1
00:00:09,290 --> 00:00:07,340
good day and welcome back to the Johnson

2
00:00:11,570 --> 00:00:09,300
Space Center as our pre-flight briefings

3
00:00:13,730 --> 00:00:11,580
continue for Discovery's upcoming flight

4
00:00:15,919 --> 00:00:13,740
to the International Space Station this

5
00:00:17,810 --> 00:00:15,929
is the mission overview briefing with us

6
00:00:20,120 --> 00:00:17,820
today to discuss all of the details of

7
00:00:21,740 --> 00:00:20,130
this flight are Brian Lonnie the lead

8
00:00:24,980 --> 00:00:21,750
space shuttle flight director for

9
00:00:26,630 --> 00:00:24,990
sts-133 and Royce Renfrew the lead space

10
00:00:29,000 --> 00:00:26,640
station flight director and we'll start

11
00:00:31,160 --> 00:00:29,010
off with Brian let's say good morning

12
00:00:32,990 --> 00:00:31,170
folks we're excited for this upcoming

13
00:00:34,310 --> 00:00:33,000

mission I'm really grateful that all of

14
00:00:35,990 --> 00:00:34,320
y'all have taken the time out of your

15
00:00:37,340 --> 00:00:36,000
day to come talk to us about the mission

16
00:00:39,709 --> 00:00:37,350
hopefully we'll fill in all the

17
00:00:40,670 --> 00:00:39,719
questions who are in your minds and be

18
00:00:44,060 --> 00:00:40,680
able to help you understand what's

19
00:00:46,369 --> 00:00:44,070
coming on this mission if I could have

20
00:00:48,080 --> 00:00:46,379
the croup a picture of the crew up there

21
00:00:49,910 --> 00:00:48,090
we'll talk about the cruise flying we

22
00:00:52,819 --> 00:00:49,920
have a great crew they've flown numerous

23
00:00:54,260 --> 00:00:52,829
times before as a group we were looking

24
00:00:56,150 --> 00:00:54,270
forward to working with these guys we've

25
00:00:57,619 --> 00:00:56,160
had some great training sessions over

26
00:00:59,840 --> 00:00:57,629
the past number of months and they're a

27
00:01:01,580 --> 00:00:59,850
great group starting with the picture on

28
00:01:04,280 --> 00:01:01,590
your left we have al drew he's flown

29
00:01:06,250 --> 00:01:04,290
once before in sts-118 this time around

30
00:01:08,660 --> 00:01:06,260
he'll be one of our two space walkers

31
00:01:10,219 --> 00:01:08,670
and while he's not out what doing space

32
00:01:12,230 --> 00:01:10,229
walks he'll be inside helping with

33
00:01:13,429 --> 00:01:12,240
everything else particularly he'll be

34
00:01:15,320 --> 00:01:13,439
assisting with the shuttle RMS

35
00:01:17,630 --> 00:01:15,330
operations during the flight day two

36
00:01:20,270 --> 00:01:17,640
inspections there's Express logistics

37
00:01:22,580 --> 00:01:20,280
carrier installation and also the flight

38
00:01:25,550 --> 00:01:22,590

day ten inspections and we got him doing

39
00:01:28,670 --> 00:01:25,560
a bunch of other things as well next to

40
00:01:30,620 --> 00:01:28,680
Drew is nicole stott she of courses X

41
00:01:33,980 --> 00:01:30,630
has been a flight engineer on expedition

42
00:01:36,980 --> 00:01:33,990
20 and 21 she flew up on sts-128 and

43
00:01:39,530 --> 00:01:36,990
flew back on SG us 129 so she's an

44
00:01:42,020 --> 00:01:39,540
experienced flyer all around she will be

45
00:01:45,499 --> 00:01:42,030
performing robotic ops with the station

46
00:01:46,700 --> 00:01:45,509
Armas for installation excuse me for

47
00:01:49,280 --> 00:01:46,710
installation of the Express logistics

48
00:01:51,289 --> 00:01:49,290
carrier as well and she also doing the

49
00:01:53,780 --> 00:01:51,299
coordination of the spacewalk tasks from

50
00:01:56,149 --> 00:01:53,790
inside so she'll be walking the crew

51
00:01:57,469 --> 00:01:56,159
outside through all their task every

52
00:01:58,880 --> 00:01:57,479
little detail you'll hear her telling

53
00:02:02,030 --> 00:01:58,890
them reminding them what they're

54
00:02:04,130 --> 00:02:02,040
supposed to be working on next to nicole

55
00:02:07,969 --> 00:02:04,140
is eric boe he's our pilot on this

56
00:02:10,550 --> 00:02:07,979
mission he is a pilot from SD s 126 so

57
00:02:12,500 --> 00:02:10,560
he's flown once before Eric will also be

58
00:02:14,000 --> 00:02:12,510
performing robotic ops with shuttle RMS

59
00:02:16,070 --> 00:02:14,010
during the flight day to inspect

60
00:02:19,100 --> 00:02:16,080
the Express logistics carrier install

61
00:02:20,630 --> 00:02:19,110
and the flight day ten inspections he's

62
00:02:21,949 --> 00:02:20,640
also scheduled to help us with the

63
00:02:23,780 --> 00:02:21,959

permanent multi-purpose module

64
00:02:26,030 --> 00:02:23,790
outfitting once we get it installed

65
00:02:28,789 --> 00:02:26,040
he'll go hook up all the wires and

66
00:02:30,410 --> 00:02:28,799
plumbing to make it work for us and that

67
00:02:32,360 --> 00:02:30,420
we expect that activation occur about

68
00:02:34,210 --> 00:02:32,370
flight day seven we may shovel that a

69
00:02:36,680 --> 00:02:34,220
little bit earlier if things go well

70
00:02:37,880 --> 00:02:36,690
Erik wall so pilot discovery during the

71
00:02:39,559 --> 00:02:37,890
undocking fly-around at the

72
00:02:42,979 --> 00:02:39,569
International International Space

73
00:02:44,119 --> 00:02:42,989
Station on flight day ten next Eric

74
00:02:45,979 --> 00:02:44,129
there in the middle of the Steve Lindsey

75
00:02:49,670 --> 00:02:45,989
Steve of course is a very experienced

76
00:02:52,280 --> 00:02:49,680
flyer he was pilot on sds 87 in sts 95

77
00:02:54,710 --> 00:02:52,290
then he was commander in stos 104 and

78
00:02:56,869 --> 00:02:54,720
121 of course he will fly the rendezvous

79
00:02:59,210 --> 00:02:56,879
for us and he will be assisting with the

80
00:03:00,830 --> 00:02:59,220
shuttle robotic operations as well and

81
00:03:05,030 --> 00:03:00,840
he'll be available for a lot of other

82
00:03:07,729 --> 00:03:05,040
tasks throughout the mission fifth from

83
00:03:09,229 --> 00:03:07,739
the left there is mike barratt this is

84
00:03:10,879 --> 00:03:09,239
Mike's first time to fly up on the

85
00:03:13,369 --> 00:03:10,889
shuttle when he was an expedition crew

86
00:03:16,759 --> 00:03:13,379
member on 19 and 20 he flew up on the

87
00:03:18,439 --> 00:03:16,769
Soyuz he once I'm once open space there

88
00:03:21,920 --> 00:03:18,449

he will perform a lot of the space

89
00:03:23,629 --> 00:03:21,930
station robotic operations for us during

90
00:03:25,460 --> 00:03:23,639
the Express logistics carry installation

91
00:03:27,589 --> 00:03:25,470
the permanent multi-purpose module

92
00:03:29,599 --> 00:03:27,599
installation and also while the

93
00:03:31,580 --> 00:03:29,609
spacewalkers are out doing their

94
00:03:34,339 --> 00:03:31,590
business out on the outside the vehicle

95
00:03:36,229 --> 00:03:34,349
he'll be flying this station robotic arm

96
00:03:40,189 --> 00:03:36,239
around helping them get to various

97
00:03:43,970 --> 00:03:40,199
locations and finally on the far right

98
00:03:45,710 --> 00:03:43,980
is tim kopra he flew up on sts-127 he

99
00:03:47,659 --> 00:03:45,720
was the flight engineer in expedition 20

100
00:03:51,379 --> 00:03:47,669
and he swapped seats with Nicole on

101
00:03:52,909 --> 00:03:51,389
sts-128 she stayed he came home Tim will

102
00:03:54,439 --> 00:03:52,919
be one of our the other one of our space

103
00:03:56,150 --> 00:03:54,449
walkers on this mission he'll be

104
00:03:58,699 --> 00:03:56,160
performing robotic ops also with the

105
00:04:00,830 --> 00:03:58,709
station RMS first installation of the

106
00:04:03,949 --> 00:04:00,840
ELC and the permanent multi-purpose

107
00:04:05,780 --> 00:04:03,959
module these guys like I said are very

108
00:04:07,939 --> 00:04:05,790
experienced crew they've been handed

109
00:04:09,500 --> 00:04:07,949
great training so far and we know that

110
00:04:12,339 --> 00:04:09,510
they're all ready to go and fly this

111
00:04:14,780 --> 00:04:12,349
mission they're in good shape to go fly

112
00:04:16,969 --> 00:04:14,790
if I could get the crew patch up we'll

113
00:04:19,610 --> 00:04:16,979

talk about that for a minute this is a

114
00:04:21,770 --> 00:04:19,620
really neat crew patch i think it was

115
00:04:23,810 --> 00:04:21,780
designed based upon some sketches from

116
00:04:25,459 --> 00:04:23,820
the late artist to robert McCall they

117
00:04:27,470 --> 00:04:25,469
were the final current creations of his

118
00:04:30,470 --> 00:04:27,480
long and prodigious career

119
00:04:32,150 --> 00:04:30,480
it shows discovery lifting off with

120
00:04:34,130 --> 00:04:32,160
plume beneath it but there's no external

121
00:04:35,870 --> 00:04:34,140
tank and no SRBs which is just

122
00:04:38,180 --> 00:04:35,880
representing sort of the tail end of the

123
00:04:39,830 --> 00:04:38,190
program I think but it's a sort of a

124
00:04:41,420 --> 00:04:39,840
retro patch I think of it as and I think

125
00:04:46,430 --> 00:04:41,430
it looks really really nice i like this

126
00:04:47,900 --> 00:04:46,440
patch let's see affected we're going to

127
00:04:49,160 --> 00:04:47,910
talk a little bit now about some of the

128
00:04:51,530 --> 00:04:49,170
folks on the ground who will be helping

129
00:04:53,840 --> 00:04:51,540
the crew from get through their daily

130
00:04:57,080 --> 00:04:53,850
operations if I could have the picture

131
00:04:59,330 --> 00:04:57,090
mr. Jones up Richard Jones is our asset

132
00:05:01,490 --> 00:04:59,340
flight director he's known as Sigma

133
00:05:03,110 --> 00:05:01,500
flight this will be his fourth a cent

134
00:05:05,270 --> 00:05:03,120
and of course Richard he's very

135
00:05:06,830 --> 00:05:05,280
experienced he's ready to go he'll be

136
00:05:08,810 --> 00:05:06,840
doing his final simulation with the

137
00:05:10,430 --> 00:05:08,820
asset team next Tuesday and then they

138
00:05:12,410 --> 00:05:10,440

will be ready to go fly help the crew

139
00:05:14,210 --> 00:05:12,420
get off the ground on a Sunday and get

140
00:05:16,460 --> 00:05:14,220
turned that vehicle from a rocket

141
00:05:19,880 --> 00:05:16,470
launcher into an orbit operations

142
00:05:23,180 --> 00:05:19,890
vehicle next slide please with ginger

143
00:05:24,830 --> 00:05:23,190
ginger Carrick is a vega flight this

144
00:05:26,390 --> 00:05:24,840
will be her third flight as a shuttle

145
00:05:28,010 --> 00:05:26,400
flight director she's done numerous

146
00:05:30,230 --> 00:05:28,020
things on the space station side and

147
00:05:32,450 --> 00:05:30,240
still is doing those things ginger will

148
00:05:33,860 --> 00:05:32,460
be on the orbit 2 team which is the team

149
00:05:36,290 --> 00:05:33,870
is sorting the second half of the crew

150
00:05:37,730 --> 00:05:36,300
day so after lunch to their about she

151
00:05:39,170 --> 00:05:37,740
will take over with her team and help

152
00:05:41,240 --> 00:05:39,180
the crew through the spacewalks and the

153
00:05:46,430 --> 00:05:41,250
other operations during that phase of

154
00:05:48,650 --> 00:05:46,440
the day next slide is a Rick laburo rick

155
00:05:49,880 --> 00:05:48,660
is a Pegasus flight this will be his

156
00:05:51,590 --> 00:05:49,890
eighth flight as a shuttle flight

157
00:05:53,360 --> 00:05:51,600
director he too has worked a lot on the

158
00:05:54,770 --> 00:05:53,370
station side and also on the shuttle

159
00:05:57,080 --> 00:05:54,780
side he's a very experienced flight

160
00:05:58,280 --> 00:05:57,090
director rick will be working the

161
00:05:59,750 --> 00:05:58,290
planning shift which will be the

162
00:06:01,460 --> 00:05:59,760
overnight while the crews sleeping and

163
00:06:03,200 --> 00:06:01,470

they will work the reap any replaying

164
00:06:04,670 --> 00:06:03,210
efforts that might be required but

165
00:06:06,110 --> 00:06:04,680
basically get the plan on board for the

166
00:06:09,020 --> 00:06:06,120
next day for the orbit one orbit two

167
00:06:10,930 --> 00:06:09,030
teams to go execute and then finally on

168
00:06:14,270 --> 00:06:10,940
the shuttle side I'll mention Paul died

169
00:06:15,830 --> 00:06:14,280
Paul is our team for of course Paul is

170
00:06:18,470 --> 00:06:15,840
iron flight he's very experienced Java

171
00:06:20,000 --> 00:06:18,480
seen him numerous times as a lead he

172
00:06:21,560 --> 00:06:20,010
will be the team for folks or they're

173
00:06:24,020 --> 00:06:21,570
just in case we have some issues and

174
00:06:26,150 --> 00:06:24,030
they can come in wed pre identify a team

175
00:06:27,920 --> 00:06:26,160
for folks to come in and work any issues

176
00:06:29,090 --> 00:06:27,930
that may come up that need the flight

177
00:06:31,040 --> 00:06:29,100
control team may need a little extra

178
00:06:32,600 --> 00:06:31,050
help with so we're excited to Paul

179
00:06:34,190 --> 00:06:32,610
helping out with that hopefully we won't

180
00:06:38,600 --> 00:06:34,200
need him of course but he'll be

181
00:06:40,750 --> 00:06:38,610
available if required let's see and last

182
00:06:42,460 --> 00:06:40,760
but not least

183
00:06:44,980 --> 00:06:42,470
entry for the final landing there of

184
00:06:47,320 --> 00:06:44,990
discovery we have Tony so catchy he is

185
00:06:49,060 --> 00:06:47,330
intrepid flight this will be his second

186
00:06:50,680 --> 00:06:49,070
flight as an entry flight director of

187
00:06:53,530 --> 00:06:50,690
course he has numerous leads also and

188
00:06:55,600 --> 00:06:53,540

has been in the shuttle program think

189
00:06:57,130 --> 00:06:55,610
since sgs1 so he's been around a long

190
00:06:59,260 --> 00:06:57,140
long time and very experienced and

191
00:07:01,390 --> 00:06:59,270
brings a lot to experience to the

192
00:07:02,920 --> 00:07:01,400
console and we're really glad that he'll

193
00:07:06,850 --> 00:07:02,930
be helping us out with the entry phase

194
00:07:08,560 --> 00:07:06,860
of this flight finally for myself I'll

195
00:07:09,730 --> 00:07:08,570
of course be orbit one I probably should

196
00:07:11,170 --> 00:07:09,740
have mentioned that already but will be

197
00:07:13,300 --> 00:07:11,180
working my team will be work in the

198
00:07:14,680 --> 00:07:13,310
first half of the crew day we'll get

199
00:07:16,120 --> 00:07:14,690
there about the time the crew wakes up

200
00:07:20,140 --> 00:07:16,130
and we'll be leaving around midday when

201
00:07:21,670 --> 00:07:20,150
the crew is going to bed now I'll walk

202
00:07:23,740 --> 00:07:21,680
you through a few of the things in the

203
00:07:28,810 --> 00:07:23,750
payload Bay if I could get the video for

204
00:07:31,090 --> 00:07:28,820
the payload Bay there we go this is

205
00:07:32,710 --> 00:07:31,100
discoveries payload Bay it shows all the

206
00:07:34,390 --> 00:07:32,720
elements in there up towards the front

207
00:07:36,700 --> 00:07:34,400
of the vehicle is the orbiter docking

208
00:07:38,140 --> 00:07:36,710
system that of course is what we docked

209
00:07:39,790 --> 00:07:38,150
to the International Space Station with

210
00:07:41,080 --> 00:07:39,800
and the crew will use that to transfer

211
00:07:43,450 --> 00:07:41,090
between the vehicles once it's

212
00:07:44,980 --> 00:07:43,460
pressurized after docking there in the

213
00:07:47,140 --> 00:07:44,990

port sill is this shuttle remote

214
00:07:48,790 --> 00:07:47,150
manipulator system that's our robotic

215
00:07:50,460 --> 00:07:48,800
arm will use for numerous robotic

216
00:07:53,200 --> 00:07:50,470
operations throughout the flight and the

217
00:07:54,640 --> 00:07:53,210
orbiter booms sensor patent system is on

218
00:07:56,500 --> 00:07:54,650
the far side there on the starboard sill

219
00:07:59,500 --> 00:07:56,510
and we'll use that the inspector

220
00:08:00,910 --> 00:07:59,510
discoveries a heat shield the Express

221
00:08:03,220 --> 00:08:00,920
logistics carrier number four there is

222
00:08:04,720 --> 00:08:03,230
in the middle it's to carry or use for

223
00:08:06,610 --> 00:08:04,730
station including that's the radiator

224
00:08:07,960 --> 00:08:06,620
sitting on it I'm a little behind the

225
00:08:10,030 --> 00:08:07,970
video here and the permanent

226
00:08:11,770 --> 00:08:10,040
multi-purpose module is there you may

227
00:08:13,660 --> 00:08:11,780
recognize it as it formerly known as an

228
00:08:14,740 --> 00:08:13,670
MP LM we call it a pmm now we're going

229
00:08:19,300 --> 00:08:14,750
to take it up we're going to leave it on

230
00:08:20,800 --> 00:08:19,310
board International Space Station so let

231
00:08:22,600 --> 00:08:20,810
me walk you through the flight days I'll

232
00:08:24,370 --> 00:08:22,610
get the first three then I'll hand over

233
00:08:26,680 --> 00:08:24,380
to Royce and let him walk on work on the

234
00:08:29,020 --> 00:08:26,690
rest of course we're going to launch a

235
00:08:31,300 --> 00:08:29,030
November first it's about 340 in the

236
00:08:33,310 --> 00:08:31,310
afternoon here in Houston the time of

237
00:08:35,230 --> 00:08:33,320
launch we're looking forward to that

238
00:08:36,850 --> 00:08:35,240

ready to go mr. Jones will come in with

239
00:08:39,250 --> 00:08:36,860
his team and they'll be ready to go

240
00:08:42,730 --> 00:08:39,260
execute and get through discovery off

241
00:08:44,260 --> 00:08:42,740
the ground one Sassin and a is complete

242
00:08:46,000 --> 00:08:44,270
and we've turned the vehicle over into

243
00:08:49,360 --> 00:08:46,010
an orbit machine got the payload bay

244
00:08:50,860 --> 00:08:49,370
doors open they'll begin downlinking and

245
00:08:52,690 --> 00:08:50,870
we're reviewing our ass and imagery of

246
00:08:54,250 --> 00:08:52,700
course and pick up with some of the

247
00:08:56,590 --> 00:08:54,260
standard sort of flight day one

248
00:08:58,510 --> 00:08:56,600
activities these include with downlink

249
00:09:00,820 --> 00:08:58,520
all the video from the ET and the

250
00:09:03,010 --> 00:09:00,830
umbilical wells we got some sensor data

251
00:09:04,810 --> 00:09:03,020
to play back and the crew in general is

252
00:09:06,430 --> 00:09:04,820
going to be just configuring the cabin

253
00:09:09,280 --> 00:09:06,440
putting away some seats getting the

254
00:09:10,870 --> 00:09:09,290
cabin ready to go for orbit ops and also

255
00:09:12,370 --> 00:09:10,880
pulling the arm out and doing a brief

256
00:09:16,350 --> 00:09:12,380
arm as check out to make sure it's in

257
00:09:19,690 --> 00:09:16,360
good shape for the next day's activities

258
00:09:21,160 --> 00:09:19,700
on flight day to the crew will wake up

259
00:09:24,040 --> 00:09:21,170
and if I could roll the video of the

260
00:09:26,020 --> 00:09:24,050
inspection please there we go thank

261
00:09:27,490 --> 00:09:26,030
y'all may have seen this before this is

262
00:09:30,130 --> 00:09:27,500
the inspection video they'll pull out

263
00:09:31,870 --> 00:09:30,140

the arm and they'll do a scans starting

264
00:09:33,340 --> 00:09:31,880
on the starboard side in the aft just

265
00:09:35,500 --> 00:09:33,350
looking for any asset damage that may

266
00:09:37,990 --> 00:09:35,510
have occurred and we'll do a pan tilt

267
00:09:40,180 --> 00:09:38,000
survey there of the back end including

268
00:09:42,640 --> 00:09:40,190
the elms pod checking for the thermal

269
00:09:44,500 --> 00:09:42,650
blankets and the towels and the t0

270
00:09:46,990 --> 00:09:44,510
umbilicals making sure everything's in

271
00:09:48,250 --> 00:09:47,000
good shape after a scent and then they

272
00:09:50,530 --> 00:09:48,260
will maneuver forward and they'll do

273
00:09:53,110 --> 00:09:50,540
several racetrack patterns scanning the

274
00:09:54,820 --> 00:09:53,120
reinforced carbon-carbon along the

275
00:09:57,540 --> 00:09:54,830
leading edge of the wings they're making

276
00:10:00,340 --> 00:09:57,550
sure those things are in good shape and

277
00:10:03,790 --> 00:10:00,350
that no damage was incurred during acent

278
00:10:05,710 --> 00:10:03,800
time this process takes about six hours

279
00:10:08,290 --> 00:10:05,720
so it's much of the crew day on flight

280
00:10:09,910 --> 00:10:08,300
day to the wings each take a couple of

281
00:10:11,710 --> 00:10:09,920
hours each then they spend the balance

282
00:10:14,800 --> 00:10:11,720
of the time working on the nose cap and

283
00:10:16,270 --> 00:10:14,810
the other surveys and the cruise train

284
00:10:18,670 --> 00:10:16,280
this a lot and obviously ready to go

285
00:10:22,330 --> 00:10:18,680
execute it's the same survey we've been

286
00:10:24,130 --> 00:10:22,340
doing for several flights now with all

287
00:10:26,230 --> 00:10:24,140
that data that is coming from the asset

288
00:10:27,610 --> 00:10:26,240

team from the asset imagery on the

289
00:10:30,220 --> 00:10:27,620
ground for that we downlink from the

290
00:10:31,570 --> 00:10:30,230
orbiter post launch and then this data

291
00:10:33,910 --> 00:10:31,580
and as well as they are bar pitch

292
00:10:35,470 --> 00:10:33,920
maneuver all that data is going to be

293
00:10:38,080 --> 00:10:35,480
reviewed by the teams on the ground the

294
00:10:40,180 --> 00:10:38,090
debris damage assessment team will

295
00:10:41,950 --> 00:10:40,190
gather all that data and they'll look at

296
00:10:43,660 --> 00:10:41,960
it and compare it to baseline data

297
00:10:45,250 --> 00:10:43,670
they're looking for any damage that may

298
00:10:46,720 --> 00:10:45,260
have occurred during a sent to be sure

299
00:10:48,640 --> 00:10:46,730
that the vehicle is in good shape and

300
00:10:50,200 --> 00:10:48,650
after about a day and a half sometime

301
00:10:52,720 --> 00:10:50,210
around when the crews going to sleep on

302
00:10:55,150 --> 00:10:52,730
flight 93 they'll be able to report to

303
00:10:56,710 --> 00:10:55,160
us if they require focused inspection so

304
00:10:58,650 --> 00:10:56,720
if they see something of concern they

305
00:11:00,760 --> 00:10:58,660
want to get a better look we got some

306
00:11:02,710 --> 00:11:00,770
specific instruments on that over there

307
00:11:04,150 --> 00:11:02,720
boom system for that we'll go and have a

308
00:11:05,920 --> 00:11:04,160
look at those the any area that they

309
00:11:07,870 --> 00:11:05,930
might be concerned about and we would do

310
00:11:09,310 --> 00:11:07,880
that on flight day six if

311
00:11:10,780 --> 00:11:09,320
that's not required of course we get a

312
00:11:13,270 --> 00:11:10,790
clean bill of health from them will be

313
00:11:14,620 --> 00:11:13,280

very excited and that frankly is our

314
00:11:18,820 --> 00:11:14,630
anticipation that the vehicle will be in

315
00:11:21,760 --> 00:11:18,830
good shape the once they tell us after

316
00:11:23,920 --> 00:11:21,770
flight 93 if or if a focus inspection is

317
00:11:25,510 --> 00:11:23,930
not required that team the damage

318
00:11:28,630 --> 00:11:25,520
assessment team will continue to do the

319
00:11:29,980 --> 00:11:28,640
reviews and then report to the mmt after

320
00:11:31,510 --> 00:11:29,990
a couple more days probably more

321
00:11:33,010 --> 00:11:31,520
rigorous analysis comparing all the

322
00:11:36,220 --> 00:11:33,020
baseline making sure everything's just

323
00:11:38,740 --> 00:11:36,230
completely good they report to them

324
00:11:41,380 --> 00:11:38,750
empty their report and based on that we

325
00:11:43,330 --> 00:11:41,390
hope to build a clear discoveries TPS to

326
00:11:44,860 --> 00:11:43,340
be safe for entry and of course you'll

327
00:11:47,320 --> 00:11:44,870
hear that from the folks when we come

328
00:11:49,390 --> 00:11:47,330
back in here on those days I know you

329
00:11:51,490 --> 00:11:49,400
guys have followed these uh debris

330
00:11:53,260 --> 00:11:51,500
assessment damage assessment things from

331
00:11:55,360 --> 00:11:53,270
flight to flight the flight and lately

332
00:11:56,920 --> 00:11:55,370
they've been very very clean and we're

333
00:11:58,870 --> 00:11:56,930
very excited about that and have every

334
00:12:01,720 --> 00:11:58,880
expectation that this one will come back

335
00:12:02,770 --> 00:12:01,730
just the same very clean and we'll be

336
00:12:09,670 --> 00:12:02,780
able to execute the rest of the flight

337
00:12:12,490 --> 00:12:09,680
nominally let that video play out once

338
00:12:14,680 --> 00:12:12,500

they're done with the scans are going to

339
00:12:16,660 --> 00:12:14,690
go ahead and park the OBS s we'll put it

340
00:12:19,150 --> 00:12:16,670
back in its place on the starboard sill

341
00:12:20,890 --> 00:12:19,160
and then they'll put the arm the RMS

342
00:12:22,960 --> 00:12:20,900
shuttle RMS over in a pre cradle

343
00:12:34,050 --> 00:12:22,970
position getting ready for docking on

344
00:12:37,680 --> 00:12:36,510
for this inspections of course i

345
00:12:40,410 --> 00:12:37,690
mentioned i'm already bell say it again

346
00:12:42,150 --> 00:12:40,420
Steve Eric and Al are all trained and

347
00:12:46,020 --> 00:12:42,160
qualified and ready to go execute these

348
00:12:47,460 --> 00:12:46,030
inspections and we'll see which one them

349
00:12:48,690 --> 00:12:47,470
actually flies the arm who helps and

350
00:12:49,920 --> 00:12:48,700
which roles they play but I expect

351
00:12:52,170 --> 00:12:49,930
they're going to swap out a little bit

352
00:12:54,240 --> 00:12:52,180
as they go and there you can see in the

353
00:12:57,990 --> 00:12:54,250
videos being parking the arm ready for

354
00:12:59,970 --> 00:12:58,000
flight day 23 excuse me so again

355
00:13:01,860 --> 00:12:59,980
overnight flight day too we're looking

356
00:13:02,940 --> 00:13:01,870
at all the data the ground team the

357
00:13:05,100 --> 00:13:02,950
engineering is on the ground are

358
00:13:07,110 --> 00:13:05,110
rigorously analyzing it making sure that

359
00:13:09,540 --> 00:13:07,120
discoveries in good shape heat shield is

360
00:13:11,400 --> 00:13:09,550
in good shape at the same time the

361
00:13:12,840 --> 00:13:11,410
morning of flight day 3 we're going to

362
00:13:14,370 --> 00:13:12,850
wake up get the crew ready to go

363
00:13:17,670 --> 00:13:14,380

rendezvous with the International Space

364
00:13:20,250 --> 00:13:17,680
Station the crew should wake up about 40

365
00:13:23,280 --> 00:13:20,260
miles short or behind the International

366
00:13:25,230 --> 00:13:23,290
Space Station and will execute a series

367
00:13:27,030 --> 00:13:25,240
of burns to bring us up closer and if I

368
00:13:30,480 --> 00:13:27,040
could roll a video of the approach and

369
00:13:32,700 --> 00:13:30,490
docking as they're coming in to the to

370
00:13:34,160 --> 00:13:32,710
the International Space Station consume

371
00:13:36,240 --> 00:13:34,170
them coming up from the bottom their

372
00:13:38,010 --> 00:13:36,250
commander Lindsey will stabilize the

373
00:13:39,660 --> 00:13:38,020
vehicle on the r bar which is just

374
00:13:42,300 --> 00:13:39,670
directly beneath the International Space

375
00:13:44,310 --> 00:13:42,310
Station about 600 feet or so and he'll

376
00:13:46,800 --> 00:13:44,320
do a round of our bar pitch maneuver and

377
00:13:48,060 --> 00:13:46,810
the folks on board the international

378
00:13:50,040 --> 00:13:48,070
space station will take a bunch of

379
00:13:51,990 --> 00:13:50,050
pictures of the TPS on the bottom being

380
00:13:53,850 --> 00:13:52,000
sure that the tile there is in good

381
00:13:55,830 --> 00:13:53,860
shape they'll get several pictures of

382
00:13:57,990 --> 00:13:55,840
each location and with the 408

383
00:13:59,730 --> 00:13:58,000
millimeter lenses that they use they

384
00:14:01,590 --> 00:13:59,740
will get really good pictures and again

385
00:14:03,210 --> 00:14:01,600
the damage assessment team will go and

386
00:14:05,430 --> 00:14:03,220
review all those pictures from the

387
00:14:07,050 --> 00:14:05,440
different angles that the pitch maneuver

388
00:14:08,610 --> 00:14:07,060

actually enables and be able to

389
00:14:10,350 --> 00:14:08,620
determine a whole lot of data about the

390
00:14:13,560 --> 00:14:10,360
health of the underside of the vehicle

391
00:14:15,080 --> 00:14:13,570
and again report back to us on the night

392
00:14:17,550 --> 00:14:15,090
of flight 93 then a couple days later

393
00:14:19,890 --> 00:14:17,560
and then we'll initiate will fly up to

394
00:14:21,870 --> 00:14:19,900
the v-bar it takes about 10 11 minutes

395
00:14:23,720 --> 00:14:21,880
to fly up there then commander Lindsey

396
00:14:25,440 --> 00:14:23,730
will fly it down the v-bar corridor

397
00:14:27,270 --> 00:14:25,450
approaching the International Space

398
00:14:29,430 --> 00:14:27,280
Station from out in front so to speak

399
00:14:31,260 --> 00:14:29,440
and then it'll pause at about 30 feet

400
00:14:32,460 --> 00:14:31,270
and do any fly out that might be

401
00:14:34,590 --> 00:14:32,470
required if there's any slight

402
00:14:36,150 --> 00:14:34,600
misalignment a degree or two he'll be

403
00:14:38,670 --> 00:14:36,160
able to do that and then press on in

404
00:14:41,880 --> 00:14:38,680
from 30 feet for the docking with the

405
00:14:45,870 --> 00:14:41,890
International Space Station once they

406
00:14:47,610 --> 00:14:45,880
are docked the crew will commence with

407
00:14:47,910 --> 00:14:47,620
their hatch leak checks make sure that

408
00:14:50,040 --> 00:14:47,920
the

409
00:14:51,690 --> 00:14:50,050
seals are all clean and holding pressure

410
00:14:54,000 --> 00:14:51,700
and then they'll be able to open the

411
00:14:55,530 --> 00:14:54,010
hatches go into the International Space

412
00:14:58,110 --> 00:14:55,540
Station and greet the crew on the other

413
00:14:59,250 --> 00:14:58,120

side they will have a safety brief and

414
00:15:00,810 --> 00:14:59,260
then they'll pick up with their

415
00:15:03,150 --> 00:15:00,820
activities with the International Space

416
00:15:05,490 --> 00:15:03,160
Station for flight day 3 as I said

417
00:15:07,439 --> 00:15:05,500
before it's a busy day half of its done

418
00:15:08,699 --> 00:15:07,449
the second half is coming and mr.

419
00:15:14,790 --> 00:15:08,709
Renfrew here is here to tell you about

420
00:15:17,579 --> 00:15:14,800
the second half good morning so 133 firm

421
00:15:19,379 --> 00:15:17,589
on ISS perspective represents the last

422
00:15:22,230 --> 00:15:19,389
pressurized module we have scheduled to

423
00:15:25,230 --> 00:15:22,240
bring up and also the exposed logistics

424
00:15:26,910 --> 00:15:25,240
carrier number four coming up pmm will

425
00:15:28,530 --> 00:15:26,920
provide us with some much-needed stowage

426
00:15:30,480 --> 00:15:28,540
space once we move all of the equipment

427
00:15:33,139 --> 00:15:30,490
out of the pmm into the various

428
00:15:35,730 --> 00:15:33,149
locations on ISS that comes up hill with

429
00:15:37,259 --> 00:15:35,740
there's some good science and lots of

430
00:15:39,900 --> 00:15:37,269
spare parts in there and then once we

431
00:15:42,509 --> 00:15:39,910
get the module cleared out after 133 two

432
00:15:44,759 --> 00:15:42,519
parts will move other equipment into the

433
00:15:46,379 --> 00:15:44,769
permanent multi-purpose module that is

434
00:15:49,590 --> 00:15:46,389
equipment that we don't normally have to

435
00:15:51,689 --> 00:15:49,600
get hands-on very often it's been a

436
00:15:53,370 --> 00:15:51,699
pretty busy traffic pattern on board ISS

437
00:15:56,970 --> 00:15:53,380
as it has been for the last couple of

438
00:15:59,250 --> 00:15:56,980

years on October the 10th we docked 24s

439
00:16:02,670 --> 00:15:59,260
with our last 3 ISS crew members that

440
00:16:04,829 --> 00:16:02,680
came up on Tuesday of next week 37

441
00:16:06,960 --> 00:16:04,839
progress will undock from DC 1 and then

442
00:16:10,139 --> 00:16:06,970
on Friday of next week 40 progress well

443
00:16:14,160 --> 00:16:10,149
dr. DC one bring up additional materials

444
00:16:17,670 --> 00:16:14,170
from in that vehicle and then also after

445
00:16:21,870 --> 00:16:17,680
133 undocks the 23 soyuz vehicle will

446
00:16:23,160 --> 00:16:21,880
undock at the end of november i should

447
00:16:24,569 --> 00:16:23,170
point out i think it's been mentioned a

448
00:16:26,670 --> 00:16:24,579
couple times in the conference's already

449
00:16:28,710 --> 00:16:26,680
that november second represents 10 years

450
00:16:32,430 --> 00:16:28,720
of continuous human presence on board

451
00:16:35,639 --> 00:16:32,440
ISS some trivial pursuit facts and

452
00:16:38,910 --> 00:16:35,649
figures for you on November second we

453
00:16:40,410 --> 00:16:38,920
will have had 68,000 519 total orbits

454
00:16:44,430 --> 00:16:40,420
since the first element launched and

455
00:16:48,269 --> 00:16:44,440
we'll also have had 50 7361 total orbits

456
00:16:49,680 --> 00:16:48,279
with humans on board ISS some of the

457
00:16:51,300 --> 00:16:49,690
prep work that's gone on to get ready

458
00:16:53,939 --> 00:16:51,310
for the mission we've installed a power

459
00:16:55,379 --> 00:16:53,949
cable in the lab that will allow us ride

460
00:16:57,509 --> 00:16:55,389
power to their permanent multi-purpose

461
00:17:00,389 --> 00:16:57,519
module once we get it installed on the

462
00:17:00,720 --> 00:17:00,399
node 1 nadir port we've also checked out

463
00:17:03,269 --> 00:17:00,730

the

464
00:17:05,130 --> 00:17:03,279
starboard lower in inboard common

465
00:17:07,169 --> 00:17:05,140
attached mechanism where the Express was

466
00:17:09,630 --> 00:17:07,179
just characters logistics character

467
00:17:11,730 --> 00:17:09,640
logistics carrier excuse me number four

468
00:17:14,159 --> 00:17:11,740
is installed I've done a lot of work in

469
00:17:16,530 --> 00:17:14,169
the airlock recharging various batteries

470
00:17:18,569 --> 00:17:16,540
we've also moved the four spacesuits

471
00:17:22,380 --> 00:17:18,579
that we usually keep on ISS out of the

472
00:17:24,030 --> 00:17:22,390
airlock into other locations on ISS 133

473
00:17:26,579 --> 00:17:24,040
will bring up its own space suits and

474
00:17:30,000 --> 00:17:26,589
we'll put them in the airlock after we

475
00:17:32,280 --> 00:17:30,010
get docked we've moved the special

476
00:17:34,980 --> 00:17:32,290
purpose dexterous manipulator on to its

477
00:17:37,680 --> 00:17:34,990
location for 133 which is the lab base

478
00:17:39,419 --> 00:17:37,690
point and we've also gotten the space

479
00:17:42,270 --> 00:17:39,429
station remote manipulator system the

480
00:17:44,610 --> 00:17:42,280
canadarm2 walked off to the node 2 base

481
00:17:47,490 --> 00:17:44,620
point we still have one mobile

482
00:17:50,100 --> 00:17:47,500
transporter translation to do do that on

483
00:17:52,560 --> 00:17:50,110
friday and get the mt to work site 3 for

484
00:17:54,299 --> 00:17:52,570
its start point for the mission crews

485
00:17:56,039 --> 00:17:54,309
also spent a lot of time branch edge of

486
00:17:57,810 --> 00:17:56,049
the pictures of the rbar pitch maneuver

487
00:17:59,909 --> 00:17:57,820
from his perspective the crew has spent

488
00:18:01,289 --> 00:17:59,919

some time on board reviewing those

489
00:18:03,270 --> 00:18:01,299
procedures to be able to take those

490
00:18:05,070 --> 00:18:03,280
pictures for those 400 and 800

491
00:18:08,880 --> 00:18:05,080
millimeter lenses to make sure we get

492
00:18:10,830 --> 00:18:08,890
all the orbiter TPS inspections done and

493
00:18:12,360 --> 00:18:10,840
we've moved some stowage and actually

494
00:18:14,130 --> 00:18:12,370
Brian and I were just in a tag up with

495
00:18:16,320 --> 00:18:14,140
the crew when before we came over here

496
00:18:18,180 --> 00:18:16,330
we've had several Act tag ups with the

497
00:18:21,990 --> 00:18:18,190
crew and several more scheduled before

498
00:18:26,430 --> 00:18:22,000
we launch speaking of the crew if I

499
00:18:28,440 --> 00:18:26,440
could get the crew side please six crew

500
00:18:30,450 --> 00:18:28,450
members onboard ISS at this time from

501
00:18:33,150 --> 00:18:30,460
from your left to right we have oleg

502
00:18:36,590 --> 00:18:33,160
skripochka alex alexander kaleri

503
00:18:39,120 --> 00:18:36,600
Alexander is one of the most senior

504
00:18:40,980 --> 00:18:39,130
astronauts cosmonauts in the world he

505
00:18:43,169 --> 00:18:40,990
has numerous missions that he has

506
00:18:46,409 --> 00:18:43,179
executed then on the far right we have

507
00:18:48,480 --> 00:18:46,419
fielder your chicken the three Russian

508
00:18:50,549 --> 00:18:48,490
crew members during the 133 mission will

509
00:18:52,409 --> 00:18:50,559
spend some time preparing for Russian

510
00:18:54,120 --> 00:18:52,419
segment EV a using their Orlan

511
00:18:57,090 --> 00:18:54,130
spacesuits which is going to occur

512
00:18:58,740 --> 00:18:57,100
shortly after 133 undocks they'll be

513
00:19:00,240 --> 00:18:58,750

doing essentially the same activities

514
00:19:01,980 --> 00:19:00,250
the u.s. crew members have been doing

515
00:19:05,669 --> 00:19:01,990
this week in preparing their spacesuits

516
00:19:09,090 --> 00:19:05,679
to go out third from the left there you

517
00:19:11,220 --> 00:19:09,100
have Scott Kelly Scott will be the ISS

518
00:19:14,190 --> 00:19:11,230
commander for increment 26 after Doug

519
00:19:17,670 --> 00:19:14,200
Wheelock leaves a couple of activities

520
00:19:19,530 --> 00:19:17,680
Scott will perform for us he has sidra

521
00:19:22,050 --> 00:19:19,540
which is the carbon dioxide removal

522
00:19:24,210 --> 00:19:22,060
assembly we're going to bring up an

523
00:19:25,890 --> 00:19:24,220
adsorbent bed to replace and sidra so

524
00:19:28,380 --> 00:19:25,900
he's going to do a majority of that

525
00:19:30,600 --> 00:19:28,390
activity for us there's also a valve in

526
00:19:32,100 --> 00:19:30,610
the Columbus module in the internal

527
00:19:33,990 --> 00:19:32,110
thermal control system that we're going

528
00:19:36,270 --> 00:19:34,000
to rnr and Scott's going to perform that

529
00:19:38,310 --> 00:19:36,280
and he is also responsible for getting

530
00:19:40,410 --> 00:19:38,320
the node one Nader vestibule outfitting

531
00:19:43,920 --> 00:19:40,420
done along with the shuttle pilot eric

532
00:19:45,900 --> 00:19:43,930
boe next is next to Scott there you see

533
00:19:47,310 --> 00:19:45,910
Doug Wheelock who is the increment 25

534
00:19:49,380 --> 00:19:47,320
commander the current commander of the

535
00:19:51,570 --> 00:19:49,390
vehicle Doug will also help out with

536
00:19:53,520 --> 00:19:51,580
that carbon dioxide removal assembly bet

537
00:19:54,990 --> 00:19:53,530
R&R that we're going to perform and he's

538
00:19:57,480 --> 00:19:55,000

also going to make sure we get all the

539
00:20:03,420 --> 00:19:57,490
EV a campout prep and post activities

540
00:20:06,180 --> 00:20:03,430
completed as well next to Doug there is

541
00:20:07,830 --> 00:20:06,190
shannon walker shannon has various in

542
00:20:09,750 --> 00:20:07,840
fight maintenance activities that we're

543
00:20:11,490 --> 00:20:09,760
going to perform on 133 with either

544
00:20:12,720 --> 00:20:11,500
items that were bringing up on them on

545
00:20:15,210 --> 00:20:12,730
the vehicle that we need to get

546
00:20:17,070 --> 00:20:15,220
installed on ISS her items that we want

547
00:20:20,480 --> 00:20:17,080
to bring home on 133 that she's going to

548
00:20:23,130 --> 00:20:20,490
take apart for us she's also spent the

549
00:20:25,290 --> 00:20:23,140
three-stage EPA's flying the station arm

550
00:20:27,270 --> 00:20:25,300
so we're going to use her expertise in

551
00:20:29,070 --> 00:20:27,280
that area to work with mike barrett

552
00:20:31,320 --> 00:20:29,080
during the tui VA's where we're flying a

553
00:20:33,960 --> 00:20:31,330
crew member on the arm Shannon also has

554
00:20:35,460 --> 00:20:33,970
a couple of individual unloaded our mops

555
00:20:36,810 --> 00:20:35,470
that she's going to do for the various

556
00:20:41,550 --> 00:20:36,820
walk offs that we need during the

557
00:20:44,040 --> 00:20:41,560
mission if I could get the first flight

558
00:20:46,260 --> 00:20:44,050
director side please we'll roll out of

559
00:20:47,750 --> 00:20:46,270
the crew overview and i'll tell you the

560
00:20:50,160 --> 00:20:47,760
folks that are on my team on the ground

561
00:20:52,920 --> 00:20:50,170
first person there's David Korth whose

562
00:20:54,600 --> 00:20:52,930
Odyssey flight Dave's the other execute

563
00:20:56,310 --> 00:20:54,610

shift flight director he gets the orbit

564
00:20:58,680 --> 00:20:56,320
one shift which is essentially the first

565
00:21:01,320 --> 00:20:58,690
part of the crew day that will include

566
00:21:04,140 --> 00:21:01,330
EV a prep on five days five and seven

567
00:21:05,700 --> 00:21:04,150
and also all the activities that are

568
00:21:07,020 --> 00:21:05,710
associated with the morning ops which

569
00:21:10,100 --> 00:21:07,030
includes the permanent multi-purpose

570
00:21:14,910 --> 00:21:10,110
module installation on flight day six

571
00:21:17,040 --> 00:21:14,920
you've seen Dave as the sts 119 15a ISSS

572
00:21:19,770 --> 00:21:17,050
orbit 35 director and he was also

573
00:21:21,900 --> 00:21:19,780
recently the increment 21 22 lead ISS

574
00:21:24,990 --> 00:21:21,910
flight director if I could get the next

575
00:21:27,030 --> 00:21:25,000
slide please Chris Edelen is the orbit 3

576
00:21:29,550 --> 00:21:27,040
ISS flight director the planning shift

577
00:21:31,350 --> 00:21:29,560
Chris be responsible and Chris's venture

578
00:21:33,870 --> 00:21:31,360
fight by the way he'll be responsible

579
00:21:35,490 --> 00:21:33,880
for making sure any changes to the plan

580
00:21:37,890 --> 00:21:35,500
are taken care of that we might need

581
00:21:40,350 --> 00:21:37,900
based on real-time decisions during the

582
00:21:41,970 --> 00:21:40,360
mission he'll also be responsible for a

583
00:21:43,710 --> 00:21:41,980
lot of those robotics ops I've alluded

584
00:21:45,330 --> 00:21:43,720
to that are going to occur when the crew

585
00:21:48,120 --> 00:21:45,340
is asleep and the ground is driving the

586
00:21:50,280 --> 00:21:48,130
arm or the Mt from the ground a lot of

587
00:21:55,170 --> 00:21:50,290
that will fall on Chris's shift you've

588
00:21:57,630 --> 00:21:55,180

seen him recently as the shuttle orbit

589
00:22:00,390 --> 00:21:57,640
three flight director for SDS 130 which

590
00:22:02,790 --> 00:22:00,400
was ISS 20 a and he was also the shuttle

591
00:22:06,570 --> 00:22:02,800
orbit one flight director for sts-132

592
00:22:09,510 --> 00:22:06,580
which is you left for next I please

593
00:22:12,720 --> 00:22:09,520
kawachi alber oho defiant fight will be

594
00:22:15,150 --> 00:22:12,730
our ISS team for flight director cause

595
00:22:17,100 --> 00:22:15,160
he's a veteran flight director with

596
00:22:20,400 --> 00:22:17,110
numerous missions his last two leads

597
00:22:23,970 --> 00:22:20,410
have been the ISS lead flight director

598
00:22:26,340 --> 00:22:23,980
for SDS 119 which was 15 a and he was

599
00:22:30,870 --> 00:22:26,350
also the shuttle flight director lead

600
00:22:33,060 --> 00:22:30,880
for SDS 130 which was 20 a going to go

601
00:22:34,890 --> 00:22:33,070
through a couple snapshot configs of the

602
00:22:36,150 --> 00:22:34,900
vehicle as we work through the mission

603
00:22:37,920 --> 00:22:36,160
and then I'll talk about the two

604
00:22:39,150 --> 00:22:37,930
components we're going to install and

605
00:22:41,190 --> 00:22:39,160
then we'll get back to the flight day

606
00:22:43,410 --> 00:22:41,200
overview so if I could get the first

607
00:22:46,260 --> 00:22:43,420
overall config this is a little to look

608
00:22:48,120 --> 00:22:46,270
like after discovery gets docked to the

609
00:22:50,030 --> 00:22:48,130
ISS before we start any of the

610
00:22:53,310 --> 00:22:50,040
installations and then on the next slide

611
00:22:55,500 --> 00:22:53,320
you can see ELC for installed out on the

612
00:22:58,850 --> 00:22:55,510
starboard truss we'll do that on five

613
00:23:01,050 --> 00:22:58,860

day three and then the next slide please

614
00:23:02,880 --> 00:23:01,060
here's the location of the permanent

615
00:23:05,400 --> 00:23:02,890
multi-purpose module dock to node 1

616
00:23:07,920 --> 00:23:05,410
nadir and then if I could get the next

617
00:23:09,540 --> 00:23:07,930
slide please here's the what the ISS

618
00:23:13,730 --> 00:23:09,550
will look at after we're finished with

619
00:23:18,390 --> 00:23:16,920
the permanent let me spend a little bit

620
00:23:20,490 --> 00:23:18,400
of time talking about the permanent

621
00:23:22,140 --> 00:23:20,500
multi-purpose module and what it is and

622
00:23:25,170 --> 00:23:22,150
how it wound up here if I could get the

623
00:23:26,760 --> 00:23:25,180
exterior shot of the module please here

624
00:23:29,130 --> 00:23:26,770
you see the what's called the permanent

625
00:23:30,900 --> 00:23:29,140
multi-purpose module and the red the red

626
00:23:33,390 --> 00:23:30,910
area over there is where it's located on

627
00:23:34,980 --> 00:23:33,400
node1 nadir after we get it installed as

628
00:23:38,070 --> 00:23:34,990
Brian mentioned this is actually a

629
00:23:40,710 --> 00:23:38,080
multi-purpose Logistics Module that has

630
00:23:41,100 --> 00:23:40,720
phoned ISS numerous times the last time

631
00:23:44,100 --> 00:23:41,110
it was

632
00:23:46,980 --> 00:23:44,110
on board was during sts-131 which is 19

633
00:23:49,230 --> 00:23:46,990
a this is the fight module one Leonardo

634
00:23:52,260 --> 00:23:49,240
module after we got it back from that

635
00:23:54,930 --> 00:23:52,270
mission in april of 2010 we upgraded

636
00:23:57,090 --> 00:23:54,940
some of the exterior micrometeoroid

637
00:23:59,789 --> 00:23:57,100
orbital debris shielding and we also

638
00:24:01,320 --> 00:23:59,799

changed some of the components inside to

639
00:24:03,210 --> 00:24:01,330
make it easier to do on orbit

640
00:24:04,590 --> 00:24:03,220
maintenance and updated the software on

641
00:24:06,180 --> 00:24:04,600
it got it ready for a long duration

642
00:24:08,640 --> 00:24:06,190
mission as opposed to the short

643
00:24:11,539 --> 00:24:08,650
turnaround m PLM flights if i could get

644
00:24:13,590 --> 00:24:11,549
the next slide please inside the module

645
00:24:15,570 --> 00:24:13,600
again you'll see as i go through these

646
00:24:19,950 --> 00:24:15,580
sides here it comes up hill pretty much

647
00:24:21,659 --> 00:24:19,960
pretty much packed one of the one of the

648
00:24:25,130 --> 00:24:21,669
items that we're bringing up in this in

649
00:24:27,930 --> 00:24:25,140
the bay one area is a treadmill

650
00:24:30,030 --> 00:24:27,940
replacement for the treadmill to or the

651
00:24:31,289 --> 00:24:30,040
colbert trait treadmill if we have any

652
00:24:33,930 --> 00:24:31,299
problems with that we're bringing up a

653
00:24:36,000 --> 00:24:33,940
spare treadmill inside the permanent

654
00:24:38,730 --> 00:24:36,010
multi-purpose module if i could get the

655
00:24:41,789 --> 00:24:38,740
bay to side please here you can see

656
00:24:43,680 --> 00:24:41,799
where part of the Robonaut will be

657
00:24:45,480 --> 00:24:43,690
located this is the standard that sets

658
00:24:50,340 --> 00:24:45,490
on once we get it deployed in the lab

659
00:24:52,080 --> 00:24:50,350
then in Bay three we have Express rack

660
00:24:53,310 --> 00:24:52,090
number eight which is a payload rack

661
00:24:55,110 --> 00:24:53,320
we'll get it out of the permanent

662
00:24:56,820 --> 00:24:55,120
multi-purpose module after the mission

663
00:24:58,590 --> 00:24:56,830

get it installed in the in the other

664
00:25:00,930 --> 00:24:58,600
modules and get it activated it's a

665
00:25:02,909 --> 00:25:00,940
science rack coming up hill and then if

666
00:25:05,370 --> 00:25:02,919
i could get bay forward please pay for

667
00:25:07,230 --> 00:25:05,380
shows the upper tosok where the upper

668
00:25:09,450 --> 00:25:07,240
torso of the Robonaut will be stoked

669
00:25:11,400 --> 00:25:09,460
going uphill and again after the mission

670
00:25:13,799 --> 00:25:11,410
will get those two components out get

671
00:25:16,200 --> 00:25:13,809
those put in the ISS and activate that

672
00:25:18,030 --> 00:25:16,210
then the last slide shows the income

673
00:25:20,640 --> 00:25:18,040
configuration with a couple bags around

674
00:25:22,620 --> 00:25:20,650
the outside radius the income after

675
00:25:24,299 --> 00:25:22,630
we've cleaned out a lot of stuff in here

676
00:25:26,340 --> 00:25:24,309
we'll build what the crew likes to call

677
00:25:28,169 --> 00:25:26,350
a bungee jail by stringing bungees

678
00:25:30,360 --> 00:25:28,179
between the racks and bay for and

679
00:25:32,190 --> 00:25:30,370
creating essentially a spiderweb back

680
00:25:34,680 --> 00:25:32,200
there where we can put some light items

681
00:25:38,610 --> 00:25:34,690
in the income of the pmm for additional

682
00:25:40,080 --> 00:25:38,620
stowage so that's the permanent

683
00:25:41,909 --> 00:25:40,090
multi-purpose module and then i'll tell

684
00:25:44,100 --> 00:25:41,919
you just a little bit about express

685
00:25:46,919 --> 00:25:44,110
logistics carrier number four so if i

686
00:25:48,990 --> 00:25:46,929
could get that slide please here you see

687
00:25:51,030 --> 00:25:49,000
both sides of express logistics carrier

688
00:25:53,850 --> 00:25:51,040

number four as it's configured to go

689
00:25:54,659 --> 00:25:53,860
uphill the bottom of the image as you're

690
00:25:56,310 --> 00:25:54,669
looking at it the

691
00:25:58,950 --> 00:25:56,320
there would be the piece that attaches

692
00:26:00,599 --> 00:25:58,960
to the truss if you look along the

693
00:26:02,879 --> 00:26:00,609
bottom of the image in the left side

694
00:26:04,979 --> 00:26:02,889
view you see to grapple fixtures that

695
00:26:07,859 --> 00:26:04,989
the various manipulators will get ahold

696
00:26:09,479 --> 00:26:07,869
of and then on the top in the left and

697
00:26:11,099 --> 00:26:09,489
the right side view you can see a third

698
00:26:12,419 --> 00:26:11,109
grapple fixture and I'll explain to you

699
00:26:14,729 --> 00:26:12,429
in a few minutes why we have three

700
00:26:17,759 --> 00:26:14,739
grapple fixtures on expressed by just a

701
00:26:19,619 --> 00:26:17,769
carrier number four going uphill we have

702
00:26:21,479 --> 00:26:19,629
the radiator that you saw when Brian

703
00:26:23,519 --> 00:26:21,489
showed you the payload Bay overview this

704
00:26:26,489 --> 00:26:23,529
is a spare radiator we've we've seen

705
00:26:28,019 --> 00:26:26,499
after the pump module failure recently

706
00:26:31,229 --> 00:26:28,029
how important it is for us to have

707
00:26:32,849 --> 00:26:31,239
Institute's spare parts on board ISS so

708
00:26:34,710 --> 00:26:32,859
this will be a spare radiator for the

709
00:26:36,840 --> 00:26:34,720
external thermal control system if we

710
00:26:39,180 --> 00:26:36,850
ever need it then on the right-hand side

711
00:26:41,190 --> 00:26:39,190
you can see that I have five empty white

712
00:26:43,769 --> 00:26:41,200
releasable attachment mechanism Jeff

713
00:26:45,960 --> 00:26:43,779

Rams those come up he'll empty and then

714
00:26:47,999 --> 00:26:45,970
on subsequent flights like HTV that I

715
00:26:50,249 --> 00:26:48,009
have designated here will put various

716
00:26:52,379 --> 00:26:50,259
components in there like the flex hose

717
00:26:54,090 --> 00:26:52,389
rotary coupler and the common transport

718
00:27:01,909 --> 00:26:54,100
carrier number for that go in those two

719
00:27:04,289 --> 00:27:01,919
positions so we left off with dlc for

720
00:27:05,909 --> 00:27:04,299
flight day three after we get the crew

721
00:27:07,560 --> 00:27:05,919
cross the hatch and have completed the

722
00:27:09,570 --> 00:27:07,570
safety briefing briefing in the welcome

723
00:27:11,580 --> 00:27:09,580
ceremony will get down to instant

724
00:27:13,769 --> 00:27:11,590
installation of the external logistics

725
00:27:18,029 --> 00:27:13,779
carrier express logistics carrier number

726
00:27:21,359 --> 00:27:18,039
four we will be using the bottom

727
00:27:24,989 --> 00:27:21,369
handrails the achieve mean we'll be

728
00:27:26,369 --> 00:27:24,999
using the the trunnion grapple fixtures

729
00:27:28,049 --> 00:27:26,379
I showed you there and I have a little

730
00:27:29,609 --> 00:27:28,059
video that I can show you i said i would

731
00:27:31,529 --> 00:27:29,619
explain why there are three of them on

732
00:27:34,499 --> 00:27:31,539
our Tim and Nicole will be flying the

733
00:27:36,930 --> 00:27:34,509
canadarm2 al and Eric will be flying the

734
00:27:39,269 --> 00:27:36,940
shuttle arm for this activity and then

735
00:27:41,039 --> 00:27:39,279
Alan Mike will actually operate the the

736
00:27:43,560 --> 00:27:41,049
common attached system once we get it

737
00:27:45,960 --> 00:27:43,570
installed so if i could see video 1 i'll

738
00:27:49,560 --> 00:27:45,970

walk you through the installation of ELC

739
00:27:51,299 --> 00:27:49,570
for start out with the station arm

740
00:27:53,399 --> 00:27:51,309
reaches into the payload bay and

741
00:27:55,560 --> 00:27:53,409
grapples one of those grapple fixtures i

742
00:27:57,450 --> 00:27:55,570
pointed out to you earlier then we will

743
00:28:00,269 --> 00:27:57,460
maneuver to what's called a high hover

744
00:28:02,999 --> 00:28:00,279
position and then translate starboard to

745
00:28:05,249 --> 00:28:03,009
allow to present a grapple fixture for

746
00:28:06,269 --> 00:28:05,259
the shuttle arm to take the payload away

747
00:28:08,070 --> 00:28:06,279
from us

748
00:28:12,330 --> 00:28:08,080
then the shuttle crew will operate the

749
00:28:14,009 --> 00:28:12,340
the RMS reach over and take the payload

750
00:28:15,330 --> 00:28:14,019
away from us using the second grapple

751
00:28:17,820 --> 00:28:15,340
fixture that I pointed out to you

752
00:28:20,159 --> 00:28:17,830
earlier station arm will release and

753
00:28:23,549 --> 00:28:20,169
maneuver to the mobile remote service or

754
00:28:25,289 --> 00:28:23,559
based system where we'll staple while

755
00:28:27,570 --> 00:28:25,299
we're doing a walk off the shuttle arm

756
00:28:29,609 --> 00:28:27,580
will maneuver of the payload and present

757
00:28:31,289 --> 00:28:29,619
the third grapple fixture to us which is

758
00:28:33,479 --> 00:28:31,299
in a convenient place for us to get a

759
00:28:35,190 --> 00:28:33,489
hold up from the ground will change the

760
00:28:37,289 --> 00:28:35,200
ends of the arm and then the station

761
00:28:39,529 --> 00:28:37,299
crew will pick back up operating the

762
00:28:42,629 --> 00:28:39,539
canadarm2 from the cupola in this case

763
00:28:44,489 --> 00:28:42,639

grapple the ELC for then we'll perform

764
00:28:46,349 --> 00:28:44,499
what's called an operator commanded auto

765
00:28:49,169 --> 00:28:46,359
sequences which is just a really big

766
00:28:51,930 --> 00:28:49,179
maneuver that will will run an automatic

767
00:28:54,089 --> 00:28:51,940
there is a camera on the end of the ELC

768
00:28:57,149 --> 00:28:54,099
that allows the crew to get good cues

769
00:28:59,519 --> 00:28:57,159
when we come in will come into a low

770
00:29:01,139 --> 00:28:59,529
hover and then I pre-install and then

771
00:29:02,969 --> 00:29:01,149
we'll install it with Alan Mike

772
00:29:06,259 --> 00:29:02,979
operating the common attached system

773
00:29:10,200 --> 00:29:06,269
after we get done we will release and

774
00:29:12,180 --> 00:29:10,210
then overnight I will mention that the

775
00:29:13,709 --> 00:29:12,190
that i mentioned chris is going to be

776
00:29:16,049 --> 00:29:13,719
doing a lot of robotics ops with his

777
00:29:18,570 --> 00:29:16,059
team overnight overnight will walk the

778
00:29:21,450 --> 00:29:18,580
arm off from the ground back to the note

779
00:29:23,459 --> 00:29:21,460
to base point to set up for the orbit

780
00:29:26,849 --> 00:29:23,469
room sensor system hand off that occurs

781
00:29:29,279 --> 00:29:26,859
in the morning of the next day so flight

782
00:29:31,529 --> 00:29:29,289
day for again we have the handoff Mike

783
00:29:34,529 --> 00:29:31,539
and Nicole be flying the station arm the

784
00:29:36,779 --> 00:29:34,539
state canadarm2 with Steve Eric and al

785
00:29:41,249 --> 00:29:36,789
all having some portions of the shuttle

786
00:29:43,709 --> 00:29:41,259
robotics during the OBS s handoff and if

787
00:29:48,509 --> 00:29:43,719
i could get video to hear i'll walk you

788
00:29:50,519 --> 00:29:48,519

through this station arm grapples the

789
00:29:53,249 --> 00:29:50,529
orbit room sensor system out of the out

790
00:29:55,049 --> 00:29:53,259
of the payload Bay maneuvers to a hover

791
00:29:57,599 --> 00:29:55,059
and then presents a grapple fixture to

792
00:29:59,489 --> 00:29:57,609
the shuttle arm shoulder arm will will

793
00:30:01,200 --> 00:29:59,499
grapple station arm will release and

794
00:30:03,389 --> 00:30:01,210
then the shuttle arm will maneuver the

795
00:30:05,159 --> 00:30:03,399
boom to a clearance position the shuttle

796
00:30:06,690 --> 00:30:05,169
arm will hold the OB SS for the

797
00:30:09,629 --> 00:30:06,700
remainder of the mission for doing all

798
00:30:13,560 --> 00:30:09,639
of those any late inspection surveys

799
00:30:15,509 --> 00:30:13,570
that we need to get done also on flight

800
00:30:17,789 --> 00:30:15,519
day for we're going to take the carbon

801
00:30:20,460 --> 00:30:17,799
dioxide removal assembly the

802
00:30:23,820 --> 00:30:20,470
the out of the air revitalization rack

803
00:30:25,590 --> 00:30:23,830
in node 3 and get that in a temp stove

804
00:30:28,979 --> 00:30:25,600
location in the gem module and

805
00:30:31,560 --> 00:30:28,989
preparation for the Sidra this co2 bed

806
00:30:33,690 --> 00:30:31,570
R&R later in the mission also on flight

807
00:30:36,629 --> 00:30:33,700
day for i mentioned scott will go into

808
00:30:39,239 --> 00:30:36,639
the Columbus module and we will take out

809
00:30:41,220 --> 00:30:39,249
a water on/off valve its water on/off

810
00:30:43,739 --> 00:30:41,230
valve number eight which is a valve

811
00:30:45,539 --> 00:30:43,749
that's contained in the Columbus

812
00:30:47,940 --> 00:30:45,549
internal thermal control system that

813
00:30:50,489 --> 00:30:47,950

valve is failed in an open config we're

814
00:30:52,139 --> 00:30:50,499
bringing up a spare valve on the mission

815
00:30:55,950 --> 00:30:52,149
will change that out bring home the

816
00:30:59,220 --> 00:30:55,960
failed valve on 133 lastly we'll get the

817
00:31:01,139 --> 00:30:59,230
crew into camp out tim kopra and al jury

818
00:31:03,869 --> 00:31:01,149
will spend the night in the airlock and

819
00:31:08,129 --> 00:31:03,879
camp out in preparation for flight day 5

820
00:31:10,349 --> 00:31:08,139
which is e VA 1 if I could get the EV

821
00:31:13,200 --> 00:31:10,359
crew overview please so here you see our

822
00:31:16,019 --> 00:31:13,210
two spacewalking crew members tim kopra

823
00:31:18,570 --> 00:31:16,029
on the left al drew on the right tim

824
00:31:21,599 --> 00:31:18,580
kopra will be the lead spacewalker for

825
00:31:24,629 --> 00:31:21,609
both EBA EBA one and EBA to and al drew

826
00:31:27,930 --> 00:31:24,639
will be eb-2 on those two on those two

827
00:31:30,330 --> 00:31:27,940
activities these will be Tim Cobras

828
00:31:33,200 --> 00:31:30,340
second and third spacewalks and this is

829
00:31:36,090 --> 00:31:33,210
al Drew's first and second spacewalks

830
00:31:38,580 --> 00:31:36,100
arc Thomason who is the lead extra vehic

831
00:31:41,369 --> 00:31:38,590
extra vehicular activities officer for

832
00:31:43,229 --> 00:31:41,379
133 has an extensive briefing for you

833
00:31:44,549 --> 00:31:43,239
folks later on today where we'll go

834
00:31:46,739 --> 00:31:44,559
through and talk about what we're going

835
00:31:48,899 --> 00:31:46,749
to do on both the EVs so I'm just going

836
00:31:51,659 --> 00:31:48,909
to hit a couple of the high points we

837
00:31:54,119 --> 00:31:51,669
have what's called the j 6 12 connector

838
00:31:55,830 --> 00:31:54,129

and the name just drives off of the

839
00:31:58,169 --> 00:31:55,840
schematic that shows which cave won't

840
00:32:00,570 --> 00:31:58,179
socket we're going to plug it into so we

841
00:32:02,009 --> 00:32:00,580
have the j 6 12 connector cable it's a

842
00:32:04,289 --> 00:32:02,019
ten foot extension that we're going to

843
00:32:05,729 --> 00:32:04,299
plug into the end of node one that will

844
00:32:07,379 --> 00:32:05,739
get that power source out from

845
00:32:09,479 --> 00:32:07,389
underneath the permanent multi-purpose

846
00:32:12,629 --> 00:32:09,489
module once we get it installed on

847
00:32:14,639 --> 00:32:12,639
flight day six we will also go get the

848
00:32:17,009 --> 00:32:14,649
pump module that the expedition crews

849
00:32:19,979 --> 00:32:17,019
are located in to the power on the

850
00:32:22,349 --> 00:32:19,989
previous stage epa's the PO is the

851
00:32:24,479 --> 00:32:22,359
payload oru accommodation it's a part of

852
00:32:27,810 --> 00:32:24,489
the robotic system out on the mobile

853
00:32:29,669 --> 00:32:27,820
remote service or system we'll go get

854
00:32:31,250 --> 00:32:29,679
that failed pump module and relocate

855
00:32:34,230 --> 00:32:31,260
that too ESP to

856
00:32:35,670 --> 00:32:34,240
there is a camera stanchion that is

857
00:32:37,860 --> 00:32:35,680
located close to where we installed

858
00:32:40,020 --> 00:32:37,870
express logistics carrier number four

859
00:32:42,360 --> 00:32:40,030
yesterday and we need to actually move

860
00:32:44,460 --> 00:32:42,370
that cameras tension out of the way in

861
00:32:47,250 --> 00:32:44,470
order to be able to access those five

862
00:32:49,170 --> 00:32:47,260
white releasable attachment mechanisms

863
00:32:50,730 --> 00:32:49,180

that I described earlier so we're going

864
00:32:52,650 --> 00:32:50,740
to install a little wedge at the base of

865
00:32:56,160 --> 00:32:52,660
that stanchion that will need mean that

866
00:32:57,750 --> 00:32:56,170
stanchion away from the ELC for and

867
00:32:59,790 --> 00:32:57,760
finally we're going to go install some

868
00:33:02,160 --> 00:32:59,800
what are called cedar rail stubs pretty

869
00:33:05,070 --> 00:33:02,170
short little pieces of the mt rail out

870
00:33:06,960 --> 00:33:05,080
on the starboard end of the mt rail we

871
00:33:09,000 --> 00:33:06,970
had previously removed those in order to

872
00:33:12,240 --> 00:33:09,010
be able to do some solar alpha rotary

873
00:33:16,280 --> 00:33:12,250
joint maintenance on a previous mission

874
00:33:18,630 --> 00:33:16,290
will go reinstall those overnight again

875
00:33:21,690 --> 00:33:18,640
after the crew come back comes back

876
00:33:23,580 --> 00:33:21,700
inside will move the SS rms back to the

877
00:33:26,130 --> 00:33:23,590
note 2 base point from the ground and

878
00:33:27,840 --> 00:33:26,140
then fight day 6 will start up with the

879
00:33:30,180 --> 00:33:27,850
permanent multi-purpose module

880
00:33:33,030 --> 00:33:30,190
installation in this case Tim and

881
00:33:34,770 --> 00:33:33,040
Michael be flying the canadarm2 there is

882
00:33:39,330 --> 00:33:34,780
no handoff required this is a direct

883
00:33:43,440 --> 00:33:39,340
unbirth if I could get the next slide or

884
00:33:44,730 --> 00:33:43,450
the next video please so the first thing

885
00:33:47,150 --> 00:33:44,740
we will do is we will reach into the

886
00:33:49,590 --> 00:33:47,160
payload Bay grapple the grapple fixture

887
00:33:52,830 --> 00:33:49,600
and then maneuver the permanent

888
00:33:54,630 --> 00:33:52,840

multi-purpose module to a low hover once

889
00:33:57,030 --> 00:33:54,640
again will perform an operator command

890
00:33:58,950 --> 00:33:57,040
at auto sequence to get the pmm into

891
00:34:01,230 --> 00:33:58,960
what's called a pre-installed config in

892
00:34:03,420 --> 00:34:01,240
this case we also have a camera system

893
00:34:05,280 --> 00:34:03,430
that it assists the crew inviting things

894
00:34:07,290 --> 00:34:05,290
up but instead of the camera being on

895
00:34:08,909 --> 00:34:07,300
the permanent multi-purpose module it's

896
00:34:11,220 --> 00:34:08,919
actually a camera that's installed in

897
00:34:13,560 --> 00:34:11,230
the window on the node 1 nadir common

898
00:34:15,060 --> 00:34:13,570
berthing mechanism hatch you can also

899
00:34:18,090 --> 00:34:15,070
see that we're going to get a very good

900
00:34:19,800 --> 00:34:18,100
view besides the centerline birthing

901
00:34:21,000 --> 00:34:19,810
camera system right out of the coop whoa

902
00:34:25,590 --> 00:34:21,010
because we're going to install this

903
00:34:28,350 --> 00:34:25,600
right next to it we will then release

904
00:34:30,899 --> 00:34:28,360
and then the arm will maneuver to its

905
00:34:34,050 --> 00:34:30,909
start position for EV a 2 which will

906
00:34:36,320 --> 00:34:34,060
execute on the next day probably

907
00:34:38,520 --> 00:34:36,330
mentioned the work that we will do

908
00:34:42,149 --> 00:34:38,530
before we get docked to survey the

909
00:34:43,530 --> 00:34:42,159
vehicle if we have achieved a statement

910
00:34:44,310 --> 00:34:43,540
from the shuttle program and all the

911
00:34:47,220 --> 00:34:44,320
engineers look

912
00:34:49,380 --> 00:34:47,230
by five day 6 that says discovery is

913
00:34:51,840 --> 00:34:49,390

good for my thermal protection system

914
00:34:54,810 --> 00:34:51,850
standpoint to that we don't need any

915
00:34:56,730 --> 00:34:54,820
additional inspections then on fight day

916
00:34:58,770 --> 00:34:56,740
six we will actually we will activate

917
00:35:00,510 --> 00:34:58,780
and ingress the module otherwise we'll

918
00:35:04,260 --> 00:35:00,520
activate an ingress the module on fight

919
00:35:06,060 --> 00:35:04,270
day seven also on this day Tim and now

920
00:35:08,010 --> 00:35:06,070
once again at the end of the day get

921
00:35:10,010 --> 00:35:08,020
back into camp out in preparation for

922
00:35:12,800 --> 00:35:10,020
their EV a two on flight day seven and

923
00:35:15,360 --> 00:35:12,810
five day six is a second part of our

924
00:35:17,910 --> 00:35:15,370
common carbon dioxide removal assembly

925
00:35:19,890 --> 00:35:17,920
are in our ops we'll get one of the

926
00:35:22,830 --> 00:35:19,900
absorbent beds out and replace it with a

927
00:35:26,820 --> 00:35:22,840
new one that we brought up he'll fight

928
00:35:28,710 --> 00:35:26,830
day seven is EV 82 and again art

929
00:35:31,920 --> 00:35:28,720
Thomason will give you the details of

930
00:35:33,750 --> 00:35:31,930
that EV a later in the EV a officers

931
00:35:36,150 --> 00:35:33,760
briefing a couple of the points I'll

932
00:35:38,340 --> 00:35:36,160
throw out here is that the pump module

933
00:35:40,620 --> 00:35:38,350
itself contains about 10 pounds of

934
00:35:42,360 --> 00:35:40,630
ammonia that we need to vent out so that

935
00:35:44,700 --> 00:35:42,370
we can bring the pump module home on a

936
00:35:46,440 --> 00:35:44,710
subsequent vehicle in order to determine

937
00:35:49,110 --> 00:35:46,450
the failure case that caused the pump

938
00:35:51,060 --> 00:35:49,120

module two failed to begin with we will

939
00:35:53,490 --> 00:35:51,070
also spend some time during this EV a

940
00:35:55,710 --> 00:35:53,500
recovering the lightweight adapter panel

941
00:35:58,260 --> 00:35:55,720
assembly which everybody calls l wapa

942
00:36:00,750 --> 00:35:58,270
off of the end of Columbus to put that

943
00:36:03,180 --> 00:36:00,760
in discoveries payload Bay for return to

944
00:36:05,550 --> 00:36:03,190
earth the lightweight adapter panel

945
00:36:07,470 --> 00:36:05,560
assembly has been the base location for

946
00:36:09,420 --> 00:36:07,480
numerous numerous material science

947
00:36:11,670 --> 00:36:09,430
experiments recently and there's an

948
00:36:13,230 --> 00:36:11,680
avionics box on that platform that has

949
00:36:14,570 --> 00:36:13,240
some of that additional science data

950
00:36:17,190 --> 00:36:14,580
that would like to get on the ground

951
00:36:18,810 --> 00:36:17,200
additionally that platform will be refit

952
00:36:25,790 --> 00:36:18,820
and reef loan for another payload

953
00:36:31,640 --> 00:36:29,330
also on on this e VA will be installing

954
00:36:33,020 --> 00:36:31,650
camera lenses on several of the robotics

955
00:36:34,850 --> 00:36:33,030
cameras these are little protective

956
00:36:37,280 --> 00:36:34,860
lenses that go over the cameras will

957
00:36:39,830 --> 00:36:37,290
install those on one of the Canada arm

958
00:36:42,500 --> 00:36:39,840
two cameras one of the special purpose

959
00:36:45,320 --> 00:36:42,510
dexterous manipulator cameras and on the

960
00:36:49,190 --> 00:36:45,330
payload oru accommodation the poet thats

961
00:36:50,930 --> 00:36:49,200
out on the MBS flight day eight is a

962
00:36:52,580 --> 00:36:50,940
half crew day but we still have a couple

963
00:36:54,350 --> 00:36:52,590

of things we want to get done by this

964
00:36:56,270 --> 00:36:54,360
time in the mission will be ready to put

965
00:36:59,540 --> 00:36:56,280
the carbon dioxide removal assembly back

966
00:37:01,460 --> 00:36:59,550
into a track in note 3 should point out

967
00:37:03,320 --> 00:37:01,470
that we have to carbon dioxide removal

968
00:37:04,690 --> 00:37:03,330
assembly is on the vehicle now the one

969
00:37:07,100 --> 00:37:04,700
in the lab will be running continuously

970
00:37:09,470 --> 00:37:07,110
we've normally always run the vehicle

971
00:37:11,810 --> 00:37:09,480
with one sidra and now we have to sort

972
00:37:14,840 --> 00:37:11,820
of take advantage of that to do this co2

973
00:37:17,180 --> 00:37:14,850
absorbent bed change out during 133 by

974
00:37:19,640 --> 00:37:17,190
taking one of those down we also have

975
00:37:21,740 --> 00:37:19,650
our last minute mid-deck transfers and

976
00:37:23,000 --> 00:37:21,750
we have some packaging material that's

977
00:37:24,680 --> 00:37:23,010
inside the permanent multi-purpose

978
00:37:27,560 --> 00:37:24,690
module that we need to get out for a

979
00:37:30,410 --> 00:37:27,570
return to return some items home in

980
00:37:32,270 --> 00:37:30,420
discoveries midday then on flight day

981
00:37:34,280 --> 00:37:32,280
nine once again we have a half crew day

982
00:37:36,020 --> 00:37:34,290
there is a joint news conference on

983
00:37:38,360 --> 00:37:36,030
flight day 9 i'm sure all you folks be

984
00:37:40,370 --> 00:37:38,370
interested in that will do the farewell

985
00:37:42,140 --> 00:37:40,380
and then we'll also get the hatches

986
00:37:44,720 --> 00:37:42,150
closed get the vehicles buttoned up for

987
00:37:46,430 --> 00:37:44,730
undock on fight day 10 from here I'll

988
00:37:51,230 --> 00:37:46,440

turn it back over to Brian for the rest

989
00:37:52,790 --> 00:37:51,240
of the mission okay thank you Royce so

990
00:37:54,800 --> 00:37:52,800
we got the hatches closed on flight

991
00:37:56,390 --> 00:37:54,810
night nine and we're moving into flight

992
00:37:58,520 --> 00:37:56,400
date in the morning flight day 10 the

993
00:37:59,630 --> 00:37:58,530
crew will wake up the hatches will be

994
00:38:01,850 --> 00:37:59,640
closed we'll go ahead and execute the

995
00:38:03,620 --> 00:38:01,860
undocking if I can go ahead and roll the

996
00:38:05,930 --> 00:38:03,630
video number four there to show the

997
00:38:08,420 --> 00:38:05,940
undocking our pilot eric boe will fly to

998
00:38:11,120 --> 00:38:08,430
space space shuttle out the out to about

999
00:38:12,770 --> 00:38:11,130
400 feet along the V Bar and then he'll

1000
00:38:14,510 --> 00:38:12,780
execute fly around to get some good

1001
00:38:16,060 --> 00:38:14,520
pictures of the space station on the

1002
00:38:18,740 --> 00:38:16,070
outside of that and then we'll do a

1003
00:38:20,510 --> 00:38:18,750
separation maneuver and discovery will

1004
00:38:23,060 --> 00:38:20,520
depart the vicinity of the International

1005
00:38:25,160 --> 00:38:23,070
Space Station once that activity is

1006
00:38:27,830 --> 00:38:25,170
complete then the crew will go ahead and

1007
00:38:29,630 --> 00:38:27,840
pull out the OB SS the over to boom

1008
00:38:31,670 --> 00:38:29,640
sensor system again and they'll do an

1009
00:38:34,280 --> 00:38:31,680
inspection of the wing leading edges the

1010
00:38:36,410 --> 00:38:34,290
reinforced carbon-carbon as well as the

1011
00:38:38,030 --> 00:38:36,420
nose cap mostly here we're looking for

1012
00:38:39,140 --> 00:38:38,040
the micrometeorite orbital debris type

1013
00:38:40,400 --> 00:38:39,150

damage so we

1014
00:38:42,290 --> 00:38:40,410
need to go back and look at the back

1015
00:38:44,660 --> 00:38:42,300
side of the vehicle we'll just look at

1016
00:38:45,890 --> 00:38:44,670
the forward part and looking for any

1017
00:38:47,300 --> 00:38:45,900
little kind of damage that may have

1018
00:38:49,600 --> 00:38:47,310
occurred from some of that debris that

1019
00:38:52,220 --> 00:38:49,610
may be flying around up there in orbit

1020
00:38:54,380 --> 00:38:52,230
again this all this imagery will be down

1021
00:38:56,180 --> 00:38:54,390
linked to the ground that same team of

1022
00:38:59,000 --> 00:38:56,190
engineers who now knows exactly what

1023
00:39:00,830 --> 00:38:59,010
discoveries wing leading edges look like

1024
00:39:02,360 --> 00:39:00,840
on orbit will go compared to that

1025
00:39:03,770 --> 00:39:02,370
baseline and they can do a bit quicker

1026
00:39:06,350 --> 00:39:03,780
assessment because they have that

1027
00:39:08,120 --> 00:39:06,360
baseline to look at so go look at all

1028
00:39:10,640 --> 00:39:08,130
that verify it's all good and again

1029
00:39:13,910 --> 00:39:10,650
report back to the mmt what they have

1030
00:39:17,240 --> 00:39:13,920
going there which obviously we hope is

1031
00:39:19,460 --> 00:39:17,250
very little the system should be all

1032
00:39:21,620 --> 00:39:19,470
cleaned up once the crew is complete

1033
00:39:23,450 --> 00:39:21,630
with the scans and the reviews there

1034
00:39:25,130 --> 00:39:23,460
they'll go ahead and park the orbiter

1035
00:39:28,670 --> 00:39:25,140
boom system sensor system on the

1036
00:39:29,840 --> 00:39:28,680
starboard sill they'll park it for the

1037
00:39:31,970 --> 00:39:29,850
rest of the mission and then they'll

1038
00:39:33,770 --> 00:39:31,980

park the shuttle robotic arm also for

1039
00:39:35,180 --> 00:39:33,780
rest the mission and there at the end of

1040
00:39:37,070 --> 00:39:35,190
flight day 10 will be done with the

1041
00:39:40,100 --> 00:39:37,080
robotic operations and it was a very

1042
00:39:41,750 --> 00:39:40,110
busy flight as you saw with the both the

1043
00:39:46,910 --> 00:39:41,760
station and the shuttle arms doing a lot

1044
00:39:50,390 --> 00:39:46,920
of activities there goes bring it on

1045
00:39:52,090 --> 00:39:50,400
down so once you're complete with that

1046
00:39:56,270 --> 00:39:52,100
the crew will go to bed on flight night

1047
00:39:58,340 --> 00:39:56,280
10 the next day the entry team will come

1048
00:40:00,620 --> 00:39:58,350
in with Tony's achachi and his team will

1049
00:40:02,420 --> 00:40:00,630
come in to do the check out of all the

1050
00:40:03,860 --> 00:40:02,430
entry critical systems to verify that

1051
00:40:06,080 --> 00:40:03,870
they are all ready to go for entry the

1052
00:40:08,390 --> 00:40:06,090
following day so they're in the flight

1053
00:40:09,890 --> 00:40:08,400
day 11 entry checked out we'll check out

1054
00:40:12,170 --> 00:40:09,900
the flight control systems when we fire

1055
00:40:13,760 --> 00:40:12,180
up one of the auxiliary power units to

1056
00:40:16,040 --> 00:40:13,770
power the elephant's and the speed

1057
00:40:17,990 --> 00:40:16,050
brakes and all those systems that are

1058
00:40:19,400 --> 00:40:18,000
critical for entry and verify that those

1059
00:40:21,770 --> 00:40:19,410
are all working just as they should be

1060
00:40:23,630 --> 00:40:21,780
we'll also do a reaction control system

1061
00:40:25,900 --> 00:40:23,640
hot fire verify that the primary

1062
00:40:28,520 --> 00:40:25,910
reaction Jets are working just fine and

1063
00:40:30,950 --> 00:40:28,530

any other final activities we got to do

1064
00:40:32,930 --> 00:40:30,960
such as cabin stow stow the k you

1065
00:40:36,590 --> 00:40:32,940
antenna and generally get the vehicle

1066
00:40:38,830 --> 00:40:36,600
ready for entry the next day so the crew

1067
00:40:41,150 --> 00:40:38,840
will go to bed then and on flight day 12

1068
00:40:45,890 --> 00:40:41,160
Tony Scott jeans team will come back in

1069
00:40:47,300 --> 00:40:45,900
to prepare for the deorbit burn for the

1070
00:40:50,090 --> 00:40:47,310
deorbit burn for this particular one

1071
00:40:51,920 --> 00:40:50,100
will close up the payload bay doors just

1072
00:40:52,880 --> 00:40:51,930
like we have every other time and after

1073
00:40:55,040 --> 00:40:52,890
flying around the earth about

1074
00:40:57,110 --> 00:40:55,050
170 times is what we're going to get

1075
00:40:59,720 --> 00:40:57,120
with this mission discovery will come

1076
00:41:00,830 --> 00:40:59,730
home for its last flight also on this

1077
00:41:03,050 --> 00:41:00,840
flight we have the boundary layer

1078
00:41:04,400 --> 00:41:03,060
experiment dto and this is where we had

1079
00:41:06,230 --> 00:41:04,410
a little half-inch protrusion on the

1080
00:41:07,520 --> 00:41:06,240
bottom of the orbiter I think mr.

1081
00:41:09,920 --> 00:41:07,530
Shannon spoke to you about it earlier

1082
00:41:11,720 --> 00:41:09,930
we're going to gather data around Mach

1083
00:41:14,690 --> 00:41:11,730
18 19 when we get the boundary layer

1084
00:41:17,510 --> 00:41:14,700
transition what thermally occurs with

1085
00:41:20,720 --> 00:41:17,520
that little protrusion downstream of it

1086
00:41:22,700 --> 00:41:20,730
and what the all the data that the folks

1087
00:41:23,930 --> 00:41:22,710
use get from that they got the Cadillac

1088
00:41:25,640 --> 00:41:23,940

coating on some of the tile some of the

1089
00:41:27,680 --> 00:41:25,650
tiles don't have the coating be able to

1090
00:41:29,960 --> 00:41:27,690
derive what's going on and those types

1091
00:41:33,050 --> 00:41:29,970
of scenarios and play that into future

1092
00:41:34,670 --> 00:41:33,060
programs the final landing of discovery

1093
00:41:36,980 --> 00:41:34,680
will occur at the kennedy space center

1094
00:41:40,250 --> 00:41:36,990
on November twelfth about ten thirty

1095
00:41:42,800 --> 00:41:40,260
nine Eastern Time in the morning we're

1096
00:41:44,390 --> 00:41:42,810
all real excited about this mission as I

1097
00:41:46,340 --> 00:41:44,400
think we've laid out for you the folks

1098
00:41:47,930 --> 00:41:46,350
are really ready to go we've got a good

1099
00:41:50,690 --> 00:41:47,940
plan to go execute it will be a very

1100
00:41:52,160 --> 00:41:50,700
busy mission as always but the crew is

1101
00:41:53,930 --> 00:41:52,170
ready to go the team on the ground is

1102
00:41:56,180 --> 00:41:53,940
ready to go and we're going to go fly

1103
00:41:58,580 --> 00:41:56,190
this one and come down home safely on

1104
00:42:01,400 --> 00:41:58,590
November twelfth I think that's all I

1105
00:42:03,140 --> 00:42:01,410
got robbed if folks got questions thanks

1106
00:42:04,850 --> 00:42:03,150
Brian thanks Royce will take questions

1107
00:42:06,890 --> 00:42:04,860
here in Houston then go around to the

1108
00:42:09,680 --> 00:42:06,900
other NASA centers and I believe we'll

1109
00:42:12,320 --> 00:42:09,690
start off with mark in the back oh thank

1110
00:42:15,110 --> 00:42:12,330
you mark haro from aviation we can have

1111
00:42:19,100 --> 00:42:15,120
two questions one for Brian what

1112
00:42:21,500 --> 00:42:19,110
triggers the additional day if if the if

1113
00:42:25,130 --> 00:42:21,510

it's available to you and what would you

1114
00:42:27,650 --> 00:42:25,140
do okay in recent flights we've carried

1115
00:42:29,900 --> 00:42:27,660
consumables to allow us to stay an extra

1116
00:42:31,700 --> 00:42:29,910
day while docked it's a dock day since

1117
00:42:35,270 --> 00:42:31,710
we have those fits capability we'd call

1118
00:42:37,340 --> 00:42:35,280
it a dock day and some flights there's

1119
00:42:38,630 --> 00:42:37,350
things that are pre-identified well this

1120
00:42:39,830 --> 00:42:38,640
is going to be a real challenge and

1121
00:42:41,990 --> 00:42:39,840
we're kind of worried about that task

1122
00:42:44,000 --> 00:42:42,000
and we may need things an extra day to

1123
00:42:45,200 --> 00:42:44,010
get that done on this particular flight

1124
00:42:46,700 --> 00:42:45,210
we really don't have anything on that

1125
00:42:48,740 --> 00:42:46,710
list most of the activities are pretty

1126
00:42:50,810 --> 00:42:48,750
well defined we think we understand them

1127
00:42:52,130 --> 00:42:50,820
pretty well of course we'll see but

1128
00:42:54,440 --> 00:42:52,140
we've trained them we're ready to go

1129
00:42:57,820 --> 00:42:54,450
execute so on this mission there's no

1130
00:43:00,200 --> 00:42:57,830
pre-identified task that is in question

1131
00:43:02,570 --> 00:43:00,210
only usual sorts of contingencies that

1132
00:43:05,510 --> 00:43:02,580
might come up some sort of damage during

1133
00:43:06,470 --> 00:43:05,520
acent inspections repairs and or some of

1134
00:43:08,090 --> 00:43:06,480
the other challenges with

1135
00:43:09,440 --> 00:43:08,100
I have while docked and what we want to

1136
00:43:13,280 --> 00:43:09,450
help out the International Space Station

1137
00:43:17,120 --> 00:43:13,290
guys with thanks I had a question on the

1138
00:43:19,880 --> 00:43:17,130

changes to the from Leonardo to a PM em

1139
00:43:26,330 --> 00:43:19,890
on the the external shielding this

1140
00:43:28,850 --> 00:43:26,340
wondered was how did you how much how

1141
00:43:32,390 --> 00:43:28,860
did you determine how much shielding you

1142
00:43:35,360 --> 00:43:32,400
needed for the for the multi-purpose

1143
00:43:39,020 --> 00:43:35,370
Logistics Module to make it permanent so

1144
00:43:41,480 --> 00:43:39,030
to speak is it based on on a length of

1145
00:43:44,120 --> 00:43:41,490
time or a position on the space station

1146
00:43:46,640 --> 00:43:44,130
how did you sort of way how much to put

1147
00:43:48,200 --> 00:43:46,650
on to deal with the risk sure and and

1148
00:43:50,060 --> 00:43:48,210
what we've done with the permanent

1149
00:43:52,880 --> 00:43:50,070
multi-purpose module is upgraded it to

1150
00:43:55,250 --> 00:43:52,890
get it to be compliant with the rest of

1151
00:43:58,040 --> 00:43:55,260
the modules on board the on the u.s.

1152
00:44:00,530 --> 00:43:58,050
modules that are on the vehicle what we

1153
00:44:03,770 --> 00:44:00,540
did there is took the hard shells off

1154
00:44:06,980 --> 00:44:03,780
after after nineteen eighty landed and

1155
00:44:09,050 --> 00:44:06,990
took the Kevlar blankets that are

1156
00:44:10,730 --> 00:44:09,060
underneath the hard shells and upgraded

1157
00:44:12,890 --> 00:44:10,740
the amount of Kevlar that is in those

1158
00:44:15,500 --> 00:44:12,900
and then put all those blankets back in

1159
00:44:17,870 --> 00:44:15,510
put the hard shell back on that we have

1160
00:44:22,300 --> 00:44:17,880
folks here that do risk assessments for

1161
00:44:25,850 --> 00:44:22,310
us to look long duration ten years out

1162
00:44:27,950 --> 00:44:25,860
what is the the haven't how often are we

1163
00:44:29,720 --> 00:44:27,960

going to run into micrometeoroid orbital

1164
00:44:31,520 --> 00:44:29,730
debris and what is the amount of

1165
00:44:33,680 --> 00:44:31,530
protection that we need to add to the

1166
00:44:35,570 --> 00:44:33,690
module in order to be able to protect

1167
00:44:38,870 --> 00:44:35,580
the module from being penetrated in that

1168
00:44:40,460 --> 00:44:38,880
case so so what we've done is taken a

1169
00:44:41,960 --> 00:44:40,470
module that's only been designed and you

1170
00:44:43,550 --> 00:44:41,970
look at all those risk assessments

1171
00:44:46,430 --> 00:44:43,560
that's only been designed to be on on

1172
00:44:48,260 --> 00:44:46,440
orbit for two weeks or so and expanded

1173
00:44:50,390 --> 00:44:48,270
that to say if this same module was on

1174
00:44:52,100 --> 00:44:50,400
orbit for ten years what would we have

1175
00:44:53,960 --> 00:44:52,110
to do to upgrade it to make sure we're

1176
00:44:58,400 --> 00:44:53,970
in a good config for that long duration

1177
00:45:01,040 --> 00:44:58,410
mission hi Robert Roman with

1178
00:45:03,200 --> 00:45:01,050
collectspace.com I think to follow up

1179
00:45:05,900 --> 00:45:03,210
with on marks question about Leonardo

1180
00:45:07,940 --> 00:45:05,910
just to to verify are there any

1181
00:45:11,060 --> 00:45:07,950
constraints on the on the ISS crew once

1182
00:45:13,820 --> 00:45:11,070
it's attached in terms of how the how

1183
00:45:16,760 --> 00:45:13,830
they can spend time in that module does

1184
00:45:17,930 --> 00:45:16,770
have any difference from other no there

1185
00:45:19,380 --> 00:45:17,940
aren't any constraints on how much time

1186
00:45:23,700 --> 00:45:19,390
they can spend in

1187
00:45:25,799 --> 00:45:23,710
in the module the think the the natural

1188
00:45:27,509 --> 00:45:25,809

flow of activities in the module will

1189
00:45:30,420 --> 00:45:27,519
determine how much time they actually do

1190
00:45:33,359 --> 00:45:30,430
spend in there because really it's for

1191
00:45:34,950 --> 00:45:33,369
stowage and food and water and pieces of

1192
00:45:37,620 --> 00:45:34,960
equipment that we don't normally have

1193
00:45:38,940 --> 00:45:37,630
our hands on so I don't expect them to

1194
00:45:40,079 --> 00:45:38,950
spend a whole lot of time in there to

1195
00:45:42,809 --> 00:45:40,089
begin with but there aren't any

1196
00:45:45,120 --> 00:45:42,819
constraints on that and also just to

1197
00:45:48,329 --> 00:45:45,130
fact-check is it retaining its name

1198
00:45:51,750 --> 00:45:48,339
Leonardo or is it called pmm or what how

1199
00:45:53,430 --> 00:45:51,760
do we refer to mr. naevius on that

1200
00:45:54,980 --> 00:45:53,440
because I don't know the answer it's the

1201
00:45:57,390 --> 00:45:54,990
permanent multi-purpose module

1202
00:45:59,519 --> 00:45:57,400
affectionately known as Leonardo so it

1203
00:46:02,670 --> 00:45:59,529
will it will retain its name Leonardo

1204
00:46:04,289 --> 00:46:02,680
for the purpose of engineering

1205
00:46:07,670 --> 00:46:04,299
documentation it's the permanent

1206
00:46:09,539 --> 00:46:07,680
multi-purpose module and for Bryant

1207
00:46:12,839 --> 00:46:09,549
given this is the last flight of

1208
00:46:16,470 --> 00:46:12,849
discovery is there up is there a sense

1209
00:46:18,779 --> 00:46:16,480
among the team that this is that this

1210
00:46:23,549 --> 00:46:18,789
has an importance to it that it is a

1211
00:46:25,019 --> 00:46:23,559
last flight is there or is it just we

1212
00:46:29,880 --> 00:46:25,029
fly the missions and there's time to

1213
00:46:32,069 --> 00:46:29,890

write to look back later I would say

1214
00:46:33,509 --> 00:46:32,079
it's a lot of the latter the team's the

1215
00:46:35,880 --> 00:46:33,519
shuttle teams Lisa flight control teams

1216
00:46:38,460 --> 00:46:35,890
are very focused on going and flying the

1217
00:46:40,019 --> 00:46:38,470
mission we had hopefully two more so

1218
00:46:42,240 --> 00:46:40,029
we're fairly confident and can look

1219
00:46:44,220 --> 00:46:42,250
reflect later when we get out there also

1220
00:46:45,720 --> 00:46:44,230
share with you this is my fourteenth

1221
00:46:49,470 --> 00:46:45,730
mission with discovery my first mission

1222
00:46:52,380 --> 00:46:49,480
with discovery was SGS 31 which was a

1223
00:46:54,900 --> 00:46:52,390
long time ago obviously but that was a

1224
00:46:56,220 --> 00:46:54,910
flight we took Hubble up and at the time

1225
00:46:57,779 --> 00:46:56,230
go ahead and give you a war story

1226
00:47:03,660 --> 00:46:57,789
because she goes sometimes like those

1227
00:47:05,609 --> 00:47:03,670
things at the time are you scared at the

1228
00:47:06,900 --> 00:47:05,619
time this was the first flight that we

1229
00:47:08,279 --> 00:47:06,910
went and filled the ohms tanks I was a

1230
00:47:11,730 --> 00:47:08,289
consumables officer I was in the back

1231
00:47:13,049 --> 00:47:11,740
room and just one of the many lessons of

1232
00:47:14,370 --> 00:47:13,059
space shuttle program has shown it's

1233
00:47:16,049 --> 00:47:14,380
just one of the gazillion who's a

1234
00:47:17,730 --> 00:47:16,059
gazillion these lessons out there but

1235
00:47:19,319 --> 00:47:17,740
this is one of them so we fill up the

1236
00:47:20,910 --> 00:47:19,329
tanks of all the way because wanna go as

1237
00:47:22,470 --> 00:47:20,920
high as we possibly can so we can leave

1238
00:47:24,660 --> 00:47:22,480

Hubble up in as high in orbit soul stay

1239
00:47:26,940 --> 00:47:24,670
up there as long as it possibly can so

1240
00:47:29,640 --> 00:47:26,950
we all agreed oh yeah sure we can fill

1241
00:47:31,589 --> 00:47:29,650
up those own tanks no problem so we have

1242
00:47:33,120 --> 00:47:31,599
oxygen fuel on each side Knox and fuel

1243
00:47:36,150 --> 00:47:33,130
tank on each side lifepod right

1244
00:47:37,769 --> 00:47:36,160
and during a cent of course the team is

1245
00:47:40,170 --> 00:47:37,779
monitoring all the tank pressures this

1246
00:47:42,390 --> 00:47:40,180
is specific to the prop group oops prop

1247
00:47:44,490 --> 00:47:42,400
group monitoring pressures make sure the

1248
00:47:46,890 --> 00:47:44,500
tanks are in good shape of course in our

1249
00:47:49,349 --> 00:47:46,900
training simulations training guys teach

1250
00:47:50,910 --> 00:47:49,359
us lots of things one of which is how to

1251
00:47:52,470 --> 00:47:50,920
deal with prop leak so they put in leaks

1252
00:47:55,019 --> 00:47:52,480
and the tanks in the system so you see

1253
00:47:56,309 --> 00:47:55,029
the pressures bleeding down and then we

1254
00:47:57,930 --> 00:47:56,319
run through our procedures respond to

1255
00:48:00,480 --> 00:47:57,940
that do what we have to do to deal with

1256
00:48:02,279 --> 00:48:00,490
that particular malfunction on this

1257
00:48:04,499 --> 00:48:02,289
particular flight we fill up the tanks

1258
00:48:06,299 --> 00:48:04,509
full so there's a little bit of helium

1259
00:48:08,730 --> 00:48:06,309
at the very tip top of the tank but

1260
00:48:11,670 --> 00:48:08,740
mostly liquid fuel on one side aux on

1261
00:48:14,039 --> 00:48:11,680
the other and what we learned in real

1262
00:48:16,589 --> 00:48:14,049
time is that the oxidizer tends to

1263
00:48:19,559 --> 00:48:16,599

absorb helium the fuel tank pressures

1264
00:48:21,180 --> 00:48:19,569
all stayed very steady up around 275 the

1265
00:48:23,160 --> 00:48:21,190
aux tank pressures on both sides and

1266
00:48:25,109 --> 00:48:23,170
thankfully we had two sides to compare

1267
00:48:26,999 --> 00:48:25,119
but they started bleeding down they

1268
00:48:28,499 --> 00:48:27,009
dropped about 10 psi if I remember right

1269
00:48:31,079 --> 00:48:28,509
it's a long time ago but they dropped

1270
00:48:33,210 --> 00:48:31,089
about 10 psi during launch and at the

1271
00:48:35,339 --> 00:48:33,220
time we're going oh is this a leak or is

1272
00:48:36,779 --> 00:48:35,349
this just normal like I said there are

1273
00:48:39,390 --> 00:48:36,789
two tanks they were both doing the same

1274
00:48:41,700 --> 00:48:39,400
thing so it made it a bit easier to call

1275
00:48:43,559 --> 00:48:41,710
that not a leak and not respond to that

1276
00:48:45,120 --> 00:48:43,569
but it was just one of the many lessons

1277
00:48:46,470 --> 00:48:45,130
that we learned throughout the history

1278
00:48:49,200 --> 00:48:46,480
discovery in the space shuttle program

1279
00:48:51,210 --> 00:48:49,210
on some of the new challenges you get

1280
00:48:52,710 --> 00:48:51,220
when you fly in space and these lessons

1281
00:48:55,710 --> 00:48:52,720
are all over the place every disciplines

1282
00:48:56,910 --> 00:48:55,720
got them many of them occurred early in

1283
00:48:58,589 --> 00:48:56,920
the program but we're still learning

1284
00:49:00,150 --> 00:48:58,599
lessons as we go we got the boundary

1285
00:49:01,620 --> 00:49:00,160
layer experiment I mentioned earlier

1286
00:49:04,019 --> 00:49:01,630
we're going to learn a great deal about

1287
00:49:06,180 --> 00:49:04,029
how that we're continued to learn more

1288
00:49:08,460 --> 00:49:06,190

about the dynamics a hypersonic flight

1289
00:49:09,720 --> 00:49:08,470
and what that can do to you the vehicle

1290
00:49:12,029 --> 00:49:09,730
that you're flying in those velocities

1291
00:49:15,180 --> 00:49:12,039
and what it can mean to the crew on the

1292
00:49:17,940 --> 00:49:15,190
inside so we're excited that we get to

1293
00:49:19,559 --> 00:49:17,950
learn all these things every new program

1294
00:49:22,140 --> 00:49:19,569
that comes along a course has a huge bow

1295
00:49:24,029 --> 00:49:22,150
wave of lessons to learn and that's part

1296
00:49:25,529 --> 00:49:24,039
of the challenge of a new program even

1297
00:49:27,390 --> 00:49:25,539
before they get off the ground there's

1298
00:49:30,180 --> 00:49:27,400
all kinds of challenges and concerns and

1299
00:49:31,710 --> 00:49:30,190
worries but as you fly and you fly and

1300
00:49:33,960 --> 00:49:31,720
you fly you learn things you get better

1301
00:49:35,789 --> 00:49:33,970
and better and it's just like cars today

1302
00:49:38,190 --> 00:49:35,799
we're all very familiar cars drive very

1303
00:49:39,749 --> 00:49:38,200
well I saw recently where particular

1304
00:49:41,549 --> 00:49:39,759
companies trying to get automated cars

1305
00:49:43,829 --> 00:49:41,559
out on the roads and has been doing so a

1306
00:49:45,450 --> 00:49:43,839
lot of lessons to learn there but cars

1307
00:49:47,490 --> 00:49:45,460
are a pretty well-known

1308
00:49:50,010 --> 00:49:47,500
things so you can design those systems

1309
00:49:52,650 --> 00:49:50,020
I'm not going to say easy but at least

1310
00:49:53,970 --> 00:49:52,660
easier flying in space of course as many

1311
00:49:55,410 --> 00:49:53,980
unique challenges this will be the one

1312
00:49:57,140 --> 00:49:55,420
hundred and thirty third flight of the

1313
00:50:00,120 --> 00:49:57,150

space shuttle program i believe and

1314
00:50:01,849 --> 00:50:00,130
every flight we learn things so we're

1315
00:50:05,010 --> 00:50:01,859
looking forward to this are we

1316
00:50:06,030 --> 00:50:05,020
reflective somewhat perhaps but mostly

1317
00:50:07,500 --> 00:50:06,040
focused on getting the mission

1318
00:50:09,000 --> 00:50:07,510
accomplished and being sure that we

1319
00:50:12,780 --> 00:50:09,010
bring their crew discovery home safely

1320
00:50:15,570 --> 00:50:12,790
on November twelfth bill bill hurley CBS

1321
00:50:16,770 --> 00:50:15,580
02 from me for brian i think you

1322
00:50:17,520 --> 00:50:16,780
mentioned focused on the mission John

1323
00:50:19,920 --> 00:50:17,530
talked a little bit earlier about

1324
00:50:21,540 --> 00:50:19,930
layoffs at the cape and system-wide how

1325
00:50:24,480 --> 00:50:21,550
has that affected Mission Control and

1326
00:50:25,770 --> 00:50:24,490
and how do you see the you mentioned

1327
00:50:27,660 --> 00:50:25,780
focus there are a lot of distractions

1328
00:50:31,230 --> 00:50:27,670
out there and morale issues how are you

1329
00:50:35,609 --> 00:50:31,240
guys handling that in in the milker a

1330
00:50:36,960 --> 00:50:35,619
great question it said we are focused on

1331
00:50:38,670 --> 00:50:36,970
a mission and what I'll tell you is that

1332
00:50:40,710 --> 00:50:38,680
the team here in the control center and

1333
00:50:42,420 --> 00:50:40,720
across the country on the space shuttle

1334
00:50:44,010 --> 00:50:42,430
program is an extremely dedicated

1335
00:50:46,859 --> 00:50:44,020
professional team we're all passionate

1336
00:50:47,940 --> 00:50:46,869
about what we do so yes we know the end

1337
00:50:50,160 --> 00:50:47,950
is coming the end of the space shuttle

1338
00:50:52,200 --> 00:50:50,170

program is coming but we are passionate

1339
00:50:54,570 --> 00:50:52,210
absolutely dedicated to making sure that

1340
00:50:55,710 --> 00:50:54,580
the final flights are just a safe safer

1341
00:50:57,960 --> 00:50:55,720
actually because we know a lot more

1342
00:50:59,970 --> 00:50:57,970
about how to fly the thing safer than

1343
00:51:01,109 --> 00:50:59,980
the first few flights so the folks are

1344
00:51:02,490 --> 00:51:01,119
working really hard there are

1345
00:51:03,870 --> 00:51:02,500
distractions there but we are

1346
00:51:05,070 --> 00:51:03,880
professionals and we're dealing with

1347
00:51:07,770 --> 00:51:05,080
those distractions just like you would

1348
00:51:11,010 --> 00:51:07,780
deal with any other distractions and I

1349
00:51:12,599 --> 00:51:11,020
know you're not an ass well lead flight

1350
00:51:13,800 --> 00:51:12,609
director here I noticed that 20 minutes

1351
00:51:15,420 --> 00:51:13,810
ago the National Hurricane Center went

1352
00:51:17,339 --> 00:51:15,430
you know did Richard Jones your SN

1353
00:51:19,650 --> 00:51:17,349
flight director the honor of naming the

1354
00:51:20,849 --> 00:51:19,660
tropical storm after him it looks like

1355
00:51:24,210 --> 00:51:20,859
it's going to come over the Florida

1356
00:51:25,829 --> 00:51:24,220
peninsula here around countdown time if

1357
00:51:28,710 --> 00:51:25,839
you guys even talked about this and in

1358
00:51:31,050 --> 00:51:28,720
in in terms of if that if those tracks

1359
00:51:32,880 --> 00:51:31,060
actually play out with some of your

1360
00:51:35,099 --> 00:51:32,890
options are hurricane richard is coming

1361
00:51:36,540 --> 00:51:35,109
so what you're saying actually Rob

1362
00:51:38,640 --> 00:51:36,550
showed us the plots of that just before

1363
00:51:40,320 --> 00:51:38,650

we walked in there had not seen it but

1364
00:51:42,480 --> 00:51:40,330
I've lived on the Gulf Coast my entire

1365
00:51:44,099 --> 00:51:42,490
life and hurricanes come and you deal

1366
00:51:45,780 --> 00:51:44,109
with them just like we did with Ike just

1367
00:51:47,400 --> 00:51:45,790
like Florida has certainly had their

1368
00:51:49,980 --> 00:51:47,410
share of hurricanes and we'll monitor

1369
00:51:52,079 --> 00:51:49,990
see what happens and if we gotta roll

1370
00:51:54,060 --> 00:51:52,089
back I really hope that's not the case

1371
00:51:56,160 --> 00:51:54,070
or the folks at KC have all their

1372
00:51:58,250 --> 00:51:56,170
contingency plans in place to deal with

1373
00:51:59,990 --> 00:51:58,260
if those grand tracks come when

1374
00:52:01,670 --> 00:52:00,000
ords them what the timelines for those

1375
00:52:03,080 --> 00:52:01,680
on don't remember all the details but

1376
00:52:05,120 --> 00:52:03,090
they have all that those plans in place

1377
00:52:07,390 --> 00:52:05,130
and are ready to deal with it if we have

1378
00:52:09,470 --> 00:52:07,400
to I'll remind you however you know

1379
00:52:11,330 --> 00:52:09,480
hurricane predictions are a challenge

1380
00:52:13,610 --> 00:52:11,340
it's a kind of an art not a science so

1381
00:52:16,580 --> 00:52:13,620
as observing them over the Gulf Coast

1382
00:52:17,900 --> 00:52:16,590
for last 40 some odd years wait and see

1383
00:52:19,040 --> 00:52:17,910
we'll see all we get will be ready to

1384
00:52:21,020 --> 00:52:19,050
deal with whatever mother nature wants

1385
00:52:22,670 --> 00:52:21,030
to throw at us yeah I lived there too is

1386
00:52:23,630 --> 00:52:22,680
only what you mean for rice really quick

1387
00:52:25,340 --> 00:52:23,640
you may have mentioned this and I may

1388
00:52:28,070 --> 00:52:25,350

just missed it taken us twisted the

1389
00:52:30,950 --> 00:52:28,080
total up meson p.m. in an dlc for in the

1390
00:52:32,480 --> 00:52:30,960
bay as you watch I don't want to quote

1391
00:52:35,930 --> 00:52:32,490
the number right off the top of my head

1392
00:52:40,010 --> 00:52:35,940
it's on the order of 28,000 pounds we

1393
00:52:41,360 --> 00:52:40,020
get the detail for you thanks Gina Gina

1394
00:52:43,490 --> 00:52:41,370
sincere have you seen these two

1395
00:52:44,900 --> 00:52:43,500
questions one let's start Brian since

1396
00:52:46,580 --> 00:52:44,910
you told us a little bit about your

1397
00:52:48,410 --> 00:52:46,590
history just get with discovery does

1398
00:52:52,180 --> 00:52:48,420
this mission since its discoveries last

1399
00:52:55,130 --> 00:52:52,190
mission have any poignancy for you I

1400
00:52:56,510 --> 00:52:55,140
again it's it just signifies the end of

1401
00:52:58,460 --> 00:52:56,520
the space shuttle program is that much

1402
00:53:01,100 --> 00:52:58,470
closer and and that reason of course

1403
00:53:02,870 --> 00:53:01,110
we're all interested in making sure

1404
00:53:04,730 --> 00:53:02,880
these flights all fly out very well and

1405
00:53:06,170 --> 00:53:04,740
very safe and as always with every

1406
00:53:07,820 --> 00:53:06,180
mission the crew is our prime concern

1407
00:53:10,310 --> 00:53:07,830
making sure they come home safely and

1408
00:53:12,160 --> 00:53:10,320
that is what we're going to do so I

1409
00:53:14,930 --> 00:53:12,170
don't think it's any extra significance

1410
00:53:16,640 --> 00:53:14,940
necessarily but our job is to continue

1411
00:53:17,810 --> 00:53:16,650
to be professional and focus on the

1412
00:53:20,360 --> 00:53:17,820
mission make sure those guys come home

1413
00:53:23,960 --> 00:53:20,370

safely and Royce does this mission

1414
00:53:27,920 --> 00:53:23,970
complete the space station well we have

1415
00:53:29,300 --> 00:53:27,930
we have as the next mission coming up

1416
00:53:31,880 --> 00:53:29,310
bringing the Alpha Magnetic Spectrometer

1417
00:53:34,160 --> 00:53:31,890
and the rest of the equipment that it

1418
00:53:36,200 --> 00:53:34,170
has on on it so i would say we're almost

1419
00:53:38,600 --> 00:53:36,210
complete we are what this mission does

1420
00:53:41,480 --> 00:53:38,610
fly as i said in the last pressurized

1421
00:53:42,860 --> 00:53:41,490
module that will be installed on the US

1422
00:53:47,240 --> 00:53:42,870
segment with the addition of the

1423
00:53:49,400 --> 00:53:47,250
permanent multi-purpose module did you

1424
00:53:51,260 --> 00:53:49,410
yeah air burger with the Houston

1425
00:53:53,150 --> 00:53:51,270
Chronicle and I think the PhDs to

1426
00:53:55,040 --> 00:53:53,160
Hurricane Center may quibble with their

1427
00:54:02,480 --> 00:53:55,050
craft being called an art rather than a

1428
00:54:03,830 --> 00:54:02,490
science but for Brian given that this is

1429
00:54:06,350 --> 00:54:03,840
you know almost certainly the last

1430
00:54:07,820 --> 00:54:06,360
flight of discovery is there anything

1431
00:54:11,050 --> 00:54:07,830
different you're doing

1432
00:54:13,190 --> 00:54:11,060
in terms of bringing the vehicle back

1433
00:54:14,690 --> 00:54:13,200
steps you don't have to take because

1434
00:54:16,880 --> 00:54:14,700
you're not preparing the vehicle to fly

1435
00:54:18,620 --> 00:54:16,890
again or is everything going to be by

1436
00:54:21,410 --> 00:54:18,630
the book as it has been with every other

1437
00:54:22,850 --> 00:54:21,420
mission for discovery it's the latter

1438
00:54:24,740 --> 00:54:22,860

everything will be by the book as we've

1439
00:54:27,710 --> 00:54:24,750
done the previous missions and you bring

1440
00:54:29,630 --> 00:54:27,720
up a good point years ago the mid 90s we

1441
00:54:30,860 --> 00:54:29,640
had these between flights of each

1442
00:54:32,480 --> 00:54:30,870
vehicle we had a long list of

1443
00:54:34,700 --> 00:54:32,490
maintenance items that folks at KSC

1444
00:54:36,140 --> 00:54:34,710
would take care of and we went and scrub

1445
00:54:37,940 --> 00:54:36,150
those lists and said well she what can

1446
00:54:39,980 --> 00:54:37,950
we take care of while we're on orbit to

1447
00:54:41,840 --> 00:54:39,990
save the time on the ground and we came

1448
00:54:44,090 --> 00:54:41,850
up with long list of stuff and we

1449
00:54:45,260 --> 00:54:44,100
execute those every flight so that they

1450
00:54:47,510 --> 00:54:45,270
don't have to turn around do it on the

1451
00:54:49,490 --> 00:54:47,520
ground and we will continue to do that

1452
00:54:51,380 --> 00:54:49,500
we didn't go scrub those things out of

1453
00:54:53,510 --> 00:54:51,390
our procedures we're not doing anything

1454
00:54:54,680 --> 00:54:53,520
different on this flight than we have in

1455
00:54:57,980 --> 00:54:54,690
previous so we'll do all the same

1456
00:55:01,760 --> 00:54:57,990
checkouts that we normally do all that

1457
00:55:03,650 --> 00:55:01,770
intended to be intended to design to

1458
00:55:05,360 --> 00:55:03,660
bring the crew home safely just as we

1459
00:55:06,950 --> 00:55:05,370
have done on the previous flights don't

1460
00:55:07,940 --> 00:55:06,960
do anything different do it the same way

1461
00:55:10,870 --> 00:55:07,950
you've been doing it because we know

1462
00:55:13,160 --> 00:55:10,880
that works pretty darn well thank you

1463
00:55:15,920 --> 00:55:13,170

let's take a question from mark then

1464
00:55:18,080 --> 00:55:15,930
we'll go to the other centers hi I'm

1465
00:55:19,430 --> 00:55:18,090
mark Kirkman interspace news questions

1466
00:55:21,770 --> 00:55:19,440
for Royce and I'm not sure how much you

1467
00:55:24,020 --> 00:55:21,780
can tell me how much exposure you've had

1468
00:55:26,120 --> 00:55:24,030
to it but can you describe the drag and

1469
00:55:28,310 --> 00:55:26,130
I lidar system that you're bringing up

1470
00:55:30,140 --> 00:55:28,320
why it's my understanding for SpaceX

1471
00:55:32,240 --> 00:55:30,150
does that mean that it's not a program

1472
00:55:34,280 --> 00:55:32,250
asset it actually belongs to them can

1473
00:55:35,870 --> 00:55:34,290
you tell me just an overview of how it

1474
00:55:38,840 --> 00:55:35,880
works and what's envisioned to be gained

1475
00:55:40,790 --> 00:55:38,850
from that and I'll defer that answer to

1476
00:55:43,010 --> 00:55:40,800
Brian I will tell you on the ISS side

1477
00:55:45,230 --> 00:55:43,020
that we're collecting some GPS data for

1478
00:55:47,090 --> 00:55:45,240
the run of and undock that will provide

1479
00:55:48,950 --> 00:55:47,100
for them first and post patient analysis

1480
00:55:51,050 --> 00:55:48,960
but the equipment in the payload valve

1481
00:55:52,520 --> 00:55:51,060
at Brian deal with so the answer your

1482
00:55:56,300 --> 00:55:52,530
question I think we float previously on

1483
00:55:57,920 --> 00:55:56,310
s gos 2127 it's a box I think of all

1484
00:55:59,570 --> 00:55:57,930
these avionics things as that's a box

1485
00:56:01,460 --> 00:55:59,580
there's a box it's a box that sits in

1486
00:56:04,790 --> 00:56:01,470
the payload Bay next to the orbiter

1487
00:56:06,440 --> 00:56:04,800
docking system and it the crew flips a

1488
00:56:07,670 --> 00:56:06,450

switch to turn it on on flight day three

1489
00:56:09,470 --> 00:56:07,680
and they flip a switch to turn it off

1490
00:56:11,590 --> 00:56:09,480
when we after we get docked and we'll

1491
00:56:13,820 --> 00:56:11,600
turn it on and off same for undocking

1492
00:56:15,590 --> 00:56:13,830
it's a lidar it's a laser it's

1493
00:56:18,290 --> 00:56:15,600
collecting ranging information it's also

1494
00:56:20,810 --> 00:56:18,300
it's got a GPS on board this particular

1495
00:56:21,620 --> 00:56:20,820
one and they're collecting data for GPS

1496
00:56:22,940 --> 00:56:21,630
as well we

1497
00:56:25,880 --> 00:56:22,950
is what they will use post-flight to

1498
00:56:29,059 --> 00:56:25,890
compare it to the space station gps it

1499
00:56:30,620 --> 00:56:29,069
is purely owned by SpaceX and we have

1500
00:56:32,180 --> 00:56:30,630
very little interface with it other than

1501
00:56:34,190 --> 00:56:32,190
that switch throw we turn on we turn it

1502
00:56:36,349 --> 00:56:34,200
off if there's issues problems we won't

1503
00:56:41,180 --> 00:56:36,359
know in real time necessarily and

1504
00:56:42,589 --> 00:56:41,190
Norwood troubleshooting me that I do

1505
00:56:46,819 --> 00:56:42,599
know you'll even one of the handheld's

1506
00:56:49,519 --> 00:56:46,829
behind what's the reasoning for that etv

1507
00:56:51,950 --> 00:56:49,529
rates doing HTV we were asked to leave

1508
00:56:53,870 --> 00:56:51,960
one of our handheld lasers behind which

1509
00:56:55,940 --> 00:56:53,880
is a handheld little device they used to

1510
00:56:58,700 --> 00:56:55,950
shoot at an object and get a range and a

1511
00:56:59,720 --> 00:56:58,710
range rate over time of course we were

1512
00:57:01,700 --> 00:56:59,730
asked to go ahead and leave one of those

1513
00:57:04,400 --> 00:57:01,710

on board as a back up back up to a

1514
00:57:06,349 --> 00:57:04,410
backup probably for when the HTV comes

1515
00:57:08,660 --> 00:57:06,359
flying in the crew will have that if

1516
00:57:10,279 --> 00:57:08,670
they want to pull it out and use it and

1517
00:57:13,759 --> 00:57:10,289
I think we did a similar thing after

1518
00:57:16,579 --> 00:57:13,769
it's just 128 we left one up there and

1519
00:57:17,779 --> 00:57:16,589
brought it back after that ok let's go

1520
00:57:19,999 --> 00:57:17,789
around to the other centers will come

1521
00:57:21,529 --> 00:57:20,009
back here to JSC for follow ups and down

1522
00:57:26,210 --> 00:57:21,539
to discoveries launch site at the

1523
00:57:29,329 --> 00:57:26,220
Kennedy Space Center this is Marcia Dunn

1524
00:57:31,970 --> 00:57:29,339
of the associated press for Brian a

1525
00:57:33,829 --> 00:57:31,980
couple questions start with you have you

1526
00:57:37,999 --> 00:57:33,839
had a chance to reflect with your father

1527
00:57:39,890 --> 00:57:38,009
perhaps the parallels or similarities or

1528
00:57:41,960 --> 00:57:39,900
not between the end of the shuttle

1529
00:57:43,069 --> 00:57:41,970
program and the end of Apollo I was

1530
00:57:45,920 --> 00:57:43,079
wondering if you could share a little

1531
00:57:49,279 --> 00:57:45,930
bit of that please that's oh that's a

1532
00:57:51,019 --> 00:57:49,289
good question they're probably not in

1533
00:57:52,609 --> 00:57:51,029
those specific terms of course my dad

1534
00:57:54,620 --> 00:57:52,619
and I talk a lot dad was involved in the

1535
00:57:56,210 --> 00:57:54,630
program in the early days and he was

1536
00:57:57,559 --> 00:57:56,220
also shuttle program manager I think it

1537
00:58:00,049 --> 00:57:57,569
was for sgs2 and a few flights

1538
00:58:01,160 --> 00:58:00,059

thereafter so he has certainly been

1539
00:58:03,430 --> 00:58:01,170
involved in the early days of the

1540
00:58:05,539 --> 00:58:03,440
shuttle the latter days the Apollo and

1541
00:58:07,069 --> 00:58:05,549
he's still paying attention obviously

1542
00:58:08,480 --> 00:58:07,079
still in the neighborhood he still comes

1543
00:58:11,089 --> 00:58:08,490
and visits I saw him in the cafeteria

1544
00:58:13,460 --> 00:58:11,099
yesterday did he was up here doing some

1545
00:58:14,779 --> 00:58:13,470
other things but so then I get often get

1546
00:58:17,240 --> 00:58:14,789
a chance to talk about various things

1547
00:58:18,710 --> 00:58:17,250
and I got to say our biggest concern of

1548
00:58:20,059 --> 00:58:18,720
course is the future of manned

1549
00:58:21,740 --> 00:58:20,069
spaceflight he got involved in

1550
00:58:23,029 --> 00:58:21,750
spaceflight because he thought it was

1551
00:58:24,859 --> 00:58:23,039
good for the country good for the world

1552
00:58:26,359 --> 00:58:24,869
and I got to say that I have the same

1553
00:58:28,220 --> 00:58:26,369
motivations we think what we do is

1554
00:58:30,130 --> 00:58:28,230
important the science we collect the

1555
00:58:32,480 --> 00:58:30,140
lessons we learned and just the

1556
00:58:34,700 --> 00:58:32,490
exploration benefit of having mankind

1557
00:58:35,140 --> 00:58:34,710
doing these things is a must in my

1558
00:58:36,850 --> 00:58:35,150
opinion

1559
00:58:39,820 --> 00:58:36,860
so he got involved for those reasons I'm

1560
00:58:41,410 --> 00:58:39,830
involved for those as well and ending

1561
00:58:42,880 --> 00:58:41,420
the shuttle program with the gap coming

1562
00:58:45,010 --> 00:58:42,890
up and some of the other things going on

1563
00:58:47,050 --> 00:58:45,020

we are concerned that the what we've

1564
00:58:48,840 --> 00:58:47,060
invested our lives in we want to make

1565
00:58:51,190 --> 00:58:48,850
sure that it continues to go well so

1566
00:58:53,530 --> 00:58:51,200
there's lots of other opportunities out

1567
00:58:56,290 --> 00:58:53,540
there of course and we'll go explore

1568
00:58:59,380 --> 00:58:56,300
those and see how those happen and as

1569
00:59:00,880 --> 00:58:59,390
far as the end of the Apollo program we

1570
00:59:02,350 --> 00:59:00,890
haven't specifically talked about that

1571
00:59:05,440 --> 00:59:02,360
we've just talked about what's coming

1572
00:59:07,390 --> 00:59:05,450
next and we're looking forward to what

1573
00:59:11,770 --> 00:59:07,400
that is and hoping that it's all going

1574
00:59:14,050 --> 00:59:11,780
to turn out well thank you and I'm

1575
00:59:16,090 --> 00:59:14,060
wondering does Mission Control or the

1576
00:59:18,100 --> 00:59:16,100
crew plan any special commemorations

1577
00:59:19,690 --> 00:59:18,110
during the flight because this is

1578
00:59:23,350 --> 00:59:19,700
discoveries less flight or any special

1579
00:59:25,710 --> 00:59:23,360
payloads or that are going up

1580
00:59:30,130 --> 00:59:25,720
specifically to mark the end of

1581
00:59:33,010 --> 00:59:30,140
discoveries flying time yes I think

1582
00:59:34,480 --> 00:59:33,020
you'll see similar to an sts-132 when

1583
00:59:36,250 --> 00:59:34,490
that crew thought that could have been

1584
00:59:39,390 --> 00:59:36,260
the less it was the last plan flight of

1585
00:59:42,130 --> 00:59:39,400
linnaeus at the time they did a little

1586
00:59:44,050 --> 00:59:42,140
tribute if you will a video where each

1587
00:59:45,550 --> 00:59:44,060
of the crew said a few words I expect

1588
00:59:47,710 --> 00:59:45,560

we'll see a similar thing on this flight

1589
00:59:50,080 --> 00:59:47,720
probably a flight day 11 or flight day

1590
00:59:50,950 --> 00:59:50,090
10 after undocking they'll share with us

1591
00:59:56,830 --> 00:59:50,960
some of their thoughts and reflections

1592
00:59:59,260 --> 00:59:56,840
so something to look forward to and for

1593
01:00:01,900 --> 00:59:59,270
mr. Renfrew I just so I know we have a

1594
01:00:04,150 --> 01:00:01,910
Robonaut briefing coming up but from

1595
01:00:05,890 --> 01:00:04,160
your perspective once the Robonaut

1596
01:00:08,800 --> 01:00:05,900
container goes over to the space station

1597
01:00:11,410 --> 01:00:08,810
is it opened up at all during the

1598
01:00:16,030 --> 01:00:11,420
shuttle visit or when does it get up put

1599
01:00:19,710 --> 01:00:16,040
off to in terms of whatever happens to

1600
01:00:22,570 --> 01:00:19,720
rope a nod from once it gets on board

1601
01:00:24,550 --> 01:00:22,580
yes actually not anytime during the

1602
01:00:27,520 --> 01:00:24,560
mission or do we intend to deploy the

1603
01:00:29,380 --> 01:00:27,530
Robonaut the the stand and the upper

1604
01:00:32,170 --> 01:00:29,390
torso of the Robonaut stays in the

1605
01:00:34,560 --> 01:00:32,180
permanent multi-purpose module all the

1606
01:00:37,930 --> 01:00:34,570
way through the dock time frame and then

1607
01:00:41,110 --> 01:00:37,940
during the increment ops after 133 is

1608
01:00:43,500 --> 01:00:41,120
gone we'll get it out assemble the two

1609
01:00:46,390 --> 01:00:43,510
components together and start doing some

1610
01:00:48,670 --> 01:00:46,400
investigations into that science program

1611
01:00:51,069 --> 01:00:48,680
onboard ISS

1612
01:00:56,770 --> 01:00:51,079
a destination location for that is in

1613
01:00:59,650 --> 01:00:56,780

the u.s. lab do you have a timeline for

1614
01:01:01,990 --> 01:00:59,660
that even ever so vague and are you

1615
01:01:05,950 --> 01:01:02,000
personally excited about the prospects

1616
01:01:07,210 --> 01:01:05,960
of what Robonaut has to offer and i

1617
01:01:09,670 --> 01:01:07,220
don't have a timeline i have to tell you

1618
01:01:12,010 --> 01:01:09,680
I've been absolutely focused on on this

1619
01:01:14,620 --> 01:01:12,020
mission 133 and because I'm not

1620
01:01:16,359 --> 01:01:14,630
deploying Robonaut I haven't I haven't

1621
01:01:18,700 --> 01:01:16,369
tracked it more than the fact that I

1622
01:01:20,710 --> 01:01:18,710
know where it is in the in the in the

1623
01:01:23,799 --> 01:01:20,720
pmm and I know I don't have to get it

1624
01:01:26,530 --> 01:01:23,809
out it's it's exciting it really is

1625
01:01:28,690 --> 01:01:26,540
Brian's been telling war stories all

1626
01:01:30,940 --> 01:01:28,700
along here and I have a have a young

1627
01:01:32,589 --> 01:01:30,950
daughter I like to tell her that all the

1628
01:01:35,650 --> 01:01:32,599
stuff that I used to watch when I was a

1629
01:01:37,180 --> 01:01:35,660
kid growing up as far as science fiction

1630
01:01:39,490 --> 01:01:37,190
and all the books I used to read or

1631
01:01:42,520 --> 01:01:39,500
apparently coming to life here so it's a

1632
01:01:44,349 --> 01:01:42,530
very exciting demonstration technology

1633
01:01:46,420 --> 01:01:44,359
that we're going to get on board ISS and

1634
01:01:48,760 --> 01:01:46,430
I know those guys been working for years

1635
01:01:51,339 --> 01:01:48,770
over in one of the buildings here in JSC

1636
01:01:53,680 --> 01:01:51,349
I've wandered through that for years now

1637
01:01:55,539 --> 01:01:53,690
and saw the Robonaut get assembled and

1638
01:01:58,210 --> 01:01:55,549

to finally actually see it get launched

1639
01:01:59,680 --> 01:01:58,220
and start using it on ISS and learn how

1640
01:02:01,059 --> 01:01:59,690
we're actually going to operate and how

1641
01:02:03,700 --> 01:02:01,069
we can fold it into our normal

1642
01:02:05,920 --> 01:02:03,710
operations is a very exciting activity

1643
01:02:08,230 --> 01:02:05,930
and as you said there is a detailed

1644
01:02:10,059 --> 01:02:08,240
Robonaut briefing by the experts who can

1645
01:02:16,510 --> 01:02:10,069
give you all of those details a little

1646
01:02:18,789 --> 01:02:16,520
bit later this afternoon hi it's James

1647
01:02:23,319 --> 01:02:18,799
Dean from Florida to have four questions

1648
01:02:25,390 --> 01:02:23,329
I think male-male be 44 Royce first if i

1649
01:02:27,280 --> 01:02:25,400
recall correctly the installation of

1650
01:02:29,069 --> 01:02:27,290
that power extension cable was something

1651
01:02:32,230 --> 01:02:29,079
that was initially planned during the

1652
01:02:35,109 --> 01:02:32,240
pump module rnr and was considered a

1653
01:02:36,789 --> 01:02:35,119
prerequisite to installing the pmm and i

1654
01:02:38,680 --> 01:02:36,799
was just wondering if if there was some

1655
01:02:40,599 --> 01:02:38,690
problem on EV a one getting that

1656
01:02:42,160 --> 01:02:40,609
installed I don't know how simple a task

1657
01:02:45,160 --> 01:02:42,170
that is but if there was some problem

1658
01:02:49,240 --> 01:02:45,170
with that with that impact your ability

1659
01:02:51,700 --> 01:02:49,250
to install the pmn the next day we had

1660
01:02:53,589 --> 01:02:51,710
originally planned to instant it's the j

1661
01:02:54,910 --> 01:02:53,599
6 12 cable that i mentioned in my

1662
01:02:58,180 --> 01:02:54,920
briefing that we're talking about here

1663
01:03:03,550 --> 01:02:58,190

we had originally flown that uphill on

1664
01:03:05,580 --> 01:03:03,560
I want to say 3937 progress it came up

1665
01:03:08,710 --> 01:03:05,590
hill so we would have it to be able to

1666
01:03:12,070 --> 01:03:08,720
to do the stage EVs that we had

1667
01:03:13,540 --> 01:03:12,080
scheduled stage EPA's 15 and 16 and we

1668
01:03:16,000 --> 01:03:13,550
were going to go install that cable as

1669
01:03:17,410 --> 01:03:16,010
part of those two state gbas as we were

1670
01:03:19,720 --> 01:03:17,420
going through the preparation to do

1671
01:03:22,450 --> 01:03:19,730
those stage ii va's however we had the

1672
01:03:24,550 --> 01:03:22,460
failure of the loop a pump module so the

1673
01:03:26,860 --> 01:03:24,560
the installation of that cable while it

1674
01:03:29,740 --> 01:03:26,870
was a high priority task to get ready to

1675
01:03:32,440 --> 01:03:29,750
go fly 133 was not as high a priority

1676
01:03:34,960 --> 01:03:32,450
test is actually to rnr the loop a pump

1677
01:03:37,150 --> 01:03:34,970
module so we could restore nominal

1678
01:03:40,840 --> 01:03:37,160
external thermal control system cooling

1679
01:03:42,820 --> 01:03:40,850
so during the 3e va's that that Doug and

1680
01:03:44,680 --> 01:03:42,830
Tracy did to go change out the pump

1681
01:03:46,990 --> 01:03:44,690
module we simply ran out of time on

1682
01:03:50,740 --> 01:03:47,000
those evaa doing a higher priority task

1683
01:03:53,560 --> 01:03:50,750
so we absorbed that activity on 133 and

1684
01:03:55,450 --> 01:03:53,570
that's as I said in my brief a VA

1685
01:03:57,940 --> 01:03:55,460
overview that's the very first task that

1686
01:04:04,730 --> 01:03:57,950
we do on EBA one before before we get

1687
01:04:10,670 --> 01:04:08,600
okay I was also wondering why you

1688
01:04:13,220 --> 01:04:10,680

couldn't bring home the the pump module

1689
01:04:15,710 --> 01:04:13,230
on discovery or or even the next flight

1690
01:04:17,900 --> 01:04:15,720
I assume it requires a specific carrier

1691
01:04:21,260 --> 01:04:17,910
like in maybe an ELC or ESP or something

1692
01:04:24,290 --> 01:04:21,270
if that's the case how will you get home

1693
01:04:26,810 --> 01:04:24,300
if the you know the flight schedule

1694
01:04:28,550 --> 01:04:26,820
allows you to do so your your musings

1695
01:04:30,440 --> 01:04:28,560
are perfectly correct we need a

1696
01:04:32,510 --> 01:04:30,450
particular carrier to bring that home

1697
01:04:34,520 --> 01:04:32,520
whose names escapes me at the moment

1698
01:04:36,200 --> 01:04:34,530
actually but a particular carrier in the

1699
01:04:38,570 --> 01:04:36,210
payload Bay and at the time the pump

1700
01:04:41,510 --> 01:04:38,580
module stuff all came up there in August

1701
01:04:42,980 --> 01:04:41,520
in September we took a quick look at it

1702
01:04:44,600 --> 01:04:42,990
just knew at that point there's no way

1703
01:04:46,820 --> 01:04:44,610
to rearrange the payload Bay to fit that

1704
01:04:48,410 --> 01:04:46,830
carrier on discovery with the other

1705
01:04:51,170 --> 01:04:48,420
items that we had in the payload Bay

1706
01:04:53,510 --> 01:04:51,180
looking ahead to 134 is a similar answer

1707
01:04:56,210 --> 01:04:53,520
AMS is sitting back there and there's

1708
01:04:58,550 --> 01:04:56,220
not room to put that carrier so for 135

1709
01:04:59,990 --> 01:04:58,560
there's shuffling things since it's far

1710
01:05:01,580 --> 01:05:00,000
enough away where we can go and figure

1711
01:05:03,350 --> 01:05:01,590
out how to put that carrier in the

1712
01:05:05,720 --> 01:05:03,360
payload bay so it's expected that for

1713
01:05:08,120 --> 01:05:05,730

135 assuming that flight is approved and

1714
01:05:10,190 --> 01:05:08,130
authorized and appropriated all those

1715
01:05:11,720 --> 01:05:10,200
good things if we get to go fly that

1716
01:05:12,950 --> 01:05:11,730
flight that we'll be able to bring it

1717
01:05:18,580 --> 01:05:12,960
home on that particular flight with the

1718
01:05:21,260 --> 01:05:18,590
right carrier in the payload Bay okay uh

1719
01:05:23,150 --> 01:05:21,270
Royson normally with an MBA line mission

1720
01:05:24,560 --> 01:05:23,160
you have a hectic schedule of transfer

1721
01:05:26,870 --> 01:05:24,570
of stuff you know in and out of that

1722
01:05:30,740 --> 01:05:26,880
module obviously with with it's staying

1723
01:05:32,150 --> 01:05:30,750
up there now assuming that's not as much

1724
01:05:34,250 --> 01:05:32,160
of a factor I just wondered if you could

1725
01:05:37,030 --> 01:05:34,260
describe kind of the transfer activity

1726
01:05:39,530 --> 01:05:37,040
how busy that will be on this mission

1727
01:05:42,580 --> 01:05:39,540
what is getting transferred if anything

1728
01:05:45,650 --> 01:05:42,590
I think I know you mentioned some

1729
01:05:48,140 --> 01:05:45,660
packing materials or something but how

1730
01:05:50,570 --> 01:05:48,150
that will compare to you know MPL on

1731
01:05:53,270 --> 01:05:50,580
missions we've seen in the past sure so

1732
01:05:55,130 --> 01:05:53,280
the nominal MPL emission I think you

1733
01:05:57,950 --> 01:05:55,140
describe that accurately it's a hectic

1734
01:06:00,020 --> 01:05:57,960
schedule to get all of the new hardware

1735
01:06:01,820 --> 01:06:00,030
out of the MP LM still somewhere in ISS

1736
01:06:03,230 --> 01:06:01,830
and then get all the old hardware the

1737
01:06:05,480 --> 01:06:03,240
stuff we want to bring back home stove

1738
01:06:07,490 --> 01:06:05,490

back in the NP LM during the dock phrase

1739
01:06:08,890 --> 01:06:07,500
so we could put the that module back in

1740
01:06:11,810 --> 01:06:08,900
the payload bay and bring it home I

1741
01:06:13,430 --> 01:06:11,820
think the answer to your question is we

1742
01:06:14,440 --> 01:06:13,440
still have a very hectic schedule doing

1743
01:06:16,150 --> 01:06:14,450
a lot of other activity

1744
01:06:17,710 --> 01:06:16,160
they just don't happen to be transferred

1745
01:06:21,069 --> 01:06:17,720
because we don't have to empty the

1746
01:06:22,599 --> 01:06:21,079
module we have multiple R&R activity in

1747
01:06:24,940 --> 01:06:22,609
fight maintenance activities that we're

1748
01:06:27,310 --> 01:06:24,950
doing we have the two EVs that we're

1749
01:06:29,800 --> 01:06:27,320
going to go execute and two big payload

1750
01:06:32,020 --> 01:06:29,810
installations so it's a it's a very busy

1751
01:06:33,670 --> 01:06:32,030
mission it's just not busy in the fact

1752
01:06:36,579 --> 01:06:33,680
that we're transferring cargo back and

1753
01:06:39,970 --> 01:06:36,589
forth all told we have about 30 hours of

1754
01:06:42,130 --> 01:06:39,980
mid dec transfer on the mission the co2

1755
01:06:44,349 --> 01:06:42,140
absorbent bet coming up in the payload

1756
01:06:45,790 --> 01:06:44,359
Bay excuse me coming up in the mid deck

1757
01:06:48,040 --> 01:06:45,800
that we're going to replace for the

1758
01:06:49,960 --> 01:06:48,050
carbon dioxide removal assembly bring

1759
01:06:52,660 --> 01:06:49,970
the old bed home we're also bringing up

1760
01:06:55,060 --> 01:06:52,670
that water on/off valve i mentioned that

1761
01:06:56,349 --> 01:06:55,070
goes in the Columbus module another big

1762
01:06:59,440 --> 01:06:56,359
item that we're bringing home in

1763
01:07:01,210 --> 01:06:59,450

discoveries mid-deck is the hydrogen

1764
01:07:03,579 --> 01:07:01,220
dome that comes out of our oxygen

1765
01:07:06,250 --> 01:07:03,589
generating system that failed previously

1766
01:07:08,650 --> 01:07:06,260
we replace that with a spare we're

1767
01:07:11,050 --> 01:07:08,660
bringing that failed hydrogen dome home

1768
01:07:13,359 --> 01:07:11,060
in discoveries mid-deck but the packing

1769
01:07:15,220 --> 01:07:13,369
for that actually comes up he'll inside

1770
01:07:16,750 --> 01:07:15,230
the permanent multi-purpose module says

1771
01:07:18,520 --> 01:07:16,760
what I was referring to before we'll go

1772
01:07:24,309 --> 01:07:18,530
get that packing out so we can get that

1773
01:07:28,470 --> 01:07:24,319
h2 dome on the ground okay thanks and

1774
01:07:32,109 --> 01:07:28,480
finally release just thinking about the

1775
01:07:34,690 --> 01:07:32,119
debris shielding for the for the pmm I

1776
01:07:37,960 --> 01:07:34,700
was thinking about how you rely to some

1777
01:07:40,059 --> 01:07:37,970
extent on the shuttle fly around to get

1778
01:07:42,280 --> 01:07:40,069
an assessment of the station's condition

1779
01:07:44,950 --> 01:07:42,290
after each mission and and as I

1780
01:07:48,430 --> 01:07:44,960
understand that that helps you to to

1781
01:07:50,349 --> 01:07:48,440
really detail where you may have things

1782
01:07:52,329 --> 01:07:50,359
like to breed strikes and any kind of

1783
01:07:53,800 --> 01:07:52,339
issues around the station I was just

1784
01:07:56,640 --> 01:07:53,810
wondering if you know looking forward if

1785
01:07:59,230 --> 01:07:56,650
you could speak it all to you know how

1786
01:08:02,470 --> 01:07:59,240
how you'll be impact without shuttle

1787
01:08:04,960 --> 01:08:02,480
shuttle fly around to help how well we

1788
01:08:07,270 --> 01:08:04,970

be able to monitor the station's

1789
01:08:10,359 --> 01:08:07,280
exterior condition and potential debris

1790
01:08:12,790 --> 01:08:10,369
strikes sure and that's the you know we

1791
01:08:14,170 --> 01:08:12,800
still have 130 for coming up in the

1792
01:08:17,349 --> 01:08:14,180
first part of next year and then

1793
01:08:19,510 --> 01:08:17,359
hopefully a 135 mission also next year

1794
01:08:21,910 --> 01:08:19,520
that will be able to help us at least do

1795
01:08:23,800 --> 01:08:21,920
a baseline for the ISS config in

1796
01:08:25,510 --> 01:08:23,810
particular for the permanent

1797
01:08:26,550 --> 01:08:25,520
multi-purpose module that we're again

1798
01:08:29,700 --> 01:08:26,560
we're going to install on the

1799
01:08:31,410 --> 01:08:29,710
mission what we do get tremendous

1800
01:08:32,940 --> 01:08:31,420
benefit out of the orbiter fly around

1801
01:08:34,800 --> 01:08:32,950
because we've done it for so many

1802
01:08:36,780 --> 01:08:34,810
missions and we can go back and compare

1803
01:08:40,260 --> 01:08:36,790
the orbiter fly around from mission

1804
01:08:42,809 --> 01:08:40,270
exhibition why to see if there is a ding

1805
01:08:45,180 --> 01:08:42,819
on the vehicle from micrometeoroids or

1806
01:08:47,730 --> 01:08:45,190
whatever however we also do have a

1807
01:08:49,620 --> 01:08:47,740
tremendous amount of camera assets on

1808
01:08:52,230 --> 01:08:49,630
board ISS including the mobile assets

1809
01:08:54,450 --> 01:08:52,240
that are from the space station remote

1810
01:08:56,430 --> 01:08:54,460
manipulator and from the JEM RMS as well

1811
01:08:58,200 --> 01:08:56,440
we do a lot of surveys during stage

1812
01:09:02,190 --> 01:08:58,210
where we're looking at in particular

1813
01:09:04,079 --> 01:09:02,200

things so yes will will we have learned

1814
01:09:06,120 --> 01:09:04,089
a lot Brian talked a lot about what

1815
01:09:07,680 --> 01:09:06,130
we've learned in doing human spaceflight

1816
01:09:10,380 --> 01:09:07,690
we've learned a lot about how a

1817
01:09:11,730 --> 01:09:10,390
structure that big behaves in space by

1818
01:09:13,559 --> 01:09:11,740
looking at the data that we gather from

1819
01:09:15,450 --> 01:09:13,569
the orbiter fly around but we'll

1820
01:09:17,309 --> 01:09:15,460
continue to learn that after the orbiter

1821
01:09:21,900 --> 01:09:17,319
stops flying by using the assets that we

1822
01:09:23,730 --> 01:09:21,910
have on board ISS okay we'll go to NASA

1823
01:09:28,920 --> 01:09:23,740
headquarters for questions before coming

1824
01:09:31,590 --> 01:09:28,930
back here for follow-ups hi this is

1825
01:09:34,140 --> 01:09:31,600
Denise Chow from space com just a

1826
01:09:35,940 --> 01:09:34,150
question about the pmm wondering if you

1827
01:09:37,740 --> 01:09:35,950
could outline them the interior changes

1828
01:09:39,470 --> 01:09:37,750
the most significant changes you

1829
01:09:41,550 --> 01:09:39,480
maintain tier of the module and

1830
01:09:44,730 --> 01:09:41,560
specifically what type of hardware you

1831
01:09:46,559 --> 01:09:44,740
eliminated to reduce the weight sure one

1832
01:09:49,740 --> 01:09:46,569
of the big things that we took out there

1833
01:09:52,559 --> 01:09:49,750
was the internal thermal control system

1834
01:09:55,020 --> 01:09:52,569
most of the ISS modules that have an

1835
01:09:56,970 --> 01:09:55,030
active thermal control system we flow

1836
01:09:58,770 --> 01:09:56,980
water through various loops and the

1837
01:10:00,690 --> 01:09:58,780
water on/off valve that Scott's going to

1838
01:10:02,760 --> 01:10:00,700

change out for us in Columbus is part of

1839
01:10:04,530 --> 01:10:02,770
that system in the permanent

1840
01:10:06,630 --> 01:10:04,540
multi-purpose module we don't have an

1841
01:10:08,310 --> 01:10:06,640
active thermal control system we have

1842
01:10:10,170 --> 01:10:08,320
shell heaters that are strung out around

1843
01:10:12,030 --> 01:10:10,180
there to keep it warm but we're not

1844
01:10:13,950 --> 01:10:12,040
actually flowing any water through the

1845
01:10:16,440 --> 01:10:13,960
system to be able to cool off any racks

1846
01:10:18,120 --> 01:10:16,450
so we took that equipment out that was

1847
01:10:19,800 --> 01:10:18,130
one of the the big weight savings that

1848
01:10:22,080 --> 01:10:19,810
we took out of the module in order to be

1849
01:10:24,860 --> 01:10:22,090
able to get additional payload in it we

1850
01:10:28,190 --> 01:10:24,870
also as I said modified some of the

1851
01:10:31,200 --> 01:10:28,200
avionics racks the avionics fold down

1852
01:10:33,000 --> 01:10:31,210
containers inside the pmm to allow the

1853
01:10:35,010 --> 01:10:33,010
crew to be able to fold down the hatches

1854
01:10:36,810 --> 01:10:35,020
to get to those avionics boxes without

1855
01:10:38,490 --> 01:10:36,820
having to disconnect a bunch of cabling

1856
01:10:39,109 --> 01:10:38,500
it's pretty easy for the guys at the

1857
01:10:40,219 --> 01:10:39,119
Cape duty

1858
01:10:41,810 --> 01:10:40,229
that one we have it on the ground

1859
01:10:43,250 --> 01:10:41,820
because the module is powered off and

1860
01:10:45,770 --> 01:10:43,260
you can just disconnect all that stuff

1861
01:10:48,139 --> 01:10:45,780
for a module that we want to presume we

1862
01:10:49,729 --> 01:10:48,149
keep up and happy while we're doing some

1863
01:10:51,229 --> 01:10:49,739

activities we don't want to have to

1864
01:10:53,239 --> 01:10:51,239
power it down so we extended some of

1865
01:10:55,879 --> 01:10:53,249
those cables to make those ifm tasks a

1866
01:10:57,859 --> 01:10:55,889
little bit easier we've also gone

1867
01:11:00,409 --> 01:10:57,869
through and taken out out the wiring

1868
01:11:02,779 --> 01:11:00,419
that would be necessary for an 80 you an

1869
01:11:04,310 --> 01:11:02,789
audio terminal unit there's not one in

1870
01:11:06,799 --> 01:11:04,320
the module and there's not also there's

1871
01:11:08,270 --> 01:11:06,809
also not a utility outlet port in the

1872
01:11:10,639 --> 01:11:08,280
module where the crew would plug in a

1873
01:11:12,350 --> 01:11:10,649
laptop if they needed one again with the

1874
01:11:15,169 --> 01:11:12,360
idea here that we're not doing science

1875
01:11:17,029 --> 01:11:15,179
and we're not doing pego de activities

1876
01:11:18,619 --> 01:11:17,039
in the in this module it's really just

1877
01:11:20,239 --> 01:11:18,629
for putting in equipment that we don't

1878
01:11:23,330 --> 01:11:20,249
need and we don't spend a whole lot of

1879
01:11:25,600 --> 01:11:23,340
time in there okay we're back here at

1880
01:11:27,739 --> 01:11:25,610
JSC for final follow-ups in the back

1881
01:11:31,100 --> 01:11:27,749
Phillips loss with NASA Space Flight

1882
01:11:34,310 --> 01:11:31,110
calm question for Brian on the boundary

1883
01:11:37,909 --> 01:11:34,320
layer dto I understand that you want to

1884
01:11:39,319 --> 01:11:37,919
avoid doing the role reversal during the

1885
01:11:41,379 --> 01:11:39,329
period where you might trip the boundary

1886
01:11:44,449 --> 01:11:41,389
layer is that going to have any

1887
01:11:45,739 --> 01:11:44,459
operational limitations in terms of I

1888
01:11:49,060 --> 01:11:45,749

think I also saw that there might be

1889
01:11:51,439 --> 01:11:49,070
some cross range limitations for entry

1890
01:11:54,169 --> 01:11:51,449
right so what you're alluding to there

1891
01:11:56,239 --> 01:11:54,179
is we do have we have identified when we

1892
01:11:59,119 --> 01:11:56,249
expect a battery layer transition to

1893
01:12:01,909 --> 01:11:59,129
occur it's around Mach 18 mark 19 we've

1894
01:12:04,250 --> 01:12:01,919
also identified which cross ranges would

1895
01:12:05,600 --> 01:12:04,260
cause a role reversal tour Kurt because

1896
01:12:07,879 --> 01:12:05,610
you're cross-range predetermines when

1897
01:12:10,729 --> 01:12:07,889
your role reversals will occur so we're

1898
01:12:12,709 --> 01:12:10,739
going to try to avoid those if we can we

1899
01:12:14,540 --> 01:12:12,719
may consider doing orbita just burns to

1900
01:12:15,790 --> 01:12:14,550
help that Tony ciccotti and entry team

1901
01:12:18,080 --> 01:12:15,800
will go through all those calculations

1902
01:12:20,449 --> 01:12:18,090
once we get undock to see what's

1903
01:12:22,939 --> 01:12:20,459
available our number one party of course

1904
01:12:24,709 --> 01:12:22,949
is the land at KSC to land safely and we

1905
01:12:26,060 --> 01:12:24,719
have a list of other things we do

1906
01:12:29,419 --> 01:12:26,070
consider for those orbit adjust

1907
01:12:31,009 --> 01:12:29,429
questions so if we if we can accommodate

1908
01:12:33,770 --> 01:12:31,019
it and still accommodate all the other

1909
01:12:35,869 --> 01:12:33,780
things we will tart we may target and

1910
01:12:38,330 --> 01:12:35,879
over to just type burn to improve that

1911
01:12:40,310 --> 01:12:38,340
first opportunity KFC's cross-range for

1912
01:12:43,429 --> 01:12:40,320
this experiment but then as you know

1913
01:12:45,469 --> 01:12:43,439

whether may be a problem we may not land

1914
01:12:46,489 --> 01:12:45,479
on that opportunity and we kind of take

1915
01:12:48,830 --> 01:12:46,499
what we get on the subsequent

1916
01:12:50,449 --> 01:12:48,840
opportunities so again Tony and the team

1917
01:12:51,540 --> 01:12:50,459
will go through all those discussions

1918
01:12:53,460 --> 01:12:51,550
and deter

1919
01:12:55,590 --> 01:12:53,470
if it makes sense given everything else

1920
01:12:56,970 --> 01:12:55,600
that's going on to do an orbital just

1921
01:12:58,830 --> 01:12:56,980
type thing to try and optimize a

1922
01:13:00,900 --> 01:12:58,840
particular cross range for the first

1923
01:13:04,770 --> 01:13:00,910
deorbit opportunity and decide whether

1924
01:13:07,980 --> 01:13:04,780
or not to do it that's okay any other

1925
01:13:10,560 --> 01:13:07,990
follow-ups here okay no other follow-ups

1926
01:13:12,450 --> 01:13:10,570
so our programming note coming up on

1927
01:13:14,520 --> 01:13:12,460
NASA television our pre-flight briefings

1928
01:13:16,470 --> 01:13:14,530
will continue later today with the

1929
01:13:18,270 --> 01:13:16,480
spacewalk overview briefing featuring

1930
01:13:20,820 --> 01:13:18,280
lead spacewalk officer art Thomason

1931
01:13:23,250 --> 01:13:20,830
followed by the Robonaut 2 briefing with

1932
01:13:25,200 --> 01:13:23,260
rob ambrose providing all the details of

1933
01:13:27,630 --> 01:13:25,210
the humanoid that will reside aboard the

1934
01:13:30,630 --> 01:13:27,640
International Space Station following

1935
01:13:32,550 --> 01:13:30,640
that discovery six astronauts will be

1936
01:13:34,530 --> 01:13:32,560
here for the traditional crew news

1937
01:13:36,600 --> 01:13:34,540
conference so stay tuned throughout the

1938
01:13:38,880 --> 01:13:36,610

day on NASA TV for all of those

1939
01:13:40,470 --> 01:13:38,890
briefings you can follow space shuttle

1940
01:13:44,700 --> 01:13:40,480
and Space Station activities on our

1941
01:13:45,750 --> 01:13:44,710
website at WWDC gov would that we'll