



1  
00:00:07,749 --> 00:00:03,030  
deborah houston you guys ready for the

2  
00:00:26,870 --> 00:00:10,390  
uh mike yes good uh i guess it's good

3  
00:00:34,069 --> 00:00:29,990  
endeavor houston com check

4  
00:00:39,190 --> 00:00:37,350  
mike you're loud and clear on board node

5  
00:00:41,110 --> 00:00:39,200  
two

6  
00:00:43,030 --> 00:00:41,120  
okay nick i have you the same you guys

7  
00:00:50,069 --> 00:00:43,040  
we have you on the big screen down here

8  
00:00:50,079 --> 00:00:53,110  
we are

9  
00:00:57,990 --> 00:00:55,510  
all right uh fellas we appreciate you

10  
00:01:00,229 --> 00:00:58,000  
are participating in here you're oh you

11  
00:01:02,470 --> 00:01:00,239  
go that's really good you guys are you

12  
00:01:03,830 --> 00:01:02,480  
look you look awesome

13  
00:01:05,509 --> 00:01:03,840

uh

14

00:01:07,350 --> 00:01:05,519

we've got some great questions here this

15

00:01:09,910 --> 00:01:07,360

was a major competition we got like

16

00:01:12,710 --> 00:01:09,920

thousands of questions and uh these are

17

00:01:15,270 --> 00:01:12,720

just a few that we we selected to ask

18

00:01:17,910 --> 00:01:15,280

you so we'll get right into it

19

00:01:20,390 --> 00:01:17,920

first thing is

20

00:01:23,670 --> 00:01:20,400

first question it's about the sounds and

21

00:01:26,550 --> 00:01:23,680

smells in space can you describe how the

22

00:01:28,469 --> 00:01:26,560

various parts of the shuttle or the iss

23

00:01:30,550 --> 00:01:28,479

how they smell and some of the sounds

24

00:01:32,630 --> 00:01:30,560

that that you hear that might might

25

00:01:38,550 --> 00:01:32,640

describe the environment further for

26

00:01:41,350 --> 00:01:39,830

well that's a good question mike

27

00:01:43,749 --> 00:01:41,360

obviously launch is really noisy but

28

00:01:45,190 --> 00:01:43,759

once you're in space um space itself is

29

00:01:46,469 --> 00:01:45,200

really quiet but the inside of the

30

00:01:49,109 --> 00:01:46,479

spacecraft

31

00:01:52,069 --> 00:01:49,119

um is never quite this it's full of fan

32

00:01:55,030 --> 00:01:52,079

noise um everywhere you go there's a fan

33

00:01:57,350 --> 00:01:55,040

circulating air because there's no

34

00:01:58,709 --> 00:01:57,360

no convection that on earth is caused by

35

00:02:00,389 --> 00:01:58,719

gravity and temperature differences

36

00:02:01,910 --> 00:02:00,399

there's no convection up here to

37

00:02:04,230 --> 00:02:01,920

circulate the air for you so that's the

38

00:02:07,670 --> 00:02:04,240

biggest noise we notice um how about

39

00:02:09,589 --> 00:02:07,680

smells bob what do you notice up here

40

00:02:11,750 --> 00:02:09,599

well i think one of the most uh

41

00:02:13,510 --> 00:02:11,760

remarkable smells that you notice in

42

00:02:15,910 --> 00:02:13,520

space everything smells relatively

43

00:02:17,910 --> 00:02:15,920

similar uh except for food

44

00:02:20,150 --> 00:02:17,920

uh and then one other thing and that uh

45

00:02:22,150 --> 00:02:20,160

that second thing is the smell that you

46

00:02:24,949 --> 00:02:22,160

smell when you actually go into a place

47

00:02:28,869 --> 00:02:24,959

that was recently at vacuum i might i've

48

00:02:30,869 --> 00:02:28,879

heard it described as ozone-ish um also

49

00:02:33,270 --> 00:02:30,879

being attributed to the oxidation of

50

00:02:35,910 --> 00:02:33,280

aluminum but the smell of coming into a

51  
00:02:37,670 --> 00:02:35,920  
an area that had just been a vacuum just

52  
00:02:40,390 --> 00:02:37,680  
been at space

53  
00:02:42,470 --> 00:02:40,400  
is really unique and i haven't smelled

54  
00:02:45,589 --> 00:02:42,480  
it to any place on the ground

55  
00:02:47,750 --> 00:02:45,599  
just coming through the hatch or

56  
00:02:49,830 --> 00:02:47,760  
actually coming back in from an eva you

57  
00:02:51,270 --> 00:02:49,840  
can smell the eva crew members or space

58  
00:02:55,190 --> 00:02:51,280  
walkers when they come in they really

59  
00:02:56,949 --> 00:02:55,200  
have a strong smell the smell of space

60  
00:02:58,869 --> 00:02:56,959  
now i know the both of you guys very

61  
00:03:00,949 --> 00:02:58,879  
well and between the two there's a lot

62  
00:03:02,710 --> 00:03:00,959  
of brain power i just can't help to

63  
00:03:04,710 --> 00:03:02,720

follow up on that question what do you

64

00:03:06,470 --> 00:03:04,720

think causes that that smell of space

65

00:03:07,750 --> 00:03:06,480

what do you what do you think it is you

66

00:03:12,149 --> 00:03:07,760

think it's actually space or is it

67

00:03:16,229 --> 00:03:14,229

i think the the smell that you get is

68

00:03:18,149 --> 00:03:16,239

actually all the hard work of uh the

69

00:03:19,910 --> 00:03:18,159

space walkers who are outside you know

70

00:03:21,750 --> 00:03:19,920

they spend uh

71

00:03:23,750 --> 00:03:21,760

six or eight hours

72

00:03:25,990 --> 00:03:23,760

like yourself mike eight hours on a

73

00:03:28,229 --> 00:03:26,000

spacewalk on the last couple that you

74

00:03:29,910 --> 00:03:28,239

had on hubble they spend a lot of time

75

00:03:34,630 --> 00:03:29,920

outside working and you can generate

76

00:03:38,710 --> 00:03:36,470

okay i have a way i like to describe

77

00:03:41,750 --> 00:03:38,720

that smell to people mike

78

00:03:44,149 --> 00:03:41,760

that that smell to me is to metal uh

79

00:03:46,869 --> 00:03:44,159

what the smell of toast is to bread if

80

00:03:47,990 --> 00:03:46,879

that makes any sense

81

00:03:50,229 --> 00:03:48,000

yeah that's why we thought it might be

82

00:03:51,830 --> 00:03:50,239

some outgassing going on there all right

83

00:03:53,509 --> 00:03:51,840

thanks very much that's question number

84

00:03:55,110 --> 00:03:53,519

one question number two

85

00:03:57,190 --> 00:03:55,120

we're looking for funny moments were

86

00:03:59,350 --> 00:03:57,200

there any funny moments particularly

87

00:04:01,509 --> 00:03:59,360

after you first get to space you know

88

00:04:04,149 --> 00:04:01,519

anything anything unusual anything funny

89

00:04:09,509 --> 00:04:04,159

when you unbuckle zero g for the first

90

00:04:13,030 --> 00:04:11,030

i think we were both smiling when we

91

00:04:14,949 --> 00:04:13,040

unbuckled um

92

00:04:17,349 --> 00:04:14,959

the the funny the funny things are when

93

00:04:19,830 --> 00:04:17,359

when things that you think you had just

94

00:04:21,430 --> 00:04:19,840

ten seconds ago are gone and there's one

95

00:04:23,670 --> 00:04:21,440

thing i lost i still haven't found it

96

00:04:26,230 --> 00:04:23,680

five days later um

97

00:04:29,270 --> 00:04:26,240

so we're too busy to really

98

00:04:31,909 --> 00:04:29,280

really have uh our humors up at full

99

00:04:33,909 --> 00:04:31,919

speed but it is amusing to watch uh

100

00:04:35,749 --> 00:04:33,919

things and people fly around as as

101  
00:04:37,670 --> 00:04:35,759  
though their first time in a new

102  
00:04:42,230 --> 00:04:37,680  
environment and for many of us it is the

103  
00:04:45,350 --> 00:04:43,590  
yeah i think one of the things i

104  
00:04:47,510 --> 00:04:45,360  
wouldn't describe as a you know kind of

105  
00:04:49,909 --> 00:04:47,520  
funny in the joking sort of a sense but

106  
00:04:52,070 --> 00:04:49,919  
uh what was really fun for me uh on this

107  
00:04:53,909 --> 00:04:52,080  
flight was to see uh folks get to do

108  
00:04:54,790 --> 00:04:53,919  
things for the first time and so to see

109  
00:04:59,030 --> 00:04:54,800  
uh

110  
00:05:01,590 --> 00:04:59,040  
floating around and try to work his way

111  
00:05:03,749 --> 00:05:01,600  
out of his suit and uh deal with uh the

112  
00:05:04,629 --> 00:05:03,759  
challenges of weakness uh weightlessness

113  
00:05:08,390 --> 00:05:04,639

was a

114

00:05:10,150 --> 00:05:08,400

fun for me to share that experience with

115

00:05:12,390 --> 00:05:10,160

him as he uh went through it for the

116

00:05:14,710 --> 00:05:12,400

first time and for nick going out the

117

00:05:17,270 --> 00:05:14,720

hatch it was fun for me to watch him go

118

00:05:19,670 --> 00:05:17,280

out on his first spacewalk and

119

00:05:21,270 --> 00:05:19,680

experience that for the first time so

120

00:05:22,150 --> 00:05:21,280

it's not really funny in the comical

121

00:05:24,150 --> 00:05:22,160

sense

122

00:05:25,830 --> 00:05:24,160

nick didn't do anything comical during

123

00:05:27,670 --> 00:05:25,840

the eva but

124

00:05:29,189 --> 00:05:27,680

it was fun for me to to be there for the

125

00:05:32,390 --> 00:05:29,199

first time a couple of folks got to do

126  
00:05:36,550 --> 00:05:34,790  
that's awesome and kind of following up

127  
00:05:38,390 --> 00:05:36,560  
to what bob started talking about with

128  
00:05:40,469 --> 00:05:38,400  
the with the space walks

129  
00:05:42,310 --> 00:05:40,479  
for both of you can you describe what

130  
00:05:43,749 --> 00:05:42,320  
the earth looks like i mean uh either

131  
00:05:45,350 --> 00:05:43,759  
through the through the windows of the

132  
00:05:46,950 --> 00:05:45,360  
spaceship is one thing but what did it

133  
00:05:52,310 --> 00:05:46,960  
what was your impressions of seeing it

134  
00:05:55,909 --> 00:05:54,070  
well well mike i think there's uh two

135  
00:05:58,150 --> 00:05:55,919  
things that are really impressive uh

136  
00:06:00,790 --> 00:05:58,160  
during the spacewalk the first one is

137  
00:06:02,870 --> 00:06:00,800  
just the depth of the atmosphere and so

138  
00:06:04,629 --> 00:06:02,880

you can see the clouds

139

00:06:06,390 --> 00:06:04,639

and the shadow that they cast i don't

140

00:06:08,150 --> 00:06:06,400

know if if you've ever had the

141

00:06:10,790 --> 00:06:08,160

experience of being on the ground and

142

00:06:13,270 --> 00:06:10,800

then had an airplane fly over you or or

143

00:06:15,430 --> 00:06:13,280

had a dense cloud go over you but that

144

00:06:16,950 --> 00:06:15,440

shadow that it cast on the ground and

145

00:06:18,870 --> 00:06:16,960

then that's something that you can

146

00:06:20,870 --> 00:06:18,880

really see the depth of the atmosphere

147

00:06:23,110 --> 00:06:20,880

and notice how high the clouds actually

148

00:06:24,950 --> 00:06:23,120

are you can also see lightning you can

149

00:06:26,870 --> 00:06:24,960

see cities at night

150

00:06:28,390 --> 00:06:26,880

all that remarkableness that you can

151  
00:06:30,790 --> 00:06:28,400  
look out the window and kind of see

152  
00:06:32,790 --> 00:06:30,800  
through just a little small portal you

153  
00:06:35,110 --> 00:06:32,800  
kind of have the whole horizon out in

154  
00:06:36,870 --> 00:06:35,120  
front of you through your space helmet

155  
00:06:38,469 --> 00:06:36,880  
and it's it's really remarkable to just

156  
00:06:40,710 --> 00:06:38,479  
to take that all in you have to take

157  
00:06:42,870 --> 00:06:40,720  
mental pictures because uh

158  
00:06:44,070 --> 00:06:42,880  
even the cameras that we have don't have

159  
00:06:46,150 --> 00:06:44,080  
a wide enough

160  
00:06:47,510 --> 00:06:46,160  
field of view to take

161  
00:06:48,390 --> 00:06:47,520  
all of that in

162  
00:06:51,110 --> 00:06:48,400  
and the other

163  
00:06:53,749 --> 00:06:51,120

remarkable part of uh going out for the

164

00:06:55,270 --> 00:06:53,759

uh the spacewalks is is again just uh

165

00:06:57,189 --> 00:06:55,280

thinking about all the people who come

166

00:06:59,589 --> 00:06:57,199

together to make make it all possible

167

00:07:01,589 --> 00:06:59,599

and so it takes it takes a giant team on

168

00:07:03,029 --> 00:07:01,599

the ground to get us into space and to

169

00:07:04,550 --> 00:07:03,039

make it all happen i know you had a

170

00:07:06,629 --> 00:07:04,560

great support team on your previous

171

00:07:08,710 --> 00:07:06,639

flights and uh we've had a huge support

172

00:07:11,189 --> 00:07:08,720

team and just to to know all those

173

00:07:12,390 --> 00:07:11,199

people are are rewarded and excited by

174

00:07:20,070 --> 00:07:12,400

how things are going during the

175

00:07:23,029 --> 00:07:21,430

nick you want to describe your first

176

00:07:27,990 --> 00:07:23,039

look at the earth from uh

177

00:07:32,629 --> 00:07:29,909

it's it's really hard to describe mike

178

00:07:34,469 --> 00:07:32,639

i'll try uh we went out of the hatch in

179

00:07:36,070 --> 00:07:34,479

the dark so i couldn't see anything at

180

00:07:38,469 --> 00:07:36,080

first except the underside of space

181

00:07:39,670 --> 00:07:38,479

station and endeavour which were lit in

182

00:07:41,909 --> 00:07:39,680

flood lights

183

00:07:44,710 --> 00:07:41,919

and that was beautiful enough and we got

184

00:07:46,390 --> 00:07:44,720

working and at some point in that i

185

00:07:47,830 --> 00:07:46,400

think steve warned us that our first

186

00:07:49,189 --> 00:07:47,840

sunrise was coming up and i looked

187

00:07:50,230 --> 00:07:49,199

towards the horizon and there was this

188

00:07:52,469 --> 00:07:50,240

beautiful

189

00:07:54,390 --> 00:07:52,479

blue glow coming towards us

190

00:07:55,110 --> 00:07:54,400

and there isn't much time to watch it

191

00:07:56,790 --> 00:07:55,120

but

192

00:07:58,950 --> 00:07:56,800

once or twice i could watch it during

193

00:08:00,309 --> 00:07:58,960

the space spacewalk yesterday

194

00:08:01,990 --> 00:08:00,319

it was just amazing the view is

195

00:08:04,070 --> 00:08:02,000

panoramic as bob said you can in the

196

00:08:05,670 --> 00:08:04,080

helmet you can see so much more than you

197

00:08:08,469 --> 00:08:05,680

can through shuttle windows because you

198

00:08:09,990 --> 00:08:08,479

can see almost 180 degrees uh field of

199

00:08:12,550 --> 00:08:10,000

view

200

00:08:14,950 --> 00:08:12,560

but the the blue spreads across the

201  
00:08:16,629 --> 00:08:14,960  
horizon and towards you and then turns

202  
00:08:18,629 --> 00:08:16,639  
orange and red and the sun pokes up and

203  
00:08:20,869 --> 00:08:18,639  
the space station is bathed in a

204  
00:08:22,230 --> 00:08:20,879  
brilliant light uh it all happens

205  
00:08:23,990 --> 00:08:22,240  
extremely quickly and of course it

206  
00:08:25,909 --> 00:08:24,000  
happens 16 times a day and it's it's a

207  
00:08:28,550 --> 00:08:25,919  
really stunning sight from anywhere up

208  
00:08:32,070 --> 00:08:28,560  
here but especially from the inside of a

209  
00:08:36,630 --> 00:08:33,909  
nice job it's hard to describe it but

210  
00:08:38,070 --> 00:08:36,640  
you guys did really well and

211  
00:08:39,670 --> 00:08:38,080  
following up we have another question

212  
00:08:41,750 --> 00:08:39,680  
related to what you see during a

213  
00:08:48,389 --> 00:08:41,760

spacewalk did you notice any stars while

214

00:08:54,310 --> 00:08:51,829

i did see some stars mica but they are

215

00:08:56,070 --> 00:08:54,320

are so small compared to actually being

216

00:08:57,829 --> 00:08:56,080

able to look at the earth and see the

217

00:08:59,990 --> 00:08:57,839

lightning or to see the cities at night

218

00:09:02,150 --> 00:09:00,000

that the stars are are

219

00:09:04,790 --> 00:09:02,160

actually very dim compared to the lit up

220

00:09:07,750 --> 00:09:04,800

space station or the space shuttle we

221

00:09:09,430 --> 00:09:07,760

did see a very good view of the moon and

222

00:09:11,190 --> 00:09:09,440

like i said the cities at night and the

223

00:09:13,910 --> 00:09:11,200

lightning show that you get through the

224

00:09:16,070 --> 00:09:13,920

atmosphere is just really remarkable the

225

00:09:17,990 --> 00:09:16,080

stars are a little bit tougher to see

226

00:09:19,910 --> 00:09:18,000

you can break out the colors on

227

00:09:22,550 --> 00:09:19,920

individual stars

228

00:09:24,389 --> 00:09:22,560

but they're they're they're hard to

229

00:09:27,750 --> 00:09:24,399

compare to just all you can see on the

230

00:09:33,030 --> 00:09:30,550

as bob mentioned the moon i did watch

231

00:09:34,630 --> 00:09:33,040

um the moon rise

232

00:09:37,269 --> 00:09:34,640

behind bob

233

00:09:38,550 --> 00:09:37,279

yesterday once it came up through the

234

00:09:40,230 --> 00:09:38,560

atmosphere i wasn't sure what i was

235

00:09:42,310 --> 00:09:40,240

seeing but literally rose through the

236

00:09:44,550 --> 00:09:42,320

atmosphere so it was a white moon behind

237

00:09:45,590 --> 00:09:44,560

a blue haze

238

00:09:47,509 --> 00:09:45,600

and then

239

00:09:49,430 --> 00:09:47,519

all of a sudden it was up in the clear

240

00:09:50,790 --> 00:09:49,440

black of space and i could tell that it

241

00:09:52,310 --> 00:09:50,800

really was the moon i'd been looking at

242

00:09:53,990 --> 00:09:52,320

that was really a remarkable thing to

243

00:09:57,829 --> 00:09:54,000

see but i didn't see any stars yesterday

244

00:10:01,110 --> 00:09:59,509

well that

245

00:10:02,790 --> 00:10:01,120

those great descriptions of what you

246

00:10:04,310 --> 00:10:02,800

guys saw out there you know it's just an

247

00:10:05,670 --> 00:10:04,320

incredible experience and appreciate you

248

00:10:07,190 --> 00:10:05,680

sharing that with us and like you said

249

00:10:09,590 --> 00:10:07,200

you got a couple more opportunities to

250

00:10:11,430 --> 00:10:09,600

make some more memories so uh great job

251  
00:10:13,350 --> 00:10:11,440  
on your first dva and good luck on the

252  
00:10:14,150 --> 00:10:13,360  
next couple we'll be watching

253  
00:10:16,389 --> 00:10:14,160  
um

254  
00:10:18,389 --> 00:10:16,399  
onto a slightly different topic now

255  
00:10:20,630 --> 00:10:18,399  
uh how are you sleeping how are your

256  
00:10:29,509 --> 00:10:20,640  
sleep patterns up there and uh how are

257  
00:10:34,710 --> 00:10:32,389  
well uh sleep patterns aren't affected

258  
00:10:36,550 --> 00:10:34,720  
too much with a couple of exceptions the

259  
00:10:38,710 --> 00:10:36,560  
first is we have a huge what we call a

260  
00:10:40,949 --> 00:10:38,720  
sleep shift to get here we needed to

261  
00:10:41,910 --> 00:10:40,959  
launch at 4 30 in the morning eastern

262  
00:10:43,590 --> 00:10:41,920  
time

263  
00:10:46,870 --> 00:10:43,600

and because of the amount of work you

264

00:10:48,630 --> 00:10:46,880

have to do when you get to uh to space

265

00:10:50,230 --> 00:10:48,640

uh takes about a whole afternoon's worth

266

00:10:51,990 --> 00:10:50,240

of work to convert the shuttle into

267

00:10:53,590 --> 00:10:52,000

something that's appropriate for living

268

00:10:55,190 --> 00:10:53,600

in once you've launched

269

00:10:57,030 --> 00:10:55,200

we needed to make that

270

00:10:58,790 --> 00:10:57,040

just after our lunch time

271

00:11:01,430 --> 00:10:58,800

so we were sleep shifted by about nine

272

00:11:03,509 --> 00:11:01,440

or ten hours to achieve that

273

00:11:04,949 --> 00:11:03,519

and that took us a week or two really to

274

00:11:06,310 --> 00:11:04,959

get comfortable with that huge sleep

275

00:11:08,150 --> 00:11:06,320

shift and we're still roughly on that

276

00:11:10,790 --> 00:11:08,160

sleep cycle sleeping when people in

277

00:11:12,630 --> 00:11:10,800

north america are awake and we're awake

278

00:11:15,269 --> 00:11:12,640

when they're asleep

279

00:11:17,030 --> 00:11:15,279

but up here on on on station now that

280

00:11:18,389 --> 00:11:17,040

we've adapted to that sleep schedule

281

00:11:20,069 --> 00:11:18,399

we're more or less sleeping normally

282

00:11:23,430 --> 00:11:20,079

there just isn't as much time for it as

283

00:11:26,870 --> 00:11:25,750

for us mike it was like making a trip to

284

00:11:29,190 --> 00:11:26,880

tokyo

285

00:11:30,710 --> 00:11:29,200

right before we launched and uh we did a

286

00:11:32,389 --> 00:11:30,720

about three days

287

00:11:35,670 --> 00:11:32,399

before the launch we did the equivalent

288

00:11:38,790 --> 00:11:35,680

of uh transferring to uh almost uh tokyo

289

00:11:40,310 --> 00:11:38,800

time tokyo japan and and uh going

290

00:11:42,069 --> 00:11:40,320

through that is going to happen on the

291

00:11:44,069 --> 00:11:42,079

other end when we come back so i'm sure

292

00:11:46,389 --> 00:11:44,079

we'll not only be tired from the mission

293

00:11:48,470 --> 00:11:46,399

but we'll be tired from those two big

294

00:11:52,550 --> 00:11:48,480

sleep shifts as nick described when we

295

00:11:57,030 --> 00:11:53,990

well you have plenty of time to catch up

296

00:11:58,949 --> 00:11:57,040

when you get back to earth

297

00:12:00,710 --> 00:11:58,959

another question now

298

00:12:02,550 --> 00:12:00,720

comes from

299

00:12:04,550 --> 00:12:02,560

the las vemosos and i'm probably

300

00:12:06,389 --> 00:12:04,560

mispronouncing that

301  
00:12:08,710 --> 00:12:06,399  
sixth graders at the sherman middle

302  
00:12:10,150 --> 00:12:08,720  
school in madison wisconsin so this

303  
00:12:11,910 --> 00:12:10,160  
comes from a bunch of sixth graders so

304  
00:12:14,150 --> 00:12:11,920  
be prepared

305  
00:12:21,269 --> 00:12:14,160  
they want to know what do you weigh in

306  
00:12:25,269 --> 00:12:23,350  
well for a bunch of sixth graders they

307  
00:12:27,269 --> 00:12:25,279  
they asked some pretty tough questions

308  
00:12:29,910 --> 00:12:27,279  
for us uh you know i think nick and i

309  
00:12:32,710 --> 00:12:29,920  
probably have well over 30 years of

310  
00:12:34,310 --> 00:12:32,720  
education between the two of us and uh

311  
00:12:36,629 --> 00:12:34,320  
getting questions from sixth graders is

312  
00:12:38,550 --> 00:12:36,639  
always the most challenging uh of them

313  
00:12:40,710 --> 00:12:38,560

all but i think nick just demonstrated

314

00:12:43,670 --> 00:12:40,720

and i think that we both uh could show

315

00:12:47,350 --> 00:12:45,910

that we uh

316

00:12:55,190 --> 00:12:47,360

we don't weigh much of anything while

317

00:12:58,470 --> 00:12:57,350

very nice demonstration but you know the

318

00:12:59,590 --> 00:12:58,480

sixth graders will probably be

319

00:13:03,269 --> 00:12:59,600

interested to

320

00:13:05,110 --> 00:13:03,279

although you don't weigh anything

321

00:13:07,110 --> 00:13:05,120

you still have mass you still have

322

00:13:08,470 --> 00:13:07,120

inertia so if you start something moving

323

00:13:09,910 --> 00:13:08,480

like if i take bob and i move him

324

00:13:12,069 --> 00:13:09,920

towards the camera it takes me a second

325

00:13:14,470 --> 00:13:12,079

to speed him up i have to take that same

326

00:13:16,790 --> 00:13:14,480

second to slow him down because he is

327

00:13:18,629 --> 00:13:16,800

massive and just as we all are he'll

328

00:13:20,150 --> 00:13:18,639

keep moving in one direction as long as

329

00:13:21,509 --> 00:13:20,160

there's no force acting on him so

330

00:13:23,030 --> 00:13:21,519

there's really some interesting physics

331

00:13:25,190 --> 00:13:23,040

to observe up here not just the weight

332

00:13:27,750 --> 00:13:25,200

but also the mass

333

00:13:29,269 --> 00:13:27,760

thanks bob

334

00:13:32,389 --> 00:13:29,279

well done boys

335

00:13:33,190 --> 00:13:32,399

uh moving on to a different topic

336

00:13:36,150 --> 00:13:33,200

uh

337

00:13:38,870 --> 00:13:36,160

your meals we have this this comes from

338

00:13:40,069 --> 00:13:38,880

uh chef casey wilson

339

00:13:42,949 --> 00:13:40,079

and uh

340

00:13:45,590 --> 00:13:42,959

he or she asks the chef asks what your

341

00:13:47,750 --> 00:13:45,600

meals consist of and is there anything

342

00:13:49,430 --> 00:13:47,760

specific that you asked to bring up that

343

00:13:55,750 --> 00:13:49,440

you're eating that's maybe a little bit

344

00:14:00,310 --> 00:13:58,230

well mike i think there's always a lot

345

00:14:02,389 --> 00:14:00,320

of interest in what type of food we

346

00:14:05,110 --> 00:14:02,399

actually eat on orbit and it's a mixture

347

00:14:07,590 --> 00:14:05,120

of of kind of camping food and military

348

00:14:09,110 --> 00:14:07,600

rations and kind of dehydrated things

349

00:14:10,710 --> 00:14:09,120

and so we've kind of got

350

00:14:12,550 --> 00:14:10,720

just about everything that you have on

351

00:14:15,030 --> 00:14:12,560

the ground just in a slightly different

352

00:14:17,189 --> 00:14:15,040

format that we either warm up or add

353

00:14:18,710 --> 00:14:17,199

water to and then warm up so those are

354

00:14:21,269 --> 00:14:18,720

kind of the two things that we have so

355

00:14:22,550 --> 00:14:21,279

nothing nothing too fancy as far as

356

00:14:25,110 --> 00:14:22,560

chefs go

357

00:14:27,189 --> 00:14:25,120

because we don't get to use all the the

358

00:14:29,910 --> 00:14:27,199

the fancy techniques we just get to add

359

00:14:31,350 --> 00:14:29,920

water or add heat and that's just about

360

00:14:33,509 --> 00:14:31,360

it for me

361

00:14:35,269 --> 00:14:33,519

i brought up some some chocolates that i

362

00:14:37,110 --> 00:14:35,279

like and i also brought up some

363

00:14:38,629 --> 00:14:37,120

breakfast rolls and some fresh fruit

364

00:14:40,790 --> 00:14:38,639

because one of the things that you don't

365

00:14:43,189 --> 00:14:40,800

have very much of up here like i said

366

00:14:45,030 --> 00:14:43,199

with all rehydrated or or food that you

367

00:14:47,509 --> 00:14:45,040

just warm up you don't get a lot of

368

00:14:50,310 --> 00:14:47,519

vegetables so it's a it is nice to to

369

00:14:52,470 --> 00:14:50,320

taste citrus and taste fresh fresh

370

00:14:54,230 --> 00:14:52,480

vegetables during the the week or two

371

00:14:56,470 --> 00:14:54,240

that you're actually on orbit and when

372

00:14:58,710 --> 00:14:56,480

we arrived with the for the station crew

373

00:14:59,990 --> 00:14:58,720

we actually brought them quite a bit of

374

00:15:01,030 --> 00:15:00,000

fresh food

375

00:15:02,629 --> 00:15:01,040

i don't think

376

00:15:04,470 --> 00:15:02,639

you can see any more of it here actually

377

00:15:06,470 --> 00:15:04,480

you can there's some of it stowed right

378

00:15:08,310 --> 00:15:06,480

above nick's head up here there's some

379

00:15:11,030 --> 00:15:08,320

oranges and some apples and some

380

00:15:13,030 --> 00:15:11,040

avocados and some lemons so a lot of

381

00:15:14,870 --> 00:15:13,040

fresh fruits that only get delivered

382

00:15:16,790 --> 00:15:14,880

when there's a a progress vehicle

383

00:15:28,470 --> 00:15:16,800

arriving or a space shuttle arrives to

384

00:15:34,870 --> 00:15:31,829

okay next question comes from uh

385

00:15:38,470 --> 00:15:36,310

and they want to know how long do you

386

00:15:39,670 --> 00:15:38,480

prepare for a for your flight how long

387

00:15:45,189 --> 00:15:39,680

do you guys prepare for your space

388

00:15:49,590 --> 00:15:46,790

well we've been training for about a

389

00:15:51,030 --> 00:15:49,600

year mike um we got assigned to this

390

00:15:52,829 --> 00:15:51,040

mission i think in

391

00:15:55,509 --> 00:15:52,839

december of

392

00:15:57,189 --> 00:15:55,519

2008 so we trained for just over a year

393

00:15:58,310 --> 00:15:57,199

before we launched but in a way we've

394

00:16:01,350 --> 00:15:58,320

been training for this for all of our

395

00:16:03,110 --> 00:16:01,360

lives bob and i are both engineers um

396

00:16:05,509 --> 00:16:03,120

bob's an air force flight test engineer

397

00:16:07,110 --> 00:16:05,519

and i'm a civilian

398

00:16:09,189 --> 00:16:07,120

mechanical engineer as you know because

399

00:16:10,710 --> 00:16:09,199

we were at school together

400

00:16:14,310 --> 00:16:10,720

but we have literally been training to

401  
00:16:16,389 --> 00:16:14,320  
be astronauts for the last um 30 or 40

402  
00:16:17,590 --> 00:16:16,399  
years through our education

403  
00:16:19,430 --> 00:16:17,600  
one of the things i was struck by

404  
00:16:21,269 --> 00:16:19,440  
yesterday when i was doing my space walk

405  
00:16:23,350 --> 00:16:21,279  
is that i think

406  
00:16:26,069 --> 00:16:23,360  
you probably can't feel really

407  
00:16:27,829 --> 00:16:26,079  
comfortable hanging from uh hanging from

408  
00:16:30,310 --> 00:16:27,839  
a space station 200 miles above the

409  
00:16:31,829 --> 00:16:30,320  
planet going about 18 000 miles an hour

410  
00:16:33,269 --> 00:16:31,839  
unless you're really confident in the

411  
00:16:35,110 --> 00:16:33,279  
physics that you'll just keep going

412  
00:16:36,870 --> 00:16:35,120  
around the planet and won't fall so in a

413  
00:16:43,749 --> 00:16:36,880

way i think we've been training a long

414

00:16:46,790 --> 00:16:45,189

you know all that education that you

415

00:16:48,870 --> 00:16:46,800

guys have between you comes comes in

416

00:16:50,389 --> 00:16:48,880

handy

417

00:16:51,430 --> 00:16:50,399

next question

418

00:16:53,030 --> 00:16:51,440

is from

419

00:16:55,430 --> 00:16:53,040

taiwan media

420

00:16:57,509 --> 00:16:55,440

and uh the question is what times what

421

00:16:58,710 --> 00:16:57,519

types of experiments do you have on

422

00:16:59,990 --> 00:16:58,720

board what experiments are you guys

423

00:17:01,110 --> 00:17:00,000

doing i know you're busy with lots of

424

00:17:07,669 --> 00:17:01,120

stuff but if you have any time for

425

00:17:11,829 --> 00:17:09,669

well mike we do have a couple of

426  
00:17:14,309 --> 00:17:11,839  
experiment experiments with us and most

427  
00:17:15,829 --> 00:17:14,319  
of them are biological in nature really

428  
00:17:17,990 --> 00:17:15,839  
as far as our flight goes the space

429  
00:17:20,549 --> 00:17:18,000  
station is doing a quite a bit of

430  
00:17:22,150 --> 00:17:20,559  
additional work uh this is an assembly

431  
00:17:24,710 --> 00:17:22,160  
mission to the space station and so

432  
00:17:26,630 --> 00:17:24,720  
we're primarily focused on that but the

433  
00:17:29,830 --> 00:17:26,640  
the experiments that we do have we have

434  
00:17:32,470 --> 00:17:29,840  
one which is a a experiment to actually

435  
00:17:35,590 --> 00:17:32,480  
control viruses and so we have a

436  
00:17:37,669 --> 00:17:35,600  
they're in a contained vessel and we

437  
00:17:39,830 --> 00:17:37,679  
cycle them through their process trying

438  
00:17:42,310 --> 00:17:39,840

to activate them and then deactivate

439

00:17:44,789 --> 00:17:42,320

them inside their canister to understand

440

00:17:46,470 --> 00:17:44,799

what the effects gravity have gravity

441

00:17:49,350 --> 00:17:46,480

has on those viruses

442

00:17:52,310 --> 00:17:49,360

we also fly a a big freezer

443

00:17:54,789 --> 00:17:52,320

it's called a glacier and it keeps

444

00:17:56,870 --> 00:17:54,799

biological samples really cold and also

445

00:17:59,590 --> 00:17:56,880

allows us to transfer new science

446

00:18:01,990 --> 00:17:59,600

materials either to the station or back

447

00:18:04,230 --> 00:18:02,000

down from the station and so just uh the

448

00:18:06,710 --> 00:18:04,240

day that we arrived i opened up that

449

00:18:08,630 --> 00:18:06,720

freezer and exchanged some samples that

450

00:18:11,110 --> 00:18:08,640

uh jeff williams the commander of the

451  
00:18:12,630 --> 00:18:11,120  
space station right now had on board and

452  
00:18:15,590 --> 00:18:12,640  
swapped those out and i know there'll be

453  
00:18:17,110 --> 00:18:15,600  
a large number of blood samples and

454  
00:18:18,950 --> 00:18:17,120  
other samples from the crews that have

455  
00:18:21,029 --> 00:18:18,960  
been on orbit to make sure that they've

456  
00:18:23,830 --> 00:18:21,039  
been healthy and understand the effects

457  
00:18:30,789 --> 00:18:23,840  
of gravity on their health during their

458  
00:18:35,669 --> 00:18:32,630  
boys i think we have time for one more

459  
00:18:38,070 --> 00:18:35,679  
question and uh this one is uh pertinent

460  
00:18:39,909 --> 00:18:38,080  
to our twittering in space

461  
00:18:41,590 --> 00:18:39,919  
uh this comes from rich v miller he

462  
00:18:42,870 --> 00:18:41,600  
wants to know what kind of computer do

463  
00:18:44,390 --> 00:18:42,880

you use

464

00:18:50,630 --> 00:18:44,400

to send your tweets and nick are you

465

00:18:54,710 --> 00:18:52,630

as you know mike i was tweeting

466

00:18:56,390 --> 00:18:54,720

every day before we launched and

467

00:18:58,710 --> 00:18:56,400

unfortunately i haven't had enough time

468

00:19:00,070 --> 00:18:58,720

to do uh do much tweeting from up here

469

00:19:00,950 --> 00:19:00,080

although i will send another one out

470

00:19:02,789 --> 00:19:00,960

today

471

00:19:03,909 --> 00:19:02,799

um when i send a tweet i have to email

472

00:19:07,270 --> 00:19:03,919

it to a colleague on the ground who's

473

00:19:08,870 --> 00:19:07,280

agreed to post it for me um but when the

474

00:19:11,510 --> 00:19:08,880

folks on the space station here send a

475

00:19:14,150 --> 00:19:11,520

tweet they're able to do it directly via

476

00:19:15,510 --> 00:19:14,160

a live computer link with a machine down

477

00:19:17,510 --> 00:19:15,520

in mission control

478

00:19:19,750 --> 00:19:17,520

um so they're actually able to uh

479

00:19:21,590 --> 00:19:19,760

directly if somewhat slowly post their

480

00:19:24,390 --> 00:19:21,600

own tweets and that's a

481

00:19:26,789 --> 00:19:24,400

something that tj creamer the iss flight

482

00:19:28,070 --> 00:19:26,799

engineer up here now

483

00:19:29,830 --> 00:19:28,080

has just

484

00:19:31,270 --> 00:19:29,840

set up with help from colleagues on the

485

00:19:36,070 --> 00:19:31,280

ground so that's a very exciting

486

00:19:39,110 --> 00:19:37,750

well we know you're you're busy nick and

487

00:19:41,029 --> 00:19:39,120

anything you can send out i know the

488

00:19:43,510 --> 00:19:41,039

folks would be interested in uh in

489

00:19:46,390 --> 00:19:43,520

reading eventually and uh

490

00:19:47,750 --> 00:19:46,400

we're out of time actually uh and i know

491

00:19:49,909 --> 00:19:47,760

you guys are busy and have something

492

00:19:51,990 --> 00:19:49,919

else to do it's been a real honor for me

493

00:19:54,870 --> 00:19:52,000

to work as your capcom and to talk to

494

00:19:56,549 --> 00:19:54,880

you uh this evening it's uh it's been a

495

00:19:58,310 --> 00:19:56,559

real blast and you guys look great and

496

00:20:00,150 --> 00:19:58,320

you're doing a great job and we're all

497

00:20:01,669 --> 00:20:00,160

proud of everything you guys are doing

498

00:20:04,630 --> 00:20:01,679

anything you want to say to wrap up you

499

00:20:06,630 --> 00:20:04,640

want to say hi to anybody or uh

500

00:20:11,510 --> 00:20:06,640

thank anyone or what do you got closing

501  
00:20:14,710 --> 00:20:12,950  
gosh the foot we're going to thank

502  
00:20:16,070 --> 00:20:14,720  
everybody uh but we won't thank

503  
00:20:18,230 --> 00:20:16,080  
everybody it's a bit like an oscar

504  
00:20:19,510 --> 00:20:18,240  
speech if you do that um

505  
00:20:21,510 --> 00:20:19,520  
i guess we'd like to thank the people

506  
00:20:23,669 --> 00:20:21,520  
who got us here our trainers in houston

507  
00:20:25,669 --> 00:20:23,679  
um and uh

508  
00:20:28,470 --> 00:20:25,679  
the people at neutral buoyancy lab who

509  
00:20:31,029 --> 00:20:28,480  
uh make the underwater training possible

510  
00:20:32,950 --> 00:20:31,039  
and uh flight control team on the ground

511  
00:20:35,830 --> 00:20:32,960  
um those are the really important groups

512  
00:20:36,710 --> 00:20:35,840  
to thank i'd like to thank my family too

513  
00:20:38,470 --> 00:20:36,720

for

514

00:20:40,070 --> 00:20:38,480

putting up with my what should we call

515

00:20:44,310 --> 00:20:40,080

it business travel which can be

516

00:20:47,110 --> 00:20:45,750

and nick covered

517

00:20:49,510 --> 00:20:47,120

the folks that

518

00:20:51,190 --> 00:20:49,520

that have got us to this point and also

519

00:20:53,110 --> 00:20:51,200

been supporting us while we're here on

520

00:20:55,669 --> 00:20:53,120

orbit i'd also like to thank

521

00:20:58,230 --> 00:20:55,679

my family and uh my wife megan who's

522

00:21:00,710 --> 00:20:58,240

also a capcom for some other other

523

00:21:02,710 --> 00:21:00,720

missions and flew with you mike

524

00:21:05,110 --> 00:21:02,720

back to the the space telescope a little

525

00:21:11,029 --> 00:21:05,120

bit uh a little while back so i'd like

526

00:21:15,110 --> 00:21:13,190

all right guys great job this concludes

527

00:21:16,390 --> 00:21:15,120

the event good luck with the rest of the

528

00:21:17,430 --> 00:21:16,400

mission we'll be talking with you and