1
00:00:13,680 --> 00:00:11,700
why did you want to be an astronaut well

2
00:00:16,440 --> 00:00:13,690
I always loved flying I loved flying in

3
00:00:17,609 --> 00:00:16,450
airplanes and so that was kind of

4
00:00:19,920 --> 00:00:17,619
natural to me and I was always

5
00:00:21,240 --> 00:00:19,930
interested in the space program and so

6
00:00:22,320 --> 00:00:21,250
it was one of those things where at

7
00:00:24,450 --> 00:00:22,330
first I want to get involved in the

8
00:00:25,650 --> 00:00:24,460
space program and I became a flight

9
00:00:28,290 --> 00:00:25,660
controller down here the Johnson Space

10
00:00:30,150 --> 00:00:28,300
Center and I became very interested in

11
00:00:31,920 --> 00:00:30,160
space room I enjoyed working working on

12
00:00:33,540 --> 00:00:31,930
it and then as I transitioned the Air

13
00:00:35,160 --> 00:00:33,550

Force to a flying career as a as a

14
00:00:36,720 --> 00:00:35,170
backseater as a flight test engineer I

15
00:00:38,040 --> 00:00:36,730
started getting some of the flight

16
00:00:39,450 --> 00:00:38,050
experience that I liked and now I had

17
00:00:42,330 --> 00:00:39,460
some space experience and some flying

18
00:00:43,920 --> 00:00:42,340
experience and now I could possibly take

19
00:00:45,720 --> 00:00:43,930
seriously the chance of becoming an

20
00:00:48,060 --> 00:00:45,730
astronaut and so I said well I'd really

21
00:00:49,139 --> 00:00:48,070
really better you know pursue this like

22
00:00:50,819 --> 00:00:49,149
I've always wanted to because I have a

23
00:00:52,200 --> 00:00:50,829
chance now and I wouldn't feel

24
00:00:54,569 --> 00:00:52,210
comfortable with just kind of letting it

25
00:00:56,160 --> 00:00:54,579
slip by and so as I get more experience

26
00:00:58,619 --> 00:00:56,170
in the Air Force and the flight test

27
00:01:00,779 --> 00:00:58,629
field and I decided to apply I applied

28
00:01:02,369 --> 00:01:00,789
once to the the program and didn't get

29
00:01:03,569 --> 00:01:02,379
accepted I figured well this goal is

30
00:01:05,130 --> 00:01:03,579
worth happiness we're trying hard

31
00:01:07,890 --> 00:01:05,140
forward so I applied again a couple

32
00:01:10,140 --> 00:01:07,900
years later in that time I got in before

33
00:01:11,400 --> 00:01:10,150
that what made you interested in flying

34
00:01:14,999 --> 00:01:11,410
and in the space program

35
00:01:17,190 --> 00:01:15,009
my father was a b-17 pilot during the

36
00:01:19,230 --> 00:01:17,200
World War 2 era so he was a pilot and he

37
00:01:20,969 --> 00:01:19,240
loved flying and so he take us to air

38
00:01:22,710 --> 00:01:20,979

shows and I think there's something

39
00:01:23,819 --> 00:01:22,720
about the flying that sometimes runs in

40
00:01:26,789 --> 00:01:23,829
the blood and so that's something that's

41
00:01:28,230 --> 00:01:26,799
passed on from my dad to me and I'd like

42
00:01:29,690 --> 00:01:28,240
to say I really loved flying and so I

43
00:01:32,730 --> 00:01:29,700
was always interested in aviation

44
00:01:34,050 --> 00:01:32,740
let's tell me about the background we'll

45
00:01:35,490 --> 00:01:34,060
start with your hometown tell me about

46
00:01:37,590 --> 00:01:35,500
your hometown of what it was like

47
00:01:39,749 --> 00:01:37,600
growing up there sure I grew up in San

48
00:01:41,940 --> 00:01:39,759
Carlos California it's a town of about

49
00:01:44,219 --> 00:01:41,950
30,000 people south of San Francisco

50
00:01:47,190 --> 00:01:44,229
it's a great place to grow up pretty

51
00:01:49,709 --> 00:01:47,200
normal middle America you know playing

52
00:01:53,190 --> 00:01:49,719
sports Little League you know football

53
00:01:55,709 --> 00:01:53,200
and I had a great support structure a

54
00:01:57,600 --> 00:01:55,719
wonderful mother and father that really

55
00:02:00,749 --> 00:01:57,610
really took good care of me and made

56
00:02:02,609 --> 00:02:00,759
sure I was I was going down the right

57
00:02:04,469 --> 00:02:02,619
path for school and everything and

58
00:02:07,260 --> 00:02:04,479
really stressing that and I had great

59
00:02:08,760 --> 00:02:07,270
teachers from from grade school middle

60
00:02:11,430 --> 00:02:08,770
school high school and then on to

61
00:02:13,530 --> 00:02:11,440
college and the like I say that the

62
00:02:15,180 --> 00:02:13,540
people there were were very supportive

63
00:02:17,880 --> 00:02:15,190

in a very good community and it was a

64
00:02:20,699 --> 00:02:17,890
great place to grow up you get to see it

65
00:02:21,730 --> 00:02:20,709
during your flights yeah my first flight

66
00:02:23,410 --> 00:02:21,740
that was one of my main goal

67
00:02:25,300 --> 00:02:23,420
I want to see my hometown San Carlos

68
00:02:27,190 --> 00:02:25,310
from space and so how do little research

69
00:02:28,870 --> 00:02:27,200
because you know you're going 17,500

70
00:02:30,940 --> 00:02:28,880
miles an hour so it's not a piece of

71
00:02:32,710 --> 00:02:30,950
cake that spot your hometown from 200

72
00:02:34,900 --> 00:02:32,720
miles up so I looked at some pictures

73
00:02:37,420 --> 00:02:34,910
from space of the San Carlos area and

74
00:02:38,860 --> 00:02:37,430
you know the peninsula of san fracisco

75
00:02:40,480 --> 00:02:38,870
peninsula looks kind of like a thumb and

76
00:02:41,500 --> 00:02:40,490
so I knew if I I could find that really

77
00:02:43,210 --> 00:02:41,510
easily so the first thing you see is the

78
00:02:44,860 --> 00:02:43,220
coast of California see the thumb where

79
00:02:47,500 --> 00:02:44,870
San Francisco is and as you get closer

80
00:02:48,970 --> 00:02:47,510
you look for you need to binoculars just

81
00:02:51,550 --> 00:02:48,980
or a high telephoto lens

82
00:02:52,930 --> 00:02:51,560
but I looked for highway 280 which is

83
00:02:54,610 --> 00:02:52,940
right goes right up and down the

84
00:02:56,230 --> 00:02:54,620
peninsula and there's a reservoir a big

85
00:02:58,180 --> 00:02:56,240
reservoir on the on the west side of

86
00:02:59,500 --> 00:02:58,190
that I knew if I found the reservoir I

87
00:03:01,720 --> 00:02:59,510
went to the southern tip looked across

88
00:03:03,430 --> 00:03:01,730

the highway that's San Carlos and so I

89
00:03:04,750 --> 00:03:03,440
got my binoculars out and we're coming

90
00:03:06,910 --> 00:03:04,760
up in the coast of California one time

91
00:03:08,800 --> 00:03:06,920
on sts-1 time my first flight and sure

92
00:03:11,230 --> 00:03:08,810
enough I could I could I could see the

93
00:03:12,460 --> 00:03:11,240
reservoir and I could see I could see

94
00:03:14,500 --> 00:03:12,470
that the 280 area and I could basically

95
00:03:15,610 --> 00:03:14,510
navigate my way to San Carlos and I

96
00:03:17,560 --> 00:03:15,620
could see places where I could recognize

97
00:03:19,120 --> 00:03:17,570
at San Carlos Airport and I could even

98
00:03:21,460 --> 00:03:19,130
follow the streets up to the area where

99
00:03:23,560 --> 00:03:21,470
I grew up and it was just a fantastic

100
00:03:25,480 --> 00:03:23,570
thing to be able to see your hometown

101
00:03:26,530 --> 00:03:25,490
from space to think I'm a little kid I

102
00:03:28,870 --> 00:03:26,540
used to look up and watch the airplanes

103
00:03:31,480 --> 00:03:28,880
fly over in my backyard and here I was

104
00:03:33,280 --> 00:03:31,490
flying over at Mach 25 and looking down

105
00:03:37,930 --> 00:03:33,290
at my hometown way higher than those air

106
00:03:40,180 --> 00:03:37,940
yeah tell me about the the path in from

107
00:03:42,160 --> 00:03:40,190
San Carlos through your education and

108
00:03:44,650 --> 00:03:42,170
your Air Force career that led you here

109
00:03:46,660 --> 00:03:44,660
yeah well I I went to school at the

110
00:03:49,740 --> 00:03:46,670
University California Berkeley and I

111
00:03:52,660 --> 00:03:49,750
wanted to be a pilot originally and so I

112
00:03:53,830 --> 00:03:52,670
went through ROTC at Berkeley and I also

113
00:03:55,180 --> 00:03:53,840

got an engineering degree because I

114
00:03:56,500 --> 00:03:55,190
always knew that the flying thing

115
00:03:58,930 --> 00:03:56,510
doesn't always work out you know your

116
00:04:00,010 --> 00:03:58,940
eyes could go bad or anything and so I

117
00:04:02,290 --> 00:04:00,020
got a mechanical agent agree from

118
00:04:04,090 --> 00:04:02,300
Berkeley and then graduated from ROTC

119
00:04:05,440 --> 00:04:04,100
and went down to pilot training and they

120
00:04:07,390 --> 00:04:05,450
said I had a heart murmur and they

121
00:04:09,580 --> 00:04:07,400
wouldn't let me fly and so from that

122
00:04:12,580 --> 00:04:09,590
point on I thought well hey I'll never

123
00:04:14,500 --> 00:04:12,590
get to fly and I'll have to do something

124
00:04:16,000 --> 00:04:14,510
else so I took an engineering the

125
00:04:18,010 --> 00:04:16,010
engineering route in the Air Force but I

126
00:04:19,810 --> 00:04:18,020
heard that well I couldn't be a pilot I

127
00:04:22,120 --> 00:04:19,820
could be a backseater and be a flight

128
00:04:24,250 --> 00:04:22,130
test engineer so I took some various

129
00:04:26,740 --> 00:04:24,260
engineering jobs that in the Air Force

130
00:04:28,030 --> 00:04:26,750
and I tried to get my resume good so

131
00:04:29,620 --> 00:04:28,040
that I could apply to this flight

132
00:04:33,790 --> 00:04:29,630
engineer course at at test pilot school

133
00:04:35,860 --> 00:04:33,800
and in about seven years later I applied

134
00:04:38,830 --> 00:04:35,870
to to the flight engineer

135
00:04:41,080 --> 00:04:38,840
course and I got accepted and I went to

136
00:04:42,879 --> 00:04:41,090
get my waiver for this I get for this

137
00:04:44,409 --> 00:04:42,889
heart murmur they said I had so I could

138
00:04:45,969 --> 00:04:44,419

find the back seat and when I went to

139
00:04:48,520 --> 00:04:45,979
get the waiver the doctor said well you

140
00:04:49,659 --> 00:04:48,530
don't have a heart murmur and so in the

141
00:04:51,280 --> 00:04:49,669
seven years since the pilot training

142
00:04:52,480 --> 00:04:51,290
where they wouldn't let me fly they had

143
00:04:53,620 --> 00:04:52,490
gotten better equipment and they'd

144
00:04:55,510 --> 00:04:53,630
changed the criteria for what

145
00:04:57,340 --> 00:04:55,520
constitutes his heart murmur so that

146
00:04:59,230 --> 00:04:57,350
opened up obviously the flight engineer

147
00:05:00,310 --> 00:04:59,240
course but then since I know I got a

148
00:05:03,189 --> 00:05:00,320
heart murmur while there was a chance I

149
00:05:04,330 --> 00:05:03,199
could become an astronaut so I went

150
00:05:06,100 --> 00:05:04,340
through my career as that flight

151
00:05:07,750 --> 00:05:06,110
engineer and went through the course and

152
00:05:10,360 --> 00:05:07,760
worked on the f-16 project at Edwards

153
00:05:12,760 --> 00:05:10,370
for for four years and and then had a

154
00:05:15,060 --> 00:05:12,770
chance to apply to NASA and like I say

155
00:05:17,800 --> 00:05:15,070
on the second time I applied I got in

156
00:05:20,110 --> 00:05:17,810
when you were thinking that you couldn't

157
00:05:22,719 --> 00:05:20,120
be a pilot where you still had the goal

158
00:05:24,070 --> 00:05:22,729
of astronaut well not when it looked

159
00:05:25,530 --> 00:05:24,080
like my dreams were over there when I

160
00:05:27,940 --> 00:05:25,540
first got out of college when I was at

161
00:05:29,140 --> 00:05:27,950
Williams Air Force Base they told me at

162
00:05:31,180 --> 00:05:29,150
a heart murmur I was never gonna fly

163
00:05:33,279 --> 00:05:31,190

maybe as a backseater but I was

164
00:05:34,719 --> 00:05:33,289
certainly when I figured okay I'm never

165
00:05:36,070 --> 00:05:34,729
gonna become a pilot and how on earth

166
00:05:38,290 --> 00:05:36,080
might ever become an astronaut that was

167
00:05:39,370 --> 00:05:38,300
completely out of the question so if

168
00:05:40,570 --> 00:05:39,380
somebody had tapped me on the shoulder

169
00:05:42,310 --> 00:05:40,580
and say hey don't worry kid you're gonna

170
00:05:43,840 --> 00:05:42,320
end up flying in space someday I would

171
00:05:46,029 --> 00:05:43,850
have said you got to be kidding me so

172
00:05:47,650 --> 00:05:46,039
that it all worked out

173
00:05:49,480 --> 00:05:47,660
but it was quite a different path and I

174
00:05:51,850 --> 00:05:49,490
thought it was going to take and then

175
00:05:53,830 --> 00:05:51,860
you've gotten here to a job that where

176
00:05:55,589 --> 00:05:53,840
the flying in space part of this job is

177
00:05:57,909 --> 00:05:55,599
one that's certainly got as challenges

178
00:06:00,640 --> 00:05:57,919
will Rex what is it that you think we

179
00:06:03,670 --> 00:06:00,650
get or or learn as a result of flying

180
00:06:05,620 --> 00:06:03,680
people in space that makes you feel that

181
00:06:07,719 --> 00:06:05,630
that's worth doing well there's a number

182
00:06:09,580 --> 00:06:07,729
of reasons number one you get you were

183
00:06:11,379 --> 00:06:09,590
leaving the planet for the first time

184
00:06:13,089 --> 00:06:11,389
you know we we've been in space for 50

185
00:06:16,690 --> 00:06:13,099
years but we're still eking our way off

186
00:06:18,190 --> 00:06:16,700
earth and having a permanent a permanent

187
00:06:20,260 --> 00:06:18,200
presence in space and that's what the

188
00:06:21,850 --> 00:06:20,270

Space Station is doing it's important to

189
00:06:23,469 --> 00:06:21,860
keep pushing your boundaries just like

190
00:06:25,060 --> 00:06:23,479
the pioneers in the old days push the

191
00:06:26,770 --> 00:06:25,070
boundaries and went farther west and

192
00:06:28,150 --> 00:06:26,780
we're learning about our earth we're

193
00:06:30,219 --> 00:06:28,160
learning about how the human body adapts

194
00:06:32,440 --> 00:06:30,229
to space and and we're learning all

195
00:06:34,510 --> 00:06:32,450
sorts of ways physical activities and

196
00:06:36,040 --> 00:06:34,520
biological processes behave in space

197
00:06:38,589 --> 00:06:36,050
that are different it's a it's a

198
00:06:41,690 --> 00:06:38,599
incredible new area to research and to

199
00:06:43,700 --> 00:06:41,700
understand and it's very exciting and

200
00:06:46,220 --> 00:06:43,710
and it's a it's it really is still

201
00:06:47,960 --> 00:06:46,230
amazing to to both watch the space

202
00:06:50,570 --> 00:06:47,970
program and also to be a part of it and

203
00:06:52,580 --> 00:06:50,580
so it's a despite as challenges it's

204
00:06:53,990 --> 00:06:52,590
it's definitely rewarding and I've

205
00:06:55,760 --> 00:06:54,000
considered myself very fortunate to be a

206
00:06:58,250 --> 00:06:55,770
part of it in whatever aspect and and

207
00:06:59,660 --> 00:06:58,260
once my flying career is done I still

208
00:07:05,890 --> 00:06:59,670
want to be a part of it because I just

209
00:07:09,650 --> 00:07:08,300
you're one of the four crew members on

210
00:07:12,170 --> 00:07:09,660
the final flight of space shuttle

211
00:07:14,630 --> 00:07:12,180
Atlantis Rex could you give me a summary

212
00:07:16,730 --> 00:07:14,640
of the work that's planned for sts-135

213
00:07:19,340 --> 00:07:16,740

and what your jobs are going to be yeah

214
00:07:21,230 --> 00:07:19,350
sts-135 is mainly a resupply mission to

215
00:07:23,300 --> 00:07:21,240
the space station so we're bringing up

216
00:07:25,190 --> 00:07:23,310
just tons of supplies food clothing

217
00:07:27,380 --> 00:07:25,200
experiments then we're bringing back

218
00:07:29,510 --> 00:07:27,390
stuff that really only the spatial has a

219
00:07:32,810 --> 00:07:29,520
capability of doing large heavy objects

220
00:07:35,180 --> 00:07:32,820
and just a valium of equipment that no

221
00:07:37,520 --> 00:07:35,190
other vehicle can bring back so my job's

222
00:07:40,160 --> 00:07:37,530
first on the way up there is I'm sitting

223
00:07:42,260 --> 00:07:40,170
in between the pilot and Commander and

224
00:07:43,640 --> 00:07:42,270
we're gonna help monitor the system to

225
00:07:46,010 --> 00:07:43,650
deal with any failures we have during

226
00:07:48,440 --> 00:07:46,020
the launch sequence and then we're gonna

227
00:07:50,480 --> 00:07:48,450
run it with the space station and I'll

228
00:07:52,310 --> 00:07:50,490
be helping them out with the computers

229
00:07:54,680 --> 00:07:52,320
and making sure everything's operating

230
00:07:56,450 --> 00:07:54,690
properly as we're coming into the into

231
00:07:57,920 --> 00:07:56,460
the space station once we get to the

232
00:07:59,530 --> 00:07:57,930
space station the main job is going to

233
00:08:01,550 --> 00:07:59,540
be haul that stuff from the

234
00:08:02,960 --> 00:08:01,560
multi-purpose Logistics Module which

235
00:08:05,600 --> 00:08:02,970
we're carrying up which holds all the

236
00:08:07,190 --> 00:08:05,610
equipment over to the space station and

237
00:08:09,530 --> 00:08:07,200
then once we get most that stuff out

238
00:08:11,150 --> 00:08:09,540

bringing down the stuff that they don't

239
00:08:12,200 --> 00:08:11,160
need to bring down and them in the

240
00:08:13,640 --> 00:08:12,210
middle of all that we're also going to

241
00:08:16,430 --> 00:08:13,650
have a spacewalk where I'm going to be

242
00:08:18,140 --> 00:08:16,440
what's called IV or interview ler health

243
00:08:19,220 --> 00:08:18,150
for the spacewalkers so I'm going to be

244
00:08:20,630 --> 00:08:19,230
reading their checklist when you're out

245
00:08:22,550 --> 00:08:20,640
doing a spacewalk you can't carry your

246
00:08:23,810 --> 00:08:22,560
checklist with you so all the checklists

247
00:08:25,730 --> 00:08:23,820
there and I'll guide them through the

248
00:08:27,380 --> 00:08:25,740
activities let them know what they got

249
00:08:29,930 --> 00:08:27,390
to do next and kind of choreograph the

250
00:08:32,360 --> 00:08:29,940
the the spacewalk with the help from the

251
00:08:35,360 --> 00:08:32,370
Mission Control Center and then when

252
00:08:36,080 --> 00:08:35,370
we've rebirth the mplm back into the

253
00:08:38,810 --> 00:08:36,090
payload Bay

254
00:08:41,540 --> 00:08:38,820
I'll help again on the flight deck with

255
00:08:43,820 --> 00:08:41,550
the landing sequence they're only four

256
00:08:46,250 --> 00:08:43,830
of you going up on this mission by just

257
00:08:48,680 --> 00:08:46,260
four since we are the last space shuttle

258
00:08:49,880 --> 00:08:48,690
mission we don't have the luxury of

259
00:08:51,290 --> 00:08:49,890
having another shuttle they can come up

260
00:08:53,690 --> 00:08:51,300
and get us if we have a problem with the

261
00:08:54,830 --> 00:08:53,700
space shuttle so our rescue scenario if

262
00:08:56,360 --> 00:08:54,840
we do have a problem with this patient

263
00:08:59,210 --> 00:08:56,370

we can't bring it back home is to come

264
00:09:00,680 --> 00:08:59,220
back via sawyou spacecraft and now I

265
00:09:02,540 --> 00:09:00,690
don't have a Soyuz up there all that

266
00:09:04,910 --> 00:09:02,550
often they rotate every six months and

267
00:09:06,890 --> 00:09:04,920
so in order to come back down we'd have

268
00:09:09,050 --> 00:09:06,900
to cycle down on soyuz's and that would

269
00:09:10,850 --> 00:09:09,060
take a long time so the the optimal crew

270
00:09:12,230 --> 00:09:10,860
size is about four otherwise people end

271
00:09:14,120 --> 00:09:12,240
up staying on the space station for a

272
00:09:16,340 --> 00:09:14,130
very extended period of time before they

273
00:09:16,910 --> 00:09:16,350
can get it hitch a ride home even as it

274
00:09:25,009 --> 00:09:16,920
is

275
00:09:27,259 --> 00:09:25,019
on the state for for an extra right

276
00:09:29,540 --> 00:09:27,269
period of time right describe that

277
00:09:31,129 --> 00:09:29,550
scenario what's the plan then if I had

278
00:09:33,889 --> 00:09:31,139
to to bring you guys yeah the the plan

279
00:09:35,540 --> 00:09:33,899
would basically to to kind of change the

280
00:09:36,949 --> 00:09:35,550
the down sequence of when people would

281
00:09:38,090 --> 00:09:36,959
come down some of the folks on the space

282
00:09:41,810 --> 00:09:38,100
station would stay longer than they

283
00:09:43,129 --> 00:09:41,820
anticipated and then as spots free up

284
00:09:45,290 --> 00:09:43,139
for the people who were going to go down

285
00:09:47,180 --> 00:09:45,300
at a certain time we cycle our crew down

286
00:09:49,430 --> 00:09:47,190
one by one and then they'll also launch

287
00:09:51,139 --> 00:09:49,440
so I used spacecraft up with just two

288
00:09:52,699 --> 00:09:51,149

people instead of three which leaves a

289
00:09:55,310 --> 00:09:52,709
spot for them to come down with one of

290
00:09:56,689 --> 00:09:55,320
our crew members and so we will kind of

291
00:09:59,660 --> 00:09:56,699
methodically do that until everybody's

292
00:10:00,889 --> 00:09:59,670
rotated down how do you feel about that

293
00:10:02,750 --> 00:10:00,899
are you comfortable with the idea of

294
00:10:04,639 --> 00:10:02,760
coming home on a Soyuz maybe get a

295
00:10:05,960 --> 00:10:04,649
couple extra months since right well

296
00:10:07,759 --> 00:10:05,970
coming home thus ladies doesn't bother

297
00:10:10,310 --> 00:10:07,769
me that's we know that's a very well

298
00:10:11,840 --> 00:10:10,320
proven system that can that has been

299
00:10:13,160 --> 00:10:11,850
operating for years and years and does a

300
00:10:14,930 --> 00:10:13,170
great job of bringing people to and from

301
00:10:16,670 --> 00:10:14,940
space so that's not a problem

302
00:10:18,829 --> 00:10:16,680
stay in space for a long time it'd be a

303
00:10:19,730 --> 00:10:18,839
it would really be a privilege and it

304
00:10:21,769 --> 00:10:19,740
would be tough because we have been

305
00:10:23,000 --> 00:10:21,779
trained on how to everything works in

306
00:10:24,949 --> 00:10:23,010
the space station but we can kind of

307
00:10:26,240 --> 00:10:24,959
stick together as a four-person team

308
00:10:28,460 --> 00:10:26,250
with the shuttle crew because sandy

309
00:10:29,780 --> 00:10:28,470
Magnus one of our crew members has has

310
00:10:31,579 --> 00:10:29,790
been there before she spent six months

311
00:10:33,500 --> 00:10:31,589
there so she can somewhat train us and

312
00:10:34,790 --> 00:10:33,510
and and bring us up to speed without

313
00:10:36,800 --> 00:10:34,800

interfering with the regular day-to-day

314
00:10:37,970 --> 00:10:36,810
ops in the space station and we can

315
00:10:40,220 --> 00:10:37,980
learn the types of things we can do and

316
00:10:43,370 --> 00:10:40,230
we all have our own capabilities that we

317
00:10:44,990 --> 00:10:43,380
we come up with like Doug knows robotics

318
00:10:47,660 --> 00:10:45,000
and stuff sandy knows the life of the

319
00:10:49,730 --> 00:10:47,670
space station I'm a lot of time with in

320
00:10:51,079 --> 00:10:49,740
the e ba area so we can all kind of help

321
00:10:52,699 --> 00:10:51,089
concentrate on those areas and expand

322
00:10:54,290 --> 00:10:52,709
what we know so we can help out in the

323
00:10:56,180 --> 00:10:54,300
space station from a day-to-day basis

324
00:10:57,860 --> 00:10:56,190
now you've been to the space station

325
00:10:59,540 --> 00:10:57,870
before in fact all four of you have been

326
00:11:01,040 --> 00:10:59,550
there at least once before and as you

327
00:11:03,889 --> 00:11:01,050
say sandy has been there for an extended

328
00:11:05,269 --> 00:11:03,899
period of time as that experience helped

329
00:11:07,250 --> 00:11:05,279
you guys as you've been training for

330
00:11:08,540 --> 00:11:07,260
this play yeah it does help the things

331
00:11:10,430 --> 00:11:08,550
we're doing or not all that out of the

332
00:11:11,540 --> 00:11:10,440
ordinary it's it's a great mission

333
00:11:13,819 --> 00:11:11,550
that's going to be it's going to be

334
00:11:15,740 --> 00:11:13,829
exciting but the individual tasks most

335
00:11:17,300 --> 00:11:15,750
people have done before over the period

336
00:11:18,350 --> 00:11:17,310
of the space shuttle program so that's

337
00:11:19,730 --> 00:11:18,360
not the real challenge the real

338
00:11:23,000 --> 00:11:19,740

challenge is doing with just four people

339
00:11:24,259 --> 00:11:23,010
so we'll have have a lot to do and we'll

340
00:11:26,000 --> 00:11:24,269
each get a chance to do something we

341
00:11:27,829 --> 00:11:26,010
haven't done before so we'll take our

342
00:11:30,170 --> 00:11:27,839
base areas of expertise we'll work on

343
00:11:30,680 --> 00:11:30,180
those that we've done before like for me

344
00:11:32,180 --> 00:11:30,690
being a mission

345
00:11:33,680 --> 00:11:32,190
specialist - I've done that before which

346
00:11:36,110 --> 00:11:33,690
is helpful they're still always a lot to

347
00:11:38,270 --> 00:11:36,120
learn but I can do that and and working

348
00:11:40,280 --> 00:11:38,280
with the Eevee a crew that'll be feel

349
00:11:42,020 --> 00:11:40,290
real like home for me which is great and

350
00:11:44,450 --> 00:11:42,030
then I'll expand to do stuff like work

351
00:11:45,860 --> 00:11:44,460
on the computers and and other stuff I

352
00:11:48,050 --> 00:11:45,870
haven't done before which will be more

353
00:11:49,250 --> 00:11:48,060
of a challenge but other people have

354
00:11:51,500 --> 00:11:49,260
done it before so I'll learn from them

355
00:11:53,390 --> 00:11:51,510
and and we'll get everything done it's

356
00:11:55,340 --> 00:11:53,400
been a while since you've been at to the

357
00:11:57,950 --> 00:11:55,350
station yes what are you looking forward

358
00:11:59,270 --> 00:11:57,960
to seeing when you get back there well I

359
00:12:01,220 --> 00:11:59,280
think probably what everybody wants to

360
00:12:02,660 --> 00:12:01,230
see is the cupola the the big windowed

361
00:12:04,340 --> 00:12:02,670
module where you can stick your head out

362
00:12:05,510 --> 00:12:04,350
there and see you know 360 degrees

363
00:12:06,950 --> 00:12:05,520

around you it's about the closer you

364
00:12:08,990 --> 00:12:06,960
come to doing a spacewalk without

365
00:12:10,400 --> 00:12:09,000
putting the spacesuit on so we're

366
00:12:11,840 --> 00:12:10,410
looking forward to seeing that I also

367
00:12:14,390 --> 00:12:11,850
haven't seen the Japanese module before

368
00:12:16,790 --> 00:12:14,400
so I'll be interested in and going in

369
00:12:19,340 --> 00:12:16,800
there and seen how that looks and it'll

370
00:12:20,510 --> 00:12:19,350
be a purely experience to see that space

371
00:12:22,580 --> 00:12:20,520
station basically in its final

372
00:12:23,990 --> 00:12:22,590
configuration so it'll be quite a treat

373
00:12:25,820 --> 00:12:24,000
to see all that yeah there's a lot more

374
00:12:27,770 --> 00:12:25,830
of it than there was a list there is and

375
00:12:30,140 --> 00:12:27,780
it's amazing to me how big it gets each

376
00:12:34,670 --> 00:12:30,150
time I go there when I was there in in

377
00:12:36,980 --> 00:12:34,680
2002 on sts-1 10 it was it was it seemed

378
00:12:40,400 --> 00:12:36,990
big at the time but it compared to 122

379
00:12:42,380 --> 00:12:40,410
and we've added node 2 and the Columbus

380
00:12:45,230 --> 00:12:42,390
module the European laboratory module it

381
00:12:48,380 --> 00:12:45,240
it was much bigger and now it's going to

382
00:12:49,940 --> 00:12:48,390
see me just enormous so it's every time

383
00:12:51,740 --> 00:12:49,950
you start the rendezvous to the space

384
00:12:53,720 --> 00:12:51,750
station it just it just blows your mind

385
00:12:56,060 --> 00:12:53,730
just how big this thing is and what an

386
00:12:58,700 --> 00:12:56,070
incredible vehicle we put together up in

387
00:13:00,800 --> 00:12:58,710
space as you said that the biggest

388
00:13:03,170 --> 00:13:00,810

priority for this flight is delivering a

389
00:13:04,490 --> 00:13:03,180
well frankly a shuttle full of supplies

390
00:13:07,250 --> 00:13:04,500
they have the International Space

391
00:13:09,050 --> 00:13:07,260
Station tell me about the kind of cargo

392
00:13:10,760 --> 00:13:09,060
that you and your crewmates are bringing

393
00:13:12,590 --> 00:13:10,770
to orbit well the main thing we're going

394
00:13:15,710 --> 00:13:12,600
to bring is like we say supplies so that

395
00:13:17,780 --> 00:13:15,720
is everything from from lots of food to

396
00:13:19,550 --> 00:13:17,790
clothing and then we're also going to

397
00:13:20,930 --> 00:13:19,560
help them resupply their science you

398
00:13:22,550 --> 00:13:20,940
know they've got a lot of scientific

399
00:13:24,050 --> 00:13:22,560
equipment they need up there and then

400
00:13:25,430 --> 00:13:24,060
just even the space station components

401
00:13:27,800 --> 00:13:25,440
such as you know Global Positioning

402
00:13:30,560 --> 00:13:27,810
System antennas and rate gyro assemblies

403
00:13:32,450 --> 00:13:30,570
just the various things we need to keep

404
00:13:35,960 --> 00:13:32,460
the space station running and keep it

405
00:13:38,390 --> 00:13:35,970
livable - there is a spacewalk on this

406
00:13:40,790 --> 00:13:38,400
flight on flight day 5 yes but unlike

407
00:13:42,320 --> 00:13:40,800
previous shuttle flights there are

408
00:13:44,189 --> 00:13:42,330
station crew members who are going to be

409
00:13:46,230 --> 00:13:44,199
the ones going outside

410
00:13:48,509 --> 00:13:46,240
what's the reason for that assignment

411
00:13:50,160 --> 00:13:48,519
well you know we're one big team with

412
00:13:51,540 --> 00:13:50,170
the Space Shuttle in the space station

413
00:13:52,920 --> 00:13:51,550

crew members and we have to figure out

414
00:13:55,290 --> 00:13:52,930
what's the best way to use your

415
00:13:56,790 --> 00:13:55,300
resources and since we are a little bit

416
00:13:58,680 --> 00:13:56,800
short-handed on this flight with just

417
00:14:00,509 --> 00:13:58,690
four people we figured it was best to

418
00:14:02,009 --> 00:14:00,519
but the station crew members do the

419
00:14:03,540 --> 00:14:02,019
spacewalk and we're going to be helping

420
00:14:05,430 --> 00:14:03,550
them out so we're all going to be busy

421
00:14:06,689 --> 00:14:05,440
that day and well you know sandy and

422
00:14:08,519 --> 00:14:06,699
Doug will be doing robotics I'll be

423
00:14:11,970 --> 00:14:08,529
doing the the check was from the inside

424
00:14:14,400 --> 00:14:11,980
and Chris will be suiting them up in the

425
00:14:17,850 --> 00:14:14,410
airlock so we're busy but it works out

426
00:14:19,019 --> 00:14:17,860
real well this way Ron Garan and and

427
00:14:20,460 --> 00:14:19,029
Mike Fossum have already done the

428
00:14:22,769 --> 00:14:20,470
spacewalk together too so they're a

429
00:14:24,930 --> 00:14:22,779
great team to send out there and and do

430
00:14:26,460 --> 00:14:24,940
our EBA tasks all right well tell us

431
00:14:28,170 --> 00:14:26,470
about what they're going to do this time

432
00:14:29,370 --> 00:14:28,180
what's on that checklist that you're

433
00:14:30,809 --> 00:14:29,380
going to be paired with them with the

434
00:14:33,389 --> 00:14:30,819
main thing the first thing we're going

435
00:14:34,920 --> 00:14:33,399
to do is bring back the the pump module

436
00:14:36,569 --> 00:14:34,930
that failed on the space station you

437
00:14:38,699 --> 00:14:36,579
last summer we had a pump module that

438
00:14:40,379 --> 00:14:38,709

failed and it was a big deal he had to

439
00:14:42,269 --> 00:14:40,389
get that thing replaced and quickly to

440
00:14:45,050 --> 00:14:42,279
restore the cooling to the electronics

441
00:14:47,550 --> 00:14:45,060
inside the space station and so that

442
00:14:48,990 --> 00:14:47,560
pump module was swapped out it put a new

443
00:14:50,579 --> 00:14:49,000
one in there but the old one that failed

444
00:14:52,290 --> 00:14:50,589
it's been sitting up in the space

445
00:14:54,480 --> 00:14:52,300
station ever since and we'd like to

446
00:14:55,650 --> 00:14:54,490
bring that home to number one find out

447
00:14:57,600 --> 00:14:55,660
what happened because you learn a lot

448
00:14:59,160 --> 00:14:57,610
from from failures of equipment in space

449
00:15:00,840 --> 00:14:59,170
say hey what's our feeling well maybe we

450
00:15:02,939 --> 00:15:00,850
didn't expect this or is it something we

451
00:15:04,259 --> 00:15:02,949
expected and then potentially we could

452
00:15:06,509 --> 00:15:04,269
refurbish it and launch it again later

453
00:15:07,710 --> 00:15:06,519
on for another spare if we needed to the

454
00:15:10,259 --> 00:15:07,720
second things that we're going to take

455
00:15:11,370 --> 00:15:10,269
from the space from the space station

456
00:15:12,900 --> 00:15:11,380
and put it in the payload Bay of the

457
00:15:15,210 --> 00:15:12,910
shuttle once we get in the payload Bay

458
00:15:17,100 --> 00:15:15,220
the shuttle Ron and Mike are gonna take

459
00:15:19,769 --> 00:15:17,110
a what's called the robotics refueling

460
00:15:22,110 --> 00:15:19,779
module and take this payload and put it

461
00:15:24,499 --> 00:15:22,120
onto the space station and and the

462
00:15:27,059 --> 00:15:24,509
robotics refueling module or RRM is a

463
00:15:28,620 --> 00:15:27,069

kind of a testbed of sorts that usually

464
00:15:31,800 --> 00:15:28,630
going to be used to see how we can

465
00:15:34,499 --> 00:15:31,810
remotely service satellites to space

466
00:15:36,960 --> 00:15:34,509
well it's got it's got a bunch of places

467
00:15:38,929 --> 00:15:36,970
where the this space station is a

468
00:15:42,960 --> 00:15:38,939
special purpose dextrous manipulator

469
00:15:44,189 --> 00:15:42,970
spdm can grab on to it take off caps try

470
00:15:46,530 --> 00:15:44,199
different things that normally we'd have

471
00:15:47,429 --> 00:15:46,540
a human space Walker do and see if it

472
00:15:49,259 --> 00:15:47,439
can be done remotely

473
00:15:52,319 --> 00:15:49,269
for instance pulling up flaps cutting

474
00:15:54,809 --> 00:15:52,329
MLI or either insulation and taking

475
00:15:56,960 --> 00:15:54,819
taking caps off or even potentially

476
00:15:58,759 --> 00:15:56,970
moving fuel from one

477
00:16:00,290 --> 00:15:58,769
vehicle to another so ways to test that

478
00:16:02,059 --> 00:16:00,300
with the RRM that we're really excited

479
00:16:04,340 --> 00:16:02,069
about it should tell us a lot about how

480
00:16:06,530 --> 00:16:04,350
hard it is to remotely service a

481
00:16:09,079 --> 00:16:06,540
satellite in space find out just how

482
00:16:11,840 --> 00:16:09,089
Dexter's exactly and so it really is the

483
00:16:13,730 --> 00:16:11,850
chance to show how well the spdm can

484
00:16:16,850 --> 00:16:13,740
function space so it'll be a will be a

485
00:16:18,319 --> 00:16:16,860
challenge from the from the the payload

486
00:16:20,030 --> 00:16:18,329
standpoint but also from the robotic

487
00:16:21,679 --> 00:16:20,040
standpoint for how we how we go about

488
00:16:22,610 --> 00:16:21,689

doing these tasks and I'm sure we're

489
00:16:24,980 --> 00:16:22,620
going to learn a ton because there's a

490
00:16:26,960 --> 00:16:24,990
lot of neat tools that this the

491
00:16:29,749 --> 00:16:26,970
spacecraft has that we can we can test

492
00:16:30,769 --> 00:16:29,759
out on the space station to figure out

493
00:16:32,030 --> 00:16:30,779
hey are there better ways of doing this

494
00:16:34,519 --> 00:16:32,040
or the better ways of making satellites

495
00:16:36,319 --> 00:16:34,529
so that we can refuel them or or service

496
00:16:37,730 --> 00:16:36,329
them easier in space and/or the better

497
00:16:40,369 --> 00:16:37,740
ways robotically to handle situations

498
00:16:42,499 --> 00:16:40,379
like this now to be clear the this

499
00:16:43,999 --> 00:16:42,509
you're you're delivering this but all

500
00:16:46,129 --> 00:16:44,009
this the work that we've talking about

501
00:16:48,050 --> 00:16:46,139
this test is not going to occur now your

502
00:16:50,900 --> 00:16:48,060
mission no the the are and we will put

503
00:16:53,119 --> 00:16:50,910
on the space station where the the spdm

504
00:16:54,530 --> 00:16:53,129
the robotic arm can get to it and take

505
00:16:56,329 --> 00:16:54,540
care all these tasks later on when we

506
00:16:58,009 --> 00:16:56,339
have more time we have a very very

507
00:17:00,110 --> 00:16:58,019
compressed timeline we're trying to do

508
00:17:02,869 --> 00:17:00,120
so much in this time with like I said

509
00:17:04,010 --> 00:17:02,879
with the short-handed crew that a lot of

510
00:17:05,569 --> 00:17:04,020
stuff we're going to get set up so

511
00:17:07,460 --> 00:17:05,579
people can take care of it later and

512
00:17:09,230 --> 00:17:07,470
we're going to have more time and you

513
00:17:12,169 --> 00:17:09,240

got arm operations that are going to

514
00:17:13,579 --> 00:17:12,179
assist in both of these yes yes what

515
00:17:15,919 --> 00:17:13,589
else is on the timeline because besides

516
00:17:17,449 --> 00:17:15,929
those two things and that's well those

517
00:17:19,730 --> 00:17:17,459
are the main task for the spacewalk

518
00:17:21,649 --> 00:17:19,740
now the after we that we have will have

519
00:17:23,360 --> 00:17:21,659
some extra time to do what we call get

520
00:17:24,770 --> 00:17:23,370
ahead tasks and those are still a little

521
00:17:26,270 --> 00:17:24,780
bit in flux for those kind of change

522
00:17:28,279 --> 00:17:26,280
depending on what the highest priority

523
00:17:29,810 --> 00:17:28,289
is at time so we have a number of tasks

524
00:17:32,299 --> 00:17:29,820
that we've trained for that and Ron and

525
00:17:33,500 --> 00:17:32,309
Mike have trained for and when we just

526
00:17:34,760 --> 00:17:33,510
when we get closer to flight we'll

527
00:17:35,810 --> 00:17:34,770
decide okay these are these are the

528
00:17:37,640 --> 00:17:35,820
highest parties these the ones we're

529
00:17:40,039 --> 00:17:37,650
going to want you to do know why waste

530
00:17:42,529 --> 00:17:40,049
time planted who practicing for it now

531
00:17:44,690 --> 00:17:42,539
and we can use you for what's needed

532
00:17:45,950 --> 00:17:44,700
them that's right that's right now most

533
00:17:48,560 --> 00:17:45,960
of the time that you're going to be up

534
00:17:50,120 --> 00:17:48,570
there outside of this spacewalk all the

535
00:17:52,789 --> 00:17:50,130
crew members are going to be involved in

536
00:17:54,350 --> 00:17:52,799
moving over yes the materials being

537
00:17:56,330 --> 00:17:54,360
delivered and bringing the stuff back

538
00:17:59,029 --> 00:17:56,340

it's sort of like packing up one house

539
00:18:01,360 --> 00:17:59,039
and right pack up two houses and moving

540
00:18:04,310 --> 00:18:01,370
them across the outlet the same door

541
00:18:06,710 --> 00:18:04,320
give us a sense of what's involved here

542
00:18:09,200 --> 00:18:06,720
not just in terms of moving items but

543
00:18:10,370 --> 00:18:09,210
knowing where they are and where they're

544
00:18:13,520 --> 00:18:10,380
supposed to go and

545
00:18:15,620 --> 00:18:13,530
and knowing what goes when right it's

546
00:18:17,720 --> 00:18:15,630
it's quite a puzzle game and the the

547
00:18:19,760 --> 00:18:17,730
very first most important rule is do

548
00:18:21,289 --> 00:18:19,770
what sandy says because Sandy's lived up

549
00:18:24,289 --> 00:18:21,299
there and she's our loadmaster so she

550
00:18:26,900 --> 00:18:24,299
knows where where things go and also how

551
00:18:29,060 --> 00:18:26,910
is the best way to rearrange stuff and

552
00:18:31,820 --> 00:18:29,070
so you know I'll be her assistant and so

553
00:18:33,799 --> 00:18:31,830
we'll figure out ways to to make that

554
00:18:35,180 --> 00:18:33,809
shell game happen because before you

555
00:18:36,770 --> 00:18:35,190
bring stuff back ups you got to make a

556
00:18:38,900 --> 00:18:36,780
hole for it and is it and can you bring

557
00:18:41,900 --> 00:18:38,910
all the stuff out of the out of the

558
00:18:43,279 --> 00:18:41,910
multi-purpose Logistics Module before

559
00:18:44,779 --> 00:18:43,289
you start bringing stuff back in or just

560
00:18:45,919 --> 00:18:44,789
bring them back part at a time so it's

561
00:18:47,270 --> 00:18:45,929
kind of one of those puzzle games where

562
00:18:49,310 --> 00:18:47,280
we will start bringing stuff in before

563
00:18:51,950 --> 00:18:49,320

we offload at everything so it can get

564
00:18:53,539 --> 00:18:51,960
confusing so we have some really

565
00:18:55,130 --> 00:18:53,549
talented transfer people on the ground

566
00:18:57,919 --> 00:18:55,140
to help us keep it straight and then we

567
00:19:00,590 --> 00:18:57,929
have transfer books to make sure we know

568
00:19:03,169 --> 00:19:00,600
what goes where and then we just do the

569
00:19:04,700 --> 00:19:03,179
do the shell game and try to take care

570
00:19:06,049 --> 00:19:04,710
of it all and invariably there'll be a

571
00:19:07,669 --> 00:19:06,059
piece or two they go okay to somebody

572
00:19:09,350 --> 00:19:07,679
move this and if we didn't sign for it

573
00:19:10,730 --> 00:19:09,360
and say where we moved it to it can be a

574
00:19:13,310 --> 00:19:10,740
problem so we have to be very dedicated

575
00:19:15,020 --> 00:19:13,320
about about annotating where things went

576
00:19:16,940 --> 00:19:15,030
who put them where and all that kind of

577
00:19:18,950 --> 00:19:16,950
thing I wonder whether or not it's I

578
00:19:21,380 --> 00:19:18,960
think excuse me all plotted out down to

579
00:19:22,760 --> 00:19:21,390
the finest detail or do you are you're

580
00:19:24,140 --> 00:19:22,770
gonna have to ad-lib we have to Ella

581
00:19:26,750 --> 00:19:24,150
somewhat because we'll go grab stuff

582
00:19:29,180 --> 00:19:26,760
that's that's on the space station that

583
00:19:30,590 --> 00:19:29,190
we need to put in our return canister

584
00:19:32,240 --> 00:19:30,600
basically and we'll put it in what we

585
00:19:33,620 --> 00:19:32,250
call a bungee Jail it's a bunch of

586
00:19:35,060 --> 00:19:33,630
bungee that go across and we can push

587
00:19:36,230 --> 00:19:35,070
them in there and the end there and they

588
00:19:38,029 --> 00:19:36,240

won't they'll kind of float around in

589
00:19:39,169 --> 00:19:38,039
there but they won't go anywhere so so

590
00:19:40,549 --> 00:19:39,179
we'll be cramming a bunch of stuff in

591
00:19:42,100 --> 00:19:40,559
the bungee Jail and taking a bunch of

592
00:19:44,480 --> 00:19:42,110
stuff out and take it over the station

593
00:19:46,520 --> 00:19:44,490
we'll we'll make sure we annotate when

594
00:19:47,810 --> 00:19:46,530
stuff goes across but some of the stuff

595
00:19:49,310 --> 00:19:47,820
in the bungee Jail you don't know

596
00:19:50,450 --> 00:19:49,320
exactly where it is and she's got to

597
00:19:52,190 --> 00:19:50,460
kind of fish it out of there and then

598
00:19:54,049 --> 00:19:52,200
put it in its final stove location so

599
00:19:55,340 --> 00:19:54,059
some of it will be inaudible we'll look

600
00:19:56,419 --> 00:19:55,350
and we'll know hey this is this is not

601
00:19:58,159 --> 00:19:56,429
working we've got to get to this before

602
00:19:59,810 --> 00:19:58,169
you get to that or this doesn't fit

603
00:20:01,100 --> 00:19:59,820
exactly like we thought it was gonna and

604
00:20:04,880 --> 00:20:01,110
so there would be a lot of audible and

605
00:20:06,409 --> 00:20:04,890
going on delivering is is easy except

606
00:20:09,470 --> 00:20:06,419
that you got a clear space for the stuff

607
00:20:11,360 --> 00:20:09,480
to write go into right it's a that

608
00:20:13,930 --> 00:20:11,370
that's well that's why you've got

609
00:20:16,909 --> 00:20:13,940
several days to do it all yes yes yep

610
00:20:19,399 --> 00:20:16,919
when the joint time line work at the

611
00:20:20,780 --> 00:20:19,409
station is all over the four of you the

612
00:20:23,240 --> 00:20:20,790
shuttle crew members are going to mark a

613
00:20:23,529 --> 00:20:23,250

milestone with the last undocking of a

614
00:20:24,729 --> 00:20:23,539
space

615
00:20:27,549 --> 00:20:24,739
shuttle from the International Space

616
00:20:29,739 --> 00:20:27,559
Station is there anything special on the

617
00:20:32,710 --> 00:20:29,749
plan for the undocking operation itself

618
00:20:34,749 --> 00:20:32,720
as Lantis wraps up the shuttles mission

619
00:20:37,269 --> 00:20:34,759
at the station I think well what kind of

620
00:20:40,060 --> 00:20:37,279
in some way commemorate that activity

621
00:20:41,349 --> 00:20:40,070
and and just note that this is the last

622
00:20:43,719 --> 00:20:41,359
time we're leave on the space shuttle

623
00:20:45,519 --> 00:20:43,729
and it's again that's one of those busy

624
00:20:47,349 --> 00:20:45,529
days so we got a lot of work to do and

625
00:20:49,479 --> 00:20:47,359
we'll make sure we're being very careful

626
00:20:51,549 --> 00:20:49,489
but everything we have to do but I think

627
00:20:52,960 --> 00:20:51,559
after we start backing away and get a

628
00:20:55,149 --> 00:20:52,970
little farther away where we can let

629
00:20:56,830 --> 00:20:55,159
down our guard just a little bit we'll

630
00:20:59,259 --> 00:20:56,840
we'll look back at the space station and

631
00:21:00,849 --> 00:20:59,269
just think back and what an amazing

632
00:21:02,200 --> 00:21:00,859
thing it is the space shuttle has done

633
00:21:03,669 --> 00:21:02,210
because without the space shuttle the

634
00:21:05,139 --> 00:21:03,679
space station would not look anything

635
00:21:07,089 --> 00:21:05,149
like it does because the space state

636
00:21:09,159 --> 00:21:07,099
this facial is the heavy lifter that got

637
00:21:10,930 --> 00:21:09,169
those big pieces up there and so I think

638
00:21:13,029 --> 00:21:10,940

that's when we kind of look back on say

639
00:21:15,009 --> 00:21:13,039
wow you know it's pretty amazing what's

640
00:21:16,509 --> 00:21:15,019
been built up here by a bad group of

641
00:21:19,149 --> 00:21:16,519
seventeen different nations all working

642
00:21:20,859 --> 00:21:19,159
together and it's it's neat that we can

643
00:21:22,690 --> 00:21:20,869
be a part of it from the from the US

644
00:21:25,180 --> 00:21:22,700
standpoint to to fly and work on the

645
00:21:26,619 --> 00:21:25,190
shuttle to to make our part happen the

646
00:21:28,899 --> 00:21:26,629
fly around is going to be a little bit

647
00:21:31,469 --> 00:21:28,909
different than all the previous ones too

648
00:21:33,909 --> 00:21:31,479
right yes we're looking at flying around

649
00:21:35,379 --> 00:21:33,919
basically kind of round sideways instead

650
00:21:38,080 --> 00:21:35,389
of instead of head-on we'll move the

651
00:21:40,210 --> 00:21:38,090
station 90 degrees is that what we're

652
00:21:41,169 --> 00:21:40,220
planning on doing and then flying all

653
00:21:42,519 --> 00:21:41,179
the way around it so we get a different

654
00:21:44,649 --> 00:21:42,529
view of the station as we go around

655
00:21:46,210 --> 00:21:44,659
that's a good way of seeing just what

656
00:21:48,099 --> 00:21:46,220
everything on the outside the space

657
00:21:49,839 --> 00:21:48,109
station looks like it's always important

658
00:21:51,789 --> 00:21:49,849
to document to shoot a bunch of pictures

659
00:21:53,379 --> 00:21:51,799
and to see what the outside of the space

660
00:21:55,269 --> 00:21:53,389
station looks like or any there are any

661
00:21:56,799 --> 00:21:55,279
insulation flaps coming up is anything

662
00:21:59,109 --> 00:21:56,809
unexpected not looking like it's

663
00:22:00,339 --> 00:21:59,119

supposed to look and so it's kind of

664
00:22:01,539 --> 00:22:00,349
hard to do that when you when you fly

665
00:22:03,219 --> 00:22:01,549
out the same way around the space

666
00:22:05,019 --> 00:22:03,229
station each time so this time if with a

667
00:22:07,210 --> 00:22:05,029
space station rotated 90 degrees and we

668
00:22:09,310 --> 00:22:07,220
fly around it we have a good view of all

669
00:22:10,810 --> 00:22:09,320
sides of the space station what do you

670
00:22:13,810 --> 00:22:10,820
think you're going to be keeping your

671
00:22:16,029 --> 00:22:13,820
eyes peeled for as you do that last fly

672
00:22:17,889 --> 00:22:16,039
around and final separation I think I

673
00:22:19,479 --> 00:22:17,899
think big picture just looking at the

674
00:22:21,609 --> 00:22:19,489
space station say you know just kind of

675
00:22:23,799 --> 00:22:21,619
just taking a step back what if I've got

676
00:22:25,330 --> 00:22:23,809
us a few seconds there because sometimes

677
00:22:26,529 --> 00:22:25,340
when you're so close to these programs

678
00:22:28,629 --> 00:22:26,539
you're so concentrated on your

679
00:22:29,950 --> 00:22:28,639
procedures that you just you don't see

680
00:22:33,070 --> 00:22:29,960
the enormity of what you're doing I

681
00:22:34,839 --> 00:22:33,080
heard some of the Apollo guys on a one

682
00:22:37,070 --> 00:22:34,849
of the specials that was run about that

683
00:22:38,510 --> 00:22:37,080
how they they they wish they had they

684
00:22:40,490 --> 00:22:38,520
they step back a little more and

685
00:22:43,070 --> 00:22:40,500
appreciated the big picture of a percent

686
00:22:44,810 --> 00:22:43,080
of people in the moon and so hopefully

687
00:22:46,070 --> 00:22:44,820
you have a chance for a few seconds to

688
00:22:47,450 --> 00:22:46,080

look back in the Space Station saying

689
00:22:48,890 --> 00:22:47,460
look look at what we're building

690
00:22:50,300 --> 00:22:48,900
together we're building the space

691
00:22:52,490 --> 00:22:50,310
station and just really appreciate just

692
00:22:58,200 --> 00:22:52,500
for a few seconds and then get back to

693
00:23:02,080 --> 00:23:00,490
when you were assigned to this flight it

694
00:23:03,880 --> 00:23:02,090
was going to be a rescue mission for the

695
00:23:05,980 --> 00:23:03,890
last space shuttle mission and it was

696
00:23:08,889 --> 00:23:05,990
going to have flown more than a year ago

697
00:23:10,690 --> 00:23:08,899
of course those plans have changed what

698
00:23:13,210 --> 00:23:10,700
was your reaction Rex when you realize

699
00:23:15,720 --> 00:23:13,220
I'm gonna be on the last space shuttle

700
00:23:17,649 --> 00:23:15,730
mission it was pretty exciting because

701
00:23:19,389 --> 00:23:17,659
whether I flew on this flight or not I

702
00:23:20,620 --> 00:23:19,399
wanted somehow be a part of the last

703
00:23:22,419 --> 00:23:20,630
mission whether I was helping the

704
00:23:24,039 --> 00:23:22,429
Mission Control helping down to Cape or

705
00:23:25,750 --> 00:23:24,049
helping one of the abort sites I just

706
00:23:27,220 --> 00:23:25,760
love the space shuttle program in it I

707
00:23:29,289 --> 00:23:27,230
just want a chance to be a part of the

708
00:23:31,060 --> 00:23:29,299
last mission and to find I was assigned

709
00:23:33,399 --> 00:23:31,070
to it was really a tremendously exciting

710
00:23:34,870 --> 00:23:33,409
because I just like to say I enjoyed

711
00:23:37,480 --> 00:23:34,880
this program so much I want to be there

712
00:23:38,950 --> 00:23:37,490
till the last wheel stop and to think

713
00:23:40,330 --> 00:23:38,960

that I'll be riding on the vehicle till

714
00:23:42,370 --> 00:23:40,340
the last wheel stop is really an

715
00:23:45,930 --> 00:23:42,380
incredible opportunity and I'm very

716
00:23:47,919 --> 00:23:45,940
thankful for is it the special honor or

717
00:23:49,330 --> 00:23:47,929
responsibility yeah it is a special

718
00:23:51,009 --> 00:23:49,340
responsibility because you want to

719
00:23:52,360 --> 00:23:51,019
finish strong you know the space shuttle

720
00:23:54,100 --> 00:23:52,370
program has been amazing what it's done

721
00:23:56,259 --> 00:23:54,110
all the great accomplishments and you

722
00:23:59,080 --> 00:23:56,269
just don't want to let that momentum

723
00:24:01,000 --> 00:23:59,090
down and so there is a lot of a lot of

724
00:24:03,669 --> 00:24:01,010
pressure to do your job right and like I

725
00:24:05,560 --> 00:24:03,679
say to finish strong and at the end of

726
00:24:07,149 --> 00:24:05,570
the program also means a lot of changes

727
00:24:09,070 --> 00:24:07,159
they're coming at NASA and that includes

728
00:24:11,649 --> 00:24:09,080
some layoffs and shutting down some

729
00:24:13,299 --> 00:24:11,659
historic facilities yes what is your

730
00:24:15,940 --> 00:24:13,309
feeling about the decision that was made

731
00:24:17,560 --> 00:24:15,950
to stop flying these vehicles yeah well

732
00:24:19,600 --> 00:24:17,570
I understand that we need to move on

733
00:24:21,399 --> 00:24:19,610
beyond low-earth orbit from that point I

734
00:24:23,320 --> 00:24:21,409
do understand that we need to develop a

735
00:24:24,970 --> 00:24:23,330
vehicle that can get out of low Earth

736
00:24:27,340 --> 00:24:24,980
orbit and go on to destinations we want

737
00:24:29,919 --> 00:24:27,350
to go on to you know past past earth out

738
00:24:31,810 --> 00:24:29,929

past to the moon asteroids or hopefully

739
00:24:33,129 --> 00:24:31,820
one day to Mars but it's been painful

740
00:24:34,990 --> 00:24:33,139
there's no question about it it's been

741
00:24:36,820 --> 00:24:35,000
very hard watching people we've worked

742
00:24:38,500 --> 00:24:36,830
with for years lose their jobs it's

743
00:24:40,779 --> 00:24:38,510
already started and it could continue

744
00:24:43,240 --> 00:24:40,789
and we were just at the Kennedy Space

745
00:24:44,560 --> 00:24:43,250
Center about a week ago and there were

746
00:24:45,669 --> 00:24:44,570
there were hundreds of people that were

747
00:24:48,549 --> 00:24:45,679
losing their jobs the days we were there

748
00:24:49,899 --> 00:24:48,559
and as hard as that was to see and many

749
00:24:52,180 --> 00:24:49,909
people came up and said hey this is my

750
00:24:54,430 --> 00:24:52,190
last day it was really inspiring to see

751
00:24:56,950 --> 00:24:54,440
how upbeat they were about their time on

752
00:24:58,509 --> 00:24:56,960
the space program they really treasured

753
00:25:00,549 --> 00:24:58,519
being part of the space program and they

754
00:25:03,340 --> 00:25:00,559
it was just it really was inspiring how

755
00:25:05,259 --> 00:25:03,350
they they understood hey they saw this

756
00:25:07,750 --> 00:25:05,269
coming and they still want to be a part

757
00:25:09,070 --> 00:25:07,760
of it for as long as they could and and

758
00:25:10,499 --> 00:25:09,080
they really treasured the time they work

759
00:25:13,379 --> 00:25:10,509
with the space shuttle program and

760
00:25:14,759 --> 00:25:13,389
I just I take comfort in that and I know

761
00:25:16,529 --> 00:25:14,769
that there have been some great people

762
00:25:18,209 --> 00:25:16,539
and I've enjoyed working with them as

763
00:25:21,689 --> 00:25:18,219

much as they've enjoyed working with the

764
00:25:23,939 --> 00:25:21,699
space shuttle program each mission comes

765
00:25:25,889 --> 00:25:23,949
with its own patch but a cut that comes

766
00:25:27,479 --> 00:25:25,899
from somewhere yes tell us about some of

767
00:25:29,099 --> 00:25:27,489
the elements that are in your patch

768
00:25:30,569 --> 00:25:29,109
there's elements of the NASA emblem at

769
00:25:32,459 --> 00:25:30,579
night and of course the last letter of

770
00:25:33,569 --> 00:25:32,469
the Greek alphabet is right right well

771
00:25:36,299 --> 00:25:33,579
one of the main things we wanted to show

772
00:25:37,709 --> 00:25:36,309
with our patch was that it was an

773
00:25:39,389 --> 00:25:37,719
incredible team that makes the space

774
00:25:41,369 --> 00:25:39,399
shuttle program possible

775
00:25:43,619 --> 00:25:41,379
that's why we incorporated part of the

776
00:25:45,869 --> 00:25:43,629
the NASA emblem we wanted to show it's

777
00:25:47,369 --> 00:25:45,879
the contractors and the NASA civil

778
00:25:48,419 --> 00:25:47,379
servants and the whole team that makes

779
00:25:50,849 --> 00:25:48,429
it possible so that's what that

780
00:25:52,439 --> 00:25:50,859
symbolizes and then of course the the

781
00:25:54,449 --> 00:25:52,449
shuttle the kind of reminiscence almost

782
00:25:56,189 --> 00:25:54,459
of the STS one patch a little bit and

783
00:25:57,389 --> 00:25:56,199
then of course we did want to

784
00:25:59,899 --> 00:25:57,399
commemorate the fact this is the last

785
00:26:03,359 --> 00:25:59,909
mission and to do that we we picked the

786
00:26:04,889 --> 00:26:03,369
Greek Omega letter so which is the last

787
00:26:06,059 --> 00:26:04,899
letter of their alphabet to kind of

788
00:26:08,459 --> 00:26:06,069

commemorate the fact that this is the

789
00:26:10,829 --> 00:26:08,469
last mission I understand that you guys

790
00:26:14,279 --> 00:26:10,839
got some special help in designing the

791
00:26:17,039 --> 00:26:14,289
past yes my wife is a graphics designer

792
00:26:18,629 --> 00:26:17,049
by trade and so she was helping us with

793
00:26:20,639 --> 00:26:18,639
the patch and she designed this patch

794
00:26:22,469 --> 00:26:20,649
she actually designed her 110 and 120

795
00:26:24,329 --> 00:26:22,479
two patches my her previous mission so I

796
00:26:27,059 --> 00:26:24,339
was happy to have her help it's a lot of

797
00:26:29,009 --> 00:26:27,069
work designing the patch and and she

798
00:26:31,129 --> 00:26:29,019
always does a wonderful job so it was a

799
00:26:34,769 --> 00:26:31,139
pleasure to have her on our team to

800
00:26:36,180 --> 00:26:34,779
design her patch and and also to to

801
00:26:37,379 --> 00:26:36,190
incorporate all the ideas that we were

802
00:26:39,719 --> 00:26:37,389
given her and other people were given

803
00:26:41,129 --> 00:26:39,729
her also to arrive at a patch that

804
00:26:42,689 --> 00:26:41,139
suitably commemorated the last flight of

805
00:26:44,609 --> 00:26:42,699
the space shuttle program and we all

806
00:26:46,559 --> 00:26:44,619
think it turned out nice it is nice it

807
00:26:49,859 --> 00:26:46,569
it's going to be a part of space shuttle

808
00:26:52,079 --> 00:26:49,869
history let's talk about history what

809
00:26:53,969 --> 00:26:52,089
what do you consider to be some of the

810
00:26:56,459 --> 00:26:53,979
most significant moments in Space

811
00:26:58,319 --> 00:26:56,469
Shuttle history well number one would

812
00:26:59,969 --> 00:26:58,329
have to be STS 1 I mean you just can't

813
00:27:02,579 --> 00:26:59,979

get around the fact that was an

814
00:27:04,109 --> 00:27:02,589
incredible accomplishment to put two

815
00:27:05,699 --> 00:27:04,119
people on a space shuttle that's never

816
00:27:08,519 --> 00:27:05,709
flown unmanned never been tested

817
00:27:09,899 --> 00:27:08,529
completely unmanned and to get them on

818
00:27:11,729 --> 00:27:09,909
there and get them home safely was

819
00:27:13,799 --> 00:27:11,739
absolutely amazing and it still boggles

820
00:27:14,789 --> 00:27:13,809
my mind that those guys could hear all

821
00:27:16,949 --> 00:27:14,799
the stories of how this is all supposed

822
00:27:18,059 --> 00:27:16,959
to work okay these white rockers are

823
00:27:20,249 --> 00:27:18,069
gonna burn fur to miss and they're going

824
00:27:21,329 --> 00:27:20,259
to come off and then that the engines

825
00:27:22,440 --> 00:27:21,339
are going to burn for another six and

826
00:27:24,270 --> 00:27:22,450
half minutes and then the tanks going to

827
00:27:27,000 --> 00:27:24,280
come off and WHAM you're in space and

828
00:27:29,250 --> 00:27:27,010
like oh okay suit us up let's go you

829
00:27:31,200 --> 00:27:29,260
know so it's a it's amazing what what

830
00:27:32,670 --> 00:27:31,210
the first few crews went through to

831
00:27:34,110 --> 00:27:32,680
before this thing had been wrung out

832
00:27:35,100 --> 00:27:34,120
really well and before we learned the

833
00:27:37,380 --> 00:27:35,110
tremendous lessons that we've learned

834
00:27:39,390 --> 00:27:37,390
over the years they got on board and and

835
00:27:41,040 --> 00:27:39,400
flew so that was the first part that

836
00:27:43,950 --> 00:27:41,050
just sticks out and mine is sts-1 and

837
00:27:46,170 --> 00:27:43,960
and the initial flights and then the

838
00:27:49,590 --> 00:27:46,180

ability to launch interplanetary probes

839
00:27:51,030 --> 00:27:49,600
you know to the planets launched the

840
00:27:53,640 --> 00:27:51,040
Hubble Space Telescope the incredible

841
00:27:54,690 --> 00:27:53,650
accomplishments that have been come

842
00:27:56,460 --> 00:27:54,700
about from the Hubble Space Telescope

843
00:27:57,990 --> 00:27:56,470
learning more about our universe there

844
00:27:59,670 --> 00:27:58,000
are just amazing and that was possibly

845
00:28:01,800 --> 00:27:59,680
because of the shuttle getting up there

846
00:28:04,980 --> 00:28:01,810
and of course the servicing missions

847
00:28:06,660 --> 00:28:04,990
bring making sure it was fixed and an

848
00:28:08,010 --> 00:28:06,670
upgraded over the years so that was

849
00:28:09,420 --> 00:28:08,020
amazing and then I think the crown jewel

850
00:28:11,940 --> 00:28:09,430
of the space shuttle program is just the

851
00:28:13,590 --> 00:28:11,950
the heavy lift capability of getting the

852
00:28:15,990 --> 00:28:13,600
space station components up there and

853
00:28:17,970 --> 00:28:16,000
literally building our portion of the

854
00:28:20,130 --> 00:28:17,980
space station it's an amazing

855
00:28:21,750 --> 00:28:20,140
accomplishment that what it takes year

856
00:28:23,940 --> 00:28:21,760
after year to keep those missions going

857
00:28:25,410 --> 00:28:23,950
and to get all the pieces up there many

858
00:28:27,150 --> 00:28:25,420
of which have never fit together before

859
00:28:28,770 --> 00:28:27,160
and to fit them together in space for

860
00:28:31,020 --> 00:28:28,780
the first time and that for it to all

861
00:28:32,520 --> 00:28:31,030
work and to see a completed Space

862
00:28:34,680 --> 00:28:32,530
Station up there is really a testament

863
00:28:36,270 --> 00:28:34,690

to not only ingenuity of all the

864
00:28:37,290 --> 00:28:36,280
engineers and scientists and people on

865
00:28:38,790 --> 00:28:37,300
the ground who work in the space station

866
00:28:39,930 --> 00:28:38,800
but also the people who work on the

867
00:28:42,150 --> 00:28:39,940
space shuttle that could make such an

868
00:28:44,190 --> 00:28:42,160
incredible reusable space vehicle to

869
00:28:47,250 --> 00:28:44,200
make that happen you're going to use it

870
00:28:49,350 --> 00:28:47,260
lantus to to wrap up this program what

871
00:28:51,240 --> 00:28:49,360
do you think Atlantis is place is going

872
00:28:54,450 --> 00:28:51,250
to be in the history well I think it's

873
00:28:55,950 --> 00:28:54,460
uh it's got a great story past and part

874
00:28:58,950 --> 00:28:55,960
of the the space shuttle program

875
00:29:00,870 --> 00:28:58,960
you know first launching some like say

876
00:29:03,630 --> 00:29:00,880
Internet interplanetary probes Magellan

877
00:29:05,880 --> 00:29:03,640
and Galileo and then we're working doing

878
00:29:08,130 --> 00:29:05,890
Hubble Hubble redouble repair missions

879
00:29:09,720 --> 00:29:08,140
and working on that and then launching

880
00:29:11,700 --> 00:29:09,730
some of the heavy parts of the space

881
00:29:14,370 --> 00:29:11,710
station to the to the missions I was on

882
00:29:16,500 --> 00:29:14,380
as 0 the the first portion of the truss

883
00:29:17,910 --> 00:29:16,510
the very heavy component of the space

884
00:29:19,020 --> 00:29:17,920
station was launched by lands because

885
00:29:22,500 --> 00:29:19,030
Atlantis has a capability of launching

886
00:29:24,990 --> 00:29:22,510
those heavy pieces and and on and on

887
00:29:26,760 --> 00:29:25,000
about the rest of the portions of the of

888
00:29:28,500 --> 00:29:26,770

the space station that Atlantis launch

889
00:29:30,480 --> 00:29:28,510
so it's been an incredible vehicle and

890
00:29:31,980 --> 00:29:30,490
it's done it's done a lot of the heavy

891
00:29:35,040 --> 00:29:31,990
lifting for the for the space station

892
00:29:36,700 --> 00:29:35,050
program if you expand the view beyond

893
00:29:37,870 --> 00:29:36,710
just that vehicle

894
00:29:41,169 --> 00:29:37,880
how was the work of the shuttle program

895
00:29:43,269 --> 00:29:41,179
going to be remembered I think the the

896
00:29:44,919 --> 00:29:43,279
shuttle program be remembered for number

897
00:29:47,080 --> 00:29:44,929
one obviously the first reusable

898
00:29:49,750 --> 00:29:47,090
spacecraft the fact that these vehicles

899
00:29:51,850 --> 00:29:49,760
have been flown year after year mission

900
00:29:53,260 --> 00:29:51,860
after mission and you come back and look

901
00:29:56,169 --> 00:29:53,270
at them it's like it's amazing this

902
00:29:58,389 --> 00:29:56,179
thing it looks great and you we're just

903
00:30:01,149 --> 00:29:58,399
in this in Atlantis you know looking at

904
00:30:02,620 --> 00:30:01,159
some preflight items last week and you

905
00:30:04,899 --> 00:30:02,630
just look around go this is amazing this

906
00:30:07,720 --> 00:30:04,909
vehicle is 30 years old and it it looks

907
00:30:09,549 --> 00:30:07,730
beautiful and they and that's a

908
00:30:11,350 --> 00:30:09,559
testament of the care that the people at

909
00:30:13,419 --> 00:30:11,360
the Kennedy Space Center prepare it

910
00:30:15,190 --> 00:30:13,429
service it make sure it's ready to fly

911
00:30:16,659 --> 00:30:15,200
and the care that the people here at the

912
00:30:18,940 --> 00:30:16,669
Johnson Space Center around the country

913
00:30:20,740 --> 00:30:18,950

that operate the Space Shuttle make sure

914
00:30:23,440 --> 00:30:20,750
that it operates well me we keep with is

915
00:30:24,909 --> 00:30:23,450
within its operating limits and and take

916
00:30:26,409 --> 00:30:24,919
care of it and change out things we need

917
00:30:28,120 --> 00:30:26,419
to be changed out and upgrade it when it

918
00:30:29,799 --> 00:30:28,130
needs to be upgraded that that it can

919
00:30:31,960 --> 00:30:29,809
continue to operate to have a vehicle

920
00:30:34,299 --> 00:30:31,970
that is subjected to the environment

921
00:30:36,730 --> 00:30:34,309
that it is in launch and landing for you

922
00:30:38,279 --> 00:30:36,740
know for up to toward up to 30 years is

923
00:30:40,570 --> 00:30:38,289
absolutely amazing

924
00:30:42,639 --> 00:30:40,580
any thoughts about what kind of space

925
00:30:44,110 --> 00:30:42,649
station we have right now we're it not

926
00:30:46,450 --> 00:30:44,120
for the shuttle it'd be a lot smaller

927
00:30:49,659 --> 00:30:46,460
you know the space the Space Shuttle is

928
00:30:50,860 --> 00:30:49,669
is the heavy lifter like we say so it

929
00:30:53,049 --> 00:30:50,870
brings up the big components of the

930
00:30:54,700 --> 00:30:53,059
space station and then not only that

931
00:30:56,080 --> 00:30:54,710
when the space station would look

932
00:30:57,460 --> 00:30:56,090
different it wouldn't be as big but also

933
00:30:59,049 --> 00:30:57,470
we wouldn't have the science we have

934
00:31:01,180 --> 00:30:59,059
without the space shuttle program

935
00:31:04,470 --> 00:31:01,190
equation allows to bring those the big

936
00:31:07,899 --> 00:31:04,480
payloads the big large equipment and

937
00:31:09,610 --> 00:31:07,909
science results back down to earth which

938
00:31:11,529 --> 00:31:09,620

is really the only way we can we can get

939
00:31:14,350 --> 00:31:11,539
those kind of heavy payloads and

940
00:31:16,919 --> 00:31:14,360
scientific equipment back down to get

941
00:31:20,049 --> 00:31:16,929
the results that we that we so so need

942
00:31:22,090 --> 00:31:20,059
well after sts-135 it's going to be up

943
00:31:24,310 --> 00:31:22,100
to spaceships from other nations and

944
00:31:27,100 --> 00:31:24,320
perhaps from private industry to get

945
00:31:29,200 --> 00:31:27,110
cargo and crews up to this station for

946
00:31:30,820 --> 00:31:29,210
the foreseeable future right as an

947
00:31:32,769 --> 00:31:30,830
American astronaut how do you feel about

948
00:31:35,289 --> 00:31:32,779
the future of the International Space

949
00:31:37,779 --> 00:31:35,299
Station well I think the the shuttle has

950
00:31:39,880 --> 00:31:37,789
gotten it where it needs to get to be

951
00:31:41,440 --> 00:31:39,890
able to move on to the next level of the

952
00:31:43,539 --> 00:31:41,450
program you know we've gotten the big

953
00:31:45,039 --> 00:31:43,549
components up there so assembly is

954
00:31:47,560 --> 00:31:45,049
complete and now we need to do is we

955
00:31:49,710 --> 00:31:47,570
need to establish the kind of logistics

956
00:31:51,450 --> 00:31:49,720
resupply to handle the utilize a

957
00:31:53,400 --> 00:31:51,460
process where we're really just doing

958
00:31:54,450 --> 00:31:53,410
science onboard the space station so I

959
00:31:56,400 --> 00:31:54,460
think we can get there with the

960
00:32:00,750 --> 00:31:56,410
commercial entities and the help of our

961
00:32:03,450 --> 00:32:00,760
of our foreign partners we can get the

962
00:32:04,710 --> 00:32:03,460
the items up there that we need up there

963
00:32:05,550 --> 00:32:04,720

getting them back is gonna be a little

964
00:32:08,790 --> 00:32:05,560
more of a challenge but I think we'll

965
00:32:10,470 --> 00:32:08,800
get there eventually to said that STS

966
00:32:11,930 --> 00:32:10,480
one was one of the most significant

967
00:32:14,670 --> 00:32:11,940
moments in the history of the program

968
00:32:16,470 --> 00:32:14,680
you remember where you were when st is

969
00:32:18,390 --> 00:32:16,480
one took off and how you felt about that

970
00:32:20,550 --> 00:32:18,400
yeah I was I was in college I was a

971
00:32:22,260 --> 00:32:20,560
freshman in college and I remember in

972
00:32:24,210 --> 00:32:22,270
the run-up to the to the mission

973
00:32:25,680 --> 00:32:24,220
thinking that was amazing cuz I'd

974
00:32:27,510 --> 00:32:25,690
watched the approach and landing tests

975
00:32:28,710 --> 00:32:27,520
on TV and when they did the landings for

976
00:32:30,720 --> 00:32:28,720
the shuttle and think that was that was

977
00:32:33,690 --> 00:32:30,730
pretty impressive but to see that whole

978
00:32:35,790 --> 00:32:33,700
thing stacked on the pad was was was

979
00:32:37,980 --> 00:32:35,800
incredible and to to hear that it all

980
00:32:39,480 --> 00:32:37,990
worked out well and the launch sequence

981
00:32:41,910 --> 00:32:39,490
went well and they can't all came home

982
00:32:44,190 --> 00:32:41,920
safe they both came home safe was was

983
00:32:45,630 --> 00:32:44,200
was really amazing so it it really

984
00:32:48,750 --> 00:32:45,640
really got my attention I remember

985
00:32:50,070 --> 00:32:48,760
having a chance to brief some school

986
00:32:51,510 --> 00:32:50,080
kids on what the Space Shuttle was

987
00:32:53,130 --> 00:32:51,520
capable of and what it was gonna be used

988
00:32:54,870 --> 00:32:53,140

for and stuff and I did that just before

989
00:32:57,330 --> 00:32:54,880
the first launch that was that it was

990
00:32:59,040 --> 00:32:57,340
pretty neat to to kind of watch it as it

991
00:33:01,290 --> 00:32:59,050
came along and then to to see it was

992
00:33:03,420 --> 00:33:01,300
successful on their first flight what's

993
00:33:07,650 --> 00:33:03,430
your favorite memory out of the Space

994
00:33:09,330 --> 00:33:07,660
Shuttle era wow that's a that's probably

995
00:33:11,370 --> 00:33:09,340
a it's a tough one because it could be

996
00:33:13,140 --> 00:33:11,380
many many things and of course the the

997
00:33:15,000 --> 00:33:13,150
launches and landings that I've been on

998
00:33:17,850 --> 00:33:15,010
are high up there

999
00:33:20,730 --> 00:33:17,860
but I think part of it is just the

1000
00:33:22,080 --> 00:33:20,740
ability that has given us to to

1001
00:33:24,240 --> 00:33:22,090
contribute to this International Space

1002
00:33:26,070 --> 00:33:24,250
Station program because you get on board

1003
00:33:27,870 --> 00:33:26,080
and on the space station when you fly up

1004
00:33:29,370 --> 00:33:27,880
there and you bring a new piece up there

1005
00:33:31,950 --> 00:33:29,380
and you see these crews working together

1006
00:33:34,260 --> 00:33:31,960
and they're multi multinational crews

1007
00:33:35,970 --> 00:33:34,270
and everybody works together and we all

1008
00:33:38,610 --> 00:33:35,980
work together we work together we eat

1009
00:33:40,800 --> 00:33:38,620
together we laugh about things together

1010
00:33:43,290 --> 00:33:40,810
and we're one big team up there and it's

1011
00:33:46,170 --> 00:33:43,300
really an amazing example so the

1012
00:33:48,780 --> 00:33:46,180
international cooperation that that we

1013
00:33:50,610 --> 00:33:48,790

contribute to the space station via the

1014
00:33:52,590 --> 00:33:50,620
space shuttle was was really pretty

1015
00:33:54,810 --> 00:33:52,600
impressive of course there's nothing

1016
00:33:57,210 --> 00:33:54,820
like the the rise to orbit so I think

1017
00:33:58,620 --> 00:33:57,220
those will also stick out stick out

1018
00:33:59,190 --> 00:33:58,630
highly in my mind I wouldn't be

1019
00:34:01,320 --> 00:33:59,200
surprised

1020
00:34:02,899 --> 00:34:01,330
well the destinations that we're

1021
00:34:04,399 --> 00:34:02,909
launching to today

1022
00:34:06,409 --> 00:34:04,409
although still in low-earth orbit are a

1023
00:34:08,240 --> 00:34:06,419
lot different than where sts-1 was

1024
00:34:10,940 --> 00:34:08,250
headed 30 years ago when it kicked off

1025
00:34:13,369 --> 00:34:10,950
this era where do you think we're gonna

1026
00:34:15,409 --> 00:34:13,379
go in the next era of human space

1027
00:34:18,470 --> 00:34:15,419
exploration well I hope we're going to

1028
00:34:20,359 --> 00:34:18,480
beyond Earth orbit it's it's difficult

1029
00:34:21,589 --> 00:34:20,369
to get to orbit it around the earth but

1030
00:34:23,419 --> 00:34:21,599
it's even harder to get outside of

1031
00:34:25,369 --> 00:34:23,429
Earth's orbit to go to places like the

1032
00:34:27,859 --> 00:34:25,379
moon to asteroids or to Mars and I hope

1033
00:34:29,059 --> 00:34:27,869
that's our next step and I think well I

1034
00:34:30,559 --> 00:34:29,069
think we'll get there it's just going to

1035
00:34:32,599 --> 00:34:30,569
take some time and some dedication and

1036
00:34:34,129 --> 00:34:32,609
everybody's part and it's going to take

1037
00:34:35,599 --> 00:34:34,139
the same ingenuity we see around here

1038
00:34:37,099 --> 00:34:35,609

that made the space shuttle possible for

1039
00:34:38,809 --> 00:34:37,109
30 years the people who worked in the

1040
00:34:40,279 --> 00:34:38,819
control center who processed the vehicle

1041
00:34:41,899 --> 00:34:40,289
who designed and conceived the space

1042
00:34:44,419 --> 00:34:41,909
shuttle that same kind of ingenuity

1043
00:34:47,000 --> 00:34:44,429
still around here and we'll need to use

1044
00:34:48,740 --> 00:34:47,010
that to develop the next generation and

1045
00:34:50,930 --> 00:34:48,750
the same kind of can-do spirit you saw

1046
00:34:53,149 --> 00:34:50,940
in the early early Mercury Gemini and

1047
00:34:54,770 --> 00:34:53,159
Apollo days you know the kids coming out

1048
00:34:56,210 --> 00:34:54,780
of college today they they've got the

1049
00:34:57,799 --> 00:34:56,220
same smarts and they got the same Drive

1050
00:34:59,150 --> 00:34:57,809
we need to harness that combine it with

1051
00:35:01,670 --> 00:34:59,160
the experience we've learned over the