
NASA
CS-2
CS-3

1
00:00:04,150 --> 00:00:02,389
composition is different from the planet

2
00:00:05,990 --> 00:00:04,160
then they likely formed in a different

3
00:00:08,549 --> 00:00:06,000
part of the solar system and are

4
00:00:10,470 --> 00:00:08,559
captured asteroids

5
00:00:12,950 --> 00:00:10,480
you can follow the martian news

6
00:00:16,850 --> 00:00:12,960
exploration mission on our twitter feed

7
00:04:47,630 --> 00:00:25,990
[Music]

8
00:04:57,800 --> 00:04:47,640
so

9
00:05:21,029 --> 00:04:59,830
[Music]

10
00:05:42,629 --> 00:05:23,560
this is nasa tv

11
00:05:44,390 --> 00:05:42,639
[Music]

12
00:05:46,150 --> 00:05:44,400
good morning good afternoon and good

13
00:05:47,909 --> 00:05:46,160

evening i'm nasa's gary jordan thank you

14
00:05:50,230 --> 00:05:47,919
for joining us remotely for the next

15
00:05:52,790 --> 00:05:50,240
briefing in our series to preview the

16
00:05:54,550 --> 00:05:52,800
upcoming crew one mission the first crew

17
00:05:56,309 --> 00:05:54,560
rotation mission on a u.s commercial

18
00:05:59,350 --> 00:05:56,319
spacecraft to the international space

19
00:06:01,029 --> 00:05:59,360
station for nasa and for spacex this

20
00:06:02,790 --> 00:06:01,039
briefing will address the details of the

21
00:06:05,590 --> 00:06:02,800
crew one mission and programmatic

22
00:06:08,390 --> 00:06:05,600
updates from nasa spacex and the japan

23
00:06:10,070 --> 00:06:08,400
aerospace exploration agency jaxa

24
00:06:12,070 --> 00:06:10,080
joining our esteemed panel based at

25
00:06:14,309 --> 00:06:12,080
nasa's johnson space center in houston

26
00:06:16,309 --> 00:06:14,319
texas we have steve stitch manager of

27
00:06:18,230 --> 00:06:16,319
nasa's commercial crew program kenny

28
00:06:20,629 --> 00:06:18,240
todd deputy manager of the international

29
00:06:22,150 --> 00:06:20,639
space station program and anthony varya

30
00:06:23,590 --> 00:06:22,160
lead flight director here in houston for

31
00:06:25,670 --> 00:06:23,600
the crew one mission

32
00:06:27,990 --> 00:06:25,680
representing spacex from hawthorne

33
00:06:30,150 --> 00:06:28,000
california we welcome benji reed senior

34
00:06:32,309 --> 00:06:30,160
director of human space flight programs

35
00:06:34,629 --> 00:06:32,319
and finally we welcome sakai junich

36
00:06:36,230 --> 00:06:34,639
manager of jax's international space

37
00:06:37,909 --> 00:06:36,240
station program

38
00:06:39,909 --> 00:06:37,919

we'll first start with some initial

39
00:06:41,830 --> 00:06:39,919
remarks from each of our briefers before

40
00:06:43,510 --> 00:06:41,840
opening it up for questions we'll be

41
00:06:46,150 --> 00:06:43,520
taking questions on our phone bridge as

42
00:06:47,590 --> 00:06:46,160
well as on our social media platforms if

43
00:06:49,670 --> 00:06:47,600
you're on the phone please press star

44
00:06:51,749 --> 00:06:49,680
one to add your name to our queue and to

45
00:06:54,629 --> 00:06:51,759
ask a question if you're on social media

46
00:06:57,670 --> 00:06:54,639
use the hashtag ask nasa we'll now begin

47
00:06:59,510 --> 00:06:57,680
with initial remarks from steve stitch

48
00:07:01,589 --> 00:06:59,520
well good morning it's uh it's exciting

49
00:07:02,870 --> 00:07:01,599
to be here today representing the the

50
00:07:05,830 --> 00:07:02,880
nasa team

51
00:07:07,990 --> 00:07:05,840
who has worked uh so hard to make this

52
00:07:09,830 --> 00:07:08,000
uh crude rotation capability possible

53
00:07:11,909 --> 00:07:09,840
over the last 10 years or so i started

54
00:07:13,909 --> 00:07:11,919
working commercial crew 10 years ago

55
00:07:15,589 --> 00:07:13,919
and it's very exciting today to be here

56
00:07:16,390 --> 00:07:15,599
talking about our first crude rotation

57
00:07:19,350 --> 00:07:16,400
mission

58
00:07:21,189 --> 00:07:19,360
um

59
00:07:22,710 --> 00:07:21,199
you know it's been a busy time frame for

60
00:07:25,510 --> 00:07:22,720
us in commercial crew

61
00:07:27,749 --> 00:07:25,520
working with our spacex uh colleagues

62
00:07:30,629 --> 00:07:27,759
uh you know we just landed the the demo

63
00:07:32,150 --> 00:07:30,639

two mission on august the 2nd and so

64
00:07:34,629 --> 00:07:32,160
we've been looking through that data and

65
00:07:36,870 --> 00:07:34,639
reviewing that data in preparation to

66
00:07:38,870 --> 00:07:36,880
certify the vehicle for these increment

67
00:07:41,430 --> 00:07:38,880
missions and then also to get into crew

68
00:07:46,070 --> 00:07:43,430
we have baselined a new launch date

69
00:07:49,670 --> 00:07:46,080
recently uh the new launch date will be

70
00:07:51,749 --> 00:07:49,680
october 31st at 2 40 a.m eastern

71
00:07:53,270 --> 00:07:51,759
early in the morning on halloween day

72
00:07:54,790 --> 00:07:53,280
and we did that to give us a little bit

73
00:07:57,110 --> 00:07:54,800
more time to kind of work through a few

74
00:07:58,469 --> 00:07:57,120
things with iss program and also get

75
00:08:01,189 --> 00:07:58,479
ready for the flight

76
00:08:02,309 --> 00:08:01,199
we'll dock about 25 hours later the next

77
00:08:04,550 --> 00:08:02,319
day

78
00:08:05,350 --> 00:08:04,560
just like we did on the demo 2 mission

79
00:08:08,869 --> 00:08:05,360
and

80
00:08:11,270 --> 00:08:08,879
this mission the difference between this

81
00:08:13,270 --> 00:08:11,280
mission and demo 2 is this is our first

82
00:08:15,350 --> 00:08:13,280
increment mission so we plan to be

83
00:08:17,990 --> 00:08:15,360
docked for six months

84
00:08:20,390 --> 00:08:18,000
and uh we have uh not taken that lightly

85
00:08:22,790 --> 00:08:20,400
this is the first u.s spacecraft to be

86
00:08:26,309 --> 00:08:22,800
docked that long the previous record was

87
00:08:28,230 --> 00:08:26,319
back in skylab which is about 84 days

88
00:08:30,629 --> 00:08:28,240

we've improved the spacecraft from demo

89
00:08:32,070 --> 00:08:30,639
two we have a better capability to land

90
00:08:33,509 --> 00:08:32,080
uh with some improved structural

91
00:08:35,509 --> 00:08:33,519
capability

92
00:08:38,070 --> 00:08:35,519
we've improved the solar rays

93
00:08:39,990 --> 00:08:38,080
to give us that full 210

94
00:08:40,870 --> 00:08:40,000
day doctoration that we need for this

95
00:08:42,310 --> 00:08:40,880
mission

96
00:08:44,149 --> 00:08:42,320
and we've made a few other improvements

97
00:08:47,110 --> 00:08:44,159
to the vehicle such as having the

98
00:08:49,269 --> 00:08:47,120
capability to dock to the zenith port in

99
00:08:51,829 --> 00:08:49,279
addition to the ford port and then also

100
00:08:53,670 --> 00:08:51,839
having port relocate

101
00:08:55,430 --> 00:08:53,680
we also have been reviewing lessons

102
00:08:57,670 --> 00:08:55,440
learned from demo2 we've worked through

103
00:09:00,150 --> 00:08:57,680
a number of those

104
00:09:01,910 --> 00:09:00,160
we had a number of observations and then

105
00:09:03,670 --> 00:09:01,920
a number of lessons learned

106
00:09:04,870 --> 00:09:03,680
and then a couple of the big ones that

107
00:09:06,870 --> 00:09:04,880
was talked about in the previous press

108
00:09:08,790 --> 00:09:06,880
conference we we had a little bit of a

109
00:09:11,030 --> 00:09:08,800
erosion around an area called the

110
00:09:12,630 --> 00:09:11,040
compression pattern tension time the tps

111
00:09:14,150 --> 00:09:12,640
we've worked through that and installed

112
00:09:15,590 --> 00:09:14,160
some changes to the vehicle those are

113
00:09:17,350 --> 00:09:15,600

actually being installed

114
00:09:19,829 --> 00:09:17,360
over the last few days

115
00:09:21,509 --> 00:09:19,839
we we learned a lesson with the deploy

116
00:09:23,190 --> 00:09:21,519
of the drug parachutes it was a little

117
00:09:25,110 --> 00:09:23,200
lower than the nominal planned altitude

118
00:09:26,790 --> 00:09:25,120
but within limits we had a little bit of

119
00:09:28,230 --> 00:09:26,800
a venting clog and we worked through

120
00:09:30,630 --> 00:09:28,240
that as well and then of course

121
00:09:32,550 --> 00:09:30,640
everybody saw uh on landing for demo two

122
00:09:33,590 --> 00:09:32,560
we had boats in the area and we've

123
00:09:35,110 --> 00:09:33,600
worked with the coast guard to have

124
00:09:36,389 --> 00:09:35,120
additional assets in place to make sure

125
00:09:37,910 --> 00:09:36,399
that doesn't happen

126
00:09:39,509 --> 00:09:37,920
so we're certainly excited to be here

127
00:09:40,470 --> 00:09:39,519
certainly excited to have this crew one

128
00:09:41,269 --> 00:09:40,480
mission

129
00:09:43,110 --> 00:09:41,279
and

130
00:09:44,470 --> 00:09:43,120
kick off our increment support for

131
00:09:46,150 --> 00:09:44,480
station and i'll turn it over to kenny

132
00:09:48,389 --> 00:09:46,160
todd deputy program manager for the

133
00:09:51,269 --> 00:09:48,399
space station program

134
00:09:53,509 --> 00:09:51,279
well thank you steve and uh as uh

135
00:09:55,750 --> 00:09:53,519
as one of the primary benefactors of

136
00:09:57,030 --> 00:09:55,760
this service uh uh you can certainly add

137
00:09:59,590 --> 00:09:57,040
us to the long list of people who are

138
00:10:02,310 --> 00:09:59,600

very excited about this uh upcoming uh

139
00:10:04,630 --> 00:10:02,320
mission uh for the for the crew one crew

140
00:10:05,829 --> 00:10:04,640
it's gonna be an exciting time on board

141
00:10:08,230 --> 00:10:05,839
the space station again we're looking

142
00:10:09,509 --> 00:10:08,240
forward to getting uh up to seven crew

143
00:10:10,949 --> 00:10:09,519
we haven't we haven't been there in a

144
00:10:12,710 --> 00:10:10,959
while so we're awfully excited about

145
00:10:14,310 --> 00:10:12,720
being able to be able to get the crew

146
00:10:15,350 --> 00:10:14,320
size back up again

147
00:10:17,509 --> 00:10:15,360
um

148
00:10:20,870 --> 00:10:17,519
this uh particular briefing comes on the

149
00:10:23,110 --> 00:10:20,880
heels of of our completion of our stage

150
00:10:24,710 --> 00:10:23,120
ops readiness review yesterday which is

151
00:10:27,590 --> 00:10:24,720
a review that we hold within the station

152
00:10:29,350 --> 00:10:27,600
program before every every crew flight

153
00:10:31,590 --> 00:10:29,360
and also before every cargo flight just

154
00:10:33,670 --> 00:10:31,600
to make sure that we've got all our our

155
00:10:34,949 --> 00:10:33,680
uh issues pounded flat and that we're

156
00:10:36,470 --> 00:10:34,959
ready to go and we understand what we're

157
00:10:38,310 --> 00:10:36,480
going to do with with the mission and

158
00:10:40,150 --> 00:10:38,320
that the space station is ready to go

159
00:10:42,389 --> 00:10:40,160
into and to receive that particular

160
00:10:43,509 --> 00:10:42,399
vehicle uh we had a very good review

161
00:10:44,870 --> 00:10:43,519
yesterday

162
00:10:46,949 --> 00:10:44,880
we had some forward work coming out of

163
00:10:48,710 --> 00:10:46,959

that as steve mentioned earlier we made

164
00:10:50,470 --> 00:10:48,720
the decision along with with the

165
00:10:52,470 --> 00:10:50,480
commercial crew program to move the

166
00:10:54,710 --> 00:10:52,480
flight a few days allow us to continue

167
00:10:56,310 --> 00:10:54,720
to work through some issues on orbit uh

168
00:10:58,630 --> 00:10:56,320
with with our crew time and trying to

169
00:11:01,750 --> 00:10:58,640
make sure that that we get all the right

170
00:11:04,230 --> 00:11:01,760
boxes checked on board as well as here

171
00:11:07,750 --> 00:11:04,240
on the ground before before we we get

172
00:11:09,269 --> 00:11:07,760
ready to to welcome them on board

173
00:11:11,750 --> 00:11:09,279
with regard to the current state of

174
00:11:15,030 --> 00:11:11,760
station uh the the increment crew on

175
00:11:17,910 --> 00:11:15,040
board increment 63 with

176
00:11:19,750 --> 00:11:17,920
anatolia yvonne and chris cassidy

177
00:11:21,430 --> 00:11:19,760
they're doing fantastic

178
00:11:23,509 --> 00:11:21,440
they're doing a great job taking care of

179
00:11:25,829 --> 00:11:23,519
station and continuing our our science

180
00:11:27,910 --> 00:11:25,839
mission on board

181
00:11:30,150 --> 00:11:27,920
as far as station goes and in very good

182
00:11:32,069 --> 00:11:30,160
shape uh the only the only issue that i

183
00:11:34,230 --> 00:11:32,079
would i would bring up at this point is

184
00:11:36,069 --> 00:11:34,240
this uh this little atmosphere leak

185
00:11:38,870 --> 00:11:36,079
that's proven to be a bit challenging

186
00:11:40,949 --> 00:11:38,880
over the last couple of months but

187
00:11:42,630 --> 00:11:40,959
for those of you that that follow a

188
00:11:45,030 --> 00:11:42,640

station

189
00:11:46,949 --> 00:11:45,040
on orbit operations

190
00:11:48,389 --> 00:11:46,959
regularly you'll know that we've been

191
00:11:50,550 --> 00:11:48,399
we've been dealing with a small

192
00:11:52,389 --> 00:11:50,560
atmosphere leak over the last well

193
00:11:55,030 --> 00:11:52,399
really over a year

194
00:11:56,470 --> 00:11:55,040
but we saw a little bump up in it here a

195
00:11:58,949 --> 00:11:56,480
couple of months ago

196
00:12:01,430 --> 00:11:58,959
we did some isolation testing on orbit

197
00:12:02,949 --> 00:12:01,440
to try to try to try to find the source

198
00:12:04,150 --> 00:12:02,959
of the leak we got a lot of good data

199
00:12:05,750 --> 00:12:04,160
out of that

200
00:12:07,030 --> 00:12:05,760
and we were still parsing through that

201
00:12:08,230 --> 00:12:07,040
and trying to figure out what our next

202
00:12:10,230 --> 00:12:08,240
steps were

203
00:12:12,629 --> 00:12:10,240
when we saw yet another little tick-up

204
00:12:15,350 --> 00:12:12,639
um uh prior to last weekend and so we

205
00:12:17,910 --> 00:12:15,360
decided to repeat that isolation test

206
00:12:19,269 --> 00:12:17,920
again uh again got some some very good

207
00:12:21,190 --> 00:12:19,279
data and and what we were able to

208
00:12:23,269 --> 00:12:21,200
confirm is that we didn't have a second

209
00:12:24,790 --> 00:12:23,279
leak anywhere else in the stack that we

210
00:12:26,949 --> 00:12:24,800
were still probably just dealing with

211
00:12:29,110 --> 00:12:26,959
the initial leak and for whatever reason

212
00:12:31,910 --> 00:12:29,120
that it hitted we were we were seeing a

213
00:12:33,750 --> 00:12:31,920

little bit larger of a leak so um anyway

214
00:12:35,350 --> 00:12:33,760
we were still uh trying to figure out

215
00:12:38,069 --> 00:12:35,360
the next plan after we finished this

216
00:12:39,829 --> 00:12:38,079
isolation test this past weekend and uh

217
00:12:40,949 --> 00:12:39,839
overnight we we

218
00:12:43,110 --> 00:12:40,959
we were

219
00:12:45,670 --> 00:12:43,120
watching watching the the leak raid

220
00:12:49,110 --> 00:12:45,680
overnight and saw that it it ticked up

221
00:12:50,629 --> 00:12:49,120
again um and at that point we we made

222
00:12:53,350 --> 00:12:50,639
the decision that had gotten large

223
00:12:56,069 --> 00:12:53,360
enough that that we felt like that we

224
00:12:58,069 --> 00:12:56,079
had a pretty good opportunity to

225
00:12:59,829 --> 00:12:58,079
to get the crew up

226
00:13:02,550 --> 00:12:59,839
start working through

227
00:13:03,990 --> 00:13:02,560
a more focused isolation procedure

228
00:13:06,389 --> 00:13:04,000
trying to focus on some areas that we

229
00:13:08,150 --> 00:13:06,399
hadn't looked at as closely during the

230
00:13:10,629 --> 00:13:08,160
earlier tests just because

231
00:13:12,310 --> 00:13:10,639
those particular modules were hard to uh

232
00:13:14,470 --> 00:13:12,320
to analyze given that the crew was

233
00:13:16,629 --> 00:13:14,480
living there and in those modules during

234
00:13:18,870 --> 00:13:16,639
those particular isolation tests so we

235
00:13:21,110 --> 00:13:18,880
decided to go ahead and do it

236
00:13:23,430 --> 00:13:21,120
wake the crew up we went through a

237
00:13:25,990 --> 00:13:23,440
several hour activity and we think we

238
00:13:27,910 --> 00:13:26,000

got again some some more data we got a

239
00:13:30,230 --> 00:13:27,920
finer point on where we think the leak

240
00:13:32,870 --> 00:13:30,240
is and module wise we at this point

241
00:13:34,790 --> 00:13:32,880
think it's in the russian segment uh and

242
00:13:36,230 --> 00:13:34,800
the service module area

243
00:13:37,990 --> 00:13:36,240
again we're continuing to look at all

244
00:13:39,750 --> 00:13:38,000
the data from the test but but we do

245
00:13:41,030 --> 00:13:39,760
know uh and have confirmed with our

246
00:13:42,389 --> 00:13:41,040
russian colleagues that we think there's

247
00:13:44,230 --> 00:13:42,399
something going on there and so we're

248
00:13:45,990 --> 00:13:44,240
going to try to put a finer point on our

249
00:13:48,150 --> 00:13:46,000
troubleshooting plan we have a leak

250
00:13:50,710 --> 00:13:48,160
detector on board and now we'll start to

251
00:13:52,470 --> 00:13:50,720
uh to really put some some focus in in

252
00:13:54,550 --> 00:13:52,480
the service module and try to work with

253
00:13:55,829 --> 00:13:54,560
our russian colleagues to to get that

254
00:13:58,230 --> 00:13:55,839
taken care of

255
00:14:01,350 --> 00:13:58,240
um so uh so again a lot going on on

256
00:14:03,990 --> 00:14:01,360
board right now uh between now and and

257
00:14:06,230 --> 00:14:04,000
and crew one will actually welcome the

258
00:14:07,590 --> 00:14:06,240
the northrop grumman cygnus module on

259
00:14:09,110 --> 00:14:07,600
board it's launching later this week

260
00:14:11,110 --> 00:14:09,120
we'll get to the international space

261
00:14:14,389 --> 00:14:11,120
station on sunday got about eight

262
00:14:16,069 --> 00:14:14,399
thousand pounds of cargo and and and uh

263
00:14:19,110 --> 00:14:16,079

roughly a third or more than a third of

264
00:14:21,030 --> 00:14:19,120
that is is actually directly uh related

265
00:14:23,030 --> 00:14:21,040
to utilization of the space station so

266
00:14:24,389 --> 00:14:23,040
we're very excited about that uh the

267
00:14:26,230 --> 00:14:24,399
amount of utilization we're putting on

268
00:14:27,509 --> 00:14:26,240
these cygnus vehicles now has gone way

269
00:14:30,069 --> 00:14:27,519
up and so

270
00:14:31,189 --> 00:14:30,079
we'll have a lot for for chris to do and

271
00:14:32,710 --> 00:14:31,199
and we're looking forward to getting

272
00:14:34,550 --> 00:14:32,720
that module on board

273
00:14:36,470 --> 00:14:34,560
a little later in the month of october

274
00:14:39,189 --> 00:14:36,480
uh we'll we'll do what we probably have

275
00:14:40,870 --> 00:14:39,199
to refer to as a soyuz rotation uh kate

276
00:14:42,790 --> 00:14:40,880
rubens and uh

277
00:14:44,790 --> 00:14:42,800
two two of her russian colleagues both

278
00:14:46,150 --> 00:14:44,800
named sergey will be coming to the

279
00:14:47,750 --> 00:14:46,160
international space station and they

280
00:14:51,030 --> 00:14:47,760
will take a handover

281
00:14:53,509 --> 00:14:51,040
from chris and anatoly any bond

282
00:14:56,230 --> 00:14:53,519
they'll do about a seven day handover

283
00:14:59,110 --> 00:14:56,240
between the 14th and the 21st and then

284
00:15:02,629 --> 00:14:59,120
on the 21st uh chris yvonne and anatoly

285
00:15:05,030 --> 00:15:02,639
will will return uh to the uh to the the

286
00:15:07,269 --> 00:15:05,040
kazakh step uh

287
00:15:10,389 --> 00:15:07,279
back to back to earth so again a lot

288
00:15:12,710 --> 00:15:10,399

going on in the early part of of october

289
00:15:14,790 --> 00:15:12,720
which again helped uh feed this

290
00:15:16,470 --> 00:15:14,800
discussion about you know where where is

291
00:15:18,310 --> 00:15:16,480
the right place really to fly crew want

292
00:15:19,990 --> 00:15:18,320
to make sure that that we've got all the

293
00:15:21,110 --> 00:15:20,000
boxes checked and never that we're ready

294
00:15:23,269 --> 00:15:21,120
to go so

295
00:15:25,269 --> 00:15:23,279
once we get the crew one uh crew on

296
00:15:27,269 --> 00:15:25,279
board we'll be at a crew of five on the

297
00:15:29,430 --> 00:15:27,279
usos

298
00:15:31,030 --> 00:15:29,440
between now and when this crew home

299
00:15:32,949 --> 00:15:31,040
comes home we've we've got a series of

300
00:15:35,030 --> 00:15:32,959
evas that we're going to do probably

301
00:15:37,110 --> 00:15:35,040
around four evas i anticipate we'll do

302
00:15:39,590 --> 00:15:37,120
those after the first of the year just

303
00:15:41,509 --> 00:15:39,600
because of all of the associated cargo

304
00:15:44,790 --> 00:15:41,519
ops and the science with the with the

305
00:15:47,430 --> 00:15:44,800
ng-14 cygnus module and the arrival in

306
00:15:50,389 --> 00:15:47,440
november of the spacex 21

307
00:15:52,470 --> 00:15:50,399
dragon crew cargo dragon which again

308
00:15:54,470 --> 00:15:52,480
will bring another several thousand

309
00:15:56,389 --> 00:15:54,480
pounds of cargo

310
00:15:58,230 --> 00:15:56,399
over half of which will be directly

311
00:15:59,509 --> 00:15:58,240
utilization uh

312
00:16:00,949 --> 00:15:59,519
and science so

313
00:16:03,030 --> 00:16:00,959

so uh between now and the end of the

314
00:16:05,430 --> 00:16:03,040
year we'll be doing a lot of science um

315
00:16:07,509 --> 00:16:05,440
a lot a lot of vehicle processing we'll

316
00:16:09,910 --> 00:16:07,519
turn the corner after the new year do

317
00:16:12,870 --> 00:16:09,920
some ebas early in the year and then get

318
00:16:15,910 --> 00:16:12,880
ready for an another north roman cygnus

319
00:16:17,430 --> 00:16:15,920
visit in in february and then shortly

320
00:16:18,790 --> 00:16:17,440
after that we'll really get into the

321
00:16:21,269 --> 00:16:18,800
detail plan with steve and the

322
00:16:24,069 --> 00:16:21,279
commercial crew program about return of

323
00:16:25,829 --> 00:16:24,079
of the crew one capsule and uh and and

324
00:16:28,230 --> 00:16:25,839
making sure we got a good handover plan

325
00:16:29,910 --> 00:16:28,240
between uh crew one and crew two so

326
00:16:32,230 --> 00:16:29,920
that's how the the increments gonna lay

327
00:16:35,030 --> 00:16:32,240
out we're uh very excited about it again

328
00:16:37,590 --> 00:16:35,040
uh count s as uh as one of many that are

329
00:16:39,990 --> 00:16:37,600
excited about this upcoming mission so

330
00:16:41,590 --> 00:16:40,000
we're ready to go

331
00:16:43,829 --> 00:16:41,600
thank you kenny we'll now hand it over

332
00:16:45,430 --> 00:16:43,839
to anthony varya

333
00:16:46,790 --> 00:16:45,440
all right yeah thank you kenny and thank

334
00:16:48,550 --> 00:16:46,800
you steve

335
00:16:51,749 --> 00:16:48,560
all of that excitement turns into

336
00:16:53,670 --> 00:16:51,759
exciting operations and so uh as a lead

337
00:16:55,110 --> 00:16:53,680
flight director for crew 1 and one of

338
00:16:58,230 --> 00:16:55,120

the leads of the operations teams that

339
00:16:59,749 --> 00:16:58,240
keeps a space station running and keeps

340
00:17:01,030 --> 00:16:59,759
keeps getting ready for this crew one

341
00:17:03,430 --> 00:17:01,040
mission and all these other missions

342
00:17:05,909 --> 00:17:03,440
northrop grumman etc it is extremely

343
00:17:07,909 --> 00:17:05,919
exciting time uh to be working in human

344
00:17:10,470 --> 00:17:07,919
space flight and so

345
00:17:12,630 --> 00:17:10,480
the nasa and spacex operations teams are

346
00:17:14,870 --> 00:17:12,640
jointly getting ready for this launch

347
00:17:16,949 --> 00:17:14,880
that's coming up just outside of a month

348
00:17:18,710 --> 00:17:16,959
we've got a few more procedures to

349
00:17:21,829 --> 00:17:18,720
polish we've got a few more sims to

350
00:17:24,470 --> 00:17:21,839
finish out but we are well attenuated to

351
00:17:26,870 --> 00:17:24,480
a 1031 launch date and excited to see

352
00:17:29,350 --> 00:17:26,880
that go off early morning

353
00:17:32,150 --> 00:17:29,360
from florida on halloween

354
00:17:34,789 --> 00:17:32,160
soon we'll be putting hopper shannon ike

355
00:17:36,549 --> 00:17:34,799
and suici into quarantine

356
00:17:39,669 --> 00:17:36,559
and they are getting ready to go here

357
00:17:41,830 --> 00:17:39,679
they are certified as dragon flyers by

358
00:17:43,270 --> 00:17:41,840
the spacex team and they are ready to be

359
00:17:44,390 --> 00:17:43,280
increment crew members on board the

360
00:17:47,029 --> 00:17:44,400
international space station we're

361
00:17:48,789 --> 00:17:47,039
excited to see them up there and so soon

362
00:17:50,789 --> 00:17:48,799
they'll be uh getting ready for going up

363
00:17:52,630 --> 00:17:50,799

to ksc going out to kennedy space center

364
00:17:54,789 --> 00:17:52,640
about seven days before the launch so

365
00:17:56,070 --> 00:17:54,799
that's looking to be at the end of

366
00:17:58,390 --> 00:17:56,080
october

367
00:17:59,990 --> 00:17:58,400
but it's all about uh getting ready for

368
00:18:01,510 --> 00:18:00,000
these missions and making sure that the

369
00:18:04,150 --> 00:18:01,520
space station is also ready for those

370
00:18:05,590 --> 00:18:04,160
missions and so that our our teams are

371
00:18:07,990 --> 00:18:05,600
sitting over and building 30 and mission

372
00:18:09,590 --> 00:18:08,000
control here in houston and making sure

373
00:18:11,430 --> 00:18:09,600
that that vehicle is going to be ready

374
00:18:12,870 --> 00:18:11,440
so that when these people get up there

375
00:18:16,310 --> 00:18:12,880
they can do all the good science that we

376
00:18:23,750 --> 00:18:18,310
thank you anthony we'll now hand it over

377
00:18:30,390 --> 00:18:24,710
hello

378
00:18:32,710 --> 00:18:30,400
it's always an honor um to get to

379
00:18:36,070 --> 00:18:32,720
represent um all of the the many many

380
00:18:38,470 --> 00:18:36,080
people here at spacex our suppliers um

381
00:18:40,950 --> 00:18:38,480
and of course at nasa to to represent

382
00:18:43,909 --> 00:18:40,960
these missions and talk about what's

383
00:18:46,070 --> 00:18:43,919
coming up and how important it is um

384
00:18:48,950 --> 00:18:46,080
for uh for the nation for nasa for our

385
00:18:51,270 --> 00:18:48,960
company and and really for humanity um

386
00:18:54,310 --> 00:18:51,280
again it's an honor and with a lot of

387
00:18:57,750 --> 00:18:54,320
gratitude um we're here um supporting

388
00:18:59,909 --> 00:18:57,760

these missions and these causes

389
00:19:01,270 --> 00:18:59,919
this upcoming mission is for me really

390
00:19:02,630 --> 00:19:01,280
important really special i think it's

391
00:19:05,190 --> 00:19:02,640
true for a lot of us this this

392
00:19:07,190 --> 00:19:05,200
represents um really the culmination of

393
00:19:10,950 --> 00:19:07,200
many many years of work between the

394
00:19:12,549 --> 00:19:10,960
joint teams at nasa and spacex

395
00:19:14,950 --> 00:19:12,559
putting together this whole commercial

396
00:19:16,549 --> 00:19:14,960
crew program overall

397
00:19:18,710 --> 00:19:16,559
which has really been in the development

398
00:19:21,029 --> 00:19:18,720
and test stage all the way through now

399
00:19:22,150 --> 00:19:21,039
demo 2 was a beautiful

400
00:19:23,750 --> 00:19:22,160
mission

401
00:19:25,669 --> 00:19:23,760
it was just almost straight down the

402
00:19:26,870 --> 00:19:25,679
line in terms of the data that we got

403
00:19:27,990 --> 00:19:26,880
out of it versus the data that was

404
00:19:30,390 --> 00:19:28,000
predicted

405
00:19:32,390 --> 00:19:30,400
we had some good lessons learned um that

406
00:19:34,870 --> 00:19:32,400
hans talked about earlier um in the last

407
00:19:36,710 --> 00:19:34,880
press briefing and also uh that stitch

408
00:19:38,310 --> 00:19:36,720
is mentioned um and these are very

409
00:19:39,669 --> 00:19:38,320
important things every single mission we

410
00:19:42,230 --> 00:19:39,679
fly we're gonna learn lessons out of

411
00:19:44,150 --> 00:19:42,240
them and and apply those to make each

412
00:19:46,630 --> 00:19:44,160
subsequent mission safer

413
00:19:48,789 --> 00:19:46,640

um but uh overall again that was

414
00:19:50,789 --> 00:19:48,799
fundamentally a test mission that uh

415
00:19:52,950 --> 00:19:50,799
happily we were able to extend and get a

416
00:19:54,390 --> 00:19:52,960
lot of good work out of uh that mission

417
00:19:56,710 --> 00:19:54,400
and bob and doug were able to do a lot

418
00:19:59,909 --> 00:19:56,720
of work on station because this is all

419
00:20:02,390 --> 00:19:59,919
leading up to the big operational

420
00:20:05,270 --> 00:20:02,400
cadence that we're about to move into

421
00:20:08,310 --> 00:20:05,280
and uh and this is super cool

422
00:20:10,310 --> 00:20:08,320
bottom line is is that we are here to to

423
00:20:12,789 --> 00:20:10,320
provide transportation services to help

424
00:20:16,230 --> 00:20:12,799
keep iss staffed and to provide the

425
00:20:18,230 --> 00:20:16,240
cargo that iss needs

426
00:20:19,750 --> 00:20:18,240
once we start with crew one we'll be

427
00:20:21,430 --> 00:20:19,760
moving into a cadence where over the

428
00:20:23,669 --> 00:20:21,440
next 14 months

429
00:20:24,630 --> 00:20:23,679
um we will need to fly seven dragon

430
00:20:26,789 --> 00:20:24,640
missions

431
00:20:29,590 --> 00:20:26,799
um there will be a number of crew

432
00:20:32,310 --> 00:20:29,600
missions crew one crew two crew three

433
00:20:34,789 --> 00:20:32,320
um and ongoing um our expectations are

434
00:20:37,270 --> 00:20:34,799
able to uh will be prepared to help nasa

435
00:20:38,789 --> 00:20:37,280
to hand off on orbit between all of

436
00:20:41,909 --> 00:20:38,799
those crews going from mission to

437
00:20:45,110 --> 00:20:41,919
mission to mission um at the same time

438
00:20:47,350 --> 00:20:45,120

we'll be flying four cargo flights um uh

439
00:20:48,950 --> 00:20:47,360
on to uh station is is the plan where we

440
00:20:52,070 --> 00:20:48,960
will be ready to support nasa in that

441
00:20:53,990 --> 00:20:52,080
capacity um as they need um and what

442
00:20:55,909 --> 00:20:54,000
this means for us as a company and also

443
00:20:57,510 --> 00:20:55,919
as a joint operations team between

444
00:20:59,830 --> 00:20:57,520
spacex and nasa

445
00:21:01,750 --> 00:20:59,840
is that starting with the crew one

446
00:21:03,990 --> 00:21:01,760
flight we will have a dragon

447
00:21:06,310 --> 00:21:04,000
continuously on station

448
00:21:08,789 --> 00:21:06,320
again for the next 14 months and every

449
00:21:10,630 --> 00:21:08,799
time there's a dragon launch there'll be

450
00:21:13,590 --> 00:21:10,640
two dragons in space

451
00:21:15,990 --> 00:21:13,600
so this really is a new era um for for

452
00:21:18,149 --> 00:21:16,000
us as a company for for spacex and and

453
00:21:19,750 --> 00:21:18,159
also for commercial space in general

454
00:21:21,750 --> 00:21:19,760
this is a really exciting time that

455
00:21:22,950 --> 00:21:21,760
we're coming into

456
00:21:24,789 --> 00:21:22,960
as we come into it though it's very

457
00:21:27,270 --> 00:21:24,799
important that we stay focused on the

458
00:21:30,310 --> 00:21:27,280
mission ahead um the next mission is

459
00:21:33,029 --> 00:21:30,320
always the the most important mission um

460
00:21:34,870 --> 00:21:33,039
and uh and and of course um we we

461
00:21:36,710 --> 00:21:34,880
understand the sacred honor that we have

462
00:21:39,590 --> 00:21:36,720
of of holding on the lives of the

463
00:21:40,710 --> 00:21:39,600

astronauts um you know in our hands and

464
00:21:42,789 --> 00:21:40,720
and making sure that they get to the

465
00:21:46,149 --> 00:21:42,799
space station safely um that they have a

466
00:21:48,310 --> 00:21:46,159
great um and safe uh time on on on orbit

467
00:21:50,310 --> 00:21:48,320
for the next six months that we provide

468
00:21:51,430 --> 00:21:50,320
uh lifeboat capability the dragon will

469
00:21:52,950 --> 00:21:51,440
be there in case they needed to come

470
00:21:54,390 --> 00:21:52,960
home early and then of course when it's

471
00:21:55,909 --> 00:21:54,400
time at the end of their six months if

472
00:21:57,190 --> 00:21:55,919
they come home and we bring them home

473
00:21:58,710 --> 00:21:57,200
safely and bring them back home to their

474
00:22:00,630 --> 00:21:58,720
families

475
00:22:01,909 --> 00:22:00,640
and that's uh that's that's that's

476
00:22:04,470 --> 00:22:01,919
really what we're focusing on at the

477
00:22:08,230 --> 00:22:04,480
moment as mentioned uh we're going to be

478
00:22:10,630 --> 00:22:08,240
moving this uh flight to halloween uh to

479
00:22:12,789 --> 00:22:10,640
early early in the morning on halloween

480
00:22:14,950 --> 00:22:12,799
on october 31st

481
00:22:17,750 --> 00:22:14,960
and uh as always we are very happy to

482
00:22:19,669 --> 00:22:17,760
support nasa in in in the scheduling and

483
00:22:22,390 --> 00:22:19,679
the needs and be there for them when

484
00:22:24,149 --> 00:22:22,400
they're ready and as a joint team we fly

485
00:22:25,750 --> 00:22:24,159
when we're ready uh we're staying

486
00:22:28,310 --> 00:22:25,760
focused now we're taking the extra few

487
00:22:30,870 --> 00:22:28,320
days to continue our double and triple

488
00:22:32,070 --> 00:22:30,880

checks make sure that uh that we really

489
00:22:34,390 --> 00:22:32,080
have looked under every rock we've

490
00:22:37,590 --> 00:22:34,400
checked under everything right because

491
00:22:40,070 --> 00:22:37,600
most important is uh is mike and victor

492
00:22:41,909 --> 00:22:40,080
and shannon and suici and uh and making

493
00:22:43,830 --> 00:22:41,919
sure that they can do the work that they

494
00:22:45,270 --> 00:22:43,840
are very excited to do the training

495
00:22:46,789 --> 00:22:45,280
accomplish the training that they've

496
00:22:48,149 --> 00:22:46,799
they've just finished up and got

497
00:22:49,750 --> 00:22:48,159
certified with

498
00:22:51,270 --> 00:22:49,760
um and then bring them back home to

499
00:22:53,270 --> 00:22:51,280
continue their work as astronauts and

500
00:22:54,950 --> 00:22:53,280
also to be home with their families so

501
00:22:56,549 --> 00:22:54,960
this is uh this is what we're focusing

502
00:22:59,270 --> 00:22:56,559
on now

503
00:23:01,029 --> 00:22:59,280
um let's take a look uh right now at uh

504
00:23:02,789 --> 00:23:01,039
kind of what the mission will look like

505
00:23:04,070 --> 00:23:02,799
i think we have an initial uh one of our

506
00:23:06,310 --> 00:23:04,080
great drawings

507
00:23:07,990 --> 00:23:06,320
that give you a demonstration of what it

508
00:23:09,270 --> 00:23:08,000
looks like as you can see here in this

509
00:23:12,310 --> 00:23:09,280
drawing there's of course the launch and

510
00:23:14,549 --> 00:23:12,320
ascent with the f9 both stages and the

511
00:23:16,310 --> 00:23:14,559
dragon attached

512
00:23:18,230 --> 00:23:16,320
there's uh the separation of the first

513
00:23:20,390 --> 00:23:18,240

and second stages

514
00:23:21,909 --> 00:23:20,400
the second stage goes on with its its

515
00:23:24,390 --> 00:23:21,919
important mission of carrying dragon

516
00:23:25,510 --> 00:23:24,400
into the right orbit before dragon

517
00:23:27,110 --> 00:23:25,520
separates

518
00:23:29,029 --> 00:23:27,120
at the same time the first stage is

519
00:23:30,950 --> 00:23:29,039
doing its flip maneuver and entry burns

520
00:23:33,029 --> 00:23:30,960
and getting ready to come back home

521
00:23:34,549 --> 00:23:33,039
very important note here our intention

522
00:23:37,590 --> 00:23:34,559
is to take this

523
00:23:38,870 --> 00:23:37,600
same falcon 9 and wafter comes back

524
00:23:41,190 --> 00:23:38,880
we'll start getting it ready for its

525
00:23:42,310 --> 00:23:41,200
refurbishment to be flown on the crew 2

526
00:23:44,149 --> 00:23:42,320
mission

527
00:23:47,590 --> 00:23:44,159
um so at the same time as i mentioned

528
00:23:48,390 --> 00:23:47,600
the dragon continues on it separates

529
00:23:51,430 --> 00:23:48,400
from

530
00:23:53,269 --> 00:23:51,440
on into orbit

531
00:23:55,269 --> 00:23:53,279
we go to the next drawing

532
00:23:56,630 --> 00:23:55,279
we'll take a look here

533
00:23:59,350 --> 00:23:56,640
and we can see now this is what we call

534
00:24:00,710 --> 00:23:59,360
the phasing part of the mission so what

535
00:24:02,149 --> 00:24:00,720
we're doing is essentially chasing

536
00:24:04,549 --> 00:24:02,159
station in the most efficient way

537
00:24:06,950 --> 00:24:04,559
possible based on the orbital mechanics

538
00:24:09,269 --> 00:24:06,960

and where station is when we've launched

539
00:24:11,350 --> 00:24:09,279
where dragon is and how do we get there

540
00:24:13,269 --> 00:24:11,360
um in the in the best way possible using

541
00:24:15,350 --> 00:24:13,279
the right amount of fuel and so we go

542
00:24:17,510 --> 00:24:15,360
through that that phasing process

543
00:24:19,990 --> 00:24:17,520
um and we'll uh and then eventually we

544
00:24:21,669 --> 00:24:20,000
get there we approach station um and we

545
00:24:23,669 --> 00:24:21,679
do our docking

546
00:24:27,110 --> 00:24:23,679
as before under demo two the docking

547
00:24:29,909 --> 00:24:27,120
will be at the node two forward port on

548
00:24:32,710 --> 00:24:29,919
space station um it will be an automated

549
00:24:34,230 --> 00:24:32,720
docking and uh we'll uh and of course

550
00:24:36,630 --> 00:24:34,240
though the crew does have the ability to

551
00:24:38,470 --> 00:24:36,640
go into a manual mode if they need to

552
00:24:40,870 --> 00:24:38,480
um and then if we go to the next line

553
00:24:44,390 --> 00:24:42,470
we can see what happens when it's time

554
00:24:45,590 --> 00:24:44,400
to come home so assume the crew's been

555
00:24:47,430 --> 00:24:45,600
up there for six months they've done a

556
00:24:49,750 --> 00:24:47,440
lot of great work a lot of great science

557
00:24:52,070 --> 00:24:49,760
and maintaining at the station

558
00:24:55,029 --> 00:24:52,080
um and then we'll do an undocking again

559
00:24:56,549 --> 00:24:55,039
automated um with the ability for the

560
00:24:58,549 --> 00:24:56,559
crew to do various things at different

561
00:25:01,590 --> 00:24:58,559
times in the mission if needed

562
00:25:02,470 --> 00:25:01,600
undocking and then a phasing to come

563
00:25:06,789 --> 00:25:02,480

home

564
00:25:09,990 --> 00:25:06,799
re-entry burn and re-enter and just like

565
00:25:12,870 --> 00:25:10,000
on demo 2 we'll be recovering the crew

566
00:25:14,870 --> 00:25:12,880
we have a number of sites

567
00:25:18,470 --> 00:25:14,880
near florida uh both on the atlantic

568
00:25:20,390 --> 00:25:18,480
side and the gulf um and uh and ready to

569
00:25:22,310 --> 00:25:20,400
to to recover the crew with our with our

570
00:25:24,230 --> 00:25:22,320
what we call our spacex navy

571
00:25:26,390 --> 00:25:24,240
with our recovery team and their vessels

572
00:25:27,830 --> 00:25:26,400
um and uh and look forward to that

573
00:25:29,830 --> 00:25:27,840
happening and that'll happen like i said

574
00:25:34,630 --> 00:25:29,840
about six months later um kind of in

575
00:25:39,269 --> 00:25:37,110
so you know i i mentioned a lot of the

576
00:25:40,230 --> 00:25:39,279
work that we do as a joint team to get

577
00:25:43,110 --> 00:25:40,240
us here

578
00:25:44,870 --> 00:25:43,120
um a lot of the effort um between you

579
00:25:47,029 --> 00:25:44,880
know the beginning of this program and

580
00:25:49,830 --> 00:25:47,039
now was in the development the

581
00:25:51,510 --> 00:25:49,840
partnership um and the certification ton

582
00:25:53,190 --> 00:25:51,520
of certification work that's happened to

583
00:25:55,510 --> 00:25:53,200
get us to be ready to go fly

584
00:25:57,350 --> 00:25:55,520
operationally um and this is some

585
00:26:00,630 --> 00:25:57,360
examples of that kind of work that we do

586
00:26:03,750 --> 00:26:00,640
right we've done um you know 500 hours

587
00:26:05,750 --> 00:26:03,760
of 500 tests i mean of uh of you know

588
00:26:08,390 --> 00:26:05,760

docking simulations uh down to johnson

589
00:26:11,190 --> 00:26:08,400
space center uh we've done uh over eight

590
00:26:12,950 --> 00:26:11,200
million hours of hardware in the loop

591
00:26:14,470 --> 00:26:12,960
testing between our hardware systems and

592
00:26:16,390 --> 00:26:14,480
our software systems

593
00:26:19,029 --> 00:26:16,400
including

594
00:26:21,029 --> 00:26:19,039
tests that basically simulate dragon and

595
00:26:23,750 --> 00:26:21,039
falcon working together

596
00:26:25,909 --> 00:26:23,760
our systems working with nasa systems

597
00:26:26,789 --> 00:26:25,919
on top of that we've done thousands of

598
00:26:29,830 --> 00:26:26,799
hours

599
00:26:32,070 --> 00:26:29,840
of simulations with our operations teams

600
00:26:35,269 --> 00:26:32,080
here at spacex our joint operations

601
00:26:37,430 --> 00:26:35,279
teams with nasa and with the crew

602
00:26:39,510 --> 00:26:37,440
and and we're we're at a point now um

603
00:26:41,430 --> 00:26:39,520
and as kenny todd mentioned we finished

604
00:26:43,750 --> 00:26:41,440
this stage operations readiness review

605
00:26:46,070 --> 00:26:43,760
so we're at a point now where we are um

606
00:26:48,630 --> 00:26:46,080
we're in the final lane we're getting

607
00:26:50,710 --> 00:26:48,640
ready uh for this launch

608
00:26:54,230 --> 00:26:50,720
um i'd like to end here with uh with an

609
00:26:56,149 --> 00:26:54,240
image of the crew um uh here at spacex

610
00:26:58,710 --> 00:26:56,159
um and again it's this is this is our

611
00:27:02,070 --> 00:26:58,720
focus this is the most important thing

612
00:27:03,750 --> 00:27:02,080
um these uh great individuals um who are

613
00:27:06,549 --> 00:27:03,760

who are going to be flying and running

614
00:27:09,350 --> 00:27:06,559
the first operational mission of

615
00:27:10,230 --> 00:27:09,360
crew dragon to space station

616
00:27:11,990 --> 00:27:10,240
and

617
00:27:14,070 --> 00:27:12,000
i think it's appropriate as a good segue

618
00:27:15,510 --> 00:27:14,080
to mention that this will also be our

619
00:27:17,350 --> 00:27:15,520
first time not only that we have four

620
00:27:19,190 --> 00:27:17,360
crew members on who stay on for six

621
00:27:20,710 --> 00:27:19,200
months but will also be our first time

622
00:27:22,710 --> 00:27:20,720
we're flying an international partner

623
00:27:24,710 --> 00:27:22,720
astronaut and you can see suichi there

624
00:27:25,990 --> 00:27:24,720
on the right and i believe we're going

625
00:27:28,389 --> 00:27:26,000
to be handing off

626
00:27:31,430 --> 00:27:28,399
to jaxa to speak next so thank you very

627
00:27:33,269 --> 00:27:31,440
much to nasa to jaxa to all the

628
00:27:35,110 --> 00:27:33,279
international partners and of course to

629
00:27:37,190 --> 00:27:35,120
the american public

630
00:27:40,230 --> 00:27:37,200
for your trust in uh in us here at

631
00:27:45,430 --> 00:27:42,549
thank you benji for final remarks we'll

632
00:27:48,310 --> 00:27:45,440
send it over to mr sakaijunich in scuba

633
00:27:49,750 --> 00:27:48,320
japan

634
00:27:52,630 --> 00:27:49,760
hi

635
00:27:55,830 --> 00:27:52,640
thank you for introducing me and uh

636
00:27:56,710 --> 00:27:55,840
first of all uh on behalf of jax i like

637
00:28:01,750 --> 00:27:56,720
to

638
00:28:04,789 --> 00:28:01,760

and grand staffs

639
00:28:07,510 --> 00:28:04,799
who are engaged in this project

640
00:28:10,230 --> 00:28:07,520
especially space exploration technology

641
00:28:13,750 --> 00:28:10,240
corporation nasa and the other

642
00:28:16,950 --> 00:28:13,760
cooperative companies for the launch

643
00:28:19,269 --> 00:28:16,960
related operations during copied 19

644
00:28:22,070 --> 00:28:19,279
situations

645
00:28:25,430 --> 00:28:22,080
the success of demonstration 2 mission

646
00:28:27,990 --> 00:28:25,440
was an epoch making event

647
00:28:30,710 --> 00:28:28,000
of the commercial space development

648
00:28:33,350 --> 00:28:30,720
following it a full-scale commercial

649
00:28:34,630 --> 00:28:33,360
flight will begin

650
00:28:37,909 --> 00:28:34,640
soon

651
00:28:40,710 --> 00:28:37,919
this is not only a start of

652
00:28:45,269 --> 00:28:40,720
alternative humans transportation system

653
00:28:48,549 --> 00:28:45,279
to the iss but also a start of a new era

654
00:28:51,430 --> 00:28:48,559
of leo commercializations

655
00:28:53,510 --> 00:28:51,440
i'm honored to be able to

656
00:28:55,350 --> 00:28:53,520
witness this event

657
00:28:58,630 --> 00:28:55,360
and i'm proud of

658
00:29:00,389 --> 00:28:58,640
brought that in japanese astronaut dr

659
00:29:02,389 --> 00:29:00,399
noguchi

660
00:29:04,710 --> 00:29:02,399
has proven

661
00:29:08,149 --> 00:29:04,720
his responsibility

662
00:29:11,029 --> 00:29:08,159
as a member of this event

663
00:29:13,269 --> 00:29:11,039

astronaut technology has flown in space

664
00:29:16,230 --> 00:29:13,279
twice before

665
00:29:18,070 --> 00:29:16,240
and he has always been

666
00:29:21,110 --> 00:29:18,080
challenging

667
00:29:22,470 --> 00:29:21,120
once again he is going to take a taking

668
00:29:25,430 --> 00:29:22,480
on a

669
00:29:26,470 --> 00:29:25,440
big challenge of boarding a new

670
00:29:27,510 --> 00:29:26,480
spacecraft

671
00:29:31,190 --> 00:29:27,520
and

672
00:29:34,549 --> 00:29:31,200
has second long duration stage staying

673
00:29:40,549 --> 00:29:37,269
i hope that he and

674
00:29:43,590 --> 00:29:40,559
three of his nasa correct astronaut

675
00:29:46,950 --> 00:29:43,600
craigs will succeed in

676
00:29:51,269 --> 00:29:49,830
as reported earlier at the sor held

677
00:29:52,630 --> 00:29:51,279
yesterday

678
00:29:56,789 --> 00:29:52,640
with a new

679
00:30:02,070 --> 00:30:00,070
uranus review of the sex trades

680
00:30:03,909 --> 00:30:02,080
i believe that

681
00:30:05,669 --> 00:30:03,919
human space

682
00:30:08,389 --> 00:30:05,679
activities will

683
00:30:09,909 --> 00:30:08,399
expand from iss to

684
00:30:13,430 --> 00:30:09,919
leo

685
00:30:15,350 --> 00:30:13,440
the moon and beyond in the future

686
00:30:18,149 --> 00:30:15,360
we are looking forward to

687
00:30:19,510 --> 00:30:18,159
enjoying to enjoying the beginning of

688
00:30:23,029 --> 00:30:19,520

our new

689
00:30:24,470 --> 00:30:23,039
le operations with iss international

690
00:30:30,549 --> 00:30:24,480
partners

691
00:30:34,789 --> 00:30:32,710
thanks to all of our briefers for those

692
00:30:36,789 --> 00:30:34,799
initial remarks we'll now open it up for

693
00:30:39,190 --> 00:30:36,799
questions again if you're on our phone

694
00:30:41,350 --> 00:30:39,200
bridge please press star 1 to submit a

695
00:30:43,269 --> 00:30:41,360
question once your name is called please

696
00:30:45,029 --> 00:30:43,279
state to whom you'd like to direct your

697
00:30:46,630 --> 00:30:45,039
question we'll have a lot of questions

698
00:30:49,110 --> 00:30:46,640
so if you find that yours has already

699
00:30:51,190 --> 00:30:49,120
been answered press star 2 to withdraw

700
00:30:53,430 --> 00:30:51,200
it on social media please use the

701
00:30:55,269 --> 00:30:53,440
hashtag ask nasa

702
00:30:56,870 --> 00:30:55,279
let's start on our phone bridge with

703
00:30:59,190 --> 00:30:56,880
ceylin barbauer from gannett

704
00:31:01,750 --> 00:30:59,200
publications

705
00:31:04,950 --> 00:31:01,760
thank you i believe my question is going

706
00:31:07,430 --> 00:31:04,960
to be addressed either to steve or kenny

707
00:31:09,350 --> 00:31:07,440
you so kindly alluded or said that there

708
00:31:11,430 --> 00:31:09,360
are planned evas

709
00:31:13,909 --> 00:31:11,440
after the first year can you share any

710
00:31:15,430 --> 00:31:13,919
of those details please of what

711
00:31:17,669 --> 00:31:15,440
those

712
00:31:19,509 --> 00:31:17,679
evas will entail please and who might be

713
00:31:22,470 --> 00:31:19,519

carrying those out

714
00:31:23,990 --> 00:31:22,480
sure as far as let me start with the

715
00:31:25,669 --> 00:31:24,000
last question first

716
00:31:27,430 --> 00:31:25,679
as of now um

717
00:31:29,669 --> 00:31:27,440
i don't know the crew compliment um we

718
00:31:32,070 --> 00:31:29,679
usually once we get a little closer in

719
00:31:34,070 --> 00:31:32,080
we see how the crew tasking

720
00:31:36,710 --> 00:31:34,080
goes leading up to to that time frame

721
00:31:39,669 --> 00:31:36,720
and then we make the decision uh we have

722
00:31:41,269 --> 00:31:39,679
multiple eba qualified astronauts uh in

723
00:31:43,590 --> 00:31:41,279
the in this group that will be on board

724
00:31:45,110 --> 00:31:43,600
so uh that that actually works to our

725
00:31:46,950 --> 00:31:45,120
advantage in making sure that we can

726
00:31:49,029 --> 00:31:46,960
optimize on all the work that we're

727
00:31:51,110 --> 00:31:49,039
trying to do on station not just the eba

728
00:31:52,630 --> 00:31:51,120
so but anyway so we'll we'll sort that

729
00:31:54,070 --> 00:31:52,640
out as it gets as it gets a little

730
00:31:55,990 --> 00:31:54,080
closer to the end of the year and we

731
00:31:57,590 --> 00:31:56,000
start ramping up into that time frame

732
00:31:59,350 --> 00:31:57,600
when we're going to do them as far as

733
00:32:00,789 --> 00:31:59,360
what we're going to do it's actually

734
00:32:02,310 --> 00:32:00,799
kind of cool because again it's an

735
00:32:04,149 --> 00:32:02,320
international space station a lot of

736
00:32:06,630 --> 00:32:04,159
times you'll hear us go out and work on

737
00:32:08,470 --> 00:32:06,640
something that's that's wholly a nasa

738
00:32:09,990 --> 00:32:08,480

product but we're actually going to be

739
00:32:12,549 --> 00:32:10,000
doing uh some work on the columbus

740
00:32:14,310 --> 00:32:12,559
module the european columbus module

741
00:32:15,830 --> 00:32:14,320
and and uh helping out they they

742
00:32:18,870 --> 00:32:15,840
launched a new platform last year the

743
00:32:21,029 --> 00:32:18,880
bartolo mayo and uh we uh

744
00:32:22,870 --> 00:32:21,039
we were able to get it installed uh but

745
00:32:24,070 --> 00:32:22,880
we haven't run all the power cables to

746
00:32:25,430 --> 00:32:24,080
actually make it functional at this

747
00:32:27,590 --> 00:32:25,440
point so we're excited about the

748
00:32:29,509 --> 00:32:27,600
opportunity to to uh to get that

749
00:32:30,870 --> 00:32:29,519
platform up and running and and totally

750
00:32:32,710 --> 00:32:30,880
functional so that they can get some of

751
00:32:33,990 --> 00:32:32,720
their their users and some of their

752
00:32:37,269 --> 00:32:34,000
customers

753
00:32:39,029 --> 00:32:37,279
on board as well in addition um there is

754
00:32:42,149 --> 00:32:39,039
a a a

755
00:32:43,590 --> 00:32:42,159
k a band antenna a communication antenna

756
00:32:45,750 --> 00:32:43,600
upgrade that we're going to put on the

757
00:32:48,789 --> 00:32:45,760
columbus in addition to that for our

758
00:32:50,710 --> 00:32:48,799
jackson colleagues they have

759
00:32:52,230 --> 00:32:50,720
their their small fine arm we're going

760
00:32:55,350 --> 00:32:52,240
to go out and do some work on it for

761
00:32:58,230 --> 00:32:55,360
them um so in addition to that some of

762
00:33:00,870 --> 00:32:58,240
our some of our our our upgrades that

763
00:33:03,509 --> 00:33:00,880

we're doing on station over the next uh

764
00:33:04,950 --> 00:33:03,519
few months really focus on on some new

765
00:33:06,389 --> 00:33:04,960
solar arrays we're going to put some new

766
00:33:07,669 --> 00:33:06,399
solar rays on we're going to basically

767
00:33:09,430 --> 00:33:07,679
put them over the top of the ones that

768
00:33:11,029 --> 00:33:09,440
are there um

769
00:33:12,230 --> 00:33:11,039
kind of a roll out solar array is what

770
00:33:13,830 --> 00:33:12,240
we call it

771
00:33:16,230 --> 00:33:13,840
but we have to we have to put some

772
00:33:18,230 --> 00:33:16,240
structures in place to be able to house

773
00:33:20,789 --> 00:33:18,240
those solar arrays when they come up a

774
00:33:23,269 --> 00:33:20,799
little about the middle of next year and

775
00:33:25,110 --> 00:33:23,279
so we'll do those evas to install those

776
00:33:26,710 --> 00:33:25,120
structures to to put us in a good

777
00:33:29,909 --> 00:33:26,720
position so

778
00:33:30,950 --> 00:33:29,919
at a kind of a 5000 foot level those are

779
00:33:32,789 --> 00:33:30,960
the kinds of things we're going to be

780
00:33:34,389 --> 00:33:32,799
looking at but again the thing that when

781
00:33:36,230 --> 00:33:34,399
i look at that group eva is just the

782
00:33:38,630 --> 00:33:36,240
fact that we're we're doing things

783
00:33:40,870 --> 00:33:38,640
across the partnership to try to enhance

784
00:33:42,870 --> 00:33:40,880
everybody's uh you know position and and

785
00:33:44,389 --> 00:33:42,880
things going on on their particular on

786
00:33:47,029 --> 00:33:44,399
their particular part station is pretty

787
00:33:52,870 --> 00:33:51,590
next we have bill harwood from cbs news

788
00:33:55,269 --> 00:33:52,880

yeah hey think i think this is a

789
00:33:57,350 --> 00:33:55,279
question for benji um

790
00:33:58,710 --> 00:33:57,360
i know the the demo 2 vehicle obviously

791
00:34:00,230 --> 00:33:58,720
the lessons learned we've heard about

792
00:34:02,870 --> 00:34:00,240
that but can you talk a little bit about

793
00:34:04,470 --> 00:34:02,880
what's required to refurb that vehicle

794
00:34:06,789 --> 00:34:04,480
to get it ready for flight what has to

795
00:34:08,950 --> 00:34:06,799
be done to get everybody happy that it's

796
00:34:10,389 --> 00:34:08,960
good to go again and just given the

797
00:34:11,589 --> 00:34:10,399
environments the vehicle flew through i

798
00:34:13,510 --> 00:34:11,599
mean it seems like that'd be a pretty

799
00:34:14,869 --> 00:34:13,520
good challenge i mean you got heating

800
00:34:16,869 --> 00:34:14,879
you got water and all that could you

801
00:34:21,190 --> 00:34:16,879
just talk about how that will play out

802
00:34:25,829 --> 00:34:23,430
absolutely that's a great question um

803
00:34:28,790 --> 00:34:25,839
you know we've designed dragon um from

804
00:34:31,349 --> 00:34:28,800
the get-go even dragon one to be able to

805
00:34:33,430 --> 00:34:31,359
re-enter right and to come back and keep

806
00:34:35,829 --> 00:34:33,440
everything inside safe on the

807
00:34:39,349 --> 00:34:35,839
dragon ones it was cargo on dragon twos

808
00:34:41,909 --> 00:34:39,359
it's crew and cargo um and uh and so in

809
00:34:44,550 --> 00:34:41,919
terms of the the entry re-entry heating

810
00:34:47,109 --> 00:34:44,560
that you mentioned um you have to be not

811
00:34:49,990 --> 00:34:47,119
only keeping it safe but plenty of

812
00:34:52,149 --> 00:34:50,000
margin against that um very important

813
00:34:54,149 --> 00:34:52,159

and so and so the good news is is that

814
00:34:57,589 --> 00:34:54,159
this is not a lot that you have to do to

815
00:34:59,430 --> 00:34:57,599
go and say refurb a lot of the um

816
00:35:00,870 --> 00:34:59,440
thermal protection system the tps and

817
00:35:02,150 --> 00:35:00,880
that sort of thing there is work that we

818
00:35:05,190 --> 00:35:02,160
do we do

819
00:35:07,109 --> 00:35:05,200
inspect it very closely we we check it

820
00:35:09,270 --> 00:35:07,119
out very closely we do we do various

821
00:35:11,270 --> 00:35:09,280
touch-ups um and then there are there

822
00:35:14,150 --> 00:35:11,280
are aspects of things that we do replace

823
00:35:16,069 --> 00:35:14,160
for sure um but uh but one of the goals

824
00:35:18,150 --> 00:35:16,079
um for example like a heat shield is

825
00:35:19,510 --> 00:35:18,160
that you want to be able to reuse it

826
00:35:20,710 --> 00:35:19,520
that was also part of the design from

827
00:35:22,310 --> 00:35:20,720
the get-go

828
00:35:23,670 --> 00:35:22,320
um you know another question we often

829
00:35:25,190 --> 00:35:23,680
get you mentioned is you know we splash

830
00:35:27,030 --> 00:35:25,200
down into salt water

831
00:35:29,190 --> 00:35:27,040
isn't that really hard on things and it

832
00:35:31,190 --> 00:35:29,200
is salt water is um can be a very

833
00:35:32,550 --> 00:35:31,200
difficult environment to be in it can be

834
00:35:34,230 --> 00:35:32,560
very corrosive and

835
00:35:35,750 --> 00:35:34,240
cause a lot of long-term problems if

836
00:35:38,150 --> 00:35:35,760
you're not prepared for it if you

837
00:35:40,630 --> 00:35:38,160
haven't designed for it um

838
00:35:42,310 --> 00:35:40,640

the great thing about having run so many

839
00:35:44,950 --> 00:35:42,320
missions

840
00:35:47,910 --> 00:35:44,960
with the dragon one program with cargo

841
00:35:50,230 --> 00:35:47,920
um which was a fantastic program it

842
00:35:53,430 --> 00:35:50,240
allowed us to learn a lot and and and

843
00:35:55,510 --> 00:35:53,440
develop um even more how to do reuse how

844
00:35:57,910 --> 00:35:55,520
to be able to reuse dragons which we use

845
00:36:00,790 --> 00:35:57,920
many many dragons on the cargo crew one

846
00:36:02,950 --> 00:36:00,800
are sorry the cargo dragon one program

847
00:36:05,349 --> 00:36:02,960
we've reused many dragons

848
00:36:08,150 --> 00:36:05,359
and um and and so we've applied all of

849
00:36:10,790 --> 00:36:08,160
that wisdom and all that knowledge um to

850
00:36:13,589 --> 00:36:10,800
uh to how we are going to maintain the

851
00:36:14,630 --> 00:36:13,599
dragon twos for crew and for cargo going

852
00:36:16,790 --> 00:36:14,640
forward

853
00:36:19,030 --> 00:36:16,800
in terms of the actual work that we do

854
00:36:21,030 --> 00:36:19,040
first and foremost it's inspections um

855
00:36:23,910 --> 00:36:21,040
and and assessing the data analyzing the

856
00:36:25,510 --> 00:36:23,920
data so we spend uh immediately um even

857
00:36:26,950 --> 00:36:25,520
once we launch you know there's some

858
00:36:28,710 --> 00:36:26,960
there's some initial inspections or some

859
00:36:30,950 --> 00:36:28,720
work that's that's done on station we've

860
00:36:32,470 --> 00:36:30,960
looked at all of the data um from you

861
00:36:34,069 --> 00:36:32,480
know from the launch aspects of the

862
00:36:35,270 --> 00:36:34,079
dragon um you know anything that it

863
00:36:37,910 --> 00:36:35,280

might have seen or any other data that

864
00:36:39,750 --> 00:36:37,920
we saw um and then there's some pre

865
00:36:41,190 --> 00:36:39,760
undocking

866
00:36:42,550 --> 00:36:41,200
imagery that we do that we work with

867
00:36:45,270 --> 00:36:42,560
nasa on

868
00:36:46,630 --> 00:36:45,280
we review that we inspect that closely

869
00:36:48,550 --> 00:36:46,640
and then coming home we're getting lots

870
00:36:50,069 --> 00:36:48,560
of data as soon as we splash down where

871
00:36:52,069 --> 00:36:50,079
you know the teams are already analyzing

872
00:36:53,510 --> 00:36:52,079
all the data that came out that's a very

873
00:36:55,510 --> 00:36:53,520
very important piece we want to listen

874
00:36:57,510 --> 00:36:55,520
to the data we want to understand um

875
00:36:58,950 --> 00:36:57,520
what the data is telling us

876
00:37:00,470 --> 00:36:58,960
and and let's look for anything that

877
00:37:01,510 --> 00:37:00,480
looks out of them out of the ordinary

878
00:37:03,910 --> 00:37:01,520
look for anything that's trending

879
00:37:05,430 --> 00:37:03,920
differently and then we can go in and

880
00:37:08,470 --> 00:37:05,440
start to really figure out what we might

881
00:37:09,829 --> 00:37:08,480
need to go fix um if anything and then

882
00:37:11,829 --> 00:37:09,839
of course there's inspections once you

883
00:37:13,190 --> 00:37:11,839
have the capsule um

884
00:37:15,829 --> 00:37:13,200
on the ground you can start to go

885
00:37:17,430 --> 00:37:15,839
through it and we start to take aspects

886
00:37:19,190 --> 00:37:17,440
of it apart so you can inspect more

887
00:37:22,550 --> 00:37:19,200
deeply right we take the panels off we

888
00:37:25,270 --> 00:37:22,560

look inside we get in there um there are

889
00:37:26,950 --> 00:37:25,280
there are items that we uh replace um

890
00:37:28,950 --> 00:37:26,960
you know various components um our

891
00:37:30,550 --> 00:37:28,960
subsystems that um that we that are

892
00:37:32,310 --> 00:37:30,560
appropriate to replace because they're

893
00:37:33,910 --> 00:37:32,320
you know they have a limited life or

894
00:37:35,750 --> 00:37:33,920
they they've used up a certain amount of

895
00:37:37,430 --> 00:37:35,760
their consumable

896
00:37:39,349 --> 00:37:37,440
other things we may decide well you know

897
00:37:40,870 --> 00:37:39,359
what this one i we feel like it with the

898
00:37:43,030 --> 00:37:40,880
data or for some other reason we need to

899
00:37:44,550 --> 00:37:43,040
replace it so our team's ready to go

900
00:37:46,870 --> 00:37:44,560
one of the big things that spacex has

901
00:37:49,670 --> 00:37:46,880
been doing um in the last number of

902
00:37:52,550 --> 00:37:49,680
years as part of coming into the dragon

903
00:37:53,910 --> 00:37:52,560
2 programs for crew and cargo is

904
00:37:56,470 --> 00:37:53,920
establishing

905
00:37:59,510 --> 00:37:56,480
um a very effective um

906
00:38:01,750 --> 00:37:59,520
refurb and and really overall process

907
00:38:03,430 --> 00:38:01,760
and facility down at the cape

908
00:38:06,390 --> 00:38:03,440
our goal was to be able to come in and

909
00:38:09,589 --> 00:38:06,400
and do all of dragon processing at the

910
00:38:11,430 --> 00:38:09,599
cape um and um and we again the dragon

911
00:38:13,430 --> 00:38:11,440
one program the cargo program allowed us

912
00:38:15,589 --> 00:38:13,440
to do a lot of that work and start to

913
00:38:17,270 --> 00:38:15,599

develop what that process looks like

914
00:38:20,230 --> 00:38:17,280
what the resources and tools are that we

915
00:38:22,950 --> 00:38:20,240
need to do that and um and we have since

916
00:38:25,589 --> 00:38:22,960
established a very uh a great facility

917
00:38:27,349 --> 00:38:25,599
and a great team most importantly with a

918
00:38:28,710 --> 00:38:27,359
lot of knowledge and skills that are

919
00:38:30,230 --> 00:38:28,720
down there that are ready to just

920
00:38:31,829 --> 00:38:30,240
continue to work our dragons right

921
00:38:33,589 --> 00:38:31,839
they've already been down there they do

922
00:38:35,109 --> 00:38:33,599
a lot of the closeouts and free flight

923
00:38:36,470 --> 00:38:35,119
work um

924
00:38:38,950 --> 00:38:36,480
between the time that the dragon ships

925
00:38:40,310 --> 00:38:38,960
out of hawthorne and gets to the cape um

926
00:38:42,069 --> 00:38:40,320
they do a lot of that work during that

927
00:38:43,030 --> 00:38:42,079
time after it's at the cape um they've

928
00:38:44,710 --> 00:38:43,040
already been

929
00:38:46,310 --> 00:38:44,720
being able to run multiple dragons

930
00:38:47,589 --> 00:38:46,320
through there at the same time they're

931
00:38:50,310 --> 00:38:47,599
going to be able to do lots of

932
00:38:52,230 --> 00:38:50,320
refurbishment um uh and and have dragons

933
00:38:53,270 --> 00:38:52,240
coming back so they expect to be able to

934
00:38:55,349 --> 00:38:53,280
see you know every once in a while new

935
00:38:57,190 --> 00:38:55,359
dragons show up lots of dragons coming

936
00:38:58,870 --> 00:38:57,200
in for reuse and then and then going

937
00:39:00,870 --> 00:38:58,880
through that whole refurbishment process

938
00:39:03,190 --> 00:39:00,880

right down there at that whole facility

939
00:39:04,710 --> 00:39:03,200
um which is really exciting um so we're

940
00:39:05,910 --> 00:39:04,720
gonna have a whole we already have a

941
00:39:07,910 --> 00:39:05,920
whole dragon

942
00:39:10,470 --> 00:39:07,920
production and refurbishment and

943
00:39:12,069 --> 00:39:10,480
test facility set up down there

944
00:39:13,510 --> 00:39:12,079
when you go through all of the steps and

945
00:39:15,349 --> 00:39:13,520
you've applied all these lessons after

946
00:39:17,190 --> 00:39:15,359
the last many years and all of these

947
00:39:20,069 --> 00:39:17,200
missions that we've done

948
00:39:22,310 --> 00:39:20,079
it actually makes the process um i won't

949
00:39:24,150 --> 00:39:22,320
say easy because space flight is hard

950
00:39:25,750 --> 00:39:24,160
and a lot of what we do takes a lot of

951
00:39:27,750 --> 00:39:25,760
attention and work

952
00:39:29,990 --> 00:39:27,760
but it makes it smooth we know what we

953
00:39:31,670 --> 00:39:30,000
need to do we have the awesome team to

954
00:39:33,109 --> 00:39:31,680
go get it done

955
00:39:36,470 --> 00:39:33,119
and then we go through and get the

956
00:39:42,870 --> 00:39:38,870
next we have douglas messier from

957
00:39:48,069 --> 00:39:45,910
uh yes i was hoping that uh one of you

958
00:39:50,310 --> 00:39:48,079
guys could talk a little bit more about

959
00:39:52,390 --> 00:39:50,320
the heat shield issue now

960
00:39:55,030 --> 00:39:52,400
do the connections stick out and they

961
00:39:57,829 --> 00:39:55,040
burn off or how does that work with the

962
00:40:03,109 --> 00:39:57,839
tile and exactly what happened on this

963
00:40:07,589 --> 00:40:06,630

yeah i guess i'll take that one

964
00:40:09,270 --> 00:40:07,599
most

965
00:40:11,030 --> 00:40:09,280
capsules

966
00:40:13,670 --> 00:40:11,040
for entry you have to separate in

967
00:40:16,390 --> 00:40:13,680
spacex's case and drag in the trunk

968
00:40:18,230 --> 00:40:16,400
and there are um some bolts that

969
00:40:21,030 --> 00:40:18,240
protrude out

970
00:40:23,349 --> 00:40:21,040
uh once that trunk separates on orbit

971
00:40:25,349 --> 00:40:23,359
and the vehicle comes back in

972
00:40:27,990 --> 00:40:25,359
it's the same design on orion and other

973
00:40:29,750 --> 00:40:28,000
spacecraft and so those that area around

974
00:40:32,470 --> 00:40:29,760
these tension ties

975
00:40:35,109 --> 00:40:32,480
is a very complex flow field

976
00:40:37,670 --> 00:40:35,119
and so basically on on demo two what

977
00:40:39,910 --> 00:40:37,680
happened is in this complex flow field

978
00:40:42,870 --> 00:40:39,920
there was some some erosion of some

979
00:40:43,990 --> 00:40:42,880
material between tiles that we saw on

980
00:40:46,069 --> 00:40:44,000
this flight

981
00:40:47,990 --> 00:40:46,079
uh in that same area for whatever reason

982
00:40:50,150 --> 00:40:48,000
in this complex flow field in demo one

983
00:40:52,069 --> 00:40:50,160
we did not we did not see that

984
00:40:53,990 --> 00:40:52,079
so what we've what we and we didn't find

985
00:40:55,430 --> 00:40:54,000
this out until after landing i mean when

986
00:40:58,390 --> 00:40:55,440
the vehicle was inspected so what we've

987
00:41:00,150 --> 00:40:58,400
done is we've gone in and changed out a

988
00:41:02,630 --> 00:41:00,160

lot of the materials uh to better

989
00:41:03,990 --> 00:41:02,640
materials we've made this area robust

990
00:41:05,910 --> 00:41:04,000
we've made the area in between these

991
00:41:07,270 --> 00:41:05,920
tiles better we have a better process

992
00:41:09,750 --> 00:41:07,280
for installation

993
00:41:11,670 --> 00:41:09,760
we took those design changes and we uh

994
00:41:13,910 --> 00:41:11,680
tested that in the same facility out at

995
00:41:15,910 --> 00:41:13,920
ames that we've used for a space shuttle

996
00:41:17,829 --> 00:41:15,920
and other programs it's called an arc

997
00:41:19,190 --> 00:41:17,839
jet and it's able to simulate that entry

998
00:41:21,190 --> 00:41:19,200
environment and so we took five

999
00:41:23,430 --> 00:41:21,200
different samples and we sent them out

1000
00:41:25,270 --> 00:41:23,440
to the ames arc jet uh we exposed them

1001
00:41:28,069 --> 00:41:25,280
to the re-entry environment we exposed

1002
00:41:30,630 --> 00:41:28,079
them also to an abort environment so

1003
00:41:33,430 --> 00:41:30,640
during ascent if we were to execute an

1004
00:41:35,109 --> 00:41:33,440
escape where dragon separates from f9

1005
00:41:37,030 --> 00:41:35,119
those entries for some cases are a

1006
00:41:39,349 --> 00:41:37,040
little bit more aggressive than the

1007
00:41:41,670 --> 00:41:39,359
nominal end emission so we went through

1008
00:41:43,670 --> 00:41:41,680
and tested that these changes

1009
00:41:45,910 --> 00:41:43,680
and the changes

1010
00:41:47,750 --> 00:41:45,920
performed very well we've done analysis

1011
00:41:49,670 --> 00:41:47,760
on the changes and so we're very pleased

1012
00:41:51,430 --> 00:41:49,680
with what we have for crew one and

1013
00:41:55,349 --> 00:41:51,440

likely the configuration will fly for

1014
00:42:00,230 --> 00:41:57,510
next we have eric berger from rs

1015
00:42:05,990 --> 00:42:03,829
yeah hi uh good uh good afternoon um my

1016
00:42:07,910 --> 00:42:06,000
question is about weather uh probably

1017
00:42:09,270 --> 00:42:07,920
for anthony um

1018
00:42:11,510 --> 00:42:09,280
you know we had a lot of constraints in

1019
00:42:13,670 --> 00:42:11,520
the launch and the landing

1020
00:42:15,910 --> 00:42:13,680
for the demo 2 mission and it seems to

1021
00:42:17,430 --> 00:42:15,920
me like we got fairly lucky

1022
00:42:19,750 --> 00:42:17,440
with with both the launch and landing

1023
00:42:21,430 --> 00:42:19,760
happening relatively on schedule and i'm

1024
00:42:22,870 --> 00:42:21,440
just wondering

1025
00:42:25,190 --> 00:42:22,880
have either of those

1026
00:42:27,910 --> 00:42:25,200
been relaxed for launch or landing or

1027
00:42:29,910 --> 00:42:27,920
there you know changes to the rocket or

1028
00:42:31,270 --> 00:42:29,920
the spacecraft that maybe give you a

1029
00:42:32,950 --> 00:42:31,280
little more

1030
00:42:35,349 --> 00:42:32,960
flexibility in terms of when you can go

1031
00:42:37,190 --> 00:42:35,359
and when you can come back thank you

1032
00:42:39,589 --> 00:42:37,200
so that's a great question yes we have

1033
00:42:41,990 --> 00:42:39,599
uh re-looked at the weather rules that

1034
00:42:44,069 --> 00:42:42,000
we fly by uh and we're finishing those

1035
00:42:46,390 --> 00:42:44,079
up and getting those ready for flight

1036
00:42:48,870 --> 00:42:46,400
well later in october but you know the

1037
00:42:52,150 --> 00:42:48,880
big changes are kind of going to be uh

1038
00:42:54,470 --> 00:42:52,160

i'd say transparent uh in the launch

1039
00:42:55,829 --> 00:42:54,480
side of things just in how we determine

1040
00:42:57,670 --> 00:42:55,839
uh when we're ready to go because we're

1041
00:42:59,589 --> 00:42:57,680
not just looking at what is the weather

1042
00:43:01,670 --> 00:42:59,599
at the launch site we're looking at the

1043
00:43:03,270 --> 00:43:01,680
weather the whole way as we say uphill

1044
00:43:05,750 --> 00:43:03,280
the whole way up the eastern seaboard

1045
00:43:07,190 --> 00:43:05,760
looking at a kind of probabilistically

1046
00:43:09,109 --> 00:43:07,200
where the places where if there was an

1047
00:43:11,430 --> 00:43:09,119
abort you'd be most likely to come down

1048
00:43:13,109 --> 00:43:11,440
and what's the weather in those spots so

1049
00:43:14,950 --> 00:43:13,119
how we look at those spots and how we

1050
00:43:17,030 --> 00:43:14,960
determine that overall the picture is

1051
00:43:18,870 --> 00:43:17,040
good enough that we can go or that we

1052
00:43:20,390 --> 00:43:18,880
can not go or that we at least need to

1053
00:43:22,069 --> 00:43:20,400
talk about it that's something that

1054
00:43:24,069 --> 00:43:22,079
we're refining based on lessons we

1055
00:43:26,069 --> 00:43:24,079
learned from the demo 2 mission i'd say

1056
00:43:28,150 --> 00:43:26,079
on the back end of flight we are in a

1057
00:43:30,710 --> 00:43:28,160
better position because of upgrades to

1058
00:43:33,430 --> 00:43:30,720
the hardware we've got new what we call

1059
00:43:35,030 --> 00:43:33,440
back shells on this spacex dragon that

1060
00:43:36,150 --> 00:43:35,040
will allow us to come down in a little

1061
00:43:38,710 --> 00:43:36,160
bit rougher

1062
00:43:40,790 --> 00:43:38,720
wind a little bit higher and so that's

1063
00:43:43,589 --> 00:43:40,800

going to increase our capability that on

1064
00:43:45,430 --> 00:43:43,599
a given undock date uh we can find the

1065
00:43:47,510 --> 00:43:45,440
day we can look at the weather and

1066
00:43:49,750 --> 00:43:47,520
decide it's a good time to come home i'd

1067
00:43:52,150 --> 00:43:49,760
say that you know our chances at the end

1068
00:43:54,150 --> 00:43:52,160
of demo two were probably one in seven

1069
00:43:55,829 --> 00:43:54,160
we got it right on the first try and our

1070
00:43:56,790 --> 00:43:55,839
chances are even better probably one and

1071
00:43:58,710 --> 00:43:56,800
four

1072
00:44:01,589 --> 00:43:58,720
on the at the end of the crew one

1073
00:44:08,309 --> 00:44:03,510
next we have robert pearlman from

1074
00:44:13,910 --> 00:44:11,030
hi thank you um a question i think for

1075
00:44:16,069 --> 00:44:13,920
kenny and then a question for benji um

1076
00:44:17,030 --> 00:44:16,079
first for kenny uh

1077
00:44:23,190 --> 00:44:17,040
the

1078
00:44:25,829 --> 00:44:23,200
you're adding a

1079
00:44:27,510 --> 00:44:25,839
an expedition member um there's only six

1080
00:44:29,990 --> 00:44:27,520
sleep stations on board can you talk a

1081
00:44:31,589 --> 00:44:30,000
little bit about when the seventh uh

1082
00:44:33,750 --> 00:44:31,599
sleep station will be added and how it

1083
00:44:38,470 --> 00:44:33,760
was decided who will be the odd person

1084
00:44:40,470 --> 00:44:38,480
out on this crew and for benji um if uh

1085
00:44:43,430 --> 00:44:40,480
if if there's a story behind it how did

1086
00:44:44,950 --> 00:44:43,440
you arrive at the title crew for these

1087
00:44:49,030 --> 00:44:44,960
missions crew one i know it's kind of

1088
00:44:52,710 --> 00:44:50,710

let's see robert uh

1089
00:44:55,030 --> 00:44:52,720
that's a good question yes we uh we

1090
00:44:57,030 --> 00:44:55,040
clearly uh have more crew than we have

1091
00:44:58,870 --> 00:44:57,040
uh sleep stations and and that's

1092
00:45:01,030 --> 00:44:58,880
something we're looking at uh in terms

1093
00:45:02,470 --> 00:45:01,040
of how we how we do this going forward

1094
00:45:04,710 --> 00:45:02,480
um

1095
00:45:08,309 --> 00:45:04,720
the reality is is that that when we have

1096
00:45:11,190 --> 00:45:08,319
uh four usos crew members on board um

1097
00:45:13,670 --> 00:45:11,200
then then we have an adequate number of

1098
00:45:15,349 --> 00:45:13,680
sleep station which if you look at the

1099
00:45:18,550 --> 00:45:15,359
rest of the program and how we have it

1100
00:45:20,309 --> 00:45:18,560
laid out uh once we uh once we get our

1101
00:45:21,670 --> 00:45:20,319
agreement on how we're how we're going

1102
00:45:24,069 --> 00:45:21,680
to fly on each other's vehicles how

1103
00:45:26,309 --> 00:45:24,079
we're going to continue to to make sure

1104
00:45:28,309 --> 00:45:26,319
that we have a good covering on coverage

1105
00:45:32,309 --> 00:45:28,319
on station our intent is to be at the

1106
00:45:34,470 --> 00:45:32,319
four crew on the usos and so again when

1107
00:45:36,950 --> 00:45:34,480
we think about a fifth crew member

1108
00:45:39,589 --> 00:45:36,960
that's probably not a steady state type

1109
00:45:41,750 --> 00:45:39,599
of operation we'll be in uh but that

1110
00:45:43,829 --> 00:45:41,760
said uh we know that there's a

1111
00:45:45,910 --> 00:45:43,839
possibility we're going to be here

1112
00:45:48,309 --> 00:45:45,920
going forward at least in the near term

1113
00:45:51,109 --> 00:45:48,319

and so we are looking at options for uh

1114
00:45:53,030 --> 00:45:51,119
where we could put a another temporary

1115
00:45:53,910 --> 00:45:53,040
sleep station

1116
00:45:56,069 --> 00:45:53,920
that

1117
00:45:57,910 --> 00:45:56,079
could be a little more it won't be

1118
00:46:00,470 --> 00:45:57,920
exactly like the current crew quarters

1119
00:46:03,430 --> 00:46:00,480
but it'll be something similar in terms

1120
00:46:05,030 --> 00:46:03,440
of privacy and uh being in in a rack

1121
00:46:06,870 --> 00:46:05,040
location we've identified a couple of

1122
00:46:09,190 --> 00:46:06,880
places on station we're currently

1123
00:46:11,589 --> 00:46:09,200
working throughout the partnership

1124
00:46:14,790 --> 00:46:11,599
to to talk about those options and and

1125
00:46:16,950 --> 00:46:14,800
to assess them but um clearly not not

1126
00:46:18,550 --> 00:46:16,960
going to be in place for this particular

1127
00:46:21,589 --> 00:46:18,560
uh near term time when we're going to

1128
00:46:23,270 --> 00:46:21,599
have five us os crew on board but uh but

1129
00:46:25,270 --> 00:46:23,280
but we're we're working to solve that

1130
00:46:27,109 --> 00:46:25,280
problem and and uh

1131
00:46:28,950 --> 00:46:27,119
this time around the crew has worked

1132
00:46:30,870 --> 00:46:28,960
closely with us and the crew office in

1133
00:46:32,950 --> 00:46:30,880
general has worked with us very well to

1134
00:46:34,790 --> 00:46:32,960
to help get us in a good situation where

1135
00:46:37,670 --> 00:46:34,800
where uh where we've got a plan for for

1136
00:46:44,470 --> 00:46:37,680
this particular five us os crew crew

1137
00:46:49,270 --> 00:46:46,630
and um i can uh answer the naming

1138
00:46:51,910 --> 00:46:49,280

question i think that number one thing

1139
00:46:54,069 --> 00:46:51,920
with naming is that it should be

1140
00:46:56,470 --> 00:46:54,079
inspirational and it should be simple

1141
00:46:57,910 --> 00:46:56,480
and it should be memorable and usable if

1142
00:47:01,430 --> 00:46:57,920
you have to use it you know in

1143
00:47:03,190 --> 00:47:01,440
day-to-day work or operations um we

1144
00:47:05,589 --> 00:47:03,200
always refer refer to this program as

1145
00:47:07,270 --> 00:47:05,599
the nasa crew program here um and so

1146
00:47:09,190 --> 00:47:07,280
these missions are the nasa crew

1147
00:47:11,349 --> 00:47:09,200
missions and since this is the first

1148
00:47:13,349 --> 00:47:11,359
operational mission it's the nasa crew

1149
00:47:14,630 --> 00:47:13,359
one and i think it says it all i don't

1150
00:47:15,589 --> 00:47:14,640
think you know it doesn't need any kind

1151
00:47:17,510 --> 00:47:15,599
of

1152
00:47:19,589 --> 00:47:17,520
acronym or anything else it's it's just

1153
00:47:23,430 --> 00:47:19,599
cool this is the first operational

1154
00:47:29,829 --> 00:47:27,750
next we have megan bartel from space.com

1155
00:47:31,750 --> 00:47:29,839
hey thanks for taking my

1156
00:47:33,829 --> 00:47:31,760
question um

1157
00:47:35,510 --> 00:47:33,839
this is based on something anthony said

1158
00:47:37,510 --> 00:47:35,520
but i don't know if either kenny or

1159
00:47:39,270 --> 00:47:37,520
steve would like to weigh in as well you

1160
00:47:41,430 --> 00:47:39,280
mentioned that the four crew members

1161
00:47:42,790 --> 00:47:41,440
will be going into quarantine soon and i

1162
00:47:44,790 --> 00:47:42,800
was asked i was hoping you could talk a

1163
00:47:46,790 --> 00:47:44,800

little bit more about that um and

1164
00:47:48,710 --> 00:47:46,800
particularly say how long before launch

1165
00:47:50,069 --> 00:47:48,720
they'll be going into quarantine

1166
00:47:52,630 --> 00:47:50,079
whether they'll have the option to

1167
00:47:55,030 --> 00:47:52,640
quarantine at home like pop and doug did

1168
00:47:57,910 --> 00:47:55,040
earlier this year and any ways that the

1169
00:47:59,349 --> 00:47:57,920
process is being affected by covid or

1170
00:48:01,750 --> 00:47:59,359
sort of how it would compare to the

1171
00:48:04,069 --> 00:48:01,760
standard procedure that isuv folks have

1172
00:48:06,390 --> 00:48:04,079
developed for the crew flight um and

1173
00:48:08,390 --> 00:48:06,400
then also sort of talking through the

1174
00:48:09,750 --> 00:48:08,400
pre-launch activities and how that plays

1175
00:48:13,670 --> 00:48:09,760
in in terms of whether there are any

1176
00:48:17,750 --> 00:48:16,309
for dm2 for the demo 2 mission uh what

1177
00:48:19,829 --> 00:48:17,760
we did with bob and doug we put them in

1178
00:48:22,549 --> 00:48:19,839
a sort of a soft quarantine

1179
00:48:24,470 --> 00:48:22,559
which looked a lot like what all of us

1180
00:48:27,349 --> 00:48:24,480
really should be under per cdc

1181
00:48:29,670 --> 00:48:27,359
guidelines and we kind of strengthened

1182
00:48:31,510 --> 00:48:29,680
that quarantine as time went on

1183
00:48:33,990 --> 00:48:31,520
as minji alluded to we'll do a static

1184
00:48:35,589 --> 00:48:34,000
fire of the rocket the first stage to

1185
00:48:36,950 --> 00:48:35,599
make sure all the nine engines are

1186
00:48:38,069 --> 00:48:36,960
working in there and the rockets

1187
00:48:40,710 --> 00:48:38,079
functional

1188
00:48:42,470 --> 00:48:40,720

uh and then the very next day we'll uh

1189
00:48:44,470 --> 00:48:42,480
take the crew out and do

1190
00:48:46,069 --> 00:48:44,480
basically an end in dress rehearsal for

1191
00:48:47,270 --> 00:48:46,079
the launch so they'll start in crew

1192
00:48:48,870 --> 00:48:47,280
quarters

1193
00:48:52,710 --> 00:48:48,880
put their suits on

1194
00:48:54,870 --> 00:48:52,720
be transported out to the launch pad 39a

1195
00:48:57,109 --> 00:48:54,880
go up and go up the elevator and then

1196
00:48:59,109 --> 00:48:57,119
the closeout crew from spacex will put

1197
00:49:00,870 --> 00:48:59,119
them in the vehicle and then we'll run

1198
00:49:02,390 --> 00:49:00,880
through that whole timeline just like we

1199
00:49:04,390 --> 00:49:02,400
would on launch day so

1200
00:49:07,910 --> 00:49:04,400
it's very similar to what we did on on

1201
00:49:12,950 --> 00:49:10,069
we'll now go over to some social media

1202
00:49:15,190 --> 00:49:12,960
questions using the hashtag ask nasa

1203
00:49:18,790 --> 00:49:15,200
the first comes from both david and from

1204
00:49:20,470 --> 00:49:18,800
splat asking about the ports on the

1205
00:49:22,950 --> 00:49:20,480
international space station so this one

1206
00:49:24,870 --> 00:49:22,960
can go to kenny uh if you can describe

1207
00:49:27,589 --> 00:49:24,880
where crew 1 will dock and how it will

1208
00:49:29,670 --> 00:49:27,599
work with crs 21 and the boeing

1209
00:49:32,710 --> 00:49:29,680
starliner

1210
00:49:34,870 --> 00:49:32,720
um first of all the uh the uh when crew

1211
00:49:36,710 --> 00:49:34,880
one arrives the station it will it will

1212
00:49:39,109 --> 00:49:36,720
be uh

1213
00:49:40,710 --> 00:49:39,119

it will arrive at and dock at the the

1214
00:49:42,790 --> 00:49:40,720
forward what we call the forward end of

1215
00:49:45,030 --> 00:49:42,800
station so it'll be in the node two

1216
00:49:47,030 --> 00:49:45,040
forward location so it'll be right out

1217
00:49:48,150 --> 00:49:47,040
on the on the front of station

1218
00:49:51,670 --> 00:49:48,160
um

1219
00:49:52,470 --> 00:49:51,680
the spacex 21 that comes up later later

1220
00:49:57,670 --> 00:49:52,480
in

1221
00:50:00,630 --> 00:49:57,680
the node 2 zenith

1222
00:50:02,870 --> 00:50:00,640
port so basically you'll have have the

1223
00:50:03,589 --> 00:50:02,880
the crew dragon on the front you'll have

1224
00:50:07,510 --> 00:50:03,599
the

1225
00:50:08,950 --> 00:50:07,520
of station

1226
00:50:14,950 --> 00:50:08,960
um

1227
00:50:16,790 --> 00:50:14,960
indeed the

1228
00:50:18,790 --> 00:50:16,800
the boeing starliner

1229
00:50:21,109 --> 00:50:18,800
flies later this year we'll have a plan

1230
00:50:22,630 --> 00:50:21,119
for doing what we refer to as a port

1231
00:50:24,950 --> 00:50:22,640
relocation

1232
00:50:27,589 --> 00:50:24,960
the spacex 21 mission once it gets on

1233
00:50:30,950 --> 00:50:27,599
it'll be on for roughly 35 days at that

1234
00:50:32,870 --> 00:50:30,960
point uh we'll uh we'll undock unknock

1235
00:50:35,349 --> 00:50:32,880
that that particular cargo dragon it

1236
00:50:38,230 --> 00:50:35,359
will come home it will free up the the

1237
00:50:40,390 --> 00:50:38,240
no two zenith port and then as us

1238
00:50:43,030 --> 00:50:40,400

alluded to we will we will put the crew

1239
00:50:45,990 --> 00:50:43,040
in the capsule and and we'll do a port

1240
00:50:48,630 --> 00:50:46,000
relocation and allow the uh allow the

1241
00:50:51,270 --> 00:50:48,640
the crew dragon basically to maneuver up

1242
00:50:54,069 --> 00:50:51,280
to the zenith port and then that would

1243
00:50:57,510 --> 00:50:54,079
that would then provide a home for the

1244
00:51:00,790 --> 00:50:57,520
for the starliner starliner vehicle

1245
00:51:05,190 --> 00:51:02,870
and we'll take one more uh question on

1246
00:51:07,430 --> 00:51:05,200
social media this one's from jasu on

1247
00:51:09,270 --> 00:51:07,440
twitter and this one's for steve why is

1248
00:51:12,150 --> 00:51:09,280
the crew one mission going to take 25

1249
00:51:14,390 --> 00:51:12,160
hours to dock to the space station

1250
00:51:16,309 --> 00:51:14,400
yeah that's a good question so what

1251
00:51:20,230 --> 00:51:16,319
we've done with the crew one mission is

1252
00:51:21,910 --> 00:51:20,240
we've sort of laid out a a timeline uh

1253
00:51:23,109 --> 00:51:21,920
every day to to make the docking

1254
00:51:24,710 --> 00:51:23,119
opportunities and the crew sleep

1255
00:51:27,190 --> 00:51:24,720
predictable and so

1256
00:51:29,430 --> 00:51:27,200
the best balance was to have that uh 25

1257
00:51:31,430 --> 00:51:29,440
hours it just turns out the way overall

1258
00:51:33,910 --> 00:51:31,440
mechanics works

1259
00:51:35,910 --> 00:51:33,920
it takes about 25 hours or so to get

1260
00:51:37,589 --> 00:51:35,920
there for that particular day and we've

1261
00:51:39,430 --> 00:51:37,599
done that for a couple days in a row

1262
00:51:41,030 --> 00:51:39,440
where we'll sort of slow down how fast

1263
00:51:43,349 --> 00:51:41,040

we get to the station

1264
00:51:46,150 --> 00:51:43,359
keep the station and the crew sleeps the

1265
00:51:48,950 --> 00:51:46,160
same and and then we'll uh dock about 25

1266
00:51:50,870 --> 00:51:48,960
hours after launch

1267
00:51:54,710 --> 00:51:50,880
we'll now go back to the phone bridge

1268
00:51:56,950 --> 00:51:54,720
starting with jeff faust from space news

1269
00:51:58,710 --> 00:51:56,960
hi a question for uh benji reed you

1270
00:52:00,549 --> 00:51:58,720
mentioned earlier you're planning uh

1271
00:52:02,870 --> 00:52:00,559
seven total dragon missions crew and

1272
00:52:05,109 --> 00:52:02,880
cargo over the next 14 months

1273
00:52:07,109 --> 00:52:05,119
given your plans for reuse how many uh

1274
00:52:09,109 --> 00:52:07,119
individual dragon spacecraft do you

1275
00:52:11,030 --> 00:52:09,119
anticipate needing to fly those seven

1276
00:52:12,549 --> 00:52:11,040
missions and does that total also

1277
00:52:14,230 --> 00:52:12,559
include any uh

1278
00:52:15,510 --> 00:52:14,240
additional private missions such as some

1279
00:52:19,340 --> 00:52:15,520
of the private astronaut missions that

1280
00:52:20,710 --> 00:52:19,350
have been discussed recently thanks

1281
00:52:22,790 --> 00:52:20,720
[Music]

1282
00:52:24,390 --> 00:52:22,800
hi jeff that's a great question and i

1283
00:52:26,309 --> 00:52:24,400
actually don't have the exact number but

1284
00:52:27,750 --> 00:52:26,319
i know we can get it for you um i have

1285
00:52:29,990 --> 00:52:27,760
to think real quick and do math in my

1286
00:52:32,470 --> 00:52:30,000
head publicly which is dangerous but

1287
00:52:34,790 --> 00:52:32,480
a number of those are reused flights and

1288
00:52:37,030 --> 00:52:34,800

um and a handful of them are new

1289
00:52:39,109 --> 00:52:37,040
um uh so you know for example as we

1290
00:52:41,030 --> 00:52:39,119
already know the the crew one capsule is

1291
00:52:42,710 --> 00:52:41,040
going to get is going to be referred i'm

1292
00:52:45,270 --> 00:52:42,720
sorry the demo 2 capsule is already

1293
00:52:48,230 --> 00:52:45,280
being refurbished for crew 2.

1294
00:52:50,150 --> 00:52:48,240
um and uh and and we're looking at the

1295
00:52:51,589 --> 00:52:50,160
crew 3 capsule as well as possibly being

1296
00:52:53,109 --> 00:52:51,599
a new capsule

1297
00:52:54,630 --> 00:52:53,119
but what we're we're what we're

1298
00:52:57,030 --> 00:52:54,640
assessing right now is that is the right

1299
00:52:59,510 --> 00:52:57,040
way to to do all of those um

1300
00:53:00,950 --> 00:52:59,520
in in the most efficient manner we can

1301
00:53:02,790 --> 00:53:00,960
make sure that we have the right amount

1302
00:53:05,349 --> 00:53:02,800
of margin to schedule between

1303
00:53:07,109 --> 00:53:05,359
refurbishment and need for flight um and

1304
00:53:08,470 --> 00:53:07,119
then you're so to give you the exact

1305
00:53:10,630 --> 00:53:08,480
number to have to get that for you but

1306
00:53:12,309 --> 00:53:10,640
but more importantly

1307
00:53:15,109 --> 00:53:12,319
the real question is is about that

1308
00:53:17,270 --> 00:53:15,119
scheduled margin in terms of the private

1309
00:53:18,710 --> 00:53:17,280
mission um that doesn't include uh

1310
00:53:21,109 --> 00:53:18,720
private mission planning that's just for

1311
00:53:23,270 --> 00:53:21,119
what we're doing for nasa um and so we

1312
00:53:24,870 --> 00:53:23,280
are excited to look forward to the

1313
00:53:27,750 --> 00:53:24,880

opportunities through private missions

1314
00:53:29,510 --> 00:53:27,760
um i think that uh late next year is is

1315
00:53:31,030 --> 00:53:29,520
a good time to start looking towards you

1316
00:53:32,790 --> 00:53:31,040
know uh when we hopefully could start

1317
00:53:35,270 --> 00:53:32,800
those missions up um we're working with

1318
00:53:37,510 --> 00:53:35,280
a number of partners that we have in

1319
00:53:39,190 --> 00:53:37,520
the commercial passenger area um as you

1320
00:53:41,430 --> 00:53:39,200
know you've already heard of you know

1321
00:53:42,950 --> 00:53:41,440
axiom and space adventures have have got

1322
00:53:43,750 --> 00:53:42,960
some different uh opportunities that

1323
00:53:45,349 --> 00:53:43,760
they're working and that we're

1324
00:53:47,750 --> 00:53:45,359
partnering with them on

1325
00:53:48,790 --> 00:53:47,760
um and that's very exciting and so we

1326
00:53:51,430 --> 00:53:48,800
look forward to you know be able to

1327
00:53:52,950 --> 00:53:51,440
provide transportation services um for

1328
00:53:54,710 --> 00:53:52,960
for lots of different partners and also

1329
00:53:57,030 --> 00:53:54,720
be able to uh you know continue to

1330
00:53:59,349 --> 00:53:57,040
support uh space station directly um

1331
00:54:01,270 --> 00:53:59,359
with commercial passengers as needed um

1332
00:54:04,069 --> 00:54:01,280
and then beyond that you know long term

1333
00:54:06,470 --> 00:54:04,079
we we see uh you know the the starship

1334
00:54:08,630 --> 00:54:06,480
opportunities and um you know we we

1335
00:54:10,870 --> 00:54:08,640
already have a you know another japanese

1336
00:54:13,829 --> 00:54:10,880
person who will be joining us um in the

1337
00:54:16,630 --> 00:54:13,839
in the future um you know mizawasan um

1338
00:54:18,630 --> 00:54:16,640

for a a lunar orbit mission as well um

1339
00:54:19,910 --> 00:54:18,640
on starship so these are these are kind

1340
00:54:22,870 --> 00:54:19,920
of all these exciting things that we

1341
00:54:25,349 --> 00:54:22,880
look forward to and but but yes uh we

1342
00:54:26,870 --> 00:54:25,359
would also looking to how can we do a

1343
00:54:30,790 --> 00:54:26,880
commercial mission you know probably

1344
00:54:36,309 --> 00:54:33,670
next we have dave mosher from business

1345
00:54:41,829 --> 00:54:39,589
this is for kenny or whomever is best um

1346
00:54:43,589 --> 00:54:41,839
how much of a factor is this pesky air

1347
00:54:45,510 --> 00:54:43,599
leak in bethesda in terms of launch

1348
00:54:48,150 --> 00:54:45,520
dates in other words if you can't locate

1349
00:54:50,710 --> 00:54:48,160
and fix it soon could that push back or

1350
00:54:52,710 --> 00:54:50,720
move soyuz and coolant flight dates and

1351
00:54:54,309 --> 00:54:52,720
then also what do you expect a fix to

1352
00:54:56,390 --> 00:54:54,319
look like for that leak at this point

1353
00:54:58,950 --> 00:54:56,400
thanks

1354
00:55:01,589 --> 00:54:58,960
well uh in terms of how it might affect

1355
00:55:04,309 --> 00:55:01,599
our our upcoming plans uh for for our

1356
00:55:07,510 --> 00:55:04,319
flight program for crude flights or

1357
00:55:09,910 --> 00:55:07,520
or even cargo flights um at this point

1358
00:55:11,430 --> 00:55:09,920
um we're we're working the problem uh

1359
00:55:13,910 --> 00:55:11,440
yesterday we had an extensive

1360
00:55:15,190 --> 00:55:13,920
conversation at our ops readiness review

1361
00:55:17,829 --> 00:55:15,200
um and

1362
00:55:19,030 --> 00:55:17,839
and out of that we we basically put a

1363
00:55:20,870 --> 00:55:19,040

plan in place that says we're to

1364
00:55:23,030 --> 00:55:20,880
continue continue to troubleshoot this

1365
00:55:24,870 --> 00:55:23,040
problem in parallel with that we're also

1366
00:55:25,750 --> 00:55:24,880
going to go look at our flight manifest

1367
00:55:30,470 --> 00:55:25,760
all of

1368
00:55:32,630 --> 00:55:30,480
flights and and see if we can get to a

1369
00:55:35,510 --> 00:55:32,640
plan that says if we continue with the

1370
00:55:37,750 --> 00:55:35,520
re leak at the same rate how far

1371
00:55:39,349 --> 00:55:37,760
you know could we continue to to provide

1372
00:55:41,990 --> 00:55:39,359
the necessary consumables through our

1373
00:55:44,710 --> 00:55:42,000
cargo flights to uh to continue to to

1374
00:55:46,710 --> 00:55:44,720
keep us sustained infinitely

1375
00:55:48,470 --> 00:55:46,720
but but the bottom line is based on

1376
00:55:50,630 --> 00:55:48,480
where the leak rate is today

1377
00:55:53,190 --> 00:55:50,640
uh and and we're going to fly a couple

1378
00:55:54,950 --> 00:55:53,200
of of resupply tanks on the upcoming

1379
00:55:57,270 --> 00:55:54,960
flight this week on the on the cygnus

1380
00:55:59,430 --> 00:55:57,280
flight will will be okay out into the

1381
00:56:01,750 --> 00:55:59,440
spring of next year so this is not

1382
00:56:03,349 --> 00:56:01,760
necessarily an a near-term problem as

1383
00:56:06,069 --> 00:56:03,359
long as the leak

1384
00:56:08,150 --> 00:56:06,079
rate stays at where it's at today

1385
00:56:10,150 --> 00:56:08,160
but if it were to get worse obviously

1386
00:56:12,549 --> 00:56:10,160
we'll we'll circle back up and revisit

1387
00:56:14,549 --> 00:56:12,559
that but as we get closer to every one

1388
00:56:16,470 --> 00:56:14,559

of our flights uh going to the

1389
00:56:19,589 --> 00:56:16,480
international space station if this

1390
00:56:21,430 --> 00:56:19,599
problem uh continues and uh

1391
00:56:23,109 --> 00:56:21,440
then we'll we will constantly be looking

1392
00:56:25,109 --> 00:56:23,119
at our consumables be looking at our

1393
00:56:27,589 --> 00:56:25,119
logistics train and making sure that

1394
00:56:30,789 --> 00:56:27,599
that we can stay ahead of it but first

1395
00:56:33,430 --> 00:56:30,799
and foremost our our goal is to to find

1396
00:56:35,349 --> 00:56:33,440
the leak and you asked about the fix the

1397
00:56:37,670 --> 00:56:35,359
the fix is really going to be based on

1398
00:56:40,870 --> 00:56:37,680
what we find once we we get eyes on the

1399
00:56:42,390 --> 00:56:40,880
actual the actual leak itself

1400
00:56:43,990 --> 00:56:42,400
you know when you look at a vehicle the

1401
00:56:46,069 --> 00:56:44,000
size of the space station it's you know

1402
00:56:49,589 --> 00:56:46,079
it's got valves that go to vacuum it's

1403
00:56:52,069 --> 00:56:49,599
got lots of different uh lines plumbing

1404
00:56:54,789 --> 00:56:52,079
it's got windows with seals on them so

1405
00:56:57,910 --> 00:56:54,799
so there's a there's a lot of acreage

1406
00:57:00,630 --> 00:56:57,920
with a lot of different um i'll say leak

1407
00:57:02,789 --> 00:57:00,640
paths that they could be potential spots

1408
00:57:03,910 --> 00:57:02,799
for us and so uh the good news is is

1409
00:57:06,069 --> 00:57:03,920
that we

1410
00:57:07,829 --> 00:57:06,079
we've at least i refer

1411
00:57:09,910 --> 00:57:07,839
tell people you know now instead of a

1412
00:57:11,829 --> 00:57:09,920
bunch of haystacks we're down to maybe

1413
00:57:13,670 --> 00:57:11,839

just maybe just one haystack but it's

1414
00:57:15,829 --> 00:57:13,680
still a needle we're looking for

1415
00:57:18,789 --> 00:57:15,839
we've got capabilities on board with our

1416
00:57:21,109 --> 00:57:18,799
leak detector to go do some fine checks

1417
00:57:22,870 --> 00:57:21,119
now and that's that's the the next steps

1418
00:57:24,950 --> 00:57:22,880
that we're heading down and so working

1419
00:57:27,589 --> 00:57:24,960
very closely with our russian colleagues

1420
00:57:29,510 --> 00:57:27,599
and again our primary goal is to is to

1421
00:57:32,549 --> 00:57:29,520
find this leak in the near term and get

1422
00:57:38,150 --> 00:57:35,109
next we have mark caro from aviation

1423
00:57:43,670 --> 00:57:41,430
questions for uh kenny todd um

1424
00:57:45,510 --> 00:57:43,680
just checking back and clarifying i

1425
00:57:48,870 --> 00:57:45,520
think on the number of crew going

1426
00:57:50,950 --> 00:57:48,880
forward that the station can house

1427
00:57:52,309 --> 00:57:50,960
when was the last time you had as many

1428
00:57:54,630 --> 00:57:52,319
as seven

1429
00:57:57,589 --> 00:57:54,640
and is the objective at least from the

1430
00:58:00,789 --> 00:57:57,599
nasa perspective to to have

1431
00:58:03,510 --> 00:58:00,799
um seven total but four to five on the

1432
00:58:05,670 --> 00:58:03,520
u.s side if possible depending on

1433
00:58:07,190 --> 00:58:05,680
how many the russians can fly at one

1434
00:58:09,589 --> 00:58:07,200
time

1435
00:58:11,430 --> 00:58:09,599
uh correct mark uh

1436
00:58:12,870 --> 00:58:11,440
starting starting and i'm thinking on

1437
00:58:15,349 --> 00:58:12,880
your first question by the way but on

1438
00:58:17,670 --> 00:58:15,359

your second one yeah the the goal is was

1439
00:58:20,069 --> 00:58:17,680
to have four on the us os and then

1440
00:58:22,309 --> 00:58:20,079
obviously three three on on the on the

1441
00:58:25,270 --> 00:58:22,319
russian segment so yeah steady state

1442
00:58:27,430 --> 00:58:25,280
we're we're considering a you know a 7 7

1443
00:58:30,069 --> 00:58:27,440
crew is is pretty much our steady state

1444
00:58:32,870 --> 00:58:30,079
going forward and again the crew makeups

1445
00:58:35,109 --> 00:58:32,880
we will we will continue to evolve as we

1446
00:58:37,670 --> 00:58:35,119
work with our partners

1447
00:58:39,349 --> 00:58:37,680
to uh to kind of manage the vehicle

1448
00:58:40,710 --> 00:58:39,359
traffic going back and forth to station

1449
00:58:42,710 --> 00:58:40,720
so you might have periods there where

1450
00:58:44,549 --> 00:58:42,720
you'll have a couple of vehicles and for

1451
00:58:46,470 --> 00:58:44,559
a week or two you might have a you know

1452
00:58:47,910 --> 00:58:46,480
even a larger crew than than seven

1453
00:58:50,470 --> 00:58:47,920
during some handover periods but the

1454
00:58:52,150 --> 00:58:50,480
steady state crew size will be seven

1455
00:58:53,990 --> 00:58:52,160
as far as the last time we had seven i

1456
00:58:55,829 --> 00:58:54,000
was trying to think of it here mark i

1457
00:58:57,589 --> 00:58:55,839
can't think of off top of my head but i

1458
00:59:00,150 --> 00:58:57,599
will find out and i will i will make

1459
00:59:03,510 --> 00:59:00,160
sure we get that data to you but

1460
00:59:08,309 --> 00:59:06,710
next we have paul rivera from wesh tv in

1461
00:59:10,150 --> 00:59:08,319
orlando

1462
00:59:10,789 --> 00:59:10,160
hey thanks for taking my question this

1463
00:59:12,950 --> 00:59:10,799

is

1464
00:59:15,750 --> 00:59:12,960
a follow-up to the first question about

1465
00:59:17,589 --> 00:59:15,760
the evas to whomever wants to pick up on

1466
00:59:18,390 --> 00:59:17,599
it but you mentioned that they're going

1467
00:59:21,190 --> 00:59:18,400
to be

1468
00:59:22,950 --> 00:59:21,200
evas aside conducting science once they

1469
00:59:25,270 --> 00:59:22,960
get up there i was wondering if you all

1470
00:59:27,430 --> 00:59:25,280
could speak specifically to

1471
00:59:28,950 --> 00:59:27,440
what they will be accomplishing once

1472
00:59:31,430 --> 00:59:28,960
they arrive at the space station and

1473
00:59:34,309 --> 00:59:31,440
start to live there

1474
00:59:35,829 --> 00:59:34,319
can i ask a clarifying question you uh

1475
00:59:39,430 --> 00:59:35,839
were you asking about the evas in

1476
00:59:39,440 --> 00:59:44,230
inside

1477
00:59:49,109 --> 00:59:47,109
and kenny i believe it was uh evas

1478
00:59:52,470 --> 00:59:49,119
associated with science

1479
00:59:54,390 --> 00:59:52,480
yes from from uh the standpoint of uh

1480
00:59:57,430 --> 00:59:54,400
what we're doing with the evas is is

1481
00:59:59,990 --> 00:59:57,440
where is we're enabling um even enabling

1482
01:00:02,710 --> 01:00:00,000
science uh the bartolomeo platform that

1483
01:00:05,030 --> 01:00:02,720
our uh that our esa colleagues flew uh

1484
01:00:07,270 --> 01:00:05,040
last year um on this on the spacex

1485
01:00:09,670 --> 01:00:07,280
dragon that particular platform is

1486
01:00:11,589 --> 01:00:09,680
intended to house experiments uh

1487
01:00:13,910 --> 01:00:11,599
commercial experiments through uh

1488
01:00:15,750 --> 01:00:13,920

through their own um

1489
01:00:18,630 --> 01:00:15,760
customer front door that that they have

1490
01:00:20,230 --> 01:00:18,640
within esa and so the evas are really

1491
01:00:23,270 --> 01:00:20,240
going to be helping to establish that

1492
01:00:25,190 --> 01:00:23,280
capability uh for for our esa colleagues

1493
01:00:28,549 --> 01:00:25,200
and and giving them that platform to be

1494
01:00:30,789 --> 01:00:28,559
able to um to basically uh offer that to

1495
01:00:32,390 --> 01:00:30,799
commercial for commercial use uh as a

1496
01:00:35,270 --> 01:00:32,400
science platform

1497
01:00:36,870 --> 01:00:35,280
um and so uh that's gonna be our uh

1498
01:00:39,349 --> 01:00:36,880
probably one of our primary science

1499
01:00:42,230 --> 01:00:39,359
objectives when it comes to to evas this

1500
01:00:44,549 --> 01:00:42,240
this coming january

1501
01:00:46,630 --> 01:00:44,559
we have time for one or two more

1502
01:00:50,950 --> 01:00:46,640
questions so we'll hand it over to susie

1503
01:00:55,750 --> 01:00:53,109
thank you um

1504
01:00:57,109 --> 01:00:55,760
this question is for whomever is best to

1505
01:00:59,109 --> 01:00:57,119
answer it

1506
01:01:01,750 --> 01:00:59,119
so after the isf had to maneuver away

1507
01:01:03,589 --> 01:01:01,760
from some space debris last week nasa

1508
01:01:05,270 --> 01:01:03,599
administrator jim bridenstine said that

1509
01:01:07,349 --> 01:01:05,280
the station has maneuvered three times

1510
01:01:08,710 --> 01:01:07,359
in 2020 to avoid debris

1511
01:01:10,630 --> 01:01:08,720
and in the last two weeks there have

1512
01:01:12,789 --> 01:01:10,640
been three high concern potential

1513
01:01:14,390 --> 01:01:12,799

conjunctions so how concerned are

1514
01:01:15,990 --> 01:01:14,400
officials about space debris over the

1515
01:01:17,990 --> 01:01:16,000
next few months and have you done any

1516
01:01:20,230 --> 01:01:18,000
preparation for a potential space debris

1517
01:01:22,069 --> 01:01:20,240
incident

1518
01:01:23,910 --> 01:01:22,079
well

1519
01:01:26,549 --> 01:01:23,920
i mean space station's been flying on

1520
01:01:27,270 --> 01:01:26,559
orbit for for 20 years now uh

1521
01:01:29,829 --> 01:01:27,280
the

1522
01:01:32,549 --> 01:01:29,839
uh debris isn't is not a new thing for

1523
01:01:34,230 --> 01:01:32,559
us it's been around for a very long time

1524
01:01:36,309 --> 01:01:34,240
what we've seen over the 20 years is

1525
01:01:38,630 --> 01:01:36,319
that we're getting more and more debris

1526
01:01:43,030 --> 01:01:38,640
uh we have some some pretty good

1527
01:01:44,870 --> 01:01:43,040
capabilities um to to track debris uh we

1528
01:01:45,910 --> 01:01:44,880
work closely with the team that that

1529
01:01:47,349 --> 01:01:45,920
does that

1530
01:01:50,710 --> 01:01:47,359
um but uh

1531
01:01:52,470 --> 01:01:50,720
again debris in space is just a reality

1532
01:01:54,470 --> 01:01:52,480
and and we live with it every day

1533
01:01:56,630 --> 01:01:54,480
we count on our tools and our processes

1534
01:01:59,750 --> 01:01:56,640
and the people that help to monitor uh

1535
01:02:03,190 --> 01:01:59,760
those items that we know about um but

1536
01:02:05,430 --> 01:02:03,200
as we as we continue um as a as a world

1537
01:02:07,270 --> 01:02:05,440
population to launch more things

1538
01:02:09,510 --> 01:02:07,280

into orbit

1539
01:02:11,510 --> 01:02:09,520
then then you know that just creates

1540
01:02:13,750 --> 01:02:11,520
additional debris that that programs

1541
01:02:15,750 --> 01:02:13,760
like the space station will have to uh

1542
01:02:16,789 --> 01:02:15,760
not only acknowledge but have a plan for

1543
01:02:18,309 --> 01:02:16,799
so

1544
01:02:20,950 --> 01:02:18,319
the way that

1545
01:02:22,710 --> 01:02:20,960
that we deal with it is again we we try

1546
01:02:25,750 --> 01:02:22,720
to track it there are folks out there

1547
01:02:28,390 --> 01:02:25,760
who catalog these things and then

1548
01:02:30,710 --> 01:02:28,400
basically watch them uh 24 hours a day

1549
01:02:33,430 --> 01:02:30,720
seven days a week and when one of these

1550
01:02:34,390 --> 01:02:33,440
items looks like it's on a trajectory to

1551
01:02:36,630 --> 01:02:34,400
pass through

1552
01:02:38,950 --> 01:02:36,640
uh the space station trajectory then

1553
01:02:41,750 --> 01:02:38,960
then that's when we get involved uh we

1554
01:02:44,470 --> 01:02:41,760
have a group here uh that specifically

1555
01:02:47,510 --> 01:02:44,480
uh does the probabilistic assessment uh

1556
01:02:48,710 --> 01:02:47,520
for uh for those pieces of debris

1557
01:02:51,349 --> 01:02:48,720
and the potential for hitting the

1558
01:02:54,150 --> 01:02:51,359
station and then we have rules in place

1559
01:02:56,710 --> 01:02:54,160
that's that tell us when when we need to

1560
01:02:59,670 --> 01:02:56,720
uh to do the to do the maneuvers but

1561
01:03:01,910 --> 01:02:59,680
the the idea of of uh worrying about

1562
01:03:04,630 --> 01:03:01,920
debris is something that that has been

1563
01:03:06,630 --> 01:03:04,640

in the program since since day one and

1564
01:03:09,430 --> 01:03:06,640
and again it's just become more and more

1565
01:03:11,750 --> 01:03:09,440
of a of a watch item and a concern for

1566
01:03:13,589 --> 01:03:11,760
us as we've watched you know lower earth

1567
01:03:15,589 --> 01:03:13,599
orbit become a little more a little more

1568
01:03:17,670 --> 01:03:15,599
cluttered and we're just we're just

1569
01:03:19,430 --> 01:03:17,680
counting on our processes and uh you

1570
01:03:21,670 --> 01:03:19,440
know having a station that with

1571
01:03:23,910 --> 01:03:21,680
propulsive capability that we can we can

1572
01:03:27,349 --> 01:03:23,920
get away from some of these items that

1573
01:03:30,710 --> 01:03:29,029
thanks to all who submitted questions

1574
01:03:32,630 --> 01:03:30,720
and thanks to today's briefers for

1575
01:03:34,710 --> 01:03:32,640
taking the time to discuss the crew one

1576
01:03:36,549 --> 01:03:34,720
mission we have one more briefing coming

1577
01:03:38,710 --> 01:03:36,559
up today we'll be hosting the astronauts

1578
01:03:41,270 --> 01:03:38,720
of crew one for a news conference at 2

1579
01:03:43,029 --> 01:03:41,280
pm eastern time for details on this

1580
01:03:45,589 --> 01:03:43,039
briefing and for the latest on this

1581
01:03:47,670 --> 01:03:45,599
mission please visit nasa.gov

1582
01:03:49,270 --> 01:03:47,680
commercial crew thanks again for joining

1583
01:03:51,290 --> 01:03:49,280
us that will wrap up today's crew one

1584
01:04:04,470 --> 01:03:51,300
mission overview briefing

1585
01:04:05,830 --> 01:04:04,480
[Music]