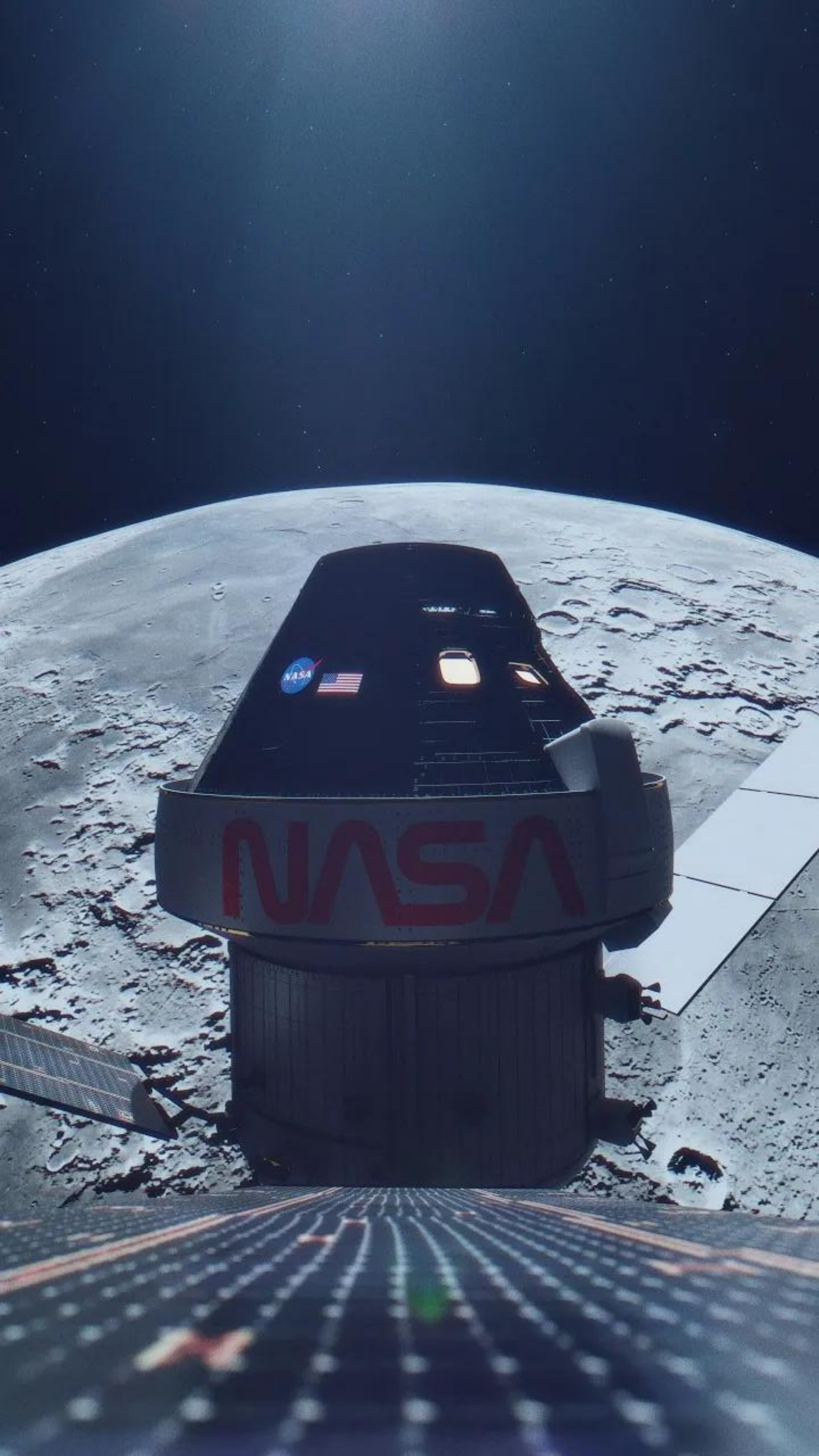
NASA

1
00:00:00,960 --> 00:00:06,670
safety

2
00:00:15,490 --> 00:00:09,820
Bay here the angle has landed

3
00:00:57,590 --> 00:00:23,020
[Music]

4
00:01:03,590 --> 00:01:00,229
good morning and welcome to the Johnson

5
00:01:05,990 --> 00:01:03,600
Space Center in Houston Texas I'm NASA's

6
00:01:08,570 --> 00:01:06,000
Sandra Jones and we're bringing you live

7
00:01:10,490 --> 00:01:08,580
coverage from Mission Control Houston of

8
00:01:14,630 --> 00:01:10,500
the upcoming outbound trajectory

9
00:01:17,330 --> 00:01:14,640
correction burn or otc-1 burn following

10
00:01:19,670 --> 00:01:17,340
the historic launch of the space launch

11
00:01:22,730 --> 00:01:19,680
system from the Kennedy Space Center in

12
00:01:24,530 --> 00:01:22,740
Florida just hours ago today we're in

13
00:01:26,330 --> 00:01:24,540

the white flight control room just

14
00:01:28,130 --> 00:01:26,340
across the hall from where you usually

15
00:01:30,410 --> 00:01:28,140
see us in the International Space

16
00:01:36,670 --> 00:01:30,420
Station flight control room the white

17
00:01:42,170 --> 00:01:39,830
Starliner previously this room was used

18
00:01:45,469 --> 00:01:42,180
for space shuttle missions and was also

19
00:01:48,590 --> 00:01:45,479
renovated in 2014 to support our use

20
00:01:50,990 --> 00:01:48,600
with the Artemis program so speaking of

21
00:01:54,230 --> 00:01:51,000
Artemis earlier today the space launch

22
00:01:57,289 --> 00:01:54,240
system blasted off from pad 39b at the

23
00:02:01,249 --> 00:01:57,299
Kennedy Space Center in Florida at 12 47

24
00:02:04,069 --> 00:02:01,259
a.m Central 1 47 a.m Eastern following

25
00:02:07,370 --> 00:02:04,079
liftoff solar arrays were deployed trans

26
00:02:10,969 --> 00:02:07,380
lunar injection took place and icps

27
00:02:14,210 --> 00:02:10,979
separation occurred since then Orion has

28
00:02:16,550 --> 00:02:14,220
been in a coast phase so let's take a

29
00:02:18,830 --> 00:02:16,560
quick look at a replay of that

30
00:02:20,390 --> 00:02:18,840
spectacular launch happening just hours

31
00:02:22,970 --> 00:02:20,400
ago

32
00:02:27,589 --> 00:02:22,980
filling the vehicle at 128 miles per

33
00:02:30,890 --> 00:02:29,690
here in good good control on the role

34
00:02:33,530 --> 00:02:30,900
from teams in Mission Control Houston

35
00:02:36,410 --> 00:02:33,540
all good calls so far now 30 seconds

36
00:02:37,729 --> 00:02:36,420
applied hardness one first Milestone

37
00:02:39,530 --> 00:02:37,739
will be forward the vehicle to pass

38
00:02:41,449 --> 00:02:39,540

through Max Q in about one minute and

39
00:02:43,309 --> 00:02:41,459
nine seconds into launch this is the

40
00:02:48,880 --> 00:02:43,319
greatest period of atmospheric force on

41
00:03:00,290 --> 00:02:50,930
[Music]

42
00:03:22,130 --> 00:03:02,270
you're looking at 8.8 million pounds of

43
00:03:26,449 --> 00:03:24,410
and there you saw it that beautiful

44
00:03:29,030 --> 00:03:26,459
launch in the wee hours of the morning

45
00:03:31,910 --> 00:03:29,040
with SLS lighting up the Florida Space

46
00:03:34,970 --> 00:03:31,920
Coast now on your screen today you see

47
00:03:37,130 --> 00:03:34,980
today's flight director Judd excuse me

48
00:03:39,050 --> 00:03:37,140
Rick labrode who stepped in and is

49
00:03:41,030 --> 00:03:39,060
leading the team now following Judd

50
00:03:43,250 --> 00:03:41,040
frieling who led the team during the

51
00:03:46,250 --> 00:03:43,260
ascent portion of the space launch

52
00:03:49,070 --> 00:03:46,260
system now during liftoff SLS produced

53
00:03:51,229 --> 00:03:49,080
8.8 million pounds of thrust propelling

54
00:03:53,390 --> 00:03:51,239
Orion toward what will be more than a 1

55
00:03:55,190 --> 00:03:53,400
million mile Journey To The Moon and

56
00:03:59,330 --> 00:03:55,200
Beyond in an elliptical orbit before

57
00:04:04,910 --> 00:04:02,030
now that Orion is on the way to the Moon

58
00:04:07,190 --> 00:04:04,920
following trans lunar injection the next

59
00:04:11,030 --> 00:04:07,200
major Milestone is the outbound

60
00:04:13,670 --> 00:04:11,040
trajectory correction or otc-1 burn this

61
00:04:15,410 --> 00:04:13,680
burn will fine-tune Orion's path to the

62
00:04:17,330 --> 00:04:15,420
moon and will perform a critical

63
00:04:20,150 --> 00:04:17,340

checkout of the orbital maneuvering

64
00:04:22,490 --> 00:04:20,160
system or Ohm's engine which is the main

65
00:04:24,830 --> 00:04:22,500
engine on the European service module

66
00:04:26,150 --> 00:04:24,840
the outbound Lake of the Artemis 1

67
00:04:28,249 --> 00:04:26,160
mission is the portion between

68
00:04:31,430 --> 00:04:28,259
translunar injection and distant rate

69
00:04:33,129 --> 00:04:31,440
distant retrograde orbit insertion which

70
00:04:35,570 --> 00:04:33,139
will take place later in the mission

71
00:04:37,370 --> 00:04:35,580
this outbound trip will take several

72
00:04:40,790 --> 00:04:37,380
days during which time Engineers will

73
00:04:42,950 --> 00:04:40,800
evaluate the spacecraft's system

74
00:04:45,469 --> 00:04:42,960
and following the outbound leg Orion

75
00:04:47,330 --> 00:04:45,479
will fly about 80 nautical miles above

76
00:04:49,550 --> 00:04:47,340
the surface of the moon at its very

77
00:04:51,530 --> 00:04:49,560
closest approach and then we'll use the

78
00:04:53,930 --> 00:04:51,540
moon's gravitational force to propel

79
00:04:56,930 --> 00:04:53,940
Orion into a distant retrograde orbit

80
00:04:59,330 --> 00:04:56,940
traveling about 40 000 miles past the

81
00:05:01,790 --> 00:04:59,340
moon in this orbit and this distance is

82
00:05:04,670 --> 00:05:01,800
actually 30 000 miles farther than the

83
00:05:06,830 --> 00:05:04,680
previous record set during Apollo 13 and

84
00:05:09,469 --> 00:05:06,840
the farthest in space any spacecraft

85
00:05:11,810 --> 00:05:09,479
built for humans has ever flown

86
00:05:14,510 --> 00:05:11,820
but before we get to the moon we need to

87
00:05:16,430 --> 00:05:14,520
have the critical checkout of the OTC

88
00:05:19,370 --> 00:05:16,440

which will check out the orbital

89
00:05:21,770 --> 00:05:19,380
maneuvering system ohms engine so to

90
00:05:24,170 --> 00:05:21,780
give us an overview of the otc-1 burn

91
00:05:27,350 --> 00:05:24,180
let's take a look at this video overview

92
00:05:29,870 --> 00:05:27,360
using the moon board

93
00:05:31,909 --> 00:05:29,880
all right now let's talk about OTC one

94
00:05:34,070 --> 00:05:31,919
outbound trajectory correction number

95
00:05:36,170 --> 00:05:34,080
one so at this point we've done our

96
00:05:38,029 --> 00:05:36,180
translunar injection we're on our way to

97
00:05:39,529 --> 00:05:38,039
the moon and to get there we're going to

98
00:05:41,570 --> 00:05:39,539
fine tune our path we're going to make a

99
00:05:43,150 --> 00:05:41,580
couple of different Burns just to make

100
00:05:46,129 --> 00:05:43,160
sure we're targeting the right direction

101
00:05:48,469 --> 00:05:46,139
now the first one is this OTC one burn

102
00:05:50,330 --> 00:05:48,479
and really this is a critical test of

103
00:05:52,790 --> 00:05:50,340
that large orbital maneuvering system

104
00:05:55,010 --> 00:05:52,800
engine that's right here in the AFT part

105
00:05:56,330 --> 00:05:55,020
of the Orion service module that's

106
00:05:58,670 --> 00:05:56,340
really what's going to be doing our big

107
00:06:00,830 --> 00:05:58,680
pushing Maneuvers and it's critical for

108
00:06:03,230 --> 00:06:00,840
those flybys the powered flybys of the

109
00:06:05,150 --> 00:06:03,240
Moon both the one that allows us to get

110
00:06:07,249 --> 00:06:05,160
to distant retrograde orbit and the one

111
00:06:09,110 --> 00:06:07,259
that comes home additionally we have

112
00:06:11,090 --> 00:06:09,120
these auxiliary thrusters around the

113
00:06:13,670 --> 00:06:11,100

bottom we have eight of these that can

114
00:06:15,110 --> 00:06:13,680
provide some additional push to help out

115
00:06:16,430 --> 00:06:15,120
with this orbital maneuvering system

116
00:06:19,189 --> 00:06:16,440
engine but

117
00:06:21,350 --> 00:06:19,199
OTC one is coming up we'll likely make a

118
00:06:23,749 --> 00:06:21,360
number of these burns on our way out to

119
00:06:25,670 --> 00:06:23,759
the moon and all that sets us up for

120
00:06:27,890 --> 00:06:25,680
essentially this slingshot that we see

121
00:06:29,990 --> 00:06:27,900
here before we get to the outbound power

122
00:06:32,450 --> 00:06:30,000
flyby you can see that engine igniting

123
00:06:34,370 --> 00:06:32,460
here testing it on this burn is going to

124
00:06:35,870 --> 00:06:34,380
be really critical to making sure that

125
00:06:37,850 --> 00:06:35,880
it works there and that's what's going

126
00:06:39,710 --> 00:06:37,860
to allow us to get into our nice stable

127
00:06:41,809 --> 00:06:39,720
orbit around the Moon where we can

128
00:06:44,809 --> 00:06:41,819
really test Orion out put it through its

129
00:06:46,670 --> 00:06:44,819
Paces so coming up OTC one the first in

130
00:06:51,170 --> 00:06:46,680
many Burns using that European service

131
00:06:55,430 --> 00:06:52,790
and to talk a little

132
00:06:57,830 --> 00:06:55,440
Allure about that OTC burn that we do

133
00:07:00,350 --> 00:06:57,840
have upcoming have a very special guest

134
00:07:02,510 --> 00:07:00,360
joining me today this is brant Gast he

135
00:07:04,249 --> 00:07:02,520
is a prop flight controller here in

136
00:07:05,749 --> 00:07:04,259
mission control so thank you so much for

137
00:07:07,969 --> 00:07:05,759
joining me today this has to be a really

138
00:07:09,469 --> 00:07:07,979

exciting moment for you oh it is it's

139
00:07:10,610 --> 00:07:09,479
Year's worth of work it's just a great

140
00:07:11,450 --> 00:07:10,620
thing to see we're off the ground in

141
00:07:13,430 --> 00:07:11,460
space

142
00:07:15,290 --> 00:07:13,440
absolutely was so exciting to see that

143
00:07:16,730 --> 00:07:15,300
launch earlier so as we look ahead can

144
00:07:18,770 --> 00:07:16,740
you talk just a little bit about that

145
00:07:21,050 --> 00:07:18,780
OTC burn what it is what the purpose of

146
00:07:23,689 --> 00:07:21,060
it is sure thing uh so it really has two

147
00:07:25,790 --> 00:07:23,699
purposes so the first one being that we

148
00:07:28,309 --> 00:07:25,800
are going to do a trajectory correction

149
00:07:30,290 --> 00:07:28,319
so there we're going to correct

150
00:07:32,930 --> 00:07:30,300
dispersions or errors that we've gotten

151
00:07:35,570 --> 00:07:32,940
from you know going off of icps or just

152
00:07:37,129 --> 00:07:35,580
being in deep space effectively figuring

153
00:07:39,409 --> 00:07:37,139
out where we're supposed to be versus

154
00:07:41,089 --> 00:07:39,419
where we are second thing as was

155
00:07:43,129 --> 00:07:41,099
mentioned is checking out the orbital

156
00:07:44,930 --> 00:07:43,139
maneuvering just to mention as a prop

157
00:07:46,370 --> 00:07:44,940
that's very exciting that's going to be

158
00:07:47,990 --> 00:07:46,380
the first time that we test out that big

159
00:07:49,909 --> 00:07:48,000
engine

160
00:07:51,650 --> 00:07:49,919
great and so what are some of the other

161
00:07:53,150 --> 00:07:51,660
major Burns that will happen throughout

162
00:07:54,830 --> 00:07:53,160
this Mission because this is really this

163
00:07:56,270 --> 00:07:54,840

first checkout of that that main engine

164
00:07:57,710 --> 00:07:56,280
like you discussed but we know there's

165
00:07:59,510 --> 00:07:57,720
going to be other Burns that take place

166
00:08:01,670 --> 00:07:59,520
throughout Orion's mission to the moon

167
00:08:03,469 --> 00:08:01,680
and back home yep uh exactly right

168
00:08:05,809 --> 00:08:03,479
there's four more Burns that we'll do on

169
00:08:08,150 --> 00:08:05,819
the ohms the first one is the OPF burn

170
00:08:09,290 --> 00:08:08,160
that's the outbound power flyby as you

171
00:08:11,089 --> 00:08:09,300
mentioned it goes really close to the

172
00:08:12,950 --> 00:08:11,099
moon and essentially slingshot us into

173
00:08:14,809 --> 00:08:12,960
the distant retrograde orbit but we

174
00:08:17,029 --> 00:08:14,819
don't get there just yet then we have

175
00:08:18,350 --> 00:08:17,039
the dri that's the insertion burn to get

176
00:08:20,510 --> 00:08:18,360
into the dro

177
00:08:22,490 --> 00:08:20,520
that burn will essentially put us in

178
00:08:23,930 --> 00:08:22,500
that elliptical orbit around the Moon we

179
00:08:26,029 --> 00:08:23,940
then have a couple of days weeks where

180
00:08:28,010 --> 00:08:26,039
we can test out all the systems then we

181
00:08:30,409 --> 00:08:28,020
have the drd so now we can depart from

182
00:08:32,750 --> 00:08:30,419
the dro and put us back on the way home

183
00:08:35,149 --> 00:08:32,760
and then the RPF they return power flyby

184
00:08:37,310 --> 00:08:35,159
essentially mirrors the OPF so that way

185
00:08:39,050 --> 00:08:37,320
we come back slingshot again puts us

186
00:08:41,149 --> 00:08:39,060
right back on the way home

187
00:08:42,469 --> 00:08:41,159
that is definitely exciting and even

188
00:08:44,329 --> 00:08:42,479

more exciting because we'll be on the

189
00:08:46,550 --> 00:08:44,339
air to cover many of those Burns

190
00:08:48,230 --> 00:08:46,560
throughout the mission so my very last

191
00:08:50,030 --> 00:08:48,240
question for you is can you talk a

192
00:08:52,070 --> 00:08:50,040
little bit about your role as a prop

193
00:08:53,990 --> 00:08:52,080
during these Burns and some of the

194
00:08:56,630 --> 00:08:54,000
things you that your console team will

195
00:08:58,130 --> 00:08:56,640
be monitoring and looking for sure so

196
00:08:59,810 --> 00:08:58,140
just in general flight controllers are

197
00:09:01,430 --> 00:08:59,820
there to make sure that the burn goes

198
00:09:03,110 --> 00:09:01,440
off well or just in general that we get

199
00:09:04,790 --> 00:09:03,120
where we're supposed to go for a prop

200
00:09:06,470 --> 00:09:04,800
it's very exciting as I mentioned we're

201
00:09:08,570 --> 00:09:06,480
testing out our Hardware we are the

202
00:09:10,430 --> 00:09:08,580
owners of the ohms everything that we

203
00:09:12,769 --> 00:09:10,440
see from the pressurization system the

204
00:09:14,630 --> 00:09:12,779
feed lines the propellant itself and

205
00:09:16,910 --> 00:09:14,640
then the thrusters you know this is kind

206
00:09:18,110 --> 00:09:16,920
of our first big test to the system so

207
00:09:20,509 --> 00:09:18,120
we're going to look at things like

208
00:09:22,250 --> 00:09:20,519
pressures temperatures everything that

209
00:09:24,350 --> 00:09:22,260
we know hey here's what our system is

210
00:09:25,490 --> 00:09:24,360
supposed to look like we'll see that and

211
00:09:28,370 --> 00:09:25,500
then we can coordinate with other

212
00:09:29,990 --> 00:09:28,380
consoles like the gncs the Fidos see if

213
00:09:31,190 --> 00:09:30,000

they got the answers if they wanted and

214
00:09:32,449 --> 00:09:31,200
then obviously we coordinate with the

215
00:09:33,410 --> 00:09:32,459
flight director and hopefully in a

216
00:09:35,990 --> 00:09:33,420
couple minutes here we'll say everything

217
00:09:39,050 --> 00:09:36,000
was good to go yep very exciting indeed

218
00:09:41,090 --> 00:09:39,060
we're about 21 minutes away from OTC one

219
00:09:43,310 --> 00:09:41,100
so I'll let you get back to it I know

220
00:09:45,110 --> 00:09:43,320
you have some exciting work to do ahead

221
00:09:47,269 --> 00:09:45,120
of that burn but thank you so much Brant

222
00:09:48,769 --> 00:09:47,279
for joining me and uh good luck on that

223
00:10:06,009 --> 00:09:48,779
burn excellent thank you very much for

224
00:10:15,949 --> 00:10:09,470
so we are now closing in on the 20

225
00:10:21,889 --> 00:10:20,210
now the OTC one burn as Brandt mentioned

226
00:10:24,829 --> 00:10:21,899
includes a checkout of the orbital

227
00:10:27,110 --> 00:10:24,839
maneuvering system engine the ohms

228
00:10:28,910 --> 00:10:27,120
engine is the main engine on the

229
00:10:44,150 --> 00:10:28,920
European service module and is located

230
00:10:50,269 --> 00:10:46,790
and so as you can see in this graphic

231
00:10:52,069 --> 00:10:50,279
here on the very bottom of Orion is that

232
00:10:55,009 --> 00:10:52,079
larger engine that is the orbital

233
00:10:58,670 --> 00:10:55,019
maneuvering system or ohms engine this

234
00:11:00,949 --> 00:10:58,680
engine is built by aerojet Rocketdyne

235
00:11:03,230 --> 00:11:00,959
and is the main engine as I've mentioned

236
00:11:05,329 --> 00:11:03,240
on the European service module which

237
00:11:07,910 --> 00:11:05,339
provides the primary propulsion for

238
00:11:10,250 --> 00:11:07,920

Orion's major in-space Maneuvers as it

239
00:11:13,009 --> 00:11:10,260
travels around the moon and this engine

240
00:11:20,269 --> 00:11:13,019
provides about 6 000 pounds of thrust

241
00:11:25,310 --> 00:11:22,850
that engine is actually on its first

242
00:11:27,889 --> 00:11:25,320
mission as part of Artemis one of course

243
00:11:29,990 --> 00:11:27,899
but is a repurposed space shuttle

244
00:11:32,750 --> 00:11:30,000
orbital maneuvering system engine that

245
00:11:34,910 --> 00:11:32,760
has flown in space before

246
00:11:37,790 --> 00:11:34,920
the engine flying today on Artemis 1

247
00:11:39,310 --> 00:11:37,800
flew on 19 space shuttle flights

248
00:11:43,730 --> 00:11:39,320
beginning with

249
00:11:48,949 --> 00:11:43,740
sts-41g in October of 1984 and ending

250
00:11:51,710 --> 00:11:48,959
with sts-112 in October of 2002.

251
00:11:54,530 --> 00:11:51,720
and you can also see a few other engines

252
00:11:56,810 --> 00:11:54,540
around the Ohm's engine some of those

253
00:11:58,970 --> 00:11:56,820
are the auxiliary engines there are

254
00:12:01,130 --> 00:11:58,980
eight auxiliary engines that are located

255
00:12:04,790 --> 00:12:01,140
on the bottom of the service module in

256
00:12:09,230 --> 00:12:07,009
these provide about a hundred pounds of

257
00:12:12,829 --> 00:12:09,240
thrust each and can provide steering

258
00:12:15,590 --> 00:12:12,839
during Burns by pulsing on and off

259
00:12:17,750 --> 00:12:15,600
there's also 24 smaller engines grouped

260
00:12:19,250 --> 00:12:17,760
into six pods which provide attitude

261
00:12:21,650 --> 00:12:19,260
control

262
00:12:23,449 --> 00:12:21,660
they can be fired individually as needed

263
00:12:24,889 --> 00:12:23,459

to move the spacecraft in different

264
00:12:27,710 --> 00:12:24,899
directions

265
00:12:34,190 --> 00:12:27,720
or rotate in any position so in total

266
00:12:40,009 --> 00:12:37,310
now as we are less than 20 minutes away

267
00:12:43,009 --> 00:12:40,019
from the OTC one burn today we did hear

268
00:12:46,730 --> 00:12:43,019
the flight director

269
00:12:49,610 --> 00:12:46,740
give a go no-go Poll for today's burn

270
00:12:51,710 --> 00:12:49,620
and the team pulled go everything

271
00:12:53,930 --> 00:12:51,720
looking good ahead of this critical

272
00:13:07,190 --> 00:12:53,940
checkout of the orbital maneuvering

273
00:13:14,290 --> 00:13:09,410
now this burn will be relatively short

274
00:13:52,190 --> 00:13:17,509
but the ohms engine can fire for as long

275
00:13:58,129 --> 00:13:55,790
and we are hearing that the solar arrays

276
00:14:00,470 --> 00:13:58,139
on Orion are maneuvering into the

277
00:15:14,269 --> 00:14:00,480
correct position ahead of the burn

278
00:15:14,279 --> 00:15:17,769
yeah

279
00:15:25,550 --> 00:15:21,650
at this hour we are now seven hours and

280
00:15:28,810 --> 00:15:25,560
28 minutes since Orion lifted off

281
00:15:32,569 --> 00:15:28,820
and Orion is 40

282
00:16:14,509 --> 00:15:32,579
695 miles away from Earth

283
00:16:21,170 --> 00:16:17,930
as Orion continues its Journey To The

284
00:16:23,269 --> 00:16:21,180
Moon as part of a 25-day mission to test

285
00:16:26,030 --> 00:16:23,279
out critical components as part of the

286
00:16:28,610 --> 00:16:26,040
Artemis 1 Mission let's take a quick

287
00:16:31,610 --> 00:16:28,620
look at a mission overview of what is to

288
00:16:35,689 --> 00:16:31,620

come throughout this mission

289
00:16:38,030 --> 00:16:35,699
Welcome To The Moon board we got this

290
00:16:40,790 --> 00:16:38,040
just in time for the first mission in

291
00:16:43,550 --> 00:16:40,800
Artemis Artemis one so let me use it now

292
00:16:45,530 --> 00:16:43,560
to take you through as always we're

293
00:16:48,889 --> 00:16:45,540
going to start off with a launch in this

294
00:16:51,530 --> 00:16:48,899
case for rs25 engines ignite two solid

295
00:16:54,050 --> 00:16:51,540
rocket boosters sending SLS and Orion

296
00:16:56,090 --> 00:16:54,060
Skyward on the way uphill a couple of

297
00:16:58,490 --> 00:16:56,100
jettison events things coming off of the

298
00:17:00,290 --> 00:16:58,500
rocket one of the most visual will be

299
00:17:01,910 --> 00:17:00,300
these two solid rocket boosters coming

300
00:17:04,490 --> 00:17:01,920
off about two minutes into the flight

301
00:17:06,890 --> 00:17:04,500
after all of their propellants gone we

302
00:17:09,169 --> 00:17:06,900
also have three fairings protecting

303
00:17:10,789 --> 00:17:09,179
Orion on the way uphill as well as the

304
00:17:13,549 --> 00:17:10,799
launch abort system that will come off

305
00:17:15,409 --> 00:17:13,559
now after we get through all of the

306
00:17:17,689 --> 00:17:15,419
propellant in that giant core stage

307
00:17:19,970 --> 00:17:17,699
we'll hear Mikko main engine cut off it

308
00:17:22,730 --> 00:17:19,980
will drop away turning propulsion over

309
00:17:25,970 --> 00:17:22,740
to this the interim cryogenic propulsion

310
00:17:28,010 --> 00:17:25,980
stage or icps it's going to make its

311
00:17:29,450 --> 00:17:28,020
first maneuver to raise up the lowest

312
00:17:31,549 --> 00:17:29,460
part of our orbit around the Earth

313
00:17:33,770 --> 00:17:31,559

really put us in a nice circular path

314
00:17:35,990 --> 00:17:33,780
path around our planet and while we're

315
00:17:37,970 --> 00:17:36,000
in Earth orbit we can check out Orion

316
00:17:40,909 --> 00:17:37,980
make sure its systems are functioning as

317
00:17:44,029 --> 00:17:40,919
we expect before we commit to sending it

318
00:17:48,650 --> 00:17:44,039
to the Moon that happens here the trans

319
00:17:51,230 --> 00:17:48,660
lunar injection to a 20-minute firing of

320
00:17:54,470 --> 00:17:51,240
this icps upper stage and what that's

321
00:17:56,570 --> 00:17:54,480
designed to do is really give Orion

322
00:17:58,930 --> 00:17:56,580
enough energy to get out of low earth

323
00:18:01,610 --> 00:17:58,940
orbit and make its way to the Moon

324
00:18:04,010 --> 00:18:01,620
shortly after that the icps will

325
00:18:06,590 --> 00:18:04,020
separate its job pushing Orion is done

326
00:18:08,690 --> 00:18:06,600
it has a couple of secondary payloads in

327
00:18:11,270 --> 00:18:08,700
here some cubesats that it'll deploy

328
00:18:13,909 --> 00:18:11,280
ultimately sending itself on a path

329
00:18:16,370 --> 00:18:13,919
around the Moon before it escapes and

330
00:18:18,710 --> 00:18:16,380
goes into orbit around the sun meanwhile

331
00:18:21,529 --> 00:18:18,720
Orion though continues on its Journey

332
00:18:23,630 --> 00:18:21,539
it'll make some correction Burns as it

333
00:18:25,850 --> 00:18:23,640
fine-tunes its path towards our lunar

334
00:18:28,789 --> 00:18:25,860
neighbor before we get into all the

335
00:18:31,490 --> 00:18:28,799
exciting stuff up close we'll dip in for

336
00:18:33,830 --> 00:18:31,500
a 60 nautical mile flyby of the lunar

337
00:18:35,690 --> 00:18:33,840
surface using the engines on the

338
00:18:38,930 --> 00:18:35,700

European service module to push us

339
00:18:42,289 --> 00:18:38,940
around and into distant retrograde orbit

340
00:18:44,450 --> 00:18:42,299
or Dro that's this dotted line that you

341
00:18:46,549 --> 00:18:44,460
can see up here this is really where

342
00:18:49,070 --> 00:18:46,559
we're going to learn about Orion while

343
00:18:51,950 --> 00:18:49,080
we fly around the Moon about 38 000

344
00:18:54,409 --> 00:18:51,960
miles off the lunar surface we call it

345
00:18:56,750 --> 00:18:54,419
retrograde as the Moon is heading in

346
00:18:59,870 --> 00:18:56,760
that direction Orion will be heading in

347
00:19:02,330 --> 00:18:59,880
this one opposite retrograde

348
00:19:04,310 --> 00:19:02,340
now after we're done in that orbit it'll

349
00:19:07,370 --> 00:19:04,320
be time to come home we'll execute a

350
00:19:09,770 --> 00:19:07,380
maneuver to exit do another flyby close

351
00:19:11,810 --> 00:19:09,780
to the lunar surface that commits us to

352
00:19:13,730 --> 00:19:11,820
coming home and fine-tuning our path

353
00:19:16,190 --> 00:19:13,740
towards the atmosphere we'll make any

354
00:19:18,830 --> 00:19:16,200
correction burns on our way back as

355
00:19:20,930 --> 00:19:18,840
necessary before it's time to re-enter

356
00:19:22,250 --> 00:19:20,940
the atmosphere now before that can

357
00:19:24,710 --> 00:19:22,260
happen we'll have a spacecraft

358
00:19:26,930 --> 00:19:24,720
separation about the service module its

359
00:19:28,370 --> 00:19:26,940
job is done it breaks away ends up

360
00:19:31,250 --> 00:19:28,380
burning up in the atmosphere after

361
00:19:34,690 --> 00:19:31,260
carrying Orion to the Moon and back

362
00:19:37,610 --> 00:19:34,700
what this does is reveal the heat shield

363
00:19:40,610 --> 00:19:37,620

the large structure on the base of Orion

364
00:19:43,070 --> 00:19:40,620
testing this is our number one goal for

365
00:19:44,990 --> 00:19:43,080
the Artemis one flight because when we

366
00:19:47,510 --> 00:19:45,000
come back from the Moon we're going to

367
00:19:49,850 --> 00:19:47,520
be moving at 25

368
00:19:51,590 --> 00:19:49,860
000 miles an hour that's 8 000 miles an

369
00:19:53,570 --> 00:19:51,600
hour faster than when you come home from

370
00:19:55,970 --> 00:19:53,580
the International Space Station and what

371
00:19:58,669 --> 00:19:55,980
that's going to cause is this to heat up

372
00:20:00,049 --> 00:19:58,679
to about 5000 degrees Fahrenheit that's

373
00:20:02,270 --> 00:20:00,059
half the temperature if you were

374
00:20:04,370 --> 00:20:02,280
standing on the surface of the Sun so

375
00:20:06,890 --> 00:20:04,380
things will be very hot but that heat

376
00:20:08,330 --> 00:20:06,900
shield does its job to protect the Orion

377
00:20:10,190 --> 00:20:08,340
capsule which will be bringing our

378
00:20:12,289 --> 00:20:10,200
astronauts home at the end of these

379
00:20:15,230 --> 00:20:12,299
future missions after we're through that

380
00:20:17,630 --> 00:20:15,240
fiery re-entry parachutes deploy Orion

381
00:20:20,690 --> 00:20:17,640
splashes down in the ocean we'll have a

382
00:20:23,210 --> 00:20:20,700
U.S Navy ship standing by with recovery

383
00:20:25,610 --> 00:20:23,220
Personnel to pick Orion up out of the

384
00:20:32,409 --> 00:20:25,620
water and bring it in to the first

385
00:20:37,490 --> 00:20:35,990
and there was an overview of what is to

386
00:20:40,130 --> 00:20:37,500
come and a little bit of what has

387
00:20:43,370 --> 00:20:40,140
already happened in the mission so far

388
00:20:45,830 --> 00:20:43,380

again we lifted off from the Kennedy

389
00:20:47,870 --> 00:20:45,840
Space senator in Florida about seven and

390
00:20:51,409 --> 00:20:47,880
a half hours ago

391
00:20:59,150 --> 00:20:51,419
and at this hour we are nearing less

392
00:21:05,210 --> 00:21:02,750
that otc-1 burn includes a checkout of

393
00:21:06,970 --> 00:21:05,220
the orbital maneuvering system or ohms

394
00:21:12,049 --> 00:21:06,980
engine

395
00:21:20,169 --> 00:21:12,059
on the European service module located

396
00:22:08,390 --> 00:21:23,330
this burn is slated to last about 30

397
00:22:15,169 --> 00:22:12,289
and as we approach the OTC one burn less

398
00:22:18,230 --> 00:22:15,179
than 10 minutes from now Orion is

399
00:22:21,049 --> 00:22:18,240
maneuvering into the proper attitude in

400
00:22:26,710 --> 00:22:21,059
preparation for this burn earlier the

401
00:22:31,750 --> 00:22:29,630
and before that the flight director

402
00:23:08,210 --> 00:22:31,760
pulled the team here in mission control

403
00:23:14,450 --> 00:23:11,149
the key purpose of today's burn besides

404
00:23:17,210 --> 00:23:14,460
checking out the ohms engine is to

405
00:23:20,270 --> 00:23:17,220
correct any trajectory dispersions on

406
00:23:22,549 --> 00:23:20,280
this outbound leg of the mission

407
00:23:24,190 --> 00:23:22,559
the outbound leg of the Artemis 1

408
00:23:27,049 --> 00:23:24,200
mission is the portion between

409
00:23:29,390 --> 00:23:27,059
translunar injection which occurred

410
00:23:32,090 --> 00:23:29,400
earlier today and distant retrograde

411
00:23:39,649 --> 00:23:32,100
orbit insertion which will take place a

412
00:23:52,070 --> 00:23:42,590
and we did just hear that Orion is in

413
00:23:57,649 --> 00:23:54,350

everything continuing to proceed

414
00:25:33,230 --> 00:23:57,659
smoothly ahead of today's otc-1 burn

415
00:25:38,750 --> 00:25:35,690
we're now that less than six minutes

416
00:25:40,430 --> 00:25:38,760
away from the OTC one burn which will

417
00:25:42,529 --> 00:25:40,440
provide a critical checkout of the

418
00:25:45,289 --> 00:25:42,539
orbital maneuvering system engine or

419
00:25:47,090 --> 00:25:45,299
ohms engine it is located on the very

420
00:25:50,090 --> 00:25:47,100
bottom of the service module there you

421
00:25:51,890 --> 00:25:50,100
see it on your screen there located at

422
00:25:54,169 --> 00:25:51,900
the very bottom it's the larger of those

423
00:25:56,690 --> 00:25:54,179
engines you see

424
00:25:58,029 --> 00:25:56,700
today's burn will last less than 30

425
00:26:04,789 --> 00:25:58,039
seconds

426
00:26:07,250 --> 00:26:04,799
can occur with this engine that go up to

427
00:26:10,070 --> 00:26:07,260
16 minutes in length

428
00:26:12,590 --> 00:26:10,080
this ohms engine is the main engine on

429
00:26:14,690 --> 00:26:12,600
the European service module and is used

430
00:26:18,409 --> 00:26:14,700
to provide primary propulsion for

431
00:26:20,390 --> 00:26:18,419
Orion's major in space maneuvers

432
00:26:22,430 --> 00:26:20,400
the engine will provide about 6 000

433
00:26:25,010 --> 00:26:22,440
pounds of thrust and is equipped to

434
00:26:26,990 --> 00:26:25,020
steer the spacecraft and can be used in

435
00:26:34,690 --> 00:26:27,000
some abort cases as well to safely

436
00:26:39,470 --> 00:26:37,789
and this ohms engine is a repurposed

437
00:26:42,769 --> 00:26:39,480
space shuttle orbital maneuvering system

438
00:26:46,610 --> 00:26:42,779

engine that has flown in space before on

439
00:26:57,610 --> 00:26:46,620
19 space shuttle flights from 1984 to

440
00:27:02,390 --> 00:27:00,529
we're now about four minutes and 30

441
00:28:31,029 --> 00:27:02,400
seconds away from the start of today's

442
00:28:34,430 --> 00:28:33,529
less than three minutes until the start

443
00:28:36,590 --> 00:28:34,440
of today's

444
00:28:38,810 --> 00:28:36,600
OTC burn which will provide a critical

445
00:28:40,850 --> 00:28:38,820
checkout of the orbital maneuvering

446
00:28:43,070 --> 00:28:40,860
system or ohms engine of the Orion

447
00:28:45,350 --> 00:28:43,080
spacecraft following its liftoff from

448
00:29:41,990 --> 00:28:45,360
the Kennedy Space Center in Florida 7

449
00:29:46,070 --> 00:29:43,490
images

450
00:29:49,190 --> 00:29:46,080
and as you see here this Mission elapsed

451
00:29:52,370 --> 00:29:49,200
time showing that Orion lifted off seven

452
00:29:54,049 --> 00:29:52,380
hours and 43 minutes ago still in the

453
00:29:56,630 --> 00:29:54,059
beginning part of its Journey as this is

454
00:30:00,769 --> 00:29:56,640
a 25-day mission with a Splashdown

455
00:30:03,649 --> 00:30:00,779
targeted for December 11th but right now

456
00:30:05,389 --> 00:30:03,659
we're about a minute and 20 seconds away

457
00:30:07,370 --> 00:30:05,399
from the

458
00:30:09,769 --> 00:30:07,380
outbound trajectory correction burn

459
00:30:12,049 --> 00:30:09,779
which again is a critical checkout of

460
00:30:13,850 --> 00:30:12,059
the orbital maneuvering system engine or

461
00:30:16,490 --> 00:30:13,860
ohms engine

462
00:30:19,490 --> 00:30:16,500
this burn is slated to last about 30

463
00:30:26,149 --> 00:30:19,500

seconds and everything is still go for

464
00:30:50,269 --> 00:30:27,830
less than a minute until the burn is

465
00:30:50,279 --> 00:31:29,169
30 seconds until burn starts

466
00:31:29,179 --> 00:31:41,950
burn is underway

467
00:31:41,960 --> 00:31:53,570
hearing good engine performance

468
00:31:59,029 --> 00:31:56,750
and we are getting some imagery of the

469
00:32:02,269 --> 00:31:59,039
solar array on Orion as it Maneuvers

470
00:32:02,279 --> 00:32:08,810
and the burn has just wrapped up

471
00:32:08,820 --> 00:32:16,450
that was a about 30 second long burn

472
00:32:21,590 --> 00:32:19,370
and we did hear good calls from the team

473
00:32:23,690 --> 00:32:21,600
here in Mission Control good performance

474
00:32:26,029 --> 00:32:23,700
performance from the orbital maneuvering

475
00:32:31,789 --> 00:32:26,039
system engine the main engine on the

476
00:32:37,490 --> 00:32:34,490
again that burn was successful all

477
00:32:39,289 --> 00:32:37,500
systems performing as expected and a

478
00:33:34,930 --> 00:32:39,299
good checkout of the orbital maneuvering

479
00:33:40,909 --> 00:33:38,450
and with a successful burn and checkout

480
00:33:43,070 --> 00:33:40,919
of that ohms engine that will wrap up

481
00:33:45,590 --> 00:33:43,080
our coverage of today's burn but don't

482
00:33:47,930 --> 00:33:45,600
go too far as we'll be back on the air

483
00:33:50,389 --> 00:33:47,940
here shortly to cover expected Earth

484
00:33:53,029 --> 00:33:50,399
views from Orion during this outbound

485
00:33:55,850 --> 00:33:53,039
Coast To The Moon our coverage of that

486
00:33:59,509 --> 00:33:55,860
broadcast will begin at 8 45 a.m central

487
00:34:01,549 --> 00:33:59,519
9 45 a.m Eastern this morning and we do

488
00:34:04,310 --> 00:34:01,559

expect those live views possible a short

489
00:34:06,649 --> 00:34:04,320
time after coverage begins we hope we'll

490
00:34:08,690 --> 00:34:06,659
see you then but for now with Orion

491
00:34:11,750 --> 00:34:08,700
continuing its Journey To The Moon

492
00:34:13,849 --> 00:34:11,760
following a successful checkout of the

493
00:34:16,010 --> 00:34:13,859
ohms engine that will wrap our coverage

494
00:34:19,750 --> 00:34:16,020
for today this is Mission Control