
BOEING

1
00:00:29,349 --> 00:00:26,870
i think i see some

2
00:00:56,830 --> 00:00:29,359
familiar faces out there what face parts

3
00:00:56,840 --> 00:01:14,710
oh

4
00:01:18,149 --> 00:01:16,230
good afternoon and welcome to nasa's

5
00:01:20,230 --> 00:01:18,159
kennedy space center here in florida

6
00:01:21,830 --> 00:01:20,240
i'm megan cruz with nasa communications

7
00:01:24,390 --> 00:01:21,840
and you're here watching the crew

8
00:01:24,950 --> 00:01:24,400
and science briefing for tomorrow's oft2

9
00:01:27,910 --> 00:01:24,960
launch

10
00:01:28,390 --> 00:01:27,920
targeted for 2 53 pm eastern daylight

11
00:01:31,109 --> 00:01:28,400
time

12
00:01:31,910 --> 00:01:31,119
now oft2 is boeing's second uncrewed

13
00:01:34,550 --> 00:01:31,920

test flight

14
00:01:36,069 --> 00:01:34,560
of its starliner capsule atop a ula

15
00:01:39,350 --> 00:01:36,079
atlas 5 rocket

16
00:01:41,350 --> 00:01:39,360
nasa boeing and ula are targeting a

17
00:01:43,190 --> 00:01:41,360
launch later this year for the first

18
00:01:44,469 --> 00:01:43,200
crude flight and speaking of the crew we

19
00:01:46,389 --> 00:01:44,479
have them here today along with some

20
00:01:48,310 --> 00:01:46,399
other familiar faces i'm sure

21
00:01:50,630 --> 00:01:48,320
first we have chris ferguson director of

22
00:01:53,910 --> 00:01:50,640
starliner mission operations

23
00:01:55,670 --> 00:01:53,920
and integration cruise systems and then

24
00:01:57,749 --> 00:01:55,680
we have the crew again as i was saying

25
00:02:00,469 --> 00:01:57,759
we have commander butch wilmore

26
00:02:01,910 --> 00:02:00,479
pilot mike fink and mission specialist

27
00:02:03,670 --> 00:02:01,920
nicole mann

28
00:02:05,429 --> 00:02:03,680
and then we have jennifer buckley who's

29
00:02:07,350 --> 00:02:05,439
the deputy chief scientist

30
00:02:09,270 --> 00:02:07,360
of nasa's international space station

31
00:02:10,630 --> 00:02:09,280
program now each will deliver some

32
00:02:11,430 --> 00:02:10,640
opening remarks and then we'll take your

33
00:02:12,790 --> 00:02:11,440
questions so

34
00:02:14,869 --> 00:02:12,800
why don't you take it away chris thanks

35
00:02:17,110 --> 00:02:14,879
megan uh well good morning

36
00:02:18,949 --> 00:02:17,120
uh this is a this is a great day anytime

37
00:02:20,630 --> 00:02:18,959
we get ready to uh to launch a rocket

38
00:02:22,710 --> 00:02:20,640

into space is an awesome day

39
00:02:24,470 --> 00:02:22,720
uh for those of you who did not have the

40
00:02:25,830 --> 00:02:24,480
privilege of watching the atlas v

41
00:02:27,110 --> 00:02:25,840
roll out of the vertical integration

42
00:02:27,990 --> 00:02:27,120
facility and over to the pad it

43
00:02:29,910 --> 00:02:28,000
completed

44
00:02:31,509 --> 00:02:29,920
oh about an hour ago so it's sitting out

45
00:02:33,750 --> 00:02:31,519
there and and ready for

46
00:02:35,750 --> 00:02:33,760
what we hope will be weather dependent

47
00:02:37,830 --> 00:02:35,760
on time launch tomorrow

48
00:02:39,830 --> 00:02:37,840
this has been it's been a long time

49
00:02:42,390 --> 00:02:39,840
preparing for this flight

50
00:02:44,869 --> 00:02:42,400
we we have taken an awful lot of effort

51
00:02:45,190 --> 00:02:44,879
to basically scrutinize every aspect of

52
00:02:48,229 --> 00:02:45,200
the

53
00:02:51,750 --> 00:02:48,239
have

54
00:02:54,390 --> 00:02:51,760
verification tests

55
00:02:54,869 --> 00:02:54,400
uh we have added uh an enormous amount

56
00:02:56,869 --> 00:02:54,879
of test

57
00:02:57,910 --> 00:02:56,879
scripting to the way that we manage our

58
00:02:59,190 --> 00:02:57,920
flight software

59
00:03:01,750 --> 00:02:59,200
we have made upgrades to our

60
00:03:03,430 --> 00:03:01,760
communication system all in preparation

61
00:03:06,149 --> 00:03:03,440
for what will ultimately be

62
00:03:06,949 --> 00:03:06,159
this crew's trip to space so we're very

63
00:03:08,790 --> 00:03:06,959

proud

64
00:03:10,229 --> 00:03:08,800
to be of course a part of the uh

65
00:03:12,229 --> 00:03:10,239
commercial crew program

66
00:03:13,350 --> 00:03:12,239
we're very proud to be conducting our

67
00:03:15,270 --> 00:03:13,360
second flight

68
00:03:17,110 --> 00:03:15,280
and we will be equally proud when we

69
00:03:20,229 --> 00:03:17,120
launch the the awesome

70
00:03:21,670 --> 00:03:20,239
cft crew here later this year so it's

71
00:03:23,430 --> 00:03:21,680
going to be a great day

72
00:03:25,190 --> 00:03:23,440
we again are looking for an on-time

73
00:03:27,750 --> 00:03:25,200
launch tomorrow with a docking

74
00:03:28,470 --> 00:03:27,760
less than 24 hours later and then a

75
00:03:30,309 --> 00:03:28,480
landing

76
00:03:31,910 --> 00:03:30,319
on or about august 5th at one of our

77
00:03:33,430 --> 00:03:31,920
western landing sites we have already

78
00:03:34,630 --> 00:03:33,440
deployed our landing teams out there

79
00:03:37,030 --> 00:03:34,640
and they're ready to receive the

80
00:03:39,430 --> 00:03:37,040
starliner upon return

81
00:03:41,430 --> 00:03:39,440
with that i would like to introduce

82
00:03:43,509 --> 00:03:41,440
butch barry wilmore a good friend we've

83
00:03:45,509 --> 00:03:43,519
known each other a very long time

84
00:03:47,190 --> 00:03:45,519
i am intimately familiar with this crew

85
00:03:47,589 --> 00:03:47,200
as many of you i think are well aware

86
00:03:51,589 --> 00:03:47,599
but

87
00:03:55,110 --> 00:03:51,599
chris and good morning

88
00:03:57,270 --> 00:03:55,120

and what an exciting time kennedy space

89
00:03:58,070 --> 00:03:57,280
center cape canaveral launched a lot of

90
00:04:00,470 --> 00:03:58,080
spacecraft

91
00:04:01,350 --> 00:04:00,480
into space obviously but this is human

92
00:04:02,789 --> 00:04:01,360
space flight

93
00:04:04,789 --> 00:04:02,799
and that's what makes this really

94
00:04:07,350 --> 00:04:04,799
special obviously for us

95
00:04:09,190 --> 00:04:07,360
we are a bit jealous i will admit that

96
00:04:10,949 --> 00:04:09,200
we have a rocket that is launching

97
00:04:13,350 --> 00:04:10,959
in human space flight without a crew on

98
00:04:14,070 --> 00:04:13,360
it um but that's the necessary thing

99
00:04:15,589 --> 00:04:14,080
obviously

100
00:04:17,110 --> 00:04:15,599
we have to test we need to make sure

101
00:04:18,150 --> 00:04:17,120
systems are ready and ready to go and

102
00:04:19,349 --> 00:04:18,160
just a little bit about human

103
00:04:20,229 --> 00:04:19,359
spaceflight i thought i'd share very

104
00:04:22,150 --> 00:04:20,239
briefly

105
00:04:23,670 --> 00:04:22,160
i launched on sts-129 on the space

106
00:04:26,310 --> 00:04:23,680
shuttle in 2009

107
00:04:28,070 --> 00:04:26,320
and when you go to the pad there's no

108
00:04:29,749 --> 00:04:28,080
one there because the spacecraft is

109
00:04:31,510 --> 00:04:29,759
fueled it's a little bit of a dangerous

110
00:04:32,390 --> 00:04:31,520
environment so you the crew has to

111
00:04:34,070 --> 00:04:32,400
obviously get there

112
00:04:36,310 --> 00:04:34,080
so it's the crew and the bus driver

113
00:04:37,110 --> 00:04:36,320

right and we get out you go walk over we

114
00:04:38,870 --> 00:04:37,120
walked over to

115
00:04:41,030 --> 00:04:38,880
the space shuttle atlantis and we looked

116
00:04:42,710 --> 00:04:41,040
up and there that american flag on the

117
00:04:45,430 --> 00:04:42,720
side of the space shuttle

118
00:04:47,350 --> 00:04:45,440
it was without question the proudest

119
00:04:49,749 --> 00:04:47,360
moment of my professional career

120
00:04:51,749 --> 00:04:49,759
because it encompassed a nation coming

121
00:04:53,430 --> 00:04:51,759
together to do great things

122
00:04:55,110 --> 00:04:53,440
that's what that flag represented on the

123
00:04:56,870 --> 00:04:55,120
side of that space shuttle and it's the

124
00:04:58,950 --> 00:04:56,880
same thing with starliner

125
00:05:00,870 --> 00:04:58,960
we'll go to the pad eventually and we

126
00:05:01,749 --> 00:05:00,880
will walk up to that pad it'll be fueled

127
00:05:03,749 --> 00:05:01,759
and ready to go

128
00:05:05,029 --> 00:05:03,759
us and the bus driver and we'll look up

129
00:05:06,950 --> 00:05:05,039
and we'll see that american flag and

130
00:05:08,950 --> 00:05:06,960
it's going to mean the exact same thing

131
00:05:09,990 --> 00:05:08,960
we look forward to that day it will get

132
00:05:12,390 --> 00:05:10,000
here eventually but

133
00:05:14,070 --> 00:05:12,400
right now obviously the focus is oft2

134
00:05:14,950 --> 00:05:14,080
and we're excited about what's coming in

135
00:05:16,390 --> 00:05:14,960
the next week

136
00:05:17,990 --> 00:05:16,400
and so with that that's all i have to

137
00:05:19,189 --> 00:05:18,000
say i'll hand it over to our joint

138
00:05:22,469 --> 00:05:19,199

operations commander

139
00:05:24,710 --> 00:05:22,479
mike fink yeah good morning uh you

140
00:05:27,110 --> 00:05:24,720
you heard it uh we are excited we're

141
00:05:28,550 --> 00:05:27,120
excited for orbital flight test right so

142
00:05:30,950 --> 00:05:28,560
that's what we're in the in the flight

143
00:05:32,790 --> 00:05:30,960
test phase of getting a capability

144
00:05:34,310 --> 00:05:32,800
to the international space station after

145
00:05:34,790 --> 00:05:34,320
orbital flight test comes crew flight

146
00:05:37,270 --> 00:05:34,800
test

147
00:05:38,310 --> 00:05:37,280
and then regularly scheduled uh programs

148
00:05:39,990 --> 00:05:38,320
and what it really

149
00:05:41,909 --> 00:05:40,000
does and what really really helps it

150
00:05:43,670 --> 00:05:41,919
gives us nasa

151
00:05:45,510 --> 00:05:43,680
the ability to go to the international

152
00:05:47,749 --> 00:05:45,520
space station have four people

153
00:05:49,270 --> 00:05:47,759
getting a lot of fantastic science done

154
00:05:52,150 --> 00:05:49,280
aboard the space station so

155
00:05:53,430 --> 00:05:52,160
oft 2 is is paving the way and we're

156
00:05:56,629 --> 00:05:53,440
excited we're looking for

157
00:05:58,469 --> 00:05:56,639
our flight coming soon and with that our

158
00:06:00,070 --> 00:05:58,479
our pilot um the joint ops commander

159
00:06:01,670 --> 00:06:00,080
she's the pilot uh

160
00:06:03,189 --> 00:06:01,680
nicole man lieutenant colonel united

161
00:06:05,830 --> 00:06:03,199
states marine corps

162
00:06:07,350 --> 00:06:05,840
thank you spanky let's talk about this a

163
00:06:09,510 --> 00:06:07,360

little bit in the big picture of things

164
00:06:11,909 --> 00:06:09,520
this is exciting moment for oft

165
00:06:14,309 --> 00:06:11,919
2 and for the nasa boeing team but this

166
00:06:16,469 --> 00:06:14,319
is also part of commercial crew program

167
00:06:18,469 --> 00:06:16,479
and launch america we've already

168
00:06:20,150 --> 00:06:18,479
returned capabilities to launch humans

169
00:06:21,590 --> 00:06:20,160
from american soil and now we're

170
00:06:23,749 --> 00:06:21,600
continuing that effort

171
00:06:25,510 --> 00:06:23,759
with these two dissimilar companies that

172
00:06:27,590 --> 00:06:25,520
will have spacecraft taking astronauts

173
00:06:29,909 --> 00:06:27,600
to the international space station

174
00:06:30,790 --> 00:06:29,919
this is paving the way for our larger

175
00:06:33,670 --> 00:06:30,800
strategic

176
00:06:34,469 --> 00:06:33,680
goal of putting people beyond low earth

177
00:06:36,150 --> 00:06:34,479
orbit

178
00:06:37,830 --> 00:06:36,160
we'll partner with commercial industry

179
00:06:39,270 --> 00:06:37,840
with our international partners

180
00:06:41,350 --> 00:06:39,280
to the moon as part of the artemis

181
00:06:43,350 --> 00:06:41,360
program and eventually to mars so

182
00:06:44,629 --> 00:06:43,360
it's a very exciting time as we see the

183
00:06:46,710 --> 00:06:44,639
commercialization

184
00:06:48,230 --> 00:06:46,720
beginning of low earth orbit and

185
00:06:49,830 --> 00:06:48,240
expiration beyond

186
00:06:51,749 --> 00:06:49,840
and with that i'll turn it over to

187
00:06:54,950 --> 00:06:51,759
jennifer buckley who's been with nasa

188
00:06:56,710 --> 00:06:54,960

for over 15 years and is our deputy

189
00:06:59,029 --> 00:06:56,720
chief scientist for the international

190
00:07:00,550 --> 00:06:59,039
space station thank you nicole

191
00:07:02,790 --> 00:07:00,560
it's my pleasure to be here today to

192
00:07:05,589 --> 00:07:02,800
talk about the commercial crew program

193
00:07:06,309 --> 00:07:05,599
and how it enables research on iss so to

194
00:07:07,990 --> 00:07:06,319
date we've done

195
00:07:09,430 --> 00:07:08,000
over 3000 experiments on the

196
00:07:11,189 --> 00:07:09,440
international space station

197
00:07:13,029 --> 00:07:11,199
and the research community is very much

198
00:07:15,029 --> 00:07:13,039
looking forward to bringing

199
00:07:16,390 --> 00:07:15,039
on another commercial crew provider you

200
00:07:18,710 --> 00:07:16,400
know the commercial crew program

201
00:07:19,909 --> 00:07:18,720
not only means more crew members and

202
00:07:22,230 --> 00:07:19,919
more cargo

203
00:07:24,550 --> 00:07:22,240
which means more science but it also

204
00:07:26,469 --> 00:07:24,560
really enabled an infrastructure

205
00:07:28,309 --> 00:07:26,479
to not only get crew back more quickly

206
00:07:29,990 --> 00:07:28,319
but also our science samples more

207
00:07:31,830 --> 00:07:30,000
quickly so this is really important this

208
00:07:33,110 --> 00:07:31,840
gets the research in the hands of

209
00:07:35,670 --> 00:07:33,120
researchers

210
00:07:36,469 --> 00:07:35,680
in a matter of hours now and really

211
00:07:38,469 --> 00:07:36,479
opens up

212
00:07:40,790 --> 00:07:38,479
what we're able to study now we can look

213
00:07:44,390 --> 00:07:40,800

at things like re-adaptation

214
00:07:46,550 --> 00:07:44,400
when when our science returns from space

215
00:07:47,830 --> 00:07:46,560
so we are we're very excited about this

216
00:07:49,270 --> 00:07:47,840
program and for the launch coming up

217
00:07:50,390 --> 00:07:49,280
this week

218
00:07:51,909 --> 00:07:50,400
thanks everyone you know you can tell

219
00:07:53,270 --> 00:07:51,919
how excited everybody is up here and

220
00:07:54,390 --> 00:07:53,280
we're excited to have you guys here so

221
00:07:55,510 --> 00:07:54,400
we're going to start taking your

222
00:07:56,469 --> 00:07:55,520
questions

223
00:07:57,990 --> 00:07:56,479
and what we're going to do is we're

224
00:07:59,670 --> 00:07:58,000
going to alternate between some of you

225
00:08:00,629 --> 00:07:59,680
guys in the room as well as social media

226
00:08:02,390 --> 00:08:00,639
and over the phone

227
00:08:03,909 --> 00:08:02,400
um those on social media remember you

228
00:08:07,589 --> 00:08:03,919
can still ask questions with

229
00:08:10,309 --> 00:08:07,599
uh ask nasa or in the face tube

230
00:08:11,670 --> 00:08:10,319
face tube facebook or youtube chat and

231
00:08:11,990 --> 00:08:11,680
then remember please keep it to one

232
00:08:13,510 --> 00:08:12,000
question

233
00:08:15,670 --> 00:08:13,520
so that we can get to as many people as

234
00:08:16,629 --> 00:08:15,680
possible all right so the first one on

235
00:08:19,589 --> 00:08:16,639
social media

236
00:08:22,230 --> 00:08:19,599
is are you attempting a land landing or

237
00:08:24,550 --> 00:08:22,240
is this going to be a splashdown

238
00:08:27,189 --> 00:08:24,560

whoever wants to take that uh i'll start

239
00:08:29,110 --> 00:08:27,199
so this will be a land landing at uh one

240
00:08:29,749 --> 00:08:29,120
of uh four different western united

241
00:08:32,630 --> 00:08:29,759
states

242
00:08:34,389 --> 00:08:32,640
landing spots uh we we descend under

243
00:08:36,790 --> 00:08:34,399
parachutes initially

244
00:08:38,230 --> 00:08:36,800
uh and then uh for at the approximately

245
00:08:38,630 --> 00:08:38,240
three thousand feet off the ground we

246
00:08:41,110 --> 00:08:38,640
will

247
00:08:41,750 --> 00:08:41,120
jettison our base heat shield and we

248
00:08:43,589 --> 00:08:41,760
inflate

249
00:08:45,430 --> 00:08:43,599
what we call landing airbags which

250
00:08:47,590 --> 00:08:45,440
cushion the final impact

251
00:08:49,509 --> 00:08:47,600
uh on ground it's great opportunity we

252
00:08:50,150 --> 00:08:49,519
get to the crew very quickly uh we can

253
00:08:51,990 --> 00:08:50,160
also

254
00:08:54,310 --> 00:08:52,000
extract science payload and get it back

255
00:08:56,630 --> 00:08:54,320
to the likes of uh jennifer before too

256
00:08:58,310 --> 00:08:56,640
long so again we're a landlander

257
00:09:00,310 --> 00:08:58,320
yeah and i'll i'll just add real quick

258
00:09:02,070 --> 00:09:00,320
that uh fergie mentioned the part that

259
00:09:04,630 --> 00:09:02,080
we look forward to is the

260
00:09:06,550 --> 00:09:04,640
cushioned portion of that yeah we didn't

261
00:09:08,790 --> 00:09:06,560
have airbags on the soil no we did not

262
00:09:09,590 --> 00:09:08,800
so uh landing on water obviously the

263
00:09:11,190 --> 00:09:09,600

water gives

264
00:09:13,269 --> 00:09:11,200
land does not give so much so the

265
00:09:15,829 --> 00:09:13,279
cushion part that'll be cool

266
00:09:16,310 --> 00:09:15,839
yo airbags perfect one from the room

267
00:09:18,790 --> 00:09:16,320
here

268
00:09:19,990 --> 00:09:18,800
hi derek wise with the space explorer so

269
00:09:23,269 --> 00:09:20,000
obviously the

270
00:09:25,509 --> 00:09:23,279
delay with the original oft wasn't ideal

271
00:09:27,590 --> 00:09:25,519
but how does having this second orbital

272
00:09:32,630 --> 00:09:27,600
flight test raise your confidence

273
00:09:38,790 --> 00:09:36,550
all right so uh all of us uh here

274
00:09:41,190 --> 00:09:38,800
chris included our uh flight testers

275
00:09:42,470 --> 00:09:41,200
from our various services uh before we

276
00:09:45,269 --> 00:09:42,480
became astronauts

277
00:09:46,630 --> 00:09:45,279
uh this is a this is how we we do it we

278
00:09:48,230 --> 00:09:46,640
we stepwise build

279
00:09:49,990 --> 00:09:48,240
and if something doesn't work right we

280
00:09:51,590 --> 00:09:50,000
fix it and go fly it again and this is

281
00:09:53,110 --> 00:09:51,600
exactly what boeing decided to do

282
00:09:54,070 --> 00:09:53,120
they're going to get it right this time

283
00:09:56,630 --> 00:09:54,080
and then we're going to have super

284
00:09:57,750 --> 00:09:56,640
confidence for the crew on board for

285
00:10:00,150 --> 00:09:57,760
crew flight test

286
00:10:01,030 --> 00:10:00,160
adding a crew on board actually is uh is

287
00:10:03,509 --> 00:10:01,040
a great thing too

288
00:10:05,350 --> 00:10:03,519

because we can we add an extra element

289
00:10:07,509 --> 00:10:05,360
of safety and redundancy

290
00:10:09,269 --> 00:10:07,519
so if for some reason the automation

291
00:10:10,389 --> 00:10:09,279
can't handle whatever situation we might

292
00:10:12,550 --> 00:10:10,399
find ourselves in

293
00:10:14,630 --> 00:10:12,560
uh we can hit the the manual buttons and

294
00:10:16,230 --> 00:10:14,640
go manual and fly the spacecraft all the

295
00:10:18,470 --> 00:10:16,240
way up to docking if needed

296
00:10:19,990 --> 00:10:18,480
so it really uh we're really trying to

297
00:10:22,230 --> 00:10:20,000
ensure crew success

298
00:10:23,269 --> 00:10:22,240
mission success here uh including you

299
00:10:24,870 --> 00:10:23,279
know being able to

300
00:10:26,870 --> 00:10:24,880
help out the international space station

301
00:10:28,069 --> 00:10:26,880
so this is a you know it's a fantastic

302
00:10:30,150 --> 00:10:28,079
spacecraft i've been on

303
00:10:33,430 --> 00:10:30,160
on this will be my third one and i'm

304
00:10:34,949 --> 00:10:33,440
just a big fan of starliner

305
00:10:38,389 --> 00:10:34,959
great and we'll take one from the phone

306
00:10:41,350 --> 00:10:38,399
now this is david hurley with discovery

307
00:10:42,069 --> 00:10:41,360
thanks very much uh butch just referred

308
00:10:44,870 --> 00:10:42,079
to it but

309
00:10:45,990 --> 00:10:44,880
nicole uh boeing talked about the fact

310
00:10:48,310 --> 00:10:46,000
that a crew had been on board

311
00:10:49,430 --> 00:10:48,320
on oft one uh there would not have been

312
00:10:50,870 --> 00:10:49,440
the problems because you would have

313
00:10:53,829 --> 00:10:50,880

overridden the system uh

314
00:10:54,389 --> 00:10:53,839
so i'd like a kind of a broad answer

315
00:10:57,430 --> 00:10:54,399
about

316
00:10:58,310 --> 00:10:57,440
automation and human interaction and

317
00:11:00,710 --> 00:10:58,320
interface

318
00:11:02,230 --> 00:11:00,720
and where we are with that and what that

319
00:11:06,389 --> 00:11:02,240
all means and chris when are you getting

320
00:11:10,069 --> 00:11:08,150
a great question and now if we had been

321
00:11:10,550 --> 00:11:10,079
on board i'm not to say that nothing

322
00:11:12,949 --> 00:11:10,560
would have

323
00:11:14,069 --> 00:11:12,959
gone uh wrong certainly we had some

324
00:11:16,550 --> 00:11:14,079
challenges

325
00:11:18,069 --> 00:11:16,560
but crew brings a different capability

326
00:11:21,269 --> 00:11:18,079
as spanky mentioned

327
00:11:24,550 --> 00:11:21,279
and so what you'll see with starliner

328
00:11:26,630 --> 00:11:24,560
is that it's an incredible jump in

329
00:11:27,430 --> 00:11:26,640
technology as far as automation goes

330
00:11:29,430 --> 00:11:27,440
it's a very

331
00:11:30,630 --> 00:11:29,440
robust spacecraft with a ton of

332
00:11:31,750 --> 00:11:30,640
capability

333
00:11:33,910 --> 00:11:31,760
someday we're going to get to the point

334
00:11:35,350 --> 00:11:33,920
where that spacecraft flies the mission

335
00:11:37,350 --> 00:11:35,360
all with the automation and no

336
00:11:39,910 --> 00:11:37,360
interaction from crew we're not quite

337
00:11:41,030 --> 00:11:39,920
there yet so part of our mission as test

338
00:11:42,949 --> 00:11:41,040

pilots on board

339
00:11:44,069 --> 00:11:42,959
the first experimental test flight of

340
00:11:46,470 --> 00:11:44,079
this new spacecraft

341
00:11:48,389 --> 00:11:46,480
is to test out those backup systems so

342
00:11:49,509 --> 00:11:48,399
we will turn off the automation we'll

343
00:11:51,750 --> 00:11:49,519
take over manually

344
00:11:53,110 --> 00:11:51,760
we will fly the spacecraft we will test

345
00:11:55,190 --> 00:11:53,120
out that backup system

346
00:11:56,550 --> 00:11:55,200
so that for future crews in the case

347
00:11:57,350 --> 00:11:56,560
that they have a problem with the

348
00:11:58,949 --> 00:11:57,360
automation

349
00:12:00,550 --> 00:11:58,959
we have confidence that the backup

350
00:12:03,430 --> 00:12:00,560
systems will work so that's

351
00:12:03,910 --> 00:12:03,440
all part of the building process and the

352
00:12:07,430 --> 00:12:03,920
rigor

353
00:12:10,150 --> 00:12:07,440
and tests that we do for spaceflight

354
00:12:11,750 --> 00:12:10,160
and as for being back in the rotation uh

355
00:12:12,949 --> 00:12:11,760
primary job number one

356
00:12:14,550 --> 00:12:12,959
let's get these guys up the space

357
00:12:15,829 --> 00:12:14,560
station get them back safely and then

358
00:12:17,269 --> 00:12:15,839
we'll we'll see where things go from

359
00:12:18,710 --> 00:12:17,279
there

360
00:12:20,629 --> 00:12:18,720
great and we have a question from

361
00:12:22,710 --> 00:12:20,639
facebook now so what will the sensors on

362
00:12:24,550 --> 00:12:22,720
rosie the rocketeer be monitoring in

363
00:12:26,230 --> 00:12:24,560

regards to how the flight will affect

364
00:12:28,629 --> 00:12:26,240
the astronauts

365
00:12:30,470 --> 00:12:28,639
okay i'll take that one um so on our

366
00:12:32,310 --> 00:12:30,480
very first test flight we did have rosie

367
00:12:33,269 --> 00:12:32,320
well instrumented we collected the data

368
00:12:35,269 --> 00:12:33,279
that we needed

369
00:12:37,350 --> 00:12:35,279
uh we processed the data and and it was

370
00:12:39,269 --> 00:12:37,360
it was actually very good

371
00:12:41,269 --> 00:12:39,279
rosie's predominant job on this flight

372
00:12:42,310 --> 00:12:41,279
is to be essentially a weight and

373
00:12:43,990 --> 00:12:42,320
balance machine

374
00:12:45,670 --> 00:12:44,000
uh we do not have her instrumented we

375
00:12:47,110 --> 00:12:45,680
will not be getting any instrumentation

376
00:12:49,350 --> 00:12:47,120
data off of her

377
00:12:51,269 --> 00:12:49,360
but she is there to essentially maintain

378
00:12:51,990 --> 00:12:51,279
a good weight in balance as if a crew

379
00:12:54,870 --> 00:12:52,000
member

380
00:12:58,550 --> 00:12:54,880
were really there so she's uh her job is

381
00:13:00,790 --> 00:12:58,560
is largely to just enjoy the ride

382
00:13:02,710 --> 00:13:00,800
great let's take one from the room now

383
00:13:04,949 --> 00:13:02,720
amy from space.com so

384
00:13:06,310 --> 00:13:04,959
my question is for any one of you three

385
00:13:09,190 --> 00:13:06,320
if you want to answer

386
00:13:10,790 --> 00:13:09,200
what has your role been in the past 18

387
00:13:14,470 --> 00:13:10,800
months in getting this

388
00:13:16,790 --> 00:13:14,480

capsule ready for reflight

389
00:13:17,829 --> 00:13:16,800
well i would say that all of us like

390
00:13:19,670 --> 00:13:17,839
like mike mentioned when

391
00:13:21,350 --> 00:13:19,680
we started out we are flight testers

392
00:13:22,949 --> 00:13:21,360
that's what what we trained for back

393
00:13:25,190 --> 00:13:22,959
when we're in our various services

394
00:13:26,710 --> 00:13:25,200
and have to have the opportunity to take

395
00:13:28,949 --> 00:13:26,720
place in the first flight

396
00:13:30,389 --> 00:13:28,959
of a spacecraft i mean none of us would

397
00:13:32,069 --> 00:13:30,399
have ever dreamed that we'd be sitting

398
00:13:33,750 --> 00:13:32,079
in these positions none of us

399
00:13:35,910 --> 00:13:33,760
so it's fascinating and we're in the

400
00:13:37,190 --> 00:13:35,920
siem obviously it's a new spacecraft new

401
00:13:39,269 --> 00:13:37,200
systems new software

402
00:13:41,030 --> 00:13:39,279
you find things here and there that are

403
00:13:42,629 --> 00:13:41,040
not working exactly perfectly

404
00:13:44,470 --> 00:13:42,639
and that's what flight test does we go

405
00:13:45,110 --> 00:13:44,480
through those processes identify the

406
00:13:49,829 --> 00:13:45,120
problems

407
00:13:52,069 --> 00:13:49,839
it's a fascinating wonderful place to be

408
00:13:53,590 --> 00:13:52,079
uh at this point and we're just excited

409
00:13:55,350 --> 00:13:53,600
that uh that we have the opportunity

410
00:13:56,870 --> 00:13:55,360
obviously

411
00:14:00,710 --> 00:13:56,880
okay we have one question on the phone

412
00:14:03,269 --> 00:14:00,720
this is jackie goddard times of london

413
00:14:04,310 --> 00:14:03,279

yes hello thank you my question is for

414
00:14:06,470 --> 00:14:04,320
chris ferguson

415
00:14:07,750 --> 00:14:06,480
um firstly no woman wants to just be

416
00:14:08,949 --> 00:14:07,760
called weight and balance in a

417
00:14:12,150 --> 00:14:08,959
spacecraft

418
00:14:15,189 --> 00:14:12,160
um uh but uh poor old rosie um

419
00:14:16,230 --> 00:14:15,199
but initially you were lined up um to

420
00:14:18,389 --> 00:14:16,240
fly

421
00:14:19,590 --> 00:14:18,399
on the first crude mission and and then

422
00:14:22,629 --> 00:14:19,600
you made that switch

423
00:14:22,949 --> 00:14:22,639
and i wondered what it feels like um to

424
00:14:25,990 --> 00:14:22,959
be

425
00:14:27,750 --> 00:14:26,000
now on the more uh terrestrial side of

426
00:14:29,350 --> 00:14:27,760
preparing for that

427
00:14:30,949 --> 00:14:29,360
whether you find yourself being a little

428
00:14:32,949 --> 00:14:30,959
um envious um

429
00:14:35,030 --> 00:14:32,959
and and how that has changed the dynamic

430
00:14:37,430 --> 00:14:35,040
for you thank you very much

431
00:14:38,069 --> 00:14:37,440
uh that's a great question i can tell

432
00:14:41,110 --> 00:14:38,079
you that

433
00:14:42,710 --> 00:14:41,120
uh within two weeks of launch um i

434
00:14:44,949 --> 00:14:42,720
enjoyed wearing one of those flight

435
00:14:48,310 --> 00:14:44,959
suits more than

436
00:14:49,430 --> 00:14:48,320
more than one of these it's a it's it's

437
00:14:51,030 --> 00:14:49,440
a little more hectic

438
00:14:52,949 --> 00:14:51,040

right you're worried about a lot of the

439
00:14:56,230 --> 00:14:52,959
details uh and

440
00:14:58,150 --> 00:14:56,240
you know there's a pretty pretty good

441
00:15:00,069 --> 00:14:58,160
elevation of i'll just call it general

442
00:15:03,189 --> 00:15:00,079
work hours you know in the month and

443
00:15:04,230 --> 00:15:03,199
the weeks leading to flight um but uh i

444
00:15:06,310 --> 00:15:04,240
enjoy that job

445
00:15:07,590 --> 00:15:06,320
uh just as much and we're very proud of

446
00:15:09,189 --> 00:15:07,600
our crew and looking forward to seeing

447
00:15:10,550 --> 00:15:09,199
them go fly

448
00:15:13,509 --> 00:15:10,560
great all right someone else from the

449
00:15:14,230 --> 00:15:13,519
room here hey thank you uh joey roulette

450
00:15:16,470 --> 00:15:14,240
with the verge

451
00:15:17,910 --> 00:15:16,480
um question for the starliner astronauts

452
00:15:18,470 --> 00:15:17,920
similar to one that was already asked

453
00:15:20,310 --> 00:15:18,480
but

454
00:15:22,470 --> 00:15:20,320
how much more engaged were you this time

455
00:15:22,870 --> 00:15:22,480
around in the starliner preparations

456
00:15:26,710 --> 00:15:22,880
than

457
00:15:28,550 --> 00:15:26,720
you were before the 2019 test

458
00:15:30,790 --> 00:15:28,560
i'd like to say that we um we were

459
00:15:33,829 --> 00:15:30,800
engaged then and we're engaged now

460
00:15:37,189 --> 00:15:33,839
and uh and we'll continue to be engaged

461
00:15:40,790 --> 00:15:37,199
for our flight uh to be honest the

462
00:15:43,269 --> 00:15:40,800
first oft and oft2 you know the

463
00:15:44,790 --> 00:15:43,279

the team at boeing and uh the mission

464
00:15:47,189 --> 00:15:44,800
operations that are happening

465
00:15:48,949 --> 00:15:47,199
in houston texas you know that team is

466
00:15:51,110 --> 00:15:48,959
ready to go they're operators

467
00:15:52,069 --> 00:15:51,120
they're used to working with automation

468
00:15:53,430 --> 00:15:52,079
and they're used to

469
00:15:55,189 --> 00:15:53,440
under they totally understand the

470
00:15:57,269 --> 00:15:55,199
spacecraft then you add

471
00:15:58,790 --> 00:15:57,279
what chris ferguson and his team bring

472
00:16:00,790 --> 00:15:58,800
to the mission management so if they

473
00:16:02,389 --> 00:16:00,800
have to make big decisions in real time

474
00:16:04,069 --> 00:16:02,399
they're ready to go so we are part of

475
00:16:06,230 --> 00:16:04,079
that those teams um

476
00:16:08,470 --> 00:16:06,240
we've made contributions and we've been

477
00:16:10,150 --> 00:16:08,480
in lots of simulations to help get

478
00:16:13,030 --> 00:16:10,160
everybody trained so we're we're

479
00:16:13,509 --> 00:16:13,040
there the the whole team is ready just

480
00:16:15,670 --> 00:16:13,519
one more

481
00:16:17,269 --> 00:16:15,680
follow-up how was the end-to-end test i

482
00:16:18,710 --> 00:16:17,279
know i think you guys participated in

483
00:16:19,350 --> 00:16:18,720
that if you could kind of give just like

484
00:16:21,430 --> 00:16:19,360
a general

485
00:16:22,389 --> 00:16:21,440
like scope of how many more like hours

486
00:16:24,230 --> 00:16:22,399
you might have put in

487
00:16:25,430 --> 00:16:24,240
in this time around or if there's any

488
00:16:28,629 --> 00:16:25,440

kind of major difference

489
00:16:29,030 --> 00:16:28,639
thanks yeah uh chris can can add because

490
00:16:30,710 --> 00:16:29,040
uh

491
00:16:32,470 --> 00:16:30,720
this was definitely a bowling event but

492
00:16:34,069 --> 00:16:32,480
from what what we as a crew saw the

493
00:16:36,150 --> 00:16:34,079
endan test was great we

494
00:16:38,310 --> 00:16:36,160
we the software you know we started

495
00:16:40,710 --> 00:16:38,320
running it you know hours before

496
00:16:41,910 --> 00:16:40,720
launch kind of where we are now um and

497
00:16:44,069 --> 00:16:41,920
all the way through

498
00:16:45,590 --> 00:16:44,079
landing and that included docking to the

499
00:16:48,230 --> 00:16:45,600
international space station

500
00:16:49,990 --> 00:16:48,240
uh there were a few uh pre-planned

501
00:16:51,829 --> 00:16:50,000
malfunctions to make sure that the

502
00:16:53,189 --> 00:16:51,839
fault detection and isolation software

503
00:16:55,189 --> 00:16:53,199
would work and

504
00:16:57,269 --> 00:16:55,199
it was super smooth and that's how we

505
00:16:58,470 --> 00:16:57,279
want our software to work

506
00:17:00,150 --> 00:16:58,480
and chris this is probably a question

507
00:17:00,629 --> 00:17:00,160
for you from twitter does starliner

508
00:17:02,870 --> 00:17:00,639
support

509
00:17:03,990 --> 00:17:02,880
automatic docking to the iss or the

510
00:17:06,870 --> 00:17:04,000
astronauts have to operate

511
00:17:07,909 --> 00:17:06,880
that manually uh it fully supports

512
00:17:10,150 --> 00:17:07,919
automated docking

513
00:17:11,350 --> 00:17:10,160

um that said uh the astronauts can take

514
00:17:13,990 --> 00:17:11,360
over at any time

515
00:17:16,069 --> 00:17:14,000
uh and uh and also using the onboard

516
00:17:18,789 --> 00:17:16,079
what we call relative navigation system

517
00:17:20,870 --> 00:17:18,799
uh dock as well so uh there we can we

518
00:17:22,069 --> 00:17:20,880
can uh we can work it either way

519
00:17:23,590 --> 00:17:22,079
okay we'll do one from the phone and

520
00:17:24,230 --> 00:17:23,600
then we'll head to a couple people here

521
00:17:25,990 --> 00:17:24,240
in the room

522
00:17:28,870 --> 00:17:26,000
so we have paul brinkman with united

523
00:17:31,029 --> 00:17:28,880
press international

524
00:17:31,990 --> 00:17:31,039
hi yeah thanks for for taking my

525
00:17:33,270 --> 00:17:32,000
question um

526
00:17:34,870 --> 00:17:33,280
i don't know about any of you but as a

527
00:17:36,549 --> 00:17:34,880
journalist i'm sort of having a sense of

528
00:17:37,909 --> 00:17:36,559
deja vu

529
00:17:40,150 --> 00:17:37,919
because there was a lot of confidence

530
00:17:40,710 --> 00:17:40,160
and excitement um you know before the

531
00:17:42,789 --> 00:17:40,720
last

532
00:17:44,310 --> 00:17:42,799
test flight in 2019 so i'm just

533
00:17:44,789 --> 00:17:44,320
wondering if any of you are feeling that

534
00:17:48,070 --> 00:17:44,799
i guess

535
00:17:51,350 --> 00:17:48,080
for nicole or chris and specifically

536
00:17:54,710 --> 00:17:51,360
um any of the lessons learned from that

537
00:17:56,950 --> 00:17:54,720
investigation uh of that mishap

538
00:17:58,710 --> 00:17:56,960

were those applied at all to these

539
00:18:00,470 --> 00:17:58,720
readiness reviews or is that all just

540
00:18:03,909 --> 00:18:00,480
like ancient history i guess

541
00:18:06,070 --> 00:18:03,919
thanks well it's certainly not

542
00:18:07,430 --> 00:18:06,080
ancient history um you know i think many

543
00:18:09,669 --> 00:18:07,440
of you are aware there was an

544
00:18:10,549 --> 00:18:09,679
an independent review team uh that was

545
00:18:13,590 --> 00:18:10,559
assembled uh

546
00:18:15,430 --> 00:18:13,600
after after the first oft flight they've

547
00:18:16,950 --> 00:18:15,440
they came out with 80 recommendations

548
00:18:20,390 --> 00:18:16,960
that they recommended that

549
00:18:22,150 --> 00:18:20,400
we implement a significant uh

550
00:18:23,510 --> 00:18:22,160
significantly less portion i think it

551
00:18:25,270 --> 00:18:23,520
was about 25 percent of them were

552
00:18:27,909 --> 00:18:25,280
considered mandatory

553
00:18:29,350 --> 00:18:27,919
uh boeing went and and we fixed everyone

554
00:18:31,029 --> 00:18:29,360
we addressed everyone

555
00:18:32,950 --> 00:18:31,039
uh you know we want this next flight to

556
00:18:35,590 --> 00:18:32,960
be as uh to be as uh

557
00:18:36,070 --> 00:18:35,600
uh i will call it uh you know incident

558
00:18:39,190 --> 00:18:36,080
free

559
00:18:41,510 --> 00:18:39,200
uh as clean as it can possibly be uh

560
00:18:43,110 --> 00:18:41,520
we there is some uh indication made

561
00:18:43,909 --> 00:18:43,120
about an indian test we called it the

562
00:18:46,950 --> 00:18:43,919
acel

563
00:18:49,510 --> 00:18:46,960

mission rehearsal amr uh it it ran

564
00:18:51,430 --> 00:18:49,520
from launch minus 30 hours all the way

565
00:18:54,070 --> 00:18:51,440
through touchdown plus a couple hours

566
00:18:56,230 --> 00:18:54,080
it was a 100 hour plus simulation

567
00:18:57,510 --> 00:18:56,240
something we had never done and what

568
00:18:59,350 --> 00:18:57,520
that did is it stitched

569
00:19:00,789 --> 00:18:59,360
together every element of the mission

570
00:19:03,029 --> 00:19:00,799
that we had previously tested

571
00:19:04,310 --> 00:19:03,039
thoroughly but independently and gave us

572
00:19:06,470 --> 00:19:04,320
an opportunity to see

573
00:19:07,590 --> 00:19:06,480
really how the vehicle performs uh over

574
00:19:10,470 --> 00:19:07,600
the full duration

575
00:19:12,230 --> 00:19:10,480
of an entire mission so we have really

576
00:19:15,190 --> 00:19:12,240
i'll call it thoroughly dug into

577
00:19:16,150 --> 00:19:15,200
tested and verified hundreds of times

578
00:19:18,150 --> 00:19:16,160
you know the independent

579
00:19:19,990 --> 00:19:18,160
uh the software code to ensure that it

580
00:19:21,590 --> 00:19:20,000
performs exactly the way we intend on

581
00:19:22,870 --> 00:19:21,600
oft2

582
00:19:24,789 --> 00:19:22,880
we'll take two questions from the room

583
00:19:25,590 --> 00:19:24,799
here thank you sorry rosenstein with

584
00:19:27,750 --> 00:19:25,600
talking space

585
00:19:29,110 --> 00:19:27,760
um chris you talked earlier about all

586
00:19:29,750 --> 00:19:29,120
the different changes that have been

587
00:19:32,230 --> 00:19:29,760
made

588
00:19:33,510 --> 00:19:32,240

uh to the starliner capsule so i guess

589
00:19:35,190 --> 00:19:33,520
which system

590
00:19:36,710 --> 00:19:35,200
from the ground are you in particular

591
00:19:37,430 --> 00:19:36,720
looking to see the most from and for the

592
00:19:39,110 --> 00:19:37,440
crew

593
00:19:40,549 --> 00:19:39,120
which systems will you guys be really

594
00:19:41,350 --> 00:19:40,559
trying to focus on during this test

595
00:19:44,950 --> 00:19:41,360
flight ahead of

596
00:19:46,470 --> 00:19:44,960
your eventual flights so i'll keep it

597
00:19:47,029 --> 00:19:46,480
real short one thing i'm very interested

598
00:19:48,310 --> 00:19:47,039
in uh

599
00:19:50,230 --> 00:19:48,320
i think most of you are aware we're

600
00:19:52,630 --> 00:19:50,240
flying with a fully up abort

601
00:19:53,830 --> 00:19:52,640
capable system this time we had mass

602
00:19:55,510 --> 00:19:53,840
simulators

603
00:19:57,510 --> 00:19:55,520
for the for the portion of the abort

604
00:19:59,430 --> 00:19:57,520
system for oft-1

605
00:20:01,510 --> 00:19:59,440
um interested in c you know of course we

606
00:20:03,750 --> 00:20:01,520
don't never plan to use the abort system

607
00:20:05,590 --> 00:20:03,760
however we will not be able to monitor

608
00:20:07,909 --> 00:20:05,600
its performance and ensure that you know

609
00:20:10,710 --> 00:20:07,919
we don't see anything unexpected

610
00:20:12,070 --> 00:20:10,720
and then sort of to me we also have an

611
00:20:13,669 --> 00:20:12,080
entry cover uh we're

612
00:20:15,909 --> 00:20:13,679
you know a way to protect the docking

613
00:20:17,110 --> 00:20:15,919

mechanism for the heat of reentry

614
00:20:18,870 --> 00:20:17,120
this will be the first time that we're

615
00:20:20,789 --> 00:20:18,880
using an entry cover entry cover has to

616
00:20:22,630 --> 00:20:20,799
be opened once we get on orbit and then

617
00:20:24,470 --> 00:20:22,640
closed uh prior to landing so those are

618
00:20:26,310 --> 00:20:24,480
the two biggies for me

619
00:20:27,590 --> 00:20:26,320
okay and another oh i'm so sorry i think

620
00:20:29,190 --> 00:20:27,600
from a crew perspective

621
00:20:31,190 --> 00:20:29,200
the second part of that question is

622
00:20:32,870 --> 00:20:31,200
we'll be really focused on the portion

623
00:20:35,029 --> 00:20:32,880
of the mission that we did not

624
00:20:36,870 --> 00:20:35,039
get a chance to accomplish on oft so

625
00:20:37,669 --> 00:20:36,880
specifically that's the rendezvous and

626
00:20:39,110 --> 00:20:37,679
docking

627
00:20:41,510 --> 00:20:39,120
we'll be looking at the relative

628
00:20:44,230 --> 00:20:41,520
navigation system vesta is a series of

629
00:20:46,230 --> 00:20:44,240
cameras that provides us that capability

630
00:20:48,149 --> 00:20:46,240
so we're excited to see from the crew

631
00:20:48,950 --> 00:20:48,159
displays what's that actually going to

632
00:20:51,029 --> 00:20:48,960
look like

633
00:20:52,390 --> 00:20:51,039
vice just what we have in the simulators

634
00:20:54,630 --> 00:20:52,400
of course docking and then

635
00:20:56,310 --> 00:20:54,640
undocking as the other major components

636
00:20:58,310 --> 00:20:56,320
of this test that we'll specifically be

637
00:21:01,270 --> 00:20:58,320
watching

638
00:21:02,950 --> 00:21:01,280

go ahead can cramer space up close

639
00:21:04,070 --> 00:21:02,960
thanks uh good luck on the mission for

640
00:21:05,590 --> 00:21:04,080
the crew

641
00:21:07,430 --> 00:21:05,600
um we were here a couple of weeks ago

642
00:21:09,830 --> 00:21:07,440
and you you arrived with the booster i'm

643
00:21:12,070 --> 00:21:09,840
wondering if you got any more clarity

644
00:21:13,510 --> 00:21:12,080
on how long your mission might be a

645
00:21:14,789 --> 00:21:13,520
couple of days couple of months you

646
00:21:18,230 --> 00:21:14,799
didn't have too much

647
00:21:20,789 --> 00:21:18,240
uh clarity on that and how much science

648
00:21:23,190 --> 00:21:20,799
are you training are you doing to carry

649
00:21:25,110 --> 00:21:23,200
out experiments on the iss if it might

650
00:21:27,270 --> 00:21:25,120
be a longer mission well i can tell you

651
00:21:29,750 --> 00:21:27,280
that we are completely fully trained

652
00:21:30,390 --> 00:21:29,760
to do a full up mission six months or

653
00:21:31,510 --> 00:21:30,400
longer

654
00:21:33,590 --> 00:21:31,520
as long as the spacecraft i think the

655
00:21:35,190 --> 00:21:33,600
spacecraft's ready for like 220 days

656
00:21:36,630 --> 00:21:35,200
uh attached to the space station so

657
00:21:37,350 --> 00:21:36,640
we're fully trained and ready to go and

658
00:21:39,909 --> 00:21:37,360
do that but

659
00:21:41,029 --> 00:21:39,919
our focus is obviously very broad but

660
00:21:43,270 --> 00:21:41,039
our detailed focus

661
00:21:45,430 --> 00:21:43,280
is on this flight it is an experimental

662
00:21:47,350 --> 00:21:45,440
test flight and that's what our focus is

663
00:21:49,029 --> 00:21:47,360

and if it's uh eight days or eight

664
00:21:50,230 --> 00:21:49,039
months whatever it winds up being that's

665
00:21:52,149 --> 00:21:50,240
that's what we're gonna what

666
00:21:53,990 --> 00:21:52,159
what we are prepared to to do and

667
00:21:55,830 --> 00:21:54,000
accomplish so flight tests

668
00:21:57,430 --> 00:21:55,840
what the objectives that we have set in

669
00:21:59,669 --> 00:21:57,440
front of us are the key

670
00:22:01,270 --> 00:21:59,679
for this and honestly wherever we fit in

671
00:22:02,789 --> 00:22:01,280
is where we'll go it depends on the

672
00:22:03,990 --> 00:22:02,799
needs of the space station as far as

673
00:22:06,230 --> 00:22:04,000
duration of the mission

674
00:22:07,750 --> 00:22:06,240
so if the space station needs us uh for

675
00:22:09,029 --> 00:22:07,760
a couple months that's what it'll be if

676
00:22:10,070 --> 00:22:09,039
it needs us for six months that's what

677
00:22:11,430 --> 00:22:10,080
it'll be if you don't if it really

678
00:22:13,270 --> 00:22:11,440
doesn't need us at the time but it's a

679
00:22:15,110 --> 00:22:13,280
good window to go to the space station

680
00:22:16,310 --> 00:22:15,120
and it just becomes a test flight

681
00:22:18,390 --> 00:22:16,320
that'll be fine with us

682
00:22:20,230 --> 00:22:18,400
but that includes the science we we

683
00:22:22,390 --> 00:22:20,240
fully support jennifer and her team

684
00:22:23,669 --> 00:22:22,400
on the science program where uh trained

685
00:22:25,270 --> 00:22:23,679
up in

686
00:22:27,270 --> 00:22:25,280
all the science programs goes as we get

687
00:22:28,549 --> 00:22:27,280
closer to our our launch date

688
00:22:30,070 --> 00:22:28,559

and we know what exactly what

689
00:22:31,350 --> 00:22:30,080
experiments are going to be the focus

690
00:22:32,950 --> 00:22:31,360
we'll get the extra training

691
00:22:34,789 --> 00:22:32,960
again not to interfere with our our

692
00:22:37,590 --> 00:22:34,799
flight test like butch said but

693
00:22:39,669 --> 00:22:37,600
we're definitely a science crew and just

694
00:22:39,990 --> 00:22:39,679
to comment on a standard crew expedition

695
00:22:43,270 --> 00:22:40,000
we

696
00:22:46,630 --> 00:22:43,280
do anywhere up to about 300 experiments

697
00:22:50,630 --> 00:22:48,070
this question's from social it's from an

698
00:22:52,549 --> 00:22:50,640
11 year old from north carolina he wants

699
00:22:53,669 --> 00:22:52,559
to know how long the training process is

700
00:22:55,909 --> 00:22:53,679
before you launch

701
00:22:58,710 --> 00:22:55,919
also what is the fastest speeds you'll

702
00:23:03,350 --> 00:23:01,110
so that training process starts the day

703
00:23:05,270 --> 00:23:03,360
you show up at nasa and it never stops

704
00:23:06,789 --> 00:23:05,280
but it's really exciting it's some of

705
00:23:08,070 --> 00:23:06,799
the coolest training and learning that

706
00:23:09,669 --> 00:23:08,080
you'll ever do

707
00:23:11,350 --> 00:23:09,679
specifically for a mission training

708
00:23:13,990 --> 00:23:11,360
starts about two years

709
00:23:15,669 --> 00:23:14,000
prior um to your launch to train

710
00:23:17,510 --> 00:23:15,679
specifically what you'll be doing on

711
00:23:18,789 --> 00:23:17,520
that mission if it's a spacewalk or

712
00:23:21,110 --> 00:23:18,799
science or in our case

713
00:23:23,350 --> 00:23:21,120

an experimental test flight but that

714
00:23:24,950 --> 00:23:23,360
that training continues the entire time

715
00:23:26,630 --> 00:23:24,960
uh fortunately coming back home we're

716
00:23:28,390 --> 00:23:26,640
going to reach just over 25

717
00:23:29,990 --> 00:23:28,400
mach so uh that's going to be the

718
00:23:31,110 --> 00:23:30,000
fastest eyes i've ever gone and these

719
00:23:32,549 --> 00:23:31,120
gentlemen have flown

720
00:23:33,990 --> 00:23:32,559
flown before but we're looking forward

721
00:23:34,310 --> 00:23:34,000
to those speeds you get a patch if you

722
00:23:37,190 --> 00:23:34,320
fly

723
00:23:38,390 --> 00:23:37,200
25 mach and uh we and you'll see the

724
00:23:40,149 --> 00:23:38,400
astronauts uh

725
00:23:41,190 --> 00:23:40,159
traditionally have them those have flown

726
00:23:41,909 --> 00:23:41,200
i think butch you're wearing your

727
00:23:43,990 --> 00:23:41,919
shuttle one

728
00:23:45,990 --> 00:23:44,000
i'm wearing my soyuz one and we have a

729
00:23:47,350 --> 00:23:46,000
new patch that has a starliner on it but

730
00:23:49,430 --> 00:23:47,360
we're not allowed to wear it until we

731
00:23:51,350 --> 00:23:49,440
go mach 25. i'm looking forward to

732
00:23:52,950 --> 00:23:51,360
watching duke go mach 25 for the first

733
00:23:53,700 --> 00:23:52,960
time i've got a spot for it on my flight

734
00:23:55,830 --> 00:23:53,710
suit so i'm ready

735
00:23:57,190 --> 00:23:55,840
[Laughter]

736
00:23:58,470 --> 00:23:57,200
all right we have one more on social and

737
00:24:00,310 --> 00:23:58,480
then i do see we have two or three in

738
00:24:02,149 --> 00:24:00,320

the room here uh so the one on social is

739
00:24:04,630 --> 00:24:02,159
how will starliner contribute to the

740
00:24:09,750 --> 00:24:04,640
future of space exploration and continue

741
00:24:12,870 --> 00:24:11,669
nicole you got a good answer for that

742
00:24:14,710 --> 00:24:12,880
well i think

743
00:24:16,070 --> 00:24:14,720
i'll answer from the first part of the

744
00:24:16,789 --> 00:24:16,080
we talked a little bit about the big

745
00:24:19,029 --> 00:24:16,799
mission

746
00:24:20,070 --> 00:24:19,039
of how starliner fits into human

747
00:24:22,470 --> 00:24:20,080
exploration right

748
00:24:24,070 --> 00:24:22,480
this is a huge component to returning

749
00:24:25,750 --> 00:24:24,080
this launch capability from

750
00:24:28,310 --> 00:24:25,760
the united states and having this

751
00:24:29,830 --> 00:24:28,320
sustained dissimilar redundancy between

752
00:24:32,070 --> 00:24:29,840
spacex and boeing and so that

753
00:24:33,510 --> 00:24:32,080
we're not reliant on just one company to

754
00:24:34,630 --> 00:24:33,520
get astronauts to the international

755
00:24:37,430 --> 00:24:34,640
space station

756
00:24:38,870 --> 00:24:37,440
and as we look at low earth orbit you've

757
00:24:41,350 --> 00:24:38,880
seen a lot of commercial

758
00:24:42,070 --> 00:24:41,360
launches recently you're going to see

759
00:24:44,230 --> 00:24:42,080
more

760
00:24:45,269 --> 00:24:44,240
folks in low earth orbit that are not

761
00:24:47,909 --> 00:24:45,279
nasa astronauts

762
00:24:49,350 --> 00:24:47,919
that's great this is this is goodness i

763
00:24:51,590 --> 00:24:49,360

think for the younger generation

764
00:24:53,190 --> 00:24:51,600
they're going to see scientists

765
00:24:55,350 --> 00:24:53,200
engineers maybe journalists

766
00:24:57,110 --> 00:24:55,360
in space and they're going to be able to

767
00:24:58,070 --> 00:24:57,120
capture the amazement of space and

768
00:25:00,070 --> 00:24:58,080
they're going to be able

769
00:25:01,590 --> 00:25:00,080
to share these experiences and the

770
00:25:04,230 --> 00:25:01,600
things that we learn

771
00:25:05,190 --> 00:25:04,240
better so than than astronauts are able

772
00:25:07,029 --> 00:25:05,200
to do so

773
00:25:08,789 --> 00:25:07,039
and i think for these kids that they are

774
00:25:09,269 --> 00:25:08,799
going to see that there's opportunities

775
00:25:11,510 --> 00:25:09,279
for them

776
00:25:13,430 --> 00:25:11,520
in space in whichever capacity that they

777
00:25:15,430 --> 00:25:13,440
would like to participate

778
00:25:16,950 --> 00:25:15,440
and so hopefully they'll realize that a

779
00:25:18,390 --> 00:25:16,960
lot of these barriers or maybe

780
00:25:20,149 --> 00:25:18,400
limitations from the past are being

781
00:25:22,470 --> 00:25:20,159
broken down and the opportunities

782
00:25:24,470 --> 00:25:22,480
are there for the taking it will also

783
00:25:26,630 --> 00:25:24,480
increase our science capability

784
00:25:28,710 --> 00:25:26,640
quite a bit which i think jennifer would

785
00:25:31,590 --> 00:25:28,720
probably be best suited to touch on

786
00:25:32,149 --> 00:25:31,600
yeah absolutely so again we talked

787
00:25:35,029 --> 00:25:32,159
earlier

788
00:25:35,430 --> 00:25:35,039

you know we having more crew on orbit

789
00:25:39,110 --> 00:25:35,440
and

790
00:25:40,630 --> 00:25:39,120
can do more science we really do a wide

791
00:25:42,549 --> 00:25:40,640
variety of science

792
00:25:44,149 --> 00:25:42,559
so we do experiments and everything from

793
00:25:46,710 --> 00:25:44,159
human research to

794
00:25:47,909 --> 00:25:46,720
fluid physics to technology

795
00:25:50,549 --> 00:25:47,919
demonstrations

796
00:25:52,470 --> 00:25:50,559
life sciences as well as education so

797
00:25:53,909 --> 00:25:52,480
that is a component of our mission

798
00:25:55,350 --> 00:25:53,919
and so students have been very

799
00:25:57,029 --> 00:25:55,360
successful in student involved

800
00:25:58,149 --> 00:25:57,039
experiments on iss to date

801
00:26:00,789 --> 00:25:58,159
and i look forward to seeing that

802
00:26:02,950 --> 00:26:00,799
increase yeah very bright future for all

803
00:26:04,390 --> 00:26:02,960
of us okay one in the room here

804
00:26:06,070 --> 00:26:04,400
chris get part with nasa space flight

805
00:26:07,269 --> 00:26:06,080
for chris ferguson um

806
00:26:09,990 --> 00:26:07,279
one of the other things that popped up

807
00:26:11,269 --> 00:26:10,000
on oft was a communications issue

808
00:26:12,630 --> 00:26:11,279
some sort of interference with

809
00:26:14,390 --> 00:26:12,640
communication system i'm just wondering

810
00:26:15,269 --> 00:26:14,400
what was the ultimate root cause of that

811
00:26:18,070 --> 00:26:15,279
investigation

812
00:26:19,510 --> 00:26:18,080
and what were the fixes yeah so there

813
00:26:20,870 --> 00:26:19,520

were a couple

814
00:26:23,750 --> 00:26:20,880
you know one of them had to do with

815
00:26:25,430 --> 00:26:23,760
locking on to a bad tdrs frequency

816
00:26:27,590 --> 00:26:25,440
we've got plenty of mitigations in place

817
00:26:28,470 --> 00:26:27,600
for that in fact for the crude flight

818
00:26:31,510 --> 00:26:28,480
test

819
00:26:33,350 --> 00:26:31,520
we are going to uh roll on a new what we

820
00:26:34,950 --> 00:26:33,360
call communications transceiver

821
00:26:36,549 --> 00:26:34,960
that is a little more robust and

822
00:26:39,430 --> 00:26:36,559
resistant to that but we have

823
00:26:40,950 --> 00:26:39,440
mitigation ways to detect if we have

824
00:26:42,230 --> 00:26:40,960
what we call a false lock

825
00:26:44,070 --> 00:26:42,240
and we'll break that lock and we'll

826
00:26:46,789 --> 00:26:44,080
reacquire so that's one of them

827
00:26:48,470 --> 00:26:46,799
another one we discovered that we were

828
00:26:50,710 --> 00:26:48,480
really looking a little too close with

829
00:26:52,549 --> 00:26:50,720
our antennas to the earth's horizon

830
00:26:54,310 --> 00:26:52,559
and therefore we were picking up a lot

831
00:26:55,909 --> 00:26:54,320
of interfering frequencies and those

832
00:26:58,310 --> 00:26:55,919
interfering frequencies all full

833
00:26:59,110 --> 00:26:58,320
in the region of cell phones believe it

834
00:27:01,990 --> 00:26:59,120
or not

835
00:27:03,909 --> 00:27:02,000
so we now have actually canted our view

836
00:27:04,549 --> 00:27:03,919
of the rise and we sort of mask out that

837
00:27:07,669 --> 00:27:04,559
noisy

838
00:27:09,990 --> 00:27:07,679

area and we've taken other measures we

839
00:27:11,909 --> 00:27:10,000
we point ourselves in what we call

840
00:27:14,630 --> 00:27:11,919
communications friendly attitudes

841
00:27:15,909 --> 00:27:14,640
to try to make sure that we minimize our

842
00:27:18,630 --> 00:27:15,919
exposure to uh

843
00:27:20,149 --> 00:27:18,640
to to that noise so i think the biggest

844
00:27:20,870 --> 00:27:20,159
thing is for the crew flight test and

845
00:27:22,310 --> 00:27:20,880
subsequence

846
00:27:24,549 --> 00:27:22,320
we're going to roll on a new transceiver

847
00:27:25,590 --> 00:27:24,559
which will really uh permanently put a

848
00:27:28,070 --> 00:27:25,600
lot of these issues

849
00:27:29,830 --> 00:27:28,080
behind us but in the interim we've got a

850
00:27:32,310 --> 00:27:29,840
lot of good measures in place to ensure

851
00:27:33,510 --> 00:27:32,320
we have good calm throughout the flight

852
00:27:35,350 --> 00:27:33,520
great thank you and the last question

853
00:27:36,389 --> 00:27:35,360
from the room here rachel nail with

854
00:27:37,909 --> 00:27:36,399
florida today

855
00:27:40,310 --> 00:27:37,919
this is a little bit of a follow on what

856
00:27:42,070 --> 00:27:40,320
nicole just was talking about um

857
00:27:44,549 --> 00:27:42,080
virgin galactic and blue origin just

858
00:27:45,750 --> 00:27:44,559
flew you know folks on these suborbital

859
00:27:46,710 --> 00:27:45,760
space flights

860
00:27:48,310 --> 00:27:46,720
and there's a little bit of a

861
00:27:49,990 --> 00:27:48,320
controversy should these people be

862
00:27:51,430 --> 00:27:50,000
considered astronauts should they be

863
00:27:53,350 --> 00:27:51,440

called astronauts

864
00:27:54,470 --> 00:27:53,360
i'm very curious what you guys think

865
00:27:56,630 --> 00:27:54,480
about these

866
00:27:58,389 --> 00:27:56,640
passengers that are on these suborbital

867
00:28:00,230 --> 00:27:58,399
space flights you know now and in the

868
00:28:02,549 --> 00:28:00,240
future

869
00:28:04,470 --> 00:28:02,559
i can say that uh we are excited that

870
00:28:05,029 --> 00:28:04,480
more people are coming to space uh just

871
00:28:07,750 --> 00:28:05,039
to

872
00:28:08,710 --> 00:28:07,760
um stand on the shoulders of uh nicole

873
00:28:11,430 --> 00:28:08,720
there is that

874
00:28:12,230 --> 00:28:11,440
you know only 550 people plus or minus

875
00:28:13,750 --> 00:28:12,240
have been

876
00:28:15,830 --> 00:28:13,760
been to space and the more people that

877
00:28:17,110 --> 00:28:15,840
can see our beautiful planet see what

878
00:28:19,430 --> 00:28:17,120
our eyes have seen

879
00:28:20,870 --> 00:28:19,440
the better it off is for all of humanity

880
00:28:22,070 --> 00:28:20,880
and the more companies that we have is

881
00:28:23,909 --> 00:28:22,080
more jobs

882
00:28:25,510 --> 00:28:23,919
for everyone including here on the space

883
00:28:28,070 --> 00:28:25,520
coast so this is all

884
00:28:29,110 --> 00:28:28,080
goodness as nicole said what we call

885
00:28:31,750 --> 00:28:29,120
these people

886
00:28:33,190 --> 00:28:31,760
that's uh that's that's hard to say i

887
00:28:33,909 --> 00:28:33,200
would just say that we called alan

888
00:28:35,750 --> 00:28:33,919

shepard

889
00:28:37,669 --> 00:28:35,760
uh an astronaut when uh he did his

890
00:28:40,549 --> 00:28:37,679
suborbital flight along with gus

891
00:28:41,510 --> 00:28:40,559
on uh mercury atlas or excuse me mercury

892
00:28:44,870 --> 00:28:41,520
redstone

893
00:28:46,470 --> 00:28:44,880
um and uh so uh but uh these people

894
00:28:48,149 --> 00:28:46,480
some folks who go to their are not

895
00:28:50,630 --> 00:28:48,159
professional astronauts like uh

896
00:28:52,070 --> 00:28:50,640
like it's our profession uh so uh what

897
00:28:53,350 --> 00:28:52,080
what to call them is a very good

898
00:28:54,549 --> 00:28:53,360
question

899
00:28:56,870 --> 00:28:54,559
but we're glad that more people are

900
00:28:58,950 --> 00:28:56,880
seeing space

901
00:29:00,149 --> 00:28:58,960
perfect thank you guys so much this uh

902
00:29:01,669 --> 00:29:00,159
brings us to the end of this briefing

903
00:29:02,630 --> 00:29:01,679
thank you to everyone who participated

904
00:29:04,149 --> 00:29:02,640
and asked questions

905
00:29:06,470 --> 00:29:04,159
again a reminder that the launch

906
00:29:07,430 --> 00:29:06,480
tomorrow is targeted for 2 53 p.m

907
00:29:09,190 --> 00:29:07,440
eastern time