
PORT
STBD

1
00:00:03,909 --> 00:00:01,910
house committee on science space and

2
00:00:04,789 --> 00:00:03,919
technology this is mission control

3
00:00:11,669 --> 00:00:04,799
houston

4
00:00:16,790 --> 00:00:12,549
smith

5
00:00:16,800 --> 00:00:19,990
we have you loud and clear

6
00:00:24,310 --> 00:00:22,230
that is great uh the gentleman from

7
00:00:28,470 --> 00:00:24,320
california mr rohrabacher will be

8
00:00:32,150 --> 00:00:31,429
this congressman dana rohrabacher and uh

9
00:00:51,750 --> 00:00:32,160
i

10
00:00:53,510 --> 00:00:51,760
to

11
00:00:55,510 --> 00:00:53,520
give us an understanding of the

12
00:00:57,750 --> 00:00:55,520
challenge of space debris how the space

13
00:00:59,670 --> 00:00:57,760

station deals with it

14
00:01:01,510 --> 00:00:59,680
and if there's some other

15
00:01:03,830 --> 00:01:01,520
challenges like that that we may not be

16
00:01:06,310 --> 00:01:03,840
thinking about here that we have to deal

17
00:01:10,830 --> 00:01:06,320
with before we build a new station in

18
00:01:15,030 --> 00:01:13,670
ahead it's a good question congressman

19
00:01:17,109 --> 00:01:15,040
yes we do have to worry about space

20
00:01:19,429 --> 00:01:17,119
debris up here as a matter of fact a

21
00:01:22,550 --> 00:01:19,439
couple nights ago we had to do a

22
00:01:23,749 --> 00:01:22,560
debris avoidance maneuver uh when we

23
00:01:26,870 --> 00:01:23,759
realized that there was going to be a

24
00:01:28,149 --> 00:01:26,880
piece of debris close to our path so we

25
00:01:29,749 --> 00:01:28,159
luckily mission control has a good

26
00:01:31,830 --> 00:01:29,759
program set up so when they see that

27
00:01:33,749 --> 00:01:31,840
they go ahead and execute it and within

28
00:01:36,230 --> 00:01:33,759
a few hours we're out of way out of

29
00:01:37,830 --> 00:01:36,240
harm's way and we have people on the

30
00:01:39,670 --> 00:01:37,840
ground who monitor that for us and they

31
00:01:41,270 --> 00:01:39,680
know where everything is as for where

32
00:01:48,069 --> 00:01:41,280
the debris is and where we are and they

33
00:01:51,590 --> 00:01:50,469
the gentlewoman from texas ms johnson

34
00:01:53,510 --> 00:01:51,600
ranking member of this committee is

35
00:01:55,270 --> 00:01:53,520
recognized

36
00:01:57,749 --> 00:01:55,280
thank you very much mr chairman and

37
00:01:59,350 --> 00:01:57,759
greetings to commander wiseman and dr

38
00:02:01,350 --> 00:01:59,360

swanson

39
00:02:03,190 --> 00:02:01,360
it's a lot of excitement on this end

40
00:02:05,990 --> 00:02:03,200
watching you

41
00:02:07,590 --> 00:02:06,000
i'd like both of you to comment on the

42
00:02:10,550 --> 00:02:07,600
aspects of the international space

43
00:02:13,190 --> 00:02:10,560
station program that's most important in

44
00:02:15,750 --> 00:02:13,200
enabling fuel human

45
00:02:20,790 --> 00:02:15,760
space exploration beyond the uh

46
00:02:23,990 --> 00:02:22,550
oh i don't want to take your entire day

47
00:02:27,110 --> 00:02:24,000
up i could talk about this subject

48
00:02:29,030 --> 00:02:27,120
forever um really it's it's getting

49
00:02:31,430 --> 00:02:29,040
humans into low earth orbit and having

50
00:02:33,509 --> 00:02:31,440
us live up here right now for six months

51
00:02:35,350 --> 00:02:33,519
at a time and in just a little over a

52
00:02:38,070 --> 00:02:35,360
year we'll have scott kelly up here for

53
00:02:39,830 --> 00:02:38,080
an entire year and it's it's all the

54
00:02:41,509 --> 00:02:39,840
things that happen to the human body and

55
00:02:44,309 --> 00:02:41,519
also what our spacecraft needs to

56
00:02:46,550 --> 00:02:44,319
provide to us like oxygen

57
00:02:49,030 --> 00:02:46,560
to breathe water to drink all of the

58
00:02:51,270 --> 00:02:49,040
food the supplies and just running this

59
00:02:53,589 --> 00:02:51,280
machine through its paces

60
00:02:55,190 --> 00:02:53,599
over six months or even a year at a time

61
00:02:57,350 --> 00:02:55,200
that's what we're going to need when we

62
00:02:58,229 --> 00:02:57,360
go onward to mars and spend two or three

63
00:02:59,990 --> 00:02:58,239

years

64
00:03:02,790 --> 00:03:00,000
in space so we need to test all this

65
00:03:04,869 --> 00:03:02,800
stuff now on the space station so that

66
00:03:09,190 --> 00:03:04,879
in a decade or so we can head on to mars

67
00:03:12,470 --> 00:03:10,869
the gentleman from texas mr hall is

68
00:03:14,309 --> 00:03:12,480
recognized

69
00:03:16,309 --> 00:03:14,319
mr chairman i thank you for linking our

70
00:03:18,390 --> 00:03:16,319
committee to these two astronauts

71
00:03:20,470 --> 00:03:18,400
commander wiseman and dr swanson i

72
00:03:22,790 --> 00:03:20,480
remember the house floor debate on june

73
00:03:25,190 --> 00:03:22,800
23 1993

74
00:03:28,070 --> 00:03:25,200
in this committee in this room

75
00:03:30,149 --> 00:03:28,080
when this committee came within one vote

76
00:03:32,710 --> 00:03:30,159
of killing the space station that

77
00:03:35,190 --> 00:03:32,720
congressman markey had fought for

78
00:03:36,710 --> 00:03:35,200
forever our argument made on behalf of

79
00:03:38,710 --> 00:03:36,720
space station was the importance of

80
00:03:40,390 --> 00:03:38,720
providing something tangible that our

81
00:03:42,869 --> 00:03:40,400
children can dream about and then aim

82
00:03:44,630 --> 00:03:42,879
their education their careers towards so

83
00:03:46,550 --> 00:03:44,640
i'll just ask a simple question how do

84
00:03:48,550 --> 00:03:46,560
you think this space station has

85
00:03:50,470 --> 00:03:48,560
inspired young people and can give us

86
00:03:52,390 --> 00:03:50,480
some examples of efforts on the space

87
00:03:54,789 --> 00:03:52,400
station to engage young people and

88
00:03:56,309 --> 00:03:54,799

inspire them to pursue stem education

89
00:04:02,309 --> 00:03:56,319
what would you say to me the space

90
00:04:07,589 --> 00:04:04,789
oh i do agree with you tremendously

91
00:04:09,030 --> 00:04:07,599
about the stem program a matter of fact

92
00:04:11,750 --> 00:04:09,040
one of the things i did before i got

93
00:04:13,350 --> 00:04:11,760
here was work on spheres with students

94
00:04:15,270 --> 00:04:13,360
in the local high school and that's what

95
00:04:17,189 --> 00:04:15,280
we do is experiment we have up here and

96
00:04:19,270 --> 00:04:17,199
the kids themselves get to program the

97
00:04:21,349 --> 00:04:19,280
spheres satellites that float around

98
00:04:22,950 --> 00:04:21,359
here and they have competitions and i

99
00:04:24,950 --> 00:04:22,960
just saw it on the kids faces when they

100
00:04:26,790 --> 00:04:24,960
got to have their program run on the

101
00:04:31,350 --> 00:04:26,800
station they got so enthused about

102
00:04:35,749 --> 00:04:32,790
the gentlewoman from maryland miss

103
00:04:37,670 --> 00:04:35,759
edwards is recognized

104
00:04:40,550 --> 00:04:37,680
thank you very much and thank you so

105
00:04:44,390 --> 00:04:40,560
much i have to tell you i am so excited

106
00:04:47,189 --> 00:04:44,400
i wish i could be you when i grow up

107
00:04:50,390 --> 00:04:47,199
my my question and greetings to reid

108
00:04:52,629 --> 00:04:50,400
weissman a fellow marylander

109
00:04:55,430 --> 00:04:52,639
you know we'll package some freeze-dried

110
00:04:57,110 --> 00:04:55,440
crab cakes for you up there

111
00:05:02,629 --> 00:04:57,120
i wonder if you could

112
00:05:06,710 --> 00:05:04,870
i got that signal i wonder if i wonder

113
00:05:09,670 --> 00:05:06,720

if you could tell us though

114
00:05:12,550 --> 00:05:09,680
the importance of the work that you do

115
00:05:14,950 --> 00:05:12,560
and how you were inspired to join the

116
00:05:16,870 --> 00:05:14,960
space program what inspired you because

117
00:05:20,070 --> 00:05:16,880
i think it is really a challenge for us

118
00:05:25,029 --> 00:05:20,080
to figure out what ex inspires the next

119
00:05:28,870 --> 00:05:26,629
that's a great question and i think back

120
00:05:30,390 --> 00:05:28,880
to my childhood and certainly it was

121
00:05:32,629 --> 00:05:30,400
when the space shuttle was just being

122
00:05:33,749 --> 00:05:32,639
developed and launched back in 1981 i

123
00:05:35,749 --> 00:05:33,759
was

124
00:05:39,029 --> 00:05:35,759
around six years old at the time and i

125
00:05:41,189 --> 00:05:39,039
definitely remember a 747 flying over

126
00:05:42,710 --> 00:05:41,199
maryland and i was at in towson with my

127
00:05:44,710 --> 00:05:42,720
parents we had gone up to the top of a

128
00:05:46,390 --> 00:05:44,720
hill for the simple act of watching a

129
00:05:48,710 --> 00:05:46,400
space shuttle fly over on the back of a

130
00:05:50,950 --> 00:05:48,720
747 as they were transporting it and

131
00:05:52,790 --> 00:05:50,960
that image has burned into my mind

132
00:05:54,950 --> 00:05:52,800
and that probably started the course

133
00:05:56,870 --> 00:05:54,960
that i i was on to become not only a

134
00:05:59,909 --> 00:05:56,880
navy pilot test pilot and then an

135
00:06:02,070 --> 00:05:59,919
astronaut so to me we never know

136
00:06:03,110 --> 00:06:02,080
as as adults we never know that little

137
00:06:05,189 --> 00:06:03,120
thing that's going to spark the

138
00:06:06,710 --> 00:06:05,199

imagination of a child's mind and for me

139
00:06:07,830 --> 00:06:06,720
it was a simple airplane with a space

140
00:06:09,830 --> 00:06:07,840
shuttle flying all right that's not

141
00:06:11,029 --> 00:06:09,840
simple but it was that simple act of

142
00:06:13,270 --> 00:06:11,039
being with my parents and that's what

143
00:06:16,070 --> 00:06:13,280
sparked my imagination and so

144
00:06:18,390 --> 00:06:16,080
as much as we can from up here and nasa

145
00:06:20,870 --> 00:06:18,400
on the ground to reach out to to kids

146
00:06:21,830 --> 00:06:20,880
and just expose them to this world this

147
00:06:24,070 --> 00:06:21,840
stem

148
00:06:25,029 --> 00:06:24,080
world that's in motion i think you never

149
00:06:26,390 --> 00:06:25,039
know when you're going to spark their

150
00:06:29,990 --> 00:06:26,400
imagination and i'm sure that we're

151
00:06:33,189 --> 00:06:31,510
the gentleman from mississippi mr

152
00:06:35,270 --> 00:06:33,199
palazzo is recognized

153
00:06:37,749 --> 00:06:35,280
hey reed and steve thanks for talking to

154
00:06:40,309 --> 00:06:37,759
us today hopefully the chairman of the

155
00:06:42,230 --> 00:06:40,319
full committee will allow us to have a

156
00:06:44,150 --> 00:06:42,240
congressional trip to the space station

157
00:06:46,070 --> 00:06:44,160
in the near future

158
00:06:49,110 --> 00:06:46,080
i have a question for you from one of my

159
00:06:51,029 --> 00:06:49,120
constituents in south mississippi

160
00:06:53,029 --> 00:06:51,039
suzanne would like to know how do you

161
00:06:59,430 --> 00:06:53,039
deal with the incredible solitude for

162
00:07:03,189 --> 00:07:01,510
that is an interesting question

163
00:07:04,950 --> 00:07:03,199

um each person probably does it a little

164
00:07:06,710 --> 00:07:04,960
differently one of the things we like to

165
00:07:08,790 --> 00:07:06,720
do i think that helps

166
00:07:10,070 --> 00:07:08,800
keep us calm and motivated at the same

167
00:07:12,150 --> 00:07:10,080
time is look out the window on our

168
00:07:14,070 --> 00:07:12,160
beautiful planet and when we have free

169
00:07:16,150 --> 00:07:14,080
time we always go over to this window we

170
00:07:18,469 --> 00:07:16,160
have called the cupola it's basically

171
00:07:19,990 --> 00:07:18,479
like the glass bottom boat of our ship

172
00:07:21,749 --> 00:07:20,000
and we look down on earth and it's

173
00:07:23,029 --> 00:07:21,759
fantastic and that's what keeps us going

174
00:07:27,589 --> 00:07:23,039
i think just looking at our beautiful

175
00:07:31,430 --> 00:07:29,589
the gentleman from california mr peters

176
00:07:33,589 --> 00:07:31,440
is recognized

177
00:07:35,270 --> 00:07:33,599
thank you mr chairman hello gentlemen i

178
00:07:36,309 --> 00:07:35,280
had a question for you uh for our

179
00:07:38,230 --> 00:07:36,319
committee

180
00:07:40,309 --> 00:07:38,240
uh we struggle along

181
00:07:41,990 --> 00:07:40,319
a lot with how to maintain the country's

182
00:07:44,150 --> 00:07:42,000
lead in science i wondered if you could

183
00:07:45,110 --> 00:07:44,160
give us your perspective on how

184
00:07:47,990 --> 00:07:45,120
important

185
00:07:49,510 --> 00:07:48,000
space exploration and research is

186
00:07:53,589 --> 00:07:49,520
to maintaining our nation's lead in

187
00:07:58,390 --> 00:07:55,909
well certainly it's uh it's right at the

188
00:08:02,070 --> 00:07:58,400

cutting edge and this is just one of our

189
00:08:04,309 --> 00:08:02,080
many uh pieces i guess in our overall

190
00:08:05,990 --> 00:08:04,319
uh u.s portfolio of leading this

191
00:08:08,469 --> 00:08:06,000
technological revolution that we're

192
00:08:10,309 --> 00:08:08,479
living day-to-day and so uh i don't know

193
00:08:12,469 --> 00:08:10,319
right here just just off our screen to

194
00:08:14,710 --> 00:08:12,479
the right there's the arm of robonaut

195
00:08:17,189 --> 00:08:14,720
and robonaut is hanging out we just had

196
00:08:19,589 --> 00:08:17,199
him out last night to do uh to do some

197
00:08:21,029 --> 00:08:19,599
upgrades and we'll bring it out and get

198
00:08:22,469 --> 00:08:21,039
it in full operation here maybe even

199
00:08:24,309 --> 00:08:22,479
with a set of legs

200
00:08:25,990 --> 00:08:24,319
down the road so the work we're doing up

201
00:08:27,749 --> 00:08:26,000
here is right on the cutting edge but

202
00:08:29,749 --> 00:08:27,759
that's just one small piece across our

203
00:08:31,749 --> 00:08:29,759
entire country of what's going on and a

204
00:08:33,670 --> 00:08:31,759
lot of it is thanks to uh government

205
00:08:35,670 --> 00:08:33,680
funding and pumping money into this

206
00:08:37,509 --> 00:08:35,680
research that's critical for our nation

207
00:08:39,029 --> 00:08:37,519
not just five years down the road but 50

208
00:08:42,469 --> 00:08:39,039
and 100 years down the road to stay on

209
00:08:46,710 --> 00:08:44,550
the gentleman from alabama mr brooks is

210
00:08:49,590 --> 00:08:46,720
recognized

211
00:08:51,750 --> 00:08:49,600
dr swanson commander weissmann hi i'm mo

212
00:08:54,070 --> 00:08:51,760
brooks from alabama's fifth district the

213
00:08:56,790 --> 00:08:54,080

home of the marshall space flight center

214
00:08:59,190 --> 00:08:56,800
as a child i grew up feeling the ground

215
00:09:00,310 --> 00:08:59,200
shake as the saturn v rocket was tested

216
00:09:02,630 --> 00:09:00,320
nearby

217
00:09:04,710 --> 00:09:02,640
and i vividly remember apollo 11 when

218
00:09:07,509 --> 00:09:04,720
neil armstrong descended from the lunar

219
00:09:10,150 --> 00:09:07,519
module declaring one small step for man

220
00:09:11,990 --> 00:09:10,160
one giant leap for mankind

221
00:09:14,630 --> 00:09:12,000
the apollo program was american

222
00:09:17,910 --> 00:09:14,640
exceptionalism at its best it made us

223
00:09:19,750 --> 00:09:17,920
all proud to be americans my question is

224
00:09:22,389 --> 00:09:19,760
what mission should america's space

225
00:09:28,630 --> 00:09:22,399
program next embark on to be the next

226
00:09:31,750 --> 00:09:30,070
yes i believe

227
00:09:33,590 --> 00:09:31,760
we should get ourselves to mars i know

228
00:09:35,509 --> 00:09:33,600
it's a difficult road ahead to get there

229
00:09:37,509 --> 00:09:35,519
but i believe we can do it and this is

230
00:09:39,670 --> 00:09:37,519
one of the first blocks that we have to

231
00:09:42,389 --> 00:09:39,680
do is learn how to live in space and

232
00:09:44,470 --> 00:09:42,399
recycle everything we need to from water

233
00:09:46,070 --> 00:09:44,480
air everything we need to do bring grow

234
00:09:47,430 --> 00:09:46,080
our own food all that kind of stuff so

235
00:09:48,389 --> 00:09:47,440
we can reduce the amount of supplies

236
00:09:50,550 --> 00:09:48,399
with us

237
00:09:51,750 --> 00:09:50,560
create a robust system and right here

238
00:09:53,110 --> 00:09:51,760

we're starting it off we probably have

239
00:09:55,190 --> 00:09:53,120
to do a few other steps before we get

240
00:09:58,710 --> 00:09:55,200
there but i think going to mars is our

241
00:10:03,509 --> 00:10:00,949
the gentlewoman from massachusetts ms

242
00:10:05,590 --> 00:10:03,519
clark is recognized

243
00:10:08,389 --> 00:10:05,600
thank you it is great to be here i have

244
00:10:10,630 --> 00:10:08,399
some questions from the compass summer

245
00:10:13,750 --> 00:10:10,640
program students in cambridge

246
00:10:17,990 --> 00:10:13,760
massachusetts they submitted over 40

247
00:10:24,150 --> 00:10:21,509
from dante how do you pack do you bring

248
00:10:28,949 --> 00:10:24,160
a suitcase and what's the temperature

249
00:10:31,829 --> 00:10:28,959
from chloe what fuel do you use to

250
00:10:35,829 --> 00:10:31,839
to support the space shuttle and from

251
00:10:41,430 --> 00:10:35,839
luke has anyone had a birthday and if so

252
00:10:44,949 --> 00:10:42,870
okay so

253
00:10:46,710 --> 00:10:44,959
we pack in a very very small suitcase

254
00:10:50,150 --> 00:10:46,720
it's about that big we get about one and

255
00:10:51,750 --> 00:10:50,160
a half kilograms um the fuel that we use

256
00:10:54,470 --> 00:10:51,760
well for our rocket ship we basically

257
00:10:56,310 --> 00:10:54,480
use kerosene and oxygen to get up here

258
00:10:58,150 --> 00:10:56,320
and then once we're on the space station

259
00:10:59,670 --> 00:10:58,160
we have a hypergolic fuel mix that we

260
00:11:02,310 --> 00:10:59,680
use to keep us here but we don't have to

261
00:11:03,910 --> 00:11:02,320
burn our engines very often and then we

262
00:11:06,069 --> 00:11:03,920
did have a russian crewmate who had a

263
00:11:07,829 --> 00:11:06,079

birthday and right behind the camera we

264
00:11:09,910 --> 00:11:07,839
have a dinner table there

265
00:11:13,269 --> 00:11:09,920
in node one and we all gather around

266
00:11:16,550 --> 00:11:13,279
that table all six of us and we share

267
00:11:18,230 --> 00:11:16,560
u.s food european food russian food

268
00:11:20,470 --> 00:11:18,240
some of our juices

269
00:11:22,470 --> 00:11:20,480
some of the russian teas are very nice

270
00:11:24,230 --> 00:11:22,480
and we just joined together and have a

271
00:11:25,750 --> 00:11:24,240
really a really great evening

272
00:11:28,870 --> 00:11:25,760
unfortunately i don't think there were

273
00:11:30,790 --> 00:11:28,880
any presents to unwrap but sasha

274
00:11:34,230 --> 00:11:30,800
i think he was happy enough so it was a

275
00:11:37,990 --> 00:11:36,069
the gentleman from florida mr posey is

276
00:11:40,389 --> 00:11:38,000
recognized

277
00:11:42,230 --> 00:11:40,399
dr swanson and commander wiseman

278
00:11:44,550 --> 00:11:42,240
sometimes it's hard for americans to

279
00:11:46,150 --> 00:11:44,560
understand why human space exploration

280
00:11:48,310 --> 00:11:46,160
is so important

281
00:11:49,910 --> 00:11:48,320
can you take a moment to explain

282
00:11:51,750 --> 00:11:49,920
how the work you're doing now on the

283
00:11:57,750 --> 00:11:51,760
international space station benefits

284
00:12:01,110 --> 00:11:59,190
i think there's a few different ways to

285
00:12:04,150 --> 00:12:01,120
look at that question one we are doing

286
00:12:07,430 --> 00:12:04,160
research right now uh on our scientific

287
00:12:09,590 --> 00:12:07,440
aspect we do from burning new ways to

288
00:12:12,230 --> 00:12:09,600

learn how actual fire works in the

289
00:12:14,389 --> 00:12:12,240
details part of it we do medical

290
00:12:16,230 --> 00:12:14,399
research up here we've just

291
00:12:19,269 --> 00:12:16,240
through station research we've come up

292
00:12:21,110 --> 00:12:19,279
with ways to get chemotherapy to the

293
00:12:22,230 --> 00:12:21,120
target areas of the body more

294
00:12:24,310 --> 00:12:22,240
effectively

295
00:12:26,790 --> 00:12:24,320
just one of an example the other thing

296
00:12:29,030 --> 00:12:26,800
you have a look at is is that humans are

297
00:12:31,350 --> 00:12:29,040
meant to explore i believe and this is

298
00:12:33,190 --> 00:12:31,360
one path that we need to take and now

299
00:12:35,110 --> 00:12:33,200
we're starting off and this fulfills

300
00:12:36,870 --> 00:12:35,120
that idea i think for our just not just

301
00:12:39,110 --> 00:12:36,880
the whole race of humans and that's one

302
00:12:40,310 --> 00:12:39,120
thing we need to do and the other aspect

303
00:12:42,389 --> 00:12:40,320
i believe this is a really good

304
00:12:43,990 --> 00:12:42,399
investment a lot of spin-off

305
00:12:46,389 --> 00:12:44,000
technologies come out of this it creates

306
00:12:49,110 --> 00:12:46,399
uh economy uh sorry it's good for the

307
00:12:50,710 --> 00:12:49,120
economy it creates money for our country

308
00:12:53,750 --> 00:12:50,720
and it creates a better world for all of

309
00:12:57,190 --> 00:12:55,509
the gentleman from washington mr kilmer

310
00:12:58,710 --> 00:12:57,200
is recognized

311
00:13:00,629 --> 00:12:58,720
thank you mr chairman and thank you for

312
00:13:03,110 --> 00:13:00,639
being with us um

313
00:13:06,310 --> 00:13:03,120

i have two quick questions that came

314
00:13:07,190 --> 00:13:06,320
from the young gentleman behind me uh

315
00:13:09,430 --> 00:13:07,200
here

316
00:13:12,310 --> 00:13:09,440
uh uh one is just trying to get a sense

317
00:13:15,910 --> 00:13:12,320
uh more of uh of how the space station

318
00:13:18,710 --> 00:13:15,920
plays into um the effort to go to mars

319
00:13:20,310 --> 00:13:18,720
and a little bit more specific about uh

320
00:13:22,470 --> 00:13:20,320
what what the utility is of the space

321
00:13:23,269 --> 00:13:22,480
station then he also wants to know

322
00:13:26,470 --> 00:13:23,279
um

323
00:13:27,190 --> 00:13:26,480
uh as we look out into uh this century

324
00:13:29,509 --> 00:13:27,200
uh

325
00:13:31,350 --> 00:13:29,519
what's what's on the horizon what what

326
00:13:33,190 --> 00:13:31,360
other new frontiers do you think we're

327
00:13:34,710 --> 00:13:33,200
going to to visit and he also wants to

328
00:13:36,550 --> 00:13:34,720
know how many other planets are we going

329
00:13:37,590 --> 00:13:36,560
to discover

330
00:13:38,949 --> 00:13:37,600
is that right

331
00:13:40,790 --> 00:13:38,959
all right

332
00:13:42,949 --> 00:13:40,800
well let's start with the let's start

333
00:13:45,110 --> 00:13:42,959
with the end question how many planets

334
00:13:47,030 --> 00:13:45,120
limitless it just depends on how how

335
00:13:48,949 --> 00:13:47,040
good our sensors get in our lifetimes as

336
00:13:50,629 --> 00:13:48,959
to how many we're going to discover

337
00:13:52,470 --> 00:13:50,639
perhaps every time you look up at night

338
00:13:54,710 --> 00:13:52,480

at any star you got to think there's a

339
00:13:57,189 --> 00:13:54,720
solar system around that star so

340
00:13:58,790 --> 00:13:57,199
it just blows my mind i know

341
00:14:01,189 --> 00:13:58,800
for the space station and how does this

342
00:14:02,870 --> 00:14:01,199
play into our long duration missions if

343
00:14:05,509 --> 00:14:02,880
we're going to go to mars we're going to

344
00:14:07,670 --> 00:14:05,519
set out on a three plus year journey and

345
00:14:09,590 --> 00:14:07,680
if you have one major system break

346
00:14:11,350 --> 00:14:09,600
without spares on that journey and that

347
00:14:13,350 --> 00:14:11,360
could be your own human body your heart

348
00:14:15,350 --> 00:14:13,360
your muscles your bones that could be

349
00:14:17,670 --> 00:14:15,360
your environmental control system that

350
00:14:19,430 --> 00:14:17,680
could be your engines your solar arrays

351
00:14:21,110 --> 00:14:19,440
any piece of that puzzle falls apart and

352
00:14:23,350 --> 00:14:21,120
now you've lost your your mission to

353
00:14:24,550 --> 00:14:23,360
mars so this is the test bed this is

354
00:14:26,069 --> 00:14:24,560
where we start

355
00:14:28,389 --> 00:14:26,079
the the fundamental blocking and

356
00:14:30,710 --> 00:14:28,399
tackling of this challenge to get to

357
00:14:32,150 --> 00:14:30,720
mars and i think that research is being

358
00:14:34,629 --> 00:14:32,160
done right now and we're seeing very

359
00:14:36,949 --> 00:14:34,639
successful results our water balance is

360
00:14:39,750 --> 00:14:36,959
almost at 90 percent so we recycle our

361
00:14:41,750 --> 00:14:39,760
urine into drinking water we recycle

362
00:14:43,750 --> 00:14:41,760
water into oxygen we have a really

363
00:14:45,269 --> 00:14:43,760

amazing regenerative system up here and

364
00:14:46,710 --> 00:14:45,279
it's proving extremely effective and

365
00:14:53,430 --> 00:14:46,720
we're working on reliability that's

366
00:14:59,269 --> 00:14:55,350
and i hope that covers enough of your

367
00:15:05,189 --> 00:15:02,550
the gentleman from texas mr stockman

368
00:15:07,350 --> 00:15:05,199
thank you for uh having this broadcast

369
00:15:09,509 --> 00:15:07,360
today as you're my constituents i

370
00:15:11,750 --> 00:15:09,519
appreciate what you're doing i'm also

371
00:15:14,470 --> 00:15:11,760
proud of our country and our support of

372
00:15:16,710 --> 00:15:14,480
you but some of you

373
00:15:19,189 --> 00:15:16,720
may know that up here it's not universal

374
00:15:21,189 --> 00:15:19,199
support which i think is a mistake and

375
00:15:23,189 --> 00:15:21,199
what would you if you were me what would

376
00:15:25,990 --> 00:15:23,199
you tell my colleagues

377
00:15:29,110 --> 00:15:26,000
why they should be supportive of your

378
00:15:30,389 --> 00:15:29,120
efforts and why we should vote three

379
00:15:32,389 --> 00:15:30,399
times the amount of money that we're

380
00:15:33,110 --> 00:15:32,399
supporting right now

381
00:15:37,509 --> 00:15:33,120
or

382
00:15:41,590 --> 00:15:39,189
i would be happy with twice but that's a

383
00:15:42,870 --> 00:15:41,600
good question um that's a really good

384
00:15:44,710 --> 00:15:42,880
question really because again it goes

385
00:15:46,870 --> 00:15:44,720
back to what do we provide for our the

386
00:15:48,790 --> 00:15:46,880
taxpayer and i do think we one we

387
00:15:50,470 --> 00:15:48,800
provide research and development

388
00:15:52,949 --> 00:15:50,480

that's what we get out of this we get

389
00:15:54,949 --> 00:15:52,959
new products new ideas new science new

390
00:15:56,790 --> 00:15:54,959
research which always helps the country

391
00:15:58,389 --> 00:15:56,800
in the future maybe 10 15 years down the

392
00:16:00,150 --> 00:15:58,399
road and again that creates new

393
00:16:02,470 --> 00:16:00,160
companies which does again goes better

394
00:16:04,230 --> 00:16:02,480
for the economy we get that we inspire

395
00:16:06,150 --> 00:16:04,240
the new generation which hopefully gets

396
00:16:08,150 --> 00:16:06,160
them to be productive and help out and

397
00:16:09,749 --> 00:16:08,160
make our country stronger and we then

398
00:16:11,509 --> 00:16:09,759
are explorers which again help the whole

399
00:16:14,870 --> 00:16:11,519
human race i would try to go with those

400
00:16:18,230 --> 00:16:16,310
the gentleman from california mr

401
00:16:19,430 --> 00:16:18,240
swahwell

402
00:16:21,590 --> 00:16:19,440
hello and

403
00:16:23,670 --> 00:16:21,600
my questions today come from the bay

404
00:16:25,829 --> 00:16:23,680
area and i have three young aspiring

405
00:16:27,910 --> 00:16:25,839
astronauts uh with questions uh shay

406
00:16:30,150 --> 00:16:27,920
daley of san ramon

407
00:16:32,949 --> 00:16:30,160
phoebe bruns of castro valley

408
00:16:35,189 --> 00:16:32,959
and julia warren of castro valley and

409
00:16:36,949 --> 00:16:35,199
the first question is an easy one for

410
00:16:39,269 --> 00:16:36,959
commander wiseman and that is what is

411
00:16:41,110 --> 00:16:39,279
your favorite food in space

412
00:16:42,550 --> 00:16:41,120
and also for

413
00:16:43,829 --> 00:16:42,560

dr swanson

414
00:16:45,430 --> 00:16:43,839
the question is

415
00:16:48,829 --> 00:16:45,440
do you think one day we'll encounter

416
00:16:55,189 --> 00:16:52,550
planet go first okay i i am uh i'm a

417
00:16:56,949 --> 00:16:55,199
food lover and uh but there is one

418
00:16:59,430 --> 00:16:56,959
particular food that they know when they

419
00:17:01,430 --> 00:16:59,440
open the desserts box uh all chocolate

420
00:17:04,470 --> 00:17:01,440
pudding cake goes directly to reed

421
00:17:05,990 --> 00:17:04,480
wiseman's uh locker and so i am hoarding

422
00:17:08,069 --> 00:17:06,000
chocolate pudding cake i cannot get

423
00:17:09,350 --> 00:17:08,079
enough of this stuff i tried it on earth

424
00:17:10,789 --> 00:17:09,360
and i didn't really like it that much

425
00:17:12,949 --> 00:17:10,799
but there's something about this cake up

426
00:17:14,630 --> 00:17:12,959
here that i uh i'm in love with so i'll

427
00:17:16,789 --> 00:17:14,640
pass it over to dr swanson for the

428
00:17:18,870 --> 00:17:16,799
follow on

429
00:17:21,590 --> 00:17:18,880
for the follow-on question i have to say

430
00:17:24,069 --> 00:17:21,600
yes i mean that's just that uh endless

431
00:17:25,510 --> 00:17:24,079
as as reid pointed out as you look up

432
00:17:27,909 --> 00:17:25,520
there's so many solar systems out there

433
00:17:29,750 --> 00:17:27,919
so many planets so many possibilities i

434
00:17:33,750 --> 00:17:29,760
figure that it just has to be somewhere

435
00:17:34,950 --> 00:17:33,760
and sometime it will happen absolutely

436
00:17:36,789 --> 00:17:34,960
absolutely

437
00:17:39,350 --> 00:17:36,799
the gentleman from arizona mr schweikert

438
00:17:41,430 --> 00:17:39,360

is recognized thank you mr chairman and

439
00:17:43,590 --> 00:17:41,440
a texan on my staff wants me to say

440
00:17:46,549 --> 00:17:43,600
howdy

441
00:17:49,029 --> 00:17:46,559
um and your experience so far what have

442
00:17:50,789 --> 00:17:49,039
you found that has surprised you on

443
00:17:52,950 --> 00:17:50,799
what's robust

444
00:17:55,350 --> 00:17:52,960
um has held up

445
00:17:58,390 --> 00:17:55,360
quite well on the space station and what

446
00:18:00,070 --> 00:17:58,400
have you found that is fragile that you

447
00:18:05,190 --> 00:18:00,080
see we're going to have to do future

448
00:18:08,950 --> 00:18:07,990
yeah so i would lead that off uh sir

449
00:18:10,789 --> 00:18:08,960
with

450
00:18:13,110 --> 00:18:10,799
this is my first space flight and i've

451
00:18:16,310 --> 00:18:13,120
known the space station uh for many many

452
00:18:18,310 --> 00:18:16,320
years uh we're into our 5 000 plus day

453
00:18:19,909 --> 00:18:18,320
of ops up here and one of the first

454
00:18:23,110 --> 00:18:19,919
things that struck me when i arrived is

455
00:18:25,750 --> 00:18:23,120
i expected to see an aging system i

456
00:18:27,430 --> 00:18:25,760
expected uh it to be well i don't know

457
00:18:29,430 --> 00:18:27,440
from the tv maybe it does look messy to

458
00:18:30,870 --> 00:18:29,440
you but every one of these wires has a

459
00:18:33,350 --> 00:18:30,880
purpose and when i got up here i

460
00:18:35,830 --> 00:18:33,360
realized this is a brilliant laboratory

461
00:18:38,549 --> 00:18:35,840
it's in overall amazing shape it's been

462
00:18:39,990 --> 00:18:38,559
very well cared for and i think it's

463
00:18:41,350 --> 00:18:40,000

basically a testament to the engineering

464
00:18:43,110 --> 00:18:41,360
that went in the robustness of the

465
00:18:44,870 --> 00:18:43,120
design that here we've been operating

466
00:18:47,430 --> 00:18:44,880
5000 days and this thing really looks

467
00:18:49,830 --> 00:18:47,440
like a brand new machine up here uh very

468
00:18:51,510 --> 00:18:49,840
impressive to me from from that aspect

469
00:18:53,270 --> 00:18:51,520
some things that aren't quite as

470
00:18:55,510 --> 00:18:53,280
reliable the things that have surprised

471
00:18:57,909 --> 00:18:55,520
me a little bit is you really get to see

472
00:18:59,909 --> 00:18:57,919
how quickly technology on earth develops

473
00:19:02,470 --> 00:18:59,919
when you come up here this was developed

474
00:19:04,870 --> 00:19:02,480
in the 80s and 90s and

475
00:19:06,390 --> 00:19:04,880
and really you do see ethernet cables

476
00:19:07,830 --> 00:19:06,400
running all around the outside because

477
00:19:09,750 --> 00:19:07,840
we didn't necessarily have that

478
00:19:11,990 --> 00:19:09,760
technology when they built it we just

479
00:19:13,830 --> 00:19:12,000
flew up some tablets and i mean there's

480
00:19:15,909 --> 00:19:13,840
a device that that

481
00:19:18,070 --> 00:19:15,919
a year ago i hardly even knew and now at

482
00:19:19,909 --> 00:19:18,080
home i can barely live without and so

483
00:19:21,590 --> 00:19:19,919
just building on these technologies as

484
00:19:22,870 --> 00:19:21,600
we go over time has been somewhat of a

485
00:19:24,950 --> 00:19:22,880
surprise you can kind of see the

486
00:19:26,470 --> 00:19:24,960
evolution of technology up here and so

487
00:19:27,990 --> 00:19:26,480
that's something in future designs i

488
00:19:31,510 --> 00:19:28,000

don't even know how you account for that

489
00:19:34,870 --> 00:19:33,590
the gentlewoman from connectedness sd is

490
00:19:35,830 --> 00:19:34,880
recognized probably for the last

491
00:19:37,430 --> 00:19:35,840
question

492
00:19:39,029 --> 00:19:37,440
thank you mr chairman the students of

493
00:19:41,110 --> 00:19:39,039
waterbury connecticut home of rick

494
00:19:42,710 --> 00:19:41,120
mastracchio want to know what they can

495
00:19:47,350 --> 00:19:42,720
best do to become astronauts of the

496
00:19:50,150 --> 00:19:49,190
well of course it always goes with study

497
00:19:51,830 --> 00:19:50,160
hard

498
00:19:53,510 --> 00:19:51,840
you have to do well in school that's a

499
00:19:55,990 --> 00:19:53,520
given and also it's find something that

500
00:19:57,430 --> 00:19:56,000
you're really passionate about in life

501
00:19:59,430 --> 00:19:57,440
of course it helps if it's science and

502
00:20:01,590 --> 00:19:59,440
technology or engineering to get this

503
00:20:03,990 --> 00:20:01,600
job but you find an area in there that

504
00:20:06,149 --> 00:20:04,000
you're passionate about do it well

505
00:20:07,430 --> 00:20:06,159
enjoy it and that will show when you go

506
00:20:08,470 --> 00:20:07,440
and try to become an astronaut and

507
00:20:09,590 --> 00:20:08,480
that's what they're really looking for

508
00:20:14,149 --> 00:20:09,600
somebody who's passionate about the

509
00:20:17,350 --> 00:20:15,669
unfortunately we are out of time the

510
00:20:19,430 --> 00:20:17,360
astronauts are out of time we want to

511
00:20:21,430 --> 00:20:19,440
thank you both for spending

512
00:20:22,950 --> 00:20:21,440
20 minutes with us today appreciate all

513
00:20:25,190 --> 00:20:22,960

your answers to the questions we look