1
00:00:05,190 --> 00:00:02,710
good morning from the johnson space

2
00:00:07,349 --> 00:00:05,200
center here in houston i'm dan hewitt

3
00:00:09,270 --> 00:00:07,359
two expedition 39 astronauts are getting

4
00:00:11,110 --> 00:00:09,280
ready to go outside and do a spacewalk

5
00:00:13,270 --> 00:00:11,120
to replace a failed backup relay

6
00:00:14,789 --> 00:00:13,280
computer here to give us a status update

7
00:00:16,630 --> 00:00:14,799
and walk us through the spacewalk we

8
00:00:18,230 --> 00:00:16,640
have mr mike sufferdini the

9
00:00:19,990 --> 00:00:18,240
international space station program

10
00:00:22,710 --> 00:00:20,000
manager he'll be joining us from the

11
00:00:24,230 --> 00:00:22,720
kennedy space center down in florida

12
00:00:25,830 --> 00:00:24,240
here in the room we have brian smith

13
00:00:28,230 --> 00:00:25,840

international space station flight

14
00:00:30,630 --> 00:00:28,240
director who will be overseeing the eva

15
00:00:33,910 --> 00:00:30,640
as it comes up we also have glenda brown

16
00:00:35,510 --> 00:00:33,920
the lead spacewalk officer for eva 26

17
00:00:36,790 --> 00:00:35,520
start off with opening remarks from each

18
00:00:37,910 --> 00:00:36,800
of them and then we'll open it up for

19
00:00:39,110 --> 00:00:37,920
questions

20
00:00:43,590 --> 00:00:39,120
why don't we start off with mike

21
00:00:47,830 --> 00:00:46,310
well good morning everyone uh this uh

22
00:00:50,549 --> 00:00:47,840
press conference is supposed to be about

23
00:00:52,790 --> 00:00:50,559
the eva but we'll talk about uh what's

24
00:00:55,029 --> 00:00:52,800
uh most immediate in our future and that

25
00:00:56,310 --> 00:00:55,039
is the launch of the uh dragon

26
00:00:59,670 --> 00:00:56,320
spacecraft

27
00:01:01,510 --> 00:00:59,680
out at uh launch pad 40. uh the the uh

28
00:01:04,789 --> 00:01:01,520
falcon rocket itself

29
00:01:06,710 --> 00:01:04,799
uh has been uh repaired since uh the uh

30
00:01:09,270 --> 00:01:06,720
discovery of the uh

31
00:01:10,789 --> 00:01:09,280
orifice issue in um during the last

32
00:01:15,030 --> 00:01:10,799
launch countdown that's all been

33
00:01:17,590 --> 00:01:15,040
repaired we put fresh science on board

34
00:01:20,149 --> 00:01:17,600
buttoned it up and rolled out last night

35
00:01:21,830 --> 00:01:20,159
the vehicle is currently at the pad

36
00:01:25,190 --> 00:01:21,840
and we're counting down to a launch at 3

37
00:01:26,390 --> 00:01:25,200
25 this afternoon local time

38
00:01:28,310 --> 00:01:26,400

of course the big

39
00:01:30,390 --> 00:01:28,320
big question mark is the weather

40
00:01:32,710 --> 00:01:30,400
i think we're still at about uh

41
00:01:34,149 --> 00:01:32,720
predicted to be 60 percent chance of no

42
00:01:37,510 --> 00:01:34,159
go

43
00:01:39,030 --> 00:01:37,520
as a result of weather however

44
00:01:40,390 --> 00:01:39,040
a big part of the challenge is just

45
00:01:42,550 --> 00:01:40,400
getting out there and being ready in

46
00:01:44,149 --> 00:01:42,560
case a hole opens up

47
00:01:46,069 --> 00:01:44,159
and so that's where we're at that gives

48
00:01:48,630 --> 00:01:46,079
us the best chance of success and in

49
00:01:50,230 --> 00:01:48,640
fact once this little frontal boundary

50
00:01:53,030 --> 00:01:50,240
passes over there's a pretty good chance

51
00:01:55,510 --> 00:01:53,040
we'll we'll potentially find a hole in

52
00:01:57,670 --> 00:01:55,520
the weather and and get off the pad

53
00:01:59,830 --> 00:01:57,680
if we don't make today then we'll uh

54
00:02:02,230 --> 00:01:59,840
we'll do a scrub turn around for 24

55
00:02:04,630 --> 00:02:02,240
hours and and try tomorrow

56
00:02:07,270 --> 00:02:04,640
about 23 minutes earlier

57
00:02:09,430 --> 00:02:07,280
that does affect the eva plan if we

58
00:02:11,350 --> 00:02:09,440
launch today the plan is to do the eva

59
00:02:13,510 --> 00:02:11,360
on april 23rd

60
00:02:15,030 --> 00:02:13,520
we'll launch dragon we'll birth dragon

61
00:02:17,589 --> 00:02:15,040
on the 20th

62
00:02:19,190 --> 00:02:17,599
about seven in the morning eastern time

63
00:02:20,790 --> 00:02:19,200

and then we have some research we need

64
00:02:23,110 --> 00:02:20,800
to get started on so we'll open up the

65
00:02:24,869 --> 00:02:23,120
hatch we'll get the research started

66
00:02:27,589 --> 00:02:24,879
and then we'll get things configured for

67
00:02:29,990 --> 00:02:27,599
the eva we also have a progress 53

68
00:02:31,110 --> 00:02:30,000
progress that has to depart as well so

69
00:02:32,470 --> 00:02:31,120
the crew will get up in the morning

70
00:02:34,790 --> 00:02:32,480
we'll get the progress on its way and

71
00:02:36,550 --> 00:02:34,800
then we'll conduct the eva

72
00:02:38,949 --> 00:02:36,560
brian and glinda will talk to you in

73
00:02:41,030 --> 00:02:38,959
detail about the eva but i will talk a

74
00:02:41,910 --> 00:02:41,040
little bit about the uh where we are

75
00:02:44,070 --> 00:02:41,920
from

76
00:02:45,030 --> 00:02:44,080
a risk posture standpoint

77
00:02:45,830 --> 00:02:45,040
um

78
00:02:52,309 --> 00:02:45,840
the

79
00:02:54,790 --> 00:02:52,319
a year or so ago with luca on board

80
00:02:57,110 --> 00:02:54,800
we have been working diligently to

81
00:02:59,350 --> 00:02:57,120
understand the cause of the anomaly and

82
00:03:01,110 --> 00:02:59,360
to recover from that cause

83
00:03:03,830 --> 00:03:01,120
but in the process we have done a

84
00:03:06,390 --> 00:03:03,840
thorough review of all of our processes

85
00:03:08,229 --> 00:03:06,400
and procedures and our hazard reports

86
00:03:10,550 --> 00:03:08,239
and we established a goal for ourselves

87
00:03:13,910 --> 00:03:10,560
to have all of that work done

88
00:03:16,070 --> 00:03:13,920

before we did a planned eba

89
00:03:17,509 --> 00:03:16,080
however the vehicle keeps flying and

90
00:03:19,350 --> 00:03:17,519
keeps operating

91
00:03:21,750 --> 00:03:19,360
and and occasionally we have contingency

92
00:03:23,670 --> 00:03:21,760
evas we've done one of those already as

93
00:03:26,070 --> 00:03:23,680
you know to do a pump module uh

94
00:03:30,149 --> 00:03:26,080
replacement and uh and we're prepared to

95
00:03:32,949 --> 00:03:30,159
do uh this one for this ext

96
00:03:35,350 --> 00:03:32,959
mdm that has failed

97
00:03:37,030 --> 00:03:35,360
from a risk standpoint

98
00:03:39,509 --> 00:03:37,040
we better understand the cause of the

99
00:03:41,990 --> 00:03:39,519
anomaly the anomaly is

100
00:03:44,149 --> 00:03:42,000
is due to contamination that was likely

101
00:03:45,750 --> 00:03:44,159
introduced by a filter that was used to

102
00:03:47,190 --> 00:03:45,760
clean the system

103
00:03:49,750 --> 00:03:47,200
we have since

104
00:03:52,309 --> 00:03:49,760
scrubbed all of the suits water lines

105
00:03:54,390 --> 00:03:52,319
are removed basically we've replaced the

106
00:03:56,149 --> 00:03:54,400
water or flushed the water

107
00:03:58,309 --> 00:03:56,159
three times and all three of the suits

108
00:03:59,509 --> 00:03:58,319
on orbit and the coolant lines in the

109
00:04:03,110 --> 00:03:59,519
station that

110
00:04:05,190 --> 00:04:03,120
provide cooling and water to the suits

111
00:04:06,630 --> 00:04:05,200
in addition to that we've of course

112
00:04:08,470 --> 00:04:06,640
replaced the filters now we have good

113
00:04:10,229 --> 00:04:08,480

filters on board

114
00:04:13,750 --> 00:04:10,239
we have replaced the

115
00:04:16,469 --> 00:04:13,760
fan pump sep that got clogged up in

116
00:04:20,229 --> 00:04:16,479
emu 3011 which we used for a previous

117
00:04:24,390 --> 00:04:20,239
eva the pump module eba and we just did

118
00:04:25,990 --> 00:04:24,400
the fan pump sep r r for suit 3005 and

119
00:04:28,390 --> 00:04:26,000
so the team is going to recommend to the

120
00:04:30,710 --> 00:04:28,400
mission management team here next week

121
00:04:32,469 --> 00:04:30,720
that we utilize those two suits and

122
00:04:34,310 --> 00:04:32,479
they've been prepped and and they're

123
00:04:36,870 --> 00:04:34,320
ready to go and i'm sure brian and

124
00:04:39,350 --> 00:04:36,880
glendale have more to say about that

125
00:04:41,749 --> 00:04:39,360
uh one of the uh the challenges with

126
00:04:43,590 --> 00:04:41,759
these suits is to to understand the

127
00:04:45,749 --> 00:04:43,600
water chemistry and we're learning quite

128
00:04:47,590 --> 00:04:45,759
a bit about water chemistry in the suits

129
00:04:49,350 --> 00:04:47,600
and the sensitivities

130
00:04:51,110 --> 00:04:49,360
and the contaminations that can be

131
00:04:53,350 --> 00:04:51,120
scrubbed out and those that are very

132
00:04:57,830 --> 00:04:53,360
very difficult to scrub out

133
00:05:01,110 --> 00:04:57,840
so in this process we have become quite

134
00:05:03,189 --> 00:05:01,120
i would say more adept at uh figuring

135
00:05:04,629 --> 00:05:03,199
out how to keep the water clean and the

136
00:05:07,189 --> 00:05:04,639
significance of

137
00:05:07,990 --> 00:05:07,199
of certain constituents in the water and

138
00:05:12,550 --> 00:05:08,000

and

139
00:05:15,189 --> 00:05:12,560
so as part of the process that we're

140
00:05:17,430 --> 00:05:15,199
going through to continue to plan dvas

141
00:05:19,110 --> 00:05:17,440
we're updating all of our hazard reports

142
00:05:21,590 --> 00:05:19,120
and of course we need to do our final

143
00:05:24,230 --> 00:05:21,600
failure analysis and and conclusion for

144
00:05:26,870 --> 00:05:24,240
the anomaly uh to make sure that we've

145
00:05:29,510 --> 00:05:26,880
repaired all of the or chased all the

146
00:05:32,469 --> 00:05:29,520
possible fault tree branches

147
00:05:34,870 --> 00:05:32,479
to a complete closure but again

148
00:05:36,390 --> 00:05:34,880
the preliminary information seems to

149
00:05:38,230 --> 00:05:36,400
point to the filters

150
00:05:41,029 --> 00:05:38,240
those of course have been removed and

151
00:05:42,950 --> 00:05:41,039
replaced with uh with good filters and

152
00:05:45,510 --> 00:05:42,960
the water's been flushed

153
00:05:47,749 --> 00:05:45,520
and so we've reduced the risk

154
00:05:49,670 --> 00:05:47,759
back down to an acceptable level

155
00:05:50,950 --> 00:05:49,680
so we have great confidence with the eba

156
00:05:52,950 --> 00:05:50,960
that we have planned it'll be a

157
00:05:55,029 --> 00:05:52,960
relatively short eba

158
00:05:56,309 --> 00:05:55,039
uh rick and uh

159
00:05:57,909 --> 00:05:56,319
um

160
00:05:59,029 --> 00:05:57,919
and swanny will go out and do the eba

161
00:06:01,270 --> 00:05:59,039
excuse me

162
00:06:03,430 --> 00:06:01,280
uh and uh and kuichi will help them get

163
00:06:07,749 --> 00:06:03,440

ready to go out and and

164
00:06:10,070 --> 00:06:07,759
manage the eva from inside the the iss

165
00:06:11,670 --> 00:06:10,080
so with that that's all my opening march

166
00:06:12,710 --> 00:06:11,680
we're ready to go both for the launch

167
00:06:15,670 --> 00:06:12,720
today

168
00:06:17,990 --> 00:06:15,680
and for the eba on whichever day is

169
00:06:18,830 --> 00:06:18,000
it turns out to be required thank you

170
00:06:21,590 --> 00:06:18,840
very

171
00:06:23,590 --> 00:06:21,600
much all right thanks mike brian

172
00:06:25,670 --> 00:06:23,600
all right good morning everybody

173
00:06:27,270 --> 00:06:25,680
let me give a brief overview of what

174
00:06:28,390 --> 00:06:27,280
we're talking about with the computer

175
00:06:30,870 --> 00:06:28,400
failure

176
00:06:34,469 --> 00:06:30,880
we refer to it as the external multiplex

177
00:06:36,309 --> 00:06:34,479
or demultiplexer or ext mdm is as we

178
00:06:38,710 --> 00:06:36,319
refer to it

179
00:06:41,430 --> 00:06:38,720
to put it in context there's 46

180
00:06:42,710 --> 00:06:41,440
computers on just the us portion of the

181
00:06:46,230 --> 00:06:42,720
space station

182
00:06:49,110 --> 00:06:46,240
24 of those are external and of those 24

183
00:06:50,550 --> 00:06:49,120
this extmdm controls 12 of them so it's

184
00:06:52,629 --> 00:06:50,560
it's very important

185
00:06:56,070 --> 00:06:52,639
we have two of them we run one at a time

186
00:06:57,909 --> 00:06:56,080
and we always have one in backup

187
00:06:59,749 --> 00:06:57,919
last friday afternoon

188
00:07:00,830 --> 00:06:59,759

during normal operations we powered on

189
00:07:03,670 --> 00:07:00,840
the backup

190
00:07:06,150 --> 00:07:03,680
extmdm and attempted to the intent was

191
00:07:07,830 --> 00:07:06,160
to load some files to it

192
00:07:09,350 --> 00:07:07,840
we do this periodically based on the

193
00:07:10,629 --> 00:07:09,360
operations that are going on on board

194
00:07:15,749 --> 00:07:10,639
iss

195
00:07:16,870 --> 00:07:15,759
we spent friday afternoon and friday

196
00:07:18,870 --> 00:07:16,880
evening

197
00:07:21,270 --> 00:07:18,880
attempting to get it to power on boot up

198
00:07:23,110 --> 00:07:21,280
correctly and communicate we were

199
00:07:24,309 --> 00:07:23,120
unsuccessful at which point we declared

200
00:07:25,510 --> 00:07:24,319
the mdm

201
00:07:28,710 --> 00:07:25,520
failed

202
00:07:30,629 --> 00:07:28,720
late friday night the iss program

203
00:07:32,950 --> 00:07:30,639
directed the mission operations director

204
00:07:34,309 --> 00:07:32,960
to initiate a team four effort

205
00:07:36,309 --> 00:07:34,319
most of you are probably familiar with

206
00:07:38,070 --> 00:07:36,319
the the terminology team four because we

207
00:07:40,710 --> 00:07:38,080
just did this

208
00:07:43,270 --> 00:07:40,720
back in december

209
00:07:44,790 --> 00:07:43,280
team four efforts are started when

210
00:07:46,710 --> 00:07:44,800
there's a serious problem on space

211
00:07:49,749 --> 00:07:46,720
station that needs to be solved in

212
00:07:52,710 --> 00:07:49,759
relatively short order to

213
00:07:55,510 --> 00:07:52,720

put the iss in a better risk posture

214
00:07:57,430 --> 00:07:55,520
and so the team four will consist of all

215
00:07:59,830 --> 00:07:57,440
engineering operations all support

216
00:08:01,510 --> 00:07:59,840
personnel necessary to solve the problem

217
00:08:04,550 --> 00:08:01,520
the team makeup will vary depending on

218
00:08:06,869 --> 00:08:04,560
what the nature of the problem is

219
00:08:08,869 --> 00:08:06,879
i've been leading this team for effort

220
00:08:10,629 --> 00:08:08,879
since early saturday morning

221
00:08:12,469 --> 00:08:10,639
and the teams have done a fantastic job

222
00:08:14,710 --> 00:08:12,479
trying to figure out how to solve this

223
00:08:17,990 --> 00:08:14,720
extmdm problem

224
00:08:19,350 --> 00:08:18,000
as mike alluded to this isn't a long eva

225
00:08:20,790 --> 00:08:19,360
there's certainly evas that are more

226
00:08:22,950 --> 00:08:20,800
complicated

227
00:08:25,270 --> 00:08:22,960
than this one

228
00:08:27,749 --> 00:08:25,280
however the real trick has been

229
00:08:29,189 --> 00:08:27,759
to figure out how to put this eva in the

230
00:08:32,550 --> 00:08:29,199
same week that we're doing the dragon

231
00:08:33,909 --> 00:08:32,560
mission and we're doing the 53p progress

232
00:08:35,750 --> 00:08:33,919
operations

233
00:08:37,350 --> 00:08:35,760
each one of those individually has its

234
00:08:39,589 --> 00:08:37,360
own constraints its own systems

235
00:08:41,110 --> 00:08:39,599
configurations that we need to to

236
00:08:42,550 --> 00:08:41,120
account for

237
00:08:44,870 --> 00:08:42,560
and we know how to do each one

238
00:08:47,430 --> 00:08:44,880

individually and we usually keep these

239
00:08:49,190 --> 00:08:47,440
events spaced apart

240
00:08:51,269 --> 00:08:49,200
in this scenario though we need to

241
00:08:52,630 --> 00:08:51,279
execute them relatively close to each

242
00:08:54,710 --> 00:08:52,640
other and that was the real challenge

243
00:08:56,310 --> 00:08:54,720
for team four we were tasked to go

244
00:08:58,790 --> 00:08:56,320
figure out

245
00:09:00,070 --> 00:08:58,800
how to replace this ext mdm as quickly

246
00:09:01,829 --> 00:09:00,080
as possible

247
00:09:03,430 --> 00:09:01,839
at the same time trying to fly this

248
00:09:05,990 --> 00:09:03,440
dragon mission in the presence of the

249
00:09:10,070 --> 00:09:06,000
next worst case failure

250
00:09:13,269 --> 00:09:10,080
situation would be loss of the one

251
00:09:15,110 --> 00:09:13,279
remaining extmdm that we have

252
00:09:16,870 --> 00:09:15,120
so i'll briefly describe what would

253
00:09:19,030 --> 00:09:16,880
happen if that were to be lost so you

254
00:09:20,630 --> 00:09:19,040
understand the criticality of going and

255
00:09:22,790 --> 00:09:20,640
replacing it and why we need to do this

256
00:09:25,590 --> 00:09:22,800
spacewalk in short order

257
00:09:27,350 --> 00:09:25,600
so if we were to lose our remaining ext

258
00:09:29,829 --> 00:09:27,360
mdm

259
00:09:32,310 --> 00:09:29,839
we would lose our ability to control our

260
00:09:34,550 --> 00:09:32,320
solar array rotary joints our sarges we

261
00:09:37,030 --> 00:09:34,560
need to control those one for power

262
00:09:38,870 --> 00:09:37,040
generation but also there's a large

263
00:09:41,269 --> 00:09:38,880

number of constraints on these solar

264
00:09:43,110 --> 00:09:41,279
arrays we don't want to have

265
00:09:45,110 --> 00:09:43,120
thrusters plummeting them when vehicles

266
00:09:47,110 --> 00:09:45,120
are coming in we don't want to erode or

267
00:09:49,829 --> 00:09:47,120
contaminate them

268
00:09:51,829 --> 00:09:49,839
and so there's a number of constraints

269
00:09:52,949 --> 00:09:51,839
that need to be satisfied and we always

270
00:09:54,470 --> 00:09:52,959
put these

271
00:09:56,630 --> 00:09:54,480
solar arrays we always command these

272
00:09:59,030 --> 00:09:56,640
sarges into a particular position we

273
00:10:00,790 --> 00:09:59,040
lose that capability and so the impacts

274
00:10:02,630 --> 00:10:00,800
would be to things like soyuz dockings

275
00:10:05,190 --> 00:10:02,640
undockings progress stockings and

276
00:10:06,630 --> 00:10:05,200
undockings dragon missions cygnus

277
00:10:07,670 --> 00:10:06,640
missions

278
00:10:09,670 --> 00:10:07,680
and so

279
00:10:12,470 --> 00:10:09,680
it's imperative that we maintain the the

280
00:10:14,710 --> 00:10:12,480
fault tolerance on these extmdms and

281
00:10:15,990 --> 00:10:14,720
right now we don't have that

282
00:10:16,790 --> 00:10:16,000
some of the other issues we would run

283
00:10:18,870 --> 00:10:16,800
into

284
00:10:20,389 --> 00:10:18,880
is being able to power on redundant

285
00:10:21,990 --> 00:10:20,399
equipment that's on the outside of the

286
00:10:23,829 --> 00:10:22,000
space station

287
00:10:25,590 --> 00:10:23,839
a large number of the commands that are

288
00:10:28,310 --> 00:10:25,600

required to turn on and off our

289
00:10:30,870 --> 00:10:28,320
redundant equipment pass through an ext

290
00:10:32,550 --> 00:10:30,880
mdm and without that we lose our ability

291
00:10:34,389 --> 00:10:32,560
to activate these

292
00:10:36,470 --> 00:10:34,399
the other equipment

293
00:10:39,750 --> 00:10:36,480
we also lose some insight and command

294
00:10:41,110 --> 00:10:39,760
capability into our external control

295
00:10:42,630 --> 00:10:41,120
thermal loops

296
00:10:44,310 --> 00:10:42,640
so these are what we talked about back

297
00:10:45,350 --> 00:10:44,320
in december when we had the loop alpha

298
00:10:47,509 --> 00:10:45,360
problem

299
00:10:50,069 --> 00:10:47,519
the loops will continue to run

300
00:10:51,590 --> 00:10:50,079
without an extmdm and we have all the

301
00:10:53,829 --> 00:10:51,600
failure detection and isolation and

302
00:10:55,990 --> 00:10:53,839
recovery software in place we just lose

303
00:10:58,470 --> 00:10:56,000
our ability to see the telemetry and to

304
00:11:00,630 --> 00:10:58,480
change the configuration

305
00:11:03,030 --> 00:11:00,640
so because of these impacts this

306
00:11:04,949 --> 00:11:03,040
particular failure was put on a list of

307
00:11:08,230 --> 00:11:04,959
critical failures that we would respond

308
00:11:10,470 --> 00:11:08,240
to quickly and we would go do an eva for

309
00:11:12,389 --> 00:11:10,480
and a lot of the work was done up front

310
00:11:14,230 --> 00:11:12,399
for this eva and we were able to

311
00:11:15,750 --> 00:11:14,240
capitalize on that when we started our

312
00:11:16,949 --> 00:11:15,760
team four effort

313
00:11:18,710 --> 00:11:16,959

throughout the week the teams have

314
00:11:21,190 --> 00:11:18,720
worked extremely hard we worked very

315
00:11:23,350 --> 00:11:21,200
long hours and we've come up with plans

316
00:11:25,590 --> 00:11:23,360
that would accommodate not only this eva

317
00:11:26,870 --> 00:11:25,600
but also the dragon mission as well as

318
00:11:29,509 --> 00:11:26,880
the progress

319
00:11:31,590 --> 00:11:29,519
operations and we've come up with two

320
00:11:33,430 --> 00:11:31,600
different plans depending on when when

321
00:11:35,670 --> 00:11:33,440
the spacex launch occurs whether it

322
00:11:39,829 --> 00:11:35,680
occurs today or tomorrow we have those

323
00:11:43,990 --> 00:11:42,470
all right over to you glenda okay to

324
00:11:46,069 --> 00:11:44,000
give you a few more details about the

325
00:11:47,590 --> 00:11:46,079
eva itself uh first of all let's talk

326
00:11:49,110 --> 00:11:47,600
about the crew members

327
00:11:50,629 --> 00:11:49,120
our ev1

328
00:11:55,110 --> 00:11:50,639
is rick

329
00:11:57,990 --> 00:11:55,120
mastracchio and this is his ninth eba

330
00:11:59,829 --> 00:11:58,000
he's already got logged 20 i'm sorry 51

331
00:12:02,949 --> 00:11:59,839
hours and 28 minutes

332
00:12:04,310 --> 00:12:02,959
and uh then eb2 is steve swanson we call

333
00:12:07,910 --> 00:12:04,320
him swanny

334
00:12:10,310 --> 00:12:07,920
this is his fifth eba he's logged 26

335
00:12:14,470 --> 00:12:10,320
hours and 22 minutes on his previous

336
00:12:16,949 --> 00:12:14,480
edas all together we've had 178

337
00:12:18,550 --> 00:12:16,959
spacewalks up until now maintaining and

338
00:12:21,910 --> 00:12:18,560

building the international space station

339
00:12:23,829 --> 00:12:21,920
this will be our 179th

340
00:12:26,069 --> 00:12:23,839
brian mentioned a lot of crew member a

341
00:12:28,069 --> 00:12:26,079
lot of team members working together to

342
00:12:30,150 --> 00:12:28,079
pull together all of the plans uh the

343
00:12:31,670 --> 00:12:30,160
work started several years ago when we

344
00:12:32,790 --> 00:12:31,680
identified that this was a critical

345
00:12:36,389 --> 00:12:32,800
spare

346
00:12:39,030 --> 00:12:36,399
we formed the failure response

347
00:12:40,629 --> 00:12:39,040
action teams or frats and it's a bunch

348
00:12:42,470 --> 00:12:40,639
of engineers that get together they

349
00:12:45,030 --> 00:12:42,480
review all of the documentation and then

350
00:12:47,829 --> 00:12:45,040
they prepare all of the work that would

351
00:12:49,430 --> 00:12:47,839
come prior to in development of this eba

352
00:12:51,030 --> 00:12:49,440
right down to the very last stuff that

353
00:12:53,509 --> 00:12:51,040
we need to do

354
00:12:55,670 --> 00:12:53,519
that is specific to this uh particular

355
00:12:57,350 --> 00:12:55,680
event on this particular day

356
00:12:58,949 --> 00:12:57,360
so most of the work the hard work was

357
00:13:01,190 --> 00:12:58,959
done for us and now it's just packaging

358
00:13:03,269 --> 00:13:01,200
it all together and uh and putting it

359
00:13:06,550 --> 00:13:03,279
together into one eba

360
00:13:08,150 --> 00:13:06,560
uh we'll be assisted uh during the eva

361
00:13:10,870 --> 00:13:08,160
by

362
00:13:13,509 --> 00:13:10,880
ground iv jeremy hansen

363
00:13:15,110 --> 00:13:13,519

i'm supported by a number of people

364
00:13:17,670 --> 00:13:15,120
gathering all of that information from

365
00:13:19,829 --> 00:13:17,680
the host of engineers in my back room

366
00:13:22,389 --> 00:13:19,839
we'll have sandra moore at the task

367
00:13:25,670 --> 00:13:22,399
console we have sandra fletcher at the

368
00:13:28,150 --> 00:13:25,680
emu console reagan chaney is our airlock

369
00:13:29,509 --> 00:13:28,160
support and we have greer wilt helping

370
00:13:31,030 --> 00:13:29,519
all of them out

371
00:13:32,629 --> 00:13:31,040
they'll be gathering all of the inputs

372
00:13:34,150 --> 00:13:32,639
from the team

373
00:13:35,750 --> 00:13:34,160
that need to be

374
00:13:37,750 --> 00:13:35,760
gathered during the eva if there's a

375
00:13:39,829 --> 00:13:37,760
response that the crew needs we've got a

376
00:13:41,829 --> 00:13:39,839
lot of people standing by to provide

377
00:13:44,230 --> 00:13:41,839
that information

378
00:13:46,069 --> 00:13:44,240
so let's go ahead and run the video

379
00:13:51,509 --> 00:13:46,079
so we can see just what we're going to

380
00:13:57,030 --> 00:13:54,069
so our eva to repair the

381
00:13:58,629 --> 00:13:57,040
xmdm or external multiplexer

382
00:14:00,829 --> 00:13:58,639
demultiplexer

383
00:14:03,030 --> 00:14:00,839
will begin as we always do at the quest

384
00:14:04,949 --> 00:14:03,040
airlock as you can see here in the

385
00:14:08,470 --> 00:14:04,959
center of the photo we egress through

386
00:14:11,030 --> 00:14:08,480
the airlock at the nader hatch

387
00:14:13,269 --> 00:14:11,040
eb1 will exit the airlock first that'll

388
00:14:14,389 --> 00:14:13,279

be rick coming out first

389
00:14:16,629 --> 00:14:14,399
and

390
00:14:18,069 --> 00:14:16,639
steve will follow him out

391
00:14:19,269 --> 00:14:18,079
between the two of them they'll manage

392
00:14:21,189 --> 00:14:19,279
the hardware that they're bringing out

393
00:14:23,430 --> 00:14:21,199
we're showing several bags here but what

394
00:14:25,189 --> 00:14:23,440
we've really boiled down to now is just

395
00:14:28,069 --> 00:14:25,199
uh the one

396
00:14:29,430 --> 00:14:28,079
oru bag containing the mdm that will

397
00:14:31,269 --> 00:14:29,440
translate to the work site they're going

398
00:14:34,069 --> 00:14:31,279
to carry all their other tools on their

399
00:14:36,870 --> 00:14:34,079
persons they'll translate up the ceta

400
00:14:38,230 --> 00:14:36,880
spur up to the handrail up to the z

401
00:14:39,590 --> 00:14:38,240
s zero

402
00:14:42,150 --> 00:14:39,600
face one

403
00:14:44,870 --> 00:14:42,160
uh and work along the c to hand rail

404
00:14:47,430 --> 00:14:44,880
face one is where the mobile transporter

405
00:14:49,430 --> 00:14:47,440
that holds the ssrms is normally parked

406
00:14:51,189 --> 00:14:49,440
right over the top of these mdms we've

407
00:14:53,110 --> 00:14:51,199
moved that out of the way and it's at

408
00:14:56,069 --> 00:14:53,120
work site two now

409
00:14:58,870 --> 00:14:56,079
they'll be uh getting into position

410
00:15:00,470 --> 00:14:58,880
stowing the bag that's got the oru in it

411
00:15:02,550 --> 00:15:00,480
stowing any other tools that they bring

412
00:15:04,949 --> 00:15:02,560
with them that they want to have handy

413
00:15:07,269 --> 00:15:04,959

and then rick will get into position uh

414
00:15:09,269 --> 00:15:07,279
in a heads-down position in front of the

415
00:15:11,670 --> 00:15:09,279
mdm there's the mdm right there and

416
00:15:13,750 --> 00:15:11,680
we're gonna rather than not show rather

417
00:15:15,110 --> 00:15:13,760
than show him over the top of the box

418
00:15:18,069 --> 00:15:15,120
we'll leave him out of the way for the

419
00:15:19,350 --> 00:15:18,079
purposes of this video

420
00:15:20,790 --> 00:15:19,360
when they get to the work site they're

421
00:15:23,110 --> 00:15:20,800
going to look around and see if they can

422
00:15:25,750 --> 00:15:23,120
find any damage if it's daylight we'll

423
00:15:27,189 --> 00:15:25,760
take some photos

424
00:15:29,030 --> 00:15:27,199
if it's darkness we'll go ahead and

425
00:15:30,710 --> 00:15:29,040
proceed to get the work done rick will

426
00:15:32,389 --> 00:15:30,720
get into position

427
00:15:34,230 --> 00:15:32,399
and

428
00:15:36,949 --> 00:15:34,240
remove the

429
00:15:39,269 --> 00:15:36,959
handling tool or the scoop we call that

430
00:15:41,430 --> 00:15:39,279
in a scoop because it looks like an ice

431
00:15:43,829 --> 00:15:41,440
an ice cream scoop

432
00:15:46,470 --> 00:15:43,839
he'll remove that and then he will drive

433
00:15:48,949 --> 00:15:46,480
the three bolts that are on the front of

434
00:15:50,550 --> 00:15:48,959
the mdm i've got the mdm here in the

435
00:15:53,030 --> 00:15:50,560
room and i'll show you that when we're

436
00:15:54,629 --> 00:15:53,040
completed with the video

437
00:15:56,629 --> 00:15:54,639
steve will be standing by and helping

438
00:15:59,189 --> 00:15:56,639

him out with access to any of the tools

439
00:16:01,670 --> 00:15:59,199
that he needs uh taking anything away

440
00:16:03,350 --> 00:16:01,680
from him and stowing it uh here we have

441
00:16:05,670 --> 00:16:03,360
him just handling the scoop to give you

442
00:16:08,550 --> 00:16:05,680
an idea of of how he would be moving

443
00:16:11,430 --> 00:16:09,749
so

444
00:16:13,749 --> 00:16:11,440
the scoop gets installed on the front of

445
00:16:15,990 --> 00:16:13,759
the box so we've decided to bring it out

446
00:16:18,069 --> 00:16:16,000
installed on the front of the

447
00:16:20,710 --> 00:16:18,079
the oru bag and we'll install it here

448
00:16:22,949 --> 00:16:20,720
onto the failed unit

449
00:16:24,389 --> 00:16:22,959
we have to drive the bolts first before

450
00:16:26,310 --> 00:16:24,399
we install the scoop and so it'll be

451
00:16:28,870 --> 00:16:26,320
ready to pull right on out as soon as we

452
00:16:31,110 --> 00:16:28,880
uh we drive those bolts

453
00:16:32,949 --> 00:16:31,120
well temp stow it out of the way and we

454
00:16:35,509 --> 00:16:32,959
picked a nice safe spot that we'll most

455
00:16:37,350 --> 00:16:35,519
likely use down inside the truss we'll

456
00:16:39,110 --> 00:16:37,360
tie it off to a hand rail there so it's

457
00:16:42,230 --> 00:16:39,120
out of the way while we do the work with

458
00:16:45,350 --> 00:16:43,749
there'll be an inspection of the cold

459
00:16:46,949 --> 00:16:45,360
plate and the bracket that holds the

460
00:16:49,030 --> 00:16:46,959
blind mate connectors which i'll be

461
00:16:50,470 --> 00:16:49,040
showing you in more detail

462
00:16:51,749 --> 00:16:50,480
afterwards

463
00:16:54,629 --> 00:16:51,759

and

464
00:16:56,389 --> 00:16:54,639
then they'll access the new mdm out of

465
00:16:58,710 --> 00:16:56,399
the oru bag

466
00:17:00,629 --> 00:16:58,720
steve will help out as needed

467
00:17:02,550 --> 00:17:00,639
to hand that off to rick

468
00:17:05,350 --> 00:17:02,560
they'll be inspecting both the

469
00:17:09,990 --> 00:17:05,360
new oru and the cold plate one last time

470
00:17:15,590 --> 00:17:13,110
again it's got three bolts so we'll just

471
00:17:17,829 --> 00:17:15,600
install the center jacking bolt first

472
00:17:19,750 --> 00:17:17,839
and then use the other two tie down

473
00:17:21,510 --> 00:17:19,760
bolts to hold it in place if we should

474
00:17:22,309 --> 00:17:21,520
have any trouble with either the any of

475
00:17:26,870 --> 00:17:22,319
the

476
00:17:28,470 --> 00:17:26,880
in place we'll be uh

477
00:17:29,990 --> 00:17:28,480
we'll be good to go with just the center

478
00:17:34,070 --> 00:17:30,000
jacking bolt that just

479
00:17:35,510 --> 00:17:34,080
provides some extra security to the box

480
00:17:37,909 --> 00:17:35,520
and we take the

481
00:17:39,190 --> 00:17:37,919
scoop off of the new oru

482
00:17:41,350 --> 00:17:39,200
stow it

483
00:17:42,310 --> 00:17:41,360
for return to the airlock

484
00:17:43,110 --> 00:17:42,320
and

485
00:17:45,510 --> 00:17:43,120
then

486
00:17:47,590 --> 00:17:45,520
pack up all of our tools

487
00:17:48,549 --> 00:17:47,600
pack up the oru bag

488
00:17:50,950 --> 00:17:48,559

and

489
00:17:52,549 --> 00:17:50,960
do some final inspections if we haven't

490
00:17:54,310 --> 00:17:52,559
had daylight when we first come out

491
00:17:55,190 --> 00:17:54,320
we'll take the photos at the end of the

492
00:17:56,310 --> 00:17:55,200
work

493
00:17:58,230 --> 00:17:56,320
and

494
00:18:00,549 --> 00:17:58,240
then

495
00:18:02,630 --> 00:18:00,559
pack up everything and come inside

496
00:18:05,590 --> 00:18:02,640
the trans oh i'm sorry we have to pack

497
00:18:07,750 --> 00:18:05,600
up the oru the

498
00:18:09,350 --> 00:18:07,760
failed our u goes back into the oru bag

499
00:18:11,909 --> 00:18:09,360
before we can uh come back to the

500
00:18:14,549 --> 00:18:11,919
airlock with it

501
00:18:16,789 --> 00:18:14,559
so grab the bags and head back

502
00:18:20,150 --> 00:18:16,799
inside we follow the same translation

503
00:18:23,190 --> 00:18:21,750
out to the worksite on to return back

504
00:18:25,350 --> 00:18:23,200
down to the airlock

505
00:18:26,789 --> 00:18:25,360
so you can see it's a pretty simple

506
00:18:28,789 --> 00:18:26,799
eva

507
00:18:30,070 --> 00:18:28,799
in terms of the overall work that we

508
00:18:32,310 --> 00:18:30,080
have to do

509
00:18:34,230 --> 00:18:32,320
it's just coming out to the airlock

510
00:18:35,350 --> 00:18:34,240
driving three bolts to remove the failed

511
00:18:36,150 --> 00:18:35,360
unit

512
00:18:39,270 --> 00:18:36,160
uh

513
00:18:40,830 --> 00:18:39,280

removing it temp stowing it and then

514
00:18:43,190 --> 00:18:40,840
installing the new one very

515
00:18:45,830 --> 00:18:43,200
straightforward at the end of the eva

516
00:18:48,070 --> 00:18:45,840
they'll come back inside and and we'll

517
00:18:50,789 --> 00:18:48,080
be done

518
00:18:53,750 --> 00:18:50,799
so now if we can look at the

519
00:18:55,350 --> 00:18:53,760
at the mdm that i brought with me

520
00:18:57,510 --> 00:18:55,360
so

521
00:18:58,390 --> 00:18:57,520
this is what the size of the box looks

522
00:18:59,350 --> 00:18:58,400
like

523
00:19:02,310 --> 00:18:59,360
um

524
00:19:03,669 --> 00:19:02,320
the one difference is uh this mock-up is

525
00:19:06,390 --> 00:19:03,679
for a new box that we're going to be

526
00:19:08,789 --> 00:19:06,400
installing next summer on an eva and it

527
00:19:11,029 --> 00:19:08,799
will not the box we're working on does

528
00:19:13,190 --> 00:19:11,039
not have this electrical connector that

529
00:19:15,430 --> 00:19:13,200
is an upgrade for the new system that

530
00:19:19,110 --> 00:19:15,440
will be installed uh

531
00:19:20,390 --> 00:19:19,120
next year summer of 2015.

532
00:19:22,150 --> 00:19:20,400
so the

533
00:19:24,630 --> 00:19:22,160
the bolts that i mentioned are right

534
00:19:25,830 --> 00:19:24,640
here at the bottom of the the

535
00:19:27,990 --> 00:19:25,840
oru

536
00:19:29,590 --> 00:19:28,000
it's got the two tie-down bolts here and

537
00:19:31,830 --> 00:19:29,600
then the primary bolt which is in the

538
00:19:34,070 --> 00:19:31,840

middle that's the jacking bolt

539
00:19:36,789 --> 00:19:34,080
so in order to remove it you release the

540
00:19:39,430 --> 00:19:36,799
two outside fasteners first

541
00:19:41,590 --> 00:19:39,440
and then drive the bolt in the primary

542
00:19:43,190 --> 00:19:41,600
bolt and what that does is you drive

543
00:19:43,990 --> 00:19:43,200
that bolt out

544
00:19:55,510 --> 00:19:44,000
it

545
00:19:57,029 --> 00:19:55,520
going to set this here for just a moment

546
00:19:59,270 --> 00:19:57,039
to talk to you about what the work site

547
00:20:01,510 --> 00:19:59,280
looks a little bit like this is a one of

548
00:20:03,430 --> 00:20:01,520
the plastic mock-ups that we have from

549
00:20:05,590 --> 00:20:03,440
the neutral buoyancy laboratory so it's

550
00:20:07,510 --> 00:20:05,600
not exactly flight-like but it does give

551
00:20:08,630 --> 00:20:07,520
you an idea of how the installation

552
00:20:10,630 --> 00:20:08,640
works

553
00:20:12,630 --> 00:20:10,640
so when you look at the installation

554
00:20:15,110 --> 00:20:12,640
bracket the blind mate connectors will

555
00:20:16,950 --> 00:20:15,120
be inside this bracket here and those

556
00:20:20,549 --> 00:20:16,960
will mate with the ones that are on the

557
00:20:22,870 --> 00:20:20,559
back side of the mdm so the mdm has ma

558
00:20:24,390 --> 00:20:22,880
mating connectors electrical and power

559
00:20:26,230 --> 00:20:24,400
and data

560
00:20:27,909 --> 00:20:26,240
to in the back of it

561
00:20:29,750 --> 00:20:27,919
the uh

562
00:20:32,390 --> 00:20:29,760
the

563
00:20:34,470 --> 00:20:32,400

cold plate that it's mounted to

564
00:20:37,029 --> 00:20:34,480
is right down here and then it has these

565
00:20:38,230 --> 00:20:37,039
three wedge locks that are at the back

566
00:20:40,470 --> 00:20:38,240
of it

567
00:20:42,070 --> 00:20:40,480
and the way it works is when you slide

568
00:20:44,149 --> 00:20:42,080
the two together you can see there's

569
00:20:46,870 --> 00:20:44,159
pins that are on the oru that go into

570
00:20:49,350 --> 00:20:46,880
the to the slots right here there's four

571
00:20:52,310 --> 00:20:49,360
pins that'll just slide into those slots

572
00:20:55,029 --> 00:20:52,320
and then as the two come together

573
00:20:56,310 --> 00:20:55,039
the wedges that are on the cold plate

574
00:20:58,789 --> 00:20:56,320
interface

575
00:21:01,909 --> 00:20:58,799
with the wedges that are on

576
00:21:04,230 --> 00:21:01,919
the back of the bottom side of the oru

577
00:21:09,510 --> 00:21:04,240
so this is actually a wedge

578
00:21:14,470 --> 00:21:11,909
the four pins go into the slots you put

579
00:21:16,310 --> 00:21:14,480
the two together and then the wedges

580
00:21:18,710 --> 00:21:16,320
come together in the back as you drive

581
00:21:21,990 --> 00:21:18,720
the bolt when it gets to the wedges the

582
00:21:23,909 --> 00:21:22,000
wedges drive uh next to each other to

583
00:21:26,950 --> 00:21:23,919
put a nice preload onto the bottom of

584
00:21:27,909 --> 00:21:26,960
the box so it's very firmly mated to

585
00:21:37,350 --> 00:21:27,919
the

586
00:21:39,590 --> 00:21:37,360
we need to make sure that it's got good

587
00:21:41,110 --> 00:21:39,600
thermal conductivity with the cold plate

588
00:21:42,789 --> 00:21:41,120

on the box

589
00:21:44,789 --> 00:21:42,799
so that is essentially

590
00:21:46,310 --> 00:21:44,799
the eba and i can answer any of your

591
00:21:48,470 --> 00:21:46,320
questions

592
00:21:50,710 --> 00:21:48,480
all right we'll go ahead and start

593
00:21:52,710 --> 00:21:50,720
with questions a reminder we have mr

594
00:21:54,230 --> 00:21:52,720
stufferdini tied down from kennedy so if

595
00:21:56,230 --> 00:21:54,240
you could please state your affiliation

596
00:21:58,149 --> 00:21:56,240
and who your question is for

597
00:22:00,470 --> 00:21:58,159
be much appreciated we'll start here at

598
00:22:01,990 --> 00:22:00,480
jsc then we'll go down to kennedy and

599
00:22:03,510 --> 00:22:02,000
then we'll take questions from our phone

600
00:22:04,789 --> 00:22:03,520
bridge so

601
00:22:07,029 --> 00:22:04,799
gina

602
00:22:07,909 --> 00:22:07,039
uh yeah how long has that box been up

603
00:22:10,230 --> 00:22:07,919
there

604
00:22:12,630 --> 00:22:10,240
so it came up um

605
00:22:14,710 --> 00:22:12,640
uh with the trust that uh was launched

606
00:22:18,590 --> 00:22:14,720
and i want to say it's a long round the

607
00:22:21,830 --> 00:22:18,600
is it 11 years april 2002 it launched

608
00:22:25,110 --> 00:22:21,840
sts-110 8a

609
00:22:27,830 --> 00:22:25,120
it was launched in place with the trust

610
00:22:30,149 --> 00:22:27,840
and you have how many spares

611
00:22:33,350 --> 00:22:30,159
we have just the one spare that's inside

612
00:22:35,750 --> 00:22:33,360
um but within the box itself there are

613
00:22:37,669 --> 00:22:35,760

cards just like in your computer at home

614
00:22:38,870 --> 00:22:37,679
so if there's a failure of any one of

615
00:22:40,390 --> 00:22:38,880
the cards

616
00:22:42,549 --> 00:22:40,400
we're intending when we bring that

617
00:22:43,990 --> 00:22:42,559
failed unit back inside

618
00:22:44,950 --> 00:22:44,000
that we'll replace the card that's

619
00:22:46,710 --> 00:22:44,960
failed

620
00:22:48,390 --> 00:22:46,720
and then that will be a good spare for

621
00:22:49,830 --> 00:22:48,400
us in the future

622
00:22:52,230 --> 00:22:49,840
okay

623
00:22:58,470 --> 00:22:52,240
mark

624
00:23:02,070 --> 00:22:58,480
this might be for mike safradini

625
00:23:04,630 --> 00:23:02,080
but it might be for brian too

626
00:23:06,830 --> 00:23:04,640
what are the plans for the progress 53

627
00:23:10,310 --> 00:23:06,840
when does it leave and come

628
00:23:11,669 --> 00:23:10,320
back okay so 53 p there's three aspects

629
00:23:13,909 --> 00:23:11,679
to that operation there's going to be a

630
00:23:15,750 --> 00:23:13,919
prop purge on the 19th

631
00:23:17,190 --> 00:23:15,760
on the 23rd it's going to undock and

632
00:23:20,390 --> 00:23:17,200
then it's going to come back and re-dock

633
00:23:24,630 --> 00:23:21,190
and

634
00:23:26,070 --> 00:23:24,640
may i ask a question on the mdm

635
00:23:28,470 --> 00:23:26,080
do you know

636
00:23:32,310 --> 00:23:28,480
why why it failed yet or is that a

637
00:23:34,470 --> 00:23:32,320
follow-up to retrieving the old box

638
00:23:36,710 --> 00:23:34,480

so we don't have the exact calls yet

639
00:23:38,390 --> 00:23:36,720
because the box didn't power on properly

640
00:23:40,710 --> 00:23:38,400
and it isn't communicating with us our

641
00:23:43,430 --> 00:23:40,720
insight into it is extremely limited we

642
00:23:45,430 --> 00:23:43,440
have a power signature to work with but

643
00:23:47,669 --> 00:23:45,440
we can't trust the data because we don't

644
00:23:49,190 --> 00:23:47,679
think the box is communicating to us and

645
00:23:50,870 --> 00:23:49,200
so that's the extent of what we know

646
00:23:53,350 --> 00:23:50,880
right now we've exhausted our

647
00:23:54,870 --> 00:23:53,360
troubleshooting options

648
00:23:56,710 --> 00:23:54,880
we'll see if we're going to troubleshoot

649
00:23:59,190 --> 00:23:56,720
it or not

650
00:24:00,950 --> 00:23:59,200
we've got spare cards and so

651
00:24:02,710 --> 00:24:00,960
you know the quickest posture back to

652
00:24:08,710 --> 00:24:02,720
another spare might just be to change

653
00:24:13,190 --> 00:24:11,110
jim oberger nbc a couple of short ones

654
00:24:14,630 --> 00:24:13,200
on the box what's the approximate mass

655
00:24:16,470 --> 00:24:14,640
of it in terms of handling it's

656
00:24:19,430 --> 00:24:16,480
approximately 50 pounds it's just under

657
00:24:20,870 --> 00:24:19,440
that okay where are they stored inside

658
00:24:22,950 --> 00:24:20,880
the iss

659
00:24:24,950 --> 00:24:22,960
yeah this bear mdm is stored inside the

660
00:24:30,310 --> 00:24:24,960
lab it's been there for the last 13

661
00:24:35,909 --> 00:24:33,430
you were going to talk about uh

662
00:24:38,470 --> 00:24:35,919
eva dates in case of uh no launch

663
00:24:39,909 --> 00:24:38,480

tuesday or tomorrow uh was there some

664
00:24:43,669 --> 00:24:39,919
discussion if we didn't launch there

665
00:24:46,470 --> 00:24:45,190
what dates are you looking at so the

666
00:24:48,710 --> 00:24:46,480
team four

667
00:24:49,830 --> 00:24:48,720
looked at this in in great detail

668
00:24:51,269 --> 00:24:49,840
it was very important for us to

669
00:24:53,110 --> 00:24:51,279
understand all the constraints of each

670
00:24:54,549 --> 00:24:53,120
operation and make sure the iss was put

671
00:24:56,630 --> 00:24:54,559
in the best risk posture in all

672
00:24:59,590 --> 00:24:56,640
scenarios

673
00:25:01,750 --> 00:24:59,600
what it boils down to is if there is a

674
00:25:04,070 --> 00:25:01,760
launch successful launch today the eva

675
00:25:06,549 --> 00:25:04,080
is on the 23rd in all other cases the

676
00:25:09,510 --> 00:25:06,559
eva will be on the 20th

677
00:25:12,310 --> 00:25:09,520
sunday correct okay

678
00:25:14,549 --> 00:25:12,320
so today pushes the 23rd otherwise

679
00:25:18,230 --> 00:25:14,559
no matter what happens it's on the 20th

680
00:25:23,029 --> 00:25:20,149
jim sorry we're going to move on

681
00:25:25,110 --> 00:25:23,039
i'll call i'll come back this time

682
00:25:27,269 --> 00:25:25,120
okay i think that does it for in here

683
00:25:28,950 --> 00:25:27,279
actually we'll come back for follow-ups

684
00:25:30,470 --> 00:25:28,960
at the end why don't we go down to

685
00:25:33,510 --> 00:25:30,480
kennedy now and again please state your

686
00:25:34,950 --> 00:25:33,520
affiliation and who your question is for

687
00:25:36,870 --> 00:25:34,960
your question

688
00:25:38,870 --> 00:25:36,880

um yes marcia done associated press

689
00:25:39,750 --> 00:25:38,880
probably for you mike since you're here

690
00:25:45,110 --> 00:25:39,760
um

691
00:25:47,909 --> 00:25:45,120
on board the dragon to use for the space

692
00:25:50,390 --> 00:25:47,919
walk if you can get it there in time

693
00:25:52,230 --> 00:25:50,400
why not wait for saturday's spacewalk to

694
00:25:54,390 --> 00:25:52,240
get the material and if you don't get

695
00:25:58,310 --> 00:25:54,400
the gasket like material what are you

696
00:26:01,750 --> 00:25:58,320
using between the box and the cold plate

697
00:26:03,269 --> 00:26:01,760
uh so as as uh time has progressed and

698
00:26:05,510 --> 00:26:03,279
we've gotten a little closer the launch

699
00:26:07,430 --> 00:26:05,520
is getting a little closer to the

700
00:26:08,950 --> 00:26:07,440
to the eva in our plan we've actually

701
00:26:11,190 --> 00:26:08,960
decided to go ahead and use the material

702
00:26:13,430 --> 00:26:11,200
we have on orbit the material we have on

703
00:26:14,789 --> 00:26:13,440
orbit is the correct thickness it's not

704
00:26:16,149 --> 00:26:14,799
quite cut

705
00:26:17,350 --> 00:26:16,159
the same

706
00:26:19,990 --> 00:26:17,360
and so

707
00:26:23,190 --> 00:26:20,000
the team has decided we go ahead and we

708
00:26:25,350 --> 00:26:23,200
had determined before we even loaded the

709
00:26:26,870 --> 00:26:25,360
the material on the dragon that we could

710
00:26:29,590 --> 00:26:26,880
live with the one we had on orbit if we

711
00:26:31,909 --> 00:26:29,600
had to so in the interest of time today

712
00:26:33,669 --> 00:26:31,919
actually we're getting the mdm modified

713
00:26:35,029 --> 00:26:33,679

the crews put in the um we had to put in

714
00:26:36,630 --> 00:26:35,039
a new card

715
00:26:38,070 --> 00:26:36,640
and the mdn that's going to go outside

716
00:26:40,149 --> 00:26:38,080
in order to get the right boot up

717
00:26:42,070 --> 00:26:40,159
software in there and so we've just

718
00:26:43,510 --> 00:26:42,080
about done with that

719
00:26:46,149 --> 00:26:43,520
and then we're going to check the check

720
00:26:48,630 --> 00:26:46,159
it out the the box using a piece of

721
00:26:50,230 --> 00:26:48,640
hardware have them or on board and then

722
00:26:52,630 --> 00:26:50,240
we're going to remove the old cold therm

723
00:26:54,310 --> 00:26:52,640
and put this modified coal therm and

724
00:26:56,710 --> 00:26:54,320
that's just a timing thing now when

725
00:26:58,630 --> 00:26:56,720
dragon shows up are we going to be very

726
00:27:01,110 --> 00:26:58,640
occupied with getting the research

727
00:27:02,789 --> 00:27:01,120
started and uh and and that takes about

728
00:27:04,789 --> 00:27:02,799
a day or so and then we're going to go

729
00:27:06,789 --> 00:27:04,799
right into the eba preps and so we

730
00:27:08,070 --> 00:27:06,799
wanted to have the the mdm all ready to

731
00:27:09,830 --> 00:27:08,080
go so we didn't have to do that at the

732
00:27:11,830 --> 00:27:09,840
last minute did you pull it off the

733
00:27:13,190 --> 00:27:11,840
dragon the original repair part are you

734
00:27:19,430 --> 00:27:13,200
just going to let it fly we just let it

735
00:27:19,440 --> 00:27:23,430
okay next question down at kennedy

736
00:27:27,669 --> 00:27:25,110
yeah bill harwood cbs news with a couple

737
00:27:29,190 --> 00:27:27,679
of quick questions um when you said you

738
00:27:31,750 --> 00:27:29,200

replaced your replacement card mic on

739
00:27:33,190 --> 00:27:31,760
the spare mdm i and then i assume you've

740
00:27:34,630 --> 00:27:33,200
tested this this box will have been

741
00:27:35,830 --> 00:27:34,640
tested thoroughly before it goes out the

742
00:27:38,070 --> 00:27:35,840
door just because it's been there so

743
00:27:39,510 --> 00:27:38,080
long right that that was part of the

744
00:27:41,510 --> 00:27:39,520
effort all along was to check out the

745
00:27:43,269 --> 00:27:41,520
box but we realized that it had a set of

746
00:27:45,029 --> 00:27:43,279
boot code software on it that wasn't

747
00:27:46,470 --> 00:27:45,039
going to we were going to be able to

748
00:27:48,630 --> 00:27:46,480
work with with the new version that

749
00:27:50,149 --> 00:27:48,640
we're up to now on iss since has been on

750
00:27:51,750 --> 00:27:50,159
board for so long so the easiest thing

751
00:27:54,149 --> 00:27:51,760
to do was take a card we already had and

752
00:27:55,510 --> 00:27:54,159
just plug it in almost all these mdms

753
00:27:57,350 --> 00:27:55,520
are interchangeable the cards are

754
00:27:58,630 --> 00:27:57,360
interchangeable inside okay and a quick

755
00:28:00,389 --> 00:27:58,640
one for brian you were going through the

756
00:28:03,350 --> 00:28:00,399
list of things that

757
00:28:05,190 --> 00:28:03,360
would happen if the prime if ext1 failed

758
00:28:06,870 --> 00:28:05,200
um i'm give i'm assuming that given all

759
00:28:08,630 --> 00:28:06,880
the procedures you put in place for

760
00:28:10,389 --> 00:28:08,640
fixed solar array angles and things like

761
00:28:11,909 --> 00:28:10,399
that there are no power downs that would

762
00:28:13,590 --> 00:28:11,919
happen if that failed is that right it's

763
00:28:15,190 --> 00:28:13,600

just a matter of you'd lose some

764
00:28:16,870 --> 00:28:15,200
telemetry and insight into the external

765
00:28:18,230 --> 00:28:16,880
thermal control system but you wouldn't

766
00:28:21,510 --> 00:28:18,240
have would you have to power anything

767
00:28:23,110 --> 00:28:21,520
down if the prime went down

768
00:28:25,750 --> 00:28:23,120
that would be assessed on day by day of

769
00:28:27,430 --> 00:28:25,760
course that answer is dependent upon the

770
00:28:30,630 --> 00:28:27,440
beta angle so

771
00:28:32,630 --> 00:28:30,640
if we have no primary ext mdm the solar

772
00:28:34,389 --> 00:28:32,640
arrays will eventually stay in in auto

773
00:28:36,389 --> 00:28:34,399
track the serges specifically would stay

774
00:28:38,310 --> 00:28:36,399
in auto track for 24 hours at the end of

775
00:28:39,669 --> 00:28:38,320
that 24 hours they're going to go to a

776
00:28:41,590 --> 00:28:39,679
preset

777
00:28:43,590 --> 00:28:41,600
angles we call those the null angles we

778
00:28:45,269 --> 00:28:43,600
have control over what those angles are

779
00:28:47,669 --> 00:28:45,279
and we've been very strategic about how

780
00:28:48,630 --> 00:28:47,679
we set those angles for this upcoming

781
00:28:50,389 --> 00:28:48,640
week

782
00:28:52,070 --> 00:28:50,399
once they get into those

783
00:28:54,470 --> 00:28:52,080
null angles

784
00:28:56,710 --> 00:28:54,480
then we just rely on our pgas

785
00:28:59,269 --> 00:28:56,720
the beta gimbal assemblies to rotate and

786
00:29:02,149 --> 00:28:59,279
generate power and so we would have to

787
00:29:03,510 --> 00:29:02,159
assess uh day by day as the beta angle

788
00:29:05,830 --> 00:29:03,520

change and our power generation

789
00:29:08,710 --> 00:29:05,840
capability changed versus what it was we

790
00:29:11,029 --> 00:29:08,720
needed to accomplish on iss and it would

791
00:29:13,430 --> 00:29:11,039
be quite possible power downs would be

792
00:29:18,549 --> 00:29:13,440
required to the extent though it would

793
00:29:22,149 --> 00:29:20,310
and i would also add we're

794
00:29:24,230 --> 00:29:22,159
low beta right now which is good for us

795
00:29:27,110 --> 00:29:24,240
power wise so we're

796
00:29:28,549 --> 00:29:27,120
we're pretty flexible in in terms of of

797
00:29:30,149 --> 00:29:28,559
how we'd manage power if we got into

798
00:29:36,389 --> 00:29:30,159
that position and it's just we're just

799
00:29:41,029 --> 00:29:38,830
okay next one down to kennedy

800
00:29:43,669 --> 00:29:41,039
okay down to kennedy

801
00:29:45,029 --> 00:29:43,679
uh james dean florida today mr stephanie

802
00:29:46,870 --> 00:29:45,039
sorry if i missed this but i'm just

803
00:29:48,950 --> 00:29:46,880
wondering why

804
00:29:50,950 --> 00:29:48,960
you wouldn't uh use this opportunity to

805
00:29:53,110 --> 00:29:50,960
stay out a little longer and and

806
00:29:54,149 --> 00:29:53,120
get a few more things done

807
00:29:56,070 --> 00:29:54,159
during the spacewalk and you're just

808
00:29:57,590 --> 00:29:56,080
limiting it to this one task

809
00:29:59,990 --> 00:29:57,600
right well that that goes back to a

810
00:30:01,590 --> 00:30:00,000
number of things one is uh we're we want

811
00:30:03,430 --> 00:30:01,600
to get this job done as quickly as we

812
00:30:04,710 --> 00:30:03,440
can and so we didn't want to add a whole

813
00:30:06,310 --> 00:30:04,720

bunch of other things for the team to go

814
00:30:08,549 --> 00:30:06,320
sort out

815
00:30:11,590 --> 00:30:08,559
but also we've we've made the commitment

816
00:30:13,269 --> 00:30:11,600
that we're not doing planned dvas and uh

817
00:30:15,909 --> 00:30:13,279
tasks that aren't critical

818
00:30:18,230 --> 00:30:15,919
uh until we get all of our hazards

819
00:30:19,830 --> 00:30:18,240
closed and and get a final closure on

820
00:30:22,310 --> 00:30:19,840
the on the failure

821
00:30:24,630 --> 00:30:22,320
of the suit so a short eva actually from

822
00:30:26,310 --> 00:30:24,640
a wrist posture really really reduces

823
00:30:27,269 --> 00:30:26,320
your risk we're very close to the

824
00:30:29,830 --> 00:30:27,279
airlock

825
00:30:31,669 --> 00:30:29,840
um two hours and 30 minutes i think is

826
00:30:33,830 --> 00:30:31,679
the time for the eva

827
00:30:35,750 --> 00:30:33,840
uh and so that that really minimizes the

828
00:30:38,549 --> 00:30:35,760
risk to the crew now again i'll tell you

829
00:30:40,470 --> 00:30:38,559
i feel pretty strongly that we've sorted

830
00:30:41,909 --> 00:30:40,480
out the root cause and that our suits

831
00:30:43,510 --> 00:30:41,919
are in pretty good shape but we still

832
00:30:46,389 --> 00:30:43,520
have some work to do

833
00:30:48,870 --> 00:30:46,399
to finish uh preparing the suits for for

834
00:30:50,389 --> 00:30:48,880
long-term use for planned evas

835
00:30:52,230 --> 00:30:50,399
and and so

836
00:30:53,029 --> 00:30:52,240
just to keep everything at the right

837
00:30:54,630 --> 00:30:53,039
risk

838
00:30:57,190 --> 00:30:54,640

posture we've chosen just to go do the

839
00:31:00,389 --> 00:30:57,200
job we have to do for this critical

840
00:31:01,190 --> 00:31:00,399
repair and then get the crew back inside

841
00:31:03,110 --> 00:31:01,200
thanks

842
00:31:05,830 --> 00:31:03,120
and just kind of big picture we're

843
00:31:07,990 --> 00:31:05,840
seeing now another contingency eva after

844
00:31:09,029 --> 00:31:08,000
a couple a few months back

845
00:31:11,830 --> 00:31:09,039
and i just wondered if you could kind of

846
00:31:13,590 --> 00:31:11,840
characterize um

847
00:31:15,909 --> 00:31:13,600
does it just sort of look like there's

848
00:31:18,549 --> 00:31:15,919
maybe more things are are breaking and

849
00:31:19,669 --> 00:31:18,559
there's a increase in in uh you know

850
00:31:21,190 --> 00:31:19,679
they need to go out and do these kind of

851
00:31:23,269 --> 00:31:21,200
things or

852
00:31:25,509 --> 00:31:23,279
is this pretty much just in line with

853
00:31:27,669 --> 00:31:25,519
expected failures that you you know the

854
00:31:28,630 --> 00:31:27,679
failures you'd expect and and things are

855
00:31:29,909 --> 00:31:28,640
still

856
00:31:32,149 --> 00:31:29,919
um

857
00:31:33,590 --> 00:31:32,159
lasting as as long as you know you want

858
00:31:35,750 --> 00:31:33,600
them to

859
00:31:39,430 --> 00:31:35,760
you know uh logistically things are

860
00:31:40,389 --> 00:31:39,440
doing very well um we had planned and if

861
00:31:43,350 --> 00:31:40,399
you

862
00:31:45,669 --> 00:31:43,360
uh look at our logistics and and our

863
00:31:47,990 --> 00:31:45,679

supplies on orbit our plan is always

864
00:31:50,470 --> 00:31:48,000
assumed that we have to do something on

865
00:31:53,190 --> 00:31:50,480
the order of six to eight evas a year

866
00:31:54,149 --> 00:31:53,200
uh and so uh we're well below that on

867
00:31:55,590 --> 00:31:54,159
average

868
00:31:57,830 --> 00:31:55,600
uh although we of course these two

869
00:31:59,590 --> 00:31:57,840
contingencies are are and and the other

870
00:32:00,549 --> 00:31:59,600
contingencies have every time we have

871
00:32:01,509 --> 00:32:00,559
them

872
00:32:03,190 --> 00:32:01,519
we go

873
00:32:05,269 --> 00:32:03,200
you know we sort through that and we and

874
00:32:07,350 --> 00:32:05,279
we plug that data back into our

875
00:32:08,389 --> 00:32:07,360
logistics support analysis we do every

876
00:32:10,630 --> 00:32:08,399
year

877
00:32:12,149 --> 00:32:10,640
which essentially up updates the mean

878
00:32:14,389 --> 00:32:12,159
time between failure for all of our

879
00:32:15,909 --> 00:32:14,399
hardware and then we use that data to

880
00:32:18,230 --> 00:32:15,919
determine if we have enough spares on

881
00:32:20,789 --> 00:32:18,240
board but overall i would tell you the

882
00:32:22,310 --> 00:32:20,799
program has been

883
00:32:24,149 --> 00:32:22,320
much more the systems have been much

884
00:32:25,430 --> 00:32:24,159
more reliable than their initial mean

885
00:32:26,710 --> 00:32:25,440
time between failure would have

886
00:32:28,630 --> 00:32:26,720
suggested

887
00:32:29,990 --> 00:32:28,640
and we've from a failure standpoint

888
00:32:31,909 --> 00:32:30,000

we've been

889
00:32:35,430 --> 00:32:31,919
i'd say we're below what we what we

890
00:32:39,430 --> 00:32:37,430
hi uh jared hayworth i'm here with the

891
00:32:41,590 --> 00:32:39,440
nasa social and i'm a photographer with

892
00:32:43,509 --> 00:32:41,600
wehadtoday.com it's a question for you

893
00:32:45,509 --> 00:32:43,519
mike um one of the most highly

894
00:32:47,830 --> 00:32:45,519
publicized payloads on board the dragon

895
00:32:49,350 --> 00:32:47,840
are the legs for robonaut 2. can you

896
00:32:51,590 --> 00:32:49,360
tell us what steps are remaining to

897
00:32:53,509 --> 00:32:51,600
allow robonaut to be you know in place

898
00:32:55,590 --> 00:32:53,519
to go out and perform an eva and do this

899
00:32:57,509 --> 00:32:55,600
repair rather than sending out the human

900
00:32:59,509 --> 00:32:57,519
astronauts

901
00:33:02,470 --> 00:32:59,519
that's an excellent question

902
00:33:04,230 --> 00:33:02,480
it's we have a quite a ways to go

903
00:33:05,990 --> 00:33:04,240
the legs are the first step in figuring

904
00:33:08,070 --> 00:33:06,000
out mobility

905
00:33:11,430 --> 00:33:08,080
and they allow mobility there's quite a

906
00:33:14,310 --> 00:33:11,440
bit of work to be done from a

907
00:33:15,590 --> 00:33:14,320
from a software standpoint to to create

908
00:33:19,350 --> 00:33:15,600
a

909
00:33:21,430 --> 00:33:19,360
freely

910
00:33:23,110 --> 00:33:21,440
anywhere you'd want it to on a station

911
00:33:24,789 --> 00:33:23,120
and then conduct those tasks that's a

912
00:33:26,549 --> 00:33:24,799
that's an enormous

913
00:33:28,870 --> 00:33:26,559

uh software challenge and really that's

914
00:33:30,470 --> 00:33:28,880
what robonaut is it's a it's a great big

915
00:33:33,029 --> 00:33:30,480
software testbed

916
00:33:35,190 --> 00:33:33,039
and uh and so these are great first

917
00:33:37,909 --> 00:33:35,200
steps but

918
00:33:40,149 --> 00:33:37,919
if you look at something like

919
00:33:42,070 --> 00:33:40,159
the dexter that we use on orbit today

920
00:33:43,830 --> 00:33:42,080
dexter when we tell dexter to do

921
00:33:45,830 --> 00:33:43,840
something we have to tell dexter

922
00:33:47,509 --> 00:33:45,840
specifically where to go and we have to

923
00:33:49,590 --> 00:33:47,519
give it basically coordinates and plug

924
00:33:51,029 --> 00:33:49,600
it into a system that the that the

925
00:33:52,789 --> 00:33:51,039
coordinate system that the system

926
00:33:54,870 --> 00:33:52,799
understands so it can go to where you

927
00:33:57,190 --> 00:33:54,880
need it to go and do the job you need to

928
00:33:58,310 --> 00:33:57,200
do it's it's a it's a software intensive

929
00:34:00,549 --> 00:33:58,320
effort

930
00:34:03,350 --> 00:34:00,559
but we have very specific things for it

931
00:34:05,190 --> 00:34:03,360
to grab a hold of and very specific uh

932
00:34:06,710 --> 00:34:05,200
interfaces onboard station that can go

933
00:34:08,550 --> 00:34:06,720
to something like a robonaut

934
00:34:10,629 --> 00:34:08,560
theoretically could

935
00:34:12,149 --> 00:34:10,639
walk down handrails interface with a

936
00:34:13,909 --> 00:34:12,159
number of

937
00:34:15,669 --> 00:34:13,919
sockets or adapters that you have on

938
00:34:18,149 --> 00:34:15,679

orbit and use a number of tools that you

939
00:34:20,470 --> 00:34:18,159
may or that you may have on orbit

940
00:34:24,149 --> 00:34:20,480
and that would add to the complexity of

941
00:34:26,550 --> 00:34:24,159
of the software system to to operate

942
00:34:29,510 --> 00:34:26,560
outdoors but the team is off

943
00:34:30,950 --> 00:34:29,520
developing the mods necessary to make a

944
00:34:33,669 --> 00:34:30,960
robonaut

945
00:34:35,430 --> 00:34:33,679
externally compatible let's call it

946
00:34:36,470 --> 00:34:35,440
i think the battery pack might have to

947
00:34:38,470 --> 00:34:36,480
get a little bit smaller i don't know

948
00:34:40,310 --> 00:34:38,480
but with the battery pack and the legs

949
00:34:41,909 --> 00:34:40,320
and the mods for external then from a

950
00:34:44,069 --> 00:34:41,919
hardware perspective you'd be ready to

951
00:34:46,389 --> 00:34:44,079
go uh but like i said i think the long

952
00:34:48,149 --> 00:34:46,399
pulled antenna software but that's the

953
00:34:50,790 --> 00:34:48,159
main reason why it's up there is to see

954
00:34:53,030 --> 00:34:50,800
can you can you get a robot

955
00:34:54,950 --> 00:34:53,040
ready to go to save the

956
00:34:57,190 --> 00:34:54,960
the risk that you basically assume when

957
00:34:59,030 --> 00:34:57,200
crews go outside they won't ever replace

958
00:35:01,030 --> 00:34:59,040
the crews but they could they could do a

959
00:35:02,710 --> 00:35:01,040
lot of the jobs i think that

960
00:35:05,030 --> 00:35:02,720
uh you would

961
00:35:06,390 --> 00:35:05,040
you would from a just an oru

962
00:35:08,150 --> 00:35:06,400
change out standpoint that's something

963
00:35:10,390 --> 00:35:08,160

you could probably get a robot to do for

964
00:35:14,790 --> 00:35:12,310
ian clought with the nasa social group

965
00:35:17,190 --> 00:35:14,800
and also airlinereporter.com

966
00:35:20,150 --> 00:35:17,200
and uh so question about today's launch

967
00:35:21,670 --> 00:35:20,160
for the uh the spacex crs3 uh looks like

968
00:35:23,750 --> 00:35:21,680
quite a significant front coming in on

969
00:35:25,750 --> 00:35:23,760
the weather radar uh and uh so i

970
00:35:27,270 --> 00:35:25,760
wondered do you have uh

971
00:35:28,630 --> 00:35:27,280
do you know the points in the countdown

972
00:35:30,150 --> 00:35:28,640
preparations that are sensitive to

973
00:35:32,230 --> 00:35:30,160
weather and particularly lightning in

974
00:35:35,510 --> 00:35:32,240
the area

975
00:35:41,030 --> 00:35:37,750
spacex guys that specifically i sat with

976
00:35:44,310 --> 00:35:41,040
them last night and i um

977
00:35:45,829 --> 00:35:44,320
from a from a strike standpoint

978
00:35:47,829 --> 00:35:45,839
they are they're protected with their

979
00:35:49,510 --> 00:35:47,839
catenary system that's around it and it

980
00:35:52,390 --> 00:35:49,520
has to do with the amount of energy that

981
00:35:54,630 --> 00:35:52,400
will find its way back into the vehicle

982
00:35:57,430 --> 00:35:54,640
if a strike occurs

983
00:35:59,750 --> 00:35:57,440
and so if you look at a 30 chance of

984
00:36:02,950 --> 00:35:59,760
lightning the actual chance

985
00:36:04,310 --> 00:36:02,960
uh that they'd have a an impact

986
00:36:05,910 --> 00:36:04,320
an energy

987
00:36:07,670 --> 00:36:05,920
impulse into the vehicle big enough to

988
00:36:09,670 --> 00:36:07,680

cause re-tests based on their

989
00:36:11,030 --> 00:36:09,680
calculations last night

990
00:36:12,870 --> 00:36:11,040
was something on the order of one

991
00:36:15,190 --> 00:36:12,880
percent so it's a it's a pretty low

992
00:36:17,510 --> 00:36:15,200
likelihood that you that if there was

993
00:36:19,349 --> 00:36:17,520
lightning in five miles predicted at 30

994
00:36:21,270 --> 00:36:19,359
percent that you'd actually have a

995
00:36:23,829 --> 00:36:21,280
vehicle problem or at least something

996
00:36:25,589 --> 00:36:23,839
you'd have to go test for

997
00:36:28,069 --> 00:36:25,599
but if they have a constraint or when

998
00:36:29,910 --> 00:36:28,079
they stand down launch operations i

999
00:36:32,630 --> 00:36:29,920
don't know specifically if that exists

1000
00:36:35,109 --> 00:36:32,640
and what that number is

1001
00:36:37,270 --> 00:36:35,119
marcia nap again from you mike is the

1002
00:36:38,710 --> 00:36:37,280
dragon bringing down any

1003
00:36:40,950 --> 00:36:38,720
is it still planning to bring down the

1004
00:36:43,030 --> 00:36:40,960
parmitano suit i can't remember what if

1005
00:36:44,870 --> 00:36:43,040
any of that bad space suit is coming

1006
00:36:46,790 --> 00:36:44,880
back i know it's working

1007
00:36:49,270 --> 00:36:46,800
so

1008
00:36:52,550 --> 00:36:49,280
eba and it's not coming home 3015 comes

1009
00:36:53,829 --> 00:36:52,560
home it had a sublimator failure early

1010
00:36:55,190 --> 00:36:53,839
i don't remember now i think it's a

1011
00:36:56,790 --> 00:36:55,200
couple years ago now we've been waiting

1012
00:36:59,190 --> 00:36:56,800
to get it down but that's the suit we're

1013
00:37:01,990 --> 00:36:59,200

bringing home 3011 we we changed out the

1014
00:37:03,349 --> 00:37:02,000
fan pumps up and all of its filters uh

1015
00:37:05,270 --> 00:37:03,359
and it's one of the suits we're sending

1016
00:37:07,030 --> 00:37:05,280
outside so there's no parts from that

1017
00:37:08,870 --> 00:37:07,040
that incident last summer that you're

1018
00:37:10,150 --> 00:37:08,880
waiting on for the investigation no

1019
00:37:11,670 --> 00:37:10,160
we've gotten those parts are home

1020
00:37:13,030 --> 00:37:11,680
they're home and they're taken apart

1021
00:37:14,470 --> 00:37:13,040
we've looked at and we've also brought

1022
00:37:16,630 --> 00:37:14,480
other suit parts home and looked at them

1023
00:37:19,270 --> 00:37:16,640
so we we have a pretty good

1024
00:37:21,109 --> 00:37:19,280
insight into the to the what what it

1025
00:37:22,390 --> 00:37:21,119
causes the suit to do

1026
00:37:24,310 --> 00:37:22,400
how much longer do you think it's going

1027
00:37:26,069 --> 00:37:24,320
to take for this investigation and when

1028
00:37:27,589 --> 00:37:26,079
is that series of spacewalks planned

1029
00:37:29,510 --> 00:37:27,599
later this year that you had mentioned

1030
00:37:31,910 --> 00:37:29,520
earlier for late summer perhaps yeah we

1031
00:37:33,589 --> 00:37:31,920
have it penciled in for july so that's

1032
00:37:35,510 --> 00:37:33,599
that's we're trying to get all of our

1033
00:37:37,589 --> 00:37:35,520
hazard work done and close the final

1034
00:37:39,829 --> 00:37:37,599
legs of the fall tree

1035
00:37:41,349 --> 00:37:39,839
by july if there's anything hanging out

1036
00:37:42,630 --> 00:37:41,359
that's critical

1037
00:37:45,670 --> 00:37:42,640
from a safety perspective then we'll

1038
00:37:48,870 --> 00:37:47,430

james dean again and

1039
00:37:51,030 --> 00:37:48,880
i'm just wondering it seems like steve

1040
00:37:52,310 --> 00:37:51,040
swanson just just practically got there

1041
00:37:54,150 --> 00:37:52,320
and i was just curious if there was any

1042
00:37:57,670 --> 00:37:54,160
limits on you know how quickly a crew

1043
00:38:00,150 --> 00:37:57,680
member could be approved to to do eva

1044
00:38:01,349 --> 00:38:00,160
um if are there ever any concerns about

1045
00:38:02,790 --> 00:38:01,359
you know just the adjustment to

1046
00:38:05,030 --> 00:38:02,800
microgravity and how ready they'd be

1047
00:38:06,069 --> 00:38:05,040
able to do that or or um

1048
00:38:07,510 --> 00:38:06,079
i don't know it's probably been a month

1049
00:38:09,990 --> 00:38:07,520
or something that by now i mean is that

1050
00:38:12,390 --> 00:38:10,000
was that never an issue for this eva

1051
00:38:13,750 --> 00:38:12,400
it's it's days that we try to make sure

1052
00:38:17,030 --> 00:38:13,760
the crews

1053
00:38:20,069 --> 00:38:17,040
have a little time to acclimate on orbit

1054
00:38:23,990 --> 00:38:20,079
before we actually we try not to um give

1055
00:38:25,510 --> 00:38:24,000
them a full workload for for a few days

1056
00:38:26,950 --> 00:38:25,520
in order for them to acclimate and get

1057
00:38:29,030 --> 00:38:26,960
going and generally speaking they get

1058
00:38:31,190 --> 00:38:29,040
going a lot faster i mean they acclimate

1059
00:38:33,190 --> 00:38:31,200
a lot quicker than we necessarily plan

1060
00:38:34,870 --> 00:38:33,200
for i don't remember if we have a

1061
00:38:36,230 --> 00:38:34,880
specific constraint to go outside but if

1062
00:38:37,910 --> 00:38:36,240
we leave it to the crews they go outside

1063
00:38:40,150 --> 00:38:37,920

when they arrive so

1064
00:38:42,310 --> 00:38:40,160
eva is a pretty big deal so the crews

1065
00:38:43,670 --> 00:38:42,320
are already ready to go if we ask them

1066
00:38:45,670 --> 00:38:43,680
to i don't know if we have a specific

1067
00:38:47,589 --> 00:38:45,680
constraint but we can we can go look at

1068
00:38:48,870 --> 00:38:47,599
that for you

1069
00:38:50,950 --> 00:38:48,880
yeah mike and just as long as you're

1070
00:38:52,150 --> 00:38:50,960
here i'll ask you a russian question how

1071
00:38:53,270 --> 00:38:52,160
are things going with the russians given

1072
00:38:54,710 --> 00:38:53,280
everything that's going on in the world

1073
00:38:56,470 --> 00:38:54,720
have you guys seen any impacts at all

1074
00:38:59,030 --> 00:38:56,480
and how you're dealing with them for iss

1075
00:39:01,910 --> 00:38:59,040
or anything else

1076
00:39:03,670 --> 00:39:01,920
not at all um and that i believe is the

1077
00:39:05,589 --> 00:39:03,680
strength of um

1078
00:39:08,710 --> 00:39:05,599
a partnership and endeavor like this

1079
00:39:10,550 --> 00:39:08,720
that involves human spaceflight is it uh

1080
00:39:13,270 --> 00:39:10,560
it's the stability when everything else

1081
00:39:15,990 --> 00:39:13,280
is getting a little crazy but um

1082
00:39:18,150 --> 00:39:16,000
uh our work with our russian colleagues

1083
00:39:21,910 --> 00:39:18,160
and their work with us has

1084
00:39:23,910 --> 00:39:21,920
never been better and uh and

1085
00:39:26,069 --> 00:39:23,920
and it's clear to me that that's by

1086
00:39:28,310 --> 00:39:26,079
direction of both governments so we're

1087
00:39:30,150 --> 00:39:28,320
you know it's it's it's understood to be

1088
00:39:34,069 --> 00:39:30,160

very important and it hasn't affected us

1089
00:39:36,630 --> 00:39:35,349
all right that'll do it for questions

1090
00:39:38,630 --> 00:39:36,640
from kennedy we'll go ahead and go to

1091
00:39:47,990 --> 00:39:38,640
our phone bridge real quick i'll start

1092
00:39:52,950 --> 00:39:49,589
okay i think we lost charles why don't

1093
00:39:54,550 --> 00:39:52,960
we go to denise ciao from space.com

1094
00:39:56,470 --> 00:39:54,560
hi thanks for taking my question i think

1095
00:39:57,990 --> 00:39:56,480
this is for mike and i i think marcia

1096
00:39:59,589 --> 00:39:58,000
may have touched on it and i apologize

1097
00:40:01,990 --> 00:39:59,599
if i missed it but do you have a

1098
00:40:04,550 --> 00:40:02,000
tentative um timeline of when you might

1099
00:40:07,589 --> 00:40:04,560
get back onto your regularly scheduled

1100
00:40:14,069 --> 00:40:07,599
evas and after eva 26 what's sort of the

1101
00:40:18,870 --> 00:40:16,790
yeah i told marcia it's penciled in for

1102
00:40:20,870 --> 00:40:18,880
the july time frame

1103
00:40:22,230 --> 00:40:20,880
and however if we're not done with all

1104
00:40:23,829 --> 00:40:22,240
of our work then we'll move it to the

1105
00:40:27,030 --> 00:40:23,839
right to make sure we have all of our

1106
00:40:29,030 --> 00:40:27,040
work done before we do planned dvas

1107
00:40:30,630 --> 00:40:29,040
and i feel pretty confident we'll get

1108
00:40:33,190 --> 00:40:30,640
all of our work done but it's a it's a

1109
00:40:36,550 --> 00:40:33,200
pretty tight schedule

1110
00:40:38,150 --> 00:40:36,560
in terms of work after eva 26 you mean

1111
00:40:41,910 --> 00:40:38,160
the work we need to do to be able to go

1112
00:40:45,750 --> 00:40:43,829
what's sort of the main priority outside

1113
00:40:48,710 --> 00:40:45,760

that you would need to address after eva

1114
00:40:51,430 --> 00:40:49,990
oh i see

1115
00:40:54,150 --> 00:40:51,440
well we have a number of things we have

1116
00:40:56,309 --> 00:40:54,160
to go do we have some cameras we need to

1117
00:40:59,349 --> 00:40:56,319
uh rearrange to get good views for the

1118
00:41:00,630 --> 00:40:59,359
ssrms we have reconfiguration work this

1119
00:41:02,470 --> 00:41:00,640
is probably the biggest thing that's

1120
00:41:03,510 --> 00:41:02,480
coming up we have reconfiguration work

1121
00:41:05,190 --> 00:41:03,520
to do

1122
00:41:08,790 --> 00:41:05,200
because eventually we're going to move

1123
00:41:11,030 --> 00:41:08,800
the pmm which is the pressurized

1124
00:41:12,470 --> 00:41:11,040
multi-purpose module

1125
00:41:14,790 --> 00:41:12,480
the big storage module that's on the

1126
00:41:18,950 --> 00:41:14,800
nader port of node 1. we're going to

1127
00:41:21,910 --> 00:41:18,960
move to the forward port of node 3

1128
00:41:24,630 --> 00:41:21,920
and then make that the nader port of

1129
00:41:25,510 --> 00:41:24,640
node one a backup berthing

1130
00:41:27,030 --> 00:41:25,520
port

1131
00:41:30,390 --> 00:41:27,040
um and then we're putting the two

1132
00:41:32,950 --> 00:41:30,400
docking ports on iss one node two

1133
00:41:34,710 --> 00:41:32,960
forward and no two zenith so there's

1134
00:41:37,349 --> 00:41:34,720
quite a bit of work we have to do to get

1135
00:41:39,910 --> 00:41:37,359
the iss configured

1136
00:41:42,630 --> 00:41:39,920
to to first move

1137
00:41:44,710 --> 00:41:42,640
the pmm which we need to do before we

1138
00:41:46,950 --> 00:41:44,720

uh bring up the

1139
00:41:48,790 --> 00:41:46,960
we call them the ida's these are the

1140
00:41:50,150 --> 00:41:48,800
docking adapters we call them the iss

1141
00:41:51,589 --> 00:41:50,160
docking adapters

1142
00:41:53,109 --> 00:41:51,599
so before we can bring the docking

1143
00:41:55,109 --> 00:41:53,119
systems on board we've got to move the

1144
00:41:56,630 --> 00:41:55,119
pmm our commitment is to have the

1145
00:41:59,190 --> 00:41:56,640
docking system

1146
00:42:00,790 --> 00:41:59,200
on board and installed in 2015

1147
00:42:02,390 --> 00:42:00,800
so if you back up and look at all the

1148
00:42:04,390 --> 00:42:02,400
things we have to do to get the iss

1149
00:42:05,990 --> 00:42:04,400
configured to do that

1150
00:42:07,430 --> 00:42:06,000
we've got to get on with these evas

1151
00:42:08,870 --> 00:42:07,440
there's a number of other

1152
00:42:11,430 --> 00:42:08,880
repairs and things we want to do we're

1153
00:42:13,190 --> 00:42:11,440
outside but the the biggest line of

1154
00:42:15,030 --> 00:42:13,200
things we need to get done

1155
00:42:19,430 --> 00:42:15,040
is all the reconfiguration work we need

1156
00:42:24,470 --> 00:42:21,430
okay next we have elizabeth with

1157
00:42:27,829 --> 00:42:26,230
can you give us a sense of what sort of

1158
00:42:29,670 --> 00:42:27,839
uh this is for mike can you give us a

1159
00:42:31,349 --> 00:42:29,680
sense of what sort of changes have to

1160
00:42:33,270 --> 00:42:31,359
take place in order to make sure that

1161
00:42:34,230 --> 00:42:33,280
you could do the eva in between the

1162
00:42:41,750 --> 00:42:34,240
progress

1163
00:42:46,069 --> 00:42:44,710

what kind of changes need to take place

1164
00:42:48,230 --> 00:42:46,079
saying that one of the challenges of

1165
00:42:49,990 --> 00:42:48,240
planning the space block was trying to

1166
00:42:52,230 --> 00:42:50,000
um getting the

1167
00:42:53,990 --> 00:42:52,240
getting the task together in between all

1168
00:42:55,430 --> 00:42:54,000
the other tasks the crew had to do to

1169
00:42:58,390 --> 00:42:55,440
get ready for the drag and also for the

1170
00:43:00,150 --> 00:42:58,400
progress

1171
00:43:02,150 --> 00:43:00,160
okay i got you well you know brian could

1172
00:43:04,230 --> 00:43:02,160
give you this in song and verse he he

1173
00:43:05,270 --> 00:43:04,240
was the one that was uh given this task

1174
00:43:07,750 --> 00:43:05,280
go do

1175
00:43:10,150 --> 00:43:07,760
i would tell you though that um

1176
00:43:13,030 --> 00:43:10,160
it's it's an enormous amount of work for

1177
00:43:14,870 --> 00:43:13,040
a team to do and and you add on top of

1178
00:43:17,190 --> 00:43:14,880
that and it's already hard enough when

1179
00:43:19,349 --> 00:43:17,200
you've got a dragon that's trying to

1180
00:43:21,430 --> 00:43:19,359
launch and you got progress that has

1181
00:43:22,710 --> 00:43:21,440
uh the russians have plans to leave and

1182
00:43:23,750 --> 00:43:22,720
come back

1183
00:43:28,230 --> 00:43:23,760
then you decide you have to do a

1184
00:43:33,109 --> 00:43:31,109
already necessarily

1185
00:43:35,030 --> 00:43:33,119
ready to go do the eba so now you've got

1186
00:43:37,109 --> 00:43:35,040
a lot of work to do to not only get the

1187
00:43:39,670 --> 00:43:37,119
suits ready but to do the extra work to

1188
00:43:42,069 --> 00:43:39,680

make sure the suit system is okay plus

1189
00:43:43,589 --> 00:43:42,079
find a hole plus plan for

1190
00:43:46,069 --> 00:43:43,599
a launch and a backup launch and a

1191
00:43:47,829 --> 00:43:46,079
backup backup launch uh so yes we've

1192
00:43:49,670 --> 00:43:47,839
we've kept we've kept brian off the

1193
00:43:51,910 --> 00:43:49,680
streets with this exercise him and his

1194
00:43:53,430 --> 00:43:51,920
team but maybe brian would want to add

1195
00:43:55,670 --> 00:43:53,440
specifically the kinds of things he's

1196
00:43:57,349 --> 00:43:55,680
had to do to deal with this

1197
00:43:59,430 --> 00:43:57,359
some of the key things we had to look at

1198
00:44:00,870 --> 00:43:59,440
first was was the crew time there's a

1199
00:44:03,109 --> 00:44:00,880
certain amount of crew time associated

1200
00:44:04,870 --> 00:44:03,119
with the dragon operations

1201
00:44:06,950 --> 00:44:04,880
preparing for the capture the actual

1202
00:44:08,470 --> 00:44:06,960
capture the birthing and then of course

1203
00:44:11,109 --> 00:44:08,480
the critical science which you would get

1204
00:44:12,870 --> 00:44:11,119
to the next day you have to ingress the

1205
00:44:14,550 --> 00:44:12,880
vehicle and get that science started and

1206
00:44:16,470 --> 00:44:14,560
some of that science will also be

1207
00:44:18,390 --> 00:44:16,480
conducted the following day

1208
00:44:20,630 --> 00:44:18,400
the eva timelines also have a lot of

1209
00:44:22,230 --> 00:44:20,640
preparation work for them

1210
00:44:23,910 --> 00:44:22,240
in addition to getting the suits ready

1211
00:44:26,790 --> 00:44:23,920
and buying down that risk we had to get

1212
00:44:30,069 --> 00:44:26,800
the mdm ready and as we speak the crew

1213
00:44:32,150 --> 00:44:30,079

on orbit is preparing that spare mdm

1214
00:44:33,750 --> 00:44:32,160
and because we had to change out the

1215
00:44:35,910 --> 00:44:33,760
processor card and we have to deal with

1216
00:44:37,670 --> 00:44:35,920
the co-therm on it it wasn't a

1217
00:44:39,030 --> 00:44:37,680
straightforward preparation and it took

1218
00:44:40,950 --> 00:44:39,040
the teams a while to put that together

1219
00:44:43,349 --> 00:44:40,960
and then find a hole

1220
00:44:46,710 --> 00:44:43,359
in the timeline for that to occur

1221
00:44:48,390 --> 00:44:46,720
as far as the dragon ops and the eva

1222
00:44:50,550 --> 00:44:48,400
progress one of the biggest challenges

1223
00:44:52,069 --> 00:44:50,560
was finding solar array positions that

1224
00:44:54,069 --> 00:44:52,079
would accommodate all those i mentioned

1225
00:44:56,470 --> 00:44:54,079
earlier each one of those has its unique

1226
00:44:58,790 --> 00:44:56,480
set of constraints that will drive our

1227
00:45:01,270 --> 00:44:58,800
sarges to be in a certain position now

1228
00:45:03,430 --> 00:45:01,280
we have to find spots with the sergeants

1229
00:45:05,030 --> 00:45:03,440
that can accommodate all of them and in

1230
00:45:07,829 --> 00:45:05,040
the presence of the failure if we lose

1231
00:45:09,670 --> 00:45:07,839
the ext mdm we want to control where

1232
00:45:11,270 --> 00:45:09,680
those surges go

1233
00:45:12,470 --> 00:45:11,280
one set of angles is good for one event

1234
00:45:14,390 --> 00:45:12,480
another set of angles is good for

1235
00:45:16,230 --> 00:45:14,400
another event we had to find some type

1236
00:45:17,750 --> 00:45:16,240
of common plan that minimized the risk

1237
00:45:20,790 --> 00:45:17,760
associated with losing that primary

1238
00:45:22,470 --> 00:45:20,800

extmdm relative to the sarges the

1239
00:45:24,150 --> 00:45:22,480
constraints associated with those in the

1240
00:45:25,670 --> 00:45:24,160
power generation

1241
00:45:27,430 --> 00:45:25,680
we also looking from relative

1242
00:45:29,990 --> 00:45:27,440
trajectories the spacing of the the

1243
00:45:31,510 --> 00:45:30,000
dragon ops and the progress ops

1244
00:45:33,510 --> 00:45:31,520
was something that needed to be looked

1245
00:45:35,430 --> 00:45:33,520
at very very closely we look at the

1246
00:45:37,510 --> 00:45:35,440
nominal trajectories we also look at off

1247
00:45:39,430 --> 00:45:37,520
nominal abort trajectories make sure we

1248
00:45:41,910 --> 00:45:39,440
can keep everything safe not only from

1249
00:45:43,430 --> 00:45:41,920
the iss but for vehicle to vehicle as

1250
00:45:44,870 --> 00:45:43,440
they come and go so

1251
00:45:47,030 --> 00:45:44,880
at a high level those were some of the

1252
00:45:48,550 --> 00:45:47,040
challenges associated with trying to put

1253
00:45:50,230 --> 00:45:48,560
all these operations within the same

1254
00:45:51,910 --> 00:45:50,240
week

1255
00:45:55,750 --> 00:45:51,920
all right thanks brian let's go to

1256
00:45:57,430 --> 00:45:55,760
stephen clark with space flight now

1257
00:46:00,230 --> 00:45:57,440
hi thanks stephen clark with space

1258
00:46:03,829 --> 00:46:00,240
flight now uh just a couple of questions

1259
00:46:05,990 --> 00:46:03,839
uh for mike uh first can you go into a

1260
00:46:08,230 --> 00:46:06,000
little bit of discussion on

1261
00:46:10,870 --> 00:46:08,240
when's your drop dead last launch

1262
00:46:15,589 --> 00:46:10,880
attempt for spacex before

1263
00:46:19,829 --> 00:46:17,829

in the case this launch gets tied up

1264
00:46:21,190 --> 00:46:19,839
with some weather delays and also if

1265
00:46:24,069 --> 00:46:21,200
there's a scrub today not to be

1266
00:46:25,349 --> 00:46:24,079
pessimistic but

1267
00:46:27,270 --> 00:46:25,359
do you have to

1268
00:46:32,390 --> 00:46:27,280
go in and service any research payloads

1269
00:46:37,270 --> 00:46:34,710
uh okay well the answer your first

1270
00:46:38,069 --> 00:46:37,280
question is we haven't decided yet um we

1271
00:46:40,150 --> 00:46:38,079
have

1272
00:46:43,670 --> 00:46:40,160
today's attempt tomorrow's attempt and

1273
00:46:46,230 --> 00:46:43,680
the 22nd is options

1274
00:46:48,630 --> 00:46:46,240
i believe we have the 25th

1275
00:46:50,150 --> 00:46:48,640
as a possible opportunity

1276
00:46:51,510 --> 00:46:50,160
and then after that we got to sit down

1277
00:46:53,829 --> 00:46:51,520
and and

1278
00:46:56,230 --> 00:46:53,839
talk to folks and decide

1279
00:46:58,230 --> 00:46:56,240
uh what the next what to do next of

1280
00:46:59,910 --> 00:46:58,240
course in spacex's case it's not just

1281
00:47:01,510 --> 00:46:59,920
when you can launch it's when you can

1282
00:47:03,270 --> 00:47:01,520
land and there's a finite period the

1283
00:47:05,430 --> 00:47:03,280
vehicle can be on orbit

1284
00:47:07,750 --> 00:47:05,440
and we have landing constraints uh that

1285
00:47:09,270 --> 00:47:07,760
try to protect uh the well to protect

1286
00:47:11,030 --> 00:47:09,280
the spacecraft

1287
00:47:13,510 --> 00:47:11,040
protects the faa windows for the

1288
00:47:15,430 --> 00:47:13,520

aircraft flying in the area and also we

1289
00:47:17,990 --> 00:47:15,440
have a certain amount of constraints for

1290
00:47:18,870 --> 00:47:18,000
payloads back to the dock

1291
00:47:20,790 --> 00:47:18,880
time

1292
00:47:22,549 --> 00:47:20,800
so all those play a factor so when we're

1293
00:47:24,470 --> 00:47:22,559
trying to decide when to launch we're

1294
00:47:26,870 --> 00:47:24,480
trying to make sure that we have um

1295
00:47:30,230 --> 00:47:26,880
adequate windows for landing

1296
00:47:31,990 --> 00:47:30,240
so after the 25th we'll uh probably

1297
00:47:34,150 --> 00:47:32,000
sit down and and have a long

1298
00:47:37,109 --> 00:47:34,160
conversation if the dragon isn't off the

1299
00:47:39,510 --> 00:47:37,119
ground at that point

1300
00:47:43,910 --> 00:47:39,520
your question about the backup if we go

1301
00:47:46,390 --> 00:47:43,920
on uh on the 19th we will not um

1302
00:47:48,470 --> 00:47:46,400
uh resupply any of our research the

1303
00:47:50,470 --> 00:47:48,480
dragon will stay buttoned up

1304
00:47:54,309 --> 00:47:50,480
that does have a

1305
00:47:57,670 --> 00:47:54,319
effect on a couple of our um

1306
00:47:59,829 --> 00:47:57,680
uh research items but being in the grand

1307
00:48:01,829 --> 00:47:59,839
scheme of things it's um it's the right

1308
00:48:02,790 --> 00:48:01,839
risk trade to make since we really need

1309
00:48:05,270 --> 00:48:02,800
to

1310
00:48:09,430 --> 00:48:05,280
get the rest of the logistics on board

1311
00:48:11,589 --> 00:48:09,440
iss and in both cases it's a it's a

1312
00:48:14,390 --> 00:48:11,599
i'll say it's a it's an impact a

1313
00:48:17,109 --> 00:48:14,400

potential impact not necessarily a given

1314
00:48:20,390 --> 00:48:17,119
that it's a that it's going to

1315
00:48:22,710 --> 00:48:20,400
be unusable uh research as a result of

1316
00:48:24,309 --> 00:48:22,720
the delay so

1317
00:48:27,190 --> 00:48:24,319
this is why we choose to go ahead and

1318
00:48:31,430 --> 00:48:27,200
take the back update

1319
00:48:33,589 --> 00:48:31,440
okay moving on we got irene from reuters

1320
00:48:36,390 --> 00:48:33,599
hi thanks very much i have two quick

1321
00:48:39,510 --> 00:48:36,400
ones for mike um the first is

1322
00:48:47,190 --> 00:48:39,520
on the evas are snorkels and helmet pads

1323
00:48:51,990 --> 00:48:49,829
yes

1324
00:48:55,430 --> 00:48:52,000
thanks and the other one is um on the

1325
00:48:58,150 --> 00:48:55,440
failure analysis on the mda mdm that's

1326
00:49:00,549 --> 00:48:58,160
returned will that all be done on orbit

1327
00:49:06,710 --> 00:49:00,559
are you planning to return any of the

1328
00:49:10,150 --> 00:49:08,069
uh

1329
00:49:11,430 --> 00:49:10,160
i don't know about returning on dragon

1330
00:49:14,230 --> 00:49:11,440
but

1331
00:49:16,390 --> 00:49:14,240
as glenda said my preference is to

1332
00:49:18,630 --> 00:49:16,400
change the

1333
00:49:20,390 --> 00:49:18,640
failed component and keep the mdm up

1334
00:49:23,430 --> 00:49:20,400
there and then would bring the component

1335
00:49:26,309 --> 00:49:23,440
home really the box is about 13 years

1336
00:49:29,030 --> 00:49:26,319
old it's not a

1337
00:49:31,430 --> 00:49:29,040
it's not like this this failure is

1338
00:49:33,030 --> 00:49:31,440

shocking to have occurred at some point

1339
00:49:34,710 --> 00:49:33,040
given its age

1340
00:49:36,710 --> 00:49:34,720
so we're not we're not looking at it

1341
00:49:38,790 --> 00:49:36,720
like it's an indication of some big

1342
00:49:41,430 --> 00:49:38,800
bigger issue but we will take it home

1343
00:49:43,270 --> 00:49:41,440
and and do failure analysis on it

1344
00:49:45,270 --> 00:49:43,280
but what we'll try to do is just to r r

1345
00:49:48,390 --> 00:49:45,280
the card so we put the mdm will be back

1346
00:49:50,470 --> 00:49:48,400
as a as a good spare as glenda said and

1347
00:49:52,230 --> 00:49:50,480
we'll bring that card home and and in

1348
00:49:56,309 --> 00:49:52,240
due course we'll uh we'll do failure

1349
00:50:01,589 --> 00:49:58,309
okay i think we have one quick follow-up

1350
00:50:04,230 --> 00:50:02,870
aviation week

1351
00:50:06,230 --> 00:50:04,240
and uh

1352
00:50:08,390 --> 00:50:06,240
as for brian smith

1353
00:50:10,870 --> 00:50:08,400
you certainly mentioned the the power

1354
00:50:12,870 --> 00:50:10,880
and the thermal what are other concerns

1355
00:50:14,950 --> 00:50:12,880
if you if you lost

1356
00:50:18,069 --> 00:50:14,960
another mdm

1357
00:50:20,710 --> 00:50:18,079
other systems on the station that are

1358
00:50:21,990 --> 00:50:20,720
are you know high order

1359
00:50:23,670 --> 00:50:22,000
so i'll give you two

1360
00:50:25,990 --> 00:50:23,680
two examples

1361
00:50:27,270 --> 00:50:26,000
we have two s-band strings communication

1362
00:50:29,190 --> 00:50:27,280
strings

1363
00:50:32,710 --> 00:50:29,200

and that carries the command telemetry

1364
00:50:37,510 --> 00:50:34,950
our ability to power up that backup

1365
00:50:40,549 --> 00:50:37,520
string which normally we keep off

1366
00:50:41,990 --> 00:50:40,559
requires an ext mdm

1367
00:50:43,430 --> 00:50:42,000
so one of the preemptive measures we

1368
00:50:46,790 --> 00:50:43,440
took right after we declared the backup

1369
00:50:49,589 --> 00:50:46,800
extmdm failed while we still have a good

1370
00:50:51,990 --> 00:50:49,599
ext mdn we started powering on all those

1371
00:50:53,270 --> 00:50:52,000
redundant systems rate gyro assembly is

1372
00:50:54,790 --> 00:50:53,280
another one that's used in our guided

1373
00:50:56,549 --> 00:50:54,800
synaptic control system we normally

1374
00:50:58,549 --> 00:50:56,559
wouldn't power that on

1375
00:51:00,230 --> 00:50:58,559
it's there as a backup so those are

1376
00:51:03,109 --> 00:51:00,240
types of things that we

1377
00:51:05,030 --> 00:51:03,119
we have on right now uh

1378
00:51:07,190 --> 00:51:05,040
the the helmet camera that we're going

1379
00:51:09,589 --> 00:51:07,200
to use during this eva those radios

1380
00:51:11,910 --> 00:51:09,599
outside are normally off we require the

1381
00:51:14,150 --> 00:51:11,920
extmdm to turn those on so we turn those

1382
00:51:15,670 --> 00:51:14,160
on right away once the mdm was declared

1383
00:51:17,510 --> 00:51:15,680
failed we knew we were destined for an

1384
00:51:21,270 --> 00:51:17,520
eva at some point so we turned them on

1385
00:51:25,349 --> 00:51:22,630
okay

1386
00:51:26,630 --> 00:51:25,359
uh one one last one from jim yeah

1387
00:51:28,790 --> 00:51:26,640
for mike

1388
00:51:29,670 --> 00:51:28,800

this is jim oberg with nbc

1389
00:51:33,990 --> 00:51:29,680
on the

1390
00:51:38,069 --> 00:51:35,430
there was some talk that you would be

1391
00:51:38,790 --> 00:51:38,079
looking at the previous replaced oru

1392
00:51:40,710 --> 00:51:38,800
that

1393
00:51:42,470 --> 00:51:40,720
the pump module and possibly repairing

1394
00:51:43,910 --> 00:51:42,480
it on orbit is there any status you can

1395
00:51:46,790 --> 00:51:43,920
give us on that

1396
00:51:48,950 --> 00:51:46,800
and can you give us a status on any uh

1397
00:51:51,670 --> 00:51:48,960
explanation from the russian side on

1398
00:51:53,670 --> 00:51:51,680
there on the hiccup on the four rev on

1399
00:51:56,150 --> 00:51:53,680
the six-hour rendezvous that they had to

1400
00:51:57,030 --> 00:51:56,160
abort anybody have given any reasons for

1401
00:52:03,270 --> 00:51:57,040
that

1402
00:52:09,270 --> 00:52:06,390
uh let's see uh jim let's see the four

1403
00:52:11,829 --> 00:52:09,280
orbit uh uh the um

1404
00:52:12,870 --> 00:52:11,839
i'm sorry the six hour rendezvous abort

1405
00:52:14,230 --> 00:52:12,880
um

1406
00:52:16,230 --> 00:52:14,240
that was uh

1407
00:52:18,390 --> 00:52:16,240
ultimately turned out to be an energy

1408
00:52:20,630 --> 00:52:18,400
issue uh that

1409
00:52:23,030 --> 00:52:20,640
ended up having the

1410
00:52:25,190 --> 00:52:23,040
vehicle making a maneuver

1411
00:52:27,190 --> 00:52:25,200
taking too long to get itself into the

1412
00:52:29,109 --> 00:52:27,200
maneuver for the burn

1413
00:52:30,790 --> 00:52:29,119

and it aborted the burn

1414
00:52:33,670 --> 00:52:30,800
they've taken some lessons learned from

1415
00:52:34,870 --> 00:52:33,680
that because ultimately the

1416
00:52:40,069 --> 00:52:34,880
uh

1417
00:52:45,670 --> 00:52:42,870
within family performance of the vehicle

1418
00:52:48,549 --> 00:52:45,680
and and so the russians have gone off

1419
00:52:51,750 --> 00:52:48,559
to make themselves more robust against

1420
00:52:53,750 --> 00:52:51,760
the band of potential

1421
00:52:56,390 --> 00:52:53,760
energy results from the

1422
00:52:58,390 --> 00:52:56,400
from the orbit uh insertion

1423
00:52:59,109 --> 00:52:58,400
and and the on orbit burns

1424
00:53:02,470 --> 00:52:59,119
so

1425
00:53:03,270 --> 00:53:02,480
it really overall the vehicle performed

1426
00:53:05,510 --> 00:53:03,280
uh

1427
00:53:07,349 --> 00:53:05,520
within the nominal range but the

1428
00:53:08,870 --> 00:53:07,359
constraints were so tight for getting

1429
00:53:10,870 --> 00:53:08,880
into attitude

1430
00:53:13,030 --> 00:53:10,880
from a fitter standpoint that they

1431
00:53:14,710 --> 00:53:13,040
didn't take into account that they could

1432
00:53:16,870 --> 00:53:14,720
be in a position where they didn't quite

1433
00:53:20,230 --> 00:53:16,880
get to attitude quick enough

1434
00:53:22,230 --> 00:53:20,240
and so they've opened up that window and

1435
00:53:25,190 --> 00:53:22,240
and we believe future launches won't

1436
00:53:27,190 --> 00:53:25,200
have this particular problem of course

1437
00:53:29,990 --> 00:53:27,200
folks all know that

1438
00:53:32,710 --> 00:53:30,000

we do uh both the six orbit and the 30

1439
00:53:33,589 --> 00:53:32,720
34 orbit the six hour 4 orbit and the 34

1440
00:53:36,710 --> 00:53:33,599
orbit

1441
00:53:39,510 --> 00:53:36,720
rendezvous we plan for both of those um

1442
00:53:41,109 --> 00:53:39,520
and we plan for the 34 as a backup

1443
00:53:45,030 --> 00:53:41,119
while we plan for the forward rendezvous

1444
00:53:47,990 --> 00:53:45,040
so this was well within our our plan

1445
00:53:50,470 --> 00:53:48,000
and your first question was

1446
00:53:53,030 --> 00:53:50,480
on the last condition continuously eva

1447
00:53:54,470 --> 00:53:53,040
the crew replaced the pump module

1448
00:53:56,549 --> 00:53:54,480
and i understand it may simply be an

1449
00:53:58,630 --> 00:53:56,559
electrical problem in the module you may

1450
00:54:02,870 --> 00:53:58,640
be able to repair on orbit and have it

1451
00:54:08,950 --> 00:54:06,470
yes um that is we're assuming that to be

1452
00:54:10,710 --> 00:54:08,960
the case the team is has some ideas

1453
00:54:14,150 --> 00:54:10,720
about how you put

1454
00:54:15,750 --> 00:54:14,160
this valve uh on a qd in between the

1455
00:54:18,390 --> 00:54:15,760
line to the pump

1456
00:54:19,510 --> 00:54:18,400
and the pump itself and then we can

1457
00:54:21,589 --> 00:54:19,520
we can

1458
00:54:23,030 --> 00:54:21,599
jumper in the

1459
00:54:24,950 --> 00:54:23,040
into the connector that goes to the

1460
00:54:27,990 --> 00:54:24,960
module so that that valve

1461
00:54:33,030 --> 00:54:31,270
separate from the fail valve inside

1462
00:54:34,950 --> 00:54:33,040
but i haven't i haven't gotten a recent

1463
00:54:36,870 --> 00:54:34,960

status gym we have we have some time to

1464
00:54:38,549 --> 00:54:36,880
work this

1465
00:54:39,910 --> 00:54:38,559
given the number of spares we have on

1466
00:54:42,150 --> 00:54:39,920
orbit but the team is off looking at

1467
00:54:44,470 --> 00:54:42,160
that i just haven't had an out brief yet

1468
00:54:47,829 --> 00:54:44,480
uh we have not turned on

1469
00:54:50,549 --> 00:54:47,839
um boeing to go build uh

1470
00:54:52,710 --> 00:54:50,559
this this mod kit yet i know that for a

1471
00:54:55,430 --> 00:54:52,720
fact so but i hadn't gotten a briefing

1472
00:54:57,270 --> 00:54:55,440
recently on it

1473
00:54:58,870 --> 00:54:57,280
all right well that's going to wrap it

1474
00:55:00,710 --> 00:54:58,880
up for us today thank you to all of our

1475
00:55:02,710 --> 00:55:00,720
briefers a couple quick programming

1476
00:55:04,470 --> 00:55:02,720
notes for you coming up as always you

1477
00:55:07,750 --> 00:55:04,480
can tune in to space station live every

1478
00:55:09,349 --> 00:55:07,760
day at 10 a.m central 11 a.m eastern for

1479
00:55:11,270 --> 00:55:09,359
all the latest on life on board the

1480
00:55:13,030 --> 00:55:11,280
international space station

1481
00:55:15,670 --> 00:55:13,040
more immediate we have our launch

1482
00:55:18,549 --> 00:55:15,680
coverage of today's spacex mission uh

1483
00:55:21,109 --> 00:55:18,559
going on the air at 1 15 p.m

1484
00:55:24,150 --> 00:55:21,119
on nasa tv that launch scheduled to take

1485
00:55:26,069 --> 00:55:24,160
place at 2 25 pm central today and

1486
00:55:28,950 --> 00:55:26,079
assuming the launch today in a spacewalk

1487
00:55:31,750 --> 00:55:28,960
on april 23rd our nasa tv coverage will

1488
00:55:33,349 --> 00:55:31,760

begin at 7 30 a.m central as always you

1489
00:55:36,270 --> 00:55:33,359
can get all the latest updates on

1490
00:55:37,990 --> 00:55:36,280
station news on our website at