BOEING

1
00:00:06,950 --> 00:00:04,710
welcome this morning to nasa's kennedy

2
00:00:09,030 --> 00:00:06,960
space center in florida i'm marie lewis

3
00:00:10,470 --> 00:00:09,040
with nasa public affairs and i'm josh

4
00:00:12,150 --> 00:00:10,480
barrett with boeing communications

5
00:00:13,990 --> 00:00:12,160
starliner is nearly ready for our

6
00:00:15,589 --> 00:00:14,000
uncrewed orbital flight test you can see

7
00:00:17,670 --> 00:00:15,599
it over our shoulders lit up on the

8
00:00:19,269 --> 00:00:17,680
launch pad it's a little windy out but

9
00:00:21,830 --> 00:00:19,279
right now that won't stop liftoff

10
00:00:23,349 --> 00:00:21,840
scheduled for 6 36 a.m eastern time

11
00:00:25,349 --> 00:00:23,359
let's take a look again at the pad

12
00:00:27,109 --> 00:00:25,359
ground crews are currently wrapping up

13
00:00:29,910 --> 00:00:27,119

operations in the white room i want to

14
00:00:32,069 --> 00:00:29,920
take you back to about 4 34 a.m this

15
00:00:33,590 --> 00:00:32,079
morning that's when they actually closed

16
00:00:35,590 --> 00:00:33,600
the hatch inside the white room we

17
00:00:38,150 --> 00:00:35,600
should have some video of them wrapping

18
00:00:40,150 --> 00:00:38,160
up that operation yeah and there you go

19
00:00:42,630 --> 00:00:40,160
there you see it now the the pad team is

20
00:00:45,029 --> 00:00:42,640
actually running about 45 minutes ahead

21
00:00:46,229 --> 00:00:45,039
of schedule which is really awesome news

22
00:00:48,150 --> 00:00:46,239
on their first time doing that yeah

23
00:00:50,470 --> 00:00:48,160
remarkable because this is the first

24
00:00:52,709 --> 00:00:50,480
time um they're doing it for real um

25
00:00:54,229 --> 00:00:52,719
it's so it was so cool i mean this this

26
00:00:55,510 --> 00:00:54,239
video you're seeing was a little bit

27
00:00:56,790 --> 00:00:55,520
earlier this morning like you said

28
00:00:59,670 --> 00:00:56,800
they're ahead of schedule so they're

29
00:01:01,029 --> 00:00:59,680
they've already left the white room but

30
00:01:03,349 --> 00:01:01,039
everything is looking good and there's

31
00:01:05,030 --> 00:01:03,359
no crew flying today but teams are

32
00:01:07,270 --> 00:01:05,040
operating just as if astronauts are on

33
00:01:09,670 --> 00:01:07,280
board now this is a live view you see

34
00:01:11,750 --> 00:01:09,680
the crew still up there on the tower

35
00:01:13,109 --> 00:01:11,760
and we are as we get closer to launch

36
00:01:15,190 --> 00:01:13,119
we're going to see the white room and

37
00:01:17,990 --> 00:01:15,200
the crew access arm start to swing away

38
00:01:19,990 --> 00:01:18,000

from starliner on uh in preparation for

39
00:01:22,310 --> 00:01:20,000
liftoff but there they are making those

40
00:01:24,070 --> 00:01:22,320
final preparations to leave the pad

41
00:01:25,749 --> 00:01:24,080
now this uncrewed test flight is

42
00:01:27,749 --> 00:01:25,759
incredibly important for us to prove

43
00:01:29,670 --> 00:01:27,759
that we can safely fly astronauts to the

44
00:01:32,310 --> 00:01:29,680
international space station this is a

45
00:01:34,630 --> 00:01:32,320
huge day for the entire nasa boeing and

46
00:01:36,630 --> 00:01:34,640
united launch alliance teams since the

47
00:01:38,950 --> 00:01:36,640
space shuttle program ended we've all

48
00:01:41,429 --> 00:01:38,960
been working hard to return human space

49
00:01:43,590 --> 00:01:41,439
flight capability to the united states

50
00:01:45,910 --> 00:01:43,600
we call this effort nasa's commercial

51
00:01:48,389 --> 00:01:45,920
crew program it's a partnership we have

52
00:01:51,350 --> 00:01:48,399
with boeing and spacex and today is

53
00:01:53,749 --> 00:01:51,360
starliner's big debut and our goal is

54
00:01:56,230 --> 00:01:53,759
for everyone watching today to see a

55
00:01:58,230 --> 00:01:56,240
mission as close as possible to a crude

56
00:02:00,230 --> 00:01:58,240
flight and to collect the mountains of

57
00:02:01,830 --> 00:02:00,240
data that we can only learn from flying

58
00:02:03,749 --> 00:02:01,840
it's also the first time our mission

59
00:02:05,510 --> 00:02:03,759
teams have a chance to put starliner

60
00:02:07,429 --> 00:02:05,520
through its paces we've all been

61
00:02:09,589 --> 00:02:07,439
practicing but now as you can see in the

62
00:02:11,350 --> 00:02:09,599
control room it's game day we're really

63
00:02:13,670 --> 00:02:11,360

excited to show you how this all comes

64
00:02:15,270 --> 00:02:13,680
together teams from nasa boeing and ula

65
00:02:17,510 --> 00:02:15,280
all have to be in lockstep to be

66
00:02:19,830 --> 00:02:17,520
successful today we all have people

67
00:02:21,190 --> 00:02:19,840
spread across the country sitting on

68
00:02:23,030 --> 00:02:21,200
console

69
00:02:25,190 --> 00:02:23,040
we have three control rooms here in

70
00:02:27,430 --> 00:02:25,200
florida united launch alliance's atlas

71
00:02:29,350 --> 00:02:27,440
space space flight operations center is

72
00:02:31,030 --> 00:02:29,360
on the cape canaveral air force station

73
00:02:32,790 --> 00:02:31,040
starliners launch control the boeing

74
00:02:34,550 --> 00:02:32,800
mission control center is just across

75
00:02:36,949 --> 00:02:34,560
the street from us here at kennedy and

76
00:02:39,589 --> 00:02:36,959
nasa's emergency operations center is

77
00:02:42,470 --> 00:02:39,599
activated ready to respond at a moment's

78
00:02:44,710 --> 00:02:42,480
notice then in houston at johnson space

79
00:02:46,869 --> 00:02:44,720
center the space station control room is

80
00:02:49,030 --> 00:02:46,879
following the mission closely as well

81
00:02:50,550 --> 00:02:49,040
and starliner's mission control is just

82
00:02:51,910 --> 00:02:50,560
down the hall from that space station

83
00:02:53,509 --> 00:02:51,920
control room that's where flight

84
00:02:56,309 --> 00:02:53,519
controllers are actually commanding the

85
00:02:59,110 --> 00:02:56,319
vehicle right now and finally ula also

86
00:03:00,949 --> 00:02:59,120
has teams in denver monitoring ascent

87
00:03:02,790 --> 00:03:00,959
so we want to check in first with the

88
00:03:04,470 --> 00:03:02,800

atlas launch control team they're just a

89
00:03:06,390 --> 00:03:04,480
few miles away from where we're sitting

90
00:03:08,309 --> 00:03:06,400
here in florida and their job is to make

91
00:03:10,309 --> 00:03:08,319
sure the rocket stays healthy right now

92
00:03:12,149 --> 00:03:10,319
leading up to and during launch we have

93
00:03:14,309 --> 00:03:12,159
united launch alliances dylan rice

94
00:03:16,229 --> 00:03:14,319
monitoring this morning's activities

95
00:03:17,190 --> 00:03:16,239
over in the asoc dylan how is the rocket

96
00:03:19,350 --> 00:03:17,200
doing

97
00:03:20,790 --> 00:03:19,360
hey good morning josh marie things are

98
00:03:22,710 --> 00:03:20,800
great here this morning it's been a

99
00:03:24,149 --> 00:03:22,720
really good morning as you can see the

100
00:03:26,789 --> 00:03:24,159
the team rolled atlas centaur and

101
00:03:28,149 --> 00:03:26,799
starliner out to the pad a day ago teams

102
00:03:29,750 --> 00:03:28,159
have been working overnight to prepare

103
00:03:31,350 --> 00:03:29,760
the vehicle for launch

104
00:03:33,430 --> 00:03:31,360
all of our propellant tanks are loaded

105
00:03:34,949 --> 00:03:33,440
the vehicle is in stable topping while

106
00:03:36,309 --> 00:03:34,959
the the ground crews finish up their

107
00:03:37,430 --> 00:03:36,319
final loading of the cargo on the

108
00:03:38,869 --> 00:03:37,440
starliner

109
00:03:40,229 --> 00:03:38,879
and i understand all that's been

110
00:03:42,149 --> 00:03:40,239
completed now and the team is starting

111
00:03:44,070 --> 00:03:42,159
to close out the

112
00:03:46,070 --> 00:03:44,080
the white room for uh

113
00:03:48,229 --> 00:03:46,080

for operations today this is a big day

114
00:03:51,030 --> 00:03:48,239
for us this is a return of atlas to its

115
00:03:52,710 --> 00:03:51,040
human space flight heritage uh the first

116
00:03:54,390 --> 00:03:52,720
u.s astronaut to orbit the earth was

117
00:03:56,470 --> 00:03:54,400
john glenn and he launched on an atlas

118
00:03:59,429 --> 00:03:56,480
lv 3b rocket just up the road at complex

119
00:04:00,949 --> 00:03:59,439
14 back in february 1962 so we're really

120
00:04:03,190 --> 00:04:00,959
excited about getting atlas back to the

121
00:04:04,710 --> 00:04:03,200
human space flight business

122
00:04:07,350 --> 00:04:04,720
it's also a return to service of our

123
00:04:08,869 --> 00:04:07,360
dual engine configuration of centaur

124
00:04:11,670 --> 00:04:08,879
the the dual engine centaur is very

125
00:04:13,350 --> 00:04:11,680
uniquely qualified to uh

126
00:04:14,949 --> 00:04:13,360
provide the amount of thrust and the

127
00:04:16,550 --> 00:04:14,959
type of flight profile necessary in

128
00:04:17,990 --> 00:04:16,560
order to give starliner a safe and

129
00:04:19,270 --> 00:04:18,000
smooth ride to the international space

130
00:04:20,949 --> 00:04:19,280
station

131
00:04:22,230 --> 00:04:20,959
also on centaur we've added an emergency

132
00:04:24,469 --> 00:04:22,240
detection system which is kind of a

133
00:04:26,230 --> 00:04:24,479
supplemental telemetry system that

134
00:04:28,629 --> 00:04:26,240
independently evaluates all of the data

135
00:04:30,150 --> 00:04:28,639
on board the vehicle to ensure that the

136
00:04:31,510 --> 00:04:30,160
ride is as safe as possible for

137
00:04:32,710 --> 00:04:31,520
astronauts when

138
00:04:34,550 --> 00:04:32,720

when the time comes for that we take

139
00:04:36,150 --> 00:04:34,560
safety very seriously that's at the

140
00:04:38,230 --> 00:04:36,160
forefront of everything we do and adding

141
00:04:39,670 --> 00:04:38,240
that emergency detection system to

142
00:04:40,950 --> 00:04:39,680
centaur was just one more way we can

143
00:04:42,550 --> 00:04:40,960
assure that the astronauts get the

144
00:04:43,909 --> 00:04:42,560
safest ride possible when it comes time

145
00:04:45,749 --> 00:04:43,919
to launch those

146
00:04:48,070 --> 00:04:45,759
on the next mission

147
00:04:49,749 --> 00:04:48,080
a top centaur is a cst specific vehicle

148
00:04:50,550 --> 00:04:49,759
adapter it's a truss and ring structure

149
00:04:52,710 --> 00:04:50,560
that

150
00:04:53,990 --> 00:04:52,720
basically holds the starliner

151
00:04:54,950 --> 00:04:54,000
to centaur

152
00:04:56,550 --> 00:04:54,960
and on

153
00:04:58,070 --> 00:04:56,560
along with that is an aeroskirt which

154
00:04:59,909 --> 00:04:58,080
helps enhance their aerodynamics and

155
00:05:01,270 --> 00:04:59,919
stability of the vehicle during flight

156
00:05:03,189 --> 00:05:01,280
uh but today's not just about testing

157
00:05:04,469 --> 00:05:03,199
the rocket uh it's also an opportunity

158
00:05:05,670 --> 00:05:04,479
to demonstrate the processes and

159
00:05:07,029 --> 00:05:05,680
procedures that we're going to use when

160
00:05:08,390 --> 00:05:07,039
it comes time to actually load crew

161
00:05:10,469 --> 00:05:08,400
onboard that spacecraft and we've been

162
00:05:11,670 --> 00:05:10,479
working on that this morning um so for

163
00:05:13,510 --> 00:05:11,680

now the grand cru is still up on the

164
00:05:14,950 --> 00:05:13,520
crew access tower

165
00:05:16,550 --> 00:05:14,960
they are closing out the white room as i

166
00:05:17,909 --> 00:05:16,560
understand the the team is wrapped up in

167
00:05:19,670 --> 00:05:17,919
the capsule you guys showed that video

168
00:05:22,230 --> 00:05:19,680
just a few minutes ago of the

169
00:05:23,830 --> 00:05:22,240
hatch closure so our team has taken over

170
00:05:25,510 --> 00:05:23,840
and preparing the crew access tower in

171
00:05:26,550 --> 00:05:25,520
the white room for launch uh that's

172
00:05:27,990 --> 00:05:26,560
that's it for the update here at the

173
00:05:29,430 --> 00:05:28,000
asoc back to you guys over at kennedy

174
00:05:31,430 --> 00:05:29,440
space center all right thanks a lot

175
00:05:32,870 --> 00:05:31,440
dylan now if you remember space shuttle

176
00:05:35,270 --> 00:05:32,880
launches you might recall there were

177
00:05:36,790 --> 00:05:35,280
fewer control rooms um but this is a

178
00:05:38,230 --> 00:05:36,800
whole new way of doing things and that's

179
00:05:40,310 --> 00:05:38,240
really the whole point of the commercial

180
00:05:41,990 --> 00:05:40,320
crew program exactly today you have a

181
00:05:43,510 --> 00:05:42,000
commercial spacecraft launching on a

182
00:05:45,189 --> 00:05:43,520
commercial rocket and both of those have

183
00:05:46,790 --> 00:05:45,199
their own control rooms and nasa is

184
00:05:48,230 --> 00:05:46,800
watching it all making sure everyone's

185
00:05:49,909 --> 00:05:48,240
making the right calls and that's going

186
00:05:51,510 --> 00:05:49,919
to be especially important when crews on

187
00:05:53,350 --> 00:05:51,520
board so let's learn a little bit more

188
00:05:56,390 --> 00:05:53,360

about those commercial vehicles on the

189
00:05:58,230 --> 00:05:56,400
pad behind us today first is the atlas 5

190
00:06:00,629 --> 00:05:58,240
rocket that's made and operated by

191
00:06:02,790 --> 00:06:00,639
united launch alliance it's a workhorse

192
00:06:05,189 --> 00:06:02,800
rocket with 80 successful missions to

193
00:06:07,990 --> 00:06:05,199
date this is a special version of atlas

194
00:06:11,350 --> 00:06:08,000
made just for starliner ula calls it an

195
00:06:13,670 --> 00:06:11,360
n22 that stands for no payload fairing

196
00:06:15,990 --> 00:06:13,680
two solid rocket motors and a dual

197
00:06:17,270 --> 00:06:16,000
engine centaur upper stage a first for

198
00:06:20,309 --> 00:06:17,280
the atlas v

199
00:06:22,629 --> 00:06:20,319
and on top of atlas is boeing cst 100

200
00:06:24,950 --> 00:06:22,639
starliner it comes in two main sections

201
00:06:26,469 --> 00:06:24,960
a crew module and a service module the

202
00:06:28,550 --> 00:06:26,479
crew module is where the astronauts

203
00:06:30,150 --> 00:06:28,560
would be it's reusable up to 10 times

204
00:06:32,469 --> 00:06:30,160
and it features lightweight thermal

205
00:06:34,230 --> 00:06:32,479
protection as well as an innovative

206
00:06:36,710 --> 00:06:34,240
landing system using parachutes and

207
00:06:38,870 --> 00:06:36,720
airbags those make starliner the first

208
00:06:41,110 --> 00:06:38,880
american orbital capsule able to land on

209
00:06:43,029 --> 00:06:41,120
land the service module houses most of

210
00:06:45,110 --> 00:06:43,039
our propulsion systems including the on

211
00:06:47,510 --> 00:06:45,120
orbit maneuvering thrusters and our low

212
00:06:49,189 --> 00:06:47,520
altitude abort motors we also have a

213
00:06:51,350 --> 00:06:49,199

high efficiency solar array on the

214
00:06:54,070 --> 00:06:51,360
bottom which covers a micro meteorite

215
00:06:55,589 --> 00:06:54,080
and orbital debris shield

216
00:06:57,510 --> 00:06:55,599
now we want to check in on how that

217
00:06:59,670 --> 00:06:57,520
spacecraft is doing and we happen to

218
00:07:01,430 --> 00:06:59,680
have one of starliner's engineers torrey

219
00:07:03,189 --> 00:07:01,440
pedrotti she's in boeing's launch

220
00:07:05,270 --> 00:07:03,199
control center monitoring the launch

221
00:07:08,710 --> 00:07:05,280
team there for us tori how are things

222
00:07:10,950 --> 00:07:08,720
going for the bmcc's very first mission

223
00:07:13,589 --> 00:07:10,960
good morning josh and marie everything

224
00:07:15,350 --> 00:07:13,599
is going great here in the bmcc as you

225
00:07:17,909 --> 00:07:15,360
said this is the boeing mission control

226
00:07:19,189 --> 00:07:17,919
center this is the heart of starliner

227
00:07:20,469 --> 00:07:19,199
while we're on

228
00:07:22,870 --> 00:07:20,479
the ground while we're doing launch

229
00:07:26,150 --> 00:07:22,880
operations and then transition we will

230
00:07:27,189 --> 00:07:26,160
transition control over to houston

231
00:07:31,909 --> 00:07:27,199
here

232
00:07:35,029 --> 00:07:31,919
excited and as you can see we have a lot

233
00:07:36,629 --> 00:07:35,039
of people tied in to their consoles here

234
00:07:38,150 --> 00:07:36,639
now we have a bunch of different teams

235
00:07:40,790 --> 00:07:38,160
in this

236
00:07:43,430 --> 00:07:40,800
control room not only nasa teams and

237
00:07:44,950 --> 00:07:43,440
boeing teams working together but

238
00:07:47,749 --> 00:07:44,960

analysts also looking at all of the

239
00:07:49,830 --> 00:07:47,759
different subsystems including thermal

240
00:07:51,749 --> 00:07:49,840
propulsion eclipse

241
00:07:53,029 --> 00:07:51,759
anything that the spacecraft needs to

242
00:07:56,390 --> 00:07:53,039
continue on its mission to the

243
00:07:58,950 --> 00:07:57,110
so

244
00:08:00,710 --> 00:07:58,960
looking back at the rocket now you can

245
00:08:02,550 --> 00:08:00,720
see that um we were just talking a

246
00:08:05,990 --> 00:08:02,560
little bit about the pad team now this

247
00:08:07,749 --> 00:08:06,000
pad team was a joint ula and boeing team

248
00:08:10,070 --> 00:08:07,759
and this is only the second time that

249
00:08:12,550 --> 00:08:10,080
we've had people near a fueled atlas v

250
00:08:14,150 --> 00:08:12,560
so when you saw that hatch closure and

251
00:08:15,990 --> 00:08:14,160
that white room clear out just a few

252
00:08:17,830 --> 00:08:16,000
minutes ago that was only the second

253
00:08:19,510 --> 00:08:17,840
time in history that we've had people

254
00:08:22,309 --> 00:08:19,520
this close

255
00:08:23,909 --> 00:08:22,319
to a field atlas 5. the first time was

256
00:08:27,110 --> 00:08:23,919
during our wet dress rehearsal a few

257
00:08:29,670 --> 00:08:27,120
weeks ago now the wet dress rehearsal is

258
00:08:32,070 --> 00:08:29,680
where we fuel the vehicle and we do

259
00:08:34,389 --> 00:08:32,080
everything follow all of our procedures

260
00:08:36,230 --> 00:08:34,399
except for except launch now today we're

261
00:08:38,630 --> 00:08:36,240
really excited to follow all of our

262
00:08:41,350 --> 00:08:38,640
procedures and launch so it's it's a

263
00:08:42,790 --> 00:08:41,360

really exciting day um and this pad team

264
00:08:43,909 --> 00:08:42,800
and the views that we're seeing here in

265
00:08:46,710 --> 00:08:43,919
the white room are really just a

266
00:08:48,150 --> 00:08:46,720
hallmark of human space flight

267
00:08:49,910 --> 00:08:48,160
having people and being able to load

268
00:08:51,430 --> 00:08:49,920
people and cargo at the last minute is

269
00:08:53,590 --> 00:08:51,440
going to be really essential for our

270
00:08:55,430 --> 00:08:53,600
crude flights later on and

271
00:08:57,110 --> 00:08:55,440
oft this orbital flight test that we do

272
00:08:59,430 --> 00:08:57,120
does not have crew on it but we're

273
00:09:01,190 --> 00:08:59,440
really practicing like we would to make

274
00:09:02,550 --> 00:09:01,200
sure that we do that we are safe and

275
00:09:04,150 --> 00:09:02,560
we're ready when we do have crew on

276
00:09:05,910 --> 00:09:04,160
board next time

277
00:09:09,190 --> 00:09:05,920
so let's take a little bit closer look

278
00:09:11,750 --> 00:09:09,200
at that pad team

279
00:09:15,030 --> 00:09:11,760
melanie weber is the pad team lead she

280
00:09:17,269 --> 00:09:15,040
is the first female pad team lead

281
00:09:18,870 --> 00:09:17,279
melanie has worked for multiple years on

282
00:09:21,430 --> 00:09:18,880
the commercial crew program but before

283
00:09:24,150 --> 00:09:21,440
that she worked on iss so she knows not

284
00:09:25,509 --> 00:09:24,160
only about our vehicle but about

285
00:09:27,190 --> 00:09:25,519
where we're going

286
00:09:28,710 --> 00:09:27,200
and a lot about the international space

287
00:09:30,949 --> 00:09:28,720
station as well

288
00:09:32,630 --> 00:09:30,959

melanie is the crew and cargo lead and

289
00:09:34,550 --> 00:09:32,640
she has been in charge of the interior

290
00:09:36,230 --> 00:09:34,560
of the capsule from the very beginning

291
00:09:38,790 --> 00:09:36,240
so she was involved when there was

292
00:09:40,870 --> 00:09:38,800
nothing in there and now it's

293
00:09:42,630 --> 00:09:40,880
and now she has designed the entirety of

294
00:09:44,310 --> 00:09:42,640
the inside of the vehicle and has led

295
00:09:45,990 --> 00:09:44,320
the team to close it out so that's

296
00:09:47,430 --> 00:09:46,000
really exciting and it's a good day for

297
00:09:50,389 --> 00:09:47,440
her and it's a great day for the team as

298
00:09:52,470 --> 00:09:50,399
they clear out of the tower so back to

299
00:09:54,389 --> 00:09:52,480
you joshua marie all right thanks a lot

300
00:09:56,150 --> 00:09:54,399
tori it's good news that starliner is

301
00:09:57,190 --> 00:09:56,160
looking great for launch really great

302
00:09:58,710 --> 00:09:57,200
news you know the first time you're

303
00:10:00,389 --> 00:09:58,720
doing anything there's always elements

304
00:10:02,470 --> 00:10:00,399
of unknown but great news from the

305
00:10:04,069 --> 00:10:02,480
control rooms so let's learn a little

306
00:10:05,670 --> 00:10:04,079
bit more about those control rooms and

307
00:10:07,750 --> 00:10:05,680
who's leading those teams in those

308
00:10:10,389 --> 00:10:07,760
starliner control rooms today in the

309
00:10:12,630 --> 00:10:10,399
bmcc starliner's first launch conductor

310
00:10:14,230 --> 00:10:12,640
is lewis atchison a native floridian

311
00:10:16,150 --> 00:10:14,240
lewis has dreamed of working in space

312
00:10:17,670 --> 00:10:16,160
flight his whole life and he's actually

313
00:10:19,910 --> 00:10:17,680

made a few cuts in the astronaut

314
00:10:21,590 --> 00:10:19,920
selection process himself as launch

315
00:10:23,509 --> 00:10:21,600
conductor he leads the pre-launch and

316
00:10:25,350 --> 00:10:23,519
ground operations campaign and helps the

317
00:10:27,190 --> 00:10:25,360
team work through any issues that come

318
00:10:29,269 --> 00:10:27,200
up in the countdown and lewis's

319
00:10:31,910 --> 00:10:29,279
counterpart in mission control houston

320
00:10:33,509 --> 00:10:31,920
is richard jones richard is a veteran

321
00:10:35,910 --> 00:10:33,519
nasa flight director assigned to

322
00:10:37,829 --> 00:10:35,920
starliner on this uncrewed flight his

323
00:10:40,150 --> 00:10:37,839
team is completely responsible for

324
00:10:42,230 --> 00:10:40,160
commanding and controlling starliner

325
00:10:43,990 --> 00:10:42,240
known as flight in the control room he

326
00:10:46,310 --> 00:10:44,000
makes every critical decision during

327
00:10:48,150 --> 00:10:46,320
launch and ascent he will hand off to

328
00:10:51,590 --> 00:10:48,160
another flight control team for orbital

329
00:10:53,670 --> 00:10:51,600
operations but he'll be back for landing

330
00:10:55,670 --> 00:10:53,680
now these two teams have to be perfectly

331
00:10:57,670 --> 00:10:55,680
in sync before launch and then during

332
00:11:00,069 --> 00:10:57,680
flight the bmc will transition to kind

333
00:11:02,389 --> 00:11:00,079
of a backroom mission support room and

334
00:11:03,910 --> 00:11:02,399
they will stay on console 24 7 through

335
00:11:05,430 --> 00:11:03,920
flight and help the flight controllers

336
00:11:07,350 --> 00:11:05,440
in houston work through any issues if

337
00:11:09,430 --> 00:11:07,360
they do come up that's right we want to

338
00:11:11,269 --> 00:11:09,440

check in with richard jones and his team

339
00:11:13,750 --> 00:11:11,279
in starliner mission control over in

340
00:11:15,990 --> 00:11:13,760
houston there we have nasa's brandy dean

341
00:11:19,750 --> 00:11:16,000
and boeing steve seisloff keeping tabs

342
00:11:21,670 --> 00:11:19,760
on the progress hi stephen brandy

343
00:11:24,150 --> 00:11:21,680
good morning welcome to starliner

344
00:11:26,550 --> 00:11:24,160
mission control in houston i am steve

345
00:11:28,790 --> 00:11:26,560
seislov from boeing communications and

346
00:11:31,829 --> 00:11:28,800
i'm brandi dean from nasa public affairs

347
00:11:33,829 --> 00:11:31,839
and right here is where richard jones is

348
00:11:35,590 --> 00:11:33,839
and his team are watching closely over

349
00:11:37,509 --> 00:11:35,600
all the systems and subsystems of

350
00:11:39,990 --> 00:11:37,519
starliner this morning

351
00:11:42,550 --> 00:11:40,000
launch is time to put the

352
00:11:45,509 --> 00:11:42,560
starliner on a precise path it's going

353
00:11:49,670 --> 00:11:45,519
to time to uh when the launch site there

354
00:11:50,949 --> 00:11:49,680
at cape canaveral lines up with the 51.6

355
00:11:53,110 --> 00:11:50,959
degree orbital plane of the

356
00:11:55,910 --> 00:11:53,120
international space station that's when

357
00:11:57,509 --> 00:11:55,920
atlas 5 will lift off and put starliner

358
00:11:59,590 --> 00:11:57,519
right on the course it needs to chase

359
00:12:01,110 --> 00:11:59,600
the international space station

360
00:12:02,550 --> 00:12:01,120
and speaking of the international space

361
00:12:04,150 --> 00:12:02,560
station just down the hall here in

362
00:12:05,990 --> 00:12:04,160
mission control houston there's a whole

363
00:12:07,670 --> 00:12:06,000

another flight control team

364
00:12:09,509 --> 00:12:07,680
watching um the space station systems

365
00:12:11,509 --> 00:12:09,519
making sure that it is ready for the

366
00:12:13,910 --> 00:12:11,519
starliner to arrive tomorrow that team

367
00:12:15,910 --> 00:12:13,920
is led by flight director chris edelen

368
00:12:17,110 --> 00:12:15,920
he is um getting ready to pull his own

369
00:12:19,829 --> 00:12:17,120
team to make sure that they're ready for

370
00:12:21,350 --> 00:12:19,839
today's launch and he will be on console

371
00:12:23,190 --> 00:12:21,360
again tomorrow

372
00:12:25,670 --> 00:12:23,200
for that rendezvous

373
00:12:27,350 --> 00:12:25,680
all of that does a culmination of years

374
00:12:28,629 --> 00:12:27,360
of preparation for the international

375
00:12:31,190 --> 00:12:28,639
space station and it's going to be

376
00:12:33,030 --> 00:12:31,200
poised and ready to see starliner in

377
00:12:34,470 --> 00:12:33,040
space tomorrow

378
00:12:36,470 --> 00:12:34,480
we'll keep an eye on things here in

379
00:12:38,550 --> 00:12:36,480
houston but for now we'll go back to

380
00:12:40,230 --> 00:12:38,560
florida all right thanks brandi and

381
00:12:41,590 --> 00:12:40,240
steve good news from all the control

382
00:12:43,269 --> 00:12:41,600
rooms so things are looking good for

383
00:12:45,110 --> 00:12:43,279
launch you know just really great news

384
00:12:46,470 --> 00:12:45,120
for an important first step in this nasa

385
00:12:48,550 --> 00:12:46,480
boeing partnership that will help

386
00:12:50,629 --> 00:12:48,560
commercialize low earth orbit but nasa

387
00:12:52,550 --> 00:12:50,639
is also working on a lot of other

388
00:12:54,710 --> 00:12:52,560

exciting things like their next giant

389
00:12:56,629 --> 00:12:54,720
leap with the artemis program and nasa's

390
00:12:58,949 --> 00:12:56,639
daryl nail is joined by nasa

391
00:13:01,030 --> 00:12:58,959
administrator jim bridenstine nearby to

392
00:13:03,190 --> 00:13:01,040
talk about all the exciting things we're

393
00:13:04,710 --> 00:13:03,200
working on right now hi daryl

394
00:13:06,949 --> 00:13:04,720
hi marie and joshua that's right we're

395
00:13:09,030 --> 00:13:06,959
here at the top of the osb building just

396
00:13:10,949 --> 00:13:09,040
a few feet away from where you guys are

397
00:13:13,030 --> 00:13:10,959
with a beautiful view of the rocket mr

398
00:13:15,430 --> 00:13:13,040
bridenstine is here of course simply put

399
00:13:17,590 --> 00:13:15,440
the big boss over all of nasa or just

400
00:13:19,190 --> 00:13:17,600
jim or just jim in this case thank you

401
00:13:21,430 --> 00:13:19,200
for that thank you um just tell me

402
00:13:22,710 --> 00:13:21,440
you've been here for the week um what

403
00:13:24,629 --> 00:13:22,720
are you feeling right now and the

404
00:13:26,710 --> 00:13:24,639
excitement as it builds up to this

405
00:13:28,870 --> 00:13:26,720
launch so i will tell you the uh the

406
00:13:31,030 --> 00:13:28,880
level of energy here is really amazing

407
00:13:33,269 --> 00:13:31,040
um and and this is not new to the

408
00:13:34,790 --> 00:13:33,279
kennedy space center uh but certainly

409
00:13:37,670 --> 00:13:34,800
it's been a long time since we've flown

410
00:13:39,030 --> 00:13:37,680
humans in humans into space and this is

411
00:13:40,949 --> 00:13:39,040
one of those opportunities where we're

412
00:13:43,030 --> 00:13:40,959
meeting a critical milestone an

413
00:13:45,350 --> 00:13:43,040

end-to-end test of one of our commercial

414
00:13:48,389 --> 00:13:45,360
crew vehicles uh i will tell you you

415
00:13:50,389 --> 00:13:48,399
know i i i was in the orlando area

416
00:13:52,550 --> 00:13:50,399
years ago when the shuttles were getting

417
00:13:54,629 --> 00:13:52,560
ready to retire and the constellation

418
00:13:57,269 --> 00:13:54,639
program was was standing up and then and

419
00:13:59,590 --> 00:13:57,279
then it got cancelled uh this

420
00:14:00,949 --> 00:13:59,600
the kennedy space center is back

421
00:14:03,189 --> 00:14:00,959
the commercial partners are doing

422
00:14:05,030 --> 00:14:03,199
amazing things there's there's an energy

423
00:14:06,550 --> 00:14:05,040
here that is just it's palpable so it

424
00:14:08,150 --> 00:14:06,560
feels really good to be here right now

425
00:14:10,150 --> 00:14:08,160
very good it was a tough time at the

426
00:14:11,509 --> 00:14:10,160
retirement of the shuttle indeed and now

427
00:14:13,189 --> 00:14:11,519
it looks like we're just getting ready

428
00:14:14,710 --> 00:14:13,199
to turn the corner the big question

429
00:14:17,110 --> 00:14:14,720
everybody wants to know is

430
00:14:18,790 --> 00:14:17,120
when will astronauts be riding on one of

431
00:14:20,710 --> 00:14:18,800
these spacecraft so we have two

432
00:14:24,470 --> 00:14:20,720
different uh commercial crew providers

433
00:14:26,550 --> 00:14:24,480
spacex and boeing and i'm confident that

434
00:14:29,269 --> 00:14:26,560
uh that we will have in the first part

435
00:14:31,189 --> 00:14:29,279
of 2020 at least one successful launch

436
00:14:33,030 --> 00:14:31,199
with with astronauts

437
00:14:35,189 --> 00:14:33,040
i would say that um

438
00:14:37,910 --> 00:14:35,199

i'm actually confident we'll have two uh

439
00:14:39,590 --> 00:14:37,920
partners in the first part of 2020

440
00:14:41,750 --> 00:14:39,600
but but you know remember what the goal

441
00:14:44,470 --> 00:14:41,760
is the goal is to have two independent

442
00:14:46,389 --> 00:14:44,480
solutions so that if if one has a set

443
00:14:47,990 --> 00:14:46,399
back the other can move forward

444
00:14:50,389 --> 00:14:48,000
and so that's why we have dissimilar

445
00:14:51,910 --> 00:14:50,399
redundancy and so this this increases

446
00:14:53,910 --> 00:14:51,920
the probability of success so i would

447
00:14:55,350 --> 00:14:53,920
say first part of 2020 is what we can

448
00:14:57,990 --> 00:14:55,360
look forward to and you were telling me

449
00:15:00,230 --> 00:14:58,000
as a backup you've sought to purchase

450
00:15:02,310 --> 00:15:00,240
seats on soyuz absolutely and why is

451
00:15:04,310 --> 00:15:02,320
that we need to make sure that we we

452
00:15:06,069 --> 00:15:04,320
don't have a gap in americans on the

453
00:15:07,430 --> 00:15:06,079
international space station

454
00:15:10,030 --> 00:15:07,440
the partnership between the united

455
00:15:11,590 --> 00:15:10,040
states and russia has been strong since

456
00:15:13,670 --> 00:15:11,600
1975.

457
00:15:15,750 --> 00:15:13,680
we want to keep it moving forward

458
00:15:17,509 --> 00:15:15,760
and and we want to make sure that

459
00:15:19,910 --> 00:15:17,519
you know even when commercial crew is

460
00:15:21,829 --> 00:15:19,920
successful we want americans launching

461
00:15:23,670 --> 00:15:21,839
on soyuz rockets and we want russians

462
00:15:26,150 --> 00:15:23,680
launching on commercial crew rockets the

463
00:15:27,829 --> 00:15:26,160

partnership needs to be strong half of

464
00:15:30,069 --> 00:15:27,839
the international space station is

465
00:15:32,150 --> 00:15:30,079
russian so it's important for us as we

466
00:15:33,670 --> 00:15:32,160
maintain this partnership uh that we

467
00:15:35,430 --> 00:15:33,680
move forward in a meaningful way all

468
00:15:37,590 --> 00:15:35,440
right jim thanks for joining us enjoy

469
00:15:39,110 --> 00:15:37,600
the launch today thank you joshua marie

470
00:15:41,110 --> 00:15:39,120
we'll send it back to you guys all right

471
00:15:42,870 --> 00:15:41,120
thank you so much daryl and jim well the

472
00:15:44,470 --> 00:15:42,880
last time we launched astronauts if you

473
00:15:47,110 --> 00:15:44,480
remember from the united states was in

474
00:15:48,949 --> 00:15:47,120
2011 and to restore that capability as

475
00:15:50,550 --> 00:15:48,959
you heard them just talking about nasa

476
00:15:52,629 --> 00:15:50,560
turned to private companies like boeing

477
00:15:54,150 --> 00:15:52,639
to provide the ride and then nasa buys

478
00:15:56,389 --> 00:15:54,160
the ticket if you will for our

479
00:15:58,230 --> 00:15:56,399
astronauts that's right this partnership

480
00:16:00,389 --> 00:15:58,240
is all about opening up orbit and

481
00:16:02,870 --> 00:16:00,399
fostering new capabilities in commercial

482
00:16:05,030 --> 00:16:02,880
human space flight

483
00:16:07,509 --> 00:16:05,040
standby for terminal count stage two

484
00:16:08,790 --> 00:16:07,519
present for flight five

485
00:16:10,150 --> 00:16:08,800
four

486
00:16:13,670 --> 00:16:10,160
the purpose of the commercial crew

487
00:16:16,629 --> 00:16:13,680
program is to return to our nation the

488
00:16:18,790 --> 00:16:16,639

capability to fly our astronauts to the

489
00:16:20,150 --> 00:16:18,800
international space station

490
00:16:21,269 --> 00:16:20,160
three

491
00:16:23,350 --> 00:16:21,279
two

492
00:16:25,670 --> 00:16:23,360
one there's just something about going

493
00:16:28,069 --> 00:16:25,680
to space that has always been special so

494
00:16:30,870 --> 00:16:28,079
here's an opportunity to go back again

495
00:16:33,749 --> 00:16:30,880
in in a different kind of craft

496
00:16:37,189 --> 00:16:35,269
the commercial crew program is

497
00:16:38,710 --> 00:16:37,199
revolutionary in a sense where it's

498
00:16:40,870 --> 00:16:38,720
going to provide us the opportunity to

499
00:16:43,350 --> 00:16:40,880
have more astronauts in space it's going

500
00:16:45,910 --> 00:16:43,360
to further our ability for knowledge in

501
00:16:47,910 --> 00:16:45,920
a microgravity environment

502
00:16:50,790 --> 00:16:47,920
the fact that we're able to partner with

503
00:16:52,870 --> 00:16:50,800
commercial industries allows us to

504
00:16:55,430 --> 00:16:52,880
fulfill that mission to be explorers

505
00:16:57,030 --> 00:16:55,440
because we can work together

506
00:16:59,110 --> 00:16:57,040
there's a larger group of us that are

507
00:17:02,150 --> 00:16:59,120
dreaming that potentially could have a

508
00:17:03,670 --> 00:17:02,160
ride someday and be working in space

509
00:17:05,429 --> 00:17:03,680
folks all over the world are going to be

510
00:17:07,029 --> 00:17:05,439
watching this because we're integrating

511
00:17:09,029 --> 00:17:07,039
new technologies can make these

512
00:17:16,150 --> 00:17:09,039
spacecraft better and smarter

513
00:17:19,909 --> 00:17:17,909

it's truly an exciting time in space

514
00:17:22,069 --> 00:17:19,919
flight and we want you to get involved

515
00:17:23,510 --> 00:17:22,079
online and on social media if you want

516
00:17:25,510 --> 00:17:23,520
to learn more about starliner head to

517
00:17:27,189 --> 00:17:25,520
boeing.com starliner we have more

518
00:17:29,110 --> 00:17:27,199
details about the vehicle and the teams

519
00:17:31,029 --> 00:17:29,120
as well as some educational activities

520
00:17:33,190 --> 00:17:31,039
and we have something called a next-gen

521
00:17:35,029 --> 00:17:33,200
stem website it has learning activities

522
00:17:36,230 --> 00:17:35,039
for students of all grade levels of

523
00:17:37,909 --> 00:17:36,240
course you can learn about all things

524
00:17:39,590 --> 00:17:37,919
commercial crew on the program's main

525
00:17:41,110 --> 00:17:39,600
page you see all three of those there on

526
00:17:42,950 --> 00:17:41,120
your screen and if you have a question

527
00:17:44,549 --> 00:17:42,960
you want answered just hop on twitter

528
00:17:46,710 --> 00:17:44,559
and make sure you use the hashtag

529
00:17:48,789 --> 00:17:46,720
asknasa in fact we've already been

530
00:17:50,549 --> 00:17:48,799
getting some great questions we want to

531
00:17:53,430 --> 00:17:50,559
take one i want to show you we had one

532
00:17:55,270 --> 00:17:53,440
from mark on twitter he was asking where

533
00:17:56,950 --> 00:17:55,280
starliner is going to land after all

534
00:17:58,710 --> 00:17:56,960
this so that's a great question as we

535
00:18:00,630 --> 00:17:58,720
said earlier starliner is going to be

536
00:18:02,310 --> 00:18:00,640
the first american orbital crew capsule

537
00:18:03,990 --> 00:18:02,320
that can land on land so we have five

538
00:18:06,230 --> 00:18:04,000

landing sites out in the western united

539
00:18:08,310 --> 00:18:06,240
states wherever we land depends heavily

540
00:18:10,150 --> 00:18:08,320
on where we are when we undock so right

541
00:18:11,750 --> 00:18:10,160
now if we stay on schedule for landing

542
00:18:14,230 --> 00:18:11,760
on the 28th we'll land on the white

543
00:18:16,310 --> 00:18:14,240
sands missile range in new mexico you

544
00:18:18,630 --> 00:18:16,320
can also follow us on twitter at boeing

545
00:18:20,549 --> 00:18:18,640
space and at commercial underscore crew

546
00:18:22,549 --> 00:18:20,559
use the hashtag starliner show us how

547
00:18:24,310 --> 00:18:22,559
you're watching today's launch and as we

548
00:18:26,150 --> 00:18:24,320
mentioned before we are launching from

549
00:18:28,070 --> 00:18:26,160
cape canaveral located on the eastern

550
00:18:29,990 --> 00:18:28,080
coast of florida

551
00:18:31,510 --> 00:18:30,000
and joining us now is a special guest

552
00:18:33,430 --> 00:18:31,520
who has a vested interest in what

553
00:18:35,110 --> 00:18:33,440
happens here in the sunshine state daryl

554
00:18:36,950 --> 00:18:35,120
nail is with us again with florida

555
00:18:38,710 --> 00:18:36,960
governor ron desantis

556
00:18:40,310 --> 00:18:38,720
that's right joshua we are here with

557
00:18:41,750 --> 00:18:40,320
governor desantis thanks for joining us

558
00:18:42,950 --> 00:18:41,760
and taking the time you're here for the

559
00:18:44,310 --> 00:18:42,960
launch you've been here for a few days

560
00:18:45,909 --> 00:18:44,320
did you get a tour

561
00:18:48,310 --> 00:18:45,919
well we just came from the briefing

562
00:18:50,710 --> 00:18:48,320
which is very interesting and um this is

563
00:18:52,150 --> 00:18:50,720

an exciting day uh i would say wake up

564
00:18:53,909 --> 00:18:52,160
bright and early but it's not even

565
00:18:55,510 --> 00:18:53,919
bright yet it's so early but but this is

566
00:18:57,110 --> 00:18:55,520
really great i mean there's we really in

567
00:18:58,870 --> 00:18:57,120
florida are proud of what's going on

568
00:19:01,110 --> 00:18:58,880
here kennedy space center we think this

569
00:19:02,870 --> 00:19:01,120
is the epicenter of all the the new

570
00:19:05,270 --> 00:19:02,880
innovations with space particularly the

571
00:19:06,789 --> 00:19:05,280
commercial uh government partnerships

572
00:19:08,549 --> 00:19:06,799
and so we think this is going to be

573
00:19:11,029 --> 00:19:08,559
great and then we look to continue to do

574
00:19:12,789 --> 00:19:11,039
this and and get american astronauts uh

575
00:19:14,470 --> 00:19:12,799
back up into space and eventually on the

576
00:19:15,750 --> 00:19:14,480
moon you recall here in florida the

577
00:19:18,710 --> 00:19:15,760
retirement the space shuttle program in

578
00:19:20,070 --> 00:19:18,720
2011 um that kind of shook the state for

579
00:19:22,630 --> 00:19:20,080
a while especially here at the space

580
00:19:24,470 --> 00:19:22,640
coast oh big time jim bridenstine the

581
00:19:26,950 --> 00:19:24,480
national administrator and i both got

582
00:19:28,950 --> 00:19:26,960
elected to congress in 2012. my district

583
00:19:30,630 --> 00:19:28,960
was just north of here starting in

584
00:19:32,390 --> 00:19:30,640
volusia county so we had a lot of people

585
00:19:33,990 --> 00:19:32,400
who would work here who lived in that

586
00:19:36,230 --> 00:19:34,000
district in the southern part of the

587
00:19:39,669 --> 00:19:36,240
district and uh you could tell i mean it

588
00:19:41,350 --> 00:19:39,679

was a um you know really bad time uh for

589
00:19:42,789 --> 00:19:41,360
here and it was almost like you know we

590
00:19:44,470 --> 00:19:42,799
were so proud of everything's going on

591
00:19:45,669 --> 00:19:44,480
here it's like what's happening well i

592
00:19:47,830 --> 00:19:45,679
think you know we're back with a

593
00:19:49,909 --> 00:19:47,840
vengeance now so it's really exciting to

594
00:19:51,270 --> 00:19:49,919
see uh the direction this is going you

595
00:19:53,430 --> 00:19:51,280
see a turning corner and getting

596
00:19:55,990 --> 00:19:53,440
commercial would you ride on one of

597
00:19:57,909 --> 00:19:56,000
these spacecraft i think it would depend

598
00:19:59,830 --> 00:19:57,919
on the circumstances and everything but

599
00:20:01,909 --> 00:19:59,840
um i think i think i'd be more of a

600
00:20:03,510 --> 00:20:01,919
liability than anything for them so i

601
00:20:05,190 --> 00:20:03,520
don't know if they'd want me on there

602
00:20:06,789 --> 00:20:05,200
well i mean you know these people really

603
00:20:09,190 --> 00:20:06,799
know what they're doing so you know

604
00:20:10,630 --> 00:20:09,200
they're autopiloted now so right so if

605
00:20:12,310 --> 00:20:10,640
you if you decide you want to change

606
00:20:13,830 --> 00:20:12,320
your mind you'll let us know governor

607
00:20:15,110 --> 00:20:13,840
thank you so much thank you enjoy the

608
00:20:16,549 --> 00:20:15,120
launch appreciate it all right we'll

609
00:20:18,310 --> 00:20:16,559
send it back to you guys all right

610
00:20:21,029 --> 00:20:18,320
thanks to both of you we are definitely

611
00:20:22,950 --> 00:20:21,039
back in a big way and now about 44

612
00:20:25,510 --> 00:20:22,960
minutes from launch we want to take a

613
00:20:27,909 --> 00:20:25,520

look again at launch complex 41

614
00:20:30,149 --> 00:20:27,919
starliner sitting atop atlas 5 getting

615
00:20:31,669 --> 00:20:30,159
closer and closer to liftoff today's

616
00:20:33,669 --> 00:20:31,679
orbital flight test is our dress

617
00:20:35,350 --> 00:20:33,679
rehearsal for launching astronauts

618
00:20:37,110 --> 00:20:35,360
boeing is proud to be sending veteran

619
00:20:38,870 --> 00:20:37,120
space shuttle astronaut chris ferguson

620
00:20:40,789 --> 00:20:38,880
on our next launch the crew flight test

621
00:20:43,110 --> 00:20:40,799
to the international space station

622
00:20:45,190 --> 00:20:43,120
ferguson will join nasa astronaut mike

623
00:20:47,029 --> 00:20:45,200
fink who is no stranger to the space

624
00:20:48,950 --> 00:20:47,039
station thinks served on two

625
00:20:51,110 --> 00:20:48,960
long-duration flights as its science

626
00:20:53,350 --> 00:20:51,120
officer and commander and he flew on

627
00:20:54,950 --> 00:20:53,360
space shuttle endeavour's final mission

628
00:20:57,270 --> 00:20:54,960
now the third crew member is nasa

629
00:20:59,270 --> 00:20:57,280
astronaut nicole mann and boeing's crew

630
00:21:01,430 --> 00:20:59,280
flight test will be her first trip to

631
00:21:03,350 --> 00:21:01,440
space the trio have been training for

632
00:21:04,870 --> 00:21:03,360
every aspect of the mission together

633
00:21:07,029 --> 00:21:04,880
learning the starliner systems and

634
00:21:08,789 --> 00:21:07,039
preparing for life and work aboard the

635
00:21:10,870 --> 00:21:08,799
international space station where they

636
00:21:12,390 --> 00:21:10,880
could be staying for up to six months

637
00:21:14,710 --> 00:21:12,400
the crew has been training for both

638
00:21:16,470 --> 00:21:14,720

routine and emergency operations on the

639
00:21:18,230 --> 00:21:16,480
ground and in flight

640
00:21:20,470 --> 00:21:18,240
but keep in mind starliner is not going

641
00:21:23,590 --> 00:21:20,480
to be empty for this flight it is packed

642
00:21:26,070 --> 00:21:23,600
with almost 600 pounds of nasa cargo and

643
00:21:27,990 --> 00:21:26,080
we also have an anthropometric test

644
00:21:29,430 --> 00:21:28,000
device who will teach us a lot about

645
00:21:31,750 --> 00:21:29,440
what this ride will be like for the

646
00:21:33,590 --> 00:21:31,760
astronauts meet rosie she's the

647
00:21:35,669 --> 00:21:33,600
starliner's commander for this very

648
00:21:37,669 --> 00:21:35,679
first mission we named her after rosie

649
00:21:40,070 --> 00:21:37,679
the riveter an icon who inspired

650
00:21:42,549 --> 00:21:40,080
generations of women to join aerospace

651
00:21:44,230 --> 00:21:42,559
today rosie the rocketeer is flying for

652
00:21:46,149 --> 00:21:44,240
everyone on our team who took on the

653
00:21:48,230 --> 00:21:46,159
challenge of human space flight and said

654
00:21:50,310 --> 00:21:48,240
we can do it her flight isn't just

655
00:21:52,070 --> 00:21:50,320
symbolic she has 15 sensors that will

656
00:21:54,070 --> 00:21:52,080
collect valuable data we'll use to make

657
00:21:56,070 --> 00:21:54,080
sure the future astronauts stay safe and

658
00:21:58,070 --> 00:21:56,080
healthy on starliner and she has a

659
00:21:59,669 --> 00:21:58,080
companion with her there you see snoopy

660
00:22:01,990 --> 00:21:59,679
he's getting another chance to go to

661
00:22:03,510 --> 00:22:02,000
space snoopy has a long history with

662
00:22:05,909 --> 00:22:03,520
nasa going all the way back to the

663
00:22:07,909 --> 00:22:05,919

apollo program when we sent astronauts

664
00:22:09,909 --> 00:22:07,919
to the moon and now snoopy's a part of

665
00:22:12,310 --> 00:22:09,919
the next era of human space flight with

666
00:22:14,789 --> 00:22:12,320
commercial crew and nasa's artemis

667
00:22:17,029 --> 00:22:14,799
program he's got an important job too as

668
00:22:18,789 --> 00:22:17,039
our gravity indicator so when starliner

669
00:22:20,870 --> 00:22:18,799
reaches microgravity he will start

670
00:22:22,549 --> 00:22:20,880
floating out of that pilot's seat

671
00:22:24,149 --> 00:22:22,559
now rosie and snoopy are definitely

672
00:22:25,669 --> 00:22:24,159
going to need some help flying starliner

673
00:22:27,909 --> 00:22:25,679
mostly that help's going to come from

674
00:22:29,190 --> 00:22:27,919
starliner's autonomous flight systems

675
00:22:31,270 --> 00:22:29,200
and they'll be relying on that to get

676
00:22:33,270 --> 00:22:31,280
the station and back but the ground

677
00:22:35,350 --> 00:22:33,280
teams will also be monitoring and

678
00:22:36,549 --> 00:22:35,360
intervening if needed so we want to

679
00:22:38,870 --> 00:22:36,559
check on those people who will be

680
00:22:40,470 --> 00:22:38,880
commanding starliner from here on earth

681
00:22:43,750 --> 00:22:40,480
stephen brandy how are things over in

682
00:22:47,029 --> 00:22:45,669
thanks marie things are moving along

683
00:22:49,350 --> 00:22:47,039
into the brief in the pre-launch

684
00:22:51,909 --> 00:22:49,360
checklist today the team here in mission

685
00:22:53,270 --> 00:22:51,919
control uh now tracking 41 minutes away

686
00:22:55,029 --> 00:22:53,280
from lunch and they're working through

687
00:22:57,669 --> 00:22:55,039
that checklist making sure that they are

688
00:23:00,149 --> 00:22:57,679

ready to take control of starliner once

689
00:23:01,669 --> 00:23:00,159
it does lift off the launch pad today

690
00:23:03,110 --> 00:23:01,679
and when it does um flight director

691
00:23:05,350 --> 00:23:03,120
richard jones and the starliner mission

692
00:23:07,029 --> 00:23:05,360
control team will finally get to put to

693
00:23:08,870 --> 00:23:07,039
work all the skills they've hold an

694
00:23:11,110 --> 00:23:08,880
exhaustive flight simulations over the

695
00:23:13,270 --> 00:23:11,120
past months they've already been sending

696
00:23:14,710 --> 00:23:13,280
some commands to starliner for things

697
00:23:17,190 --> 00:23:14,720
like cabin pressurization and

698
00:23:18,549 --> 00:23:17,200
communications checks and as soon as the

699
00:23:20,950 --> 00:23:18,559
starliner spacecraft lifts off the

700
00:23:23,029 --> 00:23:20,960
launch pad this group of space flight

701
00:23:24,950 --> 00:23:23,039
specialist will be watching carefully

702
00:23:27,190 --> 00:23:24,960
and making commands where needed to keep

703
00:23:29,110 --> 00:23:27,200
the vehicle on its precise path to the

704
00:23:30,870 --> 00:23:29,120
international space station

705
00:23:32,470 --> 00:23:30,880
and another group that is keenly

706
00:23:34,710 --> 00:23:32,480
watching today is of course the

707
00:23:37,190 --> 00:23:34,720
astronauts who are going to make

708
00:23:39,750 --> 00:23:37,200
the first flight on starliner when we do

709
00:23:42,710 --> 00:23:39,760
this again in early 2020. that is of

710
00:23:44,789 --> 00:23:42,720
course nasa astronaut mike fink and nasa

711
00:23:47,350 --> 00:23:44,799
astronaut nicole mann along with boeing

712
00:23:49,510 --> 00:23:47,360
astronaut chris ferguson they are down

713
00:23:51,830 --> 00:23:49,520

at the cape watching today's launch from

714
00:23:54,630 --> 00:23:51,840
control centers but we had a chance to

715
00:23:56,070 --> 00:23:54,640
sit down and talk with them a little bit

716
00:23:57,669 --> 00:23:56,080
a little bit

717
00:23:59,990 --> 00:23:57,679
earlier to

718
00:24:04,310 --> 00:24:00,000
find out their their views on this new

719
00:24:08,310 --> 00:24:06,390
in 10 or 15 years there's going to be

720
00:24:10,230 --> 00:24:08,320
more than just one space station in fact

721
00:24:11,909 --> 00:24:10,240
when we'll say oh the space station

722
00:24:13,190 --> 00:24:11,919
people say what you want and that's

723
00:24:14,789 --> 00:24:13,200
going to be really neat we're going to

724
00:24:17,190 --> 00:24:14,799
have people that are going to be able to

725
00:24:19,350 --> 00:24:17,200
to everyday people regular scientists

726
00:24:21,990 --> 00:24:19,360
and engineers even people with tourists

727
00:24:24,230 --> 00:24:22,000
they can buy a ticket to go see it's go

728
00:24:25,830 --> 00:24:24,240
to the space stations in orbit we're

729
00:24:26,950 --> 00:24:25,840
going to be manufacturing new things

730
00:24:29,430 --> 00:24:26,960
that are going to make life better on

731
00:24:31,510 --> 00:24:29,440
planet earth and there's a great uh

732
00:24:33,669 --> 00:24:31,520
unique opportunity for our country

733
00:24:35,510 --> 00:24:33,679
united states to establish these

734
00:24:37,430 --> 00:24:35,520
industries in low-earth orbit to make

735
00:24:40,549 --> 00:24:37,440
life better on planet earth and continue

736
00:24:41,040 --> 00:24:40,559
the engine of our of our economy of

737
00:24:42,710 --> 00:24:41,050
high-tech

738
00:24:44,470 --> 00:24:42,720

[Music]

739
00:24:45,909 --> 00:24:44,480
i don't think astronauts are as famous

740
00:24:47,110 --> 00:24:45,919
today as they used to be nor do i think

741
00:24:48,630 --> 00:24:47,120
they should be

742
00:24:50,950 --> 00:24:48,640
if everybody whoever flew into space

743
00:24:53,029 --> 00:24:50,960
became infinitely famous then

744
00:24:54,789 --> 00:24:53,039
we're not making it available for

745
00:24:56,070 --> 00:24:54,799
anybody

746
00:24:57,990 --> 00:24:56,080
so

747
00:24:59,430 --> 00:24:58,000
when we get into an airliner who knows

748
00:25:01,909 --> 00:24:59,440
the name of the captain of the airliner

749
00:25:04,310 --> 00:25:01,919
nobody knows the cabin in the airliner

750
00:25:06,070 --> 00:25:04,320
and if space flight is ever going to

751
00:25:07,909 --> 00:25:06,080
become as commonplace as we'd like it to

752
00:25:10,310 --> 00:25:07,919
be

753
00:25:13,110 --> 00:25:10,320
astronauts are just pilots who get

754
00:25:15,029 --> 00:25:13,120
people back and forth

755
00:25:17,190 --> 00:25:15,039
it's really going to be this combined

756
00:25:18,789 --> 00:25:17,200
effort probably with multiple commercial

757
00:25:20,710 --> 00:25:18,799
industries working together along with

758
00:25:22,630 --> 00:25:20,720
government and i think that's how we're

759
00:25:24,549 --> 00:25:22,640
going to see the future of space

760
00:25:26,310 --> 00:25:24,559
exploration you know to the moon and

761
00:25:27,669 --> 00:25:26,320
then eventually to mars you know we

762
00:25:28,950 --> 00:25:27,679
don't have we wouldn't be able to

763
00:25:31,110 --> 00:25:28,960

sustain

764
00:25:32,549 --> 00:25:31,120
that type of exploration without

765
00:25:34,630 --> 00:25:32,559
commercial industry

766
00:25:36,149 --> 00:25:34,640
um and really a lot of it comes down to

767
00:25:38,230 --> 00:25:36,159
us the people right you need the people

768
00:25:39,909 --> 00:25:38,240
you need the ideas and you need those

769
00:25:40,950 --> 00:25:39,919
folks that come in and it's good to have

770
00:25:42,870 --> 00:25:40,960
a little bit of that commercial

771
00:25:49,350 --> 00:25:42,880
competition right it keeps everybody

772
00:25:52,630 --> 00:25:50,870
it's always great hearing from the crew

773
00:25:54,710 --> 00:25:52,640
members themselves they're getting a

774
00:25:57,029 --> 00:25:54,720
front row seat on the future human space

775
00:25:59,269 --> 00:25:57,039
flight and what an exciting future it is

776
00:26:00,710 --> 00:25:59,279
uh for anyone who wants to work in human

777
00:26:02,950 --> 00:26:00,720
space flight especially all the young

778
00:26:04,950 --> 00:26:02,960
people watching today exactly but first

779
00:26:07,350 --> 00:26:04,960
we've got this critical uncrew flight

780
00:26:08,950 --> 00:26:07,360
test which is a important step in the

781
00:26:10,950 --> 00:26:08,960
journey to launch american astronauts

782
00:26:12,710 --> 00:26:10,960
from american soil and nasa will use the

783
00:26:14,549 --> 00:26:12,720
data from this test flight to help

784
00:26:16,710 --> 00:26:14,559
certify the systems to carry those

785
00:26:18,710 --> 00:26:16,720
astronauts we just heard from we are

786
00:26:20,549 --> 00:26:18,720
about 38 minutes from launch now so we

787
00:26:21,669 --> 00:26:20,559
want to check in on the rocket dylan

788
00:26:23,029 --> 00:26:21,679

what's the latest you're hearing from

789
00:26:24,549 --> 00:26:23,039
the asoc

790
00:26:26,789 --> 00:26:24,559
hey things are continuing to go very

791
00:26:28,470 --> 00:26:26,799
well here in the asoc um we've gotten

792
00:26:29,909 --> 00:26:28,480
the report that the all the ground crews

793
00:26:31,750 --> 00:26:29,919
have cleared the crew access tower

794
00:26:33,990 --> 00:26:31,760
they've moved a safe distance away from

795
00:26:36,470 --> 00:26:34,000
the pad up to a road block on the

796
00:26:37,909 --> 00:26:36,480
on the beach road there so

797
00:26:39,669 --> 00:26:37,919
things are going very well here we do

798
00:26:41,190 --> 00:26:39,679
have a weather update planned in about

799
00:26:43,110 --> 00:26:41,200
about eight minutes at l minus 30

800
00:26:44,549 --> 00:26:43,120
minutes uh not expecting any surprises

801
00:26:45,909 --> 00:26:44,559
there although we've had a breezy past

802
00:26:47,590 --> 00:26:45,919
couple of days the weather continues to

803
00:26:49,430 --> 00:26:47,600
be very favorable for a launch on time

804
00:26:51,190 --> 00:26:49,440
today so we're looking forward to that

805
00:26:53,269 --> 00:26:51,200
final weather report

806
00:26:56,310 --> 00:26:53,279
um and the team here is just to continue

807
00:26:57,830 --> 00:26:56,320
to remain uh focused but very excited

808
00:26:59,669 --> 00:26:57,840
the mood here as been discussed

809
00:27:00,549 --> 00:26:59,679
previously is really electric the team

810
00:27:03,269 --> 00:27:00,559
is just

811
00:27:05,029 --> 00:27:03,279
um very excited to be uh getting ever

812
00:27:06,710 --> 00:27:05,039
closer to launch and we're really

813
00:27:08,630 --> 00:27:06,720

looking forward to that hitting that t0

814
00:27:10,549 --> 00:27:08,640
at 636 here

815
00:27:12,630 --> 00:27:10,559
in just a little while josh murray back

816
00:27:14,950 --> 00:27:12,640
to you

817
00:27:16,789 --> 00:27:14,960
thanks dylan i know for y'all at ula

818
00:27:19,590 --> 00:27:16,799
today isn't something all that new you

819
00:27:21,350 --> 00:27:19,600
have more than 130 successful launches

820
00:27:23,029 --> 00:27:21,360
under your belt that's why boeing chose

821
00:27:25,190 --> 00:27:23,039
the launch chose atlas to launch

822
00:27:27,350 --> 00:27:25,200
starliner because when we were deciding

823
00:27:29,269 --> 00:27:27,360
on a launch vehicle ula was boeing's

824
00:27:31,350 --> 00:27:29,279
obvious choice when you're talking about

825
00:27:34,310 --> 00:27:31,360
launching people safety and reliability

826
00:27:35,990 --> 00:27:34,320
are the biggest priorities

827
00:27:37,990 --> 00:27:36,000
one of the design parameters on the

828
00:27:40,149 --> 00:27:38,000
spacecraft from the very beginning was

829
00:27:42,630 --> 00:27:40,159
to be launched vehicle agnostic or to be

830
00:27:43,590 --> 00:27:42,640
able to move from one launch vehicle to

831
00:27:45,510 --> 00:27:43,600
the other

832
00:27:48,710 --> 00:27:45,520
without a significant amount of design

833
00:27:50,149 --> 00:27:48,720
change on the spacecraft

834
00:27:52,149 --> 00:27:50,159
for the early flights of the starliner

835
00:27:53,590 --> 00:27:52,159
we selected the atlas 5 because of its

836
00:27:55,909 --> 00:27:53,600
unparalleled safety and mission

837
00:27:57,990 --> 00:27:55,919
assurance the long-term success in this

838
00:27:59,990 --> 00:27:58,000

market is going to be driven by customer

839
00:28:02,549 --> 00:28:00,000
confidence and safety and reliability

840
00:28:04,789 --> 00:28:02,559
every aspect of our spacecraft and our

841
00:28:09,750 --> 00:28:04,799
systems has been designed with that as a

842
00:28:12,789 --> 00:28:10,549
now

843
00:28:14,950 --> 00:28:12,799
ula has launched nasa science missions

844
00:28:16,630 --> 00:28:14,960
to almost every planet in the solar

845
00:28:18,870 --> 00:28:16,640
system but this is the first time

846
00:28:21,029 --> 00:28:18,880
they're tasked with launching astronauts

847
00:28:22,789 --> 00:28:21,039
it's a very special mission for everyone

848
00:28:24,389 --> 00:28:22,799
involved and it's taken years to get

849
00:28:25,990 --> 00:28:24,399
here but let's take a look at some of

850
00:28:27,350 --> 00:28:26,000
the hard work that's happened just over

851
00:28:29,990 --> 00:28:27,360
the past few months to get these

852
00:28:32,149 --> 00:28:30,000
vehicles ready for today

853
00:28:33,990 --> 00:28:32,159
there you see um the atlas 5 being

854
00:28:36,389 --> 00:28:34,000
stacked at the vertical integration

855
00:28:38,870 --> 00:28:36,399
facility this operation was taking place

856
00:28:40,950 --> 00:28:38,880
on november 4th um and this was in

857
00:28:43,029 --> 00:28:40,960
preparation for a long starliner to be

858
00:28:44,549 --> 00:28:43,039
rolled out and made it on top so you see

859
00:28:47,350 --> 00:28:44,559
on the different stages of the rocket

860
00:28:48,950 --> 00:28:47,360
being hoisted into position there and

861
00:28:50,630 --> 00:28:48,960
there's starliner in front of our

862
00:28:52,870 --> 00:28:50,640
commercial crew and cargo processing

863
00:28:54,549 --> 00:28:52,880

facility it's an old space shuttle

864
00:28:56,230 --> 00:28:54,559
garage essentially

865
00:28:58,310 --> 00:28:56,240
and there it is rolling in front of the

866
00:29:00,630 --> 00:28:58,320
iconic vehicle assembly building here at

867
00:29:03,350 --> 00:29:00,640
kennedy space center this rollout was on

868
00:29:05,430 --> 00:29:03,360
november 21st it took about a six mile

869
00:29:08,310 --> 00:29:05,440
path out to the launch pad we got some

870
00:29:10,710 --> 00:29:08,320
beautiful drone footage of that day

871
00:29:12,950 --> 00:29:10,720
i love these shots it was a gorgeous day

872
00:29:14,389 --> 00:29:12,960
with a spacecraft rolling down the beach

873
00:29:16,470 --> 00:29:14,399
you know a site you can really only see

874
00:29:19,110 --> 00:29:16,480
here at the kennedy space center

875
00:29:20,710 --> 00:29:19,120
there it is going down beach road

876
00:29:22,710 --> 00:29:20,720
approaching that vertical integration

877
00:29:24,389 --> 00:29:22,720
facility will be picked up by a crane

878
00:29:26,870 --> 00:29:24,399
and integrated with the rocket that

879
00:29:28,389 --> 00:29:26,880
really only takes a couple of hours it's

880
00:29:29,750 --> 00:29:28,399
pretty impressive how quickly our teams

881
00:29:31,909 --> 00:29:29,760
can work on this

882
00:29:33,909 --> 00:29:31,919
and then from there it was ready to be

883
00:29:35,350 --> 00:29:33,919
rolled out to the pad for i know tori

884
00:29:37,190 --> 00:29:35,360
talked about earlier that wet dress

885
00:29:38,950 --> 00:29:37,200
rehearsal with the fueled rocket that

886
00:29:41,190 --> 00:29:38,960
was the integrated day of launch test

887
00:29:43,190 --> 00:29:41,200
for all the teams to practice one final

888
00:29:45,430 --> 00:29:43,200

time before today

889
00:29:48,389 --> 00:29:45,440
exactly there it is rolling

890
00:29:51,830 --> 00:29:50,230
and most of that video covers the last

891
00:29:53,350 --> 00:29:51,840
few months as we got ready for launch

892
00:29:55,029 --> 00:29:53,360
but it really doesn't even scratch the

893
00:29:57,510 --> 00:29:55,039
surface of all the hard work that's

894
00:29:59,830 --> 00:29:57,520
taken by so many people to get starliner

895
00:30:01,909 --> 00:29:59,840
ready for today but we are finally here

896
00:30:03,990 --> 00:30:01,919
today so let's go back to the bmcc to

897
00:30:05,830 --> 00:30:04,000
see how starliner is doing tori our

898
00:30:09,190 --> 00:30:05,840
launch team our launch team's tracking

899
00:30:11,830 --> 00:30:09,200
any issues right now hi josh uh here in

900
00:30:13,669 --> 00:30:11,840
the bmcc we are not tracking any issues

901
00:30:15,909 --> 00:30:13,679
it looks like everything is set and

902
00:30:17,110 --> 00:30:15,919
ready for for a good and clean launch

903
00:30:19,669 --> 00:30:17,120
here uh

904
00:30:20,870 --> 00:30:19,679
in the in ksc

905
00:30:22,549 --> 00:30:20,880
now uh

906
00:30:24,870 --> 00:30:22,559
you can see the the people in the room

907
00:30:26,630 --> 00:30:24,880
here are all really tied into data

908
00:30:29,029 --> 00:30:26,640
that's coming in and all of these teams

909
00:30:30,789 --> 00:30:29,039
are really just looking at

910
00:30:32,470 --> 00:30:30,799
a bunch of data that's coming off the

911
00:30:33,830 --> 00:30:32,480
rocket in real time right now to ensure

912
00:30:35,990 --> 00:30:33,840
that everything

913
00:30:39,830 --> 00:30:36,000

that we see is well inside envelopes for

914
00:30:45,750 --> 00:30:41,990
everything is looking great here in the

915
00:30:48,310 --> 00:30:45,760
bmcc so back to you joshua marie

916
00:30:49,510 --> 00:30:48,320
all right thanks a lot tori we want to

917
00:30:52,310 --> 00:30:49,520
give you a closer look of those

918
00:30:54,630 --> 00:30:52,320
beautiful views of starliner and atlas 5

919
00:30:56,950 --> 00:30:54,640
over on space launch complex 41. you can

920
00:30:59,029 --> 00:30:56,960
see it right behind us yeah we're about

921
00:31:00,789 --> 00:30:59,039
33 minutes away from launch so let's

922
00:31:02,630 --> 00:31:00,799
take a look at what the launch and a set

923
00:31:05,000 --> 00:31:02,640
phases of starliner's mission will look

924
00:31:18,070 --> 00:31:05,010
like today

925
00:31:22,389 --> 00:31:20,149
the mission starts at t minus zero with

926
00:31:24,310 --> 00:31:22,399
liftoff after the atlas v booster

927
00:31:25,430 --> 00:31:24,320
engines water life and send the vehicle

928
00:31:27,830 --> 00:31:25,440
skyward

929
00:31:29,830 --> 00:31:27,840
soon after at t plus 12 seconds the

930
00:31:31,669 --> 00:31:29,840
rocket begins the roll program putting

931
00:31:37,190 --> 00:31:31,679
the crew in a heads down position to

932
00:31:42,070 --> 00:31:39,990
max q starts at 41 seconds that's also

933
00:31:44,070 --> 00:31:42,080
known as max aerodynamic pressure this

934
00:31:45,830 --> 00:31:44,080
is a critical time when the atmospheric

935
00:31:47,950 --> 00:31:45,840
forces on the rocket are the highest

936
00:31:50,710 --> 00:31:47,960
they'll reach

937
00:31:53,269 --> 00:31:50,720
[Music]

938
00:31:55,269 --> 00:31:53,279

at one minute 35 seconds the two solid

939
00:31:58,389 --> 00:31:55,279
rocket boosters run out of fuel and burn

940
00:32:01,669 --> 00:31:58,399
out less than a minute later at plus 222

941
00:32:03,669 --> 00:32:01,679
they separate from the booster

942
00:32:06,549 --> 00:32:03,679
the main engine keeps burning for almost

943
00:32:09,269 --> 00:32:06,559
two more minutes then at plus 429

944
00:32:10,870 --> 00:32:09,279
booster engine cutoff or biko six

945
00:32:13,190 --> 00:32:10,880
seconds later the booster stage

946
00:32:14,710 --> 00:32:13,200
separates and six seconds after that so

947
00:32:17,590 --> 00:32:14,720
does the ascent cover on top of

948
00:32:19,830 --> 00:32:17,600
starliner at plus 4 minutes 45 seconds

949
00:32:22,789 --> 00:32:19,840
the centaur upper stage ignites pushing

950
00:32:25,669 --> 00:32:22,799
starliner to near orbital speeds then at

951
00:32:27,590 --> 00:32:25,679
plus 505 the aeroskirt jettisons since

952
00:32:29,590 --> 00:32:27,600
starliner and centaur are free of the

953
00:32:32,110 --> 00:32:29,600
atmosphere and no longer need that

954
00:32:35,509 --> 00:32:32,120
aerodynamic support

955
00:32:37,909 --> 00:32:35,519
[Music]

956
00:32:40,389 --> 00:32:37,919
after a long six plus minute push from

957
00:32:44,149 --> 00:32:40,399
centaur main engine cutoff or miko

958
00:32:46,710 --> 00:32:44,159
happens at plus 11 54. then when centaur

959
00:32:48,710 --> 00:32:46,720
successfully separates almost 15 minutes

960
00:32:51,509 --> 00:32:48,720
after launch the rocket's job is done

961
00:32:54,389 --> 00:32:51,519
but starliner is not quite in orbit yet

962
00:32:56,630 --> 00:32:54,399
after a long 16 minute coast and 31

963
00:32:59,029 --> 00:32:56,640

minutes after launch starliner ignites

964
00:33:00,870 --> 00:32:59,039
four of its a facing omak engines for

965
00:33:04,549 --> 00:33:00,880
the orbital insertion burn and the

966
00:33:08,149 --> 00:33:06,310
it's definitely going to be an exciting

967
00:33:09,909 --> 00:33:08,159
ascent but before the rocket is declared

968
00:33:12,389 --> 00:33:09,919
ready for launch some teams have to

969
00:33:14,070 --> 00:33:12,399
report readiness in some upcoming polls

970
00:33:15,830 --> 00:33:14,080
right before the launch vehicle poll the

971
00:33:17,590 --> 00:33:15,840
starliner control rooms are up first

972
00:33:19,350 --> 00:33:17,600
both teams in florida and houston are

973
00:33:20,950 --> 00:33:19,360
preparing to report out so let's go back

974
00:33:24,149 --> 00:33:20,960
to houston to see how they're doing

975
00:33:25,669 --> 00:33:24,159
steve how's mission control

976
00:33:28,389 --> 00:33:25,679
thank you josh everything looks very

977
00:33:30,549 --> 00:33:28,399
exciting there in florida here richard

978
00:33:32,549 --> 00:33:30,559
jones will be polling his team in just a

979
00:33:35,509 --> 00:33:32,559
few minutes this is the final chance for

980
00:33:38,310 --> 00:33:35,519
him to get a go no go from his team of

981
00:33:41,430 --> 00:33:38,320
system specialists and then he will use

982
00:33:43,509 --> 00:33:41,440
that poll to inform his own go no-go

983
00:33:45,990 --> 00:33:43,519
decision for the launch conductors poll

984
00:33:47,909 --> 00:33:46,000
later that will uh set the stage to come

985
00:33:50,070 --> 00:33:47,919
out of terminal count

986
00:33:51,669 --> 00:33:50,080
and meanwhile in space the international

987
00:33:53,029 --> 00:33:51,679
space station crew is standing by for

988
00:33:54,310 --> 00:33:53,039

today's launch as well they are

989
00:33:56,470 --> 00:33:54,320
commander

990
00:33:57,830 --> 00:33:56,480
luca parmitano from the european space

991
00:34:00,470 --> 00:33:57,840
agency isa

992
00:34:03,029 --> 00:34:00,480
nasa flight engineers christina cook

993
00:34:04,549 --> 00:34:03,039
jessica mear and andrew morgan and

994
00:34:07,029 --> 00:34:04,559
roscosmos flight engineers oleg

995
00:34:08,629 --> 00:34:07,039
skropochka and alex kortsov they're all

996
00:34:10,790 --> 00:34:08,639
going to be waiting on board the space

997
00:34:13,190 --> 00:34:10,800
station for starliner's arrival tomorrow

998
00:34:15,430 --> 00:34:13,200
but mir and cook have a particularly

999
00:34:17,349 --> 00:34:15,440
crucial road role to play in that

1000
00:34:19,270 --> 00:34:17,359
rendezvous they'll be sending commands

1001
00:34:20,629 --> 00:34:19,280
to the starliner vehicle helping with

1002
00:34:21,909 --> 00:34:20,639
some of the demonstrations to make sure

1003
00:34:23,190 --> 00:34:21,919
it's going to be able to rendezvous

1004
00:34:25,109 --> 00:34:23,200
safely

1005
00:34:27,829 --> 00:34:25,119
so this will be the next uh the next

1006
00:34:29,030 --> 00:34:27,839
major milestone as we count down towards

1007
00:34:31,030 --> 00:34:29,040
20

1008
00:34:34,310 --> 00:34:31,040
years of continuous human presence in

1009
00:34:39,030 --> 00:34:36,550
the international space station a

1010
00:34:41,750 --> 00:34:39,040
football field sized million pound

1011
00:34:42,950 --> 00:34:41,760
laboratory flying around planet earth at

1012
00:34:45,109 --> 00:34:42,960
17

1013
00:34:47,589 --> 00:34:45,119

500 miles per hour

1014
00:34:49,829 --> 00:34:47,599
it's our home in low earth orbit and the

1015
00:34:51,669 --> 00:34:49,839
bridge to exploring the far reaches of

1016
00:34:54,710 --> 00:34:51,679
our solar system

1017
00:34:55,829 --> 00:34:54,720
a place to learn what it takes to live

1018
00:34:58,550 --> 00:34:55,839
to work

1019
00:35:00,550 --> 00:34:58,560
to thrive in space

1020
00:35:02,310 --> 00:35:00,560
thanks to space agencies representing

1021
00:35:04,710 --> 00:35:02,320
more than a dozen countries around the

1022
00:35:07,109 --> 00:35:04,720
world it went from the drawing board to

1023
00:35:09,510 --> 00:35:07,119
liftoff when the first piece flew into

1024
00:35:11,349 --> 00:35:09,520
space in 1998

1025
00:35:12,550 --> 00:35:11,359
that kicked off over a decade of

1026
00:35:14,870 --> 00:35:12,560
construction

1027
00:35:16,870 --> 00:35:14,880
hauling the station to orbit piece by

1028
00:35:18,710 --> 00:35:16,880
piece on nasa's space shuttle and

1029
00:35:20,550 --> 00:35:18,720
russian rockets

1030
00:35:23,190 --> 00:35:20,560
and after the first crew arrived in

1031
00:35:26,069 --> 00:35:23,200
november 2000 we started an unbroken

1032
00:35:27,589 --> 00:35:26,079
streak of humans living and working in

1033
00:35:29,910 --> 00:35:27,599
space

1034
00:35:31,829 --> 00:35:29,920
building on the legacy of past outposts

1035
00:35:33,750 --> 00:35:31,839
like skylab and mir

1036
00:35:36,069 --> 00:35:33,760
the international space station became

1037
00:35:37,750 --> 00:35:36,079
the training ground for humanity's next

1038
00:35:39,270 --> 00:35:37,760

great journeys

1039
00:35:41,430 --> 00:35:39,280
learning how to live in space for

1040
00:35:43,589 --> 00:35:41,440
extreme periods of time

1041
00:35:45,589 --> 00:35:43,599
building and perfecting the technologies

1042
00:35:47,030 --> 00:35:45,599
necessary to travel to our neighbors in

1043
00:35:49,349 --> 00:35:47,040
the solar system

1044
00:35:51,910 --> 00:35:49,359
it gave us a place right on our doorstep

1045
00:35:53,109 --> 00:35:51,920
to prepare for the next giant leap into

1046
00:35:55,270 --> 00:35:53,119
the unknown

1047
00:35:56,829 --> 00:35:55,280
and thanks to the station a new era in

1048
00:35:59,510 --> 00:35:56,839
outer space is

1049
00:36:01,670 --> 00:35:59,520
unfolding what was once the domain of

1050
00:36:03,990 --> 00:36:01,680
only nations and governments is now

1051
00:36:06,150 --> 00:36:04,000
populated by a growing space fleet from

1052
00:36:08,790 --> 00:36:06,160
american industry

1053
00:36:09,829 --> 00:36:08,800
private spacecraft to fly cargo and crew

1054
00:36:12,310 --> 00:36:09,839
members

1055
00:36:13,750 --> 00:36:12,320
new habitats and technologies for future

1056
00:36:16,550 --> 00:36:13,760
space missions

1057
00:36:19,030 --> 00:36:16,560
and an open door for companies research

1058
00:36:21,670 --> 00:36:19,040
institutions and even students around

1059
00:36:25,030 --> 00:36:21,680
the world to do research in space that

1060
00:36:27,750 --> 00:36:25,040
have never had the opportunity before

1061
00:36:30,069 --> 00:36:27,760
all laying the foundation for a robust

1062
00:36:32,790 --> 00:36:30,079
economy in space

1063
00:36:34,870 --> 00:36:32,800

there have been thousands of experiments

1064
00:36:36,870 --> 00:36:34,880
hundreds of spacewalks

1065
00:36:38,470 --> 00:36:36,880
endless hours of challenges and

1066
00:36:40,390 --> 00:36:38,480
successes

1067
00:36:42,310 --> 00:36:40,400
all done by humans hailing from

1068
00:36:44,390 --> 00:36:42,320
countries around the globe

1069
00:36:46,630 --> 00:36:44,400
the international space station is what

1070
00:36:49,589 --> 00:36:46,640
we can achieve as a planet when we come

1071
00:36:52,150 --> 00:36:49,599
together to do the things that are hard

1072
00:36:54,310 --> 00:36:52,160
and the work isn't slowing down

1073
00:36:55,270 --> 00:36:54,320
because we're ready for the next giant

1074
00:36:57,990 --> 00:36:55,280
leap

1075
00:36:59,990 --> 00:36:58,000
because we're ready to go farther

1076
00:37:00,790 --> 00:37:00,000
because what we do and learn along the

1077
00:37:07,430 --> 00:37:00,800
way

1078
00:37:12,310 --> 00:37:10,069
and you really get an idea from that of

1079
00:37:14,550 --> 00:37:12,320
the importance of the research and the

1080
00:37:15,510 --> 00:37:14,560
benefit from the international space

1081
00:37:17,750 --> 00:37:15,520
station

1082
00:37:19,510 --> 00:37:17,760
every day astronauts living up there

1083
00:37:21,589 --> 00:37:19,520
doing their experiments

1084
00:37:23,510 --> 00:37:21,599
there is nowhere like space to test the

1085
00:37:26,630 --> 00:37:23,520
systems that astronauts will rely on

1086
00:37:28,150 --> 00:37:26,640
when they go to the moon and on to mars

1087
00:37:30,230 --> 00:37:28,160
and of course before we make those

1088
00:37:32,310 --> 00:37:30,240

flights we have to make these flights

1089
00:37:34,150 --> 00:37:32,320
including carrying

1090
00:37:36,150 --> 00:37:34,160
carrying a few hundred pounds of cargo

1091
00:37:37,670 --> 00:37:36,160
to the international space station

1092
00:37:39,510 --> 00:37:37,680
including the food

1093
00:37:41,430 --> 00:37:39,520
that will go up as kind of a care

1094
00:37:43,910 --> 00:37:41,440
package for the crew up there

1095
00:37:47,270 --> 00:37:43,920
also taking up flags coins and the

1096
00:37:48,790 --> 00:37:47,280
illustrious silver snoopys and you know

1097
00:37:50,630 --> 00:37:48,800
one of the phrases that you hear a lot

1098
00:37:53,030 --> 00:37:50,640
in human space flight is standing on the

1099
00:37:54,950 --> 00:37:53,040
shoulders of giants and that basically

1100
00:37:56,470 --> 00:37:54,960
represents uh

1101
00:37:58,710 --> 00:37:56,480
represents the

1102
00:38:01,430 --> 00:37:58,720
the work that our predecessors have done

1103
00:38:03,430 --> 00:38:01,440
to make this space program so successful

1104
00:38:04,390 --> 00:38:03,440
and the work that everybody puts in

1105
00:38:06,230 --> 00:38:04,400
every day

1106
00:38:07,190 --> 00:38:06,240
to uh to achieve these wonderful

1107
00:38:08,550 --> 00:38:07,200
missions

1108
00:38:10,470 --> 00:38:08,560
so

1109
00:38:13,670 --> 00:38:10,480
items like these like the flags they're

1110
00:38:15,910 --> 00:38:13,680
often used to commemorate and uh tokens

1111
00:38:18,630 --> 00:38:15,920
such as silver snoopies give us a chance

1112
00:38:20,630 --> 00:38:18,640
to uh for boeing and nasa to

1113
00:38:23,109 --> 00:38:20,640

thank the workforce that puts in

1114
00:38:24,470 --> 00:38:23,119
everything that goes into these flights

1115
00:38:25,910 --> 00:38:24,480
that's right that's one more reason to

1116
00:38:27,510 --> 00:38:25,920
be excited to get starliner off the

1117
00:38:30,550 --> 00:38:27,520
ground today so we can get some of that

1118
00:38:32,550 --> 00:38:30,560
fun cargo back uh after landing in the

1119
00:38:34,150 --> 00:38:32,560
meantime though uh the flight control

1120
00:38:36,790 --> 00:38:34,160
team here in houston just gave richard

1121
00:38:39,109 --> 00:38:36,800
jones there go for launch so uh

1122
00:38:41,030 --> 00:38:39,119
everything's proceeding right on time

1123
00:38:42,150 --> 00:38:41,040
and we're gonna hand back now to marie

1124
00:38:43,990 --> 00:38:42,160
and josh

1125
00:38:45,990 --> 00:38:44,000
all right thanks steven brandy um it is

1126
00:38:48,150 --> 00:38:46,000
so cool to see you guys there in mission

1127
00:38:49,910 --> 00:38:48,160
control houston for what will soon be

1128
00:38:51,750 --> 00:38:49,920
crew launches again and josh i know you

1129
00:38:53,589 --> 00:38:51,760
and i both know the people behind the

1130
00:38:56,710 --> 00:38:53,599
scenes just how many people involved and

1131
00:38:58,230 --> 00:38:56,720
how long and hard they have just poured

1132
00:39:00,069 --> 00:38:58,240
their hearts and souls into this you

1133
00:39:02,069 --> 00:39:00,079
know i got chills myself hearing that

1134
00:39:03,430 --> 00:39:02,079
mission control is go and i know the

1135
00:39:05,030 --> 00:39:03,440
people sitting on console you know

1136
00:39:06,630 --> 00:39:05,040
they're focused on their data but it's

1137
00:39:08,630 --> 00:39:06,640
just such an emotional day for them

1138
00:39:10,470 --> 00:39:08,640

still yep so we want to go over to dylan

1139
00:39:12,950 --> 00:39:10,480
now in the asoc for a quick status check

1140
00:39:14,470 --> 00:39:12,960
dylan how's it going over there

1141
00:39:16,470 --> 00:39:14,480
hey marie we're continuing to have a

1142
00:39:18,390 --> 00:39:16,480
very very clean countdown here the team

1143
00:39:19,750 --> 00:39:18,400
is working no issues uh just a few

1144
00:39:21,990 --> 00:39:19,760
moments ago we heard from launch weather

1145
00:39:23,430 --> 00:39:22,000
officer jessica williams and got a

1146
00:39:25,109 --> 00:39:23,440
weather report that's just about as good

1147
00:39:26,470 --> 00:39:25,119
as it gets from uh from jessica and the

1148
00:39:29,430 --> 00:39:26,480
launch weather team over at the 40th

1149
00:39:30,950 --> 00:39:29,440
space wing 45th space wing clear skies

1150
00:39:33,349 --> 00:39:30,960
we're go in all constraints with just a

1151
00:39:35,750 --> 00:39:33,359
10 probability of violation for uh for

1152
00:39:37,190 --> 00:39:35,760
ground winds but those winds are well

1153
00:39:38,470 --> 00:39:37,200
under our constraints so we're not

1154
00:39:42,390 --> 00:39:38,480
looking for

1155
00:39:43,510 --> 00:39:42,400
for any with weather issues this morning

1156
00:39:45,109 --> 00:39:43,520
you know one of the big differences

1157
00:39:46,550 --> 00:39:45,119
between our countdown today as compared

1158
00:39:47,750 --> 00:39:46,560
to countdowns that we run for our other

1159
00:39:49,829 --> 00:39:47,760
missions is the length of this final

1160
00:39:51,750 --> 00:39:49,839
built-in hold uh generally our final

1161
00:39:53,750 --> 00:39:51,760
built-in hold is 15 or 30 minutes and

1162
00:39:55,510 --> 00:39:53,760
that's dependent on our on our launch

1163
00:39:56,790 --> 00:39:55,520

window but today's built-in hole in the

1164
00:39:58,950 --> 00:39:56,800
in the built-in hole that we're going to

1165
00:40:00,710 --> 00:39:58,960
use for commercial crew missions is four

1166
00:40:02,950 --> 00:40:00,720
hours and that during that time is the

1167
00:40:05,750 --> 00:40:02,960
time when the boeing team goes back out

1168
00:40:07,430 --> 00:40:05,760
and uh finishes loading up that cargo

1169
00:40:09,349 --> 00:40:07,440
into the starliner as well as that's

1170
00:40:10,950 --> 00:40:09,359
when they launch or load the astronauts

1171
00:40:12,230 --> 00:40:10,960
as well

1172
00:40:13,589 --> 00:40:12,240
those are all the processes that the

1173
00:40:15,510 --> 00:40:13,599
team has checked out today of course all

1174
00:40:16,550 --> 00:40:15,520
that is wrapped up and done

1175
00:40:18,390 --> 00:40:16,560
um

1176
00:40:19,349 --> 00:40:18,400
so the remaining work we have ahead of

1177
00:40:20,950 --> 00:40:19,359
us here

1178
00:40:22,230 --> 00:40:20,960
are we're going to be closing out our

1179
00:40:24,470 --> 00:40:22,240
prop and hydraulic systems get those

1180
00:40:26,870 --> 00:40:24,480
configured for flight the avionics team

1181
00:40:28,630 --> 00:40:26,880
will be taking the final upper level

1182
00:40:30,150 --> 00:40:28,640
wind data loading that into our avionics

1183
00:40:32,230 --> 00:40:30,160
system so that the rocket can steer

1184
00:40:33,829 --> 00:40:32,240
appropriately through our

1185
00:40:35,829 --> 00:40:33,839
through the atmosphere with the upper

1186
00:40:37,270 --> 00:40:35,839
level winds

1187
00:40:39,270 --> 00:40:37,280
there will be some com checks completed

1188
00:40:40,550 --> 00:40:39,280

between the lcc here mission control in

1189
00:40:42,710 --> 00:40:40,560
houston

1190
00:40:44,390 --> 00:40:42,720
the bmcc over kennedy space center and

1191
00:40:46,230 --> 00:40:44,400
eventually that com check will include

1192
00:40:48,470 --> 00:40:46,240
astronauts as well

1193
00:40:49,670 --> 00:40:48,480
we'll get that crew access arm retracted

1194
00:40:51,750 --> 00:40:49,680
and then we'll move into our final

1195
00:40:53,430 --> 00:40:51,760
polling for launch josh marie that's the

1196
00:40:55,190 --> 00:40:53,440
update from the asoc

1197
00:40:57,109 --> 00:40:55,200
thanks dylan that's really about as good

1198
00:40:58,390 --> 00:40:57,119
a forecast as you can hope for fingers

1199
00:41:00,309 --> 00:40:58,400
crossed that mother nature keeps

1200
00:41:01,829 --> 00:41:00,319
cooperating absolutely and in the

1201
00:41:04,150 --> 00:41:01,839
meantime mission teams across the

1202
00:41:05,670 --> 00:41:04,160
country continue preparing for flight

1203
00:41:06,470 --> 00:41:05,680
now in case of an emergency on the

1204
00:41:08,950 --> 00:41:06,480
ground

1205
00:41:11,349 --> 00:41:08,960
nasa's steve payne is on standby in the

1206
00:41:13,270 --> 00:41:11,359
emergency operation center he's the guy

1207
00:41:15,589 --> 00:41:13,280
you hope you never have to call but

1208
00:41:17,670 --> 00:41:15,599
you'll be glad he's there if you do in

1209
00:41:19,510 --> 00:41:17,680
an emergency steve would coordinate all

1210
00:41:22,309 --> 00:41:19,520
the resources on site to make sure we

1211
00:41:25,589 --> 00:41:22,319
get everyone out safely and in denver

1212
00:41:28,150 --> 00:41:25,599
ula's balor team led by lars onsiger is

1213
00:41:30,069 --> 00:41:28,160

preparing for ascent lars and his team

1214
00:41:32,069 --> 00:41:30,079
are only on console for ula during

1215
00:41:34,230 --> 00:41:32,079
starliner flights they're looking

1216
00:41:36,390 --> 00:41:34,240
specifically for anything that could go

1217
00:41:38,150 --> 00:41:36,400
wrong on ascent and will relay data to

1218
00:41:40,470 --> 00:41:38,160
mission control to be prepared for an

1219
00:41:42,950 --> 00:41:40,480
abort today is just practice for them

1220
00:41:45,670 --> 00:41:42,960
since our abort system is not active and

1221
00:41:46,950 --> 00:41:45,680
there's not crew on board

1222
00:41:48,950 --> 00:41:46,960
now throughout the show we've been

1223
00:41:51,109 --> 00:41:48,960
answering your questions about starliner

1224
00:41:53,829 --> 00:41:51,119
on social media that's right and we want

1225
00:41:56,069 --> 00:41:53,839
to take uh we got a really cool photo

1226
00:41:58,230 --> 00:41:56,079
from a starliner super fan watching um

1227
00:41:59,589 --> 00:41:58,240
all the way across the pond in ireland

1228
00:42:01,030 --> 00:41:59,599
uh of course he didn't have to get up

1229
00:42:02,390 --> 00:42:01,040
quite so early because i think it's

1230
00:42:04,309 --> 00:42:02,400
morning there now but

1231
00:42:06,390 --> 00:42:04,319
um hayden thank you so much for sending

1232
00:42:09,510 --> 00:42:06,400
your photo and please if you're watching

1233
00:42:10,870 --> 00:42:09,520
um follow us use the hashtag ask nasa

1234
00:42:12,870 --> 00:42:10,880
show us how you're watching today's

1235
00:42:14,230 --> 00:42:12,880
launch hey and i hope he sees a good

1236
00:42:15,589 --> 00:42:14,240
launch today

1237
00:42:17,829 --> 00:42:15,599
and as mission teams prepare for the

1238
00:42:19,910 --> 00:42:17,839

final parts oh sorry we have a question

1239
00:42:22,390 --> 00:42:19,920
uh stemcore wants to know uh about the

1240
00:42:25,030 --> 00:42:22,400
new boeing blue spacesuit design and the

1241
00:42:26,950 --> 00:42:25,040
materials used so it's made out of nomex

1242
00:42:29,349 --> 00:42:26,960
which is kind of standard for a lot of

1243
00:42:30,710 --> 00:42:29,359
spacesuits um because it's you know fire

1244
00:42:32,150 --> 00:42:30,720
resistant and so it would keep the

1245
00:42:33,910 --> 00:42:32,160
astronauts safe if there's anything

1246
00:42:35,589 --> 00:42:33,920
going wrong but we added a lot of

1247
00:42:37,589 --> 00:42:35,599
innovations on top of kind of what the

1248
00:42:39,990 --> 00:42:37,599
shuttle suit did um i think chris

1249
00:42:41,990 --> 00:42:40,000
ferguson's favorite is it's got a hooded

1250
00:42:43,829 --> 00:42:42,000
kind of seal so it's a soft shell hood

1251
00:42:45,109 --> 00:42:43,839
you don't have this heavy helmet on but

1252
00:42:47,190 --> 00:42:45,119
otherwise it's got touch screen

1253
00:42:48,630 --> 00:42:47,200
sensitive sensitive gloves more

1254
00:42:50,150 --> 00:42:48,640
comfortable shoes that were made by

1255
00:42:52,230 --> 00:42:50,160
reebok um

1256
00:42:53,990 --> 00:42:52,240
and you know just overall a much lighter

1257
00:42:55,670 --> 00:42:54,000
more comfortable suit for the astronauts

1258
00:42:58,150 --> 00:42:55,680
we will get to see them debut those uh

1259
00:42:59,750 --> 00:42:58,160
the next time starliner flies so as

1260
00:43:01,349 --> 00:42:59,760
mission teams prepare for the final

1261
00:43:02,630 --> 00:43:01,359
parts of the countdown we want to hear

1262
00:43:04,550 --> 00:43:02,640
from some of the people who have been

1263
00:43:06,950 --> 00:43:04,560

working so hard to get this brand new

1264
00:43:09,190 --> 00:43:06,960
spacecraft to this point building a

1265
00:43:11,109 --> 00:43:09,200
spacecraft is hard this whole team has

1266
00:43:12,950 --> 00:43:11,119
been through highs and lows to get here

1267
00:43:15,190 --> 00:43:12,960
but being this close to flight is an

1268
00:43:16,710 --> 00:43:15,200
emotional time for everyone on our team

1269
00:43:18,470 --> 00:43:16,720
so let's hear from some of the people

1270
00:43:22,790 --> 00:43:18,480
who have spent years pouring their

1271
00:43:27,589 --> 00:43:25,990
if i'm not 100 involved every single day

1272
00:43:30,870 --> 00:43:27,599
we are putting i'm sorry i'm getting

1273
00:43:35,109 --> 00:43:33,349
some of us if if something's not right

1274
00:43:40,309 --> 00:43:35,119
then you know we're not going to sleep

1275
00:43:44,069 --> 00:43:41,990
if something's not right i'm i'm not

1276
00:43:45,750 --> 00:43:44,079
going to sleep so we're going to get it

1277
00:43:47,589 --> 00:43:45,760
straightened out you're not just

1278
00:43:50,150 --> 00:43:47,599
carrying the dreams of a particular

1279
00:43:52,069 --> 00:43:50,160
company an agency but of the entire

1280
00:43:55,270 --> 00:43:52,079
world

1281
00:43:58,550 --> 00:43:55,280
both boeing and nasa are doing something

1282
00:44:00,790 --> 00:43:58,560
right now not just for the benefit of a

1283
00:44:03,109 --> 00:44:00,800
private company like boeing

1284
00:44:06,069 --> 00:44:03,119
not just for an agency like nasa they're

1285
00:44:08,710 --> 00:44:06,079
doing this on behalf of the nation for

1286
00:44:10,710 --> 00:44:08,720
the benefit of mankind this is human

1287
00:44:12,150 --> 00:44:10,720
space flight we've got people we've got

1288
00:44:14,390 --> 00:44:12,160

teammates and colleagues that are going

1289
00:44:16,470 --> 00:44:14,400
to fly in this vehicle we need to make

1290
00:44:18,470 --> 00:44:16,480
sure that we get them there safely and

1291
00:44:19,990 --> 00:44:18,480
we get them back safely i fly it every

1292
00:44:22,550 --> 00:44:20,000
time if i could

1293
00:44:24,870 --> 00:44:22,560
there's no point to any of this to

1294
00:44:28,069 --> 00:44:24,880
commercial human space flight if we

1295
00:44:29,990 --> 00:44:28,079
don't make sure our crew is safe nobody

1296
00:44:32,710 --> 00:44:30,000
understands this

1297
00:44:34,309 --> 00:44:32,720
i don't think anybody really outside of

1298
00:44:35,270 --> 00:44:34,319
this business understands what we're

1299
00:44:37,430 --> 00:44:35,280
doing

1300
00:44:38,790 --> 00:44:37,440
these spacecraft are

1301
00:44:40,550 --> 00:44:38,800
hand built

1302
00:44:42,870 --> 00:44:40,560
from the ground up and we don't even use

1303
00:44:44,309 --> 00:44:42,880
power tools on any little piece means

1304
00:44:45,510 --> 00:44:44,319
something important you don't know what

1305
00:44:47,430 --> 00:44:45,520
you don't know

1306
00:44:50,230 --> 00:44:47,440
and it's just a lessons learned and

1307
00:44:52,630 --> 00:44:50,240
keeping your eyes and ears open

1308
00:44:55,190 --> 00:44:52,640
everybody watches everybody else you

1309
00:44:57,349 --> 00:44:55,200
have to you can't make mistakes

1310
00:44:59,430 --> 00:44:57,359
there is no room for error i've heard

1311
00:45:01,190 --> 00:44:59,440
people say would you make that decision

1312
00:45:03,829 --> 00:45:01,200
with chris's wife in the room and the

1313
00:45:06,550 --> 00:45:03,839

answer is always

1314
00:45:07,349 --> 00:45:06,560
you got to put 110 percent every day

1315
00:45:09,109 --> 00:45:07,359
you know

1316
00:45:11,430 --> 00:45:09,119
and take time from our families to make

1317
00:45:13,349 --> 00:45:11,440
sure that he can come home to his our

1318
00:45:14,710 --> 00:45:13,359
grass is tall at home and our kids are

1319
00:45:16,230 --> 00:45:14,720
looking for us but i'm building a

1320
00:45:18,230 --> 00:45:16,240
spaceship to get back to a spaceship

1321
00:45:19,750 --> 00:45:18,240
that i made already you can't tweak

1322
00:45:22,069 --> 00:45:19,760
something when you're up there

1323
00:45:23,990 --> 00:45:22,079
you can only do it one time

1324
00:45:24,790 --> 00:45:24,000
i know what i've done is a pretty good

1325
00:45:27,109 --> 00:45:24,800
job

1326
00:45:28,550 --> 00:45:27,119
i might not be riding on it but i'm i'm

1327
00:45:30,309 --> 00:45:28,560
right there with them

1328
00:45:32,550 --> 00:45:30,319
launch is going to be a great day but

1329
00:45:35,109 --> 00:45:32,560
that's just the start for us when we see

1330
00:45:36,710 --> 00:45:35,119
it land and everybody's safe that's

1331
00:45:39,589 --> 00:45:36,720
going to be really when we do the high

1332
00:45:43,190 --> 00:45:41,270
now some of those people are sitting in

1333
00:45:46,150 --> 00:45:43,200
the bmcc you're looking at them right

1334
00:45:48,150 --> 00:45:46,160
now on console they should be about to

1335
00:45:50,150 --> 00:45:48,160
enter their final poll and the boeing

1336
00:45:52,309 --> 00:45:50,160
launch teams have reported out from the

1337
00:45:54,309 --> 00:45:52,319
control room on the hardware readiness

1338
00:45:56,230 --> 00:45:54,319

that signaled that starliner is ready

1339
00:45:58,150 --> 00:45:56,240
for that terminal count and tory's been

1340
00:46:01,190 --> 00:45:58,160
keeping tabs on their progress tori how

1341
00:46:03,030 --> 00:46:01,200
are the final starliner polls going

1342
00:46:04,630 --> 00:46:03,040
thanks josh the start final starliner

1343
00:46:07,109 --> 00:46:04,640
polls are going excellent we actually

1344
00:46:09,270 --> 00:46:07,119
just heard all the engineering teams go

1345
00:46:11,349 --> 00:46:09,280
through their final poll so that and say

1346
00:46:13,109 --> 00:46:11,359
that they are go and green for launch so

1347
00:46:15,270 --> 00:46:13,119
everything here out of the bmcc is

1348
00:46:16,550 --> 00:46:15,280
looking great we have everybody really

1349
00:46:18,230 --> 00:46:16,560
tied in and they're ready for that

1350
00:46:20,390 --> 00:46:18,240
terminal count

1351
00:46:21,990 --> 00:46:20,400
now we have a message for you at home

1352
00:46:25,840 --> 00:46:22,000
from the woman who named rosie the

1353
00:46:36,230 --> 00:46:33,109
[Music]

1354
00:46:38,309 --> 00:46:36,240
hi everyone i'm leanne corett i'm

1355
00:46:41,190 --> 00:46:38,319
thrilled to be here today at kennedy

1356
00:46:44,150 --> 00:46:41,200
space center visitor complex inside the

1357
00:46:46,390 --> 00:46:44,160
astronaut hall of fame surrounded by the

1358
00:46:49,030 --> 00:46:46,400
heroes and legends that have inspired

1359
00:46:51,109 --> 00:46:49,040
the work we're doing here today

1360
00:46:53,510 --> 00:46:51,119
my parents actually met while working on

1361
00:46:56,550 --> 00:46:53,520
the saturn v program and i was born

1362
00:46:59,270 --> 00:46:56,560
right here on florida's space coast like

1363
00:47:01,910 --> 00:46:59,280

many of you i'm inspired by the wonder

1364
00:47:04,550 --> 00:47:01,920
of space exploration and it's humbling

1365
00:47:07,430 --> 00:47:04,560
to be part of this moment in history

1366
00:47:10,550 --> 00:47:07,440
we're so proud that starliner is the

1367
00:47:13,349 --> 00:47:10,560
very first human spacecraft to be built

1368
00:47:15,270 --> 00:47:13,359
and launched right here in florida

1369
00:47:18,069 --> 00:47:15,280
thank you to all the teams across the

1370
00:47:21,670 --> 00:47:18,079
country and as far away as australia who

1371
00:47:24,309 --> 00:47:21,680
designed built and tested starliner and

1372
00:47:26,870 --> 00:47:24,319
thank you to nasa we've been a proud

1373
00:47:29,510 --> 00:47:26,880
nasa partner since the earliest days of

1374
00:47:31,510 --> 00:47:29,520
space exploration and i can't wait to

1375
00:47:34,630 --> 00:47:31,520
see what we'll accomplish together in

1376
00:47:37,589 --> 00:47:34,640
the years ahead i want you to know that

1377
00:47:39,349 --> 00:47:37,599
space is not the final frontier it's

1378
00:47:41,430 --> 00:47:39,359
just the next one

1379
00:47:44,470 --> 00:47:41,440
thanks to starliner getting there will

1380
00:47:46,549 --> 00:47:44,480
be safe efficient and attainable

1381
00:47:50,069 --> 00:47:46,559
thank you for watching our show

1382
00:47:53,750 --> 00:47:52,150
now leanne is probably one of the people

1383
00:47:55,430 --> 00:47:53,760
most excited about this whenever you

1384
00:47:58,069 --> 00:47:55,440
talk to space about her her eyes just

1385
00:48:00,309 --> 00:47:58,079
light up so we're all hoping for a great

1386
00:48:02,549 --> 00:48:00,319
launch we actually just got confirmation

1387
00:48:04,549 --> 00:48:02,559
that they are configuring starliner for

1388
00:48:06,470 --> 00:48:04,559

the terminal count we are all go right

1389
00:48:08,309 --> 00:48:06,480
now if you're just joining us we're

1390
00:48:09,829 --> 00:48:08,319
minutes away from starliner's first

1391
00:48:12,230 --> 00:48:09,839
launch attempt

1392
00:48:14,630 --> 00:48:12,240
and ula will be getting ready soon to

1393
00:48:16,710 --> 00:48:14,640
begin on its poll to enter the terminal

1394
00:48:18,549 --> 00:48:16,720
count right now we're about 16 minutes

1395
00:48:20,630 --> 00:48:18,559
from liftoff now this is a critical

1396
00:48:23,030 --> 00:48:20,640
point in the countdown after the launch

1397
00:48:24,950 --> 00:48:23,040
clock restarts at t minus four minutes

1398
00:48:29,510 --> 00:48:24,960
if another hold is called we will scrub

1399
00:48:34,470 --> 00:48:31,750
one static checks proceed with terminal

1400
00:48:38,549 --> 00:48:34,480
count atlas systems propulsion go

1401
00:48:40,950 --> 00:48:38,559
hydraulics go pneumatics go lo2 go water

1402
00:48:43,430 --> 00:48:40,960
go centaur systems propulsion

1403
00:48:46,870 --> 00:48:43,440
pneumatics go lo2

1404
00:48:49,750 --> 00:48:46,880
lh2 go has gas go electrical systems

1405
00:48:53,030 --> 00:48:49,760
airborne go ground go

1406
00:48:55,270 --> 00:48:53,040
anomaly chief ac range coordinator clear

1407
00:48:57,349 --> 00:48:55,280
to proceed launch director flash

1408
00:49:05,270 --> 00:48:57,359
director is go and you have permission

1409
00:49:05,280 --> 00:49:08,870
[Music]

1410
00:49:12,390 --> 00:49:10,710
we have a few minutes now to answer more

1411
00:49:14,549 --> 00:49:12,400
of your questions about starliner we

1412
00:49:16,870 --> 00:49:14,559
have one from ingram

1413
00:49:19,030 --> 00:49:16,880

wants to know you have certain weight

1414
00:49:20,630 --> 00:49:19,040
concerns obviously um so how do you take

1415
00:49:23,589 --> 00:49:20,640
into account the weight of the paint

1416
00:49:25,589 --> 00:49:23,599
used on starliner so of course every

1417
00:49:27,430 --> 00:49:25,599
pound matters on a spacecraft and that's

1418
00:49:29,109 --> 00:49:27,440
why we didn't use too much paint that we

1419
00:49:31,589 --> 00:49:29,119
don't need if you can you know tell on

1420
00:49:33,990 --> 00:49:31,599
the vehicle there's some some style

1421
00:49:36,069 --> 00:49:34,000
paintings on there uh the nasa logo the

1422
00:49:38,549 --> 00:49:36,079
boeing logo those kind of cool dash

1423
00:49:40,309 --> 00:49:38,559
marks around the top um but that's the

1424
00:49:42,470 --> 00:49:40,319
only paint that you know starliner

1425
00:49:44,790 --> 00:49:42,480
doesn't need that gray paint covering is

1426
00:49:45,990 --> 00:49:44,800
actually there for thermal uh properties

1427
00:49:48,150 --> 00:49:46,000
you might remember if you've been

1428
00:49:50,230 --> 00:49:48,160
following starliner for a while it used

1429
00:49:52,150 --> 00:49:50,240
to be white but as we continued our

1430
00:49:53,990 --> 00:49:52,160
analysis we decided that gray would be a

1431
00:49:55,990 --> 00:49:54,000
little better and safer on reentry so we

1432
00:49:58,470 --> 00:49:56,000
covered it up with this special gray

1433
00:49:59,990 --> 00:49:58,480
paint that is very heat resistant yeah i

1434
00:50:01,109 --> 00:50:00,000
mean you can see it well it's obviously

1435
00:50:03,109 --> 00:50:01,119
it's really early in the morning the

1436
00:50:05,430 --> 00:50:03,119
sun's not up yet but we've you can tell

1437
00:50:07,750 --> 00:50:05,440
that kind of color um on the capsule at

1438
00:50:10,630 --> 00:50:07,760

the top of the rocket on the pad there

1439
00:50:12,390 --> 00:50:10,640
yeah exactly it's actually making use of

1440
00:50:13,990 --> 00:50:12,400
thermal blankets the gray part is

1441
00:50:15,190 --> 00:50:14,000
thermal blankets that you might remember

1442
00:50:17,430 --> 00:50:15,200
from the space shuttle and the little

1443
00:50:18,790 --> 00:50:17,440
black parts are thermal tiles also from

1444
00:50:20,630 --> 00:50:18,800
the space shuttle but we have a brand

1445
00:50:22,630 --> 00:50:20,640
new heat shield on the bottom i think we

1446
00:50:24,230 --> 00:50:22,640
have time for one more question so we

1447
00:50:26,950 --> 00:50:24,240
were we also got another interesting

1448
00:50:29,829 --> 00:50:26,960
question about the g-forces

1449
00:50:32,309 --> 00:50:29,839
moon man wanted to ask about the max

1450
00:50:34,309 --> 00:50:32,319
loads expected during ascent um and then

1451
00:50:36,230 --> 00:50:34,319
will the booster throttle down to

1452
00:50:38,150 --> 00:50:36,240
maintain those lower gs so that's

1453
00:50:40,309 --> 00:50:38,160
actually a great question

1454
00:50:42,309 --> 00:50:40,319
ula is flying a very unique trajectory

1455
00:50:45,109 --> 00:50:42,319
for us um it's going to fly flatter as

1456
00:50:46,790 --> 00:50:45,119
moon man said and the booster will actu

1457
00:50:49,030 --> 00:50:46,800
actually throttle down during the later

1458
00:50:50,870 --> 00:50:49,040
stages of flight uh to maintain three

1459
00:50:53,349 --> 00:50:50,880
and a half g's on the crew members i

1460
00:50:54,790 --> 00:50:53,359
wanna oh the crew access arm is about to

1461
00:50:57,030 --> 00:50:54,800
retract i thought it was retracting

1462
00:50:58,470 --> 00:50:57,040
there but yeah so atlas will fly a

1463
00:51:00,069 --> 00:50:58,480

little uh different flight than it's

1464
00:51:01,670 --> 00:51:00,079
normally used to for us today but three

1465
00:51:03,510 --> 00:51:01,680
and a half g's is

1466
00:51:05,670 --> 00:51:03,520
uh not uncomfortable for the crew it's

1467
00:51:07,109 --> 00:51:05,680
safe for them uh chris ferguson has

1468
00:51:09,030 --> 00:51:07,119
described it still kind of feels like a

1469
00:51:10,950 --> 00:51:09,040
gorilla sitting on your chest but that's

1470
00:51:13,430 --> 00:51:10,960
a colorful description it's about normal

1471
00:51:14,950 --> 00:51:13,440
for most launches and we want you to

1472
00:51:16,069 --> 00:51:14,960
keep those questions coming thank you

1473
00:51:17,430 --> 00:51:16,079
for all the great questions just

1474
00:51:19,990 --> 00:51:17,440
remember to use the

1475
00:51:22,150 --> 00:51:20,000
ask nasa and we're standing by now

1476
00:51:25,109 --> 00:51:22,160
keeping an eye on space launch complex

1477
00:51:26,710 --> 00:51:25,119
41 waiting for that crew access arm to

1478
00:51:28,790 --> 00:51:26,720
begin its retraction and when that

1479
00:51:30,710 --> 00:51:28,800
happens we will start to see

1480
00:51:32,549 --> 00:51:30,720
the arms swing away we'll see the the

1481
00:51:33,510 --> 00:51:32,559
white room slowly move away from atlas

1482
00:51:34,870 --> 00:51:33,520
and that's

1483
00:51:37,030 --> 00:51:34,880
going to be one of the last visible

1484
00:51:39,349 --> 00:51:37,040
things that we'll see ahead of launch

1485
00:51:42,390 --> 00:51:39,359
so up to this point if there were crew

1486
00:51:44,069 --> 00:51:42,400
on board um right before the crew access

1487
00:51:45,750 --> 00:51:44,079
arm moves is where we'd configure the

1488
00:51:46,790 --> 00:51:45,760

launch abort system

1489
00:51:48,390 --> 00:51:46,800
um

1490
00:51:50,069 --> 00:51:48,400
we'll see it slowly kind of move away

1491
00:51:52,309 --> 00:51:50,079
but it can actually swing back to the

1492
00:51:53,829 --> 00:51:52,319
capsule in under 20 seconds for a less

1493
00:51:55,589 --> 00:51:53,839
urgent emergency like if there were a

1494
00:51:57,990 --> 00:51:55,599
lightning storm coming and the crew had

1495
00:51:59,589 --> 00:51:58,000
to get off the pad but really after that

1496
00:52:00,630 --> 00:51:59,599
access arm goes away if they need to get

1497
00:52:02,069 --> 00:52:00,640
off they're gonna

1498
00:52:03,589 --> 00:52:02,079
they're gonna leave on starliner and

1499
00:52:05,270 --> 00:52:03,599
josh you mentioned the abort system i

1500
00:52:07,750 --> 00:52:05,280
know that's not active on this flight

1501
00:52:10,630 --> 00:52:07,760
can you help explain to people why

1502
00:52:12,630 --> 00:52:10,640
yeah so uh ula has this new emergency

1503
00:52:14,710 --> 00:52:12,640
detection system on the top of their

1504
00:52:16,790 --> 00:52:14,720
centaur upper stage it's basically two

1505
00:52:18,950 --> 00:52:16,800
extra computers that are plugged into

1506
00:52:21,190 --> 00:52:18,960
the rest of the rocket and they are just

1507
00:52:23,030 --> 00:52:21,200
um you know really making sure that that

1508
00:52:24,870 --> 00:52:23,040
system is going to work we don't want to

1509
00:52:26,150 --> 00:52:24,880
cause a premature abort since that's

1510
00:52:28,230 --> 00:52:26,160
this is the first time that that

1511
00:52:29,829 --> 00:52:28,240
system's on atlas but you know that

1512
00:52:31,670 --> 00:52:29,839
system is looking for what's called fast

1513
00:52:34,309 --> 00:52:31,680

trigger abort so those are something

1514
00:52:37,190 --> 00:52:34,319
that will happen so quickly that a human

1515
00:52:39,430 --> 00:52:37,200
wouldn't be able to detect it

1516
00:52:41,270 --> 00:52:39,440
and so we're going to see that

1517
00:52:43,190 --> 00:52:41,280
of course is going to be activated um

1518
00:52:44,549 --> 00:52:43,200
the next time starliner flies that that

1519
00:52:46,390 --> 00:52:44,559
next flight's going to be called the

1520
00:52:48,470 --> 00:52:46,400
crew flight test and that will carry

1521
00:52:51,030 --> 00:52:48,480
uh boeing astronaut chris ferguson nasa

1522
00:52:53,109 --> 00:52:51,040
astronauts mike fink and nicole mann

1523
00:52:54,549 --> 00:52:53,119
and they will be next time sitting right

1524
00:52:57,109 --> 00:52:54,559
on top of that atlas live inside

1525
00:53:00,069 --> 00:52:57,119
starliner but but for today of course

1526
00:53:02,790 --> 00:53:00,079
we've got rosie inside snoopy inside um

1527
00:53:05,190 --> 00:53:02,800
and 600 pounds of nasa cargo

1528
00:53:06,950 --> 00:53:05,200
and we are a little over 11 minutes away

1529
00:53:08,549 --> 00:53:06,960
from launch now again just standing by

1530
00:53:10,870 --> 00:53:08,559
because we want to make sure you get to

1531
00:53:12,390 --> 00:53:10,880
see live on that crew access arm

1532
00:53:14,790 --> 00:53:12,400
swinging away so we're just keeping an

1533
00:53:17,829 --> 00:53:14,800
eye on things for you there you can see

1534
00:53:20,470 --> 00:53:17,839
uh centaur venting it that's completely

1535
00:53:23,030 --> 00:53:20,480
normal for these launches it's

1536
00:53:25,510 --> 00:53:23,040
very cold liquid hydrogen and oxygen

1537
00:53:27,750 --> 00:53:25,520
that are in that fuel tank and as they

1538
00:53:40,829 --> 00:53:27,760

heat up they start to expand and vent

1539
00:53:44,870 --> 00:53:43,990
oh control so the crew access arm for

1540
00:53:55,030 --> 00:53:44,880
launch

1541
00:53:57,910 --> 00:53:56,309
there we just heard the call that

1542
00:53:59,030 --> 00:53:57,920
they're about to stow that crew access

1543
00:54:00,549 --> 00:53:59,040
arm

1544
00:54:03,190 --> 00:54:00,559
we've also got confirmation that

1545
00:54:05,430 --> 00:54:03,200
starliner is running on internal power

1546
00:54:06,390 --> 00:54:05,440
it is not relying on ground power

1547
00:54:20,390 --> 00:54:06,400
anymore

1548
00:54:24,230 --> 00:54:21,910
if you're just joining us we're just

1549
00:54:25,910 --> 00:54:24,240
over 10 minutes from liftoff and we are

1550
00:54:28,390 --> 00:54:25,920
oh there it is that looks like the crew

1551
00:54:29,829 --> 00:54:28,400
access arm is beginning to move away

1552
00:54:32,470 --> 00:54:29,839
from starliner you can see the white

1553
00:54:34,630 --> 00:54:32,480
room ever so slightly starting to uh

1554
00:54:37,030 --> 00:54:34,640
make its swing

1555
00:54:38,789 --> 00:54:37,040
again this is one of the last major

1556
00:54:39,829 --> 00:54:38,799
steps the next is the launch vehicle

1557
00:54:42,069 --> 00:54:39,839
poll

1558
00:54:43,430 --> 00:54:42,079
then we will release the four-minute

1559
00:54:44,549 --> 00:54:43,440
hold

1560
00:54:46,950 --> 00:54:44,559
and then we'll provide

1561
00:55:02,230 --> 00:54:46,960
gst-100 on internal power

1562
00:55:07,190 --> 00:55:05,270
now as that crew access arm retracts

1563
00:55:09,270 --> 00:55:07,200

again the final

1564
00:55:11,510 --> 00:55:09,280
pull for today is the launch vehicle

1565
00:55:14,710 --> 00:55:11,520
pull if you've watched atlas launches it

1566
00:55:17,910 --> 00:55:16,950
there's a big old piston pulling back

1567
00:55:21,109 --> 00:55:17,920
that

1568
00:55:23,109 --> 00:55:21,119
crew access arm and after atlas is

1569
00:55:25,270 --> 00:55:23,119
declared ready for launch nasa and

1570
00:55:26,789 --> 00:55:25,280
boeing will jointly decide whether

1571
00:55:37,109 --> 00:55:26,799
they're going to move forward with the

1572
00:55:47,109 --> 00:55:39,109
again about nine minutes away from

1573
00:55:50,789 --> 00:55:48,390
all right and there you see the crew

1574
00:55:52,950 --> 00:55:50,799
access arm just finishing its swing away

1575
00:55:54,950 --> 00:55:52,960
from the atlas v rocket and starliner

1576
00:55:56,069 --> 00:55:54,960
and we want to go over to dylan rice in

1577
00:55:59,109 --> 00:55:56,079
the asoc

1578
00:56:00,789 --> 00:55:59,119
for a status update dylan

1579
00:56:02,470 --> 00:56:00,799
hey marie so we're continuing to have a

1580
00:56:03,910 --> 00:56:02,480
very clean countdown here

1581
00:56:05,270 --> 00:56:03,920
we're just a few moments away now from

1582
00:56:06,710 --> 00:56:05,280
chief launch director doug libo

1583
00:56:09,109 --> 00:56:06,720
conducting that terminal account status

1584
00:56:11,589 --> 00:56:09,119
check poll which will take us into our

1585
00:56:13,190 --> 00:56:11,599
final final countdown to watch

1586
00:56:14,470 --> 00:56:13,200
that terminal account status check poll

1587
00:56:16,710 --> 00:56:14,480
is

1588
00:56:17,990 --> 00:56:16,720

the final check from each operators

1589
00:56:20,150 --> 00:56:18,000
operators associated with the ground

1590
00:56:21,910 --> 00:56:20,160
systems the launch vehicle the uh

1591
00:56:23,990 --> 00:56:21,920
spacecraft and the eastern range to

1592
00:56:25,829 --> 00:56:24,000
ensure that uh all systems are ready to

1593
00:56:27,670 --> 00:56:25,839
go for us to proceed into a terminal

1594
00:56:28,950 --> 00:56:27,680
count and get the rocket launched so

1595
00:56:30,870 --> 00:56:28,960
we're just about a minute away from that

1596
00:56:32,150 --> 00:56:30,880
now i can tell you

1597
00:56:34,230 --> 00:56:32,160
that you know we've executed this

1598
00:56:36,309 --> 00:56:34,240
countdown many times for for a variety

1599
00:56:38,150 --> 00:56:36,319
of different missions but the countdown

1600
00:56:39,270 --> 00:56:38,160
today feels um

1601
00:56:41,030 --> 00:56:39,280
feels quite a bit different than what

1602
00:56:42,549 --> 00:56:41,040
we've normally done the excitement here

1603
00:56:45,109 --> 00:56:42,559
is just uh

1604
00:56:47,270 --> 00:56:45,119
is just unbelievable and we are we are

1605
00:56:49,270 --> 00:56:47,280
very very um

1606
00:56:50,390 --> 00:56:49,280
very very excited to uh

1607
00:56:53,670 --> 00:56:50,400
see this

1608
00:56:54,870 --> 00:56:53,680
especially with such a clean countdown

1609
00:56:56,870 --> 00:56:54,880
like we've had today so we're really

1610
00:56:58,710 --> 00:56:56,880
looking forward to this um the team has

1611
00:56:59,750 --> 00:56:58,720
not been talking any any issues at all

1612
00:57:01,430 --> 00:56:59,760
on any of the other nets that i've been

1613
00:57:03,030 --> 00:57:01,440

listening to so we're

1614
00:57:04,710 --> 00:57:03,040
when that terminal account status check

1615
00:57:06,789 --> 00:57:04,720
starts um we're expecting to hear goes

1616
00:57:08,789 --> 00:57:06,799
across the board

1617
00:57:10,549 --> 00:57:08,799
so i think we'll um we'll stand by here

1618
00:57:12,150 --> 00:57:10,559
and listen for uh chief launch conductor

1619
00:57:14,630 --> 00:57:12,160
doug libo to

1620
00:57:40,230 --> 00:57:14,640
get that pole started here in about 20

1621
00:57:44,549 --> 00:57:41,910
status check to proceed with terminal

1622
00:57:49,829 --> 00:57:44,559
count atlas systems propulsion go

1623
00:57:52,470 --> 00:57:49,839
hydraulics go pneumatic go lo2 go water

1624
00:57:57,910 --> 00:57:52,480
go centaur systems propulsion go

1625
00:58:01,030 --> 00:57:57,920
pneumatics go lo2 go lh2 go has gas go

1626
00:58:02,710 --> 00:58:01,040
electrical systems airborne go ground

1627
00:58:06,309 --> 00:58:02,720
fill facility

1628
00:58:07,190 --> 00:58:06,319
go rffts go flight control

1629
00:58:30,789 --> 00:58:07,200
go

1630
00:58:32,230 --> 00:58:30,799
clear to proceed flight director why

1631
00:58:34,950 --> 00:58:32,240
does it go

1632
00:58:38,069 --> 00:58:34,960
launch director

1633
00:58:39,190 --> 00:58:38,079
ld is go and lc you have permission to

1634
00:58:41,349 --> 00:58:39,200
launch

1635
00:58:45,510 --> 00:58:41,359
proceeding with the count

1636
00:58:47,829 --> 00:58:45,520
alc verify t0 is set for 11 colon 36

1637
00:58:53,589 --> 00:58:47,839
colon 43 zulu

1638
00:58:58,390 --> 00:58:55,990

well josh marie you heard it we are go

1639
00:58:59,750 --> 00:58:58,400
for launch right on time

1640
00:59:02,069 --> 00:58:59,760
all right thanks dylan yeah we heard

1641
00:59:03,430 --> 00:59:02,079
some cheers behind us over at the press

1642
00:59:05,270 --> 00:59:03,440
site when we heard that you have

1643
00:59:06,870 --> 00:59:05,280
permission to launch um and i know

1644
00:59:08,950 --> 00:59:06,880
they're feeling good about that over in

1645
00:59:10,470 --> 00:59:08,960
the boeing mission control center tori

1646
00:59:12,069 --> 00:59:10,480
standing by over there and we're hearing

1647
00:59:14,470 --> 00:59:12,079
she's got a very special guest to say

1648
00:59:19,190 --> 00:59:16,549
thanks marie yes i do a very special

1649
00:59:21,430 --> 00:59:19,200
guest here today i have a chris ferguson

1650
00:59:23,589 --> 00:59:21,440
first boeing astronaut and formal sp

1651
00:59:24,470 --> 00:59:23,599
former space shuttle commander

1652
00:59:26,309 --> 00:59:24,480
so

1653
00:59:28,710 --> 00:59:26,319
chris you heard the poll you were in

1654
00:59:30,069 --> 00:59:28,720
you're here you know being part of some

1655
00:59:33,190 --> 00:59:30,079
of the other polls this morning can you

1656
00:59:35,349 --> 00:59:33,200
tell us how it's going um well every

1657
00:59:37,750 --> 00:59:35,359
launch has its exciting moments we had a

1658
00:59:39,990 --> 00:59:37,760
few earlier with a minor issue that came

1659
00:59:42,470 --> 00:59:40,000
up but we've developed all the necessary

1660
00:59:43,910 --> 00:59:42,480
rationale to go flying and you just

1661
00:59:46,150 --> 00:59:43,920
listen to the poll

1662
00:59:47,510 --> 00:59:46,160
basically everybody is in line and in

1663
00:59:49,990 --> 00:59:47,520

agreement that we're in a good

1664
00:59:52,390 --> 00:59:50,000
configuration to go fly so uh

1665
00:59:53,829 --> 00:59:52,400
it uh it was a little close but hey

1666
00:59:55,829 --> 00:59:53,839
we're uh we're gonna be off to the races

1667
00:59:57,349 --> 00:59:55,839
here in a few short minutes i know this

1668
00:59:59,589 --> 00:59:57,359
is this is a really exciting time right

1669
01:00:00,710 --> 00:59:59,599
less than five minutes here until launch

1670
01:00:02,069 --> 01:00:00,720
so

1671
01:00:03,190 --> 01:00:02,079
you know it's it's funny when we say

1672
01:00:04,069 --> 01:00:03,200
we're less than five minutes to launch

1673
01:00:06,950 --> 01:00:04,079
but i know that you've been on the

1674
01:00:08,549 --> 01:00:06,960
program for about eight years now so

1675
01:00:10,390 --> 01:00:08,559
all of this i know has been leading up

1676
01:00:12,230 --> 01:00:10,400
to this moment and the cft can you tell

1677
01:00:14,390 --> 01:00:12,240
us a little bit more about your role

1678
01:00:16,069 --> 01:00:14,400
within the starliner program

1679
01:00:17,670 --> 01:00:16,079
i joined the program about like you said

1680
01:00:19,990 --> 01:00:17,680
eight years ago shortly after the space

1681
01:00:22,150 --> 01:00:20,000
shuttle program ended and uh it's uh

1682
01:00:23,829 --> 01:00:22,160
it's been wonderful to be a part of the

1683
01:00:25,829 --> 01:00:23,839
team it's been wonderful to have some

1684
01:00:27,510 --> 01:00:25,839
influence in the design

1685
01:00:29,030 --> 01:00:27,520
and now you know it's almost surreal

1686
01:00:30,710 --> 01:00:29,040
there it is out on the pad you know the

1687
01:00:33,349 --> 01:00:30,720
labor of the last uh eight and a half

1688
01:00:35,670 --> 01:00:33,359

years is sort of coming to uh you know

1689
01:00:38,789 --> 01:00:35,680
it's it's it's uh it's game day right

1690
01:00:40,230 --> 01:00:38,799
the big test is and and mind you um you

1691
01:00:41,829 --> 01:00:40,240
know our big game right for the

1692
01:00:43,670 --> 01:00:41,839
spacecraft actually begins when the

1693
01:00:45,750 --> 01:00:43,680
launch vehicle releases this 11 minutes

1694
01:00:47,670 --> 01:00:45,760
from now so we've got a lot of work to

1695
01:00:49,109 --> 01:00:47,680
do even though this is the exciting part

1696
01:00:50,309 --> 01:00:49,119
that everybody enjoys watching the

1697
01:00:51,990 --> 01:00:50,319
launch

1698
01:00:54,150 --> 01:00:52,000
our big test really begins when the

1699
01:00:55,750 --> 01:00:54,160
launch vehicle sort of releases us and

1700
01:00:57,349 --> 01:00:55,760
and we have to go you know perform all

1701
01:00:59,510 --> 01:00:57,359
the necessary demonstrations to get

1702
01:01:02,390 --> 01:00:59,520
ready to dock to the international space

1703
01:01:05,190 --> 01:01:02,400
station tomorrow so we've got a busy 24

1704
01:01:06,549 --> 01:01:05,200
hours yeah chris that's that is really

1705
01:01:08,309 --> 01:01:06,559
exciting right

1706
01:01:10,390 --> 01:01:08,319
it's busy but i know the teams here are

1707
01:01:12,230 --> 01:01:10,400
up for the challenge absolutely

1708
01:01:15,030 --> 01:01:12,240
all right josh marie thanks for coming

1709
01:01:19,430 --> 01:01:17,270
it was great hearing from chris

1710
01:01:21,349 --> 01:01:19,440
we are three minutes and 20 seconds away

1711
01:01:24,230 --> 01:01:21,359
the t-minus four minute hold was

1712
01:01:26,710 --> 01:01:24,240
released while chris was uh telling us

1713
01:01:28,549 --> 01:01:26,720

about how excited he is for starliner so

1714
01:01:30,470 --> 01:01:28,559
we are going to quiet down listening to

1715
01:01:32,549 --> 01:01:30,480
the loops um i want to note that on

1716
01:01:34,069 --> 01:01:32,559
ascent because we have so many control

1717
01:01:35,670 --> 01:01:34,079
rooms you will be hearing reports from

1718
01:01:38,150 --> 01:01:35,680
the atlas space flight operations center

1719
01:01:42,230 --> 01:01:38,160
from jsc and marie and i will stick

1720
01:01:49,829 --> 01:01:45,349
securing ls2 topping

1721
01:01:49,839 --> 01:01:53,829
2 minutes 50 seconds

1722
01:01:53,839 --> 01:02:10,069
fts internal

1723
01:02:10,079 --> 01:02:13,510
two and a half minutes

1724
01:02:16,870 --> 01:02:14,549
atlas

1725
01:02:17,589 --> 01:02:16,880
tanks are at flight levels centaur will

1726
01:02:28,710 --> 01:02:17,599
be

1727
01:02:31,589 --> 01:02:29,829
if you're just joining us we're

1728
01:02:33,670 --> 01:02:31,599
approaching two minutes from the very

1729
01:02:35,430 --> 01:02:33,680
first flight of boeing's cst cst-100

1730
01:02:39,829 --> 01:02:35,440
starliner to the international space

1731
01:02:39,839 --> 01:02:43,670
159

1732
01:02:47,670 --> 01:02:45,349
vehicle internal

1733
01:02:49,829 --> 01:02:47,680
155

1734
01:02:53,270 --> 01:02:49,839
start

1735
01:02:55,589 --> 01:02:53,280
150 to carrying centaur lh2 securing

1736
01:02:57,430 --> 01:02:55,599
center lo2

1737
01:02:59,109 --> 01:02:57,440
there's the rocket is now on internal

1738
01:03:01,670 --> 01:02:59,119

power as well

1739
01:03:03,349 --> 01:03:01,680
both atlas and our tanks

1740
01:03:07,990 --> 01:03:03,359
launch enabled

1741
01:03:12,630 --> 01:03:10,309
fts armed

1742
01:03:19,589 --> 01:03:12,640
that was the flight termination software

1743
01:03:24,150 --> 01:03:22,069
120

1744
01:03:26,150 --> 01:03:24,160
oc is armed

1745
01:03:28,390 --> 01:03:26,160
that's the account started eds ascent

1746
01:03:39,190 --> 01:03:28,400
mode that was that emergency detection

1747
01:03:46,069 --> 01:03:41,029
t minus one minute

1748
01:04:09,829 --> 01:03:47,349
54

1749
01:04:09,839 --> 01:04:14,789
30 seconds

1750
01:04:30,150 --> 01:04:18,390
t-minus 25 seconds status check go atlas

1751
01:04:32,069 --> 01:04:31,109
ten

1752
01:04:33,029 --> 01:04:32,079
nine

1753
01:04:33,990 --> 01:04:33,039
eight

1754
01:04:34,950 --> 01:04:34,000
seven

1755
01:04:35,990 --> 01:04:34,960
six

1756
01:04:36,950 --> 01:04:36,000
five

1757
01:04:37,990 --> 01:04:36,960
four

1758
01:04:39,029 --> 01:04:38,000
three

1759
01:04:40,549 --> 01:04:39,039
two

1760
01:04:43,910 --> 01:04:40,559
one

1761
01:04:50,549 --> 01:04:43,920
and lift off the rise of starliner and a

1762
01:04:54,470 --> 01:04:52,630
now ten seconds into flight people's

1763
01:04:56,630 --> 01:04:54,480

begun the pitch over the program body

1764
01:04:59,670 --> 01:04:56,640
rate responses look good

1765
01:05:06,430 --> 01:05:01,910
gone closer control

1766
01:05:23,670 --> 01:05:07,510
[Music]

1767
01:05:27,270 --> 01:05:25,670
rd180 engine operating parameters

1768
01:05:28,789 --> 01:05:27,280
continue to look good

1769
01:05:33,029 --> 01:05:28,799
vehicles now passing through max q

1770
01:05:36,630 --> 01:05:34,789
chamber pressures on both srvs continue

1771
01:05:40,390 --> 01:05:36,640
to look good rd180 engine operating

1772
01:05:40,400 --> 01:05:46,710
now passing one minute into flight

1773
01:05:46,720 --> 01:05:52,630
and mach 1 atlas 5 is now supersonic

1774
01:05:56,150 --> 01:05:54,630
and vehicle now throttling up engine

1775
01:05:57,589 --> 01:05:56,160
response looks good

1776
01:06:01,510 --> 01:05:57,599
continues to good chamber pressure on

1777
01:06:06,710 --> 01:06:05,109
one minute 20 seconds into flight

1778
01:06:10,789 --> 01:06:06,720
body rate responses on the vehicle look

1779
01:06:16,150 --> 01:06:12,950
one minute 30 seconds in standing by for

1780
01:06:20,630 --> 01:06:17,829
and we have burnout on both solid rocket

1781
01:06:22,309 --> 01:06:20,640
boosters atlas will hold on to the srbs

1782
01:06:23,589 --> 01:06:22,319
for an additional 48 seconds prior to

1783
01:06:25,510 --> 01:06:23,599
jettison

1784
01:06:30,630 --> 01:06:25,520
rd-180 has gone back up to full thrust

1785
01:06:36,470 --> 01:06:33,430
one minute 50 seconds in

1786
01:06:37,910 --> 01:06:36,480
atlas is now 17 miles in altitude 11 and

1787
01:06:40,870 --> 01:06:37,920
a half miles downrange distance

1788
01:06:43,829 --> 01:06:40,880

traveling at 2 300 miles per hour

1789
01:06:45,589 --> 01:06:43,839
now passing two minutes into flight

1790
01:06:52,950 --> 01:06:45,599
rd-180 engine operating parameters

1791
01:06:56,390 --> 01:06:54,549
and at two minutes 11 seconds into

1792
01:06:57,670 --> 01:06:56,400
flight the atlas rocket now weighs just

1793
01:06:59,510 --> 01:06:57,680
one half of what it did at launch

1794
01:07:04,230 --> 01:06:59,520
burning propellant at a rate of 2 800

1795
01:07:09,109 --> 01:07:05,589
and we've seen good indication of

1796
01:07:12,150 --> 01:07:09,119
jettison of both solid rocket boosters

1797
01:07:14,230 --> 01:07:12,160
vehicles gone to close loop guidance

1798
01:07:16,230 --> 01:07:14,240
now just under two minutes remaining in

1799
01:07:21,109 --> 01:07:16,240
the booster phase of flight

1800
01:07:26,470 --> 01:07:24,710
rd-180 continues to perform well

1801
01:07:31,109 --> 01:07:26,480
engine's now throttling down slightly

1802
01:07:39,430 --> 01:07:33,829
and atlas 5 is now traveling at over

1803
01:07:42,710 --> 01:07:41,109
centaur reaction control system is now

1804
01:07:50,230 --> 01:07:42,720
pressurizing to flight levels system

1805
01:07:50,240 --> 01:07:54,470
3 minutes 10 seconds into flight

1806
01:07:59,349 --> 01:07:57,109
atlas 5 is now 38 miles in altitude 80

1807
01:08:06,069 --> 01:07:59,359
miles downrange distance traveling at 5

1808
01:08:10,069 --> 01:08:08,069
rd-180 engine operating parameters

1809
01:08:15,029 --> 01:08:10,079
continue to look good now one minute

1810
01:08:17,910 --> 01:08:16,630
body rate responses continue to look

1811
01:08:24,070 --> 01:08:17,920
good throughout the booster phase of

1812
01:08:28,789 --> 01:08:26,470
and rd-180 is now throttling to maintain

1813
01:08:35,990 --> 01:08:28,799

a constant 3.5 g acceleration limit

1814
01:08:36,000 --> 01:08:44,309
3 minutes 55 seconds into flight

1815
01:08:50,789 --> 01:08:45,749
and centaur's begun the boost phase

1816
01:08:55,590 --> 01:08:53,749
20 seconds to biko

1817
01:08:57,910 --> 01:08:55,600
rd-180 continuing to look good as it

1818
01:09:00,630 --> 01:08:57,920
throttles to maintain that constant 3.5

1819
01:09:02,149 --> 01:09:00,640
g acceleration limit

1820
01:09:06,070 --> 01:09:02,159
atlas pu has gone to open loop in

1821
01:09:06,080 --> 01:09:11,910
and standing by for beco

1822
01:09:18,390 --> 01:09:13,669
and we have beco booster engine cutoff

1823
01:09:21,669 --> 01:09:19,829
and we have good indication of stage

1824
01:09:23,910 --> 01:09:21,679
separation

1825
01:09:28,470 --> 01:09:23,920
we have pre-start on the rl10

1826
01:09:33,510 --> 01:09:30,709
we have ignition and full thrust on both

1827
01:09:34,950 --> 01:09:33,520
rl10 engines

1828
01:09:43,110 --> 01:09:34,960
chamber pressures look good on both

1829
01:09:46,550 --> 01:09:44,709
we have confirmation of the scent

1830
01:09:49,349 --> 01:09:46,560
covered jettison on starliner skirt

1831
01:09:51,110 --> 01:09:49,359
jettison

1832
01:09:55,510 --> 01:09:51,120
and we have good indication of aeroscore

1833
01:09:58,870 --> 01:09:57,189
since are now resuming active attitude

1834
01:10:00,950 --> 01:09:58,880
control after successful aeroskir

1835
01:10:02,790 --> 01:10:00,960
jettison

1836
01:10:05,030 --> 01:10:02,800
chamber pressures on both rl10 engines

1837
01:10:06,950 --> 01:10:05,040
continue to look good

1838
01:10:08,790 --> 01:10:06,960

this was a very critical piece of the

1839
01:10:10,790 --> 01:10:08,800
mission here staging is always a very

1840
01:10:20,310 --> 01:10:10,800
dynamic piece of flight passing five

1841
01:10:24,149 --> 01:10:22,229
and the centaur rcs system is beginning

1842
01:10:25,750 --> 01:10:24,159
the initial thruster firings for system

1843
01:10:29,590 --> 01:10:25,760
thermal conditioning system response

1844
01:10:40,950 --> 01:10:32,790
now once again centaur will continue

1845
01:10:40,960 --> 01:10:51,350
now passing six minutes into flight

1846
01:10:56,070 --> 01:10:53,590
and centaur is now 95 miles in altitude

1847
01:11:04,790 --> 01:10:56,080
570 miles downrange distance traveling

1848
01:11:09,350 --> 01:11:07,590
those dual rl10 engines continue to

1849
01:11:10,390 --> 01:11:09,360
propel starliner

1850
01:11:12,950 --> 01:11:10,400
they are

1851
01:11:15,350 --> 01:11:12,960
making up for a little bit of the

1852
01:11:17,669 --> 01:11:15,360
booster flying a flatter trajectory and

1853
01:11:19,990 --> 01:11:17,679
at lower thrust again to maintain that

1854
01:11:21,350 --> 01:11:20,000
three and a half g forces

1855
01:11:23,990 --> 01:11:21,360
again a first

1856
01:11:25,669 --> 01:11:24,000
flight for the dual engine centaur

1857
01:11:28,550 --> 01:11:25,679
on an atlas v

1858
01:11:31,590 --> 01:11:28,560
starliner and centaur continue to head

1859
01:11:33,110 --> 01:11:31,600
to orbit throughout the centaur burn

1860
01:11:38,709 --> 01:11:33,120
timber pressures have remained very

1861
01:11:54,070 --> 01:11:40,390
just under five minutes now remaining in

1862
01:11:59,189 --> 01:11:57,110
and centaur is now 102 miles in altitude

1863
01:12:07,590 --> 01:11:59,199

800 miles downrange distance traveling

1864
01:12:11,669 --> 01:12:09,430
and the centaur propellant utilization

1865
01:12:13,669 --> 01:12:11,679
system continuing with active control

1866
01:12:16,229 --> 01:12:13,679
looks good

1867
01:12:20,709 --> 01:12:16,239
body rate responses are all very close

1868
01:12:39,830 --> 01:12:23,110
that means atlas is flying almost

1869
01:12:43,910 --> 01:12:41,910
now passing eight minutes into flight if

1870
01:12:45,669 --> 01:12:43,920
you are just joining us

1871
01:12:46,870 --> 01:12:45,679
eight minutes into starliner's first

1872
01:12:48,870 --> 01:12:46,880
flight

1873
01:12:50,950 --> 01:12:48,880
we've been through a successful

1874
01:12:55,030 --> 01:12:50,960
booster stage separation

1875
01:12:57,030 --> 01:12:55,040
centaur continues to propel starliner

1876
01:12:59,350 --> 01:12:57,040
the next major milestone will be main

1877
01:13:04,229 --> 01:12:59,360
engine cutoff at 11 minutes and 58

1878
01:13:07,830 --> 01:13:06,550
both centaur rl10 engines are continuing

1879
01:13:37,270 --> 01:13:07,840
to perform well throughout the burn

1880
01:13:42,709 --> 01:13:38,950
and now coming up on nine minutes into

1881
01:13:45,430 --> 01:13:42,719
flight centaur is 101 miles in altitude

1882
01:13:50,870 --> 01:13:45,440
1 200 miles downrange distance traveling

1883
01:13:54,390 --> 01:13:52,310
now the two control rooms you are

1884
01:13:57,669 --> 01:13:54,400
looking at on the left that is ula's

1885
01:13:59,669 --> 01:13:57,679
denver operations control center

1886
01:14:01,430 --> 01:13:59,679
they are a backup control room for the

1887
01:14:03,430 --> 01:14:01,440
control room on the right which is the

1888
01:14:05,270 --> 01:14:03,440

actual atlas space flight operations

1889
01:14:06,390 --> 01:14:05,280
center they were the ones who launched

1890
01:14:19,110 --> 01:14:06,400
the rocket

1891
01:14:24,390 --> 01:14:21,110
as you can see everyone is locked in on

1892
01:14:26,630 --> 01:14:24,400
their screens monitoring data

1893
01:14:29,189 --> 01:14:26,640
you might have noticed there wasn't much

1894
01:14:31,030 --> 01:14:29,199
excitement during launch

1895
01:14:32,790 --> 01:14:31,040
but ula will

1896
01:14:35,510 --> 01:14:32,800
be happy once we get to uh stage

1897
01:14:37,830 --> 01:14:35,520
separation which is coming up

1898
01:14:44,630 --> 01:14:37,840
almost 15 minutes after launch so about

1899
01:14:47,830 --> 01:14:46,229
centaur system performance remains

1900
01:14:50,870 --> 01:14:47,840
nominal throughout this burn continuing

1901
01:14:53,430 --> 01:14:50,880
to see stable values on our fuel and

1902
01:14:55,270 --> 01:14:53,440
oxidizer tank pressures

1903
01:14:56,790 --> 01:14:55,280
main vehicle battery temperatures and

1904
01:15:04,630 --> 01:14:56,800
pressures

1905
01:15:08,790 --> 01:15:06,149
telemetry quality has been good

1906
01:15:34,310 --> 01:15:08,800
throughout this burn only seeing very

1907
01:15:39,750 --> 01:15:35,910
now approximately one minute remaining

1908
01:15:43,990 --> 01:15:41,030
so once again

1909
01:15:46,709 --> 01:15:44,000
after starliner separates from centaur

1910
01:15:49,110 --> 01:15:46,719
coming up in about four minutes

1911
01:15:51,590 --> 01:15:49,120
starliner will circularize its orbit

1912
01:15:53,990 --> 01:15:51,600
with an orbital insertion burn

1913
01:15:57,110 --> 01:15:54,000

again about 30 seconds

1914
01:15:59,270 --> 01:15:57,120
to main engine cut off

1915
01:16:12,070 --> 01:15:59,280
chamber pressures on both rl10s continue

1916
01:16:15,830 --> 01:16:13,750
now ahead of main engine cutoff we are

1917
01:16:17,750 --> 01:16:15,840
seeing good tank pressure on starliner

1918
01:16:19,350 --> 01:16:17,760
itself batteries

1919
01:16:21,990 --> 01:16:19,360
are in a nominal temperature good

1920
01:16:23,830 --> 01:16:22,000
pressure sensor readings from starliner

1921
01:16:26,229 --> 01:16:23,840
as it prepares to free fly for the first

1922
01:16:34,229 --> 01:16:26,239
time in orbit

1923
01:16:34,239 --> 01:16:39,590
and we have miko main engine cutoff

1924
01:16:42,950 --> 01:16:41,189
body rate responses have remained very

1925
01:16:46,390 --> 01:16:42,960
stable

1926
01:16:48,149 --> 01:16:46,400
now passing 12 minutes into flight

1927
01:16:51,270 --> 01:16:48,159
now starliner will stay attached to

1928
01:16:53,270 --> 01:16:51,280
centaur again until about 15 minutes

1929
01:16:56,950 --> 01:16:53,280
expected to separate at 14 minutes and

1930
01:16:58,470 --> 01:16:56,960
58 seconds after liftoff

1931
01:17:01,110 --> 01:16:58,480
and that will be the first time

1932
01:17:02,790 --> 01:17:01,120
starliner free flies in orbit

1933
01:17:04,550 --> 01:17:02,800
and at that point

1934
01:17:07,430 --> 01:17:04,560
richard jones and his team in houston

1935
01:17:09,030 --> 01:17:07,440
will have full control over the vehicle

1936
01:17:11,430 --> 01:17:09,040
and they will set it up for an orbital

1937
01:17:12,310 --> 01:17:11,440
insertion burn that will take place 16

1938
01:17:41,110 --> 01:17:12,320

minutes

1939
01:17:44,310 --> 01:17:42,790
body rate responses

1940
01:17:51,910 --> 01:17:44,320
continue to look very stable throughout

1941
01:17:55,510 --> 01:17:53,350
so you're looking at the boeing mission

1942
01:17:57,110 --> 01:17:55,520
control center there at this point they

1943
01:17:59,110 --> 01:17:57,120
have transitioned to

1944
01:18:00,550 --> 01:17:59,120
a mission support room

1945
01:18:02,149 --> 01:18:00,560
the people you're seeing sitting on

1946
01:18:04,229 --> 01:18:02,159
console designed

1947
01:18:06,310 --> 01:18:04,239
tested and built starliner they are the

1948
01:18:09,030 --> 01:18:06,320
experts on the systems

1949
01:18:10,870 --> 01:18:09,040
so if flight controllers need any help

1950
01:18:11,910 --> 01:18:10,880
they will be the ones answering the call

1951
01:18:15,270 --> 01:18:11,920
passing

1952
01:18:19,750 --> 01:18:16,950
in just over a minute we're expecting to

1953
01:18:32,070 --> 01:18:19,760
hear that starliner has separated from

1954
01:18:49,830 --> 01:18:34,070
and about one minute now remaining until

1955
01:19:01,669 --> 01:18:51,590
body rates in the roll pitch in yaw

1956
01:19:22,070 --> 01:19:03,030
and about 30 seconds away from

1957
01:19:34,229 --> 01:19:23,590
now standing by for spacecraft

1958
01:19:40,310 --> 01:19:35,990
and we have good indication of

1959
01:19:44,550 --> 01:19:42,630
there it is ula

1960
01:19:47,750 --> 01:19:44,560
has successfully completed their piece

1961
01:19:49,189 --> 01:19:47,760
of the mission starliner is free flying

1962
01:19:51,990 --> 01:19:49,199
for the first time

1963
01:19:54,390 --> 01:19:52,000

in space from here the johnson space

1964
01:19:56,149 --> 01:19:54,400
center mission controllers will be

1965
01:19:58,390 --> 01:19:56,159
flying starliner

1966
01:20:02,870 --> 01:19:58,400
we will hear reports exclusively from

1967
01:20:06,790 --> 01:20:04,950
and starliner's software has been

1968
01:20:08,629 --> 01:20:06,800
switched to orbit mode meaning the

1969
01:20:10,070 --> 01:20:08,639
spacecraft is executing the commands it

1970
01:20:11,750 --> 01:20:10,080
needs for

1971
01:20:13,990 --> 01:20:11,760
operating in space following a

1972
01:20:16,070 --> 01:20:14,000
successful launch into orbit

1973
01:20:18,070 --> 01:20:16,080
into the orbital trajectory

1974
01:20:20,390 --> 01:20:18,080
this is just one step flight controllers

1975
01:20:22,070 --> 01:20:20,400
are taking in configuring starliner now

1976
01:20:23,750 --> 01:20:22,080
that it's flying on its own

1977
01:20:25,669 --> 01:20:23,760
flight controllers are setting up for

1978
01:20:27,990 --> 01:20:25,679
the orbital insertion burn which will

1979
01:20:29,750 --> 01:20:28,000
take place in about 15 minutes little

1980
01:20:31,750 --> 01:20:29,760
over 15 minutes

1981
01:20:34,229 --> 01:20:31,760
and that'll circularize starliner's

1982
01:20:36,470 --> 01:20:34,239
orbit as it sets off to chase the

1983
01:20:38,149 --> 01:20:36,480
international space station

1984
01:20:39,830 --> 01:20:38,159
the team here is also turning off

1985
01:20:41,910 --> 01:20:39,840
several systems that were needed for

1986
01:20:45,669 --> 01:20:41,920
powered flight but are not necessary now

1987
01:20:47,590 --> 01:20:45,679
that starliner is in orbit

1988
01:20:49,830 --> 01:20:47,600

while some are turned off others will be

1989
01:20:51,669 --> 01:20:49,840
turned on such as the thruster housings

1990
01:20:52,790 --> 01:20:51,679
that will be used to maneuver starliner

1991
01:20:55,110 --> 01:20:52,800
in space

1992
01:20:56,950 --> 01:20:55,120
and the solar arrays

1993
01:20:59,110 --> 01:20:56,960
the thrusters will steer

1994
01:21:01,189 --> 01:20:59,120
starliner through orbit and the solar

1995
01:21:04,229 --> 01:21:01,199
arrays will of course convert

1996
01:21:08,229 --> 01:21:04,239
the sun's energy into uh electric energy

1997
01:21:12,550 --> 01:21:09,669
the centaur has intentionally left

1998
01:21:13,510 --> 01:21:12,560
starliner in an elliptical trajectory

1999
01:21:15,030 --> 01:21:13,520
that would make it easy for the

2000
01:21:16,870 --> 01:21:15,040
spacecraft and more importantly its

2001
01:21:18,709 --> 01:21:16,880
future crews to come back to earth at

2002
01:21:20,390 --> 01:21:18,719
this point if there were a problem

2003
01:21:21,590 --> 01:21:20,400
but that means it's all on starliner to

2004
01:21:23,350 --> 01:21:21,600
make it the rest of the way into a

2005
01:21:24,950 --> 01:21:23,360
stable orbit and on track for the space

2006
01:21:26,790 --> 01:21:24,960
station talking

2007
01:21:28,629 --> 01:21:26,800
this is where starliner's orbital

2008
01:21:30,790 --> 01:21:28,639
maneuvering and attitude control engines

2009
01:21:32,950 --> 01:21:30,800
come into play those 20 engines can

2010
01:21:35,270 --> 01:21:32,960
provide each up to

2011
01:21:38,390 --> 01:21:35,280
1400 pounds of thrust which is more than

2012
01:21:40,470 --> 01:21:38,400
enough to neatly heave starliner that

2013
01:21:42,390 --> 01:21:40,480

last little bit into orbit

2014
01:21:44,149 --> 01:21:42,400
they'll fire for about 40 seconds

2015
01:21:45,750 --> 01:21:44,159
setting starliner on the right path not

2016
01:21:47,430 --> 01:21:45,760
only for docking with the space station

2017
01:21:50,550 --> 01:21:47,440
but also a series of demonstrations that

2018
01:21:52,310 --> 01:21:50,560
starliner will perform before docking

2019
01:21:54,470 --> 01:21:52,320
and those demonstrations will prove that

2020
01:21:57,110 --> 01:21:54,480
starliner is ready to safely dock with

2021
01:21:59,030 --> 01:21:57,120
the space station they actually began on

2022
01:22:01,270 --> 01:21:59,040
the launch pad when we performed a check

2023
01:22:03,590 --> 01:22:01,280
to make sure that starliner's gps and

2024
01:22:05,350 --> 01:22:03,600
navigation systems agreed that it was

2025
01:22:07,189 --> 01:22:05,360
indeed on the launch pad

2026
01:22:09,189 --> 01:22:07,199
after the upcoming orbital insertion

2027
01:22:11,590 --> 01:22:09,199
burns the demonstrations will continue

2028
01:22:12,870 --> 01:22:11,600
so that ground controllers can ensure

2029
01:22:14,870 --> 01:22:12,880
that the spacecraft systems are

2030
01:22:16,629 --> 01:22:14,880
functioning correctly

2031
01:22:18,709 --> 01:22:16,639
when these first demos are complete

2032
01:22:20,470 --> 01:22:18,719
starliner will resume its path to the

2033
01:22:22,310 --> 01:22:20,480
international space station and our

2034
01:22:24,790 --> 01:22:22,320
systems here

2035
01:22:26,470 --> 01:22:24,800
are telling us that these early early

2036
01:22:28,629 --> 01:22:26,480
steps are complete and starliner's

2037
01:22:31,110 --> 01:22:28,639
systems are doing exactly what they are

2038
01:22:32,470 --> 01:22:31,120

supposed to do

2039
01:22:35,350 --> 01:22:32,480
we still have a few minutes before that

2040
01:22:38,229 --> 01:22:35,360
orbital insertion burn about 13 minutes

2041
01:22:39,990 --> 01:22:38,239
uh until it takes place so let's go back

2042
01:22:44,629 --> 01:22:40,000
to florida where josh and marie have

2043
01:22:49,430 --> 01:22:47,270
brandi it was a beautiful launch from

2044
01:22:50,470 --> 01:22:49,440
here in florida it took off right here

2045
01:22:52,550 --> 01:22:50,480
behind us

2046
01:22:54,229 --> 01:22:52,560
it is you know the sun is starting to

2047
01:22:56,310 --> 01:22:54,239
rise there's a little bit of a rocket

2048
01:22:58,229 --> 01:22:56,320
plume left over there behind us no

2049
01:23:00,310 --> 01:22:58,239
rocket left back there but it was just i

2050
01:23:02,629 --> 01:23:00,320
mean it was stunning to see i mean i

2051
01:23:04,470 --> 01:23:02,639
know you weren't looking from this view

2052
01:23:06,470 --> 01:23:04,480
you're looking much closer but i mean we

2053
01:23:08,229 --> 01:23:06,480
just turned around in our seats too

2054
01:23:10,790 --> 01:23:08,239
to watch it here and we could feel the

2055
01:23:12,709 --> 01:23:10,800
rumble and i know um you didn't see

2056
01:23:14,950 --> 01:23:12,719
people celebrating in the control rooms

2057
01:23:17,510 --> 01:23:14,960
because you know their job's not done at

2058
01:23:18,470 --> 01:23:17,520
liftoff it goes beyond that much further

2059
01:23:19,430 --> 01:23:18,480
and so

2060
01:23:22,709 --> 01:23:19,440
um

2061
01:23:27,030 --> 01:23:22,719
people are i think now just beginning to

2062
01:23:27,990 --> 01:23:27,040
breathe again um and so folks are just

2063
01:23:30,790 --> 01:23:28,000

uh

2064
01:23:31,990 --> 01:23:30,800
so happy about um this accomplishment i

2065
01:23:34,229 --> 01:23:32,000
mean obviously this is just the

2066
01:23:36,070 --> 01:23:34,239
beginning of the mission but

2067
01:23:38,310 --> 01:23:36,080
such a huge momentous occasion this

2068
01:23:41,990 --> 01:23:38,320
morning and uh we're actually hearing

2069
01:23:44,790 --> 01:23:42,000
that uh in the bmcc uh tori pedrotti is

2070
01:23:47,270 --> 01:23:44,800
with lewis atchison who was starliner's

2071
01:23:49,830 --> 01:23:47,280
very first launch conductor and saw us

2072
01:23:50,950 --> 01:23:49,840
through a successful first launch torrey

2073
01:23:53,270 --> 01:23:50,960
and lewis

2074
01:23:55,910 --> 01:23:53,280
got to be feeling pretty good right now

2075
01:23:57,669 --> 01:23:55,920
yes thank you josh that is

2076
01:23:59,750 --> 01:23:57,679
uh it's really excellent to have lewis

2077
01:24:01,270 --> 01:23:59,760
here and to have you know take him away

2078
01:24:02,709 --> 01:24:01,280
from console for just a minute to talk

2079
01:24:05,590 --> 01:24:02,719
with us so

2080
01:24:07,510 --> 01:24:05,600
lewis i know that you and chris ferguson

2081
01:24:09,110 --> 01:24:07,520
have been very close through this entire

2082
01:24:10,470 --> 01:24:09,120
process and i know that he asked you to

2083
01:24:13,030 --> 01:24:10,480
create the launch procedures can you

2084
01:24:15,270 --> 01:24:13,040
give us some some details about that

2085
01:24:17,110 --> 01:24:15,280
sure i think as you all know chris has a

2086
01:24:19,350 --> 01:24:17,120
very uh vested interest in how the

2087
01:24:20,790 --> 01:24:19,360
launch procedures were put together uh i

2088
01:24:23,430 --> 01:24:20,800

started with the program uh probably

2089
01:24:24,950 --> 01:24:23,440
about seven years ago about a year in i

2090
01:24:27,590 --> 01:24:24,960
was still a flight test engineer on the

2091
01:24:29,030 --> 01:24:27,600
program i happened to run into chris on

2092
01:24:31,110 --> 01:24:29,040
in the elevator on the way to work one

2093
01:24:33,910 --> 01:24:31,120
morning and quite frankly i didn't know

2094
01:24:35,350 --> 01:24:33,920
he knew my name but he said hey louis if

2095
01:24:37,350 --> 01:24:35,360
you've got a little bit of spare time

2096
01:24:38,709 --> 01:24:37,360
can you uh work and maybe see if you can

2097
01:24:40,390 --> 01:24:38,719
figure out how these launch procedures

2098
01:24:42,310 --> 01:24:40,400
are going to work for the program

2099
01:24:44,070 --> 01:24:42,320
and of course i was like oh yeah sure

2100
01:24:46,550 --> 01:24:44,080
spare time i can i can find time to you

2101
01:24:47,669 --> 01:24:46,560
know gen up some launch procedures

2102
01:24:49,830 --> 01:24:47,679
uh so

2103
01:24:52,070 --> 01:24:49,840
that began a uh basically a six-year

2104
01:24:54,629 --> 01:24:52,080
journey on finding a unique way to

2105
01:24:57,270 --> 01:24:54,639
integrate uh the united launch alliance

2106
01:24:59,830 --> 01:24:57,280
atlas v launch procedure which is a

2107
01:25:01,430 --> 01:24:59,840
tried and tested launch process

2108
01:25:03,510 --> 01:25:01,440
with something that had never flown

2109
01:25:04,790 --> 01:25:03,520
before our space capsule and were a lot

2110
01:25:06,709 --> 01:25:04,800
different than any of the other payloads

2111
01:25:08,229 --> 01:25:06,719
that they've flown so as you can imagine

2112
01:25:09,510 --> 01:25:08,239
we had to merge several different

2113
01:25:11,750 --> 01:25:09,520

cultures

2114
01:25:14,229 --> 01:25:11,760
our flight control team which is uh

2115
01:25:16,870 --> 01:25:14,239
really homegrown from nasa our ground

2116
01:25:18,950 --> 01:25:16,880
control team which is uh here

2117
01:25:21,110 --> 01:25:18,960
at c3pf that performs a lot of the

2118
01:25:23,669 --> 01:25:21,120
spacecraft power-up activities and

2119
01:25:26,390 --> 01:25:23,679
located here in c3pf that's correct i'm

2120
01:25:28,550 --> 01:25:26,400
florida local

2121
01:25:30,310 --> 01:25:28,560
so working through those processes

2122
01:25:32,229 --> 01:25:30,320
procedures and and finding a way to

2123
01:25:34,870 --> 01:25:32,239
integrate all that and oh by the way we

2124
01:25:35,590 --> 01:25:34,880
have to find time to load a crew one day

2125
01:25:40,629 --> 01:25:35,600
and

2126
01:25:43,110 --> 01:25:40,639
up so that everything comes together for

2127
01:25:45,750 --> 01:25:43,120
an instantaneous launch window so today

2128
01:25:47,189 --> 01:25:45,760
fortunately we made our window um you

2129
01:25:49,030 --> 01:25:47,199
know it's a first flight program we saw

2130
01:25:50,470 --> 01:25:49,040
some challenges over the evening but

2131
01:25:51,590 --> 01:25:50,480
we've got a world-class team here and

2132
01:25:53,189 --> 01:25:51,600
they were able to pull through the

2133
01:25:54,390 --> 01:25:53,199
little things that we were seeing

2134
01:25:55,910 --> 01:25:54,400
fortunately we've had a good training

2135
01:25:57,990 --> 01:25:55,920
program along the way

2136
01:26:00,070 --> 01:25:58,000
and uh it's just an incredibly exciting

2137
01:26:02,310 --> 01:26:00,080
day i know and seeing

2138
01:26:04,550 --> 01:26:02,320

so far a successful flight has just been

2139
01:26:07,110 --> 01:26:04,560
one of the best experiences i've had

2140
01:26:08,709 --> 01:26:07,120
working on this program

2141
01:26:11,110 --> 01:26:08,719
but so you mentioned you know we had

2142
01:26:12,709 --> 01:26:11,120
some a little bit of setbacks some

2143
01:26:14,229 --> 01:26:12,719
issues that we needed to work through so

2144
01:26:16,470 --> 01:26:14,239
i'm guessing today didn't go exactly

2145
01:26:17,830 --> 01:26:16,480
according to plan no first flight ever

2146
01:26:19,430 --> 01:26:17,840
does

2147
01:26:21,669 --> 01:26:19,440
so yeah we were um we were working a

2148
01:26:23,110 --> 01:26:21,679
couple issues with the com sub system

2149
01:26:24,550 --> 01:26:23,120
fortunately the flight control team was

2150
01:26:27,430 --> 01:26:24,560
able to work it out before we went to

2151
01:26:29,430 --> 01:26:27,440
fly today a few days ago we had a couple

2152
01:26:30,629 --> 01:26:29,440
issues with the hatch which we were able

2153
01:26:31,830 --> 01:26:30,639
to

2154
01:26:33,510 --> 01:26:31,840
which we learned about when we did our

2155
01:26:35,910 --> 01:26:33,520
integrated day of launch test was which

2156
01:26:37,750 --> 01:26:35,920
was actually a fantastic test

2157
01:26:39,350 --> 01:26:37,760
we did a couple of modifications to

2158
01:26:41,910 --> 01:26:39,360
account for the fact that when there's

2159
01:26:43,189 --> 01:26:41,920
pressure changes outside we need to

2160
01:26:44,550 --> 01:26:43,199
bleed a little bit of that pressure off

2161
01:26:46,070 --> 01:26:44,560
so we can get the hatch open you'd be

2162
01:26:48,149 --> 01:26:46,080
surprised how just a little pressure

2163
01:26:49,910 --> 01:26:48,159

difference over a large surface area

2164
01:26:51,750 --> 01:26:49,920
makes it really tough to open so we were

2165
01:26:53,750 --> 01:26:51,760
able to get that fixed so the pad team

2166
01:26:55,030 --> 01:26:53,760
here and the recovery team in the desert

2167
01:26:57,910 --> 01:26:55,040
are going to be able to open that side

2168
01:26:59,350 --> 01:26:57,920
hatch uh pretty seamlessly

2169
01:27:01,270 --> 01:26:59,360
that's excellent and it's there's

2170
01:27:03,189 --> 01:27:01,280
nothing like a flight test to learn

2171
01:27:05,990 --> 01:27:03,199
these things right so this is the reason

2172
01:27:08,149 --> 01:27:06,000
why we why we test i completely agree

2173
01:27:09,910 --> 01:27:08,159
and and this being the first launch that

2174
01:27:11,990 --> 01:27:09,920
had the opportunity to work in a control

2175
01:27:12,790 --> 01:27:12,000
center right next to the launch vehicle

2176
01:27:15,189 --> 01:27:12,800
um

2177
01:27:16,870 --> 01:27:15,199
we've sinned we've trained for this and

2178
01:27:18,870 --> 01:27:16,880
there was nothing quite like the feeling

2179
01:27:20,310 --> 01:27:18,880
of the monitors and the floor shaking

2180
01:27:22,629 --> 01:27:20,320
after that rocket took off today so it

2181
01:27:25,510 --> 01:27:22,639
was a amazing electric atmosphere this

2182
01:27:26,950 --> 01:27:25,520
morning i completely agree is there

2183
01:27:29,910 --> 01:27:26,960
anything that you'd like to share with

2184
01:27:33,110 --> 01:27:29,920
the team you know here in florida back

2185
01:27:34,709 --> 01:27:33,120
in houston anybody watching sure so um

2186
01:27:36,709 --> 01:27:34,719
first of all uh i have to thank my

2187
01:27:38,870 --> 01:27:36,719
family for all the um

2188
01:27:40,790 --> 01:27:38,880

the the time patience and effort that

2189
01:27:41,669 --> 01:27:40,800
was put in over the past uh several

2190
01:27:43,110 --> 01:27:41,679
years

2191
01:27:44,790 --> 01:27:43,120
we work a lot of long hours to make

2192
01:27:46,550 --> 01:27:44,800
these kind of things happen and i

2193
01:27:49,189 --> 01:27:46,560
realized that they're at home watching

2194
01:27:50,070 --> 01:27:49,199
eagerly excited about the the next part

2195
01:27:52,550 --> 01:27:50,080
of the mission which will be the

2196
01:27:54,229 --> 01:27:52,560
recovery operation that i'm a part of um

2197
01:27:55,750 --> 01:27:54,239
and also the team right

2198
01:27:57,990 --> 01:27:55,760
this is the one of the greatest team

2199
01:28:00,229 --> 01:27:58,000
sports you could ever possibly imagine

2200
01:28:01,590 --> 01:28:00,239
and it takes a lot of people to make all

2201
01:28:02,790 --> 01:28:01,600
this happen and a lot of people need to

2202
01:28:04,629 --> 01:28:02,800
be at the right place at the right time

2203
01:28:06,229 --> 01:28:04,639
and know the right stuff in order to

2204
01:28:07,669 --> 01:28:06,239
make this instantaneous launch window

2205
01:28:09,750 --> 01:28:07,679
happen and quite frankly everything

2206
01:28:11,510 --> 01:28:09,760
happened on this program

2207
01:28:12,790 --> 01:28:11,520
right well thank you louis it's been

2208
01:28:15,350 --> 01:28:12,800
great to have you here thank you so much

2209
01:28:17,990 --> 01:28:15,360
for taking some time to talk to us thank

2210
01:28:19,750 --> 01:28:18,000
you josh marie back to you

2211
01:28:21,510 --> 01:28:19,760
thank you tori

2212
01:28:23,110 --> 01:28:21,520
thanks so much tori

2213
01:28:24,470 --> 01:28:23,120

uh well you know before we go back to

2214
01:28:26,310 --> 01:28:24,480
jfc as they're getting ready for the

2215
01:28:27,910 --> 01:28:26,320
orbital insertion burn i just want to

2216
01:28:29,830 --> 01:28:27,920
you know send a message out to everyone

2217
01:28:31,669 --> 01:28:29,840
watching not here from florida if you've

2218
01:28:33,110 --> 01:28:31,679
never seen a rocket launch before it's

2219
01:28:35,270 --> 01:28:33,120
like nothing you've ever seen i mean it

2220
01:28:37,750 --> 01:28:35,280
quite literally looks like another sun

2221
01:28:39,189 --> 01:28:37,760
is rising up into the sky so the next

2222
01:28:40,950 --> 01:28:39,199
time we do this there's going to be

2223
01:28:42,550 --> 01:28:40,960
people on board and if you're in the

2224
01:28:44,390 --> 01:28:42,560
states you can drive down here to

2225
01:28:46,470 --> 01:28:44,400
florida and come watch us fly yes just

2226
01:28:48,629 --> 01:28:46,480
be prepared for a lot of traffic don't

2227
01:28:50,709 --> 01:28:48,639
expect to be going anywhere anytime soon

2228
01:28:52,310 --> 01:28:50,719
after launch because um we expect the

2229
01:28:54,709 --> 01:28:52,320
place to be pretty jammed up just like

2230
01:28:55,590 --> 01:28:54,719
it was during the space shuttle days

2231
01:28:57,189 --> 01:28:55,600
yeah

2232
01:28:59,030 --> 01:28:57,199
i think there was upwards of a million

2233
01:29:00,950 --> 01:28:59,040
people here up

2234
01:29:02,870 --> 01:29:00,960
now uh this is actually some video that

2235
01:29:05,270 --> 01:29:02,880
we got of the pad team right as they

2236
01:29:07,030 --> 01:29:05,280
were closing up the white room

2237
01:29:09,189 --> 01:29:07,040
showing us uh

2238
01:29:10,629 --> 01:29:09,199

their enthusiasm before they got off the

2239
01:29:12,629 --> 01:29:10,639
pad

2240
01:29:15,030 --> 01:29:12,639
just taking a team moment to reflect on

2241
01:29:16,870 --> 01:29:15,040
the the history of this day

2242
01:29:18,709 --> 01:29:16,880
yeah i mean and you don't always see it

2243
01:29:20,470 --> 01:29:18,719
when we're doing these operational

2244
01:29:21,910 --> 01:29:20,480
things but the the people behind the

2245
01:29:24,870 --> 01:29:21,920
scenes i mean you saw them in that

2246
01:29:27,669 --> 01:29:24,880
embrace there it's really like a family

2247
01:29:29,270 --> 01:29:27,679
um nasa boeing ula we work side by side

2248
01:29:31,030 --> 01:29:29,280
together every day these people putting

2249
01:29:32,470 --> 01:29:31,040
in these long hours they're doing this

2250
01:29:34,709 --> 01:29:32,480
together everybody working towards a

2251
01:29:36,629 --> 01:29:34,719
common goal and you saw the culmination

2252
01:29:38,470 --> 01:29:36,639
of that when we had that instantaneous

2253
01:29:40,709 --> 01:29:38,480
liftoff on the first try

2254
01:29:42,229 --> 01:29:40,719
exactly and you know like you said it's

2255
01:29:44,070 --> 01:29:42,239
very much like a family a lot of these

2256
01:29:45,750 --> 01:29:44,080
folks are going to be spending christmas

2257
01:29:47,430 --> 01:29:45,760
you know making sure starliner is doing

2258
01:29:49,669 --> 01:29:47,440
well attached to the international space

2259
01:29:53,110 --> 01:29:49,679
station it just takes so much hard work

2260
01:29:55,030 --> 01:29:53,120
and dedication to do what they do

2261
01:29:57,270 --> 01:29:55,040
and we want to go back over to houston

2262
01:29:59,350 --> 01:29:57,280
uh we are standing by uh

2263
01:30:01,510 --> 01:29:59,360

before too long starliner is going to be

2264
01:30:03,510 --> 01:30:01,520
in orbit so we want to get uh an update

2265
01:30:06,790 --> 01:30:03,520
from steve and brandy to see how things

2266
01:30:09,669 --> 01:30:06,800
are going over there hi guys

2267
01:30:11,990 --> 01:30:09,679
thank you folks it is uh it is very

2268
01:30:13,669 --> 01:30:12,000
looking very good here in houston

2269
01:30:15,189 --> 01:30:13,679
we are about um

2270
01:30:16,790 --> 01:30:15,199
five and a half minutes away from the

2271
01:30:18,629 --> 01:30:16,800
orbital insertion burn that's going to

2272
01:30:20,870 --> 01:30:18,639
circularize the

2273
01:30:23,590 --> 01:30:20,880
the orbit of starliner starliner is

2274
01:30:26,070 --> 01:30:23,600
currently flying over southeast europe

2275
01:30:28,550 --> 01:30:26,080
as it begins its chase uh

2276
01:30:30,629 --> 01:30:28,560
about 25 minutes ago begun its chase of

2277
01:30:31,910 --> 01:30:30,639
the international space station that's

2278
01:30:35,030 --> 01:30:31,920
right the international space station

2279
01:30:37,189 --> 01:30:35,040
was about 260 miles over a great

2280
01:30:39,270 --> 01:30:37,199
australian bite south of western

2281
01:30:41,510 --> 01:30:39,280
australia when it uh when starliner

2282
01:30:43,189 --> 01:30:41,520
launched today and the crew members on

2283
01:30:44,470 --> 01:30:43,199
board were sent up some video of their

2284
01:30:45,750 --> 01:30:44,480
launch so i know that they were probably

2285
01:30:47,669 --> 01:30:45,760
following along and cheering with

2286
01:30:49,430 --> 01:30:47,679
everybody here on the ground as well

2287
01:30:51,030 --> 01:30:49,440
they're looking forward to seeing

2288
01:30:52,709 --> 01:30:51,040

starliner talk to the space station

2289
01:30:54,709 --> 01:30:52,719
tomorrow

2290
01:30:57,430 --> 01:30:54,719
and it's going to take um going to take

2291
01:30:59,350 --> 01:30:57,440
a little more than 24 hours for the

2292
01:31:01,270 --> 01:30:59,360
starliner to reach

2293
01:31:04,550 --> 01:31:01,280
international space station on this

2294
01:31:06,310 --> 01:31:04,560
orbital flight test the regular docking

2295
01:31:08,149 --> 01:31:06,320
scenario will not take that long when

2296
01:31:10,070 --> 01:31:08,159
there is a crew on board but since this

2297
01:31:11,270 --> 01:31:10,080
is the first flight of starliner want to

2298
01:31:13,189 --> 01:31:11,280
make sure

2299
01:31:14,790 --> 01:31:13,199
that all the systems are working that

2300
01:31:17,030 --> 01:31:14,800
everything's doing what it's supposed to

2301
01:31:17,830 --> 01:31:17,040
after all starliner is flying itself to

2302
01:31:20,629 --> 01:31:17,840
this

2303
01:31:24,070 --> 01:31:20,639
so even though it's going mach 25 right

2304
01:31:25,590 --> 01:31:24,080
now 17 500 miles an hour to catch up to

2305
01:31:27,430 --> 01:31:25,600
the space station

2306
01:31:29,510 --> 01:31:27,440
still going to take a little time make

2307
01:31:31,110 --> 01:31:29,520
sure all the systems are working the way

2308
01:31:32,950 --> 01:31:31,120
they're supposed to make sure starliner

2309
01:31:35,030 --> 01:31:32,960
knows where it is where it's going and

2310
01:31:36,629 --> 01:31:35,040
will reach it in time that's right and

2311
01:31:38,870 --> 01:31:36,639
we're now about four minutes away from

2312
01:31:40,790 --> 01:31:38,880
that orbital insertion burn uh the team

2313
01:31:43,270 --> 01:31:40,800

here on the ground is uh following along

2314
01:31:45,189 --> 01:31:43,280
making sure that all the systems are

2315
01:31:47,270 --> 01:31:45,199
hooking up and uh talking like they're

2316
01:31:49,669 --> 01:31:47,280
supposed to as as we do get closer to

2317
01:31:51,910 --> 01:31:49,679
that that'll be about a 40-second burn

2318
01:31:53,910 --> 01:31:51,920
um again moving uh space at the

2319
01:31:55,750 --> 01:31:53,920
starliner into the right orbit to catch

2320
01:31:57,669 --> 01:31:55,760
up with space station

2321
01:32:00,229 --> 01:31:57,679
and it's going to be the four

2322
01:32:01,030 --> 01:32:00,239
omac engines that are on starliner they

2323
01:32:03,350 --> 01:32:01,040
are

2324
01:32:06,550 --> 01:32:03,360
orbital maneuvering and control engines

2325
01:32:10,310 --> 01:32:06,560
1500 pounds of thrust each so combined a

2326
01:32:12,149 --> 01:32:10,320
6 000 pound kick to push starliner a

2327
01:32:14,390 --> 01:32:12,159
little bit a little bit higher a little

2328
01:32:16,390 --> 01:32:14,400
bit faster raise the orbit

2329
01:32:17,910 --> 01:32:16,400
and get everything together of course

2330
01:32:19,189 --> 01:32:17,920
those engines are going to play a big

2331
01:32:21,910 --> 01:32:19,199
role

2332
01:32:22,709 --> 01:32:21,920
throughout the next 24 hours as

2333
01:32:27,990 --> 01:32:22,719
the

2334
01:32:30,229 --> 01:32:28,000
international space station

2335
01:32:32,149 --> 01:32:30,239
we are now about three minutes and 14

2336
01:32:33,110 --> 01:32:32,159
seconds away from the orbital insertion

2337
01:32:35,590 --> 01:32:33,120
burn

2338
01:32:38,470 --> 01:32:35,600

this of course follows a terrific launch

2339
01:32:39,270 --> 01:32:38,480
this morning and the power of the atlas

2340
01:32:41,669 --> 01:32:39,280
v

2341
01:32:44,310 --> 01:32:41,679
putting starliner on the exact right

2342
01:32:46,470 --> 01:32:44,320
course and speeding it from zero

2343
01:32:48,310 --> 01:32:46,480
to orbital velocity

2344
01:32:50,390 --> 01:32:48,320
in uh in just about

2345
01:32:52,070 --> 01:32:50,400
11 and a half minutes i think of powered

2346
01:32:53,669 --> 01:32:52,080
flight

2347
01:32:57,590 --> 01:32:53,679
it's amazing how little time it takes to

2348
01:33:01,270 --> 01:32:59,270
so controllers here are looking

2349
01:33:03,350 --> 01:33:01,280
carefully at all of their systems making

2350
01:33:04,950 --> 01:33:03,360
sure everything is good it's very quiet

2351
01:33:06,950 --> 01:33:04,960
here in the control room which is always

2352
01:33:09,030 --> 01:33:06,960
a good sign that means the

2353
01:33:11,350 --> 01:33:09,040
controllers are heads down watching over

2354
01:33:13,030 --> 01:33:11,360
the systems and

2355
01:33:13,830 --> 01:33:13,040
keeping track of everything that's going

2356
01:33:15,350 --> 01:33:13,840
on

2357
01:33:24,709 --> 01:33:15,360
just above

2358
01:33:28,870 --> 01:33:26,629
we're also seeing here that uh

2359
01:33:30,709 --> 01:33:28,880
starliner's reaction control system

2360
01:33:33,669 --> 01:33:30,719
engines they are for the fine

2361
01:33:34,709 --> 01:33:33,679
adjustments 100 pound class engines

2362
01:33:37,430 --> 01:33:34,719
are

2363
01:33:39,750 --> 01:33:37,440

making small adjustments as uh as

2364
01:33:46,870 --> 01:33:39,760
starliner adjusts its attitude

2365
01:34:00,950 --> 01:33:48,310
less than two minutes to go until that

2366
01:34:04,310 --> 01:34:02,709
and you can see here the control room

2367
01:34:06,229 --> 01:34:04,320
here in houston starliner mission

2368
01:34:08,229 --> 01:34:06,239
control this is of course a

2369
01:34:10,390 --> 01:34:08,239
flight control room that's been used

2370
01:34:13,030 --> 01:34:10,400
before for nasa missions but this is the

2371
01:34:15,590 --> 01:34:13,040
inaugural starliner mission so it's the

2372
01:34:18,550 --> 01:34:15,600
first time that it's been used

2373
01:34:20,950 --> 01:34:18,560
for this boeing spacecraft

2374
01:34:24,070 --> 01:34:20,960
and of course controllers are used to

2375
01:34:26,229 --> 01:34:24,080
this room and have spent a number of

2376
01:34:29,669 --> 01:34:26,239
a number of hours in here doing uh

2377
01:34:33,189 --> 01:34:29,679
simulations and everything it's a

2378
01:34:35,910 --> 01:34:33,199
very professional crew and many of these

2379
01:34:38,229 --> 01:34:35,920
folks are veterans of the shuttle

2380
01:34:40,229 --> 01:34:38,239
shuttle mission certainly richard jones

2381
01:34:41,109 --> 01:34:40,239
flight director who is overseeing this

2382
01:34:42,070 --> 01:34:41,119
ascent

2383
01:34:54,149 --> 01:34:42,080
and

2384
01:34:55,669 --> 01:34:54,159
the orbital insertion burn flight

2385
01:34:58,790 --> 01:34:55,679
controllers here

2386
01:35:03,910 --> 01:35:01,030
not working any technical issues the

2387
01:35:08,149 --> 01:35:03,920
unmac engines are

2388
01:35:11,669 --> 01:35:10,390

make that 40 second firing that will

2389
01:35:13,510 --> 01:35:11,679
circularize

2390
01:35:15,510 --> 01:35:13,520
starliner's orbit and get it into a

2391
01:35:17,669 --> 01:35:15,520
position to continue its chase to the

2392
01:35:19,830 --> 01:35:17,679
international space station which is

2393
01:36:49,430 --> 01:35:19,840
itself currently coming up on central

2394
01:36:53,430 --> 01:36:51,030
and controllers are maneuvering

2395
01:36:55,669 --> 01:36:53,440
starliner into the

2396
01:37:20,229 --> 01:36:55,679
into the right attitude for this

2397
01:39:59,910 --> 01:37:22,310
controllers watching the

2398
01:40:03,270 --> 01:40:01,109
and the

2399
01:40:05,590 --> 01:40:03,280
orbital insertion burn has been delayed

2400
01:40:06,870 --> 01:40:05,600
controllers are watching the attitude of

2401
01:40:08,790 --> 01:40:06,880
starliner

2402
01:40:10,390 --> 01:40:08,800
as it positions itself

2403
01:40:11,990 --> 01:40:10,400
and looking at the

2404
01:41:00,790 --> 01:40:12,000
at the spacecraft

2405
01:41:04,070 --> 01:41:02,709
once again that orbital insertion burn

2406
01:41:05,510 --> 01:41:04,080
that was supposed to take place about

2407
01:41:07,669 --> 01:41:05,520
five and a half minutes ago has been

2408
01:41:09,590 --> 01:41:07,679
delayed as the team here on the ground

2409
01:41:11,590 --> 01:41:09,600
is seeing uh starlander

2410
01:41:12,950 --> 01:41:11,600
uh not in the in the correct attitude

2411
01:41:14,790 --> 01:41:12,960
for it they're they're working through

2412
01:41:50,310 --> 01:41:14,800
that and we'll be looking for

2413
01:41:53,990 --> 01:41:52,070

currently starliner is using its

2414
01:41:56,550 --> 01:41:54,000
hundred-pound class thrusters to

2415
01:41:59,270 --> 01:41:56,560
maneuver in space

2416
01:42:04,790 --> 01:41:59,280
we are 37 minutes into this first flight

2417
01:42:04,800 --> 01:42:08,550
and flight controllers are

2418
01:42:08,560 --> 01:42:13,350
seeing what

2419
01:42:18,149 --> 01:42:16,310
the mac engines are of course 1500 pound

2420
01:42:19,669 --> 01:42:18,159
class thrusters each one of them there's

2421
01:42:21,590 --> 01:42:19,679
four of them on starliner that's what

2422
01:42:38,310 --> 01:42:21,600
they'll use to complete the orbital

2423
01:42:41,510 --> 01:42:39,910
team here in starlander mission control

2424
01:42:43,510 --> 01:42:41,520
still working through some

2425
01:42:45,750 --> 01:42:43,520
steps to try and get starliner in the

2426
01:42:47,590 --> 01:42:45,760
right attitude for the orbital insertion

2427
01:42:48,709 --> 01:42:47,600
burn

2428
01:42:51,189 --> 01:42:48,719
working on

2429
01:42:53,350 --> 01:42:51,199
the next the next opportunity for that

2430
01:43:25,109 --> 01:42:53,360
and

2431
01:43:56,470 --> 01:43:25,119
reports that we are in a stable orbit

2432
01:44:01,109 --> 01:43:58,950
once again starliner is now in a stable

2433
01:44:02,709 --> 01:44:01,119
orbit uh they've got it in a stable

2434
01:44:04,390 --> 01:44:02,719
position but the teams here on the

2435
01:44:06,390 --> 01:44:04,400
ground are working through what the what

2436
01:45:11,030 --> 01:44:06,400
the best next steps for starliner should

2437
01:45:14,390 --> 01:45:12,870
and richard jones reports that his

2438
01:45:17,189 --> 01:45:14,400

flight controllers are turning the

2439
01:45:19,270 --> 01:45:17,199
starliner spacecraft to the

2440
01:45:21,270 --> 01:45:19,280
what we call a tail sun position that

2441
01:45:22,950 --> 01:45:21,280
means the solar rays will be pointing to

2442
01:45:26,550 --> 01:45:22,960
the sun to recharge

2443
01:45:29,030 --> 01:45:26,560
the batteries on starliner

2444
01:45:30,550 --> 01:45:29,040
and of course to power the systems on

2445
01:46:39,750 --> 01:45:30,560
the spacecraft

2446
01:46:42,950 --> 01:46:41,350
and flight controllers are working

2447
01:46:45,430 --> 01:46:42,960
through all the options at their

2448
01:46:48,790 --> 01:46:45,440
disposal as this

2449
01:46:53,270 --> 01:46:48,800
maneuver to put starliner in a tail sun

2450
01:50:00,470 --> 01:46:55,669
starliner's flight path and orbit are

2451
01:50:06,229 --> 01:50:03,270
and we do have an off nominal insertion

2452
01:50:08,709 --> 01:50:06,239
reported we have spacecraft control

2453
01:50:10,950 --> 01:50:08,719
guidance and control teams are assessing

2454
01:50:13,990 --> 01:50:10,960
their next maneuvers spacecraft

2455
01:51:35,270 --> 01:50:14,000
batteries are good and the spacecraft is

2456
01:51:38,470 --> 01:51:37,030
view here inside starliner mission

2457
01:51:40,390 --> 01:51:38,480
control where flight controllers are

2458
01:51:41,990 --> 01:51:40,400
working through what the next steps for

2459
01:51:44,390 --> 01:51:42,000
starliner should be you can see flight

2460
01:51:46,870 --> 01:51:44,400
director richard jones standing up there

2461
01:51:48,390 --> 01:51:46,880
beside the uh behind the flight director

2462
01:53:35,750 --> 01:51:48,400
console talking with

2463
01:53:41,109 --> 01:53:38,709

and once again we have had an um off

2464
01:53:43,270 --> 01:53:41,119
nominal insertion

2465
01:53:45,270 --> 01:53:43,280
we have spacecraft control guidance and

2466
01:53:46,470 --> 01:53:45,280
control teams here at starliner mission

2467
01:53:48,790 --> 01:53:46,480
control

2468
01:53:50,070 --> 01:53:48,800
are assessing options assessing all

2469
01:53:50,950 --> 01:53:50,080
their options

2470
01:53:53,030 --> 01:53:50,960
and

2471
01:53:54,790 --> 01:53:53,040
contemplating the next maneuvers for the

2472
01:53:57,030 --> 01:53:54,800
spacecraft

2473
01:53:59,109 --> 01:53:57,040
starliner has good batteries

2474
01:54:00,310 --> 01:53:59,119
and is in a stable orbit

2475
01:54:02,390 --> 01:54:00,320
and the flight control team also

2476
01:54:05,430 --> 01:54:02,400
reporting that starliner did uh finish

2477
01:54:07,109 --> 01:54:05,440
moving into that uh tail sun

2478
01:56:54,629 --> 01:54:07,119
position that will allow its batteries

2479
01:56:59,030 --> 01:56:56,870
and if you're just tuning in starliner

2480
01:57:02,470 --> 01:56:59,040
lifted off from cape canaveral florida

2481
01:57:04,550 --> 01:57:02,480
at 6 36 central time

2482
01:57:06,550 --> 01:57:04,560
this morning

2483
01:57:09,030 --> 01:57:06,560
we have had a re

2484
01:57:11,109 --> 01:57:09,040
off nominal insertion

2485
01:57:13,589 --> 01:57:11,119
and mission control teams here at

2486
01:57:15,109 --> 01:57:13,599
starliner mission control are

2487
01:57:17,990 --> 01:57:15,119
assessing

2488
01:57:19,750 --> 01:57:18,000

all of their options for the starliner

2489
01:57:22,310 --> 01:57:19,760
spacecraft it is in

2490
01:57:25,510 --> 01:57:22,320
a stable orbit it has power

2491
01:57:51,830 --> 01:57:25,520
and its solar array is facing the sun

2492
01:57:55,510 --> 01:57:53,270
that horrible insertion burn was

2493
01:57:57,750 --> 01:57:55,520
scheduled to take place 31 minutes after

2494
01:57:59,030 --> 01:57:57,760
launch uh but uh didn't happen on

2495
01:58:00,870 --> 01:57:59,040
schedule

2496
01:58:02,950 --> 01:58:00,880
again teams here on the ground are

2497
01:58:04,950 --> 01:58:02,960
evaluating their their various options

2498
02:03:09,830 --> 01:58:04,960
looking at what the best next steps for

2499
02:03:14,709 --> 02:03:12,149
and once again if you are just joining a

2500
02:03:17,830 --> 02:03:14,719
starliner lifted off from cape canaveral

2501
02:03:20,149 --> 02:03:17,840
florida this morning at 6 36 a.m

2502
02:03:22,950 --> 02:03:20,159
central time to begin its chase of the

2503
02:03:25,430 --> 02:03:22,960
international space station

2504
02:03:26,950 --> 02:03:25,440
we have since experienced a off nominal

2505
02:03:30,070 --> 02:03:26,960
insertion

2506
02:03:32,950 --> 02:03:30,080
and the spacecraft has essentially

2507
02:03:35,830 --> 02:03:32,960
is in a stable

2508
02:03:38,629 --> 02:03:35,840
position it's it's fully powered mission

2509
02:03:39,910 --> 02:03:38,639
control here in houston is assessing all

2510
02:03:41,669 --> 02:03:39,920
the options

2511
02:03:44,870 --> 02:03:41,679
we're going to step away from the

2512
02:03:46,470 --> 02:03:44,880
broadcast and you can stay updated on

2513
02:03:50,790 --> 02:03:46,480

everything that is taking place with the

2514
02:03:51,910 --> 02:03:50,800
starliner mission on boeing.com

2515
02:03:53,750 --> 02:03:51,920
we'll also be getting you more

2516
02:03:55,910 --> 02:03:53,760
information here on nasa tv as the

2517
02:03:57,750 --> 02:03:55,920
morning progresses thanks so much for

2518
02:03:59,430 --> 02:03:57,760
joining us today we're going to sign off

2519
02:04:19,030 --> 02:03:59,440
for now but we'll have more information

2520
02:04:25,430 --> 02:04:22,229
hey you're watching nasa tv on the air