
S. KELLY
SCOTT KELLY
EXPEDITION 46 COMMANDER

1
00:00:06,470 --> 00:00:04,150
well good good afternoon everybody i'm

2
00:00:07,909 --> 00:00:06,480
dan hewitt and welcome to nasa's johnson

3
00:00:09,990 --> 00:00:07,919
space center

4
00:00:12,310 --> 00:00:10,000
uh two astronauts are getting ready to

5
00:00:13,830 --> 00:00:12,320
take the first spacewalk of 2016 just

6
00:00:15,749 --> 00:00:13,840
three days from now so we're here to

7
00:00:17,349 --> 00:00:15,759
hear a little bit more about that and

8
00:00:20,870 --> 00:00:17,359
what's ahead for the crew of expedition

9
00:00:22,950 --> 00:00:20,880
46. joining me today is kenny todd the

10
00:00:24,790 --> 00:00:22,960
international space station operations

11
00:00:26,470 --> 00:00:24,800
integration manager

12
00:00:29,269 --> 00:00:26,480
royce renfrew who's going to be the

13
00:00:30,870 --> 00:00:29,279

flight director for eva number 35 coming

14
00:00:32,870 --> 00:00:30,880
up on friday

15
00:00:34,790 --> 00:00:32,880
and then also on our panel is the lead

16
00:00:36,950 --> 00:00:34,800
spacewalk officer paul dumb who's going

17
00:00:39,750 --> 00:00:36,960
to be walking through all the specifics

18
00:00:41,830 --> 00:00:39,760
of this eva coming up this week so with

19
00:00:43,110 --> 00:00:41,840
that i will pass it on over to kenny to

20
00:00:45,110 --> 00:00:43,120
kick it off

21
00:00:47,590 --> 00:00:45,120
well thanks very much dan and first of

22
00:00:49,750 --> 00:00:47,600
all happy new year to everyone

23
00:00:51,750 --> 00:00:49,760
it's great to to see everybody again as

24
00:00:53,350 --> 00:00:51,760
we turn the corner another year of iss

25
00:00:54,950 --> 00:00:53,360
operations

26
00:00:57,270 --> 00:00:54,960
at this point we're about at the

27
00:01:00,869 --> 00:00:57,280
midpoint of increment 46.

28
00:01:01,670 --> 00:01:00,879
uh scott kelly michal kornienko

29
00:01:03,590 --> 00:01:01,680
they're

30
00:01:05,670 --> 00:01:03,600
slowly rounding up their their 12-month

31
00:01:08,070 --> 00:01:05,680
stay on orbit they'll be coming home

32
00:01:11,109 --> 00:01:08,080
here in early march

33
00:01:12,950 --> 00:01:11,119
along with sergey volkov and so

34
00:01:14,550 --> 00:01:12,960
we'll be doing a lot of good uh human

35
00:01:16,469 --> 00:01:14,560
research um

36
00:01:18,870 --> 00:01:16,479
uh type of data collection over the next

37
00:01:20,469 --> 00:01:18,880
couple of months uh here is the as scott

38
00:01:21,429 --> 00:01:20,479

and mikael are finishing up the

39
00:01:22,630 --> 00:01:21,439
increment

40
00:01:25,590 --> 00:01:22,640
um

41
00:01:27,830 --> 00:01:25,600
tim copra tim peake and yuri malenchenko

42
00:01:29,270 --> 00:01:27,840
are finishing up their their first month

43
00:01:31,270 --> 00:01:29,280
on orbit things are going very well

44
00:01:33,350 --> 00:01:31,280
they've adapted very well and

45
00:01:35,830 --> 00:01:33,360
as you'll see earlier i've done already

46
00:01:38,069 --> 00:01:35,840
quite a quite a bit of work over the

47
00:01:41,350 --> 00:01:38,079
over the last month

48
00:01:42,389 --> 00:01:41,360
we just completed a very busy december

49
00:01:44,550 --> 00:01:42,399
we saw

50
00:01:47,270 --> 00:01:44,560
quite a bit of vehicle traffic to the

51
00:01:50,230 --> 00:01:47,280
station we did a crew exchange we

52
00:01:52,870 --> 00:01:50,240
brought home chell lindgren kimia uni

53
00:01:55,030 --> 00:01:52,880
yui and oleg kononenko

54
00:01:56,469 --> 00:01:55,040
everything went very well there and as i

55
00:02:00,069 --> 00:01:56,479
said earlier we got

56
00:02:02,709 --> 00:02:00,079
tim tim and uh and yuri on orbit and

57
00:02:04,709 --> 00:02:02,719
nicely adapted so

58
00:02:07,990 --> 00:02:04,719
also in december we saw a return to

59
00:02:09,669 --> 00:02:08,000
flight for the orbital cygnus module um

60
00:02:12,070 --> 00:02:09,679
the it turned out to be our first

61
00:02:14,309 --> 00:02:12,080
birthing to the to the node 1 nader

62
00:02:17,510 --> 00:02:14,319
port and all that all went extremely

63
00:02:20,229 --> 00:02:17,520

well and and we're still processing that

64
00:02:21,750 --> 00:02:20,239
that cygnus module today

65
00:02:23,430 --> 00:02:21,760
talk a little bit about about when we're

66
00:02:25,670 --> 00:02:23,440
going to release that module here

67
00:02:27,110 --> 00:02:25,680
shortly but

68
00:02:29,910 --> 00:02:27,120
we also saw

69
00:02:31,670 --> 00:02:29,920
towards the end of of of december the

70
00:02:33,270 --> 00:02:31,680
arrival of 62

71
00:02:36,470 --> 00:02:33,280
progress which

72
00:02:37,910 --> 00:02:36,480
in some ways represented a return to

73
00:02:39,750 --> 00:02:37,920
flight type of opportunity for our

74
00:02:40,550 --> 00:02:39,760
russian colleagues it was the the first

75
00:02:42,949 --> 00:02:40,560
time

76
00:02:45,190 --> 00:02:42,959
uh since they had uh their uh their

77
00:02:46,790 --> 00:02:45,200
issue with their progress back in april

78
00:02:49,350 --> 00:02:46,800
that they launched this combination of

79
00:02:51,509 --> 00:02:49,360
the launcher and uh with the with this

80
00:02:53,750 --> 00:02:51,519
progress and so anyway everything went

81
00:02:57,270 --> 00:02:53,760
very well for that as well and and we're

82
00:02:59,589 --> 00:02:57,280
glad to glad to have 62p uh progress on

83
00:03:03,430 --> 00:02:59,599
board uh in addition to all that vehicle

84
00:03:06,070 --> 00:03:03,440
traffic we threw in a bonus uh spacewalk

85
00:03:07,750 --> 00:03:06,080
around the christmas time frame

86
00:03:09,830 --> 00:03:07,760
we we had a

87
00:03:11,110 --> 00:03:09,840
a translation cart that was out on the

88
00:03:12,949 --> 00:03:11,120

trust that

89
00:03:14,630 --> 00:03:12,959
we tried to move it to support some some

90
00:03:16,149 --> 00:03:14,640
payload activities and we found

91
00:03:18,790 --> 00:03:16,159
ourselves with that card stuck in

92
00:03:20,790 --> 00:03:18,800
between work sites uh having that uh

93
00:03:22,470 --> 00:03:20,800
that cart uh

94
00:03:26,710 --> 00:03:22,480
and not at a work site was gonna be

95
00:03:28,710 --> 00:03:26,720
problematic for uh for docking um the 62

96
00:03:30,149 --> 00:03:28,720
p progress vehicle and therefore we made

97
00:03:34,149 --> 00:03:30,159
the decision to

98
00:03:36,789 --> 00:03:34,159
to execute a space walk we did it with

99
00:03:38,949 --> 00:03:36,799
about four hour four days of of notice

100
00:03:40,630 --> 00:03:38,959
and uh from the time we we saw the

101
00:03:42,710 --> 00:03:40,640
problem till the time we we went out the

102
00:03:45,110 --> 00:03:42,720
hatch so that was pretty remarkable in

103
00:03:47,110 --> 00:03:45,120
and of itself but uh the crew and the

104
00:03:48,710 --> 00:03:47,120
and the entire engineering ops team did

105
00:03:51,110 --> 00:03:48,720
a great job at putting that plan

106
00:03:53,190 --> 00:03:51,120
together and executed so in the midst of

107
00:03:56,390 --> 00:03:53,200
all that we've uh we've been continuing

108
00:03:58,070 --> 00:03:56,400
to to uh to do the science uh a lot of a

109
00:03:59,589 --> 00:03:58,080
lot of human research in this time frame

110
00:04:01,990 --> 00:03:59,599
especially with the new crew coming on

111
00:04:05,350 --> 00:04:02,000
board i have a lot of requirements just

112
00:04:06,390 --> 00:04:05,360
after arrival to to get to get a lot of

113
00:04:11,589 --> 00:04:06,400

data

114
00:04:12,710 --> 00:04:11,599
everything going very well on orbit at

115
00:04:14,949 --> 00:04:12,720
this point

116
00:04:17,670 --> 00:04:14,959
as we turn the corner looking looking

117
00:04:20,150 --> 00:04:17,680
into the new year

118
00:04:23,430 --> 00:04:20,160
the the we're really

119
00:04:26,469 --> 00:04:23,440
focused focusing on on the spacex return

120
00:04:28,950 --> 00:04:26,479
to flight mission at this point um

121
00:04:31,590 --> 00:04:28,960
our spacex colleagues did in in

122
00:04:34,230 --> 00:04:31,600
september or december launch a

123
00:04:35,749 --> 00:04:34,240
launch a vehicle um on their on their

124
00:04:37,990 --> 00:04:35,759
new launcher

125
00:04:40,150 --> 00:04:38,000
and uh and had very good results they

126
00:04:41,990 --> 00:04:40,160
had a post flight review last week and

127
00:04:44,230 --> 00:04:42,000
and all indications are that that the

128
00:04:46,550 --> 00:04:44,240
data was very very positive coming out

129
00:04:49,030 --> 00:04:46,560
of that out of that launch in december

130
00:04:51,670 --> 00:04:49,040
uh we're continuing um to work with them

131
00:04:54,469 --> 00:04:51,680
to finalize the plans for uh for the

132
00:04:55,909 --> 00:04:54,479
launch of the dragon to the station

133
00:04:58,390 --> 00:04:55,919
we'll probably be hammering that out

134
00:05:00,390 --> 00:04:58,400
over the next uh week or two here and

135
00:05:03,189 --> 00:05:00,400
and uh and try to get that on the plan

136
00:05:04,469 --> 00:05:03,199
so um i know they've got a couple of

137
00:05:06,950 --> 00:05:04,479
more launches that they're they're

138
00:05:08,550 --> 00:05:06,960

supporting and uh and we'll be uh be

139
00:05:10,870 --> 00:05:08,560
watching those and working with them to

140
00:05:12,310 --> 00:05:10,880
uh to get our station plan sorted out as

141
00:05:14,230 --> 00:05:12,320
well

142
00:05:15,830 --> 00:05:14,240
in parallel with that as i said earlier

143
00:05:17,670 --> 00:05:15,840
we have the orbital cygnus module that's

144
00:05:19,270 --> 00:05:17,680
currently sitting on the node 1 nader

145
00:05:21,749 --> 00:05:19,280
port

146
00:05:23,110 --> 00:05:21,759
and and we're we're finalizing our our

147
00:05:24,550 --> 00:05:23,120
plan for when we're going to release

148
00:05:26,150 --> 00:05:24,560
that module

149
00:05:27,510 --> 00:05:26,160
originally we were going to going to do

150
00:05:28,950 --> 00:05:27,520
that here at the end of january but

151
00:05:30,790 --> 00:05:28,960
we're looking at our options for hanging

152
00:05:32,790 --> 00:05:30,800
on to it a little bit longer just to

153
00:05:35,350 --> 00:05:32,800
give ourselves an opportunity to keep

154
00:05:37,189 --> 00:05:35,360
station clean get as much trash

155
00:05:38,629 --> 00:05:37,199
off as we can when when that module

156
00:05:40,230 --> 00:05:38,639
departs and so

157
00:05:42,150 --> 00:05:40,240
we'll be we'll be working through that

158
00:05:43,270 --> 00:05:42,160
over the next few days here

159
00:05:45,350 --> 00:05:43,280
um

160
00:05:49,590 --> 00:05:45,360
and it's because of some of this vehicle

161
00:05:51,029 --> 00:05:49,600
traffic that that brings us here today

162
00:05:53,430 --> 00:05:51,039
we we

163
00:05:55,510 --> 00:05:53,440

as most of you know back in in

164
00:05:58,469 --> 00:05:55,520
in the november time frame friday the

165
00:06:01,590 --> 00:05:58,479
13th to be exact uh we lost uh the

166
00:06:04,150 --> 00:06:01,600
channels to one of our our uh our power

167
00:06:05,670 --> 00:06:04,160
channels on board the station and and

168
00:06:09,189 --> 00:06:05,680
that

169
00:06:11,189 --> 00:06:09,199
chose at the time to say we would live

170
00:06:12,629 --> 00:06:11,199
with it for couldn't live with it for

171
00:06:13,990 --> 00:06:12,639
some period of time while we watched the

172
00:06:14,950 --> 00:06:14,000
vehicle traffic

173
00:06:16,469 --> 00:06:14,960
um

174
00:06:18,469 --> 00:06:16,479
since that time frame as things have

175
00:06:19,590 --> 00:06:18,479
started to settle out we we've asked the

176
00:06:21,749 --> 00:06:19,600
team to

177
00:06:23,430 --> 00:06:21,759
to try to protect maybe in january an

178
00:06:24,950 --> 00:06:23,440
opportunity to do an eba and the team's

179
00:06:26,710 --> 00:06:24,960
done a real nice job at pulling that

180
00:06:28,950 --> 00:06:26,720
plan together

181
00:06:31,830 --> 00:06:28,960
so so we're here today to talk about

182
00:06:33,189 --> 00:06:31,840
this eva to go to go repair this power

183
00:06:34,950 --> 00:06:33,199
channel

184
00:06:37,510 --> 00:06:34,960
as most of you know we have eight power

185
00:06:39,510 --> 00:06:37,520
channels uh we're down one

186
00:06:40,870 --> 00:06:39,520
it's uh from a station perspective we

187
00:06:43,510 --> 00:06:40,880
could live in this state for quite a

188
00:06:45,110 --> 00:06:43,520

while but but the reality is is that if

189
00:06:46,390 --> 00:06:45,120
we were to have an additional failure in

190
00:06:47,749 --> 00:06:46,400
another channel

191
00:06:49,909 --> 00:06:47,759
we'd probably find ourselves a little

192
00:06:51,029 --> 00:06:49,919
more strapped and and

193
00:06:52,469 --> 00:06:51,039
given the

194
00:06:55,189 --> 00:06:52,479
the hole that's opened up here in

195
00:06:57,029 --> 00:06:55,199
january and the readiness of the team to

196
00:06:59,990 --> 00:06:57,039
to go execute the eva we think it's

197
00:07:03,189 --> 00:07:00,000
probably about about time to to go get

198
00:07:05,589 --> 00:07:03,199
this work behind us so anyway

199
00:07:07,430 --> 00:07:05,599
the the failure that we've seen in this

200
00:07:10,309 --> 00:07:07,440
power channel

201
00:07:13,749 --> 00:07:10,319
is very similar to one we saw back in in

202
00:07:14,870 --> 00:07:13,759
the 2014 time frame october

203
00:07:19,029 --> 00:07:14,880
we had a

204
00:07:21,589 --> 00:07:19,039
called a sequential shunt unit and when

205
00:07:23,670 --> 00:07:21,599
you look at the at the signatures that

206
00:07:25,749 --> 00:07:23,680
we saw back then to what we saw with

207
00:07:28,230 --> 00:07:25,759
this particular power channel which we

208
00:07:31,510 --> 00:07:28,240
call power channel 1b

209
00:07:32,950 --> 00:07:31,520
they uh very similar um and uh and based

210
00:07:35,029 --> 00:07:32,960
on what we know about

211
00:07:35,830 --> 00:07:35,039
about the failure of the other box it it

212
00:07:37,350 --> 00:07:35,840
uh

213
00:07:38,790 --> 00:07:37,360

there's little doubt in our mind that

214
00:07:41,270 --> 00:07:38,800
that the cause of the problem is indeed

215
00:07:42,710 --> 00:07:41,280
the sequential shunt unit so the eba is

216
00:07:45,270 --> 00:07:42,720
really going to be focused on going out

217
00:07:46,070 --> 00:07:45,280
and replacing that box

218
00:07:51,110 --> 00:07:46,080
we

219
00:07:54,070 --> 00:07:51,120
out of that spare back in december and

220
00:07:56,070 --> 00:07:54,080
it checked out very very good no issues

221
00:07:59,510 --> 00:07:56,080
going forward with the spare

222
00:08:02,150 --> 00:07:59,520
this particular box uh helps us to uh

223
00:08:04,469 --> 00:08:02,160
control the voltage uh that gets sent

224
00:08:06,790 --> 00:08:04,479
downstream to our our different uh

225
00:08:08,629 --> 00:08:06,800
payloads and systems hardware uh when

226
00:08:10,790 --> 00:08:08,639
you think about these these solar arrays

227
00:08:11,990 --> 00:08:10,800
they generate an awful lot of

228
00:08:14,390 --> 00:08:12,000
current

229
00:08:15,830 --> 00:08:14,400
coming down coming down the solar array

230
00:08:17,830 --> 00:08:15,840
towards the electronics and we really

231
00:08:19,909 --> 00:08:17,840
need something in the in the path there

232
00:08:21,830 --> 00:08:19,919
to help help regulate the voltage and

233
00:08:23,909 --> 00:08:21,840
the current that we send downstream and

234
00:08:26,070 --> 00:08:23,919
and this particular box

235
00:08:28,230 --> 00:08:26,080
when it's not working or not working

236
00:08:29,990 --> 00:08:28,240
properly then we run the risk of of

237
00:08:32,070 --> 00:08:30,000
potentially damaging some of the

238
00:08:34,230 --> 00:08:32,080

downstream units so

239
00:08:35,589 --> 00:08:34,240
that's why that's why

240
00:08:36,310 --> 00:08:35,599
we elected to

241
00:08:40,949 --> 00:08:36,320
to

242
00:08:43,110 --> 00:08:40,959
not have it in the mix and once we get

243
00:08:44,470 --> 00:08:43,120
this the sequential shunt unit replaced

244
00:08:46,310 --> 00:08:44,480
we should be able to reintegrate the

245
00:08:49,110 --> 00:08:46,320
channel and get back up and up and

246
00:08:50,790 --> 00:08:49,120
running again on all eight channels so

247
00:08:53,430 --> 00:08:50,800
anyway um

248
00:08:55,350 --> 00:08:53,440
when we go out the the eba itself to to

249
00:08:56,150 --> 00:08:55,360
replace this ssu isn't going to take the

250
00:08:58,389 --> 00:08:56,160
full

251
00:09:00,150 --> 00:08:58,399
six or six and a half hours uh royce and

252
00:09:02,389 --> 00:09:00,160
the team have come up with a set of

253
00:09:05,269 --> 00:09:02,399
other tasks that

254
00:09:06,710 --> 00:09:05,279
are are good work good good work that we

255
00:09:08,790 --> 00:09:06,720
can go buy down

256
00:09:10,949 --> 00:09:08,800
some additional tasks that that we've

257
00:09:12,710 --> 00:09:10,959
had on our plate for quite a while

258
00:09:15,030 --> 00:09:12,720
specifically to support some of our

259
00:09:17,030 --> 00:09:15,040
commercial crew vehicles in in

260
00:09:18,550 --> 00:09:17,040
in the next year or two and

261
00:09:19,670 --> 00:09:18,560
as well as some other systems

262
00:09:22,949 --> 00:09:19,680
maintenance

263
00:09:24,310 --> 00:09:22,959

we tend to carry a log of things that

264
00:09:25,990 --> 00:09:24,320
that when we can get to them that we

265
00:09:27,829 --> 00:09:26,000
like to go out and try to try to get

266
00:09:30,310 --> 00:09:27,839
that work behind us so these guys have

267
00:09:32,630 --> 00:09:30,320
done a nice job at filling in around the

268
00:09:35,590 --> 00:09:32,640
the replacement of what we call the ssu

269
00:09:37,910 --> 00:09:35,600
the sequential shunt unit and and and

270
00:09:39,350 --> 00:09:37,920
make it a nice full eba so

271
00:09:41,269 --> 00:09:39,360
anyway um

272
00:09:43,430 --> 00:09:41,279
we uh we conducted the uh the mission

273
00:09:45,030 --> 00:09:43,440
management team review yesterday with

274
00:09:47,110 --> 00:09:45,040
the entire partnership

275
00:09:49,670 --> 00:09:47,120
a little bit of open work left but

276
00:09:51,990 --> 00:09:49,680
nothing that that is significant and

277
00:09:54,870 --> 00:09:52,000
crew seems uh well rested and ready to

278
00:09:56,790 --> 00:09:54,880
go do the eva and understands the task

279
00:09:58,150 --> 00:09:56,800
that that royce and the team have laid

280
00:09:59,670 --> 00:09:58,160
out and so

281
00:10:02,550 --> 00:09:59,680
we pulled the entire partnership

282
00:10:04,389 --> 00:10:02,560
yesterday everybody was go and at this

283
00:10:07,269 --> 00:10:04,399
point we'll go close out that open work

284
00:10:09,110 --> 00:10:07,279
and and uh and try to get this eva

285
00:10:10,550 --> 00:10:09,120
done in behind us so

286
00:10:11,990 --> 00:10:10,560
with that i'll turn it over to royce and

287
00:10:15,269 --> 00:10:12,000
let him talk to you a little bit about

288
00:10:17,829 --> 00:10:15,279

uh the specifics of what we're gonna do

289
00:10:19,670 --> 00:10:17,839
okay good afternoon uh i think i'll

290
00:10:21,350 --> 00:10:19,680
start just talking a little bit about

291
00:10:23,269 --> 00:10:21,360
the personnel that are involved in doing

292
00:10:24,470 --> 00:10:23,279
all this kenny mentioned that we did an

293
00:10:27,829 --> 00:10:24,480
eva

294
00:10:31,750 --> 00:10:27,839
back in 2014 to replace a similar unit

295
00:10:33,670 --> 00:10:31,760
the 3a sequential unit or ssu that that

296
00:10:35,750 --> 00:10:33,680
eva was actually performed by reid

297
00:10:37,590 --> 00:10:35,760
wiseman and

298
00:10:41,509 --> 00:10:37,600
barry wilmore uh

299
00:10:43,670 --> 00:10:41,519
it was actually eva 28 in uh in 2014 so

300
00:10:45,269 --> 00:10:43,680
we're we're going to have reid wiseman

301
00:10:47,350 --> 00:10:45,279
on console with us when we're doing this

302
00:10:49,269 --> 00:10:47,360
activity the person that you'll hear

303
00:10:51,990 --> 00:10:49,279
speaking to the crew most often during

304
00:10:53,509 --> 00:10:52,000
the eva called the ground iv person will

305
00:10:55,670 --> 00:10:53,519
be read

306
00:10:58,069 --> 00:10:55,680
he brings obviously the the history that

307
00:11:01,509 --> 00:10:58,079
he has in doing a very similar task on

308
00:11:06,630 --> 00:11:01,519
that other eva scott kelly

309
00:11:10,550 --> 00:11:08,790
scott's job in this eva is going to be

310
00:11:11,670 --> 00:11:10,560
to get the crew in and out of their

311
00:11:13,509 --> 00:11:11,680
suits

312
00:11:15,110 --> 00:11:13,519
there's a there's a very detailed

313
00:11:17,750 --> 00:11:15,120

process for being able to get a crew

314
00:11:19,269 --> 00:11:17,760
member to ready to go do a spacewalk

315
00:11:20,710 --> 00:11:19,279
involves getting them all suited up make

316
00:11:21,750 --> 00:11:20,720
sure all their tools are configured

317
00:11:23,190 --> 00:11:21,760
correctly

318
00:11:25,910 --> 00:11:23,200
changing out

319
00:11:27,590 --> 00:11:25,920
medox canisters and just doing a great

320
00:11:29,110 --> 00:11:27,600
deal of work in the airlock to get both

321
00:11:31,910 --> 00:11:29,120
crew members ready to go

322
00:11:33,910 --> 00:11:31,920
if you saw the eva that kenny mentioned

323
00:11:37,030 --> 00:11:33,920
earlier that we did in december that was

324
00:11:39,509 --> 00:11:37,040
the job that tim peake did for that eva

325
00:11:41,509 --> 00:11:39,519
was the suit iv test so

326
00:11:44,389 --> 00:11:41,519
scott will be doing the suit iv for us

327
00:11:47,350 --> 00:11:44,399
and then for the eva itself

328
00:11:49,430 --> 00:11:47,360
tim kopra will be what's called ev1

329
00:11:52,069 --> 00:11:49,440
he'll be the crew member that's wearing

330
00:11:54,790 --> 00:11:52,079
the red stripes on his suit

331
00:11:57,430 --> 00:11:54,800
and tim peake will be ev2

332
00:12:00,069 --> 00:11:57,440
who has the white stripes and this will

333
00:12:02,710 --> 00:12:00,079
be mr peak's first eva

334
00:12:05,750 --> 00:12:02,720
mr coper's third eva when we when we

335
00:12:09,829 --> 00:12:07,430
kenny talked a little bit about

336
00:12:12,310 --> 00:12:09,839
the ssu itself if you could throw the

337
00:12:13,509 --> 00:12:12,320
graphic up that shows the the space

338
00:12:15,269 --> 00:12:13,519

station

339
00:12:17,990 --> 00:12:15,279
so the the little circle in the center

340
00:12:19,269 --> 00:12:18,000
of the station is where the airlock is

341
00:12:19,990 --> 00:12:19,279
that's where the crew is going to come

342
00:12:21,670 --> 00:12:20,000
out

343
00:12:23,110 --> 00:12:21,680
and then they're going to translate all

344
00:12:24,870 --> 00:12:23,120
the way down the truss all the way to

345
00:12:27,269 --> 00:12:24,880
the end of this very starboard end of

346
00:12:30,949 --> 00:12:27,279
the truss which is where the sequential

347
00:12:33,750 --> 00:12:30,959
shunt unit itself is located the iss

348
00:12:34,550 --> 00:12:33,760
is powered by solar rays solar energy

349
00:12:36,310 --> 00:12:34,560
only

350
00:12:38,550 --> 00:12:36,320
and there you can see the

351
00:12:41,750 --> 00:12:38,560
eight pairs of solar arrays that we have

352
00:12:44,710 --> 00:12:41,760
for powering uh all the iss loads

353
00:12:46,069 --> 00:12:44,720
the the ssu that we're after is on the

354
00:12:48,150 --> 00:12:46,079
one bravo

355
00:12:50,710 --> 00:12:48,160
channel the channels are labeled one

356
00:12:52,949 --> 00:12:50,720
alpha one bravo all the way through four

357
00:12:54,870 --> 00:12:52,959
bravo so there are eight channels

358
00:12:56,150 --> 00:12:54,880
uh we can operate the station as

359
00:12:58,790 --> 00:12:56,160
kingstead

360
00:13:00,949 --> 00:12:58,800
on seven channels is it's very much like

361
00:13:05,430 --> 00:13:00,959
your

362
00:13:07,030 --> 00:13:05,440
energy to turn on these very bright

363
00:13:08,389 --> 00:13:07,040

lights that i'm looking into here for

364
00:13:10,870 --> 00:13:08,399
example

365
00:13:13,829 --> 00:13:10,880
they might have multiple power

366
00:13:15,110 --> 00:13:13,839
generation facilities windmill or wind

367
00:13:16,230 --> 00:13:15,120
turbines or

368
00:13:19,590 --> 00:13:16,240
or

369
00:13:21,670 --> 00:13:19,600
one of those plants needs to be shut

370
00:13:23,829 --> 00:13:21,680
down that doesn't turn off this light

371
00:13:25,829 --> 00:13:23,839
same config that we have for the iss we

372
00:13:27,590 --> 00:13:25,839
have eight power channels we can support

373
00:13:29,350 --> 00:13:27,600
all the loads that we need to

374
00:13:30,790 --> 00:13:29,360
with only seven but it would be much

375
00:13:32,470 --> 00:13:30,800
better if we could get back to our

376
00:13:34,949 --> 00:13:32,480
nominal config of eight

377
00:13:37,670 --> 00:13:34,959
that's the primary objective of this eva

378
00:13:40,069 --> 00:13:37,680
is to go out and swap out that ssu the

379
00:13:41,829 --> 00:13:40,079
ssu failure prevents us from using the

380
00:13:43,829 --> 00:13:41,839
1v channel

381
00:13:45,590 --> 00:13:43,839
then as kenny said we have a couple of

382
00:13:47,350 --> 00:13:45,600
other activities that we will do during

383
00:13:48,870 --> 00:13:47,360
the eva to round it out

384
00:13:50,550 --> 00:13:48,880
and uh

385
00:13:52,470 --> 00:13:50,560
i'm looking forward to go do this on

386
00:13:54,710 --> 00:13:52,480
friday with that i think i'm going to

387
00:13:56,550 --> 00:13:54,720
turn it over here to paul dumb who is my

388
00:13:57,910 --> 00:13:56,560

lead eva officer and he's going to tell

389
00:14:00,150 --> 00:13:57,920
you a little bit more of the details

390
00:14:01,670 --> 00:14:00,160
about the activities that we'll be doing

391
00:14:03,590 --> 00:14:01,680
all right well before i jump into the

392
00:14:05,269 --> 00:14:03,600
details of the activities i'd like to

393
00:14:08,150 --> 00:14:05,279
mention that tim and tim have gotten to

394
00:14:10,470 --> 00:14:08,160
practice most of these tasks in the nbl

395
00:14:12,150 --> 00:14:10,480
the neutral buoyancy laboratory uh

396
00:14:14,310 --> 00:14:12,160
before they launched and they've also

397
00:14:15,910 --> 00:14:14,320
been studying uh products and procedures

398
00:14:17,350 --> 00:14:15,920
we've uplinked since they've been on

399
00:14:20,389 --> 00:14:17,360
orbit to get ready

400
00:14:22,949 --> 00:14:20,399
we have a brief video clip of tim peake

401
00:14:24,150 --> 00:14:22,959
practicing using a virtual reality

402
00:14:26,389 --> 00:14:24,160
trainer

403
00:14:28,150 --> 00:14:26,399
to practice some contingency response

404
00:14:30,310 --> 00:14:28,160
during the eva

405
00:14:33,030 --> 00:14:30,320
now as has been mentioned one of the key

406
00:14:34,310 --> 00:14:33,040
challenges of uh replacing the

407
00:14:36,389 --> 00:14:34,320
ssu

408
00:14:38,949 --> 00:14:36,399
is that it has to happen at night uh

409
00:14:41,350 --> 00:14:38,959
because we need to protect the crew from

410
00:14:43,110 --> 00:14:41,360
the power that would come from the array

411
00:14:44,629 --> 00:14:43,120
um and so this time pressure means it's

412
00:14:45,590 --> 00:14:44,639
critical that the crew is ready to step

413
00:14:47,670 --> 00:14:45,600

into con

414
00:14:49,990 --> 00:14:47,680
contingency procedures quickly if

415
00:14:52,310 --> 00:14:50,000
necessary so the crew has studied hard

416
00:14:54,470 --> 00:14:52,320
and they are ready to go

417
00:14:56,710 --> 00:14:54,480
i now like to go to a video animation in

418
00:15:01,590 --> 00:14:56,720
the eva which shows some details of how

419
00:15:06,870 --> 00:15:03,670
so we're starting by zooming in on the

420
00:15:10,710 --> 00:15:06,880
airlock this is where ev1 and ev2 will

421
00:15:15,590 --> 00:15:13,509
ev1 will egress first he'll be the one

422
00:15:17,269 --> 00:15:15,600
wearing the red stripes

423
00:15:20,069 --> 00:15:17,279
and he'll bring some tools and equipment

424
00:15:22,710 --> 00:15:20,079
for the ssu r and r with him

425
00:15:24,629 --> 00:15:22,720
he'll be followed by ev2 tim peake in

426
00:15:27,189 --> 00:15:24,639
the white stripes tim peake will be

427
00:15:28,710 --> 00:15:27,199
carrying their spare ssu out to the work

428
00:15:30,470 --> 00:15:28,720
site

429
00:15:32,389 --> 00:15:30,480
before the crew leave the vicinity of

430
00:15:33,829 --> 00:15:32,399
the airlock they'll take a few moments

431
00:15:35,829 --> 00:15:33,839
to temp stow some other tools and

432
00:15:37,269 --> 00:15:35,839
equipment for subsequent eva tasks on

433
00:15:39,189 --> 00:15:37,279
the outside the airlock where they're

434
00:15:41,350 --> 00:15:39,199
easily accessible

435
00:15:43,110 --> 00:15:41,360
once that's complete ev1 will translate

436
00:15:45,189 --> 00:15:43,120
to the starboard cedar cart where he

437
00:15:47,509 --> 00:15:45,199
will retrieve a foot restraint which

438
00:15:51,430 --> 00:15:47,519

he'll use for work site stabilization at

439
00:15:55,189 --> 00:15:53,670
once he has retrieved the foot restraint

440
00:15:56,710 --> 00:15:55,199
he will connect the safety tether

441
00:15:58,870 --> 00:15:56,720
anchors for both crew members to

442
00:15:59,829 --> 00:15:58,880
handrails on the end of the s1 truss

443
00:16:01,430 --> 00:15:59,839
segment

444
00:16:03,030 --> 00:16:01,440
connecting the safety tethers anchors

445
00:16:05,189 --> 00:16:03,040
out here will enable them to reach all

446
00:16:06,829 --> 00:16:05,199
the way to the ssu worksite which is on

447
00:16:09,990 --> 00:16:06,839
the far end of the

448
00:16:12,069 --> 00:16:10,000
truss ev-1 will then translate to the

449
00:16:13,749 --> 00:16:12,079
ssu worksite

450
00:16:15,030 --> 00:16:13,759
where he will install and set up the

451
00:16:17,110 --> 00:16:15,040
foot restraint

452
00:16:19,910 --> 00:16:17,120
positioning it to give him good access

453
00:16:21,910 --> 00:16:19,920
to the ssu itself

454
00:16:23,509 --> 00:16:21,920
once that's complete he'll stow the

455
00:16:28,470 --> 00:16:23,519
tools and equipment he brought with him

456
00:16:35,189 --> 00:16:31,189
meanwhile ev2 will also translate to the

457
00:16:39,030 --> 00:16:37,269
and when he arrives he will work to stow

458
00:16:42,389 --> 00:16:39,040
this spare ssu

459
00:16:44,069 --> 00:16:42,399
where it's within easy reach for the r r

460
00:16:46,949 --> 00:16:44,079
he'll then position himself where he can

461
00:16:48,710 --> 00:16:46,959
get good visuals on the ssu work site

462
00:16:51,030 --> 00:16:48,720
and easily access the tools and

463
00:16:54,389 --> 00:16:51,040

equipment that have been brought out

464
00:16:56,470 --> 00:16:54,399
ev1 will ingress the foot restraint

465
00:16:59,670 --> 00:16:56,480
and verify that he's in a good position

466
00:17:01,590 --> 00:16:59,680
for the ssu rnr

467
00:17:02,470 --> 00:17:01,600
crew will wait for the beginning of

468
00:17:04,230 --> 00:17:02,480
night

469
00:17:05,909 --> 00:17:04,240
and when that occurs they'll begin the

470
00:17:08,309 --> 00:17:05,919
ssu rnr

471
00:17:10,949 --> 00:17:08,319
ev1 will remove the failed ssu and

472
00:17:13,189 --> 00:17:10,959
present it to ev2 for inspection

473
00:17:15,669 --> 00:17:13,199
then stow it on his brt so it's out of

474
00:17:20,870 --> 00:17:15,679
the way as the crew retrieves the spare

475
00:17:25,110 --> 00:17:22,470
ev-1 will then

476
00:17:29,510 --> 00:17:25,120
install the spare ssu

477
00:17:34,310 --> 00:17:31,750
once that's complete the crew will work

478
00:17:36,710 --> 00:17:34,320
together to put the failed ssu back in

479
00:17:38,150 --> 00:17:36,720
the bag that the spare ssu originally

480
00:17:41,830 --> 00:17:38,160
came out in

481
00:17:44,230 --> 00:17:41,840
which ev2 will carry back to the airlock

482
00:17:46,230 --> 00:17:44,240
ev1 will work to clean up the work site

483
00:17:48,390 --> 00:17:46,240
and then we'll follow ev2 back to the

484
00:17:49,909 --> 00:17:48,400
airlock dropping off the foot restraint

485
00:17:52,070 --> 00:17:49,919
on his way

486
00:17:55,430 --> 00:17:52,080
ev2 will place the failed ssu back

487
00:17:56,870 --> 00:17:55,440
inside the airlock and be joined by ev1

488
00:17:58,950 --> 00:17:56,880

ev1 will chain

489
00:18:01,510 --> 00:17:58,960
trade out some equipment and then begin

490
00:18:03,430 --> 00:18:01,520
his translation to the npv worksite for

491
00:18:05,669 --> 00:18:03,440
the next task

492
00:18:07,990 --> 00:18:05,679
on the way to this work site

493
00:18:10,870 --> 00:18:08,000
ev1 will stop and drop a cable on the

494
00:18:13,510 --> 00:18:10,880
support side of z1 it will be waiting

495
00:18:15,669 --> 00:18:13,520
here for ev2 to connect later in the eva

496
00:18:17,830 --> 00:18:15,679
then ev1 will continue to the npv this

497
00:18:19,669 --> 00:18:17,840
is a non-propulsive vent work site where

498
00:18:21,590 --> 00:18:19,679
he'll be installing this non-propulsive

499
00:18:23,909 --> 00:18:21,600
vent

500
00:18:25,909 --> 00:18:23,919
in order to install the npv he will

501
00:18:27,510 --> 00:18:25,919
first remove a cover plate that was

502
00:18:31,750 --> 00:18:27,520
installed on the same location where the

503
00:18:34,310 --> 00:18:31,760
npv goes and then place the npv on the

504
00:18:37,029 --> 00:18:34,320
end of node 3. here we have some nbl

505
00:18:39,190 --> 00:18:37,039
video of the crew practicing this task

506
00:18:41,990 --> 00:18:39,200
you can see that the clearance between

507
00:18:45,909 --> 00:18:42,000
node 3 and pmm is very tight making this

508
00:18:48,630 --> 00:18:45,919
a challenging work site for the ev crew

509
00:18:50,950 --> 00:18:48,640
once installation of the npv is complete

510
00:18:52,150 --> 00:18:50,960
ev1 will translate to the aft side of

511
00:18:56,150 --> 00:18:52,160
the vehicle

512
00:18:58,950 --> 00:18:56,160
and specifically to the aft side of pma3

513
00:19:00,470 --> 00:18:58,960

here he will release a pma3 launch

514
00:19:02,630 --> 00:19:00,480
restraint bracket

515
00:19:04,950 --> 00:19:02,640
this will free some cables which will be

516
00:19:07,430 --> 00:19:04,960
disconnected on a subsequent eva

517
00:19:10,710 --> 00:19:07,440
allowing the pma-3 to be relocated to an

518
00:19:13,430 --> 00:19:10,720
alternate location on space station

519
00:19:15,510 --> 00:19:13,440
once this is complete ev1 will translate

520
00:19:17,270 --> 00:19:15,520
back to the airlock where he will drop

521
00:19:18,470 --> 00:19:17,280
off the tools and equipment he used for

522
00:19:20,390 --> 00:19:18,480
the npv

523
00:19:22,870 --> 00:19:20,400
and pick up an empty bag which he will

524
00:19:25,830 --> 00:19:22,880
use for the retrieval of the cp9

525
00:19:27,830 --> 00:19:25,840
luminaire so that's camera port 9

526
00:19:30,070 --> 00:19:27,840
the light has some burned out light

527
00:19:32,150 --> 00:19:30,080
bulbs so he'll translate out to this

528
00:19:34,070 --> 00:19:32,160
work site

529
00:19:36,230 --> 00:19:34,080
retrieve the luminaire which you can see

530
00:19:38,549 --> 00:19:36,240
here in white

531
00:19:42,710 --> 00:19:38,559
and he'll place that luminaire in the

532
00:19:46,630 --> 00:19:44,310
once he has retrieved the lemonaire

533
00:19:48,390 --> 00:19:46,640
he'll do a few cleanup tasks at the work

534
00:19:51,270 --> 00:19:48,400
site and then translate back to the

535
00:19:57,669 --> 00:19:54,950
meanwhile ev2 will have retrieved the

536
00:19:59,990 --> 00:19:57,679
ida cable bag so this bag contains a

537
00:20:02,549 --> 00:20:00,000
cable which hat which will be used to

538
00:20:05,190 --> 00:20:02,559

provide power and data to the ida and

539
00:20:07,270 --> 00:20:05,200
international docking adapter

540
00:20:08,789 --> 00:20:07,280
ev2 will translate to the nader side of

541
00:20:10,710 --> 00:20:08,799
the lab

542
00:20:12,149 --> 00:20:10,720
attempt stow the cable bag and begin

543
00:20:14,230 --> 00:20:12,159
routing the cable

544
00:20:16,549 --> 00:20:14,240
first he'll route a leg of it aft to

545
00:20:19,190 --> 00:20:16,559
node 1 and connect on the nader side of

546
00:20:21,430 --> 00:20:19,200
node 1.

547
00:20:23,270 --> 00:20:21,440
he'll then retrieve the epic mdm leg of

548
00:20:24,470 --> 00:20:23,280
this cable and route it zenith on the

549
00:20:27,110 --> 00:20:24,480
lab

550
00:20:29,270 --> 00:20:27,120
and then port across the vehicle

551
00:20:31,590 --> 00:20:29,280
as you can see from this flyby one of

552
00:20:33,190 --> 00:20:31,600
the key challenges ev2 tim peake will

553
00:20:35,029 --> 00:20:33,200
face during this portion of the eva will

554
00:20:36,710 --> 00:20:35,039
be the tightness of the translation path

555
00:20:41,350 --> 00:20:36,720
and the number of other cables that

556
00:20:46,630 --> 00:20:43,270
once he has completed routing the cable

557
00:20:49,110 --> 00:20:46,640
to the port side of z1 he will connect

558
00:20:51,750 --> 00:20:49,120
it to the white uh to the epic mdm cable

559
00:20:53,590 --> 00:20:51,760
which ev1 left for him earlier on the

560
00:20:55,590 --> 00:20:53,600
eva

561
00:20:58,710 --> 00:20:55,600
he'll also make two connections of the

562
00:21:00,870 --> 00:20:58,720
epic mdm cable two pigtails that were

563
00:21:06,710 --> 00:21:00,880

left out on another cable called the mlm

564
00:21:12,710 --> 00:21:09,029
once this is complete he will return to

565
00:21:17,510 --> 00:21:14,710
and retrieve the third and final leg of

566
00:21:19,590 --> 00:21:17,520
the ida cable which he'll route forward

567
00:21:21,430 --> 00:21:19,600
along the lab and then zenith and

568
00:21:23,110 --> 00:21:21,440
forward on node 2

569
00:21:25,669 --> 00:21:23,120
leaving it for eventual connection to

570
00:21:27,510 --> 00:21:25,679
the international docking adapter

571
00:21:29,350 --> 00:21:27,520
once this is complete he will clean up

572
00:21:32,390 --> 00:21:29,360
his work site and return to the airlock

573
00:21:34,230 --> 00:21:32,400
and that will conclude the eva

574
00:21:36,549 --> 00:21:34,240
all right well now i have a couple items

575
00:21:38,950 --> 00:21:36,559
i brought with me related to the ssu r r

576
00:21:40,950 --> 00:21:38,960
that i'd like to show you the first is

577
00:21:43,110 --> 00:21:40,960
this bolt which is called an acme bolt

578
00:21:45,510 --> 00:21:43,120
it's the type of bolt that holds the ssu

579
00:21:47,029 --> 00:21:45,520
into the space station

580
00:21:49,669 --> 00:21:47,039
this is the stanchion which has the

581
00:21:51,270 --> 00:21:49,679
threads which the bolt attaches to

582
00:21:53,029 --> 00:21:51,280
so if everything goes smoothly it's as

583
00:21:55,110 --> 00:21:53,039
simple simple as turning a bolt to

584
00:21:57,190 --> 00:21:55,120
install the ssu

585
00:21:58,549 --> 00:21:57,200
however we've had some difficulties on

586
00:22:02,950 --> 00:21:58,559
previous

587
00:22:04,310 --> 00:22:02,960
boxes that use this type of bolt so

588
00:22:05,990 --> 00:22:04,320

we've had the crew make up a number of

589
00:22:08,070 --> 00:22:06,000
contingency tools which they could use

590
00:22:09,830 --> 00:22:08,080
if they encounter difficulty one of them

591
00:22:12,390 --> 00:22:09,840
i'd like to show you is called for

592
00:22:14,470 --> 00:22:12,400
obvious reasons the toothbrush tool so

593
00:22:16,950 --> 00:22:14,480
if there were difficulties if there was

594
00:22:19,029 --> 00:22:16,960
debris for example in the threads of the

595
00:22:20,789 --> 00:22:19,039
where the ssu installs the crew could

596
00:22:22,390 --> 00:22:20,799
use this tool to clean and lubricate

597
00:22:23,750 --> 00:22:22,400
those threads

598
00:22:26,789 --> 00:22:23,760
and that hopefully would make it easier

599
00:22:28,470 --> 00:22:26,799
for them to install the spare ssu

600
00:22:30,310 --> 00:22:28,480
now before i turn it back over to dan

601
00:22:32,390 --> 00:22:30,320
i'd like to recognize a couple of team

602
00:22:35,029 --> 00:22:32,400
members who've made this eva possible on

603
00:22:37,909 --> 00:22:35,039
the eva execution team we have devin

604
00:22:40,230 --> 00:22:37,919
bolch brian alpert james galstad and

605
00:22:41,830 --> 00:22:40,240
sarah corona and on our eva increment

606
00:22:44,549 --> 00:22:41,840
team who've helped prepare the suits and

607
00:22:46,310 --> 00:22:44,559
tools we've got jackie cagey sandy moore

608
00:22:47,669 --> 00:22:46,320
and costa maverietas

609
00:22:48,789 --> 00:22:47,679
with that i'll turn it back over to you

610
00:22:50,950 --> 00:22:48,799
dan

611
00:22:53,430 --> 00:22:50,960
all right thanks paul thanks kenny and

612
00:22:55,590 --> 00:22:53,440
royce right now we will open it up for

613
00:22:57,430 --> 00:22:55,600

questions just a reminder if you're on

614
00:22:59,990 --> 00:22:57,440
the phone bridge at this point you need

615
00:23:02,310 --> 00:23:00,000
to press star one if you have a question

616
00:23:03,830 --> 00:23:02,320
to get into our queue we're gonna start

617
00:23:05,909 --> 00:23:03,840
here in the room and then go to the

618
00:23:08,870 --> 00:23:05,919
phones i'm gonna start left from right

619
00:23:10,390 --> 00:23:08,880
like i always do we'll go with you mark

620
00:23:12,630 --> 00:23:10,400
hey thank you mark

621
00:23:14,870 --> 00:23:12,640
caro for aviation week

622
00:23:16,470 --> 00:23:14,880
uh it's best you know and i realize you

623
00:23:18,149 --> 00:23:16,480
addressed some of this in the opening

624
00:23:19,110 --> 00:23:18,159
remarks but

625
00:23:25,350 --> 00:23:19,120
are you

626
00:23:27,830 --> 00:23:25,360
arrival and even roughly

627
00:23:28,789 --> 00:23:27,840
when do you think you can relocate pma3

628
00:23:32,549 --> 00:23:28,799
if you're

629
00:23:35,510 --> 00:23:33,750
as far as

630
00:23:38,789 --> 00:23:35,520
when we're going to try to

631
00:23:41,110 --> 00:23:38,799
try to fly the ida i think

632
00:23:42,549 --> 00:23:41,120
you know over the next uh week or so i

633
00:23:43,669 --> 00:23:42,559
mean our focus right now is really

634
00:23:45,269 --> 00:23:43,679
trying to get

635
00:23:47,029 --> 00:23:45,279
it spacex 8

636
00:23:48,630 --> 00:23:47,039
which which doesn't have the idea it'll

637
00:23:52,549 --> 00:23:48,640
be the follow on flight which we refer

638
00:23:56,710 --> 00:23:54,470

clearly the flight program that we have

639
00:23:57,590 --> 00:23:56,720
today is is out to date out of date and

640
00:24:01,750 --> 00:23:57,600
we're

641
00:24:03,510 --> 00:24:01,760
with our spacex colleagues they have

642
00:24:05,990 --> 00:24:03,520
other launches they need to support

643
00:24:07,350 --> 00:24:06,000
we're also interested in the and uh and

644
00:24:08,789 --> 00:24:07,360
those guys being able to get the data

645
00:24:12,470 --> 00:24:08,799
they need we don't want to pressure them

646
00:24:15,350 --> 00:24:12,480
into into trying to get to uh get to get

647
00:24:18,710 --> 00:24:15,360
to launch uh for for uh for the dragon

648
00:24:19,590 --> 00:24:18,720
so um in terms of of when the idea might

649
00:24:21,669 --> 00:24:19,600
fly

650
00:24:23,269 --> 00:24:21,679
i guess i'll beg off on that question

651
00:24:25,350 --> 00:24:23,279
let us finish some of that coordination

652
00:24:27,269 --> 00:24:25,360
with those guys and we'll uh we'll get

653
00:24:28,549 --> 00:24:27,279
that out to you here in the in the short

654
00:24:32,549 --> 00:24:28,559
in short order

655
00:24:36,070 --> 00:24:32,559
it's a 2016 activity absolutely yeah

656
00:24:38,070 --> 00:24:36,080
yes uh again i i think uh from a program

657
00:24:39,990 --> 00:24:38,080
perspective seeing these guys fly in

658
00:24:43,430 --> 00:24:40,000
december and having the good success in

659
00:24:47,269 --> 00:24:43,440
their their post flight review last week

660
00:24:49,190 --> 00:24:47,279
again all all very encouraging and and

661
00:24:50,870 --> 00:24:49,200
again they've got a couple more flights

662
00:24:53,750 --> 00:24:50,880
they want to try to fly here in in

663
00:24:55,110 --> 00:24:53,760

relatively short order and and we're uh

664
00:24:57,190 --> 00:24:55,120
we're in those discussions with them

665
00:24:59,430 --> 00:24:57,200
right now trying to lay out the plan

666
00:25:02,789 --> 00:24:59,440
for the rest of the year so absolutely

667
00:25:04,710 --> 00:25:02,799
ida ii we're looking at this year we're

668
00:25:07,269 --> 00:25:04,720
starting to put our eba plans in place

669
00:25:10,710 --> 00:25:07,279
to to target when we we think it might

670
00:25:13,190 --> 00:25:10,720
be there as far as pma 3

671
00:25:15,269 --> 00:25:13,200
we can we can try to do that at any

672
00:25:16,789 --> 00:25:15,279
point here during the year and i mean

673
00:25:18,310 --> 00:25:16,799
that's that's a matter of just doing the

674
00:25:21,909 --> 00:25:18,320
eba planning

675
00:25:23,990 --> 00:25:21,919
to move pma three if i had to

676
00:25:27,110 --> 00:25:24,000
throw a spit ball at a schedule right

677
00:25:28,470 --> 00:25:27,120
now i would say out in the fall sometime

678
00:25:30,470 --> 00:25:28,480
we might take a

679
00:25:31,909 --> 00:25:30,480
take a look at trying to do it but to be

680
00:25:34,870 --> 00:25:31,919
honest with you mark that would that

681
00:25:37,269 --> 00:25:34,880
would just be a a guess at this point

682
00:25:41,350 --> 00:25:37,279
so it won't be any any time in the near

683
00:25:43,190 --> 00:25:41,360
in the spring and early summer for sure

684
00:25:45,909 --> 00:25:43,200
okay bill

685
00:25:48,630 --> 00:25:45,919
uh bill harvey cbs for royce um

686
00:25:50,470 --> 00:25:48,640
what is the the sparing situation on

687
00:25:52,070 --> 00:25:50,480
ssu since you've this is the second one

688
00:25:54,149 --> 00:25:52,080

that's failed is there anything generic

689
00:25:56,149 --> 00:25:54,159
are they totally independent failures do

690
00:25:57,350 --> 00:25:56,159
you think um and then when do you hope

691
00:25:58,470 --> 00:25:57,360
to be able to get a spare up and i've

692
00:25:59,590 --> 00:25:58,480
got to follow

693
00:26:02,630 --> 00:25:59,600
so the

694
00:26:04,950 --> 00:26:02,640
the 3a ssu that we did in eva 28 we

695
00:26:06,630 --> 00:26:04,960
brought that one to the ground

696
00:26:09,669 --> 00:26:06,640
which was good so we could get it back

697
00:26:12,230 --> 00:26:09,679
into a post-mortem on it

698
00:26:14,710 --> 00:26:12,240
that particular ssu

699
00:26:17,350 --> 00:26:14,720
actually failed twice on us the first

700
00:26:19,350 --> 00:26:17,360
time it failed we managed to recover it

701
00:26:21,190 --> 00:26:19,360
failed originally in 2012 and we

702
00:26:25,350 --> 00:26:21,200
recovered it and then it fell again in

703
00:26:27,990 --> 00:26:25,360
2014 we did the r r on based on the the

704
00:26:29,909 --> 00:26:28,000
post-mortem that we did on the 3a ssu

705
00:26:33,029 --> 00:26:29,919
once we got it on the ground we don't

706
00:26:36,070 --> 00:26:33,039
think that there's any systemic issue

707
00:26:39,269 --> 00:26:36,080
with the ssus on the vehicle

708
00:26:40,470 --> 00:26:39,279
i would not i don't know the answer is

709
00:26:41,990 --> 00:26:40,480
to whether or not we're going to be able

710
00:26:43,669 --> 00:26:42,000
to get one be back on the ground i'm

711
00:26:45,029 --> 00:26:43,679
sure the program is interested in seeing

712
00:26:47,269 --> 00:26:45,039
if we can find

713
00:26:49,350 --> 00:26:47,279

some space on a dragon vehicle to bring

714
00:26:52,149 --> 00:26:49,360
this other one back to the ground the

715
00:26:54,549 --> 00:26:52,159
ssu that we're going to install is the

716
00:26:56,870 --> 00:26:54,559
is the only remaining ssu that we have

717
00:26:59,190 --> 00:26:56,880
on the vehicle i believe that's true

718
00:27:01,350 --> 00:26:59,200
statement there are no other ssu spares

719
00:27:02,549 --> 00:27:01,360
on the vehicle i believe there's one on

720
00:27:04,149 --> 00:27:02,559
the ground if i remember those

721
00:27:06,470 --> 00:27:04,159
conversations correctly so we'll be

722
00:27:09,029 --> 00:27:06,480
looking at manifest and to get that one

723
00:27:11,350 --> 00:27:09,039
up to iss here eventually

724
00:27:12,789 --> 00:27:11,360
and the second question is it's a

725
00:27:14,950 --> 00:27:12,799
it's the dumb reporter's question but

726
00:27:17,110 --> 00:27:14,960
you do this in an eclipse obviously but

727
00:27:19,269 --> 00:27:17,120
but what's the actual danger since you

728
00:27:21,430 --> 00:27:19,279
guys build everything to such

729
00:27:24,149 --> 00:27:21,440
tolerances anyway i mean what's is it

730
00:27:27,029 --> 00:27:24,159
arcing is it what would happen is

731
00:27:29,029 --> 00:27:27,039
it's a solar it's a solar right right so

732
00:27:31,029 --> 00:27:29,039
it works off of electricity or it

733
00:27:33,269 --> 00:27:31,039
generates electricity out of sunlight

734
00:27:35,510 --> 00:27:33,279
when it's not in sunlight it's not

735
00:27:37,110 --> 00:27:35,520
generating any electricity so what

736
00:27:39,430 --> 00:27:37,120
you're what you're interested in there

737
00:27:40,710 --> 00:27:39,440
in particular for removing the failed

738
00:27:43,029 --> 00:27:40,720

ssu

739
00:27:44,789 --> 00:27:43,039
is because we don't know what actually

740
00:27:46,070 --> 00:27:44,799
caused it to fail it could have a short

741
00:27:47,750 --> 00:27:46,080
inside it

742
00:27:50,310 --> 00:27:47,760
so what we don't want to do is be

743
00:27:52,389 --> 00:27:50,320
removing that with a potential short

744
00:27:54,310 --> 00:27:52,399
that could cause arcing and sparking as

745
00:27:55,510 --> 00:27:54,320
it comes off so we do it during the

746
00:27:57,350 --> 00:27:55,520
night pass

747
00:27:59,269 --> 00:27:57,360
that way we're absolutely guaranteed

748
00:28:01,269 --> 00:27:59,279
that there's no power flowing through

749
00:28:05,430 --> 00:28:01,279
there because there's no sun to generate

750
00:28:09,750 --> 00:28:07,110
robert perlman with collect space i'm

751
00:28:11,510 --> 00:28:09,760
sort of building off that question

752
00:28:13,590 --> 00:28:11,520
night pass is 45 minutes what's the

753
00:28:15,590 --> 00:28:13,600
nominal amount of time that you project

754
00:28:18,630 --> 00:28:15,600
will need for that install

755
00:28:20,789 --> 00:28:18,640
and if you were to run long because of a

756
00:28:23,909 --> 00:28:20,799
problem and and we're approaching

757
00:28:26,470 --> 00:28:23,919
daylight what's the contingency for

758
00:28:27,909 --> 00:28:26,480
when you have to call it off and

759
00:28:29,510 --> 00:28:27,919
and then resume work

760
00:28:31,510 --> 00:28:29,520
so i'll answer the first question about

761
00:28:32,950 --> 00:28:31,520
the night pass and i'll let my eva

762
00:28:35,590 --> 00:28:32,960
officer talk about some of our crib

763
00:28:38,310 --> 00:28:35,600

sheet stuff so the the the night passes

764
00:28:41,750 --> 00:28:38,320
that we're targeting here in in

765
00:28:44,870 --> 00:28:41,760
january are 31 minutes long

766
00:28:47,029 --> 00:28:44,880
based on it's all based on solar beta

767
00:28:49,590 --> 00:28:47,039
uh solar beta at the

768
00:28:51,990 --> 00:28:49,600
for an ssu rnr it needs to be somewhere

769
00:28:55,350 --> 00:28:52,000
between negative and positive 10. we get

770
00:28:57,350 --> 00:28:55,360
to negative 8.5 on january the 15th so

771
00:28:59,669 --> 00:28:57,360
that's our beginning of our maximum

772
00:29:02,950 --> 00:28:59,679
length of our night passes and it's 31

773
00:29:05,269 --> 00:29:02,960
minutes long uh the objective of this

774
00:29:06,470 --> 00:29:05,279
eva is to do the ssu's kenny mentioned

775
00:29:10,710 --> 00:29:06,480
that we

776
00:29:13,029 --> 00:29:10,720
but in reality if we don't get the ssu

777
00:29:14,870 --> 00:29:13,039
done during the first eclipse pass will

778
00:29:17,110 --> 00:29:14,880
fall back to the second eclipse pass or

779
00:29:18,549 --> 00:29:17,120
potentially to the third eclipse pass to

780
00:29:20,470 --> 00:29:18,559
get it done and the rest of that stuff

781
00:29:22,389 --> 00:29:20,480
will just fall off the timeline but i'll

782
00:29:24,230 --> 00:29:22,399
let pilot paul talk about some of the

783
00:29:25,990 --> 00:29:24,240
sheet items that we have planned

784
00:29:27,990 --> 00:29:26,000
yeah so you were asking how long it

785
00:29:30,470 --> 00:29:28,000
would take if if everything goes

786
00:29:32,549 --> 00:29:30,480
completely smoothly probably on the

787
00:29:34,310 --> 00:29:32,559
order of 15 minutes so we do have a

788
00:29:37,669 --> 00:29:34,320

little bit of margin now when we did

789
00:29:40,710 --> 00:29:37,679
this a little over a year ago we used

790
00:29:43,350 --> 00:29:40,720
almost all the margin we have you asked

791
00:29:45,750 --> 00:29:43,360
about uh contingencies and what what

792
00:29:47,750 --> 00:29:45,760
what we were looking at you know there's

793
00:29:49,590 --> 00:29:47,760
uh this fairly simple for the bolt to

794
00:29:51,430 --> 00:29:49,600
thread in and out but what we found that

795
00:29:53,350 --> 00:29:51,440
sometimes we get debris in there

796
00:29:54,549 --> 00:29:53,360
sometimes we've had other challenges so

797
00:29:56,950 --> 00:29:54,559
one of the first things we'd have the

798
00:29:58,549 --> 00:29:56,960
crew do is kind of slow down stop using

799
00:30:00,310 --> 00:29:58,559
a power tool and start using a ratchet

800
00:30:01,990 --> 00:30:00,320
wrench so that they can feel kind of get

801
00:30:04,149 --> 00:30:02,000
a better feel for whether or not this

802
00:30:06,310 --> 00:30:04,159
bolt is binding try and finesse it out

803
00:30:08,149 --> 00:30:06,320
if that doesn't work we have

804
00:30:09,590 --> 00:30:08,159
some other tools out with us larger

805
00:30:11,669 --> 00:30:09,600
wrenches those sorts of things which

806
00:30:13,110 --> 00:30:11,679
will enable us to put more force on here

807
00:30:15,350 --> 00:30:13,120
so that would be our fall black paint

808
00:30:16,630 --> 00:30:15,360
plan and additionally as i mentioned we

809
00:30:19,029 --> 00:30:16,640
have we've had the crew build up a

810
00:30:21,590 --> 00:30:19,039
number of contingency tools of which the

811
00:30:23,909 --> 00:30:21,600
toothbrush tool is one so if when they

812
00:30:25,750 --> 00:30:23,919
got the failed ssu off they noticed that

813
00:30:27,269 --> 00:30:25,760

there was debris damage or we just

814
00:30:29,190 --> 00:30:27,279
thought that they had so much trouble

815
00:30:31,750 --> 00:30:29,200
doing it that there was likely to be

816
00:30:33,430 --> 00:30:31,760
debris in this in this threading we

817
00:30:35,350 --> 00:30:33,440
could use those contingency tools to

818
00:30:37,430 --> 00:30:35,360
clean this stanchion out and give us a

819
00:30:40,230 --> 00:30:37,440
better chance of success uh installing

820
00:30:41,990 --> 00:30:40,240
the spare ssu

821
00:30:43,350 --> 00:30:42,000
if they were to

822
00:30:44,870 --> 00:30:43,360
if you were to run into a situation

823
00:30:46,230 --> 00:30:44,880
where you got the new one installed but

824
00:30:47,669 --> 00:30:46,240
it wasn't bolted down and you were

825
00:30:48,710 --> 00:30:47,679
approaching daylight can you leave it

826
00:30:50,470 --> 00:30:48,720
safely

827
00:30:52,310 --> 00:30:50,480
sitting there and wait for the next pass

828
00:30:54,789 --> 00:30:52,320
or do they have to so we have uh we have

829
00:30:56,389 --> 00:30:54,799
a zone a portion of the bolt turns where

830
00:30:58,070 --> 00:30:56,399
we can safely leave it and we can throw

831
00:31:00,070 --> 00:30:58,080
it basically throw a tether on it just

832
00:31:02,389 --> 00:31:00,080
so we know it's not it's secure

833
00:31:03,830 --> 00:31:02,399
um and there there's one portion where

834
00:31:05,269 --> 00:31:03,840
we don't want it almost connected just

835
00:31:07,269 --> 00:31:05,279
because that puts our electrical pins

836
00:31:09,350 --> 00:31:07,279
close but not quite touching increases

837
00:31:11,350 --> 00:31:09,360
our risk of that arcing and sparking so

838
00:31:14,310 --> 00:31:11,360

we've talked to the crew they know not

839
00:31:16,549 --> 00:31:14,320
to have it almost in to have it only be

840
00:31:19,509 --> 00:31:16,559
beyond a certain point

841
00:31:21,669 --> 00:31:19,519
we also know that we can if if necessary

842
00:31:23,590 --> 00:31:21,679
leave no ssu installed from one eclipse

843
00:31:26,789 --> 00:31:23,600
to another um and that's another

844
00:31:28,389 --> 00:31:26,799
contingency we've looked at as well

845
00:31:30,310 --> 00:31:28,399
okay we're going to go over to the phone

846
00:31:32,230 --> 00:31:30,320
bridge now it looks like first up we

847
00:31:33,750 --> 00:31:32,240
have marcia dunn with the associated

848
00:31:35,269 --> 00:31:33,760
press marcia why don't you go ahead with

849
00:31:37,350 --> 00:31:35,279
your question

850
00:31:40,470 --> 00:31:37,360
yes thank you um could you tell me

851
00:31:41,669 --> 00:31:40,480
please the size of the ssu give or take

852
00:31:43,669 --> 00:31:41,679
and

853
00:31:48,149 --> 00:31:43,679
how many feet will it be from the

854
00:31:53,509 --> 00:31:50,070
okay i'll go ahead and take that one so

855
00:31:54,950 --> 00:31:53,519
the ssu is about two and a half by maybe

856
00:31:56,950 --> 00:31:54,960
a little less than a foot wide and about

857
00:31:58,789 --> 00:31:56,960
a foot and a half deep weighs something

858
00:32:01,110 --> 00:31:58,799
on the order of 200 pounds so it's a

859
00:32:02,630 --> 00:32:01,120
it's a pretty large and bulky uh massive

860
00:32:04,870 --> 00:32:02,640
thing the crew definitely has to take

861
00:32:08,549 --> 00:32:04,880
care of getting it to the work site

862
00:32:10,870 --> 00:32:08,559
um the work site uh itself is on the

863
00:32:12,710 --> 00:32:10,880

order of uh 200 feet or so from the

864
00:32:14,549 --> 00:32:12,720
airlock it's if you were in a straight

865
00:32:16,630 --> 00:32:14,559
line obviously the crew has to translate

866
00:32:18,549 --> 00:32:16,640
around follow structure so it's a little

867
00:32:20,230 --> 00:32:18,559
bit more than that so it's it's about as

868
00:32:22,149 --> 00:32:20,240
far on space station as you can go from

869
00:32:26,070 --> 00:32:22,159
the airlock which certainly raises the

870
00:32:30,310 --> 00:32:27,750
all right well also on the phone bridge

871
00:32:32,470 --> 00:32:30,320
we have jackie from times of london

872
00:32:35,110 --> 00:32:32,480
jackie go ahead with your question

873
00:32:36,630 --> 00:32:35,120
hello thank you um spacewalk always

874
00:32:38,389 --> 00:32:36,640
looks easy but can you tell us a little

875
00:32:40,310 --> 00:32:38,399
about the physical challenges that the

876
00:32:41,669 --> 00:32:40,320
crew go through in performing it for

877
00:32:43,830 --> 00:32:41,679
example

878
00:32:46,549 --> 00:32:43,840
the difficulty of performing fine motor

879
00:32:48,230 --> 00:32:46,559
tasks in thick gloves

880
00:32:49,909 --> 00:32:48,240
and you mentioned as well that they'll

881
00:32:51,350 --> 00:32:49,919
have one spot where they're working in a

882
00:32:52,789 --> 00:32:51,360
tight space

883
00:32:54,549 --> 00:32:52,799
can you just tell us a little bit more

884
00:32:56,389 --> 00:32:54,559
about that and what the risks or

885
00:32:57,590 --> 00:32:56,399
difficulties of that element are thank

886
00:32:59,029 --> 00:32:57,600
you

887
00:32:59,990 --> 00:32:59,039
okay um

888
00:33:02,149 --> 00:33:00,000

so

889
00:33:04,070 --> 00:33:02,159
spacewalking is is challenging you're

890
00:33:06,070 --> 00:33:04,080
you have to wear a spacesuit which is

891
00:33:07,750 --> 00:33:06,080
sort of your own independent spaceship

892
00:33:09,990 --> 00:33:07,760
to protect you from the

893
00:33:11,750 --> 00:33:10,000
harshness of the environment so there's

894
00:33:13,190 --> 00:33:11,760
a trade-off between having as much

895
00:33:15,750 --> 00:33:13,200
protection as possible but still

896
00:33:17,590 --> 00:33:15,760
maintaining mobility so imagine going

897
00:33:19,190 --> 00:33:17,600
out with thick winter gloves on and

898
00:33:20,630 --> 00:33:19,200
trying to do anything that takes fine

899
00:33:22,470 --> 00:33:20,640
dexterity

900
00:33:23,750 --> 00:33:22,480
that's going to be challenging the crew

901
00:33:25,750 --> 00:33:23,760
spends a tremendous amount of time

902
00:33:27,750 --> 00:33:25,760
practicing before they launch

903
00:33:30,310 --> 00:33:27,760
which gives them a benefit but it is

904
00:33:31,830 --> 00:33:30,320
still a challenging thing and uh

905
00:33:34,389 --> 00:33:31,840
and and just overall physically

906
00:33:36,549 --> 00:33:34,399
demanding now we mentioned the end the

907
00:33:37,830 --> 00:33:36,559
mpv and non-propulsive event worksite is

908
00:33:39,269 --> 00:33:37,840
very tight

909
00:33:41,029 --> 00:33:39,279
one of the challenges there is it's

910
00:33:42,870 --> 00:33:41,039
difficult for the crew members to to

911
00:33:45,190 --> 00:33:42,880
actually reach in most likely they're

912
00:33:46,950 --> 00:33:45,200
only going to be able to get one hand on

913
00:33:49,269 --> 00:33:46,960

on the equipment as they're trying to

914
00:33:51,509 --> 00:33:49,279
install it rather than two and as you

915
00:33:53,110 --> 00:33:51,519
can imagine from any time you ever try

916
00:33:54,950 --> 00:33:53,120
to do anything one-handed if your other

917
00:33:58,149 --> 00:33:54,960
hand is occupied it just makes it

918
00:33:59,830 --> 00:33:58,159
significantly more challenging

919
00:34:01,990 --> 00:33:59,840
all right do we have any follow-ups here

920
00:34:05,990 --> 00:34:02,000
in the room mark

921
00:34:08,149 --> 00:34:06,000
yes i'm mark crowe for aviation week

922
00:34:11,109 --> 00:34:08,159
which of the ida

923
00:34:15,270 --> 00:34:11,119
future ida locations on node 2 is the

924
00:34:17,109 --> 00:34:15,280
beneficiary of the cabling work

925
00:34:19,190 --> 00:34:17,119
this will be ida

926
00:34:21,430 --> 00:34:19,200
it'll actually be ida 3 which will be

927
00:34:23,430 --> 00:34:21,440
the one on node 2 zenith is the one that

928
00:34:25,349 --> 00:34:23,440
is being supplied by the white green

929
00:34:27,829 --> 00:34:25,359
cable that we're routing

930
00:34:29,030 --> 00:34:27,839
and just a short follow-up too i got

931
00:34:32,230 --> 00:34:29,040
lost on

932
00:34:34,389 --> 00:34:32,240
which module the vent is on i think you

933
00:34:39,829 --> 00:34:34,399
were very clear at just what right it is

934
00:34:42,629 --> 00:34:40,790
okay

935
00:34:45,190 --> 00:34:42,639
just a really quick one for me when is

936
00:34:47,349 --> 00:34:45,200
ida cabling done other than

937
00:34:49,190 --> 00:34:47,359
hooking it up when you move pma3 and all

938
00:34:51,109 --> 00:34:49,200

of that when is is this the last cable

939
00:34:53,109 --> 00:34:51,119
run or is there more beyond this

940
00:34:57,109 --> 00:34:53,119
so this will be the last cable to be

941
00:34:58,550 --> 00:34:57,119
deployed eva um once pma 3 is relocated

942
00:35:00,150 --> 00:34:58,560
obviously the cables then have to route

943
00:35:02,550 --> 00:35:00,160
from where we've temp stowed them up to

944
00:35:04,150 --> 00:35:02,560
the final connection locations

945
00:35:08,950 --> 00:35:04,160
but this will be the last cable that

946
00:35:12,630 --> 00:35:11,109
okay i think marsha on the phone bridge

947
00:35:13,750 --> 00:35:12,640
might have a follow-up marcia do you

948
00:35:15,910 --> 00:35:13,760
have one

949
00:35:18,230 --> 00:35:15,920
yes i have two if you don't mind yeah go

950
00:35:20,150 --> 00:35:18,240
for it you have you have two tims how

951
00:35:22,310 --> 00:35:20,160
are you going to distinguish between the

952
00:35:24,470 --> 00:35:22,320
two in conversation during the spacewalk

953
00:35:25,750 --> 00:35:24,480
that's my first question

954
00:35:28,230 --> 00:35:25,760
so the

955
00:35:30,150 --> 00:35:28,240
it's effectively the same as we've been

956
00:35:31,109 --> 00:35:30,160
doing it on on uh

957
00:35:34,470 --> 00:35:31,119
all the

958
00:35:36,390 --> 00:35:34,480
work inside the station we we will start

959
00:35:39,670 --> 00:35:36,400
most of the conversations with

960
00:35:41,750 --> 00:35:39,680
for tim peake or for tim copra but then

961
00:35:44,790 --> 00:35:41,760
as the conversation continues you don't

962
00:35:45,910 --> 00:35:44,800
need to keep saying their last name

963
00:35:48,069 --> 00:35:45,920

read as

964
00:35:50,310 --> 00:35:48,079
has worked with

965
00:35:52,950 --> 00:35:50,320
both the crew as a capcom so so this

966
00:35:55,030 --> 00:35:52,960
will be just fine

967
00:35:57,109 --> 00:35:55,040
yes and if you don't mind for kenny todd

968
00:35:58,950 --> 00:35:57,119
please i'm wondering

969
00:36:00,870 --> 00:35:58,960
regarding regarding one-year cruise when

970
00:36:04,069 --> 00:36:00,880
do you anticipate uh

971
00:36:05,990 --> 00:36:04,079
having another one-year crew go up

972
00:36:08,870 --> 00:36:06,000
that's a good question marcia there's

973
00:36:10,470 --> 00:36:08,880
still a lot of discussion uh here within

974
00:36:12,310 --> 00:36:10,480
within the partnership

975
00:36:15,589 --> 00:36:12,320
about uh about the scheduling for

976
00:36:17,190 --> 00:36:15,599
another uh one-year crew so um i would

977
00:36:19,030 --> 00:36:17,200
tell you that's uh still

978
00:36:22,069 --> 00:36:19,040
still very much a topic of discussion

979
00:36:23,750 --> 00:36:22,079
internally and and uh and uh today it

980
00:36:27,990 --> 00:36:23,760
would be hard to to put my finger on

981
00:36:31,990 --> 00:36:29,670
all right thank you marcia and i think

982
00:36:33,430 --> 00:36:32,000
that'll do it for today's spacewalk

983
00:36:35,109 --> 00:36:33,440
preview briefing

984
00:36:37,670 --> 00:36:35,119
of course you can watch the spacewalk

985
00:36:40,069 --> 00:36:37,680
live as it happens on nasa tv that

986
00:36:42,870 --> 00:36:40,079
broadcast time is going to start at 5 30

987
00:36:44,550 --> 00:36:42,880
a.m central time 6 30 a.m eastern so

988
00:36:46,550 --> 00:36:44,560

it'll be an early morning wake up and

989
00:36:49,109 --> 00:36:46,560
tune in and watch planned six and a half

990
00:36:50,710 --> 00:36:49,119
hour spacewalk for tim copra and tim

991
00:36:52,310 --> 00:36:50,720
peake thank you for joining us today

992
00:36:54,390 --> 00:36:52,320
that'll do it enjoy the rest of your