1
00:00:14,470 --> 00:00:12,070
hello

2
00:00:15,430 --> 00:00:14,480
i'm sts-130 mission specialist nicholas

3
00:01:31,590 --> 00:00:15,440
patrick

4
00:01:41,190 --> 00:01:33,270
good morning endeavor and a special good

5
00:01:45,990 --> 00:01:44,149
good morning shannon and uh good morning

6
00:01:47,990 --> 00:01:46,000
to all the students at uh

7
00:01:49,670 --> 00:01:48,000
our school in london and to all the

8
00:01:51,749 --> 00:01:49,680
students everywhere

9
00:01:53,910 --> 00:01:51,759
from 200 miles above the atlantic i'd

10
00:01:54,950 --> 00:01:53,920
like to encourage you all to follow your

11
00:01:57,429 --> 00:01:54,960
dreams

12
00:01:59,429 --> 00:01:57,439
good morning

13
00:02:02,149 --> 00:01:59,439

and thanks a lot nick

14
00:02:03,510 --> 00:02:02,159
song 40 years on

15
00:02:06,830 --> 00:02:03,520
which is the

16
00:02:09,910 --> 00:02:06,840
school song of the harrow school

17
00:02:12,150 --> 00:02:09,920
the wake up music today is for

18
00:02:15,270 --> 00:02:12,160
harrow alumnus mission specialist nick

19
00:02:18,390 --> 00:02:16,790
this is mission control houston with a

20
00:02:19,750 --> 00:02:18,400
view on the outside of the international

21
00:02:22,550 --> 00:02:19,760
space station looking at the new

22
00:02:24,150 --> 00:02:22,560
tranquility node and the cupola which is

23
00:02:26,390 --> 00:02:24,160
currently still attached to the end of

24
00:02:29,589 --> 00:02:26,400
tranquility but will be relocated during

25
00:02:30,630 --> 00:02:29,599
the cruise day today

26
00:02:32,030 --> 00:02:30,640
that

27
00:02:34,070 --> 00:02:32,040
work will start with the

28
00:02:36,229 --> 00:02:34,080
depressurization of the cupola by

29
00:02:37,350 --> 00:02:36,239
endeavors astronauts terry burts and kay

30
00:02:39,830 --> 00:02:37,360
hire

31
00:02:41,990 --> 00:02:39,840
and then higher inverts will begin

32
00:02:44,630 --> 00:02:42,000
operating canadarm2 the station's

33
00:02:46,229 --> 00:02:44,640
robotic arm you see poised and standing

34
00:02:49,110 --> 00:02:46,239
by there

35
00:02:51,910 --> 00:02:49,120
they will use that to latch onto cupola

36
00:02:54,710 --> 00:02:51,920
and then eventually relocate it

37
00:02:56,390 --> 00:02:54,720
view inside tranquility watching

38
00:02:58,630 --> 00:02:56,400

terry burts and kay hire work through

39
00:03:00,390 --> 00:02:58,640
the procedure to depressurize cupola

40
00:03:03,030 --> 00:03:00,400
which is on the other side of the hatch

41
00:03:07,990 --> 00:03:04,949
this is a view inside the station's

42
00:03:10,390 --> 00:03:08,000
destiny laboratory astronaut k heyer is

43
00:03:12,630 --> 00:03:10,400
positioned at the robotics workstation

44
00:03:14,869 --> 00:03:12,640
which she and astronaut terry burts use

45
00:03:16,949 --> 00:03:14,879
to operate canadarm2

46
00:03:20,710 --> 00:03:16,959
there's a time

47
00:03:23,270 --> 00:03:20,720
to get set up for that operation of

48
00:03:27,589 --> 00:03:23,280
the arm to relocate cupola

49
00:03:29,270 --> 00:03:27,599
while the depressurization is in work

50
00:03:31,270 --> 00:03:29,280
this is now a live view inside the

51
00:03:33,509 --> 00:03:31,280
station's quest airlock where the

52
00:03:35,270 --> 00:03:33,519
spacewalkers for this mission bob bankin

53
00:03:37,589 --> 00:03:35,280
and nicholas patrick are working on

54
00:03:39,430 --> 00:03:37,599
configuring tools for the mission's

55
00:03:41,910 --> 00:03:39,440
third spacewalk

56
00:03:44,550 --> 00:03:41,920
there are two days in between the second

57
00:03:45,750 --> 00:03:44,560
and third spacewalk now so the third

58
00:03:49,750 --> 00:03:45,760
excursion

59
00:03:55,110 --> 00:03:52,470
we see benkin and patrick inside the

60
00:03:56,949 --> 00:03:55,120
airlock getting their tools set up for

61
00:03:59,750 --> 00:03:56,959
the mission's third spacewalk

62
00:04:01,270 --> 00:03:59,760
they're doing most of this work today as

63
00:04:04,550 --> 00:04:01,280

the next

64
00:04:06,309 --> 00:04:04,560
day's work for them will focus on using

65
00:04:08,309 --> 00:04:06,319
the space station robotic arm to

66
00:04:09,429 --> 00:04:08,319
relocate the pressurized mating adapter

67
00:04:10,869 --> 00:04:09,439
number three

68
00:04:15,830 --> 00:04:10,879
they are the crew members that will be

69
00:04:19,349 --> 00:04:17,749
this is a camera a video camera that was

70
00:04:22,310 --> 00:04:19,359
set up by station commander jeff

71
00:04:24,469 --> 00:04:22,320
williams in a small window in the hatch

72
00:04:27,590 --> 00:04:24,479
of the tranquility node

73
00:04:28,469 --> 00:04:27,600
on the port that is facing earth that

74
00:04:30,870 --> 00:04:28,479
is the

75
00:04:31,909 --> 00:04:30,880
port that the cupola will be relocated

76
00:04:34,230 --> 00:04:31,919
to today

77
00:04:36,390 --> 00:04:34,240
for jeff and cbcs we have a good camera

78
00:04:39,189 --> 00:04:36,400
view

79
00:04:41,590 --> 00:04:39,199
the depressurization of the cupola has

80
00:04:43,909 --> 00:04:41,600
taken a little longer than expected but

81
00:04:45,830 --> 00:04:43,919
and there is some residual air left

82
00:04:47,430 --> 00:04:45,840
inside that will be vented overboard

83
00:04:49,189 --> 00:04:47,440
later in the procedure

84
00:04:50,870 --> 00:04:49,199
but the environmental control and life

85
00:04:52,790 --> 00:04:50,880
support system officer

86
00:04:54,150 --> 00:04:52,800
here in the international space station

87
00:04:56,310 --> 00:04:54,160
flight control room

88
00:04:57,990 --> 00:04:56,320

was comfortable and wanted to continue

89
00:04:59,909 --> 00:04:58,000
on with the procedure to perform the

90
00:05:02,469 --> 00:04:59,919
lake check to ensure that there is a

91
00:05:05,350 --> 00:05:02,479
tight seal there between the cupola and

92
00:05:06,870 --> 00:05:05,360
tranquility so that is the next part of

93
00:05:10,790 --> 00:05:06,880
the procedure that verts will be going

94
00:05:13,270 --> 00:05:10,800
through closing and not anything else

95
00:05:17,749 --> 00:05:13,280
eastern station for robotics we're

96
00:05:17,759 --> 00:05:26,710
houston copies on the big loop

97
00:05:30,629 --> 00:05:28,390
this is mission control houston the

98
00:05:32,070 --> 00:05:30,639
station's robotic arm canadarm2 is now

99
00:05:54,230 --> 00:05:32,080
being maneuvered to latch onto the

100
00:05:58,710 --> 00:05:56,070
this is mission control houston the

101
00:06:01,430 --> 00:05:58,720
space station robotic arm is paused in

102
00:06:02,469 --> 00:06:01,440
this procedure to latch on to the cupola

103
00:06:04,790 --> 00:06:02,479
module

104
00:06:06,950 --> 00:06:04,800
it is being operated by astronauts terry

105
00:06:08,710 --> 00:06:06,960
burts and kay heyer

106
00:06:10,710 --> 00:06:08,720
inside the space station

107
00:06:13,189 --> 00:06:10,720
commander jeff williams is completing

108
00:06:15,510 --> 00:06:13,199
the final closeout steps in the

109
00:06:20,550 --> 00:06:15,520
procedure that depressurized the cupola

110
00:06:23,830 --> 00:06:22,790
in houston the cupola d-press is

111
00:06:25,670 --> 00:06:23,840
complete

112
00:06:28,469 --> 00:06:25,680
the valve of course is closed and it

113
00:06:31,189 --> 00:06:28,479

caps and uh the vag is left completely

114
00:06:39,029 --> 00:06:31,199
intact connected up to the

115
00:06:39,039 --> 00:06:54,629
roger

116
00:06:59,430 --> 00:06:57,510
endeavor iss this is houston acr please

117
00:07:01,990 --> 00:06:59,440
stand by for the nasa explorer school

118
00:07:04,070 --> 00:07:02,000
questions

119
00:07:06,390 --> 00:07:04,080
hi my name is aaron lee from stuart

120
00:07:08,390 --> 00:07:06,400
middle magnet in tampa florida

121
00:07:10,390 --> 00:07:08,400
our teachers took us on a campout near

122
00:07:13,430 --> 00:07:10,400
the kennedy space center so we could get

123
00:07:16,150 --> 00:07:13,440
up at 4am to see your shuttle launch and

124
00:07:18,950 --> 00:07:16,160
it was awesome but my question is why

125
00:07:20,870 --> 00:07:18,960
did you have to launch so early

126
00:07:23,029 --> 00:07:20,880
well first of all we'd like to apologize

127
00:07:25,430 --> 00:07:23,039
for making everyone get up so early we

128
00:07:28,870 --> 00:07:25,440
were up pretty early ourselves

129
00:07:30,629 --> 00:07:28,880
the time of a launch is determined by

130
00:07:32,469 --> 00:07:30,639
the orbit of the international space

131
00:07:34,550 --> 00:07:32,479
station we need to be able to launch

132
00:07:35,749 --> 00:07:34,560
from florida and to catch up to the

133
00:07:37,670 --> 00:07:35,759
international space station to

134
00:07:39,909 --> 00:07:37,680
rendezvous and dock and we want to do

135
00:07:41,589 --> 00:07:39,919
that with the minimal amount of fuel

136
00:07:43,589 --> 00:07:41,599
that we expend because remember

137
00:07:47,350 --> 00:07:43,599
everything that we lift

138
00:07:49,510 --> 00:07:47,360

off of the pad it cost us basically our

139
00:07:51,270 --> 00:07:49,520
our amount that we can take to orbit so

140
00:07:54,230 --> 00:07:51,280
we don't want to have to take any extra

141
00:07:57,430 --> 00:07:54,240
fuel that we don't really need to orbit

142
00:07:59,029 --> 00:07:57,440
so we have to stay to these very tight

143
00:08:00,869 --> 00:07:59,039
little short

144
00:08:02,790 --> 00:08:00,879
launch windows to be able to catch up to

145
00:08:04,550 --> 00:08:02,800
the international space station so again

146
00:08:06,469 --> 00:08:04,560
sorry for the time but hope you enjoyed

147
00:08:08,869 --> 00:08:06,479
the light show

148
00:08:11,110 --> 00:08:08,879
hi i'm daniel lorenzo from stuart middle

149
00:08:13,270 --> 00:08:11,120
magnet school in tampa florida and my

150
00:08:15,029 --> 00:08:13,280
question to you is how long do you guys

151
00:08:16,710 --> 00:08:15,039
have to train before going into outer

152
00:08:18,390 --> 00:08:16,720
space

153
00:08:20,230 --> 00:08:18,400
that's a great question

154
00:08:22,710 --> 00:08:20,240
you could generally answer that question

155
00:08:24,869 --> 00:08:22,720
all your life because every experience

156
00:08:26,869 --> 00:08:24,879
that we have every bit of

157
00:08:30,070 --> 00:08:26,879
knowledge that we have sure comes into

158
00:08:31,430 --> 00:08:30,080
play when we're here in space because

159
00:08:34,469 --> 00:08:31,440
you never know what's going to happen

160
00:08:36,870 --> 00:08:34,479
next but generally for a space shuttle

161
00:08:38,550 --> 00:08:36,880
mission we train for a minimum of a year

162
00:08:40,469 --> 00:08:38,560
specifically for the tasks that we're

163
00:08:42,790 --> 00:08:40,479

going to do on board that mission

164
00:08:45,269 --> 00:08:42,800
prior to that though we all train

165
00:08:47,910 --> 00:08:45,279
generically as astronauts for

166
00:08:50,550 --> 00:08:47,920
one to two to multiple years before we

167
00:08:52,230 --> 00:08:50,560
get assigned to a flight so for a space

168
00:08:54,630 --> 00:08:52,240
shuttle mission the training is a

169
00:08:57,030 --> 00:08:54,640
minimum of a couple of years

170
00:08:58,470 --> 00:08:57,040
overall for a space station mission

171
00:09:00,070 --> 00:08:58,480
where the crew members are staying for

172
00:09:02,550 --> 00:09:00,080
longer duration

173
00:09:05,030 --> 00:09:02,560
they can train many years because they

174
00:09:08,070 --> 00:09:05,040
train not only in the united states but

175
00:09:10,150 --> 00:09:08,080
also with our international partners so

176
00:09:12,470 --> 00:09:10,160
it's multiple years of training but of

177
00:09:15,269 --> 00:09:12,480
course prior to that lots of years of

178
00:09:16,389 --> 00:09:15,279
schooling and experience that all comes

179
00:09:18,389 --> 00:09:16,399
into play

180
00:09:20,630 --> 00:09:18,399
my name is summer heckman and i go to

181
00:09:22,949 --> 00:09:20,640
vernon school in portland oregon and my

182
00:09:25,829 --> 00:09:22,959
question is do you have

183
00:09:27,910 --> 00:09:25,839
issues with keeping things clean

184
00:09:30,710 --> 00:09:27,920
on the space station and if so is it

185
00:09:33,110 --> 00:09:30,720
possible for mold to grow in space or on

186
00:09:35,430 --> 00:09:33,120
the space station

187
00:09:37,269 --> 00:09:35,440
that is a really really good question

188
00:09:38,949 --> 00:09:37,279

because it is a big issue

189
00:09:41,269 --> 00:09:38,959
the space station and the space shuttle

190
00:09:43,509 --> 00:09:41,279
both have very good air circulation

191
00:09:44,630 --> 00:09:43,519
systems with fans and filters to keep

192
00:09:45,509 --> 00:09:44,640
stuff

193
00:09:48,310 --> 00:09:45,519
clean

194
00:09:50,790 --> 00:09:48,320
but everything floats there's no gravity

195
00:09:52,949 --> 00:09:50,800
so on earth it's really nice you can see

196
00:09:54,870 --> 00:09:52,959
there things float

197
00:09:56,630 --> 00:09:54,880
if if you have dust or lint or just

198
00:09:57,910 --> 00:09:56,640
anything like that it tends to stick or

199
00:10:00,070 --> 00:09:57,920
it tends to fall to the ground and you

200
00:10:01,750 --> 00:10:00,080
can sweep it up in space it doesn't it

201
00:10:03,910 --> 00:10:01,760
floats around and you see little specks

202
00:10:05,750 --> 00:10:03,920
of things floating by occasionally and

203
00:10:07,910 --> 00:10:05,760
when you drink

204
00:10:10,230 --> 00:10:07,920
in your water straw unless you get all

205
00:10:11,829 --> 00:10:10,240
of the water out of your straw

206
00:10:13,670 --> 00:10:11,839
when you when it comes out of your mouth

207
00:10:15,829 --> 00:10:13,680
it'll it might flick a couple little

208
00:10:18,230 --> 00:10:15,839
specks of water and over time those can

209
00:10:20,310 --> 00:10:18,240
grow mold so we spend a lot of time on

210
00:10:22,069 --> 00:10:20,320
the shuttle keeping things clean and the

211
00:10:24,310 --> 00:10:22,079
space station crew

212
00:10:26,470 --> 00:10:24,320
spends a lot of time probably once once

213
00:10:29,509 --> 00:10:26,480

a week just keeping things clean because

214
00:10:30,790 --> 00:10:29,519
we have seen mold grow in the past and

215
00:10:31,990 --> 00:10:30,800
in fact right around the corner down

216
00:10:34,230 --> 00:10:32,000
there you can see there's some plants

217
00:10:35,670 --> 00:10:34,240
growing so things can grow in space

218
00:10:37,829 --> 00:10:35,680
and that's why it's really important for

219
00:10:39,910 --> 00:10:37,839
us to keep it clean

220
00:10:42,630 --> 00:10:39,920
hi my name is maya and i would like to

221
00:10:44,790 --> 00:10:42,640
know how long does it

222
00:10:48,470 --> 00:10:44,800
how long does it take to prepare the

223
00:10:49,990 --> 00:10:48,480
space shuttle before it launches

224
00:10:52,790 --> 00:10:50,000
well as you know the space shuttle is a

225
00:10:54,470 --> 00:10:52,800
very complicated spacecraft so it does

226
00:10:56,949 --> 00:10:54,480
take a while and it takes a lot of

227
00:10:57,750 --> 00:10:56,959
people cred quite a great team of people

228
00:10:59,990 --> 00:10:57,760
that

229
00:11:01,829 --> 00:11:00,000
prepare the space shuttle for launch and

230
00:11:03,350 --> 00:11:01,839
you know space shuttle is made up of

231
00:11:05,350 --> 00:11:03,360
several components there's a space

232
00:11:07,829 --> 00:11:05,360
shuttle orbiter there are the solid

233
00:11:09,509 --> 00:11:07,839
rocket boosters those are the two white

234
00:11:11,670 --> 00:11:09,519
rockets that strapped to the sides and

235
00:11:14,870 --> 00:11:11,680
then there's a big orange external tank

236
00:11:16,790 --> 00:11:14,880
that holds our fuel so to get all of

237
00:11:19,110 --> 00:11:16,800
those components together it takes quite

238
00:11:21,350 --> 00:11:19,120

a bit of time the absolute minimum

239
00:11:23,670 --> 00:11:21,360
amount of time from the time that a

240
00:11:26,230 --> 00:11:23,680
space shuttle orbiter lands until the

241
00:11:28,230 --> 00:11:26,240
time that it can launch again is about

242
00:11:30,230 --> 00:11:28,240
two months but that's very very

243
00:11:31,910 --> 00:11:30,240
aggressive schedule it takes longer

244
00:11:33,509 --> 00:11:31,920
actually to prepare the tank and the

245
00:11:36,550 --> 00:11:33,519
solid rocket boosters those would have

246
00:11:38,870 --> 00:11:36,560
to be waiting for it so after landing

247
00:11:41,430 --> 00:11:38,880
the team in florida processes the

248
00:11:43,910 --> 00:11:41,440
orbiter in a horizontal position like

249
00:11:46,150 --> 00:11:43,920
working on an aircraft in a hangar and

250
00:11:48,870 --> 00:11:46,160
then they rotate it into the vertical

251
00:11:51,269 --> 00:11:48,880
position and attach it to that

252
00:11:53,750 --> 00:11:51,279
that solid rocket boosters and the

253
00:11:56,069 --> 00:11:53,760
external tank and take all of that

254
00:11:58,710 --> 00:11:56,079
together out to the launch pad and get

255
00:12:01,350 --> 00:11:58,720
it ready to launch again so it actually

256
00:12:03,670 --> 00:12:01,360
takes quite a bit of time but

257
00:12:05,030 --> 00:12:03,680
it can vary depending on what our

258
00:12:07,110 --> 00:12:05,040
schedule is

259
00:12:09,190 --> 00:12:07,120
hi i'm hannah from stuart ben magnet

260
00:12:11,350 --> 00:12:09,200
school in tampa florida i have a

261
00:12:13,110 --> 00:12:11,360
question what was the most difficult

262
00:12:15,670 --> 00:12:13,120
obstacle that you had to overcome to

263
00:12:17,590 --> 00:12:15,680

become an astronaut thanks

264
00:12:20,870 --> 00:12:17,600
well i don't know that i'd really call

265
00:12:22,870 --> 00:12:20,880
it obstacles but it is very important to

266
00:12:25,110 --> 00:12:22,880
have a good strong

267
00:12:27,350 --> 00:12:25,120
math and science background to be even

268
00:12:30,150 --> 00:12:27,360
considered to be an astronaut but also

269
00:12:31,990 --> 00:12:30,160
just overall technical experience and it

270
00:12:33,750 --> 00:12:32,000
really helps to have some flying

271
00:12:35,910 --> 00:12:33,760
experience as well

272
00:12:38,150 --> 00:12:35,920
so i don't know that again that i would

273
00:12:40,550 --> 00:12:38,160
really call it an obstacle but there are

274
00:12:43,750 --> 00:12:40,560
so many very qualified

275
00:12:47,430 --> 00:12:43,760
folks very very smart very educated and

276
00:12:50,790 --> 00:12:47,440
with a lot of experience that nasa has a

277
00:12:54,230 --> 00:12:50,800
tough time selecting the astronauts from

278
00:12:56,389 --> 00:12:54,240
so many qualified candidates so

279
00:12:59,269 --> 00:12:56,399
maybe i just feel that

280
00:13:00,230 --> 00:12:59,279
i was very fortunate to be considered

281
00:13:03,190 --> 00:13:00,240
for

282
00:13:06,949 --> 00:13:03,200
selection as an astronaut

283
00:13:08,949 --> 00:13:06,959
and also that i was selected so

284
00:13:12,069 --> 00:13:08,959
i would suggest that you just keep

285
00:13:14,550 --> 00:13:12,079
studying hard and uh find the things

286
00:13:17,110 --> 00:13:14,560
that you love to do and

287
00:13:19,110 --> 00:13:17,120
gain your own expertise there

288
00:13:21,190 --> 00:13:19,120

and apply to be an astronaut and hope

289
00:13:23,509 --> 00:13:21,200
days hopefully someday you'll be able to

290
00:13:28,790 --> 00:13:23,519
fly in space as well as you saw two

291
00:13:32,069 --> 00:13:30,470
hi my name is taylor church and i go to

292
00:13:34,389 --> 00:13:32,079
edward harris junior middle school in

293
00:13:37,110 --> 00:13:34,399
elk grove california have you ever

294
00:13:39,189 --> 00:13:37,120
personally tried growing plants in space

295
00:13:41,189 --> 00:13:39,199
if so how did the experiment turn out

296
00:13:42,629 --> 00:13:41,199
and if not have you ever been on board a

297
00:13:45,430 --> 00:13:42,639
mission where a plant experiment has

298
00:13:47,910 --> 00:13:45,440
taken place thank you

299
00:13:50,150 --> 00:13:47,920
yeah that that is a great question

300
00:13:52,550 --> 00:13:50,160
actually in the next module down for me

301
00:13:54,550 --> 00:13:52,560
we're in node two so in the lab the u.s

302
00:13:56,069 --> 00:13:54,560
lab there are several big bags where

303
00:13:58,230 --> 00:13:56,079
plants are growing right now it's one of

304
00:14:00,069 --> 00:13:58,240
their experiments and in fact the space

305
00:14:02,310 --> 00:14:00,079
station is a very

306
00:14:04,790 --> 00:14:02,320
big laboratory there's a japanese lab a

307
00:14:06,550 --> 00:14:04,800
u.s lab and a european lab and plus the

308
00:14:08,470 --> 00:14:06,560
russians have their own experiments

309
00:14:10,389 --> 00:14:08,480
going in their segments so there's a lot

310
00:14:12,230 --> 00:14:10,399
of different experiments happening here

311
00:14:14,389 --> 00:14:12,240
on our space shuttle our main job is to

312
00:14:17,350 --> 00:14:14,399
bring up node 3 and tranquility but we

313
00:14:20,470 --> 00:14:17,360

have some experiments also we have uh

314
00:14:21,990 --> 00:14:20,480
some some basically vaccination testing

315
00:14:23,750 --> 00:14:22,000
and there are some viruses down there

316
00:14:25,030 --> 00:14:23,760
that we're doing uh some testing and

317
00:14:27,269 --> 00:14:25,040
experiments on but there's lots of

318
00:14:29,430 --> 00:14:27,279
experiments going on here and as you can

319
00:14:31,030 --> 00:14:29,440
see this is a uh we're in like the

320
00:14:32,470 --> 00:14:31,040
central hub here so there's a lot of

321
00:14:35,189 --> 00:14:32,480
traffic going on

322
00:14:38,230 --> 00:14:35,199
and uh so pardon our crewmates as they

323
00:14:40,710 --> 00:14:38,240
translate by with important hardware

324
00:14:42,790 --> 00:14:40,720
hi my name is pabina ramwell and i go to

325
00:14:45,670 --> 00:14:42,800
sport middle magnet and i live in tampa

326
00:14:47,990 --> 00:14:45,680
florida my question is why will nasa

327
00:14:50,550 --> 00:14:48,000
scrub a launch if the sky is cloudy or

328
00:14:53,990 --> 00:14:52,230
again a very appropriate

329
00:14:56,230 --> 00:14:54,000
question for us because our first launch

330
00:14:58,150 --> 00:14:56,240
attempt was scrubbed because of clouds

331
00:14:59,509 --> 00:14:58,160
and there's a couple of problems with

332
00:15:01,509 --> 00:14:59,519
clouds and rain

333
00:15:02,870 --> 00:15:01,519
first of all is our rocket itself you

334
00:15:04,629 --> 00:15:02,880
don't want to damage the space shuttle

335
00:15:06,629 --> 00:15:04,639
so if you fly through

336
00:15:08,710 --> 00:15:06,639
certain types of clouds with lightning

337
00:15:10,230 --> 00:15:08,720
or rain you can get a lightning strike

338
00:15:13,509 --> 00:15:10,240

which actually happened on one of our

339
00:15:14,949 --> 00:15:13,519
apollo missions and or if you fly

340
00:15:17,269 --> 00:15:14,959
through rain the rain could damage the

341
00:15:19,110 --> 00:15:17,279
vehicle because we accelerate really

342
00:15:21,430 --> 00:15:19,120
fast we're going about 100 miles an hour

343
00:15:23,189 --> 00:15:21,440
by the time we clear the launch tower

344
00:15:25,670 --> 00:15:23,199
and uh in less than a minute we're going

345
00:15:27,829 --> 00:15:25,680
supersonic straight up so the sh the

346
00:15:29,910 --> 00:15:27,839
rocket goes very fast through the air

347
00:15:31,590 --> 00:15:29,920
and so that could be dangerous the other

348
00:15:33,509 --> 00:15:31,600
thing is we want ground cameras to be

349
00:15:35,110 --> 00:15:33,519
able to see the shuttle

350
00:15:37,430 --> 00:15:35,120
or whatever rocket it is when we're

351
00:15:38,949 --> 00:15:37,440
launching unmanned rockets it's the same

352
00:15:40,550 --> 00:15:38,959
thing they need they need some

353
00:15:41,910 --> 00:15:40,560
visibility to be able to see it to make

354
00:15:44,550 --> 00:15:41,920
sure that the trajectory is going in the

355
00:15:46,949 --> 00:15:44,560
right direction hi my name is sabrina

356
00:15:51,030 --> 00:15:46,959
and i want to know what kind of tools

357
00:15:52,870 --> 00:15:51,040
you use to fix the space shuttle

358
00:15:56,069 --> 00:15:52,880
well hello sabrina thank you for that

359
00:15:58,150 --> 00:15:56,079
question that is a really good one we

360
00:15:59,910 --> 00:15:58,160
have a toolkit in the space shuttle and

361
00:16:01,749 --> 00:15:59,920
we have several toolkits here on the

362
00:16:03,350 --> 00:16:01,759
space station and one of the biggest

363
00:16:05,509 --> 00:16:03,360

things that we've been doing

364
00:16:07,269 --> 00:16:05,519
here during our mission

365
00:16:11,430 --> 00:16:07,279
and kaye is just showing me this bag if

366
00:16:16,870 --> 00:16:14,550
but there's a wrench and some pliers

367
00:16:18,710 --> 00:16:16,880
and some different types of screwdrivers

368
00:16:20,629 --> 00:16:18,720
and ratchets and scissors there's all

369
00:16:23,189 --> 00:16:20,639
kinds of stuff here sockets

370
00:16:24,710 --> 00:16:23,199
and so if you're a tool person this job

371
00:16:26,949 --> 00:16:24,720
is really fun

372
00:16:29,030 --> 00:16:26,959
because uh for the last several days and

373
00:16:30,870 --> 00:16:29,040
for the next few days we're we're in

374
00:16:32,710 --> 00:16:30,880
there turning wrenches and screwdrivers

375
00:16:35,670 --> 00:16:32,720
and all kinds of stuff

376
00:16:36,470 --> 00:16:35,680
to attach node three our new module and

377
00:16:38,389 --> 00:16:36,480
then

378
00:16:40,389 --> 00:16:38,399
later today to attack to move the cupola

379
00:16:43,670 --> 00:16:40,399
and to attach that so we have lots of

380
00:16:45,110 --> 00:16:43,680
tools and we use them a lot

381
00:16:47,269 --> 00:16:45,120
this is mission control houston with a

382
00:16:50,870 --> 00:16:47,279
view inside the space station's destiny

383
00:16:52,069 --> 00:16:50,880
laboratory module

384
00:16:53,590 --> 00:16:52,079
astronauts

385
00:16:56,629 --> 00:16:53,600
kay higher and terry burts are back at

386
00:16:59,189 --> 00:16:56,639
the robotics workstation standing by to

387
00:17:01,749 --> 00:16:59,199
maneuver canadarm2

388
00:17:03,590 --> 00:17:01,759

to move the cupola

389
00:17:05,590 --> 00:17:03,600
element from its current location on the

390
00:17:07,189 --> 00:17:05,600
end of tranquility to a

391
00:17:09,829 --> 00:17:07,199
port on the earth

392
00:17:11,429 --> 00:17:09,839
facing side of tranquility

393
00:17:13,270 --> 00:17:11,439
next to them is station commander jeff

394
00:17:15,350 --> 00:17:13,280
williams who's been working at the

395
00:17:17,590 --> 00:17:15,360
computers to operate the common berthing

396
00:17:21,669 --> 00:17:17,600
mechanism in the latches and bolts that

397
00:17:27,510 --> 00:17:25,029
during that procedure one bolt jammed

398
00:17:29,669 --> 00:17:27,520
and during the initial

399
00:17:31,430 --> 00:17:29,679
planned troubleshooting step another

400
00:17:33,430 --> 00:17:31,440
bolt jammed

401
00:17:34,789 --> 00:17:33,440
so one continues to be jammed at this

402
00:17:37,590 --> 00:17:34,799
point but not the

403
00:17:39,190 --> 00:17:37,600
same as the original one

404
00:17:41,029 --> 00:17:39,200
the next

405
00:17:45,430 --> 00:17:41,039
option that the mission control team has

406
00:17:50,789 --> 00:17:48,390
the next step is to de-rigidize or or

407
00:17:52,950 --> 00:17:50,799
command the joints and the space station

408
00:17:56,950 --> 00:17:52,960
robotic arm to go to limp

409
00:18:07,669 --> 00:17:59,350
for about 30 seconds as the arm is

410
00:18:15,430 --> 00:18:10,549
in houston this time we got bolt 1-3

411
00:18:15,440 --> 00:18:26,070
and houston sees that jeff

412
00:18:29,909 --> 00:18:27,909
i'm sure you guys are talking about

413
00:18:33,669 --> 00:18:29,919

possible loads from the internal

414
00:18:37,750 --> 00:18:35,590
jeff right now we're talking about

415
00:18:39,029 --> 00:18:37,760
upping the torques on the bolts and

416
00:18:51,190 --> 00:18:39,039
we'll get back to you after we've had

417
00:18:54,630 --> 00:18:52,549
the crew on board the international

418
00:18:57,909 --> 00:18:54,640
space station will now try the procedure

419
00:19:00,630 --> 00:18:57,919
again to deploy the four latches

420
00:19:04,789 --> 00:19:00,640
that are holding the cupola in place on

421
00:19:08,470 --> 00:19:06,470
commander jeff williams and mission

422
00:19:11,190 --> 00:19:08,480
specialist kay heyer had worked through

423
00:19:14,470 --> 00:19:11,200
a malfunction procedure after getting an

424
00:19:16,070 --> 00:19:14,480
abort message from trying to deploy the

425
00:19:17,190 --> 00:19:16,080
four latches on the common birthing

426
00:19:19,830 --> 00:19:17,200
mechanism

427
00:19:22,230 --> 00:19:19,840
basically resetting the software and

428
00:19:24,549 --> 00:19:22,240
attempting the deployment again

429
00:19:27,270 --> 00:19:24,559
the reset of the software was successful

430
00:19:29,669 --> 00:19:27,280
and the redeployment attempt will

431
00:19:32,630 --> 00:19:29,679
come shortly

432
00:19:35,750 --> 00:19:32,640
this all in part of the procedure to

433
00:19:42,390 --> 00:19:35,760
unlatch the cupola from the tranquility

434
00:19:42,400 --> 00:19:46,710
and houston good news we're complete

435
00:19:46,720 --> 00:19:53,270
houston concurs

436
00:19:58,390 --> 00:19:55,510
station commander jeff williams confirms

437
00:20:04,149 --> 00:19:58,400
that the latch is deployed as planned

438
00:20:12,149 --> 00:20:07,470

houston copies and in step are procedure

439
00:20:23,750 --> 00:20:12,159
1.410 ssrms cupola relocate step 5 is

440
00:20:31,190 --> 00:20:26,149
eastern front station for robotics

441
00:20:31,200 --> 00:21:12,470
houston copies on the big loop

442
00:21:15,669 --> 00:21:14,149
this is mission control houston the team

443
00:21:17,190 --> 00:21:15,679
in the international space station

444
00:21:19,830 --> 00:21:17,200
flight control room is monitoring the

445
00:21:22,789 --> 00:21:19,840
progress of relocating the cupola using

446
00:21:25,270 --> 00:21:22,799
the station's robotic arm canadarm2

447
00:21:27,750 --> 00:21:25,280
astronaut terry burts and astronaut

448
00:21:30,070 --> 00:21:27,760
kayhier are at the robotics workstation

449
00:21:31,909 --> 00:21:30,080
to conduct that maneuver verts indicated

450
00:21:35,029 --> 00:21:31,919
that the seal on the common berthing

451
00:21:37,190 --> 00:21:35,039
mechanism for cupola looks clear but

452
00:21:39,830 --> 00:21:37,200
that an electrical connector has popped

453
00:21:41,990 --> 00:21:39,840
out from behind the center and that it

454
00:21:43,430 --> 00:21:42,000
is recessed and cleared the mating

455
00:21:45,430 --> 00:21:43,440
surface so

456
00:21:47,430 --> 00:21:45,440
the team agreed to continue on to the

457
00:21:49,430 --> 00:21:47,440
next position of cupola at the

458
00:21:54,149 --> 00:21:49,440
pre-install position just

459
00:22:00,310 --> 00:21:58,230
go ahead jeff space ground one

460
00:22:03,590 --> 00:22:00,320
yeah that wire that we're looking at uh

461
00:22:05,590 --> 00:22:03,600
i clearly remember um in the cupola it's

462
00:22:08,310 --> 00:22:05,600
in its nominal location

463
00:22:09,750 --> 00:22:08,320

the uh when i reinstalled the the

464
00:22:10,870 --> 00:22:09,760
thermal

465
00:22:12,710 --> 00:22:10,880
mli

466
00:22:14,710 --> 00:22:12,720
it that the velcro appeared to be

467
00:22:17,270 --> 00:22:14,720
intended to be

468
00:22:18,549 --> 00:22:17,280
installed such that that wire is visible

469
00:22:22,149 --> 00:22:18,559
and that's just the way i remember

470
00:22:22,159 --> 00:22:25,590
all right thanks for that

471
00:22:30,230 --> 00:22:27,909
big info please copy i'll uh go ahead if

472
00:22:35,270 --> 00:22:30,240
you want me to do another survey or just

473
00:22:35,280 --> 00:22:39,669
let's just focus on the cable okay

474
00:22:43,430 --> 00:22:41,750
anymore

475
00:22:45,990 --> 00:22:43,440
this is mission control houston with a

476
00:22:47,190 --> 00:22:46,000
zoomed in video camera view of a

477
00:22:50,710 --> 00:22:47,200
connector

478
00:22:53,110 --> 00:22:50,720
inside around the thermal insulation on

479
00:22:57,029 --> 00:22:53,120
the port of the cupola that will be

480
00:23:01,430 --> 00:22:59,190
engineers just wanted to take a close-up

481
00:23:03,270 --> 00:23:01,440
look with the video to make sure that

482
00:23:06,149 --> 00:23:03,280
that won't interfere with latches to

483
00:23:08,310 --> 00:23:06,159
connect cupola in place looks good we'd

484
00:23:09,909 --> 00:23:08,320
like you to proceed to pre-install once

485
00:23:11,909 --> 00:23:09,919
it pre-installed take a look out the

486
00:23:13,830 --> 00:23:11,919
window and make sure that this wire

487
00:23:55,909 --> 00:23:13,840
hasn't moved and it's going to be out of

488
00:24:01,750 --> 00:23:57,669

we've got four rtls that are steady

489
00:24:06,789 --> 00:24:02,830
houston

490
00:24:08,630 --> 00:24:06,799
concur at 12 25 a.m central time the

491
00:24:10,470 --> 00:24:08,640
crew has indicated that there are four

492
00:24:12,630 --> 00:24:10,480
ready to latch indications that means

493
00:24:14,710 --> 00:24:12,640
that cupola has made contact with the

494
00:24:17,510 --> 00:24:14,720
port that it will be attached to

495
00:24:19,029 --> 00:24:17,520
the next stage will be to deploy four

496
00:24:20,950 --> 00:24:19,039
latches

497
00:24:22,710 --> 00:24:20,960
to a temporarily

498
00:24:24,310 --> 00:24:22,720
place a cupola

499
00:24:26,710 --> 00:24:24,320
on tranquility

500
00:24:29,350 --> 00:24:26,720
and then a series of bolts will be

501
00:24:31,190 --> 00:24:29,360
engaged in a two-stage fashion

502
00:24:34,630 --> 00:24:31,200
so that in the end there

503
00:24:38,149 --> 00:24:34,640
will be 16 bolts securing cupola to its

504
00:24:42,470 --> 00:24:40,870
that's basically on the big loop uh the

505
00:24:45,750 --> 00:24:42,480
ss rs

506
00:24:53,350 --> 00:24:45,760
ssrms is limped and we're going for

507
00:24:57,110 --> 00:24:55,510
getting a good shot now of the cupola

508
00:24:59,110 --> 00:24:57,120
there on the left portion of your screen

509
00:25:01,269 --> 00:24:59,120
now in its permanent location

510
00:25:02,870 --> 00:25:01,279
on the nadir port of the tranquility

511
00:25:05,110 --> 00:25:02,880
module nader means that it faces down

512
00:25:06,549 --> 00:25:05,120
toward earth

513
00:25:07,990 --> 00:25:06,559

you can see it's still covered up those

514
00:25:09,669 --> 00:25:08,000
covers will come off during the third

515
00:25:11,029 --> 00:25:09,679
and final spacewalk of this mission

516
00:25:11,909 --> 00:25:11,039
that's going to be conducted by bob

517
00:25:14,789 --> 00:25:11,919
benkin

518
00:25:16,870 --> 00:25:14,799
and nick patrick both restraint systems

519
00:25:19,110 --> 00:25:16,880
moved

520
00:25:21,510 --> 00:25:19,120
as you can see the end of the station's

521
00:25:24,149 --> 00:25:21,520
robotic arm has successfully let go of

522
00:25:26,310 --> 00:25:24,159
the cupola

523
00:25:28,549 --> 00:25:26,320
and nick patrick and bob binkin who are

524
00:25:30,549 --> 00:25:28,559
currently working inside the destiny

525
00:25:32,789 --> 00:25:30,559
laboratory and one of the robotics

526
00:25:35,350 --> 00:25:32,799
workstations there will continue to back

527
00:25:38,149 --> 00:25:35,360
away this arm and drive it over toward

528
00:25:40,230 --> 00:25:38,159
pressurized mating adapter number three

529
00:25:44,789 --> 00:25:40,240
it is as we mentioned currently on top

530
00:25:48,630 --> 00:25:46,870
which in this view would be toward the

531
00:25:50,470 --> 00:25:48,640
bottom it's over toward where the

532
00:25:52,310 --> 00:25:50,480
shuttle is currently located

533
00:25:54,950 --> 00:25:52,320
the shuttle docks with pressurized

534
00:25:57,190 --> 00:25:54,960
mating adapter number two

535
00:25:59,190 --> 00:25:57,200
but uh pma3 has been located over on

536
00:26:00,710 --> 00:25:59,200
harmony temporarily to basically just

537
00:26:02,310 --> 00:26:00,720
get it out of the way

538
00:26:03,909 --> 00:26:02,320

of all the different uh

539
00:26:05,510 --> 00:26:03,919
robotics work that had to be done during

540
00:26:07,350 --> 00:26:05,520
this mission getting tranquility

541
00:26:08,789 --> 00:26:07,360
installed as well as the cupola moved

542
00:26:10,870 --> 00:26:08,799
over

543
00:26:12,950 --> 00:26:10,880
but if you look toward the

544
00:26:14,870 --> 00:26:12,960
left part of your screen you see an

545
00:26:17,909 --> 00:26:14,880
empty hatchway there on the end of

546
00:26:19,830 --> 00:26:17,919
tranquility this is where that pma3 will

547
00:26:22,070 --> 00:26:19,840
ultimately be installed that is where

548
00:26:29,510 --> 00:26:22,080
the cupola used to be

549
00:26:33,750 --> 00:26:31,590
the station's massive robotic arm being

550
00:26:35,350 --> 00:26:33,760
moved from left to right as it turns its

551
00:26:37,029 --> 00:26:35,360
attention away from the cupola over

552
00:26:43,350 --> 00:26:37,039
toward pressurized

553
00:26:47,029 --> 00:26:45,350
you can barely see the tip of pma3 on

554
00:26:49,750 --> 00:26:47,039
the very bottom right hand portion of

555
00:26:51,110 --> 00:26:49,760
your screen it is actually on the top

556
00:26:52,470 --> 00:26:51,120
of the harmony note it's a little bit

557
00:26:53,990 --> 00:26:52,480
misleading because this camera angle is

558
00:26:55,430 --> 00:26:54,000
turned upside down

559
00:26:58,390 --> 00:26:55,440
but that robotic arm is going to be used

560
00:27:01,190 --> 00:26:58,400
to grab on to pma3 and to begin the

561
00:27:03,510 --> 00:27:01,200
process of removing it and move it over

562
00:27:05,190 --> 00:27:03,520
toward tranquility the majority of that

563
00:27:07,590 --> 00:27:05,200

activity will take place tomorrow during

564
00:27:10,230 --> 00:27:07,600
the cruise day

565
00:27:11,510 --> 00:27:10,240
endeavor iss this is wor do you read me

566
00:27:14,630 --> 00:27:11,520
copy

567
00:27:17,190 --> 00:27:14,640
wr we have you loud and clear how us ah

568
00:27:19,510 --> 00:27:17,200
yes indeed uh who am i speaking with

569
00:27:21,990 --> 00:27:19,520
you've got bob bankin one of the mission

570
00:27:24,470 --> 00:27:22,000
specialists and uh terry verts our pilot

571
00:27:26,789 --> 00:27:24,480
on endeavor all right uh bob bob good

572
00:27:28,230 --> 00:27:26,799
morning to the both of you uh we don't

573
00:27:31,190 --> 00:27:28,240
have a lot of time here so let me get

574
00:27:33,269 --> 00:27:31,200
right to it uh this node tranquility

575
00:27:35,830 --> 00:27:33,279
that you folks have brought up to the

576
00:27:37,990 --> 00:27:35,840
international space station i understand

577
00:27:39,510 --> 00:27:38,000
as of yesterday it had some troubles you

578
00:27:42,630 --> 00:27:39,520
were part of the space walk on

579
00:27:44,710 --> 00:27:42,640
installation where does it stand today

580
00:27:46,149 --> 00:27:44,720
well we're marching right along at this

581
00:27:48,389 --> 00:27:46,159
point we had a little bit of trouble

582
00:27:50,070 --> 00:27:48,399
with what's called the center disc cover

583
00:27:51,909 --> 00:27:50,080
it's a piece of material that needs to

584
00:27:53,750 --> 00:27:51,919
be put in place uh prior to some

585
00:27:55,430 --> 00:27:53,760
relocation activities and there was some

586
00:27:57,590 --> 00:27:55,440
interference with that

587
00:27:59,350 --> 00:27:57,600
but from a spacewalk perspective that

588
00:28:01,590 --> 00:27:59,360

was no impact and we were able to go

589
00:28:03,830 --> 00:28:01,600
outside and hook up the cooling system

590
00:28:06,789 --> 00:28:03,840
after having hooked up the electrical

591
00:28:08,710 --> 00:28:06,799
power on the previous spacewalk so node

592
00:28:11,510 --> 00:28:08,720
3 is up and running there's fans and

593
00:28:13,110 --> 00:28:11,520
cooling and lights even so it's looking

594
00:28:14,630 --> 00:28:13,120
good

595
00:28:16,630 --> 00:28:14,640
robert

596
00:28:18,630 --> 00:28:16,640
this is not your first time up and this

597
00:28:20,549 --> 00:28:18,640
is certainly not your first space walk

598
00:28:23,510 --> 00:28:20,559
can you describe it i mean is it is it

599
00:28:25,750 --> 00:28:23,520
hard moving all of those big pieces and

600
00:28:28,549 --> 00:28:25,760
and being in that what appears to be

601
00:28:30,230 --> 00:28:28,559
bulky space suit of viewers or is it uh

602
00:28:31,990 --> 00:28:30,240
similar to doing any sort of manual

603
00:28:33,430 --> 00:28:32,000
labor job

604
00:28:35,350 --> 00:28:33,440
well we kind of described some of the

605
00:28:37,510 --> 00:28:35,360
work that we do is is a kind of a little

606
00:28:39,269 --> 00:28:37,520
bit of heavy lifting when we're outside

607
00:28:41,510 --> 00:28:39,279
in that suit it's actually kind of like

608
00:28:44,310 --> 00:28:41,520
being inside of a balloon it's a

609
00:28:46,710 --> 00:28:44,320
pressurized at about four little over

610
00:28:48,470 --> 00:28:46,720
four pounds per square inch which means

611
00:28:50,310 --> 00:28:48,480
every time you close your hand on

612
00:28:52,070 --> 00:28:50,320
something you have to change the shape

613
00:28:54,630 --> 00:28:52,080

of that balloon and doing that for about

614
00:28:56,310 --> 00:28:54,640
six hours can kind of wear you out

615
00:28:58,789 --> 00:28:56,320
with all the gear and all the tools

616
00:29:01,110 --> 00:28:58,799
together we weigh if we were on the

617
00:29:03,990 --> 00:29:01,120
ground close to 600 pounds inside of

618
00:29:06,470 --> 00:29:04,000
that suit and so it does take some some

619
00:29:07,669 --> 00:29:06,480
training and some careful practice in

620
00:29:10,230 --> 00:29:07,679
order to make sure that you don't get

621
00:29:12,149 --> 00:29:10,240
that 600 pounds moving very quickly

622
00:29:13,990 --> 00:29:12,159
otherwise you got to put a lot of force

623
00:29:16,310 --> 00:29:14,000
in with those hands that are squeezing

624
00:29:18,549 --> 00:29:16,320
inside of those balloons to slow it down

625
00:29:20,149 --> 00:29:18,559
so it is a it is a pretty good workout

626
00:29:22,549 --> 00:29:20,159
and we all spend quite a bit of time in

627
00:29:24,549 --> 00:29:22,559
the gym trying to get in shape before we

628
00:29:26,630 --> 00:29:24,559
step up here to do space walks on this

629
00:29:29,110 --> 00:29:26,640
flight we'll do three spacewalks with uh

630
00:29:31,269 --> 00:29:29,120
just two spacewalkers and so each of us

631
00:29:32,630 --> 00:29:31,279
will go out for three different uh

632
00:29:34,950 --> 00:29:32,640
occasions and

633
00:29:37,430 --> 00:29:34,960
for a total of about 18 hours

634
00:29:38,830 --> 00:29:37,440
and that can be really exhausting if you

635
00:29:40,230 --> 00:29:38,840
haven't trained for it

636
00:29:42,389 --> 00:29:40,240
appropriately we're talking live this

637
00:29:44,950 --> 00:29:42,399
morning with space shuttle endeavour its

638
00:29:46,950 --> 00:29:44,960

pilot is terry verts uh terry i

639
00:29:49,669 --> 00:29:46,960
understand this is your first trip into

640
00:29:51,669 --> 00:29:49,679
space uh so far so good what was the

641
00:29:53,830 --> 00:29:51,679
reaction what was it like and did it

642
00:29:57,190 --> 00:29:53,840
meet expectations it's been a lot better

643
00:29:58,710 --> 00:29:57,200
than expectations um during our launch

644
00:30:00,389 --> 00:29:58,720
it's about eight minutes

645
00:30:03,190 --> 00:30:00,399
with the engines running before we get

646
00:30:05,510 --> 00:30:03,200
into space we go from zero to about 17

647
00:30:07,029 --> 00:30:05,520
500 miles an hour in about eight minutes

648
00:30:08,710 --> 00:30:07,039
and i had a chance to look outside on

649
00:30:10,230 --> 00:30:08,720
the way up and i was able to see the

650
00:30:11,909 --> 00:30:10,240
moon

651
00:30:13,350 --> 00:30:11,919
outside on the horizon

652
00:30:14,870 --> 00:30:13,360
and then as the shuttle did a roll

653
00:30:17,110 --> 00:30:14,880
maneuver um

654
00:30:18,470 --> 00:30:17,120
i i caught a quick glimpse of the entire

655
00:30:20,149 --> 00:30:18,480
east coast of the united states and it

656
00:30:21,510 --> 00:30:20,159
was just an amazing sight

657
00:30:23,750 --> 00:30:21,520
and then

658
00:30:25,830 --> 00:30:23,760
you're under this g-force three g's it

659
00:30:27,350 --> 00:30:25,840
feels like three times your body weight

660
00:30:28,310 --> 00:30:27,360
it's kind of sitting on your chest and

661
00:30:30,230 --> 00:30:28,320
then

662
00:30:32,230 --> 00:30:30,240
uh boom the engines shut down and you're

663
00:30:33,909 --> 00:30:32,240

floating and then a few minutes later we

664
00:30:35,510 --> 00:30:33,919
were going over the alps and i was

665
00:30:37,350 --> 00:30:35,520
really amazed the view of the earth was

666
00:30:39,110 --> 00:30:37,360
different than what i expected

667
00:30:41,510 --> 00:30:39,120
much better

668
00:30:45,029 --> 00:30:41,520
all right now i understand or i heard

669
00:30:47,110 --> 00:30:45,039
that on takeoff some of the insulation

670
00:30:48,950 --> 00:30:47,120
might have separated is that true and if

671
00:30:51,350 --> 00:30:48,960
so are you concerned

672
00:30:53,510 --> 00:30:51,360
we're not concerned at all we we did a

673
00:30:55,269 --> 00:30:53,520
lot of inspection on the second flight

674
00:30:57,590 --> 00:30:55,279
day that we were in space

675
00:30:59,509 --> 00:30:57,600
and we we looked at every nook and

676
00:31:02,310 --> 00:30:59,519
cranny of the of the bottom of the heat

677
00:31:04,149 --> 00:31:02,320
shield of the space shuttle and we have

678
00:31:06,230 --> 00:31:04,159
a very large team of engineers on the

679
00:31:08,310 --> 00:31:06,240
ground that looked at it there were a

680
00:31:09,669 --> 00:31:08,320
couple of small areas where a tile came

681
00:31:11,350 --> 00:31:09,679
loose and on the top of the wing there

682
00:31:12,870 --> 00:31:11,360
was a

683
00:31:14,389 --> 00:31:12,880
a piece of material that's sticking up a

684
00:31:15,909 --> 00:31:14,399
little bit but it overall it looks

685
00:31:18,230 --> 00:31:15,919
really really clean and we don't have

686
00:31:20,950 --> 00:31:18,240
any concerns at all up here we've mainly

687
00:31:23,190 --> 00:31:20,960
been just really busy working from

688
00:31:24,389 --> 00:31:23,200

all day long getting these two modules

689
00:31:25,990 --> 00:31:24,399
that we've been installing that's been

690
00:31:27,669 --> 00:31:26,000
our main focus

691
00:31:30,149 --> 00:31:27,679
terry there are only four more flights

692
00:31:31,909 --> 00:31:30,159
of the shuttle program here in the

693
00:31:33,590 --> 00:31:31,919
united states and after that we really

694
00:31:35,669 --> 00:31:33,600
don't have any other way to get back and

695
00:31:37,430 --> 00:31:35,679
forth to the space station or even into

696
00:31:39,029 --> 00:31:37,440
space except with the help of the

697
00:31:41,750 --> 00:31:39,039
russians and

698
00:31:44,950 --> 00:31:41,760
their equipment uh you're a fairly

699
00:31:47,509 --> 00:31:44,960
fairly new astronaut uh from your

700
00:31:48,870 --> 00:31:47,519
perspective how disappointing is that

701
00:31:50,389 --> 00:31:48,880
well it'll be sad to see the shuttle

702
00:31:52,070 --> 00:31:50,399
retire that's for sure a lot of people

703
00:31:54,710 --> 00:31:52,080
have spent a lot of years on it but it's

704
00:31:56,310 --> 00:31:54,720
been 30 years and um every program

705
00:31:57,590 --> 00:31:56,320
eventually comes to an end so hopefully

706
00:32:00,149 --> 00:31:57,600
we'll move on to something bigger and

707
00:32:01,750 --> 00:32:00,159
better and you're right the uh americans

708
00:32:04,389 --> 00:32:01,760
will not be able to send astronauts into

709
00:32:06,470 --> 00:32:04,399
space we will be using the russian soyuz

710
00:32:08,630 --> 00:32:06,480
in fact i had a chance today uh several

711
00:32:09,990 --> 00:32:08,640
times there are two soyuz docked to the

712
00:32:11,909 --> 00:32:10,000
space station right now so i've been

713
00:32:13,830 --> 00:32:11,919

down there and and taking a look at them

714
00:32:16,070 --> 00:32:13,840
but you're right that america will not

715
00:32:20,070 --> 00:32:16,080
have a way to launch astronauts

716
00:32:22,070 --> 00:32:20,080
uh the the soyuz uh space uh capsules

717
00:32:23,590 --> 00:32:22,080
are are almost as old as the space

718
00:32:26,230 --> 00:32:23,600
shuttle are they not

719
00:32:27,909 --> 00:32:26,240
actually the soyuz space vehicles are

720
00:32:30,070 --> 00:32:27,919
quite a bit older at least the original

721
00:32:33,029 --> 00:32:30,080
soyuz are they were they they've been

722
00:32:35,350 --> 00:32:33,039
around since the up the soyuz and solute

723
00:32:37,430 --> 00:32:35,360
days uh many years ago and so the soyuz

724
00:32:40,149 --> 00:32:37,440
has a much longer history than even the

725
00:32:42,310 --> 00:32:40,159
shuttle does but the the soyuz has been

726
00:32:44,230 --> 00:32:42,320
upgraded over the last several years

727
00:32:46,310 --> 00:32:44,240
there's been a couple of variants and

728
00:32:47,990 --> 00:32:46,320
they continue to make improvements and

729
00:32:49,509 --> 00:32:48,000
what's different between the soyuz and

730
00:32:52,310 --> 00:32:49,519
the space shuttle is that the space

731
00:32:54,230 --> 00:32:52,320
shuttle is reusable we land it and then

732
00:32:56,549 --> 00:32:54,240
we refurbish it and then fly it again

733
00:32:58,870 --> 00:32:56,559
but each soyuz is replaced

734
00:33:00,710 --> 00:32:58,880
pretty much in its entirety before it

735
00:33:02,230 --> 00:33:00,720
goes out to the launch pad to launch

736
00:33:04,789 --> 00:33:02,240
again and so it's almost like getting a

737
00:33:08,070 --> 00:33:04,799
new vehicle every time with the soyuz

738
00:33:09,029 --> 00:33:08,080

endeavor iss this is ktvi tv how do you

739
00:33:11,509 --> 00:33:09,039
hear me

740
00:33:15,269 --> 00:33:11,519
ktvi tv we have you loud and clear on

741
00:33:19,750 --> 00:33:17,909
that is fantastic good morning from st

742
00:33:20,710 --> 00:33:19,760
louis to both of you how's it going so

743
00:33:22,950 --> 00:33:20,720
far

744
00:33:25,029 --> 00:33:22,960
well good morning to you guys from us

745
00:33:26,950 --> 00:33:25,039
here on the international space station

746
00:33:29,110 --> 00:33:26,960
so far it's uh going really well we've

747
00:33:31,110 --> 00:33:29,120
got the node three attached to the space

748
00:33:32,950 --> 00:33:31,120
station we've got the cooling and

749
00:33:35,750 --> 00:33:32,960
electric hooked up to the outside of it

750
00:33:38,149 --> 00:33:35,760
and today our pilots uh relocated the

751
00:33:40,230 --> 00:33:38,159
the cupola the nice window that's going

752
00:33:41,990 --> 00:33:40,240
to be the window on the earth from the

753
00:33:43,990 --> 00:33:42,000
international space station to it's a

754
00:33:45,430 --> 00:33:44,000
new home on the underside of node 3. so

755
00:33:47,190 --> 00:33:45,440
it's going really well

756
00:33:49,350 --> 00:33:47,200
bob you know we saw your shout out to st

757
00:33:51,190 --> 00:33:49,360
louis last week tell us more about your

758
00:33:53,669 --> 00:33:51,200
upbringing here obviously we are so

759
00:33:55,669 --> 00:33:53,679
proud to have you on board there

760
00:33:57,990 --> 00:33:55,679
well i actually grew up in saint anne

761
00:33:59,269 --> 00:33:58,000
which is uh over by the airport there

762
00:34:01,669 --> 00:33:59,279
lambert

763
00:34:04,789 --> 00:34:01,679

my father's a construction worker and my

764
00:34:06,710 --> 00:34:04,799
mother had worked at mcdonald douglas

765
00:34:08,389 --> 00:34:06,720
when i was a when i was a child and so i

766
00:34:10,550 --> 00:34:08,399
grew up right there in saint anne went

767
00:34:12,470 --> 00:34:10,560
to st anne elementary which is

768
00:34:14,389 --> 00:34:12,480
since closed and i think they've built a

769
00:34:16,629 --> 00:34:14,399
new school there at this time and i went

770
00:34:18,149 --> 00:34:16,639
through the pattonville school district

771
00:34:19,349 --> 00:34:18,159
and graduated from pattonville high

772
00:34:21,589 --> 00:34:19,359
school

773
00:34:23,430 --> 00:34:21,599
i am curious terry what does it look

774
00:34:25,990 --> 00:34:23,440
like from space i mean like we've had a

775
00:34:28,710 --> 00:34:26,000
lot of snow so can you see the snow from

776
00:34:30,069 --> 00:34:28,720
space on earth oh yeah we can absolutely

777
00:34:32,069 --> 00:34:30,079
uh see the snow the thing that's really

778
00:34:33,510 --> 00:34:32,079
stuck out to me is just how snowy earth

779
00:34:35,270 --> 00:34:33,520
is right now i think we're having a cold

780
00:34:36,149 --> 00:34:35,280
winter because it seems like everywhere

781
00:34:38,230 --> 00:34:36,159
we go

782
00:34:41,109 --> 00:34:38,240
except for central africa and the in the

783
00:34:42,950 --> 00:34:41,119
desert you see snow

784
00:34:44,550 --> 00:34:42,960
especially over russia and siberia

785
00:34:46,869 --> 00:34:44,560
mongolia that whole there's an entire

786
00:34:48,149 --> 00:34:46,879
continent that's nothing but snow so it

787
00:34:49,510 --> 00:34:48,159
does look like it's been pretty cold

788
00:34:51,589 --> 00:34:49,520

down there but the view of earth is

789
00:34:53,109 --> 00:34:51,599
really spectacular this is my first

790
00:34:55,190 --> 00:34:53,119
flight and it was it was different than

791
00:34:57,190 --> 00:34:55,200
what i thought there's a lot more color

792
00:34:58,870 --> 00:34:57,200
to it and um it's even better than what

793
00:35:00,710 --> 00:34:58,880
i thought i'd been as much as i've heard

794
00:35:02,790 --> 00:35:00,720
as many pictures that i've seen there's

795
00:35:04,390 --> 00:35:02,800
nothing like seeing it in person

796
00:35:05,589 --> 00:35:04,400
that is amazing i want to ask bob

797
00:35:07,349 --> 00:35:05,599
another question we understand you

798
00:35:09,510 --> 00:35:07,359
brought some special items along with

799
00:35:11,670 --> 00:35:09,520
you from washu bob i do have a couple of

800
00:35:14,069 --> 00:35:11,680
items from washington university i have

801
00:35:15,270 --> 00:35:14,079
a pendant that was from the mechanical

802
00:35:17,109 --> 00:35:15,280
engineering department that they

803
00:35:20,150 --> 00:35:17,119
provided for me that is on board

804
00:35:22,069 --> 00:35:20,160
endeavor and i also have a a certificate

805
00:35:24,150 --> 00:35:22,079
from the physics department as well that

806
00:35:26,150 --> 00:35:24,160
i'm flying for them so those are two

807
00:35:28,230 --> 00:35:26,160
departments right there in st louis that

808
00:35:30,390 --> 00:35:28,240
i graduated from before

809
00:35:31,990 --> 00:35:30,400
picking up my education out

810
00:35:34,710 --> 00:35:32,000
on the west coast and then going into

811
00:35:36,870 --> 00:35:34,720
the air force station this is wreg

812
00:35:37,990 --> 00:35:36,880
memphis how do you read we've got you

813
00:35:39,510 --> 00:35:38,000

loud and clear

814
00:35:40,950 --> 00:35:39,520
all right thank you very much like to

815
00:35:43,190 --> 00:35:40,960
start with colonel worth this trip a

816
00:35:45,349 --> 00:35:43,200
long time coming for you and it looks

817
00:35:47,589 --> 00:35:45,359
like the main part of this mission is

818
00:35:49,430 --> 00:35:47,599
going to be taking that tranquility

819
00:35:51,109 --> 00:35:49,440
module out of the shuttle bay and

820
00:35:55,990 --> 00:35:51,119
attaching it to the international space

821
00:35:59,349 --> 00:35:57,670
that's right we've had a really great

822
00:36:01,109 --> 00:35:59,359
mission it's the first time that the

823
00:36:03,349 --> 00:36:01,119
space shuttle or that anybody has

824
00:36:05,750 --> 00:36:03,359
brought up two modules at once we have

825
00:36:07,910 --> 00:36:05,760
what's called node three or tranquility

826
00:36:09,430 --> 00:36:07,920
it's a large living facility and then we

827
00:36:11,190 --> 00:36:09,440
also have a module called the cupola

828
00:36:13,750 --> 00:36:11,200
that was launched attached to

829
00:36:15,670 --> 00:36:13,760
tranquility and so uh several days ago

830
00:36:18,150 --> 00:36:15,680
we took those out of the payload bay

831
00:36:20,069 --> 00:36:18,160
while bob and nick patrick went outside

832
00:36:22,390 --> 00:36:20,079
and disconnected it i moved it from the

833
00:36:23,990 --> 00:36:22,400
shuttle and attached it to the station

834
00:36:25,910 --> 00:36:24,000
and then just today

835
00:36:27,990 --> 00:36:25,920
we detached the cupola from one end of

836
00:36:29,990 --> 00:36:28,000
tranquility and moved it around and

837
00:36:32,150 --> 00:36:30,000
reattached it to the bottom and we've

838
00:36:33,510 --> 00:36:32,160

been busy all day connecting bolts and

839
00:36:35,670 --> 00:36:33,520
hoses and that kind of thing getting

840
00:36:37,270 --> 00:36:35,680
these modules ready to go so we've been

841
00:36:39,589 --> 00:36:37,280
we've had a really successful mission so

842
00:36:41,349 --> 00:36:39,599
far bob's done two spacewalks and we've

843
00:36:42,790 --> 00:36:41,359
got both of our main modules attached to

844
00:36:43,670 --> 00:36:42,800
the station which is really really good

845
00:36:45,670 --> 00:36:43,680
news

846
00:36:47,109 --> 00:36:45,680
now mission specialist banking is from

847
00:36:49,349 --> 00:36:47,119
missouri just a bit up the road from us

848
00:36:50,950 --> 00:36:49,359
here in memphis is back on endeavor uh

849
00:36:52,470 --> 00:36:50,960
with a couple of spacewalks under his

850
00:36:54,630 --> 00:36:52,480
belt already

851
00:36:56,390 --> 00:36:54,640
has everything gone up perfectly

852
00:36:58,150 --> 00:36:56,400
according to plan or have you had to

853
00:36:59,589 --> 00:36:58,160
adjust a little bit on this particular

854
00:37:01,270 --> 00:36:59,599
mission

855
00:37:03,190 --> 00:37:01,280
well i think that the uh the folks that

856
00:37:05,270 --> 00:37:03,200
are on the on the inside have had quite

857
00:37:06,950 --> 00:37:05,280
a bit of a adjustment to trying to just

858
00:37:09,030 --> 00:37:06,960
deal with some minor issues that have

859
00:37:11,109 --> 00:37:09,040
come up with interference of a lot of

860
00:37:12,950 --> 00:37:11,119
hardware there's a lot of a lot of parts

861
00:37:14,310 --> 00:37:12,960
that need to be moved around in order to

862
00:37:15,910 --> 00:37:14,320
accomplish

863
00:37:17,270 --> 00:37:15,920

moving a module out of the shuttle

864
00:37:18,790 --> 00:37:17,280
payload bay and actually getting it

865
00:37:20,470 --> 00:37:18,800
attached to the international space

866
00:37:21,990 --> 00:37:20,480
station and then certainly once you get

867
00:37:23,829 --> 00:37:22,000
that module attached and you start to

868
00:37:25,589 --> 00:37:23,839
try to take it apart and move pieces of

869
00:37:27,190 --> 00:37:25,599
it around the space station you can

870
00:37:29,190 --> 00:37:27,200
imagine keeping track of all those

871
00:37:31,670 --> 00:37:29,200
pieces and making sure they all fit just

872
00:37:33,430 --> 00:37:31,680
right is takes a lot of effort and a lot

873
00:37:34,470 --> 00:37:33,440
of folks working together to make it

874
00:37:35,910 --> 00:37:34,480
happen

875
00:37:38,150 --> 00:37:35,920
certainly during the spacewalks uh

876
00:37:39,990 --> 00:37:38,160
things have gone really uh really

877
00:37:41,990 --> 00:37:40,000
closely to our plans we've been able to

878
00:37:43,589 --> 00:37:42,000
get through all of our tasks on the last

879
00:37:45,670 --> 00:37:43,599
couple of spacewalks which was really

880
00:37:47,670 --> 00:37:45,680
nice we're able to get electricity and

881
00:37:49,829 --> 00:37:47,680
cooling hooked up to the outside of

882
00:37:51,910 --> 00:37:49,839
those new modules which is also really

883
00:37:53,430 --> 00:37:51,920
exciting it means that the folks who are

884
00:37:55,270 --> 00:37:53,440
working on the inside aren't wearing

885
00:37:57,270 --> 00:37:55,280
headlamps and doing

886
00:37:58,870 --> 00:37:57,280
cave diving in order to to get their

887
00:38:00,230 --> 00:37:58,880
work accomplished so we're really happy

888
00:38:01,589 --> 00:38:00,240

about that as well

889
00:38:03,670 --> 00:38:01,599
maybe you can tell us a little bit more

890
00:38:05,829 --> 00:38:03,680
about what the tranquility module is

891
00:38:07,430 --> 00:38:05,839
going to do for the scientists that will

892
00:38:09,430 --> 00:38:07,440
be aboard the international space

893
00:38:11,750 --> 00:38:09,440
station it really adds a little bit more

894
00:38:14,310 --> 00:38:11,760
room to the space station doesn't it

895
00:38:16,470 --> 00:38:14,320
oh it adds a lot it's a very large

896
00:38:18,310 --> 00:38:16,480
module it's one of the largest onboard

897
00:38:19,190 --> 00:38:18,320
and it's going to be mainly a living

898
00:38:21,430 --> 00:38:19,200
area

899
00:38:23,670 --> 00:38:21,440
it has several different life support

900
00:38:25,589 --> 00:38:23,680
racks that help to recycle oxygen and

901
00:38:27,430 --> 00:38:25,599
water and that kind of thing

902
00:38:28,310 --> 00:38:27,440
there's a large exercise machine on

903
00:38:29,589 --> 00:38:28,320
there

904
00:38:31,670 --> 00:38:29,599
that helps a lot when you live in

905
00:38:33,190 --> 00:38:31,680
weightlessness for six months it can

906
00:38:34,790 --> 00:38:33,200
really take a toll on your bodies on

907
00:38:36,950 --> 00:38:34,800
your bones and your muscles and being

908
00:38:38,870 --> 00:38:36,960
able to do exercise is really critical

909
00:38:40,790 --> 00:38:38,880
to being able to live in space

910
00:38:42,310 --> 00:38:40,800
and it also is gonna have the cupola

911
00:38:44,150 --> 00:38:42,320
attached to it but it's gonna which is

912
00:38:47,589 --> 00:38:44,160
going to have the

913
00:38:49,750 --> 00:38:47,599

ability to put a robotic control station

914
00:38:51,270 --> 00:38:49,760
so you can look outside and uh move the

915
00:38:52,470 --> 00:38:51,280
robotic arm

916
00:38:54,150 --> 00:38:52,480
now you were mentioning a little

917
00:38:55,990 --> 00:38:54,160
probably the most important thing that

918
00:38:57,670 --> 00:38:56,000
it will do the

919
00:38:59,190 --> 00:38:57,680
i'm sorry probably the most important

920
00:39:01,990 --> 00:38:59,200
thing that it'll do for scientists is it

921
00:39:03,910 --> 00:39:02,000
will get the uh the bathroom compartment

922
00:39:05,589 --> 00:39:03,920
out of the u.s laboratory and get it

923
00:39:07,270 --> 00:39:05,599
over into another module to kind of

924
00:39:09,030 --> 00:39:07,280
allow more science to happen in that

925
00:39:11,030 --> 00:39:09,040
laboratory and turn it into less of a

926
00:39:12,790 --> 00:39:11,040
hygiene facility

927
00:39:15,589 --> 00:39:12,800
now you were mentioning the exercise in

928
00:39:17,750 --> 00:39:15,599
outer space does this mean that the cold

929
00:39:19,349 --> 00:39:17,760
bear machine that we've heard so much

930
00:39:21,589 --> 00:39:19,359
about that exercise machine is that

931
00:39:24,310 --> 00:39:21,599
going into the tranquility module

932
00:39:25,910 --> 00:39:24,320
uh it sure is that's one of the yeah i'm

933
00:39:27,349 --> 00:39:25,920
staring at it right now it's it's just a

934
00:39:28,790 --> 00:39:27,359
few feet from me and that's going to

935
00:39:31,190 --> 00:39:28,800
move down there

936
00:39:33,430 --> 00:39:31,200
every day the station crew members have

937
00:39:34,950 --> 00:39:33,440
they run on the treadmill they have a

938
00:39:36,630 --> 00:39:34,960

cycle type machine and then they have

939
00:39:38,550 --> 00:39:36,640
this weight lifting machine

940
00:39:39,990 --> 00:39:38,560
something called a-red and

941
00:39:41,510 --> 00:39:40,000
exercise is an important part of their

942
00:39:43,750 --> 00:39:41,520
day they spend a couple hours every day

943
00:39:44,790 --> 00:39:43,760
exercising and the great thing about it

944
00:39:46,950 --> 00:39:44,800
having

945
00:39:48,230 --> 00:39:46,960
had humans americans and our

946
00:39:51,430 --> 00:39:48,240
international partners on board the

947
00:39:53,589 --> 00:39:51,440
space station since 2000 continuously

948
00:39:55,990 --> 00:39:53,599
we're going on 10 years now we've shown

949
00:39:57,990 --> 00:39:56,000
that we can live and work in space for

950
00:39:59,750 --> 00:39:58,000
long durations and and guys come back in

951
00:40:02,390 --> 00:39:59,760
great shape and that's due to a large

952
00:40:03,990 --> 00:40:02,400
part because of the exercise that we do

953
00:40:05,910 --> 00:40:04,000
i wish we could spend more time chatting

954
00:40:08,069 --> 00:40:05,920
with you but we are out of time pilot

955
00:40:09,349 --> 00:40:08,079
terry burts and mission specialist rob

956
00:40:11,030 --> 00:40:09,359
bank and we thank you for joining us

957
00:40:13,190 --> 00:40:11,040
this morning on daybreak you get an

958
00:40:14,630 --> 00:40:13,200
extra day in space i understand enjoy

959
00:40:16,550 --> 00:40:14,640
safe travels and we'll see you back down

960
00:40:17,589 --> 00:40:16,560
on the ground within about a week i

961
00:40:23,109 --> 00:40:17,599
think that's next sunday that you're

962
00:40:31,190 --> 00:40:25,589
have a good day uh memphis thanks to for

963
00:40:34,790 --> 00:40:32,790

this is heading from the shuttle

964
00:40:42,950 --> 00:40:34,800
endeavor over towards the international

965
00:40:46,870 --> 00:40:44,550
and here entering

966
00:40:53,670 --> 00:40:46,880
node 2 of the international space

967
00:40:53,680 --> 00:40:58,550
there goes nick patrick

968
00:41:01,430 --> 00:40:59,990
this is the commander of the

969
00:41:07,829 --> 00:41:01,440
international space station jeff

970
00:41:09,990 --> 00:41:09,109
moving from

971
00:41:23,190 --> 00:41:10,000
nerd

972
00:41:28,150 --> 00:41:26,309
as we progress from forward to aft in

973
00:41:34,069 --> 00:41:28,160
the lab we passed the robotic

974
00:41:34,079 --> 00:41:41,990
enter into node number one

975
00:41:47,510 --> 00:41:44,630
we can now take a right turn and enter

976
00:41:49,910 --> 00:41:47,520
the new node three

977
00:41:51,910 --> 00:41:49,920
this is a view inside node three looking

978
00:41:57,109 --> 00:41:51,920
towards the port or left side of the

979
00:41:57,119 --> 00:42:03,030
this is the hatch

980
00:42:05,910 --> 00:42:04,309
now we get all the way to the end and

981
00:42:07,910 --> 00:42:05,920
turn all the way around looking now

982
00:42:09,510 --> 00:42:07,920
towards the starboard you can see all

983
00:42:11,829 --> 00:42:09,520
the way across

984
00:42:15,030 --> 00:42:11,839
towards node one the equipment lock and

985
00:42:19,829 --> 00:42:17,990
this is our nader hatch and earlier

986
00:42:22,630 --> 00:42:19,839
today we were able to just look out that

987
00:42:24,710 --> 00:42:22,640
window and see down on a beautiful earth

988
00:42:26,950 --> 00:42:24,720

if we look out there now we'd actually

989
00:42:29,910 --> 00:42:26,960
see a cupola because we

990
00:42:30,710 --> 00:42:29,920
replaced the cupola there to the nader

991
00:42:32,069 --> 00:42:30,720
or

992
00:42:43,589 --> 00:42:32,079
earth-facing

993
00:42:51,990 --> 00:42:46,309
these are just more views of inside node

994
00:42:55,910 --> 00:42:54,470
here we see a little bit of the work we

995
00:43:00,069 --> 00:42:55,920
were doing

996
00:43:03,190 --> 00:43:00,079
inside there three that found here is

997
00:43:07,190 --> 00:43:03,200
the venting of the cupola before we

998
00:43:10,950 --> 00:43:08,950
coupler is just on the other side of

999
00:43:13,270 --> 00:43:10,960
that hatch and

1000
00:43:15,670 --> 00:43:13,280
it's very opened up some valves to be

1001
00:43:20,150 --> 00:43:15,680
able to prevent the atmosphere that was

1002
00:43:23,990 --> 00:43:21,829
that allowed us to

1003
00:43:26,470 --> 00:43:24,000
move remove the cupola from the port

1004
00:43:38,950 --> 00:43:26,480
side and move it around to the bottom or

1005
00:43:42,710 --> 00:43:41,349
as a safety precaution now we do wear

1006
00:43:44,790 --> 00:43:42,720
ear plugs

1007
00:43:47,510 --> 00:43:44,800
when we're venting like this because you

1008
00:43:56,950 --> 00:43:47,520
can hear the kind of high pitch noise as

1009
00:44:02,710 --> 00:43:59,510
once again this is showing the nader or

1010
00:44:03,990 --> 00:44:02,720
bottom facing hatch before the cupola

1011
00:44:05,990 --> 00:44:04,000
was placed there

1012
00:44:08,069 --> 00:44:06,000
this is just giving you a glimpse of

1013
00:44:10,550 --> 00:44:08,079

what our view might look like this is

1014
00:44:12,309 --> 00:44:10,560
just one single window but now that we

1015
00:44:14,550 --> 00:44:12,319
have the cupola there we're going to

1016
00:44:34,309 --> 00:44:14,560
have seven windows facing down in this

1017
00:44:42,309 --> 00:44:37,190
and here we have terry and i are working

1018
00:44:47,430 --> 00:44:45,349
now back to the lab jerry's

1019
00:44:49,910 --> 00:44:47,440
setting up the robotic workstation in

1020
00:44:52,150 --> 00:44:49,920
order to relocate the cupola he's going

1021
00:44:54,790 --> 00:44:52,160
to use the robotic arm to reach out and

1022
00:45:08,230 --> 00:44:54,800
grab the cupola and to move it around to

1023
00:45:11,109 --> 00:45:09,670
there's the cupola looking out the

1024
00:45:13,030 --> 00:45:11,119
window here's bob and nick and the

1025
00:45:16,069 --> 00:45:13,040
airlock they've

1026
00:45:17,349 --> 00:45:16,079
been practicing resizing emu's so

1027
00:45:18,950 --> 00:45:17,359
they're going to be the world's experts

1028
00:45:20,870 --> 00:45:18,960
on resizing abuse i think bob said

1029
00:45:24,150 --> 00:45:20,880
they're going to do four resizes and

1030
00:45:26,069 --> 00:45:24,160
they only brought up three emus

1031
00:45:27,829 --> 00:45:26,079
that's been good i know the guys on the

1032
00:45:29,510 --> 00:45:27,839
ground have been working really hard to

1033
00:45:32,870 --> 00:45:29,520
come up with these plans i know that's a

1034
00:45:37,270 --> 00:45:35,589
okay here's the russian segment um

1035
00:45:38,630 --> 00:45:37,280
i think one of our cosmonauts filmed

1036
00:45:40,630 --> 00:45:38,640
this for us or it might have been stevie

1037
00:45:42,390 --> 00:45:40,640
ray he's flying through the fgb which is

1038
00:45:45,829 --> 00:45:42,400

a storage area

1039
00:45:48,150 --> 00:45:45,839
um just asked of node one and when you

1040
00:45:50,069 --> 00:45:48,160
come into this area you can go down to

1041
00:45:52,470 --> 00:45:50,079
the docking compartment

1042
00:45:54,150 --> 00:45:52,480
yeah and or you can go up to the what's

1043
00:45:55,990 --> 00:45:54,160
called the mrm

1044
00:45:57,349 --> 00:45:56,000
and then here is the view i think steve

1045
00:46:00,870 --> 00:45:57,359
steve's right here so i'll let him tell

1046
00:46:04,630 --> 00:46:03,109
well this is pretty uh constricted

1047
00:46:06,069 --> 00:46:04,640
window environment here and the camera

1048
00:46:07,589 --> 00:46:06,079
was almost too big to see through the

1049
00:46:09,990 --> 00:46:07,599
window but if you look just in the

1050
00:46:12,550 --> 00:46:10,000
bottom part okay there's endeavor the

1051
00:46:14,309 --> 00:46:12,560
deport wing of endeavor and it's just in

1052
00:46:17,349 --> 00:46:14,319
the bottom middle of the screen it's the

1053
00:46:18,309 --> 00:46:17,359
cupola on its way to its new home