1
00:00:57,270 --> 00:00:17,029
hi i'm sts-130 flight engineer steve

2
00:00:57,280 --> 00:01:12,789
foreign

3
00:01:12,799 --> 00:01:36,789
so

4
00:01:46,469 --> 00:01:38,550
good morning endeavour and a special

5
00:01:50,870 --> 00:01:48,710
good morning houston man i wish i could

6
00:01:54,789 --> 00:01:50,880
play a guitar like that

7
00:01:59,030 --> 00:01:54,799
but it's great to be up here and uh

8
00:02:01,830 --> 00:01:59,830
some

9
00:02:03,990 --> 00:02:01,840
eclipse regen racks

10
00:02:06,389 --> 00:02:04,000
into the brand new node three thanks a

11
00:02:08,790 --> 00:02:06,399
lot for the good wake up

12
00:02:11,510 --> 00:02:08,800
this morning's wake-up call to the crew

13
00:02:13,670 --> 00:02:11,520

of space shuttle endeavour the song oh

14
00:02:15,430 --> 00:02:13,680
yeah by johnny a

15
00:02:19,670 --> 00:02:15,440
played for mission specialist steve

16
00:02:21,510 --> 00:02:20,470
crew

17
00:02:29,030 --> 00:02:21,520
on

18
00:02:31,830 --> 00:02:29,040
move the rest of the systems racks for

19
00:02:33,190 --> 00:02:31,840
the regenerative eclipse system over to

20
00:02:35,350 --> 00:02:33,200
tranquility

21
00:02:36,550 --> 00:02:35,360
they'll continue outfitting the cupola

22
00:02:38,869 --> 00:02:36,560
module

23
00:02:40,390 --> 00:02:38,879
pack up all of the space walking tools

24
00:02:42,949 --> 00:02:40,400
that were used

25
00:02:44,949 --> 00:02:42,959
and coming up in less than an hour get a

26
00:03:02,390 --> 00:02:44,959
congratulatory phone call from the

27
00:03:02,400 --> 00:03:07,750
hey guys

28
00:03:10,949 --> 00:03:08,949
here's a little bit of a boy good

29
00:03:12,790 --> 00:03:10,959
morning from the international space

30
00:03:15,149 --> 00:03:12,800
station and from the space shuttle

31
00:03:17,509 --> 00:03:15,159
endeavor mr

32
00:03:18,949 --> 00:03:17,519
president from the space shuttle and

33
00:03:21,589 --> 00:03:18,959
never mind the president

34
00:03:23,270 --> 00:03:21,599
well it's great to talk to you guys i i

35
00:03:26,070 --> 00:03:23,280
wanted to

36
00:03:28,229 --> 00:03:26,080
uh first of all just say that we've got

37
00:03:29,910 --> 00:03:28,239
a bunch of very excited young people

38
00:03:32,470 --> 00:03:29,920

here with us

39
00:03:35,110 --> 00:03:32,480
along with a bunch of

40
00:03:37,830 --> 00:03:35,120
uh somewhat excited uh

41
00:03:43,589 --> 00:03:40,390
we have one engineer and one member of

42
00:03:45,270 --> 00:03:43,599
congress uh so yeah you've got a and a

43
00:03:46,710 --> 00:03:45,280
whole bunch of press here so it's a

44
00:03:48,309 --> 00:03:46,720
pretty motley crew

45
00:03:50,149 --> 00:03:48,319
and one president two astronauts are

46
00:03:52,949 --> 00:03:50,159
from maryland

47
00:03:56,630 --> 00:03:52,959
but i uh i just wanted to let you guys

48
00:03:58,710 --> 00:03:56,640
know uh how proud we are of all of you

49
00:04:00,789 --> 00:03:58,720
uh what you guys have been uh

50
00:04:02,149 --> 00:04:00,799
accomplishing i've had a chance to take

51
00:04:04,869 --> 00:04:02,159
a look at

52
00:04:07,589 --> 00:04:04,879
what the tranquility uh

53
00:04:10,229 --> 00:04:07,599
module is doing

54
00:04:13,190 --> 00:04:10,239
everybody here

55
00:04:14,869 --> 00:04:13,200
back home is excited about this bay on

56
00:04:15,670 --> 00:04:14,879
the world that you guys are opening up

57
00:04:18,629 --> 00:04:15,680
and

58
00:04:20,550 --> 00:04:18,639
uh stephen colbert at least is excited

59
00:04:22,469 --> 00:04:20,560
about his treadmill

60
00:04:24,310 --> 00:04:22,479
uh and

61
00:04:25,670 --> 00:04:24,320
so we do we just wanted to let you know

62
00:04:26,790 --> 00:04:25,680
that uh

63
00:04:28,790 --> 00:04:26,800

you know the

64
00:04:31,270 --> 00:04:28,800
amazing work that's being done on the

65
00:04:32,150 --> 00:04:31,280
international space station

66
00:04:33,430 --> 00:04:32,160
the

67
00:04:35,189 --> 00:04:33,440
not only

68
00:04:37,189 --> 00:04:35,199
by our american

69
00:04:39,909 --> 00:04:37,199
astronauts but also

70
00:04:43,110 --> 00:04:39,919
our colleagues from japan and russia

71
00:04:45,270 --> 00:04:43,120
is just a testimony to

72
00:04:47,749 --> 00:04:45,280
human ingenuity

73
00:04:48,870 --> 00:04:47,759
a testimony to extraordinary

74
00:04:51,510 --> 00:04:48,880
skill

75
00:04:53,030 --> 00:04:51,520
and courage that you guys bring to bear

76
00:04:56,310 --> 00:04:53,040
and

77
00:04:58,710 --> 00:04:56,320
is also a testimony to why continued

78
00:05:01,990 --> 00:04:58,720
space exploration is so important

79
00:05:05,590 --> 00:05:02,000
and and is part of the reason why uh my

80
00:05:07,110 --> 00:05:05,600
commitment to nasa uh is unwavering but

81
00:05:10,550 --> 00:05:07,120
instead of me doing all the talking i

82
00:05:11,990 --> 00:05:10,560
wanted you guys to maybe let us know

83
00:05:15,670 --> 00:05:12,000
what

84
00:05:18,550 --> 00:05:15,680
this new tranquility module

85
00:05:19,830 --> 00:05:18,560
will help you accomplish

86
00:05:21,670 --> 00:05:19,840
one of the things that we've done with

87
00:05:23,510 --> 00:05:21,680
our nasa

88
00:05:24,469 --> 00:05:23,520

vision for the future is to extend the

89
00:05:26,390 --> 00:05:24,479
life of

90
00:05:27,590 --> 00:05:26,400
our participation in in the space

91
00:05:29,029 --> 00:05:27,600
station

92
00:05:30,390 --> 00:05:29,039
and so we just want to get a sense of

93
00:05:31,670 --> 00:05:30,400
the kind of research that you guys are

94
00:05:32,950 --> 00:05:31,680
doing and then maybe i'll turn it over

95
00:05:43,350 --> 00:05:32,960
to some young people to see if they've

96
00:05:47,830 --> 00:05:45,270
you have the uh

97
00:05:49,590 --> 00:05:47,840
the joint crew of endeavor and in the

98
00:05:51,909 --> 00:05:49,600
space station and we are the ones that

99
00:05:54,230 --> 00:05:51,919
are fortunate enough to be able to

100
00:05:56,629 --> 00:05:54,240
accomplish this great mission together

101
00:05:58,230 --> 00:05:56,639
uh in space but there are many thousands

102
00:06:00,070 --> 00:05:58,240
of people around the world that get gave

103
00:06:01,990 --> 00:06:00,080
the best of themselves

104
00:06:04,150 --> 00:06:02,000
over many years in order to to have the

105
00:06:05,749 --> 00:06:04,160
days that we've been having up here

106
00:06:09,830 --> 00:06:05,759
for your your question i'm going to turn

107
00:06:13,990 --> 00:06:12,070
well mr president as you know the iss

108
00:06:16,390 --> 00:06:14,000
has been under assembly for many years

109
00:06:18,469 --> 00:06:16,400
uh over a decade now

110
00:06:19,749 --> 00:06:18,479
and as george said it's uh because of

111
00:06:21,189 --> 00:06:19,759
the efforts of thousands of people

112
00:06:23,110 --> 00:06:21,199
around the world among the international

113
00:06:25,350 --> 00:06:23,120

partnerships and where this uh the

114
00:06:28,629 --> 00:06:25,360
arrival of this module means uh several

115
00:06:31,350 --> 00:06:28,639
things it means uh uh of course that we

116
00:06:34,550 --> 00:06:31,360
uh everybody's aware of this new grand

117
00:06:37,670 --> 00:06:34,560
view that we have of the world below us

118
00:06:40,230 --> 00:06:37,680
and that brings a special significance

119
00:06:43,749 --> 00:06:40,240
but the tranquility module also is going

120
00:06:47,270 --> 00:06:43,759
to serve as a as a gym

121
00:06:49,510 --> 00:06:47,280
as a hygiene area as a place a crew can

122
00:06:51,670 --> 00:06:49,520
maintain themselves for a long duration

123
00:06:53,510 --> 00:06:51,680
and a long duration

124
00:06:55,670 --> 00:06:53,520
living and working in space is what the

125
00:06:58,390 --> 00:06:55,680
space station is all about

126
00:07:00,790 --> 00:06:58,400
to do the research

127
00:07:04,070 --> 00:07:00,800
and the science necessary to take us

128
00:07:06,629 --> 00:07:04,080
beyond earth orbit that was the ultimate

129
00:07:08,629 --> 00:07:06,639
purpose of the space station and the

130
00:07:09,589 --> 00:07:08,639
arrival of this module will enable us to

131
00:07:11,430 --> 00:07:09,599
do that

132
00:07:13,270 --> 00:07:11,440
and it really marks

133
00:07:15,510 --> 00:07:13,280
the end of the major assembly of at

134
00:07:17,430 --> 00:07:15,520
least the u.s orbiting segment

135
00:07:19,990 --> 00:07:17,440
to as we transition into full

136
00:07:24,629 --> 00:07:20,000
utilization of this magnificent orbiting

137
00:07:24,639 --> 00:07:27,589
laboratory

138
00:07:32,710 --> 00:07:30,469

do you guys want to just mention

139
00:07:34,390 --> 00:07:32,720
some of the

140
00:07:35,350 --> 00:07:34,400
research and experiments that you can

141
00:07:36,950 --> 00:07:35,360
conduct

142
00:07:39,270 --> 00:07:36,960
in

143
00:07:40,469 --> 00:07:39,280
on the space station that you could not

144
00:07:45,430 --> 00:07:40,479
be doing

145
00:07:48,950 --> 00:07:47,589
that's a great question mr president um

146
00:07:50,710 --> 00:07:48,960
let me start off by saying one of the

147
00:07:52,230 --> 00:07:50,720
nice things about where we physically

148
00:07:54,869 --> 00:07:52,240
are right now is that we remove the

149
00:07:56,830 --> 00:07:54,879
effects of gravity so we're able to do

150
00:07:59,510 --> 00:07:56,840
experiments that involve

151
00:08:01,589 --> 00:07:59,520
um the effect of gravity basically on

152
00:08:03,670 --> 00:08:01,599
earth as we look at what happens with

153
00:08:05,350 --> 00:08:03,680
the absence of it for instance when you

154
00:08:07,670 --> 00:08:05,360
do combustion studies

155
00:08:09,270 --> 00:08:07,680
flames on on earth burn in a teardrop

156
00:08:11,350 --> 00:08:09,280
fashion because the air comes in from

157
00:08:13,909 --> 00:08:11,360
underneath it and feeds the flame but we

158
00:08:15,909 --> 00:08:13,919
can't do that here since the air doesn't

159
00:08:18,629 --> 00:08:15,919
know where up is there's no convection

160
00:08:21,110 --> 00:08:18,639
so the flames burn very purely in a ball

161
00:08:23,189 --> 00:08:21,120
in a similar sense when we do um

162
00:08:25,189 --> 00:08:23,199
cellular research for even like for

163
00:08:27,110 --> 00:08:25,199

cancer research for instance

164
00:08:28,869 --> 00:08:27,120
on earth the cells actually collapse

165
00:08:30,070 --> 00:08:28,879
under their own weight and so it their

166
00:08:32,070 --> 00:08:30,080
growth on earth are a little bit

167
00:08:35,190 --> 00:08:32,080
distorted here without the gravity

168
00:08:36,949 --> 00:08:35,200
effect we can grow cells very purely and

169
00:08:38,630 --> 00:08:36,959
understand the mechanisms by which that

170
00:08:41,750 --> 00:08:38,640
they are replicating

171
00:08:43,430 --> 00:08:41,760
we're also doing um metallic research

172
00:08:45,190 --> 00:08:43,440
and materials research to help us

173
00:08:46,949 --> 00:08:45,200
understand how to make materials on

174
00:08:49,030 --> 00:08:46,959
earth better but also to find out what

175
00:08:50,710 --> 00:08:49,040
materials are better for long duration

176
00:08:52,470 --> 00:08:50,720
missions and and traveling beyond

177
00:08:54,230 --> 00:08:52,480
earth's orbit

178
00:08:56,150 --> 00:08:54,240
some of the other experiments involved

179
00:08:57,670 --> 00:08:56,160
biological where we actually have you

180
00:08:59,829 --> 00:08:57,680
know for instance butterflies up here

181
00:09:02,230 --> 00:08:59,839
and we watch the life process of the

182
00:09:04,150 --> 00:09:02,240
butterflies many many experiments up and

183
00:09:05,829 --> 00:09:04,160
down the stack

184
00:09:13,110 --> 00:09:05,839
are quite exciting when we are able to

185
00:09:16,790 --> 00:09:14,550
well the

186
00:09:18,389 --> 00:09:16,800
some of the things that you talked about

187
00:09:19,430 --> 00:09:18,399
are in line with

188
00:09:22,150 --> 00:09:19,440

where

189
00:09:23,750 --> 00:09:22,160
we want to see nasa going increasingly

190
00:09:25,110 --> 00:09:23,760
what are those transformational

191
00:09:27,750 --> 00:09:25,120
technologies

192
00:09:29,350 --> 00:09:27,760
that would allow us to potentially

193
00:09:31,829 --> 00:09:29,360
see space travel

194
00:09:34,310 --> 00:09:31,839
of longer durations if we want to get to

195
00:09:38,710 --> 00:09:34,320
mars if we want to get beyond that

196
00:09:40,630 --> 00:09:38,720
uh you know what kinds of uh you know

197
00:09:42,710 --> 00:09:40,640
technologies are going to be necessary

198
00:09:43,829 --> 00:09:42,720
in order for us to make sure that folks

199
00:09:45,670 --> 00:09:43,839
can get there

200
00:09:46,550 --> 00:09:45,680
in one piece and get back in one piece

201
00:09:47,990 --> 00:09:46,560
and

202
00:09:49,990 --> 00:09:48,000
uh that

203
00:09:52,949 --> 00:09:50,000
you know the kinds of fuels that we use

204
00:09:54,870 --> 00:09:52,959
and and the technologies we use uh

205
00:09:57,670 --> 00:09:54,880
are going to facilitate something that

206
00:09:59,190 --> 00:09:57,680
uh is actually feasible and we're very

207
00:10:00,470 --> 00:09:59,200
excited about the possibilities of

208
00:10:02,550 --> 00:10:00,480
putting more

209
00:10:04,710 --> 00:10:02,560
research dollars into some of these

210
00:10:06,710 --> 00:10:04,720
transformational technologies so we're

211
00:10:07,670 --> 00:10:06,720
excited by what you're doing and what

212
00:10:09,910 --> 00:10:07,680
folks

213
00:10:11,030 --> 00:10:09,920

back on earth as part of nasa's

214
00:10:12,790 --> 00:10:11,040
uh

215
00:10:14,949 --> 00:10:12,800
you know engineering teams and and

216
00:10:16,949 --> 00:10:14,959
scientific teams are doing

217
00:10:19,350 --> 00:10:16,959
what i want to do is give some of these

218
00:10:21,190 --> 00:10:19,360
young people a chance to uh ask a couple

219
00:10:22,550 --> 00:10:21,200
of questions um but i'm not sure i've

220
00:10:25,350 --> 00:10:22,560
got any volunteers so i'm going to turn

221
00:10:27,269 --> 00:10:25,360
around oh you do oh look at that

222
00:10:29,030 --> 00:10:27,279
this is a serious bunch here i can tell

223
00:10:32,949 --> 00:10:29,040
uh so i'm going to hand the phone over

224
00:10:38,790 --> 00:10:32,959
to the first one hold on

225
00:10:42,949 --> 00:10:40,790
um what are some of the benefits of

226
00:10:45,509 --> 00:10:42,959
exploring space as opposed to exploring

227
00:10:46,870 --> 00:10:45,519
other places on earth

228
00:10:48,550 --> 00:10:46,880
okay

229
00:10:49,829 --> 00:10:48,560
pretty serious question guys you better

230
00:11:02,870 --> 00:10:49,839
have a good answer to the national

231
00:11:07,430 --> 00:11:05,269
ruth i can tell you uh your curiosity

232
00:11:09,190 --> 00:11:07,440
reaches uh reaches far and and so does

233
00:11:10,630 --> 00:11:09,200
ours and that's that's sort of the human

234
00:11:12,550 --> 00:11:10,640
spirit to find out

235
00:11:14,470 --> 00:11:12,560
what can humans really do one thing

236
00:11:16,389 --> 00:11:14,480
that's always been i think amazing to

237
00:11:18,870 --> 00:11:16,399
every person who travels in space is

238
00:11:20,150 --> 00:11:18,880

that the human body is adaptable to this

239
00:11:22,230 --> 00:11:20,160
environment

240
00:11:24,630 --> 00:11:22,240
but adaptable in what way

241
00:11:26,710 --> 00:11:24,640
and how does the human body and even the

242
00:11:28,949 --> 00:11:26,720
human brain adapt to this very very

243
00:11:31,590 --> 00:11:28,959
different environment

244
00:11:34,389 --> 00:11:31,600
learning about how we ourselves work and

245
00:11:35,509 --> 00:11:34,399
how we can handle changes if we go

246
00:11:37,829 --> 00:11:35,519
somewhere

247
00:11:39,590 --> 00:11:37,839
very different than what we use used to

248
00:11:41,509 --> 00:11:39,600
is something that's valuable also on

249
00:11:42,389 --> 00:11:41,519
earth because our environment changes on

250
00:11:43,829 --> 00:11:42,399
earth too

251
00:11:46,069 --> 00:11:43,839
and in terms of

252
00:11:47,910 --> 00:11:46,079
health and medicine we understand better

253
00:11:54,550 --> 00:11:47,920
how our own bodies work so there's a lot

254
00:12:00,230 --> 00:11:57,430
all right who's next mary all right this

255
00:12:06,790 --> 00:12:00,240
is mary coming at you

256
00:12:06,800 --> 00:12:12,949
got any takers on that one

257
00:12:16,550 --> 00:12:15,110
mary hello this is nick patrick um the

258
00:12:18,150 --> 00:12:16,560
thing that inspired me to become an

259
00:12:19,829 --> 00:12:18,160
astronaut was watching the apollo moon

260
00:12:21,269 --> 00:12:19,839
landings many many years ago with my

261
00:12:22,629 --> 00:12:21,279
parents

262
00:12:25,990 --> 00:12:22,639
i thought i wanted to be a space

263
00:12:29,030 --> 00:12:26,000

explorer then and i i stuck to my dream

264
00:12:30,949 --> 00:12:29,040
i stayed in school i studied hard

265
00:12:35,350 --> 00:12:30,959
and

266
00:12:38,230 --> 00:12:35,360
an interest in things like

267
00:12:40,389 --> 00:12:38,240
sailing and flying i was able to realize

268
00:12:42,949 --> 00:12:40,399
my dream so i i would have some advice

269
00:12:44,389 --> 00:12:42,959
to all of you there which is uh study

270
00:12:46,230 --> 00:12:44,399
really hard in school listen to your

271
00:12:48,629 --> 00:12:46,240
teachers they're full of

272
00:12:51,750 --> 00:12:48,639
knowledge and experience that

273
00:12:54,389 --> 00:12:51,760
that you really can use in whatever path

274
00:12:57,910 --> 00:12:54,399
your future life takes you along whether

275
00:12:59,910 --> 00:12:57,920
it be engineering science

276
00:13:06,310 --> 00:12:59,920
a job in business or even space

277
00:13:12,069 --> 00:13:08,870
all right let's get uh

278
00:13:15,750 --> 00:13:13,910
young people from

279
00:13:21,670 --> 00:13:15,760
nebraska from nebraska and what's your

280
00:13:28,710 --> 00:13:23,269
do you think it would ever be possible

281
00:13:39,509 --> 00:13:32,150
that's a big physics question there guys

282
00:13:44,069 --> 00:13:41,910
hi jordan uh this is terry verts here

283
00:13:45,829 --> 00:13:44,079
and that's a great question because

284
00:13:48,150 --> 00:13:45,839
one of the hard things about long

285
00:13:49,829 --> 00:13:48,160
duration space flight is the human body

286
00:13:51,829 --> 00:13:49,839
dealing with weightlessness and a lack

287
00:13:54,310 --> 00:13:51,839
of gravity and one way you can create

288
00:13:56,710 --> 00:13:54,320

gravity is to spin things

289
00:13:58,550 --> 00:13:56,720
if you take a bucket of water or paint

290
00:14:00,550 --> 00:13:58,560
you can spin it around and you'll notice

291
00:14:02,470 --> 00:14:00,560
that the water stays pressed up against

292
00:14:04,550 --> 00:14:02,480
the bucket because you're accelerating

293
00:14:06,550 --> 00:14:04,560
it and so you can artificially create

294
00:14:08,790 --> 00:14:06,560
that acceleration that makes you feel

295
00:14:10,389 --> 00:14:08,800
like you're in gravity just by rotating

296
00:14:11,430 --> 00:14:10,399
something like a centrifuge so it is

297
00:14:13,030 --> 00:14:11,440
possible

298
00:14:14,629 --> 00:14:13,040
but to do that it requires a really

299
00:14:17,189 --> 00:14:14,639
large structure

300
00:14:19,110 --> 00:14:17,199
and uh so that's something that we

301
00:14:26,629 --> 00:14:19,120
haven't done here on the space station

302
00:14:30,310 --> 00:14:28,310
that was a great question all right

303
00:14:31,829 --> 00:14:30,320
we've got we need a michigan we got to

304
00:14:34,230 --> 00:14:31,839
make sure every state is represented

305
00:14:37,910 --> 00:14:35,750
what's your name

306
00:14:39,269 --> 00:14:37,920
okay go ahead and introduce yourself

307
00:14:40,710 --> 00:14:39,279
i was just wondering what kind of

308
00:14:44,870 --> 00:14:40,720
training did you have to go through

309
00:14:55,590 --> 00:14:44,880
before you were able to get into space

310
00:15:00,550 --> 00:14:57,750
well that's a great question you know it

311
00:15:03,750 --> 00:15:00,560
takes a lot of experience to be an

312
00:15:06,389 --> 00:15:03,760
astronaut and it's not just in one field

313
00:15:09,590 --> 00:15:06,399

we've all been through many many years

314
00:15:13,310 --> 00:15:09,600
of school but also experience in our own

315
00:15:16,470 --> 00:15:13,320
fields we have engineers scientists

316
00:15:19,350 --> 00:15:16,480
mathematicians medical doctors

317
00:15:22,470 --> 00:15:19,360
and physicists we have quite a range of

318
00:15:25,030 --> 00:15:22,480
experience that become astronauts

319
00:15:27,910 --> 00:15:25,040
and the important thing is that you have

320
00:15:31,030 --> 00:15:27,920
a good solid background in the technical

321
00:15:33,110 --> 00:15:31,040
fields the science the technology the

322
00:15:35,829 --> 00:15:33,120
engineering and the math to build on

323
00:15:38,150 --> 00:15:35,839
that because once everyone comes

324
00:15:40,870 --> 00:15:38,160
and is selected as an astronaut we all

325
00:15:43,030 --> 00:15:40,880
train generically for space flight and

326
00:15:44,550 --> 00:15:43,040
then we train specifically for our

327
00:15:46,550 --> 00:15:44,560
mission for the international space

328
00:15:49,990 --> 00:15:46,560
station it's a very complicated and very

329
00:15:52,710 --> 00:15:50,000
large spacecraft so the training is over

330
00:15:55,110 --> 00:15:52,720
multiple years just for a specific

331
00:15:57,110 --> 00:15:55,120
flight for the space shuttle being a

332
00:15:59,910 --> 00:15:57,120
shorter duration flight of just a couple

333
00:16:02,069 --> 00:15:59,920
of weeks we still train for over one

334
00:16:04,629 --> 00:16:02,079
year just specifically on the task that

335
00:16:07,269 --> 00:16:04,639
we'll accomplish on our mission so it's

336
00:16:09,749 --> 00:16:07,279
quite a bit of time but it certainly is

337
00:16:11,829 --> 00:16:09,759
worth it uh it's quite rewarding to us

338
00:16:19,829 --> 00:16:11,839

to be able to execute the mission that

339
00:16:24,470 --> 00:16:21,990
and i think we need to have at least one

340
00:16:26,389 --> 00:16:24,480
floridian is that right

341
00:16:28,150 --> 00:16:26,399
that we already had at floridian

342
00:16:29,189 --> 00:16:28,160
do we have every state covered so far

343
00:16:30,870 --> 00:16:29,199
here

344
00:16:32,790 --> 00:16:30,880
all right we've got we've got time for a

345
00:16:34,069 --> 00:16:32,800
couple more questions uh

346
00:16:35,430 --> 00:16:34,079
we were going to get a little gender

347
00:16:36,470 --> 00:16:35,440
balance here this young man down here

348
00:16:38,629 --> 00:16:36,480
what's your name

349
00:16:42,069 --> 00:16:38,639
joseph joseph hold on one second we've

350
00:16:44,629 --> 00:16:42,079
got a question from joseph from nebraska

351
00:16:48,790 --> 00:16:44,639
um are there any recognizable landmarks

352
00:16:52,790 --> 00:16:51,189
yeah you know the rumor was is that uh

353
00:16:54,069 --> 00:16:52,800
you can see the great wall from space

354
00:16:56,870 --> 00:16:54,079
but uh

355
00:16:58,389 --> 00:16:56,880
i'm not sure that's true so uh

356
00:17:02,790 --> 00:16:58,399
are there at least if there aren't

357
00:17:10,309 --> 00:17:05,189
natural landmarks uh other than

358
00:17:14,789 --> 00:17:12,309
yes mr president and joseph that's a

359
00:17:16,470 --> 00:17:14,799
great question actually uh one of the

360
00:17:18,789 --> 00:17:16,480
great achievements in this mission we

361
00:17:21,189 --> 00:17:18,799
have a great window big window that we

362
00:17:24,390 --> 00:17:21,199
are really fascinated by the great view

363
00:17:26,390 --> 00:17:24,400

of the earth and uh yes we can see a lot

364
00:17:28,069 --> 00:17:26,400
of great landmarks we can see the golden

365
00:17:31,190 --> 00:17:28,079
gate bridge the great

366
00:17:33,669 --> 00:17:31,200
skyscrapers in new york and the grand

367
00:17:36,630 --> 00:17:33,679
canyon is just breathtaking

368
00:17:38,310 --> 00:17:36,640
and also uh while in the night pass we

369
00:17:40,070 --> 00:17:38,320
can see that all the lights that means

370
00:17:42,950 --> 00:17:40,080
that the humans are

371
00:17:45,430 --> 00:17:42,960
active active even in the night and uh

372
00:17:47,190 --> 00:17:45,440
this is a great uh

373
00:17:54,950 --> 00:17:47,200
benefits that we all

374
00:17:58,150 --> 00:17:56,789
well there you go all right we've got

375
00:18:00,549 --> 00:17:58,160
looks like i've got a couple more

376
00:18:02,150 --> 00:18:00,559
questions hold on what's your name is

377
00:18:04,870 --> 00:18:02,160
barbara from

378
00:18:07,270 --> 00:18:04,880
from florida hello

379
00:18:09,110 --> 00:18:07,280
hi i'm curious about the thoughts and

380
00:18:13,990 --> 00:18:09,120
emotions that you guys feel when you're

381
00:18:14,000 --> 00:18:20,470
there you go

382
00:18:25,430 --> 00:18:21,909
lonely

383
00:18:25,440 --> 00:18:32,470
vertigo

384
00:18:35,590 --> 00:18:33,750
well that's a that's an excellent

385
00:18:37,990 --> 00:18:35,600
question question and i and i think that

386
00:18:39,909 --> 00:18:38,000
probably it ranges

387
00:18:41,750 --> 00:18:39,919
quite a bit over the period of a space

388
00:18:43,750 --> 00:18:41,760

shuttle mission and i expect it probably

389
00:18:45,990 --> 00:18:43,760
varies quite a bit over the range of a

390
00:18:48,470 --> 00:18:46,000
long duration mission um kind of

391
00:18:51,270 --> 00:18:48,480
starting off for the shuttle mission um

392
00:18:52,710 --> 00:18:51,280
at least for me i've done that twice now

393
00:18:54,789 --> 00:18:52,720
you kind of get into orbit and you're

394
00:18:57,190 --> 00:18:54,799
just kind of finding uh the equivalent

395
00:18:59,350 --> 00:18:57,200
of your sea legs if you will and so

396
00:19:01,270 --> 00:18:59,360
you're you've you've arrived on orbit

397
00:19:03,590 --> 00:19:01,280
and you kind of have a feeling of joy

398
00:19:05,430 --> 00:19:03,600
having having accomplished it your your

399
00:19:07,510 --> 00:19:05,440
body has just gone through kind of a

400
00:19:09,270 --> 00:19:07,520
little bit of a violent experience uh

401
00:19:11,029 --> 00:19:09,280
through the launch and you have a little

402
00:19:12,710 --> 00:19:11,039
bit of a adrenaline probably getting out

403
00:19:15,190 --> 00:19:12,720
of your system so it's a little bit of a

404
00:19:17,750 --> 00:19:15,200
joyous giddy moment at the same time

405
00:19:19,029 --> 00:19:17,760
that you're disoriented as you deal with

406
00:19:21,270 --> 00:19:19,039
the first uh

407
00:19:24,470 --> 00:19:21,280
first couple hours of actually being on

408
00:19:26,470 --> 00:19:24,480
orbit after after that passes after a

409
00:19:29,270 --> 00:19:26,480
couple of days it for me it was a kind

410
00:19:32,870 --> 00:19:29,280
of a sense of wonder as you as you

411
00:19:34,549 --> 00:19:32,880
explore what you can do in zero gravity

412
00:19:37,350 --> 00:19:34,559
and the things that you can see out the

413
00:19:39,029 --> 00:19:37,360

window and just how the entire complex

414
00:19:42,070 --> 00:19:39,039
works together to make it happen so it's

415
00:19:44,070 --> 00:19:42,080
just a sense of wonder after a little

416
00:19:45,510 --> 00:19:44,080
while after that i think you start to

417
00:19:48,150 --> 00:19:45,520
think a little bit about the people who

418
00:19:50,230 --> 00:19:48,160
are back on earth that are most precious

419
00:19:52,630 --> 00:19:50,240
to you and then that a little bit of a

420
00:19:54,470 --> 00:19:52,640
loneliness can kick in and one of the

421
00:19:56,470 --> 00:19:54,480
really nice things that we have in the

422
00:19:58,789 --> 00:19:56,480
long duration crews have is the

423
00:20:00,870 --> 00:19:58,799
opportunity to use a telephone or to

424
00:20:03,430 --> 00:20:00,880
perform a video conference similar to

425
00:20:05,510 --> 00:20:03,440
like we're doing with you guys with our

426
00:20:07,909 --> 00:20:05,520
families and i think that's a really

427
00:20:10,310 --> 00:20:07,919
important for folks to to maintain that

428
00:20:11,669 --> 00:20:10,320
contact uh when you're up here uh on

429
00:20:13,830 --> 00:20:11,679
orbit of course you have your crew

430
00:20:15,990 --> 00:20:13,840
members but uh you do really want to

431
00:20:18,230 --> 00:20:16,000
maintain those uh precious relationships

432
00:20:19,830 --> 00:20:18,240
with all your your family members and

433
00:20:21,909 --> 00:20:19,840
friends that are on the ground and and

434
00:20:24,230 --> 00:20:21,919
they do a remarkable job actually

435
00:20:25,990 --> 00:20:24,240
supporting us uh while we're in space to

436
00:20:27,830 --> 00:20:26,000
make sure that we can still speak with

437
00:20:29,990 --> 00:20:27,840
our families and that our our families

438
00:20:32,470 --> 00:20:30,000

are informed and uh

439
00:20:35,510 --> 00:20:32,480
able to stay in contact with us but all

440
00:20:37,750 --> 00:20:35,520
those emotions kind of wrap up together

441
00:20:40,789 --> 00:20:37,760
kind of the final one is uh kind of when

442
00:20:42,470 --> 00:20:40,799
you do return to earth and and kick off

443
00:20:44,789 --> 00:20:42,480
all those relationships that whether

444
00:20:47,029 --> 00:20:44,799
they were two weeks or six months later

445
00:20:48,950 --> 00:20:47,039
have a time has passed and and you have

446
00:20:49,909 --> 00:20:48,960
to kind of rebuild them a little bit but

447
00:20:52,470 --> 00:20:49,919
uh

448
00:20:55,510 --> 00:20:52,480
it's it's a very joyous experience um

449
00:20:57,669 --> 00:20:55,520
and uh something that you you can share

450
00:20:59,430 --> 00:20:57,679
with uh both the people on the ground

451
00:21:00,789 --> 00:20:59,440
and the the people who are part of your

452
00:21:02,710 --> 00:21:00,799
crew

453
00:21:08,470 --> 00:21:02,720
throughout the entire mission

454
00:21:11,990 --> 00:21:09,350
all right

455
00:21:14,950 --> 00:21:12,000
this the last question that we've been

456
00:21:17,909 --> 00:21:14,960
keeping you guys over time uh uh so

457
00:21:20,630 --> 00:21:17,919
what's your name alex this this is alex

458
00:21:23,510 --> 00:21:20,640
hold on one sec

459
00:21:25,909 --> 00:21:23,520
does being up in space allow you to see

460
00:21:29,990 --> 00:21:25,919
things such as the weather like could

461
00:21:33,190 --> 00:21:31,590
well that's a good point uh obviously

462
00:21:35,350 --> 00:21:33,200
we're using a lot of satellite imagery

463
00:21:37,830 --> 00:21:35,360

these days and and this is going to be a

464
00:21:39,029 --> 00:21:37,840
major focus of some of the work nasa's

465
00:21:40,230 --> 00:21:39,039
doing here

466
00:21:43,350 --> 00:21:40,240
at home

467
00:21:45,909 --> 00:21:43,360
thinking about how we can get better

468
00:21:47,029 --> 00:21:45,919
information about our own climate

469
00:21:52,710 --> 00:21:47,039
is that something that you guys are

470
00:21:55,909 --> 00:21:53,750
well we

471
00:21:57,990 --> 00:21:55,919
we have the opportunity to view a lot of

472
00:21:59,669 --> 00:21:58,000
the weather phenomena we've seen many

473
00:22:00,950 --> 00:21:59,679
hurricanes and

474
00:22:03,190 --> 00:22:00,960
typhoons

475
00:22:06,149 --> 00:22:03,200
and whatnot around the world we can see

476
00:22:08,549 --> 00:22:06,159
fronts crossing continents

477
00:22:10,630 --> 00:22:08,559
we see the whole variety of cloud

478
00:22:13,430 --> 00:22:10,640
formations

479
00:22:15,909 --> 00:22:13,440
we sometimes can see the aftermath of a

480
00:22:17,110 --> 00:22:15,919
storm um

481
00:22:18,070 --> 00:22:17,120
or other

482
00:22:21,190 --> 00:22:18,080
major

483
00:22:23,430 --> 00:22:21,200
uh impact on the earth after the sky

484
00:22:24,950 --> 00:22:23,440
clears so there's a whole lot of details

485
00:22:27,430 --> 00:22:24,960
that we can see here from the space

486
00:22:29,909 --> 00:22:27,440
station and observe you know every day

487
00:22:31,669 --> 00:22:29,919
we can see things we pass over the uh

488
00:22:34,310 --> 00:22:31,679

the same portion of the earth every day

489
00:22:35,830 --> 00:22:34,320
so it's a regular uh observation that we

490
00:22:42,630 --> 00:22:35,840
can make over a period long period of

491
00:22:47,990 --> 00:22:44,789
well listen you guys have been uh

492
00:22:49,590 --> 00:22:48,000
extraordinarily generous with your time

493
00:22:51,830 --> 00:22:49,600
i just want to repeat and i think i

494
00:22:54,549 --> 00:22:51,840
speak for all the young people here and

495
00:22:55,750 --> 00:22:54,559
uh everybody back home uh how proud we

496
00:22:58,149 --> 00:22:55,760
are of you

497
00:22:59,830 --> 00:22:58,159
how excited we are about

498
00:23:00,870 --> 00:22:59,840
the work that's being done on the space

499
00:23:03,830 --> 00:23:00,880
station

500
00:23:06,950 --> 00:23:03,840
uh and uh how committed we are to

501
00:23:09,990 --> 00:23:06,960
continuing uh human space exploration

502
00:23:12,310 --> 00:23:10,000
uh in the future so you guys continue to

503
00:23:14,549 --> 00:23:12,320
be great pioneers uh and great role

504
00:23:16,390 --> 00:23:14,559
models for all of us and uh we thank you

505
00:23:18,870 --> 00:23:16,400
for your courage and and tell your

506
00:23:21,110 --> 00:23:18,880
families we appreciate uh

507
00:23:23,830 --> 00:23:21,120
them letting you uh float up into space

508
00:23:36,710 --> 00:23:23,840
like this all right

509
00:23:40,390 --> 00:23:38,390
all right guys

510
00:23:42,390 --> 00:23:40,400
nice job good questions yeah great

511
00:23:45,669 --> 00:23:42,400
question i was very impressed i can tell

512
00:23:49,909 --> 00:23:47,990
endeavor iss this is houston this

513
00:23:51,909 --> 00:23:49,919

concludes the event thank you mr

514
00:23:59,029 --> 00:23:51,919
president endeavor iss we are now

515
00:24:02,549 --> 00:24:00,710
today's activities on board the

516
00:24:05,909 --> 00:24:02,559
international space station and endeavor

517
00:24:08,630 --> 00:24:05,919
will focus on transferring the

518
00:24:12,149 --> 00:24:08,640
regenerative life support equipment into

519
00:24:13,909 --> 00:24:12,159
the new tranquility node those are

520
00:24:16,310 --> 00:24:13,919
that equipment is

521
00:24:18,470 --> 00:24:16,320
separated out into various phone phone

522
00:24:20,230 --> 00:24:18,480
booth sized racks

523
00:24:21,750 --> 00:24:20,240
many of them inside the destiny

524
00:24:23,750 --> 00:24:21,760
laboratory module

525
00:24:26,390 --> 00:24:23,760
and now that tranquility is there they

526
00:24:28,870 --> 00:24:26,400
can be relocated to that place and free

527
00:24:30,310 --> 00:24:28,880
up room inside the lab for additional

528
00:24:45,590 --> 00:24:30,320
research

529
00:24:48,710 --> 00:24:47,110
continuing to watch a view on the

530
00:24:49,830 --> 00:24:48,720
outside of the international space

531
00:24:51,830 --> 00:24:49,840
station

532
00:24:54,230 --> 00:24:51,840
and space shuttle endeavor

533
00:24:56,470 --> 00:24:54,240
as endeavor's robotic arm is being

534
00:24:57,830 --> 00:24:56,480
maneuvered slightly to a different

535
00:25:00,470 --> 00:24:57,840
position

536
00:25:02,149 --> 00:25:00,480
for a more stable configuration for when

537
00:25:04,310 --> 00:25:02,159
endeavour and docks from the station

538
00:25:05,830 --> 00:25:04,320

friday evening

539
00:25:08,549 --> 00:25:05,840
it also

540
00:25:10,870 --> 00:25:08,559
coincides with the reboost

541
00:25:16,390 --> 00:25:10,880
of the station's altitude tonight

542
00:25:21,029 --> 00:25:17,990
the arm

543
00:25:23,269 --> 00:25:21,039
still has the orbiter boom sensor system

544
00:25:27,190 --> 00:25:23,279
attached and we'll

545
00:25:29,669 --> 00:25:27,200
leave that attached for the undocking

546
00:25:31,190 --> 00:25:29,679
ready for the light inspection

547
00:25:33,269 --> 00:25:31,200
procedures following endeavor's

548
00:25:35,350 --> 00:25:33,279
departure from the station

549
00:25:37,590 --> 00:25:35,360
during which the same procedures are

550
00:25:39,590 --> 00:25:37,600
followed from the flight day two

551
00:25:40,549 --> 00:25:39,600
activities to inspect endeavors heat

552
00:25:43,590 --> 00:25:40,559
shield

553
00:25:45,750 --> 00:25:43,600
for any damage this time from

554
00:26:06,070 --> 00:25:45,760
micrometeoroid or orbital debris during

555
00:26:11,110 --> 00:26:08,070
this camera is set up inside the unity

556
00:26:13,190 --> 00:26:11,120
node looking towards destiny

557
00:26:16,070 --> 00:26:13,200
astronauts nicholas patrick and bob

558
00:26:18,549 --> 00:26:16,080
bankin are working in this area around

559
00:26:21,510 --> 00:26:18,559
the hatchway to the quest airlock

560
00:26:23,190 --> 00:26:21,520
as they are reconfiguring the suits and

561
00:26:25,269 --> 00:26:23,200
equipment that they used for the

562
00:26:27,350 --> 00:26:25,279
mission's three spacewalks

563
00:26:29,350 --> 00:26:27,360

they will stow equipment inside quest

564
00:26:31,029 --> 00:26:29,360
that will be used for future spacewalks

565
00:26:33,190 --> 00:26:31,039
and also get ready

566
00:26:38,310 --> 00:26:33,200
and transfer equipment over to endeavour

567
00:26:42,710 --> 00:26:40,070
the camera view inside the destiny

568
00:26:45,350 --> 00:26:42,720
laboratory looking forward again

569
00:26:50,870 --> 00:26:45,360
toward the harmony node and the hatchway

570
00:26:55,990 --> 00:26:52,549
astronaut steve robinson is working on

571
00:26:57,990 --> 00:26:56,000
the deck or the floor of destiny to

572
00:26:59,990 --> 00:26:58,000
disconnect umbilicals to the water

573
00:27:01,830 --> 00:27:00,000
recovery system

574
00:27:03,510 --> 00:27:01,840
that system including two different

575
00:27:10,310 --> 00:27:03,520
phone booth sized racks that will be

576
00:27:14,870 --> 00:27:12,470
robinson and astronaut tj creamer

577
00:27:16,870 --> 00:27:14,880
scheduled to first relocate the water

578
00:27:19,590 --> 00:27:16,880
recovery system number one rack which is

579
00:27:29,190 --> 00:27:19,600
the urine processor assembly component

580
00:27:33,830 --> 00:27:31,590
robinson adjusting his protective

581
00:27:35,750 --> 00:27:33,840
equipment that he is wearing goggles and

582
00:27:37,669 --> 00:27:35,760
masks and gloves while working with

583
00:27:38,870 --> 00:27:37,679
these umbilicals in the water recovery

584
00:27:43,750 --> 00:27:38,880
system

585
00:27:45,830 --> 00:27:43,760
processes and filters to

586
00:27:47,510 --> 00:27:45,840
treat astronauts urine and perspiration

587
00:27:49,909 --> 00:27:47,520
in hygiene water

588
00:27:52,149 --> 00:27:49,919

recycling about 93 percent of the fluid

589
00:27:53,909 --> 00:27:52,159
it receives to provide water clean

590
00:28:00,710 --> 00:27:53,919
enough to drink for the astronauts on

591
00:28:05,190 --> 00:28:02,870
view inside the station's destiny

592
00:28:08,070 --> 00:28:05,200
laboratory with the

593
00:28:10,310 --> 00:28:08,080
removal of the water recovery system

594
00:28:12,870 --> 00:28:10,320
rack that houses the urine processor

595
00:28:15,029 --> 00:28:12,880
assembly

596
00:28:20,950 --> 00:28:15,039
that is being moved from the destiny lab

597
00:28:25,510 --> 00:28:22,789
this is the first rack for the

598
00:28:28,070 --> 00:28:25,520
relocation activities today

599
00:28:30,470 --> 00:28:28,080
the air revitalization system rack has

600
00:28:32,950 --> 00:28:30,480
already been moved into tranquility

601
00:28:35,029 --> 00:28:32,960
earlier in the mission

602
00:28:36,710 --> 00:28:35,039
station crewmates jeff williams and tj

603
00:28:39,990 --> 00:28:36,720
creamer and shuttle astronaut steve

604
00:28:42,070 --> 00:28:40,000
robinson are working on moving this rack

605
00:28:45,029 --> 00:28:42,080
lifting it out of the deck or basically

606
00:28:47,909 --> 00:28:45,039
the floor of destiny

607
00:29:11,190 --> 00:28:47,919
and moving it into tranquility also

608
00:29:14,710 --> 00:29:12,950
this is a video camera set up in the

609
00:29:16,470 --> 00:29:14,720
unity node looking through the hatchway

610
00:29:18,310 --> 00:29:16,480
towards tranquility

611
00:29:20,549 --> 00:29:18,320
where the astronauts are installing the

612
00:29:23,510 --> 00:29:20,559
waste and hygiene compartment into the

613
00:29:59,750 --> 00:29:23,520

new tranquility node having removed it

614
00:29:59,760 --> 00:30:03,269
go ahead and add a ground too

615
00:30:17,430 --> 00:30:05,269
uh math am i supposed to

616
00:30:17,440 --> 00:30:30,230
george standby

617
00:30:35,350 --> 00:30:32,789
and deborah houston for the reboost

618
00:30:37,190 --> 00:30:35,360
george we do see it underway here and uh

619
00:30:39,430 --> 00:30:37,200
you should see some activity with your

620
00:30:42,389 --> 00:30:39,440
f7 lights uh seeing some jet firings

621
00:30:44,470 --> 00:30:42,399
there you're not seeing that

622
00:30:46,870 --> 00:30:44,480
no no i was expecting to see something

623
00:30:49,269 --> 00:30:46,880
but they're blank and i did see them i

624
00:30:52,549 --> 00:30:49,279
just now saw them firing uh to get into

625
00:30:56,149 --> 00:30:54,789
copy uh and we're watching it from down

626
00:30:58,630 --> 00:30:56,159
here and uh

627
00:31:00,870 --> 00:30:58,640
our uh our folks are telling us that uh

628
00:31:05,190 --> 00:31:00,880
yeah and you are indeed doing the

629
00:31:07,269 --> 00:31:05,200
reboost and all's well right now

630
00:31:10,389 --> 00:31:07,279
okay great now as you were talking at

631
00:31:13,509 --> 00:31:10,399
the uh i just got a right yaw activity

632
00:31:21,269 --> 00:31:13,519
light and it's uh it's honestly

633
00:31:25,830 --> 00:31:23,350
as you heard during that conversation

634
00:31:27,590 --> 00:31:25,840
between capcom mike massimino and

635
00:31:29,909 --> 00:31:27,600
shuttle commander george zamkin the

636
00:31:31,350 --> 00:31:29,919
reboost of the

637
00:31:32,870 --> 00:31:31,360
shuttle and space station using the

638
00:31:35,190 --> 00:31:32,880

space shuttle

639
00:31:37,350 --> 00:31:35,200
reaction control system is underway

640
00:31:41,750 --> 00:31:37,360
those uh engines will be firing for a

641
00:31:48,789 --> 00:31:44,870
bring the shuttle in station to a 219 by

642
00:31:51,269 --> 00:31:48,799
208 statute mile orbit

643
00:31:53,909 --> 00:31:51,279
that again will get the space station in

644
00:31:55,669 --> 00:31:53,919
a good place to

645
00:31:58,310 --> 00:31:55,679
receive future visiting vehicles

646
00:32:01,430 --> 00:31:58,320
including the russian soyuz vehicles and

647
00:32:01,440 --> 00:32:13,350
future space shuttles as

648
00:32:18,230 --> 00:32:15,509
and mike well is just uh some project

649
00:32:23,350 --> 00:32:18,240
video as we were uh maneuvering the obsf

650
00:32:27,350 --> 00:32:25,590
one thing i will say about having the

651
00:32:28,950 --> 00:32:27,360
cooper out there is when we do look at

652
00:32:31,350 --> 00:32:28,960
and we can see

653
00:32:34,549 --> 00:32:31,360
all the uh components of the space

654
00:32:37,509 --> 00:32:34,559
station and and the big arm out there uh

655
00:32:39,269 --> 00:32:37,519
we get an appreciation for uh

656
00:32:40,710 --> 00:32:39,279
the tightness of the space and the fact

657
00:32:44,070 --> 00:32:40,720
that even simple

658
00:32:45,430 --> 00:32:44,080
uh moves like this uh require pretty

659
00:32:47,269 --> 00:32:45,440
um

660
00:32:48,789 --> 00:32:47,279
pretty strict uh clearance discipline to

661
00:32:50,549 --> 00:32:48,799
make sure that you know where the arm's

662
00:32:52,230 --> 00:32:50,559
going and you've got the the volume in

663
00:32:53,909 --> 00:32:52,240

front of you clear so

664
00:32:56,070 --> 00:32:53,919
uh you know all these years we've been

665
00:32:58,630 --> 00:32:56,080
doing without in terms of a direct view

666
00:33:00,230 --> 00:32:58,640
and then providing it directly tells us

667
00:33:21,350 --> 00:33:00,240
boy that that was really some work that

668
00:33:24,950 --> 00:33:23,669
we have successful compactor apps i

669
00:33:26,149 --> 00:33:24,960
can't remember if we reported that or

670
00:33:28,710 --> 00:33:26,159
not but it was there's a lot of

671
00:33:30,630 --> 00:33:28,720
rejoicing in the uh

672
00:33:36,789 --> 00:33:30,640
on the flight deck and the mid deck and

673
00:33:36,799 --> 00:33:40,310
here's bamboo having lunch

674
00:33:40,320 --> 00:33:47,590
can't do that on earth

675
00:33:51,750 --> 00:33:49,430
and here was k downlinked some video

676
00:33:54,230 --> 00:33:51,760
earlier she was uh

677
00:33:56,389 --> 00:33:54,240
she did the robotic arm ops today she

678
00:33:58,230 --> 00:33:56,399
moved our inspection boom

679
00:34:10,389 --> 00:33:58,240
into an undocking position so it'll be

680
00:34:14,389 --> 00:34:11,990
and this is what we do with trash in

681
00:34:16,230 --> 00:34:14,399
space here's bob demonstrating our trash

682
00:34:17,829 --> 00:34:16,240
compaction techniques

683
00:34:19,589 --> 00:34:17,839
you put it in a bag

684
00:34:21,349 --> 00:34:19,599
mash it down as hard as you can small as

685
00:34:23,109 --> 00:34:21,359
you can get it and

686
00:34:24,869 --> 00:34:23,119
then you gray tape it so it stays

687
00:34:26,389 --> 00:34:24,879
smashed up there and then

688
00:34:29,669 --> 00:34:26,399

that saves volume because we don't have

689
00:34:31,589 --> 00:34:29,679
very much space to put our trash

690
00:34:34,470 --> 00:34:31,599
we have wet trash and dry trash i'm not

691
00:34:36,389 --> 00:34:34,480
sure what bob was doing there and here

692
00:34:37,909 --> 00:34:36,399
is kay

693
00:34:56,710 --> 00:34:37,919
back on the

694
00:35:00,950 --> 00:34:58,150
so this is our view

695
00:35:02,310 --> 00:35:00,960
normally we use cameras but really nice

696
00:35:04,230 --> 00:35:02,320
looking out the window you can see the

697
00:35:06,230 --> 00:35:04,240
shuttle arm there in the bottom the wing

698
00:35:08,310 --> 00:35:06,240
is a really bright thing

699
00:35:13,349 --> 00:35:08,320
and then up on the top i think you can

700
00:35:17,270 --> 00:35:15,349
that the thing up top i think was called

701
00:35:18,230 --> 00:35:17,280
the ldri which is our

702
00:35:20,710 --> 00:35:18,240
laser

703
00:35:33,109 --> 00:35:20,720
infrared camera that we use to inspect

704
00:35:36,950 --> 00:35:35,190
and here it is moving nick um took the

705
00:35:38,630 --> 00:35:36,960
camcorder down to the russian segment

706
00:35:39,589 --> 00:35:38,640
and and filmed it moving here for a

707
00:35:41,109 --> 00:35:39,599
little while

708
00:36:01,670 --> 00:35:41,119
how much time do i have left on the path

709
00:36:06,150 --> 00:36:03,510
and uh mike this is actually a view from

710
00:36:08,150 --> 00:36:06,160
cupola this is the first um time that we

711
00:36:10,550 --> 00:36:08,160
use the cupola to observe robotic

712
00:36:11,990 --> 00:36:10,560
operations which is one of its main uses

713
00:36:13,990 --> 00:36:12,000

so that was pretty cool nick went down

714
00:36:28,950 --> 00:36:14,000
there and helped us watch the uh

715
00:36:34,870 --> 00:36:32,150
that's a nice view of the boom that long

716
00:36:37,109 --> 00:36:34,880
skinny arm is the obss inspection boom

717
00:36:38,470 --> 00:36:37,119
there you can see the endeavors wing and

718
00:36:39,670 --> 00:36:38,480
you can see the station arm in the

719
00:36:40,550 --> 00:36:39,680
foreground so you can see there's a lot

720
00:36:42,710 --> 00:36:40,560
of

721
00:36:43,829 --> 00:36:42,720
stuff in the way and having that window

722
00:36:47,109 --> 00:36:43,839
just help

723
00:36:49,750 --> 00:36:47,119
helps a million million times for doing

724
00:36:51,349 --> 00:36:49,760
robotics in airplanes they say a peak is

725
00:36:52,150 --> 00:36:51,359
worth a thousand cross-checks and that

726
00:36:53,589 --> 00:36:52,160
means

727
00:36:54,950 --> 00:36:53,599
it's a lot better to look out the window

728
00:36:56,310 --> 00:36:54,960
than it is to watch your instruments and

729
00:36:57,990 --> 00:36:56,320
it's the same thing with robotics when

730
00:37:04,550 --> 00:36:58,000
you can look out the window it makes

731
00:37:08,230 --> 00:37:06,310
i think that god gave us two eyes and

732
00:37:09,510 --> 00:37:08,240
that gives us depth perception and you

733
00:37:17,510 --> 00:37:09,520
don't get that with just looking at

734
00:37:22,230 --> 00:37:20,230
and here with stevie ray today

735
00:37:24,310 --> 00:37:22,240
the big thing which was just great news

736
00:37:26,790 --> 00:37:24,320
we got a lot of our life support racks

737
00:37:28,630 --> 00:37:26,800
moved down to note 3

738
00:37:29,510 --> 00:37:28,640

and uh activated

739
00:37:31,990 --> 00:37:29,520
and

740
00:37:33,589 --> 00:37:32,000
steve was

741
00:37:34,710 --> 00:37:33,599
hooked up in all of his protective

742
00:37:36,950 --> 00:37:34,720
equipment

743
00:37:38,790 --> 00:37:36,960
keeping him safe

744
00:37:40,390 --> 00:37:38,800
operating in some of that uh with some

745
00:37:42,069 --> 00:37:40,400
of the equipment he was doing so he

746
00:37:44,950 --> 00:37:42,079
spent the entire day moving racks and

747
00:37:46,470 --> 00:37:44,960
here's an example of iraq that thing

748
00:37:48,069 --> 00:37:46,480
would probably weigh roughly a thousand

749
00:37:50,150 --> 00:37:48,079
pounds on earth

750
00:37:51,670 --> 00:37:50,160
and in space you can just it's floating

751
00:37:53,990 --> 00:37:51,680
free right now you can just push it a

752
00:37:55,910 --> 00:37:54,000
little bit and it moves the problem is

753
00:37:57,430 --> 00:37:55,920
it it requires you know a thousand

754
00:37:58,550 --> 00:37:57,440
pounds of force to stop it on the other

755
00:38:00,069 --> 00:37:58,560
side so

756
00:38:01,750 --> 00:38:00,079
you have to be really gentle with it you

757
00:38:02,550 --> 00:38:01,760
don't want to bang things and they

758
00:38:04,150 --> 00:38:02,560
they're

759
00:38:06,310 --> 00:38:04,160
such that they barely fit through the

760
00:38:08,390 --> 00:38:06,320
hatch so it's a little bit of a

761
00:38:15,670 --> 00:38:08,400
tight squeeze but we were able to move

762
00:38:20,870 --> 00:38:17,910
so here's a view from the node looking

763
00:38:22,470 --> 00:38:20,880

into node three

764
00:38:24,710 --> 00:38:22,480
it looks a lot different now than it did

765
00:38:26,710 --> 00:38:24,720
a few days ago

766
00:38:28,710 --> 00:38:26,720
there's a cupola with the windows open

767
00:38:30,470 --> 00:38:28,720
and there's all these racks activated

768
00:38:34,310 --> 00:38:30,480
it's

769
00:38:36,470 --> 00:38:34,320
unbelievable awful work that has

770
00:38:37,910 --> 00:38:36,480
happened in the last few days and uh

771
00:38:39,349 --> 00:38:37,920
most of it thanks to the space station

772
00:38:40,710 --> 00:38:39,359
crew those guys are so good they're so

773
00:38:41,990 --> 00:38:40,720
efficient they know what they're doing

774
00:38:44,829 --> 00:38:42,000
and they're and they're the ones who

775
00:38:47,589 --> 00:38:44,839
have done uh gotten this whole thing

776
00:38:49,829 --> 00:38:47,599
activated to jeff williams and tj and

777
00:38:55,910 --> 00:38:49,839
suici and also oleg and max have helped

778
00:39:00,069 --> 00:38:57,270
one thing we all kept thinking about

779
00:39:01,510 --> 00:39:00,079
today was how many people have to work

780
00:39:03,109 --> 00:39:01,520
so hard

781
00:39:04,790 --> 00:39:03,119
to prepare

782
00:39:06,550 --> 00:39:04,800
the plan

783
00:39:07,990 --> 00:39:06,560
and the mechanical engineering the

784
00:39:11,750 --> 00:39:08,000
fluids engineering the thermal

785
00:39:13,829 --> 00:39:11,760
engineering timelines the procedures

786
00:39:16,230 --> 00:39:13,839
with a tremendous amount of human

787
00:39:18,790 --> 00:39:16,240
intellectual energy to get ready for uh

788
00:39:21,190 --> 00:39:18,800

this mission and particularly today

789
00:39:23,190 --> 00:39:21,200
and the folks over uh

790
00:39:25,750 --> 00:39:23,200
and the life support side of both the

791
00:39:27,670 --> 00:39:25,760
station and especially

792
00:39:30,150 --> 00:39:27,680
well especially stationed in also

793
00:39:32,310 --> 00:39:30,160
shuttle and also the oso folks the

794
00:39:34,630 --> 00:39:32,320
mechanical system support folks

795
00:39:36,069 --> 00:39:34,640
just done a tremendous amount of work

796
00:39:38,470 --> 00:39:36,079
behind the scenes

797
00:39:40,310 --> 00:39:38,480
and uh we owe a huge debt of gratitude