1
00:00:06,710 --> 00:00:04,550
hi i'm nasa astronaut mark kelly a

2
00:00:08,950 --> 00:00:06,720
graduate of mountain high school in west

3
00:00:10,950 --> 00:00:08,960
orange new jersey back then i didn't

4
00:00:12,470 --> 00:00:10,960
know that i'd become an astronaut but

5
00:00:15,509 --> 00:00:12,480
now i know that it wouldn't have been

6
00:00:16,470 --> 00:00:15,519
possible without solid skills in science

7
00:00:17,990 --> 00:00:16,480
technology

8
00:00:20,630 --> 00:00:18,000
engineering and math

9
00:00:22,870 --> 00:00:20,640
take it from me education is your ticket

10
00:00:25,109 --> 00:00:22,880
to an incredible future and what you

11
00:00:30,150 --> 00:00:25,119
learn today will help you reach for the

12
00:00:30,160 --> 00:00:46,470
foreign

13
00:00:46,480 --> 00:01:04,630

this is

14
00:01:04,640 --> 00:01:08,230
humanity

15
00:01:08,240 --> 00:01:21,429
what could it mean

16
00:01:21,439 --> 00:01:25,109
of

17
00:01:25,119 --> 00:01:44,069
you hear ourselves

18
00:01:44,079 --> 00:01:57,030
me

19
00:02:03,030 --> 00:01:59,109
good morning endeavor houston is here

20
00:02:08,949 --> 00:02:05,830
thanks shannon uh looking forward to it

21
00:02:10,389 --> 00:02:08,959
i had a great uh fourth spacewalk

22
00:02:12,710 --> 00:02:10,399
yesterday

23
00:02:16,869 --> 00:02:12,720
uh robotic arms put away and now we got

24
00:02:19,270 --> 00:02:16,879
a lunches transfer and sidra

25
00:02:20,949 --> 00:02:19,280
uh bed rnr today so we're uh looking

26
00:02:23,270 --> 00:02:20,959
forward to another day in space and

27
00:02:25,670 --> 00:02:23,280
thanks for the great song

28
00:02:29,110 --> 00:02:25,680
and you are so welcome it was a good day

29
00:02:33,910 --> 00:02:30,869
hi this is mike drake at the university

30
00:02:36,070 --> 00:02:33,920
of arizona can you hear me

31
00:02:38,550 --> 00:02:36,080
yeah mike we got you loud and clear

32
00:02:39,910 --> 00:02:38,560
welcome aboard we're on board the

33
00:02:45,990 --> 00:02:39,920
japanese

34
00:02:49,509 --> 00:02:47,350
well as you can hear there's a lot of

35
00:02:50,949 --> 00:02:49,519
applause in the room

36
00:02:52,550 --> 00:02:50,959
we have a lot of different people here

37
00:02:55,830 --> 00:02:52,560
today

38
00:02:57,990 --> 00:02:55,840

we have staffers and friends from your

39
00:02:59,350 --> 00:02:58,000
wife congressman gabby gifford's office

40
00:03:00,949 --> 00:02:59,360
who are with us

41
00:03:02,390 --> 00:03:00,959
we have a number of first responders

42
00:03:03,990 --> 00:03:02,400
from the fire department that are with

43
00:03:07,670 --> 00:03:04,000
us

44
00:03:08,949 --> 00:03:07,680
got a lot of middle school students who

45
00:03:10,390 --> 00:03:08,959
are going to be the ones asking you

46
00:03:12,790 --> 00:03:10,400
questions

47
00:03:14,550 --> 00:03:12,800
and we also have a number of of

48
00:03:17,030 --> 00:03:14,560
university of arizona space grant

49
00:03:18,550 --> 00:03:17,040
students which your wife gabby has been

50
00:03:20,149 --> 00:03:18,560
very strongly supportive of a great

51
00:03:21,670 --> 00:03:20,159
program at nasa

52
00:03:23,350 --> 00:03:21,680
let me bring up our first middle school

53
00:03:25,670 --> 00:03:23,360
student i'm going to ask her to say her

54
00:03:27,589 --> 00:03:25,680
name and ask her question hi my name is

55
00:03:29,589 --> 00:03:27,599
lena ariaga from gridley middle school

56
00:03:32,550 --> 00:03:29,599
my question is what feeling did you have

57
00:03:34,710 --> 00:03:32,560
when you first looked out the window

58
00:03:37,030 --> 00:03:34,720
well let me first say you know for

59
00:03:38,949 --> 00:03:37,040
everybody there welcome aboard the space

60
00:03:40,789 --> 00:03:38,959
station it's a

61
00:03:43,350 --> 00:03:40,799
great opportunity for us to have a

62
00:03:45,670 --> 00:03:43,360
chance to talk to the folks there back

63
00:03:48,149 --> 00:03:45,680

in tucson i know i probably

64
00:03:49,589 --> 00:03:48,159
know some people in the in the office we

65
00:03:50,710 --> 00:03:49,599
can't see you

66
00:03:52,390 --> 00:03:50,720
uh but

67
00:03:54,390 --> 00:03:52,400
you know it's uh it's nice to have the

68
00:03:56,390 --> 00:03:54,400
opportunity to do this event we just got

69
00:03:58,470 --> 00:03:56,400
up i imagine you guys are getting ready

70
00:04:00,390 --> 00:03:58,480
to go to sleep this morning

71
00:04:02,149 --> 00:04:00,400
um with rega

72
00:04:04,470 --> 00:04:02,159
or this evening with regards to your

73
00:04:06,789 --> 00:04:04,480
question though for me when i first saw

74
00:04:09,190 --> 00:04:06,799
the earth it was over 10 years ago i

75
00:04:11,509 --> 00:04:09,200
very distinctly remember it i was the

76
00:04:13,350 --> 00:04:11,519
pilot on the same space shuttle that's

77
00:04:15,270 --> 00:04:13,360
docked just a little bit to

78
00:04:18,310 --> 00:04:15,280
out that hatch and to our left space

79
00:04:20,629 --> 00:04:18,320
shuttle endeavour and at mach 15

80
00:04:22,950 --> 00:04:20,639
when you're going into orbit

81
00:04:24,790 --> 00:04:22,960
the space shuttle rolls the head

82
00:04:26,629 --> 00:04:24,800
to heads up so it's upside down and it

83
00:04:28,390 --> 00:04:26,639
rolls heads up and i looked over my

84
00:04:30,230 --> 00:04:28,400
right shoulder out the window

85
00:04:31,590 --> 00:04:30,240
you could see this big blue planet out

86
00:04:32,870 --> 00:04:31,600
there and it's really like even though

87
00:04:36,310 --> 00:04:32,880
it was 10 years ago it's like it was

88
00:04:38,150 --> 00:04:36,320

yesterday very very spectacular view

89
00:04:43,189 --> 00:04:38,160
it's pretty exciting to get to go into

90
00:04:47,030 --> 00:04:45,749
i'm going to add to that answer uh only

91
00:04:49,670 --> 00:04:47,040
because

92
00:04:53,110 --> 00:04:49,680
uh i experienced um

93
00:04:54,550 --> 00:04:53,120
my uh first daytime liftoff about a week

94
00:04:57,670 --> 00:04:54,560
and a half ago

95
00:04:59,430 --> 00:04:57,680
and to my left was commander kelly and i

96
00:05:02,070 --> 00:04:59,440
was the pilot in the right seat just

97
00:05:02,950 --> 00:05:02,080
like mark was recalling from 10 years

98
00:05:07,430 --> 00:05:02,960
ago

99
00:05:09,430 --> 00:05:07,440
it was at night and so uh this past

100
00:05:10,390 --> 00:05:09,440
launch was my first day uh launch as

101
00:05:12,629 --> 00:05:10,400
well

102
00:05:14,710 --> 00:05:12,639
and looking over my right shoulder i was

103
00:05:15,670 --> 00:05:14,720
amazed at how

104
00:05:18,790 --> 00:05:15,680
the

105
00:05:20,469 --> 00:05:18,800
atlantic ocean accelerated by

106
00:05:22,469 --> 00:05:20,479
i do recall looking out the window and

107
00:05:24,310 --> 00:05:22,479
mark said focus

108
00:05:26,710 --> 00:05:24,320
because as the pilot i'm supposed to

109
00:05:28,629 --> 00:05:26,720
focus on the engines and other systems

110
00:05:29,909 --> 00:05:28,639
but i was amazed at what it looked like

111
00:05:31,510 --> 00:05:29,919
out the window so i just wanted to share

112
00:05:33,749 --> 00:05:31,520
that with you

113
00:05:35,590 --> 00:05:33,759

hi i'm alex boland and do you have to

114
00:05:38,230 --> 00:05:35,600
tie everything while in space or during

115
00:05:41,270 --> 00:05:38,240
liftoff and landings

116
00:05:44,469 --> 00:05:41,280
hi alex uh yeah we we really do when uh

117
00:05:46,150 --> 00:05:44,479
on launch everything vibrates uh um

118
00:05:48,710 --> 00:05:46,160
and shakes and so everything has to be

119
00:05:50,150 --> 00:05:48,720
tied down but once we get to orbit it

120
00:05:51,749 --> 00:05:50,160
you know it's not shaking and vibrating

121
00:05:53,350 --> 00:05:51,759
anymore but if we don't tie it down

122
00:05:55,029 --> 00:05:53,360
it'll float away so

123
00:05:57,590 --> 00:05:55,039
uh you know one of the big challenges

124
00:05:58,469 --> 00:05:57,600
living up here is um not losing your

125
00:06:00,870 --> 00:05:58,479
stuff

126
00:06:03,909 --> 00:06:00,880
so we we have to um keep things tied

127
00:06:05,270 --> 00:06:03,919
down keep things secured because

128
00:06:06,950 --> 00:06:05,280
you know you lose it pretty fast but

129
00:06:08,710 --> 00:06:06,960
that you know that becomes challenging

130
00:06:11,590 --> 00:06:08,720
but it also becomes fun too so if you're

131
00:06:13,510 --> 00:06:11,600
eating a meal and uh you know you have a

132
00:06:15,029 --> 00:06:13,520
couple things in your hands if you if

133
00:06:17,430 --> 00:06:15,039
you run out of hands you could just take

134
00:06:18,950 --> 00:06:17,440
your your food and stick it right there

135
00:06:20,870 --> 00:06:18,960
and then

136
00:06:22,550 --> 00:06:20,880
go about go about you know getting a

137
00:06:24,150 --> 00:06:22,560
drink or something else and then just

138
00:06:26,150 --> 00:06:24,160

grab it and there it is okay just like

139
00:06:27,830 --> 00:06:26,160
that so

140
00:06:29,189 --> 00:06:27,840
so it's a you know it's challenging on

141
00:06:30,710 --> 00:06:29,199
one hand but it's a lot of fun on the

142
00:06:32,469 --> 00:06:30,720
other

143
00:06:34,550 --> 00:06:32,479
hi my name is mia birch from girly

144
00:06:36,469 --> 00:06:34,560
middle school my question is why do you

145
00:06:38,390 --> 00:06:36,479
take dry food with you and can you eat

146
00:06:39,670 --> 00:06:38,400
regular meal in space or is it

147
00:06:41,270 --> 00:06:39,680
impossible to keep the food from

148
00:06:43,510 --> 00:06:41,280
floating off

149
00:06:45,990 --> 00:06:43,520
well we have a velcro attached to all

150
00:06:48,629 --> 00:06:46,000
our food items mark just grabbed looks

151
00:06:50,629 --> 00:06:48,639
like some dried fruit of some kind

152
00:06:53,430 --> 00:06:50,639
dried pineapple we have a lot of

153
00:06:54,950 --> 00:06:53,440
dehydrated foods like dehydrated

154
00:06:56,070 --> 00:06:54,960
pineapple

155
00:06:58,629 --> 00:06:56,080
and

156
00:07:01,510 --> 00:06:58,639
we have other items that come

157
00:07:04,230 --> 00:07:01,520
pre-packaged all ready to go and they're

158
00:07:07,510 --> 00:07:04,240
in packets that we just put in the oven

159
00:07:10,230 --> 00:07:07,520
and heat we also have uh

160
00:07:12,790 --> 00:07:10,240
clear packets plastic packets that we

161
00:07:13,909 --> 00:07:12,800
inject water in to rehydrate them

162
00:07:17,830 --> 00:07:13,919
um

163
00:07:21,110 --> 00:07:17,840

and and every meal is is fun so uh

164
00:07:23,430 --> 00:07:21,120
it's really easy to eat and uh the food

165
00:07:26,950 --> 00:07:23,440
is great uh some people love the shrimp

166
00:07:29,909 --> 00:07:26,960
cocktail i actually prefer uh the m m's

167
00:07:31,990 --> 00:07:29,919
and uh it's it's it's it's a normal diet

168
00:07:33,510 --> 00:07:32,000
i made a hamburger the other day uh

169
00:07:35,670 --> 00:07:33,520
since it's zero gravity i was able to

170
00:07:37,029 --> 00:07:35,680
stick a tortilla on a clip put a little

171
00:07:39,430 --> 00:07:37,039
ketchup and mustard it doesn't go

172
00:07:41,909 --> 00:07:39,440
anywhere and then i stuck the the

173
00:07:43,589 --> 00:07:41,919
hamburger patty right exact right on the

174
00:07:45,189 --> 00:07:43,599
ketchup and it stuck

175
00:07:47,589 --> 00:07:45,199
because of course gravity's not acting

176
00:07:49,589 --> 00:07:47,599
on it and after i took it off the clip i

177
00:07:52,070 --> 00:07:49,599
rolled it up and ate it so we have

178
00:07:54,469 --> 00:07:52,080
pretty much normal foods no soda pop or

179
00:07:56,150 --> 00:07:54,479
things like that

180
00:07:58,230 --> 00:07:56,160
hi my name is alex henriquez from

181
00:08:00,150 --> 00:07:58,240
gridley middle school my question is how

182
00:08:02,710 --> 00:08:00,160
long does it take to readjust when you

183
00:08:04,550 --> 00:08:02,720
get back to earth

184
00:08:05,830 --> 00:08:04,560
well alex that's a good question and a

185
00:08:07,189 --> 00:08:05,840
lot of it depends on how long you've

186
00:08:08,710 --> 00:08:07,199
been up here

187
00:08:10,869 --> 00:08:08,720
for shuttle crew members that are up

188
00:08:12,629 --> 00:08:10,879

here for maybe two weeks or so

189
00:08:14,230 --> 00:08:12,639
they adjust the readjustment is is

190
00:08:16,469 --> 00:08:14,240
pretty quick um

191
00:08:18,550 --> 00:08:16,479
maybe a few days i remember on my

192
00:08:20,150 --> 00:08:18,560
shuttle flight about three years ago i

193
00:08:21,909 --> 00:08:20,160
think it was

194
00:08:23,350 --> 00:08:21,919
probably a day or two before i could

195
00:08:25,110 --> 00:08:23,360
walk without thinking about it i

196
00:08:26,869 --> 00:08:25,120
remember when i first got back i would

197
00:08:28,150 --> 00:08:26,879
take a step and go okay there goes the

198
00:08:29,749 --> 00:08:28,160
left foot there goes the right foot i'm

199
00:08:30,790 --> 00:08:29,759
starting to lean left i need to lean

200
00:08:33,350 --> 00:08:30,800
back right

201
00:08:35,750 --> 00:08:33,360
and so but that that passed very quickly

202
00:08:38,389 --> 00:08:35,760
um for sure for station crew members who

203
00:08:41,029 --> 00:08:38,399
are up here you know maybe six months

204
00:08:43,829 --> 00:08:41,039
the rehabilitation is much longer and um

205
00:08:46,630 --> 00:08:43,839
some of the things that we do to help

206
00:08:48,310 --> 00:08:46,640
prevent or or to to make it so that when

207
00:08:49,590 --> 00:08:48,320
we get back we don't have such a big

208
00:08:53,350 --> 00:08:49,600
adjustment period

209
00:08:55,430 --> 00:08:53,360
is exercise and we do two hours a day of

210
00:08:58,310 --> 00:08:55,440
either resistance exercise like weight

211
00:09:00,630 --> 00:08:58,320
lifting or aerobic exercise like riding

212
00:09:03,110 --> 00:09:00,640
the bike or running on a treadmill

213
00:09:04,790 --> 00:09:03,120

and that really seems to help it helps

214
00:09:06,829 --> 00:09:04,800
us in our adjustment when we come back

215
00:09:09,829 --> 00:09:06,839
to earth and it also

216
00:09:11,750 --> 00:09:09,839
helps prevent some of the or slow down

217
00:09:13,190 --> 00:09:11,760
some of the processes of just living in

218
00:09:15,670 --> 00:09:13,200
space like losing

219
00:09:17,750 --> 00:09:15,680
some of our bone mass

220
00:09:20,790 --> 00:09:17,760
and our muscles weakening and things

221
00:09:23,430 --> 00:09:20,800
like that so it helps to counteract that

222
00:09:26,949 --> 00:09:23,440
so there's a big long period of time

223
00:09:29,110 --> 00:09:26,959
after we get back uh where we slowly uh

224
00:09:31,670 --> 00:09:29,120
you know do a lot of exercise and a lot

225
00:09:34,150 --> 00:09:31,680
of other activities to to readjust to

226
00:09:36,790 --> 00:09:34,160
gravity once we get back

227
00:09:39,269 --> 00:09:36,800
my name is shea bushy and i'm from

228
00:09:41,990 --> 00:09:39,279
gridley middle school my question is how

229
00:09:44,550 --> 00:09:42,000
do you sleep in space

230
00:09:46,389 --> 00:09:44,560
well you you know you could sleep just

231
00:09:48,790 --> 00:09:46,399
kind of floating around the problem with

232
00:09:50,630 --> 00:09:48,800
that is you'd bump into other people and

233
00:09:51,350 --> 00:09:50,640
you'd wake them up and then you might

234
00:09:53,829 --> 00:09:51,360
not

235
00:09:55,750 --> 00:09:53,839
have any idea where you're gonna

236
00:09:56,870 --> 00:09:55,760
go to on the space station it's a really

237
00:09:58,790 --> 00:09:56,880
big place

238
00:09:59,910 --> 00:09:58,800

so what we do is we sleep in a sleeping

239
00:10:00,790 --> 00:09:59,920
bag

240
00:10:03,030 --> 00:10:00,800
it

241
00:10:05,350 --> 00:10:03,040
has a bunch of straps and hooks and you

242
00:10:07,350 --> 00:10:05,360
can tie it to the ceiling or to the

243
00:10:09,509 --> 00:10:07,360
floor or the wall

244
00:10:11,750 --> 00:10:09,519
last night i slept on the floor of the

245
00:10:13,910 --> 00:10:11,760
flight deck of the space shuttle

246
00:10:15,910 --> 00:10:13,920
mike fink one of our crew members was

247
00:10:17,590 --> 00:10:15,920
sleeping on the wall downstairs and

248
00:10:18,630 --> 00:10:17,600
sometimes people will sleep on the

249
00:10:20,710 --> 00:10:18,640
ceiling

250
00:10:22,310 --> 00:10:20,720
it takes a while to get used to

251
00:10:24,710 --> 00:10:22,320
sleeping in zero gravity there's no

252
00:10:25,590 --> 00:10:24,720
pressure on your body my first night in

253
00:10:26,949 --> 00:10:25,600
space

254
00:10:28,790 --> 00:10:26,959
ten years ago

255
00:10:30,790 --> 00:10:28,800
i got in my sleeping bag and then i

256
00:10:32,710 --> 00:10:30,800
immediately rolled over on my side like

257
00:10:34,230 --> 00:10:32,720
i would in bed

258
00:10:36,790 --> 00:10:34,240
and then thought to myself well this is

259
00:10:38,870 --> 00:10:36,800
kind of dumb because there is no side

260
00:10:40,310 --> 00:10:38,880
because there is no up or down so you

261
00:10:42,630 --> 00:10:40,320
might as well just stay in the position

262
00:10:44,630 --> 00:10:42,640
you're in

263
00:10:47,030 --> 00:10:44,640

hi my name is kirsten bassett and i'm

264
00:10:50,069 --> 00:10:47,040
from gridley middle school my question

265
00:10:53,750 --> 00:10:50,079
is how is growing plants in space

266
00:10:58,389 --> 00:10:55,030
kristin that's a really good question

267
00:10:59,829 --> 00:10:58,399
because we're actually doing that and

268
00:11:02,230 --> 00:10:59,839
we're trying to figure out the answer to

269
00:11:05,269 --> 00:11:02,240
that question really and you know what

270
00:11:07,509 --> 00:11:05,279
effect gravity has in how plants grow

271
00:11:10,230 --> 00:11:07,519
and one of the things we're trying to do

272
00:11:11,670 --> 00:11:10,240
is remove because we're in space and

273
00:11:13,590 --> 00:11:11,680
because we're in this what we call

274
00:11:14,630 --> 00:11:13,600
microgravity environment we can

275
00:11:17,430 --> 00:11:14,640
eliminate

276
00:11:19,590 --> 00:11:17,440
gravity from the equation and we can see

277
00:11:21,670 --> 00:11:19,600
how plants grow without gravity and that

278
00:11:24,230 --> 00:11:21,680
helps us to better understand the

279
00:11:25,910 --> 00:11:24,240
process of plant growth which helps us

280
00:11:28,470 --> 00:11:25,920
understand how crops grow and how we can

281
00:11:30,790 --> 00:11:28,480
make more food and so one of the things

282
00:11:33,590 --> 00:11:30,800
that we're doing is we're looking at

283
00:11:35,590 --> 00:11:33,600
what factor gravity plays in a plant's

284
00:11:39,190 --> 00:11:35,600
growth and how that compares to things

285
00:11:41,030 --> 00:11:39,200
like moisture in the soil and and

286
00:11:43,910 --> 00:11:41,040
chemicals that that are used for

287
00:11:45,829 --> 00:11:43,920
fertilizers and and things like that and

288
00:11:47,750 --> 00:11:45,839

you know a lot of the research that we

289
00:11:49,509 --> 00:11:47,760
do is so that we can go farther and

290
00:11:52,150 --> 00:11:49,519
farther into space and you know when we

291
00:11:53,910 --> 00:11:52,160
go uh to mars and beyond you know we're

292
00:11:55,509 --> 00:11:53,920
going to have to grow our own food in

293
00:11:57,350 --> 00:11:55,519
order to do that and so that's a very

294
00:11:59,990 --> 00:11:57,360
important part of the research that we

295
00:12:01,910 --> 00:12:00,000
do up here but you know on the one hand

296
00:12:04,069 --> 00:12:01,920
we're trying to discover how to go

297
00:12:06,069 --> 00:12:04,079
further in space but we're also helping

298
00:12:08,949 --> 00:12:06,079
uh you know all the people on earth as

299
00:12:10,790 --> 00:12:08,959
well as we grow uh you know figure out

300
00:12:13,030 --> 00:12:10,800
how to grow crops in in areas that are

301
00:12:14,949 --> 00:12:13,040
stricken with drought and uh you know

302
00:12:16,550 --> 00:12:14,959
areas that don't have uh really good

303
00:12:18,870 --> 00:12:16,560
soil and so there's a lot of

304
00:12:20,629 --> 00:12:18,880
experimentation that we do to look at

305
00:12:22,389 --> 00:12:20,639
the the effects of gravity and we also

306
00:12:25,269 --> 00:12:22,399
have you know cameras on the space

307
00:12:27,110 --> 00:12:25,279
station that look at crops throughout

308
00:12:29,829 --> 00:12:27,120
the world and evaluate how they're

309
00:12:31,430 --> 00:12:29,839
growing over time so that we could

310
00:12:34,230 --> 00:12:31,440
better understand that process so very

311
00:12:36,550 --> 00:12:34,240
good question thank you

312
00:12:38,470 --> 00:12:36,560
hi my name is amanda duncan from goodley

313
00:12:40,949 --> 00:12:38,480

middle school my question is can you see

314
00:12:42,710 --> 00:12:40,959
signs of man-made or natural disasters

315
00:12:44,949 --> 00:12:42,720
from space

316
00:12:46,550 --> 00:12:44,959
amanda you can and uh you know that's

317
00:12:47,829 --> 00:12:46,560
one of the the

318
00:12:49,269 --> 00:12:47,839
um

319
00:12:51,030 --> 00:12:49,279
really good things about being up here

320
00:12:53,030 --> 00:12:51,040
and having this vantage point to see to

321
00:12:55,110 --> 00:12:53,040
see our planet from and

322
00:12:56,949 --> 00:12:55,120
one of the most recent ones is the

323
00:12:58,310 --> 00:12:56,959
flooding of the mississippi river and we

324
00:13:00,629 --> 00:12:58,320
were able to take pictures of that and

325
00:13:02,550 --> 00:13:00,639
kind of document over time the changes

326
00:13:05,030 --> 00:13:02,560
to the river and the effect in the

327
00:13:07,110 --> 00:13:05,040
surrounding communities and so you know

328
00:13:11,030 --> 00:13:07,120
volcanoes hurricanes

329
00:13:12,710 --> 00:13:11,040
uh pollution all those type of uh uh

330
00:13:13,750 --> 00:13:12,720
um you know

331
00:13:15,910 --> 00:13:13,760
things that are affecting our

332
00:13:18,150 --> 00:13:15,920
environment you know we can monitor we

333
00:13:19,750 --> 00:13:18,160
can watch uh we can keep track of up

334
00:13:21,269 --> 00:13:19,760
here and it's uh really interesting to

335
00:13:23,190 --> 00:13:21,279
see that and to see

336
00:13:25,590 --> 00:13:23,200
um the good things and the bad things

337
00:13:28,389 --> 00:13:25,600
and see how you know man-made of effects

338
00:13:30,230 --> 00:13:28,399

uh on our planet uh are making some

339
00:13:31,430 --> 00:13:30,240
changes that are that some of them good

340
00:13:33,430 --> 00:13:31,440
and some of them bad so it's good to

341
00:13:37,110 --> 00:13:33,440
keep track of that and it's a wonderful

342
00:13:41,750 --> 00:13:39,189
hi my name is taylor reynolds from

343
00:13:44,069 --> 00:13:41,760
gridley middle school my question is how

344
00:13:46,949 --> 00:13:44,079
does the human body change in space both

345
00:13:48,870 --> 00:13:46,959
long and short term

346
00:13:50,790 --> 00:13:48,880
well you know the human body is an

347
00:13:53,110 --> 00:13:50,800
amazing thing and it really adapts very

348
00:13:55,910 --> 00:13:53,120
quickly to uh any environment that it's

349
00:13:58,310 --> 00:13:55,920
in and you know very quickly after you

350
00:13:59,590 --> 00:13:58,320
get to space your your body starts to to

351
00:14:01,750 --> 00:13:59,600
adjust and

352
00:14:03,189 --> 00:14:01,760
that's a good thing but but some of that

353
00:14:04,949 --> 00:14:03,199
some of that adjustment is not that good

354
00:14:06,710 --> 00:14:04,959
so one of the things that your body

355
00:14:09,430 --> 00:14:06,720
realizes is it doesn't really need a

356
00:14:11,269 --> 00:14:09,440
skeleton anymore and so you start losing

357
00:14:13,269 --> 00:14:11,279
a lot of the the mass in your bones the

358
00:14:14,870 --> 00:14:13,279
density of your bones

359
00:14:17,670 --> 00:14:14,880
you don't need the muscles in your legs

360
00:14:20,470 --> 00:14:17,680
as much so you start to lose those

361
00:14:22,389 --> 00:14:20,480
as mark said the fluid shifts so in your

362
00:14:24,550 --> 00:14:22,399
body there's fluid that is all kept

363
00:14:27,350 --> 00:14:24,560

towards your feet because of gravity so

364
00:14:29,110 --> 00:14:27,360
once you get to space that is free to

365
00:14:30,710 --> 00:14:29,120
flow to different parts of your body

366
00:14:33,189 --> 00:14:30,720
that it normally doesn't

367
00:14:34,870 --> 00:14:33,199
so those are all changes that occur your

368
00:14:36,470 --> 00:14:34,880
eyes change shape

369
00:14:38,389 --> 00:14:36,480
uh so there's a lot of these different

370
00:14:40,310 --> 00:14:38,399
effects that occur

371
00:14:42,310 --> 00:14:40,320
as your body tries to adjust to its new

372
00:14:44,069 --> 00:14:42,320
environment and

373
00:14:45,990 --> 00:14:44,079
like we had talked about before so you

374
00:14:47,350 --> 00:14:46,000
know some of these bad effects like

375
00:14:50,470 --> 00:14:47,360
losing bone density we have to

376
00:14:53,590 --> 00:14:50,480
counteract uh uh through other means

377
00:14:56,790 --> 00:14:53,600
like exercise so um like i said the body

378
00:14:57,829 --> 00:14:56,800
is an amazing adaptive uh um thing and

379
00:14:59,910 --> 00:14:57,839
it's it's

380
00:15:00,949 --> 00:14:59,920
you know something that we study up here

381
00:15:03,110 --> 00:15:00,959
a great deal we have a lot of

382
00:15:05,750 --> 00:15:03,120
experimentation that we use uh that we

383
00:15:08,069 --> 00:15:05,760
do on ourselves and on each other as

384
00:15:09,990 --> 00:15:08,079
crewmates and um you know we're we are

385
00:15:13,030 --> 00:15:10,000
learning more about the human body uh

386
00:15:14,790 --> 00:15:13,040
with our time up here hi my name is

387
00:15:17,030 --> 00:15:14,800
maddie shaw from gridley middle school

388
00:15:18,230 --> 00:15:17,040

my question is how do you shower in

389
00:15:21,910 --> 00:15:18,240
space

390
00:15:23,990 --> 00:15:21,920
well thanks thanks maddie um

391
00:15:27,030 --> 00:15:24,000
we don't have a shower

392
00:15:28,310 --> 00:15:27,040
a sky lab after the apollo program where

393
00:15:30,550 --> 00:15:28,320
we went to the moon actually had

394
00:15:32,629 --> 00:15:30,560
something that was like a shower

395
00:15:34,949 --> 00:15:32,639
and i think worked pretty well on the

396
00:15:37,829 --> 00:15:34,959
space station and space shuttle we don't

397
00:15:39,269 --> 00:15:37,839
so we take a bath kind of like

398
00:15:40,949 --> 00:15:39,279
like somebody would if they were in a

399
00:15:42,710 --> 00:15:40,959
hospital bed i mean with a towel and

400
00:15:44,949 --> 00:15:42,720
water and soap on it

401
00:15:47,749 --> 00:15:44,959
you rub it on yourself and then you

402
00:15:49,590 --> 00:15:47,759
you you wipe it off later so it's not

403
00:15:50,710 --> 00:15:49,600
the greatest shower

404
00:15:52,470 --> 00:15:50,720
uh but

405
00:15:54,710 --> 00:15:52,480
you know it works it works for two weeks

406
00:15:56,790 --> 00:15:54,720
for us and it'll it'll work for six

407
00:15:59,590 --> 00:15:56,800
months for ron

408
00:16:01,829 --> 00:15:59,600
um so that that's a very good question

409
00:16:04,069 --> 00:16:01,839
before we go i wanted to congratulate

410
00:16:05,910 --> 00:16:04,079
the university of arizona on their new

411
00:16:07,350 --> 00:16:05,920
project and i can't remember the name of

412
00:16:09,829 --> 00:16:07,360
it we just saw it in the news since

413
00:16:12,550 --> 00:16:09,839

we've since we launched on the

414
00:16:15,350 --> 00:16:12,560
on the 16th of may but their project to

415
00:16:16,790 --> 00:16:15,360
visit an asteroid that's uh you know

416
00:16:19,189 --> 00:16:16,800
very exciting

417
00:16:21,829 --> 00:16:19,199
it's i think one of the biggest

418
00:16:25,189 --> 00:16:21,839
uh nasa related projects that a

419
00:16:26,629 --> 00:16:25,199
university has had and so i wanted to

420
00:16:29,189 --> 00:16:26,639
congratulate

421
00:16:30,949 --> 00:16:29,199
the university of arizona for for you

422
00:16:33,350 --> 00:16:30,959
know for that milestone in there in

423
00:16:35,509 --> 00:16:33,360
their exploration of space so thanks

424
00:16:38,310 --> 00:16:35,519
very much everybody it was great talking

425
00:16:39,910 --> 00:16:38,320
to you today and i hope to see you in

426
00:16:42,069 --> 00:16:39,920
tucson

427
00:16:57,670 --> 00:16:42,079
thank you mark let's all applaud their

428
00:17:02,470 --> 00:16:59,509
you're back aboard the international

429
00:17:04,390 --> 00:17:02,480
space station in the japanese laboratory

430
00:17:06,390 --> 00:17:04,400
the largest science laboratory of the

431
00:17:10,549 --> 00:17:06,400
international space station providing a

432
00:17:13,750 --> 00:17:10,559
great uh work site environment for the

433
00:17:17,029 --> 00:17:13,760
task that greg chamatov you see here is

434
00:17:19,590 --> 00:17:17,039
reviewing along with mike fink

435
00:17:21,750 --> 00:17:19,600
chamatov is reviewing the uh procedures

436
00:17:23,829 --> 00:17:21,760
the detailed procedures for this task

437
00:17:26,630 --> 00:17:23,839
which is budgeted on uh

438
00:17:29,430 --> 00:17:26,640

his and mike fink's timeline for uh

439
00:17:32,710 --> 00:17:29,440
about four to five hours worth of work

440
00:17:35,029 --> 00:17:32,720
to uh swap out the and a what's known as

441
00:17:37,270 --> 00:17:35,039
a bed a sorbent bed on the carbon

442
00:17:38,390 --> 00:17:37,280
dioxide removal assembly it's a very

443
00:17:39,909 --> 00:17:38,400
elaborate

444
00:17:41,350 --> 00:17:39,919
piece of equipment you see there and

445
00:17:42,630 --> 00:17:41,360
quite large

446
00:17:45,430 --> 00:17:42,640
that

447
00:17:47,350 --> 00:17:45,440
when active removes carbon dioxide from

448
00:17:50,470 --> 00:17:47,360
the atmosphere of the international

449
00:17:53,909 --> 00:17:52,390
station houston on space ground two for

450
00:17:55,830 --> 00:17:53,919
mike

451
00:17:57,830 --> 00:17:55,840
go ahead procedure

452
00:18:00,310 --> 00:17:57,840
and mike this is just for you we wanted

453
00:18:01,789 --> 00:18:00,320
to congratulate you on breaking the

454
00:18:04,710 --> 00:18:01,799
duration record

455
00:18:12,789 --> 00:18:04,720
377 days and counting our hearty

456
00:18:17,750 --> 00:18:15,590
thanks lucia and uh thanks to all the

457
00:18:18,950 --> 00:18:17,760
uh people i've phone with and all the

458
00:18:20,789 --> 00:18:18,960
folks have

459
00:18:23,350 --> 00:18:20,799
supported us from the grounds it's been

460
00:18:25,190 --> 00:18:23,360
a great ride but honestly i hope this uh

461
00:18:26,390 --> 00:18:25,200
record that we said is going to get

462
00:18:29,029 --> 00:18:26,400
broken by

463
00:18:31,270 --> 00:18:29,039

future people and this will be uh just a

464
00:18:34,310 --> 00:18:31,280
uh i guess a ripple in the wind of uh

465
00:18:35,990 --> 00:18:34,320
humans conquering space so uh for

466
00:18:38,390 --> 00:18:36,000
for the moment though i'm gonna enjoy it

467
00:18:40,470 --> 00:18:38,400
thanks for congratulations

468
00:18:44,870 --> 00:18:40,480
and it's been a real joy and we also

469
00:18:49,270 --> 00:18:46,230
just so you know mike's plan to break

470
00:18:49,280 --> 00:18:54,310
good deal

471
00:18:59,590 --> 00:18:58,390
i am this morning my timeline pleasure

472
00:19:01,590 --> 00:18:59,600
so i am

473
00:19:03,430 --> 00:19:01,600
going to the procedure to shut it down

474
00:19:06,310 --> 00:19:03,440
and then i'll take it out and then i'll

475
00:19:08,470 --> 00:19:06,320
give it to the station

476
00:19:10,870 --> 00:19:08,480
so what is glacier

477
00:19:13,669 --> 00:19:10,880
well guess your pleasure is a surprise

478
00:19:15,909 --> 00:19:13,679
because i heard that there must be some

479
00:19:16,950 --> 00:19:15,919
some very interesting inside shall we

480
00:19:20,310 --> 00:19:16,960
open it

481
00:19:22,470 --> 00:19:20,320
uh

482
00:19:24,310 --> 00:19:22,480
well it's a special tool doesn't it i

483
00:19:26,789 --> 00:19:24,320
guess we could but we don't want to do

484
00:19:29,190 --> 00:19:26,799
that we want to we don't want to spoil

485
00:19:32,070 --> 00:19:29,200
the surprise no

486
00:19:33,669 --> 00:19:32,080
but they do experiments cold um

487
00:19:35,190 --> 00:19:33,679
uh temperature experiments in there

488
00:19:36,789 --> 00:19:35,200

right what's the temperature right now

489
00:19:39,270 --> 00:19:36,799
that thing

490
00:19:41,830 --> 00:19:39,280
i went already to them and it was a

491
00:19:45,590 --> 00:19:41,840
minus 35 it's pretty good

492
00:19:49,430 --> 00:19:47,430
boy you could like store ice cream or

493
00:19:52,950 --> 00:19:49,440
something in this thing well no you

494
00:19:55,350 --> 00:19:52,960
cannot do that but in theory you

495
00:19:56,870 --> 00:19:55,360
all right well roberto we're gonna um

496
00:19:59,029 --> 00:19:56,880
get you on video when you're pulling

497
00:20:00,950 --> 00:19:59,039
this thing out so don't pull it out till

498
00:20:03,350 --> 00:20:00,960
i come back all right

499
00:20:05,669 --> 00:20:03,360
all right hi

500
00:20:08,310 --> 00:20:05,679
so hey guys so what a bunch of space

501
00:20:11,750 --> 00:20:08,320
walkers do uh after all the space walks

502
00:20:16,070 --> 00:20:13,990
what's this this is a carbon dioxide

503
00:20:17,590 --> 00:20:16,080
removal assembly

504
00:20:19,909 --> 00:20:17,600
looks like a truck engine and we're

505
00:20:22,149 --> 00:20:19,919
taking it up completely apart to change

506
00:20:23,909 --> 00:20:22,159
out that bed in there in the middle

507
00:20:25,750 --> 00:20:23,919
right a little bit everything's gonna

508
00:20:28,789 --> 00:20:25,760
come off and everything's gonna go back

509
00:20:30,630 --> 00:20:28,799
on no problem it's a full day job but uh

510
00:20:32,230 --> 00:20:30,640
we can handle it it looks like something

511
00:20:33,990 --> 00:20:32,240
that a bunch of guys who've been on the

512
00:20:34,870 --> 00:20:34,000
space station a long time would know how

513
00:20:38,070 --> 00:20:34,880

to do

514
00:20:39,510 --> 00:20:38,080
weird can do crew

515
00:20:41,510 --> 00:20:39,520
so how long you've been working on this

516
00:20:43,510 --> 00:20:41,520
thing a couple hours yeah i know you

517
00:20:45,830 --> 00:20:43,520
guys been hiding in here but hey for

518
00:20:47,669 --> 00:20:45,840
those of you watching nasa tv if you fix

519
00:20:50,230 --> 00:20:47,679
things at home anything like fixing your

520
00:20:51,590 --> 00:20:50,240
own furnace working on your own car you

521
00:20:53,350 --> 00:20:51,600
know any little thing that you any

522
00:20:54,950 --> 00:20:53,360
maintenance kind of work you do at home

523
00:20:57,029 --> 00:20:54,960
is good space flight training that's

524
00:20:58,230 --> 00:20:57,039
true absolutely

525
00:20:59,830 --> 00:20:58,240
all right

526
00:21:01,909 --> 00:20:59,840
hey there's one other thing in here that

527
00:21:03,430 --> 00:21:01,919
i noted there's uh isn't there like an

528
00:21:07,029 --> 00:21:03,440
experiment over here that's like really

529
00:21:10,789 --> 00:21:07,039
fragile that's called b-cat and it's uh

530
00:21:12,870 --> 00:21:10,799
binary colloids colloids um basically

531
00:21:15,669 --> 00:21:12,880
it's looking at how uh colloidal

532
00:21:20,230 --> 00:21:15,679
particles

533
00:21:22,390 --> 00:21:20,240
uh separate

534
00:21:25,270 --> 00:21:22,400
and uh it's over a long period of time

535
00:21:27,270 --> 00:21:25,280
in zero g and and you see a camera there

536
00:21:28,149 --> 00:21:27,280
set uh set up to take special pictures

537
00:21:29,590 --> 00:21:28,159
of that

538
00:21:30,710 --> 00:21:29,600

it's uh it's been going on the space

539
00:21:32,230 --> 00:21:30,720
station for a long time and they're

540
00:21:34,070 --> 00:21:32,240
learning a lot about how fluids behave

541
00:21:36,630 --> 00:21:34,080
in space and that's a that's a really

542
00:21:38,630 --> 00:21:36,640
neat experiment tell you what uh tez has

543
00:21:40,390 --> 00:21:38,640
a couple phds and you know why and

544
00:21:44,070 --> 00:21:40,400
understand stuff like that and then

545
00:21:46,710 --> 00:21:44,080
looking up here here we see the jlp

546
00:21:49,669 --> 00:21:46,720
wanted by another can-do crew oh yeah

547
00:21:50,870 --> 00:21:49,679
can do crew yeah you betcha um what's

548
00:21:53,110 --> 00:21:50,880
interesting right here is we've done a

549
00:21:54,789 --> 00:21:53,120
lot of our pr shots on at this

550
00:21:57,190 --> 00:21:54,799
particular location

551
00:21:58,950 --> 00:21:57,200
and that's what we kind of hold our feet

552
00:22:00,310 --> 00:21:58,960
down with these little uh

553
00:22:01,590 --> 00:22:00,320
foot restraints

554
00:22:04,630 --> 00:22:01,600
what's interesting though is they're

555
00:22:07,029 --> 00:22:04,640
located not exactly

556
00:22:09,669 --> 00:22:07,039
aligned with the hatch they're actually

557
00:22:11,909 --> 00:22:09,679
pretty far back and so if you just jump

558
00:22:13,830 --> 00:22:11,919
straight up you might hit that hatch

559
00:22:15,830 --> 00:22:13,840
right there i think we might have seen

560
00:22:17,190 --> 00:22:15,840
that earlier did that happen to you but

561
00:22:18,390 --> 00:22:17,200
yeah it did

562
00:22:20,149 --> 00:22:18,400
all right guys

563
00:22:21,750 --> 00:22:20,159

show me a jump show me a jump here we go

564
00:22:28,950 --> 00:22:21,760
all right both of you

565
00:22:33,110 --> 00:22:30,630
floating around the space station

566
00:22:34,310 --> 00:22:33,120
sometimes you'll find a bag just hanging

567
00:22:36,710 --> 00:22:34,320
out

568
00:22:39,510 --> 00:22:36,720
and as i'm exiting the

569
00:22:41,909 --> 00:22:39,520
japanese lab i see the cwc

570
00:22:44,789 --> 00:22:41,919
has condensate written on it

571
00:22:47,430 --> 00:22:44,799
and it's just hanging out here

572
00:22:49,750 --> 00:22:47,440
it has no home

573
00:22:51,110 --> 00:22:49,760
so i'm gonna go ask somebody what uh

574
00:22:57,270 --> 00:22:51,120
what we're gonna do with this bag it's

575
00:23:00,630 --> 00:22:58,870
i'm in node two

576
00:23:03,430 --> 00:23:00,640
and uh

577
00:23:07,430 --> 00:23:03,440
here are some sleep stations that the

578
00:23:10,549 --> 00:23:07,440
station guys have used over the years

579
00:23:10,559 --> 00:23:14,789
as i kind of rotate around

580
00:23:18,310 --> 00:23:17,190
ronnie garen and one of the russians

581
00:23:20,070 --> 00:23:18,320
sasha

582
00:23:23,510 --> 00:23:20,080
are sleeping in two of them but now that

583
00:23:25,590 --> 00:23:23,520
katie and paulo have left we uh

584
00:23:27,430 --> 00:23:25,600
have two open ones so

585
00:23:30,390 --> 00:23:27,440
we've been sharing um

586
00:23:34,070 --> 00:23:32,149
we've been sharing uh

587
00:23:36,310 --> 00:23:34,080
two of these the last few nights and i

588
00:23:38,870 --> 00:23:36,320

got the opportunity to sleep in one last

589
00:23:40,390 --> 00:23:38,880
night really comfortable

590
00:23:46,710 --> 00:23:40,400
they're about uh

591
00:23:53,830 --> 00:23:51,110
a sleeping bag fits nicely along in here

592
00:23:55,750 --> 00:23:53,840
and then on this side

593
00:23:58,070 --> 00:23:55,760
you can see laptops and other things

594
00:23:59,990 --> 00:23:58,080
that were used can be used to access the

595
00:24:03,510 --> 00:24:00,000
internet i'm actually upside down here

596
00:24:08,070 --> 00:24:06,789
ah there we go much better

597
00:24:10,310 --> 00:24:08,080
actually no i had it right the first

598
00:24:12,390 --> 00:24:10,320
time it's just it looks like the laptop

599
00:24:17,590 --> 00:24:12,400
stowed

600
00:24:17,600 --> 00:24:24,149
oh yeah

601
00:24:30,310 --> 00:24:27,909
continuing on into the u.s lab

602
00:24:31,669 --> 00:24:30,320
this would really upset paulo because

603
00:24:33,430 --> 00:24:31,679
i'm actually

604
00:24:35,110 --> 00:24:33,440
standing sideways it's not really

605
00:24:37,029 --> 00:24:35,120
apparent to me because i've not spent

606
00:24:38,230 --> 00:24:37,039
that much time here actually it kind of

607
00:24:40,710 --> 00:24:38,240
is now

608
00:24:41,990 --> 00:24:40,720
but this is actually the deck

609
00:24:43,590 --> 00:24:42,000
as we're

610
00:24:45,430 --> 00:24:43,600
this is the orientation my body is

611
00:24:48,230 --> 00:24:45,440
supposed to be as i traverse through

612
00:24:51,830 --> 00:24:50,149
it doesn't really bother us shuttle guys

613
00:24:53,830 --> 00:24:51,840

much because

614
00:24:56,230 --> 00:24:53,840
we're not really used to what's up and

615
00:24:58,149 --> 00:24:56,240
what's down but the station guys

616
00:25:02,710 --> 00:24:58,159
it can be troubling to them if we're

617
00:25:08,950 --> 00:25:05,190
entering into node one

618
00:25:10,870 --> 00:25:08,960
if i go down you go to the pmm

619
00:25:13,110 --> 00:25:10,880
if i go right

620
00:25:16,310 --> 00:25:13,120
we go to node three

621
00:25:19,909 --> 00:25:16,320
and then the cupola's back in there

622
00:25:22,950 --> 00:25:21,510
go into the air lock and there's guys

623
00:25:24,230 --> 00:25:22,960
working in there

624
00:25:26,070 --> 00:25:24,240
hi box

625
00:25:26,950 --> 00:25:26,080
how are you doing you're doing good how

626
00:25:29,590 --> 00:25:26,960
are you

627
00:25:31,750 --> 00:25:29,600
very good and then straight ahead is the

628
00:25:34,149 --> 00:25:31,760
russian segment the only part of the

629
00:25:35,510 --> 00:25:34,159
node that you can't go into is this one

630
00:25:37,909 --> 00:25:35,520
right here

631
00:25:40,070 --> 00:25:37,919
it's a wall of food

632
00:25:41,830 --> 00:25:40,080
and other eva items i'm gonna go into

633
00:25:43,750 --> 00:25:41,840
the airlock and see what's going on with

634
00:25:45,510 --> 00:25:43,760
these guys what you guys been doing in

635
00:25:48,630 --> 00:25:45,520
here all day

636
00:25:49,990 --> 00:25:48,640
resizing suits we're way behind we're

637
00:25:51,830 --> 00:25:50,000
catching up though

638
00:25:58,149 --> 00:25:51,840

you guys have been working back here for

639
00:26:01,590 --> 00:26:00,149
so why are you resizing them

640
00:26:04,470 --> 00:26:01,600
because some of the parts get out of

641
00:26:07,029 --> 00:26:04,480
certification life and uh and also

642
00:26:08,870 --> 00:26:07,039
because there's other eba guys coming up

643
00:26:10,310 --> 00:26:08,880
to do some work and they don't fit in

644
00:26:17,510 --> 00:26:10,320
the suits that we have configured right

645
00:26:17,520 --> 00:26:23,430
let's get them ready

646
00:26:26,230 --> 00:26:25,029
what's that uh what's that sound up

647
00:26:27,990 --> 00:26:26,240
there man

648
00:26:30,630 --> 00:26:28,000
it's the washing machine high pressure

649
00:26:35,830 --> 00:26:33,110
oh it's not a washing machine

650
00:26:37,190 --> 00:26:35,840
that sure does man

651
00:26:39,029 --> 00:26:37,200
all right well i'll let you guys get

652
00:26:40,870 --> 00:26:39,039
back to work

653
00:26:43,269 --> 00:26:40,880
thanks for uh spending a couple minutes

654
00:26:49,350 --> 00:26:43,279
on flight day highlights for flight day

655
00:26:55,110 --> 00:26:53,190
it looks like roberto is uh working on

656
00:26:59,750 --> 00:26:55,120
the second corner of this glacier

657
00:26:59,760 --> 00:27:08,630
looks pretty loose now

658
00:27:12,710 --> 00:27:10,630
so what you swap this one with the one

659
00:27:28,630 --> 00:27:12,720
that's on the iss is that how it works

660
00:27:32,789 --> 00:27:31,269
the pleasure is coming out he has been

661
00:27:35,190 --> 00:27:32,799
with us for

662
00:27:39,350 --> 00:27:35,200
13 days and now

663
00:27:44,789 --> 00:27:42,230

so roberta what is the mystery of what's

664
00:27:46,230 --> 00:27:44,799
inside a glacier i don't know maybe i

665
00:27:49,190 --> 00:27:46,240
will never know

666
00:27:51,990 --> 00:27:49,200
somebody else will be lucky that will

667
00:27:57,669 --> 00:27:54,070
all right thanks a lot man we're taking

668
00:28:00,830 --> 00:27:57,679
it to iss i'm gonna give you some help

669
00:28:03,590 --> 00:28:00,840
so what we're doing is we're

670
00:28:05,750 --> 00:28:03,600
swapping ronnie's glacier

671
00:28:09,029 --> 00:28:05,760
on the station here with the shuttle

672
00:28:14,070 --> 00:28:12,070
see ronnie accessing one of the racks

673
00:28:15,669 --> 00:28:14,080
here in the lab

674
00:28:18,470 --> 00:28:15,679
and here's

675
00:28:21,750 --> 00:28:18,480
his glacier

676
00:28:23,669 --> 00:28:21,760
and there's spanky going by and then

677
00:28:34,870 --> 00:28:23,679
you can see our glacier roberto's

678
00:28:42,470 --> 00:28:37,029
all right roberto i present you with the

679
00:28:42,480 --> 00:28:46,710
all right i accept the shuttle glacier

680
00:28:50,950 --> 00:28:48,470
and you get the shuttle glacier

681
00:28:53,750 --> 00:28:50,960
including all of its contents

682
00:28:54,950 --> 00:28:53,760
oh yeah looking forward to that

683
00:28:57,430 --> 00:28:54,960
all right

684
00:28:59,510 --> 00:28:57,440
thanks folks i have the glacier that is

685
00:29:02,070 --> 00:28:59,520
coming from the station and

686
00:29:04,630 --> 00:29:02,080
now i will put it back in place

687
00:29:21,190 --> 00:29:04,640
reinstall it power on so that we can

688
00:29:27,669 --> 00:29:23,590

very carefully slugging

689
00:29:29,350 --> 00:29:27,679
into his final location

690
00:29:31,830 --> 00:29:29,360
i'm not thinking there's any ice cream

691
00:29:32,870 --> 00:29:31,840
in this one

692
00:29:43,190 --> 00:29:32,880
i

693
00:29:44,710 --> 00:29:43,200
okay we got to connect the cables and

694
00:29:47,669 --> 00:29:44,720
the

695
00:29:51,830 --> 00:29:49,750
all right you don't want one so roberto

696
00:29:53,909 --> 00:29:51,840
are you using that high torque rod to

697
00:30:08,630 --> 00:29:53,919
get the little hex nuts in is that

698
00:30:17,190 --> 00:30:10,710
boy this mid deck was quiet now it's

699
00:30:20,870 --> 00:30:18,789
how many workouts is this for you mark

700
00:30:24,070 --> 00:30:20,880
is that are you setting a record i like

701
00:30:26,070 --> 00:30:24,080
it for me yes stay with me man i've

702
00:30:28,470 --> 00:30:26,080
gotten most of my exercise sessions i'm

703
00:30:31,510 --> 00:30:28,480
i think i'm one behind you

704
00:30:33,029 --> 00:30:31,520
went a little extra long today though

705
00:30:35,269 --> 00:30:33,039
all right well this is signing out on

706
00:30:37,590 --> 00:30:35,279
the mid deck the glacier is successfully

707
00:30:41,909 --> 00:30:37,600
transferred and

708
00:30:46,710 --> 00:30:44,710
and uh next is for me is spinal

709
00:30:48,630 --> 00:30:46,720
elongation and while we're talking about

710
00:30:50,710 --> 00:30:48,640
that here's a uh

711
00:30:52,389 --> 00:30:50,720
a height chart

712
00:30:54,149 --> 00:30:52,399
that uh

713
00:30:56,310 --> 00:30:54,159

we put up the other day

714
00:30:57,669 --> 00:30:56,320
everybody's grown about one and a half

715
00:30:59,750 --> 00:30:57,679
two inches