



U.S. Embassy
Kiev, Ukraine



International Space Station

1
00:00:05,829 --> 00:00:02,230
station this is houston are you ready

2
00:00:09,669 --> 00:00:07,909
houston this is station i'm ready for

3
00:00:11,990 --> 00:00:09,679
the event

4
00:00:13,990 --> 00:00:12,000
u.s embassy in kiev ukraine this is

5
00:00:18,310 --> 00:00:14,000
mission control houston please call

6
00:00:25,589 --> 00:00:20,790
ivanovic from the u.s embassy in keys

7
00:00:29,349 --> 00:00:27,269
madam ambassador i hear you loud and

8
00:00:30,870 --> 00:00:29,359
clear and to you and to the students of

9
00:00:36,389 --> 00:00:30,880
america house welcome to the

10
00:00:41,430 --> 00:00:38,389
well i i think that um you can see we've

11
00:00:43,510 --> 00:00:41,440
got a really excited audience here um in

12
00:00:45,350 --> 00:00:43,520
in kiev there's a bunch of people

13
00:00:47,510 --> 00:00:45,360

americans ukrainians and everybody's

14

00:00:49,750 --> 00:00:47,520

thrilled to be talking to you tonight so

15

00:00:51,750 --> 00:00:49,760

we've collected questions from all over

16

00:00:54,630 --> 00:00:51,760

ukraine from people eager to hear about

17

00:00:57,029 --> 00:00:54,640

your adventures in outer space and any

18

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

advice you have for aspiring scientists

19

00:01:00,470 --> 00:00:58,640

and engineers and i can tell you from

20

00:01:02,790 --> 00:01:00,480

our pre-talk there are a bunch of them

21

00:01:04,229 --> 00:01:02,800

here of all ages not just

22

00:01:06,789 --> 00:01:04,239

not just youth i think there are others

23

00:01:10,310 --> 00:01:06,799

as well so our first question comes from

24

00:01:12,469 --> 00:01:10,320

questia in kiev he asks what kind of

25

00:01:16,870 --> 00:01:12,479

training did you do to become an

26
00:01:20,670 --> 00:01:18,870
well we select astronauts with a bunch

27
00:01:23,190 --> 00:01:20,680
of varied backgrounds we've got

28
00:01:25,990 --> 00:01:23,200
astrophysicists engineers medical

29
00:01:27,910 --> 00:01:26,000
doctors test pilots we've got the whole

30
00:01:30,789 --> 00:01:27,920
gamut i've got joe acaba here he's a

31
00:01:32,069 --> 00:01:30,799
teacher an educator and so we all come

32
00:01:33,510 --> 00:01:32,079
with all the different backgrounds but

33
00:01:35,990 --> 00:01:33,520
we get the similar astronaut training

34
00:01:38,069 --> 00:01:36,000
where we have to learn about the systems

35
00:01:39,830 --> 00:01:38,079
of for example the space station the

36
00:01:41,270 --> 00:01:39,840
science on the space station how the

37
00:01:43,590 --> 00:01:41,280
toilet works

38
00:01:45,510 --> 00:01:43,600

we have to learn about how to fix things

39

00:01:47,350 --> 00:01:45,520

we have to learn about the experiments

40

00:01:48,789 --> 00:01:47,360

that we do on this on the science

41

00:01:50,789 --> 00:01:48,799

equipment we have to learn how to do

42

00:01:52,310 --> 00:01:50,799

space ones we'd like to learn how to be

43

00:01:54,630 --> 00:01:52,320

able to ride the rocket uphill and ride

44

00:01:56,630 --> 00:01:54,640

the rocket downhill so there's a wide

45

00:01:58,789 --> 00:01:56,640

variety of stuff that happens when

46

00:02:00,469 --> 00:01:58,799

you're an astronaut and the neat part is

47

00:02:02,149 --> 00:02:00,479

you never know what you're going to be

48

00:02:04,149 --> 00:02:02,159

doing from day to day

49

00:02:06,230 --> 00:02:04,159

and how different the different days are

50

00:02:07,749 --> 00:02:06,240

going to be so it's a lot of different

51
00:02:10,469 --> 00:02:07,759
things but that's what makes the job so

52
00:02:12,309 --> 00:02:10,479
interesting and so challenging

53
00:02:14,790 --> 00:02:12,319
so is there um this is a question from

54
00:02:17,589 --> 00:02:14,800
alina and and reap chuck ukraine and it

55
00:02:19,430 --> 00:02:17,599
really follows on to what you just said

56
00:02:26,309 --> 00:02:19,440
she'd like to know what is the most

57
00:02:29,990 --> 00:02:27,830
the most important thing about being an

58
00:02:32,229 --> 00:02:30,000
astronaut is

59
00:02:33,830 --> 00:02:32,239
that you get along with other people

60
00:02:36,150 --> 00:02:33,840
i mentioned that you have these very

61
00:02:38,550 --> 00:02:36,160
backgrounds and varied experiences but

62
00:02:40,869 --> 00:02:38,560
when we come up here as part of a crew

63
00:02:43,030 --> 00:02:40,879

we have to be able to work together

64

00:02:45,030 --> 00:02:43,040

and it can be busy it can be stressful

65

00:02:47,270 --> 00:02:45,040

to be long days but you got to be able

66

00:02:48,869 --> 00:02:47,280

to understand yourself relate to other

67

00:02:50,309 --> 00:02:48,879

people and figure out how to work as

68

00:02:52,630 --> 00:02:50,319

cohesively as a crew to be able to get

69

00:02:54,390 --> 00:02:52,640

the mission done so that's what we find

70

00:02:56,150 --> 00:02:54,400

and we try and really check out when we

71

00:02:57,670 --> 00:02:56,160

go ahead and hire people is what kind of

72

00:02:59,589 --> 00:02:57,680

person are they and would we want to be

73

00:03:02,790 --> 00:02:59,599

on a mission with them for a long time

74

00:03:05,910 --> 00:03:04,149

well that's really interesting because i

75

00:03:07,750 --> 00:03:05,920

bet a lot of people in this room thought

76

00:03:09,750 --> 00:03:07,760

the same thing i did which is it was not

77

00:03:11,589 --> 00:03:09,760

going to be the old interpersonal skills

78

00:03:14,229 --> 00:03:11,599

issue it was going to be something about

79

00:03:16,470 --> 00:03:14,239

science or math um which are of course

80

00:03:18,869 --> 00:03:16,480

also very important for your mission

81

00:03:25,589 --> 00:03:18,879

so both bogdan in kiev wants to know

82

00:03:29,830 --> 00:03:27,190

the future of space exploration is

83

00:03:31,990 --> 00:03:29,840

pretty darn exciting right now we've got

84

00:03:33,990 --> 00:03:32,000

you know companies that are building new

85

00:03:36,070 --> 00:03:34,000

space vehicles you know in in the u.s

86

00:03:38,390 --> 00:03:36,080

alone we've got the boeing and the

87

00:03:39,670 --> 00:03:38,400

spacex company that are building crude

88

00:03:41,509 --> 00:03:39,680

capsules they're going to come up here

89

00:03:44,869 --> 00:03:41,519

to the space station here hopefully by

90

00:03:47,910 --> 00:03:44,879

uh next year uh and that'll allow

91

00:03:49,589 --> 00:03:47,920

uh nasa to finish our orion vehicle

92

00:03:51,430 --> 00:03:49,599

which will start taking us out beyond

93

00:03:53,589 --> 00:03:51,440

low earth orbit and start taking us out

94

00:03:55,589 --> 00:03:53,599

towards the moon and towards mars

95

00:03:57,350 --> 00:03:55,599

and you know that's the kind of stuff

96

00:03:59,429 --> 00:03:57,360

that we need to be doing to be able to

97

00:04:01,429 --> 00:03:59,439

continue exploring and eventually get

98

00:04:02,869 --> 00:04:01,439

onto mars

99

00:04:05,270 --> 00:04:02,879

and the fact that

100

00:04:06,630 --> 00:04:05,280

no country is going to go alone to mars

101
00:04:08,470 --> 00:04:06,640
it's going to be a human effort we're

102
00:04:09,589 --> 00:04:08,480
going to do an international partnership

103
00:04:11,509 --> 00:04:09,599
just like we do with the international

104
00:04:13,589 --> 00:04:11,519
space station and that's why it's so

105
00:04:15,750 --> 00:04:13,599
important work we do here forging the

106
00:04:17,590 --> 00:04:15,760
alliances and the partnership and making

107
00:04:18,870 --> 00:04:17,600
it all work country to country that

108
00:04:20,390 --> 00:04:18,880
there's going to be an example for us

109
00:04:23,990 --> 00:04:20,400
when we go ahead and go and try and do

110
00:04:25,830 --> 00:04:24,000
that major earth you know exploration

111
00:04:27,510 --> 00:04:25,840
mission from the people that live here

112
00:04:29,110 --> 00:04:27,520
to another heavenly body like mars and

113
00:04:33,670 --> 00:04:29,120

go check it out hopefully in the near

114

00:04:39,030 --> 00:04:35,990

well that really is

115

00:04:40,390 --> 00:04:39,040

exciting and i i just um since since you

116

00:04:42,390 --> 00:04:40,400

put that little capsule out there i just

117

00:04:44,950 --> 00:04:42,400

have to ask a follow-up question so how

118

00:04:47,590 --> 00:04:44,960

is it that you're just hanging there and

119

00:04:50,070 --> 00:04:47,600

not you know kind of uh rolling around

120

00:04:52,629 --> 00:04:50,080

in space are you like

121

00:04:58,070 --> 00:04:52,639

i mean are your your uh feet in in

122

00:04:58,080 --> 00:05:14,629

foot stirrups

123

00:05:20,150 --> 00:05:17,590

so um a leg from venezia would like to

124

00:05:22,629 --> 00:05:20,160

know if you are growing plants on the

125

00:05:27,189 --> 00:05:22,639

space station and if so why are you

126
00:05:31,830 --> 00:05:29,990
great question and we have astronaut joe

127
00:05:35,029 --> 00:05:31,840
acaba

128
00:05:36,550 --> 00:05:35,039
who has been growing lettuce

129
00:05:38,150 --> 00:05:36,560
five different types of lettuce he's

130
00:05:39,909 --> 00:05:38,160
been growing here on the space station

131
00:05:41,510 --> 00:05:39,919
and we're about to harvest it come this

132
00:05:43,430 --> 00:05:41,520
friday

133
00:05:45,189 --> 00:05:43,440
why are we doing that because as you can

134
00:05:48,150 --> 00:05:45,199
imagine food

135
00:05:49,270 --> 00:05:48,160
takes a lot of space and weight

136
00:05:50,950 --> 00:05:49,280
and if we're going to go on a long

137
00:05:52,469 --> 00:05:50,960
duration mission we're going to have a

138
00:05:54,150 --> 00:05:52,479

pretty big spaceship be able to feed the

139

00:05:55,110 --> 00:05:54,160

people while we go there

140

00:05:56,870 --> 00:05:55,120

but if we

141

00:05:57,990 --> 00:05:56,880

imagine a seed it doesn't take a whole

142

00:05:59,350 --> 00:05:58,000

lot of space or a whole lot of weight

143

00:06:01,350 --> 00:05:59,360

and we can figure out how to grow a lot

144

00:06:03,350 --> 00:06:01,360

of our food and that makes it a lot

145

00:06:06,550 --> 00:06:03,360

easier to build a spaceship to have more

146

00:06:07,749 --> 00:06:06,560

scientific stuff more propulsion or more

147

00:06:09,270 --> 00:06:07,759

maybe a

148

00:06:10,950 --> 00:06:09,280

recreation room on our spaceship like

149

00:06:12,870 --> 00:06:10,960

you see in all the movies

150

00:06:14,870 --> 00:06:12,880

so that's really important for our

151

00:06:16,550 --> 00:06:14,880

sustainability not only end route to

152

00:06:19,029 --> 00:06:16,560

another planet but maybe once we get

153

00:06:23,830 --> 00:06:20,629

well i bet it will be pretty nice on

154

00:06:26,629 --> 00:06:23,840

friday night to have that fresh lettuce

155

00:06:29,189 --> 00:06:26,639

uh so uh our a former colleague of ours

156

00:06:32,070 --> 00:06:29,199

uh from the u.s embassy regine stokes is

157

00:06:33,909 --> 00:06:32,080

wondering what the solar eclipse back in

158

00:06:35,670 --> 00:06:33,919

august what did that look like from your

159

00:06:39,990 --> 00:06:35,680

vantage point the international space

160

00:06:42,230 --> 00:06:40,950

for us

161

00:06:44,070 --> 00:06:42,240

we

162

00:06:45,350 --> 00:06:44,080

none of us had ever seen a solar eclipse

163

00:06:47,110 --> 00:06:45,360

from space because

164

00:06:49,510 --> 00:06:47,120

they don't happen that often

165

00:06:52,629 --> 00:06:49,520

and we were amazed that they've got the

166

00:06:54,950 --> 00:06:52,639

sea of normally uh white clouds or the

167

00:06:56,710 --> 00:06:54,960

blue of the ocean and there's usually a

168

00:06:58,309 --> 00:06:56,720

kind of a white tint to everything

169

00:06:59,670 --> 00:06:58,319

because the sun's lighting up the

170

00:07:02,469 --> 00:06:59,680

atmosphere

171

00:07:03,589 --> 00:07:02,479

well there was this huge just black

172

00:07:06,710 --> 00:07:03,599

circle

173

00:07:10,309 --> 00:07:06,720

and we were amazed at the size of the

174

00:07:13,270 --> 00:07:10,319

shadow of the of the moon uh onto the

175

00:07:15,670 --> 00:07:13,280

surface and i mean inside that circle i

176
00:07:17,830 --> 00:07:15,680
mean big bright white clouds and earth

177
00:07:19,430 --> 00:07:17,840
around it but it was just black and it

178
00:07:21,670 --> 00:07:19,440
really altered the colors of the things

179
00:07:24,070 --> 00:07:21,680
on the other side of the of the

180
00:07:26,950 --> 00:07:24,080
umbra or the shadow of the moon

181
00:07:28,309 --> 00:07:26,960
and then we also had uh special filters

182
00:07:30,230 --> 00:07:28,319
on our cameras that allow us to take

183
00:07:31,990 --> 00:07:30,240
pictures actually of the sun and we had

184
00:07:35,110 --> 00:07:32,000
an opportunity to see the the sun on on

185
00:07:36,230 --> 00:07:35,120
three passes um and to see

186
00:07:39,350 --> 00:07:36,240
the sun

187
00:07:41,830 --> 00:07:39,360
you know get absorbed by uh you know the

188
00:07:43,990 --> 00:07:41,840

moon's shadow was really really neat and

189

00:07:46,150 --> 00:07:44,000

we were able to take pictures just like

190

00:07:49,430 --> 00:07:46,160

you guys did on the ground

191

00:07:51,830 --> 00:07:49,440

and and see the eclipse

192

00:07:54,950 --> 00:07:51,840

well that sounds really really cool

193

00:07:56,710 --> 00:07:54,960

so uh elena and kiev wants to know how

194

00:08:03,430 --> 00:07:56,720

you spend your free time in space when

195

00:08:07,589 --> 00:08:04,469

for me

196

00:08:09,909 --> 00:08:07,599

most of my free time is is spent

197

00:08:12,469 --> 00:08:09,919

trying to take pictures of our amazing

198

00:08:13,510 --> 00:08:12,479

beautiful planet

199

00:08:15,990 --> 00:08:13,520

it's

200

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

so amazing to see and and you just

201
00:08:19,909 --> 00:08:17,919
you're so changed by the experience of

202
00:08:20,950 --> 00:08:19,919
being able to look down and know that

203
00:08:22,629 --> 00:08:20,960
you know every

204
00:08:24,469 --> 00:08:22,639
minute of your life and everyone you've

205
00:08:26,550 --> 00:08:24,479
ever known is down there underneath you

206
00:08:28,950 --> 00:08:26,560
and you're moving along at you know six

207
00:08:31,270 --> 00:08:28,960
miles or 10 kilometers every second

208
00:08:32,870 --> 00:08:31,280
going around the earth every 90 minutes

209
00:08:34,630 --> 00:08:32,880
it's it's just

210
00:08:36,149 --> 00:08:34,640
every orbit is different the weather's

211
00:08:37,990 --> 00:08:36,159
different the sun is different and so

212
00:08:40,630 --> 00:08:38,000
we're up there just taking pictures so

213
00:08:42,790 --> 00:08:40,640

that we can try and do our best to share

214

00:08:44,550 --> 00:08:42,800

with all of you on the ground because

215

00:08:46,389 --> 00:08:44,560

unfortunately we've only had 500

216

00:08:48,949 --> 00:08:46,399

something humans

217

00:08:51,910 --> 00:08:48,959

go into space so far and

218

00:08:53,910 --> 00:08:51,920

we need those new vehicles and then boom

219

00:08:56,710 --> 00:08:53,920

in the space exploration business so

220

00:08:58,470 --> 00:08:56,720

that a lot more people can see it and be

221

00:09:01,590 --> 00:08:58,480

experience the beauty of our planet from

222

00:09:05,590 --> 00:09:04,550

that's a really inspiring answer um

223

00:09:07,910 --> 00:09:05,600

thank you

224

00:09:09,990 --> 00:09:07,920

so here's here's a going from the really

225

00:09:12,550 --> 00:09:10,000

serious to something a little lighter

226

00:09:14,949 --> 00:09:12,560

and a little uh perhaps more fun kirill

227

00:09:16,710 --> 00:09:14,959

from harkeef asks if you could show us

228

00:09:19,190 --> 00:09:16,720

something interesting like maybe how you

229

00:09:21,790 --> 00:09:19,200

drink a cup of coffee or wash your hair

230

00:09:25,910 --> 00:09:21,800

in space or i don't know what

231

00:09:29,910 --> 00:09:27,990

well since i i already showered we'll go

232

00:09:30,949 --> 00:09:29,920

ahead and try this is uh some some apple

233

00:09:32,070 --> 00:09:30,959

cider

234

00:09:34,310 --> 00:09:32,080

and you notice we have to have it you

235

00:09:36,630 --> 00:09:34,320

know we we bring it up dry we add water

236

00:09:38,230 --> 00:09:36,640

to it and our straws have to have a lock

237

00:09:39,829 --> 00:09:38,240

because if they didn't the liquid would

238

00:09:41,750 --> 00:09:39,839

just come out

239

00:09:44,230 --> 00:09:41,760

but water behaves a little differently

240

00:09:45,430 --> 00:09:44,240

in space oh look at it go already all

241

00:09:47,350 --> 00:09:45,440

right

242

00:10:08,310 --> 00:09:47,360

so if we let it go you can see the water

243

00:10:13,030 --> 00:10:11,110

and you can see that it just floats

244

00:10:13,910 --> 00:10:13,040

and so the surface tension holds it all

245

00:10:16,150 --> 00:10:13,920

together

246

00:10:17,670 --> 00:10:16,160

and so we try to be careful about using

247

00:10:20,710 --> 00:10:17,680

our locks on our drinks so that we don't

248

00:10:26,470 --> 00:10:22,710

what does it taste like does it taste

249

00:10:29,990 --> 00:10:28,710

um for me the drinks taste the same your

250

00:10:31,990 --> 00:10:30,000

taste buds get

251
00:10:34,069 --> 00:10:32,000
altered a little bit when you get up

252
00:10:36,230 --> 00:10:34,079
here things seem for most people a

253
00:10:38,870 --> 00:10:36,240
little blander and so

254
00:10:44,069 --> 00:10:38,880
sauces are a way to make the food feel a

255
00:10:48,069 --> 00:10:46,550
yuya and ivana frankiesk would like to

256
00:10:49,990 --> 00:10:48,079
know how much longer you will be

257
00:10:51,829 --> 00:10:50,000
stationed on the international space

258
00:10:53,750 --> 00:10:51,839
station you've already been there four

259
00:10:59,030 --> 00:10:53,760
months is that right and what you're

260
00:11:05,030 --> 00:11:02,310
well our crew on soyuz 51s with sergey

261
00:11:07,269 --> 00:11:05,040
ryazanskiy and paula nespoli will leave

262
00:11:09,910 --> 00:11:07,279
on december 14th and we'll land in

263
00:11:11,670 --> 00:11:09,920

kazakhstan uh that day and then sergey

264

00:11:13,990 --> 00:11:11,680

will go back to moscow paul and i will

265

00:11:17,110 --> 00:11:14,000

head back to houston and then we'll go

266

00:11:19,350 --> 00:11:17,120

through a phase where we'll be getting

267

00:11:20,870 --> 00:11:19,360

our bodies rehabilitated back to gravity

268

00:11:23,190 --> 00:11:20,880

we'll be doing all the medical testing

269

00:11:24,710 --> 00:11:23,200

because the size isn't just in glove

270

00:11:27,190 --> 00:11:24,720

boxes or

271

00:11:28,870 --> 00:11:27,200

or on test stands or going on outside we

272

00:11:31,190 --> 00:11:28,880

are the science too because i mentioned

273

00:11:33,110 --> 00:11:31,200

about needing food for a long journey we

274

00:11:34,949 --> 00:11:33,120

also need to protect the human bodies

275

00:11:36,790 --> 00:11:34,959

because there's radiation there's lack

276

00:11:38,790 --> 00:11:36,800

of gravity which causes our bodies to

277

00:11:41,030 --> 00:11:38,800

change and so the part of the

278

00:11:42,710 --> 00:11:41,040

experimentation is us ourselves so when

279

00:11:44,230 --> 00:11:42,720

be getting back rehabilitating our

280

00:11:45,990 --> 00:11:44,240

reconditioning ourselves we're doing

281

00:11:48,150 --> 00:11:46,000

medic get all the medical tests done on

282

00:11:49,430 --> 00:11:48,160

us then we'll be getting debriefs

283

00:11:51,750 --> 00:11:49,440

explaining everybody what we learned

284

00:11:53,030 --> 00:11:51,760

what we saw helping train the next set

285

00:11:54,790 --> 00:11:53,040

of astronauts that'll be coming up here

286

00:11:57,269 --> 00:11:54,800

and taking care of this magnificent

287

00:11:59,350 --> 00:11:57,279

space station and then the thing i look

288

00:12:01,509 --> 00:11:59,360

forward to the most is uh spending time

289

00:12:03,509 --> 00:12:01,519

with my wife and kids and uh it's been a

290

00:12:05,350 --> 00:12:03,519

long time training and time up here

291

00:12:06,790 --> 00:12:05,360

apart and so getting some good family

292

00:12:09,110 --> 00:12:06,800

time is what i'll look forward to the

293

00:12:13,030 --> 00:12:12,230

that's great so i have a question for

294

00:12:23,030 --> 00:12:13,040

you

295

00:12:26,230 --> 00:12:24,389

what surprised me the most was something

296

00:12:27,110 --> 00:12:26,240

i had a feeling for after my first

297

00:12:29,750 --> 00:12:27,120

flight

298

00:12:31,590 --> 00:12:29,760

um but i was only up here 11 days and it

299

00:12:33,750 --> 00:12:31,600

was such a whirlwind

300

00:12:34,949 --> 00:12:33,760

um but being up here now you know three

301
00:12:37,829 --> 00:12:34,959
months

302
00:12:39,990 --> 00:12:37,839
it amazes me how the human body can

303
00:12:41,590 --> 00:12:40,000
adapt to this environment so quickly you

304
00:12:43,190 --> 00:12:41,600
know just like

305
00:12:45,509 --> 00:12:43,200
you know people adapt to swimming

306
00:12:47,829 --> 00:12:45,519
underwater or diving and that type of

307
00:12:49,910 --> 00:12:47,839
neutral buoyancy

308
00:12:52,629 --> 00:12:49,920
i'm just amazed that we can be working

309
00:12:53,990 --> 00:12:52,639
you know up on this surface and it seems

310
00:12:55,750 --> 00:12:54,000
perfectly normal

311
00:12:57,269 --> 00:12:55,760
that this is straight ahead and that's

312
00:12:58,629 --> 00:12:57,279
the ceiling and that's the floor but

313
00:13:01,110 --> 00:12:58,639

then one of our buddies could be over

314

00:13:03,350 --> 00:13:01,120

here working on this surface

315

00:13:06,790 --> 00:13:03,360

and that's you know normal for him and

316

00:13:08,310 --> 00:13:06,800

we see guys floating by and flying by

317

00:13:10,310 --> 00:13:08,320

in different attitudes and it seems

318

00:13:11,509 --> 00:13:10,320

perfectly normal you just you adapt to

319

00:13:13,670 --> 00:13:11,519

it so quickly

320

00:13:16,069 --> 00:13:13,680

it really only takes the human body you

321

00:13:17,750 --> 00:13:16,079

know a couple days to where our minds

322

00:13:19,430 --> 00:13:17,760

know exactly where to if i want to go

323

00:13:21,190 --> 00:13:19,440

over this way i know where to push i'll

324

00:13:23,030 --> 00:13:21,200

just send me over and if i need to go

325

00:13:24,150 --> 00:13:23,040

back i just go in the right spot and i

326

00:13:25,990 --> 00:13:24,160

push back

327

00:13:27,670 --> 00:13:26,000

and we can control our rotations and our

328

00:13:28,870 --> 00:13:27,680

spinning and everything

329

00:13:31,110 --> 00:13:28,880

and it just

330

00:13:32,710 --> 00:13:31,120

it is so natural bodies are made for it

331

00:13:35,590 --> 00:13:32,720

to be able to go ahead and adapt to this

332

00:13:36,310 --> 00:13:35,600

environment and so in my opinion

333

00:13:38,550 --> 00:13:36,320

the

334

00:13:39,509 --> 00:13:38,560

human body is special and that doesn't

335

00:13:41,189 --> 00:13:39,519

take something special to be an

336

00:13:45,829 --> 00:13:41,199

astronaut any one of you could be up

337

00:13:51,670 --> 00:13:49,030

well i i think that that's a an amazing

338

00:13:54,069 --> 00:13:51,680

answer both the visuals and and uh and

339

00:13:56,629 --> 00:13:54,079

your words that any one of us could be

340

00:13:59,350 --> 00:13:56,639

an astronaut and so i actually did want

341

00:14:01,430 --> 00:13:59,360

to ask you do you have a special message

342

00:14:07,030 --> 00:14:01,440

or special advice for aspiring

343

00:14:11,189 --> 00:14:09,509

certainly the thing that i've seen

344

00:14:12,790 --> 00:14:11,199

from the people that i know that have

345

00:14:13,990 --> 00:14:12,800

become astronauts

346

00:14:15,670 --> 00:14:14,000

is that

347

00:14:17,670 --> 00:14:15,680

even before they came astronauts they

348

00:14:18,629 --> 00:14:17,680

loved what they did they were passionate

349

00:14:20,710 --> 00:14:18,639

about

350

00:14:22,629 --> 00:14:20,720

a lot most of them you know we all want

351

00:14:24,550 --> 00:14:22,639

to learn new things learn something new

352

00:14:26,629 --> 00:14:24,560

every day you know we all studied hard

353

00:14:28,470 --> 00:14:26,639

in school found a field that we were

354

00:14:30,949 --> 00:14:28,480

interested in whether it's geology for

355

00:14:31,910 --> 00:14:30,959

me i was a my degree was in mathematics

356

00:14:34,550 --> 00:14:31,920

um

357

00:14:38,550 --> 00:14:34,560

or and became a test pilot uh other

358

00:14:40,790 --> 00:14:38,560

people it is you know hard sciences um

359

00:14:41,910 --> 00:14:40,800

and and trying to figure things out and

360

00:14:43,990 --> 00:14:41,920

learning more things always being

361

00:14:45,269 --> 00:14:44,000

thirsty for knowledge is a trait that

362

00:14:46,710 --> 00:14:45,279

that you know

363

00:14:48,870 --> 00:14:46,720

all the astronauts and cosmonauts that i

364

00:14:51,910 --> 00:14:48,880

know have and that's what helps us in

365

00:14:53,110 --> 00:14:51,920

our job to be able to be good scientists

366

00:14:55,350 --> 00:14:53,120

up here

367

00:14:57,110 --> 00:14:55,360

good crew members good engineers and

368

00:14:59,910 --> 00:14:57,120

figure problems out

369

00:15:01,670 --> 00:14:59,920

make experiments work and ultimately

370

00:15:03,590 --> 00:15:01,680

take all these myriad of different

371

00:15:05,350 --> 00:15:03,600

things that we do and make it all work

372

00:15:06,949 --> 00:15:05,360

into the getting the mission done and

373

00:15:10,790 --> 00:15:06,959

sustaining our presence here in low

374

00:15:15,829 --> 00:15:13,430

so one of um we we kind of pulled the

375

00:15:18,069 --> 00:15:15,839

room to ask other questions that people

376

00:15:21,829 --> 00:15:18,079

might have on their minds one question

377

00:15:24,310 --> 00:15:21,839

was how do you feel mentally up there

378

00:15:29,990 --> 00:15:24,320

um is it is it a challenge being up

379

00:15:32,629 --> 00:15:31,189

um

380

00:15:33,910 --> 00:15:32,639

we have a funny thing you know when you

381

00:15:36,310 --> 00:15:33,920

forget something or something like that

382

00:15:39,189 --> 00:15:36,320

we call the space stupids

383

00:15:42,150 --> 00:15:39,199

fortunately it at least in my experience

384

00:15:44,150 --> 00:15:42,160

it hasn't happened uh that much i don't

385

00:15:46,389 --> 00:15:44,160

we do mental acuity tests and i'm always

386

00:15:48,629 --> 00:15:46,399

curious to see if i've changed at all

387

00:15:50,069 --> 00:15:48,639

but you get used to working up here and

388

00:15:53,030 --> 00:15:50,079

there's always different things going on

389

00:15:54,550 --> 00:15:53,040

so you stay really agile and

390

00:15:56,550 --> 00:15:54,560

i don't think you know at least and i've

391

00:15:59,430 --> 00:15:56,560

observed at any of my crew members and

392

00:16:01,430 --> 00:15:59,440

any cognitive or mental changes uh

393

00:16:04,150 --> 00:16:01,440

certainly you get used to working you

394

00:16:06,470 --> 00:16:04,160

know the long days and and the hours and

395

00:16:07,910 --> 00:16:06,480

you really need downtime at the end of

396

00:16:09,350 --> 00:16:07,920

the day to be able to you know whether

397

00:16:12,150 --> 00:16:09,360

it's you know converse with other people

398

00:16:14,150 --> 00:16:12,160

on email call your friends and family or

399

00:16:15,910 --> 00:16:14,160

just relax and watch a tv show or a

400

00:16:18,069 --> 00:16:15,920

movie to give your brain a break from

401
00:16:23,110 --> 00:16:18,079
the high paced uh

402
00:16:26,230 --> 00:16:25,269
so we have another question does space

403
00:16:28,790 --> 00:16:26,240
trash

404
00:16:33,990 --> 00:16:28,800
crash into the space station or do you

405
00:16:38,550 --> 00:16:36,949
there's not as much space trash in this

406
00:16:39,910 --> 00:16:38,560
lower earth orbit that space station's

407
00:16:41,269 --> 00:16:39,920
in because we're we're going around the

408
00:16:43,189 --> 00:16:41,279
earth at 17

409
00:16:44,230 --> 00:16:43,199
500 miles an hour so we're moving pretty

410
00:16:46,310 --> 00:16:44,240
quick

411
00:16:48,470 --> 00:16:46,320
so stuff would have to be able to you

412
00:16:49,829 --> 00:16:48,480
know uh have its own engine kind of to

413
00:16:51,670 --> 00:16:49,839

be able to stay in this low earth orbit

414

00:16:53,269 --> 00:16:51,680

because we do that we reboost our orbit

415

00:16:55,030 --> 00:16:53,279

and then stay in this little open but

416

00:16:56,230 --> 00:16:55,040

there is a lot of space trash farther

417

00:16:58,069 --> 00:16:56,240

out where all the satellites are with

418

00:16:59,509 --> 00:16:58,079

expended boosters or dead satellites and

419

00:17:01,430 --> 00:16:59,519

things like that

420

00:17:03,030 --> 00:17:01,440

eventually their orbit decays and comes

421

00:17:05,429 --> 00:17:03,040

through the low earth orbit that space

422

00:17:06,789 --> 00:17:05,439

station's at and every once in a while

423

00:17:08,710 --> 00:17:06,799

we've got people tracking this all the

424

00:17:10,309 --> 00:17:08,720

time it comes to the point where we go

425

00:17:11,590 --> 00:17:10,319

hey this might get close enough to space

426
00:17:13,510 --> 00:17:11,600
station that we want to move and we'll

427
00:17:15,270 --> 00:17:13,520
do a debris avoidance maneuver to move

428
00:17:17,350 --> 00:17:15,280
space station out of the way of that

429
00:17:18,870 --> 00:17:17,360
space trash as it comes descends through

430
00:17:20,710 --> 00:17:18,880
our through our orbit

431
00:17:21,909 --> 00:17:20,720
fortunately it's nothing like the movie

432
00:17:24,069 --> 00:17:21,919
gravity

433
00:17:25,029 --> 00:17:24,079
and doesn't happen very often but it is

434
00:17:27,110 --> 00:17:25,039
something that we're really going to

435
00:17:29,190 --> 00:17:27,120
have to think about as we continue more

436
00:17:31,110 --> 00:17:29,200
countries become space-faring nations

437
00:17:33,270 --> 00:17:31,120
and we want to go beyond low-earth orbit

438
00:17:34,950 --> 00:17:33,280

through that ring of

439

00:17:38,310 --> 00:17:34,960

you know space trash that we're

440

00:17:47,430 --> 00:17:40,630

so a couple of people were wondering

441

00:17:49,830 --> 00:17:48,230

uh

442

00:17:54,470 --> 00:17:49,840

you miss

443

00:17:56,070 --> 00:17:54,480

feeling temperature changes and weather

444

00:17:57,669 --> 00:17:56,080

changes you miss different types of

445

00:17:59,750 --> 00:17:57,679

foods that your favorite of

446

00:18:01,909 --> 00:17:59,760

but i think to a person it's it's the

447

00:18:03,590 --> 00:18:01,919

human uh interaction with the people

448

00:18:05,350 --> 00:18:03,600

that you love the most your crewmates

449

00:18:06,549 --> 00:18:05,360

are great and you really come to to love

450

00:18:08,630 --> 00:18:06,559

your crew mexico a lot of them but they

451

00:18:12,070 --> 00:18:08,640

don't make good dancing partners and you

452

00:18:13,750 --> 00:18:12,080

know typically uh you uh

453

00:18:15,350 --> 00:18:13,760

we don't hug that much you know we're

454

00:18:17,909 --> 00:18:15,360

guys um

455

00:18:20,150 --> 00:18:17,919

but uh you know to get a hug for my wife

456

00:18:21,990 --> 00:18:20,160

or my seven-year-old daughter or my 11

457

00:18:24,789 --> 00:18:22,000

year old son you know that's the stuff

458

00:18:26,549 --> 00:18:24,799

that you really miss the most and uh

459

00:18:27,430 --> 00:18:26,559

what you know i know we look forward to

460

00:18:28,870 --> 00:18:27,440

is

461

00:18:32,310 --> 00:18:28,880

getting back home

462

00:18:35,750 --> 00:18:34,630

so uh this is a variation on the theme

463

00:18:43,510 --> 00:18:35,760

and you kind of touched it what's your

464

00:18:49,590 --> 00:18:46,870

i'd have to say a carbonated beverage

465

00:18:51,990 --> 00:18:49,600

um would be just because it's not only

466

00:18:53,110 --> 00:18:52,000

the taste but the sensation and we don't

467

00:18:56,070 --> 00:18:53,120

have that because you don't want to send

468

00:18:56,950 --> 00:18:56,080

gas up into space so that that probably

469

00:18:58,630 --> 00:18:56,960

will be

470

00:19:00,630 --> 00:18:58,640

one of my first things that i enjoy

471

00:19:02,630 --> 00:19:00,640

besides maybe a

472

00:19:05,350 --> 00:19:02,640

fresh taco or juicy hamburger or a piece

473

00:19:10,870 --> 00:19:08,150

so we see that you have two flags behind

474

00:19:13,270 --> 00:19:10,880

you or to the side one is an american

475

00:19:19,270 --> 00:19:13,280

flag and one is the ukrainian flag where

476

00:19:24,630 --> 00:19:21,350

i picked that up last summer when my

477

00:19:27,270 --> 00:19:24,640

family and i were in the nipper vitrovsk

478

00:19:29,350 --> 00:19:27,280

my son was born there and so

479

00:19:31,029 --> 00:19:29,360

uh we went back there

480

00:19:33,669 --> 00:19:31,039

with our whole family enjoyed a few days

481

00:19:35,830 --> 00:19:33,679

there in november muscovsk and then also

482

00:19:37,510 --> 00:19:35,840

a little bit of time in keefe

483

00:19:39,590 --> 00:19:37,520

and so picked the flag up there and

484

00:19:41,110 --> 00:19:39,600

brought it with me

485

00:19:43,029 --> 00:19:41,120

and brought it all the way up to space

486

00:19:44,710 --> 00:19:43,039

too that's great

487

00:19:46,310 --> 00:19:44,720

i think you've got an appreciative

488

00:19:52,789 --> 00:19:46,320

audience here

489

00:19:59,190 --> 00:19:55,830

that's right so we had a question about

490

00:20:02,310 --> 00:19:59,200

how do you monitor solar activities and

491

00:20:07,350 --> 00:20:02,320

i think especially with regard to um to

492

00:20:11,590 --> 00:20:09,029

well we are fortunate that you know

493

00:20:14,549 --> 00:20:11,600

there's just six of us up here on a the

494

00:20:17,110 --> 00:20:14,559

world's you know biggest most amazing uh

495

00:20:18,710 --> 00:20:17,120

technological achievement to this day

496

00:20:21,110 --> 00:20:18,720

for humans

497

00:20:23,190 --> 00:20:21,120

but there is teams

498

00:20:25,190 --> 00:20:23,200

all over the world you know we've got

499

00:20:27,190 --> 00:20:25,200

the one in russia in moscow we've got

500

00:20:29,909 --> 00:20:27,200

one in munich for issa we got the one in

501
00:20:30,789 --> 00:20:29,919
scuba japan outside of tokyo

502
00:20:33,990 --> 00:20:30,799
um

503
00:20:35,510 --> 00:20:34,000
we've got the canadians you know have a

504
00:20:37,270 --> 00:20:35,520
mission control for the robotic arm and

505
00:20:40,310 --> 00:20:37,280
the opposite they do and then obviously

506
00:20:43,029 --> 00:20:40,320
mission control in houston and we've got

507
00:20:44,870 --> 00:20:43,039
literally an army of highly dedicated

508
00:20:47,350 --> 00:20:44,880
amazingly talented

509
00:20:49,350 --> 00:20:47,360
engineers and operations people that go

510
00:20:51,270 --> 00:20:49,360
ahead and monitor all that and they use

511
00:20:54,070 --> 00:20:51,280
the sensors that are outboard on our

512
00:20:55,190 --> 00:20:54,080
satellites um that are earth-based and

513
00:20:56,470 --> 00:20:55,200

you know a few sensors that are here on

514

00:20:58,630 --> 00:20:56,480

the space station to monitor all those

515

00:21:00,870 --> 00:20:58,640

types of things and let us know if

516

00:21:02,789 --> 00:21:00,880

there's anything that we need to do and

517

00:21:04,710 --> 00:21:02,799

if there is you know huge solar flare

518

00:21:05,830 --> 00:21:04,720

activity we do actually have places on

519

00:21:07,590 --> 00:21:05,840

space station that are a little more

520

00:21:10,549 --> 00:21:07,600

shielded that we'll go ahead and shelter

521

00:21:14,470 --> 00:21:10,559

in place at and wait out the the solar

522

00:21:19,270 --> 00:21:16,310

station this is houston acr that

523

00:21:20,950 --> 00:21:19,280

concludes the event

524

00:21:24,070 --> 00:21:20,960

a big thank you to all the participants

525

00:21:26,870 --> 00:21:24,080

from the u.s embassy in kiev ukraine

526

00:21:39,620 --> 00:21:26,880

station we are now resuming operational