



1  
00:00:08,070 --> 00:00:04,550  
station this is houston are you ready

2  
00:00:12,789 --> 00:00:10,870  
we are ready for the event

3  
00:00:15,110 --> 00:00:12,799  
destination imagination this is mission

4  
00:00:17,990 --> 00:00:15,120  
control houston please call station for

5  
00:00:20,310 --> 00:00:18,000  
a voice check houston

6  
00:00:23,830 --> 00:00:20,320  
station this is britt dyer how do you

7  
00:00:28,870 --> 00:00:24,630  
we

8  
00:00:32,870 --> 00:00:30,470  
done

9  
00:00:34,630 --> 00:00:32,880  
what is the one what are you allowed to

10  
00:00:36,950 --> 00:00:34,640  
take with you to space and what is the

11  
00:00:41,590 --> 00:00:36,960  
one thing that you wish that you are

12  
00:00:47,670 --> 00:00:44,549  
oh the one thing i wish i would have

13  
00:00:51,350 --> 00:00:47,680

taken would have been some filter

14

00:01:07,750 --> 00:00:51,360

materials for helping take pictures out

15

00:01:13,429 --> 00:01:11,510

well the our spacesuit is really like a

16

00:01:15,350 --> 00:01:13,439

almost like a spaceship because when

17

00:01:17,109 --> 00:01:15,360

we're in our spacesuit we have to live

18

00:01:20,149 --> 00:01:17,119

just like we do inside either the space

19

00:01:21,109 --> 00:01:20,159

station or the uh the soyuz that we come

20

00:01:22,870 --> 00:01:21,119

up in

21

00:01:24,469 --> 00:01:22,880

so everything is important i hate to

22

00:01:26,870 --> 00:01:24,479

give you that answer but we need to have

23

00:01:28,789 --> 00:01:26,880

oxygen we need to be able to stay warm

24

00:01:30,630 --> 00:01:28,799

or stay cool

25

00:01:33,350 --> 00:01:30,640

we need to be able to scrub out the co2

26

00:01:35,030 --> 00:01:33,360

so really it's a it's a whole big

27

00:01:41,910 --> 00:01:35,040

machine and all of it's necessary to

28

00:01:41,920 --> 00:01:48,149

andre how do you do your laundry

29

00:01:52,950 --> 00:01:50,550

sean aston a short answer

30

00:01:55,910 --> 00:01:52,960

we do not actually we don't wash our

31

00:01:58,230 --> 00:01:55,920

clothes because water is very precious

32

00:01:59,350 --> 00:01:58,240

and so we don't have any washing machine

33

00:02:02,069 --> 00:01:59,360

up here

34

00:02:04,709 --> 00:02:02,079

so what we do we wear it and uh yeah if

35

00:02:06,789 --> 00:02:04,719

it's if it's dirty then we have to to

36

00:02:12,550 --> 00:02:06,799

throw it so this is how we do our

37

00:02:19,030 --> 00:02:15,030

don can you have pets on the space

38

00:02:23,350 --> 00:02:21,589

can you have pets on space station if

39

00:02:26,790 --> 00:02:23,360

you consider some of the creatures we

40

00:02:28,070 --> 00:02:26,800

have for experiments pets than we do

41

00:02:29,510 --> 00:02:28,080

on

42

00:02:33,750 --> 00:02:29,520

my shuttle flight

43

00:02:35,509 --> 00:02:33,760

we had drosophila larvae

44

00:02:37,830 --> 00:02:35,519

and these drosophila larvae i don't know

45

00:02:41,750 --> 00:02:37,840

what you call them a pet but these

46

00:02:43,830 --> 00:02:41,760

drosophila larvae were there for food

47

00:02:44,949 --> 00:02:43,840

for our spiders

48

00:02:47,110 --> 00:02:44,959

and i don't really know whether you'd

49

00:02:49,190 --> 00:02:47,120

call a spider a pet usually that's

50

00:02:53,190 --> 00:02:49,200

something you step on

51  
00:02:55,030 --> 00:02:53,200  
so so i guess we really don't have pets

52  
00:03:00,470 --> 00:02:55,040  
on space station but we do have

53  
00:03:04,390 --> 00:03:01,430  
joe

54  
00:03:07,190 --> 00:03:04,400  
can you take a shower in space and how

55  
00:03:12,790 --> 00:03:07,200  
do you keep and how do you keep the soap

56  
00:03:17,430 --> 00:03:14,949  
see life is good on the space station we

57  
00:03:19,670 --> 00:03:17,440  
don't have to do laundry and we don't

58  
00:03:21,670 --> 00:03:19,680  
have to take showers so no we don't take

59  
00:03:23,589 --> 00:03:21,680  
showers up here because like you said

60  
00:03:25,910 --> 00:03:23,599  
the water would just float away it would

61  
00:03:28,550 --> 00:03:25,920  
be a big mess and like andre mentioned

62  
00:03:30,869 --> 00:03:28,560  
earlier water is very precious so we

63  
00:03:33,110 --> 00:03:30,879

have washcloths that we can get wet and

64

00:03:34,949 --> 00:03:33,120

we have some rinse free

65

00:03:38,149 --> 00:03:34,959

soap and shampoo that we can put in our

66

00:03:43,190 --> 00:03:38,159

hair and our body but no nice long hot

67

00:03:54,630 --> 00:03:46,070

andrei how do you stay connected to your

68

00:03:58,470 --> 00:03:56,869

yes yes oh that's a nice question we

69

00:04:01,350 --> 00:03:58,480

have

70

00:04:02,789 --> 00:04:01,360

several means of contacting the family

71

00:04:03,670 --> 00:04:02,799

and the ground and other people and

72

00:04:06,550 --> 00:04:03,680

friends

73

00:04:08,869 --> 00:04:06,560

uh and we can do this by normal well

74

00:04:10,949 --> 00:04:08,879

normal uh telephone we have fire the

75

00:04:13,190 --> 00:04:10,959

satellite i can call the normal

76

00:04:15,350 --> 00:04:13,200

telephone network and then i can call

77

00:04:17,430 --> 00:04:15,360

anybody in the world if you have contact

78

00:04:20,150 --> 00:04:17,440

with a satellite and once a week we have

79

00:04:22,469 --> 00:04:20,160

a video connection so i can also see

80

00:04:28,150 --> 00:04:22,479

my children and that is very nice of

81

00:04:31,110 --> 00:04:29,189

don

82

00:04:33,430 --> 00:04:31,120

do you believe there's life beyond earth

83

00:04:37,749 --> 00:04:33,440

and are you doing anything in the space

84

00:04:42,790 --> 00:04:39,510

uh

85

00:04:46,230 --> 00:04:42,800

we think we've found

86

00:04:49,830 --> 00:04:46,240

mars meteorites that have evidence of

87

00:04:52,150 --> 00:04:49,840

microbial life so if this

88

00:04:53,270 --> 00:04:52,160

is true then

89

00:04:56,550 --> 00:04:53,280

there is

90

00:05:00,550 --> 00:04:56,560

a life outside of earth particularly in

91

00:05:03,990 --> 00:05:00,560

the microbial form in the mars strata

92

00:05:07,830 --> 00:05:04,000

we're not sure about this yet but uh it

93

00:05:10,550 --> 00:05:07,840

it it is an interesting uh scientific

94

00:05:14,230 --> 00:05:10,560

investigation that's going on in terms

95

00:05:17,110 --> 00:05:14,240

of looking for life on space station

96

00:05:20,230 --> 00:05:17,120

besides observing meteor showers

97

00:05:23,029 --> 00:05:20,240

which may contain meteorites that

98

00:05:26,070 --> 00:05:23,039

come from mars with fossilized bacteria

99

00:05:28,390 --> 00:05:26,080

we really don't look for for

100

00:05:30,469 --> 00:05:28,400

signs of life on space station except

101  
00:05:40,390 --> 00:05:30,479  
inside the spacecraft when i'm looking

102  
00:05:48,790 --> 00:05:42,870  
joe how do you go to the bathroom in

103  
00:05:54,150 --> 00:05:51,029  
that's a good question

104  
00:05:56,150 --> 00:05:54,160  
you have to be very very careful um it's

105  
00:05:58,710 --> 00:05:56,160  
uh it takes a little bit longer than it

106  
00:06:00,870 --> 00:05:58,720  
does on earth as you can imagine in

107  
00:06:02,070 --> 00:06:00,880  
microgravity things tend to want to

108  
00:06:03,909 --> 00:06:02,080  
float away

109  
00:06:06,950 --> 00:06:03,919  
and you don't want that to happen so we

110  
00:06:10,070 --> 00:06:06,960  
have a very sophisticated toilet where

111  
00:06:12,550 --> 00:06:10,080  
it can catch things we have a tube

112  
00:06:14,309 --> 00:06:12,560  
to urinate in and it's kind of neat

113  
00:06:16,469 --> 00:06:14,319

because we actually recycle that water

114

00:06:18,230 --> 00:06:16,479

and then we drink it

115

00:06:19,510 --> 00:06:18,240

and then we have a bucket to catch

116

00:06:21,590 --> 00:06:19,520

number two

117

00:06:23,270 --> 00:06:21,600

and it's a very important system for us

118

00:06:30,710 --> 00:06:23,280

up here because we need to use it all

119

00:06:47,110 --> 00:06:33,110

what do you do

120

00:06:51,909 --> 00:06:49,990

yeah well there's many ways to become an

121

00:06:54,309 --> 00:06:51,919

astronaut um

122

00:06:57,589 --> 00:06:54,319

but the the best way the normal way to

123

00:07:00,550 --> 00:06:57,599

uh to achieve that is to study very hard

124

00:07:02,390 --> 00:07:00,560

uh to do your best at school and then

125

00:07:05,909 --> 00:07:02,400

later on in the university

126

00:07:08,469 --> 00:07:05,919

uh and and become some

127

00:07:12,629 --> 00:07:08,479

becomes a specialist in uh in a certain

128

00:07:14,390 --> 00:07:12,639

area in science in technology and those

129

00:07:17,909 --> 00:07:14,400

are important uh

130

00:07:20,629 --> 00:07:17,919

fields to to study and then of course

131

00:07:22,710 --> 00:07:20,639

you need to go through a selection uh so

132

00:07:24,790 --> 00:07:22,720

it's a long way but it's not impossible

133

00:07:26,070 --> 00:07:24,800

we are up here and uh

134

00:07:28,150 --> 00:07:26,080

when i was

135

00:07:31,510 --> 00:07:28,160

a kid i didn't realize that it was

136

00:07:37,990 --> 00:07:31,520

possible until i tried so

137

00:07:42,070 --> 00:07:40,150

don since you can't go grocery shopping

138

00:07:46,309 --> 00:07:42,080

what do you do if the space station runs

139

00:07:52,309 --> 00:07:49,270

fortunately we've never run out of food

140

00:07:54,469 --> 00:07:52,319

but we are in a frontier setting and we

141

00:07:56,469 --> 00:07:54,479

are dependent on wagons bringing

142

00:07:58,230 --> 00:07:56,479

supplies up to us and these wagons are

143

00:08:02,629 --> 00:07:58,240

called spaceships

144

00:08:04,629 --> 00:08:02,639

and sometimes we run low on food because

145

00:08:06,390 --> 00:08:04,639

as you pointed out we cannot go straight

146

00:08:09,029 --> 00:08:06,400

to a grocery store to refill the

147

00:08:11,589 --> 00:08:09,039

pantries and this happened during our

148

00:08:14,469 --> 00:08:11,599

expedition where for a month we had to

149

00:08:17,029 --> 00:08:14,479

live on half rations in order to save

150

00:08:19,749 --> 00:08:17,039

enough food for future expeditions

151  
00:08:22,309 --> 00:08:19,759  
and now we've got plenty of food but at

152  
00:08:26,070 --> 00:08:22,319  
that time we were we're conserving food

153  
00:08:32,630 --> 00:08:26,080  
for the future and this is what happens

154  
00:08:40,709 --> 00:08:34,870  
joe how did you get into space and how

155  
00:08:45,110 --> 00:08:43,269  
well we all came aboard on a russian

156  
00:08:47,910 --> 00:08:45,120  
soyuz spaceship

157  
00:08:50,070 --> 00:08:47,920  
and to get into space it only takes a

158  
00:08:52,790 --> 00:08:50,080  
little over eight minutes so we launched

159  
00:08:55,030 --> 00:08:52,800  
in uh in kazakhstan and then eight

160  
00:08:56,870 --> 00:08:55,040  
minutes later you're in space you're

161  
00:08:58,470 --> 00:08:56,880  
floating but then it takes us another

162  
00:09:03,590 --> 00:08:58,480  
two days to get to the international

163  
00:09:13,269 --> 00:09:05,829

okay why did you choose to become an

164

00:09:17,030 --> 00:09:15,350

well it started with some science

165

00:09:19,350 --> 00:09:17,040

fiction

166

00:09:21,350 --> 00:09:19,360

books that i got from my grandmother and

167

00:09:24,790 --> 00:09:21,360

i thought well this is interesting

168

00:09:26,630 --> 00:09:24,800

spacesuits and spacecraft planets with

169

00:09:29,110 --> 00:09:26,640

aliens and things like that

170

00:09:30,949 --> 00:09:29,120

then i saw beautiful pictures and imax

171

00:09:32,790 --> 00:09:30,959

movies from the shuttle flights and i

172

00:09:34,470 --> 00:09:32,800

thought wow this is beautiful to see the

173

00:09:38,150 --> 00:09:34,480

earth from outer space

174

00:09:39,509 --> 00:09:38,160

and then i i also learned how useful it

175

00:09:41,509 --> 00:09:39,519

was and

176

00:09:44,310 --> 00:09:41,519

i was a medical i became a medical

177

00:09:46,470 --> 00:09:44,320

doctor and then i thought okay this is

178

00:09:48,389 --> 00:09:46,480

three it's exciting three things it's

179

00:09:50,710 --> 00:09:48,399

exciting it's beautiful and it's very

180

00:09:58,550 --> 00:09:50,720

useful so that's one of the main reasons

181

00:10:05,350 --> 00:10:00,230

don what do you do if someone gets

182

00:10:10,470 --> 00:10:07,110

if someone gets really sick which

183

00:10:11,910 --> 00:10:10,480

fortunately that has not happened we

184

00:10:13,829 --> 00:10:11,920

we

185

00:10:15,910 --> 00:10:13,839

first off call the ground and there's a

186

00:10:17,990 --> 00:10:15,920

flight surgeon on call

187

00:10:20,150 --> 00:10:18,000

and we work with a flight surgeon and

188

00:10:21,030 --> 00:10:20,160

our medical kits that we have on station

189

00:10:23,350 --> 00:10:21,040

we have

190

00:10:25,190 --> 00:10:23,360

pretty substantial medical kits

191

00:10:27,110 --> 00:10:25,200

and we

192

00:10:35,910 --> 00:10:27,120

do what we can to

193

00:10:40,069 --> 00:10:38,230

for joe who came up with the idea for

194

00:10:45,190 --> 00:10:40,079

the space station and who decides what

195

00:10:49,509 --> 00:10:47,990

well that's a very good question um the

196

00:10:51,750 --> 00:10:49,519

international space station like it

197

00:10:53,990 --> 00:10:51,760

implies it was put together by many

198

00:10:55,750 --> 00:10:54,000

different countries and so i don't know

199

00:10:57,829 --> 00:10:55,760

if there was one individual that came up

200

00:10:59,750 --> 00:10:57,839

with the idea but coming to space is

201

00:11:02,550 --> 00:10:59,760

very very difficult and it's very

202

00:11:05,269 --> 00:11:02,560

expensive so it made sense for us to

203

00:11:08,230 --> 00:11:05,279

pull our resources together and work as

204

00:11:10,470 --> 00:11:08,240

one planet to build the space station

205

00:11:12,230 --> 00:11:10,480

and each of the different space agencies

206

00:11:14,069 --> 00:11:12,240

they look at what types of science they

207

00:11:16,069 --> 00:11:14,079

want to do up here there's various

208

00:11:18,150 --> 00:11:16,079

review boards that look at that so

209

00:11:19,910 --> 00:11:18,160

there's a long process the scientists

210

00:11:21,350 --> 00:11:19,920

have to put together their experiment

211

00:11:23,110 --> 00:11:21,360

and then finally they come up here and

212

00:11:39,110 --> 00:11:23,120

then we're lucky enough to go ahead and

213

00:11:43,910 --> 00:11:41,670

what do i do for fun in space well

214

00:11:45,910 --> 00:11:43,920

the best thing is of course to float

215

00:11:48,870 --> 00:11:45,920

which is not so easy if you cannot hold

216

00:11:50,389 --> 00:11:48,880

yourself so this is always fun

217

00:11:52,470 --> 00:11:50,399

this is fun

218

00:11:54,150 --> 00:11:52,480

and of course it's fun to play with

219

00:11:58,230 --> 00:11:54,160

fluids with water

220

00:12:01,110 --> 00:11:58,240

a little uh little droplets uh so um

221

00:12:04,069 --> 00:12:01,120

we can have a lot of fun up here um

222

00:12:06,389 --> 00:12:04,079

we we eat uh together in the evenings

223

00:12:10,230 --> 00:12:06,399

and sometimes watch a movie and of

224

00:12:18,150 --> 00:12:10,240

course we can call the ground and uh we

225

00:12:18,160 --> 00:12:24,310

dawn why do you sleep on in space

226

00:12:29,990 --> 00:12:26,949

what do we sleep on in space

227

00:12:33,990 --> 00:12:30,000

actually we don't sleep on anything

228

00:12:36,829 --> 00:12:34,000

because that's a gravity earth centric

229

00:12:39,829 --> 00:12:36,839

thought in space we sleep

230

00:12:42,310 --> 00:12:39,839

in something we sleep in our sleeping

231

00:12:44,470 --> 00:12:42,320

bags and we just float inside of our

232

00:12:46,870 --> 00:12:44,480

sleeping bags and actually our sleeping

233

00:12:48,470 --> 00:12:46,880

bags do two things one they keep us warm

234

00:12:50,550 --> 00:12:48,480

because you're sleeping and your

235

00:12:52,790 --> 00:12:50,560

metabolism is lower and you can get

236

00:12:55,190 --> 00:12:52,800

chilled just like you wear blankets when

237

00:12:56,949 --> 00:12:55,200

you're sleeping on a bed

238

00:12:58,790 --> 00:12:56,959

and the other thing a sleeping bag does

239

00:13:00,230 --> 00:12:58,800

that you're sleeping in it it keeps you

240

00:13:02,310 --> 00:13:00,240

contained it keeps you from drifting

241

00:13:04,389 --> 00:13:02,320

around because because you may

242

00:13:06,230 --> 00:13:04,399

go to sleep

243

00:13:09,110 --> 00:13:06,240

against the wall and wake up on the

244

00:13:11,829 --> 00:13:09,120

ceiling and and so it it it keeps you in

245

00:13:18,389 --> 00:13:11,839

one place so we don't sleep on anything

246

00:13:21,590 --> 00:13:19,590

for joe

247

00:13:26,949 --> 00:13:21,600

how do you eat when you're wearing a

248

00:13:31,829 --> 00:13:29,590

yeah unfortunately uh you cannot eat

249

00:13:33,990 --> 00:13:31,839

while you're wearing the spacesuit and

250

00:13:36,790 --> 00:13:34,000

so if you go out and you do a space walk

251  
00:13:39,030 --> 00:13:36,800  
they usually last between you know six

252  
00:13:39,910 --> 00:13:39,040  
and a half seven hours and so for that

253  
00:13:42,230 --> 00:13:39,920  
time

254  
00:13:44,710 --> 00:13:42,240  
you cannot eat we do have a drink bag

255  
00:13:46,310 --> 00:13:44,720  
inside the suit so you can drink water

256  
00:13:48,470 --> 00:13:46,320  
and so when you get done and you get out

257  
00:13:49,990 --> 00:13:48,480  
of that spacesuit one of the first

258  
00:13:56,389 --> 00:13:50,000  
things you want to do is go to the

259  
00:14:00,870 --> 00:13:58,629  
this is for andre if there are no pipes

260  
00:14:02,790 --> 00:14:00,880  
or hoses running from earth to the space

261  
00:14:08,310 --> 00:14:02,800  
station how do you get clean drinking

262  
00:14:11,670 --> 00:14:09,829  
well that's of course an interesting

263  
00:14:13,269 --> 00:14:11,680

observation there's no pipes and hoses

264

00:14:15,750 --> 00:14:13,279

but there's also no power lines for

265

00:14:16,870 --> 00:14:15,760

example and still we have we have our

266

00:14:21,269 --> 00:14:16,880

energy

267

00:14:23,030 --> 00:14:21,279

comes from

268

00:14:25,030 --> 00:14:23,040

from the solar panels

269

00:14:28,389 --> 00:14:25,040

and the water well the water is brought

270

00:14:31,509 --> 00:14:28,399

up by spacecraft but we also what i said

271

00:14:33,509 --> 00:14:31,519

before we recycle a lot of water so the

272

00:14:36,069 --> 00:14:33,519

water that is in your breath the the

273

00:14:38,389 --> 00:14:36,079

water from respiration from from the

274

00:14:40,470 --> 00:14:38,399

exercise and also the water in the urine

275

00:14:41,590 --> 00:14:40,480

is recycled and we make drink water out

276

00:14:44,790 --> 00:14:41,600

of it again

277

00:14:47,509 --> 00:14:44,800

so we we recycle it now the water is

278

00:14:50,389 --> 00:14:47,519

also used to make oxygen so we split the

279

00:14:52,790 --> 00:14:50,399

water in hydrogen and oxygen so we have

280

00:14:54,710 --> 00:14:52,800

the oxygen coming also from the water

281

00:15:01,670 --> 00:14:54,720

and we recycle and now and then we bring

282

00:15:01,680 --> 00:15:07,350

don what do it smell like in space

283

00:15:12,949 --> 00:15:09,590

what does it smell like in space well

284

00:15:15,189 --> 00:15:12,959

inside the spacecraft it smells sort of

285

00:15:19,509 --> 00:15:15,199

like a combination of a

286

00:15:21,750 --> 00:15:19,519

engine room on a ship and a gymnasium

287

00:15:22,790 --> 00:15:21,760

some somewhere like that

288

00:15:28,790 --> 00:15:22,800

and

289

00:15:31,670 --> 00:15:28,800

atmosphere born

290

00:15:33,910 --> 00:15:31,680

sense when you're in the vacuum of space

291

00:15:35,269 --> 00:15:33,920

of course there's no smell at least not

292

00:15:40,790 --> 00:15:35,279

in the

293

00:15:48,389 --> 00:15:42,790

for joe are your thoughts and feelings

294

00:15:53,829 --> 00:15:51,189

that's a good question i think my my

295

00:15:56,150 --> 00:15:53,839

feelings are about the same

296

00:15:58,310 --> 00:15:56,160

you know the the same emotions that you

297

00:15:59,990 --> 00:15:58,320

have on earth you have here and then

298

00:16:01,509 --> 00:16:00,000

your sense if you you know cut yourself

299

00:16:02,389 --> 00:16:01,519

so all those kinds of things are the

300

00:16:03,829 --> 00:16:02,399

same

301  
00:16:05,269 --> 00:16:03,839  
but your thoughts they have to be a

302  
00:16:07,670 --> 00:16:05,279  
little bit different because now we're

303  
00:16:09,269 --> 00:16:07,680  
in an environment without gravity that

304  
00:16:11,509 --> 00:16:09,279  
of course we've lived our whole lives

305  
00:16:13,030 --> 00:16:11,519  
with gravity and so you think one way

306  
00:16:15,350 --> 00:16:13,040  
when you set the glass down it's going

307  
00:16:17,590 --> 00:16:15,360  
to stay there if i want to go from one

308  
00:16:19,749 --> 00:16:17,600  
place to another i have to walk where

309  
00:16:21,430 --> 00:16:19,759  
now we float from one place to another

310  
00:16:23,350 --> 00:16:21,440  
by using our hands

311  
00:16:24,790 --> 00:16:23,360  
and if you want to set something down

312  
00:16:26,710 --> 00:16:24,800  
you can't just let it go you need to

313  
00:16:29,110 --> 00:16:26,720

stick it to the wall otherwise it'll

314

00:16:30,790 --> 00:16:29,120

float away so a lot of those minor

315

00:16:32,550 --> 00:16:30,800

thoughts and things that we do every day

316

00:16:37,910 --> 00:16:32,560

on earth they are different when you get

317

00:16:42,550 --> 00:16:40,230

joe don and andre on behalf of

318

00:16:44,949 --> 00:16:42,560

destination imagination and philadelphia

319

00:16:50,790 --> 00:16:44,959

university we can't thank you enough for

320

00:16:50,800 --> 00:17:03,430

it was a pleasure

321

00:17:09,429 --> 00:17:05,990

station this is houston acr thank you

322

00:17:13,429 --> 00:17:11,510

thank you destination imagination