
PAO

1
00:00:01,200 --> 00:00:03,400
>> Well, welcome to
Mission Control in Houston.

2
00:00:03,400 --> 00:00:04,430
My name is Pat Ryan.

3
00:00:04,430 --> 00:00:08,000
I'm the public affairs officer
on the Orbit 2 shift here

4
00:00:08,000 --> 00:00:09,640
in Mission Control today.

5
00:00:09,640 --> 00:00:12,370
And we just finished
up our daily update

6
00:00:12,370 --> 00:00:14,520
of news onboard there
International Space Station,

7
00:00:14,520 --> 00:00:17,600
and looking forward to talking
to you about the station

8
00:00:17,600 --> 00:00:19,400
and about space exploration.

9
00:00:19,400 --> 00:00:21,110
Brought along somebody
who knows all

10
00:00:21,110 --> 00:00:23,340
of that stuff even
better than I do.

11
00:00:23,340 --> 00:00:25,570
Eric Boe is an astronaut.

12
00:00:25,570 --> 00:00:28,140
He's been an astronaut
since 2000.

13
00:00:28,140 --> 00:00:31,720
He's flown to the International
Space Station twice as the pilot

14
00:00:31,720 --> 00:00:34,550
on Space Shuttle
Endeavor in 2008;

15
00:00:34,550 --> 00:00:38,930
is on the very final flight of
Space Shuttle Discovery in 2011.

16
00:00:38,930 --> 00:00:41,900
Perhaps more important,
Eric is -- tell us how --

17
00:00:41,900 --> 00:00:44,120
where you came from to get here.

18
00:00:44,120 --> 00:00:45,570
>> Well, I grew up
in Atlanta, Georgia.

19
00:00:45,570 --> 00:00:47,860
I was -- lived on the
northeast side of town,

20
00:00:47,860 --> 00:00:50,100
went to Evansdale Elementary
School, and I graduated

21
00:00:50,100 --> 00:00:51,120
from Henderson High School,

22

00:00:51,120 --> 00:00:53,790
which is now a middle
school, in the Atlanta area.

23
00:00:53,790 --> 00:00:56,170
>> So you are familiar
with the area

24
00:00:56,170 --> 00:00:59,380
where the folks here
from Ball Ground are?

25
00:00:59,380 --> 00:00:59,760
>> Absolutely.

26
00:00:59,760 --> 00:01:03,160
Very, very familiar
with the Atlanta area.

27
00:01:03,160 --> 00:01:04,430
I was looking at Ball Ground

28
00:01:04,430 --> 00:01:06,110
where these guys
are location wise.

29
00:01:06,110 --> 00:01:07,670
My father actually
lives in Canton

30
00:01:07,670 --> 00:01:10,270
which is pretty close
to where they're at.

31
00:01:10,270 --> 00:01:11,870
>> Tell us real quickly: How
did you become interested

32
00:01:11,870 --> 00:01:12,980
in being an astronaut?

33
00:01:12,980 --> 00:01:15,500
How did you -- what did
you have to do to get here?

34
00:01:15,500 --> 00:01:17,810
>> Well, I've always been
interested in flying,

35
00:01:17,810 --> 00:01:19,070
it's just been one
of my passions.

36
00:01:19,070 --> 00:01:21,460
And so I went into the Air Force
and became an Air Force pilot.

37
00:01:21,460 --> 00:01:22,780
It was always kind
of a far off dream.

38
00:01:22,780 --> 00:01:25,200
I remember when my
parents coming --

39
00:01:25,200 --> 00:01:28,000
when the moon landings happening
and Neil Armstrong was walking

40
00:01:28,000 --> 00:01:31,110
on the moon, calling me in and
saying, "Hey, watch this on TV."

41
00:01:31,110 --> 00:01:33,010
That's kind of my first
recollection of television.

42
00:01:33,010 --> 00:01:35,270
I remember seeing the landing,
and I think that's kind --

43
00:01:35,270 --> 00:01:38,110
was always kind of on my
mind to maybe get a chance

44
00:01:38,110 --> 00:01:38,840
to do that in the future.

45
00:01:38,840 --> 00:01:41,870
And as my career went along,
I became a fighter pilot

46
00:01:41,870 --> 00:01:44,360
and a test pilot, and I
had the qualifications

47
00:01:44,360 --> 00:01:46,640
to be an astronaut, I went ahead
and applied, and that's kind

48
00:01:46,640 --> 00:01:47,610
of the course it took.

49
00:01:47,610 --> 00:01:49,320
>> Cool. Well, let's
find out what the kids

50
00:01:49,320 --> 00:01:50,640
in the Atlanta area
are interested in.

51
00:01:50,640 --> 00:01:52,510
We're ready to take
your questions.

52
00:01:52,510 --> 00:01:55,330
[Pause]

53
00:01:55,330 --> 00:01:58,410

>> What kind of training do
you do to become an astronaut,

54
00:01:58,410 --> 00:02:02,740
and how many years do you have
to train to be an astronaut?

55
00:02:02,740 --> 00:02:03,630
>> That's a great question.

56
00:02:03,630 --> 00:02:05,190
Well, the training involved --

57
00:02:05,190 --> 00:02:06,710
usually when you come
in as an astronaut,

58
00:02:06,710 --> 00:02:08,250
one of the thirst
things you do is you go

59
00:02:08,250 --> 00:02:09,920
through astronaut
candidate training.

60
00:02:09,920 --> 00:02:12,340
So that's usually in the range
of a year and a half to two

61
00:02:12,340 --> 00:02:13,950
and a half years depending
on how that works out.

62
00:02:13,950 --> 00:02:16,690
So you do all kinds
of generic training,

63
00:02:16,690 --> 00:02:18,770
things like working
the robotic arm.

64
00:02:18,770 --> 00:02:19,530
You learn how to fly.

65
00:02:19,530 --> 00:02:21,450
We have T-38s that
we use for training

66
00:02:21,450 --> 00:02:23,300
to get crew members used
to what it's going to be

67
00:02:23,300 --> 00:02:24,860
like on a spaceship, because --

68
00:02:24,860 --> 00:02:26,480
communications and
working those things.

69
00:02:26,480 --> 00:02:29,800
We also have a neutral
buoyancy laboratory, NBL --

70
00:02:29,800 --> 00:02:32,020
we'll talk about that probably
a little bit later -where we

71
00:02:32,020 --> 00:02:34,410
practice doing space
walks as well.

72
00:02:34,410 --> 00:02:35,640
And we have a lot
of other training.

73
00:02:35,640 --> 00:02:38,760
Language training now with the
International Space Station,

74

00:02:38,760 --> 00:02:40,390
Russian's one of those big
things that we're learning

75
00:02:40,390 --> 00:02:42,010
on the station, so
that training.

76
00:02:42,010 --> 00:02:44,820
And then as you pick up jobs
in the [inaudible] office

77
00:02:44,820 --> 00:02:46,940
as you wait to be
assigned for your flight

78
00:02:46,940 --> 00:02:48,100
and then you get
assigned a flight,

79
00:02:48,100 --> 00:02:49,800
and then that training right now

80
00:02:49,800 --> 00:02:52,220
for International Space Station
is on the order of about two

81
00:02:52,220 --> 00:02:55,230
and two and a half years for
your training that's involved.

82
00:02:55,230 --> 00:02:57,250
When I was at space
shuttle pilot,

83
00:02:57,250 --> 00:02:59,750
my training for the space
shuttle mission was about a year

84
00:02:59,750 --> 00:03:01,660

to a year and a half,
so it kind of depends

85
00:03:01,660 --> 00:03:02,690
on what you're going for.

86
00:03:02,690 --> 00:03:04,280
You know, space station
missions,

87
00:03:04,280 --> 00:03:06,050
about six months is
how long it lasts,

88
00:03:06,050 --> 00:03:07,570
so it just takes a little
bit longer especially

89
00:03:07,570 --> 00:03:10,060
because you have travel
between different countries.

90
00:03:10,060 --> 00:03:12,070
Did I answer --

91
00:03:12,070 --> 00:03:12,470
>> Yes.

92
00:03:12,470 --> 00:03:12,720
>> Okay.

93
00:03:12,720 --> 00:03:16,360
>> Yes. Next question.

94
00:03:16,360 --> 00:03:18,530
>> What is it like
to training in water,

95
00:03:18,530 --> 00:03:21,360

and how does it relate
to being in space?

96
00:03:21,360 --> 00:03:23,880
>> Well, you mentioned the
neutral buoyancy laboratory.

97
00:03:23,880 --> 00:03:25,260
That's a big [inaudible]
of water.

98
00:03:25,260 --> 00:03:26,230
>> Absolutely.

99
00:03:26,230 --> 00:03:28,450
It's one of the biggest pools
in the world, and it's gigantic.

100
00:03:28,450 --> 00:03:29,600
If you ever get a
chance to come out here

101
00:03:29,600 --> 00:03:30,830
to Johnson Space
Center, you should --

102
00:03:30,830 --> 00:03:32,240
you can take a tour of
it and actually see it.

103
00:03:32,240 --> 00:03:33,580
It's really gigantic.

104
00:03:33,580 --> 00:03:35,080
And even though it's
a really big pool,

105
00:03:35,080 --> 00:03:37,540
we can't fit the International
Space Station fully in there,

106
00:03:37,540 --> 00:03:40,020
so we actually have to put the
mock-ups in different locations.

107
00:03:40,020 --> 00:03:42,780
But the thing the pool allows
us to do is to get out there

108
00:03:42,780 --> 00:03:45,600
and practice three-dimensionally
like we're going to be in space;

109
00:03:45,600 --> 00:03:47,120
whereas if it was
some other way,

110
00:03:47,120 --> 00:03:49,280
you obviously can't
float on the ground.

111
00:03:49,280 --> 00:03:51,390
Well, what they do is they
balance you out in the pool

112
00:03:51,390 --> 00:03:54,240
and so it kind of simulates
like being in space.

113
00:03:54,240 --> 00:03:57,470
Things that the pool doesn't
do very well is one thing

114
00:03:57,470 --> 00:03:59,100
that you get in the
water is obviously drag.

115
00:03:59,100 --> 00:04:01,170
You know, you move your hands in
front you and it slows you down.

116
00:04:01,170 --> 00:04:03,320
So in space these are things
that you have to compensate for.

117
00:04:03,320 --> 00:04:05,020
And most crew members when
they go out the first --

118
00:04:05,020 --> 00:04:06,800
the first time they
go outside in space,

119
00:04:06,800 --> 00:04:10,220
they have to really concentrate
to look at those differences

120
00:04:10,220 --> 00:04:11,030
and make a difference.

121
00:04:11,030 --> 00:04:14,370
But we found the pool is the
best way to simulate space

122
00:04:14,370 --> 00:04:15,520
that we can do on the ground

123
00:04:15,520 --> 00:04:18,690
with the best trainer
that we have.

124
00:04:18,690 --> 00:04:21,760
>> Did you like scuba diving
before you started training

125
00:04:21,760 --> 00:04:23,650
with it?

126
00:04:23,650 --> 00:04:24,840

>> That's a great question.

127
00:04:24,840 --> 00:04:26,180
I did like to do scuba dive.

128
00:04:26,180 --> 00:04:29,540
I was stationed in the Air
Force on my first assignment

129
00:04:29,540 --> 00:04:32,440
as an operational pilot, and
I was in the Philippines,

130
00:04:32,440 --> 00:04:34,150
and that's where actually I
learned how to scuba dive,

131
00:04:34,150 --> 00:04:34,900
and I had a great time.

132
00:04:34,900 --> 00:04:36,760
The scuba diving
was excellent so --

133
00:04:36,760 --> 00:04:37,450
>> Beautiful.

134
00:04:37,450 --> 00:04:39,210
>> Beautiful place to
learn how to scuba dive.

135
00:04:39,210 --> 00:04:41,800
And I've continued scuba
diving throughout my life.

136
00:04:41,800 --> 00:04:45,200
But we also scuba dive, not only
wear a space suit in the pool,

137

00:04:45,200 --> 00:04:49,300
but we also practice in the pool
for our space walks by looking

138
00:04:49,300 --> 00:04:51,520
around at the mock-ups
in scuba gear.

139
00:04:51,520 --> 00:04:55,010
So I really enjoy scuba diving
and I enjoy both in our NBL

140
00:04:55,010 --> 00:04:56,210
and also out in the ocean.

141
00:04:56,210 --> 00:04:58,030
>> And I'll point out that
there are other people

142
00:04:58,030 --> 00:05:02,250
who are doing -- who are helping
train astronauts who scuba dive.

143
00:05:02,250 --> 00:05:05,730
I had never been a diver
before, but shortly after I came

144
00:05:05,730 --> 00:05:09,470
to work here, I got trained
in scuba diving so I could go

145
00:05:09,470 --> 00:05:12,710
in that pool with a
camera to shoot video

146
00:05:12,710 --> 00:05:15,080
of the astronauts while
they were training.

147
00:05:15,080 --> 00:05:17,740

And it's a remarkable thing
to be floating around in there

148
00:05:17,740 --> 00:05:22,880
for a couple of hours at a time
holding a camera that's trailing

149
00:05:22,880 --> 00:05:27,410
this long cord, and swimming
around following them as they

150
00:05:27,410 --> 00:05:29,660
as they train for all of
the tasks that they have

151
00:05:29,660 --> 00:05:30,910
to do on the space walk.

152
00:05:30,910 --> 00:05:34,400
You get a real -- a real
interesting perspective of how

153
00:05:34,400 --> 00:05:35,660
that goes, and you
also learn a lot

154
00:05:35,660 --> 00:05:38,380
about what they're
actually doing on the EVA.

155
00:05:38,380 --> 00:05:42,660
So people who like diving
can be involved in even

156
00:05:42,660 --> 00:05:43,570
when they're not astronauts.

157
00:05:43,570 --> 00:05:44,010
>> Absolutely.

158
00:05:44,010 --> 00:05:45,900
I mean, when we're out there
just practicing, you know,

159
00:05:45,900 --> 00:05:47,820
it's typically a
spacewalk we have two people

160
00:05:47,820 --> 00:05:50,600
that are outside, and when we're
practicing, we have two people.

161
00:05:50,600 --> 00:05:54,250
But we have a whole team
that's supporting that training

162
00:05:54,250 --> 00:05:55,340
that we're doing in the NBL.

163
00:05:55,340 --> 00:05:58,230
And so when we do that, we
have, just like you said,

164
00:05:58,230 --> 00:05:59,810
photographers that
are working with us.

165
00:05:59,810 --> 00:06:02,730
We have safety divers
that are watching us.

166
00:06:02,730 --> 00:06:04,820
We have camera photographers.

167
00:06:04,820 --> 00:06:07,290
We also have people talking to
us on the loops that are not

168
00:06:07,290 --> 00:06:09,670

in the pool but they're looking
at some technical details.

169
00:06:09,670 --> 00:06:12,200
So we have a huge team that's
helping us train while we're

170
00:06:12,200 --> 00:06:12,590
in the water.

171
00:06:12,590 --> 00:06:16,370
So absolutely, there's a
lot of things to do here.

172
00:06:16,370 --> 00:06:17,990
>> Who's next?

173
00:06:17,990 --> 00:06:22,050
>> Is astronaut training tiring?

174
00:06:22,050 --> 00:06:24,790
>> Astronaut training
can be tiring.

175
00:06:24,790 --> 00:06:26,020
You know, it's really
a lot of fun,

176
00:06:26,020 --> 00:06:27,630
and it's a lot of hard work.

177
00:06:27,630 --> 00:06:29,780
There are times when,
you know, it goes quickly

178
00:06:29,780 --> 00:06:31,450
when you're working really
hard, and there's other times

179

00:06:31,450 --> 00:06:34,090
when you just got to do some
[inaudible] force of looking

180
00:06:34,090 --> 00:06:36,030
at things and really
studying things.

181
00:06:36,030 --> 00:06:37,970
But the pool that we just
talked about where you're --

182
00:06:37,970 --> 00:06:39,830
when you're doing a space walk,

183
00:06:39,830 --> 00:06:41,800
because you're fighting
against the suit.

184
00:06:41,800 --> 00:06:44,030
Typically, we --
when you're in space,

185
00:06:44,030 --> 00:06:46,450
you have a pressure differential
which makes the suit kind

186
00:06:46,450 --> 00:06:48,860
of ridged when you're moving
your arms back and forth.

187
00:06:48,860 --> 00:06:51,220
And so that really makes it --
and doing things with your hands

188
00:06:51,220 --> 00:06:52,460
like you're -- tasks
of squeezing

189
00:06:52,460 --> 00:06:54,380

with your hands can
be very difficult.

190
00:06:54,380 --> 00:06:55,960
So when you get done with that,

191
00:06:55,960 --> 00:06:58,550
whether you're doing a space
walk in space or you're

192
00:06:58,550 --> 00:07:01,120
in the pool, you end the
day and you're fairly tired.

193
00:07:01,120 --> 00:07:03,890
And other things like that
can be fairly rigorous

194
00:07:03,890 --> 00:07:05,090
in our training.

195
00:07:05,090 --> 00:07:09,430
>> Is the suit you wear heavy?

196
00:07:09,430 --> 00:07:11,680
>> That is a good question.

197
00:07:11,680 --> 00:07:12,820
It is heavy actually.

198
00:07:12,820 --> 00:07:15,910
The white suit, when we go
outside for our space walk,

199
00:07:15,910 --> 00:07:17,860
weighs about 300 pounds or so.

200
00:07:17,860 --> 00:07:19,870
So it's a fairly heavy suit

that you got to move around.

201
00:07:19,870 --> 00:07:23,560
But you got to remember, when
you're in space, we call it --

202
00:07:23,560 --> 00:07:27,140
you'll hear the term "zero G" or
"weightlessness" or we call it

203
00:07:27,140 --> 00:07:29,560
"micro gravity" to be very
specific, but essentially,

204
00:07:29,560 --> 00:07:31,270
you're weightless,
and so that allows us

205
00:07:31,270 --> 00:07:32,150
to move the suit around.

206
00:07:32,150 --> 00:07:34,190
So the thing that makes it
difficult to move the suit is

207
00:07:34,190 --> 00:07:35,890
that you're fighting that
pressure that I was talking

208
00:07:35,890 --> 00:07:38,290
about in the suit itself.

209
00:07:38,290 --> 00:07:39,630
So you don't really
feel the weight,

210
00:07:39,630 --> 00:07:41,780
and it's actually
fairly easy to move.

211
00:07:41,780 --> 00:07:43,810
Our other suit that we
wear a lot of times,

212
00:07:43,810 --> 00:07:46,190
like when we launch on a
Soyuz or when I was launching

213
00:07:46,190 --> 00:07:47,850
on the space shuttle, we
wear a different suit.

214
00:07:47,850 --> 00:07:49,040
And that suit isn't
quite as heavy.

215
00:07:49,040 --> 00:07:50,110
It doesn't weigh 300 pounds.

216
00:07:50,110 --> 00:07:53,480
It weighs on the order of 30
to 50 pounds, but the suits

217
00:07:53,480 --> 00:07:55,050
that we do -- do have
some weight to it

218
00:07:55,050 --> 00:07:56,230
and you have to work
around them.

219
00:07:56,230 --> 00:07:57,750
They have some limitations
that affect you,

220
00:07:57,750 --> 00:08:00,270
but what's why we do
the training that we do.

221

00:08:00,270 --> 00:08:02,980
>> And part of the
reason that -- that's --

222
00:08:02,980 --> 00:08:04,650
you said you have to
work against the suit is

223
00:08:04,650 --> 00:08:07,350
because it's pressurized
on the inside.

224
00:08:07,350 --> 00:08:09,340
You go out to do a spacewalk

225
00:08:09,340 --> 00:08:11,310
where there is no
atmospheric pressure

226
00:08:11,310 --> 00:08:14,050
because there is no atmosphere,
you have to have pressure

227
00:08:14,050 --> 00:08:16,270
on the inside of the suit
in order to provide you

228
00:08:16,270 --> 00:08:17,930
with an environment
that you can live in.

229
00:08:17,930 --> 00:08:20,320
And that's pressure that
makes it hard to operate --

230
00:08:20,320 --> 00:08:22,930
that makes it tough to
work against the pressure

231
00:08:22,930 --> 00:08:24,160

on the inside of the suit.

232
00:08:24,160 --> 00:08:26,170
>> Exactly, right.

233
00:08:26,170 --> 00:08:32,400
>> What materials do you use
to make an astronaut suit

234
00:08:32,400 --> 00:08:35,820
and what are its features?

235
00:08:35,820 --> 00:08:37,530
>> Well, that's -- the suit is
actually fairly complicated.

236
00:08:37,530 --> 00:08:39,460
Obviously, it's another
team that went out

237
00:08:39,460 --> 00:08:41,440
and designed the suit,
and we've had, you know,

238
00:08:41,440 --> 00:08:43,030
several iterations of
the suits along the way.

239
00:08:43,030 --> 00:08:46,030
But the big picture for the
space suit that we have,

240
00:08:46,030 --> 00:08:48,870
the one that we take outside
to do our space walks with,

241
00:08:48,870 --> 00:08:50,560
is it's made out of layers.

242

00:08:50,560 --> 00:08:53,170
You start with a layer that
basically is a bladder;

243
00:08:53,170 --> 00:08:54,270
it basically keeps that pressure

244
00:08:54,270 --> 00:08:55,890
that we've been talking
about, keeps the air in.

245
00:08:55,890 --> 00:08:58,150
That's obviously one of the
most important things 'cause you

246
00:08:58,150 --> 00:09:01,020
can't continue to live if you
don't have a place to breathe.

247
00:09:01,020 --> 00:09:02,020
And so that's the [inaudible].

248
00:09:02,020 --> 00:09:03,700
And then all the other
layers are basically

249
00:09:03,700 --> 00:09:04,650
to support that layer.

250
00:09:04,650 --> 00:09:07,420
Then we have a layer that
basically is a protective layer

251
00:09:07,420 --> 00:09:08,970
so that if you bump
into something,

252
00:09:08,970 --> 00:09:10,980
you don't accidentally
cut that bladder.

253
00:09:10,980 --> 00:09:14,930
And then on top of that we have
kind of mesh weaving that goes

254
00:09:14,930 --> 00:09:16,720
on top again that helps protect.

255
00:09:16,720 --> 00:09:19,610
And then there's a thermal layer
that protects against the sun.

256
00:09:19,610 --> 00:09:22,920
And then on our gloves where we
grab things, we actually take --

257
00:09:22,920 --> 00:09:25,760
we'll put additional -- like
a rubber layer that helps us

258
00:09:25,760 --> 00:09:26,890
so that when we're
touching things,

259
00:09:26,890 --> 00:09:30,370
that layer can help prevent us
from getting cuts in our gloves.

260
00:09:30,370 --> 00:09:32,640
So the suit is a very
complicated, and then,

261
00:09:32,640 --> 00:09:34,430
obviously, it's almost
like a portable space ship

262
00:09:34,430 --> 00:09:36,920
because you have your
own oxygen and breathing,

263
00:09:36,920 --> 00:09:37,910
you're basically
self-sustaining.

264
00:09:37,910 --> 00:09:39,040
You have a little
power unit that --

265
00:09:39,040 --> 00:09:41,980
a battery so you can monitor
your system that's going on.

266
00:09:41,980 --> 00:09:44,170
And you have to --
you have water

267
00:09:44,170 --> 00:09:45,810
to cool the suit
while you're outside.

268
00:09:45,810 --> 00:09:46,880
So there's a lot
of different things

269
00:09:46,880 --> 00:09:48,290
that go into a space suit.

270
00:09:48,290 --> 00:09:50,680
And it's essentially
like a little space ship

271
00:09:50,680 --> 00:09:51,750
that you're taking outside.

272
00:09:51,750 --> 00:09:54,940
>> I think it's also important
to point out that you don't go

273
00:09:54,940 --> 00:09:57,400

to space and wear those
space suits all the time.

274
00:09:57,400 --> 00:09:59,580
Most of the time you're
dressed like this.

275
00:09:59,580 --> 00:10:00,170
>> Absolutely.

276
00:10:00,170 --> 00:10:02,180
I mean, usually we're
wearing a shirt just like this

277
00:10:02,180 --> 00:10:03,690
on the inside, and it's
just when you're going

278
00:10:03,690 --> 00:10:06,450
to go do a spacewalk that you
actually put on that full suit.

279
00:10:06,450 --> 00:10:08,570
And typically, when
you're riding up and down,

280
00:10:08,570 --> 00:10:11,510
you put a space suit on, but
then once you're in orbit a lot

281
00:10:11,510 --> 00:10:12,750
of times you take
the space suit off,

282
00:10:12,750 --> 00:10:14,050
do some work, then
put the suit on.

283
00:10:14,050 --> 00:10:16,390
So most of the time

you're not wearing a suit,

284
00:10:16,390 --> 00:10:17,990
but there are times when --

285
00:10:17,990 --> 00:10:20,240
when you're having to do the
space walk or special times

286
00:10:20,240 --> 00:10:22,670
that you put the suit on.

287
00:10:22,670 --> 00:10:26,810
>> What is it like to live
in -- what is it living space

288
00:10:26,810 --> 00:10:29,800
and how long do you
usually stay up there?

289
00:10:29,800 --> 00:10:31,010
>> Well, it's great
living in space.

290
00:10:31,010 --> 00:10:32,040
It's one of the coolest things.

291
00:10:32,040 --> 00:10:35,320
You know, the --
living in space,

292
00:10:35,320 --> 00:10:37,100
there are so many things to see.

293
00:10:37,100 --> 00:10:39,080
When astronaut -- usually,
you're busy with a lot

294
00:10:39,080 --> 00:10:40,830

of work that's going on, but
when you have some free time,

295
00:10:40,830 --> 00:10:43,010
the thing that you go out and
do is you look at the Earth

296
00:10:43,010 --> 00:10:44,410
and you're amazed at how it is.

297
00:10:44,410 --> 00:10:46,790
But there's all kinds of things
that you have to think about.

298
00:10:46,790 --> 00:10:47,120
[Inaudible] how to eat.

299
00:10:47,120 --> 00:10:47,820
How to sleep.

300
00:10:47,820 --> 00:10:49,230
All the basics.

301
00:10:49,230 --> 00:10:52,050
I think there's -- there are
a lot of different things

302
00:10:52,050 --> 00:10:55,700
that involved in it, but it's
-- for my flights, I went up for

303
00:10:55,700 --> 00:10:58,620
about two weeks, almost 16 days,

304
00:10:58,620 --> 00:11:00,750
some of the longer space
shuttle missions where we went

305
00:11:00,750 --> 00:11:02,470

up to the space station
and stayed there.

306
00:11:02,470 --> 00:11:03,590
And we met crew members that --

307
00:11:03,590 --> 00:11:05,060
like, we have crew
members on board now.

308
00:11:05,060 --> 00:11:07,650
We have six crew members on
the space station right now,

309
00:11:07,650 --> 00:11:09,320
and they're up there
from anywhere from five

310
00:11:09,320 --> 00:11:12,590
to six months is the typical
mission while they're on board.

311
00:11:12,590 --> 00:11:15,540
So it's -- you really have
to kind of calibrate yourself

312
00:11:15,540 --> 00:11:16,710
to how long it's going to be.

313
00:11:16,710 --> 00:11:17,930
When you're on the
shorter missions,

314
00:11:17,930 --> 00:11:20,980
they're a lot more fast paced;
but on the longer missions,

315
00:11:20,980 --> 00:11:22,480
it's still a high
pace but you do it

316
00:11:22,480 --> 00:11:23,960
over a longer period of time.

317
00:11:23,960 --> 00:11:27,680
>> And in fact, we already have
a crew that's been assigned

318
00:11:27,680 --> 00:11:29,500
that is in training
right now for a mission

319
00:11:29,500 --> 00:11:32,000
that will last a
full year in space.

320
00:11:32,000 --> 00:11:34,470
One NASA astronaut Scott Kelly

321
00:11:34,470 --> 00:11:37,440
and Russian cosmonaut
Mikhail Kornienko are

322
00:11:37,440 --> 00:11:39,970
about to officially get
started in their training.

323
00:11:39,970 --> 00:11:41,830
They're going to launch,
and they're going to be

324
00:11:41,830 --> 00:11:43,870
in space for a full year.

325
00:11:43,870 --> 00:11:46,680
Longer missions like that
that we're doing in order

326
00:11:46,680 --> 00:11:50,980

to better find out how people
can spend a long time in space,

327
00:11:50,980 --> 00:11:53,350
because it is going to
take a long time in space

328
00:11:53,350 --> 00:11:56,660
to go do the future
explorations that we want to do;

329
00:11:56,660 --> 00:11:58,550
to go to Mars or
to go to asteroids,

330
00:11:58,550 --> 00:12:01,260
it will take a lot longer
than just six months.

331
00:12:01,260 --> 00:12:02,750
>> And in the recent
times, this is some

332
00:12:02,750 --> 00:12:05,240
of the big things we've been
learning about in space,

333
00:12:05,240 --> 00:12:06,170
on the space station,

334
00:12:06,170 --> 00:12:07,980
is actually doing these
six-month missions.

335
00:12:07,980 --> 00:12:10,100
We've kind of -- we're
doing a build-up approach

336
00:12:10,100 --> 00:12:12,020
as we get there, and so

these things, we're learning

337
00:12:12,020 --> 00:12:14,040
about a lot of things
like bone loss,

338
00:12:14,040 --> 00:12:16,590
how to keep your muscles --
obviously, when you're in space,

339
00:12:16,590 --> 00:12:18,810
you're not using your muscles
the same way on the ground.

340
00:12:18,810 --> 00:12:21,320
Just standing up on
Earth is a workout.

341
00:12:21,320 --> 00:12:22,930
When you're in space you
don't have that effect,

342
00:12:22,930 --> 00:12:26,320
so we have other ways to do that
with that workout equipment,

343
00:12:26,320 --> 00:12:30,040
and we have a bicycle
that we can work on

344
00:12:30,040 --> 00:12:31,710
and a treadmill as well.

345
00:12:31,710 --> 00:12:34,130
>> Okay. Next.

346
00:12:34,130 --> 00:12:36,410
>> What is it like
sleeping in space?

347
00:12:36,410 --> 00:12:40,010
>> Well, sleeping in
space can be interesting.

348
00:12:40,010 --> 00:12:42,110
The first time, obviously,
you're just floating in space.

349
00:12:42,110 --> 00:12:45,040
So usually on the space
shuttle we actually took

350
00:12:45,040 --> 00:12:46,590
out sleeping bags, so it
was kind of like being

351
00:12:46,590 --> 00:12:47,920
on a camping trip
where you run out

352
00:12:47,920 --> 00:12:49,950
and put your sleeping
bag up for the day.

353
00:12:49,950 --> 00:12:52,010
On space station right now they
actually have little sleeping

354
00:12:52,010 --> 00:12:53,360
quarters that they go into.

355
00:12:53,360 --> 00:12:55,730
So either way, you have a place
that kind of keeps you place,

356
00:12:55,730 --> 00:12:56,950
and that's just so you're
not floating around,

357

00:12:56,950 --> 00:12:59,280
bumping into things that
probably wake you up.

358
00:12:59,280 --> 00:13:01,190
One of the things I always
thought was kind of interesting

359
00:13:01,190 --> 00:13:05,300
about space is, it's -- it can
be -- they give you a pillow,

360
00:13:05,300 --> 00:13:06,920
but obviously in space
your head would be

361
00:13:06,920 --> 00:13:09,060
like this off the pillow and
that wouldn't work so well.

362
00:13:09,060 --> 00:13:11,980
So NASA gives you some
NASA-issued Velcro to stick

363
00:13:11,980 --> 00:13:14,470
around your head and attach
yourself to the pillow.

364
00:13:14,470 --> 00:13:16,190
So it's kind of a fun
way to make sure --

365
00:13:16,190 --> 00:13:18,360
and actually, it's very normal.

366
00:13:18,360 --> 00:13:20,240
You actually -- it feels
like you're sleeping

367
00:13:20,240 --> 00:13:21,180

at home after a while.

368
00:13:21,180 --> 00:13:23,430
But you do have some interesting
dreams while you're floating

369
00:13:23,430 --> 00:13:25,700
around, and it's a -- and a
lot of people like to curl

370
00:13:25,700 --> 00:13:27,850
up with their knees, kind of
get in that fetal position, and,

371
00:13:27,850 --> 00:13:30,770
again, we have some Velcro to
get your knees in a position

372
00:13:30,770 --> 00:13:32,060
to kind of hold them
there, because if not,

373
00:13:32,060 --> 00:13:33,420
they would just extend
themselves out

374
00:13:33,420 --> 00:13:36,160
and it wouldn't work
the way you want it to.

375
00:13:36,160 --> 00:13:39,830
But like anything, you learn
how to adjust to these changes,

376
00:13:39,830 --> 00:13:42,180
and it's actually fairly
to easy to sleep in space.

377
00:13:42,180 --> 00:13:44,270
You don't have to

worry about a soft bed

378
00:13:44,270 --> 00:13:45,110
like you do on the ground.

379
00:13:45,110 --> 00:13:46,890
>> No kidding.

380
00:13:46,890 --> 00:13:47,920
>> How do people

381
00:13:47,920 --> 00:13:50,370
in the International Space
Station get food and water

382
00:13:50,370 --> 00:13:53,500
from Earth if they run out?

383
00:13:53,500 --> 00:13:55,540
>> How do you get food and
-- well, the big thing,

384
00:13:55,540 --> 00:13:59,580
we were just talking, we have
a ship that's planning to dock

385
00:13:59,580 --> 00:14:00,500
to come up to the space station.

386
00:14:00,500 --> 00:14:02,550
We actually have these
unmanned ships that come up.

387
00:14:02,550 --> 00:14:03,430
The Russians have some.

388
00:14:03,430 --> 00:14:04,200
We have some.

389
00:14:04,200 --> 00:14:06,190
Our international partners
in the United States as well

390
00:14:06,190 --> 00:14:09,530
as has one, and we actually
have a new commercial company

391
00:14:09,530 --> 00:14:11,240
that Orbital Sciences is looking

392
00:14:11,240 --> 00:14:13,770
at launching their vehicle
coming up to summer.

393
00:14:13,770 --> 00:14:15,590
So we have different ways
of getting food and water

394
00:14:15,590 --> 00:14:16,530
up to the space station.

395
00:14:16,530 --> 00:14:18,210
The big thing is planning.

396
00:14:18,210 --> 00:14:20,260
We don't want to get to that
point where we run out of food

397
00:14:20,260 --> 00:14:22,450
and water on the space station.

398
00:14:22,450 --> 00:14:24,950
Another interesting fact
is on space station,

399
00:14:24,950 --> 00:14:27,020
a lot of our water
actually gets recycled.

400
00:14:27,020 --> 00:14:29,590
We have a reclamation
system on board.

401
00:14:29,590 --> 00:14:31,200
Ninety percent of the water

402
00:14:31,200 --> 00:14:34,340
that we have that's getting
used is getting reprocessed

403
00:14:34,340 --> 00:14:34,930
and redone.

404
00:14:34,930 --> 00:14:36,010
And it's really important

405
00:14:36,010 --> 00:14:38,330
because weight is a fairly
expensive thing to get up

406
00:14:38,330 --> 00:14:39,640
and down, and the
average human needs

407
00:14:39,640 --> 00:14:41,970
about two liters water a day.

408
00:14:41,970 --> 00:14:42,940
So you start adding that up.

409
00:14:42,940 --> 00:14:44,620
That adds up to be a
lot of weight of water,

410
00:14:44,620 --> 00:14:46,720
and so by reusing it -- and
these are some of the things

411
00:14:46,720 --> 00:14:49,120
that we're learning in space
that we can use on the ground,

412
00:14:49,120 --> 00:14:51,680
'cause there's obviously places
on Earth where water's limited.

413
00:14:51,680 --> 00:14:55,490
>> And as Eric said, there's --
because the space station is run

414
00:14:55,490 --> 00:14:57,600
by a partnership of
different nations,

415
00:14:57,600 --> 00:15:00,900
different countries are
providing those supplies.

416
00:15:00,900 --> 00:15:04,290
The Russian partners launch
one kind of cargo ship,

417
00:15:04,290 --> 00:15:06,900
the European Space
Agency has one,

418
00:15:06,900 --> 00:15:10,450
the Japan Aerospace Exploration
Agency has yet another kind

419
00:15:10,450 --> 00:15:14,580
of cargo ship, and NASA
has provided the seed money

420
00:15:14,580 --> 00:15:17,030
for a couple of private
companies in America

421
00:15:17,030 --> 00:15:18,980
that have been developing
cargo ships.

422
00:15:18,980 --> 00:15:21,760
One of them is already
flying, and the second one is

423
00:15:21,760 --> 00:15:23,860
about ready for its
first test flight,

424
00:15:23,860 --> 00:15:25,920
it's demonstration
flight to the station.

425
00:15:25,920 --> 00:15:28,580
>> Did you see the Great Wall

426
00:15:28,580 --> 00:15:32,060
of China while you were
traveling through space?

427
00:15:32,060 --> 00:15:34,500
>> I actually didn't see
the Great Wall of China.

428
00:15:34,500 --> 00:15:36,080
The timing for lighting
didn't work out,

429
00:15:36,080 --> 00:15:38,450
but there have been people
that have seen the Great Wall

430
00:15:38,450 --> 00:15:40,700
of China, and actually, with
a camera, you can see a lot

431
00:15:40,700 --> 00:15:42,890
of things on Earth that
you know humans are there.

432
00:15:42,890 --> 00:15:45,040
We're flying fairly
low over the planet.

433
00:15:45,040 --> 00:15:51,160
We're at the range of about
200 to 300 miles up in space,

434
00:15:51,160 --> 00:15:53,490
depending on where you are
in your orbit distance.

435
00:15:53,490 --> 00:15:55,740
So you're actually fairly
slow going across the planet,

436
00:15:55,740 --> 00:15:58,530
and you can see the Great
Wall of China from space.

437
00:15:58,530 --> 00:16:00,030
But there are a lot of
things that you can see

438
00:16:00,030 --> 00:16:02,840
that are manmade from -- from --

439
00:16:02,840 --> 00:16:04,640
while you're going
around the plant in orbit.

440
00:16:04,640 --> 00:16:06,360
But the Great Wall of
China's a pretty amazing one.

441

00:16:06,360 --> 00:16:08,680
It's on my list if I
get the chance to see it

442
00:16:08,680 --> 00:16:10,050
when I go up there next time.

443
00:16:10,050 --> 00:16:10,230
>> Okay.

444
00:16:10,230 --> 00:16:16,740
>> Did you see day and
night when you traveled?

445
00:16:17,770 --> 00:16:20,570
>> You see day and night
actually a lot while you're

446
00:16:20,570 --> 00:16:20,970
up in space.

447
00:16:20,970 --> 00:16:22,180
When you're going around
the planet, you're going

448
00:16:22,180 --> 00:16:25,810
about 17,500 miles
per hour in orbit.

449
00:16:25,810 --> 00:16:29,250
What that means is that you go
around the plant 16 times a day.

450
00:16:29,250 --> 00:16:31,930
And 16 times a day means
you see 16 sunrises

451
00:16:31,930 --> 00:16:33,140
and sunsets every day.

452
00:16:33,140 --> 00:16:36,530
So the sun -- and the sun comes
up 16 times as fast and goes

453
00:16:36,530 --> 00:16:39,490
down 16 times as fast; so when
you see it, it's up pretty quick

454
00:16:39,490 --> 00:16:40,950
and down pretty quick.

455
00:16:40,950 --> 00:16:42,900
And one of the interesting
things, of course,

456
00:16:42,900 --> 00:16:44,190
the weather's below us,

457
00:16:44,190 --> 00:16:45,630
so there's never
anything in the way.

458
00:16:45,630 --> 00:16:47,150
So when the sun comes
up, it's very bright,

459
00:16:47,150 --> 00:16:48,600
and when it goes
down, it's very dark.

460
00:16:48,600 --> 00:16:51,840
And so a lot of the effects that
you see on earth that are caused

461
00:16:51,840 --> 00:16:54,190
by the atmosphere, you
don't see those up in space.

462
00:16:54,190 --> 00:16:56,470

But it's actually -- there are
some unique views seeing it

463
00:16:56,470 --> 00:16:57,970
from space as well.

464
00:16:57,970 --> 00:17:00,880
And the sun on space walks, like
we were talking about earlier,

465
00:17:00,880 --> 00:17:03,340
you really have to take into
account where the sun is

466
00:17:03,340 --> 00:17:05,670
because it can actually -- if
you're looking right into it

467
00:17:05,670 --> 00:17:06,660
as you're working on something,

468
00:17:06,660 --> 00:17:07,950
it can really blind
what you're doing;

469
00:17:07,950 --> 00:17:10,460
or when the sun goes down, if
you don't have your lights on,

470
00:17:10,460 --> 00:17:12,170
you won't be able to see the
task that you're working on.

471
00:17:12,170 --> 00:17:14,340
So keeping track of where
the sun is actually fairly

472
00:17:14,340 --> 00:17:15,310
important thing.

473
00:17:15,310 --> 00:17:18,120
But it also effects how you
sleep, because obviously a lot

474
00:17:18,120 --> 00:17:19,610
of people use the sun
on the ground to kind

475
00:17:19,610 --> 00:17:20,410
of tell what time it is.

476
00:17:20,410 --> 00:17:22,980
So you kind of have to get used
to a new clock because you look

477
00:17:22,980 --> 00:17:26,460
that sun a little differently
while you're up in orbit.

478
00:17:26,460 --> 00:17:30,320
>> Does your oxygen
level drop in space?

479
00:17:30,320 --> 00:17:33,140
>> Your oxygen level --
actually, it's all maintained.

480
00:17:33,140 --> 00:17:35,250
We have systems on
board that maintain it.

481
00:17:35,250 --> 00:17:37,920
We have a whole Mission
Control room here in Houston,

482
00:17:37,920 --> 00:17:40,390
and also there's one in Russia
as well that are looking

483

00:17:40,390 --> 00:17:43,010
at these to make sure that
we have the right mixture

484
00:17:43,010 --> 00:17:43,900
of gases in there.

485
00:17:43,900 --> 00:17:46,090
So we have to keep track of
that as part of our thing.

486
00:17:46,090 --> 00:17:48,240
So as you breathe it,
obviously it drops down,

487
00:17:48,240 --> 00:17:50,100
but we have a tank outside

488
00:17:50,100 --> 00:17:53,020
that actually helps put
more oxygen in the air.

489
00:17:53,020 --> 00:17:55,330
We have ships that
bring up oxygen as well.

490
00:17:55,330 --> 00:17:57,870
And we can actually split
oxygen, take water --

491
00:17:57,870 --> 00:18:00,430
we can split the
hydrogen and the oxygen

492
00:18:00,430 --> 00:18:02,150
and actually get oxygen
from that as well.

493
00:18:02,150 --> 00:18:04,080
So there's multiple

ways to get it.

494
00:18:04,080 --> 00:18:06,140
It obviously goes down as we
breathe it and we just have

495
00:18:06,140 --> 00:18:07,120
to replace it over time.

496
00:18:07,120 --> 00:18:10,560
So it's something that we
have to monitor continuously.

497
00:18:10,560 --> 00:18:13,840
>> Can you watch the
Atlanta Braves game in space?

498
00:18:13,840 --> 00:18:15,160
[Chuckling]

499
00:18:15,160 --> 00:18:16,120
>> Yes, you can.

500
00:18:16,120 --> 00:18:17,480
And that's an important
thick to do.

501
00:18:17,480 --> 00:18:19,050
I remember when I was up
in space on one of them,

502
00:18:19,050 --> 00:18:22,290
and I was actually -- our
-- when I was on trip,

503
00:18:22,290 --> 00:18:23,940
we flew over a Georgia
Tech game,

504

00:18:23,940 --> 00:18:26,570
and they had actually
announced us on the news

505
00:18:26,570 --> 00:18:27,840
as the space station
flew overhead.

506
00:18:27,840 --> 00:18:29,820
I didn't hear about it at
the time, but when I landed,

507
00:18:29,820 --> 00:18:32,220
people showed me pictures
where they were talking

508
00:18:32,220 --> 00:18:34,810
about our crew going
over top of the game.

509
00:18:34,810 --> 00:18:37,490
But, yes, they can
actually put up games.

510
00:18:37,490 --> 00:18:39,250
They can also put
up television shows

511
00:18:39,250 --> 00:18:40,480
that the crew wants to watch.

512
00:18:40,480 --> 00:18:43,350
So there are ways to do that,
but a lot of times, you're busy

513
00:18:43,350 --> 00:18:44,940
but you could watch it,
you know, on weekend

514
00:18:44,940 --> 00:18:47,330

or when you have some time,
you know, at night or something

515
00:18:47,330 --> 00:18:48,830
like that, get a tape view.

516
00:18:48,830 --> 00:18:51,360
But, you know, only for big
things do you get a chance,

517
00:18:51,360 --> 00:18:52,350
maybe like the World Series

518
00:18:52,350 --> 00:18:53,960
or something you might get
a chance to watch that.

519
00:18:53,960 --> 00:18:56,010
>> There's not a television
that you can turn on

520
00:18:56,010 --> 00:18:58,280
and just watch whatever's
on television, but the folks

521
00:18:58,280 --> 00:19:03,380
who work here at Mission
Control in Houston can take a --

522
00:19:03,380 --> 00:19:05,950
whether it's a Braves
game or the World Series

523
00:19:05,950 --> 00:19:07,750
or the Super Bowl
or something --

524
00:19:07,750 --> 00:19:10,920
they can send that up
to the crew members

525
00:19:10,920 --> 00:19:13,290
and they can watch
it on the laptop,

526
00:19:13,290 --> 00:19:15,980
on a computer laptop
screen, so they can keep

527
00:19:15,980 --> 00:19:17,310
up with things like that.

528
00:19:17,310 --> 00:19:19,340
>> And most crews request
those kinds of things,

529
00:19:19,340 --> 00:19:20,470
and we have a group here that --

530
00:19:20,470 --> 00:19:22,810
on the ground that actually
helps us get that kind of --

531
00:19:22,810 --> 00:19:24,080
what you're looking
to watch while you're

532
00:19:24,080 --> 00:19:25,610
up on board on orbit.

533
00:19:25,610 --> 00:19:31,680
>> Have you seen
anything unusual in space?

534
00:19:31,680 --> 00:19:33,430
>> Not counting your crew mates.

535
00:19:33,430 --> 00:19:36,330
>> Yeah. The things that you

see that are unusual in space,

536
00:19:36,330 --> 00:19:39,030
probably the biggest things is
just how amazing the world is

537
00:19:39,030 --> 00:19:40,030
when you look out the window.

538
00:19:40,030 --> 00:19:42,050
I mean, you can really
see the planet's alive.

539
00:19:42,050 --> 00:19:44,160
You can look out the window
and you can see the atmosphere,

540
00:19:44,160 --> 00:19:45,850
you can see the blueness
of the oceans.

541
00:19:45,850 --> 00:19:48,000
There's a lot of places
you fly over on the Earth

542
00:19:48,000 --> 00:19:50,300
that a good chance you won't
get to see in the real life.

543
00:19:50,300 --> 00:19:51,080
And there are a few places --

544
00:19:51,080 --> 00:19:53,720
when I was on orbit,
I saw New Zealand.

545
00:19:53,720 --> 00:19:54,420
It was one of the things

546

00:19:54,420 --> 00:19:56,300
that always flew
underneath us fairly often,

547
00:19:56,300 --> 00:19:58,990
and I got the opportunity,
I was lucky enough to go

548
00:19:58,990 --> 00:20:02,490
down to New Zealand later, and
it was neat to compare the view

549
00:20:02,490 --> 00:20:04,240
that you saw from
space and the view.

550
00:20:04,240 --> 00:20:07,090
So the things that I -- that is
the most unusual is seeing those

551
00:20:07,090 --> 00:20:10,290
-- seeing our planed from
a different vantage point.

552
00:20:10,290 --> 00:20:10,960
>> Yup.

553
00:20:10,960 --> 00:20:17,220
>> What is your favorite
thing about living in space?

554
00:20:17,220 --> 00:20:19,700
>> I'd have to say my
favorite thing about living

555
00:20:19,700 --> 00:20:21,260
in space is really
just the mission.

556
00:20:21,260 --> 00:20:22,600

It's one of the things
that I like being

557
00:20:22,600 --> 00:20:24,920
about an astronaut is the
people that you're working with.

558
00:20:24,920 --> 00:20:26,050
And it's not just the astronauts

559
00:20:26,050 --> 00:20:27,510
that are onboard
the space station.

560
00:20:27,510 --> 00:20:28,940
It's everyone that's
in the team.

561
00:20:28,940 --> 00:20:31,010
'Cause when you see
an astronaut in space,

562
00:20:31,010 --> 00:20:32,890
there's actually a thousand
people that are behind

563
00:20:32,890 --> 00:20:34,420
that are doing -- we
have a control room here.

564
00:20:34,420 --> 00:20:36,390
We have, you know, rooms

565
00:20:36,390 --> 00:20:37,840
that are actually
behind the control room

566
00:20:37,840 --> 00:20:40,330
that support the control room
and things that are going on.

567
00:20:40,330 --> 00:20:42,520
The people who design
the hardware.

568
00:20:42,520 --> 00:20:44,720
You get to go out and meet a
lot of these people that worked

569
00:20:44,720 --> 00:20:46,150
on things, the scientific
effort.

570
00:20:46,150 --> 00:20:48,790
It's really just a huge big
effort, and it's really neat.

571
00:20:48,790 --> 00:20:50,990
And then we've talked about
the international partnership

572
00:20:50,990 --> 00:20:53,400
that we were talking about
earlier, and it's just one

573
00:20:53,400 --> 00:20:56,740
of those things that, you know,
you have astronauts that are

574
00:20:56,740 --> 00:20:57,950
from different countries.

575
00:20:57,950 --> 00:20:59,770
You have teams from
different countries.

576
00:20:59,770 --> 00:21:01,280
And all of this is going
on at the same time.

577
00:21:01,280 --> 00:21:03,030
When you start thing about
it and you look at it

578
00:21:03,030 --> 00:21:04,200
and then you look at the planet

579
00:21:04,200 --> 00:21:06,470
and you realize there's
this huge team effort

580
00:21:06,470 --> 00:21:08,090
and all these people involved,

581
00:21:08,090 --> 00:21:09,960
to me it's probably
the most exciting thing

582
00:21:09,960 --> 00:21:10,760
about the space station,

583
00:21:10,760 --> 00:21:15,930
the thing that I really think
is the coolest part about space.

584
00:21:15,930 --> 00:21:18,430
>> How does Mission
Control help you?

585
00:21:18,430 --> 00:21:21,660
>> Well, Mission Control
does a lot of things for us.

586
00:21:21,660 --> 00:21:24,130
They really kind of set
the schedule for the day.

587
00:21:24,130 --> 00:21:25,790
So every day when a

crew member wakes up,

588
00:21:25,790 --> 00:21:29,290
we have meetings the day before,
and then that day they get up

589
00:21:29,290 --> 00:21:31,160
and they look at the things
that they're going to do,

590
00:21:31,160 --> 00:21:32,130
and they have a schedule.

591
00:21:32,130 --> 00:21:33,870
And a lot of times we
come up with challenges

592
00:21:33,870 --> 00:21:36,930
where something doesn't work
the way we expect, or we have --

593
00:21:36,930 --> 00:21:39,900
like, tomorrow we have a vehicle
coming up for rendezvous.

594
00:21:39,900 --> 00:21:41,820
A lot of these things are
going on in the background

595
00:21:41,820 --> 00:21:43,550
where the crew member's
not directly involved in it

596
00:21:43,550 --> 00:21:45,160
but they're keeping us
informed on what's going

597
00:21:45,160 --> 00:21:46,680
on with those vehicles.

598
00:21:46,680 --> 00:21:49,820
And when you have problems, that
-- the ground view, they are --

599
00:21:49,820 --> 00:21:52,620
pretty much we work back
and forth continuously.

600
00:21:52,620 --> 00:21:54,600
We're constantly
having discussions,

601
00:21:54,600 --> 00:21:56,990
we're having e-mail traffic
go up and down, we get videos

602
00:21:56,990 --> 00:21:59,640
that come up and down that
talk about the experiments

603
00:21:59,640 --> 00:22:02,500
that we're working on or
the areas that we want

604
00:22:02,500 --> 00:22:03,290
to repair on the vehicle.

605
00:22:03,290 --> 00:22:05,950
So Mission Control is
extremely involved and it's one

606
00:22:05,950 --> 00:22:06,740
of the big training areas.

607
00:22:06,740 --> 00:22:09,300
We even have a person that
we call a [inaudible] here

608
00:22:09,300 --> 00:22:11,330

in the control room
that actually talks,

609
00:22:11,330 --> 00:22:13,750
takes what the control room is
talking about and then pipes it

610
00:22:13,750 --> 00:22:15,610
up to the astronauts
and vice versa.

611
00:22:15,610 --> 00:22:18,820
So it's a very essential
part of the whole mission

612
00:22:18,820 --> 00:22:20,530
of getting the job done.

613
00:22:20,530 --> 00:22:22,990
>> I think we may have
time for one more.

614
00:22:22,990 --> 00:22:28,200
>> Did you ever think
you'd be a pilot for NASA?

615
00:22:28,200 --> 00:22:30,550
>> You know, it was one of
those far off dreams but it's,

616
00:22:30,550 --> 00:22:32,670
you know, now that
I'm in this position,

617
00:22:32,670 --> 00:22:35,010
I really consider myself
extremely fortunate

618
00:22:35,010 --> 00:22:35,850
to get the opportunity.

619
00:22:35,850 --> 00:22:38,910
There's a lot of people that
apply and want to do it,

620
00:22:38,910 --> 00:22:42,460
and there are those out there in
your group that I hope you will,

621
00:22:42,460 --> 00:22:45,250
if you're interested in space,
will put your name on it,

622
00:22:45,250 --> 00:22:48,040
'cause just like you, I was
sitting in a classroom just

623
00:22:48,040 --> 00:22:50,480
like you were in Georgia,
and it was an opportunity

624
00:22:50,480 --> 00:22:53,690
to get the chance to go through,
to study hard in school,

625
00:22:53,690 --> 00:22:55,070
look at those math and sciences

626
00:22:55,070 --> 00:22:57,380
and keep doing what you're
doing, and you could be sitting

627
00:22:57,380 --> 00:22:59,670
in this seat talking
to some other people

628
00:22:59,670 --> 00:23:01,220
from Georgia in the future.

629

00:23:01,220 --> 00:23:03,660
>> Eric, we're --
our time is about up.

630
00:23:03,660 --> 00:23:05,540
I want to thank you
for joining us

631
00:23:05,540 --> 00:23:07,430
and providing some
thoughtful answers

632
00:23:07,430 --> 00:23:09,020
about the job that you do.

633
00:23:09,020 --> 00:23:09,870
>> Well, you're welcome, Pat.

634
00:23:09,870 --> 00:23:10,520
I enjoyed it.