



1
00:00:07,190 --> 00:00:03,350
station this is houston are you ready

2
00:00:12,150 --> 00:00:10,310
yes we're ready for the event

3
00:00:13,830 --> 00:00:12,160
space dynamics laboratory this is

4
00:00:16,630 --> 00:00:13,840
mission control houston please call

5
00:00:18,630 --> 00:00:16,640
station for a voice check

6
00:00:23,429 --> 00:00:18,640
station peggy and jack this is charlie

7
00:00:27,189 --> 00:00:25,189
we're hearing you great charlie it's

8
00:00:29,189 --> 00:00:27,199
good to hear your voice

9
00:00:31,029 --> 00:00:29,199
i am really jealous not to be on that

10
00:00:32,790 --> 00:00:31,039
side of the phone call but it's really

11
00:00:33,590 --> 00:00:32,800
great we got a room full of very excited

12
00:00:35,190 --> 00:00:33,600
people

13
00:00:40,709 --> 00:00:35,200

and students to talk to you so i'm going

14

00:00:44,549 --> 00:00:43,190

okay excellent

15

00:00:47,750 --> 00:00:44,559

thank you we'll dive right into our

16

00:00:51,990 --> 00:00:49,830

what did you have to do to prepare

17

00:00:55,990 --> 00:00:52,000

yourself and your body and your mind to

18

00:01:00,950 --> 00:00:57,750

well to be an astronaut you do need to

19

00:01:03,029 --> 00:01:00,960

be physically fit um we are expected to

20

00:01:06,469 --> 00:01:03,039

do spacewalks which does require some

21

00:01:08,950 --> 00:01:06,479

physical strength to some degree and uh

22

00:01:11,270 --> 00:01:08,960

obviously we have to be fit uh in order

23

00:01:13,670 --> 00:01:11,280

just to do the job but

24

00:01:16,230 --> 00:01:13,680

i think probably the most important

25

00:01:18,710 --> 00:01:16,240

qualification for being an astronaut is

26

00:01:20,950 --> 00:01:18,720

to have done studied in some field in

27

00:01:23,990 --> 00:01:20,960

math science or engineering

28

00:01:25,830 --> 00:01:24,000

uh and we have we have astronauts in all

29

00:01:27,510 --> 00:01:25,840

of those fields all different science

30

00:01:37,670 --> 00:01:27,520

fields and engineering fields and

31

00:01:41,830 --> 00:01:40,149

so it being the international space

32

00:01:43,670 --> 00:01:41,840

station

33

00:01:44,950 --> 00:01:43,680

as part of your astronaut training do

34

00:01:50,550 --> 00:01:44,960

you have to

35

00:01:55,270 --> 00:01:52,789

yeah and absolutely you do

36

00:01:59,030 --> 00:01:55,280

at a minimum we have to know english and

37

00:02:03,270 --> 00:01:59,040

russian on the space station uh but we

38

00:02:05,990 --> 00:02:03,280

also train in japan and germany uh in

39

00:02:07,429 --> 00:02:06,000

canada we we we go all over the world

40

00:02:08,630 --> 00:02:07,439

for our training and and more

41

00:02:10,309 --> 00:02:08,640

importantly

42

00:02:12,550 --> 00:02:10,319

than just the languages you have to

43

00:02:14,949 --> 00:02:12,560

understand the culture

44

00:02:17,430 --> 00:02:14,959

so that we can work better as a team

45

00:02:19,670 --> 00:02:17,440

both with our ground team and our team

46

00:02:22,630 --> 00:02:19,680

here on the space station the world is

47

00:02:24,550 --> 00:02:22,640

getting smaller and you have to be more

48

00:02:26,630 --> 00:02:24,560

worldly you have to

49

00:02:33,270 --> 00:02:26,640

work on your language skills in order to

50

00:02:37,110 --> 00:02:35,190

what are the psychological effects of

51
00:02:40,869 --> 00:02:37,120
being in such a confined space for such

52
00:02:45,750 --> 00:02:42,630
well actually the space isn't all that

53
00:02:49,589 --> 00:02:45,760
confining we have 16 different modules

54
00:02:52,150 --> 00:02:49,599
and each of them is about the size of

55
00:02:54,550 --> 00:02:52,160
of a school bus so there's a lot of

56
00:02:56,390 --> 00:02:54,560
space in here and with only uh right now

57
00:02:58,149 --> 00:02:56,400
we only have five crew members on board

58
00:03:00,309 --> 00:02:58,159
so we spend a lot of time working every

59
00:03:02,390 --> 00:03:00,319
day and we might not run into anybody

60
00:03:09,830 --> 00:03:02,400
until lunchtime when we join up together

61
00:03:09,840 --> 00:03:15,509
what is the best food in space

62
00:03:18,869 --> 00:03:16,550
uh yes

63
00:03:20,390 --> 00:03:18,879

actually my answer would be everything

64

00:03:22,790 --> 00:03:20,400

because it floats so i'm going to

65

00:03:24,390 --> 00:03:22,800

demonstrate

66

00:03:25,830 --> 00:03:24,400

i like coffee balls because i like

67

00:03:27,750 --> 00:03:25,840

coffee but i figured you guys would

68

00:03:29,430 --> 00:03:27,760

think that tropical punch is kind of

69

00:03:30,710 --> 00:03:29,440

cool because it's red and

70

00:03:33,750 --> 00:03:30,720

kind of awesome

71

00:03:36,309 --> 00:03:33,760

here we go

72

00:03:39,990 --> 00:03:36,319

so you can make a big ball because of

73

00:03:52,470 --> 00:03:40,000

surface tension of the water

74

00:03:52,480 --> 00:04:04,949

tricks by jack

75

00:04:09,670 --> 00:04:07,830

what kind of trash does the iss produce

76
00:04:14,070 --> 00:04:09,680
and how much of it will be burned using

77
00:04:17,830 --> 00:04:15,990
actually we do generate quite a bit of

78
00:04:20,229 --> 00:04:17,840
trash from all the different scientific

79
00:04:23,030 --> 00:04:20,239
investigations and we do hardware

80
00:04:24,629 --> 00:04:23,040
upgrades all over the station so

81
00:04:27,270 --> 00:04:24,639
anything that gets shipped up here has

82
00:04:29,510 --> 00:04:27,280
to be packed in foam and padded to

83
00:04:32,310 --> 00:04:29,520
handle the launch loads so there's all

84
00:04:34,469 --> 00:04:32,320
kinds of trash that gets generated

85
00:04:37,350 --> 00:04:34,479
and we do luckily have

86
00:04:39,990 --> 00:04:37,360
trash trucks like cygnus and progress

87
00:04:41,270 --> 00:04:40,000
and htv that will take

88
00:04:43,909 --> 00:04:41,280

our

89

00:04:46,950 --> 00:04:43,919

waste away and it does burn up in the

90

00:04:49,749 --> 00:04:46,960

atmosphere but it again these are small

91

00:04:52,950 --> 00:04:49,759

school bus sized modules that carry away

92

00:04:59,990 --> 00:04:52,960

quite a bit of trash and so luckily for

93

00:05:07,590 --> 00:05:01,990

if you could give your 17 year old self

94

00:05:11,110 --> 00:05:08,870

well i'd give

95

00:05:13,029 --> 00:05:11,120

the advice my dad gave to me when i was

96

00:05:15,749 --> 00:05:13,039

uh 18

97

00:05:18,070 --> 00:05:15,759

and that was i dare you to dream uh that

98

00:05:20,870 --> 00:05:18,080

has two important parts first off

99

00:05:22,790 --> 00:05:20,880

the dream part only you can find

100

00:05:24,870 --> 00:05:22,800

what it is that's your passion what it

101
00:05:26,310 --> 00:05:24,880
is that's your dream the thing that

102
00:05:27,510 --> 00:05:26,320
makes you

103
00:05:29,430 --> 00:05:27,520
just

104
00:05:31,590 --> 00:05:29,440
lights a fire in your soul you have to

105
00:05:33,590 --> 00:05:31,600
define that for yourself

106
00:05:36,550 --> 00:05:33,600
and then the second part i dare you to

107
00:05:38,870 --> 00:05:36,560
dream is is that no one is going to give

108
00:05:39,749 --> 00:05:38,880
that to you not everybody gets a trophy

109
00:05:42,710 --> 00:05:39,759
in life

110
00:05:44,870 --> 00:05:42,720
if you don't work really hard at it

111
00:05:47,270 --> 00:05:44,880
really hard at your passion it will

112
00:05:48,950 --> 00:05:47,280
never happen i can guarantee it

113
00:05:50,870 --> 00:05:48,960

so those are the two pieces that you

114

00:05:53,029 --> 00:05:50,880

need to find you need to define that

115

00:06:00,230 --> 00:05:53,039

dream you need to find your passion and

116

00:06:00,240 --> 00:06:05,110

what do you do for fun

117

00:06:09,189 --> 00:06:07,189

actually probably the most fun thing is

118

00:06:12,150 --> 00:06:09,199

looking out the window but i tell you

119

00:06:15,110 --> 00:06:12,160

what just every day being here in space

120

00:06:17,510 --> 00:06:15,120

floating figuring out you know how many

121

00:06:20,469 --> 00:06:17,520

how many circles you can make crossing

122

00:06:22,790 --> 00:06:20,479

the laboratory module or you know coming

123

00:06:25,909 --> 00:06:22,800

up with these fun games that

124

00:06:28,550 --> 00:06:25,919

you can't do or or play on earth because

125

00:06:29,749 --> 00:06:28,560

we we have grav lack of gravity here

126

00:06:31,990 --> 00:06:29,759

which

127

00:06:34,790 --> 00:06:32,000

makes the science uh so interesting as

128

00:06:41,189 --> 00:06:34,800

well but it absolutely is a fantastic

129

00:06:46,870 --> 00:06:43,110

you ever play any instruments aboard the

130

00:06:52,390 --> 00:06:50,309

why that is a fantastic question i don't

131

00:06:56,230 --> 00:06:52,400

but we just so happen to have someone

132

00:07:10,390 --> 00:06:56,240

who does he may be floating by now

133

00:07:12,950 --> 00:07:10,400

[Music]

134

00:07:15,670 --> 00:07:12,960

he speaks lots of languages plays lots

135

00:07:18,469 --> 00:07:15,680

of instruments he he's not good for our

136

00:07:20,150 --> 00:07:18,479

self-confidence as people but uh kind of

137

00:07:26,230 --> 00:07:20,160

an amazing dude that is our frenchman

138

00:07:32,070 --> 00:07:28,550

what is the adjustment process to life

139

00:07:36,870 --> 00:07:33,990

actually the biggest adjustment is that

140

00:07:39,589 --> 00:07:36,880

lack of microgravity i mentioned before

141

00:07:42,309 --> 00:07:39,599

learning how to work with uh with the

142

00:07:45,270 --> 00:07:42,319

tools that will float away if you don't

143

00:07:47,189 --> 00:07:45,280

tape them down or velcro them down or

144

00:07:49,029 --> 00:07:47,199

have them contained in a bag of some

145

00:07:49,990 --> 00:07:49,039

kind or another that's probably the

146

00:07:51,990 --> 00:07:50,000

biggest

147

00:07:54,309 --> 00:07:52,000

adjustment but physiologically our

148

00:07:56,629 --> 00:07:54,319

bodies are adjusting also without

149

00:07:59,270 --> 00:07:56,639

gravity pulling on on

150

00:08:00,950 --> 00:07:59,280

our fluids uh you know we have a fluid

151

00:08:08,869 --> 00:08:00,960

shift that occurs initially when we get

152

00:08:15,909 --> 00:08:11,430

does time seem to pass slower quicker or

153

00:08:21,830 --> 00:08:19,110

oh my gosh so much faster you know the

154

00:08:24,150 --> 00:08:21,840

adage time flies when you're having fun

155

00:08:27,029 --> 00:08:24,160

i mean we have fun all day

156

00:08:28,950 --> 00:08:27,039

like we're doing science we're fixing

157

00:08:31,589 --> 00:08:28,960

stuff we're looking out the window we're

158

00:08:33,110 --> 00:08:31,599

taking pictures everything that we do is

159

00:08:35,990 --> 00:08:33,120

just fun

160

00:08:45,910 --> 00:08:36,000

so i can't believe it's friday afternoon

161

00:08:52,150 --> 00:08:47,750

what if you run out of materials before

162

00:08:55,990 --> 00:08:54,150

well it would be a little slow if we

163

00:08:57,670 --> 00:08:56,000

didn't have as much to do but i think we

164

00:08:59,670 --> 00:08:57,680

could probably entertain ourselves for a

165

00:09:02,150 --> 00:08:59,680

few days

166

00:09:03,990 --> 00:09:02,160

now and and our resupply is very

167

00:09:05,670 --> 00:09:04,000

important for what we're doing now

168

00:09:07,269 --> 00:09:05,680

because we're doing so much different

169

00:09:08,389 --> 00:09:07,279

many different types of research

170

00:09:10,389 --> 00:09:08,399

experiments

171

00:09:12,310 --> 00:09:10,399

that we do need some resupplies but we

172

00:09:14,949 --> 00:09:12,320

have a lot of experiments that can run

173

00:09:16,870 --> 00:09:14,959

without too many resupplies and we would

174

00:09:22,230 --> 00:09:16,880

continue working on those

175

00:09:26,070 --> 00:09:24,150

my name is amy iverson i'm asking the

176

00:09:27,590 --> 00:09:26,080

question for thomas what are some of the

177

00:09:29,269 --> 00:09:27,600

current experiments that you are doing

178

00:09:32,949 --> 00:09:29,279

and what can be potentially learned from

179

00:09:37,430 --> 00:09:34,949

and it's it's a hard question to answer

180

00:09:38,470 --> 00:09:37,440

uh just in my time on this station and

181

00:09:41,190 --> 00:09:38,480

peggy's

182

00:09:42,710 --> 00:09:41,200

many more there's over 300 experiments

183

00:09:44,389 --> 00:09:42,720

that'll take place

184

00:09:45,829 --> 00:09:44,399

we're doing everything from human

185

00:09:47,750 --> 00:09:45,839

physiology

186

00:09:49,430 --> 00:09:47,760

looking peggy spent the last peggy and

187

00:09:53,670 --> 00:09:49,440

tomas spent the last couple weeks

188

00:09:56,310 --> 00:09:53,680

working on a bone investigation study

189

00:10:00,230 --> 00:09:56,320

we have we can grow perfect crystals so

190

00:10:02,310 --> 00:10:00,240

we can look at uh virology and and and

191

00:10:04,790 --> 00:10:02,320

immunology uh

192

00:10:07,829 --> 00:10:04,800

we we have a experiment on board that is

193

00:10:10,630 --> 00:10:07,839

looking at new ways to create uh

194

00:10:11,829 --> 00:10:10,640

lightweight and and stronger alloys

195

00:10:15,350 --> 00:10:11,839

um

196

00:10:17,590 --> 00:10:15,360

it's just the the expanse of of

197

00:10:19,509 --> 00:10:17,600

scientific experiments that are on the

198

00:10:22,150 --> 00:10:19,519

space station right now is absolutely

199

00:10:24,710 --> 00:10:22,160

mind-boggling so to say which ones will

200

00:10:25,670 --> 00:10:24,720

have the biggest impact i have no idea

201
00:10:27,990 --> 00:10:25,680
um

202
00:10:30,389 --> 00:10:28,000
i do know that this place and and what

203
00:10:35,350 --> 00:10:30,399
goes on here is changing humanity for

204
00:10:35,360 --> 00:10:40,310
what's your favorite thing about space

205
00:10:45,190 --> 00:10:42,790
being in space

206
00:10:47,990 --> 00:10:45,200
just being able to float relax every

207
00:10:49,910 --> 00:10:48,000
every orientation that you're in feels

208
00:10:52,710 --> 00:10:49,920
the same

209
00:11:00,230 --> 00:10:52,720
it it's an amazing experience and just

210
00:11:03,750 --> 00:11:01,910
what are your jobs what are your jobs

211
00:11:07,829 --> 00:11:03,760
and responsibilities on the space

212
00:11:12,230 --> 00:11:10,150
so that's one of the things that makes

213
00:11:14,470 --> 00:11:12,240

it so interesting is because every day

214

00:11:16,550 --> 00:11:14,480

is a bit different we may be doing

215

00:11:18,310 --> 00:11:16,560

something one day and then peggy does it

216

00:11:20,310 --> 00:11:18,320

you know peggy does it the next day and

217

00:11:21,190 --> 00:11:20,320

tomorrow does it the day after that

218

00:11:22,870 --> 00:11:21,200

um

219

00:11:24,389 --> 00:11:22,880

there's so many different things that

220

00:11:27,110 --> 00:11:24,399

we're doing because there's so many

221

00:11:30,790 --> 00:11:27,120

experiments our big jobs are maintaining

222

00:11:33,350 --> 00:11:30,800

the station uh and then the science uh

223

00:11:35,269 --> 00:11:33,360

we also have to you know clean it

224

00:11:38,069 --> 00:11:35,279

housekeeping is is one of the things

225

00:11:40,389 --> 00:11:38,079

that we do but for the most part we're

226

00:11:41,269 --> 00:11:40,399

jack all trades master and none

227

00:11:44,389 --> 00:11:41,279

and

228

00:11:47,030 --> 00:11:44,399

the the big thing is that peggy is the

229

00:11:49,269 --> 00:11:47,040

commander that role is most important in

230

00:11:51,350 --> 00:11:49,279

emergencies other than that we're kind

231

00:11:58,150 --> 00:11:51,360

of a team all the time just getting the

232

00:12:05,350 --> 00:12:00,470

how does zero gravity affect your body

233

00:12:09,670 --> 00:12:07,670

zero gravity actually

234

00:12:11,990 --> 00:12:09,680

does have a lot of effects on your body

235

00:12:13,509 --> 00:12:12,000

because you don't have gravity pulling

236

00:12:14,949 --> 00:12:13,519

on your body

237

00:12:17,030 --> 00:12:14,959

the first thing i talked about was the

238

00:12:20,230 --> 00:12:17,040

fluid shifts that may have some impacts

239

00:12:22,550 --> 00:12:20,240

that we've seen uh some changes in eyes

240

00:12:25,990 --> 00:12:22,560

in the astronauts

241

00:12:27,190 --> 00:12:26,000

we've also seen er without a significant

242

00:12:30,150 --> 00:12:27,200

exercise

243

00:12:31,990 --> 00:12:30,160

we'll have bone loss and muscle loss

244

00:12:33,750 --> 00:12:32,000

so we're we're studying those things

245

00:12:36,150 --> 00:12:33,760

figuring out what it takes what's the

246

00:12:37,990 --> 00:12:36,160

minimum exercise amount required to keep

247

00:12:40,870 --> 00:12:38,000

us healthy because when we do those

248

00:12:42,629 --> 00:12:40,880

future exploration missions maybe one of

249

00:12:44,069 --> 00:12:42,639

you will be participating and we'll have

250

00:12:46,550 --> 00:12:44,079

it all worked out and figured out

251
00:12:49,269 --> 00:12:46,560
exactly what the minimum is required to

252
00:12:51,509 --> 00:12:49,279
keep you healthy and safe

253
00:12:53,350 --> 00:12:51,519
and you know you might think uh with the

254
00:12:54,069 --> 00:12:53,360
lack of gravity you might have a stomach

255
00:12:56,150 --> 00:12:54,079
ache

256
00:12:58,870 --> 00:12:56,160
and eating i don't really feel any

257
00:13:01,590 --> 00:12:58,880
different sensations while i'm eating so

258
00:13:07,990 --> 00:13:01,600
it's uh it's great still enjoy eating

259
00:13:15,269 --> 00:13:09,750
what are the procedures you follow in

260
00:13:19,269 --> 00:13:17,110
yeah that's a great question we have we

261
00:13:21,030 --> 00:13:19,279
have a lot of different emergencies on

262
00:13:23,430 --> 00:13:21,040
the station that we train for but the

263
00:13:25,910 --> 00:13:23,440

three big ones are fire

264

00:13:27,750 --> 00:13:25,920

uh rapid depressurization if there's

265

00:13:30,870 --> 00:13:27,760

like a hole in the station

266

00:13:34,150 --> 00:13:30,880

and then a toxic atmosphere most notably

267

00:13:36,870 --> 00:13:34,160

ammonia because our cooling system

268

00:13:39,670 --> 00:13:36,880

outside uses ammonia to cool things down

269

00:13:41,829 --> 00:13:39,680

and it's not very good for you so we we

270

00:13:44,389 --> 00:13:41,839

train those and train those until we

271

00:13:47,110 --> 00:13:44,399

have them basically memorized because we

272

00:13:49,110 --> 00:13:47,120

have to have a memorized response and be

273

00:13:50,230 --> 00:13:49,120

able to react quickly

274

00:13:52,150 --> 00:13:50,240

that's where

275

00:13:53,990 --> 00:13:52,160

you know you know i mentioned that it's

276

00:13:55,750 --> 00:13:54,000

kind of we're all working together

277

00:13:57,670 --> 00:13:55,760

obviously that's true but during an

278

00:14:00,389 --> 00:13:57,680

emergency you need to have a boss and

279

00:14:01,350 --> 00:14:00,399

that's our our resident space ninja

280

00:14:03,110 --> 00:14:01,360

peggy

281

00:14:04,949 --> 00:14:03,120

telling us what we need to do and where

282

00:14:12,230 --> 00:14:04,959

we need to go so that we can all get

283

00:14:18,470 --> 00:14:14,790

what do you do during your free time in

284

00:14:23,030 --> 00:14:20,870

actually uh looking out the window never

285

00:14:25,430 --> 00:14:23,040

gets boring because we get to see the

286

00:14:27,350 --> 00:14:25,440

earth we're going around the earth 16

287

00:14:30,949 --> 00:14:27,360

times in a day

288

00:14:33,590 --> 00:14:30,959

traveling at 17 500 miles an hour we see

289

00:14:34,629 --> 00:14:33,600

a sunrise and a sunset about every 45

290

00:14:36,949 --> 00:14:34,639

minutes

291

00:14:38,470 --> 00:14:36,959

it's it's uh so it's always amazing to

292

00:14:40,150 --> 00:14:38,480

be able to look out the window and see

293

00:14:42,310 --> 00:14:40,160

something new the lighting will be

294

00:14:44,310 --> 00:14:42,320

different we'll be in a different

295

00:14:45,910 --> 00:14:44,320

inclination

296

00:14:48,230 --> 00:14:45,920

things are just always interesting

297

00:14:50,310 --> 00:14:48,240

looking out the window but of course you

298

00:14:53,350 --> 00:14:50,320

know we're up here with just four other

299

00:14:55,910 --> 00:14:53,360

people right now um and so we can talk

300

00:14:57,910 --> 00:14:55,920

to our family and friends on an internet

301
00:15:00,310 --> 00:14:57,920
protocol phone when we have the specific

302
00:15:03,030 --> 00:15:00,320
satellite capability available

303
00:15:06,310 --> 00:15:03,040
um so it's it doesn't really feel that

304
00:15:08,230 --> 00:15:06,320
we're too separated from them and it's

305
00:15:10,069 --> 00:15:08,240
nice to stay in touch with them via

306
00:15:12,069 --> 00:15:10,079
email as well so

307
00:15:13,990 --> 00:15:12,079
that's that's most of our entertainment

308
00:15:22,230 --> 00:15:14,000
and then you know figuring out astronaut

309
00:15:26,069 --> 00:15:24,389
what does what does it feel like knowing

310
00:15:32,150 --> 00:15:26,079
that you're one of so few people that

311
00:15:37,910 --> 00:15:35,269
well honestly that it's it's very very

312
00:15:40,629 --> 00:15:37,920
humbling to be a part of that group but

313
00:15:43,030 --> 00:15:40,639

it humbles me it also inspires me to

314

00:15:45,189 --> 00:15:43,040

make that list a lot bigger and i think

315

00:15:47,269 --> 00:15:45,199

that your generation all of you students

316

00:15:48,069 --> 00:15:47,279

that are there if if you're engaging in

317

00:15:51,269 --> 00:15:48,079

those

318

00:15:54,629 --> 00:15:51,279

science and technology engineering math

319

00:15:55,350 --> 00:15:54,639

type of pursuits you're going to be the

320

00:16:04,069 --> 00:15:55,360

the

321

00:16:06,710 --> 00:16:04,079

feel that space exploration is about to

322

00:16:09,590 --> 00:16:06,720

really really take off we're building

323

00:16:12,629 --> 00:16:09,600

the infrastructure with commercial uh

324

00:16:15,590 --> 00:16:12,639

endeavors as well as the largest rocket

325

00:16:16,949 --> 00:16:15,600

we've ever built so space launch system

326

00:16:18,790 --> 00:16:16,959

is going to be bigger than anything

327

00:16:21,030 --> 00:16:18,800

that's ever flown

328

00:16:24,310 --> 00:16:21,040

uh and all of this is coming together

329

00:16:26,949 --> 00:16:24,320

with a commercial enterprise both for

330

00:16:29,269 --> 00:16:26,959

commercial space flight and uh cargo to

331

00:16:31,189 --> 00:16:29,279

the station uh and then you have this

332

00:16:33,910 --> 00:16:31,199

wonderful laboratory so

333

00:16:36,790 --> 00:16:33,920

you you are the generation that's gonna

334

00:16:39,749 --> 00:16:36,800

take us into the heavens for good and

335

00:16:42,790 --> 00:16:39,759

i'm really excited for that list

336

00:16:49,030 --> 00:16:42,800

to get huge really soon

337

00:16:49,040 --> 00:16:53,910

is the iss able to be driven

338

00:16:58,150 --> 00:16:56,230

actually that's a really great question

339

00:17:00,389 --> 00:16:58,160

the iss the

340

00:17:02,790 --> 00:17:00,399

the trust that holds our solar arrays is

341

00:17:06,069 --> 00:17:02,800

the length of a football field long so

342

00:17:08,710 --> 00:17:06,079

it does take quite a bit of of uh

343

00:17:10,870 --> 00:17:08,720

momentum in our case to drive the the

344

00:17:13,990 --> 00:17:10,880

iss and we have these control moment

345

00:17:16,230 --> 00:17:14,000

gyros that are spending at 6 000 rpms

346

00:17:16,949 --> 00:17:16,240

and we can change the

347

00:17:21,429 --> 00:17:16,959

the

348

00:17:26,150 --> 00:17:21,439

something as large as this football

349

00:17:28,390 --> 00:17:26,160

field sized structure that we have and

350

00:17:31,110 --> 00:17:28,400

if we need to increase or decrease our

351
00:17:33,029 --> 00:17:31,120
altitude for instance for debris

352
00:17:34,789 --> 00:17:33,039
avoidance if we see something ahead that

353
00:17:37,190 --> 00:17:34,799
we need to avoid debris

354
00:17:39,350 --> 00:17:37,200
debris we can increase or decrease our

355
00:17:41,110 --> 00:17:39,360
altitude with the thrusters

356
00:17:42,870 --> 00:17:41,120
in the aft end of the

357
00:17:45,430 --> 00:17:42,880
russian segment

358
00:17:47,510 --> 00:17:45,440
so we can thrust up or down

359
00:17:49,430 --> 00:17:47,520
and we also can change our altitude to

360
00:17:52,549 --> 00:17:49,440
meet visiting vehicles you know to

361
00:17:54,630 --> 00:17:52,559
optimize for them as well so yes it is

362
00:18:01,990 --> 00:17:54,640
drivable but not maybe in the sense that

363
00:18:02,000 --> 00:18:09,110

what weird stuff have you seen in space

364

00:18:14,630 --> 00:18:11,110

well pretty much everything's weird

365

00:18:17,669 --> 00:18:14,640

don't point at me that's not nice

366

00:18:20,549 --> 00:18:17,679

everything's weird you you you get to

367

00:18:23,110 --> 00:18:20,559

you get to see things floating and and

368

00:18:25,669 --> 00:18:23,120

and spinning and when you eat your food

369

00:18:27,270 --> 00:18:25,679

i was i was eating pudding last night

370

00:18:29,190 --> 00:18:27,280

and i cut a little hole in the packet

371

00:18:33,190 --> 00:18:29,200

and i squirted the whole thing onto a

372

00:18:35,350 --> 00:18:33,200

spoon and it was this gelatinous jello

373

00:18:38,789 --> 00:18:35,360

mountain of yummy

374

00:18:40,230 --> 00:18:38,799

and and i mean that's just weird but

375

00:18:43,110 --> 00:18:40,240

it's cool

376

00:18:45,430 --> 00:18:43,120

there's just so much cool up here um

377

00:18:48,230 --> 00:18:45,440

every everything is weird sitting on the

378

00:18:50,230 --> 00:18:48,240

ceiling how's that for weird uh

379

00:18:52,070 --> 00:18:50,240

but the thing about it is there's so

380

00:18:54,630 --> 00:18:52,080

many different opportunities for you to

381

00:18:56,870 --> 00:18:54,640

stretch your mind and and redefine

382

00:19:06,310 --> 00:18:56,880

reality and and just grow as a human

383

00:19:10,549 --> 00:19:08,310

thank you jack and peggy we just have a

384

00:19:15,830 --> 00:19:10,559

couple of minutes left so we have two

385

00:19:22,549 --> 00:19:17,510

what classes do you have to study in

386

00:19:26,549 --> 00:19:24,310

well it's kind of like jack said any

387

00:19:28,470 --> 00:19:26,559

field math science and engineering but

388

00:19:30,630 --> 00:19:28,480

you really need to pursue something that

389

00:19:32,710 --> 00:19:30,640

means something to you that gives you

390

00:19:35,029 --> 00:19:32,720

the passion to want to study it to want

391

00:19:35,830 --> 00:19:35,039

to be an expert and that really drives

392

00:19:41,510 --> 00:19:35,840

you

393

00:19:44,070 --> 00:19:41,520

so there's nothing specific other than

394

00:19:52,710 --> 00:19:44,080

being in a math science engineering

395

00:19:58,310 --> 00:19:55,270

um do you have internet in space and if

396

00:20:03,029 --> 00:19:58,320

so do you spend much time on computers

397

00:20:07,029 --> 00:20:05,029

well i'm kind of a computer geek on the

398

00:20:10,390 --> 00:20:07,039

ground but up here not so much our

399

00:20:12,390 --> 00:20:10,400

internet we have the capability to do

400

00:20:13,590 --> 00:20:12,400

internet but i'm going to use a word

401
00:20:15,750 --> 00:20:13,600
some of you probably don't even know

402
00:20:17,990 --> 00:20:15,760
what it means dial up

403
00:20:19,909 --> 00:20:18,000
it's really slow

404
00:20:23,190 --> 00:20:19,919
like back in the old days where we had a

405
00:20:25,430 --> 00:20:23,200
modem and it would you know

406
00:20:27,029 --> 00:20:25,440
speed was measured in bod do you guys

407
00:20:29,029 --> 00:20:27,039
know what bot is

408
00:20:31,590 --> 00:20:29,039
it's really slow

409
00:20:34,789 --> 00:20:31,600
so uh we don't do much with it and

410
00:20:36,549 --> 00:20:34,799
honestly uh it would be a waste of time

411
00:20:38,950 --> 00:20:36,559
in space to be spending a whole lot of

412
00:20:40,870 --> 00:20:38,960
time on the internet up here we we have

413
00:20:43,029 --> 00:20:40,880

some people that can help us and and

414

00:20:44,710 --> 00:20:43,039

post things so that we can share

415

00:20:47,590 --> 00:20:44,720

what we're experiencing with those on

416

00:20:49,350 --> 00:20:47,600

the ground but for the most part

417

00:20:52,950 --> 00:20:49,360

we don't we don't spend a lot of time on

418

00:20:56,390 --> 00:20:54,870

this has been an incredible experience

419

00:20:57,909 --> 00:20:56,400

we are so thankful that you would join

420

00:21:01,190 --> 00:20:57,919

us today and i'm going to turn this over

421

00:21:03,990 --> 00:21:01,200

to your friend charlie to say goodbye

422

00:21:06,070 --> 00:21:04,000

jack and peggy that was awesome and uh

423

00:21:07,590 --> 00:21:06,080

jack you alluded to what these students

424

00:21:09,430 --> 00:21:07,600

can be in their future and really

425

00:21:12,070 --> 00:21:09,440

appreciate the connectivity there from

426
00:21:14,230 --> 00:21:12,080
space station on into the the deep space

427
00:21:15,669 --> 00:21:14,240
journey that we're on uh thank you so

428
00:21:17,669 --> 00:21:15,679
much and

429
00:21:20,070 --> 00:21:17,679
these are in fact our future scientists

430
00:21:21,990 --> 00:21:20,080
engineers in our workforce and

431
00:21:26,230 --> 00:21:22,000
the future of space and you did great we

432
00:21:29,669 --> 00:21:27,830
well thanks a lot sir and i don't know

433
00:21:31,350 --> 00:21:29,679
if you remember but you were the guest

434
00:21:33,590 --> 00:21:31,360
speaker at my test pilot school

435
00:21:36,549 --> 00:21:33,600
graduation and and uh

436
00:21:40,950 --> 00:21:36,559
you and peggy and you know you guys

437
00:21:42,549 --> 00:21:40,960
inspired uh me and and others and uh i i

438
00:21:44,310 --> 00:21:42,559

think it's just a

439

00:21:46,470 --> 00:21:44,320

self-licking ice cream cone of

440

00:21:48,950 --> 00:21:46,480

inspiration we need to keep this going

441

00:21:51,430 --> 00:21:48,960

and and continue so this next generation

442

00:21:53,029 --> 00:21:51,440

could be even better than we were

443

00:21:54,789 --> 00:21:53,039

indeed like i said i'm jealous

444

00:21:57,350 --> 00:21:54,799

especially that i'm not the one sitting

445

00:22:03,190 --> 00:21:57,360

on the ceiling up there today

446

00:22:08,390 --> 00:22:05,430

stationed this is houston acr that

447

00:22:12,549 --> 00:22:10,310

thank you to all participants and guests

448

00:22:14,789 --> 00:22:12,559

from space dynamics laboratory station