



GHT 341:17:05:27

MISSION CONTROL CENTER  
FOR ISS DIL-3 LOG



TIME	ORBIT	STATUS
00:00:00	001	OK
00:00:01	001	OK
00:00:02	001	OK
00:00:03	001	OK
00:00:04	001	OK
00:00:05	001	OK
00:00:06	001	OK
00:00:07	001	OK
00:00:08	001	OK
00:00:09	001	OK
00:00:10	001	OK
00:00:11	001	OK
00:00:12	001	OK
00:00:13	001	OK
00:00:14	001	OK
00:00:15	001	OK
00:00:16	001	OK
00:00:17	001	OK
00:00:18	001	OK
00:00:19	001	OK
00:00:20	001	OK
00:00:21	001	OK
00:00:22	001	OK
00:00:23	001	OK
00:00:24	001	OK
00:00:25	001	OK
00:00:26	001	OK
00:00:27	001	OK
00:00:28	001	OK
00:00:29	001	OK
00:00:30	001	OK
00:00:31	001	OK
00:00:32	001	OK
00:00:33	001	OK
00:00:34	001	OK
00:00:35	001	OK
00:00:36	001	OK
00:00:37	001	OK
00:00:38	001	OK
00:00:39	001	OK
00:00:40	001	OK
00:00:41	001	OK
00:00:42	001	OK
00:00:43	001	OK
00:00:44	001	OK
00:00:45	001	OK
00:00:46	001	OK
00:00:47	001	OK
00:00:48	001	OK
00:00:49	001	OK
00:00:50	001	OK
00:00:51	001	OK
00:00:52	001	OK
00:00:53	001	OK
00:00:54	001	OK
00:00:55	001	OK
00:00:56	001	OK
00:00:57	001	OK
00:00:58	001	OK
00:00:59	001	OK
00:01:00	001	OK

PAO

ISS DIL-3 LOG

1  
00:00:08,390 --> 00:00:05,510  
um we're uh pleased to join you guys in

2  
00:00:10,709 --> 00:00:08,400  
phoenix from here inside the room and

3  
00:00:12,950 --> 00:00:10,719  
and luckily i'm joined by uh astronaut

4  
00:00:15,509 --> 00:00:12,960  
al drew who's got a lot of experience up

5  
00:00:17,830 --> 00:00:15,519  
in space he's been uh he's been in space

6  
00:00:20,310 --> 00:00:17,840  
twice he's flown on two space shuttle

7  
00:00:22,150 --> 00:00:20,320  
missions uh to that international space

8  
00:00:24,790 --> 00:00:22,160  
station uh sts

9  
00:00:26,950 --> 00:00:24,800  
118 and sts-133

10  
00:00:28,870 --> 00:00:26,960  
uh once uh aboard space shuttle

11  
00:00:31,830 --> 00:00:28,880  
endeavour and then he also flew on the

12  
00:00:33,590 --> 00:00:31,840  
last flight of discovery before it was

13  
00:00:35,910 --> 00:00:33,600

retired along with the other two space

14

00:00:38,549 --> 00:00:35,920

shuttles so al has a tremendous amount

15

00:00:40,389 --> 00:00:38,559

of experience in space flight and and

16

00:00:42,069 --> 00:00:40,399

knows what life is like on board the

17

00:00:43,990 --> 00:00:42,079

international space station and in fact

18

00:00:45,910 --> 00:00:44,000

here in the flight control room he

19

00:00:46,950 --> 00:00:45,920

supported flights from in here as well

20

00:00:49,350 --> 00:00:46,960

so

21

00:00:52,150 --> 00:00:49,360

welcome phoenix and monterey park we're

22

00:00:54,549 --> 00:00:52,160

happy to be with you guys

23

00:00:57,189 --> 00:00:54,559

we're happy to have you as our guest

24

00:00:59,510 --> 00:00:57,199

today thank you so much for your time

25

00:01:01,189 --> 00:00:59,520

and liberty here

26

00:01:03,349 --> 00:01:01,199

is the first person that is going to be

27

00:01:04,630 --> 00:01:03,359

asking you a question

28

00:01:08,630 --> 00:01:04,640

okay

29

00:01:10,950 --> 00:01:08,640

um what um sports do you play in space

30

00:01:13,590 --> 00:01:10,960

what sports do you play in space uh

31

00:01:15,270 --> 00:01:13,600

let's see we have a basketball hoop on

32

00:01:16,550 --> 00:01:15,280

board the space station

33

00:01:18,149 --> 00:01:16,560

most of our europeans come up with

34

00:01:19,590 --> 00:01:18,159

soccer balls it's very easy to make

35

00:01:21,590 --> 00:01:19,600

bicycle kicks when you're on board the

36

00:01:33,830 --> 00:01:21,600

space station as well

37

00:01:37,910 --> 00:01:36,310

do you have access to the

38

00:01:39,030 --> 00:01:37,920

social media

39

00:01:41,270 --> 00:01:39,040

online

40

00:01:43,510 --> 00:01:41,280

video games

41

00:01:45,510 --> 00:01:43,520

yes we do we actually um in the past few

42

00:01:47,510 --> 00:01:45,520

years have gotten live internet on board

43

00:01:49,990 --> 00:01:47,520

the space station so we can

44

00:01:51,590 --> 00:01:50,000

access facebook and twitter i don't know

45

00:01:52,950 --> 00:01:51,600

if anybody who plays the video games i

46

00:01:55,030 --> 00:01:52,960

didn't see anybody was up there doing at

47

00:01:56,789 --> 00:01:55,040

the time but that may be because we're a

48

00:01:58,389 --> 00:01:56,799

little bit too old for that i'm sure

49

00:01:59,590 --> 00:01:58,399

that as we get newer and younger

50

00:02:01,670 --> 00:01:59,600

astronauts on they'll be playing things

51  
00:02:10,389 --> 00:02:01,680  
like world of warcraft on on the space

52  
00:02:16,550 --> 00:02:12,869  
do you get scared every time when you

53  
00:02:18,150 --> 00:02:16,560  
board into the spacecraft

54  
00:02:19,670 --> 00:02:18,160  
do you get scared yes there's an element

55  
00:02:21,030 --> 00:02:19,680  
of danger involved with spacecraft

56  
00:02:22,790 --> 00:02:21,040  
anybody who's not a little bit worried

57  
00:02:24,550 --> 00:02:22,800  
about that probably doesn't understand

58  
00:02:26,550 --> 00:02:24,560  
what's going on there's a lot of energy

59  
00:02:28,949 --> 00:02:26,560  
involved with getting yourself to earth

60  
00:02:30,550 --> 00:02:28,959  
orbit you're going 25 times the speed of

61  
00:02:31,990 --> 00:02:30,560  
sound that's about

62  
00:02:34,309 --> 00:02:32,000  
whole

63  
00:02:36,229 --> 00:02:34,319

12 times faster than a speeding bullet

64

00:02:37,670 --> 00:02:36,239

and so it's a lot of energy has to go

65

00:02:39,350 --> 00:02:37,680

into that and so

66

00:02:40,949 --> 00:02:39,360

it's a good thing it makes us very

67

00:02:42,309 --> 00:02:40,959

careful and very safe and we pay a lot

68

00:02:44,390 --> 00:02:42,319

of attention to what we're doing when

69

00:02:46,070 --> 00:02:44,400

we're going to and from space and i

70

00:03:02,630 --> 00:02:46,080

think a little bit of anxiety helps you

71

00:03:07,350 --> 00:03:05,910

my question is how likely does space

72

00:03:11,430 --> 00:03:07,360

elevator

73

00:03:13,270 --> 00:03:11,440

i think it's likely the question more is

74

00:03:14,630 --> 00:03:13,280

when do we get a space elevator not will

75

00:03:16,470 --> 00:03:14,640

we ever have one

76

00:03:18,710 --> 00:03:16,480

we worked out the physics of it a long

77

00:03:20,550 --> 00:03:18,720

time ago it actually does work in theory

78

00:03:22,470 --> 00:03:20,560

however it takes some very strong

79

00:03:23,670 --> 00:03:22,480

materials to build that space elevator i

80

00:03:24,789 --> 00:03:23,680

don't think we have those materials

81

00:03:26,869 --> 00:03:24,799

quite yet

82

00:03:28,550 --> 00:03:26,879

but i think that we can get there at

83

00:03:45,190 --> 00:03:28,560

some point i don't think it's anywhere

84

00:03:47,750 --> 00:03:46,630

hi i'm steve

85

00:03:50,630 --> 00:03:47,760

how

86

00:03:51,990 --> 00:03:50,640

long does travel time to the space

87

00:03:54,149 --> 00:03:52,000

station

88

00:03:55,670 --> 00:03:54,159

how long does it take to get into space

89

00:03:57,350 --> 00:03:55,680

uh for if you're on a charlotte takes

90

00:03:58,710 --> 00:03:57,360

about eight and a half minutes and so

91

00:03:59,589 --> 00:03:58,720

think about that you're sitting on the

92

00:04:01,350 --> 00:03:59,599

ground

93

00:04:04,149 --> 00:04:01,360

at zero feet of altitude rating right at

94

00:04:05,589 --> 00:04:04,159

sea level doing zero miles per hour

95

00:04:09,030 --> 00:04:05,599

and eight and a half minutes later you

96

00:04:10,710 --> 00:04:09,040

are 100 miles up going at 17 500 miles

97

00:04:12,149 --> 00:04:10,720

per hour uh so it makes for a very

98

00:04:14,149 --> 00:04:12,159

exciting eight and a half minute ride

99

00:04:16,069 --> 00:04:14,159

yeah he also asked how long does it take

100

00:04:18,150 --> 00:04:16,079

to get to the space station too so in

101  
00:04:19,909 --> 00:04:18,160  
addition to that okay so once we get to

102  
00:04:21,189 --> 00:04:19,919  
space um there's the trekking into the

103  
00:04:22,550 --> 00:04:21,199  
space station now if we really needed to

104  
00:04:24,390 --> 00:04:22,560  
get there very very quickly which we

105  
00:04:25,830 --> 00:04:24,400  
don't typically uh it wouldn't take much

106  
00:04:28,390 --> 00:04:25,840  
longer to get to the space station maybe

107  
00:04:30,150 --> 00:04:28,400  
another 45 minutes however because the

108  
00:04:31,590 --> 00:04:30,160  
way we do our rendezvous we don't like

109  
00:04:32,550 --> 00:04:31,600  
just run to the space station and stand

110  
00:04:34,550 --> 00:04:32,560  
on the brakes because you don't want to

111  
00:04:36,070 --> 00:04:34,560  
hit the space station so we usually will

112  
00:04:37,749 --> 00:04:36,080  
spend a couple of days getting the space

113  
00:04:39,670 --> 00:04:37,759

station going through checkouts making

114

00:04:41,189 --> 00:04:39,680

sure our spacecraft works okay

115

00:04:42,629 --> 00:04:41,199

but when it's time to come back from the

116

00:04:45,189 --> 00:04:42,639

space station when it comes time to land

117

00:04:47,110 --> 00:04:45,199

by the time we undock within an hour and

118

00:04:54,550 --> 00:04:47,120

a half we're back on the ground

119

00:04:59,350 --> 00:04:56,870

hi my name is michael and my question is

120

00:05:00,870 --> 00:04:59,360

how often do you travel to space

121

00:05:02,790 --> 00:05:00,880

questions how often do you travel to

122

00:05:04,710 --> 00:05:02,800

space depends on the astronaut depends

123

00:05:06,629 --> 00:05:04,720

on the time you're here

124

00:05:07,990 --> 00:05:06,639

it typically

125

00:05:09,189 --> 00:05:08,000

when things are very very busy when

126

00:05:10,870 --> 00:05:09,199

during this time of the space shuttle

127

00:05:13,990 --> 00:05:10,880

program you could count on going into

128

00:05:15,990 --> 00:05:14,000

space about once every two to four years

129

00:05:17,830 --> 00:05:16,000

with the shuttle retired and going to

130

00:05:19,990 --> 00:05:17,840

the space station the training alone

131

00:05:21,029 --> 00:05:20,000

takes anywhere between two and a half to

132

00:05:23,590 --> 00:05:21,039

four years depending on what you're

133

00:05:25,430 --> 00:05:23,600

training for so it would probably maybe

134

00:05:27,189 --> 00:05:25,440

even five years now between space

135

00:05:35,430 --> 00:05:27,199

station missions uh if you're on one of

136

00:05:42,150 --> 00:05:38,790

hi my name is d'angelo and how do you

137

00:05:43,830 --> 00:05:42,160

manage waste in space hi deangelo that's

138

00:05:45,029 --> 00:05:43,840

a very important question one of the

139

00:05:47,189 --> 00:05:45,039

things that you don't think about is the

140

00:05:48,390 --> 00:05:47,199

fact that when you're in space

141

00:05:50,390 --> 00:05:48,400

first off

142

00:05:52,150 --> 00:05:50,400

getting things is tough to do you can't

143

00:05:53,430 --> 00:05:52,160

run down to your local store and get

144

00:05:54,469 --> 00:05:53,440

groceries or go to the hardware store

145

00:05:55,909 --> 00:05:54,479

and get replaced so you have to bring

146

00:05:57,110 --> 00:05:55,919

everything up there with you and

147

00:05:58,230 --> 00:05:57,120

everything you get rid of there's no

148

00:05:59,670 --> 00:05:58,240

garbage truck that comes by every

149

00:06:00,550 --> 00:05:59,680

tuesday and thursday and takes away your

150

00:06:02,309 --> 00:06:00,560

stuff

151  
00:06:03,749 --> 00:06:02,319  
so but we do have garbage trucks there

152  
00:06:05,909 --> 00:06:03,759  
to the space station

153  
00:06:08,150 --> 00:06:05,919  
the progress capsules take away most of

154  
00:06:10,950 --> 00:06:08,160  
our garbage right now and we it burns up

155  
00:06:13,029 --> 00:06:10,960  
in the atmosphere so it i think every

156  
00:06:14,629 --> 00:06:13,039  
90 days or so a new progress comes in so

157  
00:06:16,950 --> 00:06:14,639  
we'll unpack it it has all of our fresh

158  
00:06:18,629 --> 00:06:16,960  
groceries and supplies and as soon as

159  
00:06:20,550 --> 00:06:18,639  
we've got it empty we start putting all

160  
00:06:22,870 --> 00:06:20,560  
of our old trash in there and when the

161  
00:06:26,629 --> 00:06:22,880  
new one comes up we undock it and we let

162  
00:06:33,270 --> 00:06:27,749  
thank you

163  
00:06:33,280 --> 00:06:36,629

where do you get water

164

00:06:39,350 --> 00:06:38,469

uh water that's another very important

165

00:06:41,590 --> 00:06:39,360

question

166

00:06:43,510 --> 00:06:41,600

because uh it's probably the most

167

00:06:45,510 --> 00:06:43,520

important thing we have on space station

168

00:06:47,430 --> 00:06:45,520

that's a resource if we didn't have a

169

00:06:49,430 --> 00:06:47,440

reason a regular supply of anything if

170

00:06:50,870 --> 00:06:49,440

all of our supplies stopped today nobody

171

00:06:52,230 --> 00:06:50,880

took anything else up there

172

00:06:53,749 --> 00:06:52,240

probably the first thing we would run

173

00:06:55,189 --> 00:06:53,759

out of would be water even before we'd

174

00:06:56,790 --> 00:06:55,199

run out of air

175

00:06:58,469 --> 00:06:56,800

and so water is very important to all of

176

00:06:59,830 --> 00:06:58,479

us when we have just

177

00:07:02,070 --> 00:06:59,840

offices full of people here at johnson

178

00:07:03,110 --> 00:07:02,080

space center who watch our water budgets

179

00:07:05,110 --> 00:07:03,120

and figure out how we're going to get

180

00:07:07,029 --> 00:07:05,120

our water now again back in the days of

181

00:07:09,029 --> 00:07:07,039

the space station our fuel cells which

182

00:07:10,950 --> 00:07:09,039

made electricity for the space shuttle

183

00:07:13,110 --> 00:07:10,960

actually made hundreds of gallons of

184

00:07:14,710 --> 00:07:13,120

water as a waste product the clearest

185

00:07:17,270 --> 00:07:14,720

cleanest water you could possibly ever

186

00:07:19,029 --> 00:07:17,280

find would come out of these fuel cells

187

00:07:20,469 --> 00:07:19,039

and we would take them and pipe them

188

00:07:21,749 --> 00:07:20,479

over to the space station so that water

189

00:07:23,749 --> 00:07:21,759

was never an issue

190

00:07:25,510 --> 00:07:23,759

now we have the progress capsules and

191

00:07:27,270 --> 00:07:25,520

other resupply vehicles and they bring

192

00:07:28,950 --> 00:07:27,280

up tanks of water with them and we

193

00:07:31,510 --> 00:07:28,960

conserve our water but our life support

194

00:07:33,270 --> 00:07:31,520

systems now are much more miserly they

195

00:07:34,550 --> 00:07:33,280

we waste a lot less water used to be you

196

00:07:35,909 --> 00:07:34,560

know if you the water was dirty we

197

00:07:37,350 --> 00:07:35,919

didn't care much about recycling we

198

00:07:40,150 --> 00:07:37,360

would just dump the the dirty water

199

00:07:41,670 --> 00:07:40,160

overboard now we scrub and purify and

200

00:07:43,430 --> 00:07:41,680

recycle as much of that water as we

201  
00:07:44,710 --> 00:07:43,440  
possibly can because we don't have

202  
00:07:50,629 --> 00:07:44,720  
shuttles coming up every few weeks with

203  
00:07:55,350 --> 00:07:51,830  
thank you

204  
00:08:01,110 --> 00:07:57,990  
hi i'm brooklyn how do you guys keep

205  
00:08:02,469 --> 00:08:01,120  
yourself clean in space hi brooklyn uh

206  
00:08:03,990 --> 00:08:02,479  
keeping clean in space something very

207  
00:08:08,150 --> 00:08:04,000  
near and dear to my heart because i have

208  
00:08:09,110 --> 00:08:08,160  
spent a total of 26 days in space uh

209  
00:08:10,790 --> 00:08:09,120  
obviously the things you do on the

210  
00:08:12,710 --> 00:08:10,800  
ground here aren't don't quite work in

211  
00:08:14,469 --> 00:08:12,720  
space much of what you do in the

212  
00:08:15,990 --> 00:08:14,479  
bathroom the shower and what clean up

213  
00:08:17,909 --> 00:08:16,000

needs gravity for the water to come

214

00:08:19,189 --> 00:08:17,919

across your body out of the spigot and

215

00:08:20,790 --> 00:08:19,199

go down the drain

216

00:08:21,990 --> 00:08:20,800

that doesn't work in space now any water

217

00:08:23,270 --> 00:08:22,000

you would shoot out of a nozzle would

218

00:08:25,270 --> 00:08:23,280

stay right there with you and along with

219

00:08:26,869 --> 00:08:25,280

the dirt that came off of you so

220

00:08:28,950 --> 00:08:26,879

rather than going to hop into a shower

221

00:08:30,629 --> 00:08:28,960

or a bathtub we take sponge baths if

222

00:08:32,310 --> 00:08:30,639

you've ever been camping you know what

223

00:08:33,750 --> 00:08:32,320

it's like to go out there and just get a

224

00:08:34,870 --> 00:08:33,760

towel or something wet and wipe yourself

225

00:08:36,790 --> 00:08:34,880

down

226

00:08:38,230 --> 00:08:36,800

clean that off and then rinse yourself

227

00:08:40,550 --> 00:08:38,240

off with another towel that have the

228

00:08:42,149 --> 00:08:40,560

soap on it and so it's very good at

229

00:08:44,070 --> 00:08:42,159

keeping you clean

230

00:08:45,590 --> 00:08:44,080

but not nearly as satisfying as say just

231

00:08:47,030 --> 00:08:45,600

a hot shower and you'll find most

232

00:08:48,230 --> 00:08:47,040

astronauts when they get back down the

233

00:08:49,910 --> 00:08:48,240

ground no matter how long they've been

234

00:08:51,670 --> 00:08:49,920

in space will go hop in the shower for

235

00:08:55,750 --> 00:08:51,680

30 to 45 minutes because they miss the

236

00:09:02,070 --> 00:08:55,760

sensation of just having a hot shower

237

00:09:06,389 --> 00:09:05,110

hello my name is jennifer hi jennifer my

238

00:09:08,389 --> 00:09:06,399

question is

239

00:09:10,949 --> 00:09:08,399

what is your favorite food

240

00:09:13,350 --> 00:09:10,959

what's my favorite food

241

00:09:15,430 --> 00:09:13,360

it depends from day to day

242

00:09:16,230 --> 00:09:15,440

well i'm here in in texas i like a lot

243

00:09:17,910 --> 00:09:16,240

of

244

00:09:19,910 --> 00:09:17,920

cajun food things like gumbo but also

245

00:09:21,190 --> 00:09:19,920

like barbecue and imagine if i live

246

00:09:22,630 --> 00:09:21,200

somewhere else i would eat something

247

00:09:24,470 --> 00:09:22,640

else differently but that's what they

248

00:09:26,870 --> 00:09:24,480

make best around here and they do a very

249

00:09:28,790 --> 00:09:26,880

good job of it what about

250

00:09:30,550 --> 00:09:28,800

yeah that's a good question because

251  
00:09:32,710 --> 00:09:30,560  
we've always heard that in space your

252  
00:09:34,389 --> 00:09:32,720  
taste buds tend to change

253  
00:09:36,550 --> 00:09:34,399  
what do you have a favorite food when

254  
00:09:38,070 --> 00:09:36,560  
you're flying can shift in space

255  
00:09:39,110 --> 00:09:38,080  
now some people debate that they say

256  
00:09:41,750 --> 00:09:39,120  
they've been in space and their tastes

257  
00:09:43,190 --> 00:09:41,760  
don't shift and for me my taste did

258  
00:09:44,389 --> 00:09:43,200  
shift on my first mission but it wasn't

259  
00:09:45,829 --> 00:09:44,399  
consistent didn't happen again on my

260  
00:09:47,350 --> 00:09:45,839  
second mission

261  
00:09:48,630 --> 00:09:47,360  
one of the things on space when i was in

262  
00:09:51,509 --> 00:09:48,640  
my shuttle mission

263  
00:09:53,670 --> 00:09:51,519

we had these string beans with mushrooms

264

00:09:55,269 --> 00:09:53,680

and i eat string beans i don't hate

265

00:09:57,030 --> 00:09:55,279

string beans but i probably wouldn't go

266

00:09:58,389 --> 00:09:57,040

five steps out of my way to get a bowl

267

00:09:59,430 --> 00:09:58,399

of string beans anywhere on your earth i

268

00:10:00,230 --> 00:09:59,440

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

269

00:10:02,150 --> 00:10:00,240

eat them

270

00:10:03,990 --> 00:10:02,160

uh i craved string beans when i was on

271

00:10:06,230 --> 00:10:04,000

orbit and i was trading away all my beef

272

00:10:07,590 --> 00:10:06,240

jerky which i love here on earth to get

273

00:10:09,190 --> 00:10:07,600

all the string beans that i could

274

00:10:10,389 --> 00:10:09,200

possibly get my hands on to us so i

275

00:10:12,310 --> 00:10:10,399

pretty much ate the entire shuttle

276

00:10:13,590 --> 00:10:12,320

supply of string beans in order to get

277

00:10:14,870 --> 00:10:13,600

them all and when i went back the second

278

00:10:17,269 --> 00:10:14,880

time i thought i'd crave them again and

279

00:10:20,150 --> 00:10:17,279

i didn't i didn't hate them but but they

280

00:10:21,910 --> 00:10:20,160

were just string beans at that point

281

00:10:23,590 --> 00:10:21,920

so who knows that's a science out there

282

00:10:25,110 --> 00:10:23,600

waiting to find out is why your taste

283

00:10:28,550 --> 00:10:25,120

might change on orbit and why they

284

00:10:28,560 --> 00:10:35,110

thank you

285

00:10:41,110 --> 00:10:37,670

hi my name is taitung

286

00:10:42,550 --> 00:10:41,120

my question is what hobbies do you have

287

00:10:45,670 --> 00:10:42,560

while in space

288

00:10:47,110 --> 00:10:45,680

so it just depends on

289

00:10:48,069 --> 00:10:47,120

the astronaut and how they're up how

290

00:10:49,750 --> 00:10:48,079

long they're up there if you're on a

291

00:10:51,829 --> 00:10:49,760

shuttle crew there's not much time for

292

00:10:52,870 --> 00:10:51,839

hobbies it's a very busy time you're

293

00:10:54,470 --> 00:10:52,880

just running very quickly for the

294

00:10:55,990 --> 00:10:54,480

two-week mission that you're there the

295

00:10:57,829 --> 00:10:56,000

space station crews have a little bit

296

00:10:59,590 --> 00:10:57,839

more free time and they do take up

297

00:11:01,670 --> 00:10:59,600

hobbies probably the most popular hobby

298

00:11:03,030 --> 00:11:01,680

in space is taking pictures of the earth

299

00:11:04,790 --> 00:11:03,040

we spend a lot of time with just

300

00:11:05,910 --> 00:11:04,800

top-notch photography instructors and we

301

00:11:07,829 --> 00:11:05,920

have some of the best photography

302

00:11:09,190 --> 00:11:07,839

equipment you can imagine and one of the

303

00:11:12,230 --> 00:11:09,200

most interesting things to look at when

304

00:11:14,550 --> 00:11:12,240

you're up in space about 250 miles up is

305

00:11:16,790 --> 00:11:14,560

the planet beneath us looking at oceans

306

00:11:19,110 --> 00:11:16,800

and reefs and mountain ranges and

307

00:11:20,870 --> 00:11:19,120

volcanoes and hurricanes and everything

308

00:11:23,030 --> 00:11:20,880

else you can imagine that goes on here

309

00:11:24,470 --> 00:11:23,040

back on earth uh is photography now some

310

00:11:26,230 --> 00:11:24,480

people have built ships and bottles and

311

00:11:27,670 --> 00:11:26,240

they like also using playing with ham

312

00:11:29,030 --> 00:11:27,680

radios to talk to

313

00:11:30,790 --> 00:11:29,040

school children just like you from on

314

00:11:34,710 --> 00:11:30,800

the ground and so those are things that

315

00:11:34,720 --> 00:11:39,269

thank you

316

00:11:45,030 --> 00:11:43,190

hi my name is andrew and my question is

317

00:11:47,030 --> 00:11:45,040

what kind of pets do you think will

318

00:11:49,110 --> 00:11:47,040

survive in that environment

319

00:11:50,790 --> 00:11:49,120

hi andrew i think most pets would

320

00:11:53,590 --> 00:11:50,800

survive in space we've taken up all

321

00:11:55,269 --> 00:11:53,600

types of animals not as pets from mice

322

00:11:57,110 --> 00:11:55,279

and other things like that and they seem

323

00:11:58,389 --> 00:11:57,120

to work just fine like anybody they're a

324

00:11:59,750 --> 00:11:58,399

little bit disoriented when we first

325

00:12:01,750 --> 00:11:59,760

take them to orbit because there's no up

326

00:12:03,509 --> 00:12:01,760

or down um but one thing i noticed with

327

00:12:04,710 --> 00:12:03,519

the mice that we carried up with us was

328

00:12:06,310 --> 00:12:04,720

after about a day or two they were doing

329

00:12:07,430 --> 00:12:06,320

the same astronaut stupid astronaut

330

00:12:09,030 --> 00:12:07,440

tricks that we were doing you know

331

00:12:10,870 --> 00:12:09,040

running around bouncing off the edge of

332

00:12:12,230 --> 00:12:10,880

the cages and smacking each other in the

333

00:12:13,829 --> 00:12:12,240

head and just doing goofy things that

334

00:12:15,350 --> 00:12:13,839

you would do when you realize that how

335

00:12:16,710 --> 00:12:15,360

much fun it is being weightless so i

336

00:12:19,670 --> 00:12:16,720

think most pets would do just fine in

337

00:12:19,680 --> 00:12:22,870

thank you

338

00:12:28,949 --> 00:12:26,069

hi my name is gaia my question is

339

00:12:31,269 --> 00:12:28,959

what um type of physical activities do

340

00:12:32,470 --> 00:12:31,279

you do in space yeah good uh it's

341

00:12:34,470 --> 00:12:32,480

another very good question something

342

00:12:35,670 --> 00:12:34,480

that we do worry about now one of the

343

00:12:37,670 --> 00:12:35,680

things you remember in space when you're

344

00:12:38,870 --> 00:12:37,680

weightless is that just sitting in your

345

00:12:40,790 --> 00:12:38,880

chair or standing there like you are

346

00:12:42,710 --> 00:12:40,800

talking to me you're getting more of a

347

00:12:44,949 --> 00:12:42,720

workout than you would just floating in

348

00:12:46,470 --> 00:12:44,959

space i just think about your head has

349

00:12:48,870 --> 00:12:46,480

weight and your neck has to hold your

350

00:12:50,230 --> 00:12:48,880

head up uh your legs and your feet have

351

00:12:51,590 --> 00:12:50,240

to hold the rest of your body up just

352

00:12:53,990 --> 00:12:51,600

lifting up your arm you know just moving

353

00:12:55,590 --> 00:12:54,000

your arms takes effort

354

00:12:57,750 --> 00:12:55,600

and when you're in space those muscles

355

00:12:59,590 --> 00:12:57,760

don't work anymore and so what we find

356

00:13:01,350 --> 00:12:59,600

out is that after a few days in space

357

00:13:03,590 --> 00:13:01,360

your muscles begin to waste away because

358

00:13:05,430 --> 00:13:03,600

your body is efficient which is my

359

00:13:06,870 --> 00:13:05,440

codeword for saying very lazy it doesn't

360

00:13:08,710 --> 00:13:06,880

support things it doesn't have to and

361

00:13:10,069 --> 00:13:08,720

your bones start to dissolve away too

362

00:13:11,990 --> 00:13:10,079

because the bones are there to support

363

00:13:13,350 --> 00:13:12,000

the muscles so in order to keep that

364

00:13:14,389 --> 00:13:13,360

from happening because eventually you do

365

00:13:15,990 --> 00:13:14,399

come back to earth and you want to be

366

00:13:17,829 --> 00:13:16,000

able to walk around

367

00:13:19,829 --> 00:13:17,839

our astronauts will exercise for as much

368

00:13:22,069 --> 00:13:19,839

as two and a half hours a day and so

369

00:13:23,590 --> 00:13:22,079

they're on these weight lifting machines

370

00:13:25,110 --> 00:13:23,600

obviously weights don't work because

371

00:13:26,550 --> 00:13:25,120

it's weightless but you can have

372

00:13:28,389 --> 00:13:26,560

resistance machines that simulate those

373

00:13:31,110 --> 00:13:28,399

weights we have treadmills and we have

374

00:13:33,350 --> 00:13:31,120

bicycles as well so you can keep

375

00:13:34,470 --> 00:13:33,360

keep your heart pumping as well so you

376

00:13:35,509 --> 00:13:34,480

keep your physical conditioning while

377

00:13:36,870 --> 00:13:35,519

you're in space in fact a lot of

378

00:13:38,550 --> 00:13:36,880

astronauts come back in better shape

379

00:13:40,230 --> 00:13:38,560

from being in space than they do on the

380

00:13:41,590 --> 00:13:40,240

ground because they have scheduled two

381

00:13:46,150 --> 00:13:41,600

and a half hours time to work we don't

382

00:13:46,160 --> 00:13:50,790

thank you

383

00:13:54,949 --> 00:13:52,870

do you keep a greenhouse in the space

384

00:13:56,310 --> 00:13:54,959

station and how

385

00:13:58,230 --> 00:13:56,320

do we keep a greenhouse in the space

386

00:14:00,230 --> 00:13:58,240

station yes we do we have plant growth

387

00:14:02,230 --> 00:14:00,240

experiments and we grow things there

388

00:14:04,069 --> 00:14:02,240

with lights and hydroponics and all

389

00:14:06,550 --> 00:14:04,079

kinds of other things like that

390

00:14:08,230 --> 00:14:06,560

and so we we we've grown like radishes

391

00:14:09,189 --> 00:14:08,240

and we've actually i think even managed

392

00:14:11,189 --> 00:14:09,199

to eat some of those things that we've

393

00:14:12,710 --> 00:14:11,199

grown in space but everybody enjoys

394

00:14:14,389 --> 00:14:12,720

seems to enjoy doing gardening in space

395

00:14:16,550 --> 00:14:14,399

it's one of the better past times even

396

00:14:23,030 --> 00:14:16,560

if it's out this will be an experiment

397

00:14:23,040 --> 00:14:27,269

thank you you're welcome

398

00:14:32,150 --> 00:14:29,590

hi my name is fernando and my question

399

00:14:33,670 --> 00:14:32,160

is can you control gravity in your cabin

400

00:14:36,470 --> 00:14:33,680

the question is can you control grabbed

401  
00:14:38,550 --> 00:14:36,480  
in your cabin um theoretically yes in in

402  
00:14:40,629 --> 00:14:38,560  
practice we really don't what you can do

403  
00:14:42,389 --> 00:14:40,639  
is you can spin your cabin so it behaves

404  
00:14:44,069 --> 00:14:42,399  
like a centrifuge uh years ago we

405  
00:14:45,910 --> 00:14:44,079  
actually thought about putting a a

406  
00:14:47,350 --> 00:14:45,920  
centrifuge aboard the space station

407  
00:14:48,870 --> 00:14:47,360  
because one of the few things you can do

408  
00:14:51,350 --> 00:14:48,880  
in space that you can't do here on earth

409  
00:14:53,110 --> 00:14:51,360  
is simulate gravities that are between

410  
00:14:55,269 --> 00:14:53,120  
zero and one so earth is always at one

411  
00:14:56,550 --> 00:14:55,279  
gravity and only for brief periods of

412  
00:14:58,790 --> 00:14:56,560  
time maybe seconds if you're doing a

413  
00:15:01,110 --> 00:14:58,800

parabola in space over the earth can you

414

00:15:03,189 --> 00:15:01,120

get yourself to less than one earth

415

00:15:05,110 --> 00:15:03,199

gravity in terms of force if you're in

416

00:15:06,550 --> 00:15:05,120

space then you've got no gravity acting

417

00:15:08,629 --> 00:15:06,560

on you because you're in free fall you

418

00:15:10,550 --> 00:15:08,639

can simulate half of earth's gravity you

419

00:15:12,310 --> 00:15:10,560

can simulate mars gravity which is about

420

00:15:14,470 --> 00:15:12,320

38 percent burst gravity or even moon's

421

00:15:16,710 --> 00:15:14,480

gravity or just one sixteen percent

422

00:15:18,310 --> 00:15:16,720

burst gravity and so you can control in

423

00:15:19,590 --> 00:15:18,320

that aspect but we don't have any means

424

00:15:22,389 --> 00:15:19,600

of doing that right now aboard our space

425

00:15:22,399 --> 00:15:26,470

thank you you're welcome

426

00:15:31,749 --> 00:15:28,230

hi my name is alex and i want to know

427

00:15:33,269 --> 00:15:31,759

how do you guys power the iss alex

428

00:15:34,790 --> 00:15:33,279

that's also a very good question one of

429

00:15:37,110 --> 00:15:34,800

the things that the way we power the

430

00:15:39,189 --> 00:15:37,120

international space station is by solar

431

00:15:40,629 --> 00:15:39,199

arrays you see those giant um

432

00:15:42,470 --> 00:15:40,639

rays you see out there though those

433

00:15:44,870 --> 00:15:42,480

eight of them out there um it's an acre

434

00:15:46,230 --> 00:15:44,880

of solar arrays and i think it

435

00:15:47,670 --> 00:15:46,240

gathers something in order of 80

436

00:15:49,670 --> 00:15:47,680

kilowatts of power and that's about

437

00:15:51,509 --> 00:15:49,680

enough that a city blocks worth of homes

438

00:15:53,910 --> 00:15:51,519

there in phoenix would use about 80

439

00:15:56,150 --> 00:15:53,920

kilowatts worth of power and so really

440

00:15:57,829 --> 00:15:56,160

our our power source is the sun and i

441

00:15:59,509 --> 00:15:57,839

remember when i was on the space shuttle

442

00:16:01,269 --> 00:15:59,519

we would go and plug into the space

443

00:16:02,389 --> 00:16:01,279

station and use their power and all

444

00:16:04,629 --> 00:16:02,399

those kind of giggles i thought we were

445

00:16:08,550 --> 00:16:04,639

stealing power from the sun onboard our

446

00:16:08,560 --> 00:16:13,590

thank you you're welcome

447

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

hi my name is fernando and i want to

448

00:16:20,150 --> 00:16:18,320

know what is the possibility of space

449

00:16:21,430 --> 00:16:20,160

tourism in the future

450

00:16:22,629 --> 00:16:21,440

ah it's another good question the

451

00:16:24,790 --> 00:16:22,639

possibility of space tourism in the

452

00:16:26,389 --> 00:16:24,800

future well space tourism is now uh

453

00:16:27,829 --> 00:16:26,399

we've actually had a number of space

454

00:16:29,509 --> 00:16:27,839

tourists go to the international space

455

00:16:30,550 --> 00:16:29,519

station over the past few years i

456

00:16:32,230 --> 00:16:30,560

believe the russians are actually

457

00:16:34,310 --> 00:16:32,240

planning on carrying up a another space

458

00:16:35,910 --> 00:16:34,320

tourist in a few years from now and now

459

00:16:37,910 --> 00:16:35,920

they have some extra capacity on their

460

00:16:39,829 --> 00:16:37,920

line for the soyuz capsules here in

461

00:16:42,069 --> 00:16:39,839

america we have a number of companies

462

00:16:44,870 --> 00:16:42,079

building spacecraft specifically for

463

00:16:46,230 --> 00:16:44,880

space tourism uh they're just someone

464

00:16:47,590 --> 00:16:46,240

will take you in space for maybe four or

465

00:16:49,670 --> 00:16:47,600

five minutes where you can be weightless

466

00:16:50,710 --> 00:16:49,680

and float your m ms whatever you want to

467

00:16:52,790 --> 00:16:50,720

put out in front of you and get some

468

00:16:54,470 --> 00:16:52,800

pictures and be back on earth or you can

469

00:16:56,790 --> 00:16:54,480

actually have ones that will take you up

470

00:16:58,470 --> 00:16:56,800

for weeks in space in orbit and so i

471

00:17:00,230 --> 00:16:58,480

think by the time

472

00:17:01,670 --> 00:17:00,240

you're able to afford going into space

473

00:17:03,110 --> 00:17:01,680

we'll have lots of people out there

474

00:17:06,549 --> 00:17:03,120

willing to carry you up to space to go

475

00:17:06,559 --> 00:17:11,110

thank you you're welcome

476

00:17:15,429 --> 00:17:13,270

my name is liberty and

477

00:17:18,230 --> 00:17:15,439

another question i would like to ask how

478

00:17:20,630 --> 00:17:18,240

long do you think astronauts

479

00:17:21,829 --> 00:17:20,640

possibly live and work in space

480

00:17:23,189 --> 00:17:21,839

the question is how long do you think

481

00:17:24,789 --> 00:17:23,199

astronauts can live and work in space

482

00:17:26,710 --> 00:17:24,799

and that's something that's been on my

483

00:17:27,990 --> 00:17:26,720

mind for about the last year i've been

484

00:17:30,310 --> 00:17:28,000

working over in a program called the

485

00:17:32,070 --> 00:17:30,320

deep space habitat project and we've

486

00:17:34,710 --> 00:17:32,080

been thinking about you know taking

487

00:17:36,710 --> 00:17:34,720

spacecraft out to places like asteroids

488

00:17:38,310 --> 00:17:36,720

and even the planet mars and some of

489

00:17:40,789 --> 00:17:38,320

those missions are very long they can be

490

00:17:43,350 --> 00:17:40,799

as much as 900 to 1500 days away from

491

00:17:45,430 --> 00:17:43,360

the earth and so the question is like

492

00:17:47,750 --> 00:17:45,440

can people survive for that amount of

493

00:17:49,830 --> 00:17:47,760

time out there in space and if so what

494

00:17:51,590 --> 00:17:49,840

do we need to go about doing and so

495

00:17:53,750 --> 00:17:51,600

there's there's big challenges out there

496

00:17:56,070 --> 00:17:53,760

one of the bigger ones is radiation in

497

00:17:57,990 --> 00:17:56,080

deep space our earth and its atmosphere

498

00:17:59,830 --> 00:17:58,000

and its magnetic field protect us from a

499

00:18:01,430 --> 00:17:59,840

lot of radiation that comes from the

500

00:18:03,110 --> 00:18:01,440

center of our galaxy

501  
00:18:04,549 --> 00:18:03,120  
and so

502  
00:18:06,310 --> 00:18:04,559  
if we're going to go out beyond the

503  
00:18:08,230 --> 00:18:06,320  
earth's magnetic field

504  
00:18:09,510 --> 00:18:08,240  
we're going to be subject to radiation

505  
00:18:11,350 --> 00:18:09,520  
such that we probably wouldn't stay out

506  
00:18:12,950 --> 00:18:11,360  
there for more than six months right now

507  
00:18:14,470 --> 00:18:12,960  
without some type of shielding or ways

508  
00:18:16,310 --> 00:18:14,480  
of deflecting or maybe creating our own

509  
00:18:17,669 --> 00:18:16,320  
magnetic field another thing is

510  
00:18:19,270 --> 00:18:17,679  
weightlessness we know even with all of

511  
00:18:20,789 --> 00:18:19,280  
our exercises we're not doing things

512  
00:18:23,350 --> 00:18:20,799  
that stimulate our inner ear to give us

513  
00:18:24,630 --> 00:18:23,360

balance and so that sense goes away and

514

00:18:26,150 --> 00:18:24,640

it takes a while the longer you're in

515

00:18:28,150 --> 00:18:26,160

space the longer it takes to bring that

516

00:18:30,710 --> 00:18:28,160

back so we may have to do things like

517

00:18:31,590 --> 00:18:30,720

bring about artificial gravity like one

518

00:18:33,590 --> 00:18:31,600

of your

519

00:18:35,270 --> 00:18:33,600

fellow classmates brought up so we can

520

00:18:37,190 --> 00:18:35,280

have some way of doing that

521

00:18:39,669 --> 00:18:37,200

food because we don't have a way to cook

522

00:18:41,590 --> 00:18:39,679

in zero g we have to prepare all food

523

00:18:43,430 --> 00:18:41,600

here in earth and basically make tv

524

00:18:45,110 --> 00:18:43,440

dinners out of them some of those new

525

00:18:46,710 --> 00:18:45,120

lose their nutrients after about a year

526

00:18:48,710 --> 00:18:46,720

and so they're not they didn't give you

527

00:18:51,110 --> 00:18:48,720

everything you need so that is how do we

528

00:18:52,230 --> 00:18:51,120

make food that keeps that nutrition or

529

00:18:53,590 --> 00:18:52,240

like let's see if somebody come up with

530

00:18:54,870 --> 00:18:53,600

a way of cooking in

531

00:18:56,950 --> 00:18:54,880

zero gravity you know go out there and

532

00:18:59,270 --> 00:18:56,960

just give me things like you know oats

533

00:19:00,870 --> 00:18:59,280

and flour and water and eggs and things

534

00:19:03,270 --> 00:19:00,880

like that and i can go whip up something

535

00:19:04,630 --> 00:19:03,280

right in my own kitchen there in zero g

536

00:19:06,310 --> 00:19:04,640

so those things we need to think about

537

00:19:07,909 --> 00:19:06,320

for keeping people in space but up to

538

00:19:10,630 --> 00:19:07,919

now up to date we've had a person in

539

00:19:12,789 --> 00:19:10,640

space for 400 days on that one order of

540

00:19:14,470 --> 00:19:12,799

that and you know in a short time we'll

541

00:19:16,549 --> 00:19:14,480

have another crew that will stay up on

542

00:19:18,390 --> 00:19:16,559

the space station for about a year

543

00:19:20,950 --> 00:19:18,400

so that's the limit right now is about a

544

00:19:22,789 --> 00:19:20,960

year and i think it'll take some new

545

00:19:24,070 --> 00:19:22,799

technologies for us to get along go in

546

00:19:25,750 --> 00:19:24,080

space longer than that especially deep

547

00:19:29,110 --> 00:19:25,760

space outside of the earth's magnetic

548

00:19:29,120 --> 00:19:34,230

thank you you're welcome

549

00:19:39,430 --> 00:19:37,270

my name is susan my question is

550

00:19:41,270 --> 00:19:39,440

what is your most unforgettable moment

551

00:19:43,110 --> 00:19:41,280

while living in space yeah great

552

00:19:44,710 --> 00:19:43,120

question good question susan that's

553

00:19:46,150 --> 00:19:44,720

that's also a very difficult question

554

00:19:48,390 --> 00:19:46,160

it's because there are a number of

555

00:19:49,510 --> 00:19:48,400

unforgettable moments in space but i'll

556

00:19:51,590 --> 00:19:49,520

share this one secret you can't tell

557

00:19:53,669 --> 00:19:51,600

anybody about this okay

558

00:19:55,510 --> 00:19:53,679

we were undocked from the international

559

00:19:57,430 --> 00:19:55,520

space station on the final flight of the

560

00:19:59,110 --> 00:19:57,440

space shuttle discovery and one of the

561

00:20:00,390 --> 00:19:59,120

things we have to do before we come in

562

00:20:02,149 --> 00:20:00,400

and land is

563

00:20:04,230 --> 00:20:02,159

use the robot arm and a camera to look

564

00:20:06,549 --> 00:20:04,240

for any holes that may have been

565

00:20:08,310 --> 00:20:06,559

poked into the into the orbiter by any

566

00:20:10,149 --> 00:20:08,320

debris that was floating around in space

567

00:20:11,029 --> 00:20:10,159

and so we had this camera it's a very

568

00:20:13,350 --> 00:20:11,039

slow

569

00:20:15,190 --> 00:20:13,360

and painstaking process while you look

570

00:20:16,710 --> 00:20:15,200

but it's very important to go do

571

00:20:17,990 --> 00:20:16,720

and so we're very methodical very

572

00:20:19,430 --> 00:20:18,000

disciplined anybody who's not part of it

573

00:20:20,950 --> 00:20:19,440

doesn't need to be on the flight deck

574

00:20:23,029 --> 00:20:20,960

and we go through this in a step-by-step

575

00:20:24,310 --> 00:20:23,039

process also very tiring so two people

576

00:20:26,310 --> 00:20:24,320

have to do it but three of us kind of

577

00:20:27,909 --> 00:20:26,320

rotate through and so i just got done

578

00:20:29,590 --> 00:20:27,919

with my half hour of

579

00:20:31,510 --> 00:20:29,600

helping out with this and i was just

580

00:20:34,149 --> 00:20:31,520

resting my eyes looking out the window

581

00:20:36,390 --> 00:20:34,159

and we were coming up on the west coast

582

00:20:38,310 --> 00:20:36,400

of australia over the indian ocean and i

583

00:20:39,830 --> 00:20:38,320

saw a faint green glow down beneath me

584

00:20:41,350 --> 00:20:39,840

and almost at the same tone of voice i'm

585

00:20:43,669 --> 00:20:41,360

talking right now it's like wow that

586

00:20:45,590 --> 00:20:43,679

looks like an aurora down there

587

00:20:47,110 --> 00:20:45,600

and almost immediately

588

00:20:48,950 --> 00:20:47,120

the commander and the pilot who were

589

00:20:50,149 --> 00:20:48,960

working the inspection stopped the arm

590

00:20:51,430 --> 00:20:50,159

and put a brakes on and they said did

591

00:20:53,510 --> 00:20:51,440

you say aurora and all the other crew

592

00:20:55,510 --> 00:20:53,520

members come flooding up from the mid

593

00:20:57,029 --> 00:20:55,520

the flight the mid deck and we've got

594

00:20:58,630 --> 00:20:57,039

cameras and we're in and usually we know

595

00:21:00,070 --> 00:20:58,640

we're very calm you've never seen apollo

596

00:21:01,750 --> 00:21:00,080

13 now you always have to be very calm

597

00:21:03,110 --> 00:21:01,760

about things and it's just it's just

598

00:21:04,230 --> 00:21:03,120

chaos you know we're screaming we're

599

00:21:05,190 --> 00:21:04,240

trying to find lenses we're trying to

600

00:21:06,950 --> 00:21:05,200

get the right angle we're trying to get

601  
00:21:08,390 --> 00:21:06,960  
the right exposure it was just madness

602  
00:21:09,990 --> 00:21:08,400  
for about five minutes then we get over

603  
00:21:11,510 --> 00:21:10,000  
the aurora and we get these breathtaking

604  
00:21:12,950 --> 00:21:11,520  
shots and then we're over top of

605  
00:21:14,870 --> 00:21:12,960  
australia and everybody kind of like

606  
00:21:16,149 --> 00:21:14,880  
goes the insanity prevailed again you

607  
00:21:17,750 --> 00:21:16,159  
know we kind of cleaned everything back

608  
00:21:19,029 --> 00:21:17,760  
up they went back down the mid deck they

609  
00:21:20,789 --> 00:21:19,039  
weren't doing the inspection and we went

610  
00:21:22,070 --> 00:21:20,799  
back to finishing inspecting the orbiter

611  
00:21:23,350 --> 00:21:22,080  
to go back in but that was it was a

612  
00:21:25,029 --> 00:21:23,360  
breathtaking moment to be over top

613  
00:21:26,630 --> 00:21:25,039

there's just some

614

00:21:27,750 --> 00:21:26,640

rivers of green fire that were coming up

615

00:21:29,350 --> 00:21:27,760

from the atmosphere and we're just right

616

00:21:30,549 --> 00:21:29,360

over top of it looking down and as if

617

00:21:31,830 --> 00:21:30,559

even from the ground it's impressive

618

00:21:34,789 --> 00:21:31,840

it's even more impressive to be looking

619

00:21:36,470 --> 00:21:34,799

at it from above in space

620

00:21:39,190 --> 00:21:36,480

but you can't tell me about that anybody

621

00:21:39,200 --> 00:21:45,830

thank you you're welcome

622

00:21:51,909 --> 00:21:47,750

hi my name is david i'm going to ask a

623

00:21:55,669 --> 00:21:53,590

i'm sorry what is your

624

00:21:59,430 --> 00:21:55,679

most favorite site

625

00:22:01,190 --> 00:21:59,440

tell you that after going to space and

626  
00:22:02,789 --> 00:22:01,200  
looking back the earth is my most

627  
00:22:04,470 --> 00:22:02,799  
favorite site from space i'm just

628  
00:22:05,669 --> 00:22:04,480  
looking back on it it's just a beautiful

629  
00:22:06,870 --> 00:22:05,679  
thing to be near

630  
00:22:08,390 --> 00:22:06,880  
i've thought about what other planets

631  
00:22:09,909 --> 00:22:08,400  
i'd like to be above but none of them i

632  
00:22:11,590 --> 00:22:09,919  
think would be as interesting as the

633  
00:22:13,270 --> 00:22:11,600  
earth

634  
00:22:15,350 --> 00:22:13,280  
other planets no other planets i know

635  
00:22:17,350 --> 00:22:15,360  
have any real oceans the other ones have

636  
00:22:19,270 --> 00:22:17,360  
atmospheres and weather but this don't

637  
00:22:20,470 --> 00:22:19,280  
have the color and variety and just the

638  
00:22:22,549 --> 00:22:20,480

different things that are out there that

639

00:22:24,310 --> 00:22:22,559

i think that earth does so it took me

640

00:22:26,390 --> 00:22:24,320

leaving the earth for two weeks at a

641

00:22:31,350 --> 00:22:26,400

time to really appreciate what a gym we

642

00:22:31,360 --> 00:22:37,270

thank you you're welcome

643

00:22:42,390 --> 00:22:40,070

hi my name is joey and i'm going to ask

644

00:22:45,190 --> 00:22:42,400

questions what are your top

645

00:22:46,470 --> 00:22:45,200

issues that you have to deal with in the

646

00:22:48,230 --> 00:22:46,480

space station

647

00:22:49,510 --> 00:22:48,240

well the top issues we have to deal with

648

00:22:50,710 --> 00:22:49,520

in the space station now again another

649

00:22:52,630 --> 00:22:50,720

very good question is the kind of things

650

00:22:53,830 --> 00:22:52,640

that that flight directors ask about so

651  
00:22:55,590 --> 00:22:53,840  
you sure you

652  
00:22:58,070 --> 00:22:55,600  
you're afraid to come down here and work

653  
00:22:59,590 --> 00:22:58,080  
for us flight director in training uh

654  
00:23:01,830 --> 00:22:59,600  
the top issues the main thing is that

655  
00:23:03,830 --> 00:23:01,840  
again we're isolated um and it's not so

656  
00:23:06,630 --> 00:23:03,840  
much by the distance we're only 250

657  
00:23:08,230 --> 00:23:06,640  
miles up in space which is probably

658  
00:23:10,789 --> 00:23:08,240  
less distance between you and the

659  
00:23:13,510 --> 00:23:10,799  
arizona state border however you're

660  
00:23:15,430 --> 00:23:13,520  
separated by speed 17 500 miles an hour

661  
00:23:17,110 --> 00:23:15,440  
is a incredibly fast speed so things

662  
00:23:19,510 --> 00:23:17,120  
just you just don't get there and back

663  
00:23:21,750 --> 00:23:19,520

very quickly and so things like water

664

00:23:23,350 --> 00:23:21,760

and air and food and science everything

665

00:23:24,870 --> 00:23:23,360

out there has to be imported i mean

666

00:23:26,870 --> 00:23:24,880

there's really nothing up there in space

667

00:23:29,190 --> 00:23:26,880

you just can't step outside and grab

668

00:23:31,110 --> 00:23:29,200

what you need so that's probably the the

669

00:23:33,110 --> 00:23:31,120

top issue there

670

00:23:34,310 --> 00:23:33,120

the other part is because of that we

671

00:23:35,990 --> 00:23:34,320

we're pack rats you know you've seen

672

00:23:37,750 --> 00:23:36,000

these hoarding shows we we have our own

673

00:23:39,590 --> 00:23:37,760

hoarding problem on the city space space

674

00:23:41,590 --> 00:23:39,600

station because we're afraid of running

675

00:23:43,190 --> 00:23:41,600

out of things so you'll find that every

676

00:23:45,269 --> 00:23:43,200

nook and cranny in the space station is

677

00:23:47,430 --> 00:23:45,279

just crammed with something that we

678

00:23:49,990 --> 00:23:47,440

might need sooner or later and so as big

679

00:23:51,350 --> 00:23:50,000

and palatial as the space station is

680

00:23:53,350 --> 00:23:51,360

finding room for all that stuff is kind

681

00:23:54,950 --> 00:23:53,360

of a problem

682

00:24:06,630 --> 00:23:54,960

all right this is going to be our final

683

00:24:10,070 --> 00:24:08,470

hi my name is christian

684

00:24:13,909 --> 00:24:10,080

what is the

685

00:24:15,909 --> 00:24:13,919

what is next for nasa's space flights

686

00:24:17,510 --> 00:24:15,919

great question wow that's a that is a

687

00:24:19,510 --> 00:24:17,520

great question and

688

00:24:21,350 --> 00:24:19,520

this that is the 64 million dollar

689

00:24:24,070 --> 00:24:21,360

question what is next from nasa space

690

00:24:25,590 --> 00:24:24,080

flights um i said for the foreseeable

691

00:24:27,590 --> 00:24:25,600

future we will continue to operate the

692

00:24:28,870 --> 00:24:27,600

international space station which is

693

00:24:30,470 --> 00:24:28,880

like everything nasa has built

694

00:24:32,390 --> 00:24:30,480

incredibly over engineered and living

695

00:24:34,070 --> 00:24:32,400

long past when we thought it would and

696

00:24:35,990 --> 00:24:34,080

so we expect well into the next decade

697

00:24:37,990 --> 00:24:36,000

to be operating the space station

698

00:24:39,430 --> 00:24:38,000

our we expect to have more commercial

699

00:24:41,909 --> 00:24:39,440

partners onboard the international space

700

00:24:43,430 --> 00:24:41,919

station as some of our

701  
00:24:45,830 --> 00:24:43,440  
commercial like these commercial space

702  
00:24:47,350 --> 00:24:45,840  
operators get the capability to bring up

703  
00:24:49,350 --> 00:24:47,360  
crew members as well as cargo they're

704  
00:24:50,789 --> 00:24:49,360  
already bringing up cargo back and forth

705  
00:24:52,230 --> 00:24:50,799  
in the space station next world thing

706  
00:24:53,190 --> 00:24:52,240  
we'll see is our crew members going to

707  
00:24:54,950 --> 00:24:53,200  
and from the space station on these

708  
00:24:56,870 --> 00:24:54,960  
commercial vehicles and of course we're

709  
00:24:59,350 --> 00:24:56,880  
always thinking about interplanetary

710  
00:25:01,269 --> 00:24:59,360  
travel so we're looking at

711  
00:25:02,149 --> 00:25:01,279  
we go to asteroids that are near the

712  
00:25:03,669 --> 00:25:02,159  
earth

713  
00:25:05,350 --> 00:25:03,679

and going of course i'm always thinking

714

00:25:06,630 --> 00:25:05,360

about the red planet that's the next

715

00:25:09,029 --> 00:25:06,640

place i'd like to go see us do in my

716

00:25:10,549 --> 00:25:09,039

lifetime so i think that's out there

717

00:25:11,909 --> 00:25:10,559

about the time that you get to sit in

718

00:25:14,070 --> 00:25:11,919

mission control and talk to students in

719

00:25:16,149 --> 00:25:14,080

phoenix that's will be you'll be talking

720

00:25:18,070 --> 00:25:16,159

about that

721

00:25:19,190 --> 00:25:18,080

well thanks all right i'd like to i'll

722

00:25:21,029 --> 00:25:19,200

go ahead

723

00:25:22,310 --> 00:25:21,039

oh no thank you all right i'd like to

724

00:25:24,390 --> 00:25:22,320

thank you guys for joining us today

725

00:25:26,549 --> 00:25:24,400

thank you kyle and thank you alvin and

726

00:25:28,710 --> 00:25:26,559

then thank you to monterey park all

727

00:25:30,789 --> 00:25:28,720

right well we're really happy that uh

728

00:25:33,269 --> 00:25:30,799

you guys joined us that's uh that was a

729

00:25:35,110 --> 00:25:33,279

great bunch of questions that's uh

730

00:25:37,830 --> 00:25:35,120

sometimes better than some that we get

731

00:25:39,830 --> 00:25:37,840

asked by other folks so uh you guys

732

00:25:41,590 --> 00:25:39,840

study hard and we really uh appreciate

733

00:25:43,830 --> 00:25:41,600

you joining us here in mission control

734

00:25:45,269 --> 00:25:43,840

thanks a lot for coming great questions