1
00:00:15,990 --> 00:00:12,950
why did you want to be an astronaut

2
00:00:17,990 --> 00:00:16,000
for me it wasn't i know some people say

3
00:00:19,349 --> 00:00:18,000
that they you know they knew from a very

4
00:00:21,590 --> 00:00:19,359
early age that that's what they wanted

5
00:00:23,590 --> 00:00:21,600
to do and and that's that's awesome but

6
00:00:24,950 --> 00:00:23,600
it wasn't quite that way for me i i

7
00:00:26,790 --> 00:00:24,960
think i was a little more practical

8
00:00:28,790 --> 00:00:26,800
about things and

9
00:00:30,390 --> 00:00:28,800
i was interested in space flight and i

10
00:00:32,389 --> 00:00:30,400
was interested in airplanes at a very

11
00:00:34,470 --> 00:00:32,399
young age i can remember that from way

12
00:00:36,310 --> 00:00:34,480
back and i think it was just a natural

13
00:00:38,549 --> 00:00:36,320

progression of things being interested

14
00:00:40,790 --> 00:00:38,559
in engineering being interested in

15
00:00:42,709 --> 00:00:40,800
in aviation in space and it just kind of

16
00:00:44,389 --> 00:00:42,719
led me down a path

17
00:00:46,310 --> 00:00:44,399
into college in the military and then

18
00:00:49,110 --> 00:00:46,320
the marine corps flying fighters and

19
00:00:52,229 --> 00:00:49,120
then ultimately as a test pilot and then

20
00:00:54,229 --> 00:00:52,239
to be lucky enough to get to come here

21
00:00:56,069 --> 00:00:54,239
it just kind of was that next job that

22
00:00:57,990 --> 00:00:56,079
interested me or

23
00:01:00,790 --> 00:00:58,000
that i had the prerequisites for that i

24
00:01:03,510 --> 00:01:00,800
could try for and uh it

25
00:01:06,390 --> 00:01:03,520
progressed such that i showed up here at

26
00:01:07,990 --> 00:01:06,400
the doorstep of nasa about 10 years ago

27
00:01:09,750 --> 00:01:08,000
not satisfied with what you were doing

28
00:01:11,350 --> 00:01:09,760
looking for something else well i think

29
00:01:13,590 --> 00:01:11,360
it's just a case of you

30
00:01:15,910 --> 00:01:13,600
i've always been one and i i i think

31
00:01:18,390 --> 00:01:15,920
that's fairly common in our office is to

32
00:01:19,990 --> 00:01:18,400
to kind of set goals for this particular

33
00:01:22,070 --> 00:01:20,000
what you're doing this week or this

34
00:01:23,910 --> 00:01:22,080
month or this year and then set goals

35
00:01:25,749 --> 00:01:23,920
longer term goals and

36
00:01:26,870 --> 00:01:25,759
and it just seemed like all those

37
00:01:29,270 --> 00:01:26,880
different interests all kind of

38
00:01:29,990 --> 00:01:29,280

coalesced uh

39
00:01:31,510 --> 00:01:30,000
to

40
00:01:34,230 --> 00:01:31,520
what would be described as the job

41
00:01:35,830 --> 00:01:34,240
description for an astronaut and so i

42
00:01:37,749 --> 00:01:35,840
think naturally it just progressed to

43
00:01:39,910 --> 00:01:37,759
that point and obviously i was lucky

44
00:01:41,510 --> 00:01:39,920
enough to get to be chosen to come here

45
00:01:43,749 --> 00:01:41,520
and take you to the other end of that

46
00:01:45,429 --> 00:01:43,759
story start tell me about your hometown

47
00:01:47,429 --> 00:01:45,439
and what it was like to grow up there

48
00:01:49,429 --> 00:01:47,439
well i grew up in apple lake in new york

49
00:01:52,630 --> 00:01:49,439
which is a very very small town in the

50
00:01:54,950 --> 00:01:52,640
southern tier of upstate new york and

51
00:01:56,709 --> 00:01:54,960
i mean it was just a a wonderful place

52
00:01:59,510 --> 00:01:56,719
to grow up it was a very small town it

53
00:02:01,270 --> 00:01:59,520
was fairly rural um

54
00:02:03,190 --> 00:02:01,280
i had a lot of close friends played

55
00:02:04,709 --> 00:02:03,200
sports uh

56
00:02:06,469 --> 00:02:04,719
downhill skied

57
00:02:07,910 --> 00:02:06,479
did all the things that i think you know

58
00:02:09,990 --> 00:02:07,920
most folks from that part of the country

59
00:02:12,229 --> 00:02:10,000
do and uh and really enjoyed it it's a

60
00:02:13,830 --> 00:02:12,239
great place to be from and it's i always

61
00:02:15,430 --> 00:02:13,840
look forward to getting back there you

62
00:02:17,030 --> 00:02:15,440
have a sense of how the place and and

63
00:02:19,270 --> 00:02:17,040

the people who are there

64
00:02:22,309 --> 00:02:19,280
really contributed to making you who you

65
00:02:25,030 --> 00:02:22,319
are well i i always kind of felt like i

66
00:02:26,869 --> 00:02:25,040
needed to give something back to the you

67
00:02:29,350 --> 00:02:26,879
know you have this sense of service to

68
00:02:31,589 --> 00:02:29,360
the country and i i don't know where it

69
00:02:33,430 --> 00:02:31,599
came from um

70
00:02:36,470 --> 00:02:33,440
but i had that from a fairly early age

71
00:02:38,710 --> 00:02:36,480
that i wanted to do something for the

72
00:02:40,470 --> 00:02:38,720
country you know serve the country and

73
00:02:42,070 --> 00:02:40,480
the military seemed like the best way to

74
00:02:44,390 --> 00:02:42,080
do that and

75
00:02:46,309 --> 00:02:44,400
and i think you see that from the people

76
00:02:48,070 --> 00:02:46,319
that i grew up with that they're they're

77
00:02:49,830 --> 00:02:48,080
very patriotic and and love their

78
00:02:52,229 --> 00:02:49,840
country and i think it just carried over

79
00:02:53,509 --> 00:02:52,239
to a degree in me personally

80
00:02:56,470 --> 00:02:53,519
and then

81
00:02:57,670 --> 00:02:56,480
the the mutual benefit of getting to fly

82
00:02:59,190 --> 00:02:57,680
airplanes

83
00:03:01,830 --> 00:02:59,200
for the military was just a great

84
00:03:04,229 --> 00:03:01,840
experience do you get to make out your

85
00:03:06,149 --> 00:03:04,239
hometown from orbit i've seen it a few

86
00:03:07,509 --> 00:03:06,159
times the weather in upstate new york

87
00:03:10,070 --> 00:03:07,519
can always be

88
00:03:12,070 --> 00:03:10,080

or isn't always cooperative

89
00:03:13,350 --> 00:03:12,080
there it tends to be cloudy there a fair

90
00:03:17,670 --> 00:03:13,360
amount of the time but i've seen it a

91
00:03:21,990 --> 00:03:19,509
take take us from from that point from

92
00:03:23,750 --> 00:03:22,000
high school and on and and what were

93
00:03:25,509 --> 00:03:23,760
some of the highlights you think in your

94
00:03:28,149 --> 00:03:25,519
education your professional career and

95
00:03:30,229 --> 00:03:28,159
your military career that ultimately led

96
00:03:32,869 --> 00:03:30,239
you here well i think the the first big

97
00:03:35,190 --> 00:03:32,879
decision i think was was uh

98
00:03:37,589 --> 00:03:35,200
the combination of going to school on a

99
00:03:40,550 --> 00:03:37,599
navy rotc scholarship scholarship so i

100
00:03:41,830 --> 00:03:40,560
was i actually was a marine option

101
00:03:43,350 --> 00:03:41,840
as the marines are part of the

102
00:03:45,509 --> 00:03:43,360
department of the navy both marines and

103
00:03:47,270 --> 00:03:45,519
navy officers can go through the navy

104
00:03:49,350 --> 00:03:47,280
rotc

105
00:03:51,910 --> 00:03:49,360
that was obviously a big decision and

106
00:03:54,229 --> 00:03:51,920
then uh taking engineering in college at

107
00:03:56,710 --> 00:03:54,239
tulane university uh was probably the

108
00:04:00,550 --> 00:03:56,720
other you know major milestone that kind

109
00:04:02,550 --> 00:04:00,560
of led me down that path to be a a pilot

110
00:04:04,470 --> 00:04:02,560
and then a test pilot what make what

111
00:04:05,589 --> 00:04:04,480
gets a kid from upstate new york to

112
00:04:07,110 --> 00:04:05,599
tulane

113
00:04:08,149 --> 00:04:07,120

yeah that's a good question i get that a

114
00:04:10,949 --> 00:04:08,159
lot

115
00:04:12,710 --> 00:04:10,959
i think it was as much

116
00:04:14,710 --> 00:04:12,720
maybe seeing another part of the world

117
00:04:16,629 --> 00:04:14,720
as anything and i think the other part

118
00:04:18,390 --> 00:04:16,639
of it was

119
00:04:20,469 --> 00:04:18,400
i was hoping to get somewhere where it

120
00:04:22,069 --> 00:04:20,479
was a little warmer in the winter time

121
00:04:24,710 --> 00:04:22,079
so those are probably the two biggest

122
00:04:26,629 --> 00:04:24,720
things and

123
00:04:28,310 --> 00:04:26,639
you know new orleans intrigued me it was

124
00:04:29,990 --> 00:04:28,320
you know it's just something totally

125
00:04:31,990 --> 00:04:30,000
different than what i grew up with and

126
00:04:33,670 --> 00:04:32,000
uh and it ended up just being a

127
00:04:36,230 --> 00:04:33,680
wonderful place to go to college so you

128
00:04:38,550 --> 00:04:36,240
go to college on the rotc scholarship

129
00:04:40,230 --> 00:04:38,560
studying engineering that's correct uh

130
00:04:41,510 --> 00:04:40,240
studying engineering i had a great

131
00:04:43,909 --> 00:04:41,520
professor

132
00:04:47,510 --> 00:04:43,919
dr robert bruce who kind of was

133
00:04:49,670 --> 00:04:47,520
you know that one person uh in academia

134
00:04:52,469 --> 00:04:49,680
in college that really pushed me he was

135
00:04:53,590 --> 00:04:52,479
a structural uh engineering instructor

136
00:04:54,710 --> 00:04:53,600
professor

137
00:04:57,430 --> 00:04:54,720
and uh

138
00:04:59,590 --> 00:04:57,440

just really enjoyed

139
00:05:00,629 --> 00:04:59,600
civil engineering while i was there

140
00:05:02,230 --> 00:05:00,639
and

141
00:05:03,830 --> 00:05:02,240
because it would have been easy to do

142
00:05:06,469 --> 00:05:03,840
something different engineering is a

143
00:05:08,390 --> 00:05:06,479
fairly challenging degree and then with

144
00:05:10,790 --> 00:05:08,400
all your other competing priorities with

145
00:05:11,990 --> 00:05:10,800
rotc and and just college life in

146
00:05:14,790 --> 00:05:12,000
general in new orleans as you might

147
00:05:17,029 --> 00:05:14,800
imagine you're you were pretty busy

148
00:05:19,189 --> 00:05:17,039
but it was a you know i really enjoyed

149
00:05:21,350 --> 00:05:19,199
it and and getting that degree

150
00:05:22,710 --> 00:05:21,360
uh paid huge dividends down the road

151
00:05:24,710 --> 00:05:22,720
because that's what got me into test

152
00:05:26,710 --> 00:05:24,720
pilot schools having an engineering

153
00:05:29,350 --> 00:05:26,720
degree not only being a fighter pilot

154
00:05:31,189 --> 00:05:29,360
but having that degree as well

155
00:05:33,830 --> 00:05:31,199
but that's not your first stop when you

156
00:05:35,830 --> 00:05:33,840
got your degree in the marines no so

157
00:05:37,590 --> 00:05:35,840
then you know once we graduate we're

158
00:05:39,510 --> 00:05:37,600
commissioned as an officer in the in the

159
00:05:41,189 --> 00:05:39,520
marine corps and then i was off to

160
00:05:42,710 --> 00:05:41,199
quantico virginia for

161
00:05:44,070 --> 00:05:42,720
several months of

162
00:05:45,909 --> 00:05:44,080
what they call the basic school in the

163
00:05:47,909 --> 00:05:45,919

marine corps which really means

164
00:05:50,310 --> 00:05:47,919
every marine officer is a

165
00:05:53,350 --> 00:05:50,320
ground slash infantry officer first and

166
00:05:55,029 --> 00:05:53,360
then once you finish that school

167
00:05:57,909 --> 00:05:55,039
then you're afforded the opportunity to

168
00:05:59,590 --> 00:05:57,919
go do what you intended to do your

169
00:06:02,550 --> 00:05:59,600
discipline whether it be a

170
00:06:04,390 --> 00:06:02,560
a tank driver an airplane driver

171
00:06:06,790 --> 00:06:04,400
an infantry officer

172
00:06:08,629 --> 00:06:06,800
so i spent some time in quantico

173
00:06:11,270 --> 00:06:08,639
and then after that was on my way down

174
00:06:13,670 --> 00:06:11,280
to pensacola and uh

175
00:06:15,510 --> 00:06:13,680
flight school was a long process it was

176
00:06:17,510 --> 00:06:15,520
pensacola to start with in corpus

177
00:06:20,070 --> 00:06:17,520
christi texas where i actually started

178
00:06:21,749 --> 00:06:20,080
flying airplanes and then i finished up

179
00:06:24,550 --> 00:06:21,759
flight school in meridian mississippi

180
00:06:28,070 --> 00:06:24,560
and jet training and got my wings in

181
00:06:30,950 --> 00:06:28,080
1991 and then was off to the west coast

182
00:06:33,029 --> 00:06:30,960
to fly f-18s and i spent several years

183
00:06:35,350 --> 00:06:33,039
out there operationally flying f-18s in

184
00:06:38,629 --> 00:06:35,360
the marines they finally got you off the

185
00:06:40,550 --> 00:06:38,639
gulf coast yeah for uh little did i know

186
00:06:41,270 --> 00:06:40,560
i was going to be back

187
00:06:42,790 --> 00:06:41,280
well

188
00:06:44,550 --> 00:06:42,800

and take this to through the last step

189
00:06:46,550 --> 00:06:44,560
of that you're you're a marine officer

190
00:06:48,550 --> 00:06:46,560
now and how did you end up astronaut

191
00:06:49,830 --> 00:06:48,560
yeah that's a that's a i get that a lot

192
00:06:52,309 --> 00:06:49,840
too because everybody kind of wonders

193
00:06:55,589 --> 00:06:52,319
well how did you end up there and uh

194
00:06:58,070 --> 00:06:55,599
i had flown uh operationally uh in a in

195
00:06:59,990 --> 00:06:58,080
a f-18 frontline f-18 fighter squadron

196
00:07:03,029 --> 00:07:00,000
for it was a better part of four and a

197
00:07:05,350 --> 00:07:03,039
half years and

198
00:07:07,430 --> 00:07:05,360
a couple of my commanding officers while

199
00:07:08,870 --> 00:07:07,440
i was in that particular squadron had

200
00:07:10,790 --> 00:07:08,880
said you know you ought to consider test

201
00:07:12,230 --> 00:07:10,800
pilot school

202
00:07:14,150 --> 00:07:12,240
you know with the engineering background

203
00:07:16,230 --> 00:07:14,160
and i said you know asked them a lot of

204
00:07:18,390 --> 00:07:16,240
questions about it and they knew that i

205
00:07:20,070 --> 00:07:18,400
had some desire that i you know

206
00:07:21,749 --> 00:07:20,080
considered being an astronaut and they

207
00:07:23,909 --> 00:07:21,759
said you know that is probably a way to

208
00:07:26,390 --> 00:07:23,919
go

209
00:07:28,629 --> 00:07:26,400
and so i kind of looked into it and

210
00:07:30,390 --> 00:07:28,639
applied to test pilot school

211
00:07:31,670 --> 00:07:30,400
and was accepted at the navy test pilot

212
00:07:33,270 --> 00:07:31,680
school which is in patuxent river

213
00:07:34,430 --> 00:07:33,280

maryland and so

214
00:07:37,830 --> 00:07:34,440
in

215
00:07:41,110 --> 00:07:37,840
1996 i left the west coast at that time

216
00:07:44,390 --> 00:07:41,120
it was i was at miramar in san diego and

217
00:07:46,230 --> 00:07:44,400
went to test pilot school for a year at

218
00:07:47,909 --> 00:07:46,240
patuxent river maryland

219
00:07:49,990 --> 00:07:47,919
the one thing they don't tell you about

220
00:07:51,749 --> 00:07:50,000
test pilot school is that after being

221
00:07:53,830 --> 00:07:51,759
out of college for eight or nine years

222
00:07:55,909 --> 00:07:53,840
it's like going

223
00:07:58,869 --> 00:07:55,919
into an intensive aeronautical

224
00:08:00,790 --> 00:07:58,879
engineering master's program so it was a

225
00:08:02,070 --> 00:08:00,800
little bit of denial there for the first

226
00:08:03,589 --> 00:08:02,080
few months getting back into the

227
00:08:05,350 --> 00:08:03,599
academics but

228
00:08:07,110 --> 00:08:05,360
but a very rewarding experience got to

229
00:08:09,189 --> 00:08:07,120
fly a number of different airplanes over

230
00:08:11,029 --> 00:08:09,199
the next year and then

231
00:08:13,589 --> 00:08:11,039
once you graduate from test pilot school

232
00:08:15,110 --> 00:08:13,599
then you become an operational test

233
00:08:17,510 --> 00:08:15,120
pilot for

234
00:08:21,029 --> 00:08:17,520
typically a two to three year tour and i

235
00:08:23,749 --> 00:08:21,039
stayed in patuxent river and

236
00:08:25,990 --> 00:08:23,759
was involved in several f-18

237
00:08:28,469 --> 00:08:26,000
flight test projects as well as flying

238
00:08:29,430 --> 00:08:28,479

the new f-18 super hornet

239
00:08:30,950 --> 00:08:29,440
so

240
00:08:32,389 --> 00:08:30,960
it was a great experience loved living

241
00:08:34,149 --> 00:08:32,399
there it was actually the closest i'd

242
00:08:36,389 --> 00:08:34,159
been to home in my entire military

243
00:08:38,389 --> 00:08:36,399
career so that was nice as well and it

244
00:08:40,469 --> 00:08:38,399
was while i was there as the operations

245
00:08:42,070 --> 00:08:40,479
officer for the test squadron that i was

246
00:08:43,589 --> 00:08:42,080
uh that i had applied and then

247
00:08:46,310 --> 00:08:43,599
subsequently gotten picked to come down

248
00:08:49,430 --> 00:08:46,320
to nasa and you got here and and had

249
00:08:52,230 --> 00:08:49,440
taken a job that not unlike test pilot

250
00:08:54,630 --> 00:08:52,240
uh has its own share of risks albeit

251
00:08:56,230 --> 00:08:54,640
maybe slightly different ones but doug

252
00:08:58,310 --> 00:08:56,240
what is it that you think that we're

253
00:09:00,070 --> 00:08:58,320
getting or or learning as a result of

254
00:09:02,070 --> 00:09:00,080
flying people in space

255
00:09:04,550 --> 00:09:02,080
that makes that risk worth one worth

256
00:09:06,870 --> 00:09:04,560
taking well i i think you see a number

257
00:09:09,190 --> 00:09:06,880
of a number of benefits i mean we've all

258
00:09:11,509 --> 00:09:09,200
this technology that we gain from space

259
00:09:13,190 --> 00:09:11,519
flight has you know has become such a

260
00:09:15,030 --> 00:09:13,200
fabric of our lives that it's that's

261
00:09:16,790 --> 00:09:15,040
just incredible to see

262
00:09:18,870 --> 00:09:16,800
uh and that alone in my mind is worth

263
00:09:20,870 --> 00:09:18,880

the risk but just to explore

264
00:09:22,710 --> 00:09:20,880
you know to explore low earth orbit to

265
00:09:25,190 --> 00:09:22,720
explore that next you know the moon as

266
00:09:28,230 --> 00:09:25,200
we did before is well worth the risk of

267
00:09:30,310 --> 00:09:28,240
a single person or or a few people

268
00:09:31,990 --> 00:09:30,320
to get those answers to see what's out

269
00:09:34,310 --> 00:09:32,000
there to see if there was life on other

270
00:09:36,150 --> 00:09:34,320
planets so for me

271
00:09:38,389 --> 00:09:36,160
obviously flying fighters my whole life

272
00:09:39,670 --> 00:09:38,399
i've i've come to grips with the risk

273
00:09:42,230 --> 00:09:39,680
years ago

274
00:09:44,870 --> 00:09:42,240
and uh and it really hasn't changed for

275
00:09:47,670 --> 00:09:44,880
me in that regard so this just seems

276
00:09:53,750 --> 00:09:47,680
like a just another

277
00:09:57,910 --> 00:09:55,670
you are one of four crew members on the

278
00:09:59,910 --> 00:09:57,920
final flight of space shuttle atlantis

279
00:10:02,470 --> 00:09:59,920
doug could you give me a summary of the

280
00:10:04,949 --> 00:10:02,480
work that's planned on sts-135 and what

281
00:10:06,949 --> 00:10:04,959
your jobs are going to be well obviously

282
00:10:07,750 --> 00:10:06,959
my position in the crew is as the pilot

283
00:10:09,829 --> 00:10:07,760
but

284
00:10:13,670 --> 00:10:09,839
primarily we are trying to get the

285
00:10:15,590 --> 00:10:13,680
station in a position where it can last

286
00:10:17,269 --> 00:10:15,600
without being resupplied significantly

287
00:10:19,509 --> 00:10:17,279
for over a year so

288
00:10:21,910 --> 00:10:19,519

we're taking up a fully loaded mplm

289
00:10:24,310 --> 00:10:21,920
multi-purpose logistics module uh to

290
00:10:26,230 --> 00:10:24,320
just to supply station for that amount

291
00:10:28,310 --> 00:10:26,240
of time and to keep

292
00:10:30,230 --> 00:10:28,320
keep things rolling as far as that goes

293
00:10:32,790 --> 00:10:30,240
now you guys are going up with only four

294
00:10:34,470 --> 00:10:32,800
astronauts on board atlantis why just

295
00:10:36,150 --> 00:10:34,480
four this time yeah that's a great

296
00:10:39,030 --> 00:10:36,160
question we haven't flown uh a

297
00:10:39,829 --> 00:10:39,040
four-person crew since sts-6

298
00:10:41,829 --> 00:10:39,839
so

299
00:10:43,829 --> 00:10:41,839
we obviously don't take this lightly but

300
00:10:45,110 --> 00:10:43,839
the the combination of of a couple

301
00:10:46,870 --> 00:10:45,120
different things

302
00:10:47,910 --> 00:10:46,880
kind of drove the crude size to that

303
00:10:50,230 --> 00:10:47,920
number

304
00:10:53,590 --> 00:10:50,240
the primary one being that you know

305
00:10:55,350 --> 00:10:53,600
since return to flight sts-114 we've had

306
00:10:57,110 --> 00:10:55,360
a shuttle

307
00:10:58,150 --> 00:10:57,120
in a position where it could provide a

308
00:10:59,670 --> 00:10:58,160
rescue

309
00:11:00,870 --> 00:10:59,680
for the previous shuttle if there was a

310
00:11:02,790 --> 00:11:00,880
problem with the heat shield that we

311
00:11:04,470 --> 00:11:02,800
discovered on orbit and

312
00:11:06,310 --> 00:11:04,480
obviously being the last shuttle flight

313
00:11:08,790 --> 00:11:06,320

we don't have that option

314
00:11:10,630 --> 00:11:08,800
so in order to to facilitate a a

315
00:11:13,110 --> 00:11:10,640
potential rescue scenario we have to

316
00:11:16,470 --> 00:11:13,120
come down on soyuz

317
00:11:21,670 --> 00:11:19,829
after you know some consideration

318
00:11:23,110 --> 00:11:21,680
we would have to stay

319
00:11:25,350 --> 00:11:23,120
on the order of three months for the

320
00:11:27,590 --> 00:11:25,360
first person up to a year for the last

321
00:11:29,350 --> 00:11:27,600
person by the time we come down so four

322
00:11:31,190 --> 00:11:29,360
successive soyuz flights would bring

323
00:11:32,790 --> 00:11:31,200
down one person at a time over the

324
00:11:34,550 --> 00:11:32,800
course of the following year that they

325
00:11:36,790 --> 00:11:34,560
declared a rescue they said if you had a

326
00:11:38,949 --> 00:11:36,800
larger crew it would take longer to get

327
00:11:40,069 --> 00:11:38,959
everybody home yeah it just adds to that

328
00:11:42,550 --> 00:11:40,079
and i think

329
00:11:44,710 --> 00:11:42,560
most folks are comfortable with

330
00:11:46,870 --> 00:11:44,720
allowing a crew member under under those

331
00:11:48,630 --> 00:11:46,880
particular circumstances to remain in

332
00:11:50,230 --> 00:11:48,640
space for a year but once you start

333
00:11:52,069 --> 00:11:50,240
pushing things out beyond a year that

334
00:11:53,910 --> 00:11:52,079
that that requires a lot more uh

335
00:11:55,509 --> 00:11:53,920
consideration and thought how do you

336
00:11:57,509 --> 00:11:55,519
feel about the idea of

337
00:11:59,030 --> 00:11:57,519
maybe coming home on a soyuz or spending

338
00:12:01,670 --> 00:11:59,040

an extra

339
00:12:03,750 --> 00:12:01,680
year in space well i looked at it a

340
00:12:04,870 --> 00:12:03,760
couple ways i remember when peggy

341
00:12:06,790 --> 00:12:04,880
whitson

342
00:12:08,150 --> 00:12:06,800
called me in it off called me into her

343
00:12:09,430 --> 00:12:08,160
office and said

344
00:12:11,509 --> 00:12:09,440
i've got some

345
00:12:12,870 --> 00:12:11,519
some good news for you and uh i said

346
00:12:15,670 --> 00:12:12,880
what what's that she goes i'd like you

347
00:12:17,430 --> 00:12:15,680
to be the pilot on sts-135 and i said

348
00:12:18,870 --> 00:12:17,440
well of course and i said is there

349
00:12:20,550 --> 00:12:18,880
something else and she said well right

350
00:12:22,150 --> 00:12:20,560
now it looks like you would be the last

351
00:12:24,710 --> 00:12:22,160
person to come down if there was a

352
00:12:25,910 --> 00:12:24,720
rescue declared i was like

353
00:12:27,190 --> 00:12:25,920
i thought about it for a few minutes and

354
00:12:30,470 --> 00:12:27,200
i said well let me look at it this way

355
00:12:32,069 --> 00:12:30,480
i've got nine months of shuttle training

356
00:12:34,230 --> 00:12:32,079
for this flight

357
00:12:36,150 --> 00:12:34,240
vice the two and a half years that most

358
00:12:37,990 --> 00:12:36,160
folks typically train to go on iss for

359
00:12:39,750 --> 00:12:38,000
six months so i told her i said well

360
00:12:40,949 --> 00:12:39,760
it's a bargain at any price so i'll take

361
00:12:43,350 --> 00:12:40,959
it

362
00:12:45,269 --> 00:12:43,360
yep so in the in this rescue scenario

363
00:12:46,949 --> 00:12:45,279

you'd be the fourth of four

364
00:12:48,550 --> 00:12:46,959
that's what it's looking like that's

365
00:12:51,190 --> 00:12:48,560
correct

366
00:12:52,710 --> 00:12:51,200
the last one down

367
00:12:54,629 --> 00:12:52,720
at least the current way sandy and i

368
00:12:57,829 --> 00:12:54,639
would be the last two and it's because

369
00:12:59,990 --> 00:12:57,839
we've got uh the robotics in the mix as

370
00:13:01,670 --> 00:13:00,000
well as eva and because you you

371
00:13:03,590 --> 00:13:01,680
essentially become a de facto member of

372
00:13:04,389 --> 00:13:03,600
the space station crew because they're

373
00:13:05,829 --> 00:13:04,399
not

374
00:13:08,069 --> 00:13:05,839
you know if this rescue was declared

375
00:13:09,990 --> 00:13:08,079
they're not going to fly people up uh in

376
00:13:11,509 --> 00:13:10,000
that empty seat because they need it for

377
00:13:14,069 --> 00:13:11,519
us to come down so

378
00:13:16,470 --> 00:13:14,079
we have to assume uh at least some sort

379
00:13:18,230 --> 00:13:16,480
of a role as a as a crew member on space

380
00:13:20,790 --> 00:13:18,240
station so that's the way they

381
00:13:22,310 --> 00:13:20,800
they've sorted it out now

382
00:13:24,230 --> 00:13:22,320
you have been to the space station

383
00:13:25,990 --> 00:13:24,240
before all four of you have been there

384
00:13:26,790 --> 00:13:26,000
sandy has had a long duration mission

385
00:13:29,030 --> 00:13:26,800
there

386
00:13:30,710 --> 00:13:29,040
has that experience among the four of

387
00:13:33,670 --> 00:13:30,720
you been helpful as you prepared for

388
00:13:37,350 --> 00:13:33,680

this flight it has been invaluable

389
00:13:40,550 --> 00:13:37,360
sandy is uh she's amazing she flew a

390
00:13:43,110 --> 00:13:40,560
shuttle flight back in i believe

391
00:13:44,069 --> 00:13:43,120
2002 sts-112

392
00:13:46,629 --> 00:13:44,079
and

393
00:13:48,790 --> 00:13:46,639
you would not have known it's been eight

394
00:13:50,069 --> 00:13:48,800
plus years since she's flown

395
00:13:52,310 --> 00:13:50,079
uh

396
00:13:55,189 --> 00:13:52,320
it's just amazing what she remembers

397
00:13:57,750 --> 00:13:55,199
from that flight and then the additional

398
00:13:58,790 --> 00:13:57,760
space station expertise has just been

399
00:14:00,230 --> 00:13:58,800
um

400
00:14:02,470 --> 00:14:00,240
i mean it's been great because there's

401
00:14:05,430 --> 00:14:02,480
not that concern that if you know no

402
00:14:06,710 --> 00:14:05,440
kidding if this rescue scenario happens

403
00:14:09,030 --> 00:14:06,720
to come into play and obviously the

404
00:14:10,069 --> 00:14:09,040
likelihood is extremely small that that

405
00:14:11,670 --> 00:14:10,079
would happen

406
00:14:14,230 --> 00:14:11,680
you know sandy

407
00:14:16,870 --> 00:14:14,240
would jump right into the role of

408
00:14:18,310 --> 00:14:16,880
our continuing instructor while we're on

409
00:14:20,150 --> 00:14:18,320
space station because obviously living

410
00:14:21,750 --> 00:14:20,160
there for six months she knows

411
00:14:23,269 --> 00:14:21,760
all the ins and outs obviously it's

412
00:14:25,509 --> 00:14:23,279
changed slightly since she's been there

413
00:14:27,990 --> 00:14:25,519

but you know the general philosophies on

414
00:14:30,069 --> 00:14:28,000
on how the station operates the the

415
00:14:31,430 --> 00:14:30,079
science the experiments as well as just

416
00:14:32,790 --> 00:14:31,440
the day-to-day

417
00:14:34,389 --> 00:14:32,800
things that you need to do on space

418
00:14:35,829 --> 00:14:34,399
station she's been invaluable kind of

419
00:14:37,750 --> 00:14:35,839
offering her insight as we've gone

420
00:14:40,150 --> 00:14:37,760
through this training and it's not like

421
00:14:42,629 --> 00:14:40,160
you and chris and rex have don't have

422
00:14:45,430 --> 00:14:42,639
any experience at it yeah that that's

423
00:14:46,949 --> 00:14:45,440
true i mean we've all had uh missions to

424
00:14:47,990 --> 00:14:46,959
the space station

425
00:14:50,470 --> 00:14:48,000
um

426
00:14:52,470 --> 00:14:50,480
and and it does feel a little different

427
00:14:55,189 --> 00:14:52,480
this time and there was a lot of that

428
00:14:56,710 --> 00:14:55,199
unknown on my first flight uh where you

429
00:14:58,550 --> 00:14:56,720
just didn't know what to expect getting

430
00:15:00,230 --> 00:14:58,560
to the space station and and then how

431
00:15:02,629 --> 00:15:00,240
you'd fit into the whole

432
00:15:04,310 --> 00:15:02,639
crew mix and i think that part of it is

433
00:15:07,030 --> 00:15:04,320
it definitely feels a little easier this

434
00:15:09,189 --> 00:15:07,040
time having been there once before what

435
00:15:11,269 --> 00:15:09,199
are you looking forward to seeing on the

436
00:15:13,269 --> 00:15:11,279
station when you get back there

437
00:15:15,990 --> 00:15:13,279
i'm sure this is an answer that a lot of

438
00:15:18,150 --> 00:15:16,000

people uh probably give you but i i it's

439
00:15:19,670 --> 00:15:18,160
got to be the cupola just the the

440
00:15:20,949 --> 00:15:19,680
pictures that i've seen out of the

441
00:15:23,350 --> 00:15:20,959
cupola

442
00:15:25,269 --> 00:15:23,360
have been unbelievable and and knowing

443
00:15:28,230 --> 00:15:25,279
having been in space before and looking

444
00:15:30,069 --> 00:15:28,240
out a window it's it's there's no camera

445
00:15:32,710 --> 00:15:30,079
that can capture that

446
00:15:35,269 --> 00:15:32,720
vividness the just the stunning views

447
00:15:37,590 --> 00:15:35,279
that you see out the window so

448
00:15:39,509 --> 00:15:37,600
with the cupola having unobstructed

449
00:15:40,949 --> 00:15:39,519
views of the planet and the space

450
00:15:42,790 --> 00:15:40,959
station

451
00:15:44,230 --> 00:15:42,800
i i that's probably what i'm looking

452
00:15:46,230 --> 00:15:44,240
forward to the most just getting in

453
00:15:47,990 --> 00:15:46,240
there and and hopefully having five

454
00:15:49,910 --> 00:15:48,000
minutes to look out the window without

455
00:15:51,829 --> 00:15:49,920
having to do something else

456
00:15:54,710 --> 00:15:51,839
you and your crewmates are bringing up

457
00:15:56,550 --> 00:15:54,720
well a shuttle full of supplies to the

458
00:15:58,629 --> 00:15:56,560
international space station

459
00:16:00,470 --> 00:15:58,639
give us a sense of the kinds of of

460
00:16:02,550 --> 00:16:00,480
things what kind of cargo are you guys

461
00:16:04,470 --> 00:16:02,560
bringing up to orbit um

462
00:16:07,350 --> 00:16:04,480
we are bringing up the multi-purpose

463
00:16:08,470 --> 00:16:07,360

logistics module rafaello

464
00:16:11,189 --> 00:16:08,480
and about

465
00:16:14,150 --> 00:16:11,199
the number changes

466
00:16:15,590 --> 00:16:14,160
it seems like weekly but roughly 16 000

467
00:16:19,430 --> 00:16:15,600
pounds of

468
00:16:21,189 --> 00:16:19,440
material that would include food

469
00:16:23,350 --> 00:16:21,199
on the order of a year's worth of food

470
00:16:26,389 --> 00:16:23,360
for the iss crew

471
00:16:28,710 --> 00:16:26,399
spare parts replacement parts

472
00:16:29,509 --> 00:16:28,720
some scientific experiments we're taking

473
00:16:31,509 --> 00:16:29,519
up

474
00:16:34,790 --> 00:16:31,519
i think the latest number is eight mid

475
00:16:39,350 --> 00:16:35,749
three

476
00:16:41,590 --> 00:16:39,360
sets of uh mouse enclosures so 24 mice

477
00:16:43,990 --> 00:16:41,600
uh that we're we're doing studies on

478
00:16:45,829 --> 00:16:44,000
with regards to osteoporosis so

479
00:16:47,910 --> 00:16:45,839
you name it we're we're taking it up

480
00:16:51,030 --> 00:16:47,920
there and obviously this is to just put

481
00:16:52,470 --> 00:16:51,040
the station in its best possible

482
00:16:54,150 --> 00:16:52,480
stature for

483
00:16:57,110 --> 00:16:54,160
the post shuttle era

484
00:16:58,790 --> 00:16:57,120
so that from a large supply standpoint

485
00:17:00,710 --> 00:16:58,800
it is taken care of and as far as

486
00:17:02,790 --> 00:17:00,720
replacement parts it's taken care of at

487
00:17:04,549 --> 00:17:02,800
least for the near future as you said

488
00:17:06,630 --> 00:17:04,559

some of this is coming up in the middeck

489
00:17:10,069 --> 00:17:06,640
the bulk of it is going to be inside the

490
00:17:11,909 --> 00:17:10,079
mplm that's correct mplms used to get

491
00:17:14,390 --> 00:17:11,919
docked to the underside of the unity

492
00:17:16,549 --> 00:17:14,400
node but now there's a permanent module

493
00:17:19,270 --> 00:17:16,559
there yeah does the fact that that's out

494
00:17:20,789 --> 00:17:19,280
there now create any any changes for the

495
00:17:21,909 --> 00:17:20,799
way the robotics

496
00:17:24,150 --> 00:17:21,919
operation

497
00:17:27,189 --> 00:17:24,160
will will be to install raphaelo now on

498
00:17:29,430 --> 00:17:27,199
the underside of node two um not a

499
00:17:31,270 --> 00:17:29,440
significant amount it is gonna be in all

500
00:17:32,950 --> 00:17:31,280
your camera views because it's to be

501
00:17:35,909 --> 00:17:32,960
right next to

502
00:17:37,990 --> 00:17:35,919
rafaela when we install it but generally

503
00:17:40,070 --> 00:17:38,000
speaking it actually ends up being i

504
00:17:41,510 --> 00:17:40,080
think a little closer to the shuttle so

505
00:17:45,830 --> 00:17:41,520
it's

506
00:17:47,590 --> 00:17:45,840
difference as far as the installation

507
00:17:48,870 --> 00:17:47,600
robotically but it's definitely

508
00:17:50,950 --> 00:17:48,880
something we have to pay attention to

509
00:17:53,430 --> 00:17:50,960
because the clearances obviously uh are

510
00:17:55,990 --> 00:17:53,440
much smaller it's something new that may

511
00:17:57,669 --> 00:17:56,000
be in the theater of operations that's

512
00:18:00,390 --> 00:17:57,679
right

513
00:18:03,190 --> 00:18:00,400

this mission also features one spacewalk

514
00:18:05,430 --> 00:18:03,200
on flight day five but unlike previous

515
00:18:06,870 --> 00:18:05,440
shuttle flights and on this one station

516
00:18:08,630 --> 00:18:06,880
crew members are going to be going

517
00:18:11,510 --> 00:18:08,640
outside what's the reason for that

518
00:18:13,270 --> 00:18:11,520
assignment well i think it it it's a

519
00:18:16,470 --> 00:18:13,280
couple things one

520
00:18:18,310 --> 00:18:16,480
ron garan and mike fossum have done evas

521
00:18:19,350 --> 00:18:18,320
previously

522
00:18:22,549 --> 00:18:19,360
and

523
00:18:23,990 --> 00:18:22,559
coincidentally together on sts-124

524
00:18:25,190 --> 00:18:24,000
so they have a significant amount of

525
00:18:27,350 --> 00:18:25,200
experience i believe they did three

526
00:18:29,510 --> 00:18:27,360
together on that flight

527
00:18:31,029 --> 00:18:29,520
that being one and the other we kind of

528
00:18:32,549 --> 00:18:31,039
fall back on the same thing we are a

529
00:18:33,669 --> 00:18:32,559
four-person crew

530
00:18:35,669 --> 00:18:33,679
and

531
00:18:37,750 --> 00:18:35,679
we had about eight or nine months to

532
00:18:39,669 --> 00:18:37,760
prepare for this mission and just from a

533
00:18:41,270 --> 00:18:39,679
preparation standpoint

534
00:18:42,870 --> 00:18:41,280
and the other

535
00:18:44,710 --> 00:18:42,880
things that we had to do regarding

536
00:18:46,549 --> 00:18:44,720
training we just kind of thought that

537
00:18:49,029 --> 00:18:46,559
that was a better way to do it and

538
00:18:51,270 --> 00:18:49,039

spread the spread the load around

539
00:18:53,110 --> 00:18:51,280
the entire docked crew rather than just

540
00:18:55,270 --> 00:18:53,120
place it all on the shuttle crew because

541
00:18:57,909 --> 00:18:55,280
typically you have seven people and we

542
00:19:00,789 --> 00:18:57,919
could have had two people concentrate uh

543
00:19:02,789 --> 00:19:00,799
primarily on eva whereas on this flight

544
00:19:04,950 --> 00:19:02,799
everybody has to attend almost every

545
00:19:06,950 --> 00:19:04,960
training evolution that we have

546
00:19:10,630 --> 00:19:06,960
however it's not to say that we're not

547
00:19:12,549 --> 00:19:10,640
going to be deeply involved with the eva

548
00:19:15,430 --> 00:19:12,559
sandy and i will be providing robotic

549
00:19:16,789 --> 00:19:15,440
support throughout the eva and rex is

550
00:19:19,270 --> 00:19:16,799
going to be the

551
00:19:20,549 --> 00:19:19,280
ivy for the eva so the quarterback for

552
00:19:21,669 --> 00:19:20,559
the eba

553
00:19:23,029 --> 00:19:21,679
so

554
00:19:25,909 --> 00:19:23,039
and

555
00:19:27,830 --> 00:19:25,919
i think that you know pretty much says

556
00:19:29,510 --> 00:19:27,840
uh volumes about the shuttle station

557
00:19:30,870 --> 00:19:29,520
team and how you know we're just going

558
00:19:32,789 --> 00:19:30,880
to put this whole thing together on

559
00:19:34,710 --> 00:19:32,799
orbit and it's kind of been a neat way

560
00:19:36,390 --> 00:19:34,720
to do our our training

561
00:19:37,990 --> 00:19:36,400
well let's talk about what what's going

562
00:19:40,549 --> 00:19:38,000
to happen there and from the perspective

563
00:19:42,150 --> 00:19:40,559

of of the arm operations particularly uh

564
00:19:44,310 --> 00:19:42,160
take me through the timeline as it

565
00:19:45,430 --> 00:19:44,320
exists today okay of the the space walk

566
00:19:48,150 --> 00:19:45,440
and what are these guys going to be

567
00:19:50,789 --> 00:19:48,160
doing out there well uh the the the big

568
00:19:53,110 --> 00:19:50,799
purpose of the spacewalk is uh is

569
00:19:54,870 --> 00:19:53,120
twofold you know at least from a robotic

570
00:19:56,789 --> 00:19:54,880
standpoint um the first thing we're

571
00:19:58,950 --> 00:19:56,799
gonna do is we're gonna

572
00:20:01,669 --> 00:19:58,960
retrieve the failed pump module that we

573
00:20:03,590 --> 00:20:01,679
had last summer uh and put it back in

574
00:20:05,350 --> 00:20:03,600
the payload bay the shuttle payload bay

575
00:20:07,350 --> 00:20:05,360
to bring it back to earth so that the

576
00:20:09,510 --> 00:20:07,360
engineers can kind of study study it

577
00:20:11,270 --> 00:20:09,520
more closely and and determine what

578
00:20:12,310 --> 00:20:11,280
exactly caused it to fail because

579
00:20:14,310 --> 00:20:12,320
obviously

580
00:20:16,549 --> 00:20:14,320
it's a very important part of the space

581
00:20:18,630 --> 00:20:16,559
station it provides cooling for the

582
00:20:20,710 --> 00:20:18,640
space station and we need to understand

583
00:20:22,149 --> 00:20:20,720
why it failed so that's the first thing

584
00:20:23,909 --> 00:20:22,159
and then the next

585
00:20:26,310 --> 00:20:23,919
the next big objective

586
00:20:27,830 --> 00:20:26,320
from a robotic standpoint is

587
00:20:31,590 --> 00:20:27,840
we're going to

588
00:20:32,789 --> 00:20:31,600

detach the robotics refueling module rrm

589
00:20:34,870 --> 00:20:32,799
from the

590
00:20:37,510 --> 00:20:34,880
payload bay which we we brought up along

591
00:20:39,669 --> 00:20:37,520
with the mplm and attach it to station

592
00:20:41,909 --> 00:20:39,679
right next to the spdm so those are the

593
00:20:44,789 --> 00:20:41,919
two big uh the two big events and then

594
00:20:46,549 --> 00:20:44,799
there's a a number of other get aheads

595
00:20:48,710 --> 00:20:46,559
what we call get aheads that we're going

596
00:20:50,789 --> 00:20:48,720
to try to accomplish while ron and mike

597
00:20:52,950 --> 00:20:50,799
are outside and

598
00:20:54,870 --> 00:20:52,960
as you know from previous flights those

599
00:20:56,789 --> 00:20:54,880
get-aheads and those priorities

600
00:20:58,549 --> 00:20:56,799
typically change

601
00:21:00,470 --> 00:20:58,559
almost weekly as we get up towards the

602
00:21:02,230 --> 00:21:00,480
flight and i think

603
00:21:05,270 --> 00:21:02,240
some portion of that will depend on how

604
00:21:07,350 --> 00:21:05,280
much 134 spacewalk teams get

605
00:21:09,029 --> 00:21:07,360
accomplished and then we may pick up

606
00:21:10,789 --> 00:21:09,039
some of the things that they don't do or

607
00:21:12,470 --> 00:21:10,799
if they end up doing

608
00:21:14,470 --> 00:21:12,480
some of these get-aheads we may do some

609
00:21:17,190 --> 00:21:14,480
other ones and since they won't need

610
00:21:20,310 --> 00:21:17,200
them done then exactly from the robotics

611
00:21:22,710 --> 00:21:20,320
operators perspective how how easy or

612
00:21:24,870 --> 00:21:22,720
hard are the are the operations for the

613
00:21:27,750 --> 00:21:24,880

pump module in the rrm

614
00:21:29,830 --> 00:21:27,760
well i think anytime you're involving a

615
00:21:32,549 --> 00:21:29,840
spacewalker on the end of the arm and

616
00:21:34,230 --> 00:21:32,559
close clearances it's always fairly

617
00:21:36,230 --> 00:21:34,240
intense

618
00:21:38,870 --> 00:21:36,240
we had a fair amount of that on my

619
00:21:40,950 --> 00:21:38,880
previous flight on ses 127 and and this

620
00:21:43,430 --> 00:21:40,960
will be very similar where we'll have

621
00:21:45,590 --> 00:21:43,440
both ron and mike on the end of the arm

622
00:21:48,230 --> 00:21:45,600
either retrieving the pump module or the

623
00:21:49,909 --> 00:21:48,240
robotics refueling module and and

624
00:21:52,470 --> 00:21:49,919
placing them in their appropriate uh

625
00:21:53,590 --> 00:21:52,480
final areas

626
00:21:55,110 --> 00:21:53,600
and

627
00:21:56,470 --> 00:21:55,120
you know within the payload bay it's

628
00:21:59,350 --> 00:21:56,480
going to be very tight clearances and

629
00:22:01,430 --> 00:21:59,360
then when we go to get the pump module

630
00:22:02,950 --> 00:22:01,440
that's over

631
00:22:04,870 --> 00:22:02,960
on the starboard side of the space

632
00:22:08,230 --> 00:22:04,880
station and some fairly tight clearances

633
00:22:10,470 --> 00:22:08,240
on one of the esps and then

634
00:22:11,909 --> 00:22:10,480
when we put the robotics refusing module

635
00:22:14,549 --> 00:22:11,919
back on space station it's right near

636
00:22:15,350 --> 00:22:14,559
the spdm and right near the u.s lab so

637
00:22:17,110 --> 00:22:15,360
there's

638
00:22:19,590 --> 00:22:17,120

there will be a fair amount of vigilance

639
00:22:21,430 --> 00:22:19,600
obviously by us on the robotics arm a

640
00:22:23,350 --> 00:22:21,440
robotic arm as well as the folks down at

641
00:22:25,430 --> 00:22:23,360
mission control now your area of

642
00:22:27,110 --> 00:22:25,440
operations here are all

643
00:22:29,110 --> 00:22:27,120
relatively close to what that is very

644
00:22:31,029 --> 00:22:29,120
correct yeah it's kind of going to be a

645
00:22:32,710 --> 00:22:31,039
back and forth between kind of the

646
00:22:34,070 --> 00:22:32,720
center portion of the station near the

647
00:22:36,470 --> 00:22:34,080
lab

648
00:22:37,590 --> 00:22:36,480
down to the payload bay and back

649
00:22:40,870 --> 00:22:37,600
so

650
00:22:42,789 --> 00:22:40,880
views out the window with the cupola

651
00:22:44,149 --> 00:22:42,799
based on its location which is something

652
00:22:46,230 --> 00:22:44,159
obviously that sandy and i have never

653
00:22:49,190 --> 00:22:46,240
had the luxury of having

654
00:22:51,190 --> 00:22:49,200
which should uh really help us as far as

655
00:22:53,590 --> 00:22:51,200
as that goes because previous to this

656
00:22:55,990 --> 00:22:53,600
both sandy and i's experiences have been

657
00:22:57,430 --> 00:22:56,000
with the robotic station in the u.s lab

658
00:22:59,909 --> 00:22:57,440
where there were no windows and you were

659
00:23:01,590 --> 00:22:59,919
just purely dependent on

660
00:23:03,510 --> 00:23:01,600
station camera views as well as some of

661
00:23:06,710 --> 00:23:03,520
the shuttle views as well

662
00:23:09,190 --> 00:23:06,720
yeah from the underside of node 3 right

663
00:23:10,470 --> 00:23:09,200

there the just behind the lab you should

664
00:23:12,149 --> 00:23:10,480
be able to see

665
00:23:14,149 --> 00:23:12,159
virtually every place you're going here

666
00:23:16,149 --> 00:23:14,159
i guess except the esp that's what we're

667
00:23:17,830 --> 00:23:16,159
hoping so we're really looking forward

668
00:23:19,430 --> 00:23:17,840
to just being able to look out the

669
00:23:21,750 --> 00:23:19,440
window to give ourselves clearances

670
00:23:24,230 --> 00:23:21,760
which obviously one look out the window

671
00:23:26,070 --> 00:23:24,240
is worth a thousand camera views so uh

672
00:23:28,630 --> 00:23:26,080
hopefully that's you know we've we've

673
00:23:30,870 --> 00:23:28,640
used it in vr practiced it in vr virtual

674
00:23:33,750 --> 00:23:30,880
reality lab and uh it looks like we

675
00:23:35,909 --> 00:23:33,760
should have great views out the window

676
00:23:38,070 --> 00:23:35,919
once the spacewalk is over with uh the

677
00:23:39,590 --> 00:23:38,080
combined crews are scheduled for a lot

678
00:23:44,230 --> 00:23:39,600
of transfer work

679
00:23:45,830 --> 00:23:44,240
transport yeah that's uh that is the

680
00:23:47,350 --> 00:23:45,840
understatement i think of the mission i

681
00:23:49,350 --> 00:23:47,360
think you know

682
00:23:50,630 --> 00:23:49,360
we're going to do transfers then we're

683
00:23:52,470 --> 00:23:50,640
going to transfer then we're going to do

684
00:23:55,350 --> 00:23:52,480
more transfer and then we'll throw an

685
00:23:57,190 --> 00:23:55,360
eba in the middle of it i think is how

686
00:24:00,390 --> 00:23:57,200
we have referred to it as because the

687
00:24:01,590 --> 00:24:00,400
mplm is going to be packed full

688
00:24:03,190 --> 00:24:01,600

literally

689
00:24:05,669 --> 00:24:03,200
and it's going to take a long time to

690
00:24:09,029 --> 00:24:05,679
unpack it and then unlike the previous

691
00:24:10,710 --> 00:24:09,039
mission sts-133 where they left the mplm

692
00:24:12,630 --> 00:24:10,720
up there

693
00:24:14,310 --> 00:24:12,640
with a fair amount of

694
00:24:16,390 --> 00:24:14,320
cargo still in it

695
00:24:17,669 --> 00:24:16,400
we have to empty it out completely and

696
00:24:19,510 --> 00:24:17,679
then there is a

697
00:24:21,029 --> 00:24:19,520
a laundry list of things that we are

698
00:24:21,750 --> 00:24:21,039
going to bring back from space station

699
00:24:23,909 --> 00:24:21,760
so

700
00:24:25,350 --> 00:24:23,919
you're kind of packing and unpacking a

701
00:24:26,950 --> 00:24:25,360
house uh

702
00:24:28,390 --> 00:24:26,960
twice i think is probably the best way

703
00:24:31,430 --> 00:24:28,400
to say it well you're packing and

704
00:24:33,909 --> 00:24:31,440
unpacking two houses at the same time in

705
00:24:34,789 --> 00:24:33,919
the same space that's correct and uh we

706
00:24:36,549 --> 00:24:34,799
are

707
00:24:38,710 --> 00:24:36,559
beyond thankful that sandy is going to

708
00:24:40,950 --> 00:24:38,720
be the one on orbit that's going to uh

709
00:24:44,470 --> 00:24:40,960
run the choreography for this she's uh

710
00:24:45,190 --> 00:24:44,480
she's a consummate professional and

711
00:24:48,390 --> 00:24:45,200
we

712
00:24:50,070 --> 00:24:48,400
with us

713
00:24:50,870 --> 00:24:50,080

can you give us a good sense of what

714
00:24:52,789 --> 00:24:50,880
it's

715
00:24:54,870 --> 00:24:52,799
what does it take in terms of of not

716
00:24:56,710 --> 00:24:54,880
just moving things back and forth that's

717
00:24:58,390 --> 00:24:56,720
pretty straightforward but

718
00:25:01,029 --> 00:24:58,400
also knowing where everything is

719
00:25:01,830 --> 00:25:01,039
supposed to go and and knowing where it

720
00:25:04,230 --> 00:25:01,840
is

721
00:25:06,630 --> 00:25:04,240
at the at any given time yeah that's

722
00:25:08,789 --> 00:25:06,640
that's the thing with transfer and i

723
00:25:10,630 --> 00:25:08,799
discovered this on uh on my previous

724
00:25:12,070 --> 00:25:10,640
flight and i know chris and rex and

725
00:25:13,669 --> 00:25:12,080
sandy as well have talked about this on

726
00:25:15,669 --> 00:25:13,679
their previous flights

727
00:25:17,909 --> 00:25:15,679
you have to be meticulous with your

728
00:25:19,190 --> 00:25:17,919
bookkeeping you have to be meticulous

729
00:25:21,269 --> 00:25:19,200
with your plan

730
00:25:22,630 --> 00:25:21,279
and you can't move something out of the

731
00:25:24,310 --> 00:25:22,640
mplm

732
00:25:26,789 --> 00:25:24,320
until you have a place to put it in the

733
00:25:28,710 --> 00:25:26,799
space station and then vice versa you

734
00:25:29,590 --> 00:25:28,720
can't move something back into the mplm

735
00:25:31,350 --> 00:25:29,600
until

736
00:25:34,230 --> 00:25:31,360
its spot has opened up from what we

737
00:25:35,990 --> 00:25:34,240
brought up so it is a huge amount of

738
00:25:38,070 --> 00:25:36,000

choreography that the ground teams have

739
00:25:39,350 --> 00:25:38,080
to work on as well as obviously us on

740
00:25:40,470 --> 00:25:39,360
orbit

741
00:25:42,149 --> 00:25:40,480
otherwise you're going to have these

742
00:25:43,830 --> 00:25:42,159
huge traffic jams in the middle of the

743
00:25:45,590 --> 00:25:43,840
space station and we don't have the room

744
00:25:47,430 --> 00:25:45,600
for that so it's it's got to be very

745
00:25:49,350 --> 00:25:47,440
well organized and i can't think of

746
00:25:50,549 --> 00:25:49,360
anybody better to do

747
00:25:52,390 --> 00:25:50,559
the uh

748
00:25:54,870 --> 00:25:52,400
the bookkeeping and organizing than

749
00:25:56,630 --> 00:25:54,880
sandy i guess you got to be prepared not

750
00:25:59,350 --> 00:25:56,640
just follow the script though but to

751
00:26:01,110 --> 00:25:59,360
deal with to add lib if it's called for

752
00:26:03,510 --> 00:26:01,120
i think so and i you know sandy has a

753
00:26:05,909 --> 00:26:03,520
great plan as far as you know where we

754
00:26:07,669 --> 00:26:05,919
can temporarily stow things as we move

755
00:26:10,390 --> 00:26:07,679
things back and forth as well as what we

756
00:26:12,390 --> 00:26:10,400
need to do in the mid deck and and it

757
00:26:14,470 --> 00:26:12,400
will require a little bit of ad libbing

758
00:26:16,789 --> 00:26:14,480
it may require some you know working

759
00:26:19,750 --> 00:26:16,799
after hours it may require some you know

760
00:26:21,350 --> 00:26:19,760
extra game game planning at night before

761
00:26:23,269 --> 00:26:21,360
we start the next day to kind of figure

762
00:26:24,470 --> 00:26:23,279
out how we want to attack this every day

763
00:26:26,630 --> 00:26:24,480

because it is a

764
00:26:28,630 --> 00:26:26,640
it is literally a mountain of of things

765
00:26:30,149 --> 00:26:28,640
that we're taking up the space station

766
00:26:32,789 --> 00:26:30,159
and when you're done with all of that

767
00:26:34,230 --> 00:26:32,799
when the joint timeline is done the four

768
00:26:36,390 --> 00:26:34,240
of you are going to mark a milestone

769
00:26:37,750 --> 00:26:36,400
with the last undocking of the space

770
00:26:38,549 --> 00:26:37,760
shuttle from the international space

771
00:26:40,470 --> 00:26:38,559
station

772
00:26:43,269 --> 00:26:40,480
anything special on the plan for the for

773
00:26:45,750 --> 00:26:43,279
the undocking operation itself uh i i

774
00:26:47,269 --> 00:26:45,760
think generally speaking no but i

775
00:26:50,230 --> 00:26:47,279
probably wouldn't tell you if we had

776
00:26:51,269 --> 00:26:50,240
something it wouldn't be a surprise um

777
00:26:53,590 --> 00:26:51,279
but i think

778
00:26:54,870 --> 00:26:53,600
generally you know it will be a typical

779
00:26:55,990 --> 00:26:54,880
undock day

780
00:26:58,149 --> 00:26:56,000
um

781
00:27:00,470 --> 00:26:58,159
with a slight twist we're gonna our fly

782
00:27:01,990 --> 00:27:00,480
around is gonna involve the station

783
00:27:04,630 --> 00:27:02,000
yawing to one

784
00:27:06,230 --> 00:27:04,640
one side 90 degrees to one side so when

785
00:27:08,710 --> 00:27:06,240
we do the fly around rather than over

786
00:27:10,870 --> 00:27:08,720
the center portion of the space station

787
00:27:12,789 --> 00:27:10,880
we're going to go over kind of the long

788
00:27:14,149 --> 00:27:12,799

axis of the space station and and get

789
00:27:16,390 --> 00:27:14,159
some views that

790
00:27:18,470 --> 00:27:16,400
we haven't seen of the space station in

791
00:27:19,909 --> 00:27:18,480
a very long time if ever

792
00:27:22,470 --> 00:27:19,919
and this will also help folks on the

793
00:27:24,230 --> 00:27:22,480
ground be able to document any specific

794
00:27:27,190 --> 00:27:24,240
areas of interest or micrometeorite

795
00:27:28,950 --> 00:27:27,200
damage that the station has had

796
00:27:30,950 --> 00:27:28,960
as we move forward into the post shuttle

797
00:27:31,830 --> 00:27:30,960
era so it should be

798
00:27:33,830 --> 00:27:31,840
that in

799
00:27:35,909 --> 00:27:33,840
and of itself should be a fairly unique

800
00:27:37,430 --> 00:27:35,919
fly around for the man at the controls

801
00:27:39,350 --> 00:27:37,440
does that really does that change the

802
00:27:40,870 --> 00:27:39,360
firearm task much for you it really

803
00:27:42,950 --> 00:27:40,880
doesn't um

804
00:27:45,669 --> 00:27:42,960
you know the profile is essentially the

805
00:27:48,230 --> 00:27:45,679
same i'll be at the you know your point

806
00:27:50,149 --> 00:27:48,240
of view with regard to station is is 90

807
00:27:51,750 --> 00:27:50,159
degrees different but the profile is

808
00:27:52,710 --> 00:27:51,760
essentially the same so it shouldn't

809
00:27:54,549 --> 00:27:52,720
change

810
00:27:56,789 --> 00:27:54,559
the procedures as far as onboard the

811
00:27:58,310 --> 00:27:56,799
shuttle uh drastically at all you're

812
00:28:01,269 --> 00:27:58,320
flying the same loop

813
00:28:02,870 --> 00:28:01,279

exact same loop all though the last we

814
00:28:04,149 --> 00:28:02,880
had talked about this

815
00:28:06,470 --> 00:28:04,159
based on the

816
00:28:09,029 --> 00:28:06,480
time required and obviously our our

817
00:28:10,870 --> 00:28:09,039
entire timeline is managed very closely

818
00:28:12,950 --> 00:28:10,880
and it seems like this flight even more

819
00:28:14,070 --> 00:28:12,960
so because of the number of people and

820
00:28:15,990 --> 00:28:14,080
the amount of things we're trying to

821
00:28:17,909 --> 00:28:16,000
accomplish

822
00:28:20,149 --> 00:28:17,919
we probably will not be able to do an

823
00:28:21,750 --> 00:28:20,159
entire 360 degree fly around it would

824
00:28:23,990 --> 00:28:21,760
rather just be

825
00:28:25,990 --> 00:28:24,000
uh at least as they currently plan a 180

826
00:28:27,510 --> 00:28:26,000
degree fly around so the top half of the

827
00:28:30,549 --> 00:28:27,520
space station

828
00:28:32,710 --> 00:28:30,559
or the top side top side yeah which will

829
00:28:34,149 --> 00:28:32,720
make a lot more sense when we do it

830
00:28:35,830 --> 00:28:34,159
is there going to be anything special

831
00:28:37,669 --> 00:28:35,840
you're going to keep your eyes peeled

832
00:28:40,549 --> 00:28:37,679
for during that last fly around and then

833
00:28:44,230 --> 00:28:40,559
that final separation um

834
00:28:47,269 --> 00:28:44,240
i i don't i mean that view

835
00:28:49,510 --> 00:28:47,279
is unbelievable already so i think

836
00:28:50,950 --> 00:28:49,520
that's just taking that view in one more

837
00:28:53,350 --> 00:28:50,960
time

838
00:28:54,870 --> 00:28:53,360

i know we've we've we've sent back video

839
00:28:56,389 --> 00:28:54,880
of the fly arounds and it's just

840
00:28:58,149 --> 00:28:56,399
incredible as the sun comes up and

841
00:29:00,149 --> 00:28:58,159
lights up the solar arrays you can see

842
00:29:01,510 --> 00:29:00,159
the shadow of the orbiter on the arrays

843
00:29:03,350 --> 00:29:01,520
it's just

844
00:29:04,870 --> 00:29:03,360
it's a one-of-a-kind view and i think

845
00:29:06,470 --> 00:29:04,880
for me personally that's what i'll be

846
00:29:08,149 --> 00:29:06,480
looking at

847
00:29:09,430 --> 00:29:08,159
and obviously trying to maintain all the

848
00:29:12,070 --> 00:29:09,440
parameters that we're required to

849
00:29:13,430 --> 00:29:12,080
maintain and then you know once again

850
00:29:14,950 --> 00:29:13,440
all the other folks will be very busy

851
00:29:17,430 --> 00:29:14,960
doing other things too but i think we'll

852
00:29:23,350 --> 00:29:17,440
be able to manage a glimpse or two at

853
00:29:26,149 --> 00:29:24,710
when you were assigned to this mission

854
00:29:28,310 --> 00:29:26,159
it was going to be a rescue flight for

855
00:29:30,950 --> 00:29:28,320
the last space shuttle mission of course

856
00:29:33,110 --> 00:29:30,960
the plans for that have changed

857
00:29:35,190 --> 00:29:33,120
what was your reaction when you realized

858
00:29:37,350 --> 00:29:35,200
hey i'm going to be on the last space

859
00:29:39,510 --> 00:29:37,360
shuttle mission uh

860
00:29:41,590 --> 00:29:39,520
you know it's a mix of emotions

861
00:29:44,950 --> 00:29:41,600
obviously you're excited any any space

862
00:29:45,909 --> 00:29:44,960
flight is a great space flight and uh

863
00:29:49,669 --> 00:29:45,919

you know

864
00:29:52,149 --> 00:29:49,679
the last flight in the program

865
00:29:54,310 --> 00:29:52,159
i think sets into a degree obviously the

866
00:29:58,149 --> 00:29:54,320
biggest thing is you're just count your

867
00:30:00,789 --> 00:29:58,159
blessings you're honored you're humbled

868
00:30:03,110 --> 00:30:00,799
you're lucky

869
00:30:05,110 --> 00:30:03,120
and very thankful i think are some of

870
00:30:07,269 --> 00:30:05,120
the things that went through my head

871
00:30:09,510 --> 00:30:07,279
and then then the reality of it set in

872
00:30:11,990 --> 00:30:09,520
that all right we got a this is going to

873
00:30:14,950 --> 00:30:12,000
be a real flight and you know we got

874
00:30:16,630 --> 00:30:14,960
four people and a lot to do so

875
00:30:19,510 --> 00:30:16,640
i think especially in the last few

876
00:30:21,269 --> 00:30:19,520
months that's been the biggest

877
00:30:23,029 --> 00:30:21,279
challenge is just

878
00:30:24,870 --> 00:30:23,039
trying to get all this together with

879
00:30:25,750 --> 00:30:24,880
only four of us it's been it's been very

880
00:30:27,909 --> 00:30:25,760
busy

881
00:30:30,070 --> 00:30:27,919
so there is a special sense of of honor

882
00:30:31,830 --> 00:30:30,080
or and maybe responsibility to be on

883
00:30:34,789 --> 00:30:31,840
this particular mission it's a huge

884
00:30:36,470 --> 00:30:34,799
responsibility because you you want to

885
00:30:38,389 --> 00:30:36,480
you want to represent

886
00:30:40,710 --> 00:30:38,399
the thousands and thousands of people

887
00:30:42,389 --> 00:30:40,720
that have worked probably their entire

888
00:30:44,950 --> 00:30:42,399

careers i i don't know how many people

889
00:30:47,590 --> 00:30:44,960
that we've talked to or met that have

890
00:30:49,830 --> 00:30:47,600
been in the space shuttle program since

891
00:30:51,909 --> 00:30:49,840
sts-1 and

892
00:30:54,549 --> 00:30:51,919
nothing means more i think to all four

893
00:30:57,430 --> 00:30:54,559
of us than to to honor that legacy and

894
00:30:58,630 --> 00:30:57,440
and and go out with his best ambition as

895
00:31:00,470 --> 00:30:58,640
we can fly

896
00:31:02,549 --> 00:31:00,480
well as you you know

897
00:31:05,029 --> 00:31:02,559
very well the end of the program means a

898
00:31:06,389 --> 00:31:05,039
lot of changes at nasa including people

899
00:31:08,870 --> 00:31:06,399
layoffs

900
00:31:10,310 --> 00:31:08,880
closing some historic facilities

901
00:31:12,549 --> 00:31:10,320
what's your feeling about the decision

902
00:31:13,750 --> 00:31:12,559
that was made to stop flying these

903
00:31:16,470 --> 00:31:13,760
vehicles

904
00:31:18,789 --> 00:31:16,480
well i i would imagine it was a an

905
00:31:20,870 --> 00:31:18,799
incredibly difficult decision on so many

906
00:31:23,909 --> 00:31:20,880
so many fronts

907
00:31:25,990 --> 00:31:23,919
i understand it

908
00:31:27,430 --> 00:31:26,000
there's a there's a logical end for all

909
00:31:30,149 --> 00:31:27,440
programs obviously coming from a

910
00:31:32,470 --> 00:31:30,159
military background i've seen airplanes

911
00:31:34,310 --> 00:31:32,480
fly out their their service lives and be

912
00:31:35,509 --> 00:31:34,320
retired and it's just the natural

913
00:31:36,630 --> 00:31:35,519

progression

914
00:31:37,509 --> 00:31:36,640
and uh

915
00:31:39,909 --> 00:31:37,519
you know

916
00:31:42,149 --> 00:31:39,919
fiscally it was a decision that needed

917
00:31:44,149 --> 00:31:42,159
to be made you know we we've got

918
00:31:46,070 --> 00:31:44,159
priorities at nasa we've got things we

919
00:31:47,190 --> 00:31:46,080
want to do outside of low earth orbit

920
00:31:49,590 --> 00:31:47,200
and

921
00:31:51,350 --> 00:31:49,600
the decision was made to to go that

922
00:31:54,389 --> 00:31:51,360
direction and

923
00:31:57,269 --> 00:31:54,399
then it's probably time but it's

924
00:31:59,190 --> 00:31:57,279
it doesn't make it any easier for for

925
00:32:00,630 --> 00:31:59,200
the folks that fly it and i know it

926
00:32:01,509 --> 00:32:00,640
doesn't make it any easier for the folks

927
00:32:03,430 --> 00:32:01,519
that have worked on it their whole

928
00:32:06,070 --> 00:32:03,440
careers but you know we just want them

929
00:32:09,029 --> 00:32:06,080
to to know uh that that what they've

930
00:32:11,029 --> 00:32:09,039
accomplished is is incredible and we'll

931
00:32:13,430 --> 00:32:11,039
do our best to to finish this program

932
00:32:15,430 --> 00:32:13,440
the way it deserves to be finished

933
00:32:17,029 --> 00:32:15,440
the end of the program is reflected in

934
00:32:18,470 --> 00:32:17,039
some of the elements of the patch that

935
00:32:20,310 --> 00:32:18,480
you guys have for your mission tell me

936
00:32:22,149 --> 00:32:20,320
about what what we're seeing in that in

937
00:32:24,470 --> 00:32:22,159
that patch what are those elements well

938
00:32:27,029 --> 00:32:24,480

we we kind of went for a couple

939
00:32:28,950 --> 00:32:27,039
different themes with the patch and as

940
00:32:30,470 --> 00:32:28,960
you may or may not know the

941
00:32:32,470 --> 00:32:30,480
the crews are

942
00:32:34,630 --> 00:32:32,480
are the ones that end up designing the

943
00:32:36,789 --> 00:32:34,640
patch which is a which is a great honor

944
00:32:38,389 --> 00:32:36,799
uh we did ask for a lot of advice from

945
00:32:40,149 --> 00:32:38,399
family from friends from other folks

946
00:32:42,470 --> 00:32:40,159
around the different centers uh what

947
00:32:45,190 --> 00:32:42,480
they would like to see and of course we

948
00:32:47,909 --> 00:32:45,200
got about as many ideas as we

949
00:32:49,590 --> 00:32:47,919
uh that we could possibly handle

950
00:32:52,389 --> 00:32:49,600
but we wanted to keep it simple we

951
00:32:54,710 --> 00:32:52,399
wanted to represent in in some way

952
00:32:56,230 --> 00:32:54,720
the program as a whole

953
00:32:57,909 --> 00:32:56,240
and we kind of did that with a little

954
00:33:02,230 --> 00:32:57,919
bit of a

955
00:33:04,389 --> 00:33:02,240
design that looked similar to the sts-1

956
00:33:05,990 --> 00:33:04,399
patch and then of course the omega i

957
00:33:08,310 --> 00:33:06,000
think is the other big

958
00:33:10,310 --> 00:33:08,320
uh one of the other big uh aspects of

959
00:33:12,389 --> 00:33:10,320
the patch which is the greek the last

960
00:33:14,710 --> 00:33:12,399
greek letter in the alphabet for the

961
00:33:17,269 --> 00:33:14,720
last flight

962
00:33:19,590 --> 00:33:17,279
a not so subtle

963
00:33:21,909 --> 00:33:19,600

maybe subtle way to refer to the last

964
00:33:24,070 --> 00:33:21,919
flight and then

965
00:33:26,149 --> 00:33:24,080
aspects of the nasa meatball which you

966
00:33:29,909 --> 00:33:26,159
know once again represents

967
00:33:31,590 --> 00:33:29,919
uh after our flight 135 flights

968
00:33:33,669 --> 00:33:31,600
for the program

969
00:33:37,110 --> 00:33:33,679
which is the lion's share of nasa space

970
00:33:41,430 --> 00:33:39,430
and i think the last big factor was we

971
00:33:43,830 --> 00:33:41,440
wanted to make it relatively simple not

972
00:33:45,110 --> 00:33:43,840
too busy uh some patches are busier than

973
00:33:46,630 --> 00:33:45,120
others and

974
00:33:48,789 --> 00:33:46,640
we just wanted to kind of keep it a

975
00:33:50,070 --> 00:33:48,799
little bit simple so we hope folks like

976
00:33:52,710 --> 00:33:50,080
it we hope

977
00:33:53,990 --> 00:33:52,720
it honors the space shuttle program and

978
00:33:55,669 --> 00:33:54,000
and the men and women that have worked

979
00:33:59,750 --> 00:33:55,679
there

980
00:34:01,590 --> 00:33:59,760
so if you think back of about 134 135

981
00:34:03,029 --> 00:34:01,600
space shuttle flights

982
00:34:04,789 --> 00:34:03,039
what do you think are some of the most

983
00:34:07,909 --> 00:34:04,799
significant moments from the space

984
00:34:10,069 --> 00:34:07,919
shuttle's history well i you know

985
00:34:13,030 --> 00:34:10,079
the space shuttle for me personally that

986
00:34:15,589 --> 00:34:13,040
is the space vehicle that i grew up with

987
00:34:17,510 --> 00:34:15,599
it's really the only one i remember

988
00:34:19,669 --> 00:34:17,520

i have some

989
00:34:20,869 --> 00:34:19,679
some memories of skylab but really

990
00:34:22,230 --> 00:34:20,879
nothing prior to that but space

991
00:34:23,750 --> 00:34:22,240
shuttle's been around my whole adult

992
00:34:26,149 --> 00:34:23,760
life

993
00:34:28,149 --> 00:34:26,159
but i have to start with sts-1

994
00:34:29,750 --> 00:34:28,159
an unflown

995
00:34:32,310 --> 00:34:29,760
vehicle

996
00:34:34,069 --> 00:34:32,320
and those two men getting on board and

997
00:34:35,750 --> 00:34:34,079
flying that trusting that the

998
00:34:37,990 --> 00:34:35,760
engineering was correct trusting that

999
00:34:41,109 --> 00:34:38,000
the design was correct trusting that all

1000
00:34:43,349 --> 00:34:41,119
the safety measures were in place uh

1001
00:34:45,750 --> 00:34:43,359
to me it's just amazing i i'm not sure

1002
00:34:47,109 --> 00:34:45,760
if we've done anything since then

1003
00:34:49,190 --> 00:34:47,119
and we i mean

1004
00:34:51,430 --> 00:34:49,200
the country with a test program

1005
00:34:54,550 --> 00:34:51,440
it's just amazing and then of course

1006
00:34:55,909 --> 00:34:54,560
hubble has done wonders

1007
00:34:57,670 --> 00:34:55,919
i can't say enough about the

1008
00:34:58,950 --> 00:34:57,680
accomplishments there

1009
00:35:00,710 --> 00:34:58,960
and then

1010
00:35:03,829 --> 00:35:00,720
the international space station what a

1011
00:35:07,589 --> 00:35:03,839
magnificent engineering feat to build

1012
00:35:09,829 --> 00:35:07,599
uh something of that size in orbit 225

1013
00:35:12,630 --> 00:35:09,839

miles above the surface of the earth is

1014
00:35:14,870 --> 00:35:12,640
just amazing and

1015
00:35:17,349 --> 00:35:14,880
those things for me will be a a very

1016
00:35:18,069 --> 00:35:17,359
lasting legacy uh to the space shuttle

1017
00:35:20,230 --> 00:35:18,079
and

1018
00:35:23,109 --> 00:35:20,240
as far as we know there's no other

1019
00:35:24,550 --> 00:35:23,119
vehicle that could have done all that

1020
00:35:26,710 --> 00:35:24,560
what about this vehicle where's

1021
00:35:27,990 --> 00:35:26,720
atlantis's place in in the history of

1022
00:35:30,230 --> 00:35:28,000
the space shuttle

1023
00:35:31,510 --> 00:35:30,240
well i'd like to think that atlantis

1024
00:35:33,510 --> 00:35:31,520
obviously will get

1025
00:35:36,150 --> 00:35:33,520
ideally the last flight of the program

1026
00:35:39,349 --> 00:35:36,160
so in itself that will seal its legacy

1027
00:35:41,430 --> 00:35:39,359
uh it it's done a a lion's share of work

1028
00:35:44,390 --> 00:35:41,440
with regard to the shuttle assembly it's

1029
00:35:46,710 --> 00:35:44,400
done hubble uh it did the last hubble

1030
00:35:49,190 --> 00:35:46,720
uh servicing mission so atlantis will

1031
00:35:50,870 --> 00:35:49,200
have a proud proud legacy uh as far as

1032
00:35:52,310 --> 00:35:50,880
i'm concerned and we're really looking

1033
00:35:54,390 --> 00:35:52,320
forward to flying it

1034
00:35:56,710 --> 00:35:54,400
if you think about the work of the whole

1035
00:35:59,589 --> 00:35:56,720
shuttle program on all of the orbiters

1036
00:36:01,910 --> 00:35:59,599
how is that work going to be remembered

1037
00:36:02,870 --> 00:36:01,920
well i think you know as i said before

1038
00:36:05,109 --> 00:36:02,880

uh

1039
00:36:07,190 --> 00:36:05,119
you've got the lasting

1040
00:36:08,950 --> 00:36:07,200
legacy that hubble you know the pictures

1041
00:36:10,790 --> 00:36:08,960
of our galaxy that would have never

1042
00:36:12,630 --> 00:36:10,800
never been seen

1043
00:36:13,670 --> 00:36:12,640
and you've got the space station which

1044
00:36:15,829 --> 00:36:13,680
uh

1045
00:36:16,950 --> 00:36:15,839
will will live on for many many more

1046
00:36:18,790 --> 00:36:16,960
years so

1047
00:36:21,109 --> 00:36:18,800
just in that regard i think you've got a

1048
00:36:23,270 --> 00:36:21,119
tremendous history and then just to look

1049
00:36:25,589 --> 00:36:23,280
at the engineering feat of building a

1050
00:36:27,829 --> 00:36:25,599
winged vehicle that goes into space and

1051
00:36:30,150 --> 00:36:27,839
does things robotically

1052
00:36:33,430 --> 00:36:30,160
it rendezvouses with space stations it

1053
00:36:35,030 --> 00:36:33,440
carries up huge payloads of supplies

1054
00:36:37,910 --> 00:36:35,040
and then returns to earth and lands on a

1055
00:36:40,630 --> 00:36:37,920
runway that in in and of itself is a

1056
00:36:42,069 --> 00:36:40,640
tremendous accomplishment and i think

1057
00:36:43,430 --> 00:36:42,079
it'll be a long time before we see

1058
00:36:45,349 --> 00:36:43,440
another vehicle that does all those

1059
00:36:47,030 --> 00:36:45,359
things as far as the international space

1060
00:36:48,710 --> 00:36:47,040
station is concerned

1061
00:36:50,710 --> 00:36:48,720
what what kind of station would we have

1062
00:36:51,829 --> 00:36:50,720
today if we hadn't had space shuttles to

1063
00:36:53,349 --> 00:36:51,839

build it with

1064
00:36:54,550 --> 00:36:53,359
well you think about it i mean the space

1065
00:36:57,190 --> 00:36:54,560
station

1066
00:37:00,790 --> 00:36:57,200
brought up all the major components

1067
00:37:02,790 --> 00:37:00,800
with very few exceptions and

1068
00:37:04,950 --> 00:37:02,800
there's probably a way we could have

1069
00:37:07,510 --> 00:37:04,960
built the space station albeit we'd

1070
00:37:09,109 --> 00:37:07,520
probably be in the very early stages of

1071
00:37:11,190 --> 00:37:09,119
construction had it not been for the

1072
00:37:14,310 --> 00:37:11,200
shuttle because we could bring up huge

1073
00:37:16,230 --> 00:37:14,320
trusses the solar arrays all the modules

1074
00:37:18,870 --> 00:37:16,240
for the most part all came up in the

1075
00:37:21,589 --> 00:37:18,880
shuttle payload bay so

1076
00:37:22,950 --> 00:37:21,599
i'm thinking somebody somewhere is smart

1077
00:37:24,390 --> 00:37:22,960
enough to figure out a way to put a

1078
00:37:26,550 --> 00:37:24,400
space station together without a shuttle

1079
00:37:27,829 --> 00:37:26,560
but i think it would have taken

1080
00:37:29,270 --> 00:37:27,839
almost

1081
00:37:31,349 --> 00:37:29,280
an immeasurable amount of time to put it

1082
00:37:32,550 --> 00:37:31,359
together given every everything else

1083
00:37:34,950 --> 00:37:32,560
that we know

1084
00:37:37,190 --> 00:37:34,960
after sts-135 it's going to be up to

1085
00:37:39,510 --> 00:37:37,200
spaceships from other nations and

1086
00:37:42,310 --> 00:37:39,520
probably from private industry to get

1087
00:37:43,829 --> 00:37:42,320
crews and cargo to the space station in

1088
00:37:44,950 --> 00:37:43,839

the for the foreseeable future that's

1089
00:37:46,790 --> 00:37:44,960
correct right

1090
00:37:48,710 --> 00:37:46,800
as an american astronaut how do you feel

1091
00:37:50,790 --> 00:37:48,720
about the future of the international

1092
00:37:53,430 --> 00:37:50,800
space station oh i think the future's in

1093
00:37:54,950 --> 00:37:53,440
in great hands uh you know we've known

1094
00:37:57,910 --> 00:37:54,960
about the end of the space shuttle

1095
00:37:59,430 --> 00:37:57,920
program for quite a while now and

1096
00:38:01,750 --> 00:37:59,440
some of the best folks we have are

1097
00:38:03,750 --> 00:38:01,760
working in the space station program

1098
00:38:06,150 --> 00:38:03,760
planning all these different vehicles

1099
00:38:07,990 --> 00:38:06,160
and all the right kinds of supplies

1100
00:38:09,750 --> 00:38:08,000
and all the right things that need to be

1101
00:38:11,270 --> 00:38:09,760
put on orbit in order to sustain the

1102
00:38:13,430 --> 00:38:11,280
space station we have our russian

1103
00:38:14,550 --> 00:38:13,440
partners who are going to provide

1104
00:38:16,950 --> 00:38:14,560
initially

1105
00:38:19,270 --> 00:38:16,960
provide rides for our folks up to space

1106
00:38:21,109 --> 00:38:19,280
station and back and then the plan is is

1107
00:38:22,870 --> 00:38:21,119
for the commercial folks to to pick up

1108
00:38:26,310 --> 00:38:22,880
some of that slack in the in the very

1109
00:38:28,150 --> 00:38:26,320
near future uh and continue uh flights

1110
00:38:29,190 --> 00:38:28,160
to the international space station so i

1111
00:38:31,030 --> 00:38:29,200
think

1112
00:38:32,230 --> 00:38:31,040
uh you know

1113
00:38:34,310 --> 00:38:32,240

and if you add the you know the

1114
00:38:36,310 --> 00:38:34,320
europeans with the automated transfer

1115
00:38:38,310 --> 00:38:36,320
vehicle the japanese with with their

1116
00:38:40,310 --> 00:38:38,320
transfer vehicle i think we're in we're

1117
00:38:41,990 --> 00:38:40,320
in really good shape

1118
00:38:44,630 --> 00:38:42,000
do you remember where you were when

1119
00:38:46,790 --> 00:38:44,640
sts-1 took off and how you felt about

1120
00:38:49,589 --> 00:38:46,800
that yeah i was in school i was uh i

1121
00:38:52,950 --> 00:38:49,599
believe a freshman in high school when

1122
00:38:54,310 --> 00:38:52,960
sts-1 took off and and

1123
00:38:56,069 --> 00:38:54,320
i think that was the only flight they

1124
00:38:58,390 --> 00:38:56,079
flew with a white external tank so the

1125
00:39:01,270 --> 00:38:58,400
entire stack was white like that and it

1126
00:39:03,109 --> 00:39:01,280
was just unbelievable to see this

1127
00:39:04,470 --> 00:39:03,119
what you know looked like to a teenager

1128
00:39:07,270 --> 00:39:04,480
an airplane that was going to go into

1129
00:39:09,030 --> 00:39:07,280
space and it just i've been

1130
00:39:11,109 --> 00:39:09,040
uh mesmerized with it ever since

1131
00:39:13,190 --> 00:39:11,119
fascinated with it and obviously

1132
00:39:15,589 --> 00:39:13,200
uh i was very interested in heading that

1133
00:39:16,950 --> 00:39:15,599
direction a little bit later in life as

1134
00:39:19,109 --> 00:39:16,960
you can see

1135
00:39:22,950 --> 00:39:19,119
do you have a favorite memory out of the

1136
00:39:29,030 --> 00:39:25,109
probably a few

1137
00:39:31,910 --> 00:39:29,040
i think selfishly my first flight was uh

1138
00:39:33,589 --> 00:39:31,920

was a pretty fond memory almost to the

1139
00:39:35,510 --> 00:39:33,599
point where it seemed surreal that i

1140
00:39:36,950 --> 00:39:35,520
actually did it

1141
00:39:39,750 --> 00:39:36,960
because it's so much different than

1142
00:39:41,589 --> 00:39:39,760
anything else i've ever done in my life

1143
00:39:44,230 --> 00:39:41,599
but i would say that that was a that was

1144
00:39:47,670 --> 00:39:44,240
a great moment um i would also say i

1145
00:39:50,150 --> 00:39:47,680
worked as a kennedy support uh personnel

1146
00:39:52,390 --> 00:39:50,160
down at the uh down at the kennedy space

1147
00:39:55,190 --> 00:39:52,400
center and my first launch was when i

1148
00:39:56,550 --> 00:39:55,200
was working and it was sts-109 the first

1149
00:39:57,829 --> 00:39:56,560
launch i ever saw

1150
00:40:00,150 --> 00:39:57,839
in person

1151
00:40:02,310 --> 00:40:00,160
and that was that was incredible too so

1152
00:40:03,829 --> 00:40:02,320
those were probably the two biggest

1153
00:40:05,349 --> 00:40:03,839
shuttles are still going to low-earth

1154
00:40:07,990 --> 00:40:05,359
orbit but what they're doing is

1155
00:40:11,510 --> 00:40:08,000
dramatically different today than when

1156
00:40:12,790 --> 00:40:11,520
sts-1 kicked off the space shuttle era

1157
00:40:15,190 --> 00:40:12,800
doug where do you think we're going to

1158
00:40:18,069 --> 00:40:15,200
go in the the next era of human space

1159
00:40:20,309 --> 00:40:18,079
exploration i hope we go outside of low

1160
00:40:22,870 --> 00:40:20,319
earth orbit i mean that's

1161
00:40:25,510 --> 00:40:22,880
i think why a lot of us got into this

1162
00:40:28,630 --> 00:40:25,520
business was exploration and seeing

1163
00:40:30,230 --> 00:40:28,640

what's over the next horizon and

1164
00:40:32,630 --> 00:40:30,240
that's what i would personally like to

1165
00:40:34,550 --> 00:40:32,640
see is let's go explore other worlds

1166
00:40:36,829 --> 00:40:34,560
let's explore the moon let's explore an

1167
00:40:41,750 --> 00:40:36,839
asteroid let's explore mars

1168
00:40:48,150 --> 00:40:43,829
the part of human space flight that that

1169
00:40:53,270 --> 00:40:50,150
just to see what's over that next bend