
NASA

1
00:00:13,519 --> 00:00:17,670
why did you want to be an astronaut

2
00:00:21,189 --> 00:00:19,189
when i was a kid

3
00:00:23,349 --> 00:00:21,199
i was interested in being an astronaut

4
00:00:25,109 --> 00:00:23,359
like a lot of kids are interested

5
00:00:27,189 --> 00:00:25,119
in being an astronaut because it seems

6
00:00:28,950 --> 00:00:27,199
like an exciting job you know i was also

7
00:00:30,470 --> 00:00:28,960
interested in playing baseball for the

8
00:00:34,069 --> 00:00:30,480
mets and

9
00:00:38,950 --> 00:00:35,910
and other more realistic things i think

10
00:00:40,790 --> 00:00:38,960
as i got older

11
00:00:42,229 --> 00:00:40,800
eventually i decided i wanted to be a

12
00:00:43,910 --> 00:00:42,239
pilot in the navy

13
00:00:44,790 --> 00:00:43,920

i chose the navy over the air force

14
00:00:46,709 --> 00:00:44,800
because i

15
00:00:48,549 --> 00:00:46,719
thought landing on the ship would be

16
00:00:50,709 --> 00:00:48,559
harder than and more challenging than

17
00:00:52,069 --> 00:00:50,719
landing on a runway and i was i was

18
00:00:54,950 --> 00:00:52,079
right

19
00:00:57,910 --> 00:00:56,069
then

20
00:01:00,630 --> 00:00:57,920
you know as a fighter pilot i flew the

21
00:01:02,630 --> 00:01:00,640
f-14 tomcat and then decided that and

22
00:01:04,469 --> 00:01:02,640
thought that being a test pilot was the

23
00:01:07,109 --> 00:01:04,479
next level of

24
00:01:08,870 --> 00:01:07,119
you know flying

25
00:01:10,630 --> 00:01:08,880
challenge

26
00:01:13,270 --> 00:01:10,640
and then i

27
00:01:14,950 --> 00:01:13,280
you know decided i guess a lot of guys

28
00:01:17,190 --> 00:01:14,960
that are test pilots put in an

29
00:01:19,749 --> 00:01:17,200
application to be an astronaut and

30
00:01:22,310 --> 00:01:19,759
you know thinking then the the

31
00:01:24,310 --> 00:01:22,320
next level would be being a pilot or

32
00:01:26,310 --> 00:01:24,320
commander of the space shuttle someday

33
00:01:27,830 --> 00:01:26,320
and uh

34
00:01:29,590 --> 00:01:27,840
timing and

35
00:01:30,469 --> 00:01:29,600
preparation and

36
00:01:32,870 --> 00:01:30,479
luck

37
00:01:33,670 --> 00:01:32,880
aligned for me to get an interview and

38
00:01:35,270 --> 00:01:33,680

then

39
00:01:36,550 --> 00:01:35,280
get selected

40
00:01:39,670 --> 00:01:36,560
what would be the next level of

41
00:01:41,190 --> 00:01:39,680
challenge after astronaut

42
00:01:42,630 --> 00:01:41,200
i don't know i'm gonna have to think

43
00:01:44,230 --> 00:01:42,640
about that one

44
00:01:46,630 --> 00:01:44,240
i'd like to fly again actually i

45
00:01:48,550 --> 00:01:46,640
wouldn't mind you know assuming

46
00:01:49,910 --> 00:01:48,560
um

47
00:01:50,950 --> 00:01:49,920
you know i

48
00:01:52,870 --> 00:01:50,960
enjoy

49
00:01:55,350 --> 00:01:52,880
this mission and

50
00:01:57,270 --> 00:01:55,360
um

51
00:01:59,190 --> 00:01:57,280
the opportunity presents itself i'd like

52
00:02:01,270 --> 00:01:59,200
to fly again i think i didn't mean to

53
00:02:02,630 --> 00:02:01,280
presume that you weren't going to let me

54
00:02:04,230 --> 00:02:02,640
take you back to the beginning tell me

55
00:02:06,310 --> 00:02:04,240
about your hometown and what it was like

56
00:02:07,350 --> 00:02:06,320
to grow up there

57
00:02:10,229 --> 00:02:07,360
um

58
00:02:12,630 --> 00:02:10,239
you know i grew up in a town and that is

59
00:02:14,949 --> 00:02:12,640
about 20 minutes west of new york city

60
00:02:16,710 --> 00:02:14,959
it's called west orange new jersey it's

61
00:02:19,589 --> 00:02:16,720
kind of a

62
00:02:23,830 --> 00:02:21,190
city-like

63
00:02:25,110 --> 00:02:23,840

wouldn't say quite urban but

64
00:02:27,510 --> 00:02:25,120
and

65
00:02:29,990 --> 00:02:27,520
you know half sort of like you know

66
00:02:33,270 --> 00:02:30,000
suburbs

67
00:02:35,350 --> 00:02:33,280
a very good public school system

68
00:02:36,949 --> 00:02:35,360
most of the kids that i went to

69
00:02:39,910 --> 00:02:36,959
high school with went on to college

70
00:02:42,070 --> 00:02:39,920
which is good i think we had a very high

71
00:02:44,550 --> 00:02:42,080
graduation rate there

72
00:02:48,229 --> 00:02:46,390
it was a i think it was a great place to

73
00:02:50,390 --> 00:02:48,239
grow up you know new jersey

74
00:02:51,990 --> 00:02:50,400
has a lot to offer

75
00:02:53,589 --> 00:02:52,000
um

76
00:02:56,150 --> 00:02:53,599
it's a very uh

77
00:03:00,710 --> 00:02:56,160
you know diverse

78
00:03:04,149 --> 00:03:02,630
i don't go there very often i wish i

79
00:03:05,589 --> 00:03:04,159
could actually go more and visit but

80
00:03:06,790 --> 00:03:05,599
because it is

81
00:03:11,750 --> 00:03:06,800
you know

82
00:03:13,910 --> 00:03:11,760
shore great it's close to manhattan it's

83
00:03:15,350 --> 00:03:13,920
close to new england it's you know you

84
00:03:18,869 --> 00:03:15,360
can go skiing

85
00:03:21,750 --> 00:03:18,879
within a few hours drive so it's

86
00:03:23,509 --> 00:03:21,760
it's got a lot of

87
00:03:25,589 --> 00:03:23,519
nice things about it

88
00:03:27,750 --> 00:03:25,599

you have a sense of how that place and

89
00:03:30,830 --> 00:03:27,760
the people there helped make you the

90
00:03:35,589 --> 00:03:32,630
um

91
00:03:39,750 --> 00:03:35,599
well you know i think

92
00:03:40,789 --> 00:03:39,760
the school system was good i think um

93
00:03:42,390 --> 00:03:40,799
you know

94
00:03:43,670 --> 00:03:42,400
teachers and

95
00:03:46,149 --> 00:03:43,680
my parents

96
00:03:48,550 --> 00:03:46,159
specifically always encouraged me and my

97
00:03:50,550 --> 00:03:48,560
brother that there was nothing that was

98
00:03:53,110 --> 00:03:50,560
beyond our

99
00:03:55,350 --> 00:03:53,120
capability if we uh if we worked hard

100
00:03:57,030 --> 00:03:55,360
enough at it and you know wanted it hard

101
00:03:59,670 --> 00:03:57,040
enough

102
00:04:03,990 --> 00:03:59,680
so i think that was uh

103
00:04:06,550 --> 00:04:04,000
you know critical to to our success

104
00:04:08,630 --> 00:04:06,560
is it possible to make out west orange

105
00:04:11,030 --> 00:04:08,640
new jersey when you're flying over it at

106
00:04:13,270 --> 00:04:11,040
200 miles up

107
00:04:15,190 --> 00:04:13,280
with a pair of binoculars you could

108
00:04:17,110 --> 00:04:15,200
i'll try to well you've had an

109
00:04:19,110 --> 00:04:17,120
opportunity to to take a look at it

110
00:04:21,909 --> 00:04:19,120
right

111
00:04:24,790 --> 00:04:21,919
you know it's um on my previous two

112
00:04:28,550 --> 00:04:24,800
flights no not really you're

113
00:04:30,230 --> 00:04:28,560

on a shuttle mission you're somewhat um

114
00:04:32,310 --> 00:04:30,240
you know being in space for such a short

115
00:04:34,230 --> 00:04:32,320
period of time what you get to see over

116
00:04:35,909 --> 00:04:34,240
the earth is very dependent on you know

117
00:04:37,590 --> 00:04:35,919
orbital mechanics

118
00:04:40,390 --> 00:04:37,600
day and night

119
00:04:42,790 --> 00:04:40,400
you know cycles of when you're over

120
00:04:44,710 --> 00:04:42,800
a certain uh period of the earth but

121
00:04:46,310 --> 00:04:44,720
also uh the weather

122
00:04:48,310 --> 00:04:46,320
plays a significant role and depending

123
00:04:50,070 --> 00:04:48,320
on what time of year you launch certain

124
00:04:52,629 --> 00:04:50,080
areas can be covered by clouds when

125
00:04:54,550 --> 00:04:52,639
you're over them so

126
00:04:57,830 --> 00:04:54,560
yeah i don't recall it we're getting a

127
00:04:59,990 --> 00:04:57,840
you know really good look at

128
00:05:01,430 --> 00:05:00,000
new jersey from space

129
00:05:03,590 --> 00:05:01,440
you're right you probably will get the

130
00:05:06,950 --> 00:05:03,600
opportunity over time probably however

131
00:05:10,070 --> 00:05:08,870
you touched on it if i could

132
00:05:11,590 --> 00:05:10,080
ask you to tell me a little bit more

133
00:05:13,909 --> 00:05:11,600
about your education and your

134
00:05:16,310 --> 00:05:13,919
professional background and the the path

135
00:05:17,909 --> 00:05:16,320
that led you to be astronaut

136
00:05:19,909 --> 00:05:17,919
um

137
00:05:23,110 --> 00:05:19,919
i was a electrical engineering major in

138
00:05:28,550 --> 00:05:24,710

i was interested like i said in flying

139
00:05:30,230 --> 00:05:28,560
in the navy so i was in navy rotc

140
00:05:32,150 --> 00:05:30,240
chose a school that was

141
00:05:33,909 --> 00:05:32,160
military like school because i thought

142
00:05:36,150 --> 00:05:33,919
that would help with my

143
00:05:38,629 --> 00:05:36,160
discipline and make me a better at least

144
00:05:40,230 --> 00:05:38,639
give me more time to study

145
00:05:41,670 --> 00:05:40,240
less distractions

146
00:05:43,670 --> 00:05:41,680
i was right

147
00:06:03,029 --> 00:05:43,680
and

148
00:06:04,390 --> 00:06:03,039
went on to uh fly in a uh

149
00:06:06,469 --> 00:06:04,400
fighter squadron

150
00:06:08,629 --> 00:06:06,479
vf-143

151
00:06:10,070 --> 00:06:08,639
the world famous puking dogs that's what

152
00:06:12,950 --> 00:06:10,080
they're called

153
00:06:14,469 --> 00:06:12,960
i was there for several years and then

154
00:06:15,909 --> 00:06:14,479
you know test pilot school in the early

155
00:06:18,870 --> 00:06:15,919
90s and

156
00:06:21,510 --> 00:06:18,880
showed up down here in 1996.

157
00:06:24,870 --> 00:06:21,520
as you said you looked at astronaut as

158
00:06:27,189 --> 00:06:24,880
being a challenge a thing to do uh we

159
00:06:31,510 --> 00:06:27,199
know that the flying in space part of

160
00:06:34,469 --> 00:06:31,520
this job uh has its dangers as does

161
00:06:36,870 --> 00:06:34,479
portions of your previous jobs wondering

162
00:06:39,749 --> 00:06:36,880
scott what it is you think that we get

163
00:06:40,870 --> 00:06:39,759

or learn as a result of flying people in

164
00:06:45,110 --> 00:06:40,880
space

165
00:06:49,270 --> 00:06:46,950
there's a lot of science we do on board

166
00:06:51,029 --> 00:06:49,280
that have has real

167
00:06:54,950 --> 00:06:51,039
um

168
00:06:58,309 --> 00:06:56,870
and then like i said earlier there's the

169
00:07:00,390 --> 00:06:58,319
science that

170
00:07:03,270 --> 00:07:00,400
allows us to live and work in space

171
00:07:04,790 --> 00:07:03,280
longer and

172
00:07:06,629 --> 00:07:04,800
you know i think in some ways they're

173
00:07:08,790 --> 00:07:06,639
they're complementary

174
00:07:10,629 --> 00:07:08,800
um

175
00:07:12,870 --> 00:07:10,639
but they're different i mean we

176
00:07:14,629 --> 00:07:12,880
a lot of the science is is just

177
00:07:16,309 --> 00:07:14,639
you know basically we fly in space to

178
00:07:17,909 --> 00:07:16,319
see if we can fly in space longer and if

179
00:07:19,670 --> 00:07:17,919
we want to venture away from our planet

180
00:07:21,749 --> 00:07:19,680
we need to know how to do that but then

181
00:07:23,909 --> 00:07:21,759
there's also the you know

182
00:07:26,309 --> 00:07:23,919
the medical research we can do on board

183
00:07:27,110 --> 00:07:26,319
the material science

184
00:07:31,830 --> 00:07:27,120
the

185
00:07:35,430 --> 00:07:31,840
types of uh basic science that are

186
00:07:37,029 --> 00:07:35,440
equally in my opinion important

187
00:07:38,870 --> 00:07:37,039
i think um

188
00:07:39,990 --> 00:07:38,880

you know the whole space station is one

189
00:07:41,749 --> 00:07:40,000
big

190
00:07:44,150 --> 00:07:41,759
science experiment the fact that we

191
00:07:45,589 --> 00:07:44,160
build this incredibly complicated

192
00:07:46,950 --> 00:07:45,599
structure

193
00:07:50,869 --> 00:07:46,960
in this

194
00:07:54,710 --> 00:07:52,230
i wouldn't say complicated but

195
00:07:56,869 --> 00:07:54,720
challenging partnership

196
00:07:59,670 --> 00:07:56,879
is

197
00:08:01,510 --> 00:07:59,680
a very successful experiment in its own

198
00:08:03,990 --> 00:08:01,520
right and

199
00:08:05,350 --> 00:08:04,000
i think we'll find uh benefits from that

200
00:08:11,990 --> 00:08:05,360
that we

201
00:08:15,909 --> 00:08:13,270
you're a member of the international

202
00:08:19,110 --> 00:08:15,919
space station's expedition 25 and 26

203
00:08:20,950 --> 00:08:19,120
crews scott summarize the overall goals

204
00:08:22,629 --> 00:08:20,960
of your six-month flight and tell me

205
00:08:23,670 --> 00:08:22,639
what your main responsibilities are

206
00:08:26,390 --> 00:08:23,680
going to be

207
00:08:28,390 --> 00:08:26,400
we have uh many goals on board the space

208
00:08:30,950 --> 00:08:28,400
station both both programmatic and

209
00:08:32,949 --> 00:08:30,960
personal as far as my personal

210
00:08:36,949 --> 00:08:32,959
goals are concerned

211
00:08:38,709 --> 00:08:36,959
my priority is that no one gets hurt

212
00:08:41,350 --> 00:08:38,719
we don't break any of the space station

213
00:08:42,550 --> 00:08:41,360

hardware and we meet all of the program

214
00:08:43,509 --> 00:08:42,560
objectives

215
00:08:46,870 --> 00:08:43,519
the

216
00:08:49,190 --> 00:08:46,880
concerned we have

217
00:08:50,790 --> 00:08:49,200
obviously we have many but

218
00:08:53,590 --> 00:08:50,800
the

219
00:08:55,910 --> 00:08:53,600
expedition 25 and 26 time frame that

220
00:08:57,590 --> 00:08:55,920
goes from when we arrive in october

221
00:08:59,829 --> 00:08:57,600
until we leave in march

222
00:09:01,750 --> 00:08:59,839
is pretty much

223
00:09:03,030 --> 00:09:01,760
characterized by a lot of visiting

224
00:09:06,949 --> 00:09:03,040
vehicles

225
00:09:10,870 --> 00:09:06,959
lot of logistics

226
00:09:12,790 --> 00:09:10,880
transfer of supplies to and from

227
00:09:14,150 --> 00:09:12,800
these various vehicles and they consist

228
00:09:17,030 --> 00:09:14,160
of

229
00:09:18,870 --> 00:09:17,040
one soyuz while we're we're on board

230
00:09:20,550 --> 00:09:18,880
that comes up with the remainder of the

231
00:09:23,110 --> 00:09:20,560
expedition

232
00:09:25,829 --> 00:09:23,120
26 crew in december we also have two

233
00:09:29,590 --> 00:09:25,839
progress resupply vehicles

234
00:09:33,110 --> 00:09:29,600
we have a atv which is a european uh

235
00:09:35,350 --> 00:09:33,120
resupply vehicle that that docks to the

236
00:09:36,710 --> 00:09:35,360
russian segment of the space station and

237
00:09:38,949 --> 00:09:36,720
we also have the

238
00:09:41,350 --> 00:09:38,959

japanese htv

239
00:09:42,949 --> 00:09:41,360
another large resupply vehicle this will

240
00:09:44,870 --> 00:09:42,959
be the second one of those also the

241
00:09:47,670 --> 00:09:44,880
second one of the atv

242
00:09:50,230 --> 00:09:47,680
and we birthed that uh to the u.s

243
00:09:52,949 --> 00:09:50,240
segment and that that arrives in january

244
00:09:55,430 --> 00:09:52,959
as well as two of the uh last space

245
00:09:56,470 --> 00:09:55,440
shuttle missions unless we had a at a

246
00:09:58,949 --> 00:09:56,480
third

247
00:10:00,870 --> 00:09:58,959
uh the first one will be in november and

248
00:10:02,790 --> 00:10:00,880
then the last one will be towards the

249
00:10:05,350 --> 00:10:02,800
end of my increment in uh the end of

250
00:10:06,389 --> 00:10:05,360
february earlier or early march

251
00:10:08,710 --> 00:10:06,399
it's a good thing you're going to have

252
00:10:09,750 --> 00:10:08,720
six months to handle all that traffic

253
00:10:11,829 --> 00:10:09,760
yeah i think we're going to find

254
00:10:13,910 --> 00:10:11,839
ourselves pretty busy it's an

255
00:10:15,509 --> 00:10:13,920
interesting time for the the space

256
00:10:17,350 --> 00:10:15,519
station one

257
00:10:20,630 --> 00:10:17,360
great thing about this increment is even

258
00:10:22,870 --> 00:10:20,640
though we do have all these uh

259
00:10:25,430 --> 00:10:22,880
logistic requirements we also have a lot

260
00:10:27,110 --> 00:10:25,440
of a lot of time for science and this is

261
00:10:28,710 --> 00:10:27,120
uh you know now that we have a six

262
00:10:30,790 --> 00:10:28,720
person crew on board

263
00:10:33,509 --> 00:10:30,800

we're going to try to average at least

264
00:10:35,190 --> 00:10:33,519
30 hours a week of

265
00:10:36,870 --> 00:10:35,200
various types of

266
00:10:39,590 --> 00:10:36,880
science and

267
00:10:41,269 --> 00:10:39,600
hopefully we'll have great great results

268
00:10:43,030 --> 00:10:41,279
from those scientific experiments that

269
00:10:44,389 --> 00:10:43,040
we're able to do on board

270
00:10:46,310 --> 00:10:44,399
now you've been to the space station

271
00:10:48,710 --> 00:10:46,320
once before but that was during a

272
00:10:50,470 --> 00:10:48,720
briefer time for a shuttle mission

273
00:10:52,389 --> 00:10:50,480
what are you most looking forward to

274
00:10:54,470 --> 00:10:52,399
about getting to spend six months at a

275
00:10:57,910 --> 00:10:54,480
stretch off the planet yeah

276
00:10:59,670 --> 00:10:57,920
you know what i look forward to

277
00:11:01,430 --> 00:10:59,680
my primary

278
00:11:03,269 --> 00:11:01,440
thing that i look forward to is is

279
00:11:04,230 --> 00:11:03,279
having a very safe and successful

280
00:11:05,670 --> 00:11:04,240
mission

281
00:11:08,069 --> 00:11:05,680
and the uh

282
00:11:09,990 --> 00:11:08,079
you know the feeling of uh satisfaction

283
00:11:11,430 --> 00:11:10,000
you get from working at something that's

284
00:11:15,509 --> 00:11:11,440
very very hard

285
00:11:18,230 --> 00:11:15,519
and and being successful at it

286
00:11:20,870 --> 00:11:18,240
the second thing i think would be

287
00:11:22,790 --> 00:11:20,880
on a shuttle mission you kind of visit

288
00:11:24,550 --> 00:11:22,800

space and you don't really

289
00:11:26,470 --> 00:11:24,560
ever have enough time to get comfortable

290
00:11:28,389 --> 00:11:26,480
as if you're you're living there like

291
00:11:30,470 --> 00:11:28,399
it's your your home so i

292
00:11:31,990 --> 00:11:30,480
i look forward to um

293
00:11:33,750 --> 00:11:32,000
you know getting to spend more than just

294
00:11:36,550 --> 00:11:33,760
a few weeks and getting comfortable

295
00:11:39,430 --> 00:11:36,560
enough to feel like i'm actually a uh

296
00:11:41,910 --> 00:11:39,440
you know a resident of the uh the cosmos

297
00:11:42,949 --> 00:11:41,920
i guess yes you'd say rather than just a

298
00:11:44,150 --> 00:11:42,959
visitor

299
00:11:46,310 --> 00:11:44,160
well this time you're going to begin

300
00:11:48,389 --> 00:11:46,320
your visit arriving on a new edition of

301
00:11:50,949 --> 00:11:48,399
the soyuz spacecraft it's got some

302
00:11:53,190 --> 00:11:50,959
upgrades from the tma model that's been

303
00:11:54,870 --> 00:11:53,200
in use since 2002.

304
00:11:57,110 --> 00:11:54,880
tell me just a little bit about what's

305
00:11:58,310 --> 00:11:57,120
new about this soyuz how what kind of

306
00:12:02,069 --> 00:11:58,320
improvements

307
00:12:03,190 --> 00:12:02,079
significant

308
00:12:07,110 --> 00:12:03,200
the

309
00:12:09,190 --> 00:12:07,120
cosmonauts and myself

310
00:12:11,430 --> 00:12:09,200
although my my role in the soyuz is

311
00:12:13,670 --> 00:12:11,440
somewhat minor but that they use to

312
00:12:15,590 --> 00:12:13,680
control the vehicle have been upgraded

313
00:12:16,710 --> 00:12:15,600

to make flying it easier

314
00:12:18,870 --> 00:12:16,720
it's less

315
00:12:19,670 --> 00:12:18,880
you know operator intensive

316
00:12:22,150 --> 00:12:19,680
but

317
00:12:23,509 --> 00:12:22,160
the main and most important change is

318
00:12:25,269 --> 00:12:23,519
they have a new

319
00:12:27,350 --> 00:12:25,279
what we would kind of refer to as a

320
00:12:29,910 --> 00:12:27,360
flight control computer

321
00:12:32,710 --> 00:12:29,920
so the computer that operates the the

322
00:12:34,949 --> 00:12:32,720
systems on board

323
00:12:36,150 --> 00:12:34,959
is new and the software is new now the

324
00:12:37,670 --> 00:12:36,160
software

325
00:12:43,350 --> 00:12:37,680
is

326
00:12:44,710 --> 00:12:43,360
previous um

327
00:12:46,710 --> 00:12:44,720
algorithms

328
00:12:48,790 --> 00:12:46,720
that control the vehicle but it is new

329
00:12:50,069 --> 00:12:48,800
software and it is new hardware

330
00:12:52,150 --> 00:12:50,079
um

331
00:12:53,509 --> 00:12:52,160
most of which has been tested on the

332
00:12:55,590 --> 00:12:53,519
progress

333
00:12:57,829 --> 00:12:55,600
uh russian resupply vehicles but the

334
00:13:00,949 --> 00:12:57,839
progress doesn't re-enter the same way

335
00:13:02,629 --> 00:13:00,959
as the uh the soyuz does so

336
00:13:04,550 --> 00:13:02,639
when we come home in march it'll be the

337
00:13:07,269 --> 00:13:04,560
first time that this uh new flight

338
00:13:09,829 --> 00:13:07,279

control computer and the uh entry

339
00:13:10,710 --> 00:13:09,839
software will be uh demonstrated in

340
00:13:12,790 --> 00:13:10,720
flight

341
00:13:13,670 --> 00:13:12,800
it must be uh exciting for a test pilot

342
00:13:15,590 --> 00:13:13,680
to fly

343
00:13:18,069 --> 00:13:15,600
that the new upgrades well i would

344
00:13:20,790 --> 00:13:18,079
prefer it not to be excited

345
00:13:22,310 --> 00:13:20,800
and everything go just as as they expect

346
00:13:23,110 --> 00:13:22,320
and i'm sure it will

347
00:13:25,110 --> 00:13:23,120
um

348
00:13:27,430 --> 00:13:25,120
tell us about this place that's going to

349
00:13:29,269 --> 00:13:27,440
be your home give me an overview of what

350
00:13:30,710 --> 00:13:29,279
the international space station is like

351
00:13:31,910 --> 00:13:30,720
today

352
00:13:34,550 --> 00:13:31,920
it's

353
00:13:35,590 --> 00:13:34,560
much larger than when i was there last

354
00:13:37,910 --> 00:13:35,600
it uh

355
00:13:40,790 --> 00:13:37,920
it consists of um

356
00:13:43,030 --> 00:13:40,800
basically two sections a russian

357
00:13:45,430 --> 00:13:43,040
section that consists of um several

358
00:13:47,350 --> 00:13:45,440
modules now the uh what's called the

359
00:13:50,150 --> 00:13:47,360
functional cargo block the service

360
00:13:52,550 --> 00:13:50,160
module we have

361
00:13:55,189 --> 00:13:52,560
two logistic modules on board that are

362
00:13:57,509 --> 00:13:55,199
like small cargo and science modules as

363
00:14:00,310 --> 00:13:57,519

well as a docking port

364
00:14:02,790 --> 00:14:00,320
while we're there there'll be

365
00:14:07,430 --> 00:14:02,800
at least one progress

366
00:14:11,829 --> 00:14:07,440
resupply vehicle two soyuz's and a uh

367
00:14:13,750 --> 00:14:11,839
and the european uh very large

368
00:14:15,670 --> 00:14:13,760
transfer module so it's

369
00:14:17,189 --> 00:14:15,680
the russian segment alone is pretty

370
00:14:21,189 --> 00:14:17,199
significant in

371
00:14:23,430 --> 00:14:21,199
regards to its size and volume and its

372
00:14:25,189 --> 00:14:23,440
capability and then the u.s segment

373
00:14:26,790 --> 00:14:25,199
consists of all the other partner

374
00:14:30,150 --> 00:14:26,800
modules both

375
00:14:31,829 --> 00:14:30,160
u.s manufactured as well as

376
00:14:34,870 --> 00:14:31,839
you know canadian with regards to

377
00:14:36,230 --> 00:14:34,880
robotics and japanese and european space

378
00:14:38,150 --> 00:14:36,240
agency

379
00:14:39,750 --> 00:14:38,160
their

380
00:14:42,470 --> 00:14:39,760
modules so

381
00:14:45,509 --> 00:14:42,480
on the u.s side we have laboratory three

382
00:14:49,990 --> 00:14:45,519
nodes um you know one of which has this

383
00:14:54,550 --> 00:14:52,790
and a incredible capability to do

384
00:14:55,430 --> 00:14:54,560
science the

385
00:14:57,430 --> 00:14:55,440
the

386
00:14:59,509 --> 00:14:57,440
science

387
00:15:02,150 --> 00:14:59,519
laboratory facilities we have on board

388
00:15:04,389 --> 00:15:02,160

are really state of the art the

389
00:15:06,310 --> 00:15:04,399
as you know the space station is now

390
00:15:08,629 --> 00:15:06,320
considered a national

391
00:15:11,509 --> 00:15:08,639
asset with regards to

392
00:15:14,069 --> 00:15:11,519
conducting and producing science and

393
00:15:16,310 --> 00:15:14,079
i think we'll find that

394
00:15:18,550 --> 00:15:16,320
we really are able to exploit that

395
00:15:19,430 --> 00:15:18,560
capability now for many many years to

396
00:15:21,750 --> 00:15:19,440
come

397
00:15:23,430 --> 00:15:21,760
as you say there's not only more modules

398
00:15:26,230 --> 00:15:23,440
there are more crew members on board

399
00:15:28,629 --> 00:15:26,240
that will allow you to to really do more

400
00:15:31,350 --> 00:15:28,639
utilization let's talk about the science

401
00:15:33,590 --> 00:15:31,360
for a second a lot of the science is

402
00:15:35,910 --> 00:15:33,600
designed to find out how people can live

403
00:15:38,230 --> 00:15:35,920
and work in that environment and for

404
00:15:40,949 --> 00:15:38,240
that you and your crewmates are the test

405
00:15:43,030 --> 00:15:40,959
subjects as well as operators uh tell me

406
00:15:45,749 --> 00:15:43,040
about some of the the research that goes

407
00:15:47,110 --> 00:15:45,759
on that for which you are the uh the

408
00:15:48,870 --> 00:15:47,120
experimentee

409
00:15:50,710 --> 00:15:48,880
yeah there's there's

410
00:15:55,110 --> 00:15:50,720
different types of science we do on

411
00:15:57,670 --> 00:15:55,120
board some of which um is to find ways

412
00:16:00,629 --> 00:15:57,680
for people to live in space for longer

413
00:16:01,990 --> 00:16:00,639

periods of time and they they range from

414
00:16:04,949 --> 00:16:02,000
um

415
00:16:06,470 --> 00:16:04,959
seeing how our bodies react to the

416
00:16:07,990 --> 00:16:06,480
weightless environment with regards to

417
00:16:09,430 --> 00:16:08,000
bone and muscle mass and how we can

418
00:16:11,910 --> 00:16:09,440
prevent

419
00:16:15,110 --> 00:16:11,920
debilitating potentially debilitating

420
00:16:17,189 --> 00:16:15,120
losses of those bones and muscle mass

421
00:16:18,949 --> 00:16:17,199
but also

422
00:16:21,269 --> 00:16:18,959
investigations into

423
00:16:22,870 --> 00:16:21,279
areas where

424
00:16:26,150 --> 00:16:22,880
you know our health can

425
00:16:27,670 --> 00:16:26,160
can be affected by you know certain uh

426
00:16:30,230 --> 00:16:27,680
immune system

427
00:16:33,269 --> 00:16:30,240
responses that we see in microgravity

428
00:16:36,870 --> 00:16:33,279
our immune system doesn't work as well

429
00:16:38,550 --> 00:16:36,880
and other things along those lines uh

430
00:16:39,910 --> 00:16:38,560
but there's also the other science that

431
00:16:41,110 --> 00:16:39,920
we do on board

432
00:16:43,110 --> 00:16:41,120
that is

433
00:16:45,430 --> 00:16:43,120
just as important

434
00:16:46,629 --> 00:16:45,440
often not talked about

435
00:16:49,590 --> 00:16:46,639
as much

436
00:16:51,590 --> 00:16:49,600
but we do do other experiments

437
00:16:54,949 --> 00:16:51,600
with regards to

438
00:17:01,189 --> 00:16:58,069

investigations in

439
00:17:02,629 --> 00:17:01,199
areas that may produce and i think we've

440
00:17:05,990 --> 00:17:02,639
recently have

441
00:17:10,470 --> 00:17:07,909
in the

442
00:17:11,270 --> 00:17:10,480
kind of the pipeline for approval with

443
00:17:15,990 --> 00:17:11,280
the

444
00:17:17,909 --> 00:17:16,000
things along those lines that provide

445
00:17:20,230 --> 00:17:17,919
you know potential real benefits to the

446
00:17:21,750 --> 00:17:20,240
uh to the taxpayers so

447
00:17:23,510 --> 00:17:21,760
um

448
00:17:25,110 --> 00:17:23,520
if you looked at the list of experiments

449
00:17:28,470 --> 00:17:25,120
i can't remember them all here because

450
00:17:32,310 --> 00:17:28,480
it's just hundreds of experiments

451
00:17:34,070 --> 00:17:32,320
many of which have some interesting uh

452
00:17:35,909 --> 00:17:34,080
outcomes that

453
00:17:37,430 --> 00:17:35,919
could be potentially beneficial there

454
00:17:40,870 --> 00:17:37,440
was one i was trained on recently in

455
00:17:44,070 --> 00:17:40,880
japan that was looking at the

456
00:17:47,270 --> 00:17:44,080
you know how these uh seedlings behave

457
00:17:51,190 --> 00:17:49,909
how water versus gravity

458
00:17:54,390 --> 00:17:51,200
uh

459
00:17:55,270 --> 00:17:54,400
how they are attracted to and how they

460
00:17:57,190 --> 00:17:55,280
grow

461
00:17:59,590 --> 00:17:57,200
with the influence of water and gravity

462
00:18:01,590 --> 00:17:59,600
and the predominant effect is is gravity

463
00:18:03,430 --> 00:18:01,600

obviously but there's also

464
00:18:06,230 --> 00:18:03,440
a mechanism where they're attracted to

465
00:18:08,070 --> 00:18:06,240
water and the

466
00:18:09,990 --> 00:18:08,080
one of the goals of this experiment is

467
00:18:12,950 --> 00:18:10,000
if you could figure out you know which

468
00:18:14,470 --> 00:18:12,960
gene is responsible for

469
00:18:17,830 --> 00:18:14,480
the water attraction you could

470
00:18:19,430 --> 00:18:17,840
potentially bio-engineer

471
00:18:21,350 --> 00:18:19,440
plants

472
00:18:22,150 --> 00:18:21,360
such that they would need less water and

473
00:18:25,270 --> 00:18:22,160
that

474
00:18:27,270 --> 00:18:25,280
has real impact on our ability

475
00:18:29,270 --> 00:18:27,280
to produce food in this country and

476
00:18:31,270 --> 00:18:29,280
around the world if you could make

477
00:18:32,710 --> 00:18:31,280
plants that didn't need as much water

478
00:18:34,710 --> 00:18:32,720
obviously you know we hear about you

479
00:18:36,950 --> 00:18:34,720
know water shortages around the world

480
00:18:38,549 --> 00:18:36,960
and this is kind of a national security

481
00:18:40,150 --> 00:18:38,559
issue and this is you know one i think

482
00:18:42,710 --> 00:18:40,160
good example of some of the science we

483
00:18:45,190 --> 00:18:42,720
do on board that could have potential

484
00:18:46,950 --> 00:18:45,200
real significant benefits

485
00:18:49,430 --> 00:18:46,960
you know outside of the traditional type

486
00:18:52,630 --> 00:18:49,440
of science we do in space

487
00:18:55,669 --> 00:18:52,640
it sounds like it could just be fun too

488
00:18:57,029 --> 00:18:55,679

for uh to play in those laboratories and

489
00:18:59,430 --> 00:18:57,039
do these experiments and see what

490
00:19:01,669 --> 00:18:59,440
happens oh yeah it's uh

491
00:19:02,630 --> 00:19:01,679
you know i think the whole thing has

492
00:19:03,990 --> 00:19:02,640
certain

493
00:19:06,390 --> 00:19:04,000
aspects of

494
00:19:08,470 --> 00:19:06,400
fun and interest to it in in various

495
00:19:10,310 --> 00:19:08,480
ways whether it's

496
00:19:12,390 --> 00:19:10,320
you know conducting the science doing

497
00:19:15,029 --> 00:19:12,400
the uh you know operational more

498
00:19:16,870 --> 00:19:15,039
operational things like fixing hardware

499
00:19:20,390 --> 00:19:16,880
you know potential doing potentially

500
00:19:21,830 --> 00:19:20,400
doing space walks or robotics

501
00:19:24,870 --> 00:19:21,840
but i think the most fun like i said

502
00:19:26,549 --> 00:19:24,880
earlier is is is doing something that is

503
00:19:28,230 --> 00:19:26,559
very very difficult

504
00:19:30,710 --> 00:19:28,240
something that you've worked very hard

505
00:19:33,029 --> 00:19:30,720
at for many many years and being

506
00:19:35,590 --> 00:19:33,039
successful at it and i tell kids

507
00:19:37,430 --> 00:19:35,600
all the time about this

508
00:19:42,150 --> 00:19:37,440
how this is what makes being an

509
00:19:46,789 --> 00:19:44,789
it's the best part and

510
00:19:49,110 --> 00:19:46,799
you know i encourage them to find those

511
00:19:51,510 --> 00:19:49,120
things in their lives that they can

512
00:19:53,510 --> 00:19:51,520
that are challenging they can work hard

513
00:19:54,710 --> 00:19:53,520

at it and then be proud of them their

514
00:19:56,710 --> 00:19:54,720
selves for

515
00:19:58,390 --> 00:19:56,720
for their success whether it's

516
00:20:00,150 --> 00:19:58,400
you know with their schoolwork or sports

517
00:20:01,990 --> 00:20:00,160
or something else some other career they

518
00:20:03,909 --> 00:20:02,000
find in their life it doesn't have to be

519
00:20:06,390 --> 00:20:03,919
the space program but i think you know

520
00:20:08,070 --> 00:20:06,400
it's very fulfilling to have something

521
00:20:09,350 --> 00:20:08,080
in your life that challenges you and

522
00:20:14,070 --> 00:20:09,360
then

523
00:20:16,149 --> 00:20:14,080
can be very rewarding

524
00:20:18,390 --> 00:20:16,159
throughout the course of your time there

525
00:20:20,149 --> 00:20:18,400
there are there's the plan right now for

526
00:20:22,230 --> 00:20:20,159
three spacewalks out of the russian

527
00:20:24,549 --> 00:20:22,240
section of the station in november and

528
00:20:26,470 --> 00:20:24,559
december of this year

529
00:20:28,149 --> 00:20:26,480
tell me about who'll be going outside

530
00:20:30,310 --> 00:20:28,159
and what kind of work is going to be

531
00:20:33,029 --> 00:20:30,320
done by space walkers outside your space

532
00:20:38,390 --> 00:20:35,029
the there are a few russian spacewalks

533
00:20:39,830 --> 00:20:38,400
we have no scheduled u.s spacewalks um

534
00:20:42,390 --> 00:20:39,840
the uh

535
00:20:44,230 --> 00:20:42,400
first one is done by fyodor yurchikhin

536
00:20:47,669 --> 00:20:44,240
and oleg's gripocha

537
00:20:49,830 --> 00:20:47,679
and the subsequent spacewalks by

538
00:20:52,549 --> 00:20:49,840

oleg skripoche and dima condratev and

539
00:20:55,190 --> 00:20:52,559
they have various

540
00:20:57,750 --> 00:20:55,200
objectives outside the russian segment

541
00:20:58,950 --> 00:20:57,760
maintenance objectives

542
00:21:02,390 --> 00:20:58,960
in

543
00:21:04,149 --> 00:21:02,400
shuttle flight

544
00:21:06,070 --> 00:21:04,159
people would go outside to do spacewalks

545
00:21:07,990 --> 00:21:06,080
and everybody inside was involved in

546
00:21:10,950 --> 00:21:08,000
some way in supporting that it's not

547
00:21:12,710 --> 00:21:10,960
quite the same now when space station

548
00:21:15,029 --> 00:21:12,720
crew members go outside for a spacewalk

549
00:21:16,789 --> 00:21:15,039
what do you guys do inside

550
00:21:19,590 --> 00:21:16,799
during the russian space walks because

551
00:21:21,510 --> 00:21:19,600
of um you know issues with where soyuz

552
00:21:23,110 --> 00:21:21,520
is and who's outside

553
00:21:24,950 --> 00:21:23,120
i'll probably have to be locked in one

554
00:21:27,029 --> 00:21:24,960
of the russian modules so i'm not

555
00:21:28,549 --> 00:21:27,039
isolated from my

556
00:21:31,830 --> 00:21:28,559
um

557
00:21:33,669 --> 00:21:31,840
my soyuz in a contingency so as far as

558
00:21:35,270 --> 00:21:33,679
my participation

559
00:21:37,430 --> 00:21:35,280
in the spacewalk and the russian space

560
00:21:39,270 --> 00:21:37,440
walks be very limited i'll probably

561
00:21:41,510 --> 00:21:39,280
have some kind of science or something i

562
00:21:42,950 --> 00:21:41,520
can do inside that uh

563
00:21:46,310 --> 00:21:42,960

meme 2

564
00:21:48,230 --> 00:21:46,320
russian logistics module where

565
00:21:49,909 --> 00:21:48,240
myself and sasha caleria will be

566
00:21:51,669 --> 00:21:49,919
isolated

567
00:21:53,270 --> 00:21:51,679
during the whole time these guys are

568
00:21:55,510 --> 00:21:53,280
outside so

569
00:21:57,350 --> 00:21:55,520
even if i wanted to participate i really

570
00:22:00,149 --> 00:21:57,360
really couldn't and the science work

571
00:22:01,830 --> 00:22:00,159
continues regardless yeah now we have

572
00:22:04,070 --> 00:22:01,840
u.s space walks when the shuttles are

573
00:22:06,390 --> 00:22:04,080
there planned space walks and uh you

574
00:22:09,990 --> 00:22:06,400
know i'll help with getting the crews

575
00:22:11,510 --> 00:22:10,000
um well before they even show up i'll

576
00:22:13,510 --> 00:22:11,520
be you know critical to getting the

577
00:22:15,510 --> 00:22:13,520
airlock ready getting this

578
00:22:16,710 --> 00:22:15,520
suits ready if they're using us suits or

579
00:22:18,789 --> 00:22:16,720
us

580
00:22:20,470 --> 00:22:18,799
spacesuit components and their tools

581
00:22:22,149 --> 00:22:20,480
prepared

582
00:22:24,830 --> 00:22:22,159
and helping them with the airlock

583
00:22:27,990 --> 00:22:24,840
operations maybe a little help with the

584
00:22:30,070 --> 00:22:28,000
robotics and then if there are um

585
00:22:31,909 --> 00:22:30,080
turns out to be any u.s

586
00:22:34,870 --> 00:22:31,919
what's called a stage

587
00:22:37,510 --> 00:22:34,880
eva or spacewalk when the

588
00:22:38,630 --> 00:22:37,520

shuttle isn't there then

589
00:22:40,470 --> 00:22:38,640
if it's in the first part of the

590
00:22:41,510 --> 00:22:40,480
increment i'll be doing it with doug

591
00:22:43,990 --> 00:22:41,520
wheelock

592
00:22:46,149 --> 00:22:44,000
and if it's in the second part after he

593
00:22:48,789 --> 00:22:46,159
leaves it'll be me and the

594
00:22:51,029 --> 00:22:48,799
paolo nespoli from the european space

595
00:22:53,510 --> 00:22:51,039
agency that'll conduct the space wall

596
00:22:55,830 --> 00:22:53,520
and again that's a that's the the backup

597
00:22:57,510 --> 00:22:55,840
plan in case another spacewalk is is

598
00:22:59,110 --> 00:22:57,520
needed yeah and

599
00:23:01,510 --> 00:22:59,120
they say we're going to have to fix

600
00:23:04,230 --> 00:23:01,520
stuff on the outside that's

601
00:23:06,149 --> 00:23:04,240
supposed to break so we'll be ready

602
00:23:08,230 --> 00:23:06,159
well there will be spacewalks as you

603
00:23:10,230 --> 00:23:08,240
mentioned during the visits of the space

604
00:23:12,710 --> 00:23:10,240
shuttle missions and the current launch

605
00:23:16,070 --> 00:23:12,720
plan calls for discovery to arrive on

606
00:23:17,830 --> 00:23:16,080
mission sts-133 in november tell us a

607
00:23:19,990 --> 00:23:17,840
little bit about what's on the plan for

608
00:23:22,149 --> 00:23:20,000
uh for that space shuttle mission late

609
00:23:23,669 --> 00:23:22,159
this year they bring up the what's

610
00:23:26,470 --> 00:23:23,679
called the

611
00:23:28,710 --> 00:23:26,480
pmm now it was the

612
00:23:33,390 --> 00:23:28,720
plm now it's

613
00:23:37,430 --> 00:23:33,400

the permanent

614
00:23:39,270 --> 00:23:37,440
multi-purpose module and uh basically

615
00:23:41,830 --> 00:23:39,280
it's one of the old not i would

616
00:23:45,029 --> 00:23:41,840
shouldn't say old but one of the mplms

617
00:23:46,950 --> 00:23:45,039
that has been uh improved to be able to

618
00:23:48,390 --> 00:23:46,960
stay on board permanently

619
00:23:50,789 --> 00:23:48,400
as a

620
00:23:52,470 --> 00:23:50,799
location to

621
00:23:54,149 --> 00:23:52,480
store equipment

622
00:23:56,070 --> 00:23:54,159
which is very challenging on board we

623
00:23:57,750 --> 00:23:56,080
don't it seems like the space station is

624
00:23:59,510 --> 00:23:57,760
really big but when you need

625
00:24:01,750 --> 00:23:59,520
all the stuff you need to live there for

626
00:24:04,230 --> 00:24:01,760
six months it gets pretty full and

627
00:24:08,710 --> 00:24:04,240
having another module to help with uh

628
00:24:11,350 --> 00:24:08,720
stowage is is critically important to uh

629
00:24:14,230 --> 00:24:11,360
improving our efficiency and just doing

630
00:24:15,750 --> 00:24:14,240
our you know daily work on board

631
00:24:16,470 --> 00:24:15,760
so they're going to bring up that module

632
00:24:24,950 --> 00:24:16,480
and

633
00:24:30,070 --> 00:24:28,470
with secondary objectives that isn't

634
00:24:31,590 --> 00:24:30,080
uh doesn't have anything to do with the

635
00:24:33,190 --> 00:24:31,600
module itself

636
00:24:34,630 --> 00:24:33,200
it'll give you the opportunity to see

637
00:24:35,750 --> 00:24:34,640
what a space shuttle visit to the

638
00:24:38,310 --> 00:24:35,760

station is like from the other

639
00:24:40,070 --> 00:24:38,320
perspective yeah i was actually hoping

640
00:24:41,750 --> 00:24:40,080
atlantis would come up while i was there

641
00:24:43,590 --> 00:24:41,760
because i've never seen atlantis in

642
00:24:46,710 --> 00:24:43,600
space my first flight was under

643
00:24:49,269 --> 00:24:46,720
discovery in my second on endeavor but

644
00:24:50,549 --> 00:24:49,279
unfortunately if uh if atlantis flies

645
00:24:52,390 --> 00:24:50,559
again it'll be

646
00:24:53,750 --> 00:24:52,400
i think well after i'm gone probably in

647
00:24:59,029 --> 00:24:53,760
june

648
00:25:01,909 --> 00:24:59,039
neat to see a shuttle visit

649
00:25:04,390 --> 00:25:01,919
um near the end of november you're going

650
00:25:06,390 --> 00:25:04,400
to become the commander of expedition 26

651
00:25:09,430 --> 00:25:06,400
when doug wheelock and fyodor yurchikhin

652
00:25:10,310 --> 00:25:09,440
and chan walker uh go home

653
00:25:12,549 --> 00:25:10,320
how

654
00:25:15,669 --> 00:25:12,559
has that changed daily life for you on

655
00:25:17,909 --> 00:25:15,679
the station to become its commander

656
00:25:21,190 --> 00:25:17,919
um i don't know that it'll change it a

657
00:25:23,430 --> 00:25:21,200
whole lot unless things start

658
00:25:24,789 --> 00:25:23,440
going awry

659
00:25:27,190 --> 00:25:24,799
i guess

660
00:25:28,789 --> 00:25:27,200
as long as you know

661
00:25:30,870 --> 00:25:28,799
we don't have any emergencies we don't

662
00:25:32,470 --> 00:25:30,880
have any significant problems with the

663
00:25:33,750 --> 00:25:32,480

hardware or

664
00:25:35,510 --> 00:25:33,760
people

665
00:25:37,990 --> 00:25:35,520
then it's uh

666
00:25:39,669 --> 00:25:38,000
things will probably just

667
00:25:41,430 --> 00:25:39,679
kind of like the status quo you know

668
00:25:43,510 --> 00:25:41,440
certainly as the commander

669
00:25:46,149 --> 00:25:43,520
you know you're responsible for you know

670
00:25:47,990 --> 00:25:46,159
safety and the health of your people and

671
00:25:49,590 --> 00:25:48,000
you know making sure they're

672
00:25:51,510 --> 00:25:49,600
they have everything they need to do

673
00:25:53,909 --> 00:25:51,520
their job so certainly be conscious of

674
00:25:55,110 --> 00:25:53,919
those things but

675
00:25:57,029 --> 00:25:55,120
you know we're all

676
00:25:58,390 --> 00:25:57,039
professionals we all understand what we

677
00:25:59,669 --> 00:25:58,400
need to do

678
00:26:00,870 --> 00:25:59,679
and uh

679
00:26:02,630 --> 00:26:00,880
you know

680
00:26:04,630 --> 00:26:02,640
we're all kind of self-starters and kind

681
00:26:06,390 --> 00:26:04,640
of take care of ourselves very well so

682
00:26:08,870 --> 00:26:06,400
it shouldn't shouldn't be much different

683
00:26:11,430 --> 00:26:08,880
than when doug wheelock the previous uh

684
00:26:14,230 --> 00:26:11,440
commander is in charge

685
00:26:16,710 --> 00:26:14,240
as you mentioned earlier you expect to

686
00:26:18,789 --> 00:26:16,720
see one more visit from a space shuttle

687
00:26:20,710 --> 00:26:18,799
that'll be in late february

688
00:26:22,870 --> 00:26:20,720

tell me about the plans for the joint

689
00:26:25,350 --> 00:26:22,880
operations when endeavour arrives with

690
00:26:28,070 --> 00:26:25,360
sts-134

691
00:26:31,830 --> 00:26:28,080
um it'll be very similar to

692
00:26:36,390 --> 00:26:31,840
133 it will will help with

693
00:26:40,870 --> 00:26:37,990
getting the crews ready for the space

694
00:26:42,470 --> 00:26:40,880
walks and getting you know all their

695
00:26:44,390 --> 00:26:42,480
pre-positioned items that need to go on

696
00:26:47,110 --> 00:26:44,400
the shuttle and you know

697
00:26:48,870 --> 00:26:47,120
taking care of any logistic items they

698
00:26:51,350 --> 00:26:48,880
they are bringing off the shuttle to be

699
00:26:52,789 --> 00:26:51,360
stored on the space station

700
00:26:55,430 --> 00:26:52,799
um

701
00:26:57,350 --> 00:26:55,440
basically you know

702
00:26:59,269 --> 00:26:57,360
having a lot of work to do to prepare

703
00:27:01,350 --> 00:26:59,279
the station for the arrival of a shuttle

704
00:27:05,430 --> 00:27:01,360
whether it's

705
00:27:07,350 --> 00:27:05,440
you know 133 or 134 is very similar

706
00:27:08,789 --> 00:27:07,360
and this mission is going to deliver a

707
00:27:11,350 --> 00:27:08,799
big science instrument that they're

708
00:27:12,630 --> 00:27:11,360
going to put out on the trust that

709
00:27:15,110 --> 00:27:12,640
does when the alpha magnetic

710
00:27:17,029 --> 00:27:15,120
spectrometer is installed does that

711
00:27:18,070 --> 00:27:17,039
create new work for the station crew

712
00:27:23,269 --> 00:27:18,080
members

713
00:27:24,950 --> 00:27:23,279

it it operates um autonomously um

714
00:27:27,430 --> 00:27:24,960
at one point i heard that they were

715
00:27:29,110 --> 00:27:27,440
talking about giving the onboard crew a

716
00:27:31,269 --> 00:27:29,120
little bit of um

717
00:27:32,789 --> 00:27:31,279
you know insight into

718
00:27:35,029 --> 00:27:32,799
how it's uh

719
00:27:36,549 --> 00:27:35,039
operating it's you know the status of

720
00:27:38,310 --> 00:27:36,559
its systems

721
00:27:39,430 --> 00:27:38,320
but i'm not sure

722
00:27:41,110 --> 00:27:39,440
um

723
00:27:42,549 --> 00:27:41,120
how far along they are with that or if

724
00:27:46,389 --> 00:27:42,559
we're actually going to get that

725
00:27:48,149 --> 00:27:46,399
capability if we did it would be after

726
00:27:50,070 --> 00:27:48,159
i'm i'm gone so i haven't had any

727
00:27:52,310 --> 00:27:50,080
training on it but it's basically

728
00:27:54,230 --> 00:27:52,320
designed to use the space station

729
00:27:56,870 --> 00:27:54,240
resources to collect its science but

730
00:27:58,230 --> 00:27:56,880
then you know the science and the

731
00:27:59,830 --> 00:27:58,240
is

732
00:28:03,269 --> 00:27:59,840
obviously analyzed on the ground but the

733
00:28:05,350 --> 00:28:03,279
spacecraft is also

734
00:28:07,350 --> 00:28:05,360
operated from the from the ground it's

735
00:28:10,750 --> 00:28:07,360
not a science instrument that the crew

736
00:28:13,510 --> 00:28:10,760
operates in a in an active sense

737
00:28:15,110 --> 00:28:13,520
sts-134 is a

738
00:28:17,669 --> 00:28:15,120

right now the last shuttle mission and

739
00:28:19,350 --> 00:28:17,679
it's commanded by your brother mark

740
00:28:21,029 --> 00:28:19,360
this joint operation will be the first

741
00:28:22,389 --> 00:28:21,039
time that two siblings have been in

742
00:28:24,950 --> 00:28:22,399
space together

743
00:28:26,950 --> 00:28:24,960
you excited about the idea of getting to

744
00:28:29,269 --> 00:28:26,960
share an orbital road trip

745
00:28:31,029 --> 00:28:29,279
it's actually the first time that two

746
00:28:32,789 --> 00:28:31,039
i think blood relatives have ever been

747
00:28:34,950 --> 00:28:32,799
in space together

748
00:28:36,950 --> 00:28:34,960
um

749
00:28:38,549 --> 00:28:36,960
it's exciting i know you know i've known

750
00:28:39,990 --> 00:28:38,559
obviously known my brother a really long

751
00:28:42,310 --> 00:28:40,000
time and

752
00:28:45,669 --> 00:28:42,320
you know we're great friends

753
00:28:47,269 --> 00:28:45,679
and um you know it's a real privilege to

754
00:28:49,110 --> 00:28:47,279
to share

755
00:28:50,230 --> 00:28:49,120
the experience with someone you're so

756
00:28:51,830 --> 00:28:50,240
close to

757
00:28:53,909 --> 00:28:51,840
the experience of being an astronaut

758
00:28:56,230 --> 00:28:53,919
being able to talk about you know things

759
00:28:59,350 --> 00:28:56,240
that we experience and have

760
00:29:00,789 --> 00:28:59,360
you know a common you know framework to

761
00:29:03,269 --> 00:29:00,799
to discuss it

762
00:29:06,070 --> 00:29:04,389
and

763
00:29:08,789 --> 00:29:06,080

getting to see him in space will

764
00:29:11,110 --> 00:29:08,799
actually make that even better it's uh

765
00:29:13,990 --> 00:29:11,120
certainly very exciting for uh for the

766
00:29:17,350 --> 00:29:15,669
be able to see this and it's

767
00:29:20,470 --> 00:29:17,360
pure luck i mean he was supposed to fly

768
00:29:22,310 --> 00:29:20,480
in july this past july

769
00:29:23,590 --> 00:29:22,320
actually this month was his launch date

770
00:29:26,149 --> 00:29:23,600
but then

771
00:29:29,590 --> 00:29:26,159
things got delayed and now he's uh

772
00:29:32,230 --> 00:29:29,600
coming up at the end of of my increment

773
00:29:33,990 --> 00:29:32,240
so it's uh it's pretty exciting your mom

774
00:29:35,909 --> 00:29:34,000
and dad like the idea of having two sons

775
00:29:37,750 --> 00:29:35,919
off the planet at the same time they

776
00:29:39,669 --> 00:29:37,760
don't like the idea of having one son

777
00:29:40,710 --> 00:29:39,679
off the planet at any time

778
00:29:42,389 --> 00:29:40,720
so

779
00:29:44,549 --> 00:29:42,399
you know they can uh this can kind of

780
00:29:47,990 --> 00:29:44,559
stress them out a little bit and

781
00:29:49,510 --> 00:29:48,000
i'm sure it'll stress them out even more

782
00:29:50,630 --> 00:29:49,520
fortunately my brother's the one that's

783
00:29:53,190 --> 00:29:50,640
going to have to deal with it because

784
00:29:56,070 --> 00:29:53,200
i'll be in space

785
00:29:57,830 --> 00:29:56,080
as we've mentioned uh sts-134 is the

786
00:29:58,710 --> 00:29:57,840
last scheduled flight of the space

787
00:30:00,470 --> 00:29:58,720
shuttle

788
00:30:02,789 --> 00:30:00,480

uh scott what are your thoughts about

789
00:30:05,590 --> 00:30:02,799
the shuttle's place in the history of

790
00:30:07,590 --> 00:30:05,600
human space flight and its role in the

791
00:30:08,470 --> 00:30:07,600
assembly and maintenance of the space

792
00:30:10,389 --> 00:30:08,480
station

793
00:30:13,510 --> 00:30:10,399
i don't know if we will ever build

794
00:30:15,590 --> 00:30:13,520
something as versatile

795
00:30:18,310 --> 00:30:15,600
and as capable

796
00:30:20,950 --> 00:30:18,320
uh a vehicle that can do as many

797
00:30:23,590 --> 00:30:20,960
missions as the as the space shuttle has

798
00:30:28,310 --> 00:30:23,600
been able to do it certainly not in my

799
00:30:33,190 --> 00:30:29,830
you know from

800
00:30:34,630 --> 00:30:33,200
being able to build structures in space

801
00:30:36,789 --> 00:30:34,640
to

802
00:30:39,350 --> 00:30:36,799
the robotics capability the space

803
00:30:41,350 --> 00:30:39,360
walking capability the science

804
00:30:43,430 --> 00:30:41,360
capability inside the vehicle the

805
00:30:44,389 --> 00:30:43,440
ability to carry very large payloads

806
00:30:46,549 --> 00:30:44,399
into

807
00:30:49,430 --> 00:30:46,559
low earth orbit

808
00:30:52,389 --> 00:30:49,440
deliver them to other orbits if required

809
00:30:55,909 --> 00:30:52,399
repair telescopes and other science

810
00:31:00,630 --> 00:30:58,470
carry a laboratory in the aft part of

811
00:31:01,830 --> 00:31:00,640
the vehicle i mean it really is an

812
00:31:03,029 --> 00:31:01,840
incredibly

813
00:31:04,470 --> 00:31:03,039

capable

814
00:31:06,389 --> 00:31:04,480
of vehicle

815
00:31:08,870 --> 00:31:06,399
it's also very complicated also very

816
00:31:10,470 --> 00:31:08,880
expensive to operate

817
00:31:12,789 --> 00:31:10,480
i think in a perfect world we would

818
00:31:13,990 --> 00:31:12,799
continue to fly it and it'd be great if

819
00:31:15,909 --> 00:31:14,000
we could

820
00:31:18,070 --> 00:31:15,919
you know use the space shuttle to

821
00:31:20,549 --> 00:31:18,080
continue to

822
00:31:22,230 --> 00:31:20,559
supply and be there for the space

823
00:31:23,909 --> 00:31:22,240
station

824
00:31:27,350 --> 00:31:23,919
but

825
00:31:29,590 --> 00:31:27,360
you know in our economic climate that's

826
00:31:30,789 --> 00:31:29,600
not consistent with trying to do other

827
00:31:32,070 --> 00:31:30,799
things so

828
00:31:34,389 --> 00:31:32,080
you know at a certain point you have to

829
00:31:37,669 --> 00:31:34,399
make a decision

830
00:31:39,110 --> 00:31:37,679
um you know the previous administration

831
00:31:41,430 --> 00:31:39,120
and the current administration made the

832
00:31:43,750 --> 00:31:41,440
decision that it should be retired so we

833
00:31:46,310 --> 00:31:43,760
can go on and you know explore

834
00:31:47,909 --> 00:31:46,320
eventually be beyond low earth orbit and

835
00:31:49,430 --> 00:31:47,919
nasa

836
00:31:51,190 --> 00:31:49,440
and myself

837
00:31:53,350 --> 00:31:51,200
supports

838
00:31:55,430 --> 00:31:53,360

those decisions i think it's going to be

839
00:31:56,549 --> 00:31:55,440
a sad day when the

840
00:31:59,430 --> 00:31:56,559
shuttle

841
00:32:01,509 --> 00:31:59,440
rolls to a stop for the last time but

842
00:32:04,389 --> 00:32:01,519
i think it's understandable and

843
00:32:05,830 --> 00:32:04,399
but unfortunately necessary

844
00:32:08,310 --> 00:32:05,840
you mentioned a couple of minutes ago

845
00:32:10,870 --> 00:32:08,320
that there are other spacecraft that

846
00:32:12,710 --> 00:32:10,880
will fly to supply

847
00:32:16,070 --> 00:32:12,720
the space station even after the space

848
00:32:17,750 --> 00:32:16,080
shuttle is no longer flying uh

849
00:32:20,710 --> 00:32:17,760
tell me a little bit about the com the

850
00:32:24,070 --> 00:32:20,720
capabilities of these unmanned russian

851
00:32:25,669 --> 00:32:24,080
european and japanese spacecraft and and

852
00:32:26,950 --> 00:32:25,679
how the crews involved in their

853
00:32:28,950 --> 00:32:26,960
operations

854
00:32:30,710 --> 00:32:28,960
the um

855
00:32:32,789 --> 00:32:30,720
the russian progress vehicles are

856
00:32:35,190 --> 00:32:32,799
similar to the soyuz but they're

857
00:32:37,110 --> 00:32:35,200
unmanned and they uh

858
00:32:38,310 --> 00:32:37,120
they're for carrying cargo and fuel and

859
00:32:39,590 --> 00:32:38,320
water

860
00:32:41,909 --> 00:32:39,600
the uh

861
00:32:43,590 --> 00:32:41,919
they dock automatically although the

862
00:32:45,110 --> 00:32:43,600
russians can intervene if there's a

863
00:32:47,909 --> 00:32:45,120

problem with the automatic system and

864
00:32:50,630 --> 00:32:47,919
fly the docking manually from onboard

865
00:32:55,269 --> 00:32:50,640
from a work station onboard the

866
00:33:00,470 --> 00:32:58,149
likewise the uh

867
00:33:03,830 --> 00:33:00,480
autonomous transfer vehicle the european

868
00:33:06,789 --> 00:33:03,840
vehicle is larger than the progress

869
00:33:08,870 --> 00:33:06,799
can carry um

870
00:33:10,710 --> 00:33:08,880
similar amount of cargo let's say to an

871
00:33:12,149 --> 00:33:10,720
mplm

872
00:33:15,190 --> 00:33:12,159
you know something that you put in the

873
00:33:18,630 --> 00:33:15,200
payload bay of the shuttle so it's

874
00:33:20,950 --> 00:33:18,640
got a larger cargo carrying capability

875
00:33:23,110 --> 00:33:20,960
it also docks automatically uses the

876
00:33:24,710 --> 00:33:23,120
russian system to dock but it also can

877
00:33:26,310 --> 00:33:24,720
be docked manually

878
00:33:28,549 --> 00:33:26,320
by uh

879
00:33:30,470 --> 00:33:28,559
mostly the cosmonauts if if required

880
00:33:31,830 --> 00:33:30,480
since it's a similar

881
00:33:33,430 --> 00:33:31,840
way of

882
00:33:35,350 --> 00:33:33,440
flying the vehicle manually generally

883
00:33:38,470 --> 00:33:35,360
the cosmonauts do it although

884
00:33:40,630 --> 00:33:38,480
on my flight apollo nespolis going to be

885
00:33:43,269 --> 00:33:40,640
as an esa astronaut heavily involved in

886
00:33:44,470 --> 00:33:43,279
the atv operations

887
00:33:49,350 --> 00:33:44,480
and then we have

888
00:33:51,590 --> 00:33:49,360

the japanese version of the cargo

889
00:33:53,590 --> 00:33:51,600
resupply ship and that one has a unique

890
00:33:55,990 --> 00:33:53,600
capability in that it can carry

891
00:33:57,590 --> 00:33:56,000
unpressurized cargo so

892
00:33:59,350 --> 00:33:57,600
it's not only cargo that we bring

893
00:34:01,509 --> 00:33:59,360
through the hatch but it's cargo that we

894
00:34:05,990 --> 00:34:01,519
can easily

895
00:34:07,669 --> 00:34:06,000
get outside the space station like

896
00:34:11,030 --> 00:34:07,679
um you know a big

897
00:34:14,149 --> 00:34:11,040
computer or a pump or battery something

898
00:34:15,829 --> 00:34:14,159
that the external uh part of the space

899
00:34:17,829 --> 00:34:15,839
station needs and

900
00:34:20,149 --> 00:34:17,839
previously we only had the capability to

901
00:34:21,990 --> 00:34:20,159
do that with the shuttle so the htv is

902
00:34:23,430 --> 00:34:22,000
critical to bringing up spare parts to

903
00:34:24,869 --> 00:34:23,440
the space station

904
00:34:30,310 --> 00:34:24,879
on

905
00:34:32,190 --> 00:34:30,320
and there's uh

906
00:34:34,869 --> 00:34:32,200
two

907
00:34:36,790 --> 00:34:34,879
unpressurized uh

908
00:34:38,629 --> 00:34:36,800
components for the

909
00:34:40,629 --> 00:34:38,639
external part of the space station we're

910
00:34:45,109 --> 00:34:40,639
supposed to transfer those with the spdm

911
00:34:48,149 --> 00:34:46,550
if that doesn't work we'll have to go

912
00:34:51,190 --> 00:34:48,159
and do that

913
00:34:53,990 --> 00:34:51,200

eva paulo and i'll do it eva if we can't

914
00:34:55,589 --> 00:34:54,000
do that robotically

915
00:34:57,589 --> 00:34:55,599
the way the international space station

916
00:34:59,829 --> 00:34:57,599
is supplied today is a lot different

917
00:35:02,470 --> 00:34:59,839
than it was ten years ago when the

918
00:35:04,390 --> 00:35:02,480
expedition one crew arrived well you're

919
00:35:06,550 --> 00:35:04,400
going to be on board now for the

920
00:35:09,829 --> 00:35:06,560
anniversary of permanent human

921
00:35:11,990 --> 00:35:09,839
habitation of the the space station

922
00:35:14,710 --> 00:35:12,000
scott what do you think's the best thing

923
00:35:17,109 --> 00:35:14,720
that the station partnership has done up

924
00:35:18,790 --> 00:35:17,119
there in this past 10 years

925
00:35:21,109 --> 00:35:18,800
you know i think the the whole space

926
00:35:24,069 --> 00:35:21,119
station is an experiment in how you

927
00:35:25,990 --> 00:35:24,079
build these very large very complicated

928
00:35:29,109 --> 00:35:26,000
structures

929
00:35:32,790 --> 00:35:29,119
with very complicated

930
00:35:34,790 --> 00:35:32,800
systems to maintain uh human life in low

931
00:35:37,190 --> 00:35:34,800
earth orbit and you know the reason we

932
00:35:38,069 --> 00:35:37,200
do that is to explore and to do science

933
00:35:40,069 --> 00:35:38,079
and to

934
00:35:42,069 --> 00:35:40,079
learn how

935
00:35:44,550 --> 00:35:42,079
we uh

936
00:35:46,790 --> 00:35:44,560
need to support ourselves

937
00:35:47,750 --> 00:35:46,800
uh to eventually

938
00:35:51,349 --> 00:35:47,760

venture

939
00:35:52,870 --> 00:35:51,359
beyond low earth orbit and um

940
00:35:55,349 --> 00:35:52,880
you know i think our greatest

941
00:36:00,550 --> 00:35:55,359
accomplishment is the fact that we've

942
00:36:05,270 --> 00:36:03,829
incredibly sophisticated

943
00:36:06,550 --> 00:36:05,280
space station

944
00:36:09,670 --> 00:36:06,560
with

945
00:36:11,589 --> 00:36:09,680
different cultures different

946
00:36:13,670 --> 00:36:11,599
technologies different ways of doing

947
00:36:15,910 --> 00:36:13,680
business i mean we've some of these

948
00:36:17,270 --> 00:36:15,920
modules that we have in space as part of

949
00:36:19,510 --> 00:36:17,280
the space station have never been

950
00:36:21,910 --> 00:36:19,520
connected to one another before the

951
00:36:24,150 --> 00:36:21,920
first time they ever saw one another

952
00:36:26,390 --> 00:36:24,160
was in you know low earth orbit well

953
00:36:28,390 --> 00:36:26,400
going around the earth at 17

954
00:36:31,109 --> 00:36:28,400
500 miles an hour

955
00:36:34,310 --> 00:36:31,119
and uh you know plus plus or minus uh

956
00:36:37,030 --> 00:36:34,320
you know 270 degrees of of temperature

957
00:36:38,390 --> 00:36:37,040
extremes and

958
00:36:40,550 --> 00:36:38,400
you know

959
00:36:43,030 --> 00:36:40,560
extreme radiation environment

960
00:36:44,870 --> 00:36:43,040
in a vacuum you know put together by

961
00:36:46,550 --> 00:36:44,880
astronauts and different kinds of

962
00:36:47,990 --> 00:36:46,560
spacesuits using different kinds of

963
00:36:49,030 --> 00:36:48,000

procedures

964
00:36:51,589 --> 00:36:49,040
um

965
00:36:53,589 --> 00:36:51,599
you know it's just an amazing

966
00:36:56,069 --> 00:36:53,599
feat and a

967
00:36:58,390 --> 00:36:56,079
you know an amazing facility

968
00:37:00,390 --> 00:36:58,400
we've built that we you know all should

969
00:37:03,430 --> 00:37:00,400
be proud of and you know reflecting on

970
00:37:05,750 --> 00:37:03,440
uh you know our 10 years of operation

971
00:37:09,829 --> 00:37:05,760
it's uh

972
00:37:13,670 --> 00:37:12,310
complicated and sophisticated and

973
00:37:14,550 --> 00:37:13,680
difficult than i ever thought it would

974
00:37:20,950 --> 00:37:14,560
be

975
00:37:23,190 --> 00:37:20,960
you know just as difficult if not more

976
00:37:24,950 --> 00:37:23,200
difficult than you know the apollo

977
00:37:28,230 --> 00:37:24,960
program and and putting a man on the

978
00:37:31,030 --> 00:37:28,240
moon i mean it really is a incredible um

979
00:37:33,589 --> 00:37:31,040
incredibly complicated system we have

980
00:37:34,470 --> 00:37:33,599
in space right now

981
00:37:36,630 --> 00:37:34,480
so

982
00:37:38,390 --> 00:37:36,640
that begs the question what happens next

983
00:37:41,510 --> 00:37:38,400
what would you like to see us go in the

984
00:37:42,950 --> 00:37:41,520
next 10 or 20 or 50 years well i hope we

985
00:37:45,589 --> 00:37:42,960
continue to

986
00:37:47,349 --> 00:37:45,599
utilize and exploit our

987
00:37:50,550 --> 00:37:47,359
investment

988
00:37:51,349 --> 00:37:50,560

in this amazing science facility we have

989
00:37:52,390 --> 00:37:51,359
on

990
00:37:56,710 --> 00:37:52,400
board

991
00:38:01,190 --> 00:37:58,710
you know i'd like to see us venture

992
00:38:04,870 --> 00:38:01,200
beyond low earth orbit when we have a

993
00:38:06,870 --> 00:38:04,880
vehicle that will take us there

994
00:38:09,510 --> 00:38:06,880
whether it's a government-made vehicle

995
00:38:12,069 --> 00:38:09,520
or commercial vehicle i have no idea we

996
00:38:13,990 --> 00:38:12,079
just need something

997
00:38:15,829 --> 00:38:14,000
you know we

998
00:38:18,390 --> 00:38:15,839
have learned a lot and we will continue

999
00:38:20,870 --> 00:38:18,400
to learn a lot about

1000
00:38:23,190 --> 00:38:20,880
how systems and people and

1001
00:38:25,829 --> 00:38:23,200
how to operate in space for long periods