
JAXA

1
00:00:07,590 --> 00:00:02,869
station this is houston are you ready

2
00:00:11,910 --> 00:00:09,110
houston from the international space

3
00:00:13,910 --> 00:00:11,920
station i am ready for the event

4
00:00:14,950 --> 00:00:13,920
discovery canada this is mission control

5
00:00:19,349 --> 00:00:14,960
houston

6
00:00:26,470 --> 00:00:21,670
station this is discovery canada's daily

7
00:00:31,750 --> 00:00:28,390
daily planet dan i hear you loud and

8
00:00:33,270 --> 00:00:31,760
clear how do you hear me

9
00:00:35,110 --> 00:00:33,280
wonderfully it's great to talk to you

10
00:00:37,510 --> 00:00:35,120
the energy level in the studio is

11
00:00:39,670 --> 00:00:37,520
through the roof right now why because

12
00:00:42,069 --> 00:00:39,680
commander chris hadfield is here with us

13
00:00:43,910 --> 00:00:42,079

from the international space station

14
00:00:49,110 --> 00:00:43,920
chris it is so wonderful to have you

15
00:00:52,310 --> 00:00:50,630
thank you very much i brought my own

16
00:00:55,910 --> 00:00:52,320
planet to daily planet today it's nice

17
00:00:58,709 --> 00:00:57,430
commander hatfield all week we've been

18
00:01:00,310 --> 00:00:58,719
asking our viewers to submit their

19
00:01:02,310 --> 00:01:00,320
burning questions for you so let's get

20
00:01:04,950 --> 00:01:02,320
right into it okay first to get things

21
00:01:08,469 --> 00:01:04,960
started we have andre dober a grade nine

22
00:01:10,950 --> 00:01:08,479
student from vancouver bc

23
00:01:13,030 --> 00:01:10,960
my question is why do some astronauts

24
00:01:19,990 --> 00:01:13,040
experience motion sickness or headaches

25
00:01:23,109 --> 00:01:21,590
hey dan or zai can i get you just to

26
00:01:26,950 --> 00:01:23,119
repeat the question because it echoed

27
00:01:30,950 --> 00:01:28,789
the question is why do some people

28
00:01:34,870 --> 00:01:30,960
experience motion sickness and others do

29
00:01:38,830 --> 00:01:37,270
ah you know we don't know the answer to

30
00:01:40,390 --> 00:01:38,840
that question

31
00:01:42,469 --> 00:01:40,400
uh

32
00:01:44,149 --> 00:01:42,479
it's it's really difficult to predict

33
00:01:46,389 --> 00:01:44,159
it's sort of like some people can ride

34
00:01:48,149 --> 00:01:46,399
in the back of a car and get motion sick

35
00:01:50,550 --> 00:01:48,159
and and some don't or some people go on

36
00:01:52,789 --> 00:01:50,560
a ride at the at the c e or the p e and

37
00:01:54,870 --> 00:01:52,799
they get sick and others don't and even

38
00:01:56,630 --> 00:01:54,880

people in our vomit comment on earth

39
00:01:58,950 --> 00:01:56,640
that get sick some of them don't get

40
00:02:00,950 --> 00:01:58,960
sick in space and vice versa so

41
00:02:03,109 --> 00:02:00,960
um it's something to do with the

42
00:02:05,190 --> 00:02:03,119
interaction between the eyes and the

43
00:02:07,190 --> 00:02:05,200
balance system in the inner ear

44
00:02:09,510 --> 00:02:07,200
but we really don't have a good

45
00:02:11,430 --> 00:02:09,520
predictor and so we just have to

46
00:02:13,430 --> 00:02:11,440
anticipate that it might happen and be

47
00:02:17,670 --> 00:02:13,440
ready to deal with the consequences and

48
00:02:21,350 --> 00:02:19,830
so chris have you ever experienced it

49
00:02:25,589 --> 00:02:21,360
personally have you ever been motion

50
00:02:29,830 --> 00:02:27,910
well when i first get to space yes i

51
00:02:32,229 --> 00:02:29,840
feel motion sick when i was a fighter

52
00:02:34,550 --> 00:02:32,239
pilot first learning to fly uh high

53
00:02:36,790 --> 00:02:34,560
performance airplanes it made me feel

54
00:02:38,869 --> 00:02:36,800
sick but it's one of the things that

55
00:02:42,630 --> 00:02:38,879
your body's just trying to protect you

56
00:02:44,790 --> 00:02:42,640
your body sees a huge change in in how

57
00:02:47,190 --> 00:02:44,800
it how it sees things and feels things

58
00:02:49,110 --> 00:02:47,200
and thinks maybe you've been poisoned

59
00:02:50,949 --> 00:02:49,120
because it doesn't understand why you've

60
00:02:52,630 --> 00:02:50,959
had all these changes and so your body

61
00:02:54,309 --> 00:02:52,640
tries to protect you it makes you want

62
00:02:55,830 --> 00:02:54,319
to throw up to get rid of whatever might

63
00:02:58,390 --> 00:02:55,840

have poisoned you and it makes you want

64
00:03:00,869 --> 00:02:58,400
to lie down so you stop metabolizing

65
00:03:02,390 --> 00:03:00,879
whatever that was so so your body's

66
00:03:04,630 --> 00:03:02,400
doing its best and almost everybody

67
00:03:06,309 --> 00:03:04,640
feels sick to some degree

68
00:03:07,910 --> 00:03:06,319
but after a day or two your body says

69
00:03:09,990 --> 00:03:07,920
well i didn't let him eat anything and

70
00:03:12,309 --> 00:03:10,000
he still feels that way so that couldn't

71
00:03:13,990 --> 00:03:12,319
admit it and then you feel okay again so

72
00:03:16,470 --> 00:03:14,000
there's nothing wrong with it it's just

73
00:03:18,869 --> 00:03:16,480
a normal human reaction and being in

74
00:03:21,670 --> 00:03:18,879
space being weightless is a pretty

75
00:03:24,070 --> 00:03:21,680
shocking change to your body and uh and

76
00:03:25,990 --> 00:03:24,080
we get over it we adapt to it

77
00:03:29,350 --> 00:03:26,000
and after a while we just feel normal

78
00:03:34,309 --> 00:03:31,589
next we have two very young future

79
00:03:36,470 --> 00:03:34,319
astronauts of canada

80
00:03:37,750 --> 00:03:36,480
hi my name is austin and this is my

81
00:03:41,830 --> 00:03:37,760
brother dylan

82
00:03:43,910 --> 00:03:41,840
we live in whitby ontario canada

83
00:03:46,309 --> 00:03:43,920
this is a hatfield

84
00:03:47,430 --> 00:03:46,319
is it any difference to build something

85
00:03:48,229 --> 00:03:47,440
space

86
00:03:59,670 --> 00:03:48,239
than

87
00:04:03,110 --> 00:04:01,429
and so zion dan if you could tell me

88
00:04:04,789 --> 00:04:03,120

again what the question was because our

89
00:04:09,110 --> 00:04:04,799
speaker is about this big up here and it

90
00:04:13,750 --> 00:04:11,350
the question was is it any different to

91
00:04:17,990 --> 00:04:13,760
build something in space compared to on

92
00:04:24,230 --> 00:04:21,270
oh it's really different because

93
00:04:26,790 --> 00:04:24,240
for all sorts of different reasons

94
00:04:28,710 --> 00:04:26,800
where do i start let's see if i if i get

95
00:04:31,749 --> 00:04:28,720
out my tools let's say i want to build

96
00:04:34,150 --> 00:04:31,759
something and i get my jackknife so i've

97
00:04:36,790 --> 00:04:34,160
got my jackknife here to try and screw

98
00:04:39,110 --> 00:04:36,800
something together or cut something well

99
00:04:40,710 --> 00:04:39,120
if i don't carefully put my jackknife

100
00:04:43,189 --> 00:04:40,720
somewhere put it back in my velcro

101
00:04:45,030 --> 00:04:43,199
pocket when i turn around my jackknife

102
00:04:47,030 --> 00:04:45,040
is going to be gone so one of the

103
00:04:48,150 --> 00:04:47,040
problems is tools how do you control

104
00:04:50,950 --> 00:04:48,160
your tools

105
00:04:52,790 --> 00:04:50,960
another is what you're building doesn't

106
00:04:55,110 --> 00:04:52,800
need to fight gravity

107
00:04:56,710 --> 00:04:55,120
so you know if you look at

108
00:04:58,310 --> 00:04:56,720
let's say you're you're going to build

109
00:05:02,469 --> 00:04:58,320
the pyramids

110
00:05:04,870 --> 00:05:02,479
so they have a great big strong base and

111
00:05:07,029 --> 00:05:04,880
then they go up to a nice pointy top

112
00:05:08,870 --> 00:05:07,039
because on earth with gravity you have

113
00:05:10,870 --> 00:05:08,880

to have a big strong base on anything

114
00:05:12,550 --> 00:05:10,880
that's tall up here

115
00:05:13,990 --> 00:05:12,560
you hardly need any base at all you

116
00:05:16,469 --> 00:05:14,000
could just have a uh

117
00:05:18,550 --> 00:05:16,479
a pencil could hold up to pyramids

118
00:05:20,390 --> 00:05:18,560
and so even your basic design of

119
00:05:21,270 --> 00:05:20,400
something is going to be completely

120
00:05:22,629 --> 00:05:21,280
different

121
00:05:24,469 --> 00:05:22,639
so uh

122
00:05:26,870 --> 00:05:24,479
so everything from how to keep your

123
00:05:29,110 --> 00:05:26,880
tools under control how you're going to

124
00:05:31,029 --> 00:05:29,120
control your body if i grabbed a drill

125
00:05:32,870 --> 00:05:31,039
to drill a hole in something as soon as

126
00:05:34,870 --> 00:05:32,880
i touched the wall my whole body would

127
00:05:36,870 --> 00:05:34,880
start spinning around and because the

128
00:05:38,950 --> 00:05:36,880
wall is not going to turn so how you

129
00:05:40,950 --> 00:05:38,960
brace yourself and then how you design

130
00:05:42,870 --> 00:05:40,960
something to build you have to rethink

131
00:05:46,710 --> 00:05:42,880
everything when you're working in space

132
00:05:51,830 --> 00:05:49,350
so fascinating okay so camille arsenault

133
00:05:54,070 --> 00:05:51,840
from barrie ontario has another question

134
00:05:56,790 --> 00:05:54,080
and what she's wondering is at what

135
00:06:03,749 --> 00:05:56,800
distance a paper plane could fly if it

136
00:06:08,150 --> 00:06:05,749
well let's see we throw paper airplanes

137
00:06:09,830 --> 00:06:08,160
here inside the space station here's my

138
00:06:11,990 --> 00:06:09,840

this is a bag of tea

139
00:06:15,029 --> 00:06:12,000
let's say this tea was a paper airplane

140
00:06:16,870 --> 00:06:15,039
if i throw it here in the space station

141
00:06:19,430 --> 00:06:16,880
it just there's nothing to stop it it'll

142
00:06:22,230 --> 00:06:19,440
just keep on going until it bumps into

143
00:06:25,350 --> 00:06:22,240
the wall because it won't fall

144
00:06:26,710 --> 00:06:25,360
and so so you can gently throw things

145
00:06:29,029 --> 00:06:26,720
and they'll go the whole length of the

146
00:06:31,510 --> 00:06:29,039
space station so imagine if you threw

147
00:06:33,830 --> 00:06:31,520
them outside the space station

148
00:06:35,350 --> 00:06:33,840
there would be nothing to stop them and

149
00:06:38,230 --> 00:06:35,360
they would just they would become like

150
00:06:41,430 --> 00:06:38,240
the moon they would just go forever but

151
00:06:42,870 --> 00:06:41,440
since we're down so close to the earth

152
00:06:44,950 --> 00:06:42,880
there's tiny

153
00:06:46,870 --> 00:06:44,960
random particles of the atmosphere we're

154
00:06:49,189 --> 00:06:46,880
not completely out of the atmosphere

155
00:06:51,110 --> 00:06:49,199
there's you know it tails off to almost

156
00:06:53,510 --> 00:06:51,120
nothing but almost nothing and nothing

157
00:06:56,150 --> 00:06:53,520
aren't the same thing and so

158
00:06:58,469 --> 00:06:56,160
there are a few tiny particles of air

159
00:07:01,749 --> 00:06:58,479
just enough to slow your paper airplane

160
00:07:03,830 --> 00:07:01,759
down ever so much so that over time it

161
00:07:05,589 --> 00:07:03,840
would start to decay its orbit would

162
00:07:08,070 --> 00:07:05,599
start to get dragged down into the

163
00:07:09,830 --> 00:07:08,080

atmosphere until eventually your paper

164
00:07:12,070 --> 00:07:09,840
airplane would get pulled down into the

165
00:07:13,670 --> 00:07:12,080
atmosphere it'd be going

166
00:07:15,350 --> 00:07:13,680
eight kilometers a second because that's

167
00:07:17,749 --> 00:07:15,360
how fast we're going and so if you can

168
00:07:19,110 --> 00:07:17,759
imagine an airplane a paper one going

169
00:07:21,029 --> 00:07:19,120
eight kilometers a second into the

170
00:07:22,390 --> 00:07:21,039
atmosphere the

171
00:07:24,309 --> 00:07:22,400
rubbing with the atmosphere would burn

172
00:07:26,790 --> 00:07:24,319
it up right away so it would fly for a

173
00:07:28,550 --> 00:07:26,800
long time until eventually it got pulled

174
00:07:32,870 --> 00:07:28,560
down to earth and burned up like a

175
00:07:36,550 --> 00:07:34,710
that would be epic all right now from

176
00:07:37,589 --> 00:07:36,560
the st lawrence area we have nathan

177
00:07:39,909 --> 00:07:37,599
purvis

178
00:07:47,670 --> 00:07:39,919
what is the most important experiment on

179
00:07:50,710 --> 00:07:49,029
uh

180
00:07:53,110 --> 00:07:50,720
nate there are two ways to answer that

181
00:07:54,710 --> 00:07:53,120
question from my point of view the most

182
00:07:56,550 --> 00:07:54,720
experiment important experiment on the

183
00:07:59,589 --> 00:07:56,560
space station right now is the one that

184
00:08:01,510 --> 00:07:59,599
i'm doing and the reason why is because

185
00:08:03,909 --> 00:08:01,520
if i don't do my part right the

186
00:08:06,710 --> 00:08:03,919
experiment probably will be a failure

187
00:08:08,550 --> 00:08:06,720
and so right now while i'm working here

188
00:08:11,029 --> 00:08:08,560

all the other members of the crew are

189
00:08:12,869 --> 00:08:11,039
working on their experiments chris is a

190
00:08:14,710 --> 00:08:12,879
chris cassidy is assembling one in the

191
00:08:17,510 --> 00:08:14,720
micro savvy microgravity science club

192
00:08:19,270 --> 00:08:17,520
box and you really want to focus and no

193
00:08:21,510 --> 00:08:19,280
matter what else is happening that is

194
00:08:23,350 --> 00:08:21,520
the most important thing of all

195
00:08:24,629 --> 00:08:23,360
but i think if you were just to come on

196
00:08:26,950 --> 00:08:24,639
board and think what is the most

197
00:08:29,029 --> 00:08:26,960
important one i think maybe right now

198
00:08:31,029 --> 00:08:29,039
it's the alpha magnetic spectrometer

199
00:08:33,110 --> 00:08:31,039
which is collecting energy from the

200
00:08:35,829 --> 00:08:33,120
universe it's collecting dark matter

201
00:08:38,709 --> 00:08:35,839
from the universe and just this week a

202
00:08:40,550 --> 00:08:38,719
person who won a nobel prize uh dr sam

203
00:08:42,949 --> 00:08:40,560
ting who's in charge of that experiment

204
00:08:44,630 --> 00:08:42,959
made a big announcement that they may

205
00:08:46,630 --> 00:08:44,640
have actually started to prove the

206
00:08:48,790 --> 00:08:46,640
existence of dark matter with that

207
00:08:50,230 --> 00:08:48,800
experiment that's on our space station

208
00:08:52,070 --> 00:08:50,240
that's really interesting it's not

209
00:08:54,870 --> 00:08:52,080
conclusive yet because it hasn't been

210
00:08:56,150 --> 00:08:54,880
there long enough to prove it but did we

211
00:08:58,389 --> 00:08:56,160
we think maybe we're starting to

212
00:09:00,710 --> 00:08:58,399
understand the basics of what the

213
00:09:02,630 --> 00:09:00,720

universe is made of and we can prove

214
00:09:04,470 --> 00:09:02,640
that we can figure that out because of

215
00:09:06,150 --> 00:09:04,480
the international space station so that

216
00:09:10,070 --> 00:09:06,160
may prove to be the most important

217
00:09:14,389 --> 00:09:12,389
okay now jesse de haan from st

218
00:09:17,670 --> 00:09:14,399
catharines ontario has a very

219
00:09:20,310 --> 00:09:17,680
interesting plant question for you chris

220
00:09:22,230 --> 00:09:20,320
my question to you commander hatfield is

221
00:09:26,150 --> 00:09:22,240
how does weightlessness affect plant

222
00:09:30,070 --> 00:09:27,910
how does weightlessness he's wondering

223
00:09:32,150 --> 00:09:30,080
how does weightlessness affect plant

224
00:09:35,750 --> 00:09:32,160
growth

225
00:09:37,030 --> 00:09:35,760
right how does weightlessness affect

226
00:09:38,710 --> 00:09:37,040
plant growth

227
00:09:40,630 --> 00:09:38,720
um

228
00:09:43,190 --> 00:09:40,640
well it's confusing for the plant right

229
00:09:46,870 --> 00:09:43,200
because on earth plants grow up

230
00:09:48,949 --> 00:09:46,880
uh pretty much but what we found is

231
00:09:51,110 --> 00:09:48,959
if so long as you can provide them with

232
00:09:52,470 --> 00:09:51,120
moisture and vitamins whatever their

233
00:09:54,710 --> 00:09:52,480
roots are

234
00:09:57,509 --> 00:09:54,720
and that can just be like in a in a

235
00:09:59,590 --> 00:09:57,519
moist cloth or hydroponics or in like a

236
00:10:01,990 --> 00:09:59,600
mesh or a

237
00:10:04,630 --> 00:10:02,000
mix together like a sponge so that you

238
00:10:06,470 --> 00:10:04,640

you can feed the plant then the plant

239
00:10:08,630 --> 00:10:06,480
will tend to grow towards your light

240
00:10:11,030 --> 00:10:08,640
source so if you can set up a root

241
00:10:13,269 --> 00:10:11,040
system and then set up a light source

242
00:10:15,910 --> 00:10:13,279
the plant sort of thinks it's the same

243
00:10:18,310 --> 00:10:15,920
as dirt and the sun and the plant will

244
00:10:20,230 --> 00:10:18,320
grow and we've grown a lot of different

245
00:10:22,790 --> 00:10:20,240
plants canadian plants we've grown on

246
00:10:24,790 --> 00:10:22,800
board we've grown trees small tree

247
00:10:26,150 --> 00:10:24,800
seedlings on board the station and

248
00:10:28,389 --> 00:10:26,160
there's lots of other countries that

249
00:10:30,069 --> 00:10:28,399
have had to plant experiments and we're

250
00:10:32,630 --> 00:10:30,079
trying to figure out

251
00:10:33,829 --> 00:10:32,640
why and how to grow them so that when we

252
00:10:35,269 --> 00:10:33,839
leave earth

253
00:10:37,750 --> 00:10:35,279
we don't have to bring all of our food

254
00:10:38,870 --> 00:10:37,760
in cans and in bags and we want to be

255
00:10:40,949 --> 00:10:38,880
able to

256
00:10:43,430 --> 00:10:40,959
grow and harvest food just like we do on

257
00:10:45,509 --> 00:10:43,440
earth a self-sustaining

258
00:10:48,150 --> 00:10:45,519
environment on board and of course also

259
00:10:49,829 --> 00:10:48,160
plants help purify the air so we're

260
00:10:51,750 --> 00:10:49,839
learning how to do that we haven't done

261
00:10:54,870 --> 00:10:51,760
it enough yet that we can count on it

262
00:10:57,670 --> 00:10:54,880
for our food or our air purification but

263
00:10:59,829 --> 00:10:57,680

we have proven that we can successfully

264
00:11:01,110 --> 00:10:59,839
grow plants on board and that so long as

265
00:11:02,069 --> 00:11:01,120
you control the roots and the light

266
00:11:03,910 --> 00:11:02,079
source

267
00:11:07,269 --> 00:11:03,920
they can they can be healthy and make

268
00:11:11,350 --> 00:11:08,870
one more viewer question all the way

269
00:11:13,509 --> 00:11:11,360
from creston bc we have jerry wright

270
00:11:15,190 --> 00:11:13,519
he's 60 years old he's been following

271
00:11:16,790 --> 00:11:15,200
space exploration his whole life he

272
00:11:18,389 --> 00:11:16,800
doesn't have facebook or twitter or even

273
00:11:20,870 --> 00:11:18,399
a cell phone to make a movie for us but

274
00:11:23,509 --> 00:11:20,880
his question is do you have to adjust

275
00:11:25,430 --> 00:11:23,519
the altitude and velocity of the iss as

276
00:11:26,949 --> 00:11:25,440
its mass changes to maintain orbit in

277
00:11:28,710 --> 00:11:26,959
other words you know things are coming

278
00:11:31,190 --> 00:11:28,720
and going from the iss all the time do

279
00:11:32,790 --> 00:11:31,200
those changes in the mass of the iss

280
00:11:36,870 --> 00:11:32,800
affect how fast it's going or how high

281
00:11:42,470 --> 00:11:40,069
that's a really cool question uh

282
00:11:44,949 --> 00:11:42,480
and the answer is yes but maybe not for

283
00:11:46,470 --> 00:11:44,959
the reason that you think um you know

284
00:11:48,710 --> 00:11:46,480
the space station's going around the

285
00:11:49,670 --> 00:11:48,720
world we're going eight kilometers a

286
00:11:51,910 --> 00:11:49,680
second

287
00:11:54,069 --> 00:11:51,920
you know whatever that is almost 500

288
00:11:55,750 --> 00:11:54,079

kilometers a minute so we go from all

289
00:11:57,829 --> 00:11:55,760
the way from british columbia where the

290
00:11:59,269 --> 00:11:57,839
question came from all the way across

291
00:12:01,350 --> 00:11:59,279
where you guys are in toronto right to

292
00:12:02,310 --> 00:12:01,360
halifax in about 10 minutes

293
00:12:04,710 --> 00:12:02,320
so

294
00:12:06,629 --> 00:12:04,720
we have a huge amount of inertia we

295
00:12:09,509 --> 00:12:06,639
weigh uh

296
00:12:12,870 --> 00:12:09,519
you know half a million pounds

297
00:12:15,190 --> 00:12:12,880
and so we're we're zipping and

298
00:12:17,670 --> 00:12:15,200
and so when you add one little spaceship

299
00:12:20,389 --> 00:12:17,680
it doesn't really change

300
00:12:21,670 --> 00:12:20,399
how we have to accelerate or decelerate

301
00:12:23,750 --> 00:12:21,680
it's as if

302
00:12:25,829 --> 00:12:23,760
um

303
00:12:27,990 --> 00:12:25,839
a train rolling down the track doesn't

304
00:12:29,030 --> 00:12:28,000
really know if one more person got on or

305
00:12:30,629 --> 00:12:29,040
not

306
00:12:32,389 --> 00:12:30,639
now if you wanted to stop the station

307
00:12:33,910 --> 00:12:32,399
you'd have to worry about it but what we

308
00:12:36,069 --> 00:12:33,920
really have to worry about is

309
00:12:37,430 --> 00:12:36,079
controlling the space station because

310
00:12:38,470 --> 00:12:37,440
it's sort of balanced like this

311
00:12:39,269 --> 00:12:38,480
microphone

312
00:12:41,750 --> 00:12:39,279
and

313
00:12:43,750 --> 00:12:41,760

if you put a great big mass on one end

314
00:12:45,670 --> 00:12:43,760
then the gravity from the earth will

315
00:12:47,590 --> 00:12:45,680
make it behave differently one end will

316
00:12:49,509 --> 00:12:47,600
be pulled down by gravity more than the

317
00:12:52,310 --> 00:12:49,519
other so you have to control which way

318
00:12:54,470 --> 00:12:52,320
the space station's pointed and also we

319
00:12:56,790 --> 00:12:54,480
have great big solar arrays that we

320
00:12:58,310 --> 00:12:56,800
collect energy with and they almost act

321
00:13:00,069 --> 00:12:58,320
like sails

322
00:13:02,470 --> 00:13:00,079
and when we had the question about a

323
00:13:04,470 --> 00:13:02,480
piece of paper and a paper airplane with

324
00:13:06,629 --> 00:13:04,480
a tiny bit of drag from the atmosphere

325
00:13:09,990 --> 00:13:06,639
our solar arrays are huge

326
00:13:12,310 --> 00:13:10,000
and so in fact our orbit constantly

327
00:13:15,269 --> 00:13:12,320
gets dragged down towards the earth and

328
00:13:17,509 --> 00:13:15,279
every month or two we fire our engines

329
00:13:19,269 --> 00:13:17,519
for a few minutes just to push our orbit

330
00:13:20,550 --> 00:13:19,279
back up again in fact we did it

331
00:13:22,470 --> 00:13:20,560
yesterday

332
00:13:25,190 --> 00:13:22,480
and we just pushed our push ourselves up

333
00:13:26,870 --> 00:13:25,200
away from the earth a few kilometers

334
00:13:28,230 --> 00:13:26,880
just just to keep our orbit where it

335
00:13:30,629 --> 00:13:28,240
should be because if we didn't do

336
00:13:32,389 --> 00:13:30,639
anything over a long time our orbit

337
00:13:35,590 --> 00:13:32,399
would decay and we'd spiral down into

338
00:13:37,750 --> 00:13:35,600

the atmosphere so so yes

339
00:13:40,310 --> 00:13:37,760
ships coming and going do affect how we

340
00:13:42,310 --> 00:13:40,320
control and steer the spaceship and yes

341
00:13:44,550 --> 00:13:42,320
we do have to fire our engines

342
00:13:48,870 --> 00:13:44,560
occasionally in order to hold our

343
00:13:56,949 --> 00:13:50,790
chris can you pinpoint the moment you

344
00:14:00,829 --> 00:13:59,430
yes i decided to become an astronaut on

345
00:14:04,790 --> 00:14:00,839
july 20th

346
00:14:06,710 --> 00:14:04,800
1969. i was nine years old and i decided

347
00:14:08,949 --> 00:14:06,720
to be an astronaut that night and that's

348
00:14:11,509 --> 00:14:08,959
the night that neil and buzz walked on

349
00:14:13,590 --> 00:14:11,519
the moon and i i walked outside i looked

350
00:14:16,069 --> 00:14:13,600
at the moon and i thought you know up

351
00:14:18,069 --> 00:14:16,079
until yesterday it was impossible to

352
00:14:19,829 --> 00:14:18,079
walk on the moon and now

353
00:14:21,350 --> 00:14:19,839
people have walked in the moon so right

354
00:14:23,910 --> 00:14:21,360
now it may be impossible for a little

355
00:14:25,509 --> 00:14:23,920
canadian kid to be an astronaut

356
00:14:27,829 --> 00:14:25,519
but heck it was impossible to walk on

357
00:14:30,470 --> 00:14:27,839
the moon yesterday so i'm going to give

358
00:14:31,990 --> 00:14:30,480
it a try and amazingly enough even

359
00:14:33,829 --> 00:14:32,000
though a nine-year-old kid chose my

360
00:14:35,750 --> 00:14:33,839
career for me

361
00:14:39,350 --> 00:14:35,760
that actually came true and here i am

362
00:14:42,949 --> 00:14:41,269
and so it's just been continual progress

363
00:14:44,870 --> 00:14:42,959

getting closer and closer to your goal

364
00:14:47,350 --> 00:14:44,880
the most recent step has been becoming

365
00:14:48,550 --> 00:14:47,360
commander how has your daily routine

366
00:14:54,310 --> 00:14:48,560
change now that you're the commander of

367
00:14:59,750 --> 00:14:56,710
well rather than just worrying primarily

368
00:15:01,430 --> 00:14:59,760
about my responsibilities i now

369
00:15:02,870 --> 00:15:01,440
take care of what i'm doing but also i

370
00:15:04,069 --> 00:15:02,880
think about what everybody else in the

371
00:15:06,069 --> 00:15:04,079
crew is doing

372
00:15:08,710 --> 00:15:06,079
i look at everybody else's schedule the

373
00:15:10,310 --> 00:15:08,720
night before i see where there might be

374
00:15:12,629 --> 00:15:10,320
conflicts or maybe a crew member is

375
00:15:13,670 --> 00:15:12,639
doing something for the first time

376
00:15:15,189 --> 00:15:13,680
i look at how it's all going to

377
00:15:16,629 --> 00:15:15,199
interplay with each other and then

378
00:15:18,710 --> 00:15:16,639
during the day

379
00:15:20,470 --> 00:15:18,720
i go around and check on everybody make

380
00:15:21,829 --> 00:15:20,480
sure that they're staying on schedule

381
00:15:23,030 --> 00:15:21,839
they're getting their they're getting

382
00:15:24,550 --> 00:15:23,040
their greens they're getting enough to

383
00:15:26,310 --> 00:15:24,560
eat they're getting their exercise

384
00:15:27,829 --> 00:15:26,320
they're not overworking themselves and

385
00:15:28,949 --> 00:15:27,839
then i'm also responsible for the

386
00:15:30,870 --> 00:15:28,959
spaceship

387
00:15:32,870 --> 00:15:30,880
so in the morning i go around and turn

388
00:15:35,269 --> 00:15:32,880

everything on i open up the shutters on

389
00:15:37,829 --> 00:15:35,279
the windows uh get everything working

390
00:15:39,670 --> 00:15:37,839
and then at night time i'm responsible

391
00:15:42,150 --> 00:15:39,680
for going around and putting the space

392
00:15:43,910 --> 00:15:42,160
station to bed making sure everything's

393
00:15:45,910 --> 00:15:43,920
how it should be

394
00:15:47,990 --> 00:15:45,920
and that the shutters are closed to

395
00:15:49,829 --> 00:15:48,000
protect the glass of the windows and all

396
00:15:51,829 --> 00:15:49,839
the lights are off that should be

397
00:15:53,269 --> 00:15:51,839
and an hour ago we had an alarm ring on

398
00:15:55,670 --> 00:15:53,279
the space station one of our warning

399
00:15:57,990 --> 00:15:55,680
alarms came on it said we had

400
00:15:59,749 --> 00:15:58,000
oxygen levels were low so we worked it

401
00:16:01,990 --> 00:15:59,759
and me as the commander had to sort it

402
00:16:03,670 --> 00:16:02,000
out and it's just one of the sensors

403
00:16:05,269 --> 00:16:03,680
went bad but

404
00:16:07,269 --> 00:16:05,279
it's more like instead of just being a

405
00:16:13,749 --> 00:16:07,279
team member i'm a team member and i'm

406
00:16:17,269 --> 00:16:15,509
how do you want to be remembered after

407
00:16:24,310 --> 00:16:17,279
this mission is complete what is your

408
00:16:29,990 --> 00:16:26,389
uh what i really want

409
00:16:32,150 --> 00:16:30,000
is to get things done to get stuff done

410
00:16:34,389 --> 00:16:32,160
i want our crew the people that are

411
00:16:37,030 --> 00:16:34,399
living off of the earth right now to

412
00:16:39,910 --> 00:16:37,040
feel great sense of accomplishment in

413
00:16:41,670 --> 00:16:39,920

having really when it was our turn to to

414
00:16:43,110 --> 00:16:41,680
run this place and to do it to have

415
00:16:44,870 --> 00:16:43,120
really done it right

416
00:16:48,069 --> 00:16:44,880
to have accomplished as many of the

417
00:16:50,710 --> 00:16:48,079
things as possible and and also to want

418
00:16:52,389 --> 00:16:50,720
to get off the spaceship recover and

419
00:16:54,470 --> 00:16:52,399
then run around and get back in line to

420
00:16:56,389 --> 00:16:54,480
get back on and go do this again because

421
00:16:58,949 --> 00:16:56,399
if people want to go do it again that

422
00:17:01,509 --> 00:16:58,959
means it was a successful experience and

423
00:17:03,509 --> 00:17:01,519
so as the commander those are the two

424
00:17:05,909 --> 00:17:03,519
things that i that i would really hope

425
00:17:08,309 --> 00:17:05,919
that that i can uh i can leave when i

426
00:17:09,590 --> 00:17:08,319
finish this job number one is to have

427
00:17:11,029 --> 00:17:09,600
really accomplished everything that

428
00:17:13,429 --> 00:17:11,039
we're supposed to do while we're up here

429
00:17:15,029 --> 00:17:13,439
and two that the people on board enjoyed

430
00:17:18,150 --> 00:17:15,039
it so much that they want to go do it

431
00:17:21,510 --> 00:17:19,909
chris you're making canada very very

432
00:17:22,789 --> 00:17:21,520
proud and you're making earth proud

433
00:17:26,390 --> 00:17:22,799
thanks for your hard work up there and

434
00:17:29,750 --> 00:17:28,150
well dan as i was very nice to talk with

435
00:17:31,270 --> 00:17:29,760
both of you thank you for paying

436
00:17:33,270 --> 00:17:31,280
attention to all the stuff we're doing i

437
00:17:34,870 --> 00:17:33,280
think in the midst of everything else

438
00:17:36,789 --> 00:17:34,880

that's happening in the world

439
00:17:38,789 --> 00:17:36,799
this is a pretty cool thing as we're

440
00:17:40,390 --> 00:17:38,799
leaving earth permanently i'm really

441
00:17:42,789 --> 00:17:40,400
happy to be part of it and i'm really

442
00:17:44,630 --> 00:17:42,799
glad to know you two folks and and help

443
00:17:52,789 --> 00:17:44,640
tell the story to everybody else so it's

444
00:18:00,630 --> 00:17:55,510
station this is houston acr thank you

445
00:18:04,390 --> 00:18:02,310
and thank you discovery canada station