OVHD

1
00:00:04,150 --> 00:00:02,149
samples will be sent to researchers for

2
00:00:05,910 --> 00:00:04,160
final analysis

3
00:00:08,070 --> 00:00:05,920
the crew also took some time to get

4
00:00:09,669 --> 00:00:08,080
their spacex suits unpacked and ready

5
00:00:11,830 --> 00:00:09,679
for the journey home

6
00:00:13,749 --> 00:00:11,840
and since getting the hatches closed

7
00:00:15,589 --> 00:00:13,759
just a short while ago all four

8
00:00:17,670 --> 00:00:15,599
astronauts are now suited up and in

9
00:00:19,109 --> 00:00:17,680
their seats standing by for doc

10
00:00:21,429 --> 00:00:19,119
undocking

11
00:00:23,429 --> 00:00:21,439
we've got a final go no-go poll coming

12
00:00:25,750 --> 00:00:23,439
up in just a few minutes where the joint

13
00:00:27,670 --> 00:00:25,760

spacex and nasa teams will make their

14
00:00:30,150 --> 00:00:27,680
final call for dragon to depart the

15
00:00:31,669 --> 00:00:30,160
space station and this is one of many

16
00:00:33,430 --> 00:00:31,679
checkpoints in the return that will

17
00:00:35,590 --> 00:00:33,440
continue all the way up until just

18
00:00:37,510 --> 00:00:35,600
before the deorbit burn this gives

19
00:00:39,190 --> 00:00:37,520
mission managers multiple chances to

20
00:00:41,350 --> 00:00:39,200
assess the weather at the splashdown

21
00:00:43,190 --> 00:00:41,360
zones and make sure everything is lining

22
00:00:45,350 --> 00:00:43,200
up before dragon departs

23
00:00:47,510 --> 00:00:45,360
so we'll stand by for that final go no

24
00:00:50,310 --> 00:00:47,520
go but for now everything continuing to

25
00:00:51,830 --> 00:00:50,320
look good for an on time departure so

26
00:00:54,709 --> 00:00:51,840
with that i'll throw it back over to

27
00:00:56,229 --> 00:00:54,719
jesse and leanne hawthorne

28
00:00:58,389 --> 00:00:56,239
thanks sandra

29
00:01:02,229 --> 00:00:58,399
separation is set for approximately 10

30
00:01:04,469 --> 00:01:02,239
05 pm pacific time 505 gmt which is just

31
00:01:06,870 --> 00:01:04,479
under 15 minutes from now at the moment

32
00:01:08,950 --> 00:01:06,880
dragon is in its final configuration

33
00:01:11,429 --> 00:01:08,960
before undocking and we are waiting for

34
00:01:13,510 --> 00:01:11,439
mission operators to conduct their go no

35
00:01:16,070 --> 00:01:13,520
go pull on whether to move forward with

36
00:01:18,310 --> 00:01:16,080
on the undocking procedure and like we

37
00:01:20,469 --> 00:01:18,320
mentioned this is a fully autonomous

38
00:01:22,390 --> 00:01:20,479

departure just like the approach to the

39
00:01:24,950 --> 00:01:22,400
space station meaning that the crew

40
00:01:27,030 --> 00:01:24,960
won't be required to conduct any actions

41
00:01:28,789 --> 00:01:27,040
while on board and it makes it even

42
00:01:30,550 --> 00:01:28,799
easier this time since the crew won't

43
00:01:33,830 --> 00:01:30,560
have to stop at any waypoints like we

44
00:01:35,990 --> 00:01:33,840
see when a vehicle arrives

45
00:01:38,230 --> 00:01:36,000
once the undocking sequence is complete

46
00:01:40,149 --> 00:01:38,240
dragon will use its draco engines to

47
00:01:42,389 --> 00:01:40,159
thrust away from the station in a series

48
00:01:44,069 --> 00:01:42,399
of carefully choreographed maneuvers or

49
00:01:45,910 --> 00:01:44,079
four departure burns to increase the

50
00:01:47,190 --> 00:01:45,920
distance between the spacecraft and the

51
00:01:49,030 --> 00:01:47,200
space station

52
00:01:51,910 --> 00:01:49,040
from there a phasing burn will place

53
00:01:54,149 --> 00:01:51,920
dragon on a trajectory back to earth

54
00:01:56,149 --> 00:01:54,159
next on its trip home is deorbit entry

55
00:01:58,310 --> 00:01:56,159
and landing which covers all operations

56
00:02:00,310 --> 00:01:58,320
after the final departure maneuver that

57
00:02:02,789 --> 00:02:00,320
includes trunk separation closure of the

58
00:02:04,630 --> 00:02:02,799
nose cone a deorbit burn deployment of

59
00:02:06,389 --> 00:02:04,640
the drogue and main parachutes and

60
00:02:08,229 --> 00:02:06,399
finally splash down off the florida

61
00:02:10,229 --> 00:02:08,239
coast at which point our teams will

62
00:02:12,309 --> 00:02:10,239
recover the crew 3 astronauts inside

63
00:02:14,949 --> 00:02:12,319

crew dragon from the water

64
00:02:17,510 --> 00:02:14,959
we're expecting the call for the go no

65
00:02:21,190 --> 00:02:17,520
go poll in just a few minutes or so from

66
00:02:24,309 --> 00:02:22,630
so it's been six months for these

67
00:02:25,190 --> 00:02:24,319
astronauts since they arrived on station

68
00:02:27,430 --> 00:02:25,200
but

69
00:02:30,150 --> 00:02:27,440
it was only a week ago that we saw crew

70
00:02:32,470 --> 00:02:30,160
4 arrive on station yeah it's been

71
00:02:34,390 --> 00:02:32,480
pretty incredible to see the cadence

72
00:02:36,070 --> 00:02:34,400
that we've been able to

73
00:02:37,830 --> 00:02:36,080
send astronauts up to the international

74
00:02:39,990 --> 00:02:37,840
space station for these long duration

75
00:02:42,790 --> 00:02:40,000
missions um and so exciting that we are

76
00:02:45,030 --> 00:02:42,800
able to get crew 4 up there to be

77
00:02:46,869 --> 00:02:45,040
with the crew 3 astronauts to do the

78
00:02:50,070 --> 00:02:46,879
handoff that they do yeah i think that's

79
00:02:51,990 --> 00:02:50,080
really valuable because as we saw in i

80
00:02:54,229 --> 00:02:52,000
believe was november last year we

81
00:02:56,630 --> 00:02:54,239
brought home crew 2 before we sent crew

82
00:02:58,309 --> 00:02:56,640
three so they didn't quite have that uh

83
00:03:00,470 --> 00:02:58,319
handover opportunity just because of

84
00:03:01,990 --> 00:03:00,480
some weather issues we want to make sure

85
00:03:05,030 --> 00:03:02,000
we give them the best and most

86
00:03:07,270 --> 00:03:05,040
comfortable splash down possible but

87
00:03:10,470 --> 00:03:07,280
beautiful view of dragon just moments

88
00:03:11,830 --> 00:03:10,480

away now from hearing that go no go call

89
00:03:13,990 --> 00:03:11,840
and our crew members getting ready to

90
00:03:16,229 --> 00:03:14,000
come home

91
00:03:19,030 --> 00:03:16,239
yeah i'm sure they're pretty excited to

92
00:03:21,030 --> 00:03:19,040
to come back home um they've been up

93
00:03:24,470 --> 00:03:21,040
there again for about six months doing

94
00:03:26,789 --> 00:03:24,480
science experiments um working you know

95
00:03:29,270 --> 00:03:26,799
up on the international space station

96
00:03:30,789 --> 00:03:29,280
um so i'm sure they're probably very

97
00:03:33,270 --> 00:03:30,799
excited to come back and see their

98
00:03:35,990 --> 00:03:33,280
families back here on planet earth i was

99
00:03:37,910 --> 00:03:36,000
thinking about that it's been 175 days

100
00:03:40,229 --> 00:03:37,920
that they've been on the station

101
00:03:41,430 --> 00:03:40,239
and besides friends and family what's

102
00:03:43,270 --> 00:03:41,440
something that

103
00:03:45,430 --> 00:03:43,280
you think you would look forward to

104
00:03:48,149 --> 00:03:45,440
coming home to

105
00:03:50,550 --> 00:03:49,509
yeah i

106
00:03:52,149 --> 00:03:50,560
i think

107
00:03:54,390 --> 00:03:52,159
probably the top thing would just be

108
00:03:55,750 --> 00:03:54,400
like spending time with my family right

109
00:03:57,670 --> 00:03:55,760
that's the best

110
00:03:59,509 --> 00:03:57,680
uh you don't get to communicate they do

111
00:04:01,429 --> 00:03:59,519
get to communicate with their families

112
00:04:03,110 --> 00:04:01,439
right on the station but it's um you

113
00:04:05,190 --> 00:04:03,120

know it's almost like a video

114
00:04:07,429 --> 00:04:05,200
phone or audio phone call so like i

115
00:04:09,350 --> 00:04:07,439
think spending time with them in person

116
00:04:12,630 --> 00:04:09,360
um would be really nice yeah it's

117
00:04:22,629 --> 00:04:12,640
nothing like basics on the big loop for

118
00:04:27,189 --> 00:04:25,030
okay raja just three items to talk

119
00:04:29,830 --> 00:04:27,199
through here first is that the

120
00:04:31,670 --> 00:04:29,840
we saw a good leak check result

121
00:04:34,070 --> 00:04:31,680
the second item is that we are still on

122
00:04:36,950 --> 00:04:34,080
track for our departure time of zero

123
00:04:38,629 --> 00:04:36,960
five zero zero utc

124
00:04:40,310 --> 00:04:38,639
and then the last item that i have is

125
00:04:43,510 --> 00:04:40,320
that we've identified that the root

126
00:04:45,749 --> 00:04:43,520
cause of the timer behavior on your

127
00:04:48,950 --> 00:04:45,759
displays is that the vehicle is pulling

128
00:04:51,350 --> 00:04:48,960
in bad and gad data simultaneously

129
00:04:53,749 --> 00:04:51,360
we expect this to

130
00:04:56,070 --> 00:04:53,759
resolve itself as soon as we disconnect

131
00:04:57,749 --> 00:04:56,080
the umbilicals for departure and we've

132
00:05:04,629 --> 00:04:57,759
seen this behavior before before with no

133
00:05:08,390 --> 00:05:06,469
that was a good leak check still on time

134
00:05:10,790 --> 00:05:08,400
for zero 500

135
00:05:12,790 --> 00:05:10,800
and the timer behavior which

136
00:05:15,590 --> 00:05:12,800
will fix itself once we fully unvoice

137
00:05:15,600 --> 00:05:26,230
good read back

138
00:05:30,870 --> 00:05:28,230

and we just had confirmation that the

139
00:05:32,550 --> 00:05:30,880
leak checks aboard crew dragon went well

140
00:05:34,310 --> 00:05:32,560
uh we have also been waiting for that

141
00:05:37,270 --> 00:05:34,320
vestibule leak check to be complete

142
00:05:38,950 --> 00:05:37,280
that's the space between the hatch on

143
00:05:41,510 --> 00:05:38,960
the station side known as the a pass

144
00:05:42,950 --> 00:05:41,520
hatch and this hatch on the crew dragon

145
00:05:44,950 --> 00:05:42,960
side uh we want to make sure we bring

146
00:05:46,550 --> 00:05:44,960
that big loop just make sure to give us

147
00:06:01,990 --> 00:05:46,560
uh when you're ready for us to go

148
00:06:06,230 --> 00:06:03,990
and we also heard them mention

149
00:06:08,230 --> 00:06:06,240
some tdrs we're tracking data and relay

150
00:06:09,830 --> 00:06:08,240
satellite system time differences that

151
00:06:11,830 --> 00:06:09,840
they're seeing onboard the capsule as

152
00:06:13,430 --> 00:06:11,840
you heard it's of no concern

153
00:06:15,350 --> 00:06:13,440
they're getting this data because they

154
00:06:17,189 --> 00:06:15,360
are still connected to the space station

155
00:06:19,029 --> 00:06:17,199
those umbilicals are are still attached

156
00:06:21,350 --> 00:06:19,039
so they're receiving data from the space

157
00:06:23,670 --> 00:06:21,360
station and once they are demated and

158
00:06:25,749 --> 00:06:23,680
dragon shifts to its own tracking data

159
00:06:27,590 --> 00:06:25,759
and relay satellite link

160
00:06:33,270 --> 00:06:27,600
that time difference won't be an issue

161
00:06:38,469 --> 00:06:36,309
and again departure is tracking for just

162
00:06:40,710 --> 00:06:38,479
about nine minutes from now it sounds

163
00:06:42,390 --> 00:06:40,720

like it is on time

164
00:07:03,029 --> 00:06:42,400
uh and again

165
00:07:07,110 --> 00:07:05,350
uh when they begin their departure uh

166
00:07:07,990 --> 00:07:07,120
they will un

167
00:07:11,909 --> 00:07:08,000
uh

168
00:07:13,029 --> 00:07:11,919
the the undocking procedure will um

169
00:07:15,749 --> 00:07:13,039
begin to

170
00:07:17,830 --> 00:07:15,759
unlatch the latches attached to the

171
00:07:20,390 --> 00:07:17,840
docking adapter there and then the

172
00:07:22,150 --> 00:07:20,400
thrusters will push the vehicle away

173
00:07:25,350 --> 00:07:22,160
from the international space station so

174
00:07:27,510 --> 00:07:25,360
there is a number of events that do

175
00:07:28,790 --> 00:07:27,520
happen when we begin the undocking

176
00:07:30,950 --> 00:07:28,800
sequence

177
00:07:32,950 --> 00:07:30,960
and then there will be four departure

178
00:07:35,270 --> 00:07:32,960
burns uh that will get them

179
00:07:37,270 --> 00:07:35,280
into the trajectory to make their way

180
00:07:39,510 --> 00:07:37,280
back home to earth

181
00:07:41,189 --> 00:07:39,520
um those procedures will take you know

182
00:07:44,550 --> 00:07:41,199
just a few minutes i believe it's like

183
00:07:46,790 --> 00:07:44,560
five minutes for the undocking procedure

184
00:07:48,710 --> 00:07:46,800
it's pretty quick and if you look now a

185
00:07:50,309 --> 00:07:48,720
beautiful view of crew dragon and the

186
00:07:53,430 --> 00:07:50,319
international space station as they are

187
00:07:56,629 --> 00:07:53,440
flying 260 statute miles over the

188
00:07:58,469 --> 00:07:56,639

maldives traveling at over 17 000 miles

189
00:08:00,309 --> 00:07:58,479
per hour

190
00:08:01,430 --> 00:08:00,319
and we're standing by for a call to the

191
00:08:02,710 --> 00:08:01,440
crew

192
00:08:04,390 --> 00:08:02,720
waiting to hear

193
00:08:09,430 --> 00:08:04,400
that teams here on the ground or go for

194
00:08:13,830 --> 00:08:11,270
and if you're just now joining us you

195
00:08:16,309 --> 00:08:13,840
are looking at a live view of dragon

196
00:08:18,390 --> 00:08:16,319
endurance with the crew 3 astronauts

197
00:08:20,230 --> 00:08:18,400
already on board dragon

198
00:08:21,670 --> 00:08:20,240
they're already strapped into their

199
00:08:24,309 --> 00:08:21,680
seats in

200
00:08:26,550 --> 00:08:24,319
uh into their suits they've already

201
00:08:28,550 --> 00:08:26,560
completed suit week checks

202
00:08:31,430 --> 00:08:28,560
they've also done a leak check of the

203
00:08:32,709 --> 00:08:31,440
hatches on dragon and the international

204
00:08:35,750 --> 00:08:32,719
space station

205
00:08:37,829 --> 00:08:35,760
we're just now awaiting uh

206
00:08:38,790 --> 00:08:37,839
proceeding with the undocking procedure

207
00:08:40,949 --> 00:08:38,800
again

208
00:08:43,829 --> 00:08:40,959
scheduled for

209
00:08:50,310 --> 00:08:43,839
10 05 pm pacific time

210
00:08:54,389 --> 00:08:52,710
one quick thing you'll notice the trunk

211
00:08:55,829 --> 00:08:54,399
of dragon which is on the left that'll

212
00:08:57,829 --> 00:08:55,839
be jettisoned

213
00:09:00,550 --> 00:08:57,839

before the capsule re-enters the

214
00:09:11,269 --> 00:09:00,560
atmosphere dragon spacex on the big loop

215
00:09:14,870 --> 00:09:12,790
okay dragon just wanted to let you know

216
00:09:17,110 --> 00:09:14,880
that um our final reconfigurations for

217
00:09:18,389 --> 00:09:17,120
undock are complete and nominal uh right

218
00:09:21,110 --> 00:09:18,399
now we are

219
00:09:23,030 --> 00:09:21,120
pulling go for undocking uh we're gonna

220
00:09:26,230 --> 00:09:23,040
go with an unknocked sequence start time

221
00:09:28,230 --> 00:09:26,240
of zero five zero five utc

222
00:09:30,070 --> 00:09:28,240
uh to give you guys a chance to get your

223
00:09:31,829 --> 00:09:30,080
visors down and confirm your readiness

224
00:09:49,430 --> 00:09:31,839
for unknocking at that plan to depart

225
00:10:05,070 --> 00:09:51,670
spacex copies we had a one hour window

226
00:10:05,080 --> 00:10:11,509
[Applause]

227
00:10:15,590 --> 00:10:13,030
all right good news we just heard the

228
00:10:17,350 --> 00:10:15,600
confirmation that crew dragon is go to

229
00:10:19,110 --> 00:10:17,360
undock we're now waiting for that

230
00:10:20,949 --> 00:10:19,120
undocking sequence to begin and once

231
00:10:22,949 --> 00:10:20,959
that happens it'll take less than five

232
00:10:24,790 --> 00:10:22,959
minutes for dragon to separate from the

233
00:10:27,110 --> 00:10:24,800
international space station it's home

234
00:10:28,550 --> 00:10:27,120
for the last six months

235
00:10:30,710 --> 00:10:28,560
the first step in the automatic

236
00:10:32,550 --> 00:10:30,720
undocking sequence is for the umbilicals

237
00:10:34,870 --> 00:10:32,560
to retract these umbilicals connect

238
00:10:36,790 --> 00:10:34,880

dragon systems to the space station

239
00:10:38,630 --> 00:10:36,800
transferring power telemetry and

240
00:10:40,550 --> 00:10:38,640
commands between the two vehicles

241
00:10:42,790 --> 00:10:40,560
throughout dragon's stay

242
00:10:44,470 --> 00:10:42,800
once that's complete dragon will unlatch

243
00:10:47,509 --> 00:10:44,480
itself from the space station by

244
00:10:49,269 --> 00:10:47,519
releasing the 12 hard capture hooks in

245
00:10:51,190 --> 00:10:49,279
two separate phases

246
00:10:53,190 --> 00:10:51,200
all that combined will take roughly four

247
00:10:54,710 --> 00:10:53,200
and a half minutes and then dragon will

248
00:10:57,030 --> 00:10:54,720
be ready to depart from the space

249
00:10:59,430 --> 00:10:57,040
station and begin to move itself further

250
00:11:01,190 --> 00:10:59,440
and further away using its thrusters

251
00:11:02,710 --> 00:11:01,200
and dragon's initial departure from the

252
00:11:04,710 --> 00:11:02,720
station is a little different from other

253
00:11:06,710 --> 00:11:04,720
docked vehicles like the soyuz which

254
00:11:08,790 --> 00:11:06,720
relies on springs to push it away from

255
00:11:11,110 --> 00:11:08,800
the docking port dragon will actually

256
00:11:13,350 --> 00:11:11,120
execute two short thruster firings to

257
00:11:15,110 --> 00:11:13,360
undock using a combination of the 12

258
00:11:17,269 --> 00:11:15,120
draco engines around the base of the

259
00:11:19,110 --> 00:11:17,279
capsule with the first of those firings

260
00:11:21,030 --> 00:11:19,120
breaking any stiction between dragon and

261
00:11:23,110 --> 00:11:21,040
the docking port and the second slowly

262
00:11:24,230 --> 00:11:23,120
backing the spacecraft away

263
00:11:26,230 --> 00:11:24,240

we're expecting the call for the

264
00:11:29,509 --> 00:11:26,240
undocking sequence to begin within about

265
00:11:30,870 --> 00:11:29,519
the next 10 minutes

266
00:11:33,190 --> 00:11:30,880
but like i was pointing out earlier

267
00:11:35,590 --> 00:11:33,200
before we heard that go call

268
00:11:36,870 --> 00:11:35,600
we have these solar

269
00:11:38,710 --> 00:11:36,880
panels

270
00:11:39,829 --> 00:11:38,720
solar cells i guess is a better term for

271
00:11:41,829 --> 00:11:39,839
them

272
00:11:44,230 --> 00:11:41,839
on the trunk of dragon

273
00:11:45,829 --> 00:11:44,240
and we mentioned that dragon is still

274
00:11:47,269 --> 00:11:45,839
connected to the international space

275
00:11:49,269 --> 00:11:47,279
station and still connected to the

276
00:11:51,910 --> 00:11:49,279
umbilical so it's receiving power from

277
00:11:54,310 --> 00:11:51,920
the station but once we undock dragon

278
00:11:56,550 --> 00:11:54,320
gets solar power that will power the

279
00:11:58,550 --> 00:11:56,560
vehicle and then once we are committed

280
00:12:00,550 --> 00:11:58,560
to coming home we'll let go of that

281
00:12:02,470 --> 00:12:00,560
trunk it'll burn up in the atmosphere

282
00:12:10,069 --> 00:12:02,480
and our astronauts will splash down

283
00:12:14,629 --> 00:12:12,150
we're just around three minutes away

284
00:12:17,590 --> 00:12:14,639
from that undocking sequence beginning

285
00:12:19,269 --> 00:12:17,600
we did hear that go for readiness um so

286
00:12:20,150 --> 00:12:19,279
we are on track

287
00:12:22,389 --> 00:12:20,160
for

288
00:12:24,069 --> 00:12:22,399

crew 3's departure and

289
00:12:25,190 --> 00:12:24,079
ready for them to head home back to

290
00:12:28,310 --> 00:12:25,200
earth

291
00:12:30,230 --> 00:12:28,320
and since crew 4 arrived a week ago

292
00:12:31,990 --> 00:12:30,240
i would call a crew of seven on the

293
00:12:34,389 --> 00:12:32,000
space station a full house but it's been

294
00:12:37,190 --> 00:12:34,399
a crew of 11 for the last week so i call

295
00:12:39,910 --> 00:12:37,200
it a fuller house

296
00:12:42,310 --> 00:12:39,920
so it'll take the crew compliment back

297
00:12:44,470 --> 00:12:42,320
down to seven astronauts and cosmonauts

298
00:12:45,590 --> 00:12:44,480
aboard the international space station

299
00:12:47,030 --> 00:12:45,600
three of these astronauts were

300
00:12:49,670 --> 00:12:47,040
first-time flyers

301
00:12:51,269 --> 00:12:49,680
dan marshburn is the the astronaut who

302
00:12:52,629 --> 00:12:51,279
had had two previous flights so

303
00:12:54,550 --> 00:12:52,639
everyone's coming home with a little

304
00:12:56,470 --> 00:12:54,560
more experience now

305
00:12:58,550 --> 00:12:56,480
yeah and i guess this uh for their first

306
00:13:01,910 --> 00:12:58,560
flight this is also their first return

307
00:13:03,990 --> 00:13:01,920
yes um and again this return will be

308
00:13:07,670 --> 00:13:04,000
about a 23-hour ride

309
00:13:09,350 --> 00:13:07,680
um so once they undock um it won't be

310
00:13:11,910 --> 00:13:09,360
you know right back down to earth just

311
00:13:13,509 --> 00:13:11,920
yet they'll they'll get to cruise uh in

312
00:13:15,670 --> 00:13:13,519
space for a little bit and they have

313
00:13:17,670 --> 00:13:15,680

some off time during that as well so

314
00:13:20,069 --> 00:13:17,680
they'll get to sleep if they want to

315
00:13:22,550 --> 00:13:20,079
they have options to eat meals while on

316
00:13:24,550 --> 00:13:22,560
board i'm sure they'll be enjoying the

317
00:13:26,310 --> 00:13:24,560
last few views from space

318
00:13:28,310 --> 00:13:26,320
sticking close to the window and taking

319
00:13:29,829 --> 00:13:28,320
some pictures

320
00:13:32,470 --> 00:13:29,839
and they're currently

321
00:13:35,670 --> 00:13:32,480
they're currently in their suits

322
00:13:37,509 --> 00:13:35,680
this is a pretty close-up view

323
00:13:40,710 --> 00:13:37,519
they're currently in their suits in

324
00:13:42,550 --> 00:13:40,720
their seats um but once they move away

325
00:13:44,150 --> 00:13:42,560
and are a safe distance away from the

326
00:13:46,150 --> 00:13:44,160
space station they can actually get out

327
00:13:47,670 --> 00:13:46,160
of their suits get comfortable

328
00:13:49,910 --> 00:13:47,680
enjoy the ride

329
00:13:51,030 --> 00:13:49,920
we mentioned a couple of those burns

330
00:13:52,230 --> 00:13:51,040
that will

331
00:13:53,910 --> 00:13:52,240
break help them break away from the

332
00:13:55,269 --> 00:13:53,920
space station and then separate them

333
00:13:56,550 --> 00:13:55,279
from the station

334
00:13:58,949 --> 00:13:56,560
and they are in their suits and they

335
00:14:01,269 --> 00:13:58,959
just lowered their visors as well this

336
00:14:03,910 --> 00:14:01,279
is all precautionary because these are

337
00:14:05,030 --> 00:14:03,920
not major burns as i might want to call

338
00:14:06,949 --> 00:14:05,040

them these are

339
00:14:08,470 --> 00:14:06,959
slow moving we want to move pretty

340
00:14:09,910 --> 00:14:08,480
carefully when we're around the space

341
00:14:11,189 --> 00:14:09,920
station especially while we're inside

342
00:14:13,189 --> 00:14:11,199
the keep out sphere and the approach

343
00:14:15,670 --> 00:14:13,199
ellipsoid those are two invisible

344
00:14:16,870 --> 00:14:15,680
boundaries that we use to monitor the

345
00:14:19,910 --> 00:14:16,880
distance

346
00:14:21,350 --> 00:14:19,920
of spacecraft arriving and departing

347
00:14:27,590 --> 00:14:21,360
i believe we're coming up on about a

348
00:14:31,269 --> 00:14:29,829
this is such an incredible view from the

349
00:14:33,110 --> 00:14:31,279
space station

350
00:14:36,310 --> 00:14:33,120
you can see a portion of the space

351
00:14:38,710 --> 00:14:36,320
station with dragon still docked

352
00:14:40,870 --> 00:14:38,720
and earth in the background just looks

353
00:14:42,790 --> 00:14:40,880
so incredible there that's the indian

354
00:14:44,550 --> 00:14:42,800
ocean below them right now

355
00:14:46,310 --> 00:14:44,560
dragon is docked to the harmony port on

356
00:14:48,150 --> 00:14:46,320
the international space station has

357
00:14:50,389 --> 00:14:48,160
called that location home for the last

358
00:14:52,629 --> 00:14:50,399
six months we didn't see a port

359
00:14:55,189 --> 00:14:52,639
relocation with this vehicle like we saw

360
00:14:56,870 --> 00:14:55,199
for crew one and crew two um this has

361
00:15:10,470 --> 00:14:56,880
this has been their home since they

362
00:15:14,550 --> 00:15:12,550
and dragon spacex on the big loop we

363
00:15:16,550 --> 00:15:14,560

know we are past the targeted undock

364
00:15:18,710 --> 00:15:16,560
time we are still going to be discussing

365
00:15:21,269 --> 00:15:18,720
the timing issues uh that you are seeing

366
00:15:22,710 --> 00:15:21,279
on your displays and on the ground so

367
00:15:35,350 --> 00:15:22,720
stand by for some more words on a new

368
00:15:40,230 --> 00:15:37,590
and that was the core

369
00:15:43,670 --> 00:15:40,240
crew operations and resources engineer

370
00:15:45,509 --> 00:15:43,680
speaking with the crew on board dragon

371
00:15:47,430 --> 00:15:45,519
and there's the core there on your

372
00:15:49,910 --> 00:15:47,440
left-hand screen

373
00:15:52,389 --> 00:15:49,920
uh just mentioning that they are still

374
00:15:55,430 --> 00:15:52,399
checking on a couple things that they

375
00:15:57,030 --> 00:15:55,440
had their eye on

376
00:16:00,790 --> 00:15:57,040
undocking was

377
00:16:02,150 --> 00:16:00,800
scheduled for 1005 pm pacific time but

378
00:16:04,310 --> 00:16:02,160
there is some

379
00:16:05,990 --> 00:16:04,320
margin in the schedule so

380
00:16:07,829 --> 00:16:06,000
once they are

381
00:16:08,710 --> 00:16:07,839
once they clear what they're looking

382
00:16:10,310 --> 00:16:08,720
into

383
00:16:12,550 --> 00:16:10,320
we should be go for

384
00:16:14,710 --> 00:16:12,560
undocking yes the core mentioned to the

385
00:16:17,350 --> 00:16:14,720
crew they have an hour window for this

386
00:16:19,110 --> 00:16:17,360
undock time so it's a little more leeway

387
00:16:20,710 --> 00:16:19,120
than sometimes when we see launches on

388
00:16:23,030 --> 00:16:20,720

the ground that have to go at that very

389
00:16:25,749 --> 00:16:23,040
second so they have time to look through

390
00:16:28,230 --> 00:16:25,759
this and that's a tdrs tracking data and

391
00:16:30,230 --> 00:16:28,240
relay satellite system

392
00:16:31,670 --> 00:16:30,240
times that they're receiving on dragon

393
00:16:34,470 --> 00:16:31,680
it's pulling in different two different

394
00:16:36,790 --> 00:16:34,480
types of data and they expect it to

395
00:16:38,550 --> 00:16:36,800
resolve itself once dragon has departed

396
00:16:40,470 --> 00:16:38,560
the space station and its umbilicals are

397
00:16:42,790 --> 00:16:40,480
no longer attached but i just want to

398
00:16:51,110 --> 00:16:42,800
take the moment to uh to discuss that on

399
00:16:55,670 --> 00:16:53,670
and you were talking about the core um

400
00:16:57,590 --> 00:16:55,680
that person is here in hawthorne but we

401
00:16:59,189 --> 00:16:57,600
have someone similar in houston and

402
00:17:00,470 --> 00:16:59,199
that's the capcom or the capsule

403
00:17:02,710 --> 00:17:00,480
communicator

404
00:17:04,150 --> 00:17:02,720
they are not speaking with the

405
00:17:05,590 --> 00:17:04,160
astronauts on the capsule even though

406
00:17:07,590 --> 00:17:05,600
that might sound confusing they're

407
00:17:09,829 --> 00:17:07,600
actually the person who relays

408
00:17:12,549 --> 00:17:09,839
information from mission control houston

409
00:17:13,750 --> 00:17:12,559
to the astronauts on the space station

410
00:17:16,549 --> 00:17:13,760
so um

411
00:17:18,549 --> 00:17:16,559
those two roles are incredibly important

412
00:17:20,069 --> 00:17:18,559
and we only have those two people that

413
00:17:22,230 --> 00:17:20,079

are speaking with the crew that way

414
00:17:29,430 --> 00:17:22,240
there aren't too many voices at one time

415
00:17:32,549 --> 00:17:30,950
and there you can see on your screen on

416
00:17:35,350 --> 00:17:32,559
the left-hand screen that is mission

417
00:17:37,029 --> 00:17:35,360
control here at spacex headquarters in

418
00:17:38,789 --> 00:17:37,039
hawthorne california

419
00:17:41,029 --> 00:17:38,799
and on the right side of your screen a

420
00:17:43,430 --> 00:17:41,039
little place that feels like home is

421
00:18:17,110 --> 00:17:43,440
mission control houston at johnson space

422
00:18:19,990 --> 00:18:18,549
and while these

423
00:18:21,510 --> 00:18:20,000
crew members were on board since

424
00:18:23,909 --> 00:18:21,520
november it's been six months like we

425
00:18:27,590 --> 00:18:23,919
mentioned they've seen eight visiting

426
00:18:30,630 --> 00:18:27,600
vehicles arrive that's everything from

427
00:18:33,430 --> 00:18:30,640
spacex 24 the cargo dragon that came up

428
00:18:35,430 --> 00:18:33,440
and brought resupply and science

429
00:18:37,190 --> 00:18:35,440
activities for the crew as well as

430
00:18:38,310 --> 00:18:37,200
progress resupply ships and north

431
00:18:40,710 --> 00:18:38,320
grumman ship

432
00:18:43,110 --> 00:18:40,720
two spacex crew dragons not only did

433
00:18:45,750 --> 00:18:43,120
they have crew 4 arrived last week a few

434
00:18:47,350 --> 00:18:45,760
weeks ago axiom 1 arrived aboard the

435
00:18:48,789 --> 00:18:47,360
international space station for a brief

436
00:18:50,950 --> 00:18:48,799
stay

437
00:18:56,390 --> 00:18:50,960
and the russian pre-child node module

438
00:19:01,110 --> 00:18:59,110

yeah that's a lot of uh spacecraft on

439
00:19:04,310 --> 00:19:01,120
the international space station um

440
00:19:06,950 --> 00:19:04,320
probably pretty cool for the um

441
00:19:08,630 --> 00:19:06,960
uh crew on board to

442
00:19:11,430 --> 00:19:08,640
you know get to interact with so many

443
00:19:15,430 --> 00:19:11,440
different um people yeah arriving at the

444
00:19:20,070 --> 00:19:17,350
essentially what it is yeah and that's

445
00:19:22,390 --> 00:19:20,080
how the astronauts get their food and

446
00:19:24,150 --> 00:19:22,400
their supplies you know all the water or

447
00:19:25,990 --> 00:19:24,160
almost all the water on board is

448
00:19:27,270 --> 00:19:26,000
recycled but

449
00:19:29,270 --> 00:19:27,280
we have

450
00:19:32,150 --> 00:19:29,280
food sent up for the astronauts in those

451
00:19:34,549 --> 00:19:32,160
rehydratable packages they're also meals

452
00:19:36,310 --> 00:19:34,559
ready to eat that's what the crew on

453
00:19:39,270 --> 00:19:36,320
crew dragon will have to consume over

454
00:19:40,950 --> 00:19:39,280
the next 24-ish hours

455
00:19:42,789 --> 00:19:40,960
but also science experiments there are

456
00:19:44,470 --> 00:19:42,799
always hundreds of experiments happening

457
00:19:46,630 --> 00:19:44,480
aboard the international space station

458
00:19:47,990 --> 00:19:46,640
we call it our orbiting laboratory and

459
00:19:55,669 --> 00:19:48,000
that's what takes up a lot of the crew

460
00:20:00,470 --> 00:19:58,549
and we do have two versions of the

461
00:20:03,430 --> 00:20:00,480
dragon vehicle the one that you're

462
00:20:06,149 --> 00:20:03,440
seeing on your screen is crew dragon um

463
00:20:08,390 --> 00:20:06,159

and as lee has mentioned

464
00:20:10,710 --> 00:20:08,400
the cargo dragon

465
00:20:12,310 --> 00:20:10,720
is basically designed to just fully

466
00:20:15,590 --> 00:20:12,320
carry cargo

467
00:20:20,630 --> 00:20:17,750
the crew dragon vehicle can also carry

468
00:20:24,070 --> 00:20:20,640
cargo as well it is designed for seven

469
00:20:26,390 --> 00:20:24,080
crew members um we have four members on

470
00:20:29,110 --> 00:20:26,400
board so where we would have the other

471
00:20:32,470 --> 00:20:29,120
three seats is where we store cargo

472
00:20:35,029 --> 00:20:32,480
which is just basically beneath the crew

473
00:20:36,870 --> 00:20:35,039
members on board dragon so can bring

474
00:21:14,630 --> 00:20:36,880
some cargo with them

475
00:21:21,750 --> 00:21:17,270
you're just now joining us you are tuned

476
00:21:23,830 --> 00:21:21,760
in to the crew 3 return back to earth

477
00:21:25,430 --> 00:21:23,840
the crew 3 members have been on board

478
00:21:27,350 --> 00:21:25,440
the international space station for

479
00:21:30,390 --> 00:21:27,360
about 6 months now

480
00:21:32,630 --> 00:21:30,400
with crew 4 now on board station they've

481
00:21:33,510 --> 00:21:32,640
already completed their handoff and they

482
00:21:35,430 --> 00:21:33,520
are

483
00:21:44,070 --> 00:21:35,440
dragon spacex on the big loop for

484
00:21:47,830 --> 00:21:46,149
endurance the reason that we paused was

485
00:21:50,149 --> 00:21:47,840
that we had assumed that this was going

486
00:21:53,350 --> 00:21:50,159
to that the timing issue was going to

487
00:21:55,990 --> 00:21:53,360
stop once 1553 was disconnected we did

488
00:21:57,510 --> 00:21:56,000

not see that actually occur in this case

489
00:21:59,350 --> 00:21:57,520
so we took a look back at some of the

490
00:22:01,270 --> 00:21:59,360
data that we had from

491
00:22:03,270 --> 00:22:01,280
our previous departures as well as

492
00:22:06,470 --> 00:22:03,280
taking a look into the future about if

493
00:22:08,230 --> 00:22:06,480
this were an issue during unknocking and

494
00:22:10,549 --> 00:22:08,240
the result of that investigation led us

495
00:22:13,190 --> 00:22:10,559
to know that we have seen this behavior

496
00:22:14,789 --> 00:22:13,200
before we had seen the timing issue

497
00:22:16,549 --> 00:22:14,799
resolved itself once the umbilical is

498
00:22:19,350 --> 00:22:16,559
retracted and so we are comfortable

499
00:22:21,430 --> 00:22:19,360
proceeding with a new unknocking attempt

500
00:22:26,310 --> 00:22:21,440
at a later time

501
00:22:29,830 --> 00:22:28,230
kathy yeah the 1553 disconnected and

502
00:22:31,430 --> 00:22:29,840
fixed with what we expect uh based on

503
00:22:33,510 --> 00:22:31,440
previous but uh once we disconnect

504
00:22:36,710 --> 00:22:33,520
unbelievable job itself and then

505
00:22:38,310 --> 00:22:36,720
standing by for a new one backing time

506
00:22:40,710 --> 00:22:38,320
good words and uh we were also pretty

507
00:22:42,549 --> 00:22:40,720
confident that if it were to not or if

508
00:22:44,789 --> 00:22:42,559
it would still be the case during

509
00:22:47,029 --> 00:22:44,799
unknocking we will take some potential

510
00:22:48,070 --> 00:22:47,039
pauses uh if we don't see it resolve

511
00:22:50,789 --> 00:22:48,080
itself

512
00:22:54,310 --> 00:22:50,799
right now ground is pulled go for uh the

513
00:22:56,070 --> 00:22:54,320

undocking time at 0 5 1 5 utc so please

514
00:23:04,710 --> 00:22:56,080
confirm that your visors are still down

515
00:23:10,630 --> 00:23:06,190
hey i'm super

516
00:23:10,640 --> 00:23:16,390
36 copies

517
00:23:20,710 --> 00:23:18,149
all right getting really close now we

518
00:23:23,270 --> 00:23:20,720
heard they're comfortable with that tdrs

519
00:23:24,470 --> 00:23:23,280
tracking data and relay satellite system

520
00:23:26,230 --> 00:23:24,480
time difference that they're seeing and

521
00:23:28,710 --> 00:23:26,240
they expect that to resolve on its own

522
00:23:30,070 --> 00:23:28,720
after the umbilicals have retracted and

523
00:23:31,990 --> 00:23:30,080
now we're looking for that undock

524
00:23:38,870 --> 00:23:32,000
sequence command to begin in just about

525
00:23:44,070 --> 00:23:42,070
again we had some time to

526
00:23:46,390 --> 00:23:44,080
make sure that we have everything

527
00:24:03,110 --> 00:23:46,400
planned as we wanted to because this is

528
00:24:16,470 --> 00:24:04,870
coming up on a minute until the undock

529
00:24:21,990 --> 00:24:19,029
again this undocking sequence will be an

530
00:24:24,549 --> 00:24:22,000
automatic undocking sequence uh first

531
00:24:26,390 --> 00:24:24,559
the umbilicals will retract

532
00:24:27,669 --> 00:24:26,400
uh and then

533
00:24:32,630 --> 00:24:27,679
the

534
00:24:35,669 --> 00:24:32,640
on

535
00:24:37,590 --> 00:24:35,679
the docking adapter will unlatch

536
00:24:38,950 --> 00:24:37,600
and they'll do that in two phases it'll

537
00:24:41,350 --> 00:24:38,960
be the first six

538
00:24:44,549 --> 00:24:41,360

hard latches and then followed by the

539
00:24:46,549 --> 00:24:44,559
second set of six hard latches

540
00:24:47,590 --> 00:24:46,559
then the vehicle will

541
00:24:50,789 --> 00:24:47,600
basically

542
00:24:53,110 --> 00:24:50,799
do a couple of burns uh to

543
00:24:54,950 --> 00:24:53,120
push itself away from the international

544
00:24:57,190 --> 00:24:54,960
space station so that it's at a safe

545
00:25:03,110 --> 00:24:57,200
distance before it starts

546
00:25:03,120 --> 00:25:23,909
unknock sequence commanded

547
00:25:26,149 --> 00:25:25,029
looked like the umbilical attraction

548
00:25:28,230 --> 00:25:26,159
through the trick they're seeing model

549
00:25:49,190 --> 00:25:28,240
behavior on the future

550
00:25:49,200 --> 00:25:56,870
umbilical demate complete and dominant

551
00:25:56,880 --> 00:26:21,909
very happy to see the first group

552
00:26:26,549 --> 00:26:23,990
and with that we have confirmation that

553
00:26:29,269 --> 00:26:26,559
the undocking sequence has begun

554
00:26:31,110 --> 00:26:29,279
we have heard that the uh timing issue

555
00:26:32,630 --> 00:26:31,120
that the crews were seeing on the tdrs

556
00:26:35,269 --> 00:26:32,640
clocks has been

557
00:26:37,110 --> 00:26:35,279
fixed and with dragon now getting ready

558
00:26:43,029 --> 00:26:37,120
to undock let's go to sandra jones in

559
00:26:48,549 --> 00:26:45,430
thanks leah and jesse great to hear that

560
00:26:50,549 --> 00:26:48,559
all is proceeding as planned tonight for

561
00:26:52,310 --> 00:26:50,559
undocking as you mentioned the

562
00:26:54,149 --> 00:26:52,320
umbilicals have began to retract and

563
00:26:56,470 --> 00:26:54,159

right now we're working on the sets of

564
00:26:58,470 --> 00:26:56,480
hooks to also

565
00:27:00,789 --> 00:26:58,480
separate dragon from the international

566
00:27:03,190 --> 00:27:00,799
space station

567
00:27:05,190 --> 00:27:03,200
again there's two sets of six hooks that

568
00:27:12,549 --> 00:27:05,200
we'll be looking to open so a total of

569
00:27:27,350 --> 00:27:14,870
and that first set of hooks has begin to

570
00:27:31,909 --> 00:27:30,230
once all 12 hooks are open dragon will

571
00:27:34,630 --> 00:27:31,919
officially be undocked from the

572
00:27:36,710 --> 00:27:34,640
international space station ending its

573
00:28:01,190 --> 00:27:36,720
six-month mission aboard the orbiting

574
00:28:05,590 --> 00:28:03,190
and the first set of hooks are open the

575
00:28:07,190 --> 00:28:05,600
second set is underway and we have

576
00:28:09,669 --> 00:28:07,200
committed to undocking from the

577
00:28:32,789 --> 00:28:09,679
international space station crew 4 is

578
00:29:05,190 --> 00:28:34,549
again that first set of hooks is open

579
00:29:48,710 --> 00:29:07,269
everything continuing to go as planned

580
00:29:52,789 --> 00:29:50,470
and we should be hearing the call here

581
00:30:03,350 --> 00:29:52,799
shortly that the second set of hooks has

582
00:30:03,360 --> 00:30:16,070
all hooks open and nominal

583
00:30:19,990 --> 00:30:17,990
and the crew dragon endurance has

584
00:30:31,590 --> 00:30:20,000
undocked from the international space

585
00:30:36,870 --> 00:30:34,549
did occur at 12 20 a.m

586
00:30:38,389 --> 00:30:36,880
central time 1 20 a.m eastern time while

587
00:30:45,830 --> 00:30:38,399
the international space station was

588
00:30:59,909 --> 00:30:48,149

the first undocking burn also proceeded

589
00:30:59,919 --> 00:31:09,430
now underway

590
00:31:25,110 --> 00:31:11,509
and a great view of dragon as it departs

591
00:31:28,630 --> 00:31:26,789
next up will be the rest of the series

592
00:31:30,389 --> 00:31:28,640
of departure burns that will continue to

593
00:31:32,549 --> 00:31:30,399
push dragon further from the space

594
00:31:34,630 --> 00:31:32,559
station

595
00:31:36,710 --> 00:31:34,640
and with dragon now successfully

596
00:31:38,710 --> 00:31:36,720
undocked from the space station again

597
00:31:41,830 --> 00:31:38,720
that undocking occurring at 12 20

598
00:31:44,230 --> 00:31:41,840
central time 12 20 a.m central time 1 20

599
00:31:46,470 --> 00:31:44,240
a.m eastern time just southeast of

600
00:31:48,549 --> 00:31:46,480
australia i'll hand it back over to

601
00:31:53,430 --> 00:31:48,559
jesse and leah in hawthorne to walk us

602
00:31:59,590 --> 00:31:58,070
so some great news and great views

603
00:32:01,350 --> 00:31:59,600
dragon is now undocked from the

604
00:32:04,870 --> 00:32:01,360
international space station we have

605
00:32:07,750 --> 00:32:04,880
already completed departure burn zero um

606
00:32:10,870 --> 00:32:07,760
that's a short burn of dragon's draco

607
00:32:12,630 --> 00:32:10,880
thrusters lasts about 16 seconds long

608
00:32:14,389 --> 00:32:12,640
that increases the speed that dragon is

609
00:32:16,389 --> 00:32:14,399
flying away from station

610
00:32:20,950 --> 00:32:16,399
and sends it on a trajectory taking it

611
00:32:25,430 --> 00:32:23,190
that departure burn zero sets the crew

612
00:32:27,990 --> 00:32:25,440
dragon endurance crew with russia tom

613
00:32:29,669 --> 00:32:28,000

kayla and matthias on their journey home

614
00:32:31,669 --> 00:32:29,679
now on a trajectory to head up and over

615
00:32:33,750 --> 00:32:31,679
the station before additional maneuvers

616
00:32:35,909 --> 00:32:33,760
we'll change the orbital path and take

617
00:32:38,070 --> 00:32:35,919
crew dragon below and in front of the

618
00:32:39,669 --> 00:32:38,080
station dragon will autonomously

619
00:32:41,110 --> 00:32:39,679
accomplish that through three additional

620
00:32:43,750 --> 00:32:41,120
departure burns to get the four

621
00:32:50,630 --> 00:32:43,760
astronauts of crew 3 well away from the

622
00:32:55,430 --> 00:32:52,310
what you're looking at on your screen on

623
00:32:57,029 --> 00:32:55,440
the left side is a view from dragon

624
00:32:59,590 --> 00:32:57,039
looking at the international space

625
00:33:01,110 --> 00:32:59,600
station and on the right side is a view

626
00:33:08,389 --> 00:33:01,120
from the international space station

627
00:33:11,669 --> 00:33:10,470
and now on the left side is the view

628
00:33:13,669 --> 00:33:11,679
inside

629
00:33:15,830 --> 00:33:13,679
crew dragon endurance looking over the

630
00:33:17,269 --> 00:33:15,840
seat of the commander and the pilot you

631
00:33:18,950 --> 00:33:17,279
can see the screens they're using to

632
00:33:21,190 --> 00:33:18,960
monitor their journey back home but

633
00:33:22,789 --> 00:33:21,200
again they don't need to do

634
00:33:25,590 --> 00:33:22,799
make any actions

635
00:33:27,350 --> 00:33:25,600
to continue dragon's flight this is all

636
00:33:29,509 --> 00:33:27,360
autonomous and they use those screens to

637
00:33:30,870 --> 00:33:29,519
monitor the vehicle systems as well as

638
00:33:36,870 --> 00:33:30,880

where they are

639
00:33:41,590 --> 00:33:39,350
another really cool view from the

640
00:33:44,549 --> 00:33:41,600
international space station

641
00:33:47,350 --> 00:33:44,559
you can see dragon in your bottom right

642
00:33:49,430 --> 00:33:47,360
hand corner

643
00:33:50,870 --> 00:33:49,440
as it is moving

644
00:33:52,950 --> 00:33:50,880
slow and steady away from the

645
00:33:55,269 --> 00:33:52,960
international space station

646
00:33:57,269 --> 00:33:55,279
we want to make sure that the vehicle is

647
00:33:59,430 --> 00:33:57,279
safe

648
00:34:01,590 --> 00:33:59,440
before it begins its

649
00:34:04,230 --> 00:34:01,600
several maneuvers to make its way back

650
00:34:06,950 --> 00:34:04,240
down to earth we have already completed

651
00:34:10,629 --> 00:34:06,960
burn zero which is the first of four

652
00:34:15,829 --> 00:34:13,109
and hearing reports that trajectory is

653
00:34:17,349 --> 00:34:15,839
nominal or as planned for crew dragon

654
00:34:19,909 --> 00:34:17,359
endurance we're standing by for that

655
00:34:21,990 --> 00:34:19,919
depart burn depart burn one i should say

656
00:34:23,589 --> 00:34:22,000
in about a minute and a half

657
00:34:26,389 --> 00:34:23,599
this will increase the opening rate

658
00:34:28,149 --> 00:34:26,399
between crew dragon and the station

659
00:34:30,470 --> 00:34:28,159
and again there are no hold points

660
00:34:32,869 --> 00:34:30,480
during this departure sequence we see

661
00:34:35,669 --> 00:34:32,879
crew members arrive

662
00:34:37,669 --> 00:34:35,679
and it they stop at way point two or one

663
00:34:39,990 --> 00:34:37,679

or zero sometimes they're able to pass

664
00:34:42,710 --> 00:34:40,000
through after some go no go pulls but it

665
00:34:45,270 --> 00:34:42,720
takes a lot less time to depart than it

666
00:34:47,430 --> 00:34:45,280
does to arrive so again standing by for

667
00:34:49,349 --> 00:34:47,440
that next departure burn happens about

668
00:34:52,310 --> 00:34:49,359
five minutes after separation so only

669
00:34:55,109 --> 00:34:52,320
about a minute from now

670
00:34:57,190 --> 00:34:55,119
this is a cool view as dragon is making

671
00:34:59,430 --> 00:34:57,200
its way out of the view

672
00:35:01,349 --> 00:34:59,440
you can see how slow and steady it was

673
00:35:02,710 --> 00:35:01,359
hard to tell but now that dragon is out

674
00:35:04,470 --> 00:35:02,720
of the view

675
00:35:06,870 --> 00:35:04,480
you can kind of see how slow it was

676
00:35:22,710 --> 00:35:06,880
moving away from the international space

677
00:35:26,069 --> 00:35:24,470
again as leah mentioned if you're just

678
00:35:28,710 --> 00:35:26,079
now joining us we have completed

679
00:35:31,430 --> 00:35:28,720
departure burn zero and we are now

680
00:35:33,910 --> 00:35:31,440
awaiting departure burn one coming up

681
00:35:37,430 --> 00:35:35,109
and you can tell it's a little bit

682
00:35:39,109 --> 00:35:37,440
darker outside now that's because the

683
00:35:40,790 --> 00:35:39,119
crew dragon and international space

684
00:35:43,190 --> 00:35:40,800
station have entered an orbital night

685
00:35:45,190 --> 00:35:43,200
time they circle the earth every 90

686
00:35:47,030 --> 00:35:45,200
minutes so they see a sunrise or sunset

687
00:35:49,349 --> 00:35:47,040
every 45 minutes

688
00:35:52,950 --> 00:35:49,359

and they are now flying

689
00:35:57,430 --> 00:35:52,960
just southwest of new zealand about 271

690
00:36:02,310 --> 00:35:59,670
and you can see on your screen some

691
00:36:03,670 --> 00:36:02,320
bursts happening there these are

692
00:36:07,430 --> 00:36:03,680
the burns

693
00:36:09,910 --> 00:36:07,440
uh dragon is using its draco thrusters

694
00:36:11,510 --> 00:36:09,920
to maneuver itself away from the

695
00:36:14,550 --> 00:36:11,520
international space station that was a

696
00:36:19,910 --> 00:36:17,030
dragon you are going to doff your suits

697
00:36:21,589 --> 00:36:19,920
per procedure four decimal zero one two

698
00:36:23,990 --> 00:36:21,599
and this is a reminder that ground will

699
00:36:34,230 --> 00:36:24,000
be deactivating the big loop following

700
00:36:37,910 --> 00:36:35,990
and the dirt's happy is we've gotta go

701
00:36:40,150 --> 00:36:37,920
to dock our suits and copy will be

702
00:36:41,510 --> 00:36:40,160
taking down heat loop once we're outside

703
00:36:45,190 --> 00:36:41,520
he looks like can you also continue

704
00:36:45,200 --> 00:36:52,069
that is affirmative

705
00:36:56,790 --> 00:36:53,829
thanks very much and uh station

706
00:36:59,510 --> 00:36:56,800
endurance uh thanks for the uh forum

707
00:37:01,349 --> 00:36:59,520
send off good luck expedition 67. it was

708
00:37:03,109 --> 00:37:01,359
great being up there with you guys can't

709
00:37:05,349 --> 00:37:03,119
wait to see the awesome work you guys

710
00:37:07,990 --> 00:37:05,359
continue to do on that amazing

711
00:37:10,470 --> 00:37:08,000
laboratory

712
00:37:12,550 --> 00:37:10,480
endurance i appreciate the kind words

713
00:37:14,310 --> 00:37:12,560

i've had a great time handing over with

714
00:37:15,750 --> 00:37:14,320
you all and

715
00:37:25,990 --> 00:37:15,760
look forward to seeing your smiling

716
00:37:34,550 --> 00:37:27,910
and stationed with that dragon has

717
00:37:39,670 --> 00:37:36,950
and confirmation that both depart burn

718
00:37:41,829 --> 00:37:39,680
zero and one are now complete

719
00:37:43,990 --> 00:37:41,839
and crew dragon has exited the keep out

720
00:37:46,390 --> 00:37:44,000
sphere that's the imaginary boundary or

721
00:37:48,829 --> 00:37:46,400
sphere about 200 meters in radius around

722
00:37:50,710 --> 00:37:48,839
the station it's one of several safety

723
00:37:59,990 --> 00:37:50,720
zones and dragon spacex on dragon to

724
00:38:05,349 --> 00:38:02,550
go ahead on dragging the ground for some

725
00:38:07,829 --> 00:38:05,359
numbing actions

726
00:38:10,150 --> 00:38:07,839
okay uh the cameras have been taken

727
00:38:12,790 --> 00:38:10,160
external so you guys are go for uh those

728
00:38:15,270 --> 00:38:12,800
suit doppling actions just one note for

729
00:38:16,870 --> 00:38:15,280
you tom when you are getting out of your

730
00:38:18,790 --> 00:38:16,880
suit if you want to go ahead and give me

731
00:38:21,030 --> 00:38:18,800
a call i have a couple of things we'd

732
00:38:22,870 --> 00:38:21,040
like to do to inspect your umbilical

733
00:38:30,150 --> 00:38:22,880
just to get a better understanding of if

734
00:38:33,910 --> 00:38:32,069
all cameras are going external and i'll

735
00:38:35,109 --> 00:38:33,920
give you a call before i i'm taking off

736
00:38:38,870 --> 00:38:35,119
my gloves right now but i'll give you a

737
00:38:42,630 --> 00:38:40,790
and copy that tom you can probably delay

738
00:38:49,030 --> 00:38:42,640

this until you're fully out of the suit

739
00:38:54,790 --> 00:38:50,630
okay copy give me a call once i'm out of

740
00:38:57,290 --> 00:38:56,550
and space excited here i'm dragging the

741
00:38:59,510 --> 00:38:57,300
ground on the counterweight

742
00:39:00,950 --> 00:38:59,520
[Applause]

743
00:39:05,750 --> 00:39:00,960
and i've got you five by five on the

744
00:39:05,760 --> 00:39:11,589
we've got the same

745
00:39:15,270 --> 00:39:13,349
that call coming from the core here in

746
00:39:16,950 --> 00:39:15,280
hawthorne to the crew aboard crew dragon

747
00:39:19,190 --> 00:39:16,960
letting them know the cameras will be

748
00:39:20,790 --> 00:39:19,200
off while they take off their spacesuits

749
00:39:22,630 --> 00:39:20,800
and get into some comfortable clothes

750
00:39:24,069 --> 00:39:22,640
for the journey home as we mentioned

751
00:39:27,030 --> 00:39:24,079
they have exited the keep out sphere

752
00:39:28,950 --> 00:39:27,040
that 200 meter boundary around the space

753
00:39:31,270 --> 00:39:28,960
station they're now about 300 meters

754
00:39:33,589 --> 00:39:31,280
away from the station but before moving

755
00:39:35,349 --> 00:39:33,599
in out into the keep out sphere

756
00:39:37,190 --> 00:39:35,359
spacecraft have to be configured where

757
00:39:39,109 --> 00:39:37,200
they would not cross that imaginary

758
00:39:43,349 --> 00:39:39,119
boundary for at least four orbits even

759
00:39:45,589 --> 00:39:43,359
if the spacecraft lost all maneuvering

760
00:39:47,990 --> 00:39:45,599
and we are now waiting for dragon to

761
00:39:50,069 --> 00:39:48,000
exit the approach ellipsoid or the ae

762
00:39:52,150 --> 00:39:50,079
which is another imaginary shape this

763
00:39:54,870 --> 00:39:52,160

time it's a three-dimensional ellipsoid

764
00:39:56,790 --> 00:39:54,880
measuring four by two by two kilometers

765
00:39:57,750 --> 00:39:56,800
in the same family as the keep out

766
00:39:59,190 --> 00:39:57,760
sphere

767
00:40:02,470 --> 00:39:59,200
now one of the key differences with the

768
00:40:05,030 --> 00:40:02,480
ae is that vehicles outside of it

769
00:40:08,230 --> 00:40:05,040
outside it have to be on what we call a

770
00:40:09,829 --> 00:40:08,240
24-hour safe free drift trajectory that

771
00:40:11,750 --> 00:40:09,839
means the spacecraft would not cross

772
00:40:14,470 --> 00:40:11,760
into the approach ellipsoid for at least

773
00:40:16,150 --> 00:40:14,480
24 hours again even if it lost all

774
00:40:17,829 --> 00:40:16,160
maneuvering

775
00:40:20,309 --> 00:40:17,839
so we are waiting for

776
00:40:23,030 --> 00:40:20,319
that call out

777
00:40:24,550 --> 00:40:23,040
that dragon is outside of the the ae

778
00:40:26,230 --> 00:40:24,560
that's the next call out that we're

779
00:40:28,790 --> 00:40:26,240
waiting for

780
00:40:31,030 --> 00:40:28,800
we also heard the uh

781
00:40:32,630 --> 00:40:31,040
core talking to thomas

782
00:40:34,870 --> 00:40:32,640
uh marshburn

783
00:40:36,630 --> 00:40:34,880
about the umbilical on his suit they

784
00:40:37,990 --> 00:40:36,640
were just talking about the umbilical

785
00:40:41,270 --> 00:40:38,000
that connects the spacesuit to the

786
00:40:43,510 --> 00:40:41,280
dragon itself that helps provide calm

787
00:40:45,349 --> 00:40:43,520
cooling air while they're in the suits

788
00:40:46,710 --> 00:40:45,359

of course while they are in their more

789
00:40:48,309 --> 00:40:46,720
comfortable clothes for this journey

790
00:40:50,150 --> 00:40:48,319
home he won't be connected to that and

791
00:40:51,270 --> 00:40:50,160
they can talk through a cabin microphone

792
00:40:52,950 --> 00:40:51,280
instead

793
00:40:55,430 --> 00:40:52,960
yeah and they did also mention that they

794
00:40:56,550 --> 00:40:55,440
can dock their suits or remove their

795
00:40:58,790 --> 00:40:56,560
suits

796
00:41:00,870 --> 00:40:58,800
so as leah mentioned they are

797
00:41:03,829 --> 00:41:00,880
starting to get comfortable

798
00:41:06,630 --> 00:41:03,839
and they do have you know 23 hour

799
00:41:08,470 --> 00:41:06,640
journey on the way back home so

800
00:41:09,829 --> 00:41:08,480
it'll be nice to get out of those those

801
00:41:11,990 --> 00:41:09,839
suits even though they are like a

802
00:41:15,990 --> 00:41:12,000
personal ac system for them they look

803
00:41:22,230 --> 00:41:18,390
again we are waiting for the dragon

804
00:41:23,030 --> 00:41:22,240
vehicle to confirm that it is outside of

805
00:41:28,710 --> 00:41:23,040
the

806
00:41:31,670 --> 00:41:28,720
and everything has been moving pretty

807
00:41:33,990 --> 00:41:31,680
smoothly for dragons so far we are on a

808
00:41:35,829 --> 00:41:34,000
nominal or normal trajectory and the

809
00:41:37,910 --> 00:41:35,839
next burn isn't coming up for another 42

810
00:41:40,309 --> 00:41:37,920
minutes so dragon is still cruising on

811
00:41:42,230 --> 00:41:40,319
those burns department zero and one that

812
00:41:44,630 --> 00:41:42,240
we actually saw

813
00:41:46,710 --> 00:41:44,640

i love that view

814
00:41:48,790 --> 00:41:46,720
and those birds come from the service

815
00:41:50,870 --> 00:41:48,800
section draco thrusters

816
00:41:53,349 --> 00:41:50,880
those are used for smaller maneuvers

817
00:41:55,829 --> 00:41:53,359
rather than the bulkhead draco thrusters

818
00:41:57,670 --> 00:41:55,839
which are under the nose cone uh those

819
00:42:00,710 --> 00:41:57,680
are used for the larger maneuvers like

820
00:42:04,470 --> 00:42:00,720
the d uh to orbit and dragon spacex on

821
00:42:07,550 --> 00:42:04,480
dragon to ground no response required

822
00:42:09,750 --> 00:42:07,560
but cabin temperature is now allowed via

823
00:42:11,270 --> 00:42:09,760
4.080 and the

824
00:42:13,510 --> 00:42:11,280
cabin is currently configured for

825
00:42:25,829 --> 00:42:13,520
maximum cooling so you guys have crew

826
00:42:32,870 --> 00:42:27,190
sounds like they're getting the cabin

827
00:42:37,430 --> 00:42:34,790
and the crew members can control the

828
00:42:40,230 --> 00:42:37,440
temperature on crew dragon or they can

829
00:42:43,990 --> 00:42:40,240
ask the ground to control it for them

830
00:42:46,550 --> 00:42:44,000
nice to have that option

831
00:42:48,550 --> 00:42:46,560
and as you mentioned uh we got to see

832
00:42:51,190 --> 00:42:48,560
the draco thrusters i think that was

833
00:42:52,630 --> 00:42:51,200
like one of the coolest views that uh

834
00:42:53,510 --> 00:42:52,640
i've been able to see

835
00:42:54,470 --> 00:42:53,520
um

836
00:42:57,190 --> 00:42:54,480
they

837
00:42:58,470 --> 00:42:57,200
there's uh 12 thrusters in the service

838
00:43:00,390 --> 00:42:58,480

section and they're all actually

839
00:43:03,510 --> 00:43:00,400
pointing in different directions and

840
00:43:04,950 --> 00:43:03,520
that's so that it basically has a 360

841
00:43:06,309 --> 00:43:04,960
degree control

842
00:43:09,030 --> 00:43:06,319
um

843
00:43:11,190 --> 00:43:09,040
of dragon as it's you know maneuvering

844
00:43:15,829 --> 00:43:11,200
out in space so it's really cool to see

845
00:43:19,750 --> 00:43:17,750
we're about halfway out of the approach

846
00:43:23,030 --> 00:43:19,760
ellipsoid that's that four kilometer by

847
00:43:24,390 --> 00:43:23,040
two by two kilometer uh imaginary shape

848
00:43:27,430 --> 00:43:24,400
actually i've heard it called the pizza

849
00:43:28,630 --> 00:43:27,440
box because of this yes because of its

850
00:43:30,390 --> 00:43:28,640
shape

851
00:43:32,550 --> 00:43:30,400
around the international space station

852
00:43:35,510 --> 00:43:32,560
and so we use this and the keypad sphere

853
00:43:37,270 --> 00:43:35,520
for all vehicles that arrive and depart

854
00:43:40,630 --> 00:43:37,280
the international space station that

855
00:43:42,309 --> 00:43:40,640
helps the teams monitor where vehicles

856
00:43:45,270 --> 00:43:42,319
are if they're ready to cross those

857
00:43:55,349 --> 00:43:45,280
boundaries and eventually dock or undock

858
00:43:59,190 --> 00:43:57,349
again we're here in hawthorne but teams

859
00:44:01,910 --> 00:43:59,200
in mission control houston are also

860
00:44:04,950 --> 00:44:01,920
monitoring because we are still in joint

861
00:44:07,270 --> 00:44:04,960
operations uh that happens when dragon

862
00:44:09,430 --> 00:44:07,280
is inside the approach ellipsoid so once

863
00:44:11,990 --> 00:44:09,440

dragon crosses that boundary it will

864
00:44:15,270 --> 00:44:12,000
come back to hawthorne as the prime

865
00:44:16,790 --> 00:44:15,280
monitoring location for the vehicle but

866
00:44:18,069 --> 00:44:16,800
while we're close or docked to the

867
00:44:20,230 --> 00:44:18,079
international space station we're in

868
00:44:22,230 --> 00:44:20,240
those joint operations so it's been six

869
00:44:24,550 --> 00:44:22,240
months of these teams working together

870
00:44:26,550 --> 00:44:24,560
on crew three but they continue working

871
00:44:29,829 --> 00:44:26,560
together every day because we have crew

872
00:44:33,030 --> 00:44:31,349
and there you can see the teams on your

873
00:44:34,950 --> 00:44:33,040
screen on your left hand screen is

874
00:44:36,550 --> 00:44:34,960
mission control hawthorne and on your

875
00:44:44,390 --> 00:44:36,560
right hand screen is mission control

876
00:44:48,550 --> 00:44:46,550
even though we undocked a little bit

877
00:44:49,510 --> 00:44:48,560
later than the initial

878
00:44:52,309 --> 00:44:49,520
time

879
00:44:55,109 --> 00:44:52,319
we had that hour-long window of undock

880
00:44:57,510 --> 00:44:55,119
opportunities and so we don't expect

881
00:44:59,670 --> 00:44:57,520
uh a change to the splashdown time we're

882
00:45:03,430 --> 00:44:59,680
still targeting tomorrow night around 9

883
00:45:05,750 --> 00:45:03,440
43 p.m pacific or 1 43 a.m eastern off

884
00:45:08,150 --> 00:45:05,760
the coast of florida there will be teams

885
00:45:10,550 --> 00:45:08,160
out on a boat to recover the crew after

886
00:45:13,030 --> 00:45:10,560
they splash down and after splashdown

887
00:45:15,910 --> 00:45:13,040
they'll be removed from the vehicle

888
00:45:18,710 --> 00:45:15,920

they will go through some

889
00:45:20,390 --> 00:45:18,720
casual medical checks and

890
00:45:21,910 --> 00:45:20,400
then eventually board a helicopter and

891
00:45:23,990 --> 00:45:21,920
be brought back to land where they will

892
00:45:26,710 --> 00:45:24,000
board a nasa

893
00:45:44,390 --> 00:45:26,720
jet to fly back to see their families in

894
00:45:48,069 --> 00:45:46,790
if you're just now joining us you are

895
00:45:52,230 --> 00:45:48,079
watching

896
00:45:54,710 --> 00:45:52,240
the live undocking of the crew 3 crew

897
00:45:57,109 --> 00:45:54,720
from the international space station so

898
00:45:58,150 --> 00:45:57,119
far they have undocked from the space

899
00:46:01,910 --> 00:45:58,160
station

900
00:46:05,270 --> 00:46:01,920
um they've completed uh two burns so far

901
00:46:06,790 --> 00:46:05,280
uh burn zero uh and burn one of the

902
00:46:09,910 --> 00:46:06,800
departure burns

903
00:46:12,630 --> 00:46:09,920
um we we do have two more burns um

904
00:46:14,069 --> 00:46:12,640
coming up as they make their way further

905
00:46:16,470 --> 00:46:14,079
and further away from the international

906
00:46:19,030 --> 00:46:16,480
space station and get the vehicle on a

907
00:46:20,630 --> 00:46:19,040
trajectory to make its way back home to

908
00:46:22,790 --> 00:46:20,640
earth

909
00:46:24,390 --> 00:46:22,800
and we're about 700 meters away from the

910
00:46:26,630 --> 00:46:24,400
international space station so that

911
00:46:29,589 --> 00:46:26,640
seems to have happened pretty quickly

912
00:46:31,349 --> 00:46:29,599
for very small and short burns

913
00:46:34,309 --> 00:46:31,359

but things move pretty smoothly when

914
00:46:36,150 --> 00:46:34,319
you're in space yeah and you mentioned a

915
00:46:37,670 --> 00:46:36,160
departure is a lot

916
00:46:38,950 --> 00:46:37,680
faster

917
00:46:40,309 --> 00:46:38,960
than

918
00:46:41,670 --> 00:46:40,319
docking to the international space

919
00:46:43,910 --> 00:46:41,680
station you know

920
00:46:45,990 --> 00:46:43,920
that 700 meters would take quite a bit

921
00:46:48,390 --> 00:46:46,000
of time because it's a very slow

922
00:46:49,910 --> 00:46:48,400
approach but i think moving away uh

923
00:46:52,390 --> 00:46:49,920
seems to be a lot faster which is

924
00:46:54,550 --> 00:46:52,400
probably nice for the the crew members

925
00:46:56,150 --> 00:46:54,560
and again they don't have to they don't

926
00:46:59,030 --> 00:46:56,160
have waypoints that they need to stop

927
00:47:01,510 --> 00:46:59,040
that either so it probably helps with um

928
00:47:03,670 --> 00:47:01,520
you know making the the departure a lot

929
00:47:06,230 --> 00:47:03,680
faster exactly and we talked a little

930
00:47:08,950 --> 00:47:06,240
bit about how crew dragon will move

931
00:47:11,589 --> 00:47:08,960
above the international space station

932
00:47:13,109 --> 00:47:11,599
this slows the vehicle down because what

933
00:47:16,230 --> 00:47:13,119
keeps the space station moving at

934
00:47:18,069 --> 00:47:16,240
orbital velocity 17 500 miles per hour

935
00:47:19,910 --> 00:47:18,079
is that it's trying to travel forward

936
00:47:22,470 --> 00:47:19,920
but earth's gravity is continually

937
00:47:25,190 --> 00:47:22,480
pulling it down so that keeps it in that

938
00:47:28,470 --> 00:47:25,200

orbit around earth constantly so moving

939
00:47:30,549 --> 00:47:28,480
dragon above the space station reduces

940
00:47:32,069 --> 00:47:30,559
the pull of earth's gravity and helps it

941
00:47:34,549 --> 00:47:32,079
slow down so the space station will

942
00:47:37,430 --> 00:47:34,559
actually pass in front of crew dragon

943
00:47:39,109 --> 00:47:37,440
and then crew dragon will later re-enter

944
00:47:41,030 --> 00:47:39,119
the atmosphere

945
00:47:42,950 --> 00:47:41,040
yeah and i think sometimes people forget

946
00:47:45,190 --> 00:47:42,960
how quickly the vehicles are moving

947
00:47:46,549 --> 00:47:45,200
especially when we got to see

948
00:47:47,829 --> 00:47:46,559
you know dragon

949
00:47:48,950 --> 00:47:47,839
moving slowly away from the

950
00:47:52,390 --> 00:47:48,960
international space station they're

951
00:47:54,230 --> 00:47:52,400
still going 17 500 miles per hour

952
00:48:07,910 --> 00:47:54,240
at that point

953
00:48:12,549 --> 00:48:11,829
spacex endurance on dragging the ground

954
00:48:18,829 --> 00:48:12,559
or

955
00:48:24,630 --> 00:48:22,069
axes okay tom i've got uh four items

956
00:48:52,790 --> 00:48:24,640
here for you to check out on your suit

957
00:48:52,800 --> 00:50:03,270
spacex coffee just getting my satchel

958
00:50:19,349 --> 00:50:04,630
go ahead for

959
00:50:24,069 --> 00:50:21,430
okay uh before that i just wanted to

960
00:50:26,630 --> 00:50:24,079
give you the call that dragon has exited

961
00:50:28,710 --> 00:50:26,640
the approach ellipsoid and is on a safe

962
00:50:30,150 --> 00:50:28,720
free drift trajectory houston is going

963
00:50:44,230 --> 00:50:30,160

to be taking down that big loop shortly

964
00:50:48,150 --> 00:50:46,309
okay we've got the exiting approach

965
00:50:51,190 --> 00:50:48,160
right and we'll be taking down the big

966
00:50:55,109 --> 00:50:52,309
good read

967
00:50:58,309 --> 00:50:55,119
okay the four items that i have for suit

968
00:51:01,510 --> 00:50:58,319
inspection number one is to take a look

969
00:51:02,790 --> 00:51:01,520
at both of the latches on the suit side

970
00:51:04,470 --> 00:51:02,800
of umbilical

971
00:51:06,230 --> 00:51:04,480
just seeing if there's anything funky

972
00:51:15,670 --> 00:51:06,240
about one or the other like less force

973
00:51:22,069 --> 00:51:17,510
copy doesn't work now inspecting latches

974
00:51:24,870 --> 00:51:23,349
okay do you want me to keep reading them

975
00:51:29,430 --> 00:51:24,880
off or do you want to uh get back to me

976
00:51:33,030 --> 00:51:31,270
uh we're kind of doing it simo while

977
00:51:34,390 --> 00:51:33,040
you're talking so matthias went ahead

978
00:51:36,069 --> 00:51:34,400
and reconnected the umbilical to the

979
00:51:36,950 --> 00:51:36,079
suit and he felt like he had to jiggle

980
00:51:39,589 --> 00:51:36,960
it

981
00:51:43,750 --> 00:51:39,599
and apply extra force to get clicks on

982
00:51:47,670 --> 00:51:45,750
okay copy that when matthias connected

983
00:51:49,670 --> 00:51:47,680
it it felt like he had to use extra

984
00:51:51,670 --> 00:51:49,680
force to get it to actually click and

985
00:51:57,670 --> 00:51:51,680
get both latches to

986
00:52:01,829 --> 00:51:59,750
to include shaking it back before it's

987
00:52:05,349 --> 00:52:01,839
kind of a jiggle maneuver to get them to

988
00:52:10,069 --> 00:52:07,670

okay copy that some extra force and a

989
00:52:16,829 --> 00:52:10,079
shaking or a jiggling for the umbilicals

990
00:52:20,710 --> 00:52:19,910
good okay uh second item that i have is

991
00:52:22,470 --> 00:52:20,720
that

992
00:52:25,430 --> 00:52:22,480
when able check and just see if there

993
00:52:33,589 --> 00:52:25,440
are any retracted pins on the suit side

994
00:52:33,599 --> 00:52:51,589
i'm checking pins on two sides

995
00:52:51,599 --> 00:52:56,630
retracted pins

996
00:53:01,030 --> 00:52:58,710
third item that i have is just to take a

997
00:53:03,190 --> 00:53:01,040
look at the suit side interface on your

998
00:53:05,829 --> 00:53:03,200
suit and just see if there's any fog or

999
00:53:11,670 --> 00:53:05,839
anything connected to any of those

1000
00:53:11,680 --> 00:53:16,069
check it for fun

1001
00:53:22,390 --> 00:53:18,549
notified notified when i first connected

1002
00:53:22,400 --> 00:53:25,750
copy all clean interfaces

1003
00:53:32,630 --> 00:53:28,230
last item that i have is when able

1004
00:53:36,950 --> 00:53:34,549
okay last item that i have is that uh

1005
00:53:39,030 --> 00:53:36,960
when you can remove the middle seat foam

1006
00:53:40,790 --> 00:53:39,040
and then press down on the seat side of

1007
00:54:10,630 --> 00:53:40,800
umbilical to confirm that it's fully

1008
00:54:15,030 --> 00:54:12,710
all right we just heard some

1009
00:54:21,430 --> 00:54:15,040
chatting between the core here on the

1010
00:54:27,510 --> 00:54:24,870
aboard crew dragon endurance they are

1011
00:54:29,430 --> 00:54:27,520
now outside of the approach ellipsoid

1012
00:54:32,309 --> 00:54:29,440
that four kilometer by two kilometer by

1013
00:54:33,750 --> 00:54:32,319

two kilometer shape uh invisible shape i

1014
00:54:35,910 --> 00:54:33,760
should say around the international

1015
00:54:38,309 --> 00:54:35,920
space station which we use to monitor

1016
00:54:41,109 --> 00:54:38,319
arriving and departing vehicles now we

1017
00:54:42,950 --> 00:54:41,119
were just talking about how crew dragon

1018
00:54:45,349 --> 00:54:42,960
was going to come home by moving aboard

1019
00:54:47,109 --> 00:54:45,359
above the international space station i

1020
00:54:48,470 --> 00:54:47,119
said it was due to gravity that it would

1021
00:54:50,309 --> 00:54:48,480
slow down but it's actually due to

1022
00:54:52,390 --> 00:54:50,319
relative velocity so

1023
00:54:54,390 --> 00:54:52,400
the space station is closer to earth it

1024
00:54:56,789 --> 00:54:54,400
will appear to move forward from crew

1025
00:54:58,789 --> 00:54:56,799
dragon and crew dragon will then lower

1026
00:55:00,630 --> 00:54:58,799
itself enter the atmosphere and come

1027
00:55:03,349 --> 00:55:00,640
home but everything is moving really

1028
00:55:07,589 --> 00:55:03,359
smoothly for the astronauts and their

1029
00:55:08,789 --> 00:55:07,599
journey home on crew dragon endurance

1030
00:55:11,910 --> 00:55:08,799
yeah and

1031
00:55:14,950 --> 00:55:11,920
very exciting crew 3 on their way back

1032
00:55:16,950 --> 00:55:14,960
home now nasa astronauts roger chari tom

1033
00:55:19,670 --> 00:55:16,960
marshburn caleb barron and european

1034
00:55:21,510 --> 00:55:19,680
space agency astronaut matthias maurer

1035
00:55:24,230 --> 00:55:21,520
have departed the international space

1036
00:55:25,990 --> 00:55:24,240
station it will take them about 23 hours

1037
00:55:28,710 --> 00:55:26,000
until they make their way back home to

1038
00:55:30,470 --> 00:55:28,720

planet earth next up the crew

1039
00:55:33,030 --> 00:55:30,480
they've already doffed their suits and

1040
00:55:35,109 --> 00:55:33,040
they are settling in for the flight home

1041
00:55:37,030 --> 00:55:35,119
so as they rest up our teams here will

1042
00:55:39,349 --> 00:55:37,040
continue to keep an eye on the weather

1043
00:55:41,750 --> 00:55:39,359
to ensure a safe return to earth for

1044
00:55:43,829 --> 00:55:41,760
dragon and our crew 3 astronauts and

1045
00:55:45,270 --> 00:55:43,839
though our coverage here in hawthorne is

1046
00:55:47,430 --> 00:55:45,280
wrapping up we're going to turn it over

1047
00:55:49,270 --> 00:55:47,440
to the nasa team in houston to take us

1048
00:55:51,910 --> 00:55:49,280
through the next phases of the crew 3

1049
00:55:53,990 --> 00:55:51,920
mission nasa tv will stay on the air for

1050
00:55:55,910 --> 00:55:54,000
continuous live coverage along crew 3's

1051
00:55:58,150 --> 00:55:55,920
journey home so for those of you

1052
00:56:00,069 --> 00:55:58,160
watching online on nasa's youtube take a

1053
00:56:01,750 --> 00:56:00,079
look at the description below the video

1054
00:56:03,750 --> 00:56:01,760
and you'll find a new link for the crew

1055
00:56:05,990 --> 00:56:03,760
3 coast phase live coverage will

1056
00:56:07,910 --> 00:56:06,000
continue at that new location shortly

1057
00:56:09,829 --> 00:56:07,920
but if you're watching on nasa tv don't

1058
00:56:11,670 --> 00:56:09,839
touch that dial you won't notice a thing

1059
00:56:13,910 --> 00:56:11,680
and coverage will continue

1060
00:56:15,910 --> 00:56:13,920
and meanwhile spacex's youtube channel

1061
00:56:18,309 --> 00:56:15,920
will join live coverage starting roughly

1062
00:56:20,230 --> 00:56:18,319
one hour prior to splashdown and as

1063
00:56:23,750 --> 00:56:20,240

always you can find mission updates on

1064
00:56:27,030 --> 00:56:23,760
twitter at nasa at spacex and on the web

1065
00:56:29,460 --> 00:56:27,040
at nasa.gov thanks for watching and may

1066
00:56:37,589 --> 00:56:29,470
the fourth be with you

1067
00:56:41,910 --> 00:56:39,589
and if you're just joining us four

1068
00:56:43,750 --> 00:56:41,920
astronauts as part of crew 4 are on

1069
00:56:45,750 --> 00:56:43,760
their way back to earth after a

1070
00:56:49,030 --> 00:56:45,760
six-month science mission aboard the

1071
00:56:51,190 --> 00:56:49,040
international space station

1072
00:56:54,309 --> 00:56:51,200
those astronauts include nasa astronaut

1073
00:56:56,150 --> 00:56:54,319
raj achary tom marshburn and kayla baron

1074
00:56:58,390 --> 00:56:56,160
as well as european space agency

1075
00:57:00,390 --> 00:56:58,400
astronaut matthias moore

1076
00:57:02,950 --> 00:57:00,400
crew 4 undocked from the international