



MISSION CONTROL CENTER

PAO

001 013 LOG

1
00:00:04,710 --> 00:00:03,189
hi welcome to mission control houston

2
00:00:07,030 --> 00:00:04,720
we're here in the international space

3
00:00:08,390 --> 00:00:07,040
station flight control room and i am

4
00:00:09,910 --> 00:00:08,400
brandi dean i'm working the public

5
00:00:13,110 --> 00:00:09,920
affairs office here and i've got here

6
00:00:14,950 --> 00:00:13,120
with me dory tomaica who is the visiting

7
00:00:17,590 --> 00:00:14,960
vehicle officer on the space station

8
00:00:19,349 --> 00:00:17,600
flight control team so i'm gonna let her

9
00:00:20,870 --> 00:00:19,359
tell a little bit about herself and then

10
00:00:21,990 --> 00:00:20,880
i hear you have some questions for us

11
00:00:24,470 --> 00:00:22,000
dory

12
00:00:26,310 --> 00:00:24,480
thanks brandi hey guys um like i said my

13
00:00:28,150 --> 00:00:26,320

name is dory and i've worked here at

14

00:00:30,310 --> 00:00:28,160

nasa since uh

15

00:00:31,509 --> 00:00:30,320

for five years now full time um but

16

00:00:33,430 --> 00:00:31,519

before that i actually worked here when

17

00:00:35,350 --> 00:00:33,440

i was in college so i started back in

18

00:00:37,190 --> 00:00:35,360

2004 and i worked here every other

19

00:00:38,869 --> 00:00:37,200

semester so i've gotten a lot of

20

00:00:40,869 --> 00:00:38,879

experience while i've been here

21

00:00:43,670 --> 00:00:40,879

um and like she said i'm in the visiting

22

00:00:44,950 --> 00:00:43,680

vehicle office and so we work in mission

23

00:00:46,950 --> 00:00:44,960

control

24

00:00:49,110 --> 00:00:46,960

for the space station and we are in

25

00:00:50,709 --> 00:00:49,120

charge of space station safety

26
00:00:52,790 --> 00:00:50,719
when there's another vehicle coming to

27
00:00:54,630 --> 00:00:52,800
the space station so lots of vehicles

28
00:00:57,110 --> 00:00:54,640
come the russians have their progress in

29
00:00:58,950 --> 00:00:57,120
soyuz the europeans have a vehicle the

30
00:01:00,790 --> 00:00:58,960
japanese space agency has a vehicle and

31
00:01:02,069 --> 00:01:00,800
now they're two u.s vehicles who are

32
00:01:03,990 --> 00:01:02,079
coming and so

33
00:01:06,310 --> 00:01:04,000
anytime those vehicles are near the iss

34
00:01:08,149 --> 00:01:06,320
the the vvo is in charge of making sure

35
00:01:10,070 --> 00:01:08,159
that they're being safe and that the iss

36
00:01:11,670 --> 00:01:10,080
is safe and the crew is safe and you'll

37
00:01:13,109 --> 00:01:11,680
have a vehicle that's coming soon right

38
00:01:15,109 --> 00:01:13,119

we do yeah next weekend we'll have

39

00:01:16,469 --> 00:01:15,119

dragon which is a spacex's vehicle and

40

00:01:18,789 --> 00:01:16,479

they're based out of l.a out in

41

00:01:20,550 --> 00:01:18,799

california all right well thanks dory

42

00:01:22,230 --> 00:01:20,560

okay i hear uh that you all have some

43

00:01:32,149 --> 00:01:22,240

questions for us there in phoenix so

44

00:01:32,159 --> 00:01:50,630

give us a second

45

00:01:50,640 --> 00:02:00,950

remember

46

00:02:05,270 --> 00:02:03,109

oh

47

00:02:07,030 --> 00:02:05,280

how do astronauts maintain muscle mass

48

00:02:09,109 --> 00:02:07,040

and microgravity

49

00:02:11,190 --> 00:02:09,119

how do astronauts maintain muscle mass

50

00:02:12,229 --> 00:02:11,200

and microgravity that's a really good

51
00:02:14,070 --> 00:02:12,239
question and something that's really

52
00:02:15,910 --> 00:02:14,080
important on the space station uh the

53
00:02:17,990 --> 00:02:15,920
astronauts do a lot of exercise they

54
00:02:19,350 --> 00:02:18,000
have exercise in their schedules every

55
00:02:21,270 --> 00:02:19,360
day they have different kinds of

56
00:02:23,190 --> 00:02:21,280
exercise they can do of course it's all

57
00:02:25,030 --> 00:02:23,200
modified to make it work in space and so

58
00:02:27,270 --> 00:02:25,040
sometimes they actually have to use kind

59
00:02:29,030 --> 00:02:27,280
of bungee cords to attach themselves to

60
00:02:31,030 --> 00:02:29,040
the equipment to kind of gravity or

61
00:02:32,949 --> 00:02:31,040
simulate gravity but they have things

62
00:02:34,470 --> 00:02:32,959
like treadmills and exercise bikes and

63
00:02:36,229 --> 00:02:34,480

then they do weights and things like

64

00:02:37,430 --> 00:02:36,239

that too so lots of the same exercises

65

00:02:39,030 --> 00:02:37,440

we do on earth just a little bit

66

00:02:40,790 --> 00:02:39,040

modified yeah they have special

67

00:02:43,990 --> 00:02:40,800

equipment for it to make it work without

68

00:02:44,000 --> 00:02:51,589

thank you

69

00:02:55,750 --> 00:02:53,750

do you use robotic mechanical arms on

70

00:02:57,670 --> 00:02:55,760

the space station

71

00:03:00,309 --> 00:02:57,680

do we use a lot of mechanical arms on

72

00:03:01,110 --> 00:03:00,319

the space station we do have uh we do

73

00:03:04,869 --> 00:03:01,120

have

74

00:03:07,830 --> 00:03:04,879

big one that you've probably seen is the

75

00:03:09,190 --> 00:03:07,840

ss rms and that's the really big arm

76

00:03:10,949 --> 00:03:09,200

that we're actually going to use next

77

00:03:12,309 --> 00:03:10,959

weekend for when dragon comes up

78

00:03:13,589 --> 00:03:12,319

dragon's going to come real close to

79

00:03:15,030 --> 00:03:13,599

station and then the arm's going to come

80

00:03:16,869 --> 00:03:15,040

out and grab it

81

00:03:18,229 --> 00:03:16,879

the japanese have their own smaller arm

82

00:03:20,149 --> 00:03:18,239

that they use on their module for their

83

00:03:22,149 --> 00:03:20,159

science experiments but robotics is very

84

00:03:23,589 --> 00:03:22,159

big at the space station

85

00:03:25,350 --> 00:03:23,599

and i think sometimes there are

86

00:03:26,789 --> 00:03:25,360

astronauts that go on the end of the

87

00:03:30,070 --> 00:03:26,799

robotic arm to move around during

88

00:03:31,509 --> 00:03:30,080

spacewalks and there's also a robot that

89

00:03:34,149 --> 00:03:31,519

lives inside the space station called

90

00:03:44,869 --> 00:03:34,159

robonaut 2 so it's not a robotic arm but

91

00:03:50,309 --> 00:03:48,149

do you have a lot of oxygen tanks or how

92

00:03:53,350 --> 00:03:50,319

do you clean the air in the space

93

00:03:57,270 --> 00:03:55,509

so the space station has oxygen

94

00:04:00,149 --> 00:03:57,280

scrubbers and they're these machines

95

00:04:02,309 --> 00:04:00,159

that basically clean the oxygen for us

96

00:04:04,149 --> 00:04:02,319

and so that's how we kind of recirculate

97

00:04:07,110 --> 00:04:04,159

that air and keep it clean and keep it

98

00:04:25,749 --> 00:04:08,789

items in it for good breathing and

99

00:04:31,590 --> 00:04:27,830

what is the process for becoming an

100

00:04:36,629 --> 00:04:34,469

well that's a really good question

101
00:04:38,390 --> 00:04:36,639
it kind of depends lots of people will

102
00:04:39,510 --> 00:04:38,400
apply to become astronauts that's the

103
00:04:41,590 --> 00:04:39,520
first step you have to send in an

104
00:04:43,270 --> 00:04:41,600
application and sometimes you have to

105
00:04:45,510 --> 00:04:43,280
send in different applications you won't

106
00:04:47,030 --> 00:04:45,520
get it your first try or your second try

107
00:04:48,310 --> 00:04:47,040
it's you know they get thousands of

108
00:04:49,830 --> 00:04:48,320
applications and they pick just a

109
00:04:52,150 --> 00:04:49,840
handful of astronauts when they pick a

110
00:04:54,469 --> 00:04:52,160
new class that's what they call them um

111
00:04:55,590 --> 00:04:54,479
but there's an an application process

112
00:04:57,670 --> 00:04:55,600
and then if you make it through that

113
00:04:58,950 --> 00:04:57,680

there's an interview process and there's

114

00:05:00,710 --> 00:04:58,960

a lot of testing you have to do

115

00:05:02,230 --> 00:05:00,720

physically to make sure you can handle

116

00:05:04,310 --> 00:05:02,240

really being an astronaut because being

117

00:05:05,909 --> 00:05:04,320

zero g is tough on your body

118

00:05:08,070 --> 00:05:05,919

and then there's also a social aspect to

119

00:05:09,990 --> 00:05:08,080

it too where they um they make sure that

120

00:05:12,550 --> 00:05:10,000

you know if you're going to be stuck in

121

00:05:14,310 --> 00:05:12,560

you know a house imagine with six people

122

00:05:15,510 --> 00:05:14,320

for six months you want to make sure

123

00:05:17,029 --> 00:05:15,520

that you're really good at getting along

124

00:05:18,310 --> 00:05:17,039

with people and so that's a little bit

125

00:05:19,909 --> 00:05:18,320

of it too that you really have the right

126

00:05:21,990 --> 00:05:19,919

personality for it and then of course

127

00:05:23,350 --> 00:05:22,000

you have to have had enough schooling to

128

00:05:24,790 --> 00:05:23,360

really be able to help on the space

129

00:05:26,790 --> 00:05:24,800

station with doing all the science and

130

00:05:28,230 --> 00:05:26,800

everything so a lot of the astronauts

131

00:05:29,749 --> 00:05:28,240

have phds

132

00:05:31,990 --> 00:05:29,759

and if not most of them have master's

133

00:05:34,310 --> 00:05:32,000

degrees so those are kind of the broad

134

00:05:37,270 --> 00:05:34,320

areas and most of them have the degrees

135

00:05:38,629 --> 00:05:37,280

in science or math or engineering maybe

136

00:05:40,950 --> 00:05:38,639

technology

137

00:05:42,870 --> 00:05:40,960

field so it's kind of a specific area

138

00:05:44,550 --> 00:05:42,880

you have to start studying early on so

139

00:05:56,790 --> 00:05:44,560

you're good enough to be

140

00:06:03,510 --> 00:06:00,550

uh what up mom does everybody uh get

141

00:06:06,150 --> 00:06:03,520

along at the space station

142

00:06:07,830 --> 00:06:06,160

yeah i think so i think you know it's

143

00:06:09,670 --> 00:06:07,840

it's just like you know if you put six

144

00:06:10,870 --> 00:06:09,680

people together like i said for a while

145

00:06:12,469 --> 00:06:10,880

i'm sure there will be times when you

146

00:06:13,990 --> 00:06:12,479

wish you could you know get by yourself

147

00:06:15,990 --> 00:06:14,000

for a little bit and have some personal

148

00:06:17,510 --> 00:06:16,000

time and so but these people are all

149

00:06:19,270 --> 00:06:17,520

really good at getting along and they're

150

00:06:20,870 --> 00:06:19,280

all really great friends too they train

151

00:06:22,629 --> 00:06:20,880

a lot together before they go up there

152

00:06:24,469 --> 00:06:22,639

so they're really a team and almost like

153

00:06:25,830 --> 00:06:24,479

a family by the time they go up there so

154

00:06:28,469 --> 00:06:25,840

yeah they get along really well and they

155

00:06:41,749 --> 00:06:28,479

have a lot of fun too

156

00:06:46,230 --> 00:06:44,150

we have a robotics class on campus how

157

00:06:49,909 --> 00:06:46,240

extensively are robots used in the

158

00:06:51,350 --> 00:06:49,919

program and what type of robots are used

159

00:06:53,589 --> 00:06:51,360

yes we talked a little bit about it

160

00:06:55,830 --> 00:06:53,599

before but we use robotics a lot in the

161

00:06:58,070 --> 00:06:55,840

space station like we said the arm is a

162

00:06:59,670 --> 00:06:58,080

really integral part a lot of the work

163

00:07:01,430 --> 00:06:59,680

we do outside the space station where we

164

00:07:02,629 --> 00:07:01,440

need to fix things or do some

165

00:07:04,150 --> 00:07:02,639

maintenance

166

00:07:05,430 --> 00:07:04,160

that a lot of that involves the arm

167

00:07:07,270 --> 00:07:05,440

because the arm can reach almost the

168

00:07:09,350 --> 00:07:07,280

entire space station so we use that a

169

00:07:11,029 --> 00:07:09,360

lot and then like brandi had mentioned

170

00:07:13,029 --> 00:07:11,039

we have robonaut up there who's our

171

00:07:14,870 --> 00:07:13,039

robot astronaut and now we're just

172

00:07:17,110 --> 00:07:14,880

starting to really get to use him but

173

00:07:18,629 --> 00:07:17,120

he's going to be able to do tasks

174

00:07:20,469 --> 00:07:18,639

so that the astronauts don't have to

175

00:07:22,550 --> 00:07:20,479

because going out in space is dangerous

176
00:07:24,070 --> 00:07:22,560
and so you know we like to make sure we

177
00:07:25,029 --> 00:07:24,080
prepare a lot before we do it and we

178
00:07:26,710 --> 00:07:25,039
send them out there when they have

179
00:07:29,029 --> 00:07:26,720
really important things to do and so if

180
00:07:30,390 --> 00:07:29,039
we can send robonaut out there instead

181
00:07:32,390 --> 00:07:30,400
to do some of the easier stuff that's

182
00:07:33,909 --> 00:07:32,400
kind of a long-term goal for us so

183
00:07:35,110 --> 00:07:33,919
you'll see a lot of robotics used in the

184
00:07:37,430 --> 00:07:35,120
future

185
00:07:39,550 --> 00:07:37,440
and you can find out more about robonaut

186
00:07:41,110 --> 00:07:39,560
online at

187
00:07:43,510 --> 00:07:41,120
www.nasa.gov

188
00:07:46,710 --> 00:07:43,520

robonaut and actually you can uh talk

189

00:07:48,869 --> 00:07:46,720

with him via twitter at twitter.com

190

00:07:59,270 --> 00:07:48,879

astro robonaut so y'all can find out a

191

00:08:02,070 --> 00:08:00,390

um

192

00:08:05,749 --> 00:08:02,080

who made the food

193

00:08:10,230 --> 00:08:07,430

i did can you repeat that question i

194

00:08:13,830 --> 00:08:10,240

didn't quite hear it

195

00:08:16,150 --> 00:08:13,840

who made the food the packet the food

196

00:08:19,510 --> 00:08:16,160

who makes the food packages

197

00:08:21,589 --> 00:08:19,520

yes we actually um we have a group here

198

00:08:24,550 --> 00:08:21,599

at jsc that's in charge of astronaut

199

00:08:26,150 --> 00:08:24,560

food and it's it's difficult we try to

200

00:08:27,589 --> 00:08:26,160

make the same kind of food that you have

201
00:08:29,110 --> 00:08:27,599
on the ground but you have to make it

202
00:08:30,629 --> 00:08:29,120
kind of differently sometimes you have

203
00:08:32,709 --> 00:08:30,639
to take a lot of the water out of it so

204
00:08:35,029 --> 00:08:32,719
it's dehydrated food and then we add the

205
00:08:35,829 --> 00:08:35,039
water back in when we're in space

206
00:08:37,190 --> 00:08:35,839
but

207
00:08:38,550 --> 00:08:37,200
you know you have we have a lot of

208
00:08:39,909 --> 00:08:38,560
people from different countries here and

209
00:08:41,589 --> 00:08:39,919
different countries have different food

210
00:08:43,110 --> 00:08:41,599
that they specialize in or that they

211
00:08:44,870 --> 00:08:43,120
really enjoy and so one of the things we

212
00:08:46,630 --> 00:08:44,880
do is make sure that we have food that

213
00:08:48,230 --> 00:08:46,640

people from the um from their home

214

00:08:50,550 --> 00:08:48,240

countries so that it feels a little bit

215

00:08:52,389 --> 00:08:50,560

more like home and so one of the things

216

00:08:53,750 --> 00:08:52,399

they do is on big holidays you know if

217

00:08:55,350 --> 00:08:53,760

there's special food you eat on a

218

00:08:56,870 --> 00:08:55,360

holiday they'll actually send it up for

219

00:08:58,710 --> 00:08:56,880

that holiday

220

00:09:00,470 --> 00:08:58,720

and so you know like we eat sauerkraut

221

00:09:01,990 --> 00:09:00,480

at new year's that kind of a thing so if

222

00:09:03,430 --> 00:09:02,000

there's a special food for example that

223

00:09:04,710 --> 00:09:03,440

the russians have for a holiday then

224

00:09:05,990 --> 00:09:04,720

they'll send it on board so that they

225

00:09:07,030 --> 00:09:06,000

can have the food they would normally

226
00:09:08,389 --> 00:09:07,040
have if they were at home for that

227
00:09:10,790 --> 00:09:08,399
holiday

228
00:09:12,070 --> 00:09:10,800
and before the crew goes into space they

229
00:09:13,670 --> 00:09:12,080
get to try all the different kinds of

230
00:09:15,430 --> 00:09:13,680
food and decide what they like and then

231
00:09:17,110 --> 00:09:15,440
they work with the team here on the

232
00:09:18,230 --> 00:09:17,120
ground to make sure that they get the

233
00:09:19,829 --> 00:09:18,240
right

234
00:09:22,870 --> 00:09:19,839
amount of different vitamins and

235
00:09:24,630 --> 00:09:22,880
nutrition and get a good balanced diet

236
00:09:25,910 --> 00:09:24,640
and then that's what's sent up for them

237
00:09:34,310 --> 00:09:25,920
so that they they don't have to eat

238
00:09:38,070 --> 00:09:36,550

since space uh shuttles are no longer in

239

00:09:39,350 --> 00:09:38,080

use how are supplies delivered to the

240

00:09:40,870 --> 00:09:39,360

space station

241

00:09:43,110 --> 00:09:40,880

good questions yeah another good

242

00:09:45,350 --> 00:09:43,120

question uh so right now we can we get

243

00:09:47,350 --> 00:09:45,360

crew to the space station via the soyuz

244

00:09:48,949 --> 00:09:47,360

and that's uh russia's vehicle that can

245

00:09:51,350 --> 00:09:48,959

take people up on it so that's how

246

00:09:53,750 --> 00:09:51,360

everybody's going up and back right now

247

00:09:55,190 --> 00:09:53,760

for cargo for for non-people we have

248

00:09:56,870 --> 00:09:55,200

lots of different vehicles that can go

249

00:09:58,790 --> 00:09:56,880

up there right now the russians have a

250

00:10:00,870 --> 00:09:58,800

vehicle called progress which is like

251

00:10:03,590 --> 00:10:00,880

the soyuz except it's full of stuff not

252

00:10:05,910 --> 00:10:03,600

people um the europeans have one called

253

00:10:07,990 --> 00:10:05,920

atv and the japanese have a vehicle

254

00:10:09,590 --> 00:10:08,000

called htv and those are both cargo

255

00:10:11,910 --> 00:10:09,600

vehicles that come to the space station

256

00:10:13,110 --> 00:10:11,920

and now we have two u.s companies dragon

257

00:10:14,550 --> 00:10:13,120

that we were talking about so it's

258

00:10:16,470 --> 00:10:14,560

coming next week and bringing up some

259

00:10:17,670 --> 00:10:16,480

cargo and supplies and some science

260

00:10:19,670 --> 00:10:17,680

experiments

261

00:10:21,430 --> 00:10:19,680

and then orbital's vehicle cygnus will

262

00:10:31,990 --> 00:10:21,440

be coming up later this year and it will

263

00:10:36,150 --> 00:10:34,069

are the types of careers

264

00:10:38,069 --> 00:10:36,160

are possible with nasa

265

00:10:39,670 --> 00:10:38,079

what other type of careers are possible

266

00:10:41,590 --> 00:10:39,680

at nasa

267

00:10:42,790 --> 00:10:41,600

well um there are a whole lot of

268

00:10:45,350 --> 00:10:42,800

different types of things you can do at

269

00:10:48,069 --> 00:10:45,360

nasa obviously there could be a

270

00:10:49,590 --> 00:10:48,079

flight controller like dory here or an

271

00:10:51,430 --> 00:10:49,600

astronaut or

272

00:10:53,590 --> 00:10:51,440

just an engineer

273

00:10:56,389 --> 00:10:53,600

i work in the public affairs office so i

274

00:10:58,150 --> 00:10:56,399

write a lot and there's really not not a

275

00:10:59,750 --> 00:10:58,160

whole lot of areas that nasa doesn't

276
00:11:00,710 --> 00:10:59,760
touch in some way but most people are

277
00:11:03,110 --> 00:11:00,720
going to be

278
00:11:12,870 --> 00:11:03,120
in the science or math or engineering

279
00:11:19,430 --> 00:11:15,030
go ahead and make me

280
00:11:23,670 --> 00:11:21,269
and we apologize for the color bars it

281
00:11:26,389 --> 00:11:23,680
looks like our feed got interrupted uh

282
00:11:28,790 --> 00:11:26,399
from um mission control so we're going

283
00:11:31,269 --> 00:11:28,800
to try to reconnect it now you guys are

284
00:11:34,389 --> 00:11:31,279
asking lots of great questions about

285
00:11:36,949 --> 00:11:34,399
robots and you guys were asking about r2

286
00:11:39,829 --> 00:11:36,959
and i wanted to show you a picture of r2

287
00:11:41,590 --> 00:11:39,839
it's an anthropomorphic robot so what do

288
00:11:42,470 --> 00:11:41,600

you guys think an anthropomorphic robot

289

00:11:43,829 --> 00:11:42,480

is

290

00:11:45,590 --> 00:11:43,839

okay thanks

291

00:11:47,750 --> 00:11:45,600

does it look like a human

292

00:11:49,990 --> 00:11:47,760

yeah very human-like as you can see it's

293

00:12:01,190 --> 00:11:50,000

got a head it's got a torso it's got

294

00:12:01,200 --> 00:12:12,470

oh there we go

295

00:12:18,150 --> 00:12:14,069

yeah specific daily routines on the

296

00:12:23,350 --> 00:12:21,110

the daily routines on the space station

297

00:12:25,269 --> 00:12:23,360

yeah that actually the days are very

298

00:12:26,949 --> 00:12:25,279

scheduled on the space station because

299

00:12:28,230 --> 00:12:26,959

time and space is really important we

300

00:12:30,389 --> 00:12:28,240

have a lot of science we want to get

301
00:12:32,230 --> 00:12:30,399
done we have a lot we have vehicles that

302
00:12:34,550 --> 00:12:32,240
are coming up we have robotics things we

303
00:12:37,190 --> 00:12:34,560
want to do and so the day is very well

304
00:12:38,710 --> 00:12:37,200
scheduled and one of the things is that

305
00:12:40,470 --> 00:12:38,720
you know we start the day at a set time

306
00:12:42,150 --> 00:12:40,480
and we end the day at a set time and we

307
00:12:44,230 --> 00:12:42,160
have lunch we try to keep it at you know

308
00:12:46,069 --> 00:12:44,240
around lunchtime same with dinner and so

309
00:12:47,509 --> 00:12:46,079
we schedule activities in between those

310
00:12:49,030 --> 00:12:47,519
times and so yeah everything's very

311
00:12:50,949 --> 00:12:49,040
scheduled and the ground and the crew

312
00:12:52,710 --> 00:12:50,959
can both see that schedule both for that

313
00:12:53,670 --> 00:12:52,720

day and in the future we plan a lot in

314

00:12:56,230 --> 00:12:53,680

advance

315

00:12:57,910 --> 00:12:56,240

it's planned very detailed too down to i

316

00:12:59,269 --> 00:12:57,920

think five minute increments so that

317

00:13:01,590 --> 00:12:59,279

they know what they are supposed to be

318

00:13:02,790 --> 00:13:01,600

doing at any given time and uh so that

319

00:13:04,150 --> 00:13:02,800

the ground makes sure that they have

320

00:13:05,590 --> 00:13:04,160

enough time for the things that they're

321

00:13:07,430 --> 00:13:05,600

asking them to do and they don't run out

322

00:13:12,550 --> 00:13:07,440

of time before they're before the task

323

00:13:17,910 --> 00:13:14,470

and uh ready for your next question if

324

00:13:23,350 --> 00:13:21,190

what does uh mission control do

325

00:13:25,030 --> 00:13:23,360

mission control does a whole lot of jobs

326

00:13:26,150 --> 00:13:25,040

actually if you've seen a picture of

327

00:13:27,670 --> 00:13:26,160

mission control you can see there are a

328

00:13:29,670 --> 00:13:27,680

lot of different desks we got those

329

00:13:31,350 --> 00:13:29,680

consoles and each console does something

330

00:13:33,590 --> 00:13:31,360

different but the main job of mission

331

00:13:35,670 --> 00:13:33,600

control is to help the space station to

332

00:13:37,750 --> 00:13:35,680

help the crew and to help the actual the

333

00:13:39,269 --> 00:13:37,760

structure the space station itself to do

334

00:13:41,350 --> 00:13:39,279

what it needs to get done so we have

335

00:13:42,870 --> 00:13:41,360

people like me the videos that are in

336

00:13:44,629 --> 00:13:42,880

charge of safety when there's a vehicle

337

00:13:45,670 --> 00:13:44,639

coming to the space station we have

338

00:13:47,269 --> 00:13:45,680

people that are in charge of the

339

00:13:49,030 --> 00:13:47,279

computers onboard the space station and

340

00:13:50,389 --> 00:13:49,040

making sure they run we have people that

341

00:13:52,230 --> 00:13:50,399

are in charge of keeping the life

342

00:13:54,470 --> 00:13:52,240

support systems working well so the

343

00:13:55,829 --> 00:13:54,480

oxygen like we talked about and water

344

00:13:57,509 --> 00:13:55,839

we have people that just run every

345

00:13:59,509 --> 00:13:57,519

different piece keeping a space station

346

00:14:01,030 --> 00:13:59,519

in the right place in space so just

347

00:14:02,629 --> 00:14:01,040

about anything you can think of there

348

00:14:03,990 --> 00:14:02,639

are even people that have to figure out

349

00:14:06,069 --> 00:14:04,000

you know where stuff is stored on the

350

00:14:07,670 --> 00:14:06,079

space station because you know you have

351
00:14:09,590 --> 00:14:07,680
closets in your house but on the space

352
00:14:11,750 --> 00:14:09,600
station there are closets on the walls

353
00:14:13,590 --> 00:14:11,760
and on the floor and on the ceiling

354
00:14:15,750 --> 00:14:13,600
and so think about you're living in your

355
00:14:17,430 --> 00:14:15,760
house and then six months later new

356
00:14:18,949 --> 00:14:17,440
people come into your house you have no

357
00:14:21,189 --> 00:14:18,959
idea where they put the scissors or

358
00:14:22,629 --> 00:14:21,199
where the stapler is and so we on the

359
00:14:24,069 --> 00:14:22,639
ground have to help out with that too to

360
00:14:26,069 --> 00:14:24,079
kind of keep track of where things are

361
00:14:30,949 --> 00:14:26,079
so lots of things that mission control

362
00:14:30,959 --> 00:14:37,750
ready for your next question

363
00:14:43,189 --> 00:14:40,310

um how difficult is it using the zero

364

00:14:44,949 --> 00:14:43,199

gravity toilet

365

00:14:46,949 --> 00:14:44,959

that's always a fun question huh so i've

366

00:14:48,470 --> 00:14:46,959

never gotten to use it myself uh but i

367

00:14:50,230 --> 00:14:48,480

have talked to some of the astronauts

368

00:14:51,910 --> 00:14:50,240

and one of the things is they do a lot

369

00:14:53,910 --> 00:14:51,920

of training on the ground we do training

370

00:14:55,910 --> 00:14:53,920

for everything and that's that's not an

371

00:14:57,110 --> 00:14:55,920

exception you know you have to learn how

372

00:14:58,389 --> 00:14:57,120

the machine works because it's

373

00:15:00,470 --> 00:14:58,399

definitely different than a regular

374

00:15:02,389 --> 00:15:00,480

toilet and you have to learn how to use

375

00:15:04,550 --> 00:15:02,399

it properly and then once they have that

376

00:15:06,150 --> 00:15:04,560

training it's it's not difficult

377

00:15:08,470 --> 00:15:06,160

it's just a different process they have

378

00:15:09,350 --> 00:15:08,480

to learn

379

00:15:17,110 --> 00:15:09,360

next

380

00:15:21,430 --> 00:15:18,790

how many different types of jobs are at

381

00:15:23,030 --> 00:15:21,440

mission control

382

00:15:25,110 --> 00:15:23,040

how many different types of jobs are in

383

00:15:26,949 --> 00:15:25,120

mission control it's it's hard to count

384

00:15:29,110 --> 00:15:26,959

uh get a real count because

385

00:15:30,629 --> 00:15:29,120

if you are you can see where we are

386

00:15:32,230 --> 00:15:30,639

there are a number of deaths just like

387

00:15:33,910 --> 00:15:32,240

the one we're sitting at here

388

00:15:36,790 --> 00:15:33,920

who each have a person

389

00:15:38,230 --> 00:15:36,800

at it doing a specific job and each of

390

00:15:39,829 --> 00:15:38,240

those desks has

391

00:15:40,629 --> 00:15:39,839

somebody who sits at them all day so

392

00:15:42,870 --> 00:15:40,639

there's

393

00:15:44,710 --> 00:15:42,880

three people who um sit at them you know

394

00:15:45,990 --> 00:15:44,720

for about eight or nine hours at a time

395

00:15:48,870 --> 00:15:46,000

and they switch off so that there's

396

00:15:51,430 --> 00:15:48,880

always somebody there and each of those

397

00:15:53,910 --> 00:15:51,440

desks also has a whole room of people

398

00:15:55,990 --> 00:15:53,920

usually um that sits somewhere else not

399

00:15:57,269 --> 00:15:56,000

in this room but uh that backs them up

400

00:15:59,189 --> 00:15:57,279

on different activities they might have

401
00:16:01,110 --> 00:15:59,199
to do somewhere else so

402
00:16:02,389 --> 00:16:01,120
it's a it's a lot of people it keeps it

403
00:16:05,590 --> 00:16:02,399
takes a lot of people to keep the space

404
00:16:05,600 --> 00:16:10,710
next question

405
00:16:15,350 --> 00:16:13,189
um what kind of college course work is

406
00:16:17,910 --> 00:16:15,360
needed to follow the career field of an

407
00:16:19,269 --> 00:16:17,920
astronaut

408
00:16:20,550 --> 00:16:19,279
like we had talked about you know most

409
00:16:23,110 --> 00:16:20,560
of the astronauts are involved in

410
00:16:25,110 --> 00:16:23,120
technology or science or engineering

411
00:16:26,629 --> 00:16:25,120
and so you would get you start off with

412
00:16:28,550 --> 00:16:26,639
your bachelor's degree in one of those

413
00:16:30,790 --> 00:16:28,560

areas and then you kind of figure out

414

00:16:32,470 --> 00:16:30,800

what you want your specialty to be and

415

00:16:33,670 --> 00:16:32,480

then they'll go and get a master's in

416

00:16:35,990 --> 00:16:33,680

that and most of the time they'll even

417

00:16:37,509 --> 00:16:36,000

go and get a phd so you know the highest

418

00:16:40,470 --> 00:16:37,519

kind of degree you can get to really

419

00:16:41,670 --> 00:16:40,480

become an expert on that subject

420

00:16:43,910 --> 00:16:41,680

and i think a lot of the astronauts

421

00:16:46,069 --> 00:16:43,920

would tell you that

422

00:16:47,749 --> 00:16:46,079

their recommendation is because it's so

423

00:16:49,430 --> 00:16:47,759

hard to be an astronaut you should

424

00:16:51,110 --> 00:16:49,440

really study something that you love

425

00:16:52,150 --> 00:16:51,120

anyway that you'll love doing even if

426
00:16:53,990 --> 00:16:52,160
you're not going to do it as an

427
00:16:56,150 --> 00:16:54,000
astronaut so that

428
00:16:57,110 --> 00:16:56,160
that also helps you

429
00:16:59,189 --> 00:16:57,120
learn to be

430
00:17:00,710 --> 00:16:59,199
really the best in your field if you

431
00:17:02,310 --> 00:17:00,720
love it you'll work hard at it and so

432
00:17:04,150 --> 00:17:02,320
that increases your chance of being an

433
00:17:05,270 --> 00:17:04,160
astronaut but it also gives you a backup

434
00:17:06,870 --> 00:17:05,280
plan if you're not able to be an

435
00:17:13,189 --> 00:17:06,880
astronaut

436
00:17:17,110 --> 00:17:14,870
what temperatures outside of space

437
00:17:18,710 --> 00:17:17,120
stations do you experience and how

438
00:17:21,029 --> 00:17:18,720

temperatures adjusted for the

439

00:17:23,350 --> 00:17:21,039

temperature change

440

00:17:25,029 --> 00:17:23,360

that's a good question um when it is

441

00:17:26,789 --> 00:17:25,039

nighttime outside the space station so

442

00:17:28,230 --> 00:17:26,799

the the space station is going around

443

00:17:30,390 --> 00:17:28,240

the earth so

444

00:17:31,750 --> 00:17:30,400

about half the time it's in the sunlight

445

00:17:33,430 --> 00:17:31,760

and half the time it's behind the earth

446

00:17:36,150 --> 00:17:33,440

and so it's in dark and when it's in the

447

00:17:37,750 --> 00:17:36,160

dark it's way below freezing outside and

448

00:17:39,750 --> 00:17:37,760

when it's in the sun it's much hotter

449

00:17:41,190 --> 00:17:39,760

than it ever gets on earth and so you

450

00:17:42,950 --> 00:17:41,200

can get really big temperature

451
00:17:44,950 --> 00:17:42,960
differences and so when the crew is

452
00:17:46,950 --> 00:17:44,960
inside the space station maintains a

453
00:17:49,110 --> 00:17:46,960
good temperature for them and it uses

454
00:17:50,789 --> 00:17:49,120
different ways to either collect the sun

455
00:17:53,350 --> 00:17:50,799
and use its energy to help heat the

456
00:17:55,029 --> 00:17:53,360
station or to kind of reject some of

457
00:17:56,150 --> 00:17:55,039
that heat to keep it

458
00:17:58,070 --> 00:17:56,160
at the right temperature when it gets

459
00:17:59,909 --> 00:17:58,080
too hot and then when the astronauts go

460
00:18:01,590 --> 00:17:59,919
outside to do their spacewalks their

461
00:18:04,070 --> 00:18:01,600
suits do that for them

462
00:18:05,590 --> 00:18:04,080
their suits have um little has water

463
00:18:06,789 --> 00:18:05,600

running through it and they can control

464

00:18:08,150 --> 00:18:06,799

the temperature of the water and that

465

00:18:09,830 --> 00:18:08,160

will help control the temperature inside

466

00:18:11,590 --> 00:18:09,840

the spacesuit to keep them from getting

467

00:18:13,190 --> 00:18:11,600

too hot or too cold

468

00:18:14,630 --> 00:18:13,200

and for when it's really cold if it's

469

00:18:16,310 --> 00:18:14,640

nighttime and they're working on

470

00:18:18,390 --> 00:18:16,320

something they really need their fingers

471

00:18:20,470 --> 00:18:18,400

for they have heaters and their gloves

472

00:18:22,630 --> 00:18:20,480

that keep their fingers warm so

473

00:18:23,830 --> 00:18:22,640

lots of things that that goes into

474

00:18:24,789 --> 00:18:23,840

keeping you comfortable when you're in

475

00:18:33,830 --> 00:18:24,799

space

476

00:18:35,750 --> 00:18:34,870

uh

477

00:18:37,270 --> 00:18:35,760

oh

478

00:18:39,909 --> 00:18:37,280

what kind of jobs are on the space

479

00:18:42,870 --> 00:18:41,190

so the astronauts when they're on the

480

00:18:44,789 --> 00:18:42,880

space station do a lot of different

481

00:18:46,630 --> 00:18:44,799

things um the the thing you probably

482

00:18:47,750 --> 00:18:46,640

hear the most about is is the science

483

00:18:49,830 --> 00:18:47,760

you know they're doing all kinds of

484

00:18:51,350 --> 00:18:49,840

really cool experiments and doing things

485

00:18:53,270 --> 00:18:51,360

that we can only do in space you know

486

00:18:54,870 --> 00:18:53,280

figuring out how gravity affects

487

00:18:56,310 --> 00:18:54,880

different things and so that's what they

488

00:18:58,870 --> 00:18:56,320

really enjoy doing they love doing

489

00:19:00,230 --> 00:18:58,880

science um but they also really like

490

00:19:01,990 --> 00:19:00,240

looking at the earth we do a lot of

491

00:19:03,750 --> 00:19:02,000

studying of the earth taking pictures of

492

00:19:05,350 --> 00:19:03,760

the earth um

493

00:19:06,950 --> 00:19:05,360

sometimes when we have things like

494

00:19:08,710 --> 00:19:06,960

hurricanes that are coming the

495

00:19:10,310 --> 00:19:08,720

astronauts will actually help with that

496

00:19:12,549 --> 00:19:10,320

and take pictures of that for the ground

497

00:19:13,669 --> 00:19:12,559

since we get a really good view of that

498

00:19:15,510 --> 00:19:13,679

and then there are things that they have

499

00:19:17,270 --> 00:19:15,520

to do just to just to keep the space

500

00:19:18,710 --> 00:19:17,280

station working so it's kind of like how

501
00:19:20,150 --> 00:19:18,720
you have to do some chores around your

502
00:19:21,510 --> 00:19:20,160
house to keep your house clean and

503
00:19:23,350 --> 00:19:21,520
functioning they have to do chores in

504
00:19:24,710 --> 00:19:23,360
space too and so they have to do some

505
00:19:25,830 --> 00:19:24,720
cleaning or they have to do some

506
00:19:29,669 --> 00:19:25,840
maintenance to keep some of the

507
00:19:29,679 --> 00:19:36,950
next question

508
00:19:40,310 --> 00:19:38,710
does the space station continue to grow

509
00:19:43,190 --> 00:19:40,320
in size to hold more astronauts

510
00:19:44,870 --> 00:19:43,200
cosmonauts etc

511
00:19:46,870 --> 00:19:44,880
the space station is pretty much done

512
00:19:48,710 --> 00:19:46,880
growing now uh it was designed to hold

513
00:19:50,549 --> 00:19:48,720

six people and that's where we are and

514

00:19:52,630 --> 00:19:50,559

so we're gonna keep rotating those six

515

00:19:54,870 --> 00:19:52,640

people in and out but uh we don't intend

516

00:19:56,310 --> 00:19:54,880

to get much bigger put many more people

517

00:19:58,230 --> 00:19:56,320

in there it's pretty much the size it's

518

00:19:59,990 --> 00:19:58,240

gonna be it's a live view that you're

519

00:20:01,430 --> 00:20:00,000

seeing here of uh what the space station

520

00:20:03,909 --> 00:20:01,440

looks like on the inside right now this

521

00:20:05,430 --> 00:20:03,919

is the destiny laboratory which is

522

00:20:07,669 --> 00:20:05,440

the united space

523

00:20:08,710 --> 00:20:07,679

the united states laboratory

524

00:20:10,310 --> 00:20:08,720

there are

525

00:20:13,110 --> 00:20:10,320

three different laboratories on the

526

00:20:14,870 --> 00:20:13,120

united states side of the space station

527

00:20:17,909 --> 00:20:14,880

there's one from the u.s and then also

528

00:20:19,270 --> 00:20:17,919

one from europe and one from japan and

529

00:20:21,190 --> 00:20:19,280

then the russian side of the space

530

00:20:22,789 --> 00:20:21,200

station has a couple of other modules so

531

00:20:24,549 --> 00:20:22,799

they're it's really big it's about as

532

00:20:26,390 --> 00:20:24,559

long as uh

533

00:20:27,909 --> 00:20:26,400

about the size of a football field with

534

00:20:30,310 --> 00:20:27,919

the solar arrays

535

00:20:32,630 --> 00:20:30,320

and um there's actually i think the crew

536

00:20:34,310 --> 00:20:32,640

members tend to tell you that um that

537

00:20:35,909 --> 00:20:34,320

there's plenty of room for six people in

538

00:20:37,350 --> 00:20:35,919

there and actually they are able to

539

00:20:38,789 --> 00:20:37,360

spend a lot of their time kind of by

540

00:20:40,870 --> 00:20:38,799

themselves working and they don't

541

00:20:45,830 --> 00:20:40,880

necessarily work side by side all the

542

00:20:45,840 --> 00:20:50,390

next question

543

00:20:53,830 --> 00:20:52,630

what kind of training do they do

544

00:20:55,669 --> 00:20:53,840

um

545

00:20:57,750 --> 00:20:55,679

in nasa

546

00:20:59,830 --> 00:20:57,760

what kind of training do we do at nasa

547

00:21:01,750 --> 00:20:59,840

training for the astronauts

548

00:21:03,350 --> 00:21:01,760

they do all sorts of training they spend

549

00:21:04,390 --> 00:21:03,360

a lot of their time doing training to

550

00:21:06,549 --> 00:21:04,400

get ready

551
00:21:09,190 --> 00:21:06,559
they do things from training for example

552
00:21:10,549 --> 00:21:09,200
how to fix a computer that may break

553
00:21:11,750 --> 00:21:10,559
because we don't you know you can't just

554
00:21:13,270 --> 00:21:11,760
send

555
00:21:14,630 --> 00:21:13,280
you can't call somebody to come fix your

556
00:21:16,070 --> 00:21:14,640
computer in space right you kind of have

557
00:21:17,750 --> 00:21:16,080
to know how to do it so we get training

558
00:21:18,950 --> 00:21:17,760
in that kind of stuff

559
00:21:20,230 --> 00:21:18,960
they also get training for all the

560
00:21:21,430 --> 00:21:20,240
science they're going to have to do so

561
00:21:23,270 --> 00:21:21,440
they understand what they're going to

562
00:21:24,549 --> 00:21:23,280
need to be doing for the experiments

563
00:21:26,230 --> 00:21:24,559

they do a lot of training if they're

564

00:21:27,430 --> 00:21:26,240

going to do space walks

565

00:21:29,029 --> 00:21:27,440

to make sure they understand what

566

00:21:30,950 --> 00:21:29,039

they're doing and where they're going to

567

00:21:32,470 --> 00:21:30,960

go in space it's really choreographed

568

00:21:33,990 --> 00:21:32,480

almost like a dance when they go out in

569

00:21:35,110 --> 00:21:34,000

space where they know exactly where

570

00:21:37,190 --> 00:21:35,120

they're gonna put their hand or where

571

00:21:39,190 --> 00:21:37,200

they're gonna put their foot it's very

572

00:21:40,789 --> 00:21:39,200

precise and then of course they train

573

00:21:42,789 --> 00:21:40,799

just generically on things like using

574

00:21:44,950 --> 00:21:42,799

the robotic arm it's a really big arm

575

00:21:47,350 --> 00:21:44,960

and they have to learn how to handle it

576

00:21:49,190 --> 00:21:47,360

and how to work it very smoothly for

577

00:21:50,789 --> 00:21:49,200

things like capturing vehicles so a lot

578

00:21:52,630 --> 00:21:50,799

of training there and then the people on

579

00:21:54,870 --> 00:21:52,640

the ground also do training

580

00:21:57,430 --> 00:21:54,880

we do some things called simulations and

581

00:21:59,110 --> 00:21:57,440

that's where we set computers up that

582

00:22:00,789 --> 00:21:59,120

run and pretend like the space station

583

00:22:03,590 --> 00:22:00,799

is running and pretend like for example

584

00:22:05,029 --> 00:22:03,600

dragon is coming um and so we actually

585

00:22:06,630 --> 00:22:05,039

see graphics just like it's really

586

00:22:08,549 --> 00:22:06,640

happening in real life and the entire

587

00:22:09,990 --> 00:22:08,559

mission control team will practice and

588

00:22:11,430 --> 00:22:10,000

pretend like it's really happening and

589

00:22:13,190 --> 00:22:11,440

so we practice all the stuff we're gonna

590

00:22:15,190 --> 00:22:13,200

have to do on the ground too

591

00:22:17,430 --> 00:22:15,200

how long did you have to train to be a

592

00:22:19,430 --> 00:22:17,440

visiting vehicle officer so like i said

593

00:22:20,630 --> 00:22:19,440

i've been here for five years and as

594

00:22:22,149 --> 00:22:20,640

brandi mentioned for each of the

595

00:22:23,669 --> 00:22:22,159

positions that's here there's actually

596

00:22:26,149 --> 00:22:23,679

more people helping them in different

597

00:22:27,190 --> 00:22:26,159

rooms and so we first get trained to go

598

00:22:28,549 --> 00:22:27,200

ahead and work and we call those in the

599

00:22:30,230 --> 00:22:28,559

back rooms

600

00:22:31,990 --> 00:22:30,240

and so i got trained to work three

601
00:22:33,430 --> 00:22:32,000
different positions in the back room

602
00:22:34,710 --> 00:22:33,440
before i got to come up here and work in

603
00:22:36,710 --> 00:22:34,720
the front room and i got my

604
00:22:38,390 --> 00:22:36,720
certification last year so it took me

605
00:22:40,070 --> 00:22:38,400
about four years of training to be able

606
00:22:41,669 --> 00:22:40,080
to make it into actual mission control

607
00:22:44,070 --> 00:22:41,679
and you have to kind of go step by step

608
00:22:45,350 --> 00:22:44,080
right you take one one uh position at a

609
00:22:47,510 --> 00:22:45,360
time learn how to do it well then move

610
00:23:03,830 --> 00:22:47,520
on to the next one exactly

611
00:23:06,630 --> 00:23:05,110
i'm sorry we weren't able to hear that

612
00:23:09,190 --> 00:23:06,640
one i don't think their microphone your

613
00:23:12,070 --> 00:23:09,200

microphone was turned on

614

00:23:14,470 --> 00:23:12,080

what does robonaut do now in space what

615

00:23:15,590 --> 00:23:14,480

does robonaut do now so robonaut just

616

00:23:17,590 --> 00:23:15,600

like we were talking about he's kind of

617

00:23:19,029 --> 00:23:17,600

in training right now um you know he

618

00:23:20,310 --> 00:23:19,039

went up there and now he's kind of

619

00:23:21,990 --> 00:23:20,320

learning the things he's going to be

620

00:23:23,510 --> 00:23:22,000

doing and so they're they're doing some

621

00:23:25,110 --> 00:23:23,520

testing with him they're using him for

622

00:23:26,789 --> 00:23:25,120

very small things inside the space

623

00:23:28,230 --> 00:23:26,799

station right now and because it's

624

00:23:29,750 --> 00:23:28,240

everybody has to learn you know the

625

00:23:31,990 --> 00:23:29,760

astronauts have to learn what it's like

626
00:23:33,830 --> 00:23:32,000
to work next to a robot because he's new

627
00:23:35,190 --> 00:23:33,840
there and robonaut has to learn about

628
00:23:37,270 --> 00:23:35,200
the kinds of things he can do in the

629
00:23:39,350 --> 00:23:37,280
space station and the team on the ground

630
00:23:40,870 --> 00:23:39,360
that helps control robot needs to learn

631
00:23:42,710 --> 00:23:40,880
you know how he works in space and what

632
00:23:44,149 --> 00:23:42,720
kind of things they can do

633
00:23:46,070 --> 00:23:44,159
so right now he's kind of in training

634
00:23:47,350 --> 00:23:46,080
just like the rest of us go through um

635
00:23:48,950 --> 00:23:47,360
and then like we said eventually he'll

636
00:23:50,549 --> 00:23:48,960
be able to go and do things for the

637
00:23:51,350 --> 00:23:50,559
astronauts to kind of help save them

638
00:23:52,470 --> 00:23:51,360

time

639

00:23:53,990 --> 00:23:52,480

some of the stuff that's going to be a

640

00:23:55,990 --> 00:23:54,000

little bit too boring for the astronauts

641

00:23:57,990 --> 00:23:56,000

to do because robonauts robots don't

642

00:24:06,630 --> 00:23:58,000

mind if it's boring

643

00:24:12,470 --> 00:24:09,110

how can you don't go to any other states

644

00:24:14,630 --> 00:24:12,480

any other planets but the moon

645

00:24:15,990 --> 00:24:14,640

yeah we we don't yet we want to and we

646

00:24:17,750 --> 00:24:16,000

want to go and explore lots of other

647

00:24:19,669 --> 00:24:17,760

places you know maybe some other planets

648

00:24:21,350 --> 00:24:19,679

or some asteroids or even farther than

649

00:24:23,669 --> 00:24:21,360

that so definitely we're looking at

650

00:24:25,750 --> 00:24:23,679

going you know way beyond the earth

651
00:24:27,269 --> 00:24:25,760
and we hope to do that in the future but

652
00:24:29,029 --> 00:24:27,279
it's it's like training you have to take

653
00:24:30,630 --> 00:24:29,039
little steps so the moon's the closest

654
00:24:32,390 --> 00:24:30,640
thing so that's the first baby step that

655
00:24:34,149 --> 00:24:32,400
we take and we practice on that and then

656
00:24:36,230 --> 00:24:34,159
we'll keep going we're actually building

657
00:24:37,350 --> 00:24:36,240
a new spaceship right now called the

658
00:24:38,870 --> 00:24:37,360
orion

659
00:24:40,149 --> 00:24:38,880
that's going to let us take people to

660
00:24:42,710 --> 00:24:40,159
other planets we

661
00:24:46,149 --> 00:24:42,720
believe we'll be able to go to the moon

662
00:24:48,149 --> 00:24:46,159
or asteroids or even mars on orion and

663
00:24:51,190 --> 00:24:48,159

you can find out more about that online

664

00:24:52,870 --> 00:24:51,200

too at www.nasa.gov

665

00:24:57,190 --> 00:24:52,880

orion

666

00:25:01,029 --> 00:24:58,789

i just want to thank you for talking to

667

00:25:03,029 --> 00:25:01,039

my students but uh also

668

00:25:04,950 --> 00:25:03,039

some context about two months ago they

669

00:25:07,190 --> 00:25:04,960

spoke to one of the designers of

670

00:25:09,669 --> 00:25:07,200

robonaut cody hensley i think he works

671

00:25:11,830 --> 00:25:09,679

in your building oh okay

672

00:25:13,430 --> 00:25:11,840

so you know they had some context my

673

00:25:15,430 --> 00:25:13,440

question though is

674

00:25:16,950 --> 00:25:15,440

did the people uh astronauts on the

675

00:25:19,669 --> 00:25:16,960

space station have

676

00:25:21,909 --> 00:25:19,679

any uh opinions or sightings of the

677

00:25:25,750 --> 00:25:21,919

asteroid

678

00:25:29,909 --> 00:25:27,350

i don't think that

679

00:25:32,070 --> 00:25:29,919

they had any from the space station that

680

00:25:33,909 --> 00:25:32,080

that they saw we are watching we watched

681

00:25:35,510 --> 00:25:33,919

it really closely at nasa

682

00:25:36,950 --> 00:25:35,520

and we actually

683

00:25:39,190 --> 00:25:36,960

have some pictures online if you want to

684

00:25:41,430 --> 00:25:39,200

go look at nasa.gov there's a lot of

685

00:25:44,549 --> 00:25:41,440

information there about the asteroid

686

00:25:46,470 --> 00:25:44,559

that flew by um that we knew was coming

687

00:25:48,390 --> 00:25:46,480

on friday the big one and also the one

688

00:25:50,549 --> 00:25:48,400

that hit russia so there's there's lots

689

00:25:52,549 --> 00:25:50,559

of interesting information there

690

00:25:54,070 --> 00:25:52,559

and uh one of the groups that works here

691

00:25:55,909 --> 00:25:54,080

pointing is another group in mission

692

00:25:57,830 --> 00:25:55,919

control and they were looking into the

693

00:25:59,350 --> 00:25:57,840

crew being able to see that and i think

694

00:26:01,269 --> 00:25:59,360

one of the things they said is that it's

695

00:26:03,430 --> 00:26:01,279

it was too small to actually see very

696

00:26:05,430 --> 00:26:03,440

easily you know space is really large

697

00:26:06,789 --> 00:26:05,440

and so uh it was a little bit too small

698

00:26:08,789 --> 00:26:06,799

for them to see just from the space

699

00:26:10,310 --> 00:26:08,799

station and it also depends on you know

700

00:26:11,909 --> 00:26:10,320

where the asteroid was and where the

701
00:26:13,590 --> 00:26:11,919
crew and the space station were at the

702
00:26:15,110 --> 00:26:13,600
time if the earth was in the way so i

703
00:26:17,029 --> 00:26:15,120
don't think we got to see that one i

704
00:26:18,390 --> 00:26:17,039
think it's good that it was too small to

705
00:26:19,510 --> 00:26:18,400
see that's what we like for asteroids

706
00:26:21,350 --> 00:26:19,520
close to earth

707
00:26:22,870 --> 00:26:21,360
uh we do um let

708
00:26:24,310 --> 00:26:22,880
the astronauts know though when there's

709
00:26:25,510 --> 00:26:24,320
going to be something cool in space to

710
00:26:26,710 --> 00:26:25,520
see that they're going to be able to see

711
00:26:28,710 --> 00:26:26,720
and a lot of times they're able to take

712
00:26:30,870 --> 00:26:28,720
good pictures and video which we all put

713
00:26:33,110 --> 00:26:30,880

on nasa.gov and you can see for yourself

714

00:26:33,990 --> 00:26:33,120

so there's lots of really cool pictures

715

00:26:35,830 --> 00:26:34,000

of

716

00:26:36,870 --> 00:26:35,840

just the earth and

717

00:26:38,870 --> 00:26:36,880

beautiful

718

00:26:42,070 --> 00:26:38,880

pictures of it and also

719

00:26:44,789 --> 00:26:42,080

the northern lights things like that and

720

00:26:46,470 --> 00:26:44,799

meteors hitting and um and

721

00:26:48,310 --> 00:26:46,480

you know burning up in the earth's

722

00:26:50,070 --> 00:26:48,320

atmosphere and lots of really cool

723

00:26:52,310 --> 00:26:50,080

phenomenon

724

00:26:54,149 --> 00:26:52,320

all right and dory and brandy thank you

725

00:26:56,390 --> 00:26:54,159

so much for answering all these

726

00:26:58,870 --> 00:26:56,400

wonderful questions um wanted to give

727

00:27:02,470 --> 00:26:58,880

salt river um a last chance to say thank

728

00:27:06,310 --> 00:27:04,230

thank you all great questions we really