



1
00:00:05,990 --> 00:00:04,400
well good morning everybody from NASA's

2
00:00:08,419 --> 00:00:06,000
Johnson Space Center you're inside

3
00:00:11,450 --> 00:00:08,429
Mission Control Center this is the Space

4
00:00:13,280 --> 00:00:11,460
Station flight control room where a team

5
00:00:16,970 --> 00:00:13,290
is watching over all of the activities

6
00:00:18,590 --> 00:00:16,980
that are going on 250 miles above us on

7
00:00:21,200 --> 00:00:18,600
the International Space Station three

8
00:00:22,849 --> 00:00:21,210
crew members are living up there right

9
00:00:25,759 --> 00:00:22,859
now they've been up there for 45 days

10
00:00:29,300 --> 00:00:25,769
now supporting all of the science

11
00:00:32,269 --> 00:00:29,310
activities on board we're pleased to

12
00:00:34,549 --> 00:00:32,279
join you guys in Phoenix from here

13
00:00:37,040 --> 00:00:34,559

inside the room and and luckily i'm

14

00:00:39,260 --> 00:00:37,050

joined by astronaut outdrew who's got a

15

00:00:42,110 --> 00:00:39,270

lot of experience up in space he's been

16

00:00:44,750 --> 00:00:42,120

he's been in space twice he's flown on

17

00:00:48,430 --> 00:00:44,760

to Space Shuttle missions to that

18

00:00:52,100 --> 00:00:48,440

International Space Station sts-118 in

19

00:00:54,260 --> 00:00:52,110

sts-133 wants aboard space shuttle

20

00:00:57,200 --> 00:00:54,270

Endeavour and then he also flew on the

21

00:00:59,029 --> 00:00:57,210

last flight of discovery before it was

22

00:01:01,430 --> 00:00:59,039

retired along with the other two space

23

00:01:04,250 --> 00:01:01,440

shuttle so al has a tremendous amount of

24

00:01:05,899 --> 00:01:04,260

experience in spaceflight and and knows

25

00:01:07,460 --> 00:01:05,909

what life is like on board the

26

00:01:09,410 --> 00:01:07,470

International Space Station and in fact

27

00:01:11,000 --> 00:01:09,420

here in the flight control room he

28

00:01:14,270 --> 00:01:11,010

supported flights from in here as well

29

00:01:20,210 --> 00:01:14,280

so welcome Phoenix and monterey park

30

00:01:22,870 --> 00:01:20,220

were happy to be with you guys today

31

00:01:26,240 --> 00:01:22,880

thank you so much for your time and

32

00:01:29,160 --> 00:01:26,250

liberty here is the first fruit that is

33

00:01:33,330 --> 00:01:29,170

going to be asking you a question

34

00:01:36,640 --> 00:01:33,340

um what I'm sports do you play in space

35

00:01:39,310 --> 00:01:36,650

what sports do you play in space let's

36

00:01:41,590 --> 00:01:39,320

see we have a basketball hoop onboard

37

00:01:43,060 --> 00:01:41,600

the space station most of our Europeans

38

00:01:44,710 --> 00:01:43,070

come up with soccer balls it's very easy

39

00:01:47,350 --> 00:01:44,720

to make bicycle kicks when you're on

40

00:01:58,399 --> 00:01:47,360

board the space station as well but we

41

00:02:07,529 --> 00:02:02,760

do you have access to the social medium

42

00:02:10,229 --> 00:02:07,539

online video games yes we do we actually

43

00:02:11,880 --> 00:02:10,239

in the past few years have gotten live

44

00:02:14,940 --> 00:02:11,890

internet on board the space station so

45

00:02:16,320 --> 00:02:14,950

we can access facebook and twitter i

46

00:02:17,940 --> 00:02:16,330

don't know if anybody who plays the

47

00:02:19,620 --> 00:02:17,950

video games i didn't see anybody was out

48

00:02:21,360 --> 00:02:19,630

there doing at the time but that may be

49

00:02:23,580 --> 00:02:21,370

because we're a little bit too old for

50

00:02:24,870 --> 00:02:23,590

that i'm sure that as we get newer and

51
00:02:26,820 --> 00:02:24,880
younger astronauts on they'll be playing

52
00:02:35,390 --> 00:02:26,830
things like world of warcraft on on on

53
00:02:42,229 --> 00:02:38,330
do you get scared every time when you

54
00:02:43,940 --> 00:02:42,239
brought it into the spacecraft do you

55
00:02:45,619 --> 00:02:43,950
get scared yes there's element of danger

56
00:02:46,850 --> 00:02:45,629
involved with spacecraft anybody who's

57
00:02:48,500 --> 00:02:46,860
not a little bit worried about that

58
00:02:50,479 --> 00:02:48,510
probably doesn't understand what's going

59
00:02:52,970 --> 00:02:50,489
on there's a lot of energy involved with

60
00:02:55,099 --> 00:02:52,980
getting yourself too or orbit you're

61
00:02:58,670 --> 00:02:55,109
going 25 times the speed of sound that's

62
00:03:01,099 --> 00:02:58,680
about whole 12 times faster than a

63
00:03:03,410 --> 00:03:01,109

speeding bullet and so it's a lot of

64

00:03:05,270 --> 00:03:03,420

energy has to go into that and so it's a

65

00:03:06,890 --> 00:03:05,280

good thing it makes us very careful and

66

00:03:08,390 --> 00:03:06,900

very safe and we pay a lot of attention

67

00:03:10,369 --> 00:03:08,400

to what we're doing when we're going to

68

00:03:12,830 --> 00:03:10,379

and from space and I think a little bit

69

00:03:26,070 --> 00:03:12,840

of anxiety helps you to you engaged with

70

00:03:33,690 --> 00:03:29,850

I am Dianna my question is how likely

71

00:03:35,640 --> 00:03:33,700

does space elevator Eddie Anna how I

72

00:03:37,320 --> 00:03:35,650

clean the space elevator I think it's

73

00:03:38,940 --> 00:03:37,330

likely the question more is when do we

74

00:03:41,670 --> 00:03:38,950

get a space elevator or not will we ever

75

00:03:43,560 --> 00:03:41,680

have one we worked out the physics of it

76

00:03:45,960 --> 00:03:43,570

a long time ago it actually does work in

77

00:03:47,880 --> 00:03:45,970

theory however it takes some very strong

78

00:03:49,290 --> 00:03:47,890

materials to build that space elevator I

79

00:03:52,290 --> 00:03:49,300

don't think we had those materials quite

80

00:03:53,730 --> 00:03:52,300

yet but I think that we can get there at

81

00:04:05,840 --> 00:03:53,740

some point I don't think it's it's

82

00:04:17,930 --> 00:04:13,790

I how how hi I'm Steve how long does

83

00:04:20,270 --> 00:04:17,940

travel time to space stick how long does

84

00:04:21,770 --> 00:04:20,280

it take to get into space or if you're

85

00:04:23,270 --> 00:04:21,780

on a shuttle it takes about eight and a

86

00:04:25,550 --> 00:04:23,280

half minutes and so think about that

87

00:04:26,990 --> 00:04:25,560

you're sitting on the ground at zero

88

00:04:29,120 --> 00:04:27,000

feet of altitude reading right at sea

89

00:04:31,070 --> 00:04:29,130

level doing zero miles per hour and

90

00:04:34,580 --> 00:04:31,080

eight and a half minutes later you are

91

00:04:36,680 --> 00:04:34,590

100 miles up going at 17,500 miles per

92

00:04:39,110 --> 00:04:36,690

hour so makes for a very exciting eight

93

00:04:40,400 --> 00:04:39,120

and a half minute ride he also asked how

94

00:04:43,190 --> 00:04:40,410

long does it take to get to the space

95

00:04:45,290 --> 00:04:43,200

station too so in addition okay so once

96

00:04:46,370 --> 00:04:45,300

we get to space so there's the trek into

97

00:04:47,600 --> 00:04:46,380

the space station now if we really

98

00:04:49,580 --> 00:04:47,610

needed to get there very very quickly

99

00:04:50,720 --> 00:04:49,590

which we don't typically it wouldn't

100

00:04:53,120 --> 00:04:50,730

take much longer to get to the space

101
00:04:55,400 --> 00:04:53,130
station maybe another 45 minutes however

102
00:04:56,420 --> 00:04:55,410
because the way we do our rendezvous we

103
00:04:57,650 --> 00:04:56,430
don't like just run for the space

104
00:04:58,820 --> 00:04:57,660
station and stand on the brakes because

105
00:05:00,590 --> 00:04:58,830
you don't want to hit the space station

106
00:05:02,390 --> 00:05:00,600
so we're usually will spend a couple of

107
00:05:03,740 --> 00:05:02,400
days getting the space station i'm going

108
00:05:06,200 --> 00:05:03,750
to check outs making sure our spacecraft

109
00:05:07,370 --> 00:05:06,210
works okay but when we it's time to come

110
00:05:09,020 --> 00:05:07,380
back from the space station when it

111
00:05:11,390 --> 00:05:09,030
comes time to land by the time we on Doc

112
00:05:19,570 --> 00:05:11,400
within an hour a half we're back on the

113
00:05:25,270 --> 00:05:22,179

hi my name is Michael and my question is

114

00:05:27,369 --> 00:05:25,280

how often do you travel to space flushes

115

00:05:28,659 --> 00:05:27,379

how often do you travel to space depends

116

00:05:32,619 --> 00:05:28,669

on the astronaut depends on the time

117

00:05:34,029 --> 00:05:32,629

you're here it typically when things are

118

00:05:35,649 --> 00:05:34,039

very very busy when during this time of

119

00:05:37,179 --> 00:05:35,659

the space shuttle program you could

120

00:05:40,059 --> 00:05:37,189

count on going in a space about once

121

00:05:41,920 --> 00:05:40,069

every two to four years with the shuttle

122

00:05:44,290 --> 00:05:41,930

retired and going to the space station

123

00:05:45,850 --> 00:05:44,300

the training alone takes over anywhere

124

00:05:47,770 --> 00:05:45,860

between two and a half to four years

125

00:05:49,899 --> 00:05:47,780

depending on what you're training for so

126
00:05:52,180 --> 00:05:49,909
it would probably maybe even five years

127
00:06:00,000 --> 00:05:52,190
now between space station missions if

128
00:06:07,570 --> 00:06:04,120
hi my name is D'Angelo and how do you

129
00:06:09,370 --> 00:06:07,580
manage waste in space hi D'Angelo that's

130
00:06:10,540 --> 00:06:09,380
a very important question one of the

131
00:06:13,110 --> 00:06:10,550
things that you don't think about is the

132
00:06:15,850 --> 00:06:13,120
fact that when you're in space first off

133
00:06:17,590 --> 00:06:15,860
getting things is tough to do you can't

134
00:06:18,970 --> 00:06:17,600
run down to your local store and get

135
00:06:19,930 --> 00:06:18,980
groceries or go to the hardware store in

136
00:06:21,220 --> 00:06:19,940
your place so you get to bring

137
00:06:22,570 --> 00:06:21,230
everything up there with you and

138
00:06:23,620 --> 00:06:22,580

everything you get rid of there's no

139

00:06:25,000 --> 00:06:23,630

garbage truck that comes by every

140

00:06:27,490 --> 00:06:25,010

Tuesday and Thursday and takes away your

141

00:06:29,830 --> 00:06:27,500

stuff so what we do have garbage trucks

142

00:06:31,840 --> 00:06:29,840

there to the space station the progress

143

00:06:33,760 --> 00:06:31,850

capsules take away most of our garbage

144

00:06:37,120 --> 00:06:33,770

right now and we it burns up in the

145

00:06:38,710 --> 00:06:37,130

atmosphere so it like every 90 days or

146

00:06:40,030 --> 00:06:38,720

so a new progress comes in so well

147

00:06:42,370 --> 00:06:40,040

unpack it it has all of our fresh

148

00:06:43,930 --> 00:06:42,380

groceries and rate supplies and as soon

149

00:06:46,120 --> 00:06:43,940

as we've got it empty we start putting

150

00:06:48,400 --> 00:06:46,130

all our old trash in there and when the

151
00:06:52,450 --> 00:06:48,410
new one comes up we undock it and we let

152
00:06:58,260 --> 00:06:52,460
it burn up in the atmosphere thank you

153
00:07:05,120 --> 00:07:02,970
where do you get water I water that's

154
00:07:07,680 --> 00:07:05,130
not a very important question because

155
00:07:09,330 --> 00:07:07,690
it's probably the most important thing

156
00:07:11,340 --> 00:07:09,340
we have on space station that's a

157
00:07:13,230 --> 00:07:11,350
resource if we didn't have a recent

158
00:07:15,030 --> 00:07:13,240
regular supply of anything all of our

159
00:07:16,830 --> 00:07:15,040
supply is stopped today nobody took

160
00:07:18,270 --> 00:07:16,840
anything else up there probably the

161
00:07:19,730 --> 00:07:18,280
first thing we would run out of would be

162
00:07:22,260 --> 00:07:19,740
water even before we'd run out of air

163
00:07:24,810 --> 00:07:22,270

and so water is very important to all of

164

00:07:26,790 --> 00:07:24,820

us and we have just offices for people

165

00:07:28,080 --> 00:07:26,800

here at Johnson Space Center who watch

166

00:07:29,790 --> 00:07:28,090

our water budgets and figure out how

167

00:07:30,930 --> 00:07:29,800

we're going to get our water now again

168

00:07:33,300 --> 00:07:30,940

back in the days of the space station

169

00:07:35,160 --> 00:07:33,310

our fuel cells which made electricity

170

00:07:37,200 --> 00:07:35,170

for the Space Shuttle actually made

171

00:07:39,330 --> 00:07:37,210

hundreds of gallons of water as a waste

172

00:07:41,400 --> 00:07:39,340

product the clearest cleanest water you

173

00:07:43,470 --> 00:07:41,410

could possibly ever find would come out

174

00:07:45,030 --> 00:07:43,480

of these fuel cells and we would take

175

00:07:46,470 --> 00:07:45,040

them and pipe them over to the space

176

00:07:49,230 --> 00:07:46,480

station so that water was never an issue

177

00:07:50,970 --> 00:07:49,240

now we have the progress capsules and

178

00:07:52,980 --> 00:07:50,980

other resupply vehicles and they bring

179

00:07:54,420 --> 00:07:52,990

up tanks of water with them and we can

180

00:07:56,850 --> 00:07:54,430

serve our water but our life support

181

00:07:58,650 --> 00:07:56,860

systems now are much more my zhilie they

182

00:08:00,270 --> 00:07:58,660

we waste a lot less water used to be

183

00:08:01,590 --> 00:08:00,280

enough you the water was dirty we didn't

184

00:08:03,990 --> 00:08:01,600

care much about recycling we were just

185

00:08:06,270 --> 00:08:04,000

dump the the dirty water overboard now

186

00:08:07,980 --> 00:08:06,280

we scrub and purify and recycle as much

187

00:08:09,720 --> 00:08:07,990

of that water as we possibly can because

188

00:08:10,920 --> 00:08:09,730

we don't have shuttles coming up every

189

00:08:20,360 --> 00:08:10,930

few weeks with hundreds of gallons of

190

00:08:25,870 --> 00:08:23,390

hi I'm Brooklyn how do you guys keep

191

00:08:27,920 --> 00:08:25,880

yourself clean and spaced hi Brooklyn

192

00:08:29,450 --> 00:08:27,930

keeping clean and space something very

193

00:08:33,010 --> 00:08:29,460

near and dear to my heart because I was

194

00:08:34,610 --> 00:08:33,020

spent I told of 26 days in space

195

00:08:36,230 --> 00:08:34,620

obviously the things you do on the

196

00:08:38,300 --> 00:08:36,240

ground here on don't quite work on in

197

00:08:40,610 --> 00:08:38,310

space much what you do in the bathroom

198

00:08:41,990 --> 00:08:40,620

with shower and clean up needs gravity

199

00:08:43,940 --> 00:08:42,000

for the water to come across your body

200

00:08:46,220 --> 00:08:43,950

out of the spigot and go down the drain

201
00:08:47,360 --> 00:08:46,230
that doesn't work in space no any water

202
00:08:48,740 --> 00:08:47,370
you would shoot out of the nozzle would

203
00:08:50,930 --> 00:08:48,750
stay right there with you and along with

204
00:08:52,310 --> 00:08:50,940
the dirt that came off of you so rather

205
00:08:54,800 --> 00:08:52,320
than going to hop into a shower or

206
00:08:56,540 --> 00:08:54,810
bathtub we take sponge baths ever been

207
00:08:58,040 --> 00:08:56,550
camping you know what it's like to go

208
00:08:59,590 --> 00:08:58,050
out there and just get up a towel or

209
00:09:02,060 --> 00:08:59,600
something wet and wipe yourself down

210
00:09:03,710 --> 00:09:02,070
clean that off and then rinse yourself

211
00:09:05,960 --> 00:09:03,720
off with another towel doesn't have the

212
00:09:08,300 --> 00:09:05,970
soap on it and so it's very good at

213
00:09:10,370 --> 00:09:08,310

keeping you clean but not nearly as

214

00:09:11,720 --> 00:09:10,380

satisfying as say just a hot shower and

215

00:09:12,920 --> 00:09:11,730

you'll find most astronauts when they

216

00:09:14,690 --> 00:09:12,930

get back down on the ground no matter

217

00:09:16,340 --> 00:09:14,700

how long they've been in space we'll go

218

00:09:17,840 --> 00:09:16,350

hop in the shower for 30 to 45 minutes

219

00:09:22,070 --> 00:09:17,850

because they miss the sensation of just

220

00:09:26,900 --> 00:09:22,080

having a hot shower thank you you're

221

00:09:32,820 --> 00:09:30,240

hello my name is Jennifer I Jennifer all

222

00:09:36,930 --> 00:09:32,830

my question is what is your favorite

223

00:09:40,350 --> 00:09:36,940

food what's my favorite food it depends

224

00:09:42,720 --> 00:09:40,360

from day to day well I'm here in Texas I

225

00:09:45,090 --> 00:09:42,730

like a lot of Cajun food things like

226

00:09:46,320 --> 00:09:45,100

gumbo but also like barbecue and imagine

227

00:09:47,850 --> 00:09:46,330

if i lived somewhere else i would eat

228

00:09:49,590 --> 00:09:47,860

something else differently but that's

229

00:09:52,560 --> 00:09:49,600

what they make best around here and they

230

00:09:54,420 --> 00:09:52,570

do a very good job of it what about and

231

00:09:56,250 --> 00:09:54,430

that's a good question because we've

232

00:09:59,100 --> 00:09:56,260

always heard that in space your taste

233

00:10:00,930 --> 00:09:59,110

buds tend to change what you have your

234

00:10:03,120 --> 00:10:00,940

favorite food you take flying can shift

235

00:10:04,320 --> 00:10:03,130

in space now some people debate that

236

00:10:06,900 --> 00:10:04,330

they say they've been space and their

237

00:10:08,490 --> 00:10:06,910

tastes don't shift and for me my taste

238

00:10:09,750 --> 00:10:08,500

did shift on my first mission but it

239

00:10:12,000 --> 00:10:09,760

wasn't consistent didn't happen again on

240

00:10:13,500 --> 00:10:12,010

my second mission one of things out in

241

00:10:16,500 --> 00:10:13,510

space when I was on my shuttle mission

242

00:10:19,170 --> 00:10:16,510

we had these string beans with mushrooms

243

00:10:20,699 --> 00:10:19,180

and I each string beans I don't hate

244

00:10:22,530 --> 00:10:20,709

string beans but i probably wouldn't go

245

00:10:23,880 --> 00:10:22,540

five steps out of my way to get a bowl

246

00:10:25,710 --> 00:10:23,890

of string beans anywhere on your earth I

247

00:10:27,750 --> 00:10:25,720

know they're good for me that's why I

248

00:10:29,760 --> 00:10:27,760

crave green beans when I was in orbit

249

00:10:31,829 --> 00:10:29,770

and I was trading well my beef jerky

250

00:10:33,210 --> 00:10:31,839

which I love here on earth to get all

251

00:10:34,860 --> 00:10:33,220

the string beans that I could possibly

252

00:10:36,480 --> 00:10:34,870

get my hands on to us so I pretty much

253

00:10:38,519 --> 00:10:36,490

ate the entire shuttle supply of string

254

00:10:39,660 --> 00:10:38,529

beans and were to get them all and but I

255

00:10:41,519 --> 00:10:39,670

went back a second time I thought I'd

256

00:10:43,949 --> 00:10:41,529

crave him again and I didn't I didn't

257

00:10:46,440 --> 00:10:43,959

hate him but but they were just a string

258

00:10:48,000 --> 00:10:46,450

beans at that point so who knows that's

259

00:10:49,889 --> 00:10:48,010

a science out there waiting to find out

260

00:10:59,730 --> 00:10:49,899

was why your taste might change on orbit

261

00:11:07,389 --> 00:11:03,970

hi my name is tighten my question is

262

00:11:11,920 --> 00:11:07,399

what hobbies do you have while in space

263

00:11:13,570 --> 00:11:11,930

that just depends on the astronaut and

264

00:11:15,130 --> 00:11:13,580

how long they're up there if you're in a

265

00:11:17,290 --> 00:11:15,140

shuttle crew there's not much time for

266

00:11:18,340 --> 00:11:17,300

hobbies it's a very busy time you're

267

00:11:19,930 --> 00:11:18,350

just running very quickly for the

268

00:11:21,460 --> 00:11:19,940

two-week mission that you're there the

269

00:11:23,620 --> 00:11:21,470

space station crews have a little bit

270

00:11:25,420 --> 00:11:23,630

more free time and they do take a pop is

271

00:11:27,550 --> 00:11:25,430

probably the most popular hobby in space

272

00:11:28,870 --> 00:11:27,560

is taking pictures of the earth we spend

273

00:11:30,550 --> 00:11:28,880

a lot of time with just top-notch

274

00:11:31,840 --> 00:11:30,560

photography instructors and we have some

275

00:11:33,460 --> 00:11:31,850

of the best photography equipment you

276

00:11:34,810 --> 00:11:33,470

can imagine and one of the most

277

00:11:37,870 --> 00:11:34,820

interesting things look at when you're

278

00:11:40,150 --> 00:11:37,880

up in space about 250 miles up is the

279

00:11:42,820 --> 00:11:40,160

planet beneath us looking at oceans and

280

00:11:44,829 --> 00:11:42,830

reefs and mountain ranges and volcanoes

281

00:11:46,660 --> 00:11:44,839

and hurricanes and everything else you

282

00:11:48,639 --> 00:11:46,670

can imagine it goes on here back on

283

00:11:50,110 --> 00:11:48,649

earth is photography now some people

284

00:11:52,000 --> 00:11:50,120

have built ships and bottles and they

285

00:11:54,100 --> 00:11:52,010

like also using playing with ham radios

286

00:11:55,990 --> 00:11:54,110

to talk to school children just like you

287

00:12:00,400 --> 00:11:56,000

from on the ground and so those are

288

00:12:04,300 --> 00:12:00,410

things that we do take apart time thank

289

00:12:10,330 --> 00:12:07,830

hi my name is Andrew and my question is

290

00:12:13,510 --> 00:12:10,340

what kind of pets do you think will

291

00:12:15,250 --> 00:12:13,520

survive in that environment Andrew I

292

00:12:17,050 --> 00:12:15,260

think most pets would survive in space

293

00:12:20,080 --> 00:12:17,060

we've taken up all types of animals not

294

00:12:21,550 --> 00:12:20,090

as pets from mice and other things like

295

00:12:22,870 --> 00:12:21,560

that and they seemed to work just fine

296

00:12:24,280 --> 00:12:22,880

like anybody there a little bit

297

00:12:26,530 --> 00:12:24,290

disoriented when we first take them to

298

00:12:27,910 --> 00:12:26,540

orbit because there's no up or down but

299

00:12:29,440 --> 00:12:27,920

one thing I notice with the mice that we

300

00:12:30,430 --> 00:12:29,450

carried up with us was after about a day

301

00:12:32,140 --> 00:12:30,440

or two they were doing the same

302

00:12:34,150 --> 00:12:32,150

astronaut stupid astronaut tricks that

303

00:12:35,890 --> 00:12:34,160

we were doing running around bouncing

304

00:12:37,240 --> 00:12:35,900

off the edge of the cages and smack each

305

00:12:38,410 --> 00:12:37,250

other in the head and just doing goofy

306

00:12:40,030 --> 00:12:38,420

things that you would do when you

307

00:12:41,650 --> 00:12:40,040

realize it how much fun it is being

308

00:12:48,490 --> 00:12:41,660

weightless so I think most pets would do

309

00:12:51,940 --> 00:12:48,500

just fine in space thank you mm-hmm hi

310

00:12:54,700 --> 00:12:51,950

my name is Gaia my question is what um

311

00:12:57,670 --> 00:12:54,710

type of physical activities that you do

312

00:12:59,950 --> 00:12:57,680

in space good very good question

313

00:13:01,090 --> 00:12:59,960

something that we do worry about now one

314

00:13:03,100 --> 00:13:01,100

of things remember in space when you're

315

00:13:04,269 --> 00:13:03,110

weightless is that just sitting in your

316

00:13:06,190 --> 00:13:04,279

chair or standing there like you are

317

00:13:08,170 --> 00:13:06,200

talking to me you're getting more of a

318

00:13:10,180 --> 00:13:08,180

workout than you would just floating in

319

00:13:11,890 --> 00:13:10,190

space I just think about your head has

320

00:13:14,500 --> 00:13:11,900

weight and your neck has to hold your

321

00:13:15,880 --> 00:13:14,510

head up your legs and your feet have to

322

00:13:17,140 --> 00:13:15,890

hold the rest of your body up just lift

323

00:13:20,050 --> 00:13:17,150

me up your arm you know just moving your

324

00:13:21,670 --> 00:13:20,060

arms takes effort and when you're in

325

00:13:24,310 --> 00:13:21,680

space those muscles don't work anymore

326

00:13:25,900 --> 00:13:24,320

and so what we find that is that after a

327

00:13:27,370 --> 00:13:25,910

few days in space your muscles begin to

328

00:13:29,470 --> 00:13:27,380

waste away because your body is

329

00:13:31,150 --> 00:13:29,480

efficient which is my code word for

330

00:13:32,680 --> 00:13:31,160

seeing very lazy it doesn't support

331

00:13:34,720 --> 00:13:32,690

things it doesn't have to and your bones

332

00:13:36,910 --> 00:13:34,730

start to dissolve away too because no

333

00:13:37,660 --> 00:13:36,920

bones there to support the muscles so in

334

00:13:39,250 --> 00:13:37,670

order to keep that from happening

335

00:13:40,240 --> 00:13:39,260

because eventually you do come back to

336

00:13:43,000 --> 00:13:40,250

everything you want to be able to walk

337

00:13:44,350 --> 00:13:43,010

around our astronauts will exercise for

338

00:13:46,990 --> 00:13:44,360

as much as two and a half hours a day

339

00:13:48,460 --> 00:13:47,000

and so they're on these weightlifting

340

00:13:50,560 --> 00:13:48,470

machines obviously weights don't work

341

00:13:51,910 --> 00:13:50,570

because it's weightless but you can have

342

00:13:53,829 --> 00:13:51,920

resistance machines that simulate those

343

00:13:56,770 --> 00:13:53,839

weights we have treadmills and we have

344

00:13:58,780 --> 00:13:56,780

bicycles as well so you can keep keep

345

00:13:59,920 --> 00:13:58,790

your heart pumping as well and so you

346

00:14:00,940 --> 00:13:59,930

keep your physical condition while

347

00:14:02,230 --> 00:14:00,950

you're in space in fact a lot of

348

00:14:03,970 --> 00:14:02,240

astronauts come back and better shape

349

00:14:05,740 --> 00:14:03,980

from being in space than they do on the

350

00:14:06,970 --> 00:14:05,750

ground because they have scheduled two

351

00:14:08,050 --> 00:14:06,980

and a half hours time to work and we

352

00:14:15,400 --> 00:14:08,060

don't get that much time here on the

353

00:14:21,259 --> 00:14:18,259

do you keep a greenhouse in the space

354

00:14:23,000 --> 00:14:21,269

station and how do we keep a greenhouse

355

00:14:25,100 --> 00:14:23,010

in the space station yes we do we have

356

00:14:27,350 --> 00:14:25,110

plant growth experiments and we grow

357

00:14:28,630 --> 00:14:27,360

things there with lights and hydroponics

358

00:14:32,060 --> 00:14:28,640

and all kinds of other things like that

359

00:14:33,710 --> 00:14:32,070

and so we we've grown like radishes and

360

00:14:34,639 --> 00:14:33,720

we've actually I think even managed to

361

00:14:36,500 --> 00:14:34,649

eat some of those things that we've

362

00:14:38,090 --> 00:14:36,510

grown in space but everybody enjoys

363

00:14:39,980 --> 00:14:38,100

seems to enjoy doing gardening in space

364

00:14:42,350 --> 00:14:39,990

it's one of the better pastimes even if

365

00:14:53,300 --> 00:14:42,360

it's out must be an experiment it's also

366

00:14:55,550 --> 00:14:53,310

fun thank you you're welcome hi my name

367

00:14:57,800 --> 00:14:55,560

is Fernando and my question is can you

368

00:14:59,210 --> 00:14:57,810

control gravity and you Kevin the

369

00:15:01,579 --> 00:14:59,220

question is can you control grabbing

370

00:15:03,949 --> 00:15:01,589

your cabin theoretically yes and in

371

00:15:06,019 --> 00:15:03,959

practice we really don't what you can do

372

00:15:08,090 --> 00:15:06,029

is you can spin your cabin so it behaves

373

00:15:10,130 --> 00:15:08,100

like a centrifuge years ago we actually

374

00:15:11,810 --> 00:15:10,140

thought about putting a a centrifuge

375

00:15:13,310 --> 00:15:11,820

aboard the space station because one of

376

00:15:15,139 --> 00:15:13,320

the few things you can do in space that

377

00:15:17,600 --> 00:15:15,149

you can't do here on earth is simulate

378

00:15:19,939 --> 00:15:17,610

gravity's that are between 0 & 1 so

379

00:15:21,590 --> 00:15:19,949

earth is always at one gravity and only

380

00:15:23,420 --> 00:15:21,600

for brief periods of time maybe seconds

381

00:15:25,340 --> 00:15:23,430

if you're doing a parabola in space over

382

00:15:27,829 --> 00:15:25,350

the earth can you get yourself to less

383

00:15:30,019 --> 00:15:27,839

than one earth gravity in terms of force

384

00:15:31,189 --> 00:15:30,029

if you're in space then you've got no

385

00:15:33,350 --> 00:15:31,199

gravity acting on you because you're in

386

00:15:35,060 --> 00:15:33,360

free fall you can simulate half of

387

00:15:36,380 --> 00:15:35,070

Earth's gravity you can simulate Mars's

388

00:15:37,490 --> 00:15:36,390

gravity which is about thirty eight

389

00:15:39,650 --> 00:15:37,500

percent of Earth's gravity or even

390

00:15:41,329 --> 00:15:39,660

moon's gravity or just one sixteen

391

00:15:43,340 --> 00:15:41,339

percent of Earth's gravity and so you

392

00:15:44,329 --> 00:15:43,350

can control in that aspect but we don't

393

00:15:48,259 --> 00:15:44,339

have any means of doing that right now

394

00:15:53,300 --> 00:15:48,269

on board our space station thank you

395

00:15:55,400 --> 00:15:53,310

you're welcome hi my name is Alex and I

396

00:15:58,220 --> 00:15:55,410

won't know how do you guys power the ISS

397

00:16:00,019 --> 00:15:58,230

Alex oh that's also a very good question

398

00:16:02,180 --> 00:16:00,029

one of the things that the way we power

399

00:16:04,639 --> 00:16:02,190

the International Space Station is by

400

00:16:06,290 --> 00:16:04,649

solar arrays you see those giant solar

401
00:16:08,300 --> 00:16:06,300
arrays you see out there tho those eight

402
00:16:10,819 --> 00:16:08,310
them out there it's an acre of solar

403
00:16:12,290 --> 00:16:10,829
arrays and I think it gathered some

404
00:16:14,600 --> 00:16:12,300
point on order of 80 kilowatts of power

405
00:16:16,370 --> 00:16:14,610
that's about enough that a city blocks

406
00:16:17,900 --> 00:16:16,380
worth of homes there in Phoenix would

407
00:16:20,960 --> 00:16:17,910
use about 80 kilowatts worth of power

408
00:16:22,460 --> 00:16:20,970
and so really our power source is the

409
00:16:24,559 --> 00:16:22,470
sun and i remember when i was on the

410
00:16:26,059 --> 00:16:24,569
space shuttle we would go and plug in to

411
00:16:26,940 --> 00:16:26,069
the space station and use their power

412
00:16:28,410 --> 00:16:26,950
and all

413
00:16:30,330 --> 00:16:28,420

giggles I thought we were stealing power

414

00:16:40,710 --> 00:16:30,340

from the Sun not on board our space

415

00:16:42,480 --> 00:16:40,720

shuttle thank you hi my name is Fernando

416

00:16:44,430 --> 00:16:42,490

now I want to know why is the

417

00:16:46,890 --> 00:16:44,440

possibility of space tourism in the

418

00:16:48,450 --> 00:16:46,900

future it's another good question the

419

00:16:50,880 --> 00:16:48,460

possible space tourism the future while

420

00:16:52,590 --> 00:16:50,890

space tourism is now we've actually had

421

00:16:53,790 --> 00:16:52,600

a number of space tourists go to the

422

00:16:55,470 --> 00:16:53,800

International Space Station over the

423

00:16:56,850 --> 00:16:55,480

past few years I believe the Russians

424

00:16:58,740 --> 00:16:56,860

are actually playing and carrying up

425

00:17:00,570 --> 00:16:58,750

another space tourists in a few years

426
00:17:02,160 --> 00:17:00,580
from now I know they have some extra

427
00:17:04,140 --> 00:17:02,170
capacity on their line for the Soyuz

428
00:17:06,569 --> 00:17:04,150
capsules here in America we have a

429
00:17:09,600 --> 00:17:06,579
number of companies building spacecraft

430
00:17:11,220 --> 00:17:09,610
specifically for space tourism they're

431
00:17:12,540 --> 00:17:11,230
just someone will take you in space for

432
00:17:14,670 --> 00:17:12,550
maybe four or five minutes where you can

433
00:17:15,750 --> 00:17:14,680
be weightless and float your mm's

434
00:17:16,860 --> 00:17:15,760
whatever you want to put out in front of

435
00:17:18,930 --> 00:17:16,870
you and get some pictures and be back on

436
00:17:20,970 --> 00:17:18,940
earth or you can actually have ones that

437
00:17:24,120 --> 00:17:20,980
will take you up for weeks in space in

438
00:17:25,530 --> 00:17:24,130

orbit and so I think by the time you

439

00:17:27,180 --> 00:17:25,540

were able to afford going into space

440

00:17:28,590 --> 00:17:27,190

we'll have lots of you people out there

441

00:17:36,090 --> 00:17:28,600

willing to carry you up to space to go

442

00:17:41,340 --> 00:17:39,480

my lamb is liberty and another question

443

00:17:44,789 --> 00:17:41,350

I would like to ask how long do you

444

00:17:47,159 --> 00:17:44,799

think astronauts possibly live and work

445

00:17:48,299 --> 00:17:47,169

in statements questions how long do you

446

00:17:49,500 --> 00:17:48,309

think astronauts can live and work in

447

00:17:51,990 --> 00:17:49,510

space and that's something that's been

448

00:17:53,520 --> 00:17:52,000

on my mind for about the last year I've

449

00:17:55,710 --> 00:17:53,530

been working over in a program called a

450

00:17:57,110 --> 00:17:55,720

deep space habitat project and we've

451
00:17:59,760 --> 00:17:57,120
been thinking about you know taking

452
00:18:02,130 --> 00:17:59,770
spacecraft out to places like asteroids

453
00:18:03,779 --> 00:18:02,140
and even the planet Mars and some of

454
00:18:06,120 --> 00:18:03,789
those missions are very long they can be

455
00:18:08,310 --> 00:18:06,130
as much as 900 to 1,500 days away from

456
00:18:10,919 --> 00:18:08,320
the earth and so the questions like

457
00:18:13,260 --> 00:18:10,929
cannon people survive for that amount of

458
00:18:14,880 --> 00:18:13,270
time out there in space and if so what

459
00:18:16,649 --> 00:18:14,890
do we need to go about doing and so

460
00:18:19,350 --> 00:18:16,659
there's there's big challenges out there

461
00:18:21,600 --> 00:18:19,360
one of the big ones is radiation in deep

462
00:18:23,640 --> 00:18:21,610
space our earth and its atmosphere and

463
00:18:25,590 --> 00:18:23,650

its magnetic field protect us from a lot

464

00:18:29,220 --> 00:18:25,600

of radiation that comes to the center of

465

00:18:30,980 --> 00:18:29,230

our galaxy and so if we're going to go

466

00:18:33,600 --> 00:18:30,990

out beyond the Earth's magnetic field

467

00:18:34,980 --> 00:18:33,610

we're going to be subject to radiation

468

00:18:36,390 --> 00:18:34,990

such that we probably wouldn't stay out

469

00:18:38,340 --> 00:18:36,400

there for more than six months right now

470

00:18:39,810 --> 00:18:38,350

without some type of shielding or ways

471

00:18:41,820 --> 00:18:39,820

of deflecting or maybe creating our own

472

00:18:43,200 --> 00:18:41,830

magnetic field another thing is

473

00:18:44,700 --> 00:18:43,210

weightlessness we know even with all of

474

00:18:46,200 --> 00:18:44,710

our exercises we're not doing things

475

00:18:48,810 --> 00:18:46,210

that stimulate our inner ear to give us

476

00:18:50,250 --> 00:18:48,820

balance and so that sense goes away and

477

00:18:51,810 --> 00:18:50,260

it takes a while longer you're in space

478

00:18:53,820 --> 00:18:51,820

and longer it takes to bring that back

479

00:18:56,279 --> 00:18:53,830

so we may have to do things like bring

480

00:18:58,950 --> 00:18:56,289

about artificial gravity like one of

481

00:19:00,930 --> 00:18:58,960

your fellow classmates brought up so we

482

00:19:02,840 --> 00:19:00,940

can have some way of doing that food

483

00:19:05,340 --> 00:19:02,850

because we don't have a way to cook in

484

00:19:07,380 --> 00:19:05,350

zero-g we have to prepare all food here

485

00:19:09,240 --> 00:19:07,390

on earth and basically make TV dinners

486

00:19:10,799 --> 00:19:09,250

out of them some of those new loser

487

00:19:12,180 --> 00:19:10,809

nutrients after about a year and so

488

00:19:14,220 --> 00:19:12,190

they're not now they're didn't give you

489

00:19:15,840 --> 00:19:14,230

everything you need so that is how do we

490

00:19:17,730 --> 00:19:15,850

make food that keeps that nutrition or

491

00:19:20,159 --> 00:19:17,740

like let's see if somebody came over the

492

00:19:21,840 --> 00:19:20,169

way of cooking in microgravity no go out

493

00:19:24,600 --> 00:19:21,850

there just give me things like you know

494

00:19:25,740 --> 00:19:24,610

oats and flour and water and eggs and

495

00:19:27,360 --> 00:19:25,750

things like that and i can go whip up

496

00:19:29,669 --> 00:19:27,370

something right in my own kitchen there

497

00:19:31,320 --> 00:19:29,679

in zero-g so those things we need to

498

00:19:32,970 --> 00:19:31,330

think about for keeping people in space

499

00:19:35,789 --> 00:19:32,980

but up to now up to date we've had a

500

00:19:38,340 --> 00:19:35,799

person in space for 400 days on that one

501
00:19:39,899 --> 00:19:38,350
order of that and in a short time we'll

502
00:19:42,270 --> 00:19:39,909
have another a crew that will stay up on

503
00:19:43,770 --> 00:19:42,280
the space station for about a year so

504
00:19:46,409 --> 00:19:43,780
that's the limit right now is about a

505
00:19:48,180 --> 00:19:46,419
year and I think it'll take some new

506
00:19:49,350 --> 00:19:48,190
technologies for us to get along to go

507
00:19:50,789 --> 00:19:49,360
in space longer than that

508
00:19:58,850 --> 00:19:50,799
deep space outside of the Earth's

509
00:20:05,100 --> 00:20:03,210
my name is Susan my question is what is

510
00:20:07,230 --> 00:20:05,110
your most unforgettable moment where i

511
00:20:09,299 --> 00:20:07,240
live in his face great question good

512
00:20:11,549 --> 00:20:09,309
question Souza that's it's also a very

513
00:20:13,919 --> 00:20:11,559

difficult question inspector number of

514

00:20:14,940 --> 00:20:13,929

unforgettable moments in space but i'll

515

00:20:18,360 --> 00:20:14,950

share this one secret you can't tell

516

00:20:19,830 --> 00:20:18,370

anybody about this okay we were undocked

517

00:20:21,240 --> 00:20:19,840

from the International Space Station on

518

00:20:23,340 --> 00:20:21,250

the final flight of the space shuttle

519

00:20:26,070 --> 00:20:23,350

discovery and one of the things we have

520

00:20:27,930 --> 00:20:26,080

to do before we come in land is use the

521

00:20:30,299 --> 00:20:27,940

robot arm and a camera to look for any

522

00:20:32,549 --> 00:20:30,309

holes it may have been poked into the

523

00:20:34,380 --> 00:20:32,559

into the orbiter by any debris that was

524

00:20:36,240 --> 00:20:34,390

floating around in space and so we have

525

00:20:39,000 --> 00:20:36,250

this camera it's a very slow and

526

00:20:41,039 --> 00:20:39,010

painstaking process while you look but

527

00:20:42,570 --> 00:20:41,049

it's very important to go do and so

528

00:20:43,770 --> 00:20:42,580

we're very methodical very disciplined

529

00:20:45,570 --> 00:20:43,780

anybody's not part of it doesn't need to

530

00:20:47,159 --> 00:20:45,580

be on the flight deck and we go through

531

00:20:49,169 --> 00:20:47,169

this step-by-step process also very

532

00:20:50,640 --> 00:20:49,179

tiring so two people have to do it but

533

00:20:52,770 --> 00:20:50,650

three of us kind of rotate through and

534

00:20:55,440 --> 00:20:52,780

so I just got done with my half hour of

535

00:20:57,330 --> 00:20:55,450

helping out with this and I was resting

536

00:20:59,700 --> 00:20:57,340

my eyes looking out the window and we

537

00:21:01,830 --> 00:20:59,710

were coming up on the west coast of

538

00:21:03,690 --> 00:21:01,840

Australia over the Indian Ocean and I

539

00:21:05,190 --> 00:21:03,700

saw a faint green glow down beneath me

540

00:21:06,840 --> 00:21:05,200

and almost like the same tone of voice

541

00:21:08,720 --> 00:21:06,850

I'm talking right now it's like wow that

542

00:21:11,940 --> 00:21:08,730

looks like an aurora down there and

543

00:21:13,470 --> 00:21:11,950

almost immediately the commander and the

544

00:21:15,299 --> 00:21:13,480

pilot we were working the inspection

545

00:21:16,680 --> 00:21:15,309

stop the arm put a breaks one and they

546

00:21:18,270 --> 00:21:16,690

said did you say Aurora and all the

547

00:21:20,730 --> 00:21:18,280

other crew members come flooding up from

548

00:21:22,500 --> 00:21:20,740

the mid the flight amid deck and we've

549

00:21:24,120 --> 00:21:22,510

got cameras and we're in usually now

550

00:21:25,500 --> 00:21:24,130

we're very calm you've ever seen Apollo

551
00:21:27,000 --> 00:21:25,510
13 and you always have to very calm

552
00:21:28,620 --> 00:21:27,010
about things and it's just it's just

553
00:21:29,760 --> 00:21:28,630
chaos you know we're screaming we're

554
00:21:30,780 --> 00:21:29,770
trying to find lenses we're trying to

555
00:21:32,520 --> 00:21:30,790
get the right angle or try to get the

556
00:21:33,960 --> 00:21:32,530
right exposure it was just madness for

557
00:21:35,100 --> 00:21:33,970
about five minutes then we get over the

558
00:21:36,900 --> 00:21:35,110
Aurora and we get these breathtaking

559
00:21:38,400 --> 00:21:36,910
shots and then we're over top of

560
00:21:40,409 --> 00:21:38,410
Australia and everybody kind of like

561
00:21:42,120 --> 00:21:40,419
those then sanity prevailed to getting

562
00:21:43,409 --> 00:21:42,130
we got to clean everything back up they

563
00:21:44,820 --> 00:21:43,419

went back down the mid-deck they weren't

564

00:21:46,440 --> 00:21:44,830

doing the inspection and we went back to

565

00:21:47,490 --> 00:21:46,450

finishing inspecting the orbiter to go

566

00:21:48,930 --> 00:21:47,500

back in but that was it was a

567

00:21:51,810 --> 00:21:48,940

breathtaking moment to be overtopped is

568

00:21:52,919 --> 00:21:51,820

just some rivers a green fire that we're

569

00:21:54,000 --> 00:21:52,929

coming up from the atmosphere and we're

570

00:21:56,039 --> 00:21:54,010

just right over top of it looking down

571

00:21:57,270 --> 00:21:56,049

and even from the ground it's impressive

572

00:21:59,510 --> 00:21:57,280

it's even more impressive to be looking

573

00:22:01,950 --> 00:21:59,520

at it from above in space

574

00:22:10,480 --> 00:22:01,960

but you can't tell me about that anybody

575

00:22:17,510 --> 00:22:13,160

hi my name is David I'm gonna ask a

576

00:22:20,350 --> 00:22:17,520

question again what is it Martin's I'm

577

00:22:23,120 --> 00:22:20,360

sorry what is your most favorite site

578

00:22:24,920 --> 00:22:23,130

what is my most favorite site I have to

579

00:22:26,540 --> 00:22:24,930

tell you that after going space and

580

00:22:28,550 --> 00:22:26,550

looking back the earth is my most

581

00:22:30,140 --> 00:22:28,560

favorite site from space just looking

582

00:22:32,120 --> 00:22:30,150

back on it is just a beautiful thing to

583

00:22:33,830 --> 00:22:32,130

be near I thought about what other plans

584

00:22:35,330 --> 00:22:33,840

that like to be above but none of them I

585

00:22:38,630 --> 00:22:35,340

think would be as interesting as the

586

00:22:40,820 --> 00:22:38,640

earth other planets no the plants I know

587

00:22:42,860 --> 00:22:40,830

have any real oceans the other ones have

588

00:22:44,690 --> 00:22:42,870

atmospheres and weather but they don't

589

00:22:45,800 --> 00:22:44,700

have the color and variety and just

590

00:22:47,810 --> 00:22:45,810

different things that are out there that

591

00:22:49,730 --> 00:22:47,820

I think that earth does so it took me

592

00:22:51,770 --> 00:22:49,740

leaving the earth for two weeks at a

593

00:22:57,560 --> 00:22:51,780

time to really appreciate what a gym we

594

00:23:05,120 --> 00:22:57,570

have for a planet thank you you're

595

00:23:07,210 --> 00:23:05,130

welcome hi my name is joey and i'm going

596

00:23:10,640 --> 00:23:07,220

to ask question what are you tough

597

00:23:13,160 --> 00:23:10,650

issues that you have to deal with in the

598

00:23:14,720 --> 00:23:13,170

space station with the top issues we

599

00:23:15,950 --> 00:23:14,730

have to deal with in space station again

600

00:23:17,180 --> 00:23:15,960

another very good question is the kind

601

00:23:19,520 --> 00:23:17,190

of things that note that flight

602

00:23:21,350 --> 00:23:19,530

directors ask about so you sure you're

603

00:23:23,900 --> 00:23:21,360

afraid to come down here and work for us

604

00:23:25,340 --> 00:23:23,910

like character and training the top

605

00:23:27,620 --> 00:23:25,350

issues the main thing is that again

606

00:23:29,870 --> 00:23:27,630

we're isolated and it's not so much by

607

00:23:32,660 --> 00:23:29,880

the distance we are only 250 miles up in

608

00:23:34,670 --> 00:23:32,670

space which is probably less distance

609

00:23:38,450 --> 00:23:34,680

between you and the arizona state border

610

00:23:40,430 --> 00:23:38,460

however you're separated by speed 17,500

611

00:23:42,170 --> 00:23:40,440

miles an hour is a incredibly fast page

612

00:23:44,390 --> 00:23:42,180

so things just you just don't get there

613

00:23:46,850 --> 00:23:44,400

and back very quickly and so things like

614

00:23:48,680 --> 00:23:46,860

water and air and food and science

615

00:23:49,970 --> 00:23:48,690

everything out there has to be important

616

00:23:51,620 --> 00:23:49,980

I mean there's really nothing up there

617

00:23:53,780 --> 00:23:51,630

in space you just can't step outside and

618

00:23:57,080 --> 00:23:53,790

grab what you need so that's probably

619

00:23:59,540 --> 00:23:57,090

the top issue there the other part is

620

00:24:01,130 --> 00:23:59,550

because of that we we're packrats know

621

00:24:02,750 --> 00:24:01,140

you've seen these hoarding shows we have

622

00:24:04,820 --> 00:24:02,760

our own hoarding problem study space

623

00:24:06,680 --> 00:24:04,830

space station because we're afraid of

624

00:24:08,150 --> 00:24:06,690

running out of things so you'll find

625

00:24:10,700 --> 00:24:08,160

that every nook and cranny in the space

626
00:24:12,890 --> 00:24:10,710
station is just crimp something that we

627
00:24:14,770 --> 00:24:12,900
might need sooner or later and so as big

628
00:24:16,880 --> 00:24:14,780
and palatial as a space station is

629
00:24:19,760 --> 00:24:16,890
finding room for all that stuff is kind

630
00:24:21,470 --> 00:24:19,770
of a problem alright this is going to be

631
00:24:31,620 --> 00:24:21,480
our final question from the school

632
00:24:38,910 --> 00:24:34,700
hi my name is Christian what is done

633
00:24:41,460 --> 00:24:38,920
what is next for nasa's space flights

634
00:24:44,610 --> 00:24:41,470
great question wow that's a great

635
00:24:46,140 --> 00:24:44,620
question and this that is the 64 million

636
00:24:48,630 --> 00:24:46,150
dollar question what is next from at

637
00:24:50,760 --> 00:24:48,640
NASA space flights I said for the

638
00:24:52,080 --> 00:24:50,770

foreseeable future we will continue to

639

00:24:54,240 --> 00:24:52,090

operate the International Space Station

640

00:24:55,920 --> 00:24:54,250

which is like everything that has built

641

00:24:57,900 --> 00:24:55,930

incredibly over-engineered and living

642

00:24:59,370 --> 00:24:57,910

long past when we thought it would and

643

00:25:02,130 --> 00:24:59,380

so we expected well into the next decade

644

00:25:03,480 --> 00:25:02,140

to be operating the space station or we

645

00:25:04,200 --> 00:25:03,490

will expect to have more commercial

646

00:25:07,890 --> 00:25:04,210

partners on board the International

647

00:25:09,360 --> 00:25:07,900

Space Station as some of our commercial

648

00:25:11,520 --> 00:25:09,370

like these commercial space operators

649

00:25:12,930 --> 00:25:11,530

get the capability to bring up crew

650

00:25:14,940 --> 00:25:12,940

members as well as cargo there already

651
00:25:16,440 --> 00:25:14,950
is bringing up cargo back and forth in

652
00:25:17,820 --> 00:25:16,450
the space station next one thing we'll

653
00:25:18,690 --> 00:25:17,830
see is our crew members going to and

654
00:25:20,400 --> 00:25:18,700
from the space station on these

655
00:25:22,260 --> 00:25:20,410
commercial vehicles and of course we're

656
00:25:25,140 --> 00:25:22,270
always thinking about interplanetary

657
00:25:27,660 --> 00:25:25,150
travel so we're looking at Jimmy go them

658
00:25:29,070 --> 00:25:27,670
to asteroids that are near the earth and

659
00:25:30,840 --> 00:25:29,080
going of course I'm always thinking

660
00:25:32,100 --> 00:25:30,850
about the red planet that's the next

661
00:25:34,230 --> 00:25:32,110
place I'd like to go see us do in my

662
00:25:36,060 --> 00:25:34,240
lifetime so I think that's out there

663
00:25:37,380 --> 00:25:36,070

about the time that you get to sit in

664

00:25:39,480 --> 00:25:37,390

Mission Control and talk to students and

665

00:25:42,870 --> 00:25:39,490

Phoenix that's will be you'll be talking

666

00:25:46,320 --> 00:25:42,880

about that well thanks i did liked it

667

00:25:47,790 --> 00:25:46,330

i'll go ahead oh no thank you i'd like

668

00:25:49,830 --> 00:25:47,800

to thank you guys for joining us say

669

00:25:51,990 --> 00:25:49,840

thank you kyle and thank you alvin and

670

00:25:54,360 --> 00:25:52,000

then thank you to monterey park all

671

00:25:56,850 --> 00:25:54,370

right well we're really happy that you

672

00:25:59,610 --> 00:25:56,860

guys joined us at as a great bunch of

673

00:26:02,100 --> 00:25:59,620

questions that's sometimes better than

674

00:26:04,620 --> 00:26:02,110

some that we get asked by other folks so

675

00:26:06,180 --> 00:26:04,630

you guys study hard and we really

676

00:26:08,340 --> 00:26:06,190

appreciate you joining us here in

677

00:26:10,140 --> 00:26:08,350

Mission Control thanks a lot for coming