1
00:00:27,939 --> 00:00:02,600
I assess this Houston are you ready for

2
00:00:27,949 --> 00:00:33,069
hughson ISS is ready for the event

3
00:00:50,799 --> 00:00:36,680
endeavour ISS this is Houston ACR please

4
00:00:54,740 --> 00:00:53,389
where do we sleep on the station that is

5
00:00:57,710 --> 00:00:54,750
a great question because the space

6
00:00:59,329 --> 00:00:57,720
station is a really big place the last

7
00:01:01,910 --> 00:00:59,339
few nights I've been sleeping in the

8
00:01:05,119 --> 00:01:01,920
Columbus module or the European module

9
00:01:07,190 --> 00:01:05,129
which is right there and a few people

10
00:01:09,080 --> 00:01:07,200
sleep on the space station some of us

11
00:01:10,940 --> 00:01:09,090
have slept in the Japanese module which

12
00:01:13,640 --> 00:01:10,950
is right there called the gem or Kibo

13
00:01:15,859 --> 00:01:13,650

last night one of us slept in node three

14
00:01:17,480 --> 00:01:15,869
down there and the space station crew

15
00:01:20,240 --> 00:01:17,490
members sleep all around the space

16
00:01:22,039 --> 00:01:20,250
station so we kind of spread out at

17
00:01:28,069 --> 00:01:22,049
night it's it's a really great place to

18
00:01:30,590 --> 00:01:28,079
sleep hi my name is Erin Lee from Stuart

19
00:01:32,569 --> 00:01:30,600
middle magnet in Tampa Florida our

20
00:01:34,580 --> 00:01:32,579
teachers took us on a campout near the

21
00:01:37,609 --> 00:01:34,590
kennedy space center so we could get up

22
00:01:40,370 --> 00:01:37,619
at 4am to see your shuttle launch and it

23
00:01:48,230 --> 00:01:40,380
was awesome but my question is why did

24
00:01:50,029 --> 00:01:48,240
you have to launch so early well first

25
00:01:52,160 --> 00:01:50,039
of all we'd like to apologize for making

26
00:01:55,399 --> 00:01:52,170
everyone get up so early we were up

27
00:01:58,580 --> 00:01:55,409
pretty early ourselves the time of a

28
00:02:00,440 --> 00:01:58,590
launch is determined by the orbit of the

29
00:02:02,539 --> 00:02:00,450
International Space Station we need to

30
00:02:04,010 --> 00:02:02,549
be able to launch from Florida and to

31
00:02:05,959 --> 00:02:04,020
catch up to the International Space

32
00:02:07,730 --> 00:02:05,969
Station to rendezvous and dock and we

33
00:02:10,160 --> 00:02:07,740
want to do that with the minimal amount

34
00:02:13,220 --> 00:02:10,170
of fuel that we expend because remember

35
00:02:16,640 --> 00:02:13,230
everything that we lift off of the pad

36
00:02:18,650 --> 00:02:16,650
it costs us basically are our amount

37
00:02:20,690 --> 00:02:18,660
that we can take to orbit so we don't

38
00:02:24,199 --> 00:02:20,700

want to have to take any extra fuel that

39
00:02:27,170 --> 00:02:24,209
we don't really need to orbit so we have

40
00:02:29,690 --> 00:02:27,180
to stay to these very tight little short

41
00:02:31,520 --> 00:02:29,700
launch windows to be able to catch up to

42
00:02:33,320 --> 00:02:31,530
the International Space Station so again

43
00:02:38,630 --> 00:02:33,330
sorry for the time but hope you enjoyed

44
00:02:39,770 --> 00:02:38,640
the light show hi my name is Clara hurry

45
00:02:41,510 --> 00:02:39,780
and i am from that

46
00:02:43,730 --> 00:02:41,520
gene middle school and I'll Grove

47
00:02:45,830 --> 00:02:43,740
California my generation has a bright

48
00:02:47,870 --> 00:02:45,840
future what do you think we'll be doing

49
00:02:53,590 --> 00:02:47,880
in the next 10 or 20 years as far as

50
00:02:59,059 --> 00:02:56,900
well that's a great question and I'm

51
00:03:00,350 --> 00:02:59,069
very excited about the future right now

52
00:03:02,750 --> 00:03:00,360
we've been able to build the space

53
00:03:04,340 --> 00:03:02,760
station where people have have we've

54
00:03:06,380 --> 00:03:04,350
already shown that we can live and work

55
00:03:08,960 --> 00:03:06,390
in space for a long time we've been

56
00:03:11,300 --> 00:03:08,970
building a lot of hardware and equipment

57
00:03:14,690 --> 00:03:11,310
to teach us how to live and go on long

58
00:03:16,220 --> 00:03:14,700
longer missions and I think that we will

59
00:03:19,160 --> 00:03:16,230
be able to go to places like the Moon

60
00:03:20,840 --> 00:03:19,170
and Mars in the not-too-distant future

61
00:03:24,229 --> 00:03:20,850
and I think that's going to be a really

62
00:03:29,449 --> 00:03:24,239
exciting time as humanity expands out

63
00:03:30,979 --> 00:03:29,459

into the solar system hi I'm Daniel

64
00:03:32,990 --> 00:03:30,989
Lorenzo from Stewart middle magnet

65
00:03:35,449 --> 00:03:33,000
school in Tampa Florida and my question

66
00:03:42,380 --> 00:03:35,459
to you is how long do you guys have to

67
00:03:44,300 --> 00:03:42,390
train before going into outer space well

68
00:03:45,979 --> 00:03:44,310
it's a great question you could

69
00:03:48,530 --> 00:03:45,989
generally answer that question all your

70
00:03:51,259 --> 00:03:48,540
life because every experience that we

71
00:03:53,330 --> 00:03:51,269
have every bit of knowledge that we have

72
00:03:56,270 --> 00:03:53,340
sure comes into play when we're here in

73
00:03:59,030 --> 00:03:56,280
space because you never know what's

74
00:04:01,280 --> 00:03:59,040
going to happen next but generally for a

75
00:04:03,440 --> 00:04:01,290
space shuttle mission we train for a

76
00:04:04,940 --> 00:04:03,450
minimum of a year specifically for the

77
00:04:07,520 --> 00:04:04,950
task that we're going to do on board

78
00:04:10,190 --> 00:04:07,530
that mission prior to that though we all

79
00:04:13,400 --> 00:04:10,200
trained generically as astronauts for

80
00:04:15,979 --> 00:04:13,410
one to two to multiple years before we

81
00:04:17,449 --> 00:04:15,989
get assigned to a flight so for a space

82
00:04:20,930 --> 00:04:17,459
shuttle mission the training is a

83
00:04:23,000 --> 00:04:20,940
minimum of a couple of years overall for

84
00:04:24,950 --> 00:04:23,010
Space Station mission where the crew

85
00:04:27,920 --> 00:04:24,960
members are staying for longer duration

86
00:04:29,930 --> 00:04:27,930
they can train many years because they

87
00:04:31,810 --> 00:04:29,940
trained not only in the United States

88
00:04:35,600 --> 00:04:31,820

but also with our international partners

89
00:04:37,670 --> 00:04:35,610
so it's multiple years of training but

90
00:04:40,730 --> 00:04:37,680
of course prior to that lots of years of

91
00:04:46,010 --> 00:04:40,740
schooling and experience that all comes

92
00:04:47,960 --> 00:04:46,020
into play my name is summer happy and I

93
00:04:51,469 --> 00:04:47,970
go to vernon school in portland oregon

94
00:04:52,020 --> 00:04:51,479
and my question is do have issues with

95
00:04:54,960 --> 00:04:52,030
keeping

96
00:04:57,510 --> 00:04:54,970
things clean and on the space station in

97
00:05:04,890 --> 00:04:57,520
if so is it possible for mold to grow in

98
00:05:07,200 --> 00:05:04,900
space or on the space station that is a

99
00:05:09,720 --> 00:05:07,210
really really good question because it

100
00:05:11,670 --> 00:05:09,730
is a big issue the space station and the

101
00:05:13,920 --> 00:05:11,680
Space Shuttle both have very good air

102
00:05:17,070 --> 00:05:13,930
circulation systems with fans and

103
00:05:19,830 --> 00:05:17,080
filters to keep stuff clean but

104
00:05:22,170 --> 00:05:19,840
everything floats there's no gravity so

105
00:05:25,260 --> 00:05:22,180
on earth it's really nice you can see

106
00:05:27,000 --> 00:05:25,270
there are things float if you have dust

107
00:05:28,770 --> 00:05:27,010
or lint or just anything like that it

108
00:05:30,870 --> 00:05:28,780
tends to stick or attends to fall to the

109
00:05:32,550 --> 00:05:30,880
ground and you can sweep it up and space

110
00:05:33,870 --> 00:05:32,560
it doesn't it floats around and you see

111
00:05:37,380 --> 00:05:33,880
little specks of things floating by

112
00:05:39,510 --> 00:05:37,390
occasionally and when you drink in your

113
00:05:42,360 --> 00:05:39,520

water straw unless you get all of the

114
00:05:44,010 --> 00:05:42,370
water out of your straw when you when it

115
00:05:45,660 --> 00:05:44,020
comes out of your mouth that'll it might

116
00:05:48,660 --> 00:05:45,670
flick a couple little specks of water

117
00:05:49,890 --> 00:05:48,670
and over time those can grow mold so we

118
00:05:51,960 --> 00:05:49,900
spend a lot of time on the shuttle

119
00:05:54,120 --> 00:05:51,970
keeping things clean and the space

120
00:05:56,460 --> 00:05:54,130
station crew spends a lot of time

121
00:05:58,950 --> 00:05:56,470
probably once a once a week just keeping

122
00:06:01,440 --> 00:05:58,960
things clean because we have seen mold

123
00:06:02,670 --> 00:06:01,450
grow in the past and in fact right

124
00:06:04,050 --> 00:06:02,680
around the corner down there you can see

125
00:06:06,300 --> 00:06:04,060
there's some plants growing so things

126
00:06:10,610 --> 00:06:06,310
can grow in space and that's why it's

127
00:06:15,780 --> 00:06:13,530
hi my name is mine I would like to know

128
00:06:26,610 --> 00:06:15,790
how long does it

129
00:06:27,960 --> 00:06:26,620
space shuttle before it launches well as

130
00:06:30,750 --> 00:06:27,970
you know the space shuttle is a very

131
00:06:32,490 --> 00:06:30,760
complicated spacecraft so it does take a

132
00:06:34,710 --> 00:06:32,500
while and it takes a lot of people

133
00:06:37,410 --> 00:06:34,720
credit quite a great team of people that

134
00:06:39,300 --> 00:06:37,420
prepare the space shuttle for launch and

135
00:06:41,070 --> 00:06:39,310
you know space shuttle is made up of

136
00:06:43,320 --> 00:06:41,080
several components there's a Space

137
00:06:46,020 --> 00:06:43,330
Shuttle Orbiter there the solid rocket

138
00:06:47,430 --> 00:06:46,030

boosters as to the two white rockets

139
00:06:49,560 --> 00:06:47,440
that strapped to the sides and then

140
00:06:52,740 --> 00:06:49,570
there's a big orange external tank that

141
00:06:54,630 --> 00:06:52,750
holds our fuel so to get all of those

142
00:06:57,270 --> 00:06:54,640
components together it takes quite a bit

143
00:06:59,400 --> 00:06:57,280
of time the absolute minimum amount of

144
00:07:02,130 --> 00:06:59,410
time from the time that a Space Shuttle

145
00:07:04,680 --> 00:07:02,140
Orbiter lands until the time that it can

146
00:07:07,290 --> 00:07:04,690
launch again is about two months but

147
00:07:08,970 --> 00:07:07,300
that's very very aggressive schedule it

148
00:07:10,890 --> 00:07:08,980
takes longer actually to prepare the

149
00:07:13,470 --> 00:07:10,900
tank and the solid rocket boosters those

150
00:07:16,320 --> 00:07:13,480
would have to be waiting for it so after

151
00:07:18,570 --> 00:07:16,330
landing the team in Florida processes

152
00:07:21,030 --> 00:07:18,580
the orbiter in a horizontal position

153
00:07:23,490 --> 00:07:21,040
like working on an aircraft in a hangar

154
00:07:25,700 --> 00:07:23,500
and then they rotate it into the

155
00:07:28,920 --> 00:07:25,710
vertical position and attach it to that

156
00:07:31,440 --> 00:07:28,930
that solid rocket boosters and the

157
00:07:33,870 --> 00:07:31,450
external tank and take all of that

158
00:07:36,270 --> 00:07:33,880
together out to the launch pad and get

159
00:07:39,480 --> 00:07:36,280
it ready to launch again so it actually

160
00:07:44,870 --> 00:07:39,490
takes quite a bit of time but it can

161
00:07:50,310 --> 00:07:48,210
hi I'm Michaela from Stewart no man it's

162
00:07:53,160 --> 00:07:50,320
cool in Tampa for it I was wondering

163
00:07:55,110 --> 00:07:53,170

what is the purpose of mounting the

164
00:08:00,660 --> 00:07:55,120
cupola on the bottom of the tranquility

165
00:08:02,470 --> 00:08:00,670
instead of the top well that's another

166
00:08:04,960 --> 00:08:02,480
good question

167
00:08:07,060 --> 00:08:04,970
the bottom of tranquility that putting

168
00:08:09,400 --> 00:08:07,070
the cupola on the bottom of node 3 or

169
00:08:11,650 --> 00:08:09,410
tranquility gives us several things it

170
00:08:13,720 --> 00:08:11,660
gives us a good view you can look around

171
00:08:15,850 --> 00:08:13,730
the module to the front and also to the

172
00:08:18,310 --> 00:08:15,860
back of the space station which is going

173
00:08:20,200 --> 00:08:18,320
to help when we do robotic operations

174
00:08:23,290 --> 00:08:20,210
when we move the big robotic arm from

175
00:08:24,550 --> 00:08:23,300
there it will give us a big view of in a

176
00:08:26,560 --> 00:08:24,560
lot of different directions and

177
00:08:29,140 --> 00:08:26,570
eventually there will be some modules

178
00:08:32,860 --> 00:08:29,150
that in fact we've already grappled them

179
00:08:36,610 --> 00:08:32,870
but a module called on HTV which is a

180
00:08:38,500 --> 00:08:36,620
cargo ship made by the japanese space

181
00:08:40,270 --> 00:08:38,510
agency and when that comes up you have

182
00:08:42,400 --> 00:08:40,280
to grab it with the arm and then you

183
00:08:44,980 --> 00:08:42,410
attach it to the station and so having

184
00:08:47,350 --> 00:08:44,990
the mod the cupola there will help with

185
00:08:49,570 --> 00:08:47,360
that and another added bonus as

186
00:08:51,280 --> 00:08:49,580
astronauts is it's pointed towards the

187
00:08:53,800 --> 00:08:51,290
earth so we'll get great earth views

188
00:08:59,290 --> 00:08:53,810

from that when we get it made it and

189
00:09:00,910 --> 00:08:59,300
opened up here soon hi I'm Hannah from

190
00:09:03,610 --> 00:09:00,920
Stewart bed magnet school in tampa

191
00:09:05,470 --> 00:09:03,620
florida i have a question what was the

192
00:09:13,260 --> 00:09:05,480
most difficult obstacle that you had to

193
00:09:19,210 --> 00:09:15,940
well I don't know that I'd really call

194
00:09:22,180 --> 00:09:19,220
it obstacles but it is very important to

195
00:09:24,280 --> 00:09:22,190
have a good strong math and science

196
00:09:26,590 --> 00:09:24,290
background to be even considered to be

197
00:09:29,140 --> 00:09:26,600
an astronaut but also just overall

198
00:09:31,320 --> 00:09:29,150
technical experience and it really helps

199
00:09:34,330 --> 00:09:31,330
to have some flying experience as well

200
00:09:36,280 --> 00:09:34,340
so I don't know that again that I would

201
00:09:40,000 --> 00:09:36,290
really call it an obstacle but there are

202
00:09:43,120 --> 00:09:40,010
so many very qualified folks very very

203
00:09:46,560 --> 00:09:43,130
smart very educated and with a lot of

204
00:09:49,510 --> 00:09:46,570
experience that nASA has a tough time

205
00:09:53,740 --> 00:09:49,520
selecting the astronauts from so many

206
00:09:56,470 --> 00:09:53,750
qualified candidates so maybe I just

207
00:10:00,160 --> 00:09:56,480
feel that I was very fortunate to be

208
00:10:05,770 --> 00:10:00,170
considered for selection as an astronaut

209
00:10:08,170 --> 00:10:05,780
and also that I was selected so I would

210
00:10:11,380 --> 00:10:08,180
suggest that you just keep studying hard

211
00:10:15,440 --> 00:10:11,390
and I find the things that you love to

212
00:10:17,510 --> 00:10:15,450
do and gain your own expertise there

213
00:10:19,640 --> 00:10:17,520

and apply to be an astronaut and hub

214
00:10:21,740 --> 00:10:19,650
days hopefully someday you'll be able to

215
00:10:27,410 --> 00:10:21,750
fly in space as well as you saw to a

216
00:10:28,850 --> 00:10:27,420
fellow astronauts floating right by hi

217
00:10:30,680 --> 00:10:28,860
my name is Taylor church and I go to

218
00:10:32,750 --> 00:10:30,690
edward harris jr middle school in elk

219
00:10:35,210 --> 00:10:32,760
grove california have you ever

220
00:10:37,460 --> 00:10:35,220
personally tried growing plants in space

221
00:10:39,620 --> 00:10:37,470
if so how did the experiment turn out

222
00:10:41,420 --> 00:10:39,630
and if not have you ever been on board a

223
00:10:48,290 --> 00:10:41,430
mission or a plant experiment has taken

224
00:10:51,020 --> 00:10:48,300
foot thank you yeah that is a great

225
00:10:53,270 --> 00:10:51,030
question actually in the next module

226
00:10:55,760 --> 00:10:53,280
down for me we're in node 2 so in the

227
00:10:57,440 --> 00:10:55,770
lab the US lab there are several big

228
00:10:59,300 --> 00:10:57,450
bags where plants are growing right now

229
00:11:02,060 --> 00:10:59,310
it's one of their experiments and in

230
00:11:04,370 --> 00:11:02,070
fact the space station is a very big

231
00:11:06,620 --> 00:11:04,380
laboratory there's a Japanese lab a u.s.

232
00:11:08,330 --> 00:11:06,630
lab and a European lap and plus the

233
00:11:10,250 --> 00:11:08,340
Russians have their own experiments

234
00:11:11,750 --> 00:11:10,260
going in there segments so there's a lot

235
00:11:14,000 --> 00:11:11,760
of different experiments happening here

236
00:11:16,190 --> 00:11:14,010
on our space shuttle our main job is to

237
00:11:19,340 --> 00:11:16,200
bring up node 3 and tranquility but we

238
00:11:21,740 --> 00:11:19,350

have some experiments also we have some

239
00:11:23,960 --> 00:11:21,750
some basically vaccination testing and

240
00:11:26,030 --> 00:11:23,970
there are some viruses down there that

241
00:11:27,500 --> 00:11:26,040
we're doing some testing and experiments

242
00:11:29,680 --> 00:11:27,510
on but there's lots of experiments going

243
00:11:32,300 --> 00:11:29,690
on here and as you can see this is a

244
00:11:34,910 --> 00:11:32,310
we're in like the central hub here so

245
00:11:37,430 --> 00:11:34,920
there's a lot of traffic going on and so

246
00:11:43,400 --> 00:11:37,440
pardon our crewmates as they translate

247
00:11:45,290 --> 00:11:43,410
by with important hardware my name is

248
00:11:47,270 --> 00:11:45,300
Juliana Lara and I'm call through

249
00:11:49,490 --> 00:11:47,280
elementary in Sanford Florida what

250
00:11:57,670 --> 00:11:49,500
feelings do you have while waiting to

251
00:12:00,200 --> 00:11:57,680
launch well that's a very good question

252
00:12:02,390 --> 00:12:00,210
what feelings we have I think probably

253
00:12:04,460 --> 00:12:02,400
the best way I might be able to describe

254
00:12:07,300 --> 00:12:04,470
that is actually kind of timely right

255
00:12:11,150 --> 00:12:07,310
now I've never been an Olympic athlete

256
00:12:13,880 --> 00:12:11,160
but I can imagine that Olympic athletes

257
00:12:16,280 --> 00:12:13,890
trained for many years with super

258
00:12:18,200 --> 00:12:16,290
support teams behind them their coaches

259
00:12:20,810 --> 00:12:18,210
their trainers their families supporting

260
00:12:22,880 --> 00:12:20,820
them and they finally get to the point

261
00:12:25,220 --> 00:12:22,890
where they can go and compete in the

262
00:12:26,930 --> 00:12:25,230
actual Olympics in their sport and in

263
00:12:29,870 --> 00:12:26,940

their event

264
00:12:32,420 --> 00:12:29,880
I feel like it must be very similar to

265
00:12:34,730 --> 00:12:32,430
astronauts going to launch we trained

266
00:12:36,950 --> 00:12:34,740
very hard for many years with these

267
00:12:40,220 --> 00:12:36,960
wonderful support teams that we have

268
00:12:42,260 --> 00:12:40,230
preparing the spacecraft training us for

269
00:12:44,870 --> 00:12:42,270
the task that we're going to perform and

270
00:12:46,760 --> 00:12:44,880
taking care of all of our procedures and

271
00:12:49,340 --> 00:12:46,770
tasks that we're going to have on orbit

272
00:12:52,190 --> 00:12:49,350
and everybody supports us and basically

273
00:12:54,230 --> 00:12:52,200
is cheering us on as we go launch day

274
00:12:56,720 --> 00:12:54,240
out to get into the space shuttle to

275
00:12:59,480 --> 00:12:56,730
launch it's that type of anticipation

276
00:13:02,060 --> 00:12:59,490
just that we really just want to go and

277
00:13:06,980 --> 00:13:02,070
get on with the task that we were

278
00:13:09,050 --> 00:13:06,990
trained to do one more thing to add to

279
00:13:11,300 --> 00:13:09,060
that one we got to launch on Super Bowl

280
00:13:14,360 --> 00:13:11,310
Sunday so like what Kay said it was

281
00:13:15,770 --> 00:13:14,370
probably similar but I except for the

282
00:13:17,360 --> 00:13:15,780
differences were strapped to four

283
00:13:18,740 --> 00:13:17,370
million pounds of high explosive fuel

284
00:13:24,290 --> 00:13:18,750
I'm sorry go ahead with the next

285
00:13:26,390 --> 00:13:24,300
question hi my name is pavina rummel and

286
00:13:29,150 --> 00:13:26,400
I glute middle magnet and i live in

287
00:13:31,250 --> 00:13:29,160
tampa florida my question is why both

288
00:13:38,120 --> 00:13:31,260

NASA scramble launch at the sky is

289
00:13:40,400 --> 00:13:38,130
cloudy are we need again a very

290
00:13:41,900 --> 00:13:40,410
appropriate question for us because our

291
00:13:43,910 --> 00:13:41,910
first launch attempt was scrubbed

292
00:13:46,760 --> 00:13:43,920
because of clouds and there's a couple

293
00:13:48,740 --> 00:13:46,770
of problems with clouds and rain first

294
00:13:50,120 --> 00:13:48,750
of all is our rocket itself you don't

295
00:13:52,520 --> 00:13:50,130
want to damage the Space Shuttle so if

296
00:13:54,950 --> 00:13:52,530
you fly through certain types of clouds

297
00:13:56,660 --> 00:13:54,960
with lightning or rain you can get a

298
00:14:00,140 --> 00:13:56,670
lightning strike which actually happened

299
00:14:01,520 --> 00:14:00,150
on one of our Apollo missions and or if

300
00:14:03,860 --> 00:14:01,530
you fly through rain the rain could

301
00:14:05,660 --> 00:14:03,870
damage the vehicle because we accelerate

302
00:14:07,250 --> 00:14:05,670
really fast we're going about 100 miles

303
00:14:10,010 --> 00:14:07,260
an hour by the time we clear the launch

304
00:14:12,230 --> 00:14:10,020
tower and in less than a minute we're

305
00:14:14,660 --> 00:14:12,240
going supersonic straight up so the

306
00:14:16,820 --> 00:14:14,670
rocket goes very fast through the air

307
00:14:18,620 --> 00:14:16,830
and so that could be dangerous the other

308
00:14:21,079 --> 00:14:18,630
thing is we want ground cameras to be

309
00:14:22,790 --> 00:14:21,089
able to see the shuttle or whatever

310
00:14:25,010 --> 00:14:22,800
rocket it is when we're launching on man

311
00:14:26,780 --> 00:14:25,020
rockets it's the same thing they need

312
00:14:28,010 --> 00:14:26,790
that they need some visibility to be

313
00:14:29,060 --> 00:14:28,020

able to see it to make sure that the

314
00:14:33,280 --> 00:14:29,070
trajectory is going in the right

315
00:14:38,139 --> 00:14:36,310
my name is khalil johnson i go to vernon

316
00:14:40,269 --> 00:14:38,149
school in portland oregon and my

317
00:14:42,639 --> 00:14:40,279
question is if the facilities for

318
00:14:45,220 --> 00:14:42,649
exercising in space fail do you think

319
00:14:51,720 --> 00:14:45,230
you'd trade by yourself and if so how

320
00:14:57,550 --> 00:14:55,210
exercise is very important in space what

321
00:14:59,730 --> 00:14:57,560
happens to our bodies in space is very

322
00:15:02,379 --> 00:14:59,740
similar to what would happen to a

323
00:15:04,509 --> 00:15:02,389
patient in a hospital let's say if they

324
00:15:06,400 --> 00:15:04,519
were totally bedridden until they had to

325
00:15:08,860 --> 00:15:06,410
stay laying down and couldn't get up and

326
00:15:10,569 --> 00:15:08,870
walk so it means that our muscles

327
00:15:12,759 --> 00:15:10,579
atrophy or they get smaller because

328
00:15:15,100 --> 00:15:12,769
they're not being used and even our

329
00:15:17,559 --> 00:15:15,110
bones we lose calcium and the bones get

330
00:15:19,840 --> 00:15:17,569
weaker as well so it is important for us

331
00:15:21,850 --> 00:15:19,850
to exercise in space we do have some

332
00:15:23,769 --> 00:15:21,860
great exercise equipment here on the

333
00:15:25,449 --> 00:15:23,779
International Space Station we have

334
00:15:28,180 --> 00:15:25,459
something like a bicycle we call it a

335
00:15:30,009 --> 00:15:28,190
cycle ergometer we can dial in different

336
00:15:32,110 --> 00:15:30,019
tension on there we also have a

337
00:15:33,819 --> 00:15:32,120
treadmill but we have to use bungees to

338
00:15:35,559 --> 00:15:33,829

hold us down to the treadmill to be able

339
00:15:37,990 --> 00:15:35,569
to run on the treadmill if those

340
00:15:40,090 --> 00:15:38,000
facilities break then what we have to do

341
00:15:43,329 --> 00:15:40,100
since you can't like lift weights

342
00:15:46,090 --> 00:15:43,339
because its mass but it has no feeling

343
00:15:48,730 --> 00:15:46,100
of weight here in weightlessness so we

344
00:15:52,930 --> 00:15:48,740
would get bungees something like this

345
00:15:54,970 --> 00:15:52,940
hair band here that we just use stretch

346
00:15:58,720 --> 00:15:54,980
bands type things to try to at least

347
00:16:00,759 --> 00:15:58,730
work our muscles a little bit and we use

348
00:16:02,980 --> 00:16:00,769
some of those anyway and it's a good

349
00:16:05,290 --> 00:16:02,990
question because while we are outfitting

350
00:16:07,030 --> 00:16:05,300
node3 that we just delivered we are

351
00:16:08,740 --> 00:16:07,040
moving some of the exercise equipment in

352
00:16:10,569 --> 00:16:08,750
there so there is a period of time when

353
00:16:13,150 --> 00:16:10,579
that the exercise equipment is not going

354
00:16:16,240 --> 00:16:13,160
to be available and we will have members

355
00:16:18,809 --> 00:16:16,250
on board using stretch type bands to

356
00:16:24,790 --> 00:16:18,819
give some resistance training for

357
00:16:27,400 --> 00:16:24,800
exercise during that period of time hi

358
00:16:29,759 --> 00:16:27,410
my name is Sabrina and I want to know

359
00:16:36,939 --> 00:16:29,769
what kind of tools you used to fish

360
00:16:39,639 --> 00:16:36,949
suspicion well hello Sabrina thank you

361
00:16:41,800 --> 00:16:39,649
for that question that is a really good

362
00:16:43,929 --> 00:16:41,810
one we have a tool kit in the space

363
00:16:45,850 --> 00:16:43,939

shuttle and we have several tool kits

364
00:16:46,980 --> 00:16:45,860
here in the space station and one of the

365
00:16:50,679 --> 00:16:46,990
biggest things that we've been

366
00:16:52,119 --> 00:16:50,689
here during our mission and K is just

367
00:16:56,259 --> 00:16:52,129
showing me this bag if you hear it it

368
00:16:59,439 --> 00:16:56,269
sounds like wind chime but there's a

369
00:17:01,420 --> 00:16:59,449
wrench and some pliers and some

370
00:17:03,369 --> 00:17:01,430
different types of screwdrivers and

371
00:17:05,919 --> 00:17:03,379
ratchets and scissors there's all kinds

372
00:17:08,289 --> 00:17:05,929
of stuff here sockets and so if you're a

373
00:17:11,350 --> 00:17:08,299
tool person this job is really fun

374
00:17:13,390 --> 00:17:11,360
because for the last several days and

375
00:17:14,620 --> 00:17:13,400
for the next few days we're we're in

376
00:17:17,860 --> 00:17:14,630
there turning wrenches and screwdrivers

377
00:17:21,069 --> 00:17:17,870
and and all kinds of stuff to attach

378
00:17:22,779 --> 00:17:21,079
node3 our new module and then later

379
00:17:25,000 --> 00:17:22,789
today to attach to move the cupola and

380
00:17:31,600 --> 00:17:25,010
to attach that so we have lots of tools

381
00:17:35,350 --> 00:17:31,610
and we use them a lot hello my name is

382
00:17:44,649 --> 00:17:35,360
Aidan now on to know if it's dangerous

383
00:17:47,409 --> 00:17:44,659
to do a spacewalk well it's kind of

384
00:17:49,990 --> 00:17:47,419
dangerous and I'll tell you why when we

385
00:17:53,049 --> 00:17:50,000
send astronauts outside of the

386
00:17:57,940 --> 00:17:53,059
spacecraft they're wearing an extra

387
00:18:01,180 --> 00:17:57,950
vehicular Mobility unit and they're

388
00:18:03,039 --> 00:18:01,190

doing a spacewalk outside all by

389
00:18:05,770 --> 00:18:03,049
themselves so that means that they're

390
00:18:09,399 --> 00:18:05,780
actually wearing their own spacecraft in

391
00:18:12,370 --> 00:18:09,409
that suit it actually contains its own

392
00:18:15,810 --> 00:18:12,380
power electrical power its own heating

393
00:18:18,970 --> 00:18:15,820
and cooling its own communications and

394
00:18:21,820 --> 00:18:18,980
pressurization system oxygen system all

395
00:18:23,500 --> 00:18:21,830
that and even a caution and warning a

396
00:18:27,130 --> 00:18:23,510
system that tells them if something's

397
00:18:30,159 --> 00:18:27,140
going wrong so that's all in itself its

398
00:18:32,560 --> 00:18:30,169
own little spacecraft and that the

399
00:18:34,810 --> 00:18:32,570
astronauts contained inside of there and

400
00:18:37,240 --> 00:18:34,820
outside of that is just the vacuum of

401
00:18:39,220 --> 00:18:37,250
space it's also physically challenging

402
00:18:42,159 --> 00:18:39,230
because they have to work against that

403
00:18:44,799 --> 00:18:42,169
suit the whole time so it is a little

404
00:18:48,580 --> 00:18:44,809
bit dangerous but we choreograph it or

405
00:18:50,110 --> 00:18:48,590
we plan it to every little detail and we

406
00:18:52,419 --> 00:18:50,120
check those suits and they have

407
00:18:54,970 --> 00:18:52,429
redundant or multiple systems to make

408
00:18:57,279 --> 00:18:54,980
sure that if one system fails we have a

409
00:18:59,799 --> 00:18:57,289
backup so we watch them very carefully

410
00:19:03,720 --> 00:18:59,809
and keep it as safe as we can but it is

411
00:19:09,549 --> 00:19:06,519
hello my name is Dexter and my question

412
00:19:16,539 --> 00:19:09,559
is what does it feel like when you blast

413
00:19:19,029 --> 00:19:16,549

off in the space well hi Dexter thanks

414
00:19:21,820 --> 00:19:19,039
for that question the first thing that

415
00:19:24,700 --> 00:19:21,830
you feel is being stuffed into this big

416
00:19:26,440 --> 00:19:24,710
orange stiff heavy suit it's called a

417
00:19:27,940 --> 00:19:26,450
launch and entry suit and we get

418
00:19:30,549 --> 00:19:27,950
strapped in and we lay on our backs for

419
00:19:32,859 --> 00:19:30,559
about three hours before launch and then

420
00:19:34,899 --> 00:19:32,869
when it finally comes time to launch the

421
00:19:36,879 --> 00:19:34,909
shuttle main engines start up six

422
00:19:39,159 --> 00:19:36,889
seconds before launch so the whole

423
00:19:41,619 --> 00:19:39,169
shuttle pitches forward a little bit and

424
00:19:44,109 --> 00:19:41,629
then it pitches back in six seconds

425
00:19:45,580 --> 00:19:44,119
later the solid rocket boosters like

426
00:19:47,919 --> 00:19:45,590
those are the big white rockets on the

427
00:19:50,019 --> 00:19:47,929
side and when those things light it's

428
00:19:52,210 --> 00:19:50,029
like a kick in the pants you get slammed

429
00:19:54,879 --> 00:19:52,220
for behind and you start accelerating

430
00:19:56,109 --> 00:19:54,889
forward and as you accelerate if you

431
00:19:57,669 --> 00:19:56,119
feel heavier and heavier it's like

432
00:20:01,149 --> 00:19:57,679
you're laying on your back and someone's

433
00:20:03,190 --> 00:20:01,159
laying on top of you and that shakes and

434
00:20:05,700 --> 00:20:03,200
rolls and makes a lot of noise for about

435
00:20:08,440 --> 00:20:05,710
two minutes and then after two minutes

436
00:20:11,019 --> 00:20:08,450
the solid rocket boosters run out of gas

437
00:20:12,700 --> 00:20:11,029
and so you start to slow down you don't

438
00:20:14,950 --> 00:20:12,710

accelerate as much you slow down and

439
00:20:17,499 --> 00:20:14,960
then when they come off there's a really

440
00:20:20,440 --> 00:20:17,509
loud bang and a super-bright flag we

441
00:20:21,519 --> 00:20:20,450
launched at nighttime and we even

442
00:20:23,529 --> 00:20:21,529
mentioned it we were looking out the

443
00:20:25,480 --> 00:20:23,539
window and he said well that wasn't too

444
00:20:27,100 --> 00:20:25,490
bad and then BAM these rockets fired and

445
00:20:30,399 --> 00:20:27,110
there was this big white flash in the

446
00:20:32,259 --> 00:20:30,409
solid Rockets floated away and then the

447
00:20:33,639 --> 00:20:32,269
Space Shuttle main engines burn for the

448
00:20:35,859 --> 00:20:33,649
next six minutes and that's pretty

449
00:20:37,960 --> 00:20:35,869
smooth you just lay there you get pushed

450
00:20:40,600 --> 00:20:37,970
from above push from like someone in

451
00:20:42,850 --> 00:20:40,610
front of you laying on top of you for

452
00:20:44,080 --> 00:20:42,860
about six more minutes and then after

453
00:20:46,869 --> 00:20:44,090
eight and a half minutes here in space

454
00:20:48,639 --> 00:20:46,879
and so right before the engines shut

455
00:20:50,499 --> 00:20:48,649
down you're being pushed with 3 G's

456
00:20:52,570 --> 00:20:50,509
which is like three times your own body

457
00:20:54,730 --> 00:20:52,580
weight smashing down and then when the

458
00:20:57,070 --> 00:20:54,740
engines shut down everyone goes flying

459
00:20:59,409 --> 00:20:57,080
forward and then you can let go and

460
00:21:01,600 --> 00:20:59,419
things are floating and so it's a it's a

461
00:21:03,730 --> 00:21:01,610
pretty cool ride one of the things that

462
00:21:05,320 --> 00:21:03,740
happen on our flight as we were going up

463
00:21:08,200 --> 00:21:05,330

I took a quick glance out the window and

464
00:21:09,730 --> 00:21:08,210
I could see the moon and in the shuttle

465
00:21:11,769 --> 00:21:09,740
that I rolled a heads up and I could see

466
00:21:12,799 --> 00:21:11,779
the whole east coast of America at

467
00:21:14,869 --> 00:21:12,809
nighttime lit

468
00:21:17,419 --> 00:21:14,879
and that was that'll that memory will

469
00:21:20,060 --> 00:21:17,429
stick in my mind forever and then right

470
00:21:21,560 --> 00:21:20,070
after the engine shut down just a couple

471
00:21:23,269 --> 00:21:21,570
minutes later we were flying over the

472
00:21:25,789 --> 00:21:23,279
Alps in Europe so it was a really pretty

473
00:21:27,950 --> 00:21:25,799
experienced to go from my time all of

474
00:21:32,570 --> 00:21:27,960
that shaking and vibrating and then

475
00:21:34,669 --> 00:21:32,580
floating over Europe endeavour diocese

476
00:21:38,749 --> 00:21:34,679
this is Houston ACR that concludes the

477
00:21:40,970 --> 00:21:38,759
event thanks thank you ISS and NASA

478
00:21:47,690 --> 00:21:40,980
Explorer schools we are now resuming a

479
00:21:50,649 --> 00:21:47,700
nominal audio communications copy that