1
00:00:05,990 --> 00:00:03,990
good afternoon and welcome to nasa's

2
00:00:07,749 --> 00:00:06,000
johnson space center for today's mission

3
00:00:10,549 --> 00:00:07,759
status as well as the mission management

4
00:00:12,470 --> 00:00:10,559
team briefing for the sts-132 flight

5
00:00:14,070 --> 00:00:12,480
today's activities on board the

6
00:00:15,829 --> 00:00:14,080
international space station and spatial

7
00:00:18,310 --> 00:00:15,839
atlantis featured the first of three

8
00:00:21,029 --> 00:00:18,320
planned spacewalks for the mission so to

9
00:00:22,630 --> 00:00:21,039
give us an a briefing about the

10
00:00:25,670 --> 00:00:22,640
activities we have the lead space

11
00:00:28,070 --> 00:00:25,680
station flight director emily nelson

12
00:00:29,349 --> 00:00:28,080
as well as the lead spacewalk officer

13
00:00:31,029 --> 00:00:29,359

lisa shore

14
00:00:33,030 --> 00:00:31,039
and leroy kane to join us from the

15
00:00:35,270 --> 00:00:33,040
mission management team as the chairman

16
00:00:36,950 --> 00:00:35,280
and deputy shuttle program manager

17
00:00:38,389 --> 00:00:36,960
we'll open up with comments as usual and

18
00:00:41,270 --> 00:00:38,399
then take questions here at the johnson

19
00:00:42,790 --> 00:00:41,280
space center and on the phone emily

20
00:00:45,590 --> 00:00:42,800
thanks

21
00:00:47,750 --> 00:00:45,600
today flight day four eva one was of

22
00:00:49,590 --> 00:00:47,760
course the the central piece of work

23
00:00:51,990 --> 00:00:49,600
that we did today the crew

24
00:00:53,590 --> 00:00:52,000
did a fantastic job ran into a couple of

25
00:00:55,750 --> 00:00:53,600
snags along the way

26
00:00:57,350 --> 00:00:55,760
um the ground teams also had some minor

27
00:00:59,110 --> 00:00:57,360
glitches in our systems to work through

28
00:01:01,590 --> 00:00:59,120
and and i think we got through all of

29
00:01:03,830 --> 00:01:01,600
those and had a highly successful day

30
00:01:05,670 --> 00:01:03,840
at a high level we completed the

31
00:01:08,230 --> 00:01:05,680
physical installation and connection of

32
00:01:10,310 --> 00:01:08,240
the spare escant antenna that's going to

33
00:01:12,710 --> 00:01:10,320
be our backup ku system once it's fully

34
00:01:15,109 --> 00:01:12,720
activated we also completed the

35
00:01:17,109 --> 00:01:15,119
installation of our eotp and several of

36
00:01:20,310 --> 00:01:17,119
the get ahead tasks associated with the

37
00:01:23,270 --> 00:01:20,320
the smaller power related pieces of that

38
00:01:26,390 --> 00:01:23,280

device which was attached to our

39
00:01:28,789 --> 00:01:26,400
spdm our dexter manipulator that

40
00:01:30,950 --> 00:01:28,799
attaches to our robotic arm

41
00:01:33,590 --> 00:01:30,960
inside the station the the station crew

42
00:01:35,910 --> 00:01:33,600
was was also very busy today our russian

43
00:01:37,270 --> 00:01:35,920
crewmates were working on

44
00:01:39,350 --> 00:01:37,280
some

45
00:01:40,950 --> 00:01:39,360
preparations for mrm1 installation

46
00:01:43,350 --> 00:01:40,960
tomorrow as well as

47
00:01:45,429 --> 00:01:43,360
fixing some of our oxygen masks that are

48
00:01:46,950 --> 00:01:45,439
on reserve for emergency cases that we

49
00:01:48,389 --> 00:01:46,960
found some problems with a little while

50
00:01:50,149 --> 00:01:48,399
ago

51
00:01:52,950 --> 00:01:50,159
tracy was busy working the robotic arm

52
00:01:54,469 --> 00:01:52,960
all day with peers and

53
00:01:56,069 --> 00:01:54,479
tj was

54
00:01:58,310 --> 00:01:56,079
instrumental to getting the crew out the

55
00:02:00,550 --> 00:01:58,320
door and back in again this evening so

56
00:02:02,310 --> 00:02:00,560
and suici was working heavily with mid

57
00:02:03,830 --> 00:02:02,320
deck transfer all day long making sure

58
00:02:06,069 --> 00:02:03,840
that we get all of our new cargo on

59
00:02:07,429 --> 00:02:06,079
onboard station so it's a busy day for

60
00:02:09,990 --> 00:02:07,439
everyone

61
00:02:11,830 --> 00:02:10,000
eva ran a little bit long as we

62
00:02:13,589 --> 00:02:11,840
worked through some of the issues that

63
00:02:15,350 --> 00:02:13,599

we found and lisa will talk through some

64
00:02:17,350 --> 00:02:15,360
of those in more detail but overall it

65
00:02:19,830 --> 00:02:17,360
was a really very successful day and

66
00:02:21,430 --> 00:02:19,840
we're set up to to end the day on time

67
00:02:22,869 --> 00:02:21,440
so that we can get into mrm1

68
00:02:25,030 --> 00:02:22,879
installation tomorrow which is of course

69
00:02:27,190 --> 00:02:25,040
one of our central mission objectives

70
00:02:29,990 --> 00:02:27,200
for the flight

71
00:02:33,110 --> 00:02:31,750
thanks emily

72
00:02:35,430 --> 00:02:33,120
just like to say

73
00:02:37,830 --> 00:02:35,440
for the eva was pretty much a raging

74
00:02:39,589 --> 00:02:37,840
success we met every one of our major

75
00:02:41,350 --> 00:02:39,599
objectives

76
00:02:43,509 --> 00:02:41,360
these evas were

77
00:02:46,390 --> 00:02:43,519
really hard to or not i want to say hard

78
00:02:48,150 --> 00:02:46,400
but they were a challenge to train

79
00:02:50,070 --> 00:02:48,160
because we could not

80
00:02:53,990 --> 00:02:50,080
complete them end to end really in

81
00:02:56,150 --> 00:02:54,000
either our vr lab or in the nbl so

82
00:02:57,670 --> 00:02:56,160
until we actually perform them

83
00:03:00,070 --> 00:02:57,680
weren't sure

84
00:03:01,990 --> 00:03:00,080
how the timing was going to come out

85
00:03:04,550 --> 00:03:02,000
and the crew just did a fantastic job

86
00:03:07,830 --> 00:03:04,560
they managed to get out the door about

87
00:03:11,830 --> 00:03:09,750
we started out to go out to the pallet

88
00:03:15,030 --> 00:03:11,840

we had to pick up our foot restraints

89
00:03:16,949 --> 00:03:15,040
set that up that all went flawless

90
00:03:20,710 --> 00:03:16,959
the crew was able to release

91
00:03:22,309 --> 00:03:20,720
the boom from the palette with no issues

92
00:03:25,030 --> 00:03:22,319
garrett got to take his big ride with

93
00:03:26,070 --> 00:03:25,040
the boom over there to the z1

94
00:03:27,750 --> 00:03:26,080
again

95
00:03:28,949 --> 00:03:27,760
no issues at all

96
00:03:30,949 --> 00:03:28,959
steve

97
00:03:33,430 --> 00:03:30,959
performed all of his cleanup tasks got

98
00:03:35,750 --> 00:03:33,440
over to the z1 with no issues

99
00:03:37,750 --> 00:03:35,760
we did run into a small hang up

100
00:03:38,869 --> 00:03:37,760
once we went to plant the boom onto the

101
00:03:42,550 --> 00:03:38,879
z1

102
00:03:44,550 --> 00:03:42,560
the bolts that installed the the boom

103
00:03:46,070 --> 00:03:44,560
to that segment of the truss

104
00:03:48,550 --> 00:03:46,080
apparently when they've been originally

105
00:03:50,149 --> 00:03:48,560
backed out years ago the torque used to

106
00:03:51,830 --> 00:03:50,159
do that was a little bit higher so we

107
00:03:54,149 --> 00:03:51,840
did have to bump up

108
00:03:56,149 --> 00:03:54,159
the torque on our power tool just a

109
00:03:58,949 --> 00:03:56,159
little bit to get those bolts to move

110
00:04:02,149 --> 00:03:58,959
once we did no issues

111
00:04:04,630 --> 00:04:02,159
boom is securely installed onto the

112
00:04:06,470 --> 00:04:04,640
z1 truss up there

113
00:04:08,630 --> 00:04:06,480

we anticipated some problems when

114
00:04:10,789 --> 00:04:08,640
garrett went back to

115
00:04:13,030 --> 00:04:10,799
retrieve the dish

116
00:04:14,869 --> 00:04:13,040
we did have a power glitch that shut

117
00:04:17,030 --> 00:04:14,879
down our arm operations

118
00:04:18,710 --> 00:04:17,040
for a short period of time which

119
00:04:20,069 --> 00:04:18,720
put us down a little bit on our timeline

120
00:04:23,909 --> 00:04:20,079
at that point

121
00:04:25,510 --> 00:04:23,919
problem because we had gotten a little

122
00:04:27,270 --> 00:04:25,520
bit ahead because the crew was doing so

123
00:04:28,790 --> 00:04:27,280
well

124
00:04:31,270 --> 00:04:28,800
and then once we were able to pick up

125
00:04:34,310 --> 00:04:31,280
operations again

126
00:04:35,830 --> 00:04:34,320
garrett retrieved that dish no problems

127
00:04:37,749 --> 00:04:35,840
whatsoever

128
00:04:39,430 --> 00:04:37,759
he and piers walked together worked

129
00:04:41,189 --> 00:04:39,440
together very well

130
00:04:42,870 --> 00:04:41,199
to handle the clearance issues to get

131
00:04:43,749 --> 00:04:42,880
the dish out

132
00:04:47,110 --> 00:04:43,759
garrett

133
00:04:49,110 --> 00:04:47,120
did his big flight back over to the z1

134
00:04:51,350 --> 00:04:49,120
and steve had been able to get all of

135
00:04:53,189 --> 00:04:51,360
the power connections complete by the

136
00:04:54,070 --> 00:04:53,199
time garrett showed up so he was up

137
00:04:55,350 --> 00:04:54,080
there

138
00:04:57,670 --> 00:04:55,360

waiting at the top of the boom when

139
00:04:59,270 --> 00:04:57,680
garrett arrived with the dish

140
00:05:01,029 --> 00:04:59,280
they worked together really well again

141
00:05:03,270 --> 00:05:01,039
to gca

142
00:05:05,670 --> 00:05:03,280
the dish down onto the boom

143
00:05:06,870 --> 00:05:05,680
another tricky operation but made it

144
00:05:09,189 --> 00:05:06,880
look easy

145
00:05:11,029 --> 00:05:09,199
and then we ran into one of our

146
00:05:12,070 --> 00:05:11,039
bigger difficulties on the eva when we

147
00:05:14,070 --> 00:05:12,080
went to

148
00:05:15,430 --> 00:05:14,080
drive the four bolts that hold the dish

149
00:05:16,790 --> 00:05:15,440
to the boom

150
00:05:18,950 --> 00:05:16,800
together

151
00:05:20,870 --> 00:05:18,960
the crew noticed that

152
00:05:24,390 --> 00:05:20,880
there was still a little bit of a gap

153
00:05:26,629 --> 00:05:24,400
between the two pieces of hardware

154
00:05:29,029 --> 00:05:26,639
we end up eventually then just

155
00:05:33,029 --> 00:05:29,039
upping the torque on those bolts it was

156
00:05:34,070 --> 00:05:33,039
noticeably more stable once we did that

157
00:05:36,310 --> 00:05:34,080
but we were still a little bit

158
00:05:37,590 --> 00:05:36,320
uncomfortable as far as why we're even

159
00:05:38,550 --> 00:05:37,600
seeing a gap

160
00:05:40,070 --> 00:05:38,560
so

161
00:05:42,310 --> 00:05:40,080
in order to ensure that we were in the

162
00:05:44,150 --> 00:05:42,320
best posture possible for going forward

163
00:05:46,310 --> 00:05:44,160

and that we could resolve

164
00:05:49,029 --> 00:05:46,320
any issues at a later time perhaps even

165
00:05:51,510 --> 00:05:49,039
after sts-132 undocks

166
00:05:54,550 --> 00:05:51,520
the decision was made to put a

167
00:05:57,029 --> 00:05:54,560
cloth tether around the base

168
00:05:59,189 --> 00:05:57,039
of that dish and that would ensure that

169
00:06:00,870 --> 00:05:59,199
no matter what we're good for undock and

170
00:06:04,309 --> 00:06:00,880
any other loads that we might

171
00:06:05,670 --> 00:06:04,319
expect that we would see on orbit

172
00:06:07,510 --> 00:06:05,680
the crew then ran into a little

173
00:06:09,830 --> 00:06:07,520
difficulties we have two electrical

174
00:06:10,950 --> 00:06:09,840
connectors that connect the dish to the

175
00:06:12,550 --> 00:06:10,960
boom

176
00:06:14,390 --> 00:06:12,560
one of them went on with no issue the

177
00:06:15,990 --> 00:06:14,400
second one

178
00:06:18,070 --> 00:06:16,000
seemed we were just having problems

179
00:06:19,909 --> 00:06:18,080
compressing

180
00:06:21,510 --> 00:06:19,919
the soft dock what we call the soft dock

181
00:06:23,189 --> 00:06:21,520
that holds the connectors together

182
00:06:25,510 --> 00:06:23,199
before we actually

183
00:06:27,189 --> 00:06:25,520
throw the final bale they had problems

184
00:06:28,710 --> 00:06:27,199
with that the crew mentioned during the

185
00:06:30,629 --> 00:06:28,720
eba that that thought it might have been

186
00:06:32,230 --> 00:06:30,639
thermal it's hard to say with those

187
00:06:33,510 --> 00:06:32,240
connectors they can be a little bit

188
00:06:35,029 --> 00:06:33,520

finicky

189
00:06:36,950 --> 00:06:35,039
but eventually

190
00:06:38,390 --> 00:06:36,960
through some diligence and hard work

191
00:06:41,189 --> 00:06:38,400
they were able to

192
00:06:43,270 --> 00:06:41,199
get that connector mated

193
00:06:45,590 --> 00:06:43,280
we were in a good posture even if we had

194
00:06:47,189 --> 00:06:45,600
not been able to get that connector

195
00:06:48,550 --> 00:06:47,199
to leave the boom

196
00:06:50,710 --> 00:06:48,560
we would have been able to provide

197
00:06:52,629 --> 00:06:50,720
heater power to that hardware

198
00:06:55,029 --> 00:06:52,639
so even in that case we would have been

199
00:06:56,710 --> 00:06:55,039
in a good situation for leaving future

200
00:06:58,390 --> 00:06:56,720
work for the

201
00:07:01,110 --> 00:06:58,400
stage but we did ended up not having to

202
00:07:06,550 --> 00:07:03,909
we did not remove the gimbal locks

203
00:07:07,589 --> 00:07:06,560
from the eskant as we had hoped we might

204
00:07:08,950 --> 00:07:07,599
do

205
00:07:11,830 --> 00:07:08,960
the reason for that was there were some

206
00:07:13,430 --> 00:07:11,840
still open questions at that point

207
00:07:15,430 --> 00:07:13,440
of whether or not that was a good

208
00:07:16,950 --> 00:07:15,440
configuration

209
00:07:20,629 --> 00:07:16,960
with the question of the small gap

210
00:07:24,790 --> 00:07:22,390
those gimbal locks are still in place at

211
00:07:27,670 --> 00:07:24,800
this time and we will address

212
00:07:29,589 --> 00:07:27,680
on a future eva during this mission or

213
00:07:31,110 --> 00:07:29,599

possibly a stage

214
00:07:32,550 --> 00:07:31,120
when those gimbal locks will come off

215
00:07:35,990 --> 00:07:32,560
and those are just locks that keep the

216
00:07:36,000 --> 00:07:39,270
when it's commanded

217
00:07:42,070 --> 00:07:40,870
after that we had already sent garrett

218
00:07:44,309 --> 00:07:42,080
back to

219
00:07:46,230 --> 00:07:44,319
go retrieve the platform that was

220
00:07:48,869 --> 00:07:46,240
installed onto the dexter

221
00:07:50,390 --> 00:07:48,879
no problems whatsoever doing that

222
00:07:53,350 --> 00:07:50,400
steve was able to meet him over there in

223
00:07:54,230 --> 00:07:53,360
a reasonable amount of time

224
00:07:56,629 --> 00:07:54,240
they

225
00:07:59,029 --> 00:07:56,639
ran into one small

226
00:08:00,550 --> 00:07:59,039
issue with the one of the four

227
00:08:02,150 --> 00:08:00,560
fasteners that holds that system

228
00:08:03,909 --> 00:08:02,160
together again just a little bump in the

229
00:08:05,350 --> 00:08:03,919
torque took care of that

230
00:08:07,670 --> 00:08:05,360
problem um

231
00:08:09,589 --> 00:08:07,680
that platform is now installed and

232
00:08:12,070 --> 00:08:09,599
operational and garrett was even able to

233
00:08:13,430 --> 00:08:12,080
get all the accessory test as emily

234
00:08:16,950 --> 00:08:13,440
mentioned

235
00:08:18,469 --> 00:08:16,960
installed so now we have power to any

236
00:08:21,510 --> 00:08:18,479
hardware items that we might put on that

237
00:08:23,430 --> 00:08:21,520
platform and we can also rotate it

238
00:08:25,589 --> 00:08:23,440

if needed depending on which piece of

239
00:08:26,469 --> 00:08:25,599
hardware we would want to put on it

240
00:08:27,350 --> 00:08:26,479
and

241
00:08:28,230 --> 00:08:27,360
also

242
00:09:16,389 --> 00:08:28,240
a

243
00:09:19,590 --> 00:09:16,399
orbit

244
00:09:23,430 --> 00:09:19,600
um the uh the team uh

245
00:09:25,269 --> 00:09:23,440
lisa's team and emily's entire team

246
00:09:26,870 --> 00:09:25,279
have just done an outstanding job with

247
00:09:28,550 --> 00:09:26,880
with the spacewalk work today as you

248
00:09:29,910 --> 00:09:28,560
know this mission has three very

249
00:09:32,630 --> 00:09:29,920
challenging

250
00:09:35,190 --> 00:09:32,640
um very very full

251
00:09:37,190 --> 00:09:35,200
uh spacewalk days and today was the

252
00:09:39,110 --> 00:09:37,200
first of those so i thought

253
00:09:41,990 --> 00:09:39,120
the team just did an outstanding job uh

254
00:09:44,230 --> 00:09:42,000
pulling together um across the uh

255
00:09:46,470 --> 00:09:44,240
across the entire shuttle and station uh

256
00:09:48,710 --> 00:09:46,480
combined integrated team so

257
00:09:50,550 --> 00:09:48,720
we couldn't be more pleased with how the

258
00:09:52,310 --> 00:09:50,560
mission is going so far

259
00:09:53,590 --> 00:09:52,320
we've had a few glitches here and there

260
00:09:56,070 --> 00:09:53,600
but they're

261
00:09:57,030 --> 00:09:56,080
uh they're not significant in in the

262
00:09:58,949 --> 00:09:57,040
grand

263
00:10:00,710 --> 00:09:58,959

scheme of of the kinds of things we're

264
00:10:02,069 --> 00:10:00,720
trying to accomplish on this doc mission

265
00:10:03,350 --> 00:10:02,079
so

266
00:10:04,949 --> 00:10:03,360
as far as the shuttle is concerned

267
00:10:06,790 --> 00:10:04,959
atlantis continues to perform

268
00:10:09,509 --> 00:10:06,800
exceptional

269
00:10:11,750 --> 00:10:09,519
we don't have any new issues or problems

270
00:10:13,030 --> 00:10:11,760
from when i was last here to to speak

271
00:10:14,630 --> 00:10:13,040
with you

272
00:10:17,430 --> 00:10:14,640
we did talk about a couple of items at

273
00:10:19,590 --> 00:10:17,440
the mission management team today

274
00:10:22,389 --> 00:10:19,600
mostly in the way of status as you know

275
00:10:25,190 --> 00:10:22,399
we have some work ongoing

276
00:10:27,110 --> 00:10:25,200
in terms of trying to

277
00:10:29,190 --> 00:10:27,120
evaluate and

278
00:10:30,949 --> 00:10:29,200
develop a task

279
00:10:34,790 --> 00:10:30,959
so that we can go get this

280
00:10:35,990 --> 00:10:34,800
itvc our inspection sensor

281
00:10:37,350 --> 00:10:36,000
unit

282
00:10:40,150 --> 00:10:37,360
cable

283
00:10:42,550 --> 00:10:40,160
untangled and remove that snag and and

284
00:10:44,710 --> 00:10:42,560
we think that's a an extremely simple

285
00:10:46,870 --> 00:10:44,720
relatively simple

286
00:10:48,310 --> 00:10:46,880
eva task and and today we got a status

287
00:10:50,550 --> 00:10:48,320
of that tomorrow

288
00:10:52,230 --> 00:10:50,560

i think if not in the morning at the

289
00:10:54,710 --> 00:10:52,240
station mission management team

290
00:10:56,310 --> 00:10:54,720
certainly by the afternoon in the

291
00:10:59,350 --> 00:10:56,320
in the mission management team we will

292
00:11:01,509 --> 00:10:59,360
have a discussion about that eva task

293
00:11:02,389 --> 00:11:01,519
and whether or not we think we can add

294
00:11:05,030 --> 00:11:02,399
that

295
00:11:07,829 --> 00:11:05,040
as early as eva 2

296
00:11:09,110 --> 00:11:07,839
to occur on on wednesday so

297
00:11:10,710 --> 00:11:09,120
the team's doing a lot of good work

298
00:11:12,550 --> 00:11:10,720
where that is concerned

299
00:11:14,230 --> 00:11:12,560
and we feel pretty good and reasonably

300
00:11:16,470 --> 00:11:14,240
confident now that that will probably

301
00:11:17,670 --> 00:11:16,480
have a task that we can accomplish

302
00:11:19,590 --> 00:11:17,680
that will

303
00:11:21,509 --> 00:11:19,600
present very little if any interference

304
00:11:23,030 --> 00:11:21,519
really to the planned

305
00:11:24,949 --> 00:11:23,040
eva tasks

306
00:11:26,949 --> 00:11:24,959
beginning with eva2

307
00:11:29,030 --> 00:11:26,959
and then the possibility of downward he

308
00:11:31,269 --> 00:11:29,040
can do it in eva3 if we're not able to

309
00:11:32,949 --> 00:11:31,279
do it in eva too so we got a status of

310
00:11:34,870 --> 00:11:32,959
that work today we'll get a better

311
00:11:37,269 --> 00:11:34,880
overall picture of that tomorrow in in

312
00:11:38,790 --> 00:11:37,279
the mission management team

313
00:11:41,030 --> 00:11:38,800

the other item that we talked about was

314
00:11:42,389 --> 00:11:41,040
as you know we have

315
00:11:44,710 --> 00:11:42,399
our team is

316
00:11:46,949 --> 00:11:44,720
is evaluating and assessing all of our

317
00:11:49,509 --> 00:11:46,959
inspection data that we have

318
00:11:52,710 --> 00:11:49,519
brought to the ground so far

319
00:11:54,710 --> 00:11:52,720
and so far we have no

320
00:11:57,430 --> 00:11:54,720
no requirements for any focused

321
00:11:58,949 --> 00:11:57,440
inspection we do have some areas that we

322
00:12:01,030 --> 00:11:58,959
have not had

323
00:12:02,949 --> 00:12:01,040
enough imagery yet to

324
00:12:04,310 --> 00:12:02,959
to assess or that we have not completed

325
00:12:07,190 --> 00:12:04,320
the assessment of the imagery that we

326
00:12:09,190 --> 00:12:07,200
have so we have some work yet to do as

327
00:12:12,069 --> 00:12:09,200
we expected

328
00:12:14,710 --> 00:12:12,079
and so that effort is is ongoing and

329
00:12:17,110 --> 00:12:14,720
proceeding nicely

330
00:12:18,389 --> 00:12:17,120
we did talk about the possibility of of

331
00:12:19,509 --> 00:12:18,399
adding

332
00:12:21,670 --> 00:12:19,519
some more

333
00:12:24,790 --> 00:12:21,680
inspection surveys tomorrow to the

334
00:12:25,910 --> 00:12:24,800
timeline tomorrow and that that turns

335
00:12:28,710 --> 00:12:25,920
out to

336
00:12:30,949 --> 00:12:28,720
we decided that was not a good option

337
00:12:33,590 --> 00:12:30,959
we are as you know

338
00:12:35,190 --> 00:12:33,600

primarily focused on the mrm1

339
00:12:36,150 --> 00:12:35,200
work tomorrow

340
00:12:39,990 --> 00:12:36,160
and

341
00:12:41,670 --> 00:12:40,000
that's a new task it has some some

342
00:12:43,430 --> 00:12:41,680
undoubtedly some challenges and

343
00:12:45,750 --> 00:12:43,440
potentially some unknowns

344
00:12:47,430 --> 00:12:45,760
um albeit it's been very well integrated

345
00:12:50,150 --> 00:12:47,440
and very well

346
00:12:51,990 --> 00:12:50,160
trained and understood uh it'll be a new

347
00:12:54,069 --> 00:12:52,000
operation for us as an integrated team

348
00:12:56,710 --> 00:12:54,079
and

349
00:12:59,590 --> 00:12:56,720
that combined with the the we still have

350
00:13:01,269 --> 00:12:59,600
some some data coming in

351
00:13:03,590 --> 00:13:01,279
and so we still have some time to assess

352
00:13:05,750 --> 00:13:03,600
whether or not we we need any more

353
00:13:06,949 --> 00:13:05,760
inspection data

354
00:13:08,870 --> 00:13:06,959
and so

355
00:13:10,550 --> 00:13:08,880
as of now we're proceeding forward we're

356
00:13:13,269 --> 00:13:10,560
still evaluating and assessing the

357
00:13:15,430 --> 00:13:13,279
damage assessment team is is

358
00:13:17,430 --> 00:13:15,440
continuing on with their

359
00:13:18,310 --> 00:13:17,440
normal process of evaluating all of the

360
00:13:19,990 --> 00:13:18,320
data

361
00:13:22,310 --> 00:13:20,000
and we'll have more of that to talk

362
00:13:23,990 --> 00:13:22,320
about in in the next couple of days

363
00:13:26,310 --> 00:13:24,000

um and so we just talked about that

364
00:13:27,829 --> 00:13:26,320
today in a way of a status and and made

365
00:13:29,509 --> 00:13:27,839
a decision to not try to do anything

366
00:13:30,710 --> 00:13:29,519
tomorrow in the way of any additional

367
00:13:31,670 --> 00:13:30,720
inspection

368
00:13:33,750 --> 00:13:31,680
um

369
00:13:35,430 --> 00:13:33,760
so the team continues to perform at a

370
00:13:37,269 --> 00:13:35,440
very high level the crew on board is

371
00:13:39,110 --> 00:13:37,279
doing exceptionally well they are for

372
00:13:40,629 --> 00:13:39,120
only the fourth day in orbit the second

373
00:13:41,910 --> 00:13:40,639
day docked

374
00:13:44,230 --> 00:13:41,920
just really on top of their game and

375
00:13:46,870 --> 00:13:44,240
doing a great job for us so be happy to

376
00:13:48,310 --> 00:13:46,880
take any questions you might have

377
00:13:50,470 --> 00:13:48,320
thank you we'll go ahead and start down

378
00:13:51,870 --> 00:13:50,480
here

379
00:13:54,790 --> 00:13:51,880
hi phillips loss with

380
00:13:55,590 --> 00:13:54,800
nasaspaceflight.com um could you go over

381
00:13:57,110 --> 00:13:55,600
um

382
00:13:59,269 --> 00:13:57,120
the the computer switchover that

383
00:14:03,670 --> 00:13:59,279
occurred during the eva

384
00:14:06,150 --> 00:14:03,680
is there a known cause for that and what

385
00:14:09,189 --> 00:14:06,160
what was uh what was lost in that during

386
00:14:11,030 --> 00:14:09,199
that period that had to be recovered

387
00:14:12,949 --> 00:14:11,040
certainly the

388
00:14:15,189 --> 00:14:12,959

we haven't

389
00:14:16,710 --> 00:14:15,199
fully fleshed out the root cause of the

390
00:14:18,389 --> 00:14:16,720
problem at this point but

391
00:14:19,990 --> 00:14:18,399
the preliminary indications that our

392
00:14:20,949 --> 00:14:20,000
teams will be looking at in more detail

393
00:14:22,310 --> 00:14:20,959
overnight

394
00:14:25,189 --> 00:14:22,320
are that

395
00:14:27,750 --> 00:14:25,199
some of the connectors that steve was

396
00:14:29,990 --> 00:14:27,760
mating out on the z1 truss as a part of

397
00:14:31,189 --> 00:14:30,000
providing survival power to the escant

398
00:14:32,710 --> 00:14:31,199
the the

399
00:14:34,470 --> 00:14:32,720
space ground antenna system that was

400
00:14:36,389 --> 00:14:34,480
installed today

401
00:14:39,030 --> 00:14:36,399
the caps that were

402
00:14:41,110 --> 00:14:39,040
in place on those connectors while they

403
00:14:43,590 --> 00:14:41,120
were waiting for the connectors from the

404
00:14:45,670 --> 00:14:43,600
new antenna system had a what we call a

405
00:14:47,189 --> 00:14:45,680
terminator inside that can finish an

406
00:14:50,470 --> 00:14:47,199
electrical connection inside that

407
00:14:53,030 --> 00:14:50,480
provided continuity through that bus

408
00:14:56,790 --> 00:14:53,040
when a cap was removed what we suspect

409
00:14:59,590 --> 00:14:58,550
broke the continuity in one of our data

410
00:15:02,310 --> 00:14:59,600
buses

411
00:15:05,910 --> 00:15:02,320
that confused our

412
00:15:08,550 --> 00:15:05,920
for lack of a more technical term our

413
00:15:11,269 --> 00:15:08,560

cnc our command and control computer the

414
00:15:13,189 --> 00:15:11,279
top level computer such that it

415
00:15:14,949 --> 00:15:13,199
suspected a failure and in case the

416
00:15:18,069 --> 00:15:14,959
failure is with that computer it goes

417
00:15:19,590 --> 00:15:18,079
offline and allows its backup to come up

418
00:15:21,590 --> 00:15:19,600
all of the critical functions that that

419
00:15:24,949 --> 00:15:21,600
computer provides are handed over

420
00:15:27,670 --> 00:15:24,959
immediately to the backup machine so

421
00:15:30,949 --> 00:15:27,680
we maintained communication via s-band

422
00:15:35,670 --> 00:15:33,509
the arm saved itself

423
00:15:36,949 --> 00:15:35,680
because of that transition of its

424
00:15:39,110 --> 00:15:36,959
controller

425
00:15:40,389 --> 00:15:39,120
but all of our other

426
00:15:42,069 --> 00:15:40,399
functions within the machine were

427
00:15:45,189 --> 00:15:42,079
maintained handed over from one to the

428
00:15:48,069 --> 00:15:45,199
next now ku band which is video which is

429
00:15:49,350 --> 00:15:48,079
required for

430
00:15:51,189 --> 00:15:49,360
video and data transfer is not

431
00:15:52,790 --> 00:15:51,199
considered a critical asset so that

432
00:15:54,870 --> 00:15:52,800
needed to be reconfigured after the

433
00:15:56,870 --> 00:15:54,880
transition the

434
00:15:58,949 --> 00:15:56,880
camera system itself needs some

435
00:16:01,990 --> 00:15:58,959
reconfiguration after a transition such

436
00:16:04,310 --> 00:16:02,000
as that such so that we can

437
00:16:05,670 --> 00:16:04,320
basically reset the way that the cameras

438
00:16:07,509 --> 00:16:05,680

are routed from

439
00:16:08,790 --> 00:16:07,519
the various data buses within the

440
00:16:10,230 --> 00:16:08,800
vehicle so we had to take some time

441
00:16:12,069 --> 00:16:10,240
rerouting that and that's really what

442
00:16:13,269 --> 00:16:12,079
took the the most amount of time the arm

443
00:16:15,030 --> 00:16:13,279
itself

444
00:16:16,629 --> 00:16:15,040
it was safe but it took just a few

445
00:16:18,629 --> 00:16:16,639
commands to get it back and ready again

446
00:16:20,470 --> 00:16:18,639
the the longest period of time was

447
00:16:22,230 --> 00:16:20,480
getting the video system set back up so

448
00:16:23,590 --> 00:16:22,240
that piers and tracy would have all the

449
00:16:25,350 --> 00:16:23,600
views they required for all the very

450
00:16:27,590 --> 00:16:25,360
tight clearances on the various robotic

451
00:16:28,949 --> 00:16:27,600
ops they were doing today

452
00:16:30,790 --> 00:16:28,959
trying to think if there was anything

453
00:16:33,189 --> 00:16:30,800
else there are a few other cats and dogs

454
00:16:33,910 --> 00:16:33,199
that it just takes us 20 minutes or so

455
00:16:35,430 --> 00:16:33,920
to

456
00:16:36,710 --> 00:16:35,440
clean up from that kind of a transition

457
00:16:40,310 --> 00:16:36,720
but all the critical stuff hands over

458
00:16:45,030 --> 00:16:41,990
bill harwood cbs i got a couple if i

459
00:16:46,790 --> 00:16:45,040
could for leroy

460
00:16:49,189 --> 00:16:46,800
if you get the cable snag fixed either

461
00:16:51,670 --> 00:16:49,199
on eva two or three i assume you do late

462
00:16:56,150 --> 00:16:51,680
inspection the normal way with that

463
00:16:59,189 --> 00:16:57,749

that system again for any additional

464
00:17:01,670 --> 00:16:59,199
inspections you might need them unclear

465
00:17:03,430 --> 00:17:01,680
where you stand on srms

466
00:17:06,470 --> 00:17:03,440
ops or if you even know if you need any

467
00:17:09,829 --> 00:17:06,480
more inspections from what you said

468
00:17:11,350 --> 00:17:09,839
okay yeah we we don't know um because

469
00:17:13,829 --> 00:17:11,360
we're still evaluating all the data that

470
00:17:17,429 --> 00:17:15,990
there is a possibility that

471
00:17:20,309 --> 00:17:17,439
that

472
00:17:21,750 --> 00:17:20,319
will decide

473
00:17:24,150 --> 00:17:21,760
that we're going to get all the data

474
00:17:26,470 --> 00:17:24,160
that we need with late inspection

475
00:17:27,829 --> 00:17:26,480
and that there really is not that much

476
00:17:28,950 --> 00:17:27,839
to be gained by trying to get any more

477
00:17:30,950 --> 00:17:28,960
survey

478
00:17:33,830 --> 00:17:30,960
inspection data while we're docked

479
00:17:35,750 --> 00:17:33,840
so that's really the the

480
00:17:37,830 --> 00:17:35,760
the question at hand is

481
00:17:39,510 --> 00:17:37,840
we're going to look at all these areas

482
00:17:41,430 --> 00:17:39,520
all of the areas we've already looked at

483
00:17:42,789 --> 00:17:41,440
on the rcc for example

484
00:17:44,230 --> 00:17:42,799
in addition to some of the areas where

485
00:17:46,150 --> 00:17:44,240
we didn't get the kind of coverage that

486
00:17:47,510 --> 00:17:46,160
we'd like to have because of the

487
00:17:49,029 --> 00:17:47,520
challenge that we had on flight day two

488
00:17:50,950 --> 00:17:49,039

we're going to look at all those all of

489
00:17:53,990 --> 00:17:50,960
those areas for sure

490
00:17:55,510 --> 00:17:54,000
if not before in late inspection

491
00:17:57,510 --> 00:17:55,520
so the question is

492
00:17:59,669 --> 00:17:57,520
are there any of those areas that

493
00:18:02,470 --> 00:17:59,679
we feel like we we want to or we need to

494
00:18:03,430 --> 00:18:02,480
look at while we're still docked

495
00:18:04,630 --> 00:18:03,440
and

496
00:18:07,750 --> 00:18:04,640
we've got a little bit more time to

497
00:18:09,830 --> 00:18:07,760
evaluate that um and what i asked the

498
00:18:11,510 --> 00:18:09,840
team today to do was to

499
00:18:12,950 --> 00:18:11,520
to put together those options for us and

500
00:18:16,150 --> 00:18:12,960
bring them back in so we can talk about

501
00:18:17,029 --> 00:18:16,160
it in the next next couple three days

502
00:18:18,549 --> 00:18:17,039
and

503
00:18:20,630 --> 00:18:18,559
so we would do something not earlier

504
00:18:21,990 --> 00:18:20,640
than flight day seven at this point

505
00:18:23,990 --> 00:18:22,000
if we're going to do any additional

506
00:18:26,150 --> 00:18:24,000
surveys or any kind of inspection while

507
00:18:28,150 --> 00:18:26,160
we're docked

508
00:18:29,590 --> 00:18:28,160
and two more for me for lisa the

509
00:18:31,510 --> 00:18:29,600
astronauts made it sound like they were

510
00:18:33,430 --> 00:18:31,520
kind of surprised about the putting the

511
00:18:35,590 --> 00:18:33,440
gimbal locks back in like

512
00:18:37,190 --> 00:18:35,600
it sounded like they just misinterpreted

513
00:18:38,549 --> 00:18:37,200

their tone of voice it sounded like they

514
00:18:40,310 --> 00:18:38,559
didn't think that was necessary i'm just

515
00:18:41,909 --> 00:18:40,320
wondering is that a case where you're

516
00:18:43,669 --> 00:18:41,919
just being extra conservative because

517
00:18:45,510 --> 00:18:43,679
you had an unknown config with that gap

518
00:18:46,470 --> 00:18:45,520
in there was there some other issue at

519
00:18:48,950 --> 00:18:46,480
play

520
00:18:50,870 --> 00:18:48,960
no you're exactly right we were um

521
00:18:52,870 --> 00:18:50,880
we were being extra conservative we had

522
00:18:54,390 --> 00:18:52,880
initially given them the go to release

523
00:18:56,150 --> 00:18:54,400
the gimbal locks

524
00:18:58,950 --> 00:18:56,160
and then uh after some quick

525
00:19:00,549 --> 00:18:58,960
conversations with our structures folks

526
00:19:02,630 --> 00:19:00,559
uh determined that

527
00:19:03,669 --> 00:19:02,640
um until we could do further analysis

528
00:19:06,549 --> 00:19:03,679
that

529
00:19:07,830 --> 00:19:06,559
possibly the best posture to put

530
00:19:09,270 --> 00:19:07,840
ourselves in

531
00:19:11,110 --> 00:19:09,280
and to ensure that we weren't going to

532
00:19:12,710 --> 00:19:11,120
create more work later in the eva if

533
00:19:14,230 --> 00:19:12,720
they had discussed it

534
00:19:15,909 --> 00:19:14,240
more and then decided that they needed

535
00:19:18,150 --> 00:19:15,919
those gimbal locks the best thing to do

536
00:19:19,750 --> 00:19:18,160
was just to reinstall them uh and deal

537
00:19:20,870 --> 00:19:19,760
with it later

538
00:19:22,549 --> 00:19:20,880

well what i was trying to understand is

539
00:19:24,150 --> 00:19:22,559
what was the concern i mean with that

540
00:19:26,310 --> 00:19:24,160
kind of play and this it sounded like it

541
00:19:28,070 --> 00:19:26,320
was still pretty tight i mean what what

542
00:19:29,990 --> 00:19:28,080
sort of forces were you thinking could

543
00:19:32,150 --> 00:19:30,000
possibly act on if it would you know

544
00:19:35,830 --> 00:19:32,160
make it get out of the way you had it i

545
00:19:41,350 --> 00:19:39,830
i i think really the the concern there

546
00:19:44,070 --> 00:19:41,360
is that it was in a config that was

547
00:19:46,870 --> 00:19:44,080
unexpected and therefore unanalyzed and

548
00:19:48,470 --> 00:19:46,880
so we we need to take the time to go and

549
00:19:49,990 --> 00:19:48,480
make sure that the configuration is

550
00:19:51,750 --> 00:19:50,000
acceptable for the various loads the

551
00:19:53,830 --> 00:19:51,760
vehicle sees whether that be a reboost

552
00:19:55,270 --> 00:19:53,840
or docking or undocking

553
00:19:57,029 --> 00:19:55,280
there are a number of different loads

554
00:19:58,390 --> 00:19:57,039
cases that would have to be evaluated

555
00:20:00,390 --> 00:19:58,400
and it's simply that it didn't go

556
00:20:03,029 --> 00:20:00,400
exactly as as expected and therefore

557
00:20:05,510 --> 00:20:03,039
it's considered unanalyzed at this time

558
00:20:08,470 --> 00:20:05,520
and last one for me is there is there a

559
00:20:11,029 --> 00:20:08,480
defined dexter task on the horizon

560
00:20:12,630 --> 00:20:11,039
whether a demonstration or an actual rnr

561
00:20:15,430 --> 00:20:12,640
there is

562
00:20:17,590 --> 00:20:15,440
we've been working for a while on a task

563
00:20:20,710 --> 00:20:17,600

that will

564
00:20:23,909 --> 00:20:20,720
allow for ground control of dexter to

565
00:20:26,230 --> 00:20:23,919
exchange out in a power box basically a

566
00:20:28,789 --> 00:20:26,240
kind of a switch box

567
00:20:31,590 --> 00:20:28,799
outside on the truss

568
00:20:33,510 --> 00:20:31,600
and it's been simply a matter of for a

569
00:20:35,590 --> 00:20:33,520
first stop like that especially not

570
00:20:36,950 --> 00:20:35,600
controlled from the ground we're

571
00:20:38,549 --> 00:20:36,960
checking all the boxes and making sure

572
00:20:40,149 --> 00:20:38,559
that we're fully prepared for that but

573
00:20:41,430 --> 00:20:40,159
we are planning to do

574
00:20:43,669 --> 00:20:41,440
i don't know the current plan for when

575
00:20:48,070 --> 00:20:43,679
that will be executed but that is on the

576
00:20:52,390 --> 00:20:50,070
mark caro for aviation week and i had a

577
00:20:54,789 --> 00:20:52,400
couple questions one regarding the

578
00:20:56,070 --> 00:20:54,799
antenna is there any urgency to take it

579
00:20:58,070 --> 00:20:56,080
out of the

580
00:20:59,990 --> 00:20:58,080
the configuration that you have it in

581
00:21:01,990 --> 00:21:00,000
now i mean you could you

582
00:21:04,470 --> 00:21:02,000
address this in a month or so if you

583
00:21:09,909 --> 00:21:06,870
the only urgency we have at this time is

584
00:21:13,350 --> 00:21:09,919
that the the gimbal locks themselves we

585
00:21:15,830 --> 00:21:13,360
have some analysis that indicates that

586
00:21:17,029 --> 00:21:15,840
when we get to a high solar beta angle

587
00:21:17,990 --> 00:21:17,039
those are going to

588
00:21:19,990 --> 00:21:18,000

have some

589
00:21:21,990 --> 00:21:20,000
thermal effects that will negatively

590
00:21:23,669 --> 00:21:22,000
impact their

591
00:21:25,029 --> 00:21:23,679
function that could negatively impact

592
00:21:26,710 --> 00:21:25,039
the hardware so we're going to have to

593
00:21:28,390 --> 00:21:26,720
take a closer look at that to determine

594
00:21:29,750 --> 00:21:28,400
whether we really need to remove those

595
00:21:31,270 --> 00:21:29,760
gimbal locks during this mission in

596
00:21:33,190 --> 00:21:31,280
order to prevent them

597
00:21:35,830 --> 00:21:33,200
prevent a timer basically from starting

598
00:21:37,270 --> 00:21:35,840
and requiring an eba in the stage

599
00:21:39,270 --> 00:21:37,280
or if

600
00:21:42,149 --> 00:21:39,280
we can better understand what we expect

601
00:21:44,230 --> 00:21:42,159
those signatures to be and and ensure

602
00:21:46,070 --> 00:21:44,240
that we'd be okay until either the stage

603
00:21:49,270 --> 00:21:46,080
dba we have scheduled for this summer or

604
00:21:52,070 --> 00:21:49,280
potentially the next shuttle flight

605
00:21:53,990 --> 00:21:52,080
other than that everything is in a in a

606
00:21:55,350 --> 00:21:54,000
safe config and a good config obviously

607
00:21:57,270 --> 00:21:55,360
we can't use the antenna until the

608
00:21:58,390 --> 00:21:57,280
gimbal locks are removed but there's no

609
00:22:01,190 --> 00:21:58,400
other

610
00:22:02,950 --> 00:22:01,200
safety implications

611
00:22:06,789 --> 00:22:02,960
thanks thank you very much i had a

612
00:22:08,549 --> 00:22:06,799
question too about the the computers

613
00:22:10,789 --> 00:22:08,559

did you go back to the

614
00:22:15,990 --> 00:22:10,799
primary rather than the backup cnc

615
00:22:19,750 --> 00:22:18,230
is i guess it's

616
00:22:22,230 --> 00:22:19,760
command and control computer just sounds

617
00:22:23,430 --> 00:22:22,240
like a big big deal to me and it just

618
00:22:26,149 --> 00:22:23,440
seemed very

619
00:22:27,110 --> 00:22:26,159
inconvenient uh when it when a trip

620
00:22:29,510 --> 00:22:27,120
today

621
00:22:31,909 --> 00:22:29,520
it also sounds like you've got a good

622
00:22:33,750 --> 00:22:31,919
theory but i just wonder how much

623
00:22:35,750 --> 00:22:33,760
troubleshooting you need to do to sort

624
00:22:37,750 --> 00:22:35,760
of nail that down

625
00:22:39,350 --> 00:22:37,760
we have three identical computers

626
00:22:41,430 --> 00:22:39,360
i will tell you the one that we had as

627
00:22:42,549 --> 00:22:41,440
prime today is not our favorite

628
00:22:44,710 --> 00:22:42,559
so

629
00:22:45,909 --> 00:22:44,720
on the one hand i'm perfectly happy to

630
00:22:47,350 --> 00:22:45,919
be on

631
00:22:49,029 --> 00:22:47,360
number two which is what we're on now we

632
00:22:50,470 --> 00:22:49,039
were on number three number three is the

633
00:22:52,950 --> 00:22:50,480
one that went down

634
00:22:54,390 --> 00:22:52,960
although they are all

635
00:22:56,070 --> 00:22:54,400
from a software perspective they're all

636
00:22:59,110 --> 00:22:56,080
identical from a hardware perspective

637
00:23:01,830 --> 00:22:59,120
they all have nuances of their own

638
00:23:04,310 --> 00:23:01,840

we did not invest time while the eva was

639
00:23:06,549 --> 00:23:04,320
ongoing to work on psyching out the

640
00:23:07,669 --> 00:23:06,559
problem anymore we haven't

641
00:23:08,870 --> 00:23:07,679
done any

642
00:23:10,149 --> 00:23:08,880
as

643
00:23:11,669 --> 00:23:10,159
we did some dumps today but i don't

644
00:23:13,990 --> 00:23:11,679
think we did any dumps to try to psych

645
00:23:16,470 --> 00:23:14,000
out the problem from that computer today

646
00:23:17,830 --> 00:23:16,480
overnight we'll start looking into

647
00:23:19,350 --> 00:23:17,840
what information we can get from the

648
00:23:22,149 --> 00:23:19,360
computer itself

649
00:23:24,710 --> 00:23:22,159
but with uh the backup having come up to

650
00:23:27,110 --> 00:23:24,720
prime and operating perfectly well the

651
00:23:28,710 --> 00:23:27,120
bus that we saw a problem on was also

652
00:23:30,310 --> 00:23:28,720
working perfectly well so we had no

653
00:23:33,590 --> 00:23:30,320
concerns with that bus

654
00:23:35,029 --> 00:23:33,600
although we did keep that bus inhibited

655
00:23:36,710 --> 00:23:35,039
in such a way that it couldn't cause

656
00:23:40,710 --> 00:23:36,720
another transition

657
00:23:44,149 --> 00:23:40,720
and our third cnc the cnc number one

658
00:23:45,350 --> 00:23:44,159
came into a backup mode such that we had

659
00:23:47,110 --> 00:23:45,360
we have

660
00:23:48,549 --> 00:23:47,120
you know double fault tolerance in that

661
00:23:51,110 --> 00:23:48,559
system because command and control is

662
00:23:53,750 --> 00:23:51,120
such an important function so

663
00:23:55,990 --> 00:23:53,760

within 30 minutes of the failure we had

664
00:23:57,830 --> 00:23:56,000
a fully functional backup again so that

665
00:24:01,590 --> 00:23:57,840
if we saw another failure we could go to

666
00:24:03,110 --> 00:24:01,600
that third command and control computer

667
00:24:06,230 --> 00:24:03,120
i wish i could say that we didn't have

668
00:24:07,909 --> 00:24:06,240
any experience with cnc transitions but

669
00:24:10,310 --> 00:24:07,919
not only do we train it quite a bit such

670
00:24:11,909 --> 00:24:10,320
that our team was able to respond to it

671
00:24:13,669 --> 00:24:11,919
pretty readily

672
00:24:15,430 --> 00:24:13,679
most of us have experience with seeing a

673
00:24:19,110 --> 00:24:15,440
cnc transition at some point or another

674
00:24:22,149 --> 00:24:19,120
for some reason or another sometimes

675
00:24:24,310 --> 00:24:22,159
not always hardware or software failures

676
00:24:25,750 --> 00:24:24,320
and so

677
00:24:27,350 --> 00:24:25,760
it is a big deal

678
00:24:28,870 --> 00:24:27,360
but we were in a good config and we'll

679
00:24:32,310 --> 00:24:28,880
work it out over the next couple of days

680
00:24:38,310 --> 00:24:32,320
i i'm not in a stressed situation not

681
00:24:42,950 --> 00:24:41,350
hi robert perlman with collectspace.com

682
00:24:45,190 --> 00:24:42,960
sort of following up on that just to get

683
00:24:47,990 --> 00:24:45,200
an idea of

684
00:24:50,950 --> 00:24:48,000
i guess what ifs with the cnc if uh if

685
00:24:53,269 --> 00:24:50,960
the transition had occurred during um

686
00:24:56,310 --> 00:24:53,279
an active robotic arm

687
00:24:58,549 --> 00:24:56,320
operation such as garrett's big ride

688
00:24:59,669 --> 00:24:58,559

what would have been the um

689
00:25:01,510 --> 00:24:59,679
what would have been the procedures at

690
00:25:02,789 --> 00:25:01,520
that point would you have uh would have

691
00:25:04,870 --> 00:25:02,799
been like someone getting stuck at the

692
00:25:06,950 --> 00:25:04,880
top of a of a

693
00:25:08,149 --> 00:25:06,960
ferris wheel just waiting it out or

694
00:25:10,710 --> 00:25:08,159
would there be a time when he would have

695
00:25:14,549 --> 00:25:10,720
to egress the arm and come down

696
00:25:16,070 --> 00:25:14,559
well and basically it

697
00:25:18,149 --> 00:25:16,080
there weren't any points today where a

698
00:25:19,669 --> 00:25:18,159
cnc failure would have been convenient

699
00:25:21,750 --> 00:25:19,679
um

700
00:25:24,310 --> 00:25:21,760
the the arm saves itself once the new

701
00:25:27,029 --> 00:25:24,320
mdm comes up the new computer comes up

702
00:25:29,110 --> 00:25:27,039
we're able to proceed and so

703
00:25:30,950 --> 00:25:29,120
only if all three computers were to come

704
00:25:33,190 --> 00:25:30,960
up and fail would you be in a case where

705
00:25:35,110 --> 00:25:33,200
you've got to have garrett take an

706
00:25:37,190 --> 00:25:35,120
action to get off the top of this arm

707
00:25:38,789 --> 00:25:37,200
that's stretched out and giving him this

708
00:25:39,750 --> 00:25:38,799
wild ride

709
00:25:41,750 --> 00:25:39,760
so

710
00:25:43,590 --> 00:25:41,760
essentially today we were in the process

711
00:25:46,149 --> 00:25:43,600
of moving garrett when the cnc failed

712
00:25:47,750 --> 00:25:46,159
the arm saved itself it comes to a stop

713
00:25:49,350 --> 00:25:47,760

and that's to ensure that it's not

714
00:25:51,029 --> 00:25:49,360
running without control

715
00:25:52,870 --> 00:25:51,039
we fix the problem tell peers okay

716
00:25:54,710 --> 00:25:52,880
you're ready to go and he picks back up

717
00:25:57,830 --> 00:25:54,720
with the operation it's only if we lost

718
00:25:59,190 --> 00:25:57,840
all three that we'd be in trouble

719
00:26:00,390 --> 00:25:59,200
and then just looking forward to

720
00:26:02,549 --> 00:26:00,400
tomorrow

721
00:26:03,990 --> 00:26:02,559
because leroy mentioned the challenges

722
00:26:06,789 --> 00:26:04,000
that are

723
00:26:08,390 --> 00:26:06,799
the known challenges with mrm birthing

724
00:26:11,110 --> 00:26:08,400
can you just run through what some of

725
00:26:12,870 --> 00:26:11,120
those are and maybe what some of the

726
00:26:16,230 --> 00:26:12,880
what some of the prepared responses to

727
00:26:18,470 --> 00:26:16,240
those challenges might be thanks

728
00:26:20,230 --> 00:26:18,480
most of the the challenges that we have

729
00:26:21,909 --> 00:26:20,240
tried to anticipate are associated with

730
00:26:23,190 --> 00:26:21,919
the newness of the task the fact that

731
00:26:25,350 --> 00:26:23,200
we've never done

732
00:26:26,789 --> 00:26:25,360
an a module installation of a russian

733
00:26:30,070 --> 00:26:26,799
module using

734
00:26:32,070 --> 00:26:30,080
one of our canadian arms

735
00:26:33,909 --> 00:26:32,080
and in this case especially the fact

736
00:26:35,350 --> 00:26:33,919
that the active side of the docking

737
00:26:37,029 --> 00:26:35,360
mechanism so the pieces that are

738
00:26:38,950 --> 00:26:37,039

actually physically powered and going to

739
00:26:40,789 --> 00:26:38,960
move to mate the interface and draw the

740
00:26:41,909 --> 00:26:40,799
two interfaces together

741
00:26:44,149 --> 00:26:41,919
are on

742
00:26:46,230 --> 00:26:44,159
the mrm1 side of the vehicle normally

743
00:26:47,909 --> 00:26:46,240
for us stockings or us module

744
00:26:49,669 --> 00:26:47,919
installations

745
00:26:52,789 --> 00:26:49,679
you have

746
00:26:54,149 --> 00:26:52,799
the the mechanisms are

747
00:26:55,590 --> 00:26:54,159
on the side of the interface where you

748
00:26:56,950 --> 00:26:55,600
have crew members in case something goes

749
00:26:58,630 --> 00:26:56,960
wrong you need to change something out

750
00:27:01,190 --> 00:26:58,640
you can gain access you can try to fix

751
00:27:03,990 --> 00:27:01,200
it and then try again

752
00:27:05,590 --> 00:27:04,000
in this case we've got commands and data

753
00:27:06,950 --> 00:27:05,600
going through the arm power going

754
00:27:09,350 --> 00:27:06,960
through the arm

755
00:27:12,470 --> 00:27:09,360
and a module that's fully activated

756
00:27:14,310 --> 00:27:12,480
via arm power and control

757
00:27:15,830 --> 00:27:14,320
that we're going to bring in

758
00:27:17,830 --> 00:27:15,840
for docking so

759
00:27:19,110 --> 00:27:17,840
ensuring that the communication path

760
00:27:21,669 --> 00:27:19,120
from

761
00:27:23,350 --> 00:27:21,679
the the laptop that piers will be using

762
00:27:25,830 --> 00:27:23,360
to control the docking system and to

763
00:27:27,990 --> 00:27:25,840

control mrm1 itself this is a laptop

764
00:27:29,909 --> 00:27:28,000
that is going to be located in the

765
00:27:31,269 --> 00:27:29,919
cupola with where garrett and pierce

766
00:27:33,669 --> 00:27:31,279
will be working together on this

767
00:27:36,470 --> 00:27:33,679
operation

768
00:27:38,230 --> 00:27:36,480
connected via our ethernet system back

769
00:27:40,950 --> 00:27:38,240
to the russian segment

770
00:27:42,549 --> 00:27:40,960
and then connected via our 1553 system

771
00:27:43,990 --> 00:27:42,559
from the russian segment back to the us

772
00:27:46,470 --> 00:27:44,000
segment

773
00:27:48,549 --> 00:27:46,480
back to the arm itself out to the end of

774
00:27:50,630 --> 00:27:48,559
the arm through the

775
00:27:52,470 --> 00:27:50,640
the grapple fixture into the module and

776
00:27:54,149 --> 00:27:52,480
that's a long path now what we've done

777
00:27:55,830 --> 00:27:54,159
to mitigate any potential concerns with

778
00:27:57,590 --> 00:27:55,840
that is we've tested it a great deal

779
00:27:59,590 --> 00:27:57,600
we've used all of our best simulations

780
00:28:00,950 --> 00:27:59,600
all of our most flight like units here

781
00:28:02,630 --> 00:28:00,960
on the ground obviously we don't have

782
00:28:04,630 --> 00:28:02,640
all that hardware on the ground but we

783
00:28:06,230 --> 00:28:04,640
have

784
00:28:08,230 --> 00:28:06,240
similar devices on the ground the same

785
00:28:10,230 --> 00:28:08,240
computers on the ground and we've

786
00:28:12,389 --> 00:28:10,240
modeled all of those same distances all

787
00:28:15,190 --> 00:28:12,399
those same wire paths to ensure that

788
00:28:18,070 --> 00:28:15,200

that link is as good as it can be tested

789
00:28:19,430 --> 00:28:18,080
the the latency in those data lines to

790
00:28:21,909 --> 00:28:19,440
ensure that

791
00:28:23,750 --> 00:28:21,919
we have a good safe system because if

792
00:28:26,070 --> 00:28:23,760
anything happens to the arm

793
00:28:28,149 --> 00:28:26,080
the the module will be triggered to stop

794
00:28:28,870 --> 00:28:28,159
so that it will quit moving so that we

795
00:28:30,549 --> 00:28:28,880
don't

796
00:28:31,669 --> 00:28:30,559
risk any damage to the arm so i would

797
00:28:33,110 --> 00:28:31,679
say that that

798
00:28:35,510 --> 00:28:33,120
newness and

799
00:28:36,710 --> 00:28:35,520
the fact that we've not done a task like

800
00:28:38,230 --> 00:28:36,720
that before

801
00:28:39,269 --> 00:28:38,240
triggered us to do a great deal of

802
00:28:45,510 --> 00:28:39,279
testing

803
00:28:47,750 --> 00:28:45,520
accomplished and so we have

804
00:28:49,350 --> 00:28:47,760
a good expectations that all of that

805
00:28:53,190 --> 00:28:49,360
will go nominally

806
00:28:56,389 --> 00:28:54,710
all of the normal things that you look

807
00:28:57,669 --> 00:28:56,399
at in a mechanical system any place

808
00:28:59,430 --> 00:28:57,679
where any one thing could fail what do

809
00:29:02,310 --> 00:28:59,440
you need to do

810
00:29:04,630 --> 00:29:02,320
this is a the docking system itself is a

811
00:29:05,830 --> 00:29:04,640
truly elegant system from an engineer's

812
00:29:07,669 --> 00:29:05,840
perspective

813
00:29:09,430 --> 00:29:07,679

it's worked hundreds of times on

814
00:29:10,630 --> 00:29:09,440
progresses and soyuz both to mirror and

815
00:29:13,750 --> 00:29:10,640
to iss

816
00:29:15,909 --> 00:29:13,760
so we did go through and because for

817
00:29:17,750 --> 00:29:15,919
from a shuttle mission perspective this

818
00:29:19,430 --> 00:29:17,760
was a first for this particular

819
00:29:21,269 --> 00:29:19,440
interface although our iss teams have a

820
00:29:23,590 --> 00:29:21,279
great deal of experience with these with

821
00:29:25,110 --> 00:29:23,600
this particular interface

822
00:29:26,470 --> 00:29:25,120
we spent a lot of time talking through

823
00:29:28,070 --> 00:29:26,480
what are we going to do if individual

824
00:29:29,590 --> 00:29:28,080
things fail and we have backup plans for

825
00:29:31,190 --> 00:29:29,600
all of those in most cases there's

826
00:29:33,750 --> 00:29:31,200
redundancy built into the system so we

827
00:29:36,470 --> 00:29:33,760
don't have to do anything

828
00:29:38,310 --> 00:29:36,480
i think that's most of

829
00:29:39,590 --> 00:29:38,320
the challenges that we can look at

830
00:29:41,669 --> 00:29:39,600
tomorrow although

831
00:29:42,870 --> 00:29:41,679
murphy's law we've prepared for it as

832
00:29:46,070 --> 00:29:42,880
much as we know how so it'll be

833
00:29:48,310 --> 00:29:46,080
something else that happens

834
00:29:51,510 --> 00:29:48,320
any other questions here

835
00:29:55,029 --> 00:29:53,190
mark caro for aviation week i wanted to

836
00:29:56,630 --> 00:29:55,039
follow up that question

837
00:29:58,630 --> 00:29:56,640
and you may have answered if so i'm

838
00:30:01,430 --> 00:29:58,640

sorry but is there any kind of a kind of

839
00:30:03,350 --> 00:30:01,440
a clock on that operation where you you

840
00:30:05,990 --> 00:30:03,360
have a sort of deadline you have to work

841
00:30:07,430 --> 00:30:06,000
within and what's if there is what's the

842
00:30:09,110 --> 00:30:07,440
consequence

843
00:30:10,549 --> 00:30:09,120
absolutely um

844
00:30:12,789 --> 00:30:10,559
the only clock that we'll be working

845
00:30:13,669 --> 00:30:12,799
from tomorrow is there is a period of

846
00:30:15,990 --> 00:30:13,679
time

847
00:30:17,350 --> 00:30:16,000
in between we'll have to shut power off

848
00:30:19,750 --> 00:30:17,360
to the module while it's in the payload

849
00:30:22,310 --> 00:30:19,760
bay because it is not powered while it's

850
00:30:24,149 --> 00:30:22,320
on srms while it's on the shuttle arm so

851
00:30:26,310 --> 00:30:24,159
after the srms grapples the module we'll

852
00:30:27,110 --> 00:30:26,320
shut down shut the module down

853
00:30:31,430 --> 00:30:27,120
and

854
00:30:33,909 --> 00:30:31,440
ssrms the space station arm comes to

855
00:30:35,350 --> 00:30:33,919
grapple it and we'll then we have power

856
00:30:37,909 --> 00:30:35,360
available again we'll re-power the

857
00:30:39,990 --> 00:30:37,919
module at that time we have a clock

858
00:30:41,750 --> 00:30:40,000
limiting the amount of time that we can

859
00:30:44,149 --> 00:30:41,760
perform that operation from power down

860
00:30:45,830 --> 00:30:44,159
to power back up once we get powered

861
00:30:47,350 --> 00:30:45,840
again on the station arm we're in a good

862
00:30:50,310 --> 00:30:47,360
config

863
00:30:52,149 --> 00:30:50,320

and that time period is based on not so

864
00:30:53,990 --> 00:30:52,159
much the module itself but we've got a

865
00:30:56,149 --> 00:30:54,000
number of important pieces of hardware

866
00:30:57,509 --> 00:30:56,159
attached to the exterior of the module

867
00:30:58,950 --> 00:30:57,519
that are all going to be installed on

868
00:31:00,630 --> 00:30:58,960
the mlm

869
00:31:02,710 --> 00:31:00,640
module that will be flown on a russian

870
00:31:04,470 --> 00:31:02,720
rocket to space station

871
00:31:06,310 --> 00:31:04,480
at a later date

872
00:31:08,789 --> 00:31:06,320
those pieces of hardware have survival

873
00:31:11,110 --> 00:31:08,799
heaters associated with them and it's

874
00:31:11,990 --> 00:31:11,120
those that are driving the need to to

875
00:31:13,669 --> 00:31:12,000
get

876
00:31:16,149 --> 00:31:13,679
activated again we've got on the order

877
00:31:18,310 --> 00:31:16,159
of five to ten hours though so it's

878
00:31:19,750 --> 00:31:18,320
nothing that's it's not going to be a

879
00:31:23,430 --> 00:31:19,760
nail biter by any stretch of the

880
00:31:29,190 --> 00:31:24,950
we'll take some questions on the line

881
00:31:33,509 --> 00:31:31,830
uh hi mark kirkman interspace news um if

882
00:31:34,950 --> 00:31:33,519
i may i've got a multi-part question for

883
00:31:36,389 --> 00:31:34,960
uh emily

884
00:31:38,789 --> 00:31:36,399
uh in the

885
00:31:41,029 --> 00:31:38,799
briefings before you gave you talked to

886
00:31:43,029 --> 00:31:41,039
about talk to us about how mrm basically

887
00:31:45,350 --> 00:31:43,039
needed to be attached not too slow but

888
00:31:47,590 --> 00:31:45,360

not too hard and i was wondering if you

889
00:31:49,909 --> 00:31:47,600
had a good numbers for us on what uh i

890
00:31:52,230 --> 00:31:49,919
guess garrett calls ramming speed if you

891
00:31:54,149 --> 00:31:52,240
can uh give us either actual rates or if

892
00:31:57,029 --> 00:31:54,159
not maybe just draw a comparison of how

893
00:31:59,190 --> 00:31:57,039
much faster this is compared to uh

894
00:32:00,389 --> 00:31:59,200
normal arm operations and the second

895
00:32:02,710 --> 00:32:00,399
part of my question is i'm a little

896
00:32:04,470 --> 00:32:02,720
ignorant on how the space station arm

897
00:32:07,190 --> 00:32:04,480
operates and i was wondering does

898
00:32:09,029 --> 00:32:07,200
garrett have the ability to directly

899
00:32:11,590 --> 00:32:09,039
control the rate of the arm through a

900
00:32:13,269 --> 00:32:11,600
hand controller or is this a rate that

901
00:32:15,430 --> 00:32:13,279
you program into it and it does it

902
00:32:17,830 --> 00:32:15,440
automatically thank you

903
00:32:21,350 --> 00:32:17,840
certainly i happen to bring the numbers

904
00:32:23,750 --> 00:32:21,360
for the rates so for example mrm1's

905
00:32:26,149 --> 00:32:23,760
installation is going to happen at .06

906
00:32:28,310 --> 00:32:26,159
feet per second

907
00:32:30,149 --> 00:32:28,320
by comparison a shuttle docking the

908
00:32:32,470 --> 00:32:30,159
shuttle docking a few days ago atlantis

909
00:32:34,149 --> 00:32:32,480
is docking occurred at approximately 0.1

910
00:32:35,350 --> 00:32:34,159
foot per second so that's 0.1 versus

911
00:32:38,630 --> 00:32:35,360
0.06

912
00:32:40,549 --> 00:32:38,640
and a russian visiting vehicle which

913
00:32:42,149 --> 00:32:40,559

is where this docking system is normally

914
00:32:44,630 --> 00:32:42,159
utilized comes in at something like

915
00:32:45,909 --> 00:32:44,640
point three to point six feet per second

916
00:32:48,149 --> 00:32:45,919
so we're going

917
00:32:52,870 --> 00:32:51,909
sometime up to a tenth slower uh

918
00:32:55,110 --> 00:32:52,880
i guess

919
00:32:56,710 --> 00:32:55,120
we're going ten times as slow as a

920
00:33:00,389 --> 00:32:56,720
russian vehicle normally would that uses

921
00:33:03,509 --> 00:33:02,149
in terms of whether garrett has control

922
00:33:06,549 --> 00:33:03,519
what kind of control garrett has of the

923
00:33:08,149 --> 00:33:06,559
arm we have max speeds so basically we

924
00:33:10,070 --> 00:33:08,159
have a speed limit built into the arm so

925
00:33:11,990 --> 00:33:10,080
that we don't allow him to take it maybe

926
00:33:13,990 --> 00:33:12,000
as fast as we'd like for him to take it

927
00:33:15,590 --> 00:33:14,000
or as fast as he'd like to take it

928
00:33:17,990 --> 00:33:15,600
but we have

929
00:33:20,070 --> 00:33:18,000
either when we're doing programmed

930
00:33:22,230 --> 00:33:20,080
motion we have course rates and what we

931
00:33:24,149 --> 00:33:22,240
call burn rate so we have a

932
00:33:26,310 --> 00:33:24,159
a slow rate and a fast rate and those

933
00:33:27,750 --> 00:33:26,320
are pre-programmed and the arm will ramp

934
00:33:29,669 --> 00:33:27,760
up to that speed and go that speed and

935
00:33:31,269 --> 00:33:29,679
then ramp back down when it's finished

936
00:33:32,950 --> 00:33:31,279
when we're doing manual control which is

937
00:33:34,710 --> 00:33:32,960
what we'll be doing in this case garrett

938
00:33:36,710 --> 00:33:34,720

does in fact have control over the

939
00:33:38,630 --> 00:33:36,720
speeds himself but there is a limiting

940
00:33:40,149 --> 00:33:38,640
factor within the software such that he

941
00:33:42,230 --> 00:33:40,159
can push on it as hard as he wants and

942
00:33:45,269 --> 00:33:42,240
it's still only going to go at .06 feet

943
00:33:47,590 --> 00:33:46,470
that's all i had thank you very much for

944
00:33:50,630 --> 00:33:47,600
your time

945
00:33:53,669 --> 00:33:50,640
okay next on the line marcia dunn

946
00:33:56,470 --> 00:33:53,679
yes hi um formerly nelson um do you have

947
00:34:00,950 --> 00:33:56,480
any idea how long it's going to take to

948
00:34:04,149 --> 00:34:00,960
analyze the um antenna situation um

949
00:34:05,590 --> 00:34:04,159
days if not weeks do you have any

950
00:34:07,269 --> 00:34:05,600
idea at this point

951
00:34:11,190 --> 00:34:07,279
well i would say that we have to have at

952
00:34:12,470 --> 00:34:11,200
least a preliminary answer within days

953
00:34:14,149 --> 00:34:12,480
in case they're wanting us to do

954
00:34:15,430 --> 00:34:14,159
something about it before atlantis

955
00:34:17,430 --> 00:34:15,440
undocks

956
00:34:19,750 --> 00:34:17,440
my hope is it'll be on the order of a

957
00:34:21,589 --> 00:34:19,760
day or two but i i really don't have any

958
00:34:23,349 --> 00:34:21,599
idea at this time since the engineers

959
00:34:25,030 --> 00:34:23,359
started working on it as soon as i left

960
00:34:27,030 --> 00:34:25,040
the control center so i haven't had a

961
00:34:29,510 --> 00:34:27,040
chance to ask

962
00:34:31,669 --> 00:34:29,520
um and and for leroy do you have any

963
00:34:33,030 --> 00:34:31,679

sort of debris update

964
00:34:35,750 --> 00:34:33,040
anything new that might have been seen

965
00:34:38,230 --> 00:34:35,760
in any of the launch day video or a

966
00:34:40,230 --> 00:34:38,240
total number of um

967
00:34:42,470 --> 00:34:40,240
free incidents that came off

968
00:34:44,629 --> 00:34:42,480
the tank

969
00:34:47,030 --> 00:34:44,639
no i don't march i don't have any new

970
00:34:49,109 --> 00:34:47,040
numbers in terms of total numbers of

971
00:34:50,950 --> 00:34:49,119
debris that we've seen

972
00:34:53,030 --> 00:34:50,960
we are about where i expect us to be in

973
00:34:55,030 --> 00:34:53,040
that part of the process

974
00:34:57,910 --> 00:34:55,040
and the imagery

975
00:34:59,670 --> 00:34:57,920
team did give us an update on

976
00:35:01,589 --> 00:34:59,680
on where they are with respect to their

977
00:35:03,190 --> 00:35:01,599
expectation on flight day four and and

978
00:35:04,390 --> 00:35:03,200
they're right pretty much where they

979
00:35:06,390 --> 00:35:04,400
plan to be

980
00:35:08,790 --> 00:35:06,400
on these missions so

981
00:35:10,470 --> 00:35:08,800
um in a couple of days we'll we'll have

982
00:35:12,069 --> 00:35:10,480
some more information

983
00:35:14,390 --> 00:35:12,079
and we'll have an opportunity to see

984
00:35:15,670 --> 00:35:14,400
some videos and and we'll be able to

985
00:35:18,470 --> 00:35:15,680
to be able to talk a little bit more

986
00:35:19,510 --> 00:35:18,480
about some of that data so i don't have

987
00:35:24,710 --> 00:35:19,520
any

988
00:35:26,470 --> 00:35:24,720

thank you for me

989
00:35:28,870 --> 00:35:26,480
okay todd halverson please go ahead with

990
00:35:31,270 --> 00:35:28,880
your question

991
00:35:32,230 --> 00:35:31,280
thanks todd helpers in florida today i

992
00:35:36,069 --> 00:35:32,240
actually

993
00:35:38,069 --> 00:35:36,079
have uh two the first for leroy um given

994
00:35:39,990 --> 00:35:38,079
the fact that um you're not going to

995
00:35:43,829 --> 00:35:40,000
have a focus inspection tomorrow would

996
00:35:47,910 --> 00:35:43,839
there be any changes to the uh the

997
00:35:52,390 --> 00:35:47,920
timeline in regard to uh what you would

998
00:35:53,910 --> 00:35:52,400
have been doing on orbits uh 62 and 63

999
00:35:57,270 --> 00:35:53,920
um

1000
00:35:59,349 --> 00:35:57,280
during that time thanks

1001
00:36:02,710 --> 00:35:59,359
um there there will be some activities

1002
00:36:04,470 --> 00:36:02,720
in that time frame um the team uh today

1003
00:36:06,630 --> 00:36:04,480
when we asked that question

1004
00:36:08,790 --> 00:36:06,640
uh said we have sort of a shopping list

1005
00:36:10,390 --> 00:36:08,800
of of things that they wanted to to try

1006
00:36:12,790 --> 00:36:10,400
to accomplish

1007
00:36:14,550 --> 00:36:12,800
in that white space where we would have

1008
00:36:17,270 --> 00:36:14,560
done a focus inspection if it should

1009
00:36:19,910 --> 00:36:17,280
have been deemed necessary so

1010
00:36:21,990 --> 00:36:19,920
i don't have the exact tasks

1011
00:36:24,069 --> 00:36:22,000
to to detail them for you but

1012
00:36:25,030 --> 00:36:24,079
but there were a handful of items that

1013
00:36:29,510 --> 00:36:25,040

they

1014
00:36:32,230 --> 00:36:29,520
accomplish in the event that we didn't

1015
00:36:34,230 --> 00:36:32,240
need a focused inspection so

1016
00:36:35,030 --> 00:36:34,240
once we get the updated timeline todd we

1017
00:36:40,710 --> 00:36:35,040
can

1018
00:36:44,069 --> 00:36:40,720
sure to get it to you

1019
00:36:47,750 --> 00:36:45,829
if you could just confirm for me whether

1020
00:36:51,430 --> 00:36:47,760
the mrm

1021
00:36:53,510 --> 00:36:51,440
timeline will remain the same as

1022
00:36:56,630 --> 00:36:53,520
advertised right now that would help and

1023
00:36:58,390 --> 00:36:56,640
then i have one for whomever wants to

1024
00:36:59,510 --> 00:36:58,400
field it i'm i'm just wondering how

1025
00:37:01,750 --> 00:36:59,520
tricky

1026
00:37:04,950 --> 00:37:01,760
it might be to uh

1027
00:37:09,109 --> 00:37:04,960
actually thread the mrm up through the

1028
00:37:12,710 --> 00:37:09,119
stack to uh to zarya tomorrow

1029
00:37:15,030 --> 00:37:12,720
i think i can take both of those um

1030
00:37:16,710 --> 00:37:15,040
the imran one timeline is

1031
00:37:20,230 --> 00:37:16,720
roughly the same although we did get

1032
00:37:22,470 --> 00:37:20,240
ahead and grappled mrm1 before the crew

1033
00:37:25,750 --> 00:37:22,480
finished up operations today so we're

1034
00:37:27,589 --> 00:37:25,760
ahead by that first half hour activity

1035
00:37:29,750 --> 00:37:27,599
so we may get maybe a half an hour

1036
00:37:31,430 --> 00:37:29,760
earlier start in the morning

1037
00:37:34,390 --> 00:37:31,440
in the crew morning

1038
00:37:36,710 --> 00:37:34,400

in terms of threading mrm1 into the

1039
00:37:38,390 --> 00:37:36,720
installation location it

1040
00:37:40,630 --> 00:37:38,400
actually is a pretty free trajectory

1041
00:37:42,870 --> 00:37:40,640
from the shuttle payload bay

1042
00:37:44,230 --> 00:37:42,880
kind of down and around up to the nader

1043
00:37:46,310 --> 00:37:44,240
port on

1044
00:37:48,630 --> 00:37:46,320
the zarya module and so

1045
00:37:50,790 --> 00:37:48,640
with the comment from garrett and piers

1046
00:37:52,150 --> 00:37:50,800
when they saw what those views were

1047
00:37:53,829 --> 00:37:52,160
going to look like out of the cupola

1048
00:37:55,430 --> 00:37:53,839
windows

1049
00:37:57,109 --> 00:37:55,440
their comment was basically that with

1050
00:37:59,190 --> 00:37:57,119
those views they don't need camera

1051
00:38:00,950 --> 00:37:59,200
angles for for most of that trajectory

1052
00:38:03,030 --> 00:38:00,960
because they can see the entire arm and

1053
00:38:06,790 --> 00:38:03,040
they can see the module itself

1054
00:38:08,630 --> 00:38:06,800
so once we get close

1055
00:38:10,550 --> 00:38:08,640
there will obviously be

1056
00:38:11,270 --> 00:38:10,560
far more attention paid to the alignment

1057
00:38:13,190 --> 00:38:11,280
but

1058
00:38:15,430 --> 00:38:13,200
for the automated portion of the

1059
00:38:17,589 --> 00:38:15,440
trajectory which is the largest sweep

1060
00:38:19,589 --> 00:38:17,599
from the handoff from the shuttle arm

1061
00:38:21,190 --> 00:38:19,599
all the way over to pretty close to the

1062
00:38:22,870 --> 00:38:21,200
zarya module

1063
00:38:24,470 --> 00:38:22,880

that's a pretty free

1064
00:38:26,150 --> 00:38:24,480
motion without a lot of hardware around

1065
00:38:36,230 --> 00:38:26,160
it

1066
00:38:37,109 --> 00:38:36,240
and this is a question for lisa i think

1067
00:38:38,870 --> 00:38:37,119
um

1068
00:38:41,030 --> 00:38:38,880
i'm wondering if you do decide to

1069
00:38:43,030 --> 00:38:41,040
complete the antenna installation during

1070
00:38:43,910 --> 00:38:43,040
one of the two remaining evas on this

1071
00:38:46,069 --> 00:38:43,920
flight

1072
00:38:48,630 --> 00:38:46,079
do you have any idea at this point how

1073
00:38:51,270 --> 00:38:48,640
much of an impact it would have on

1074
00:38:52,790 --> 00:38:51,280
that eva schedule basically does it seem

1075
00:38:55,670 --> 00:38:52,800
like there's a lot of work left to do or

1076
00:38:57,430 --> 00:38:55,680
would it be a minor addition

1077
00:39:00,870 --> 00:38:57,440
um basically right now when we talk

1078
00:39:02,790 --> 00:39:00,880
about completing the escant task

1079
00:39:06,230 --> 00:39:02,800
all that really would need to be do done

1080
00:39:07,270 --> 00:39:06,240
possibly is remove those gimbal locks

1081
00:39:09,670 --> 00:39:07,280
and

1082
00:39:10,790 --> 00:39:09,680
depending on what the teams come back as

1083
00:39:12,470 --> 00:39:10,800
far as the

1084
00:39:14,870 --> 00:39:12,480
attachment of the antenna to the boom

1085
00:39:16,069 --> 00:39:14,880
maybe re-torquing

1086
00:39:17,349 --> 00:39:16,079
those bolts

1087
00:39:19,190 --> 00:39:17,359
so we're probably looking in the

1088
00:39:22,150 --> 00:39:19,200

neighborhood of

1089
00:39:23,670 --> 00:39:22,160
30 to 45 minutes worth of work for a

1090
00:39:25,750 --> 00:39:23,680
single crew member

1091
00:39:27,030 --> 00:39:25,760
up on top of the z1 and we're just going

1092
00:39:29,829 --> 00:39:27,040
to have to

1093
00:39:32,870 --> 00:39:29,839
see how eva 2 and 3 go with our primary

1094
00:39:34,710 --> 00:39:32,880
objectives and then as emily said

1095
00:39:36,230 --> 00:39:34,720
you know wait and hear what the analysis

1096
00:39:42,550 --> 00:39:36,240
comes back on the gimbal locks as to

1097
00:39:45,109 --> 00:39:43,430
okay

1098
00:39:46,630 --> 00:39:45,119
did you have another question claire how

1099
00:39:49,270 --> 00:39:46,640
are you okay

1100
00:39:51,510 --> 00:39:49,280
and finally it's irene klotz

1101
00:39:52,550 --> 00:39:51,520
thanks very much um irene klops with

1102
00:39:55,510 --> 00:39:52,560
reuters

1103
00:39:56,710 --> 00:39:55,520
i had a question about this bft uh

1104
00:39:58,710 --> 00:39:56,720
transmission

1105
00:40:02,230 --> 00:39:58,720
um i was wondering if it had never

1106
00:40:03,589 --> 00:40:02,240
happened during an eva before

1107
00:40:05,430 --> 00:40:03,599
irene that question was kind of hard to

1108
00:40:08,710 --> 00:40:05,440
understand maybe you're too close to the

1109
00:40:18,069 --> 00:40:11,030
is that

1110
00:40:22,309 --> 00:40:20,790
can you hear me okay now that is better

1111
00:40:25,589 --> 00:40:22,319
thank you

1112
00:40:28,550 --> 00:40:25,599
on the cnc transition um has that ever

1113
00:40:31,829 --> 00:40:28,560

happened during an ev8 before

1114
00:40:33,990 --> 00:40:31,839
oh goodness um

1115
00:40:38,309 --> 00:40:34,000
i can't say definitively one way or the

1116
00:40:43,109 --> 00:40:40,550
the other question i had is um i thought

1117
00:40:45,349 --> 00:40:43,119
i heard uh one of the

1118
00:40:48,870 --> 00:40:45,359
astronauts saying that there was a loss

1119
00:40:52,470 --> 00:40:48,880
of emu data during that transition um

1120
00:40:57,109 --> 00:40:55,109
uh there there was it was just the um in

1121
00:40:59,109 --> 00:40:57,119
the transition of like emily said

1122
00:41:00,470 --> 00:40:59,119
reestablishing

1123
00:41:02,950 --> 00:41:00,480
uh

1124
00:41:06,710 --> 00:41:04,950
i guess our standard config just in the

1125
00:41:07,910 --> 00:41:06,720
process of reestablishing that we did

1126
00:41:09,910 --> 00:41:07,920
lose

1127
00:41:12,630 --> 00:41:09,920
suit data so the the data is actually

1128
00:41:14,790 --> 00:41:12,640
coming from the emus down to the ground

1129
00:41:16,790 --> 00:41:14,800
for a short period of time but during

1130
00:41:19,510 --> 00:41:16,800
that entire period the crew can monitor

1131
00:41:21,349 --> 00:41:19,520
their own suit data

1132
00:41:24,309 --> 00:41:21,359
thank you and what was the total amount

1133
00:41:27,510 --> 00:41:24,319
of time that it took for the

1134
00:41:31,990 --> 00:41:29,270
um in terms of the critical

1135
00:41:33,589 --> 00:41:32,000
functionality so not including our the

1136
00:41:36,069 --> 00:41:33,599
video reconfigs that we had to do

1137
00:41:39,030 --> 00:41:36,079
manually i would say it's on the order

1138
00:41:41,430 --> 00:41:39,040

of two to five minutes at most to go

1139
00:41:42,870 --> 00:41:41,440
from the primary computer to the backup

1140
00:41:45,030 --> 00:41:42,880
and have all of that critical

1141
00:41:47,030 --> 00:41:45,040
functionality handed over i think today

1142
00:41:48,950 --> 00:41:47,040
it was more like two minutes

1143
00:41:52,550 --> 00:41:48,960
and then how much longer to have video

1144
00:41:54,390 --> 00:41:52,560
so that the um arm could be moved again

1145
00:41:56,630 --> 00:41:54,400
i think i i proctored it somewhere

1146
00:41:58,950 --> 00:41:56,640
around 10 minutes but i just wanted to

1147
00:42:01,190 --> 00:41:58,960
yeah i want to say it was about 15

1148
00:42:03,750 --> 00:42:01,200
minutes 10 to 15 minutes by the time we

1149
00:42:06,710 --> 00:42:03,760
got all of the confu configuration set

1150
00:42:09,109 --> 00:42:06,720
back up for the video routing to support

1151
00:42:10,230 --> 00:42:09,119
tracy and piers's continuation of the

1152
00:42:12,470 --> 00:42:10,240
arm ops

1153
00:42:14,309 --> 00:42:12,480
okay thanks very much

1154
00:42:15,109 --> 00:42:14,319
okay do we have any follow-ups here go

1155
00:42:16,550 --> 00:42:15,119
ahead

1156
00:42:18,150 --> 00:42:16,560
just one quick one for emily just just

1157
00:42:19,829 --> 00:42:18,160
to be clear on mrm one i think i know

1158
00:42:21,670 --> 00:42:19,839
the answer is but there's there is no

1159
00:42:23,030 --> 00:42:21,680
hardware that can be messed with if

1160
00:42:25,349 --> 00:42:23,040
something doesn't go right this is all

1161
00:42:27,030 --> 00:42:25,359
software driven and it'll either work or

1162
00:42:28,390 --> 00:42:27,040
it won't and in the only fallback

1163
00:42:30,390 --> 00:42:28,400

positions put it back in the bay there's

1164
00:42:33,510 --> 00:42:30,400
no way to leave it anywhere else if you

1165
00:42:33,520 --> 00:42:37,670
fundamentally yes

1166
00:42:42,470 --> 00:42:39,829
the there are some hardware failures in

1167
00:42:44,950 --> 00:42:42,480
the mrm one itself that the backup for

1168
00:42:46,710 --> 00:42:44,960
those failures is in zarya is in the

1169
00:42:48,790 --> 00:42:46,720
zarya half of the interface which is why

1170
00:42:51,030 --> 00:42:48,800
we're doing mrm1 install in the morning

1171
00:42:52,630 --> 00:42:51,040
because the the zarya half of the

1172
00:42:54,550 --> 00:42:52,640
interface is only commanded via the

1173
00:42:55,829 --> 00:42:54,560
russian ground sites which we only have

1174
00:42:58,069 --> 00:42:55,839
in the morning in the crew morning

1175
00:43:00,710 --> 00:42:58,079
period so we were careful to schedule

1176
00:43:02,230 --> 00:43:00,720
that activity to leave ourselves plenty

1177
00:43:04,069 --> 00:43:02,240
of russian ground sites after the

1178
00:43:06,230 --> 00:43:04,079
nominal completion of installation in

1179
00:43:07,990 --> 00:43:06,240
case for example we

1180
00:43:09,270 --> 00:43:08,000
draw if the probe works fine and we draw

1181
00:43:11,510 --> 00:43:09,280
the two interfaces together but the

1182
00:43:15,349 --> 00:43:11,520
hooks are for some reason not working on

1183
00:43:18,309 --> 00:43:15,359
the mrm side of the interface then

1184
00:43:19,990 --> 00:43:18,319
our moscow team will send commands to

1185
00:43:21,750 --> 00:43:20,000
the zarya side of the interface and

1186
00:43:23,910 --> 00:43:21,760
drive the hooks from that side which

1187
00:43:25,910 --> 00:43:23,920
accomplish the same goal they're exactly

1188
00:43:29,349 --> 00:43:25,920

the same hardware physically located in

1189
00:43:33,030 --> 00:43:31,109
fundamentally yes there's nothing that

1190
00:43:35,829 --> 00:43:33,040
we can do if there are failures in mrm1

1191
00:43:37,829 --> 00:43:35,839
in terms of gaining access to hardware

1192
00:43:39,589 --> 00:43:37,839
except for that one where the the backup

1193
00:43:42,950 --> 00:43:39,599
hardware is actually located on the fgb

1194
00:43:46,630 --> 00:43:45,109
any other follow-ups here

1195
00:43:48,230 --> 00:43:46,640
being done we'll go ahead and send nasa

1196
00:43:50,309 --> 00:43:48,240
television back to mission control for

1197
00:43:52,470 --> 00:43:50,319
an update of the activities in space and

1198
00:43:55,750 --> 00:43:52,480
as always you can follow along on the