1
00:00:06,309 --> 00:00:02,790
station this is houston are you ready

2
00:00:06,319 --> 00:00:09,190
station is ready

3
00:00:13,270 --> 00:00:11,190
boise state university this is mission

4
00:00:15,749 --> 00:00:13,280
control houston please call station for

5
00:00:17,910 --> 00:00:15,759
a voice check

6
00:00:21,830 --> 00:00:17,920
station this is boise state university

7
00:00:21,840 --> 00:00:31,830
boys state we have you loud and clear

8
00:00:35,990 --> 00:00:34,310
stephen rick good to see you um welcome

9
00:00:38,069 --> 00:00:36,000
to boise state university we'd like to

10
00:00:44,709 --> 00:00:38,079
get the show rolling right away so first

11
00:00:49,350 --> 00:00:46,470
i'm jaime guevara

12
00:00:51,830 --> 00:00:49,360
a junior mechanical engineer

13
00:00:53,750 --> 00:00:51,840

as experienced astronauts who have flown

14
00:00:55,110 --> 00:00:53,760
on several missions

15
00:00:57,029 --> 00:00:55,120
are there things that you guys have to

16
00:01:02,790 --> 00:00:57,039
get used to again were there any

17
00:01:05,670 --> 00:01:04,469
i think for me every time i come up i

18
00:01:07,590 --> 00:01:05,680
have to get used to just floating in

19
00:01:09,429 --> 00:01:07,600
space again my body has to get used to

20
00:01:11,510 --> 00:01:09,439
floating in space again but for

21
00:01:13,910 --> 00:01:11,520
surprises not really for me rick you got

22
00:01:19,590 --> 00:01:13,920
any no but you do you have to get used

23
00:01:24,070 --> 00:01:22,070
hi i'm emory ross i'm a senior majoring

24
00:01:26,550 --> 00:01:24,080
in english i was wondering if you could

25
00:01:28,789 --> 00:01:26,560
tell us about veggie your space garden

26
00:01:34,149 --> 00:01:28,799
experiment are there any effects on the

27
00:01:37,830 --> 00:01:35,830
well that question is perfect timing

28
00:01:40,069 --> 00:01:37,840
tomorrow actually steve and i will begin

29
00:01:43,109 --> 00:01:40,079
to install the veggie experiment it just

30
00:01:44,789 --> 00:01:43,119
arrived on spacex cargo ship uh

31
00:01:47,270 --> 00:01:44,799
less than two weeks ago

32
00:01:49,030 --> 00:01:47,280
and so tomorrow we will be installing it

33
00:01:50,789 --> 00:01:49,040
and hopefully we'll be growing plants

34
00:01:52,310 --> 00:01:50,799
pretty soon we do have other experiments

35
00:01:54,789 --> 00:01:52,320
right at steve's feet you can see this

36
00:01:57,030 --> 00:01:54,799
bright light maybe this is growing uh i

37
00:01:58,550 --> 00:01:57,040
think it's a type of mustard seed here

38
00:02:00,310 --> 00:01:58,560

and we have another experiment called

39
00:02:01,749 --> 00:02:00,320
gravity two that we're also working on

40
00:02:03,510 --> 00:02:01,759
i'm working on it today so we do have

41
00:02:05,030 --> 00:02:03,520
other plant experiments that are ongoing

42
00:02:06,709 --> 00:02:05,040
but i think the veggie one is gonna be

43
00:02:07,830 --> 00:02:06,719
the most interesting for crew members

44
00:02:09,990 --> 00:02:07,840
because we're actually going to be

45
00:02:11,830 --> 00:02:10,000
growing the plants not just studying how

46
00:02:13,830 --> 00:02:11,840
the roots move and how the roots react

47
00:02:15,270 --> 00:02:13,840
to different uh g levels we're actually

48
00:02:16,550 --> 00:02:15,280
going to be growing plants and so i

49
00:02:17,589 --> 00:02:16,560
think it's going to be i think it's

50
00:02:19,030 --> 00:02:17,599
going to be great for crew members

51
00:02:20,949 --> 00:02:19,040
psychologically and of course we're

52
00:02:22,550 --> 00:02:20,959
going to learn how to how to grow plants

53
00:02:26,150 --> 00:02:22,560
in space which of course we all know is

54
00:02:30,550 --> 00:02:27,910
my name is brett howell i'm a biology

55
00:02:33,190 --> 00:02:30,560
major and a junior here at boise state

56
00:02:34,949 --> 00:02:33,200
steve are all astronauts susceptible to

57
00:02:36,630 --> 00:02:34,959
visual impairment after a long duration

58
00:02:38,470 --> 00:02:36,640
space flight can you share your

59
00:02:40,150 --> 00:02:38,480
experience about being the guinea pig or

60
00:02:42,309 --> 00:02:40,160
the test conductor for the ocular health

61
00:02:47,830 --> 00:02:42,319
experiment and any predictions you have

62
00:02:51,910 --> 00:02:49,589
that's a good question

63
00:02:54,309 --> 00:02:51,920

not all astronauts have been affected

64
00:02:56,550 --> 00:02:54,319
with any kind of space segregation some

65
00:02:58,550 --> 00:02:56,560
are some have been of course let's see

66
00:03:01,190 --> 00:02:58,560
for me luckily right now i have not had

67
00:03:02,630 --> 00:03:01,200
any eye issues at all

68
00:03:05,270 --> 00:03:02,640
but i still have some time up here and

69
00:03:06,710 --> 00:03:05,280
that might change as for being a guinea

70
00:03:08,070 --> 00:03:06,720
pig

71
00:03:10,790 --> 00:03:08,080
those experiments

72
00:03:12,070 --> 00:03:10,800
uh are a little taxing on your eyes uh i

73
00:03:13,589 --> 00:03:12,080
don't know if you know what a fundoscope

74
00:03:15,190 --> 00:03:13,599
is but we have to do that and that's a

75
00:03:16,149 --> 00:03:15,200
bright light that blinks in your eye

76
00:03:18,550 --> 00:03:16,159
quite a bit

77
00:03:21,030 --> 00:03:18,560
it kind of blinds you a little bit uh we

78
00:03:22,790 --> 00:03:21,040
also do an oct scan which it takes a lot

79
00:03:24,229 --> 00:03:22,800
of concentration is like the rick's like

80
00:03:26,470 --> 00:03:24,239
to say you have to give it the evil eye

81
00:03:28,789 --> 00:03:26,480
for it to work and last about a half

82
00:03:30,149 --> 00:03:28,799
hour but so it's a lot of work but we

83
00:03:31,589 --> 00:03:30,159
believe it's worthwhile because we've

84
00:03:35,830 --> 00:03:31,599
got to figure out what's happening to

85
00:03:42,149 --> 00:03:39,110
hi i'm sarah wren sophomore chemistry

86
00:03:44,229 --> 00:03:42,159
major um rick would you please tell us

87
00:03:49,670 --> 00:03:44,239
about your favorite science experiment

88
00:03:53,270 --> 00:03:51,750

yeah it's hard to pick one uh you know

89
00:03:55,190 --> 00:03:53,280
one of the experiments we do up here is

90
00:03:56,949 --> 00:03:55,200
working with the sphere satellites and

91
00:03:59,270 --> 00:03:56,959
this is a lot of fun

92
00:04:00,630 --> 00:03:59,280
it's both educational and it's also

93
00:04:02,869 --> 00:04:00,640
useful for

94
00:04:03,990 --> 00:04:02,879
developing control algorithms but we

95
00:04:05,110 --> 00:04:04,000
also work with a lot of different

96
00:04:06,550 --> 00:04:05,120
experiments i think the veggie

97
00:04:08,710 --> 00:04:06,560
experiment we talked about earlier is

98
00:04:10,070 --> 00:04:08,720
going to be uh is going to be really

99
00:04:11,429 --> 00:04:10,080
interesting unfortunately i leave in

100
00:04:12,869 --> 00:04:11,439
about a week so i probably won't get to

101
00:04:15,589 --> 00:04:12,879
see much of the

102
00:04:17,110 --> 00:04:15,599
the plants growing very large uh i think

103
00:04:18,629 --> 00:04:17,120
the but the type of experiments that i

104
00:04:20,150 --> 00:04:18,639
find the most interesting are the ones

105
00:04:22,150 --> 00:04:20,160
where we actually are working with the

106
00:04:24,390 --> 00:04:22,160
uh with the principal investigator the

107
00:04:25,670 --> 00:04:24,400
pi and we're actually talking with them

108
00:04:27,030 --> 00:04:25,680
on the loops directly and they're

109
00:04:28,550 --> 00:04:27,040
telling us okay try this in the

110
00:04:30,150 --> 00:04:28,560
experiment try that and experiment now

111
00:04:31,590 --> 00:04:30,160
do this and those are the ones i think

112
00:04:32,950 --> 00:04:31,600
are the most interesting when you really

113
00:04:34,870 --> 00:04:32,960

feel like you're actually contributing

114
00:04:38,469 --> 00:04:34,880
to their scientific studies and their

115
00:04:43,990 --> 00:04:41,430
hi i'm dave junior in marketing

116
00:04:45,590 --> 00:04:44,000
rick what is the most valuable lesson

117
00:04:47,030 --> 00:04:45,600
you've learned from something that did

118
00:04:53,030 --> 00:04:47,040
not go as planned on one of your

119
00:04:56,870 --> 00:04:55,350
yeah it's a tough one you know i i

120
00:04:58,390 --> 00:04:56,880
always say and i've been saying for many

121
00:05:00,469 --> 00:04:58,400
many years i think steve would agree

122
00:05:02,150 --> 00:05:00,479
that you learn more from your mistakes

123
00:05:04,390 --> 00:05:02,160
than you do from your successes you know

124
00:05:05,990 --> 00:05:04,400
when you make a mistake uh you know

125
00:05:07,749 --> 00:05:06,000
running a procedure if you're out doing

126
00:05:09,029 --> 00:05:07,759
a spacewalk and you make a mistake or

127
00:05:10,390 --> 00:05:09,039
you're doing something inside here you

128
00:05:11,909 --> 00:05:10,400
make a mistake you really

129
00:05:13,670 --> 00:05:11,919
that lesson that you learned from that

130
00:05:15,270 --> 00:05:13,680
mistake is something you'll never ever

131
00:05:16,870 --> 00:05:15,280
forget whereas if you're always

132
00:05:19,110 --> 00:05:16,880
successful at something you tend to

133
00:05:20,469 --> 00:05:19,120
become complacent and then you're you

134
00:05:21,909 --> 00:05:20,479
know you could easily make a mistake on

135
00:05:23,189 --> 00:05:21,919
it even though you've done it many times

136
00:05:25,110 --> 00:05:23,199
successfully

137
00:05:27,749 --> 00:05:25,120
i can't think of any very specific

138
00:05:29,510 --> 00:05:27,759

events i've made many many mistakes up

139
00:05:31,270 --> 00:05:29,520
here and i i always tell the folks on

140
00:05:32,710 --> 00:05:31,280
the ground that before i launched i said

141
00:05:35,029 --> 00:05:32,720
i guarantee you that i will make

142
00:05:36,469 --> 00:05:35,039
mistakes hopefully they'll be small and

143
00:05:38,629 --> 00:05:36,479
and i won't make any large ones to

144
00:05:40,710 --> 00:05:38,639
jeopardize safety or or the mission and

145
00:05:42,070 --> 00:05:40,720
so far i've been lucky lucky and all the

146
00:05:46,790 --> 00:05:42,080
mistakes have been small but i can't

147
00:05:51,990 --> 00:05:49,350
hi i'm jordan smotherman a

148
00:05:53,830 --> 00:05:52,000
junior in i.t management

149
00:05:55,270 --> 00:05:53,840
steve

150
00:05:56,550 --> 00:05:55,280
speaking of things that don't go quite

151
00:05:57,350 --> 00:05:56,560
as planned

152
00:06:02,710 --> 00:05:57,360
you

153
00:06:05,189 --> 00:06:02,720
couple days because they burn failed how

154
00:06:06,870 --> 00:06:05,199
often do errors like that happen and

155
00:06:12,790 --> 00:06:06,880
what do the teams on and above the

156
00:06:16,870 --> 00:06:14,870
well that was the first time it happened

157
00:06:19,430 --> 00:06:16,880
since we started doing the short

158
00:06:21,189 --> 00:06:19,440
rendezvous which is a six hours from

159
00:06:23,110 --> 00:06:21,199
launch until station and we've only done

160
00:06:24,790 --> 00:06:23,120
it probably i think five people have

161
00:06:27,110 --> 00:06:24,800
done that five different soyuz's but

162
00:06:28,790 --> 00:06:27,120
we've had a multitude of progresses i

163
00:06:30,629 --> 00:06:28,800

think we're upped about six seven or

164
00:06:32,469 --> 00:06:30,639
eight progresses that have done it so we

165
00:06:35,909 --> 00:06:32,479
had some data on it and it seemed to be

166
00:06:36,629 --> 00:06:35,919
going really well until my mission

167
00:06:38,790 --> 00:06:36,639
but

168
00:06:41,830 --> 00:06:38,800
we do prepare for stuff like that we do

169
00:06:43,749 --> 00:06:41,840
training scenarios or sims where we have

170
00:06:45,670 --> 00:06:43,759
failures and that take us to the two-day

171
00:06:47,909 --> 00:06:45,680
rendezvous so we practice that in the

172
00:06:49,670 --> 00:06:47,919
sims beforehand the ground teams

173
00:06:52,070 --> 00:06:49,680
practice the same thing so it wasn't

174
00:06:53,589 --> 00:06:52,080
that uh a big a deal in the sense of

175
00:06:55,830 --> 00:06:53,599
we've seen this before we know we need

176
00:06:58,390 --> 00:06:55,840
to do when we accomplished our tasks it

177
00:07:05,589 --> 00:06:58,400
just took a lot longer to get here and

178
00:07:05,599 --> 00:07:09,350
steve this is dad

179
00:07:14,390 --> 00:07:12,550
ah can you talk to us a little bit about

180
00:07:17,029 --> 00:07:14,400
the temperature spring

181
00:07:19,749 --> 00:07:17,039
swings you get when you're on the eva

182
00:07:21,670 --> 00:07:19,759
and what it goes from darkness to light

183
00:07:26,309 --> 00:07:21,680
and how you compensate for that in the

184
00:07:32,230 --> 00:07:29,110
sure it's great talking to you

185
00:07:33,749 --> 00:07:32,240
um when we're outside uh

186
00:07:35,510 --> 00:07:33,759
uh doing the eva

187
00:07:37,350 --> 00:07:35,520
the temperature is mostly the metals

188
00:07:39,510 --> 00:07:37,360

that we touch it really changes and they

189
00:07:41,110 --> 00:07:39,520
go from about plus 250 degrees

190
00:07:42,950 --> 00:07:41,120
fahrenheit to minus 250 degrees

191
00:07:44,790 --> 00:07:42,960
fahrenheit so what you really can tell

192
00:07:46,790 --> 00:07:44,800
is when you're grabbing pieces of metal

193
00:07:48,230 --> 00:07:46,800
if you uh if it's cold if it's dark out

194
00:07:49,589 --> 00:07:48,240
there it's going to be cold and if you

195
00:07:51,589 --> 00:07:49,599
grab something for a long time your

196
00:07:53,510 --> 00:07:51,599
hands are going to get cold so we

197
00:07:56,230 --> 00:07:53,520
actually have heaters in our gloves we

198
00:07:58,150 --> 00:07:56,240
can turn on and they're just a thermal

199
00:08:00,230 --> 00:07:58,160
resistive heaters and they keep your

200
00:08:02,150 --> 00:08:00,240
hands warm and also for the suit then

201
00:08:04,150 --> 00:08:02,160
there's and they if you can get hot when

202
00:08:05,430 --> 00:08:04,160
the sun's out there so we do we have a

203
00:08:08,070 --> 00:08:05,440
suit we have a cooling system in the

204
00:08:10,070 --> 00:08:08,080
suit that has water circulating through

205
00:08:10,950 --> 00:08:10,080
our suit actually in a garment that we

206
00:08:12,710 --> 00:08:10,960
wear

207
00:08:14,390 --> 00:08:12,720
so it's next to our body and we can

208
00:08:21,510 --> 00:08:14,400
regulate the temperature of that water

209
00:08:26,869 --> 00:08:23,510
rick we understand that

210
00:08:29,350 --> 00:08:26,879
astronauts exercise a lot on the iss

211
00:08:31,749 --> 00:08:29,360
how common are injuries such as ligament

212
00:08:35,670 --> 00:08:31,759
tears how could you properly care for

213
00:08:39,670 --> 00:08:37,269

yeah that's a it's a great question

214
00:08:41,269 --> 00:08:39,680
because i think it's very common i know

215
00:08:42,070 --> 00:08:41,279
just about everybody i've been up here

216
00:08:43,589 --> 00:08:42,080
with

217
00:08:44,790 --> 00:08:43,599
yeah you you know we push a lot of

218
00:08:45,829 --> 00:08:44,800
weight up here even though we're in a

219
00:08:47,910 --> 00:08:45,839
weightless environment with the

220
00:08:49,430 --> 00:08:47,920
resistive device that we have

221
00:08:50,870 --> 00:08:49,440
for example when we do squats you have

222
00:08:52,790 --> 00:08:50,880
to you have to add your body weight to

223
00:08:54,230 --> 00:08:52,800
your squat so you're squatting 300 400

224
00:08:55,590 --> 00:08:54,240
pounds something you're not used to and

225
00:08:57,430 --> 00:08:55,600
this is a lot of weight on your

226
00:08:59,190 --> 00:08:57,440
shoulders it's still pushing down on

227
00:09:00,070 --> 00:08:59,200
your shoulders as opposed to your whole

228
00:09:02,630 --> 00:09:00,080
body

229
00:09:05,509 --> 00:09:02,640
and so it's very easy to tweak your back

230
00:09:07,190 --> 00:09:05,519
or tweak your your legs in some way but

231
00:09:09,350 --> 00:09:07,200
i haven't seen anybody get seriously

232
00:09:11,430 --> 00:09:09,360
hurt but folks have tweaked something

233
00:09:12,949 --> 00:09:11,440
and i tweaked my back i think about a

234
00:09:14,870 --> 00:09:12,959
month or so when i would i got up here

235
00:09:16,949 --> 00:09:14,880
after about a month but all i did was

236
00:09:18,630 --> 00:09:16,959
lighten the load i just uh was a little

237
00:09:20,389 --> 00:09:18,640
more careful on the resistive device

238
00:09:21,670 --> 00:09:20,399

made sure i had very good form and

239
00:09:23,190 --> 00:09:21,680
that's kind of the really important

240
00:09:24,870 --> 00:09:23,200
thing is when you're on those devices to

241
00:09:26,470 --> 00:09:24,880
really concentrate on what you're doing

242
00:09:28,150 --> 00:09:26,480
and not get sloppy you know anytime

243
00:09:30,310 --> 00:09:28,160
you're at the gym pushing heavy weights

244
00:09:32,550 --> 00:09:30,320
you need to be careful on your form uh

245
00:09:34,710 --> 00:09:32,560
the way we prepare for it is again we

246
00:09:36,790 --> 00:09:34,720
train a lot with the trainers before we

247
00:09:38,790 --> 00:09:36,800
come up here in the gym on regular

248
00:09:40,710 --> 00:09:38,800
weight machines and then also on the on

249
00:09:42,470 --> 00:09:40,720
the space station's resistive device so

250
00:09:44,150 --> 00:09:42,480
that we do have good form and if

251
00:09:45,670 --> 00:09:44,160
somebody does get hurt of course we talk

252
00:09:47,350 --> 00:09:45,680
to the docs we talk to the folks on the

253
00:09:51,110 --> 00:09:47,360
ground and they help us work out work

254
00:09:54,230 --> 00:09:51,120
out any problems that we may have

255
00:09:56,630 --> 00:09:54,240
hi amanda health science major

256
00:09:59,750 --> 00:09:56,640
what is the risk of infectious disease

257
00:10:05,110 --> 00:09:59,760
on board the iss are colds worse in

258
00:10:08,710 --> 00:10:07,110
that's a good question but uh luckily

259
00:10:10,550 --> 00:10:08,720
we've not been sick and i don't know

260
00:10:12,790 --> 00:10:10,560
very many people have gotten sick but

261
00:10:14,550 --> 00:10:12,800
your immune system does get weakened up

262
00:10:16,470 --> 00:10:14,560
here and so i think it would have a

263
00:10:17,910 --> 00:10:16,480

bigger effect if we happen to get sick

264
00:10:20,069 --> 00:10:17,920
but we do a pretty good job of trying to

265
00:10:21,990 --> 00:10:20,079
keep all the germs down on earth and not

266
00:10:24,230 --> 00:10:22,000
bring them up with us

267
00:10:26,550 --> 00:10:24,240
so luckily that's worked out well and we

268
00:10:27,269 --> 00:10:26,560
haven't had people getting sick up here

269
00:10:28,710 --> 00:10:27,279
so

270
00:10:30,630 --> 00:10:28,720
that's a good question though because i

271
00:10:36,550 --> 00:10:30,640
know it's a it's a big topic for a long

272
00:10:42,230 --> 00:10:38,630
hi camille eddy

273
00:10:43,190 --> 00:10:42,240
freshman mechanical engineering

274
00:10:45,670 --> 00:10:43,200
steve

275
00:10:48,870 --> 00:10:45,680
what does the conservation of angular

276
00:10:53,030 --> 00:10:48,880
momentum look like in microgravity can

277
00:11:02,069 --> 00:10:55,750
i will try to give you a demonstration

278
00:11:05,750 --> 00:11:03,910
all right so steve's doing your standard

279
00:11:07,509 --> 00:11:05,760
uh figure skater when your hands are in

280
00:11:11,190 --> 00:11:07,519
he spins faster when his hands are out

281
00:11:20,550 --> 00:11:12,550
now he's got a

282
00:11:30,310 --> 00:11:22,470
hopefully that worked for you i found it

283
00:11:34,389 --> 00:11:32,790
john garrettson senior public relations

284
00:11:36,069 --> 00:11:34,399
and communications

285
00:11:38,550 --> 00:11:36,079
what are some of the safety measures on

286
00:11:46,630 --> 00:11:38,560
the iss that might not be immediately

287
00:11:49,990 --> 00:11:47,990
yeah you know we have the standard

288
00:11:51,430 --> 00:11:50,000

things like we have fire extinguishers

289
00:11:53,990 --> 00:11:51,440
and we have uh

290
00:11:55,350 --> 00:11:54,000
we have a portable oxygen masks one of

291
00:11:57,990 --> 00:11:55,360
the things that we have that probably

292
00:12:00,629 --> 00:11:58,000
not uh obvious to most folks is uh we

293
00:12:03,030 --> 00:12:00,639
have ammonia masks so this the external

294
00:12:04,949 --> 00:12:03,040
systems are cooled with ammonia and then

295
00:12:07,269 --> 00:12:04,959
there's heat exchangers that

296
00:12:09,269 --> 00:12:07,279
that transfer the heat with a uh with a

297
00:12:11,430 --> 00:12:09,279
water loop on the inside but it's a very

298
00:12:13,350 --> 00:12:11,440
very very low probability that that

299
00:12:15,990 --> 00:12:13,360
ammonia that's outside the space station

300
00:12:18,550 --> 00:12:16,000
could leak inside highly highly unlikely

301
00:12:21,030 --> 00:12:18,560
and we have a lots of safety

302
00:12:22,550 --> 00:12:21,040
checks in place to avoid it but if there

303
00:12:24,550 --> 00:12:22,560
is a leak inside it's very very

304
00:12:26,790 --> 00:12:24,560
poisonous gas it's very deadly so we do

305
00:12:28,230 --> 00:12:26,800
have these ammonia masks that we put on

306
00:12:30,310 --> 00:12:28,240
if there is an ammonia leak that's

307
00:12:32,470 --> 00:12:30,320
probably not something that you see in a

308
00:12:34,389 --> 00:12:32,480
you know a standard building or anything

309
00:12:36,629 --> 00:12:34,399
but other than that uh you know standard

310
00:12:43,750 --> 00:12:36,639
safety features like any uh public

311
00:12:47,430 --> 00:12:46,069
hi ellen geary freshman in bilingual

312
00:12:49,269 --> 00:12:47,440
education

313
00:12:51,269 --> 00:12:49,279

have you experienced any mental or

314
00:12:56,790 --> 00:12:51,279
attitude shifts that might surprise

315
00:13:01,590 --> 00:12:59,269
well i haven't but i think they have no

316
00:13:03,269 --> 00:13:01,600
joke

317
00:13:04,710 --> 00:13:03,279
not that i you know it's tough to tell i

318
00:13:06,710 --> 00:13:04,720
think you know you have the same ups and

319
00:13:07,990 --> 00:13:06,720
downs as you do out down on earth i mean

320
00:13:09,269 --> 00:13:08,000
there's days when you feel great there's

321
00:13:10,550 --> 00:13:09,279
days when you're just kind of tired of

322
00:13:12,150 --> 00:13:10,560
the job and you want to do something

323
00:13:14,069 --> 00:13:12,160
different but i think that's the same

324
00:13:16,230 --> 00:13:14,079
any place you go so i don't really know

325
00:13:24,550 --> 00:13:16,240
anything different up here that's been

326
00:13:29,750 --> 00:13:27,430
i'm skylar rogers i'm in sixth grade at

327
00:13:32,230 --> 00:13:29,760
monroe elementary and i was wondering if

328
00:13:41,910 --> 00:13:32,240
there's anything in space that works

329
00:13:45,750 --> 00:13:44,150
yeah that's a tough one you know i

330
00:13:47,829 --> 00:13:45,760
always say that space is the place where

331
00:13:49,829 --> 00:13:47,839
the impossible things are easy like you

332
00:13:51,670 --> 00:13:49,839
know we could float we could lift

333
00:13:53,110 --> 00:13:51,680
thousands and you know pound

334
00:13:55,110 --> 00:13:53,120
objects that weigh thousands of pounds

335
00:13:57,750 --> 00:13:55,120
on the earth but the easy things are

336
00:13:59,750 --> 00:13:57,760
difficult up here the simple things like

337
00:14:01,670 --> 00:13:59,760
eating your food and just putting salt

338
00:14:03,269 --> 00:14:01,680

on your food or going to the bathroom or

339
00:14:04,629 --> 00:14:03,279
brushing your teeth all this putting

340
00:14:05,829 --> 00:14:04,639
your clothes on all the things that you

341
00:14:07,509 --> 00:14:05,839
learned but when you were two or three

342
00:14:08,790 --> 00:14:07,519
or four years old are very very

343
00:14:11,189 --> 00:14:08,800
difficult up here because of the

344
00:14:12,949 --> 00:14:11,199
weightless environment

345
00:14:14,710 --> 00:14:12,959
but the things that are the same i don't

346
00:14:15,590 --> 00:14:14,720
know there's not much that's really the

347
00:14:16,710 --> 00:14:15,600
same

348
00:14:24,550 --> 00:14:16,720
tell you the truth i can't think of an

349
00:14:29,350 --> 00:14:27,269
mohammed musa computer science student

350
00:14:31,430 --> 00:14:29,360
boise state if you could design and

351
00:14:37,030 --> 00:14:31,440
build a brand new space station how

352
00:14:40,310 --> 00:14:38,790
that's a good one yes as rick just

353
00:14:42,230 --> 00:14:40,320
pointed out have a shower that would

354
00:14:43,910 --> 00:14:42,240
help a lot

355
00:14:46,150 --> 00:14:43,920
maybe like a little toaster oven would

356
00:14:48,550 --> 00:14:46,160
be great too but i think the biggest

357
00:14:51,110 --> 00:14:48,560
thing though is if we need to go places

358
00:14:52,629 --> 00:14:51,120
farther away from earth like mars that

359
00:14:54,870 --> 00:14:52,639
we need a vehicle that's a little more

360
00:14:57,110 --> 00:14:54,880
autonomous has a little more i guess

361
00:15:00,069 --> 00:14:57,120
robust ability and sensor that it

362
00:15:01,189 --> 00:15:00,079
doesn't break as often it's reliable

363
00:15:02,949 --> 00:15:01,199

those kind of features i think you'd

364
00:15:04,870 --> 00:15:02,959
have to build into it something that

365
00:15:06,870 --> 00:15:04,880
also can uh

366
00:15:08,629 --> 00:15:06,880
have recycle everything on board you can

367
00:15:10,310 --> 00:15:08,639
reuse all sorts of things

368
00:15:12,150 --> 00:15:10,320
maybe like a 3d printer where you can

369
00:15:13,269 --> 00:15:12,160
make your own parts if you needed to all

370
00:15:19,509 --> 00:15:13,279
these kinds of things that's what i put

371
00:15:23,189 --> 00:15:20,710
my name is

372
00:15:33,030 --> 00:15:23,199
kyle and i'm in second grade

373
00:15:36,069 --> 00:15:34,389
i know that i'm right next to steve

374
00:15:38,629 --> 00:15:36,079
that's about all i know

375
00:15:40,389 --> 00:15:38,639
no uh well if you ask me how do we know

376
00:15:41,910 --> 00:15:40,399
where we are over the earth well there's

377
00:15:43,829 --> 00:15:41,920
a couple of different ways we can look

378
00:15:46,470 --> 00:15:43,839
out the windows we have a cupola which

379
00:15:48,230 --> 00:15:46,480
is basically this small compartment with

380
00:15:49,590 --> 00:15:48,240
seven windows like a glass bottom boat

381
00:15:51,269 --> 00:15:49,600
if you will and it points down at the

382
00:15:53,430 --> 00:15:51,279
earth we could always go look out the

383
00:15:55,030 --> 00:15:53,440
cupola windows and if you're if you're

384
00:15:56,949 --> 00:15:55,040
really good at geography which is not

385
00:15:58,470 --> 00:15:56,959
easy up here i'll tell you looking down

386
00:16:00,310 --> 00:15:58,480
at the earth on a cloudy day it's kind

387
00:16:02,069 --> 00:16:00,320
of hard to tell where you are but if you

388
00:16:03,430 --> 00:16:02,079

can make out some of the land masses you

389
00:16:05,509 --> 00:16:03,440
could recognize them and then the other

390
00:16:06,310 --> 00:16:05,519
way is we have a computer program that

391
00:16:08,310 --> 00:16:06,320
that

392
00:16:10,550 --> 00:16:08,320
displays our trajectory and the world

393
00:16:12,230 --> 00:16:10,560
and we call it world map so you could

394
00:16:13,749 --> 00:16:12,240
easily look at any of the computers here

395
00:16:19,509 --> 00:16:13,759
in the space station and tell where we

396
00:16:22,389 --> 00:16:20,629
hello there

397
00:16:24,790 --> 00:16:22,399
my name is ken winkelmann i'm a senior

398
00:16:26,949 --> 00:16:24,800
here at boise state majoring in english

399
00:16:28,790 --> 00:16:26,959
literature and political science and i

400
00:16:30,710 --> 00:16:28,800
am a mcnair scholar

401
00:16:32,870 --> 00:16:30,720
can each of you share an observation

402
00:16:35,509 --> 00:16:32,880
about individual personalities or

403
00:16:37,590 --> 00:16:35,519
cultural or national differences when it

404
00:16:44,470 --> 00:16:37,600
comes to living and working together on

405
00:16:48,470 --> 00:16:46,629
that's a tough one but i guess i would

406
00:16:50,550 --> 00:16:48,480
say off of

407
00:16:52,550 --> 00:16:50,560
the cuff here is that uh

408
00:16:54,629 --> 00:16:52,560
our current commander koichi wakata is

409
00:16:57,350 --> 00:16:54,639
from japan and i've noticed that they

410
00:16:58,790 --> 00:16:57,360
work long hours that guy never stops

411
00:17:01,350 --> 00:16:58,800
working and that's standard i think for

412
00:17:02,389 --> 00:17:01,360
their culture and so it's something

413
00:17:03,829 --> 00:17:02,399

i've noticed before we were on the

414
00:17:05,350 --> 00:17:03,839
ground and he still does it up here and

415
00:17:06,470 --> 00:17:05,360
it's great to have a crew mate that has

416
00:17:11,909 --> 00:17:06,480
that kind of

417
00:17:15,350 --> 00:17:13,590
i guess so one of the things i recognize

418
00:17:17,669 --> 00:17:15,360
is for our russian crewmates i know on

419
00:17:19,350 --> 00:17:17,679
the u.s segment or the usos segment it's

420
00:17:21,510 --> 00:17:19,360
called it's where the uh it's the u.s

421
00:17:23,669 --> 00:17:21,520
it's japan canada european astronauts

422
00:17:25,429 --> 00:17:23,679
kind of live and work mostly uh we

423
00:17:27,189 --> 00:17:25,439
communicate a lot more with the ground i

424
00:17:28,870 --> 00:17:27,199
believe we have a lot of interaction

425
00:17:30,310 --> 00:17:28,880
with the ground folks whereas it seems

426
00:17:32,070 --> 00:17:30,320
like that the russian or russian

427
00:17:33,830 --> 00:17:32,080
colleagues over on the other side

428
00:17:35,590 --> 00:17:33,840
they're a little more autonomous if you

429
00:17:37,270 --> 00:17:35,600
will they kind of do things and then

430
00:17:38,789 --> 00:17:37,280
report them done at the end of the day

431
00:17:39,990 --> 00:17:38,799
or report if they have a problem but i

432
00:17:41,830 --> 00:17:40,000
think they're a little more autonomous

433
00:17:43,669 --> 00:17:41,840
on that side so i think that's a

434
00:17:45,350 --> 00:17:43,679
cultural thing and also just the way

435
00:17:49,830 --> 00:17:45,360
their technology is and the way their

436
00:17:54,789 --> 00:17:51,909
hi sarah again

437
00:17:57,190 --> 00:17:54,799
i would like to ask when you've looked

438
00:18:03,669 --> 00:17:57,200

out of the cupola what is the most

439
00:18:07,190 --> 00:18:05,270
that's another tough one i mean there's

440
00:18:09,750 --> 00:18:07,200
many beautiful remarkable things to see

441
00:18:11,830 --> 00:18:09,760
when you look out the cupola i guess so

442
00:18:14,230 --> 00:18:11,840
far for me

443
00:18:17,590 --> 00:18:14,240
i like the the the waters the shallow

444
00:18:20,710 --> 00:18:17,600
waters in the caribbean or the atolls

445
00:18:22,710 --> 00:18:20,720
in south east pacific are just beautiful

446
00:18:24,950 --> 00:18:22,720
this blue this aqua that comes up

447
00:18:27,190 --> 00:18:24,960
against the dark blue of the other part

448
00:18:28,950 --> 00:18:27,200
of the ocean and the islands is just

449
00:18:34,870 --> 00:18:28,960
magnificent it's just so beautiful for

450
00:18:39,270 --> 00:18:37,430
hey this is dave from marketing again

451
00:18:40,870 --> 00:18:39,280
what is the most challenging thing about

452
00:18:42,310 --> 00:18:40,880
wearing a spacesuit and what

453
00:18:47,750 --> 00:18:42,320
improvements would you like to see in

454
00:18:50,870 --> 00:18:49,350
hey dave

455
00:18:53,590 --> 00:18:50,880
excuse me the most challenging thing

456
00:18:55,590 --> 00:18:53,600
about the spacesuit is it takes a long

457
00:18:58,390 --> 00:18:55,600
time to actually

458
00:19:00,390 --> 00:18:58,400
get our body get our body ready to go

459
00:19:02,230 --> 00:19:00,400
down to vacuum or go out into the vacuum

460
00:19:03,750 --> 00:19:02,240
of space because of the protection that

461
00:19:05,510 --> 00:19:03,760
we need from the bends you know we have

462
00:19:07,350 --> 00:19:05,520
to do a lot of pre-breathing of oxygen

463
00:19:09,510 --> 00:19:07,360

kind of like a diver doing some deep

464
00:19:11,190 --> 00:19:09,520
water diving we have to pre-breathe pure

465
00:19:13,190 --> 00:19:11,200
oxygen try to get the nitrogen out of

466
00:19:14,710 --> 00:19:13,200
our body and if we had a suit that we

467
00:19:17,909 --> 00:19:14,720
could run at a higher pressure the suit

468
00:19:19,510 --> 00:19:17,919
runs at about 4.2 psi or so delta

469
00:19:21,590 --> 00:19:19,520
pressure if we had a suit that ran at a

470
00:19:23,590 --> 00:19:21,600
higher pressure we wouldn't have take

471
00:19:25,510 --> 00:19:23,600
wouldn't need to take as much time to

472
00:19:26,950 --> 00:19:25,520
prepare and get getting into the suit

473
00:19:29,029 --> 00:19:26,960
and pre-breathing and we can go out the

474
00:19:31,190 --> 00:19:29,039
door and do a space walk a lot easier a

475
00:19:32,870 --> 00:19:31,200
lot less overhead but given that though

476
00:19:34,710 --> 00:19:32,880
with those high pressures it makes the

477
00:19:36,310 --> 00:19:34,720
suit harder to move you know your all

478
00:19:37,669 --> 00:19:36,320
that pressure you have to squeeze your

479
00:19:39,590 --> 00:19:37,679
hand against that pressure and it makes

480
00:19:40,950 --> 00:19:39,600
it more difficult to move so we need to

481
00:19:42,789 --> 00:19:40,960
look at suits where we could have

482
00:19:44,310 --> 00:19:42,799
increased pressure

483
00:19:46,070 --> 00:19:44,320
decreasing the amount of time it takes

484
00:19:47,750 --> 00:19:46,080
to prepare to go outside and do a space

485
00:19:48,950 --> 00:19:47,760
walk but then also allows the crew

486
00:19:51,430 --> 00:19:48,960
member

487
00:19:52,470 --> 00:19:51,440
to move move easily in the suit and not

488
00:19:54,710 --> 00:19:52,480

get injured you know some of the

489
00:19:56,630 --> 00:19:54,720
spacesuits we have up here are pretty

490
00:19:58,150 --> 00:19:56,640
tough on the body and can cause injury

491
00:20:02,870 --> 00:19:58,160
over long periods of time so we got to

492
00:20:06,630 --> 00:20:04,789
hi it's emory again first of all i

493
00:20:07,510 --> 00:20:06,640
wanted to say thank you both so much for

494
00:20:10,310 --> 00:20:07,520
this

495
00:20:12,870 --> 00:20:10,320
and my question is for steve what has

496
00:20:15,110 --> 00:20:12,880
changed on the iss since your previous

497
00:20:21,270 --> 00:20:15,120
mission that makes living and working on

498
00:20:24,789 --> 00:20:23,350
uh you're welcome first and second i

499
00:20:26,310 --> 00:20:24,799
think the biggest thing of course is a

500
00:20:28,310 --> 00:20:26,320
cupola we've been talking about that

501
00:20:30,070 --> 00:20:28,320
wasn't here on my last two missions and

502
00:20:31,750 --> 00:20:30,080
so it's great to have that it's

503
00:20:34,070 --> 00:20:31,760
wonderful it's a wonderful view of the

504
00:20:35,750 --> 00:20:34,080
earth you can spend hours and hours just

505
00:20:37,510 --> 00:20:35,760
looking down and enjoying the beautiful

506
00:20:39,590 --> 00:20:37,520
planet besides that there's a couple

507
00:20:41,990 --> 00:20:39,600
more modules that help

508
00:20:44,230 --> 00:20:42,000
size-wise and really that's for storage

509
00:21:00,789 --> 00:20:44,240
mostly and that really helps too to keep

510
00:21:03,669 --> 00:21:02,549
right again guess we have time for one

511
00:21:04,470 --> 00:21:03,679
more question

512
00:21:06,230 --> 00:21:04,480
rick

513
00:21:07,990 --> 00:21:06,240

in the research that you are doing what

514
00:21:09,990 --> 00:21:08,000
materials have you found that burn more

515
00:21:12,070 --> 00:21:10,000
efficiently in microgravity and what

516
00:21:16,549 --> 00:21:12,080
implications does this have for future

517
00:21:19,510 --> 00:21:18,230
oh so you saved the hardest question for

518
00:21:20,870 --> 00:21:19,520
last okay

519
00:21:22,789 --> 00:21:20,880
well we are doing an experiment it's

520
00:21:24,390 --> 00:21:22,799
called bass uh burning and suppression

521
00:21:26,310 --> 00:21:24,400
in space i believe that stands for and

522
00:21:28,310 --> 00:21:26,320
there's a glove box right off to our

523
00:21:30,789 --> 00:21:28,320
left over here and we are burning

524
00:21:32,390 --> 00:21:30,799
different materials i'll be honest with

525
00:21:34,149 --> 00:21:32,400
you though i'm kind of like the operator

526
00:21:36,230 --> 00:21:34,159
of the experiment i'm not

527
00:21:38,310 --> 00:21:36,240
intimately involved and knowledgeable

528
00:21:40,230 --> 00:21:38,320
about all the different materials but we

529
00:21:42,549 --> 00:21:40,240
have i have seen like we tried to burn

530
00:21:44,230 --> 00:21:42,559
nomex one time and that had a hard time

531
00:21:46,470 --> 00:21:44,240
getting that to burn of course we vary

532
00:21:47,750 --> 00:21:46,480
the oxygen and nitrogen in the box to

533
00:21:48,950 --> 00:21:47,760
see how things burn in different

534
00:21:50,549 --> 00:21:48,960
environments

535
00:21:52,950 --> 00:21:50,559
but we did have some of these plastic

536
00:21:55,190 --> 00:21:52,960
materials that gave us a pretty big ball

537
00:21:57,110 --> 00:21:55,200
of flame up here i don't know the

538
00:21:59,029 --> 00:21:57,120

specific names of them all but it is

539
00:22:01,430 --> 00:21:59,039
kind of neat to be able to actually burn

540
00:22:02,549 --> 00:22:01,440
things in space it's uh it's obviously

541
00:22:04,149 --> 00:22:02,559
it's very safe because we have all

542
00:22:05,830 --> 00:22:04,159
different levels of protection here but

543
00:22:09,830 --> 00:22:05,840
it's it's kind of interesting to watch

544
00:22:13,990 --> 00:22:11,669
station this is houston acr that

545
00:22:15,750 --> 00:22:14,000
concludes the event thank you

546
00:22:17,430 --> 00:22:15,760
and thank you boise state university