:33,870
We have mitigation sites where we actually
open up if there's work going on in habitat

198
00:11:33,870 --> 00:11:35,290
that needs to be altered.

199
00:11:35,290 --> 00:11:41,990
We can actually help restore other areas,
and we can document that through this network.

200
00:11:41,990 --> 00:11:42,990
So kind of switching gears.

201
00:11:42,990 --> 00:11:43,990
Sure.

202
00:11:43,990 --> 00:11:46,590
Just thinking about cool stuff that you found,
'cause, obviously, like –

203
00:11:46,590 --> 00:11:48,220
Oh, now we're talking.

204
00:11:48,220 --> 00:11:53,860
The ocean and river and waterways are places
of, in a lot of ways, great mystery.

205

00:11:53,860 --> 00:11:54,860
Tell us.

206
00:11:54,860 --> 00:11:56,310
What have you found that's really cool out
there?

207
00:11:56,310 --> 00:11:59,550
Yeah, so that's the most exciting part of
my job is, you know, we know so much about

208
00:11:59,550 --> 00:12:00,680
terrestrial organisms.

209
00:12:00,680 --> 00:12:04,950
You know, people have known the details of
how, for example, birds make their living.

210
00:12:04,950 --> 00:12:08,019
Since the '50s, they've been able to radio-track
them...

211
00:12:08,019 --> 00:12:09,019
Sure.

212
00:12:09,019 --> 00:12:11,010
...across the continent, and fish are different.

213
00:12:11,010 --> 00:12:13,800
Especially around here, the water is just
-- It's so murky.

214
00:12:13,800 --> 00:12:18,180
These animals -- even really small fish -- will
migrate, potentially, hundreds of kilometers.

215
00:12:18,180 --> 00:12:22,010
Learning the details of how they make their
living in the ocean has been really hard,

216
00:12:22,010 --> 00:12:26,740
and we're actually sort of at a golden age
in fisheries in terms of technology.

217
00:12:26,740 --> 00:12:30,660
You can put satellite tags on big sharks that
if their fins stick out of the water, they

218
00:12:30,660 --> 00:12:34,670
can actually communicate their position and
environmental conditions to the satellite

219
00:12:34,670 --> 00:12:36,560
and then it just comes into your e-mail.

220
00:12:36,560 --> 00:12:40,700
Some of the things we learn specifically,
there's a species called the Atlantic sturgeon,

221
00:12:40,700 --> 00:12:44,190
which is on the U.S. Endangered Species List,
which is a big deal for a fish.

222
00:12:44,190 --> 00:12:48,610
Historically, we thought they were exceptionally
rare in Florida -- three records in 100 years

223
00:12:48,610 --> 00:12:53,660
anywhere off East Florida, and we detected
12 of them last year all from, basically -- They

224
00:12:53,660 --> 00:12:57,890
were tagged by other researchers doing the
same thing that we are up there, but as the

225
00:12:57,890 --> 00:13:02,160
animals move along the coast, we'll detect
them, and then we send that data back to these

226

00:13:02,160 --> 00:13:06,170
researchers, but tagged, basically, from the Carolinas all the way up to New York.

227
00:13:06,170 --> 00:13:10,029
Another cool one is -- we didn't know this until recently, but white sharks, which we

228
00:13:10,029 --> 00:13:13,579
thought were actually fairly uncommon here off of Brevard County –

229
00:13:13,579 --> 00:13:14,579
Right.

230
00:13:14,579 --> 00:13:16,450
That is absolutely not the case.

231
00:13:16,450 --> 00:13:17,450
They are –

232
00:13:17,450 --> 00:13:21,399
This is like a warning, everybody who's listening, if you live near here.

233
00:13:21,399 --> 00:13:22,399
[ Laughs ]

234
00:13:22,399 --> 00:13:23,399
White sharks get all the press.

235
00:13:23,399 --> 00:13:27,820
They're a little too glamorous for my taste, but they do capture people's attention...and

236
00:13:27,820 --> 00:13:30,440
they're getting tagged all over up in New England.

237

00:13:30,440 --> 00:13:31,440
Sure.

238
00:13:31,440 --> 00:13:33,279
But there's encounters.

239
00:13:33,279 --> 00:13:35,700
Every now and again, I have white sharks down
here, but it turns out they're actually really

240
00:13:35,700 --> 00:13:37,269
common here every winter.

241
00:13:37,269 --> 00:13:40,000
They're tickling the feet of the surfers,
and people didn't even know it.

242
00:13:40,000 --> 00:13:41,000
Huh.

243
00:13:41,000 --> 00:13:44,600
So maybe the story there is, we were doing
well because nobody has really had a problem

244
00:13:44,600 --> 00:13:47,209
until just recently when we're starting to
realize this.

245
00:13:47,209 --> 00:13:49,350
Well, you know, they've always been here,
I'm sure.

246
00:13:49,350 --> 00:13:52,970
So, for thousands and thousands of years,
they've been making this journey in the winter,

247
00:13:52,970 --> 00:13:54,620
and they don't stop here, necessarily.

248

00:13:54,620 --> 00:13:55,970
They keep going, so...

249
00:13:55,970 --> 00:13:56,970
That's awesome.

250
00:13:56,970 --> 00:14:00,660
So, these tags you talk about, I know you
mentioned that you're tagging some animals.

251
00:14:00,660 --> 00:14:02,540
Obviously, other people are tagging animals.

252
00:14:02,540 --> 00:14:04,139
Do people ever find your tagged fish?

253
00:14:06,139 --> 00:14:05,139
Yeah.

254
00:14:06,139 --> 00:14:08,230
Are they ever, like, fishing somewhere where
it's legal, and they catch one of your fish?

255
00:14:08,230 --> 00:14:09,230
Yeah.

256
00:14:09,230 --> 00:14:11,230
So most of the fish that we tag are legally
harvestable...

257
00:14:11,230 --> 00:14:12,230
Okay.

258
00:14:12,230 --> 00:14:16,529
...and so we sew these transmitters -- about
the size of my index finger – into the fish

259
00:14:16,529 --> 00:14:20,730
'cause they'll stay there for years and years,

and they don't affect the behavior of the

260
00:14:20,730 --> 00:14:24,820
animal at all, but if a fish is harvested,
and the angler decides he wants to take it

261
00:14:24,820 --> 00:14:29,660
home and clean the fish, oftentimes this transmitter
will fall out, and we've learned, hey, put

262
00:14:29,660 --> 00:14:34,670
your name and phone number on these things
because they're worth about 300 bucks, and

263
00:14:34,670 --> 00:14:38,370
it's another -- if we get it back, we can
go tag another fish and increase our data

264
00:14:38,370 --> 00:14:39,370
set for sure.

265
00:14:39,370 --> 00:14:42,930
And, to be honest, I love those interactions
with fishermen 'cause we consider ourselves

266
00:14:42,930 --> 00:14:48,279
experts because we do this for a living, but
I spend half my time in front of a computer,

267
00:14:48,279 --> 00:14:52,389
and talking to these folks, especially the
commercial folks and the recreational guides

268
00:14:52,389 --> 00:14:55,790
that are around the Space Center, the guides
come from all over to fish around the Space

269
00:14:55,790 --> 00:14:58,589
Center 'cause the habitat is better than anywhere
else here in Indian River.

270
00:14:58,589 --> 00:14:59,589
Cool.

271
00:14:59,600 --> 00:15:04,400
I learn more in 10 minutes talking to those
guys than I do reading journal articles all day.

272
00:15:04,440 --> 00:15:05,320
[ Laughs ]

273
00:15:05,320 --> 00:15:06,200
That's awesome.

274
00:15:06,200 --> 00:15:07,200
Very cool.

275
00:15:07,440 --> 00:15:10,400
And, obviously, we have to ask the question,
have you had one that got away?

276
00:15:10,420 --> 00:15:12,040
Like, is there the one that got away?

277
00:15:12,040 --> 00:15:13,830
"One that got away?"

278
00:15:13,830 --> 00:15:14,850
Uh, no.

279
00:15:14,850 --> 00:15:17,399
In fact, just the opposite.

280
00:15:17,399 --> 00:15:23,840
The one fish that I always wanted to catch,
and I thought I would never have the chance

281
00:15:23,840 --> 00:15:27,339

to do it -- it's called a smalltooth sawfish,
which is -- I don't know if you've ever seen

282
00:15:27,339 --> 00:15:28,660
them.

283
00:15:28,660 --> 00:15:32,940
They're actually more closer related to stingrays,
but they have this big saw or rostrum that

284
00:15:32,940 --> 00:15:34,220
comes off their snout.

285
00:15:34,220 --> 00:15:35,220
Okay.

286
00:15:35,220 --> 00:15:39,410
They get about 18 foot long, and, historically,
they were a dime a dozen here in the Indian

287
00:15:39,410 --> 00:15:44,820
River Lagoon -- a huge problem for commercial
fisherman way back in the 1800s, and they

288
00:15:44,820 --> 00:15:46,610
didn't have the ethic that we do now.

289
00:15:46,610 --> 00:15:49,769
These sawfish would get into the fishermen's
net, and they would actually -- the fishermen

290
00:15:49,769 --> 00:15:55,050
would chop the rostrum off, and then the sawfish
couldn't survive, and so the sawfish crashed

291
00:15:55,050 --> 00:15:56,329
back in the '50s.

292
00:15:56,329 --> 00:16:00,550

We never thought we'd see one around here,
but back, I think, about 2004, we were fishing

293
00:16:00,550 --> 00:16:05,070
right off the beach, tagging sharks, I think,
and it was the very first set of the very

294
00:16:05,070 --> 00:16:07,410
first day of the study...

295
00:16:07,410 --> 00:16:08,410
[ Chuckles ]

296
00:16:08,410 --> 00:16:11,300
...and this sawfish came up on the line, and
-- 'cause it was always my dream catch, and

297
00:16:11,300 --> 00:16:14,029
I'd always announce, "Today's sawfish day,"
and it was a joke.

298
00:16:14,029 --> 00:16:15,029
[ Laughs ]

299
00:16:15,029 --> 00:16:18,970
And then that first line comes up, and here
comes this huge sawfish, and it was spectacular.

300
00:16:18,970 --> 00:16:20,380
It was mad.

301
00:16:20,380 --> 00:16:21,380
Oh, man.

302
00:16:21,380 --> 00:16:22,650
How big was that one?

303
00:16:22,650 --> 00:16:23,650
So it was a juvenile.

304
00:16:23,650 --> 00:16:25,199
It was about 10 foot long is all, but –

305
00:16:25,200 --> 00:16:26,480
That's a juvenile -- 10 feet long?

306
00:16:26,480 --> 00:16:27,640
Yes, yes. Exactly. So.

307
00:16:27,640 --> 00:16:28,220
Goodness.

308
00:16:28,240 --> 00:16:30,600
What's the biggest thing you've ever seen
out here?

309
00:16:30,600 --> 00:16:34,800
We have what's called a Longline Survey -- just
ended, but we were surveying right off the

310
00:16:34,810 --> 00:16:39,600
Cape so we know what's around and what's not
around is just as important.

311
00:16:39,600 --> 00:16:45,300
We lay what are called longlines, which is
-- Basically, it's a 2,000-foot string of

312
00:16:45,300 --> 00:16:49,550
really thick fishing line that's anchored
on both ends on the bottom, and every 50 foot,

313
00:16:49,550 --> 00:16:52,350
you'll clip a hook on it with some bait, and
you let it sit for about half an hour, and

314
00:16:52,350 --> 00:16:56,709
then you reel it up on a winch, and we get

a lot of little stuff -- I mean, they're big.

315
00:16:56,709 --> 00:16:57,709
For sure.

316
00:16:57,709 --> 00:17:01,329
You know, 4- to 6-foot long sharks are really
common.

317
00:17:01,329 --> 00:17:05,240
Red drum, if you know, they get about 3 or
4 feet long, and so sometimes we'll set two

318
00:17:05,240 --> 00:17:06,909
if the site's really close together.

319
00:17:06,909 --> 00:17:09,490
So we set one, ran to set the other one.

320
00:17:09,490 --> 00:17:13,909
We could still see where we set the first
one, we thought, but when we got back to pull

321
00:17:13,909 --> 00:17:16,999
it, our longline -- and you could tell by
-- there's floats that mark each end.

322
00:17:16,999 --> 00:17:17,999
Right.

323
00:17:17,999 --> 00:17:22,459
It's nowhere to be seen, and that's really
strange and, really, it gets you nervous when

324
00:17:22,459 --> 00:17:23,699
you lose a big piece of gear like that.

325
00:17:23,699 --> 00:17:24,980
So we're looking around, and –

326
00:17:24,980 --> 00:17:27,279
We're gonna need a bigger boat?

327
00:17:27,279 --> 00:17:31,090
Yeah, low-and-behold, there's our longline
floats just hauling offshore.

328
00:17:31,090 --> 00:17:34,720
It takes a really, really big animal to do
that.

329
00:17:34,720 --> 00:17:37,779
[Suspenseful music plays ]

330
00:17:37,779 --> 00:17:41,529
And so we caught up to it, and when we caught
up to it, I realized whatever had snagged

331
00:17:41,529 --> 00:17:46,679
it had snagged it in the middle, and the line
had bent around whatever fish was towing it,

332
00:17:46,679 --> 00:17:50,730
and all those other fish that were on this
longline had now -- 'cause it was a really

333
00:17:50,730 --> 00:17:51,730
good set.

334
00:17:51,730 --> 00:17:55,460
Otherwise, we caught a bunch of other sharks,
and they're all tangled up in this whole mess

335
00:17:55,460 --> 00:17:56,460
of longline.

336
00:17:56,460 --> 00:17:57,559
Dragging behind this thing.

337
00:17:57,559 --> 00:17:58,559
Yes.

338
00:17:58,559 --> 00:17:59,880
And so we catch up to it.

339
00:17:59,880 --> 00:18:02,330
We sort of, basically, cleat this line off
to the boat.

340
00:18:02,330 --> 00:18:03,999
It starts to drag the boat, as well.

341
00:18:03,999 --> 00:18:04,999
[ Laughs ]

342
00:18:04,999 --> 00:18:07,330
And we're working on these sharks, and we
want to get the sharks off and measure them

343
00:18:07,330 --> 00:18:11,729
and let them go, and it starts to occur to
me that what else can this be...

344
00:18:11,729 --> 00:18:12,729
Yeah.

345
00:18:12,729 --> 00:18:14,649
...but a great white shark.

346
00:18:14,649 --> 00:18:15,649
Right.

347
00:18:15,649 --> 00:18:18,460
[ Suspenseful music continues ]

348
00:18:18,520 --> 00:18:21,220

'Cause, I mean, it was literally towing our
boat.

349
00:18:21,220 --> 00:18:25,400
So I started getting excited, and so, like
I mentioned before, white sharks get a little

350
00:18:25,409 --> 00:18:26,409
too much hype, you know.

351
00:18:26,409 --> 00:18:27,409
Right.

352
00:18:27,409 --> 00:18:29,260
And so I sort of -- It's like, "Eh," you know.

353
00:18:29,260 --> 00:18:33,279
I played the tough guy like, "I don't want
to see a white shark.

354
00:18:33,279 --> 00:18:34,989
You know, they get too much love."

355
00:18:34,989 --> 00:18:39,540
But once I realized we might actually have
one, I started getting sort of excited about it.

356
00:18:39,540 --> 00:18:42,380
You know, they're saying, "Eric, settle down,
settle down," but I was very -- I was confident

357
00:18:42,389 --> 00:18:43,479
this thing was a white shark.

358
00:18:43,479 --> 00:18:48,399
And, we finally, after like two hours, we
caught up to it, and we got right there.

359
00:18:48,399 --> 00:18:50,529

This is the grand finale.

360
00:18:50,529 --> 00:18:52,489
And I've never seen a white shark in person.

361
00:18:52,489 --> 00:18:53,489
Sure.

362
00:18:53,489 --> 00:18:54,489
And it turned out it was a...

363
00:18:54,489 --> 00:18:56,200
[ Suspenseful music continues ]

364
00:18:56,200 --> 00:18:56,980
It wasn't a white shark.

365
00:18:56,989 --> 00:18:58,469
It was a giant manta ray...

366
00:18:58,469 --> 00:18:59,649
[ Water splashes ]

367
00:18:59,649 --> 00:19:00,669
...which is –

368
00:19:00,669 --> 00:19:02,419
How giant are we talking?

369
00:19:02,419 --> 00:19:06,269
Oh, they get huge, but they're supposed to
be here, and it just didn't occur to me that

370
00:19:06,269 --> 00:19:08,570
we could have caught a manta ray, and manta
rays, they feed on plankton.

371
00:19:08,570 --> 00:19:13,559

So what happened, it had just sort of swam into the net, and it got hooked on its fin

372
00:19:13,559 --> 00:19:15,850
for a while, and this thing was probably about 15 foot wide.

373
00:19:15,850 --> 00:19:17,159
It was a huge animal.

374
00:19:17,159 --> 00:19:18,159
Oh.

375
00:19:18,159 --> 00:19:19,159
Crazy.

376
00:19:19,159 --> 00:19:21,200
So I would actually circle back to your original question, "What's the biggest animal you've

377
00:19:21,200 --> 00:19:22,200
seen?"

378
00:19:22,200 --> 00:19:23,200
That's probably it.

379
00:19:23,200 --> 00:19:24,200
Yeah.

380
00:19:24,200 --> 00:19:27,139
But I was, I guess, sort of highly disappointed that it wasn't a white shark.

381
00:19:27,139 --> 00:19:28,139
[ Laughs ]

382
00:19:28,139 --> 00:19:31,260
And my coworkers bring it up not daily, but quite often.

383
00:19:31,260 --> 00:19:32,260
[ Laughs ]

384
00:19:32,260 --> 00:19:35,440
They don't let me forget how excited I got
about the white shark that I had been ho-humming

385
00:19:35,440 --> 00:19:37,359
for years and years, so...

386
00:19:37,359 --> 00:19:38,359
[ Laughs ]

387
00:19:38,359 --> 00:19:39,359
Awesome.

388
00:19:39,359 --> 00:19:41,450
Well, Dr. Reyier, I appreciate you coming
in.

389
00:19:41,450 --> 00:19:42,120
Okay.

390
00:19:42,120 --> 00:19:43,440
Thanks for being here.

391
00:19:43,450 --> 00:19:44,609
I wish you the best of luck.

392
00:19:44,609 --> 00:19:46,010
Thanks for taking care of our environment.

393
00:19:46,010 --> 00:19:47,010
Yeah, this was fun.

394
00:19:47,010 --> 00:19:49,950
Thanks for looking out for us, and happy fishing,

happy research -- all of the above.

395
00:19:49,950 --> 00:19:50,700
Okay.

396
00:19:50,700 --> 00:19:53,500
Thank you very much.

397
00:19:53,860 --> 00:19:58,400
As Kennedy's Exploration Ground Systems ramps up for the first launch of the new Space Launch

398
00:19:58,409 --> 00:20:04,270
System rocket, crawler driver Sam Dove with contractor Jacobs puts the behemoth transporter

399
00:20:04,270 --> 00:20:06,700
that will take it to the launchpad into gear.

400
00:20:08,220 --> 00:20:09,679
All right, I am back in the booth.

401
00:20:09,679 --> 00:20:12,080
Today I've got Sam Dove.

402
00:20:12,080 --> 00:20:15,700
Sam is a driver of our crawler-transporter.

403
00:20:15,700 --> 00:20:17,159
So, hey, Sam.

404
00:20:17,159 --> 00:20:18,159
Thanks for being here today.

405
00:20:18,159 --> 00:20:19,159
You're welcome.

406
00:20:19,159 --> 00:20:21,639

To make sure people understand, this is a pretty massive machine.

407
00:20:21,639 --> 00:20:26,739
When we talk about you're a driver of a crawler, that may not sound that large, but we're talking

408
00:20:26,739 --> 00:20:32,960
about you can put a professional baseball diamond on top of the crawler.

409
00:20:32,960 --> 00:20:33,960
Is that about right?

410
00:20:33,960 --> 00:20:35,970
Yeah, you could fit a baseball diamond on top.

411
00:20:35,970 --> 00:20:40,129
That's one of the things that gives everybody an idea, you know, just how big it is.

412
00:20:40,129 --> 00:20:41,299
What is the crawler used for?

413
00:20:41,299 --> 00:20:43,080
Why do we need such a large-tracked vehicle?

414
00:20:43,080 --> 00:20:46,350
Well, the crawler's used to pick up the mobile launcher.

415
00:20:46,350 --> 00:20:51,940
Which currently is a massive platform with a massive tower attached to it, which, I think

416
00:20:51,940 --> 00:20:54,849
I'm hearing, weighs on the order of, like, 10 to 12 million pounds when it's done -- something

417
00:20:54,849 --> 00:20:55,849
like that?

418
00:20:55,849 --> 00:20:56,849
Yeah.

419
00:20:56,849 --> 00:20:59,909
The rocket is stacked in its entirety on top
of the mobile launcher.

420
00:20:59,909 --> 00:21:01,229
We pick that whole assembly up.

421
00:21:01,229 --> 00:21:04,269
The lifting capacity is about 18 million pounds.

422
00:21:04,269 --> 00:21:07,599
We carry it out, take it to the launchpad,
set it down on the launchpad.

423
00:21:07,599 --> 00:21:09,859
Anything big has to be moved, we move it.

424
00:21:09,859 --> 00:21:13,249
How do you get to the job of driving a crawler-transporter?

425
00:21:13,249 --> 00:21:18,169
I worked here for 30 years at Kennedy Space
Center -- first 10 years in Design Engineering,

426
00:21:18,169 --> 00:21:21,760
and then the last almost 21 on the crawler
as an Operations Engineer.

427
00:21:21,760 --> 00:21:24,649
And you mentioned that was because you guys
-- you're not just a driver.

428

00:21:24,649 --> 00:21:25,649
Right.

429
00:21:25,649 --> 00:21:28,570
You do a lot of different things, and so the engineering comes in with maybe not so much

430
00:21:28,570 --> 00:21:30,149
the driving aspect, but some of the other elements.

431
00:21:30,149 --> 00:21:31,519
What else do you guys do?

432
00:21:31,519 --> 00:21:34,080
Well, I'm also a Certified Test Conductor.

433
00:21:34,080 --> 00:21:38,019
The Test Conductor's in charge of the operation on the crawler, in charge of all 30 people

434
00:21:38,019 --> 00:21:40,130
and everybody you have to have in all the operations.

435
00:21:40,130 --> 00:21:43,580
I'm in charge of keeping things going, keeping the flow going right, making sure the checklists

436
00:21:43,580 --> 00:21:44,580
are followed.

437
00:21:44,580 --> 00:21:48,220
Also, a Certified Jacking, Equalization, and Leveling Operator.

438
00:21:48,220 --> 00:21:53,859
Engineers usually do those three jobs, and part of that, you have to know all the crawler

439
00:21:53,859 --> 00:21:57,710
systems, how to repair them, what's got to
happen, what's wrong, how to troubleshoot

440
00:21:57,710 --> 00:22:00,470
if you have to do any mods on the crawler.

441
00:22:00,470 --> 00:22:04,990
We know dealing with any machinery, nothing
works 100% of the time, so, can you give me

442
00:22:04,990 --> 00:22:09,039
kind of a feel of what are, maybe, some common
issues or what's maybe, like, the weirdest

443
00:22:09,039 --> 00:22:11,620
thing that's ever happened to the crawler
-- things that jump out at you?

444
00:22:11,620 --> 00:22:15,789
Most of the time, it's well-behaved, and we
take a lot of pride in doing our maintenance

445
00:22:15,789 --> 00:22:18,039
and everything, but, occasionally, you know,
it is a machine.

446
00:22:18,039 --> 00:22:22,849
It might have a roller or bearing go out,
or maybe you have something go wrong with

447
00:22:22,849 --> 00:22:26,859
the generator or maybe a transducer.

448
00:22:26,859 --> 00:22:27,859
It's never the same, right?

449
00:22:27,859 --> 00:22:32,590
I mean, the same thing never hardly ever breaks

two times in a row.

450
00:22:32,590 --> 00:22:37,590
We've broken a shoe before, and that single
shoe has to be able to carry the whole weight

451
00:22:37,590 --> 00:22:39,799
that's pushed down on it through the rollers.

452
00:22:39,799 --> 00:22:43,460
I think everybody's pretty familiar with a
bulldozer or something like that.

453
00:22:43,460 --> 00:22:44,460
Sure.

454
00:22:44,460 --> 00:22:48,950
You can think of that and just take each one
of those pieces of that track and just make

455
00:22:48,950 --> 00:22:51,320
it about 20 times bigger, right?

456
00:22:51,320 --> 00:22:52,320
[ Laughs ]

457
00:22:52,320 --> 00:22:59,000
And each shoe does weigh 2,000 pounds, so
you definitely have to come to a stop for that.

458
00:22:59,000 --> 00:23:00,279
And it can be a lot of things.

459
00:23:00,279 --> 00:23:04,139
You just have to go troubleshoot the system,
go figure out what's wrong, and fix it.

460
00:23:04,139 --> 00:23:06,299
Now, we have a lot of redundancy on the crawler,

as well.

461
00:23:06,300 --> 00:23:11,160
So, a lot of times, you can just shut that
down and go to the redundant system and continue on.

462
00:23:11,160 --> 00:23:14,840
If you don't have redundancy, then what we
have is a big support team behind us, right?

463
00:23:14,840 --> 00:23:19,190
When we're rolling, we usually have everybody
that we need to call back and say, "Hey, we

464
00:23:19,190 --> 00:23:22,730
need this part -- out of stock," and those
folks, they're great.

465
00:23:22,730 --> 00:23:25,190
I mean, they take care of us so good.

466
00:23:25,190 --> 00:23:27,340
When it gets there, our techs go change that
stuff out.

467
00:23:27,340 --> 00:23:29,229
We test it, then back on the road again.

468
00:23:29,229 --> 00:23:32,090
Thinking about something like that, how long
are we talking?

469
00:23:32,090 --> 00:23:33,150
Like, what kind of delay is this?

470
00:23:33,150 --> 00:23:35,580
Is this, like, 30 minutes, a couple hours?

471
00:23:35,580 --> 00:23:37,359

How do we compare to Triple-A?

472
00:23:37,359 --> 00:23:38,369
[ Laughs ]

473
00:23:38,369 --> 00:23:39,379
Oh.

474
00:23:39,380 --> 00:23:42,220
Well, if they had to come tow, Triple-A would
make a fortune, right?

475
00:23:42,220 --> 00:23:42,740
[ Laughs ]

476
00:23:42,740 --> 00:23:43,540
Listen. Listen.

477
00:23:43,540 --> 00:23:45,680
Is there a vehicle big enough to tow a crawler?

478
00:23:45,680 --> 00:23:46,760
'Cause I'd love to see that vehicle.

479
00:23:46,760 --> 00:23:48,340
The other crawler.

480
00:23:48,349 --> 00:23:49,349
[Both laugh ]

481
00:23:49,349 --> 00:23:55,229
So we call it "the crawler," and I think it's
with good reason we call it "the crawler."

482
00:23:55,229 --> 00:23:58,190
When you open this thing up, and you go full
speed ahead, what are we talking about on

483

00:23:58,190 --> 00:23:59,479
top speed here?

484
00:23:59,479 --> 00:24:05,029
Well, it has the power, the electrical power
to do 2 miles an hour, but you never would

485
00:24:05,029 --> 00:24:06,049
do that, right?

486
00:24:06,049 --> 00:24:07,049
[ Laughs ]

487
00:24:07,049 --> 00:24:08,320
So top speed is 2 miles an hour?

488
00:24:08,320 --> 00:24:13,060
Yeah, well, that's what all the specifications
say, but we've never -- I mean, I've never

489
00:24:13,060 --> 00:24:16,200
added up past more than a quarter, you know?

490
00:24:16,200 --> 00:24:16,720
Okay.

491
00:24:16,720 --> 00:24:17,420
[ Chuckles ]

492
00:24:17,420 --> 00:24:19,080
You just wouldn't want to do that.

493
00:24:19,080 --> 00:24:21,300
It's too hard on the equipment, too hard on
what you're carrying.

494
00:24:21,300 --> 00:24:22,299
Sure.

495
00:24:22,299 --> 00:24:26,830
And you can accomplish the same thing in a
slightly slower speed, you know, and get there

496
00:24:26,830 --> 00:24:29,169
with less chance of damaging anything.

497
00:24:29,169 --> 00:24:30,929
It just takes you an hour or so longer.

498
00:24:30,929 --> 00:24:32,940
And what's the total time on that trip?

499
00:24:32,940 --> 00:24:34,519
Obviously you're not moving very fast.

500
00:24:34,519 --> 00:24:36,379
How far is it and how long does it take you?

501
00:24:36,379 --> 00:24:37,590
Well, it depends.

502
00:24:37,590 --> 00:24:39,860
It's a four-and-a-half-mile trip.

503
00:24:39,860 --> 00:24:45,600
Usually seven to eight hours, but the trip
in between, it's everything you have to do

504
00:24:45,600 --> 00:24:49,259
to get ready -- you know, to get under the
load, pick it up, make sure everything's disconnected,

505
00:24:49,259 --> 00:24:52,820
pick it up, carry it out, and then do the
reverse when you get there.

506
00:24:52,820 --> 00:24:54,200

You know, get it set down, make sure everything's –

507
00:24:54,200 --> 00:24:55,080
Sure.

508
00:24:55,080 --> 00:24:59,300
And the crawler provides a lot of other services
to the mobile launcher -- you know, a lot

509
00:24:59,309 --> 00:25:01,080
of power and things like that.

510
00:25:01,080 --> 00:25:03,879
So there's a lot of connections and disconnections
have to be done.

511
00:25:03,879 --> 00:25:09,700
The whole rollout -- you know, it really depends
on how things go, but it can run anywhere

512
00:25:09,700 --> 00:25:11,610
from 16 to 20 hours.

513
00:25:11,610 --> 00:25:15,960
And so thinking about kind of a day -- this
day of your work.

514
00:25:15,960 --> 00:25:18,239
Obviously, we don't move the things on the
crawler every day.

515
00:25:18,239 --> 00:25:19,239
Right.

516
00:25:19,239 --> 00:25:22,130
So when it is a crawler moving day, what's
that day look like for you?

517
00:25:22,130 --> 00:25:23,330

Like, how does the shift work?

518
00:25:23,330 --> 00:25:25,460
Do you sit in the driver chair the whole time?

519
00:25:25,460 --> 00:25:27,649
Walk me through a day.

520
00:25:27,649 --> 00:25:33,070
Well, typically, if we're moving, we have
assignments that we sit down, and myself and

521
00:25:33,070 --> 00:25:34,639
another engineer make the assignments.

522
00:25:34,639 --> 00:25:40,009
Usually you spend -- You could spend anywhere
from one to two hours driving, and then we

523
00:25:40,009 --> 00:25:44,789
switch and rotate around, and then you come
and spend one to two hours operating the leveling

524
00:25:44,789 --> 00:25:50,840
system, and if you're certified, then you
come to spend one to two hours as a test conductor,

525
00:25:50,840 --> 00:25:56,820
and then other times when you're not scheduled
for anything, you're constantly on the move

526
00:25:56,820 --> 00:26:01,490
or checking systems to make sure everything's
good, make sure we have no problems, and constantly

527
00:26:01,490 --> 00:26:05,080
checking with our guys, making sure they're
okay, and, you know, just generally making

528

00:26:05,080 --> 00:26:08,200
sure that the mission's going smooth and the crawler's all right.

529
00:26:08,200 --> 00:26:09,350
And what's it like inside?

530
00:26:09,350 --> 00:26:13,149
So thinking about you're obviously not driving the whole day.

531
00:26:13,149 --> 00:26:14,419
You're taking on different tasks.

532
00:26:14,419 --> 00:26:15,559
What's it like to be inside.

533
00:26:15,559 --> 00:26:17,510
What kind of environment is it?

534
00:26:17,510 --> 00:26:20,700
Okay, the crawler's divided up into sections, believe it or not.

535
00:26:20,700 --> 00:26:21,940
You have the cabs where you…

536
00:26:21,940 --> 00:26:23,249
It's big enough to, right?

537
00:26:23,249 --> 00:26:24,249
Yeah, it is.

538
00:26:24,249 --> 00:26:25,249
[ Chuckles ]

539
00:26:25,249 --> 00:26:27,220
But you have the cabs where you actually drive from.

540
00:26:27,220 --> 00:26:33,119
There's a console in there with buttons, switches,
dials, meters, and computer screen, of course,

541
00:26:33,119 --> 00:26:34,719
and a lowrider-type steering wheel.

542
00:26:34,719 --> 00:26:40,229
It's a very small steering wheel, and -- but
it's all fly-by-wire, right?

543
00:26:40,229 --> 00:26:45,019
So you spend some time driving in there, and
then inside the control room, which is in

544
00:26:45,019 --> 00:26:51,389
the middle of the crawler, and on the side,
too, you have all the operations, the consoles,

545
00:26:51,389 --> 00:26:53,659
everything for the jack equalization leveling.

546
00:26:53,659 --> 00:26:58,049
You can see the test conductor is in there,
and from there, the test conductor can see

547
00:26:58,049 --> 00:27:03,400
everything that happens on the crawler -- pressures,
temperatures, RPM, what's running, what's not.

548
00:27:03,400 --> 00:27:06,739
You know, you got a camera system where you
can see where everybody's at, how things are

549
00:27:06,739 --> 00:27:08,720
doing in the engine rooms and the pump rooms.

550
00:27:08,720 --> 00:27:14,309

You can see how high we are, how low, how
fast we're going, laser-docking things -- everything

551
00:27:14,309 --> 00:27:18,870
like that -- what kind of power we're generating,
how our generators are doing, and how the

552
00:27:18,870 --> 00:27:22,950
computers are working out – virtually everything
you can see on the crawler's in the control

553
00:27:22,950 --> 00:27:24,039
room.

554
00:27:24,039 --> 00:27:27,200
And then, on each end of the crawler, you
have an engine room -- on engine room 3, and

555
00:27:27,200 --> 00:27:30,109
one on engine room 1.

556
00:27:30,109 --> 00:27:35,649
We have an Alco engine in there connected
to two dc generators, and then we have a Cummins

557
00:27:35,649 --> 00:27:40,490
engine connected to an A.C. generator that
provides all our A.C. power, and then in the

558
00:27:40,490 --> 00:27:43,940
middle, the very middle, we have our pump
room, which has our jacking, equalization,

559
00:27:43,940 --> 00:27:48,389
and leveling system motors and pumps and the
steering system motors and pumps, and all

560
00:27:48,389 --> 00:27:52,149
of the superchargers and things like that
you have to have to run the pressure up, and

561
00:27:52,149 --> 00:27:59,139
you have about a 2,200- or 2,300-gallon hydraulic
tank in the middle that holds all the hydraulic

562
00:27:59,139 --> 00:28:03,539
fuel, and then on the opposite end, you have
the same configuration of the engines again

563
00:28:03,539 --> 00:28:05,399
except they're just kind of mirrored over.

564
00:28:05,399 --> 00:28:08,999
You have an Alco engine on that end and another
Cummins engine.

565
00:28:08,999 --> 00:28:11,889
Do you know what the fuel efficiency of the
crawler is?

566
00:28:11,889 --> 00:28:12,889
Any idea?

567
00:28:12,889 --> 00:28:15,460
Sometimes, you know, the Cummins engines,
when they're carrying a lot of electrical

568
00:28:15,460 --> 00:28:22,300
load, you'll use 35 gallons an hour just on
those, and you might see somewhere around

569
00:28:22,300 --> 00:28:30,520
90 gallons or, say, 75 to 90 on the Alco engines
depending on the load and how hard you're running.

570
00:28:30,520 --> 00:28:33,159
How long have we been using these crawlers
for now?

571

00:28:33,159 --> 00:28:38,659
Since day one of the -- Well, it started with
the Apollo Program, and that was one of the

572
00:28:38,659 --> 00:28:43,590
main concerns of the Apollo Program – could
the crawler actually carry a Saturn V rocket

573
00:28:43,590 --> 00:28:50,759
and the tower, right -- which you think back
to 1963, '64, '65, even '66, it was still

574
00:28:50,759 --> 00:28:56,049
unknown, and it was a question whether it
could happen, but the guys who designed it,

575
00:28:56,049 --> 00:29:00,470
they knew what they were doing -- did a real
good job with it, made a few modifications

576
00:29:00,470 --> 00:29:05,109
here and there, and it's been able to carry
every rocket we've had since Saturn V through

577
00:29:05,109 --> 00:29:07,669
the Shuttle and now up to Space Launch System.

578
00:29:07,669 --> 00:29:09,890
So, we're traveling to the launchpad.

579
00:29:09,890 --> 00:29:10,890
What are we driving on?

580
00:29:10,890 --> 00:29:11,890
Is this just concrete?

581
00:29:11,890 --> 00:29:13,899
Is this a normal road?

582

00:29:13,899 --> 00:29:16,399
What is the structure like that you travel
on?

583
00:29:16,399 --> 00:29:20,639
The crawler weighs -- It's the size of an
interstate, a modern-day interstate, right?

584
00:29:20,639 --> 00:29:24,799
Like a full interstate, right -- not just
like a full interstate lane, it's a full-width

585
00:29:24,799 --> 00:29:25,799
interstate.

586
00:29:25,799 --> 00:29:28,599
Right -- full-width interstate, two lanes
on each side and a median in the middle.

587
00:29:28,599 --> 00:29:34,480
Originally, they planned to put down asphalt
the entire way, but, as it turns out, you

588
00:29:34,480 --> 00:29:41,889
know, 12 to 16 million pounds -- in this case,
18 million -- crushes asphalt up pretty good,

589
00:29:41,889 --> 00:29:45,969
and when you try to turn, it kind of heaves
it up a lot.

590
00:29:45,969 --> 00:29:52,259
So what they found out was that the best thing
for the crawler to have is a limestone base

591
00:29:52,259 --> 00:29:58,159
with about 8 to 12 inches of gravel on top
of that, and so the crawler rides down the

592
00:29:58,159 --> 00:30:03,029

crawler way on this cushion of gravel and
also helps with the coefficient of friction

593
00:30:03,029 --> 00:30:08,009
in turn, and it smoothes the ride out a little
bit, but it makes it easier on what you're

594
00:30:08,009 --> 00:30:09,039
carrying, as well.

595
00:30:09,039 --> 00:30:11,850
Just to kind of paint a picture for people,
if you drive past the crawler way, if you

596
00:30:11,850 --> 00:30:17,899
drive alongside it, at high speeds, it looks
like tiny pebbles, basically, filling the

597
00:30:17,899 --> 00:30:18,899
crawler way.

598
00:30:18,899 --> 00:30:20,789
So, why are we using what we're using there?

599
00:30:20,789 --> 00:30:25,840
Okay, think of the gravel on a crawler way
as like the creek gravel you put in your flower

600
00:30:25,840 --> 00:30:26,980
beds at home, right?

601
00:30:26,980 --> 00:30:27,640
Okay.

602
00:30:27,640 --> 00:30:28,540
Only bigger.

603
00:30:28,540 --> 00:30:29,420
[ Laughs ]

604
00:30:29,420 --> 00:30:30,420
Way bigger.

605
00:30:30,440 --> 00:30:34,619
They're not the small pebbles you have, but
it's the same texture, same color.

606
00:30:34,619 --> 00:30:36,700
They have the same roundness to them.

607
00:30:36,700 --> 00:30:38,940
It's just larger gravel, right?

608
00:30:38,940 --> 00:30:43,210
And they use that to fill the crawler way,
the crawler rides on it.

609
00:30:43,210 --> 00:30:47,109
The crawler doesn't have a suspension, so
that helps out with the smoothness of the

610
00:30:47,109 --> 00:30:51,659
ride, also with the turning and everything,
and it helps -- it's easier to groom that

611
00:30:51,659 --> 00:30:55,870
type of gravel, too, to keep the crawler way
conditioned and fit, and it makes it a lot

612
00:30:55,870 --> 00:30:59,269
easier for the crawler leveling system to
keep everything level and equal.

613
00:30:59,269 --> 00:31:02,709
So thinking about leveling, when you get out
to the launchpad, you're actually driving

614
00:31:02,709 --> 00:31:05,169

up a mound, and people have seen images of that.

615
00:31:05,169 --> 00:31:07,450
You know that it's definitely an elevated structure there.

616
00:31:07,450 --> 00:31:08,450
Right.

617
00:31:08,450 --> 00:31:10,350
So, are we tipping our rocket over as we ride up the hill?

618
00:31:10,350 --> 00:31:11,350
No, not at all.

619
00:31:11,350 --> 00:31:16,190
The crawler keeps everything within a couple of inches, right -- keeps it level and equal

620
00:31:16,190 --> 00:31:18,509
from end to end, side to side, and across.

621
00:31:18,509 --> 00:31:23,399
If you think of the crawler having an "X" across it, it keeps it level and equal across

622
00:31:23,399 --> 00:31:30,320
there, and as you go up the pad surface on the slope, the front end comes down as low

623
00:31:30,320 --> 00:31:34,659
as it can go, and the back end will rise up as high as it can go to its limits, and that

624
00:31:34,659 --> 00:31:38,750
way it keeps it very level as you go up and gives it a smooth ride, and as we reach the

625
00:31:38,750 --> 00:31:43,969
top of the pad, everything jacks back down
and gets it level and equal again, and then

626
00:31:43,969 --> 00:31:46,169
we go over the mounts and we set it all down.

627
00:31:46,169 --> 00:31:47,169
Cool.

628
00:31:47,169 --> 00:31:51,739
Clearly, this is a hulking machine, but how
finite is the control?

629
00:31:51,739 --> 00:31:55,789
Because once we get up to the launchpad, I
think you got to park it in a pretty specific

630
00:31:55,789 --> 00:31:56,789
spot, right?

631
00:31:56,789 --> 00:31:57,789
We do.

632
00:31:57,789 --> 00:31:59,789
Yeah, "hulking" makes it sound –

633
00:31:59,789 --> 00:32:00,789
[ Laughs ]

634
00:32:00,789 --> 00:32:07,839
It's pretty much of a -- The crawler -- I
can make the crawler go so slow, you can barely

635
00:32:07,839 --> 00:32:09,009
tell it's moving.

636
00:32:09,009 --> 00:32:10,009

Hmm.

637
00:32:10,009 --> 00:32:14,529
Or we can go up to the fastest speed it will
let us go -- you know, .8.

638
00:32:14,529 --> 00:32:21,099
.9, one mile an hour, but it does it, and
it will speed up and slow down in a very nice

639
00:32:21,099 --> 00:32:24,679
manner, and you have to remember, this is
not all computer-controlled.

640
00:32:24,679 --> 00:32:26,139
The driver controls it.

641
00:32:26,139 --> 00:32:27,139
Sure.

642
00:32:27,139 --> 00:32:31,679
And once our drivers get proficient, you can
speed up and slow down in such a nice manner

643
00:32:31,679 --> 00:32:35,440
that the instrumentation -- some of the instrumentation
guys are watching like, "Wow.

644
00:32:35,440 --> 00:32:37,719
That almost looks like a computer did it."

645
00:32:37,719 --> 00:32:38,719
[ Laughs ]

646
00:32:38,719 --> 00:32:42,779
You can steer and you can get this thing,
you can set that mobile launcher down.

647
00:32:42,779 --> 00:32:47,359

Right now -- In the Shuttle Program, we were held to a 2-inch circle, right, to set the

648
00:32:47,359 --> 00:32:52,269
mobile launch down, and a mobile launcher has six guide pins that stick down.

649
00:32:52,269 --> 00:32:53,269
Okay.

650
00:32:53,269 --> 00:32:57,529
These guide pins, they're a good foot across, probably 18-inches long, and you have to put

651
00:32:57,529 --> 00:33:02,169
those down on top of the mounts to fit them in the holes, and we can set that down -- In

652
00:33:02,169 --> 00:33:06,549
the Shuttle Program, again, they allowed us 2 inches -- a circle of one inch each way.

653
00:33:06,549 --> 00:33:09,979
Well, with S.O.S., it's one inch, right?

654
00:33:09,979 --> 00:33:11,139
So it makes it a little harder.

655
00:33:11,139 --> 00:33:12,139
[ Laughs ]

656
00:33:12,139 --> 00:33:13,139
But we can set that down in there.

657
00:33:13,139 --> 00:33:16,149
With the crawler, you can get it right up in there, and you can set that thing down

658
00:33:16,149 --> 00:33:21,799

left or right or back and forward depending
on what -- you go north or south.

659
00:33:21,799 --> 00:33:26,320
But you can set that down within that one-inch
circle, and you can repeat that virtually

660
00:33:26,320 --> 00:33:27,320
every time.

661
00:33:27,320 --> 00:33:28,320
Awesome.

662
00:33:28,320 --> 00:33:29,320
Yeah.

663
00:33:29,320 --> 00:33:33,399
We're talking about a vehicle that travels
on a very special driveway, probably has pretty

664
00:33:33,399 --> 00:33:35,639
unique and specialized parking spaces.

665
00:33:35,639 --> 00:33:39,339
Have you ever run into problems getting in
somebody else's way?

666
00:33:39,339 --> 00:33:40,749
No, no.

667
00:33:40,749 --> 00:33:48,440
A number of years ago, one of the security
guards out here decided it would make a great

668
00:33:48,440 --> 00:33:50,490
joke, you know -- which to us was pretty funny.

669
00:33:50,490 --> 00:33:52,169
I don't know, but –

670
00:33:52,169 --> 00:33:53,169
[ Laughs ]

671
00:33:53,169 --> 00:33:55,409
We parked in a place we don't normally park.

672
00:33:55,409 --> 00:33:59,049
Just sometimes you'll leave the crawler on
the crawler way overnight, or whatever -- sometimes

673
00:33:59,049 --> 00:34:04,009
at the midfield park site, and sometimes you
might be at one of the refurb sites.

674
00:34:04,009 --> 00:34:09,760
And so they left a warning on the side of
the windshield, right -- on the door...

675
00:34:09,760 --> 00:34:10,760
[ Laughs ]

676
00:34:10,760 --> 00:34:12,549
...and said, "Hey, you guys are parked in
the wrong spot."

677
00:34:12,549 --> 00:34:13,549
[ Laughs ]

678
00:34:13,549 --> 00:34:16,069
Hey, Sam, I appreciate you coming in today.

679
00:34:16,069 --> 00:34:18,019
Thank you for your and your team's work.

680
00:34:18,019 --> 00:34:20,510
Obviously, if we don't get to the launchpad,
we can't fly.

681
00:34:20,510 --> 00:34:21,510
Right.

682
00:34:21,510 --> 00:34:24,069
So, you guys are a huge part of what we do
here, and thanks for coming.

683
00:34:24,069 --> 00:34:28,679
I really appreciate it, and the crawler crew,
you know, they're 100% behind what we're doing.

684
00:34:28,679 --> 00:34:30,919
Those guys -- we have very little turnover.

685
00:34:30,919 --> 00:34:32,579
Those guys really stick to their job.

686
00:34:32,579 --> 00:34:34,549
They make sure everything works.

687
00:34:34,549 --> 00:34:40,760
Basically, when they call us to go do something,
that's what we do.

688
00:34:40,760 --> 00:34:44,889
So far we've covered land and sea, now to
the air.

689
00:34:44,889 --> 00:34:48,490
Keeping an eye on the Ranch from up above
is helicopter pilot Dave Ramsey.

690
00:34:48,490 --> 00:34:49,490
All right.

691
00:34:49,490 --> 00:34:55,000
I'm in the booth this morning with Dave Ramsey,
who has the extraordinary task of flying helicopters

692
00:34:55,000 --> 00:34:56,500
for us here at the Kennedy Space Center.

693
00:34:56,500 --> 00:34:57,500
Dave, good morning.

694
00:34:57,500 --> 00:34:58,500
Good morning.

695
00:34:58,500 --> 00:35:01,480
And tell me a little bit about yourself, kind
of your background, how you got here, and

696
00:35:01,480 --> 00:35:02,480
what you do for KSC.

697
00:35:02,480 --> 00:35:03,829
Well, I'm Dave Ramsey.

698
00:35:03,829 --> 00:35:06,480
I'm the Chief of Flying Operations here at
Kennedy Space Center.

699
00:35:06,480 --> 00:35:11,289
My day-in-and-day-out job is to be a helicopter
pilot and manage the aviation assets here

700
00:35:11,289 --> 00:35:12,990
on KSC.

701
00:35:12,990 --> 00:35:17,589
So that means I get to fly our helicopters
and work with our drone guys to make sure

702
00:35:17,589 --> 00:35:19,539
we're giving you guys the products you need.

703
00:35:19,539 --> 00:35:24,240

So, obviously, people know what desk jobs
are like, but people don't know what the job

704
00:35:24,240 --> 00:35:26,839
of a helicopter pilot really looks like.

705
00:35:26,839 --> 00:35:28,440
So, what do you do when you're in the air?

706
00:35:28,440 --> 00:35:31,039
Are you just flying around, checking things
out?

707
00:35:31,039 --> 00:35:32,950
What's going on?

708
00:35:32,950 --> 00:35:34,119
So here at Kennedy, yeah.

709
00:35:34,119 --> 00:35:38,730
So we use the helicopters for a number of
purposes -- primarily, our security.

710
00:35:38,730 --> 00:35:44,420
We're flying around, making sure people aren't
doing things in places that they shouldn't

711
00:35:44,420 --> 00:35:50,839
be or aren't in places they shouldn't be,
looking for fishermen or hunters who are doing

712
00:35:50,839 --> 00:35:56,250
-- poaching game or in the wrong areas inadvertently.

713
00:35:56,250 --> 00:35:58,580
So that's the primary mission that we do.

714
00:35:58,580 --> 00:36:06,770
We also support our biological guys here - our

bioresearch guys who keep kind of their fingers

715
00:36:06,770 --> 00:36:12,799
on the health of the wildlife community here
-- so counting birds, counting manatees, looking

716
00:36:12,799 --> 00:36:18,530
at eagles every year, hatchlings -- those
types of things, making sure that the -- or

717
00:36:18,530 --> 00:36:23,529
just recording the populations and seeing
growth or identifying trends.

718
00:36:23,529 --> 00:36:24,990
We help with that.

719
00:36:24,990 --> 00:36:29,800
And then, as we talked about earlier, those
videos, or if you want a beach-erosion video,

720
00:36:29,800 --> 00:36:35,640
and you want to see after a storm, for example,
what the impacts were, we take teams up to

721
00:36:35,640 --> 00:36:39,790
video and document and just check out the
Center to make sure.

722
00:36:39,790 --> 00:36:43,730
After a hurricane, we always take Mr. Cabana
up so he can fly over the Center to get a

723
00:36:43,730 --> 00:36:49,109
good feel for the safety and when to bring
people back and that type of stuff.

724
00:36:49,109 --> 00:36:54,740
So you mentioned a couple times people being
in places they shouldn't or other things of

725
00:36:54,740 --> 00:36:55,740
that nature.

726
00:36:55,740 --> 00:36:57,030
Do you all find people out here a lot?

727
00:36:57,030 --> 00:37:01,400
Obviously, we're in the middle of a pretty
big green area, a national wildlife refuge.

728
00:37:01,400 --> 00:37:04,010
Do you find people or things that shouldn't
be here?

729
00:37:04,010 --> 00:37:05,010
Yeah.

730
00:37:05,010 --> 00:37:07,849
I mean, more than you would think, and it's,
a lot of times, fishermen just in places they

731
00:37:07,849 --> 00:37:19,280
shouldn't be, or we had people picking the
saw palmetto berries from the wildlife refuge,

732
00:37:19,280 --> 00:37:26,480
which isn't allowed, so we've had to run those
guys off and detain people for that sort of stuff.

733
00:37:26,480 --> 00:37:34,480
So, yeah, I mean, most of it is just people
not knowing, so we just, as politely as we

734
00:37:34,490 --> 00:37:36,369
can from the air, ask them to move along.

735
00:37:36,369 --> 00:37:37,369
[ Both chuckle ]

736
00:37:37,369 --> 00:37:40,650
Honk our horn at them and tell them to get moving.

737
00:37:40,650 --> 00:37:43,109
So, what do you do when it comes to launch time?

738
00:37:43,109 --> 00:37:47,670
I know that we use our aircraft for security and other things, but how are you involved

739
00:37:47,670 --> 00:37:48,670
with launches?

740
00:37:48,670 --> 00:37:53,130
Yeah, so as we get back to crew flight, we're ramping up now.

741
00:37:53,130 --> 00:37:56,890
We're doing some exercises now for a couple of things.

742
00:37:56,890 --> 00:38:03,930
Astronaut support -- escort, we'll do that again, which has been done previously.

743
00:38:03,930 --> 00:38:08,190
Security of the air during those flights.

744
00:38:08,190 --> 00:38:09,970
So we'll be ready to respond again.

745
00:38:09,970 --> 00:38:16,029
We'll be up in the air during launches, looking for anyone trying to do damage to the rocket

746
00:38:16,029 --> 00:38:19,450

or just make themselves famous.

747
00:38:19,450 --> 00:38:22,000
So we look for those kinds of things.

748
00:38:22,000 --> 00:38:27,220
People coming into the airspace that's restricted
during those launches is a good indicator

749
00:38:27,220 --> 00:38:31,740
that maybe something's -- someone's not paying
attention, "A," or they're out to do something

750
00:38:31,740 --> 00:38:40,020
bad -- and so we do those two things, and
we also do the MEDEVAC, CASEVAC in case there

751
00:38:40,020 --> 00:38:41,490
is something.

752
00:38:41,490 --> 00:38:46,359
If something goes wrong prior to launch or
during launch, we are ready.

753
00:38:46,359 --> 00:38:55,370
We have one aircraft standing by to be a CASEVAC
aircraft to help move personnel to the Travel

754
00:38:55,370 --> 00:38:58,339
One Centers, or wherever directed, basically.

755
00:38:58,339 --> 00:39:04,010
Once when we departed the SLF, just as we
were departing, there was an anomaly on one

756
00:39:04,010 --> 00:39:07,310
of the pads a couple of years ago.

757
00:39:07,310 --> 00:39:12,059

We had just departed the SLF, and we were
flying towards the beach, flying right for

758
00:39:12,059 --> 00:39:13,690
that pad when it exploded.

759
00:39:13,690 --> 00:39:20,210
Thinking about that, I couldn't, in my mind,
process what was going on at the time.

760
00:39:20,210 --> 00:39:22,570
I was like, "Why is there fire burning right
there?

761
00:39:22,570 --> 00:39:24,849
What is that about?"

762
00:39:24,849 --> 00:39:25,849
[ Chuckles ]

763
00:39:25,849 --> 00:39:30,490
But the explosion, obviously, people remember
how the noise, and so all of our team thought

764
00:39:30,490 --> 00:39:35,960
-- We had just departed, so they thought that
maybe we'd crashed and that explosion was

765
00:39:35,960 --> 00:39:40,769
our helicopter, so everyone was on kind of
high alert during that for a number -- No

766
00:39:40,769 --> 00:39:45,000
one knew what was going on just like here
on Center, as well, I'm sure, but...

767
00:39:45,000 --> 00:39:49,839
In situations like that, and others, do you
all take on or have training for supporting

768
00:39:49,839 --> 00:39:53,750
kind of fires or other, like, extreme situations
like that?

769
00:39:53,750 --> 00:40:01,549
So we do have Bambi Buckets, which are firefighting
buckets that hang under the aircraft that

770
00:40:01,549 --> 00:40:03,270
we can put water on things.

771
00:40:03,270 --> 00:40:05,370
It's not a primary mission we do, but we can
support that.

772
00:40:05,370 --> 00:40:10,190
Obviously, in that situation, that's not appropriate,
but what we did in that situation is just,

773
00:40:10,190 --> 00:40:15,079
we picked up our local fire team, fire chief
here, flew them over the scene so then they

774
00:40:15,079 --> 00:40:18,309
could talk to the guys on the ground.

775
00:40:18,309 --> 00:40:22,809
We actually landed and picked up the on-scene
commander, got him into the air so he could

776
00:40:22,809 --> 00:40:28,619
look at what was going on, where the fires
were -- you know, passageways to get to them,

777
00:40:28,619 --> 00:40:30,050
pad -- those types of things.

778
00:40:30,050 --> 00:40:31,200
So we do provide that.

779
00:40:31,200 --> 00:40:37,180
It minimizes the risk for those guys, those
first responders that have to go in if they

780
00:40:37,180 --> 00:40:40,921
can get a safer look from the air before their
ground guys have to go in.

781
00:40:40,921 --> 00:40:45,810
And then later, we brought the drones in -- Mike
Downs and his crew brought the drones in to

782
00:40:45,810 --> 00:40:53,579
fly, again, that same route and live-stream
it to the convoy commander's team or there

783
00:40:53,579 --> 00:40:57,089
on the ground so they can get a look and figure
out kind of what their plan of attack would

784
00:40:57,089 --> 00:40:59,000
be to get their people in there.

785
00:40:59,000 --> 00:41:05,220
So it's a good coordination effort between
all of the aviation assets here on Kennedy

786
00:41:05,220 --> 00:41:08,010
to help out the Air Force, as well.

787
00:41:08,010 --> 00:41:11,720
Yeah, and I want to make sure to be clear
that nobody was injured in that incident.

788
00:41:11,720 --> 00:41:16,730
Obviously not a great day for losing a rocket
and a spacecraft, but there were no people

789

00:41:16,730 --> 00:41:18,680
injured that day, which was great.

790
00:41:18,680 --> 00:41:20,410
And pretty early on for your time here, right?

791
00:41:20,410 --> 00:41:21,410
Yeah.

792
00:41:21,410 --> 00:41:24,859
So that had to be a little bit stress-inducing
like, "Hey, like I'm not very long on the

793
00:41:24,859 --> 00:41:28,930
job here, and I'm dealing with a serious issue
like this."

794
00:41:28,930 --> 00:41:29,930
Yeah.

795
00:41:29,930 --> 00:41:33,391
I mean, in those times, everybody just wants
to help, you know, so -- but you don't want

796
00:41:33,391 --> 00:41:39,059
to get in the way, but we do believe that
having that platform, having an aerial platform

797
00:41:39,059 --> 00:41:45,089
here on the Center gives you the ability to
see the things during those times and really

798
00:41:45,089 --> 00:41:51,710
provide insight that can guide those responding
personnel, keep them safe, and keep everyone

799
00:41:51,710 --> 00:41:52,710
safe.

800

00:41:52,710 --> 00:41:58,950
So I think it's nice to be a part of that
team that could provide answers when things

801
00:41:58,950 --> 00:42:00,420
get a little crazy.

802
00:42:00,420 --> 00:42:03,970
So, Dave, how are you guys involved with the
wildlife that is out here?

803
00:42:03,970 --> 00:42:05,869
I know that there's a big effort there.

804
00:42:05,869 --> 00:42:09,500
Obviously, again, because it is a wildlife
refuge that the view from the sky is very

805
00:42:09,500 --> 00:42:10,660
helpful in a lot of ways.

806
00:42:10,660 --> 00:42:11,950
So how are you guys involved with that?

807
00:42:11,950 --> 00:42:18,390
Yeah, so we do a lot of overflights of, like,
Mosquito Lagoon and the rivers.

808
00:42:18,390 --> 00:42:23,529
It's hard to count manatee from any other
way, you know, than looking down on them from

809
00:42:23,529 --> 00:42:24,529
the water.

810
00:42:24,529 --> 00:42:31,069
So we'll take the guys up and fly so they
can count and get routine counts to see what

811

00:42:31,069 --> 00:42:34,759
the population's doing, when they're migrating
-- those types of things.

812
00:42:34,759 --> 00:42:35,900
So we do that.

813
00:42:35,900 --> 00:42:41,740
At least once a month we'll take the guys
up for a couple hours and fly pre-patterned

814
00:42:41,740 --> 00:42:43,240
routes that we fly every time.

815
00:42:43,240 --> 00:42:49,619
It's the exact route every time just to try
to keep a consistent count going so they can

816
00:42:49,619 --> 00:42:53,579
form those trends and see what's going on
with the health of the wildlife.

817
00:42:53,579 --> 00:42:55,549
Dave, I appreciate you being here this morning.

818
00:42:55,549 --> 00:42:59,020
Good luck out there, be safe, and thanks for
all you do for us.

819
00:42:59,020 --> 00:43:00,580
Yeah, awesome. Thanks.

820
00:43:02,640 --> 00:43:06,740
Clearly, we need more than just rocket scientists
to get the job done.

821
00:43:06,750 --> 00:43:10,270
Maybe your path will lead you here to join
our rowdy band of pioneers.

822
00:43:10,270 --> 00:43:13,009
I'm Joshua Santora, and that's our show.

823
00:43:13,009 --> 00:43:15,029
Thanks for stopping by the Rocket Ranch.

824
00:43:15,029 --> 00:43:20,240
And special thanks to our guests -- fisherman
Dr. Eric Reyier, crawler driver Sam Dove,

825
00:43:20,240 --> 00:43:21,839
and helicopter pilot Dave Ramsey.

826
00:43:21,840 --> 00:43:28,700
To learn more about all the cool things going
on at the Kennedy Space Center, go to nasa.gov/kennedy.

827
00:43:28,700 --> 00:43:33,000
There are also several NASA podcasts you can
check out to learn more about what's happening

828
00:43:33,010 --> 00:43:37,680
at all of our Centers at nasa.gov/podcasts.

829
00:43:37,680 --> 00:43:42,920
A special shout-out to my colleague Laura
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830
00:43:42,920 --> 00:43:48,680
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